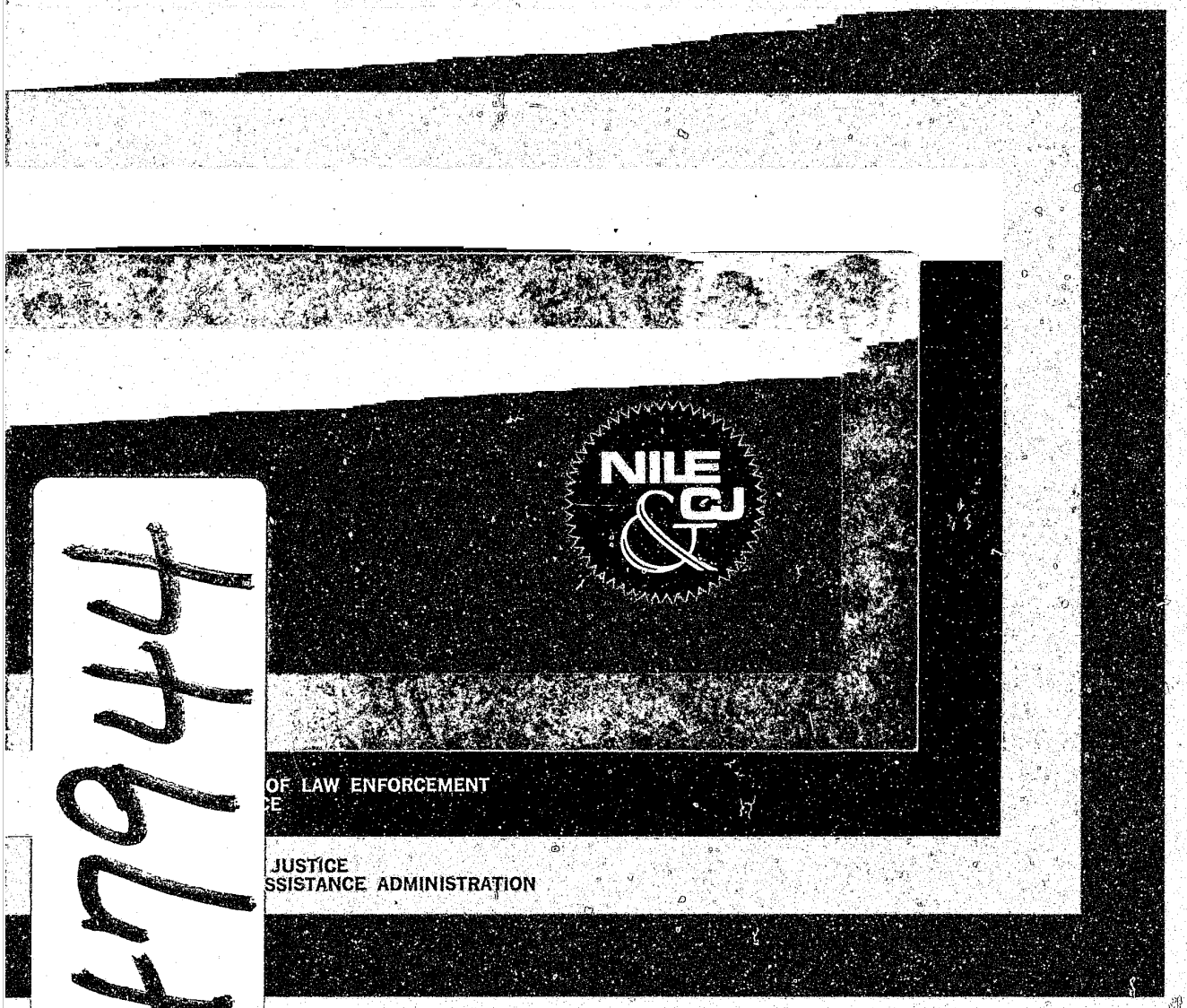
SPACE MANAGEMENT AND THE COURTS

DESIGN HANDBOOK



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DESIGN HANDBOOK

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BY

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FOREWORD

In the State of New York, as in jurisdictions elsewhere in the country, symptoms are surfacing to warn of an underlying crisis in judicial administration. Confronted by rising civil and criminal caseloads, shifts in population density and distribution, advances in every kind of technology and increasingly loud demands for due process, our management tools and the ways we use them are becoming inadequate. Perhaps nowhere are such deficiencies more in evidence than in the buildings housing our court facilities; indeed, the quantity and quality of court and court-related space is sadly inappropriate to the judicial mandate.

The Appellate Divisions of New York's First and Second Judicial Departments long have recognized the existence of acute space problems in the courts within their jurisdiction. Directly contributing to a divergence between desired and realized judicial performance, these space problems can be characterized by several factors:

- Space available is insufficient.
- Existing space is being used inefficiently.
- Courtrooms and related spaces are drab, dingy, ill-lighted and acoustically poor.
- Spaces essential to sound court management and operation, including, jury assembly and deliberation, public waiting and security, are poorly maintained and located.

New York State Judicial Conference plans to speed criminal trials and to create special narcotics court facilities as well as other new judicial procedures adding to an already huge caseload burden are creating for New York's court facilities a space crisis of major proportions.

Perhaps the major thrust of this crisis to date has been in sacrifices wrought to judicial time, judicial performance and dignity of the judicial process. To cite only a few instances—the misuse of space adds to the time spent transferring records and moving personnel, reduces personnel and records security, and slows jury selection and deliberation. Dignity and decorum, difficult to maintain in court buildings that stand as mute evidence of official neglect, are being reduced to a point where public respect for law is being called into question.

To recognize that space problems exist does not go far enough; accurate problem definition and a program to remedy deficiencies equally are essential. Moving in this direction, early in 1970 the First and Second Judicial Departments joined in sponsoring the Courthouse Reorganization and Renovation Program (CRRP) to recommend a 30-year space planning and use program for Manhattan's Foley Square court complex—one of the largest court complexes in the country. To deal with its space problems, and drawing major financial support from the U.S. Department of Justice's Law Enforcement Assistance Administration, the Rockefeller Brothers Fund, and the City of New York's Municipal Services Administration, CRRP functioned under a three-part mandate:

- Immediacy—recommendations should be readily implementable within the next few years.
- Optimization—optimum use should be sought of existing facilities rather than propose extensive new construction.
- Minimum Cost—recommended expenditures should be accommodated within present fiscal restrictions, consistent with the magnitude of the space crisis.

In addition to recommendations and plans specific to Manhattan's Foley Square court complex, CRRP was asked to develop a methodology of space use analysis applicable to courts in other metropolitan areas. A further responsibility integral to the total program was to analyze security problems and recommend solutions, for the Foley Square court facilities specifically, and for other metropolitan courts, as well.

From its broad-based research, CRRP, under the very capable direction of Dr. Michael Wong, has prepared this handbook on courthouse space management and security design for publication and national distribution by the Law Enforcement Assistance Administration. This handbook and its companion, the final report for the improvement of Foley Square court and related facilities, are believed to represent the first work of this breadth conducted in any state court system in the United States. The work of Dr. Wong and his staff well may suggest the course to follow for other jurisdictions in New York State and throughout the nation.

CRRP's comprehensive recommendations for court facility reorganization and renovation began to be implemented in 1971. All CRRP recommendations can be completed by 1976 at an estimated total cost, for the entire complex, of $31.5 million—a modest enough expenditure in comparison to skyrocketing new building costs. Of this total, $21.1 million is estimated to fully rehabilitate and renovate into an appropriate court facility a New

York State Office Building, and $10.4 million is the estimated cost to renovate and reorganize five other court buildings, all in or near the complex. If all recommendations are implemented, the estimated space needs of all the courts in the complex would be satisfied for the next 30 years, after 1970. It is my earnest hope that, with the continued support of the New York City Department of Public Works and Bureau of the Budget, this goal will be met.

The program recommended for Foley Square is an outcome of the kind of planning and analytic methodology discussed at length in this handbook. This work offers to judicial administrators, architects and planners and others concerned with court space needs an imaginative and innovative research and planning program which the Appellate Divisions of the First and Second Departments are proud to have sponsored.

HAROLD A. STEVENS
Presiding Justice, Appellate Division,
First Judicial Department, State of New York
March, 1972

ACKNOWLEDGEMENTS

The director and staff of the Courthouse Reorganization and Renovation Program wish to express their grateful appreciation to all those who supported the program over its two years. While it is impossible to list by name the many persons both in the public and private sphere who have contributed to the program, special gratitude is due the following:

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Too numerous to thank individually are the court administrators, state planning agency personnel, LEAA "pilot city" program staff, city agency personnel in 35 states and more than a hundred facilities visited by the program director over the two years in connection with the program.

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MICHAEL WONG
New York City
March, 1972

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF MAPS

LIST OF TABLES

INTRODUCTION

THE SPACE "SHORTAGE"

DEFINING THE PROBLEM

Facilities adequate to the fair and prompt administration of justice are in chronic short supply in nearly every state in the nation. Not by any means a condition limited to major metropolitan centers reporting increased crime and arrests, space shortages beset most jurisdictions regardless of location.

But what is the real nature of the space shortage? Can it be defined simply in terms of a lack of space? Or does the "shortage," at least in part, stem from the ways space is allocated within facilities and shared by them? The answer, for students of the problem, would seem to lie between these points of view.

A simple definition of this complex problem might characterize judicial facilities space shortages as no more than a concomitant of certain outmoded administrative procedures. Stated another way—many court facilities continue to function today much in the same manner as when they began operation a half century or more ago.

But the definition cannot stop here. Central to understanding the space problem is to recognize that no contemporary institution comparable to the courts in size and social impact can expect to function effectively without a comprehensive and integrated plan for the future. This handbook attempts to provide the basis for development of such a plan.

Perhaps nowhere in the courts is the absence of overall planning more evident than in the abusive use of existing space. Space allocation based solely on departmental expansion requests and procedural changes, without reference to a comprehensive facility plan, has set up increasingly tighter rigidities to further expansion in buildings which frequently have built-in structural constraints mitigating against certain kinds of expansion. *Ad hoc* space allocation practices in common use in most court buildings can be said, with some certainty, to be at the crux of the judicial facilities space shortage.

Such practices, however, do not spring full-blown after a building is occupied; rather, poor space allocation is rooted in the manner in which most facilities are created.

With few exceptions, states still rely on local county commissioners or boards of supervisors, or both, to activate the processes for new facilities construction. Often cumbersome and always time-consuming, these processes characteristically are carried out without guidance of a statewide or regional judicial facilities plan, with the result that whole sections of the country have endemic facilities imbalances. Statewide judicial facilities planning exists at this time only in Hawaii and Alaska. Puerto Rico has a comparable system.

The absence of planning at the state or regional levels tends to be reflected in the operations of buildings as they relate to each other within a court complex, and to departments and units as they relate to each other within a building.

It is atypical when space within a complex of buildings is regarded as a real-property resource bank to be shared in common for the good of each member court and for the overall prosperity of the judicial system functioning within the complex. Far more typical in such a complex is a kind of opera-

tive "territorial prerogative"—space in each building being reserved, and even jealously guarded, for the use of that building's occupants.

Space within a building tends to be allocated to units on a first-come, first-serve basis, regardless of overall priorities and functional and spatial relationships established for operations within the structure. Such an approach can set off a "space race"—units vying with each other for the first available space in the hope of forestalling a later expansion crunch. Existing practices even lead vital court-related departments or units out of a court building in search of space. It is not unusual to find such functions in buildings designed to serve as warehouses, schools and office buildings—many inadequately researched ahead of time and ill-suited for the uses being made of them.

Modifications to newly-acquired spaces regardless of location, often amount only to patchwork, do not really meet a unit's expansion needs, effectively cut off future requests for space and contribute unnecessarily to the space "shortage." In short, the lack of comprehensive planning, from conceptual stages through implementation and long-term use, is considered here to be of major significance in attributing reasons for the judicial facilities space shortage.

But the crazy-quilt allocation of space on statewide and local levels finds its most severest critics, perhaps, among the users of the judicial system—particularly within the general public. Deficiencies of long-standing, which routine users may have learned to live with, many others find inconsistent with the dignity of the judicial process. And it is an often-affronted public which ultimately must support a system of adequate judicial facilities.

Consider the infrequent user of the courts, particularly in a metropolitan center. Left to his own inclination as to how to travel to a court facility, once there, he usually has to improvise a hit-and-miss procedure to find his final destination.

Inside a facility, he may brush shoulders with a criminal case defendant being led through a public corridor by a police officer removed from his patrol for several hours simply to complete prearraignment procedures scattered on several floors of one, or even a number of buildings.

At another stage in his travels, the user may inadvertently wander into the office of a private social service agency and, at the very least, wonder what it is doing in a court building. Or, he may find in another part of the building shelf-upon-shelf of records dating back hundreds of years, taking up prime space the courts could use far more effectively.

With such free, if confusing, access to court facilities, the user may wonder how secure such a building is and how secure he is in it. And if he has been summoned for jury duty, and can find his way to the jury assembly area, he may have to endure environmental conditions out of keeping with the image he would like to have of the judicial process—to say little of the hazard to his own safety and comfort.

In the final analysis, the space "shortage," meaning, at least in part, the way space is allocated, affects everyone using a court facility.

DEFINING THE APPROACH

A research and planning study created and undertaken to recommend short- and long-term solutions to space problems, in approach must encompass a broad definition of justice system administration. Beyond court operations, this definition must include functions of agencies, the responsibilities of which rest in areas such as law enforcement, correction and social welfare. This definition, furthermore, must seek to establish the degree of correlation among all such agencies. Where interrelatedness is strong, the course and outcome of a study will be correspondingly improved; where the courts and related agencies tend to function in isolation—the case, apparently, more often than not—and a study makes no attempt to define functional and spatial relationships, its potency may be diminished.

Many good-intentioned programs have sought to correct system shortcomings, but often their scope has been limited, with scant recognition being given related areas further investigation may show to be part of the problem and, therefore, part of the solution. The fallacy of the too-narrow approach can be easily illustrated:

A rise in crime is accompanied by public demand for more police protection. Money is found to hire more policemen. Arrests go up. But minimum attention is paid to the capability of existing judicial staff and support functions to process increased caseload.

Neither are detention or correction facilities enlarged commensurate with the higher arrest rate. Where funds are provided to expand selected fa-

cilities, the tendency is to duplicate conditions which have been shown to breed prisoner unrest.

The patterns repeat, only more so. Plea bargaining and other administrative procedures geared to keep caseload at a tolerable level, if not always to serve the larger interests of justice, proliferate.

In the end, the attempted solution--more policemen--by concentrating on one problem area--more crime--only exacerbates conditions in other quarters of the justice system--in detention facilities, courtrooms, probation agencies, and so on. The "solution" has given rise to many space problems which cannot be resolved without involving each component of the system under a comprehensive approach to the total problem.

Many other examples could be cited. Police programs that result in more sophisticated law-enforcement equipment; correctional programs that bring about new procedures for prisoner treatment and rehabilitation; court programs that introduce new business management techniques to reform operations. Admittedly, efforts of this kind have helped in each sphere. But only in rare instances has the considerable data developed under such programs been used in an interdisciplinary or systems approach in terms of operation, manpower and facility planning of the justice system.

Facility planning suffers measurably, experience shows, from a failure to sufficiently integrate management needs and space requirements. What can be characterized as straight-line projection of future space needs invariably compounds the space "shortage." Failure or inability to account for anticipated changes in system operation, of either a legal, procedural or political nature, runs counter to the application of contemporary space management techniques. It is only when manpower and facilities are balanced at an appropriate ratio within each component of the justice system that reforms can be effectively implemented. If, in the previous example, a state law was to take effect establishing a time limit between arrest and trial, space and manpower imbalances conceivably could slow its implementation, placing the justice system in a distinctly undesirable posture.

Competent management of the justice system hinges significantly on the availability of adequate facilities, appropriately allocated. It follows that judicial facilities can be made fully responsive to their designated purposes only when planning is comprehensive, especially as concerns anticipated changes in system administration.

It appears certain that continued reliance on the present system of administering court and related facilities is bound to accentuate existing space imbalances--the real space "shortage." Clearly, alternatives to incohesive space allocation must be formulated.

HOW TO USE THIS HANDBOOK

This handbook is designed to avoid pitfalls of the kind discussed above in providing the foundation for a local court or related facility space management research and planning program for use either in reorganization and renovation of existing buildings or prior to the construction of new ones.

This handbook has been prepared primarily for administrators, to increase their appreciation of the need for and function of space management, both in concept and application. Architects, planners and others embarking, particularly for the first time, on a facilities study should find useful much of the information. Of special interest to this latter group should be Chapter Three--"Space Standards and Guidelines." Here is gathered a comprehensive set of time-saving standards for use in planning court and related facilities.

The content of this handbook draws on the work of the Courthouse Reorganization and Renovation Program, a study of New York County judicial facilities in Manhattan's Foley Square, conducted during 1970–1972. While the handbook may have special relevance to urban court systems, it is by no means intended to have pertinence solely in these areas. On the contrary, information developed over the course of the program has been interpolated wherever possible to have wide application. Certainly, this is so in relation to basic concepts and benefits of space management, as discussed in these pages.

Each chapter treats in sequence of use a different aspect of the space management planning process. By following the progression, the reader new to the process should arrive at an understanding of this important phase of facility planning and implementation sufficient to permit appropriate evaluation of an anticipated study, and its progress once under way.

Chapter One introduces the reader to basic concepts of space management, why they should be part of facility planning and benefits that can result as these concepts are translated into essential stages

of the process. This chapter also touches on elements in consultant selection.

Chapter Two provides two means of viewing, by component and in sequence, a space management methodology developed to study the courts of New York County. The first part of the chapter takes the reader step-by-step through a textual explanation of this methodology. A series of graphics, making up the second part of the chapter, provides a faster overall look at the same process.

Having familiarized himself with methodology, the planner next needs a basis for evaluating adequacy of existing facilities in meeting present needs. Chapter Three provides this, and, in fact, represents one of the most significant contributions of this handbook.

The space standards and design guidelines presented here—the first such known comprehensive compilation for courts and related facilities—are organized according to functional spaces within a facility, each function summarized in a table following a list of design guidelines. Given are physical, environmental and psychological data to be considered in facilities planning. Space standards, including furniture and unit space standards, environmental criteria and access and security requirements, are based on functional needs of persons performing activities making up the particular function.

Armed with this detailed data, the planner, beyond being able to check how well facilities meet present needs, can formulate "block-use" plans, a preliminary basis for evaluating overall building space use, based on established functional and spatial relationships.

Up to this stage, no means has been available to begin planning space needs. Chapter Four, a discussion of manpower projection techniques, one of the key components in the methodology, marks the start of this planning.

Manpower analysis (which may be conducted coincidently with earlier phases of the space management process), to allow for reasonably accurate projections, must account for factors such as population trends, crime rates (in the case of criminal court analysis), and anticipated caseload (taking into account anticipated legal, procedural and political changes). From this data are projected personnel expected to be required over a given period (usually in five-year intervals) by job classification, by department and by facility. These projections would, in turn, be synthesized into a projection of required courtroom, ancillary, departmental and related spaces needed over the same period.

Space management decisions frequently are influenced by factors outside of, but impinging upon, space study findings. Two such considerations, which, because of their significance to court and related facility planning are treated in separate chapters, are courthouse security and a comprehensive information communications system.

Courthouse security, the subject of Chapter Five, is of utmost concern in many current-day facilities, as even casual reading reveals. The information contained here, like that in Chapter Three, is thought to be the first of its magnitude to appear in print. Discussed are comprehensive analysis of risk and comparative analysis of security problems in courts of varying jurisdictions. Security precautions and solutions are given based on a balance of space management techniques, manpower utilization and security systems and equipment.

In Chapter Six, major components of a comprehensive information communications system are examined for their applications in particular to the urban center court complex. Design of a directional sign system, drawing on psychological and perception studies and the application of computerized information storage and retrieval systems, are among the components discussed.

Having accounted for considerations such as security and information communications systems, and having established space standards, functional and spatial relationships and future manpower and space needs, the planner is equipped to develop alternative solutions to facility space problems.

Chapter Seven describes typical space management applications and problem solutions which may be applicable on the local level. Included are basic recommendations for court complexes, court and related buildings and departments within them.

Evaluation of recommendation feasibility rests in large part on cost, a constant consideration for administrator and planner alike. Factors which bear on cost estimating and the use of published cost indices, with precautions on their use, comprise Chapter Eight.

For administrators and planners interested in optimal cost research, this chapter also contains a research methodology for developing cost-performance/cost-comfort relationships.

State financing of court and related facilities is outlined, as is a basis for assessing fair rental value of judicial facilities under statewide operation.

Program administration and cost planning forms the basis of Chapter Nine. Among topics elaborated upon are practical aspects of running a program office, and procedures for establishing essential and effective working relationships between program staff and personnel of the courts, implementation agencies and other organizations at the local and state levels. Procedures to be undertaken after a study to enhance recommendation implementation rounds out the handbook.

In sum, the court administrator and planner can use this handbook to gain a working knowledge of space management concepts applicable to the planning of new facilities or the reorganization and renovation of existing buildings. A facilities planning program, patterned along the lines described in this handbook, should result in findings and recommendations to correct existing space imbalances and to minimize the recurrence of a space "shortage."

CHAPTER ONE

SPACE MANAGEMENT CONCEPTS

Today's court administrator, whether he is a justice presiding over a far-reaching circuit or one of a growing number of professionally-trained executives functioning in a dense urban setting, has been placed by a recent surfacing of events in the vexing position of having to make more decisions faster and at lower cost than probably at any previous time in the history of the American judicial system.

An indignant segment of the public clamors in no uncertain terms for more effective administration of the courts; new laws mandate much-needed reforms in trial durations and right to trial-by-jury in misdemeanor cases; an upsurge in multi-defendant trials, implying correspondingly more intense courtroom security, raises questions of legal and moral propriety. These are just some of the developments dramatically shaping the role of court administrator and facility planner alike.

Standard remedies for these problems no longer work. Mitigating against one traditional solution—the injection of large sums of money to correct abuses—is the current and projected financial plight gripping most municipalities. The dilemma, of course, lies in finding ways to improve the courts without further depleting austere local budgets, thereby aggravating the problems of the cities.

One thing seems certain. Court administrators, in greater numbers than ever before, are reaching the conclusion that significant progress in meeting present and future challenges to the judicial system rests with efficient "plant" modernization. Having made a hard apprisal of current court facility managerial policies and the physical environment in which those policies find expression, the administrator has found, not surprisingly, conditions wanting of improvement.

So, modernization is called for. Obviously, more effective operati ; to accelerate court processes demand optimum interrelatedness of space, manpower and equipment. But how should this desirable goal be obtained? What choices are open to the administrator?

Increasingly, local court systems are turning to the federal government for relief. In this pursuit, a well-conceived proposal can expedite funding. For this reason and others, the local court administrator should become better acquainted with the space management concept, a vital first step in court facility research, planning and implementation.

WHY SPACE MANAGEMENT?

To the regret of some unfamiliar with time- and cost-saving benefits accruing from space management studies, facility expansion costs have far exceeded original dollar estimates. The failure to properly research space allocation and relationships between spaces often is at fault here. A space management program would check such runaway expenses.

After an expanded facility has been implemented, the users may find they are saddled with a structure that remains spatially inefficient, further adding to their cost in terms of additional manpower and operation time losses. A space management program would suggest space use according to manpower and functional requirements for optimum productivity and security.

And, as if things were not bad enough for the

users, their problems may be only beginning. As organization and workload expand, the original design, in addition to all its short-term faults, may be revealed as too rigidly conceived to accommodate projected growth. Space may have to be acquired at random through commercial rental or new construction—at great cost and, perhaps, at a distance remote from the existing facility. A space management program avoids such pitfalls by providing a plan with adequate flexibility to permit expansion even though system needs change.

From the foregoing, it may be correctly assumed that a space management program should be undertaken early in a contemplated renovation or design project, for space planning is a comprehensive and integrated process that begins with a study of preliminary objectives and priorities, even before a proposal is submitted for funding, and terminates with implementation of the most feasible design solution.

SPACE MANAGEMENT CONCEPTS: AN OUTLINE

Space management is a comprehensive and systematic approach for deriving feasible and flexible solutions to administrative, operational, personnel and spatial problems. Space management encompasses many interrelated planning components before, during and after the completion of a facility project, deriving solutions through a well-structured methodology consisting of a logical sequence of analytic processes.

An effective space management program embraces much more than the mere physical setting. In fact, problems initially defined in spatial terms frequently have their source in administrative or management problems. In such cases, a space problem is effect rather than cause. To resolve problems at the source, space management approach and methodology must retain a comprehensiveness sufficient to analyze not only facilities data but administrative and management data as well.

A space management program analyzes and evaluates existing resources, including personnel, equipment and facilities, prior to recommending and planning new ones. At a time when budgets for new construction are restricted while the need for more adequate facilities increases, a proven feasible approach of achieving maximum cost benefit is to assess the capacity and potential of existing resources prior to planning new ones. Only after a thorough evaluation of existing resources has been completed can a realistic assessment of new resource requirements be determined.

In terms of personnel, analyses are made of efficiency and effectiveness of existing personnel, their organization, training, promotional lines, performance and output, and adaptability of personnel to differing roles within an organization. In terms of equipment, careful analysis is made to evaluate the capacity, utilization factors, power requirements and adequacy of existing equipment and systems to handle projected additional loads. In terms of facilities, detailed functional and spatial relationships, based on personnel, communication, time-and-motion, and security studies, are developed to assess adequacy of existing facilities. Projection studies of personnel, operational and space needs also are conducted to measure suitability and adequacy of existing facilities.

During a space management study, some existing buildings will be found to be more adaptable than others to rehabilitation for specialized functional needs. Buildings determined to have this high "rehabilitation protential" can be reorganized and renovated at considerably lower cost within a shorter time than is required to construct a new building of similar capacity. A building with large floor area and a central communication and services core, for example, would have higher rehabilitation potential for conversion into a criminal court facility than would a structure with a smaller floor area (say, under 5,000 sq. ft.) with a corner communication and services core. In other words, buildings with high "rehabilitation potential" usually have low structural and planning constraints. Consideration, however, has to be given to the inconveniences caused to occupants during reorganization and renovation, and a carefully phased project implementation has to be devised to minimize such disruption.

To adequately accommodate projected manpower and spatial needs, a space management program provides alternative solutions, accounting for current and anticipated developments of a legislative, political, economic and social nature that could affect the process under study. In terms of space management, projection methodologies may require assumptions about casual relationships that cannot be proved, resulting in a degree of accuracy that decreases rapidly as time span increases. Consequently, planning and design flexibility becomes critical, if facilities are to accommodate optimally projected needs.

Movable partitions, office landscaping, unfinished floors for expansion needs, modular unit construction, multiple-use spaces and standardization and unification of system components—all can enhance flexibility in a space management plan.

Reorganization or renovation within a facility must be formulated in accordance with the existing architectural style, and recommendations incorporating external building modifications must account for the established style of adjacent buildings. Space management strives to create architectural, planning and functional harmony, both in external treatment and internal operation.

Contributing to any space management study is an array of design and planning components, not the least of which involve security and communication systems. Decisions related to security systems, in fact, may significantly determine overall facilities planning. On the other hand, security needs can only be met effectively when a balance is struck between space management techniques, manpower planning and utilization, and available security systems and equipment. A decision, for instance, to separate prisoner circulation from that of judges and public can determine layout of a courtroom floor.

Another strong influence on planning is the design of communication systems: an integrated network of directional signs to guide people to their destinations; a public information communications system to provide essential case information to qualified users; an information input, retrieval and display system to improve communication capacity throughout the justice system; and a security communications system to improve courthouse security in the most effective and economic manner. For example, a large urban arraignment courtroom reverberating with confusion and noise might be replaced by a smaller courtroom with a large waiting room to improve decorum and court operation, the two spaces made to function effectively, in part, by an inter-communication system.

Space management studies should be undertaken as an integral part of court management studies. Changes proposed for an existing system of management would provide input necessary to carry out second-phase evaluation of existing facilities prior to recommending reorganization and renovation or planning of new facilities to accommodate projected needs. This concept is especially applicable to studies conducted on a statewide basis where management decisions invariably affect the use and planning of many facilities.

Comprehensive space management also must guide recommendations through to implementation, a process achieved successfully only by coordinating planning at all stages with local implementation agencies. Additionally, a space management program can be structured to assist local architects in facility design and supervision, and to evaluate such projects after their completion.

The scope of space management should extend beyond local facility projects at county and municipal levels. Centralized funding for operations and improvement of court and related correctional and law-enforcement facilities at the state level can result in long-term cost savings through programs such as facilities consolidation and modular components development to meet short- and even long-term space needs. State financing of court operations also would encourage planning and implementation at local levels to be coordinated through unified standards and guidelines embodied in a comprehensive statewide facilities plan.

RATIONALE OF SPACE MANAGEMENT PLANNING

Facility reorganization and renovation all too frequently relies solely on straight-line projections of existing space and manpower needs—a wholly inadequate approach rejected under a well-structured space management program. In its place will be developed an approach and methodology at once comprehensive and integrated, relying on broad-based experience, as presented in Chapter Two.

A space management program structured along lines approximating those in Figure 1, page 22, will identify existing relationships between people, their activities and equipment within facilities or buildings comprising a complex. Such a program will measure the degree to which realistically predetermined objectives and clearly defined functional criteria are satisfied. It will collate this information with established communication patterns among persons within a spatial system to arrive at a determination of inter-personal relationships, communication systems and, eventually, closely interrelated persons and activities. From a carefully compiled list of assumptions, the program will project future manpower and space requirements to be accommodated in the existing or proposed facility. From such reliable knowledge of environmental and functional conditions, spaces can be planned for maximum

operational efficiency and greater manpower output now and in the future.

In approach, space management encompasses both internal and external relationships within a spatial system, placing particular emphasis on:

- Projected growth rate based on indices such as anticipated changes and trends in the judicial system by legislative enactment and legal interpretation, population growth or decline, expected personnel needs, budget allocations and case flow.
- Priorities of development and construction within an overall modernization scheme based on urgency, operational efficiency and budget availability.
- Impact of innovative techniques and procedures on case volume, operational efficiency and spatial requirements.
- Location factors in overall facilities planning, based on functional linkages, available sites, projected expansion and cost differentials of various solutions, as between rental and new construction.
- Greater flexibility and comprehensiveness in space planning to accommodate projected personnel and spatial requirements.

COST OF SPACE MANAGEMENT PLANNING

Comprehensive space management planning undertaken well before the start of actual design work—a procedure notably lacking in many previous courthouse and law-enforcement facility studies—is not expensive in relation to overall project costs and in consideration of short- and long-term operating efficiency. A rule of thumb for space management planning costs: 1 to 2 percent of project investment—a small enough amount to insure against a project becoming obsolete before implementation.

A recent space management study of a complex of several multi-storied courthouses in downtown Manhattan's Foley Square points up the need for such planning.[1]

Court expansion objectives over a 30-year period can be satisfied, the study has shown, by implementing imaginative renovation techniques rather than by constructing far more costly additions or entirely new buildings. An earlier study, in fact, made recommendations concerning the same court buildings that would have cost twice as much to implement. Furthermore, the cost of a new criminal court building in the Foley Square area—assuming space were available and exclusive of its cost—to meet space and manpower needs projected by the study through the year 2000 is estimated at $60 million, at least three times more than the cost of renovations to an existing facility recommended under the current plan. Recommendations stemming from this analytic study are being implemented now to introduce far greater orderly growth into the Foley Square courts system over the next three decades.

[1] Courthouse Reorganization and Renovation Program, New York City, "Foley Square Court Complex, New York County," Final Report and Appendices A-J, March, 1972.

SHOULD THE ARCHITECT UNDERTAKE SPACE MANAGEMENT STUDIES?

The space management function, even after its benefits are fully understood, may become delegated to the architect selected to prepare renovation or construction plans—an approach not recommended for the following reasons.

While it is often true that the space management professional is an architect, the local architect responsible for facility design, as a rule, is not trained in space management analysis. This divergence in discipline can be traced, at least in part, to traditional forms of architectural education. Until recently, curricula have not emphasized the highly specialized, research-oriented techniques of space management. What genuine space planning has been attempted by architects can be described most often as being "intuitive," that is, proceeding more from a purely creative impulse rather than from creativity functioning in concert with a systems approach. At its worst, the intuitive approach applied alone amounts to guesswork—in cases like the example cited earlier, with disastrous consequences.

Delegating to the local architect responsibility for the space management function means that this all-important phase of project planning cannot begin until after the architect is selected, often a more time-consuming selection process than is true in choosing from among the far fewer space management consultants.

Even when the architect is accomplished in space management disciplines, he may lack time and funds under budget restraints to accomplish this task. The administrator, by understanding the need for implementing this function in the project budget distinct from appropriations for architectural services will enhance the outcome of a facility program.

The administrator should retain a qualified con-

sultant not only at the earliest conception of the project; he should also consider providing in the budget a stipulation for retaining the consultant throughout the project to implementation as liaison and coordinator between facility officials, architect and implementation agencies, for reasons to be subsequently described.

PRELIMINARY FUNDING PROPOSAL

Certain government agencies and private foundations are responding to the crisis in the courts with an expanded funding base for experimental and developmental research, planning and implementation projects designed to alleviate this crisis. A space management professional should be equipped by experience to assist an administrator in preparing a preliminary proposal for submission to funding agencies. Most agencies expect a preliminary request for funds to contain the following basic information:

1. Approach and methodology of project
2. Proposed innovations
3. Priority of proposed facility
4. Potential for improving court efficiency
5. If limited in scope, potential benefit to other facilities or departments within the local or national courts system
6. Description of project, with personnel involved
7. Feasibility and evaluation studies
8. Specialized studies requiring outside consultants
9. Estimated total cost and, if possible, delineated costs
10. Other potential and matching fund sources

Whenever possible, projects should be structured to produce findings of benefit in the short and long term for the overall judicial or law-enforcement system. The administrator should seek development of a court facilities master plan, derived from a careful analysis of objectives and needs and a realistic assessment of priorities.

One of the most difficult aspects of budget preparation is arriving at reasonably accurate time-and-cost estimates, particularly if the administrator has not met prior to budget preparation with the space management professional and other consultants. The best solution here is to provide a substantial contingency sum in the initial proposal to cover any variance, taking into consideration that federal law limits the portion of total grant money that can be used to compensate facility planning personnel. Additionally, most federal grants, by law, require supplementary funding by state or local agencies to help assure that proposals are of significant magnitude to attract at-home support.

SELECTING THE CONSULTANT

Choosing a consultant can be an arduous task for the court or law-enforcement administrator, especially if he is involved for the first time in a facility renovation or design project. Because space management is a relatively new discipline, particularly in the field of judicial and law-enforcement facility planning, the administrator's range of choice should be more limited than is the case in selecting other consultants.

Those of repute are known within the court and law-enforcement field. Justices and administrators with previous experience in modernization programs are excellent sources for information about consultants. Professional organizations, such as the National Association of Trial Court Administrators, the American Bar Association, the American Institute of Architects, and law-enforcement agencies, such as the Law Enforcement Assistance Administration, Department of Justice, also should be able to furnish assistance.

The administrator's prime consideration in selection should always be one of obtaining the services of the most qualified consultant for the job—even if the consultant must be invited to visit or submit a detailed proposal from a great distance. Ensuing traveling and related expenses will be piddling in comparison to unnecessary costs that may surface when settling for a less experienced consultant. Beyond an assessment of experience and capability in the field, a measure of a consultant's qualifications lies in how extensive have been project implementations based on his recommendations.

Once a fruitful working relationship has been established with a consultant, it would be wise for the administrator to retain this person on a formal or informal basis for later collaboration. The consultant's familiarity with the local system, its operation and personnel would eliminate costly orientation on a future project. No doubt, the consultant will have data accumulated on his first local project that may be useful on another. Ultimately, the con-

sultant whose advice is sought on a continuing basis, rather than for isolated projects, will have a more definitive interest in the local court or law-enforcement system. For the administrator who nurtures such a collaboration, the benefits probably are incalculable.

COLLABORATION AFTER SELECTION

The administrator, having selected a space management consultant and other consultants, should schedule a joint preliminary meeting. For this meeting, the administrator must be able to impart in detail a thorough knowledge of project goals. General alternative approaches should be aired, in terms of the most effective and economic solutions to defined problems. A work program should be agreed upon by all. Each should know precisely the scope of his own work and how it relates to the work of others. Tentative target completion dates for various stages of the project should be set, and a plan for implementation should be established. A schedule of meetings between consultants should be arranged, subject to project progress.

When the consultant is located at considerable distance from the project locale, the administrator should plan to meet with him for in-depth discussions at critical levels during planning. These include:

1. Preliminary discussion: To determine the nature, scope and cost of the project and consulting services, program objectives and direction of the consultant's final recommendations, preferred and alternative approaches to the problem and time schedule.
2. After compilation and preliminary analysis of data: To discuss feasibility of alternative approaches, to modify existing schemes to match additional requirements and to determine preliminary content and format of the final report.
3. After refining alternative schemes: To demonstrate the preferred scheme, possibly with a scale model, constructed in sections by floor for sequential explanation, and to present a detailed analysis of facts and data and a preliminary draft of the final report.
4. After circulation of draft final report: To discuss comments by court personnel who will be responsible for the implementation of recommendations, to modify and propose variations of alternative schemes, to decide on the preferred scheme for short-term implementation, to consider phasing-in programs for long-term consideration and to agree on ultimate content and format of the final report. For large projects, more meetings could be conducted at various critical stages to improve coordination.

IN THE FINAL ANALYSIS . . .

The space management consultant's final report to the administrator should contain detailed guidelines and recommendations for further action. It is the responsibility of the administrator to develop the means of implementing the consultant's recommendations, during which period the space management consultant can be retained to act as liaison with the architect and to refine, if necessary, his earlier recommendations. (If, on the other hand, the consultant is making only preliminary recommendations to assist the administrator in formulating a proposal or program, the report should state recommendations for further action and the consultant's continued involvement, if any, in guiding the project to successful implementation.)

During facility design stages, the consultant can modify requirements according to revised budget and other restraints. When a design is finalized, he can check to ensure that all recommended and necessary spatial relationships have been satisfied.

During documentation phases—working drawing and specification preparation—the consultant, at the client's request, can make suggestions on materials and finishes appropriate to the scale of the project. He can also help to coordinate related sub-programs. During construction, he can determine that special materials and finishes are being installed according to specifications.

Later, the consultant can conduct environmental tests in completed spaces, observing and investigating patterns of movement, performance levels, and production output of people and their activities—much as he did with existing conditions at the start of the space management study. Finally, the consultant can recommend adjustments in spatial use and functions relative to actual conditions.

In sum, an understanding on the part of court administrator and other key facility personnel of the

need for and function of the space management research and planning process will enhance project outcome. With this background, court officials will be in a position to more adequately assess the methodology proposed for a space management research and planning study.

CHAPTER TWO

A SPACE MANAGEMENT METHODOLOGY

The architectural approach to planning invariably has been intuitive rather than scientific, piecemeal instead of comprehensive, haphazard where it should be systematic. While scientific and engineering research at the post-graduate level has been accepted as an integral part of academic curricula, not until the last decade had comparable architectural research gained recognition. Some credible research work has been conducted in planning educational, medical and commercial facilities, and systems approaches have found their way into limited facilities planning.

In the field of judicial and related facilities, however, a comprehensive and integrated systems approach to solving management and space problems had not been attempted until comparatively recently. The only known research in this field to date is 1) the "Judicial Facilities Study," a two-year study sponsored by the American Bar Association and the American Institute of Architects at the University of Michigan, Ann Arbor, from 1968–1970; and 2) the "Courthouse Reorganization and Renovation Program," a two year LEAA-funded program sponsored by the First and Second Judicial Departments, New York City, from 1970–1972. A comprehensive and integrated systems approach applied to reorganization and renovation of existing court facilities as well as to planning of new facilities is the subject of this chapter. It is hoped that judges and court administrators will gain from the information provided a greater awareness of the need for a systematic approach to judicial facilities planning.

An overview of the space management research, programming and planning process is shown in Figure 1, page 22. Each step of the process is briefly described and illustrated by a figure or table following the text. The figures and tables are arranged in sequence identical to the overview process.

DEFINE PROGRAM GOALS

A comprehensive space management study will focus on several major goals tailored to specific requirements of a local project. A space management research and planning proposal should advocate:

Flexible Solutions. All relevant methods of providing adequate space for present and future needs should be analyzed as to viability and cost, with recommendations for implementation phased for minimum disruption to judicial and law-enforcement facility operations.

Comprehensive, Integrated and Systematic Approach. Centralized data collection, analysis and planning based on space management techniques will produce project design standards and guidelines which should be related to standards established for other judicial and law-enforcement facilities for incorporation in a comprehensive system—an ultimate goal in this field. Design standards and guidelines for court and related facilities are given in Chapter Three. Project studies coordinated by state planning agencies should integrate facility requirements within a comprehensive plan, as well as investigate and coordinate essential locational and operational linkages.

Innovative Concepts and Programs. Innovative

approaches to court and related facility planning tend to become imprisoned within restrictive system-imposed frameworks. Innovative concepts and programs, capable of ready incorporation with modern management planning techniques, can break through traditional system barriers to provide more functional approaches without diluting the basic objectives of the courts or law-enforcement agencies.

Locational Linkages. Factors of interrelatedness among courthouses and law-enforcement facilities involved in a project should undergo detailed appraisal. Among the facilities that could be so studied are correction, juvenile, detoxification and medical and drug treatment centers.

Personnel Needs. A space management program relies in large part on a realistic evaluation of current and projected manpower needs, taking into account anticipated legal and procedural changes.

New Space and Operational Standards. Improved operations lead to revised space standards. Such standards for court facilities, devised within a comprehensive and integrated planning concept, should be generally applicable to projects outside courts. Unit space standards (per person or per space), departmental space standards and other space standards (combined courtroom, ancillary and support spaces) are all essential components in facility planning studies.

Creative Architectural and Urban Planning Concepts. Such concepts must advance further than simply the planning of physical facilities to satisfy functional needs. What is required is a careful evaluation of all variables affecting facilities planning—among them, security procedures and information and communication and retrieval systems. Such an analytical and systematic approach should be integrated with creative design capability to derive imaginative, innovative and functional solutions.

Security Procedures. Where facility security is nonexistent or inadequate, a systematic and comprehensive study should be undertaken to recommend improvements; where a security plan seems to be effective but has not really been tested, efforts should be made to conduct controlled tests. Security procedures should be evaluated in terms of a balance between architectural, operational, manpower and technological solutions.

APPROACH AND METHODOLOGY

To accomplish the forestated goals, the approach selected for a facility research and planning program must be systematic, comprehensive and integrated. A study proposal should adhere to some form of the following systematic sequence of research, programming and planning to enable formulation of essential standards and guidelines for the facility design of greatest flexibility. (For a schematic representation of the following approach, see Figure 1, page 22, "Space Management Research, Programming and Planning Process.")

DEFINE FACILITY OBJECTIVES

One of the first and most important steps in the space management planning process is to define clearly program goals, or specific program aims, and objectives, or more general system aims. Goals and objectives give direction to concepts used in arriving at final recommendations, act as constraints upon program scope and represent a base against which research findings and conclusions can be measured.

In any space management research and planning study, two sets of goals and objectives are operative—those of the program (for example, optimizing space use in existing buildings) and those of the judicial system (for example, improving existing space use to improve the quality of judicial administration). While program objectives and goals invariably coincide with or relate to those of the judicial system, program goals serve the broader perspective of the justice system as well.

Carefully delineating goals and objectives is perhaps the single most important function bearing on recommendations that will be made for existing or planned new facilities. A competent consultant will tailor a proposal and study along the following lines to reflect local project requirements.

FORMULATE, TEST AND EVALUATE APPROACHES AND TECHNIQUES

Background Research. To fully gain an understanding of the judicial system which is the focus of a study, a period of general background research usually is necessary prior to formulating research and planning approaches, unless staff previously has undertaken studies of the same system. The consultant's awareness of and access to existing research techniques, facility space standards and other reports on previous studies should avoid work duplication

and unnecessary expenditures of time and money. Substantive information and data on judicial facilities being sparse, background research of necessity involves developing original information, much of it coming from preliminary discussions with administrators, department heads and others holding positions of responsibility in the courts to be studied.

To facilitate development of a working relationship with the courts, the presiding justice or administrative director of each court to be studied should inform department unit and agency heads as to program goals, and ask that each cooperate by appointing a key staff person as liaison to the program. The person should be knowledgeable in his unit's organizational structure, operational deficiencies, personnel assignment and space allocation, as well as his unit's relationships—organizational, operational, philosophical and spatial—with other components within the judicial system.

If no one other than the department head has a familiarity on this level, and when it is not feasible to appoint more than one liaison officer, then the department head should be encouraged to serve in this capacity. It would be useful, in any case, to assign a second liaison officer, should the first be unavailable at certain stages of the program.

Preliminary discussion with the liaison officer, and possibly with other staff he selects from his unit, should provide the program team with ample background on unit historical development, administrative organization, operational sequence and major problems to be accounted for in approaches and research techniques.

Devise Research Approaches and Techniques. A survey of all available research and planning approaches and techniques based on program goals and objectives should be undertaken to evaluate applicability to the local project. Where necessary, new or modified approaches will have to be devised. Techniques should be evaluated for their separate and interrelated worth. Techniques may include personal interviews with staff (possibly by questionnaire), measurement of operational parameters such as work output and environmental conditions, observations of operational procedure and spatial characteristics and investigation of building and engineering systems.

Test and Evaluate Research Techniques. Prior to beginning full-scale data compilation, it is essential to test research techniques in a small pilot study of one department or unit. One of the most important reasons for doing so is to determine whether information collected by questionnaire, as presently structured, will reinforce program approach. Staff should participate in questionnaire formulation to obtain a full understanding of data sought. Several interviews of a cross-section of personnel then should be conducted to assess the relevance of responses. If questions seem ambiguous, wording should be made more precise. Some questions may become redundant if separate sections of the questionnaire appear to yield similar information. Progression of questions may have to be revised to improve sequence and completeness of response.

Role-playing during pilot study formulation is useful to pre-test a draft questionnaire. Program staff, in turn, can assume roles of interviewer and interviewee. The technique should enable staff members to improve their interview capabilities, while, at the same time, uncovering repetitions, inappropriate questions and other questionnaire deficiencies. More standardized data should result, along with a time approximation for each interview.

A pilot study also should test the tools to be used to measure factors such as environmental conditions and personnel work output. Work sheets or questionnaires used to record observations of court proceedings should be tested under actual conditions, as part of the pilot study.

After completing a pilot study, it must be verified for full-scale use. Data compiled must be subjected to a preliminary analysis, after which the questionnaire and other data-gathering instruments can be modified, as required.

COMPILE AND ORGANIZE DATA

Compile Data. Full-scale data compilation should be conducted by staff teams, each responsible for several departments or an entire court. At the first meeting between team and liaison officer it is vital to establish basic guidelines for operation and communication. Some liaison officers prefer to have all team requests channeled to them, including those for departmental interviews; others prefer researchers to make their own appointments. In any case, a basic ground rule is that the program team work as speedily and unobtrusively as possible during interviews.

Interviews can be arranged at a meeting organized by the liaison officers and attended by all department or unit heads and program team members. Such a meeting "to break the ice" also can be used

to further elucidate the nature, scope and purpose of the study, thereby saving valuable time during the actual data-compilation phase. Those to be interviewed, a consideration based largely on the diversity of departmental activities, should include at least the department head and a good cross-section of departmental personnel. All information pertaining to overall departmental operations—caseload, for example—should be obtained from the head or his appointed liaison. Others in the department will be able to describe factors such as staff responsibilities and work capacity, as well as space adequacy for functions performed.

The questionnaire to be used should be submitted to the interviewee prior to an interview, particularly if it extends over several pages. Prior knowledge of the questions to be asked will better prepare an interviewee and may even influence him to gather supporting materials for the interviewer's use. This procedure should minimize interview length which, in any case, should be no more than an hour. Every effort should be made to collect all needed data at only one interview although subsequent shorter meetings may be necessary to verify information, findings and proposed recommendations.

When two different teams must interview the same person—for instance, when both manpower planners and space planners require information from an administrative judge—a joint session should be arranged. To retain the standard interview time of an hour or less, only key questions should be asked. In some instances, associate staff probably would be capable of answering many questions that might otherwise be asked of the key interviewee.

It is essential that the interviewer be the same person who will do a preliminary analysis of data gathered during the interview. Only in this way can nuances of the discussion be successfully interpreted.

It should be remembered, too, that the liaison person, consulted prior to the start of interviews, should be able to answer many questions that could take up precious interview time.

Finally, in advance of observing courtroom operations and movements as part of data-gathering, permission should be sought from the judge presiding in the courtroom—especially if equipment to measure light, sound or other environmental conditions is to be used. Failure to do so could result in an embarassing confrontation between judge and researcher. The same consideration would apply when a team member visits a trial or hearing in session to sketch furniture, equipment and movement of persons and documents involved in the proceedings. Experience has shown that judges, who for the most part are supportive of facility improvement studies, are accessible to decipher unusual trial or hearing procedures which may bear on the study.

Organize Data. Information and data extrapolated from a questionnaire should be arranged as close as possible to its final format to simplify initial analysis. The use of charts, matrices, tables and graphs is helpful at this stage. If, for instance, an overview is sought of the court system, then data on major court functions, persons participating in those functions, and spaces in which the functions are performed all can be shown on the chart. Missing information should be apparent at a glance at these data display charts. The matrix has been used, among other applications, to show relative significance between persons and functions. Factors such as area and cost analyses can be understood more easily in tables, while factors such as increase and decrease in caseload and population can be simplified in graph form.

ANALYZE EXISTING SYSTEM AND FACILITIES

Evaluate Operations and Facilities. To gain a thorough understanding of existing operations and facilities, data should be collected from each department involved in the project. By means of personal interviews, by direct observation and by accurate measurement and assessment, specific information can be obtained.

Data compiled during the interview phase should encompass existing operations and future projections by the court of required caseload, manpower and space. Problems defined at the beginning of the study can be more clearly delineated and pinpointed at this juncture. But instead of analyzing each problem in isolation, each should be related to overall deficiencies of the judicial system.

Existing operations and facilities can be evaluated as to their effectiveness in meeting goals of the judicial system. Part of this effort consists of analyzing adequacy and performance level of spaces within existing buildings, based on established space standards as presented in Chapter Three. To help assure that the evaluation technique finally selected is unbiased, a number of approaches should be considered by staff, court personnel and others ex-

perienced in this area. Evaluations should be continuous throughout each stage of a facility research and planning program to maintain scope and accuracy within acceptable limits.

Obtain System Overview. A still deeper understanding of system or facility operations can be gained by preparing an overview chart to show major functions and sub-functions of particular systems. The same chart or a companion chart should list persons who perform functions (major functions may encompass several departments), documents and equipment involved, facilities in which the functions are performed and the time taken to perform each function (Table 1, page 23). While it may appear to be more expedient to study an existing system in terms of functions, it is useful to relate court departments or units to overlapping functions to prepare for subsequent departmental analysis and manpower projection studies.

A facility research and planning analysis should be conducted in the most appropriate sequence, according to local requirements and parameters. Experience has shown that, in a program for a large metropolitan court complex, an overview study should be made of each court occupying a multistory building or part of a building. The overview would determine relationships between major functions and between major or combined spaces. Each major function subsequently should be analyzed in greater detail, relating its sub-functions to functions and spaces within a major department. In the case of a major function, for instance, "jury assembly," the major space in which it is accommodated is a "jury assembly space." In an overview analysis, "jury assembly" would be related to other functions, such as "trial," "hearing," and "clerical" functions; "jury assembly space" would be related to "courtrooms" and "clerk's office." A subsequent analysis of functions or departments would categorize "jury assembly" into several sub-functions, including "general assembly," "reading," "work," "recreation," "eating," "jury impaneling" and "jury control;" similarly, "jury assembly space" would be subdivided into sub-spaces. Functional and spatial relationships then can be established at sub-functional or departmental level, as explained later.

Analyze Organizational Structure. Each department should make available a chart indicating the hierarchy of organizational structure, lines of responsibility and number of persons employed. A revised organizational chart, possibly prepared by a management consultant should be made available for use in developing specific standards. Proposed managerial changes must be studied before any specific space standards can be formulated. An organizational chart arranged according to major functions, such as administrative, clerical, judicial and external (Figure 2, page 24), follows a function-oriented concept of research methodology in providing useful information relating to functional and spatial relationships.

Prepare Space Use Plans and Sections. It is essential to obtain a set of existing space use plans (drawn to a specified scale) to amplify existing system operations and relationships between existing spaces and equipment. Inquiry should be made at the local public works department or archives as to the availability of existing architectural and engineering plans and specifications. When such documents are available, copies can be made, reduced to the required scale. A standard scale (for example, $\frac{1}{32}$, $\frac{1}{16}$ or $\frac{1}{8}$ in. equal to 1 ft.) is important for purposes of presentation and comparison, especially when each building in a complex is to be individually analyzed (Figure 3, page 25).

Sectional drawings of buildings also should be prepared with existing space allocation clearly shown. Traditional architectural sections are inadequate for an overview study of a building; several sections taken at different parts of a building are necessary to show all components. A section has been developed which shows an entire building in one drawing (Figure 4, page 26). By this means, relationships between all spaces can be studied at the same time. This sectional drawing is especially suited to the study of existing circulation patterns of court staff, personnel and public. Unnecessarily long vertical movements, requiring frequent use of elevators, can be shown on a transparent overlay. What results is a basis for improving spatial relationships.

These plans and drawings, together with existing operational flow charts, in addition to revealing problems of existing space use and operation, will yield guidelines on possible future use for existing structures.

Analyze Operations Sequence. The sequence of existing operations can be reorganized and presented in flow charts, indicating time by distance and notes. The sequence of operations can be subdivided into major functions and sub-functions, or it can be presented as an overlay on a diagrammatic vertical section of an existing building as described above, to show actual movement patterns as a factor

in the sequence of operation (Figure 5, page 30). By incorporating traveling, waiting and processing time and related data with the sequence of operations, the type and length of delays in the existing system can be pinpointed. Existing operations then can be measured against objectives, relating legal considerations, efficiency and the like. By presenting necessary functions, people and spaces as integral components of the flow chart, the sequence of operations can be useful in determining existing functional and spatial relationships.

DEVELOP PROPOSED SYSTEM AND FACILITIES

Evaluate Operation and Facilities. The above steps in the analysis process relate to the study and evaluation of an existing system and facilities. This step represents the first toward planning of new or reorganized facilities.

To derive proposed operations, existing operations are measured against the objectives of the proposed system. For example, long delays in certain functions will impede meeting the objective of a speedy trial. Another example: Binding and gagging or removing a defendant from the courtroom almost certainly will be considered as infringing on an individual's rights, unless other procedures to safeguard those rights are introduced.

By pinpointing causes of delays and other problems in space use, and by relating these factors to improved concepts developed under a mangement study, proposed operations can be defined. Such operations should significantly improve the effectiveness of manpower, document flow and equipment use, as well as the use of spaces within which the operations are performed. Additionally, time required for each operation should be reduced. From such operational changes, innovative solutions to space problems can be derived.

Define Problems. Problems are defined in detail at this stage—between evaluation of existing operations and establishment of proposed operations and facility requirements. Problems can be classified into several categories, among them: types of crimes committed and cases initiated; frequency of occurrence; spatial and environmental problems; victims and offenders; and locational linkages. The following examples are taken from a 35-state survey conducted during 1970–72 as part of the Courthouse Reorganization and Renovation Program in New York City:

A. Legislative: A bill being deliberated in at least one state legislature may permit six-man juries to replace 12-man juries. Passage would affect required space for jury assembly, jury impaneling, jury box and jury deliberation within the facility.

B. Operation: Arraignment facilities are located haphazardly over several floors. Police officers, defendants, attorneys, correction officers and other court personnel have to travel vertically and laterally, involving several floors, before defendants are arraigned. Resulting time delays and operational inefficiencies can be clearly demonstrated (Figures 6 and 7, pages 32 and 33).

C. Personnel: Vague job classification descriptions in court-related departments frequently result in markedly ineffective use of manpower. Clerks, in several instances, frequently are involved in overlapping functions.

D. Space: Spaces in law-enforcement facilities too often are planned without (1) adequate analysis of functional relationships and their priority and (2) the separation of public, staff and prisoner circulation.

E. Environmental: Poor lighting, noise and uncomfortable heating are common facility environmental problems. Lighting, air-conditioning and ventilating systems should be carefully integrated with the architectural design of court buildings.

F. Security: Facility security should be analyzed in terms of the integration of three major components: manpower, space planning and systems and equipment. The installation of sophisticated detection and alarm systems and associated automatic devices does not alone control the causes or even the symptoms of security breakdowns. Considerably more can be done to better utilize security manpower in space planning concepts. Relocating departments and separating circulation by desired levels of security and privacy are but two approaches to courthouse security, discussed in detail in Chapter Five.

G. Communication: Single facilities and, especially, large complexes with related facility components should have a comprehensive and integrated information communications system. This system should include standardized directional signs to assist to a final destination those having business at the facility or within a complex. An information communications center with automated electronic equipment also might be planned to permit rapid

retrieval of case information, as well as other pertinent data. The system should anticipate eventual use by judges, district attorneys and public defenders who, by keying a request into the terminal, can retrieve legal and case information from the system, described in Chapter Six.

H. Siting and Locational Linkages: Facility siting and locational linkages among court buildings within a complex are vital considerations, the solutions to which can affect final recommendations. In many instances, inadequate consideration has been given to this initial phase of facility planning, resulting in mistakes far too costly to rectify after project completion (see Chapter One).

Analyze Operations Sequence. From the information developed in the evaluation of proposed operations, a sequence of proposed operations can be presented in flow charts, similar to the presentation outlined for existing operations above. Operations remain in sequence, but are organized in terms of major functions. Sequence of operations should be presented on a diagrammatic section of the building to show how problems in existing operations and facilities have been resolved. Improved traveling, waiting and processing time also should be shown, where possible.

Develop Functional Relationships Through Matrices. The matrix is a useful analytical tool for measuring and quantifying functional and spatial relationships.

Several matrices should be used to study intra- and inter-departmental relationships and inter-building relationships. Matrices for such purposes can be based on two major components: (1) frequency and significance of volume of movement of persons and documents between departments or functions (Figure 8, page 34), and (2) significance of locational relationships regardless of movement patterns (Figure 9, page 35). Combining these two matrices will give significance of functional relationships (Figure 10, page 36). Each matrix, depending on the complexity of the functions it depicts, can be weighted on a "0–3," "0–5" or "0–7" scale, ranging from zero to maximum volume or significance, with a median at 2, 3 and 4, respectively. In cases where such a median is not required, the matrix can be plotted on an even-numbered point scale; however, the relative weight between any two points on the matrix scale should remain constant, especially if values are to be added. By weighting or quantifying movement and functional significance, values can be added along vertical and horizontal axes. Values for related matrices can be combined by adding or by applying an adjustment factor compensating for any relative difference in weight assigned between matrices. The combined values for each function will provide a basis for assessing the relative priority of functions or departments within a court system, as discussed in the next section of this chapter.

Establish Functional Relationships. From the data contained in the matrices, functional relationships can be established and shown graphically to provide a system overview and departmental relationships (Figure 11, page 37). Significance and frequency of movement and document transfer would be represented by thickness of line and distance. More significant functions would be shown grouped closely together, whereas less significant functions would be scattered along the periphery, linked by much thinner lines.

One of the uses of a functional relationships diagram of the overall court system is to establish a list of priorities of major functions or departments. In renovation planning projects, the existing building may not contain adequate space. Consequently, at some future date it may be decided to relocate the least significant functions or departments external to the courthouse and to renovate the vacated spaces for use by departments more directly related to court operation. The list of functional or departmental priorities will be of assistance in making such a decision. Used in conjunction with "block-use" plans (subsequently described), the priorities list forms a basis for assessing merit of departmental requests to alter use of existing space or to expand.

Establish Spatial Relationships. Spatial relationships constitute one component of essential information needed for the planning of spaces in new or existing buildings. The kinds of spaces in which operations are performed are described in Table 1, "System Overview," page 23. Functions shown in the functional relationships diagram are replaced by their corresponding spaces reorganized and classified into public, restrictive, and secured or private spaces (Figure 12, page 38). Public spaces are accessible to the general public, as well as to the staff, but not to prisoners. Restrictive spaces are accessible to staff and public who have permission to enter. Secured or private spaces are inaccessible to the public and are restricted to staff who must have specific identification to enter. Secured spaces usually are occupied by prisoners, correction officers, law-

enforcement officers and departmental workers (for instance, with probation, social and welfare agencies) who are directly connected with the processing of a case or with the welfare of a defendant or detainee.

DEVELOP 'BLOCK-USE' PLANS

Establishing major spatial relationships prepares the way for developing "block-use" plans of a court building or a complex of buildings. Not yet having formulated space standards nor projected manpower requirements, it is not feasible to assign a definite amount of space to any function or department. However, after making a preliminary assessment of functional or departmental needs, developed from interviews and analysis of existing operations, it is possible to assign bulk space to departments, based on the priorities list and established spatial relationships, as well as design factors, such as security need. If a request for space use change or expansion does not coincide with a "block-use" plan, the request would be rejected or an alternative solution found.

Assume, for instance, that all spaces related to the arraignment process are to be accommodated on the ground floor of a criminal court building. Established functional relationships determine relationships between spaces, with a pertinent added factor being the need for improved building security, especially when the court is in session nights and weekends. By locating the ground floor spaces easily accessible to the public and court staff, the upper floors could be closed to the public evenings and weekends (Figure 13, page 39).

"Block-use" plans, therefore, are bulk space allocations based on established functional relationships and overall preliminary space requirements, and represent a significant step toward formulating basic space use standards throughout a facility. This step in the programming and planning process has particular viability on most urban-area projects. One of the major obstacles in implementing judicial facility projects has been the lack of adequate communication between the courts and agencies of the state, city or county responsible for project implementation. In many cases, while agencies are willing to assist in court facilities improvement, they cannot because the courts do not effectively convey the kind of improvements required. By establishing "block-use" plans as an emergency first step in the direction of detailed space planning, courts have a basis for adequately communicating their overall needs to the appropriate agencies.

ESTABLISH SPACE STANDARDS, DESIGN GUIDELINES AND CHECKLISTS

To develop detailed space plans from "block-use" plans requires the introduction of two additional major components: space standards and manpower projections. Space standards include work space standards and common or shared space standards. Work space standards can be defined as unit furniture, equipment and circulation space per person for each classification of personnel. For example, a clerk may require 25 sq. ft. of furniture and equipment space and circulation area of 35 sq. ft., a total of 60 sq. ft. Common or shared spaces, including conference rooms, storage, special equipment and public spaces, do not relate to a person or a class of personnel, but to the department as a whole.

In the development of space standards and guidelines, it is essential to consider national trends for applicability to local conditions. For example, there is a trend both in the federal and state court systems toward using smaller trial courtrooms. By adopting such procedures, administrators should experience space and cost savings and greater planning flexibility.

Space standards for judicial facilities can be developed by:

1. Modifying applicable space standards for other types of facilities—clerical and administrative offices, for example.
2. Extracting data from a large number of plans of recent court buildings. This procedure can be carried out accurately only if the rationale behind space assignment for certain activities or personnel is known and evaluated.
3. Assessing research and consulting reports on specific facility projects throughout the country. Adjustments for local conditions have to be made before standardization of spaces can be accomplished.
4. Referring to research data compiled in the current program, including interviews with liaison officers and departmental personnel.
5. Referring to program research on environmental requirements of court space, including subjective responses of court personnel to environmental conditions measured by testing

equipment such as sound, light and psychrometric meters.

Space standards should be presented on the basis of persons using a space and their activities within the space. The standards should include unit equipment, furniture and circulation needs, as well as acoustics, illumination, color contrast and thermal environment requirements.

Noise standards should include acceptable noise level for each task performed and average coefficient of absorption for materials used in spaces.

Recommended light level, type of existing light fixtures, brightness contrast, and illumination color and mood should be included under lighting standards.

Thermal standards should include the optimum combination of air temperature, relative humidity, air movement and surface radiation. An acceptable measurement of warmth which combines all four factors is the "effective temperature." Other space standards which might be included are courthouse security and accessibility to and from court spaces (Table 3, page 40).

Design guidelines and checklists are useful to court administrators as well as to architects and planners embarking on the planning of court facilities. Design guidelines present a picture of the philosophical, symbolic, operational and physical requirements of facilities; checklists provide a basis for assessing the adequacy of facility components and equipment.

With the availability of space standards and spatial relationships described earlier, the space planner can proceed with detailed space planning to accommodate existing needs. However, to plan for future expansion needs, manpower projections will have to be established.

DEVELOP MANPOWER PROJECTIONS

Manpower planners are an integral part of a space management team; close collaboration will result in a more realistic measure of facility needs.

A manpower planning study for each department would identify and evaluate current staffing levels, historical growth trends, staffing rationale, staff productivity and assignment, overall departmental capability and restraints on staff size. Additionally, manpower projections rely on work schedules and responsibilities, probable effect on the facility of proposed legal and procedural changes, improvements in staff utilization, and caseload and staffing requirements for a specified future period. Establishing a list of realistic assumptions relating to possible future changes and verifying these assumptions with personnel responsible for the operation of the courts, legislators and others is vital to the successful outcome of the projections.

In a manpower study, factors affecting caseload in one facility, such as a criminal court, can be different from those in another court, such as a civil court. For example, establishing a criminal profile by means of data extrapolated from Federal Bureau of Investigation statistics and analyzing the effect of population classification by age, sex, education and income on the crime rate in cities are essential factors in determining projected criminal court caseload, accounting when possible for other anticipated changes in society, such as rising income levels, improved educational standards and so on; however, the factors affecting caseload in a civil court are more likely to be based on economic conditions than on population growth (Figure 14, page 41).

Having established a criminal profile as well as population characteristics and other factors affecting court caseload, a projection can be made for each case category (for example, felony, misdemeanor and violation cases). By carefully analyzing past trends in the number and use of personnel and their work capacity, and by evaluating prevalent and anticipated economic and political conditions, manpower requirements for each department can be projected (Tables 4 and 5, page 41). When manpower projections become available for each department, they can be summarized to provide the total manpower requirement in each court. A separate manpower projection should be undertaken for courtroom and ancillary facilities. The methodology is described in Chapter Four.

DETERMINE SPACE REQUIREMENTS

Having established unit space standards for court personnel and having projected manpower requirements over a period of time, space requirement for each department or function can be determined, first by assessing the amount of work space necessary for each department, and then by calculating the shared and common spaces needed in each department (Table 6, page 42). A separate analysis of space requirements should be made for court-

rooms and ancillary spaces. The combination of work space, common or shared space and courtroom and ancillary space will yield total space needs of a court building (Table 7, page 43). Space standards for each additional courtroom in an existing or new court building then can be established (Table 8, page 44).

Spatial projections should be completed for each department, each court building and each court complex. Summary charts at each level would provide all necessary space information required in the programming and planning of facilities for an entire project.

DEVELOP SPACE USE DIAGRAMS AND PLANS

Develop Departmental Space Planning Diagrams. With knowledge of the functional and spatial relationships and by using innovations developed through reorganization of operations and management techniques, departmental space planning diagrams can be developed for each department. These diagrams will translate the spatial relationships diagrams into space planning diagrams. All spaces should be represented by the same area, depending on size of presentation, and the same shape. However, their physical location in relation to each other, and their accessibility, can be shown. Based on these space planning diagrams, the designer can commence detailed physical planning and design of the department areas, including size and shape of spaces.

Establish Building Space Planning Diagrams. When all departmental space studies have been completed, the program team can begin to establish building space planning diagrams--spatial relationships within an entire building--with recommendations on allocation of bulk space by floors. By this time, space requirements for each department and for each building will have been established, and the allocation and planning of spaces within a preliminary building outline can be recommended. (When the preparation of preliminary plans for the building is outside the scope of a project, this phase usually becomes the responsibility of the architect selected for the design and construction of the facility.)

Establish Building Complex Space Planning Diagrams. To move from building space planning diagrams to those for a complex of buildings, a thorough understanding of the location linkages and a clear delineation of planning objectives must be achieved. This information then can be combined with the data established in the previous steps to develop an overall space planning facility diagram. Preliminary recommendations on the siting of new buildings, an integrated security system and a comprehensive information communications system can be made and presented with the space planning diagrams. Actual space plans, however, will be developed by an architect, with the space management consultant, perhaps, serving on an advisory basis, as necessary. At this stage, alternative schemes can be developed to include departments, buildings or a complex of buildings. More elaborate alternative schemes relating project to community also can be undertaken, when included within the scope of the project.

Translate Space Planning Diagrams into Detailed Space Plans. While no special precision need be taken to structure space planning diagrams, the opposite is true in developing space plans according to local building regulations and zoning requirements (Figure 15, page 45). Other restrictions which may be imposed upon detailed space planning include building site, floor area and floor-to-ceiling height, existing elevator and duct shafts and security requirements.

Responsibility for preparing detailed space plans generally rests with the project architect, although the space planner can become involved in this phase when it is so stated within the project scope established at the outset of the study. Alternative space planning schemes usually are developed during the preliminary planning phase, while detailed plans are developed only for the selected scheme.

Re-Evaluate Standards and Recommendations. Space use diagrams or plans provide the basis for re-evaluation of space standards and recommendations for each kind of activity, each department and each building. It now becomes possible to compile a comprehensive checklist for the design of all departments within facilities or facilities within a complex. Resulting space standards then can be charted for ease of future application by the architect and by the facility's in-house staff. This information should reflect changing needs of facilities and innovations developed from the comprehensive and integrated analysis approach. All standards and recommendations developed under the space management study will assist the architect in developing a maximum flexible design.

The summary should consist of standards relating to operation, space (unit space, department, building and complex space), personnel (based on a management consultant's study), security precautions (manpower, systems and equipment and space planning) and general planning and design guidelines and recommendations.

DEVELOP ENGINEERING SOLUTIONS

Preliminary engineering studies into structural system and cost feasibility should be developed coincidentally with each alternative planning scheme. Engineering systems include heating, ventilation and air-conditioning (HVAC), electrical (including lighting), vertical powered transportation, plumbing and drainage and fire protection (Figures 16 and 17, pages 46 and 47).

Structural feasibility studies usually are mandated as part of a renovation program to determine whether an existing building can support estimated additional load to be imposed during modernization and subsequent use (Figure 18, page 48).

For reorganization and renovation projects, existing engineering system changes can be one of the most costly items in an implementation budget. To help minimize such costs, operating data pertaining to such systems should be established during the data-compilation phase of the project to determine systems adequacy to handle additional capacity of renovated spaces by a safe margin. Alternative systems should be analyzed individually and in combination with others in terms of cost and installation feasibility.

EVALUATE FEASIBILITY

As a result of the preceding systematic analysis approach, several alternative schemes (in the form of space planning diagrams or space use plans) can be developed. Preliminary evaluation of their feasibility should be conducted, but detailed evaluation can be made only after an architect has completed preliminary design plans for proposed alternative schemes.

Alternative schemes generally are developed during the preliminary architectural schematics stage, after which one scheme usually is selected and developed further into a detailed architectural plan. Feasibility of alternative schemes should be evaluated during the preliminary stages before computing detailed cost estimates.

To evaluate feasibility of alternative schemes, it is necessary that earlier phases of the research, programming and planning process be re-evaluated first by program staff, then by court and court-related personnel. The major test of feasibility is the response shown to proposed plans by eventual users of spaces for which recommendations are made.

Making cost estimates within available budgets is still another test of feasibility (Table 9, page 45). A space management project must maximize space use at minimal implementation cost. With a financial crisis of large proportions now confronting most U.S. cities, alternative solutions will have to be found to constructing costly new court buildings. This concept and approach characterized the recent New York courts study in which reorganization and renovation was recommended wherever possible for existing facilities having good "rehabilitation potential." In New York, the approach resulted in large cost savings for the municipal government—$30 to $50 million alone in the case of recommendations for expanded Criminal Court facilities.[2]

PRESENT RECOMMENDATIONS AND SUGGEST IMPLEMENTATION PROCESS

Recommendations developed from a facility study can take the form of either a final written report or a "package" of space use plans and documents, or both. The court responsible for the study, as well as users of the proposed or renovated facility, will have to approve all recommendations before they are made final. Other appropriate court personnel and liaison officers to the study also should be advised in advance of proposed recommendations. Ample time should be given to all for review and response. In any case, recommendations probably should be presented at a meeting attended by all court and court-related personnel who would be affected by implementation, and by key personnel from implementation agencies, such as the public works and budget departments. At such a meeting, scale models, photographs and graphics can help to simplify verbal explanations of the facility study.

By collaborating closely with agencies responsible

[2] Courthouse Reorganization and Renovation Program, Phase Two Report, Vol. 1, p. xxii. March, 1971. The program team recommended renovating for court use, at an estimated $21.1 million, an existing and soon-to-be vacated New York State office building adjacent to the existing Criminal Courts Building.

for implementation, a space management study director can contribute significantly to actual implementation. By proposing phased implementation, the space planner is more likely to ensure eventual complete implementation as funds become available.

Several years may elapse between program inception and project implementation. Agency and departmental inefficiencies and external influences such as budget inadequacies or over-rigidity often combine to postpone implementation, sometimes for many years. Consequently, when projected need for a facility is five years hence, planning has to commence at least the same number of years ahead.

These considerations suggest deficiencies in current facilities planning at the state and municipal levels. A comprehensive and integrated judicial facilities master plan, incorporating long-term phasing for essential projects, can eliminate or, at least, minimize unnecessary studies and even help assure implementation. Yet few states, let alone large cities, have such a plan to guide studies of local courts and law-enforcement facilities.

PREPARE PRESENTATION

A facility improvement program should not end with filing a final report. Too often, a final report winds up forgotten on a shelf because, among other reasons, its recommendations belatedly prove to be impractical, suggest no phased program for implementation or draw unfavorable response from agencies responsible for implementation.

Thoroughly promoting a well-founded program can help to ward off a similar fate for another study. Experience has shown that a presentation incorporating a balanced combination of architectural scale models, photographs, large-scale charts and other graphic materials and color transparencies, is an excellent way to promote recommendations for persons who have little or no working knowledge of architectural and engineering plans. A facility scale model with removable sections by floor permits administrators, judges and others to view in three dimensions spatial recommendations which have been made in writing.

Photographs and charts are useful in simplifying complicated processes and procedures. Appropriate transparencies of facility projects in other locations not only can reinforce recommendations but provide visual relief during a lengthy presentation.

PREPARE PROGRAM TIME SCHEDULE

The following schedule indicates approximate time required for implementing major stages of the foregoing methodology in a typical court facility or related agency study:

Major stages of project	*Average time required (determined by project scope)*
Meet with Committee, Project Director or Delegate and other Consultants to coordinate work schedule. Define goals and objectives.	One Month
Formulate, Test, Evaluate and Modify Research Approaches and Analysis Techniques	Two Months
Compile and Organize Data	Three—Six Months
Analyze Data	Two—Three Months
Establish Space Standards and Guidelines	One—Two Months
Project Manpower and Space Requirements	Two—Three Months
Develop Space Use Planning Diagrams	One—Two Months
Evaluate Feasibility and Recommend Implementation	One—Two Months
Prepare Cost Estimates	One—Two Months
Complete Report and Presentation	One—Two Months

A project limited to the study of one building or a small complex of buildings usually can be completed within a year, 18 months at the outside. Projects of citywide or statewide scope will require at least two years to complete, the longer time required primarily for data-compilation, analysis and presentation. While an attempt has been made to provide in sequence an indication of average time required for each major stage of a project, the time can vary with the scope of the project. Also, the time required for each stage may overlap to some extent with other stages.

It is hoped that this chapter, in conveying components in sequence of a basic research and planning methodology, will aid the administrator, first, in early discussions related to a proposed space management study, and, second, during later evaluation of proposals and study recommendations. This knowledge, together with an understanding of established standards and guidelines discussed next, should enable the administrator, particularly if he is involved for the first time on a facility program, to focus more critically on local problems and potential solutions.

GRAPHICS: SEQUENCE OF METHODOLOGY

FIGURE 1

SPACE MANAGEMENT RESEARCH, PROGRAMMING AND PLANNING PROCESS

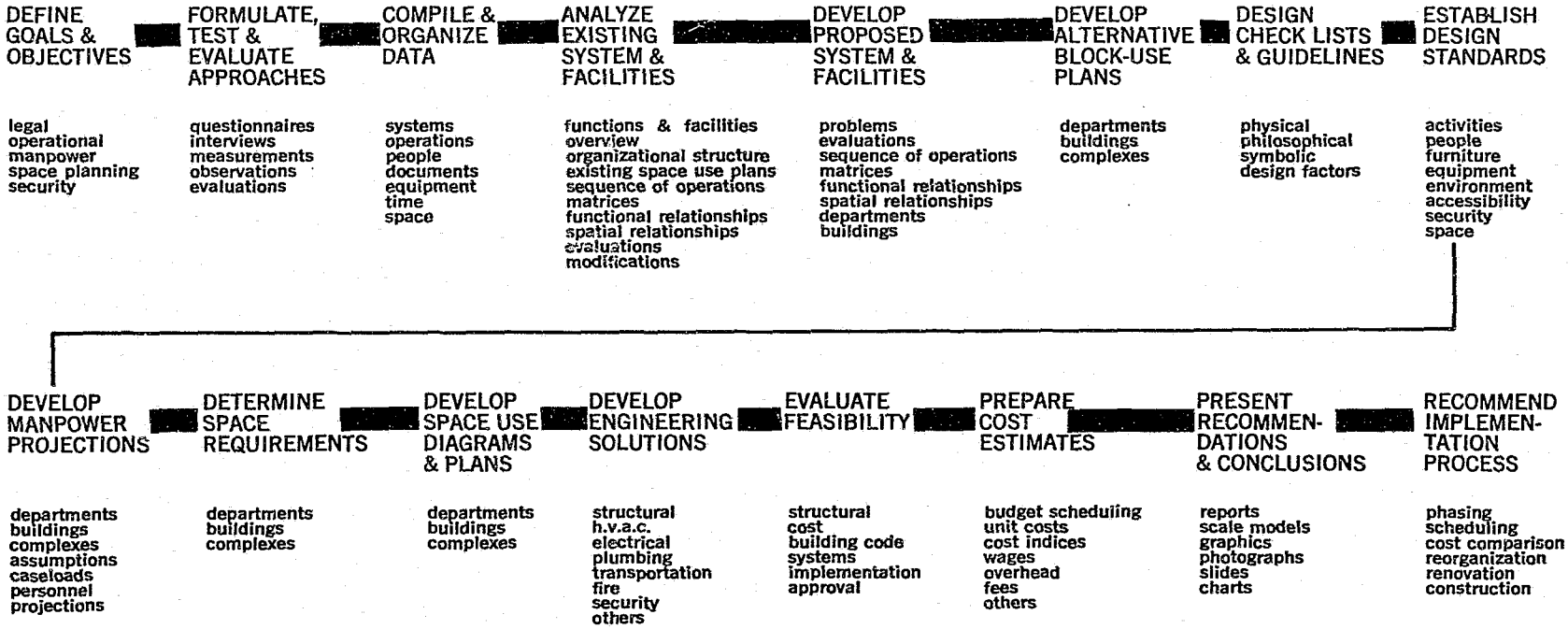


TABLE 1

SYSTEM OVERVIEW

SURROGATE'S COURT, NEW YORK COUNTY

FUNCTIONS	PEOPLE	SPACES	DOCUMENTS/EQUIPMENT	TIME
PROBATE				
DETERMINE JURISDICTION	Departmental Staff; Attorneys, Parties, Public	Probate and Administration Departments	wills, titles, legal documents	5 to 30 minutes
EXAMINE DOCUMENTS	Departmental Staff; Attorneys, Parties, Public	Probate and Administration Departments	wills, affidavits, accounts, letters of administration, legal documents	3 to 15 minutes
ASSIST DOCUMENT PREPARATION	Departmental Staff; Attorneys, Parties, Public	Probate, Administration, Guardians, Accounts and Estate Tax Departments	legal documents, forms	Varies
ACCEPT PAPERS	Departmental Staff; Attorneys, Parties, Public	Probate Department	legal documents, proposed decrees, letters of administration	1 to 3 hours
DETERMINE FEES and ESTATE TAX	Departmental Staff; Attorneys, Parties, Public	Probate and Estate Tax Departments	account sheets, forms	Varies
PROCESS PROBATE DOCUMENTS	Departmental Staff; Attorneys, Parties, Public	Probate Department	contest papers, decrees, affidavits	3 hours
SUBMIT LEGAL DOCUMENTS to SURROGATE	Probate Clerk, Surrogate	Chambers	legal documents, affidavits, contest papers with decrees	5 to 20 minutes
TRIAL and HEARING	Surrogate, Law Assistants, Clerk, Attorneys, Witnesses, Court Recorders, Parties, Public, Press	Courtrooms	all probate documents; calendar sheets, minute book	5 minutes to 1 hour
SIGN PROBATE DECREE	Surrogate	Courtroom or Chambers	decree or court order	5 minutes
CONTINUE GUARDIAN PROCEEDINGS	Departmental Staff, Attorneys, Parties, Public	Guardian Department	vouchers, receipts, forms	Varies
ADOPTION				
PROVIDE FORMS	Departmental Staff; Parents, Attorneys	Adoption Department	forms	5 minutes
RECEIVE and PROCESS COMPLETED FORMS	Departmental Staff; Attorneys, Parents	Adoption Department	forms, affidavits, birth certificates, naturalization papers	15 minutes
INTERVIEW PARENTS	Departmental Supervisor, Parents	Adoption Department, Parents' Houses	interview reports	1 hour
MAKE RECOMMENDATION to SURROGATE	Departmental Supervisor, Surrogate; Court Personnel, Parents, Attorneys, Children	Courtrooms, Chambers	report, forms, calendar sheets, legal documents	30 minutes to 1 hour
DISPOSE and FILE CASE	Surrogate, Departmental Supervisor; Attorneys, Parents, Children	Adoption Department, Chambers, Courtrooms	minute books	1 hour
CHANGE BIRTH CERTIFICATE	Bureau Staff	Bureau of Vital Statistics	forms	Varies

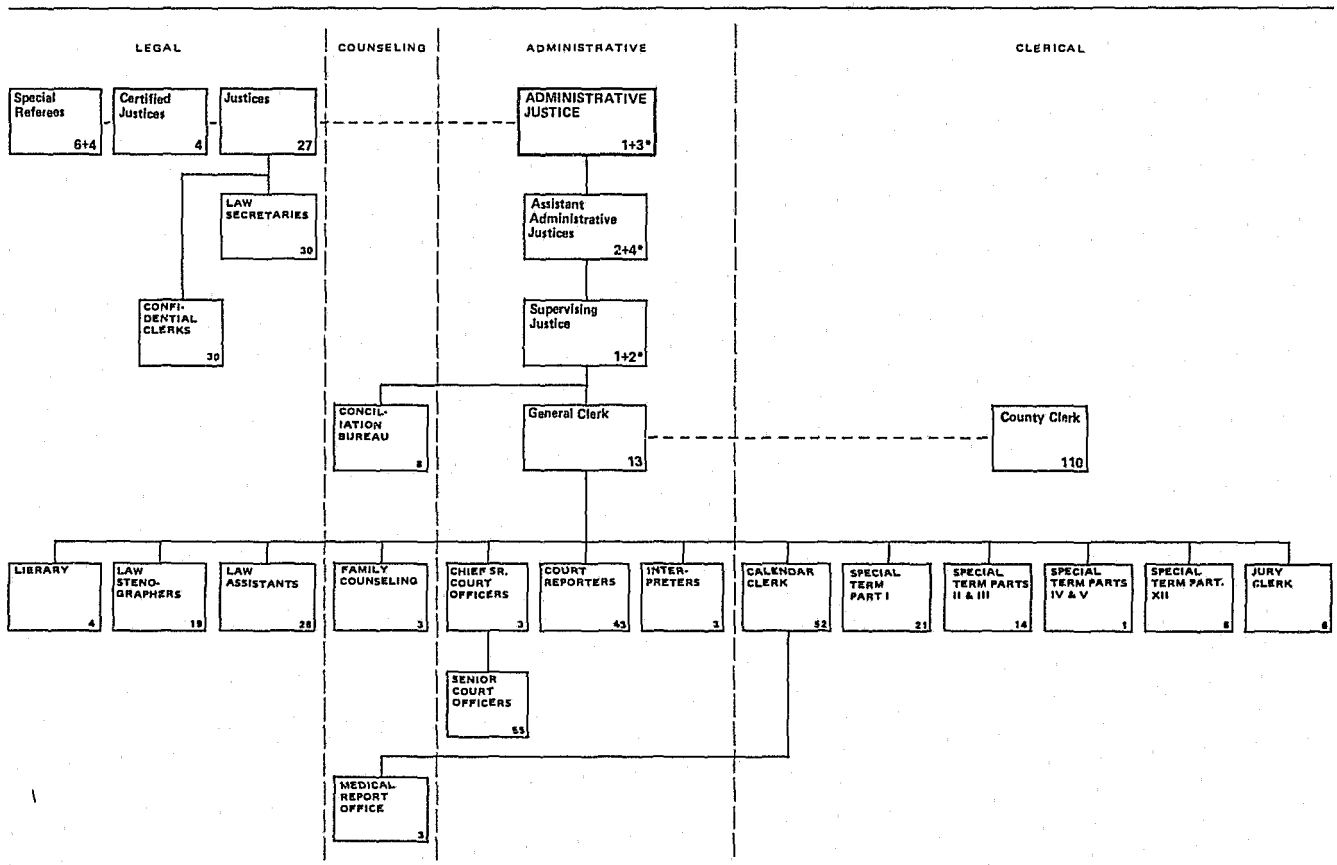


FIGURE 2
ORGANIZATIONAL CHART
SUPREME COURT CIVIL TERM, NEW YORK COUNTY

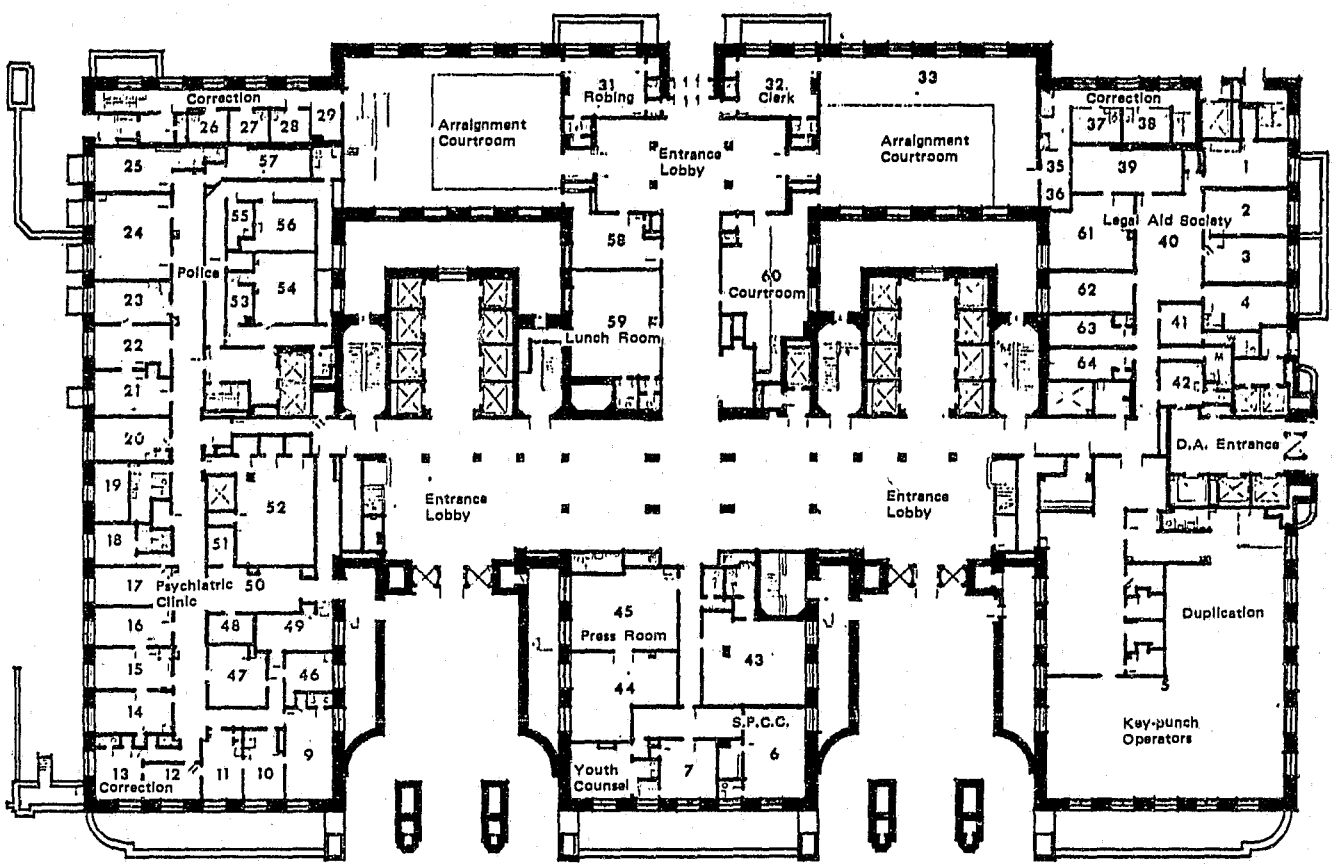


FIGURE 3
EXISTING SPACE USE PLAN
GROUND FLOOR, CRIMINAL COURTS BUILDING, NEW YORK COUNTY

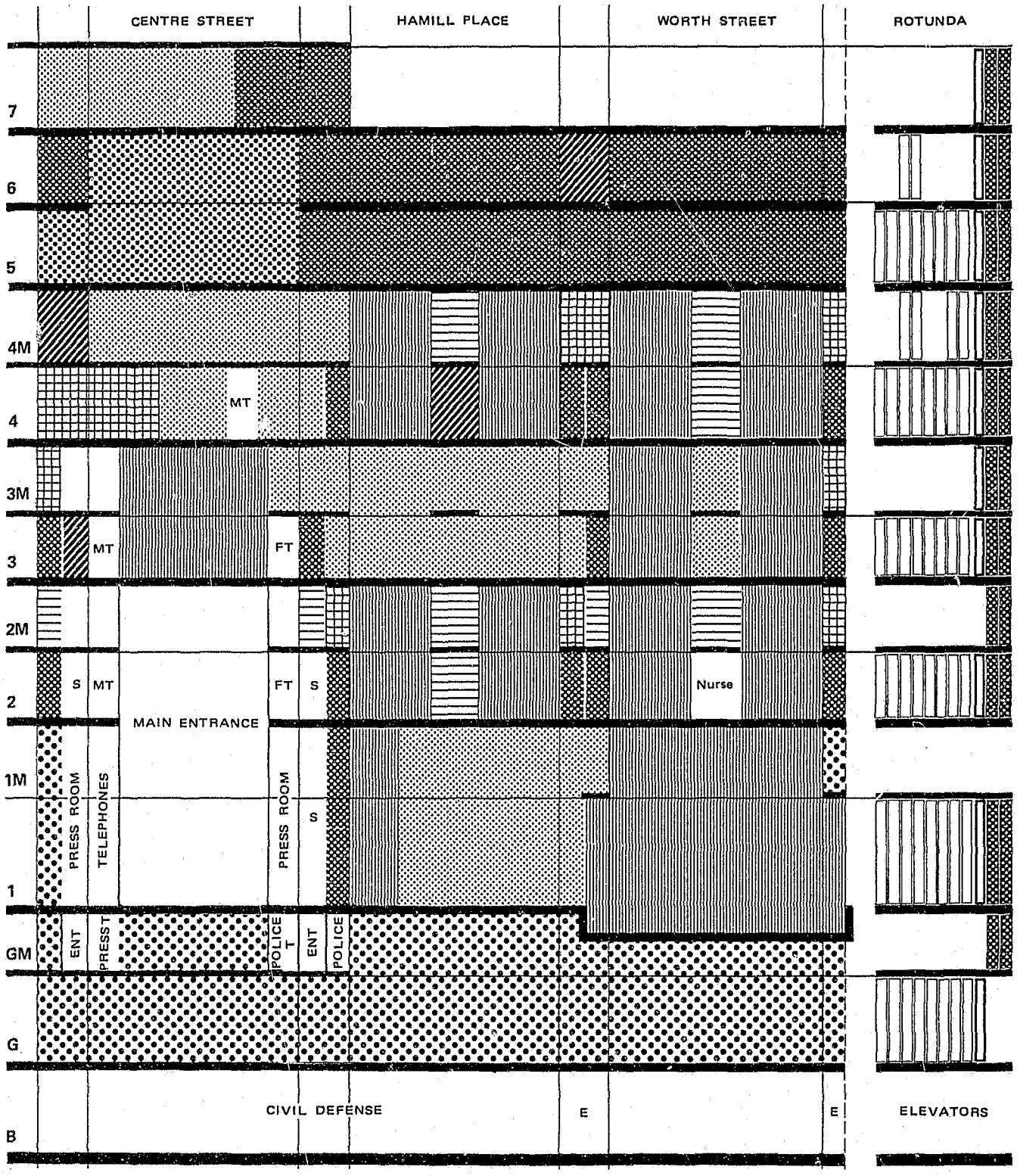
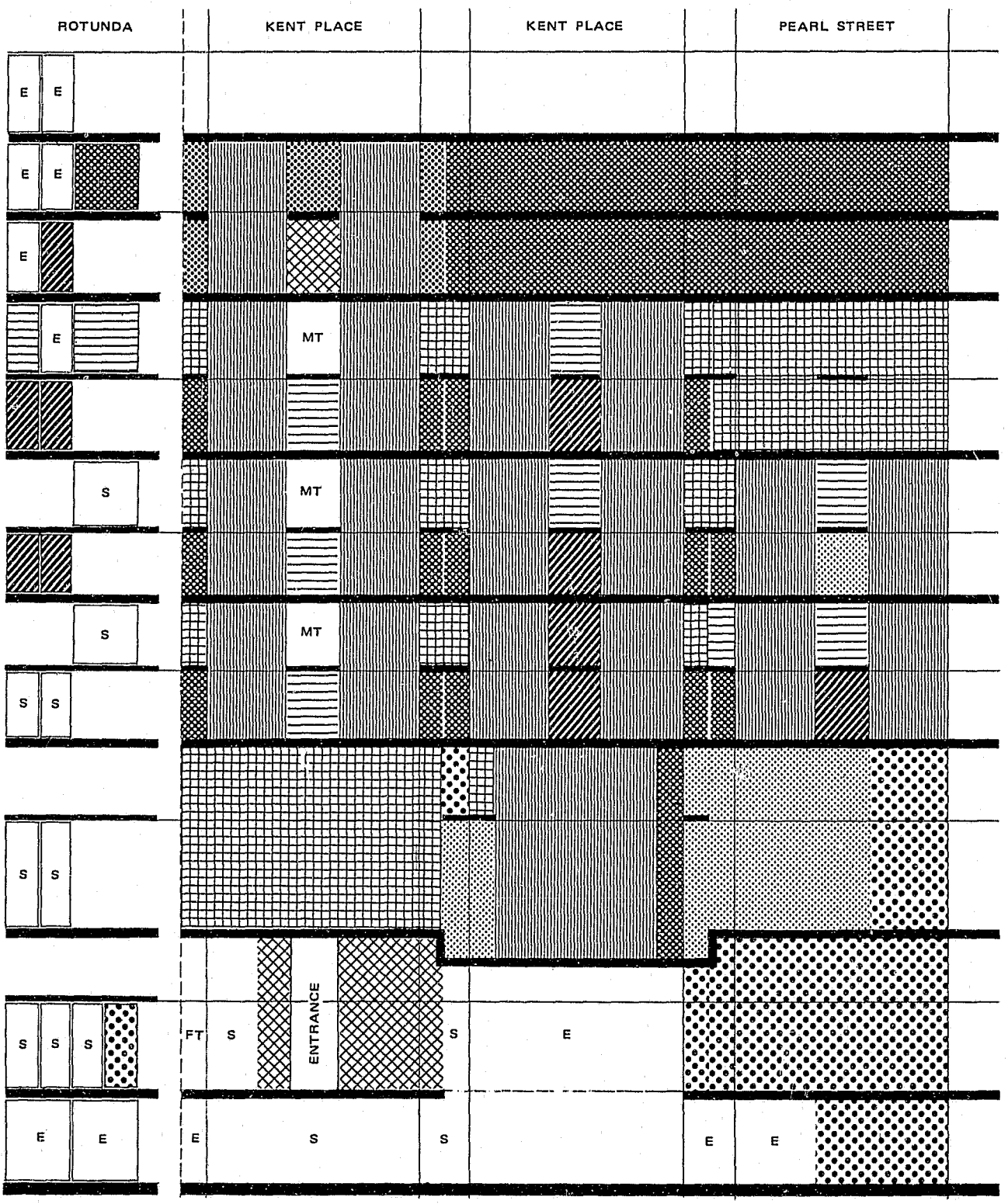


FIGURE 4
DIAGRAMMATIC SECTION
SUPREME COURT BUILDING, NEW YORK COUNTY

MT	MALE TOILETS
FT	FEMALE TOILETS
E	EQUIPMENT ROOMS
S	STORES
ENT	ENTRANCE


ROTUNDA
KENT PLACE
KENT PLACE
PEARL STREET
E
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ENTRANCE
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S
E
E
JUDGES' CHAMBERS, ROBING ROOMS
SPECIAL REFEREES
LAW ASSISTANTS
LAW LIBRARY
COURTROOMS
JURY ASSEMBLY & DELIBERATION ROOMS
COURT REPORTERS
CLERICAL OFFICES
COUNTY CLERK

TABLE 2

AREA ANALYSIS

CRIMINAL COURTS BUILDING, NEW YORK COUNTY

FLOOR	GROSS AREA (sq. ft.)	FLOOR to FLOOR HEIGHT	VOLUME (cu. ft.)	NET AREA (sq. ft.)	FUNCTIONAL GROSS AREA (sq. ft.)	FUNCTIONAL NET AREA (sq. ft.)	ELEVATOR LOBBIES (sq. ft.)	PUBLIC CORRIDORS (sq. ft.)	PUBLIC AREA (sq. ft.)	TOILET NUMBER
Sub-cellar	27,330	16' 0"	437,280	21,902	3,167	3,167	—	—	—	—
Areaways	468	25' 0"	11,700							
Cellar	52,944	19' 0"	1,005,936	43,669	21,609	20,365	700	3,258	—	—
Boiler room (upper part)	10,371	17' 0"	176,307							
Areaways	301	16' 0"	4,816							
Incinerator Mezzanine	381	Included in cellar height		331	—	—	—	—	—	—
First	54,268	16' 0"	868,288	41,951	30,029	25,923	1,595	9,414	—	—
	2,436	20' 3"	49,329							
Pylons	364	40' 0"	14,560							
Entrance lobby (upper part)	3,016	13' 0"	39,208							
Second	36,311	13' 0"	472,043	36,835	29,998	26,983	1,192	3,625	448	2
	3,810	10' 0"	38,100							
	10,212	25' 0"	255,300							
Third	39,888	12' 0"	478,656	27,710	24,145	17,896	678	700	414	2
Entrance lobby (upper part)	2,176	12' 0"	26,012							
Fourth	36,778	12' 0"	441,336	36,149	29,678	26,948	1,231	4,351	466	2
	11,220	24' 0"	269,280							
Fifth	35,113	12' 0"	421,356	26,622	20,531	16,753	1,130	2,822	447	2
	1,665	24' 0"	39,960							
Sixth	46,333	12' 0'	555,996	35,187	29,865	27,621	1,752	2,319	467	2
Seventh	47,998	12' 0"	575,976	37,027	31,945	30,214	1,751	2,467	468	2
Eighth	47,998	13' 0"	623,974	37,160	31,160	28,749	1,785	2,457	497	2
Ninth	47,988	14' 0"	671,972	36,671	31,133	29,292	1,889	2,543	—	—
Tenth	47,998	12' 0"	575,976	36,981	32,491	28,362	1,169	2,367	500	2
Eleventh	30,043	12' 0"	360,516	37,351	29,197	25,264	1,282	5,160	668	2
	17,955	24' 0"	430,920							
Twelfth	30,043	12' 0"	360,516	21,862	19,488	13,782	—	—	—	—
Thirteenth	29,638	12' 0"	355,656	35,247	28,340	24,954	1,213	4,513	601	2
	18,360	24' 0"	440,640							
Fourteenth	29,638	12' 0"	355,656	23,009	17,314	15,549	1,093	2,333	—	—
Fifteenth	39,628	12' 0"	475,536	36,673	30,983	28,433	1,163	3,608	492	2
	8,370	27' 0"	225,990							
Sixteenth	39,628	15' 0"	594,420	29,641	22,902	19,913	1,161	2,709	—	—
Seventeenth	30,020	16' 6"	495,330	28,816	22,950	22,950	418	4,819	317	2
	5,278	24'10"	131,053							
	2,244	40' 1"	89,939							
Penthouse	4,592	13' 0"	59,696	14,032	—	—	—	—	—	—
	392	18' 0"	7,056							
	3,998	11' 0"	43,978							
	8,658	20' 6"	177,489							
Penthouse (upper part)	3,998	9' 6"	37,981	3,643	—	—	—	—	—	—
Tank House	4,505	25' 0"	112,625	3,340	—	—	—	—	—	—
Bulkheads (fan rooms)	612	9' 0"	5,508							

FLOOR	GROSS AREA (sq. ft.)	FLOOR to FLOOR HEIGHT	VOLUME (cu. ft.)	NET AREA (sq. ft.)	FUNCTIONAL GROSS AREA (sq. ft.)	FUNC-TIONAL NET AREA (sq. ft.)	ELEVATOR LOBBIES (sq. ft.)	PUBLIC CORRI-DORS (sq. ft.)	PUBLIC AREA (sq. ft.)	TOILET NUMBER
Exhausts	1,818	4' 0"	7,260							
Tower Floor A	4,505	20' 0"	90,100	2,849	—	—	—	—	—	—
Tower Floor B	2,116	21' 0"		1,105						
Tower Floor C	1,190	18' 0"								
Hower Floor D.	576	13' 0"	7,488	—						
Tower Floor E	225	15' 0"	3,375	—						
TOTALS	866,291		12,988,045 (building)	655,763	487,731	433,118				
LAND AREA:	76,382		11,337,466 (above ground)							

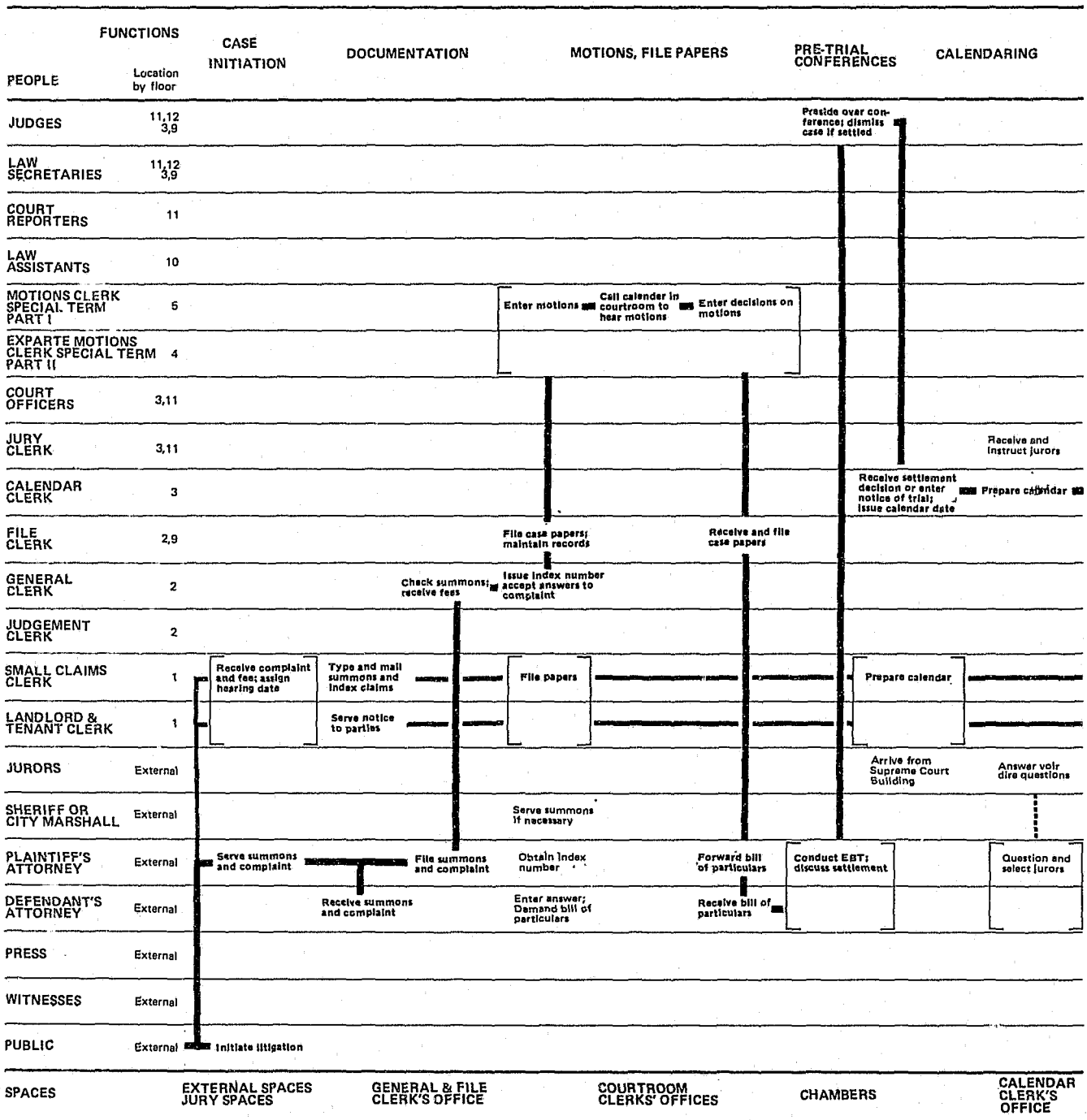
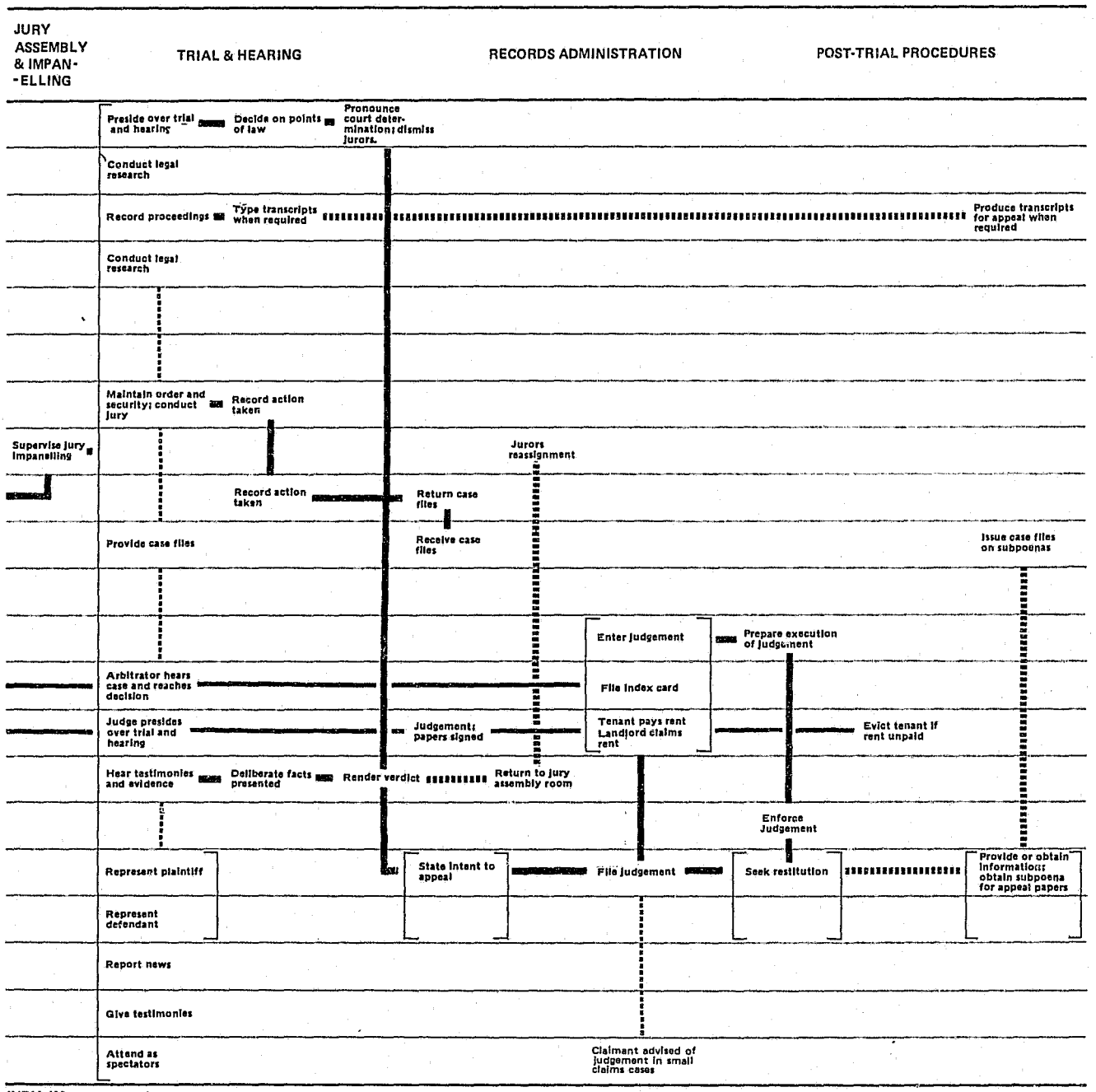


FIGURE 5
OPERATIONS SEQUENCE AND MOVEMENT PATTERNS RELATED TO DIAGRAMMATIC BUILDING SECTION
CIVIL COURT, NEW YORK COUNTY



MAJOR SEQUENCE OF OPERATION AND MOVEMENT

SEQUENCE OF OPERATION

CONTINUOUS OPERATION

CONCURRENT ACTIVITIES

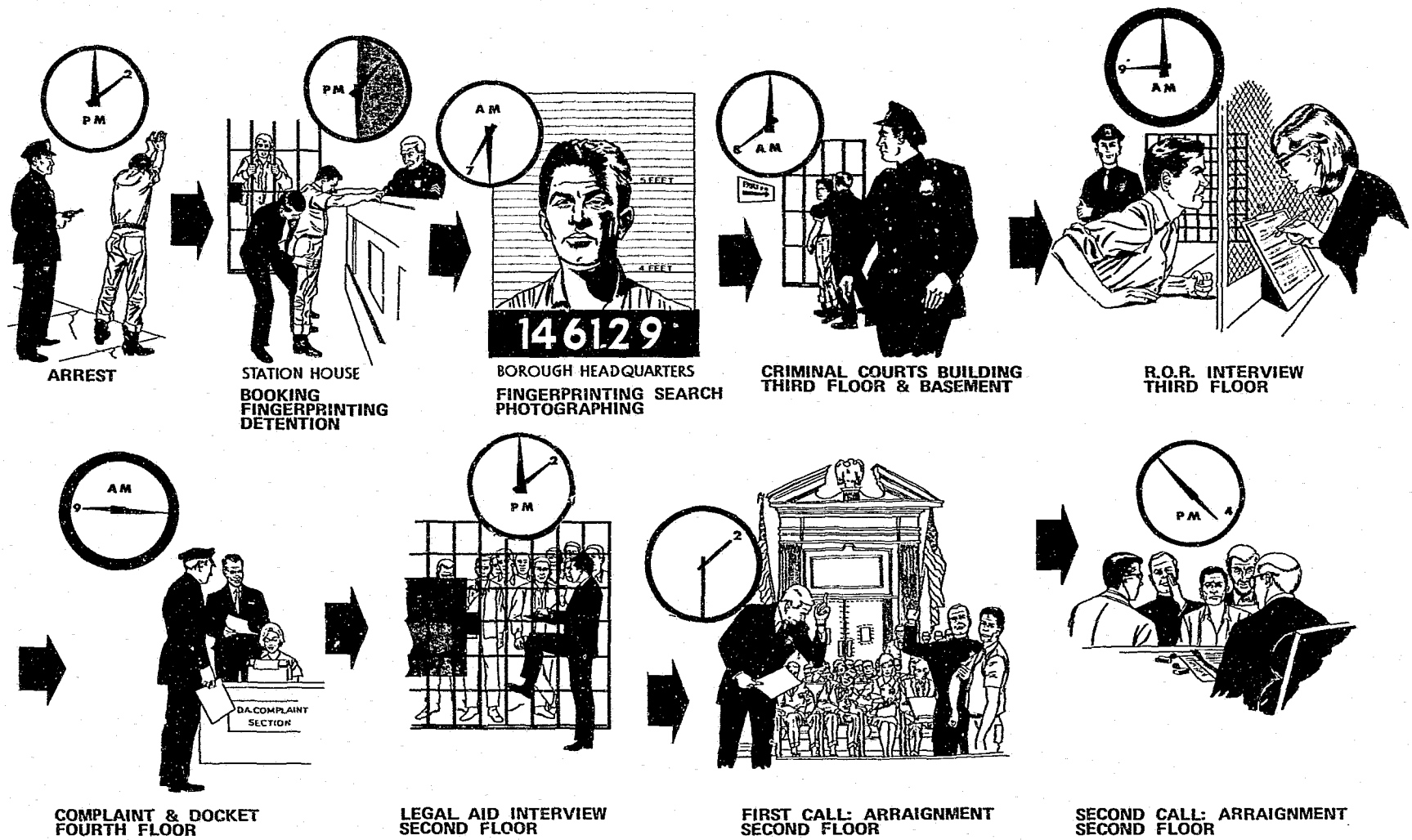


FIGURE 6
EXISTING ARRAIGNMENT PROCEDURE
CRIMINAL COURT, NEW YORK COUNTY

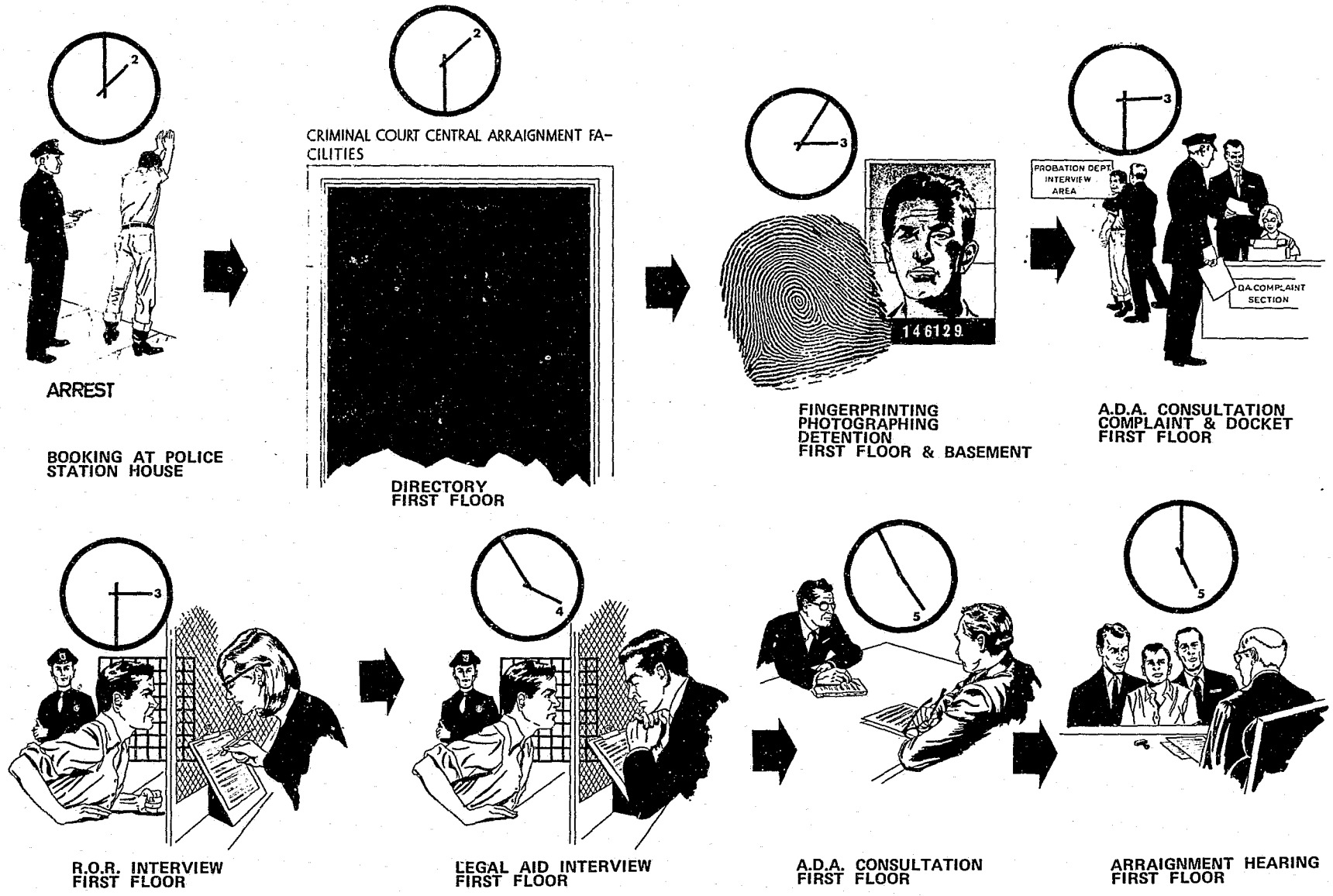


FIGURE 7
PROPOSED ARRAIGNMENT PROCEDURE
CRIMINAL COURT, NEW YORK COUNTY

FUNCTION	PROBATION INTAKE AND PROCESSING	WELFARE-COURT LIAISON	MENTAL HEALTH SERVICES	SOCIAL ASSISTANCE	SCHOOL-COURT LIAISON	CLERICAL SUPERVISION	CLERICAL	CALENDARING	PROCESS NON-LOCAL SUPPORT	RECORD ADMINISTRATION	CHILD SUPERVISION	PROCESS SUPPORT AND BAIL	CITY-WIDE CLERICAL SUPERVISION	PRINTING AND SUPPLIES	ADMINISTRATION	TEMPORARY DETENTION	PRIVATE JUDICIAL	LEGAL SECRETARIAL	LEGAL ASSISTANCE	LEGAL REPRESENTATION	RECORD PROCEEDINGS	COURT SECURITY	INTERPRETING	EXTERNAL PARTICIPATION	TRIAL AND HEARING	ANCILLARY TO TRIAL AND HEARING	LEGAL RESEARCH
PROBATION INTAKE AND PROCESSING		1	1	5	4		5	4	2	5		1				2	5			4		1		5	5		
WELFARE-COURT LIAISON	1			3	3	1			1	5		5					4			5					5		
MENTAL HEALTH SERVICES				1													3							1	5	3	
SOCIAL ASSISTANCE	5	3			5					4		3					5							4	5		
SCHOOL-COURT LIAISON	5	4		5						4		1					5			2					5		
CLERICAL SUPERVISION	1			1			2	5	1	2	1	2	4		1		2				1	1	1		2	1	
CLERICAL	1			1	1	2		4	1	4							1				1	1	1	2	3		
CALENDARING	4		1			4	4		1	3							5		1	4		1			3		
PROCESS NON-LOCAL SUPPORT	1	3				1	2	3		4		5					5			1		1			5		
RECORD ADMINISTRATION	1	1		1	1	2	2	1	1			1	3		1	1	3		2	1		1					
CHILD SUPERVISION	1	1		1		1																2			1		
PROCESS SUPPORT AND BAIL	4	5		3		3		1	3								3			1					4		
CITY-WIDE CLERICAL SUPERVISION						1	1	1		1	1			1	5		3				1	1	1				
PRINTING AND SUPPLIES			1			1	1	1	1	1		1			1		1	1	1		1						
ADMINISTRATION	1	1	1	1	1	1	1	1	1	1	1	1	2	1			5	1	1	1	1	1	1		1	1	1
TEMPORARY DETENTION	1		1														1					3			5	5	
PRIVATE JUDICIAL	4	3	2	1	1	1	1	1	1			1	1		3			3	4	3	3	2	1		5	4	3
LEGAL SECRETARIAL																	1		1								
LEGAL ASSISTANCE										4							5	3			3						5
LEGAL REPRESENTATION	4	3	1	1	2	1	2		2	2		2				5	5		2						5	4	3
RECORD PROCEEDINGS						1											2			2					4	4	
COURT SECURITY	4		4	3		1	1	2		2	1		1		1	3	3								3	3	
INTERPRETING	2						2		2							2	2			2					3	2	
EXTERNAL PARTICIPATION	5	1	1	4		2	4	1	5	2	1	3				3	4			4					5	4	
TRIAL AND HEARING	1	1	3	1					1	1		3				1	4			2	2			2		4	2
ANCILLARY TO TRIAL AND HEARING	1															1	2			2	1			1	5		2
LEGAL RESEARCH																	2		4	2				1	3	3	

FIGURE 8
FREQUENCY AND SIGNIFICANCE OF VOLUME OF MOVEMENT
FAMILY COURT, NEW YORK COUNTY

FUNCTION	PROBATION INTAKE AND PROCESSING	WELFARE-COURT LIAISON	MENTAL HEALTH SERVICES	SOCIAL ASSISTANCE	SCHOOL-COURT LIAISON	CLERICAL SUPERVISION	CLERICAL	CALENDARING	PROCESS NON-LOCAL SUPPORT	RECORD ADMINISTRATION	CHILD SUPERVISION	PROCESS SUPPORT AND BAIL	CITY-WIDE CLERICAL SUPERVISION	PRINTING AND SUPPLIES	ADMINISTRATION	TEMPORARY DETENTION	PRIVATE JUDICIAL	LEGAL SECRETARIAL	LEGAL ASSISTANCE	LEGAL REPRESENTATION	RECORD PROCEEDINGS	COURT SECURITY	INTERPRETING	EXTERNAL PARTICIPATION	TRIAL AND HEARING	ANCILLARY TO TRIAL AND HEARING	LEGAL RESEARCH
PROBATION INTAKE AND PROCESSING		3	4	5	3	2	5	5	2	5		3				1	5			3		1		5	3		
WELFARE-COURT LIAISON	2			2	2	2			1	4		4					4			4				1	2		
MENTAL HEALTH SERVICES	1			1													1							1	2	1	
SOCIAL ASSISTANCE	5	4			4		1			3		3					4							2	3		
SCHOOL-COURT LIAISON	4	3		4						4							3			1				1	2		
CLERICAL SUPERVISION	1	1		1			2	5	1	5		1	2		1		3				1	1	1	1	5	2	
CLERICAL	1			1		2		1	1	3							1					1		1	3		
CALENDARING	1					2	5			2															1		
PROCESS NON-LOCAL SUPPORT	1	2				2	3	1		5		2					1					1		2	5		
RECORD ADMINISTRATION						3	1						1	1													
CHILD SUPERVISION	2	1		1		3																		2	2		
PROCESS SUPPORT AND BAIL	1																										
CITY-WIDE CLERICAL SUPERVISION						1	1								3		3										
PRINTING AND SUPPLIES															1												
ADMINISTRATION													1				2										
TEMPORARY DETENTION																								1	1	1	
PRIVATE JUDICIAL													1		2			2	1					1	3	3	1
LEGAL SECRETARIAL														1			4		3								
LEGAL ASSISTANCE						1				3				1			2	2			1						5
LEGAL REPRESENTATION	1	1			1	4	5		1	5		1				1	5		1					2	5	5	3
RECORD PROCEEDINGS						1											1			1					3	1	
COURT SECURITY	3		3	1		1	1	2		3	1					1	4								5	3	
INTERPRETING	2						2		1							1	1			1					3	1	
EXTERNAL PARTICIPATION	5	1	1	3		3	4		3	3	2	3				1	1			3					5	5	
TRIAL AND HEARING	2	1	2	1		3			1	3	1	1				1	3			4	3	1	1	3		5	1
ANCILLARY TO TRIAL AND HEARING	1															1	3			3	1	1	1	2	5		1
LEGAL RESEARCH																	1		5	3				1	1	1	

FIGURE 9
SIGNIFICANCE OF LOCATIONAL RELATIONSHIPS REGARDLESS OF MOVEMENT
FAMILY COURT, NEW YORK COUNTY

FUNCTION	PROBATION INTAKE AND PROCESSING	WELFARE-COURT LIAISON	MENTAL HEALTH SERVICES	SOCIAL ASSISTANCE	SCHOOL-COURT LIAISON	CLERICAL SUPERVISION	CLERICAL	CALENDARING	PROCESS NON-LOCAL SUPPORT	RECORD ADMINISTRATION	CHILD SUPERVISION	PROCESS SUPPORT AND BAIL	CITY-WIDE CLERICAL SUPERVISION	PRINTING AND SUPPLIES	ADMINISTRATION	TEMPORARY DETENTION	PRIVATE JUDICIAL	LEGAL SECRETARIAL	LEGAL ASSISTANCE	LEGAL REPRESENTATION	RECORD PROCEEDINGS	COURT SECURITY	INTERPRETING	EXTERNAL PARTICIPATION	TRIAL AND HEARING	ANCILLARY TO TRIAL AND HEARING	LEGAL RESEARCH
PROBATION INTAKE AND PROCESSING		4	5	10	7	2	10	9	4	10		4				3	10			7		2		10	8		
WELFARE-COURT LIAISON	3			5	5	3			2	9		9					8			9				1	7		
MENTAL HEALTH SERVICES	1			2													4							2	7	4	
SOCIAL ASSISTANCE	10	7			9		1			7		6					9							6	8		
SCHOOL-COURT LIAISON	9	7		9						8		1					8			3				1	7		
CLERICAL SUPERVISION	2	1		2			4	10	2	7	1	3	6		2		5				2	2	2	1	7	3	
CLERICAL	2			2	1	4		5	2	7							2				1	2	1	3	6		
CALENDARING	5		1			6	9		1	5							5		1	4		1			4		
PROCESS NON-LOCAL SUPPORT	2	5				3	5	4		9		7					6			1		2		2	10		
RECORD ADMINISTRATION	1	1		1	1	5	3	1	1			1	4	1	1	1	3		2	1		1					
CHILD SUPERVISION	3	2		2		4																2		2	3		
PROCESS SUPPORT AND BAIL	5	5		3		3		1	3								3			1				3	4		
CITY-WIDE CLERICAL SUPERVISION						2	2	1		1	1			1	8		6				1	1	1				
PRINTING AND SUPPLIES			1			1	1	1	1	1		1			2		1	1	1		1						
ADMINISTRATION	1	1	1	1	1	1	1	1	1	1	1	1	3	1			7	1	1	1	1	1	1		1	1	1
TEMPORARY DETENTION	1		1														1					3		1	6	6	
PRIVATE JUDICIAL	4	3	2	1	1	1	1	1	1			1	2		5			5	5	3	3	2	1	1	8	7	4
LEGAL SECRETARIAL														1			5		4								
LEGAL ASSISTANCE						1				7				1			7	5			4						10
LEGAL REPRESENTATION	5	4	1	1	3	5	7		3	7		3				6	10		3					2	10	9	6
RECORD PROCEEDINGS						2											3			3					7	5	
COURT SECURITY	7		7	4		2	2	4		5	2		1		1	4	7								8	6	
INTERPRETING	4						4		3							3	3			3					6	3	
EXTERNAL PARTICIPATION	10	2	2	7		5	8	1	8	5	3	6				4	5			7					10	9	
TRIAL AND HEARING	3	2	5	2		3			2	4	1	4				2	7			6	5	1	1	5		9	3
ANCILLARY TO TRIAL AND HEARING	2															2	5			5	2	1	1	3	10		3
LEGAL RESEARCH																	3		9	5				2	4	4	

FIGURE 10
SIGNIFICANCE OF FUNCTIONAL RELATIONSHIPS
FAMILY COURT, NEW YORK COUNTY

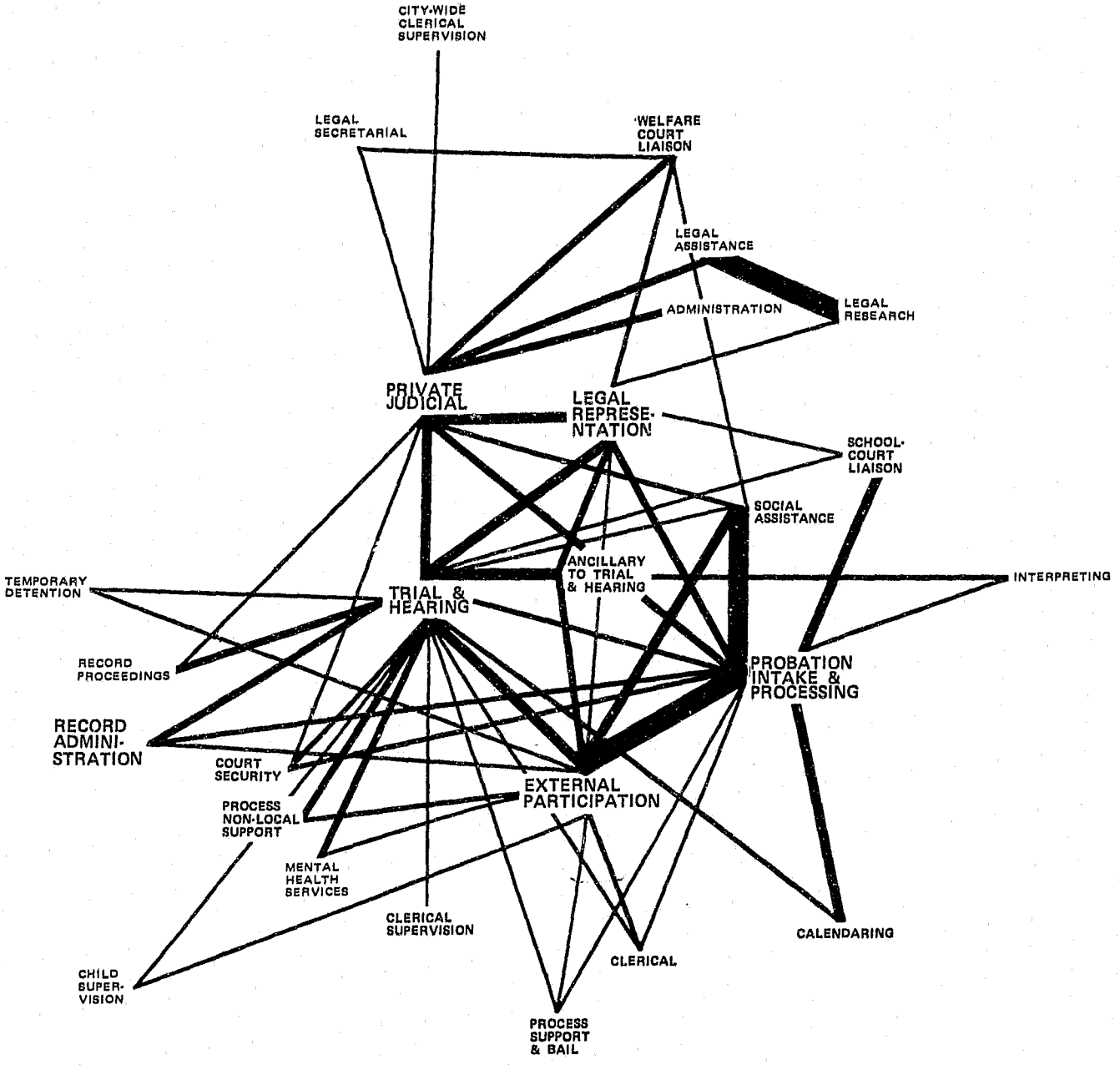


FIGURE 11
FUNCTIONAL RELATIONSHIPS DIAGRAM
FAMILY COURT, NEW YORK COUNTY

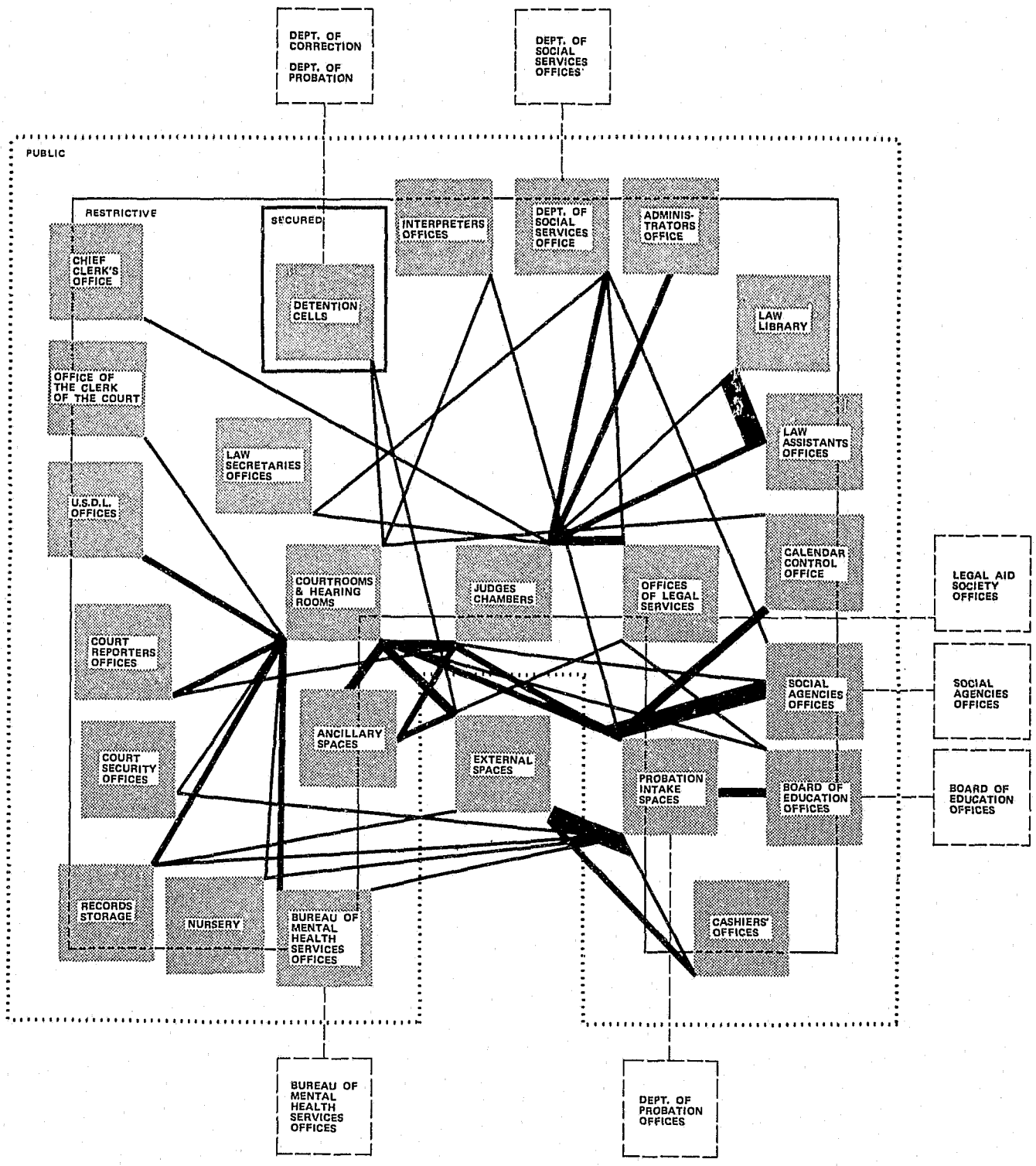


FIGURE 12
SPATIAL RELATIONSHIPS DIAGRAM
FAMILY COURT, NEW YORK COUNTY

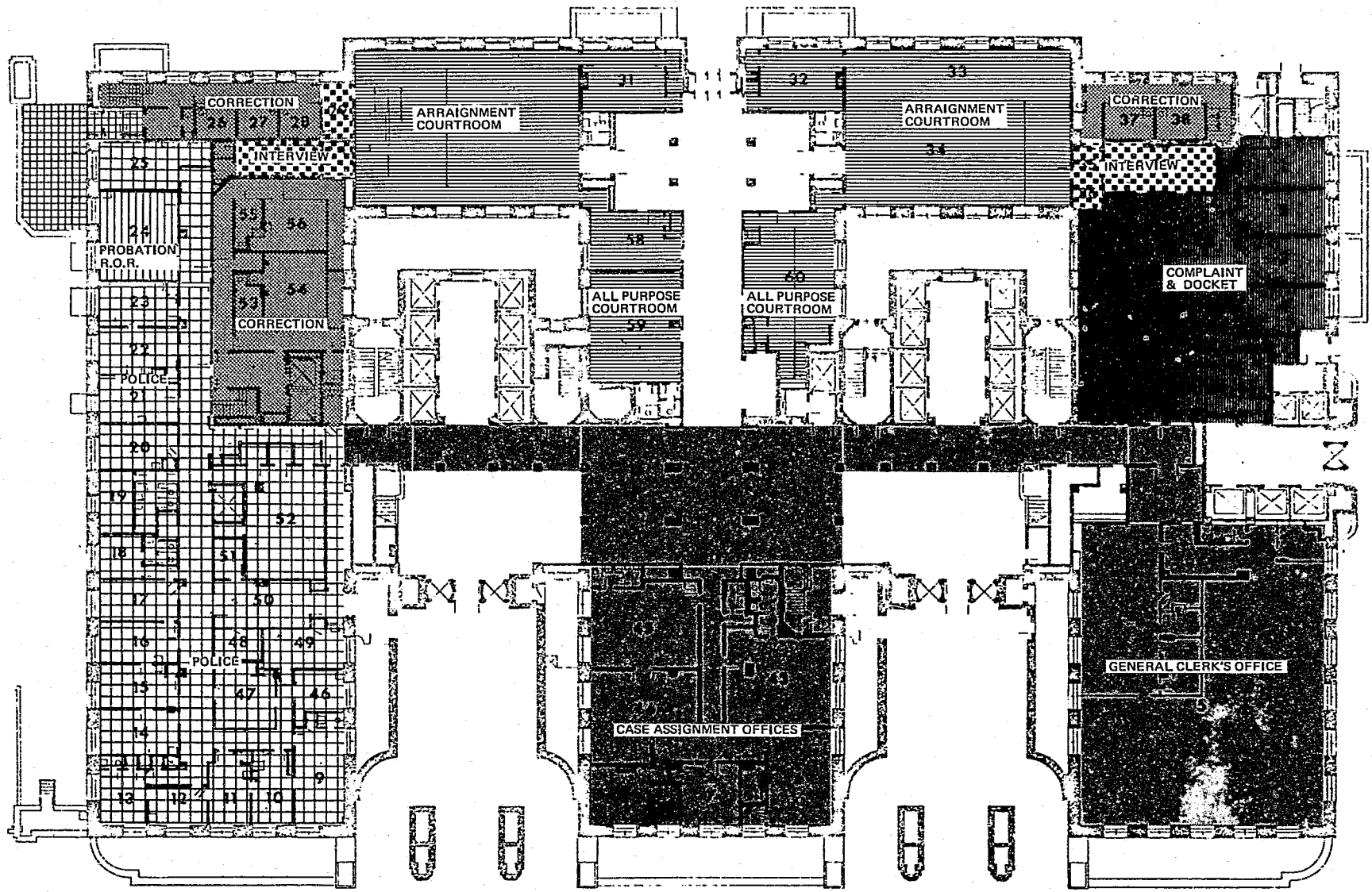


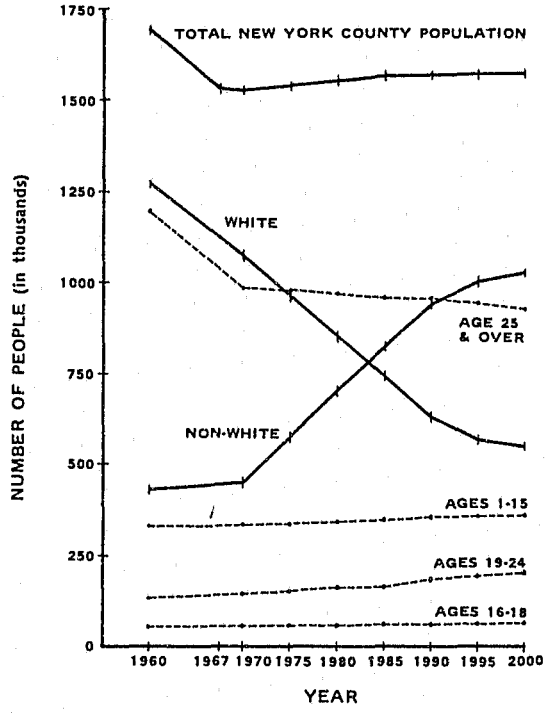
FIGURE 13
PROPOSED 'BLOCK-USE' PLAN
GROUND FLOOR, CRIMINAL COURTS BUILDING, NEW YORK COUNTY

TABLE 3

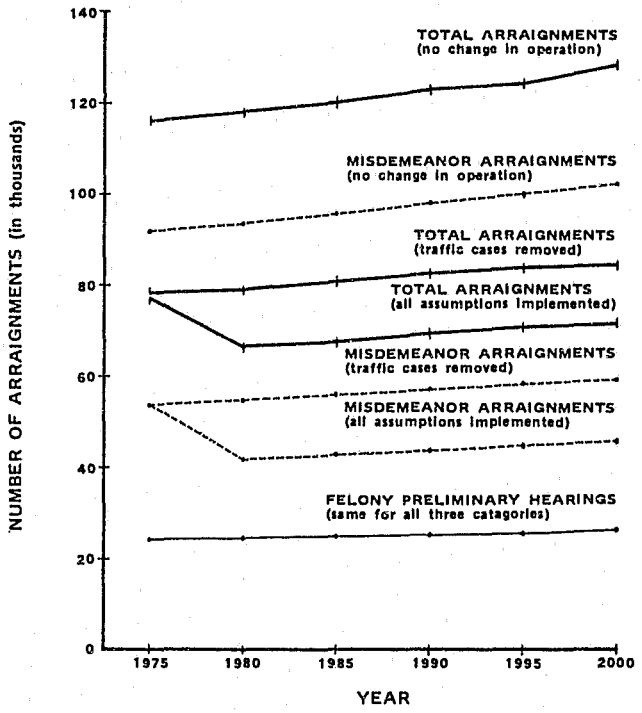
DESIGN STANDARDS: JURY FACILITIES

Activity	People Involved	Furniture/ Equipment	Area			Color Contrast	Lighting		Acoustics		Access	
			FURNITURE/ EQUIPMENT (sq. ft.)	CIRCULATION (sq. ft.)	TOTAL (sq. ft.)		LIGHT LEVEL (ft.-candles)	TYPE	BACK-GROUND NOISE LEVEL	AVERAGE ABSORPTION COEFFICIENT	SPACE	ACCESS/SECURITY
Entry and registration	Summoned jurors, jury clerks	Lounge chairs, side tables, registration counters/ office equipment	4–5	4–5	8–10	High	20–30 supplementary lighting	warm, direct or semi-direct	NC 40–50	0.30–0.40	Public space, jury impaneling space, courtroom	Public/minimum
Assembly and talking	Summoned jurors, jury clerks	Chairs, side tables, informal tables/reading materials	6–7	6–10	12–17	Medium	30–40	warm, direct or semi-direct	NC 35–45	0.30–0.40	All jury assembly spaces	Restrictive/limited
Watching television	Summoned jurors, jury clerks	Chairs/television, screen, slide and movie projectors	4–5	7–11	11–16	Subdued	15–30	warm, diffused	NC 40–50	0.40–0.50	General assembly space	Restrictive/limited
Reading, writing	Summoned jurors	Tables, chairs, bookshelves/books, journals	10–12	10–13	20–15	Medium	40–60	daylight, direct	NC 30–40	0.30–0.40	General assembly space	Restrictive/limited
Working	Summoned jurors	Table, chair, booth/ telephone	13–16	12–14	25–30	Medium	40–60	daylight, direct	NC 25–35	0.30–0.40	General assembly space	Restrictive/limited
Recreation	Summoned jurors	Tables, chairs/writing materials	6–7	7–11	13–18	High	30–40	daylight, or warm, direct	NC 40–50	0.30–0.40	General assembly space	Restrictive/limited
Dining	Summoned jurors, jury clerks, court officers, jurors	Tables, chairs/utensils	6–7	9–13	15–20	High	20–30	warm, semi-direct, or direct	NC 40–50	0.30–0.40	General assembly space	Restrictive/limited
Eating (snacks)	Summoned jurors	Tables, chairs or stools/ food, drink, cigarette machines	4–5	4–5	8–10	High	20–30	warm, direct or semi-direct	NC 40–50	0.30–0.40	General assembly space	Restrictive/limited
Jury panel assembling	Selected jurors, jury clerk, court officer or bailiff	Jury clerk's counter, jury list, jury wheel	—	8–10	8–10	High	30–40	warm, direct or semi-direct	NC 40–50	0.30–0.40	General assembly space	Restrictive/limited
- selection	Selected and impaneled jurors, attorneys	Chairs	4–5	4–5	8–10	Medium	30–35	warm, dir. or semi-dir.	NC 30–40	0.30–0.40	Jury panel assembly space	Private/limited
- voir dire	attorneys	Table(s), chairs/jury list	15–20	25–30	40–50	Medium	35–50	warm, dir. or semi-dir.	NC 30–40	0.30–0.40	Public or attorney's entrance	Public or private/ limited
- clerical	jury clerk	Table, chair/jury list, jury wheel	15–20	20–25	35–45	Medium	35–50	warm, dir. or semi-dir.	NC 30–40	0.30–0.40	Jury panel assembly space	Private/limited
Deliberating - entry	impaneled jurors, bailiff	Coat closet, couch	2–3	5–6	7–9	High	20–30	warm, semi-dir. or diffused	NC 35–45	0.30–0.40	Courtroom	Private/maximum
- toilets	impaneled jurors (men and women)	Water closet (1) and wash basin (1) each for men and women	8–10 per toilet	18–20	26–30	High	20–30	daylight, or warm, semi-direct, or direct	NC 40–50	0.15–0.25	Entrance lobby of jury deliberation spaces	Private/maximum
- deliberation	impaneled jurors	Table, chairs/drinking fountain	6–8	12–15	18–23	Medium	40–60	warm, direct or semi-direct	NC 30–40	0.30–0.40	Entrance lobby	Private/maximum

THERMAL STANDARDS: 72°-74° ET (summer), 69°-71° ET (winter)



A. PROJECTED NEW YORK COUNTY POPULATION



B. FELONY PRELIMINARY HEARINGS AND MISDEMEANOR ARRAIGNMENTS IN THE CRIMINAL COURT

FIGURE 14
PROJECTED POPULATION AND CRIMINAL COURT INTAKE CASELOAD
NEW YORK COUNTY

TABLE 4

EXISTING MANPOWER DATA
OFFICE OF PROBATION, NEW YORK COUNTY

ORGANIZATION UNITS \ PERSONNEL TITLES	OFFICE MANAGER	INTAKE CLERKS	PROBATION OFFICERS	SUPERVISOR (P.O.)	BRANCH CHIEF	SUPERVISOR (TYPING)	TYPIST	RECORDS CLERK	LIAISON OFFICERS	PARA-PROFESSIONALS	TOTAL
INTAKE UNIT	1	4									5
PROBATION INVESTIGATION UNITS*			29	6	1				4	1	40
TYPING POOL						1	8	1			10
TOTAL	1	4	29	6	1	1	8	1	4		56

*There are 6 units headed by a supervisor; 3 units have 5 Probation Officers and 3 units have 6 Probation Officers.

Caseload established by branch chief: 170 weighted cases/year, (1/3 for Youthful Offenders and 1 for an adult investigation.)

TABLE 5

MANPOWER PROJECTION 1970 - 2000
OFFICE OF PROBATION, NEW YORK COUNTY

Job Title	1970	1975	1980	1985	1990	1995	2000
Branch Chief	1	1	1	1	1	1	1
Supervising Probation Officer	6	8	6	6	7	7	7
Probation Officers	29	47	39	40	41	41	42
Para-Professionals	1	8	6	6	7	7	7
Court Liaison Officers	4	6	6	6	6	6	6
Office Manager	1	2	2	2	2	2	2
Clerks	5	8	6	6	7	7	7
Typist	8	15	13	13	13	13	14
Supervising Typists	1	2	2	2	2	2	2
TOTALS	56	97	81	82	86	86	88

TABLE 6

SUMMARY OF MANPOWER AND SPATIAL REQUIREMENTS 1970 - 2000

SUPREME COURT CRIMINAL TERM AND CRIMINAL, COURT, NEW YORK COUNTY

PERSONNEL	NUMBER OF PERSONS 1970	2000	EXISTING AREA (sq. ft.)	ASSIGNED MIN. WORK AREA* (sq. ft.)	ADDITIONAL SPACE* (sq. ft.)	TOTAL REQUIRED AREA* (sq. ft.)	TOTAL ASSIGNED AREA** (sq. ft.)
Supreme Court Judges	14	22	22,950	21,862	2,626	24,487	36,064
Supreme Court Officers	172	264	19,253	21,300	12,500	33,800	27,723
Criminal Court Judges	28	37	8,400	16,188	1,750	17,938	11,088
Criminal Court Officers	104	115	11,341	12,269	9,812	22,081	12,589
Legal Aid Society	158	211	8,895	21,750	3,562	25,312	11,920
District Attorney's Office	386	535	135,841	62,394	33,250	95,644	188,124
Office of Probation—Supreme Court	121	171	21,862	18,500	3,938	22,438	30,825
Office of Probation—Criminal Court	55	83	4,657	9,562	1,688	11,250	7,311
Psychiatric Clinic—Supreme Court	10	11	1,774	1,425	1,188	2,613	1,951
Psychiatric Clinic—Criminal Court	24	32	1,856	4,169	1,562	5,731	2,468
Department of Correction	257	330	43,244	28,900	31,250	61,050	54,522
Police Department	79	71	6,916	6,125	5,375	11,500	6,916
Youth Counsel Bureau	15	21	1,382	2,475	1,312	3,787	2,032
Manhattan Court Employment Project	58	79	3,250	8,912	4,000	13,912	4,420
Society for the Prevention of Cruelty to Children	3	4	350	575	125	700	467
TOTAL	1,484	1,991	291,471	236,406	113,937	352,243	398,420

*25% circulation space added

**based on existing space use

TABLE 7

SUMMARY OF DEPARTMENTAL AND COURTROOM AND ANCILLARY SPACE REQUIREMENTS

CRIMINAL COURTS BUILDING AND THE STATE OFFICE BUILDING, NEW YORK COUNTY

COURTROOMS AND ANCILLARY FACILITIES

Area of existing courtrooms and ancillary facilities in the Criminal Courts Building		= 149,251 sq. ft.
Existing number of courtrooms in the Criminal Courts Building	= 35	
Projected number of courtrooms for the Criminal Court and Supreme Court Criminal Term	= 48	
Projected number of additional courtrooms required for 2000 A.D.	= 13	+ 6 hearing rooms*
Number of courtrooms provided in the State Office Building	= 24	+ 12 hearing rooms
Number of courtrooms available for expansion needs beyond 2000 A.D.	= 11	+ 6 hearing rooms
Area of courtrooms and ancillary facilities provided in the State Office Building scheme		= 118,784 sq. ft.
Average area per courtroom (assuming 2 hearing rooms equal 1 courtroom)		= 8,960 sq. ft.
Area of courtrooms and ancillary spaces required for 2000 A.D.		= 63,360 sq. ft.
Area of courtrooms and ancillary spaces available for expansion needs beyond 2000 A.D.		= 55,424 sq. ft.
Area of courtrooms and ancillary spaces required in the Criminal Courts and State Office Buildings for 2000 A.D.		= 212,611 sq. ft.**

TOTAL AREA SUMMARY

Total required area, excluding public, jury, general clerk, courtrooms and ancillary spaces	= 351,343 sq. ft.
Total required area of courtrooms and ancillary spaces for 2000 A.D.	= 212,611 sq. ft.
Total required public, jury and general clerk area	= 93,800 sq. ft.***
Total required Net Functional Area	= 656,754 sq. ft.
Total Net Functional Area for the Criminal Courts Building	= 433,118 sq. ft.
Total Net Functional Area for the State Office Building	= 374,232 sq. ft.
Total Net Functional Area for the Criminal Courts and State Office Buildings	= 807,350 sq. ft.
Net Functional Area available for expansion needs beyond 2000 A.D.	= 150,596 sq. ft.

PROJECTION BASED ON EXISTING SPACE USE

Total required area, excluding public, jury, general clerk, courtrooms and ancillary spaces	= 398,420 sq. ft.
Total area of courtrooms and ancillary spaces	= 212,611 sq. ft.
Total public, jury and general clerk area	= 93,800 sq. ft.
Total Net Functional Area	= 704,831 sq. ft.
Net Functional Area Available for expansion needs beyond 2000 A.D.	= 102,519 sq. ft.

* assumed
** 149,251 sq. ft. plus 63,360 sq. ft.
*** estimated

TABLE 8

TOTAL SPACE REQUIREMENT FOR EACH ADDITIONAL COURTROOM

SUPREME COURT CRIMINAL TERM, NEW YORK COUNTY

SPACE	PERSONS PER COURTROOM	UNIT AREA (sq. ft.)	ASSIGNED AREA (sq. ft.)	PER CENT TOTAL
COURTROOM	participants 15–30 spectators 24–40		1200–1500	
ADJOINING SPACES				
Robing room	1		150–180	
Jury deliberation room with toilets	6–12		200–350	
Alternate jurors' room	1–2		80–100	
Witness rooms: state & defense	4–6 each (varies)		100–120 100–120	
Conference room	2–4		70–80	
Court personnel room (if required)	7–10		100–120	
Prisoner holding facility with toilet	1–5		40–80	
Circulation space (25% of adjoining spaces)			210–290	
Sub-total			1050–1440	
RELATED SPACES				
Office of Probation	3.9 probation officers	80–90	312–351	
	0.9 supervising officers	110–120	99–108	
	0.1 administrative staff	150–180	15–18	
	3.0 clerical	65–75	201–225	
Legal Aid Society	0.8 legal aid attorneys	110–120	88–96	
	0.5 legal aid attorneys (mental health unit)	110–120	55–60	
	0.5 law assistants	80–90	40–45	
	0.1 administrative attorneys	150–180	15–18	
	1.6 supporting staff	65–75	104–120	
District Attorney's Office	5.9 assistant district attorneys	110–120	649–708	
	1.2 supervisory staff	150–180	180–216	
	3.9 clerical	65–75	254–293	
Department of Correction	3.3 correction officers	65–75	215–248	
	0.3 captains	80–90	24–27	
	0.1 administrative staff	110–120	110–120	
	2.2 clerical	65–75	143–165	
Psychiatric Clinic	0.2 psychiatrists	150–180	30–37	
	0.2 psychologists	110–120	22–24	
	0.2 clerical	65–75	13–15	
Administrative and Clerk's Office	0.3 administrative staff	150–180	45–54	
	2.4 clerical staff	65–75	156–185	
Other departments	0.1 individuals	110–120	11–12	
Judge's chambers:				
Judge's chamber & ancillary spaces		445–500	445–500	
Secretary		145–185	145–185	
Law assistant		95–110	95–110	
Grand jury facilities*	0.2 area of facilities		300–500	
Jury facilities*			300–400	
Detention facilities			75–100	
Circulation space (25% of related spaces)			839–998	
Sub-total			4980–5938	
SUMMARY				
COURTROOM-average trial courtroom			1200–1500	16.6–16.9
-public interest trial courtroom			2000–2500	24.9–25.3
ADJOINING SPACES			1050–1440	14.5–16.2
RELATED SPACES			4980–5938	13.4–14.6 68.9–66.9 62.0–60.1
TOTAL SPACE PER COURTROOM-average trial courtroom			7230–8878	
-public interest trial courtroom			8030–9878	

*facilities that can be located centrally in another building

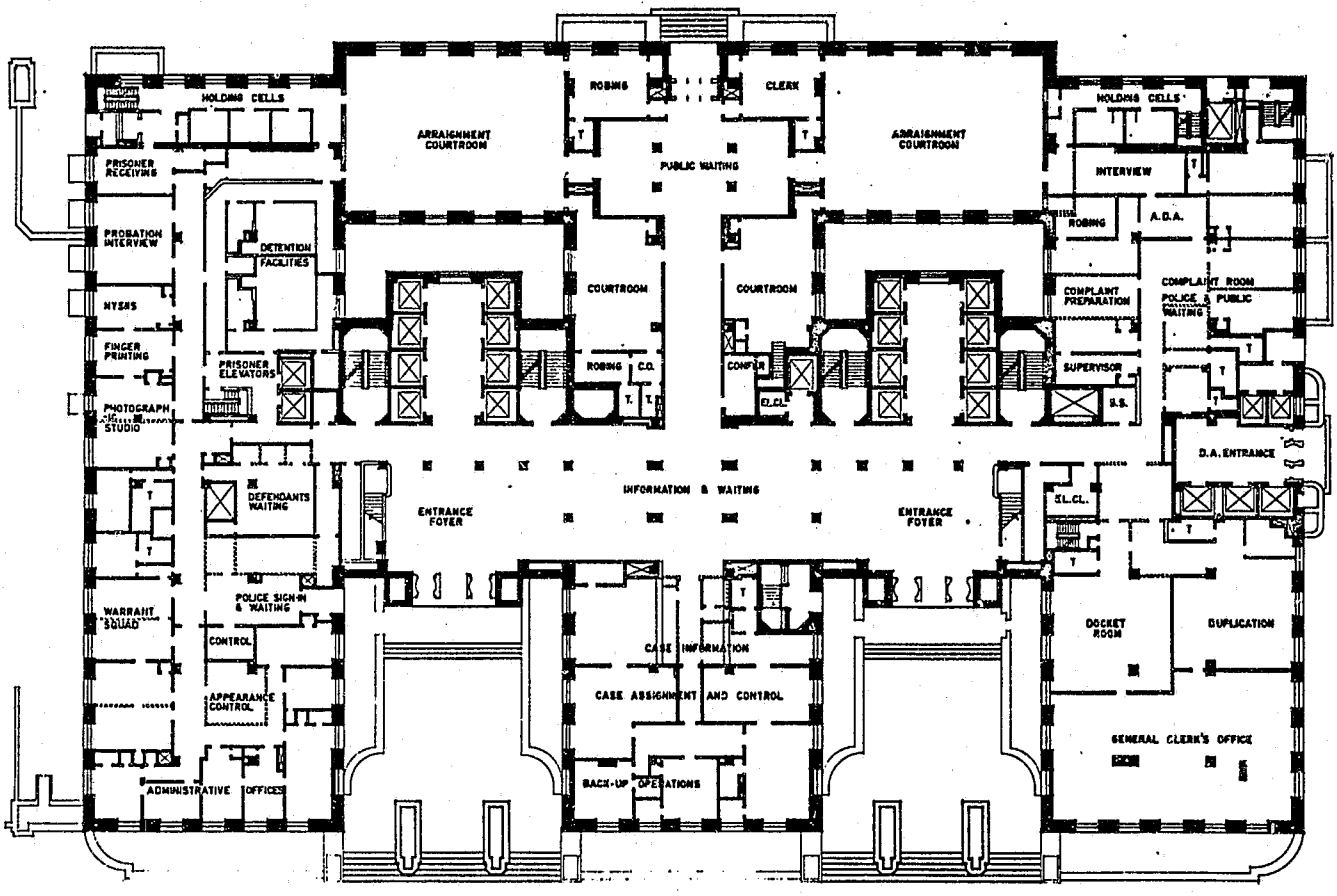


FIGURE 15
PROPOSED DETAILED SPACE USE PLAN
GROUND FLOOR, CRIMINAL COURTS BUILDING, NEW YORK COUNTY

TABLE 9

RENOVATION COST ESTIMATES

CRIMINAL COURTS BUILDING, NEW YORK COUNTY

FLOOR/ EQUIPMENT	H.V.A.C. COSTS	ELECTRICAL COSTS	PLUMBING COSTS	COST/ FLOOR INCL. SERVICES COSTS
Basement	—	—	—	—
First	37,500	18,500	4,000	175,236
Second	43,999	6,800	14,971	175,591
Third	—	6,700	26,400	85,945
Fourth	60,000	40,000	16,800	188,771
Fifth	22,500	10,000	5,570	98,833
Sixth & Seventh	—	—	—	84,598
Eighth, Ninth & Tenth	30,000	14,000	11,200	117,382
Eleventh, Twelfth & Thirteenth	24,080	3,200	—	66,534
Fourteenth	—	—	—	82,694
Fifteenth	—	8,000	—	101,471
Sixteenth	—	—	13,500	36,220
Seventeenth	—	—	—	—

SUB-TOTAL				**1,213,276**
Existing Courtroom Renovation				855,600
Painting				122,000
Additional Electrical 100 amps in each closet				61,000
Window Cooling Units	40,000	8,600	—	48,600
300-ton Refrigeration Unit	100,000	25,000	—	125,000
3 Clarage Air-Washer Units	—	—	60,500	60,500
SUB CONTRACT TOTALS	358,079	201,800	152,941	2,485,975
General Contractor's Profit & Overhead	72,201	42,480	32,129	522,060
TOTAL CONTRACT COSTS	433,280	244,280	185,070	3,008,036
15% Contingency	64,990	36,640	27,760	450,000
TOTAL COST (July, 1971)				**3,460,000**

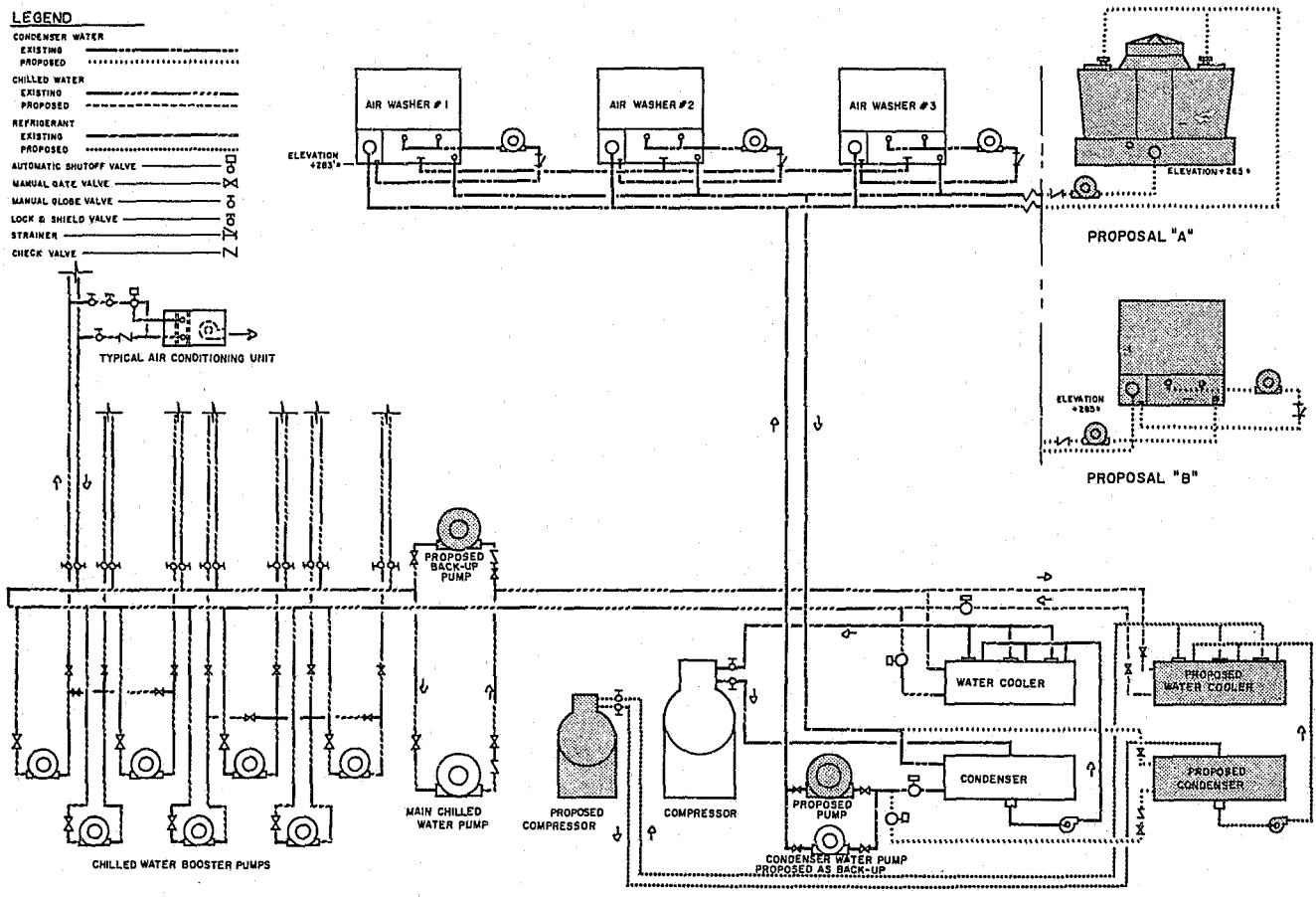


FIGURE 16
ENGINEERING SOLUTION IN RENOVATION PROJECT: AIR CONDITIONING SYSTEM
CRIMINAL COURTS BUILDING, NEW YORK COUNTY

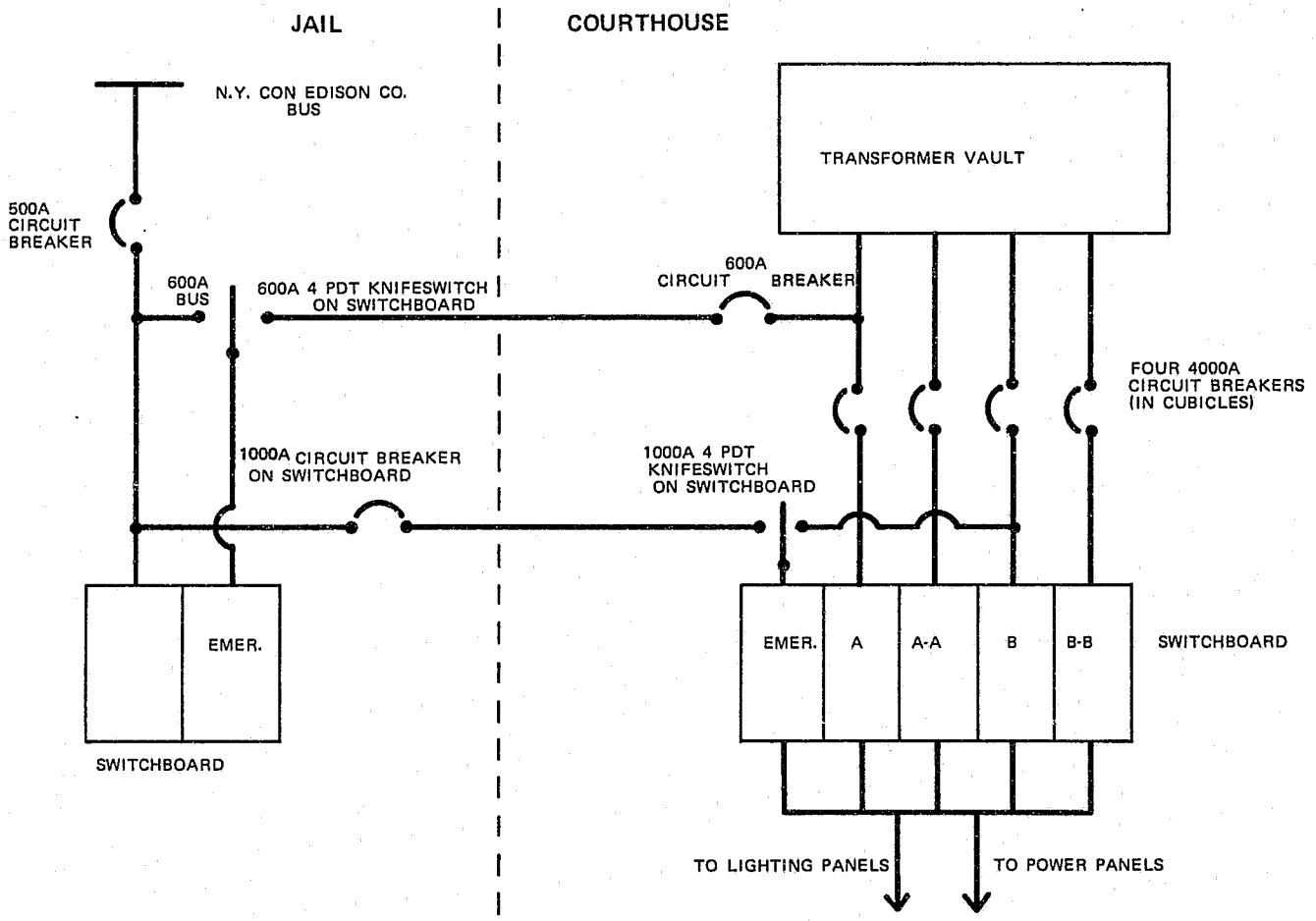
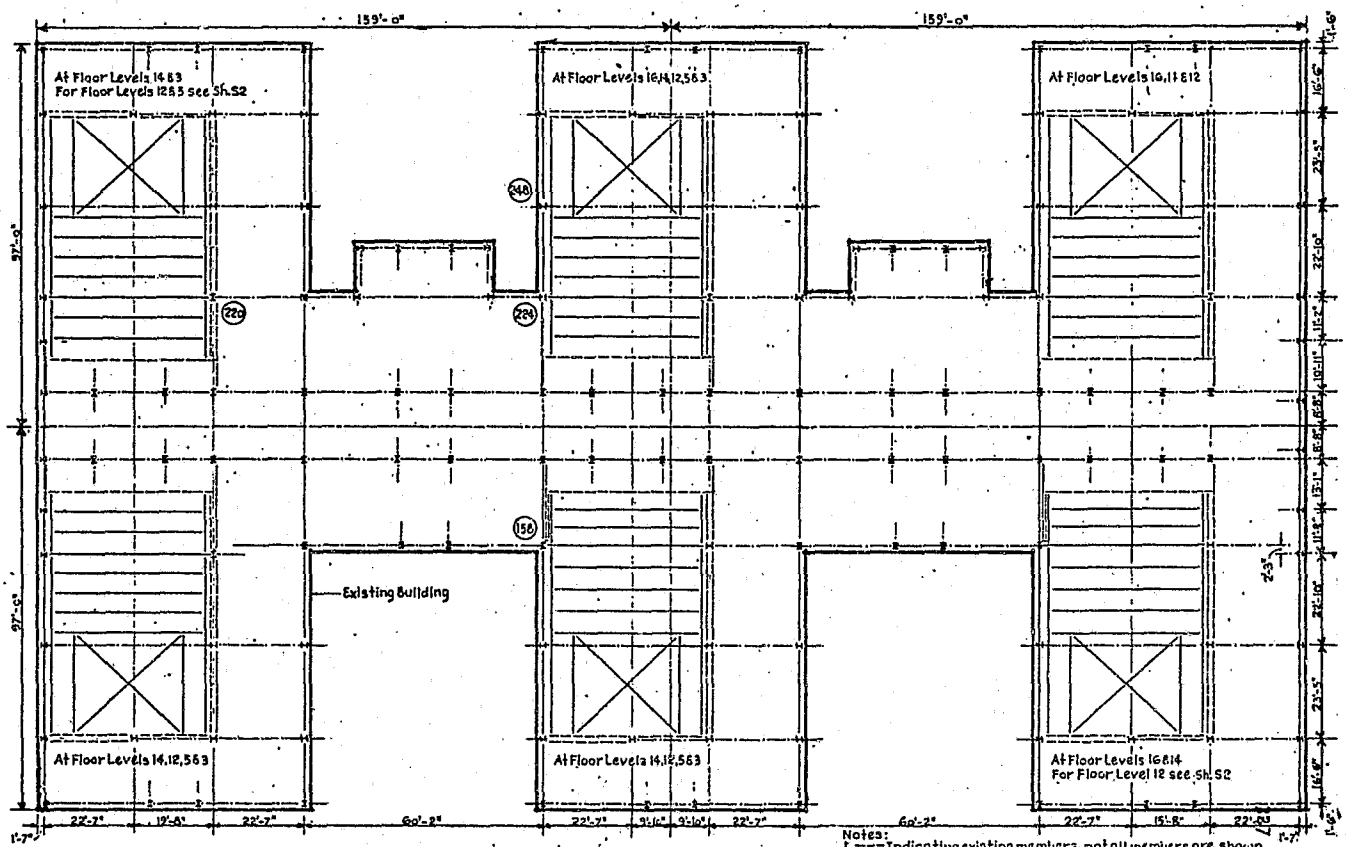


FIGURE 17
ENGINEERING SOLUTION IN RENOVATION PROJECT: ELECTRICAL SYSTEM
CRIMINAL COURTS BUILDING, NEW YORK COUNTY



TYPICAL FRAMING PLAN–FLOOR LEVELS 16,14,12,5&3
(For Proposed Floor Additions above Court Room Areas)

Notes:
1. ——Indicating existing members, not all members are shown.
2. —— Indicates proposed new framing for this study.
3. All columns shown are existing columns, except 4 new columns for each of 4 proposed new tower additions.

Col. 156

Fl. no.	Section	Area	Load	$\frac{P}{A}$	add. floor load	add col. load	Load Tot.	$\frac{P}{A}$	incre.	load inc%
14	14 I 426	125	1821	14.6	.49	49	1870	15	.4	2.7
12	14 I 320 2PS 16×1½	148.5	2151	14.5	"	98	2249	15.1	.6	4.5
5	14 I 426 2PS 22×2⅝	246.5	3597	15	"	147	3744	15.8	.5	4.1
3	14 I 426 2PS 22×3⅛	268.5	3865	14.7	"	196	4061	15.5	.8	5.1
Base-ment	14 I 426 2PS 24×3¼	281	4181	14.9	—	196	4377	15.6	.7	4.7

FIGURE 18
STRUCTURAL FEASIBILITY
CRIMINAL COURTS BUILDING, NEW YORK COUNTY

CHAPTER THREE

SPACE STANDARDS AND GUIDELINES

A major reason for the persistence of poor environmental conditions has been the absence of generally applicable space standards and guidelines—until now.

The standards and guidelines which comprise this chapter are believed to be the most comprehensive developed to date for court and related facilities. Architects and planners, in addition to administrators, who may have responsibility on such a project for the first time, should find the guidelines of special usefulness in research and planning. Primarily applicable to court and related facilities, the data, nevertheless, can be adapted to guide the planning of law-enforcement and other facilities.

These unique standards and guidelines provide a measure against which preliminary planning can be evaluated for comprehensiveness and flexibility before proceeding to final design stages of renovation or new construction. By applying to local conditions the range of data, from the most basic to the less obvious, facility administrators and planners should be able to construct a composite of required spatial and other standards, according to facility. The standards and guidelines also will be useful as a check on required standards in final plans before the start of actual renovation or construction.

The information contained in this chapter has been derived primarily from four sources:

1. Recently published reference books and journals.
2. Earlier published data relating to non-judicial facilities which can be applied to courthouse and law-enforcement projects.
3. Detailed research undertaken by the director and staff of the Courthouse Reorganization and Renovation Program on spatial and environmental requirements related to courthouse and court-related operations and personnel functions.
4. Interviews conducted by the program director and staff with persons functioning on various levels in courts, court-related departments and law-enforcement agencies.

Computing Standards and Guidelines. In general, courthouses and law-enforcement facilities can be categorized as to use by delineating their functions. The following categories under which the standards are given would hold for most court buildings (a similar list could be formulated for law-enforcement and other facilities):

Courtrooms and hearing rooms
Judges' chambers
Jury facilities
Grand jury facilities
Administrative and staff offices
Prisoner holding facilities
Other court-related facilities

A table for each of the above facility categories summarizes space standards by sq. ft. of useable floor space per person, based on activities performed. Each table lists participants involved in a major court function, activities performed, other people involved in the activities performed, furniture and equipment necessary for the performance of those activities and total net floor area required per person per activity, broken down into furniture/equipment area and circulation area. (Furniture/equipment

area includes net area occupied by the person using the furniture/equipment in performing an activity. Circulation area can be defined as the minimum area needed around the furniture/equipment for movement of people, furniture and equipment within the overall floor area).

To convert net floor area to gross floor area, which includes mechanical and electrical equipment spaces, public elevators, staircases, toilet and corridor spaces, janitorial and building supplies storage spaces, and external wall areas, an additional 50 percent of net floor area has to be added. For example, a courtroom with 1,200 sq. ft. net useable floor area would have an equivalent 1,800 sq. ft. gross floor area. In addition to space standards, standards for lighting (type and intensity), acoustical (background noise level and average absorption coefficient) and thermal (effective temperature in summer and winter) also are included in the summary table. Degree of accessibility and security classification have been evaluated and included in the table to aid the local architect in the design of judicial facilities.

COURTHOUSE GUIDELINES

General

- A courthouse is a building in which justice is administered: its architecture should express the dignity and purpose of the court.
- There are many different types of courts—among them, criminal, civil, family, juvenile—and the design of courthouses for each type should reflect the goals each seeks to achieve. The design of hearing rooms for juvenile cases, for instance, would be quite different from that of trial courtrooms.
- Architectural components of a court building—structure, services and finishes—should be designed within a unified architectural concept.
- A courthouse is designed to accommodate many different kinds of users: judges, law assistants, district attorneys, legal aid and defense attorneys, probation officers, conciliation officers, clerks, court reporters, interpreters, medical and social agency personnel, defendants, plaintiffs, press, public, and so on.
- A careful analysis should be made of all existing courthouse and court-related facilities to determine whether renovation of existing facilities can accommodate immediate and future needs.
- Some buildings have higher "renovation potential" than others. Hurried renovation of existing facilities with functional and spatial problems may aggravate rather than resolve problems.
- Extensive renovation can be as costly as new construction. The decision to renovate should be based on economic considerations as much as on functional feasibility.

Space Management

- Complex operational and functional interactions necessitate comprehensive and integrated space management research and programming.
- Space management analysis consists of:
  - clearly defining goals and objectives of project and study;
  - organizing research and analytic systems;
  - compiling and analyzing data relating to persons involved in the judicial system, their activities and the spaces in which activities are performed;
  - establishing functional and spatial relationships between persons, departments or units and documents;
  - studying existing manpower requirements and projecting future personnel needs for the estimated life span of the building;
  - developing space use plans for each court and court-related department;
  - synthesizing design concepts and integrating complex planning components;
  - developing alternative schemes and assessing their functional, environmental and economic feasibility;
  - recommending the phasing of an implementation program to complete a facility project at minimum cost to the state, city or county, with minimum disruption to court operation.

Site Selection

- Considerations should include population growth patterns, transportation modes, proximity to the community center and accessibility of court-related facilities, such as hospitals, police stations, jails, drug treatment centers, half-way houses and other related institutions.
- Site should be suitable and adequate for present and expansion needs during life span of the building or complex.
- Selection should take into account topographic, climatic and orientation factors that could influence building design.
- Consideration should be given to convenience of location for attorneys and general public. Most attorneys in urban areas are located in commercial or financial centers of the city.

Space Allocation

- Depending on site and location, a courthouse can be single- or multi-story—single for small communities or as a branch of a major court building, multi-story in large metropolitan areas.
- Horizontal segmentation of a multi-story courthouse according to major court functions may result in unnecessary and costly duplication of spaces such as robing rooms, chambers and conference rooms.
- Courtroom, departmental and judges' floors can be planned in vertical segments, each served by its own elevators and staircases.
- Spatial layout depends largely on the method of assigning cases and judges to courtrooms, and on the location and degree of consolidation of the clerk's office.
- Floors nearest the entrance level usually are assigned as public spaces and may include clerical, administrative and jury assembly spaces. Excessive traffic load on elevators thus can be minimized.
- Escalators can move persons to and from their destination on lower public floors more effectively than elevators.
- Separate entrances should be provided for judges, public and staff and prisoners. Prisoners can be transferred by secured elevators or stairs, physically separated from public or judges' elevators or stairs.
- Floors above those used by the public may house courtrooms and ancillary facilities, including conference rooms, robing rooms, witness rooms, temporary prisoner holding and interviewing facilities and offices for law assistants, court reporters and interpreters.
- Spaces on courtroom floors should be subdivided into public, restrictive, private and secured spaces. Courtrooms, public conference rooms and waiting rooms are readily accessible to the public; private conference rooms and departmental offices are restrictive spaces; judges' robing rooms and chambers are private spaces; prisoner holding and interviewing facilities are secured spaces.
- Departmental offices, including those for district attorneys, legal aid or public defender attorneys and probation officers, can be located above courtroom floors. Legal aid or public defender and probation offices are more accessible to the public than the district attorney's office.
- Judges' chambers and related facilities can be located on floors above departmental offices. Among related facilities are law library and judges' dining room which require private access.
- Mechanical, electrical and elevator equipment usually are housed on the roof and basement levels of a building, or, in buildings of more than 20 stories or so, occupy as well one or more intermediate levels to minimize long vertical duct runs.
- Detention facilities and related departmental offices can be located on a low-ceiling floor "sandwiched" between two high-ceiling courtroom floors.
- Detention facilities and any departmental offices also can be located on a low-ceiling floor around the central building core. Two-story courtrooms would have high-ceiling judicial areas and one-story public spectator areas below the upper-level detention and departmental office floor.
- Basement floors should accommodate records-storage and locker facilities, custodial offices, mechanical and electrical equipment rooms, and, possibly, temporary prisoner holding facilities.
- Greater adoption of computer systems and automation in courts will affect future personnel use, method of operation and space planning.
- Renovation of office buildings for court use may depend on structural column spacing (in older buildings usually 18–26 ft.). Courtrooms may require more substantial space than one structural bay. A solution: use one structural bay as the judicial area, surrounded on three sides by jury, press and public spaces. With careful design, four columns along the periphery can be less conspicuous than one central column surrounded by four structural bays.
- Ancillary facilities adjoining courtrooms, in general, occupy 60–80 percent of courtroom space. A courtroom of 1,200–1,500 sq. ft. has approximately 700–1,200 sq. ft. of adjoining ancillary facilities.
- In large metropolitan court buildings, departmental offices for court and personnel involved in the operation of each courtroom require space three to four times the size of the courtroom. In small non-urban courthouses, such offices would require space approximately twice that of the courtroom.
- There is a trend toward smaller courtrooms for hearings and trials. A few large courtrooms in such facilities could be retained for calendaring and motions procedures.
- Hearing rooms (for processing juvenile cases) range from 600–800 sq. ft. Small size non-jury courtrooms range between 800–1,000 sq. ft. Medium-size courtrooms for general trials with juries may require 1,200-1,500 sq. ft. Calendaring and motions courtrooms in large metropolitan courts may have a seating capacity of more than 150 persons, requiring more than 2,500

sq. ft. The number of these very large courtrooms, however, should be kept to a minimum.

- For handling arraignment cases, a medium-size courtroom can be used in conjunction with a large adjoining public waiting area. Participants involved in the case being heard and those in the few following cases would be present in the courtroom. Other participants in pending cases would wait in the public waiting area until called.

Environmental

- Ambiance of many courthouse spaces should be properly subdued—calm, dignified and businesslike. But some contrasts in color, lighting and texture should be used to provide variations without fragmenting a unified architectural concept.
- In areas with more severe climate, all courthouse spaces should be air-conditioned, if possible. At the very least, conditioned air should be provided for courtrooms, chambers and jury spaces. All courthouse spaces in regular use must be heated where climate dictates.
- Chambers and private offices along building walls with extensive glass exposure should have undersill air-conditioning units with individual thermostatic control; internal spaces can be air-conditioned by a low-velocity, central-zoned system with centralized control.
- Because courtrooms, ancillary spaces and judges' chambers may be subject to irregular use, air-conditioning to these spaces should be controlled individually where feasible to minimize operating costs.
- In old court buildings, it is more economical to cool small external rooms with window cooling units than to install a central air-conditioning system with complex ducting. For large spaces, such as courtrooms and jury assembly spaces, packaged units with minimum or no ducting can be easily installed in an adjoining room.
- Design of mechanical and electrical systems should include adequate capacity to accommodate projected needs, including the use of computer equipment.
- Soundproofing of external and internal walls is essential in courtrooms, jury, grand jury and chambers spaces.
- Separating private spaces from public spaces by means of semi-private and private corridors would alleviate considerable noise transmitted from the public spaces.
- The natural environment (climate, vegetation, sunlight, wind, etc.) should be balanced against the man-made environment (mechanical, heating, cooling and ventilation, artificial light, etc.) in the design of interior spaces—for example, the use of sun-shading devices to reduce internal load.
- Office spaces, judges' chambers and departmental offices should have external windows, both for natural lighting and for visual relief.
- Courtrooms can be without windows and artificially lighted to create a constant environment, but it is advisable to provide some daylight to relieve monotony of complete enclosure. Skylights or clerestories also can be used to advantage.
- Most courthouses more than 20 years old, unless recently renovated, have very poor lighting. In renovation projects, careful checks should be made of the type, intensity and color of light fixtures to evaluate their adequacy for persons performing specific tasks.
- Assigning judges to available courtrooms rather than having courtrooms assigned to each judge will permit closing down the air-conditioning systems on floors of unused courtrooms and ancillary facilities during low caseload and vacation periods.
- In most old courthouses, periodical checks should be made of electrical, heating, ventilating and air-conditioning (HVAC) and plumbing systems to ensure proper maintenance of those systems to service building needs.

Security (See Chapter Five for a detailed discussion)

- Security is a major consideration in the design of a court building; especially those for use in criminal and family or domestic relations cases.
- Security measures can be developed in terms of space planning concepts, detection and alarm equipment and systems, and personnel training and deployment techniques.
- Careful application of space planning concepts to increase security measures during planning of a new building costs very little and is more effective than providing adequate security after implementation.
- Security systems in courthouses should be analyzed and implemented as an integral part of the architectural design.
- Spaces requiring a similar level of security and privacy should be clustered on the same floors. Even in renovation projects, the relocation of departments, where feasible, to achieve this would be less costly, and, in many cases, equally if not more effective than providing security manpower and equipment.
- Access to private and secured spaces should be separated whenever possible from access to public spaces.

- Devices to detect firearms, other weapons and bombs should be evaluated for implementation when economically feasible, especially when space planning and existing manpower allocation techniques are inadequate.
- Alarm systems activated by foot-lift and knee-touch devices in courtrooms, judges' chambers, district attorneys' offices and other critical spaces should be evaluated and installed, whenever appropriate.
- Each courtroom should be equipped with an intercom system connected directly to a central security control station strategically located for rapid deployment of security personnel to spaces with security problems.
- Court security officers should be adequately trained in the use of firearms and in dealing with demonstrations or disturbances.
- Public entering courtrooms should be searched only as a last resort. Regular inspection of courtrooms and spaces easily accessible to the public is desirable.
- Courtrooms and ancillary facilities operating after working hours should be located on the entrance level and lower floors. All upper floors should be closed to the public to reduce load on elevators and to minimize vandalism and theft.
- Public spaces such as toilets, rest rooms, lounges and conference rooms, should not directly adjoin courtrooms and should not have hung ceilings or objects and places suitable for planting bombs. By locating such public spaces away from the courtrooms, potential physical damage and disruption of court operation is reduced.

Implementation

- Successful implementation of a courthouse renovation or construction project depends to a large extent on developing a good working relationship between the court and the local departments of public works and city planning, the space planning consultant and the architect and his consultants.
- Projects can be implemented in phases, planned according to available budget.
- Projects should be scheduled by Critical Path or similar methods for effective time and cost control and for optimum efficiency in implementation.
- Successful implementation implies a centralized decision-making authority at the highest administrative level.

COURTROOM (See Table 10, page 58)

- The courtroom should be a symbolic extension of the concept of justice; its architecture should express this ideal.
- Courtroom size and shape should be determined by functional and environmental requirements, the kinds of cases handled and the routine number of participants and spectators.
- Judicial functions of a trial or hearing can be accommodated within an area of approximately 400 sq. ft. (without jury) and 600 sq. ft. (with jury).
- Size of the public observation area in most courtrooms should be determined by the size of the jury panel, usually 25 to 30 persons for a 12-man jury and 12–15 persons for a six-man jury, plus an additional 15–20 seats for the general public. (After impaneling, additional seats become available for the public.)
- The trend is toward smaller courtrooms (800–1,200 sq. ft.) with a smaller number of large courtrooms (1,500–2,500 sq. ft.) for calendaring and motions functions.
- Floor to-ceiling heights of small- to medium-size courtrooms should be 10 to 15 ft.
- Height within a courtroom need not be uniform and should be measured in terms of symbolic and environmental factors. (A courtroom might be planned, for instance, with a central judicial area higher than surrounding public and jury areas.)
- Courtroom appearance and ambiance should be restrained, yet cheerful, with adequate light and color contrast to relieve monotony.
- Environmental criteria should be determined by the kind and extent of activities, and by the psychological response desired from participants and spectators.
- Courtrooms should have separate entrances for spectators, press litigants, witnesses (public); judge, jury, attorneys, court personnel, witnesses (private); and prisoners and court officers (secured).
- Entrances and exits for participants should be carefully grouped and located as close as possible to their stations in the courtroom.
- All participants in courtroom proceedings should be able to see and to hear each other clearly.
- Distance of movement and conflicting movement by participants during a trial or hearing should be minimized.
- A courtroom does not function in isolation; its necessary ancillary facilities include robing room, jury deliberation room, prisoner holding facility, witness isolation room and interview room.
- Courtroom furniture should be an integral part of the architecture, designed to accommodate

human activities. Much of it can be movable for flexibility, colorful without being distracting and durable for wear and stain resistance.

- Heavy furniture such as the judge's bench, clerk's station, witness box, jury box and attorneys' tables can be constructed in modular sections for rapid assembly, when necessary. Movable chairs for the public should be avoided because of noise and pilferage problems.
- Provision should be made for central recording of court proceedings; microphones should be designed as an integral part of courtroom furniture, and space and personnel required for efficient operation should be planned in advance.
- Courtroom interiors should be designed to minimize acoustical problems: volume and distance should be reduced in very large courtrooms to control reverberation time (ideal, 0.8 to 1 second), thereby avoiding echoing effect. This can be accomplished by a hung ceiling or a reduction in room size.
- Courtroom shape should not be long or narrow and walls should not be parallel or finished in sound-reflective materials. Such conditions would cause excessive sound fluttering. To alleviate this phenomenon, reduce room length, avoid the use of long parallel walls and finish with appropriate absorptive material.
- Courtroom shape, especially in the judicial area, should not be circular and constructed with reflective materials. Concave surfaces focus sound at the center.
- In the large courtrooms, walls at the front of the courtroom should be of reflective materials so that sound generated from the judicial area is reflected to the public seating area at the rear of the courtroom. If the shape of the ceiling at the front of the courtroom were curvilinear, the ceiling could be reflective; but as it is normally flat, absorptive materials are preferred.
- Walls and ceiling at the rear of the courtroom (around the public seating area) should be finished with absorptive materials to prevent sound from reflecting back to the judicial area, creating echoing effects.
- The floor of the courtroom should be finished with carpet or padded vinyl, especially in the judicial area, for noise reduction.
- Every courtroom should have a sound lock or share one with an adjoining courtroom. By designing the sound lock so that one set of doors would generally be closed before the other set is opened, noise transmission level from public waiting or circulation spaces can be minimized.
- Fully air-conditioned coutrooms with sealed windows, especially the double-glazed type with internal venetian blinds, will have far fewer problems of high traffic noise and dust and grit level commonly associated with metropolitan centers.
- Courtrooms should be adequately air-conditioned and ventilated, and standard thermal conditions should be separately controlled in each courtroom or group of courtrooms.
- An adequate number of electrical outlets should be located near anticipated power equipment placement, e.g., sound recording equipment, amplifiers, projectors, x-ray viewer, desk lamps, and so on.
- A separate heating, ventilating and air-conditioning system should be installed to service night and weekend courts. The main plant can be shut down at night and during weekends.

Judge's Bench

- Symbolic of the administration of justice.
- The judge:
  - usually wears a bulky robe and requires a large armchair;
  - exercises protective influence over witnesses;
  - views and hears all participants in courtroom;
  - speaks loudly when addressing court, instructing jurors, admonishing spectators;
  - speaks softly when conversing privately with attorneys and court clerks;
  - passes exhibits and documents to attorneys and court clerks.
- The height and area of the judge's bench and platform should appropriately express the role of the judge and the dignity of the court. The judge's eye level when he is seated should be higher than any other participant or spectator, standing or seated.
- The judge's bench can be constructed in modular sections for ease in moving.
- The judge's bench should be equipped with (or provision be made for) a microphone connected to an amplifier controlled either by the judge or the clerk.
- The judge's bench should have a 4- to 6-in.-high railing around the work surface; the work surface should slope toward the judge to prevent attorneys from seeing documents on the judge's bench.
- The judge should be able to communicate with his secretary in chambers directly by a telephone/intercom system.
- The judge should be able to alert, without detection in the courtroom, a central security control room. Court officers should be able to hear, and even see, the problem in any courtroom to take appropriate steps. They should also be able to communicate with the judge or with other

court participants through a loudspeaker system during an emergency.

Attorneys' and Litigants' Stations

- Attorneys usually are deeply involved during court procedures, and the physical environment should be conducive to this condition.
- Attorneys and litigants should be able to confer in private at their stations without being overheard by jurors, opposing attorneys, opposing litigants or by others in the courtroom.
- Attorneys should be able to move easily from their stations to a lectern, the judge's bench, court clerk's station, court reporter's station, jury box and witness box.
- Attorneys and litigants should be able to see, hear, and be seen and heard by judge, witnesses, court clerk, jurors and court reporter.
- Distance should be approximately equal between the attorneys' stations or lectern, witness box, jury box and judge's bench.
- Attorneys handle and examine exhibits and legal documents; their stations should be adequately lighted to enable them to read fine print on legal documents.
- Each attorney's station should be equipped with (or provisions made for) a microphone connected to an amplifier controlled either by the judge or the clerk.

Witness Box

- Many volunteer witnesses testify at personal sacrifice of time and money and at the risk of being harmed; they deserve the courtesy of the court and of trial participants.
- When not testifying, witnesses in controversial trials should be isolated for their safety and protection.
- Wintesses may be under emotional strain; consequently, the environmental conditions in which they wait should be calm and cheerful.
- Witnesses are entitled to the protection of the court and the judge who serves as the impartial arbiter.
- Non-encroachment distance between attorneys and witnesses should be at least 6 ft.
- Witnesses should be able to see, and be seen as close to full face as possible, and to hear attorneys, judge, court clerk and jurors.
- When answering attorney's questions, witnesses should be clearly seen and heard by attorneys, judge, jurors and court reporter.
- Witnesses on the stand receive, examine, and return exhibits. A fixed or hinged shelf for this purpose should be part of the witness box design.
- Witness box should be movable and, perhaps, constructed as a modular unit.
- Floor level of the witness box should be slightly lower than that of the judge's bench.
- The witness box should be equipped with a microphone connected to an amplifier controlled by the judge or the clerk. Many witnesses are nervous and tend to speak very softly. Amplification of witness' testimony is of special importance to the court reporter.

Jury Box

- Jurors often serve at personal sacrifice of time and money; they deserve the courtesy of the court and of trial participants. The facilities in the courtroom should be adequate, unobstructive and well-designed for their needs.
- Jurors should be adequately separated from the public to avoid interference and improper influence.
- A bailiff or court officer should be located between jurors and the public to prevent communication between them.
- Jurors should be adequately separated in distance—a minimum of 6 ft.—from attorneys and litigants to prevent their overhearing private conversations.
- In criminal trials, juries are selected and impaneled in court before the judge.
- In civil trials, juries can be selected and impaneled either in courtrooms or in jury impaneling rooms.
- Non-encroachment distance of 6 ft. from the jury box can be enforced by the presiding judge.
- Jurors should be able to see, be seen and to hear attorneys, judge, witnesses, court clerk.
- During examination of witnesses, all jurors should be able to see attorneys and witnesses as close to full face as possible.
- Jurors receive, examine and return exhibits; fixed or hinged shelves should be designed as an integral part of the jury box on its outside surface for resting large exhibits.
- Jury box can be constructed in easily movable modular sections to facilitate a more flexible and efficient use of space.
- Jurors should be located on the same side of the judge as is the witness.
- Floor level of the highest tier of the jury box should be slightly lower than that of the judge's bench.
- Depending on the layout of the courtroom, it is

possible to substitute the traditional "modesty rail" in front of the jury box with a table surface 28–29 in. above floor level so that the front row of the jury box can be used by either the plantiff or the defendant during a non-jury trial.

- The front row of the jury box should be on the same floor level as the judicial area; if all juries are reduced from 12 to 6 members, the front row of seats could be removed without extensive renovation.

Court Reporter's Station

- The court reporter:
  - is responsible for recording court proceedings by shorthand, by stenographic machine or by automatic sound recording devices;
  - must see the facial expressions of witness, attorneys, and judge, and hear every word spoken;
  - should be located close to the witness box approximately equidistant from judge, attorneys and jurors so all hear him equally well when he reads back to the court at the judge's request parts of the transcript;
  - is usually responsible for marking and identifying exhibits before they are passed to the court clerk for safekeeping;
  - should be as inconspicuous as possible, especially to the witness who should not be made to feel that every word he utters is being recorded in evidence;
  - at times has to record the answers of an emotional witness by indicating his expression and the movement of his head and hands.
- Of all trial participants, the witness is most unfamiliar to the reporter. The locational relationship between the court reporter and the witness is therefore most important.
- It is important that the furniture and equipment used by the court reporter be designed as an integral part of courtroom furniture. Design should maintain court dignity, providing for orderly stacking of steno-tapes, and so on.
- When an interpreter is required, he should be located to one side of the witness, facing the court reporter, and be easily seen by judge, attorneys and jurors.

Court Clerk's Station

- The court clerk:
  - serves the court and judge;
  - assists in efficient operation of courtroom procedures;
  - checks case files, passes them to and receives them from the judge;
  - makes records of case determinations;
  - is responsible for the custody of exhibits;
  - calls prospective jurors to the jury box and swears-in impaneled jurors for jury duty;
  - calls witnesses to the witness box and administers the oath.
- The court clerk's station:
  - adjoins the judge for ease of communication and for passing documents;
  - accommodates a large number of case files and other legal documents and exhibits, thus requiring maximum allowable work surface area;
  - should be lower in height and less significant than the judge's bench and the witness box;
  - can be constructed in modular sections for ease of movement, when necessary.
- The court clerk's work surface should be surrounded by a 6- to 9-in.-high rail to prevent attorneys from seeing documents and to cover sound recording equipment, if placed on the work surface.
- The court clerk's station should have the same alarm/intercom system as the judge: a direct intercom line to a central security control room activated by the touch of a button under the work surface.

Bailiff's or Court Officer's Station

- The bailiff or court officer is responsible for:
  - security of the courtroom and safety of participants;
  - keeping order in the courtroom;
  - safety, security, and privacy of judge and jurors;
  - safety and security of detained defendants;
  - removal of persons causing disruptions during court proceedings;
  - calling and escorting witnesses;
  - announcing entry of the judge;
  - running errands for the judge during trial or hearing.
- The bailiff should be strategically placed to perform the above duties effectively.
- During a public-interest trial, one court officer should be located between jury and public, another in close proximity to the judge, and a third for the transfer of prisoners and witnesses.
- The bailiff should be able to see all participants and public.
- The bailiff requires a small table (on the order of 2 x 2.5 ft.) with gavel used for calling the

court to order as the judge enters the courtroom.

Press Facilities

- The press has the right to attend and report trial proceedings, except juvenile and adoption cases, the records of which are kept confidential.
- Spaces for the press can be reserved in the front row of the public observation area or to the side of the courtroom, the location often determined by local policy.
- Press reporters should be no closer than 9 ft. to attorneys and litigants who may want to engage in private conversation.
- Adequate telephone facilities should be made available to the press in close proximity to courtrooms on each floor.
- A press room should be made available in close proximity to the building entrance.
- A glazed partition between press and judicial areas would enable the reporter to telephone information to his editor during trial without disrupting court procedures. (Some news reporters may object to the glazed partition on the grounds that they would lose the "feel" of a proceeding.)
- If press space is separated physically from the courtroom, then the sound and sight of court proceedings will have to be transmitted into the space by means of video-tape equipment, a concept yet to gain acceptance. However, consideration might be given to designing a central press room away from courtrooms in which reporters could view several trials on closed-circuit television.

Public Facilities

- The public:
  - has the right to attend all trials and hearings in the role of spectator;
  - need not be relegated to the traditional position in the rear half of the courtroom where only backs of attorneys and litigants and sides of jurors can be seen;
  - should be able to see and hear all participants as clearly as possible;
  - should remain inconspicuous and unobtrusive as possible to trial participants;
  - in the future may be physically separated from the courtroom in viewing spaces equipped with closed-circuit television (thereby permiting courtroom size to be reduced).
- In some courtrooms, it is possible and advantageous to plan public observation facilities to one side, preferably opposite the jurors.
- For high-security courtrooms, detection devices could be installed inconspicuously at the entrance to the public observation area to detect firearms, bombs and other dangerous weapons.
- For controversial trials, public entering the courtrooms could be subject to a search by male and female court officers.
- Size of the public observation area should be determined to a large extent by the number of prospective jurors in a panel brought into the courtroom for jury selection and impaneling.
- The public observation area in a criminal trial courtroom generally requires more space than in a civil trial courtroom.
- Courtrooms in close proximity to jury assembly spaces may only require seating capacity for half a panel, the other half being brought into the courtroom only if required.
- Floors should be carpeted where possible to minimize impact noise.
- Public entry into courtrooms should be via soundlock to minimize airborne sounds from public corridors or waiting spaces. One set of doors normally would be closed before the other were opened.

Other Courtroom Facilities

The following facilities should be installed where applicable:

Display Exhibits

- White magnetic board for charting, drawing and for holding paper exhibits.
- White tack board for cardboard exhibits.
  - Both exhibit boards can be portable or, preferably, built-in. One way of integrating boards with courtroom design is to provide a swivel-mount flush to wall with board back of the same material as the wall.
  - Each board should be at least 54 x 42 in. at 36-in. minimum height above floor level.
  - Angle of vision subtended at the boards should be greater than 45 degrees for clear viewing. Below 30 degrees, viewing becomes difficult.
- Pointer 36–42 in. long (can be collapsible).
- Battery-operated light pointer for explaining slide or film displays in a darkened courtroom.
- An adequate supply of magnetic strips, water-color markers and cleaning cloths.

Projection of Images of Exhibits

- Slide and movie projectors should be stored at a central location for use in courtroom, on re-

TABLE 10

COURTROOMS: DESIGN STANDARDS

Primary Participant	Activity	Related People	Furniture/ Equipment	Platform Height above floor	Area			Lighting		Acoustics		Access	
					FURNITURE/ EQUIPMENT	CIRCU-LATION	TOTAL	LIGHT LEVEL	TYPE	BACKGROUND NOISE LEVEL	AVERAGE ABSORPTION COEFFICIENT	SPACE	ACCESS/ SECURITY
				(inches)	(sq. ft)	(sq. ft.)	(sq. ft.)	(ft.-candles)					
Judge	Reading, writing	—	Bench surface, swivel chair/files, books, documents, exhibits	12–20	Bench 15–18 Chair 6–7	20–25	41–50	50–70	warm, direct, possible spot-lighting	NC 25–30	—	Chambers or robing room	Private/maximum
	Talking - quiet	Clerk, attorneys, bailiff, jurors, attorneys, public witnesses	—	—	—	—	—	—		NC 25–35	—		
	- loud		Microphone	—	—	—	—	—		NC 30–40	0.10–0.15 reflective		
	Viewing	Attorneys, jurors, litigants, court reporter, clerk, witnesses	—	—	—	—	—	30 min.	warm, semi-direct and direct	—	—		
Attorney	Reading, writing	—	Table surface, chair/files, books, documents, exhibits	Floor level	Table 12–15 Chair 4–5	25–30	41–50	50–70	warm, direct	NC 25–35	—	External office D.A. or legal aid staff office	Public/minimum Private/limited
	Talking - quiet	Litigants, attorneys, witness, judge, jurors, court personnel, public	—	—	—	—	—	—	—	NC 25–35	—		
	- loud		Lectern/microphone, files, books, exhibits	—	Lectern 7–9	9–11	16–20	50–70	individual lighting of lectern	NC 30–40	0.10–0.15		
	Viewing	Witness, judge, jurors, court personnel	—	—	—	—	—	30 min.	warm, direct or semi-direct	—	—		
	Moving	Witness, judge, jurors, clerk	/files, books, documents, exhibits	—	—	100–150	—	—	—	—	—		
Litigant	Reading, writing	—	Table surface, chair	Floor level	Table 8–10 Chair 4–5	8–10	20–25	50–70	warm, direct	NC 25–35	—	External (on bail or summons) detention facilities	Public/minimum Private/maximum
	Talking - quiet	Attorneys	—	—	—	—	—	—	—	NC 25–35	0.25–0.30 absorptive		
	Viewing	Attorneys, judge, witness, jurors	—	—	—	—	—	20 min.	warm, direct or semi-direct	—	—		
Witness	Reading	Attorneys	Witness box shelf/ exhibits	6–12	Shelf 4–6 Chair 4–5	7–9	15–20	50–70	warm, direct	NC 25–30	0.10–0.15 reflective	External isolation space (secret witness)	Public/minimum Private/maximum
	Talking - loud	Attorneys, judge, clerk, court reporter	Microphone	—	—	—	—	—	—	NC 25–35	—		
	Viewing	Attorneys, judge, jurors, litigants, court personnel	—	—	—	—	—	—	—	—	—		
Jurors	Reading	Attorneys	Jury box/exhibits	Row 1 floor level Row 2 - 6 in. Row 3 -12 in.	Chair 4–5	5–6	9–11	10–50 variable	warm, direct or semi-direct	NC 25–30	0.20–0.30	Jury assembling or impaneling spaces	Private/maximum
	Talking - loud	Attorneys, judge, clerk	—	—	—	—	—	—	—	NC 25–35	—		

	Viewing	Attorneys, judge, clerk, litigants, court personnel	—	—	—	—	—	5–30 variable	warm, direct or semi-direct	NC 25–35	—		
Court Reporter	Record proceedings	—	Chair, desk (optional) /stenographic machine and tapes	Floor level max. 6 in.	Desk 6–7 Chair 3–4 Machine 1–2	6–8	16–21 (with desk)	50–70	warm, semi-direct	NC 20–25	0.25–0.40 absorptive	Staff officer	Private/limited
	Feed data to computer	—	Desk (optional), chair /receptacle to coaxial cable to computer	—	Desk 6–7 Chair 3–4 Machine 1–2	6–8	16–21 (with desk)	50–70	daylight, direct	NC 25–30	0.25–0.40 absorptive		
	Talking - loud, reading	Judge, attorneys, witnesses	—	—	—	—	—	50–70	daylight, direct	NC 25–30	0.25–0.40		
	Viewing	Judge, attorneys, witnesses, clerk, jurors	—	—	—	—	—	25 min.	—	NC 25–30	—		
Court Clerk	Reading, writing	—	Desk, chair/files, documents, exhibits	6–8	Desk 12–18 Chair 4–5	15–18	31–41	50–70	daylight, direct	NC 25–35	—	Clerk's office	Private/limited
	Talking - quiet	Judge	—	—	—	—	—	—	warm, semi-direct	NC 25–30	—		
	- loud		Microphone	—	—	—	—	—	warm, direct	NC 25–35	0.10–0.15		
	Passing documents	Judge, attorneys	/files, documents, exhibits	—	—	—	—	—	warm, semi-direct	NC 25–35	—		
	Communicating	Judge's personnel, computer personnel	/telephone, C.R.T. Monitor, alarm signal	—	Monitor 3–4	5–6	8–10	50–70	warm, direct	NC 25–35	0.40–0.60 absorptive		
	Recording	—	/recording equipment	—	Desk 4–5	5–6	9–11	50–70	daylight, direct	—	0.50–0.60		
	Viewing	Judge, attorneys, witnesses, jurors, court personnel	—	—	—	—	—	30 min.	warm, semi-direct	—	—		
Bailiff or Court Officer	Calling order	Public, trial participants	Desk (optional), chair/gavel	Floor level max. 6 in.	Desk 6–8 Chair 4–5	6–10	16–23 (with desk)	20–40	daylight, direct	NC 30–40	0.10–0.15 reflective	Staff offices	Private or public/ minimum
	Viewing	Public, trial participants	—	—	—	—	—	30 min.	warm, semi-direct	NC 30–40	—		
	Running errands	Judge	—	—	—	—	—	—	—	NC 30–40	—		
Press	Writing	—	Shelf, chair	Floor level	Shelf 3–4 Chair 3–4	5–8	11–16	30–50	daylight, direct	NC 25–35	0.40–0.6 absorptive	Press room or external spaces	Public/minimum
	Viewing	Public, trial participants	—	—	—	—	—	30 min.	warm, semi-direct	NC 25–35	—		
Public	Viewing	Trial participants	Chair	Floor Level	Chair 3–4	5–8	8–12	5–30 variable	warm, semi-direct or diffused	NC 30–40	0.10–0.20 for ceiling 0.25–0.40 for walls	External spaces	Public/minimum

THERMAL STANDARDS: 72°-74° ET (summer), 69°-71° ET (winter)

quest. Projection screen can be portable or, preferably, built-in.

- If the magnetic board cannot be used as projection screen, then a roll-up screen could be installed above the board, recessed into the wall.
- The angle of vision subtended at the display boards applies also to projected images.
- An electrical outlet should be provided at the expected location of projectors.
- A portable projector stand should be collapsible for easy storage; a built-in stand should be recessed into a wall.
- An x-ray viewer or a shadow box for presenting medical evidence likewise can be integrated with courtroom wall design.
- In the foreseeable future, images of an exhibit may be projected on a movable multi-sided television device suspended from the ceiling at the center of the judicial area. The judge, witness, jurors, attorneys, litigants and the public can all see the same image on their side of the screen. This is analogous to the multi-sided scoreboard used today in sports arenas.

Clock

- An integral part of wall design, the clock should be located opposite the judge's bench.
- All clocks in a court building should be synchronized with a master lock.

Storage

- Space of at least 25–30 sq. ft. should be provided for storage of items such as display equipment and folding chairs. Interior shelves of various depths and heights from floor to ceiling should be adequately lighted–15–20 ft-candles (ft.-c.). Storage space should be locked when not in use.
- Adjoining courtrooms and those with access through a private corridor can share storage spaces.

JUDGES' CHAMBERS (See Table 11, page 61)

- Chambers:
  - are spaces where judges conduct private research, hold conferences, receive visitors, handle correspondence, work on pending cases and relax;
  - may consist of the judge's private chamber, secretary's office, law assistant's office, and judge's toilet, closet and kitchenette (if desirable);
  - in the lower courts may not include secretarial or law assistant's spaces, in which case chambers would be a judge's private office, with or without a separate toilet;
  - should be accessible by private judges' corridor or staff corridor; the public should not have direct access to the judge's chamber.
- The judge's private chamber should:
  - be quite, with low background noise level (room finishings of high sound absorption value);
  - have windows for natural lighting and for visual relief;
  - directly adjoin the secretary's and the law assistant's offices;
  - have an alternate access which enables the judge to enter a judge's corridor without passing through his secretary's office;
  - have walls, ceiling and floor of soundproof construction to aid private conversation and to reduce sound transmission to adjoining spaces;
  - for security reasons, have a work space equipped with an alarm/intercom system as in the courtroom, to notifiy a central security control station of an emergency or security risk.
- The judge's chamber or the secretary's office could open directly into a courtroom.
- When chambers are located on more than one floor away from courtrooms, or when judges are assigned to different courtrooms on a rotating or other basis, small robing rooms usually should be provided behind courtrooms for conferences or work during courtroom recesses.
- Robing rooms on the same floor as private chambers are redundant. Robing rooms and chambers can be combined when both are located on the same floor or one floor above or below courtrooms.
- Judge's and law assistant's work areas should be well-lighted, quiet and finished in colors and textures that create an atmosphere conducive to reading and writing legal documents.
- Judge's conference area, which can be a separate room adjoining his chamber, should be well-lighted with moderately low background noise and with greater contrast in color and texture than the work area.

JURY FACILITIES (See Table 12, page 63)

- The jury system ideally provides the court with an impartial tribunal that is representative of the people.
- The jury deliberates on matters of fact; the judge rules on matters of law.
- Many jurors serve jury duty at personal sacrifice of time and money, and sometimes at the risk of being harmed. They deserve the courtesy of the court, court personnel and trial participants.

TABLE 11

JUDGES' CHAMBERS: DESIGN STANDARDS

Activity	People Involved	Furniture/ Equipment	Area			Color Contrast	Lighting		Acoustics		Access	
			FURNITURE/ EQUIPMENT (sq. ft.)	CIRCULATION (sq. ft.)	TOTAL (sq. ft.)		LIGHT LEVEL (ft. candles)	TYPE	BACKGROUND NOISE LEVEL	AVERAGE ABSORPTION COEFFICIENT	SPACE	ACCESS/ SECURITY
Working: reading, writing	Judge	Desk, desk extension, bookshelves, cabinet, swivel chair/tape recorder, dictation eqiupment	45–50	65–70	110–120	Subdued	50–70	daylight, direct or semi-direct	NC 25–35	0.40–0.50	Courtroom, secretary's office	Private/maximum
Conferring	Judge, staff, visitors	Conference tables,chairs	60–65	110–115	170–180	Subdued	30–50	warm, semi-direct	NC 25–35	0.20–0.30	Conference and work areas	Private/limited or maximum
Informal meeting	Judge, staff, visitors	Lounge chairs, sofa, low tables, lamps, cabinet	45–50	45–50	90–100	Average	20–40	warm, semi-direct	NC 30–40	0.25–0.40	Conference and work areas	Private/limited or maximum
Private: toilet	Judge, visitors	Washbasin, water closet, wall cabinet, shower (optional)	8–20	22–25	30–45	High	30–50	warm, direct	—	0.25–0.40	Work and informal areas	Private/limited
kitchen	Judge	refrigerator, cupboards, sink	12–15	13–15	25–30	High	30–50	warm, direct daylight,	—	0.25–0.40	Work and informal areas	Private/limited
closet	Judge	coat closet	8–10	12–15	20–25	High	10–20	daylight, direct	—	0.25–0.40	Work and informal areas	Private/limited
Secretarial: working reading, writing, typing	Secretary	Desk, typing extension, chair/dictation and office equipment	30–35	50–55	80–90	Subdued	50–70	daylight, direct	NC 30–40	0.40–0.50	Judge's chamber, Law assistant's office, conf. room	Private/limited
filing	Secretary	filing cabinets/data input and retrieval equipment	15–25	20–30	35–55	Medium	50–70	daylight, direct	NC 40–50	0.30–0.40		
receive visitors	Secretary, visitors	lounge chairs, low tables, lamps	15–20	15–20	30–40	Medium	20–40	warm, semi-direct	NC 30–40	0.30–0.40		
Legal research - working: reading, writing	Law assistant,	Desk, chair, bookshelves /dictation equipment	30–35	50–55	80–90	Subdued	50–70	daylight, direct	NC 25–35	0.40–0.50	Judge's chamber, secretary's office, court-room, law library	Private/limited or maximum
conferring	Law assistant, visitors	chairs	7–10	8–10	15–20	Average	30–50	warm, semi-direct	NC 25–35	0.20–0.30		

THERMAL STANDARDS: 72°-74° ET (summer), 69°-71° ET (winter)

- An integrated, directional sign system should be devised to guide prospective jurors to jury assembly spaces.*
- The main jury assembly area should be planned, not as a large space housing row-upon-row of benches, but in small spatial units with movable lounge or office furniture, arranged so as to stimulate interaction between prospective jurors. But the spatial arrangement of this area should not be over-fragmented to the extent that chaotic movement and activity results.
- Adequate space should be provided close to the jury assembly area for jury clerks to call jury panels, prepare jury lists and arrange payment to jurors.
- By carefully planning the location of a jury control station, part of the large jury assembly area in existing buildings can be used as a courtroom after initial assignment of jurors, usually on Monday morning, by using movable partitions and modular courtroom furniture.
- Because some prospective jurors may wait long periods before being called, assembly rooms should be cheerful and spacious and be equipped for activities such as reading, television and games such as chess or checkers.
- Some prospective jurors may desire to do personal work while waiting to be called. Appropriately designed work booths with desk, chair and telephone could provide a quiet environment.
- A telephone-alert system should be implemented in metropolitan courts, whereby busy prospective jurors can be called at home or office to report for prospective jury within 1–1½ hours. Such a procedure, beyond its convenience to the prospective juror, would eliminate much overcrowding of jury assembly spaces and eliminate the need for a large number of private work booths.
- A cafeteria should be provided to serve jurors and court personnel. Separate enclosed spaces could be used by impaneled jurors and by judges. A central kitchen to service this and other courthouse dining facilities is preferred.
- In civil cases (when the jury does not have to be selected in the courtroom), a number of jury impaneling rooms can be centralized around the area where jury panels are called, or be individually located in close proximity to courtrooms. The first approach requires fewer bailiffs or court officers.
- A jury impaneling room has three separate spaces: the prospective jurors' area, the selected jurors' area and the *voir dire* area for the attorneys and clerk. (*Voir dire* refers to questioning of prospective jurors in selecting a jury.)
- All jury inpaneling rooms should be of soundproof construction so that *voir dire* is not disrupted by external noise.
- No impaneling room is necessary in a criminal court because impaneling and swearing-in a jury for criminal cases is conducted in the courtroom before the judge assigned to handle the case.
- Public seating capacity of a courtroom usually is determined by the size of the jury panel. For a 12-man jury, the panel is 25–30 places, and for a 6-man jury, it is 12–15. The trend is toward the smaller juries. In many states, all civil cases are heard by 6-man juries.
- A jury box should be on the same side of the courtroom as the witness so that the attorney questioning the witness will not block the jury's view of the witness.
- A jury deliberation room should be directly and privately accessible from the jury box. The jury should not have to pass in front of the public seating area when moving to the jury deliberation room.
- A jury can spend long periods in deliberation; consequently, spaces should be designed to accomodate a variety of activities and should have windows for visual relief.
- Unless jury deliberation rooms are internal spaces, they should not be located on the ground or main floor where the public can see or even hear jurors or gain access to them—a probable basis for a mistrial.
- An entrance lobby to the deliberation room should be provided for jurors to leave coats and store personal belongings. The lobby should be designed to facilitate a smooth flow of jurors from the courtroom into the jury deliberation room.
- The entrance lobby or a separate lobby adjoining the toilets can serve as a rest area from the jury deliberation room. A 6-ft. couch and one or two chairs can be provided, if space permits. If the lobby is inadequate or unsuitable as a rest room, the toilet space could be made larger to accommodate an airlock containing a bench or couch for resting. Toilets should be well-ventilated and well-lighted (20 ft.-c. minimum).
- If possible, toilets for both men and women should be accessible from the entrance lobby. Direct access to toilets from the jury deliberation room, especially for women jurors, should be avoided whenever possible.
- Toilets can be used as soundlocks between the jury deliberation room and other private and public spaces.
- Whenever possible, jury deliberation rooms should not adjoin attorney conference or witness

*For a detailed description of such a system, see Chapter Six.

TABLE 12

JURY FACILITIES: DESIGN STANDARDS

Activity	People Involved	Furniture/ Equipment	Area			Color Contrast	Lighting		Acoustics		Access	
			FURNITURE/ EQUIPMENT (sq. ft.)	CIRCULATION (sq. ft.)	TOTAL (sq. ft.)		LIGHT LEVEL (ft. candles)	TYPE	BACK-GROUND NOISE LEVEL	AVERAGE ABSORPTION COEFFICIENT	SPACE	ACCESS/ SECURITY
Entry and registration	Summoned jurors, jury clerks	Lounge chairs, side tables, registration counters/office equipment	4–5	4–5	8–10	High	20–30 supplementary lighting	warm, direct or semi-direct	NC 40–50	0.30–0.40	Public space, jury impaneling space, courtroom	Public/ minimum
Assembly and talking	Summoned jurors, jury clerks	Chairs, side tables, informal tables/reading materials	6–7	6–10	12–17	Medium	30–40	warm, direct or semi-direct	NC 35–45	0.30–0.40	All jury assembly spaces	Restrictive/ limited
Watching television	Summoned jurors jury clerks	Chairs/television, screen slide and movie projectors	4–5	7–11	11–16	Subdued	15–30	warm, diffused	NC 40–50	0.40–0.50	General assembly space	Restrictive/ limited
Reading, writing	Summoned jurors	Tables, chairs, bookshelves/books, journals	10–12	10–13	20–15	Medium	40–60	daylight, direct	NC 30–40	0.30–0.40	General assembly space	Restrictive/ limited
Working	Summoned jurors	Table, chair, booth /telephone	13–16	12–14	25–30	Medium	40–60	daylight, direct	NC 25–35	0.30–0.40	General assembly space	Restrictive/ limied
Recreation	Summoned jurors	Tables, chairs/writing materials	6–7	7–11	13–18	High	30–40	daylight or warm, direct	NC 40–50	0.30–0.40	General assembly space	Restrictive/ limied
Dining	Summoned jurors, jury clerks, court officers, jurors	Tables, chairs/utensils	6–7	9–13	15–20	High	20–30	warm, semi-direct, or direct	NC 40–50	0.30–0.40	General assembly space	Restrictive/ limied
Eating (snacks)	Summoned jurors	Tables, chairs or stools/ food, drink, cigarette machines	4–5	4–5	8–10	High	20–30	warm, direct or semi-direct	NC 40–50	0.30–0.40	General assembly space	Restrictive/ limied
Jury panel assembly	Selected jurors, jury clerk, court officer or bailiff	Jury clerk's counter, jury list, jury wheel	—	8–10	8–10	High	30–40	warm, direct or semi-direct	NC 40–50	0.30–0.40	General assembly space	Restrictive/ limied
Impaneling												
- selection	Selected and impaneled jurors, attorneys	Chairs	4–5	4–5	8–10	Medium	30–35	warm, direct or semi-direct	NC 30–40	0.30–0.40	Jury panel assembly space	Private/ limited
- voir dire	attorneys	Table(s), chairs/jury list	15–20	25–30	40–50	Medium	35–50	warm, direct or semi-direct	NC 30–40	0.30–0.40	Public or attorney's entrance	Public or private limited
- clerical	jury clerk	Table, chair/jury list, jury wheel	15–20	20–25	35–45	Medium	35–50	warm, direct or semi-direct	NC 30–40	0.30–0.40	Jury panel assembly space	Private/ limited
Deliberating												
- entry	Impaneled jurors, bailiff	Coat closet, couch	2–3	5–6	7–9	High	20–30	warm, semi-direct or diffused	NC 35–45	0.30–0.40	Courtroom	Private/ maximum
- toilets	Impaneled jurors (men and women)	Water closet (1) and wash basin (1) each for man and women	8–10 per toilet	18–20	26–30	High	20–30	daylight or warm, semi-direct or direct	NC 40–50	0.15–0.25	Entrance lobby of jury deliberation spaces	Private/ maximum
- deliberation	Impaneled jurors	Table, chairs/drinking fountain	6–8	12–15	18–23	Medium	40–60	warm, direct or semi-direct	NC 30–40	0.30–0.40	Entrance lobby	Private/ maximum

THERMAL STANDARDS: 72°-74° ET (summer), 69°-71° ET (winter)

rooms; if they must adjoin, then common walls have to be adequately soundproofed so that raised voices will not be heard.

- All jury spaces, including jury deliberation rooms, should be well-ventilated, air-conditioned, well-lighted and completely soundproof.
- A drinking fountain is essential in every jury deliberation room. It should be recessed and designed as an integral part of the toilet plumbing system.
- Adequate consideration needs to be given the activities and space requirement of the bailiff responsible for security and safety of jurors during jury deliberation. A recessed alcove adjoining the jury deliberation room could be designed for this purpose.
- Where alcove space is inadequate for the bailiff, a seat hinged to the wall with a spring device to raise the seat to a vertical position when unused can be provided outside the jury deliberation room.
- A push button should be provided at the jury foreman's station in the jury deliberation room that, when activated, would start a blinking light and/or buzzing sound at the bailiff station.

GRAND JURY FACILITIES (See Table 13, page 65)

- The major responsibility of the grand jury is to determine whether the district attorney or prosecuting attorney has sufficient evidence on which to prosecute a suspect.
- The grand jury usually consists of 23 persons, although in some states the number is lower.
- Grand jurors normally are selected from petit jurors experienced in serving jury duty.
- Grand jurors usually are impaneled in a courtroom before a judge prior to their reporting for duty at a grand-jury hearing room.
- Grand jurors listen to the assistant district attorney question witnesses and present evidence.
- After deliberation, the grand jury may return a "true bill" enabling the district attorney to prosecute the suspect, or a "no bill" prohibiting further action by the district attorney until sufficient evidence is forthcoming.
- The grand-jury foreman submits a list of determination to the court and the judge issues appropriate court orders.
- Grand jurors should have private, secured access to grand-jury spaces.
- In addition to the grand-jury hearing room, the grand-jury complex consists of a witness waiting area, a grand-jury lounge (if necessary), an office for the assistant district attorney (A.D.A.), and a defendant isolation and conference room.
- All spaces in the grand-jury complex should be closely related to each other. Around a central grand-jury hearing room should be located witness waiting space, grand-jury lounge (if necessary), A.D.A.'s office, and conference room.
- All grand-jury facilities should be properly ventilated, air-conditioned where necessary, well-lighted and reasonably quiet.
- Unless grand-jury spaces are internal, they should not be located on the ground floor where the public can see or even hear the jurors.
- Grand-jury spaces should not be accessible to anyone other than summoned witnesses, court reporters and interpreters.
- All spaces in the grand-jury complex should be of soundproof construction.
- Windows in grand-jury spaces should be provided for visual relief.
- Grand jurors' seating should be arranged in a tiered arc in the grand-jury hearing room, with attorneys, court reporter, interpreter and grand-jury foreman located near the center of the arc for optimum visual and aural reception.
- Another arrangement for the grand-jury hearing room is to locate the A.D.A.'s station behind the grand jurors, with the foreman and witness at the front. By questioning the witness from the rear, the grand jurors' attention is focused on the witness, and the A.D.A. is assured that, if he can hear the witness clearly from the rear, the grand jurors can hear as well.
- An entrance lobby with adequate closet space for personal belongings should be located outside the grand-jury hearing room.
- The grand-jury lounge should be furnished with comfortable armchairs and one or two small tables for writing and conferences.
- The grand-jury lounge should be equipped with a toilet for men and another for women, similar to those in the jury deliberation room.
- The grand-jury lounge should have a drinking fountain, designed as an integral part of the toilet plumbing system.
- The witness waiting room should be controlled and supervised by a warden located between the waiting room and the grand-jury hearing room.
- With careful design, a large witness waiting room can be shared by two or more grand-jury hearing rooms. The entry into each hearing room would be supervised by a court officer.
- The A.D.A's office should be located in close proximity to the A.D.A.'s station in the grand-jury hearing room.
- The A.D.A., court reporter and interpreter should have private and secured access to the grand-jury complex.

GRAND JURY FACILITIES: DESIGN STANDARDS

TABLE 13

Activity	People Involved	Furniture/ Equipment	Area			Color Contrast	Lighting		Acoustics		Access	
			FURNITURE/ EQUIPMENT (sq. ft.)	CIRCULATION (sq. ft.)	TOTAL (sq. ft.)		LIGHT LEVEL (ft.-candles)	TYPE	BACK-GROUND NOISE LEVEL	AVERAGE ABSORPTION COEFFICIENT	SPACE	ACCESS/SECURITY
Entry	Grand jurors, warden	Coat closet, chairs (can be part of retiring room)	2–3	5–6	7–9	High	20–30	warm, semi-direct	NC 30–40	0.30–0.40	Public and private corridor, witness waiting room, grand jury hearing room	Private/limited
Witness waiting	Witnesses, warden	Chairs, desks, side tables/reading materials	4–5	6–7	10–12	Medium	30–40	warm, semi-direct or direct	NC 35–45	0.30–0.40	Entrance lobby, grand jury hearing room	Private/maximum
Grand jury hearing	Grand jurors, A.D.A., court reporter, interpreter	Tiered seats or chairs, writing surface, attorney's table	7–8 16–20	5–7 25–30	12–15 41–50	Medium	50–70	warm or daylight, direct	NC 30–40	0.30–0.40	Witness waiting room, grand jury retiring room	Private/maximum
Grand jury deliberating	Grand jurors	Lounge chairs, side tables	4–5	4–5	8–10	High	20–30	warm, semi-direct or diffused	NC 40–50	0.20–0.30	Grand jury hearing room	Private/maximum
Private: toilet	Grand jurors	Water closet (1), wash basins (2), each for men and women	15–20 (per toilet)	35–40	50–60	High	20–30	daylight or warm, direct or semi-direct	NC 40–50	0.15–0.25	Grand jury retiring room	Private/maximum

THERMAL STANDARDS: 72°-74° ET (summer), 69°-71° ET (winter)

ADMINISTRATIVE AND STAFF OFFICERS

(See Table 14, page 67)

(Administrative and staff offices in office buildings have been covered fully in other reference books and publications, and very few additional guidelines are necessary outside the basic design standards contained in the accompanying table. The spaces are divided into executive and general office, conference spaces, interview rooms and secretarial spaces.)

- Interior office "landscaping" techniques help to define space by means of furniture, planting screens and other movable objects, rather than with traditional partitions and solid walls.
- Employed during the design stage of a facility project, architecture and office landscaping could be integrated to produce a solution that is both functional and spatially pleasing, as well as environmentally acceptable.
- Noise transmission in office landscaping can be alleviated by separating noisy spaces architecturally, without completely isolating them behind traditional walls.
- Office landscaping permits air-condtioning and lighting systems to be simplified and costs to be reduced. Floor-to-ceiling partitions impose certain restrictions on the design and layout of ceiling air-conditioning registers.
- Functional studies of interior landscaping systems show spaces created to be more conducive to office supervision and work, resulting in improved working conditions and attitude. However, no measured data are known to be available to prove that work output increases due to the application of such techniques.

PRISONER HOLDING FACILITIES

(See Table 15, page 68)

- Air-conditioning and ventilating registers and lighting fixtures should be secured in place to prevent their removal and use as weapons.
- Each prisoner holding facility should have a combined wash basin and toilet unit constructed of stainless steel. This unit should be installed along the wall on the corridor side of the facility so that repairs can be made from the outside.
- A prisoner holding facility should be provided for men and another for women behind arraignment and high case-volume courtrooms. In metropolitan criminal courts, separate facilities may be provided for use by prisoners awaiting hearing and those awaiting transfer after hearings.
- Distance of movement of prisoners from temporary detention facilities to courtrooms should be as direct as possible.
- Instead of bars to define the prisoner holding area, alternative designs should be developed and tested. The general atmosphere of these facilities should be cheerful with interesting color contrasts. The area must be designed for ease of supervision and appropriate security.
- Where prisoners have to be transferred from a holding facility on one level to a courtroom on another level, and where a prisoner elevator is not available, the prisoners should not have to be escorted by correction or court officers up or down more than two flights of stairs, one flight being preferred.
- Adequate secured interview spaces should be provided for attorneys to interview their clients.
- Security measures should be taken to avoid the passage of weapons and drugs into the prisoner holding facility. This is especially important in visiting spaces where relatives visit prisoners.
- All prisoner holding facilities and secured interview spaces should be properly ventilated, well-lighted and reasonably maintained.
- Prisoner holding facilities adjoining courtrooms entered by prisoner secured access should be designed as compactly as possible to minimize distances between these facilities and the courtrooms and detention facilities.
- The prisoner should enter the courtroom as close as possible to his station at the defense attorney's table.
- Defense attorneys should have easy access to the prisoner holding facility behind the courtroom to interview clients in spaces provided for this purpose.

TABLE 14

ADMINISTRATIVE AND STAFF OFFICES: DESIGN STANDARDS

Activity	People Involved	Furniture/ Equipment	Area			Color Contrast	Lighting		Acoustics		Access	
			FURNITURE/ EQUIPMENT (sq. ft.)	CIRCULATION (sq. ft.)	TOTAL (sq. ft.)		LIGHT LEVEL (ft.-candles)	TYPE	BACK-GROUND LEVEL NOISE	AVERAGE ABSORPTION COEFFICIENT	SPACE	ACCESS/SECURITY
Executive working	D.A., Legal Aid, Probation, Youth Counsel Bureau, police officers, clerk's office	Desk, desk extension, bookshelves, cabinet, swivel chairs/dictation and office equipment	45–50	65–70	110–120	Subdued	50–70	daylight, direct	NC 25–35	0.30–0.40	Private and general offices	Private/limited
Informal meeting	D.A., Legal Aid, Probation, Youth Counsel Bureau, police officers, clerk's office	Lounge chairs and sofa, low tables, cabinets	45–50	45–50	90–100	Average	25–40	warm, indirect	NC 30–40	0.25–0.40	Work spaces	Private/limited
Private working	D.A., Legal Aid, Probation, Youth Counsel Bureau, police officers, clerk's office	Desk, chair, book-shelves /dictation equipment	30–35	50–55	80–90	Average	50–70	daylight, direct	NC 25–35	0.30–0.40	Executive and general offices	Private/limited
General working	D.A., Legal Aid, Probation, Youth Counsel Bureau, police officers, clerk's office	Desk, chair, book-shelves/office equipment	25–30	40–45	65–75	Average	50–70	daylight, direct	NC 35–45	0.30–0.40	Private offices	Public or private/ minimum
Conferring	D.A., Legal Aid, Probation, Youth Counsel Bureau, police officers, clerk's office	Conference table, chairs (8 persons)	55–65	95–100	150–175	Subdued	30–50	warm, semi-direct	NC 30–40	0.20–0.30	Executive and private offices, public spaces	Private or public/ minimum or limited
Interviewing	D.A., Legal Aid, Probation, Youth Counsel Bureau, police officers, clerk's office	Table, chairs (interviewer and 2-3 persons)	25–30	45–50	70–80	Subdued	30–50	warm, direct or semi-direct	NC 30–40	0.20–0.30	Private and general offices, public spaces	Private or public/ limited or secured
Private secretarial -typing	Secretaries, typists	Desk, typing extension, chair/dictation and office equipment	30–35	50–55	80–90	Medium	50–70	daylight, direct	NC 30–40	0.40–0.50	Executive and private offices	Public or private/ limited
-filing	Secretaries, filing clerks	filing cabinets/data input and retrieval equipment	15–25	20–30	35–55	Medium	50–70	daylight, direct	NC 40–50	0.30–0.40		Public or private/ limited
-receiving visitors	Secretaries, visitors	Lounge chairs, low tables/reading materials	15–20	15–20	30–40	Medium	20–40	warm, semi-direct	NC 30–40	0.30–0.40		Public/limited or minimum
Examination	Medical and psychi-atric personnel	Desk, chairs/ examination equipment	50–60	100–110	150–170	Subdued	70–100 or higher	daylight, direct with special lighting	NC 25–35	0.20–0.30		Private/secured

THERMAL STANDARDS: 72°-74°ET (summer), 69°-71°ET (winter)

TABLE 15

PRISONER HOLDING FACILITIES: DESIGN STANDARDS

Activity	People Involved	Furniture/ Equipment	Area			Color Contrast	Lighting		Acoustics		Access	
			FURNITURE/ EQUIPMENT (sq. ft.)	CIRCULATION (sq. ft.)	TOTAL (sq. ft.)		LIGHT LEVEL (ft.-candles)	TYPE	BACK-GROUND NOISE LEVEL	AVERAGE ABSORPTION COEFFICIENT	SPACE	ACCESS/SECURITY
Prisoner holding	Prisoners, correction, police and court officers	Cells, fixed seating, fixed water closet and wash basin	3–4 per person	6–8 per person	9–12 per person	Medium	25–30	warm, semi-direct	NC 40–50	0.40–0.50	Courtroom	Secured/maximum
Interviewing	Defendant, attorney, probation officer, and Youth Counsel officers	Table surface in booths, chairs	10–12	30–33	40–45	Medium	30–40	warm, direct or semi-direct	NC 30–40	0.20–0.30	Courtroom detention facility	Secured/maximum

THERMAL STANDARDS: 72°-74°ET (summer), 69°-71°ET (winter)

TABLE 16

OTHER COURT RELATED FACILITIES: DESIGN STANDARDS

Activity	People Involved	Furniture/ Equipment	Area			Color Contrast	Lighting		Acoustics		Access	
			FURNITURE/ EQUIPMENT (sq. ft.)	CIRCULATION (sq. ft.)	TOTAL (sq. ft.)		LIGHT LEVEL (ft.-candles)	TYPE	BACK-GROUND NOISE LEVEL	AVERAGE ABSORPTION COEFFICIENT	SPACE	ACCESS/SECURITY
General office	Clerks, court personnel, departmental staff, (Probation, Legal Aid, etc.)	Desk, desk extension, chairs, book shelves, filing cabinets/dictation and office equipment	25–30	40–45	65–75	Medium to high	50–70	daylight, direct	NC 35–50	0.30–0.40	All court departments	Public and private/minimum to limited
Interview and conference spaces	Departmental staff, court personnel, defendant, relatives, attorneys	Table or desk, chair, coat closet/recording equipment (if needed)	6–8	12–15	18–23	Subdued to medium	30–50	warm or daylight, direct or semi-direct	NC 30–40	0.30–0.40	All public and court spaces	Public and private/minimum to limited
Secured interview spaces	Defendant, attorney(s), correction officers	Table surface (barrier optional), chairs	5–6	15–17	20–23	Subdued	30–40	warm, semi-direct	NC 40–50	0.30–0.40	Correction spaces (prisoner) public spaces (attorneys)	Private and secured/maximum
Prisoner holding facilities	Defendant, correction officers	Fixed row seating/ water closet and wash basin	3–4	6–8	9–12	Subdued	25–30	warm or daylight, direct or semi-direct	NC 40–50	0.20–0.30	Correction spaces	Private and secured/maximum

THERMAL STANDARDS: 72°-74°ET (summer), 69°-71°ET (winter)

CHAPTER FOUR

MANPOWER PROJECTION AND PLANNING

Compared to the bewilderingly rapid changes in those societal, legal, procedural, and technological processes which determine both court input and operating capability, courthouse structural lifetimes have proved to be quite long. For a facility to truly serve its intended functions during this period, its planners must match structural lifetime with a useful functional lifetime by projecting functional and space requirements to permit a design flexible enough to accomodate change. In simple terms, given certain design standards relating spaces to functions and operations performed within them, functions (i.e., the work the court does) lead to operations (i.e., how the court does its work) and operations lead to manpower and space requirements.

But planners are not omniscient. Functional requirements are related to court input and, thus, to the continuum of variable processes, but the exact nature of the relationship is difficult to discern qualitatively, let alone quantitatively. A projection technique accurate enough to be relied on of itself has yet to be found.

Projection techniques are probabilistic, not determinate; their results have only a likelihood, not a certainty, of being accurate. Unless plans based on projections allow for contingencies, the effectiveness of judicial facilities over their lifetimes cannot easily be maintained.

With that point always in mind, this chapter presents approaches found useful in developing a method to project 30-year facility needs for the New York County courts. Included are the underlying assumptions, the steps to be followed in a systematic analysis, and some sample numerical procedures.

WHAT IS MANPOWER PLANNING?

The ability to coalesce an organization's resources in programs to achieve the organization's objectives is an integral part of all effective management. The three principal resources of any organization are finances, materiél and staff. Organization programs must be planned, administered and directed toward fulfilling objectives through the appropriate acquisition and retention of these resources.

The discipline of manpower planning—the projection of future manpower requirements to carry out organizational policies and programs—fulfills a vital role in determining organizational objectives. Manpower needs must be estimated with some degree of accuracy in terms of the number, education and capability required of workers at a given future time and place. Manpower estimates typically are derived from theoretical analyses of programs and policies, from a composite picture of employees' capabilities and from general organization experience in the realm of manpower and work output. Manpower planning estimates usually involve comparing future requirements to projected supply to meet those requirements. Necessary staffing for projected new policies and programs must be added, and attrition expected within existing manpower supply subtracted, in arriving at reasonable estimates. The final result should be a series of action plans designed to fill anticipated projected gaps between manpower requirement and supply.

In approaching any manpower planning study, the analyst first must have a thorough understanding of overall manpower flow into and out of an organization, the uses being made of current staff and existing manpower problems. Data gathering and subsequent analysis must account for the expected effects of future changes in program and policy. The resulting manpower plan must be an amalgam of current operating conditions, adjusted to current optimum manpower use and contemplated changes in the system.

WHY MANPOWER PLANNING?

Conscientious manpower analyses, beyond fostering development of appropriate recruitment schedules and techniques, are prerequisites to formulation of adequate space requirements. Because government facility renovation and new construction often is bound up in political considerations, and because of restrictions upon municipal budgets throughout the country, estimates of future manpower requirements for the courts must be performed well ahead of the time space is needed for expansion. In studies of court and law-enforcement facilities, manpower analyses help give direction to spatial research, evaluation, analysis and final recommendations.

Manpower analyses and projections for the Courthouse Reorganization and Renovation Program in New York City were made on various jurisdictional levels: Supreme, Criminal, Civil, Family and Surrogate's courts and their supporting agencies. Manpower studies for each court span a 30-year period, from 1970 through 2000, and include projections for every employee classification in five-year intervals.

MANPOWER STUDY METHODOLOGY

The methodology described in this chapter was used by a manpower planning team assigned to the New York study by the Port of New York Authority. It provides a basis for undertaking similar studies at other locations, particularly in urban areas.

Define Scope and Approach. The overall program director should meet initially with the manpower planners or planning team to define scope of involvement. In a study of several courts, manpower analyses and projections may be required for each court. Time limitations placed upon manpower studies within the overall program schedule will determine depth of investigation and extent of detail in findings. The accuracy and detail desired for the manpower study depends upon the accuracy and detail required of the overall program. In arriving at this determination, general space conditions can be a guide. For instance, when the amount of available space is thought to be much greater than required for future court expansion (but poorly allocated), the degree of accuracy of manpower projection would not be so critical as when available space is at a premium, or when a new court building or complex is being planned.

But, whatever the depth and breadth decided upon, it is essential that manpower projection studies be carefully phased to dovetail with the spatial study. The space planning team must be familiar with assumptions made and techniques used to correctly interpolate manpower data.

Conduct Orientation, Background Studies. In analyzing court personnel requirements, the manpower study team should concentrate its efforts on the smallest possible working units. Manpower analysis should begin with an introductory visit to each court and its ancillary agencies. All available reading material relating to facility functions and activities should be obtained and studied. Budget documents and personnel rosters, both current and historical, should be reviewed as to manpower levels, functions and staffing mix, and previous studies, if any, should be examined. At this juncture, interviews with one or more senior staff members in each department or unit should be conducted, structured to allow the manpower analyst to develop a closer insight into activities and to clarify questions arising from analysis of written materials. Additional sources of information can be solicited, including historical workload statistics of both a general and specific nature. Past position justification memoranda are important elements of this early-phase research.

Continued analysis of information gathered will help to answer whether activity questionnaires need be distributed to obtain a detailed breakdown of how individual employees use their time.

Staff vacancies should be reviewed and analyzed as to their necessity and their likelihood of being filled. Historical growth of each department or unit should be analyzed, and an attempt made to define reasons for growth. Present staff use can be determined through discussion, observation and written surveys. Ultimately, the principal factors incumbent

upon future staff requirements can be isolated and evaluated as to their continuing relevance. These factors then can be translated into a basic profile of future staff requirements by employee classification.

Because determination of spatial and environmental requirements is function-oriented, this initial examination should reveal any major conflicts, delays and problems which, if pinpointed, could significantly affect facility manpower requirements. Eventually, by establishing functional relationships among major components of the judicial system, manpower planners can assess departmental priorities and relative input of each department in handling and disposing of cases.

Compile Research Data. Of great pertinence in a court manpower study is an evaluation of responsibilities and performance of personnel throughout the system. Manpower planning and projection questionnaires may vary for each court studied because the character of each court differs. Regardless, each questionnaire should be coordinated and encompass overall research. A questionnaire can be constructed in distinct sections for the convenience of each study group, although the data compiled eventually will be organized and analyzed in an interrelated manner. By using this approach, conflicting information obtained in interviews can be minimized. A manpower projection questionnaire can be used as an aid to:

1. Identify current staffing levels for all classes of employees.
2. Evolve staffing levels from recent past (say, five years) to present.
3. Determine rationale upon which requests for additional manpower are and will be based.
4. Determine functions and responsibilities for each manpower classification.
5. Investigate and evaluate staff productivity and utilization.
6. Evaluate value and capability of departments or units, and determine whether any can be consolidated.
7. Identify duties which could be performed by other classes of personnel.
8. Discern limiting factors on staff size, such as financial, spatial, procedural, time and legal.
9. Obtain work schedules for assessing amounts of sick leave, vacations, holidays and shift coverage.
10. Incorporate, in manpower requirements, anticipated effects of proposed legal and procedural changes in court administration.
11. Define plans for internal procedural changes.
12. Define existing case or work backlog.
13. Project future caseload and determine how it will affect staffing of units or departments.
14. Suggest improvements in staff utilization.
15. Make advance forecast of staff and other requirements, with relevant rationale.

In most cases, a straight-line projection of manpower requirements, based on historical growth alone, is extremely inaccurate. If most courts were to continue to function as they have in the past, they would not be able to handle projected increased caseloads based only on projected population. Straight-line projections may indicate a doubling or tripling of judicial and support personnel within a decade when, in fact, such expansion may be excessive. Alternative solutions are needed to modify and level off rapid caseload growth, thereby reducing lengthy delays in hearings and trials.

In analyzing court operations and personnel, manpower planners should probe the basis on which a department or unit functions, as well as how staff is organized and its responsibilities. When appropriate, questions should be raised concerning the location of a department or unit within a facility, an approach that may result in recommendations for personnel changes.

Manpower studies in the Criminal Courts Building in New York City, for example, revealed that including a psychiatric clinic as part of the administrative office of the court and locating it physically in the building was questionable. To help assure the clinic's objectivity in evaluating cases and in making recommendations to the court, it would seem appropriate, at least from the defendant's standpoint, for it to function independently outside the court building. Similarly directed questions can be raised on the advisability of locating legal aid and social agencies in court buildings. Departmental space assignment in court buildings should be based on factors beyond mere operational efficiency; allocation should refer to legality, propriety and other factors affecting the administration of justice.

An aspect of manpower projection analysis that requires a significant amount of time and effort is measuring and assessing performance of existing personnel. By observation, interviews and measurement over a period of time, standards of work output or performance level can be established for assessing staff capacity. For example, if a department handled

500 cases in 1967 and, with the same size staff, only 400 cases in 1970, and about 400 in the two intervening years, it could suggest that the staff has been working at 80 percent capacity. If caseload over the next 10 years is projected to increase 20 percent, it can be assumed that size of the existing staff will be adequate to handle total projected caseload without additional staff. However, the rationale behind hiring staff and measuring its performance on the kinds of cases handled may reveal a need to increase staff size slightly over the 10-year period. In other words, performance measurement, accounting for factors affecting it, will refine the accuracy of manpower projections.

Establish Assumptions. Establishing realistic assumptions on which manpower projections, in part, are based can be a difficult task. In some procedural areas, the process is akin to crystal-ball gazing. However, an experienced analyst will spare no amount of effort in establishing assumptions to limit uncontrolled variables affecting projections. For example, there is a trend toward removing from criminal courts traffic violations, building-code violations and other minor offenses, placing them, instead, under an administrative tribunal system. Another example can be found in some civil courts where rapid inflationary growth is forcing an increase in jurisdictional monetary limit. Each assumption will influence projected caseload.

Considerable skill enters in determining approximate dates assumptions are expected to be implemented. Legislators, administrative judges and court administrators, as well as attorneys involved in judicial reform, can shed light on factors influencing anticipated procedural and other changes, and their probable effective date.

For example, if a bill on judicial reform is before a legislature at the same time a court space study is in progress, it would be useful to interview legislators, judges and administrators as to the likelihood of the bill's passage and its expected affect on the judicial system. The highest administrative office of the state courts should have in-house management capability to supply such essential information to manpower analysts and space planners to assure uniform and complete assumptions.

Several assumptions may be applicable in many states where court and related facility manpower and space studies are being contemplated:

- A trend toward greater centralization of judicial and law-enforcement facilities, and more decentralization of court-related social agencies to local communities where most "clients" of these agencies live and work.
- Increased emphasis on treatment and rehabilitation of prisoners, in particular those with psychiatric problems.
- Removing from the courts so-called "victimless" offenses, which, more than ever before, may be handled and processed by social and administrative agencies. Such offenses include prostitution, some forms of gambling and housing-code violations.

"Victimless" offenses now constitute a major portion of criminal court workload. Their eventual removal from the court would substantially affect manpower projections for departments handling such cases. With a potential reduction in caseload and manpower needs, space requirements, including courtrooms and ancillary facilities, may also decrease.

Another significant trend affecting manpower studies is the growing application of sophisticated management tools to expedite case dispositions, coupled with new legislative rulings specifying a limit on the period of time between arraignment and trial.

The increasing use of computer technology and electronic data-processing for information storage and retrieval will mandate more specialized personnel, including programmers, analysts and operators. Even now, the courts are relying on planners and coordinators to effectively marshall these resources in managing judicial, administrative and other operational procedures.

Simplification of court procedures, growing out of case overload and promoted by improved management techniques, is another assumption vital to manpower projections. For example, probate and estate case procedures are being simplified, with adequate legal safeguards, to relieve the courts of the need to process non-judicial matters or those on which a determination can be made without court intervention.

The creation of new courts and new types of cases is a possibility that cannot be ignored in establishing manpower projection assumptions. The recent creation of a special narcotics court in New York City to handle only felony narcotics cases is but one example. Additional personnel required to operate such courts has to be taken into account during a manpower projection study, prior to the court's inception.

Among factors requiring detailed evaluation at the local level are the specific calendaring and case

assignment system adopted by the court, use of manpower, possible consolidation of trial courts and major delays in case disposition. Even when trends can be pinpointed, an "adjustment factor" should be used to accommodate other potential legal and procedural changes; alternative projections being made for each assumption.

Having established the assumptions to be used in projecting manpower needs, based on research and interviews with key judicial and administrative personnel, it is essential to verify these assumptions with the agencies responsible for implementation of changes in the court system. Agency personnel usually can provide the approximate projected dates that assumptions will become effective.

Project Manpower Needs. Manpower projections, based on research and assumptions (see following sample. calculation), can be either short- or long-term. Short-term projections for five years beginning in the fiscal year after the study usually can be calculated fairly accurately, based on existing and anticipated workloads, economic conditions and the political influence of the agency. The longer the period allowed for manpower projection, the more variable would be assumptions. However, because estimated useful life of a building today is 50 years—especially so for public buildings like courthouses designed and erected for a specific need—it is essential that projections, within known possible future administrative and operational changes, be for a long-term period of 30 years and be reviewed periodically every five or ten years.

In subsequent space projections based in large part on projected manpower requirements, each personnel classification should be assigned a space standard per person in square feet. Combining total work area with departmental spaces (such as conference rooms, storage spaces and visitors' spaces), circulation space, and staff amenities (such as restrooms and lunch rooms), total space requirement for each department can be accurately computed. Separate projections are usually conducted for courtrooms and ancillary spaces.

After projecting manpower for each department or unit, it is important that projections be verified by department heads. Preliminary projections can be modified, based on any new assumptions.

APPLYING THE METHODOLOGY TO INDIVIDUAL COURTS

Manpower planning for the Courthouse Reorganization and Renovation Program in New York City was concerned with needs of Criminal, Civil, Supreme (both Criminal and Civil Terms), Surrogate's and Family courts. Ancillary agencies with operations directly affecting court manpower requirements and required to be located near courtrooms, also were analyzed. These agencies included departments or offices of the prosecuting attorney, legal aid, correction, probation and several smaller agencies engaged in court-related activities. For each court department or agency, the general manpower planning techniques previously discussed were modified to suit the department or unit's particular operating criteria. What follows is a summary of the approach and techniques used in these studies.

The New York Approach. In the New York County Criminal Court, manpower analysis began by reviewing population characteristics, past and present, of the county and surrounding areas, the principal source being the 1960 and 1970 "Census Reports" published by the U.S. Department of Commerce. In addition to straight head-count figures, these reports present population data under major demographic categories such as sex, age, education level, race, occupation, income level, marital status and nationality. The underlying basis for analyzing population characteristics is the assumption that levels of crime relate, on an historical basis, directly to specific characteristics of local population. (Every effort should be made to account for variables such as rising income and educational levels which could alter the historical picture in the future.) It is assumed that, if expected population mix can be projected, then a reasonable basis will result from which levels of crime can be predicted. Crime levels can be directly related to workload of a criminal court and its ancillary units and, in turn, to manpower requirements.

The "Uniform Crime Reports," published annually by the Federal Bureau of Investigation, provides a useful index of population characteristics which seem to be reliable barometers of crime. Population characteristics which can be considered major indicators of crime are: head count, sex, age, income, race and housing density.

Expected local variance in these factors can be developed by analyzing local statistical changes in these characteristics between 1960 and 1970. Concurrently, criminal court caseload can be isolated by the type of crime—first into the three major categories of felony, misdemeanor, and violation, and second, into specific variations within each

category. The "Uniform Crime Reports", then can be consulted as to recent and current trends in each specific category of crime, as reported for U.S. cities of 250,000 or more population (or cities of comparable size in relation to the locale of the court system under study).

For example, historical caseload in a city may show an increase of felonious assault charges of 10 percent over the past 10 years. At the same time, the FBI report may show that, in recent years, 85 percent of felonious assault arrests in municipalities of comparable size were committed by adult males over the age of 25, with a 50–50 mix between Caucasian and Negro perpetrators, and there may be discernible patterns of income level. This data then would be evaluated in light of a characteristic profile developed for the geographical area. This profile may show that male adults over age 25 were expected to decrease in number by 10 percent over the next few years and the male/female ratio and Caucasian/Negro ratio were expected to remain constant. The assumption here is that the principal factor contributing to local felonious assaults in the future would be the number and proportion of male adults over age 25. Extrapolating information regarding felonious assaults for large cities may indicate a 30 percent increase in this type of crime; however, this percentage must be evaluated against the expected 10 percent local decrease of male adults over age 25. The resulting analysis might yield a projection that the number of felonious assaults committed in the near future would be something less than the 30 percent increase trend given by the FBI report (Table 17, page 75).

Short-term projections can also be made for each category of crime, leading ultimately to a projection of the number of arraignments anticipated for the local criminal court. Arraignments can be quantitatively related to workloads for judges, prosecuting attorneys, legal aid attorneys, probation officers and corrections officers. Finite statistical information used in projecting manpower requirements would be taken from future trends likely for each type of crime, estimated in five-year intervals. Individual caseload capacities in ancillary units, such as offices of the district attorney and the public defender, can be computed using past performance records.

Projected criminal court manpower requirements must account for police arrest policies and administrative criteria for placing cases on calendars. Court statistics should show the average number of cases heard or tried in individual court parts. Current backlog in the court should be taken into account, and provision made in the manpower projection for staff adequate to hold this backlog to reasonable levels. Finally, caseload prediction must be modified in the light of any projected legal or procedural provisions, as discussed earlier in this chapter. In such instances, pertinent caseload data must be subtracted from expected future caseload and appropriate allocations made outside the criminal court.

Current and projected data relating societal factors in the general population to crime, if available, will effect facility manpower projections. Such factors could include rising levels of education, improved job opportunities, and so on. (No such data was available to the manpower planners on the Courthouse Reorganization and Renovation Program staff.)

Background for Projecting Criminal Court Caseload. To usefully project criminal court case inputs through the lifetime of a courthouse, three contributions are needed:

- A theory of projection
- Specific local quantitative data
- Comprehensive quantitative data (usually of national and regional scope).

U.S. Census information is fundamental to all population-related factors in projection, and forms the quantitative base of all projections. Generally, the comprehensive national and regional information also will have been used in deriving local data, supplemented by information specific to the jurisdiction being studied. If numerical projective data are inaccurate, caseload projections so derived are likely to be unreliable.

Long-Term Projections of Criminal Court Caseload. Attempts to predict crime rates can be based on combinations of two approaches derived from one general theory.

Approach 1: Suppose it is possible to identify a criminal population segment, call it the CPS, consisting of that segment of the total population responsible for committing the significant portion of all crimes. If the size of the CPS can be projected, then the total crime rate can be projected, assuming no important change in the criminal propensity of the CPS or the remainder of the population.

Approach 2: Suppose the crime rate, which might conveniently be defined as the annual number of reported crimes, is well in excess of the arrest

TABLE 17

NATIONAL CRIMINAL PROFILE

BASED ON DATA FROM FBI 'UNIFORM CRIME REPORTS'

CATEGORIES OF CRIME	RATE OF ARREST PER 100,000 IN CITIES WITH POPULATION OVER 250,000	% INCREASE OR DECREASE OF ARRESTS ALL AGES 1960–69	% CHANGE OF ARRESTS BY SEX 1960–60		% OF DEFENDERS BY SEX 1969		ARREST TRENDS BY AGE IN CITIES OVER 250,000 POPULATION GROUP 1969				% OF ARRESTS BY RACE IN CITIES OVER 250,000 POPULATION 1969		
		% INCREASE	MALE	FEMALE	MALE	FEMALE	"A" 1–14	"B" 15–17	"C" 18–24	"D" 25–OVER	WHITE	NEGRO	OTHERS
1. Homicide													
A. Murder and Non-Negligent Manslaughter	16.2	83.6	87.3	65.4	84.8	15.2	1.5%	8.6%	32.8%	57.1%	30.7	67.4	1.9
B. Manslaughter by Negligence	2.4	4.4	3.3	13.8	89.8	10.2	.1	7.5	35.9	56.5	67.0	30.9	2.1
2. Forcible Rape	17.8	56.6	56.6		100.0	--	4.2	17.2	43.6	35.0	41.1	57.0	1.9
3. Robbery	124.2	95.3	92.2	155.8	93.8	6.2	12.4	22.2	42.5	22.0	29.1	69.1	1.8
4. Aggravated Assault	133.4	54.1	57.0	37.3	87.4	12.6	5.7	11.5	30.1	57.3	44.6	53.6	1.8
5. Burglary	245.2	52.0	50.2	104.7	95.6	4.4	26.4	28.0	28.7	16.9	58.8	39.4	1.8
6. Larceny-Theft	443.0	83.9	61.7	196.3	73.5	26.5	28.9	25.4	23.9	21.8	63.6	34.4	2.0
7. Auto Theft	143.8	73.5	70.4	154.9	94.7	5.3	16.5	42.3	29.3	11.9	57.5	39.8	2.7
Violent Crime	291.6	69.2	70.6	57.2	90.4	9.6	7.9	15.7	35.7	40.7	38.0	60.2	1.8
Property Crime	832.0	72.0	59.1	184.9	82.9	17.1	26.5	28.5	25.9	19.1	61.4	36.5	2.1
Other Assaults	247.9	54.6	50.3	94.6	87.9	12.1	7.4	10.9	28.7	53.0	56.3	41.8	1.9
Arson	7.7				90.9	9.1	46.8	18.3	32.9		65.9	32.9	1.2
Forgery and Counterfeiting	34.0	31.1	20.8	83.9	77.3	22.7	2.6	9.3	41.6	46.5	64.8	34.2	1.0
Fraud	42.6		30.5	156.2	73.8	26.2	1.9	4.0	30.1	64.0	70.1	29.1	.8
Embezzlement	3.5	49.6			79.2	20.8	.1	3.6	31.1	65.2	72.9	26.8	.3
Stolen Property	58.0	263.1	263.1	262.7	91.5	8.5	11.0	21.5	35.9	31.6	56.4	42.4	1.2
Vandalism	79.6				92.7	7.3	49.4	24.7	13.8	12.1	74.6	23.9	1.5
Weapons	113.0	117.2	114.7	159.8	93.5	6.5	4.6	12.8	32.5	50.1	44.0	54.4	1.6
Prostitution	99.1	61.0	14.2	80.1	20.4	79.6	--	1.9	56.6	41.5	30.8	68.2	1.0
Sex Offenses	57.2	(17.2)*	(12.2)	(39.4)	86.9	13.1	8.8	12.9	28.7	49.6	72.6	25.1	2.3
Narcotic Drug Law	292.4	491.9	487.6	516.7	84.5	15.5	3.5	21.3	51.4	23.8	73.9	24.5	1.6
Gambling	148.9	(42.9)*	(42.3)	(48.6)	92.2	7.8	.3	1.9	12.7	85.1	25.7	69.8	4.5
Off. Against Family & Children	30.4	(3.6)	(5.1)	13.3	90.8	9.2	.3	1.4	31.4	66.9	60.6	38.1	1.3
Driving Under the Influence	278.5	73.3	72.4	86.5	93.7	6.3	--	1.0	18.6	80.4	79.0	19.3	1.7
Liquor Laws	81.5	61.6	65.2	41.1	87.2	12.8	2.9	30.3	47.7	19.1	84.3	13.5	2.2
Drunkenness	1378.2	(13.6)*	(12.8)	(23.9)	92.9	7.1	.3	2.4	13.5	83.8	72.1	21.9	.6
Disorderly Conduct	621.1	7.7	6.1	17.8	85.6	14.4	7.2	13.1	31.6	48.1	60.7	36.1	3.2
Vagrancy	163.7	(34.0)*	(36.9)	1.6	88.6	11.4	1.8	8.5	32.9	56.8	73.3	24.4	2.3
All other Offenses	467.3		45.5	104.6	84.5	15.5	12.9	19.4	30.8	36.9	70.6	27.4	2.0
(Less Traffic)		54.6			85.1		5.8	17.1	43.2	33.9	53.1	46.1	.8
Suspicion	124.7	(19.1)*											
Curfew and Loitering Law Vio.	81.7		(23.0)	13.2	79.9	14.9 20.1	26.2 40.5	73.8 59.5	-- --	-- --	75.7 80.8	21.9 16.6	2.4 2.6
Runaways	106.8				48.7	51.3							
Total	5,514				86.3	13.7	9.9%	15.6%	25.2%	49.3%	66.7	30.1	3.2

*% decrease in parenthesis.

rate—as is the case in most, if not all, large jurisdictions. Then, arrest rate can be taken as a dependent variable determined by police performance, for example, annual arrests per sworn patrol officer. For purposes of projection, arrest rate then would be given by police performance, independent of crime rate, assuming no significant reduction in the ratio of reported crime to arrests.

In the general theory on which these approaches are based, criminal court case input is determined by the number of police arrests, arrests depend on the number of reported crimes, crime reports depend on the number of definable crimes committed, crimes are committed by a number of criminals (i.e., persons fitting a criminal profile), and the number of criminals depends on the fraction of the general population fitting the criminal profile. The latter we have called the CPS. Thus, criminal court case input depends, ultimately, on the size of the CPS. If the total population and its fraction constituting the CPS can be projected, then the size of the CPS and, finally, the criminal court case input can be projected through all the intervening correlations.

The theory is convenient and relatively effective for projections in the short-term during which statistics hold sufficiently constant. But even over the 10-year period basic for all population projections, gross projective errors are not uncommon.

For example, six-year projections of total population for a major U.S. city, made by a respected university center of population studies, were in error by 6 percent compared to 1970 U.S. Census enumerations. An error of 6 percent in predicting caseload over a six-year interval is probably not of consequence, but if projection techniques are based on such data, the inaccuracy of long-term projections may be consequential.

It is not difficult to see the deficiencies of either approach as a means of accurate projection of crime rate.

Developing a criminal profile which accurately predicts the "who," "against whom," "when," "where," and "how" of crime has occupied criminologists, psychologists, sociologists, law-enforcement personnel, and mystery writers for many years. It is a fascinating subject. Unfortunately, the key to the jigsaw puzzle of criminal behavior has not yet been found, although many pieces have been identified. Enough is known to realize the magnitude of the problem and diversity of its contributory elements, and to understand the statistical unreliability of any projection method.

A simple test is to collect crime data for the last 50 years and separate it into the last 30 years and the previous 20. Using only the data for the first 20 years, project the data of the next 30 and compare the results to the actual situation. Granted that the last 50 years in American society have been a time of tremendous fundamental change, can it be said that convulsive change is now over, that life has stabilized into 30-year predictable patterns? Unless it has stabilized, how can accurate projections be made?

Major operative factors in crime have been identified for several years. Without reference to possible causal relationships, they include: drug use, age group, income level, residence location, color, and sex of offenders. To project crime rates it is necessary to account for these factors by projecting whether they will retain their present statistical significance in the overall fabric of American life.

A frequent technique used to project arrest rates is to examine a jurisdiction's history of arrests and determine one factor common to most cases. The factor then is projected by whatever means are at hand, and arrest rates are associated solely with these projections. For large jurisdictions this can be done by examining annual police reports, which usually are organized to correspond to the FBI Uniform Crime Reports. Normally, these data are arranged into categories including age, sex, and color of arrestees, although some also include locations of crimes and residences of those arrested. In any event, the number of categories is so few that correlations virtually are forced on the analyst. Given that age and sex are generally accepted criteria for assigning type and incidence of offenses, what other valid predictors are apparent in the data?

Some offenses are usually committed by juveniles, among them truancy, in-school vandalism, and being in need of supervision. Other offenses are defined in terms of the offender's age or sex. Others possibly are more typical of the customs of one population segment, but assumptions of this type are particularly vulnerable to change. From the viewpoint of statistical prediction, however, it is still necessary to correlate cause with effect and to evaluate variations in cause over a period of time in order to project crime data. In other words, simply defining truancy as a juvenile offense does not determine the future rate of truancy, nor does extrapolating historical truancy rates forward from today take account of any underlying influences on truancy rates. Unless the

possible existence of self-regulating processes is examined, for example, we would have to look forward to a time of complete non-attendance in the public schools.

One determinant of crime rate which is possibly more reliable and constant than others is, unfortunately, not readily quantified: the public's definition of deviant behavior and its attitude towards offenders. Evidence is ample that behavior tolerated in one person or group is unacceptable to the majority when exhibited by another person or group. Measured against a 50-year courthouse structural lifetime, public attitudes and prejudices probably are relatively constant and effective both in defining criminal behavior and criminals.

Because a simple operative definition of a criminal is a person who, through official procedures of arrest and trial, is declared to be guilty of an offense, arrest policy may be said to play an important part in the definition. As a result, the behavioral characteristics of criminals are largely defined by the characteristics of those the police arrest. Paradoxically, as long as public attitudes remain the same and are reflected in arrest policy, yesterday's arrests are a fairly reliable indicator of tomorrow's.

SAMPLE CALCULATIONS

The following sample calculations should help to make clear how a manpower analyst can project changes likely to occur in a standard crime category—"Dangerous Weapons"—and the factors he would take into account in translating projected caseload into future manpower requirements. All calculations are shown in sequence.

Define Composite Statistical Profile. According to statistics published in the FBI's 1970 "Uniform Crime Reports," the most frequent offender under the "dangerous-weapons" statutes in metropolitan areas with populations in excess of 250,000 inhabitants is an individual with the following characteristics:

- Of total offenders, 94 percent are male. The proportion of males to females in the total population is about equal (47 to 53 percent).
- Half the offenders fall within the 19 to 24 age group, with another 33 percent being above 25. Because 83 percent of "dangerous-weapons" offenders are at least 19 years old, this offense obviously is not common to youth.
- The most significant characteristic of the typical "dangerous-weapons" offender would appear to be race, 56 percent being non-white, 44 percent being white. On the surface this ratio would appear to be close; in New York County, however, this characteristic assumes added importance. When it is considered that non-whites make up only 30 percent of the entire county population, the statistics reveal that this group committed 56 percent of the "dangerous-weapons" offenses. Similar qualifications would have to be taken into account for studies in other locales.

The composite statistical profile of the most frequent "dangerous-weapons" offender, drawn for the above three dominant characteristics, is one of a non-white male, above the age of 19. This information would be correlated with projected population patterns to determine the probable trend in the incidence of "dangerous-weapons" offenses.

Project Population. The projection of population combines elements of art as well as science. Statistical and other sciences provide techniques for determining and extrapolating into the future historical trends from the detailed statistics of population change. The art is in judging what may happen in the future to modify those trends. As the period of projection increases, accuracy increasingly depends on how closely the statistics represent a stationary time series—in simpler terms, on how well yesterday foreshadows tomorrow.

Many population factors, especially birth and death rates, seem to be relatively predictable for individual categories of the total population. Where projection depends more on art than on science is in attempting to localize movements of population caused by man-made events (changes in national and international economic policies, wars still over-the-horizon, technological breakthroughs) and catastrophic natural events. Simple examples of such considerations might be found by analyzing a 1934 projection of the 1946 population of Hiroshima, Japan, or the 1956 population of Tel Aviv, Israel. Major man-made variables determined the population changes in both cities.

In most cities and populous counties, local and regional planning authorities regularly publish population projections which are fundamental sources for a court planner. He should make selective use of them, basing his choice on diligent attempts to validate their underlying assumptions.

As an example, in studying population trends for New York County, it was found convenient to examine the changes in white and non-white groups separately. A net out-migration of whites was as-

sumed, and the size of the remaining white resident group was assumed to be determined by two factors related to income. A very high income group was assumed able to afford to stay in the county and a very low income group was assumed unable to afford to leave. Finally, the non-white population was assumed to increase slightly faster than the white population decreased to bring about a slow increase in total population and a shift towards a non-white majority.

Project Caseload. For simplicity of illustration, the following computations use a single component of criminal court caseload—arrests for dangerous weapons offenses (DWA)—and attribute it solely to population groups in accordance with their color. That approach is neither recommended nor endorsed, for reasons already discussed at length, but the parameter used was the only one available in the reference data.

From the FBI's 1970 Reports, shown in Table 17, 44 percent of DWA were of whites and 56 percent were of non-whites. Relevant population projections for the years 1970 and 1975 are:

	1970	1975
White Population	1,075,000	965,000
Non-white Population	450,000	575,000
Total Population	1,525,000	1,540,000

Police data in the 1970 Report for New York County include 1600 DWA. Combined with FBI data this gives .44 x 1600 or 704 DWA of whites, and .56 x 1600 DWA, or 896 DWA of non-whites in 1970.

Assuming the percentage of each segment of the population arrested for dangerous weapons offenses remains constant for five years, the numbers of DWA in 1975 can be computed as follows:

For the white population;

$$\frac{704 \text{ DWA}}{1{,}075{,}000} = \frac{x \text{ DWA}}{965{,}000}$$

$$x = 660 \text{ DWA}$$

For the non-white population;

$$\frac{896 \text{ DWA}}{450{,}000} = \frac{x \text{ DWA}}{575{,}000}$$

$$x = 1{,}150 \text{ DWA}$$

Comparable figures for DWA in 1970 and 1975 are:

	1970	1975
White Population	704	660
Non-white Population	896	1,150
Total Population	1,600	1,810

This calculation projects an increase of 210 DWA over the five years from 1970 to 1975, representing a 13 percent increase in caseload assumed resulting from DWA.

Factors Affecting Departmental Manpower Projections. Projected trends in crimes cannot be related directly to departmental workload without first giving consideration to a number of qualifying factors. These factors may have little or no effect upon projected crime patterns as they relate to court manpower requirements but more often can alter projections substantially. Some of the most important of these qualifying factors follow.

Staff Utilization and Capacity. During analysis of recent historical workload of a court department or unit, it may become apparent that a higher workload has been handled in years past. Assuming that staffing strength was the same both at recent and more distant periods, staffing requirements to meet projected increases in workload must be predicated on the higher workload standard, as demonstrated by the following example:

Year	1965	1966	1967	1968	1969
Caseload Handled	450	370	375	385	400
Staff Strength	10	10	10	10	10

This chart shows that, in 1965, 10 staff members disposed of 450 cases. In 1969, the same staff handled only 400 cases. Projections of future caseload requirements must be made on the caseload standard (workload units ÷ staff strength) of 450 ÷ 10, or 45, as opposed to the standard of 400 ÷ 10, or 40. This generalization assumes that the department or unit functioned under the same procedures in both 1965 and 1969, and that no unfilled positions existed at either time.

Prospective Changes in Operating Procedure. Departments or units being studied may be planning changes in operation, or the facility as a whole may anticipate making changes that would have the same or similar effect. Usually these changes have an impact on unit workload capacity, although the precise effect is not always apparent. In instances where operation may not change, jurisdiction or scope of responsibilities may be altered. In any event, before a realistic manpower projection can be calculated, these changes must be appraised with a view toward probable impact on total caseload and staff capacity.

In the New York County Courts, for example, three kinds of calendaring procedures were in varying stages of implementation at the time of the study: "individual calendar," "all-purpose part," and "conference-and-assignment part." Each has been designed to increase judicial productivity and decrease calendar backlog in the county's Civil, Criminal and Supreme courts.

The conference-and-assignment system had been fully operational in the Civil Court for about $1\frac{1}{2}$ years when the study began. Based on performance of the concept over that period, judicial productivity was estimated to have increased by 60 percent.

The individual calendar and all-purpose part systems were operating about three months as small-scale experiments at study inception. Analysis of each, based on such brief experience, required making allowances for a higher disposition rate at the outset of their introduction when cases more rapidly settled were disposed. In time, cases to be tried would tend to reduce the initial impact of the new systems on court workload.

Existing Case Backlog. Future workload projections for any department or unit must incorporate existing work backlog to arrive at total workload. The existence of an excessive backlog may indicate that some operating deficiency exists in either manpower utilization or organizational structure. The structure of the unit, for instance, may not be conducive to efficiency, with the result that staff potential is not being realized.

Budgetary Restrictions. Quite frequently, the manpower planner will encounter fiscal limitations upon projected staff requirements. During the New York study, for instance, a job freeze was in effect encompassing all municipal employees. Consequently, many departments studied were not at full complement, nor could they expect to be so for the immediate future. While such situations may be only temporary, some units may be affected financially for the entire period of the study.

The office of a court-related department in New York County is another case in point. Traditional fiscal policy of this organization has been conservative and executive management has cut back repeatedly on staff authorization requests by line supervisors. The analyst must carefully assess any diverging management attitudes to gauge net impact on future staffing levels. In fact, one important intangible consideration in manpower planning is the executive or managerial philosophy of the organization. Very often, the practical effects of these attitudes are reflected in official documents of the organization—notably the annual budget, a valuable tool for analyzing historical staffing patterns and projecting trends.

PROJECTION CONSIDERATIONS IN OTHER COURTS

Civil Court. For a civil court, the basic criteria which determine court caseload are not necessarily related so closely to population characteristics utilized to analyze criminal court caseload. Civil court caseload (and, consequently, manpower requirements) is determined to a greater degree by straight head count and general prevailing economic conditions within the court's jurisdiction. The majority of civil court cases involve either personal injury or contract violations. In projecting caseload of personal injury cases, weight should be given to recent caseload trends, the affect of current legislation (such as adoption of so-called "no-fault" car insurance) and expected changes in total population. The percentage of commercial or contract cases varies with inflationary conditions prevalent at any point in time. Civil cases reach a higher court, such as the New York State Supreme Court, as a result of an arbitrary economic cut-off point, say cases evaluated in excess of $10,000. Here again, future caseload and manpower estimates for the higher court's civil term are related indirectly to changes expected in the cost of living and directly to changes in the economic cut-off point for cases coming under the court's jurisdiction.

It is also likely that changes in the cost of living may change the monetary jurisdiction of a small claims court. At each increase of the monetary cut-off point, an initial sharp increase in caseload can be expected, which would level off gradually over a period of years, as the cost of living continues to rise.

Changes in court jurisdiction also may have significant effect on caseload and personnel requirements. The transfer of minor housing-code violations from criminal to civil jurisdiction, for example, may increase civil court caseload, and require adding different kinds of personnel. The complete removal of such violation cases from the judicial system to handle them administratively, while it would reduce caseload, would require establish-

ing a tribunal staffed with personnel having greater experience in this specialized field.

Decentralization of court functions, of course, would relieve the centralized court of a percentage of its caseload. The trend toward decentralizing functions such as the small claims court to communities generating greatest caseload should provide greater convenience to local residents served by the branch court. However, such decentralization generally would require an increase in overall court personnel because of some duplication of effort.

Surrogate's Court. In a probate court dealing particularly with wills and estates, future manpower requirements may be gauged by expected population changes, income level and age distribution. Any or all of these may have a significant effect on the number of wills filed for probate and, consequently, on court workload.

The trend toward simplifying procedures to probate estates by de-emphasizing court control over simple non-contested cases, while tightening safeguards in contested matters, would reduce average time needed to process each probate case, and would tend to stabilize existing personnel levels. An increase or decrease in jurisdictional responsibility, of course, would affect caseload and manpower needs of the probate court.

Family Court. Projected workload for a family court is closely related to population characteristics. Here again, expected changes in population distribution and income levels can be related directly to court workload—delinquency hearings, adoption cases and other family problems over which family court has jurisdiction.

In New York City, participants in the majority of Family Court cases are non-white. If population changes, as one estimate has it, from a white/non-white ratio of 70 percent to 30 percent (1970) to 35 percent to 65 percent (2000), it is estimated that there would be a substantial increase in the number of cases, especially if the proportion of adolescents and their involvement in delinquent behavior holds constant. Even decentralizing community-oriented functions such as probation, legal aid and social and welfare agencies to communities with greatest need, and rising income and education levels and other indices of living standard in these population groups, the caseload is bound to increase, as will personnel, both in the court and community branch facilities.

APPLICATION OF MANPOWER PROJECTIONS

When completed, manpower requirements projected for each job classification in each department of each court can be summarized in a table similar to the one shown for the Office of Probation in the New York study (Table 19). Existing departmental staffing is shown in Table 18.

TABLE 18

EXISTING MANPOWER DATA

OFFICE OF PROBATION, NEW YORK COUNTY

ORGANIZATION UNITS / PERSONNEL TITLES	OFFICE MANAGER	INTAKE CLERKS	PROBATION OFFICERS	SUPERVISOR (P.O.)	BRANCH CHIEF	SUPERVISOR (TYPING)	TYPIST	RECORDS CLERK	LIAISON OFFICERS	PARA-PROFESSIONALS	TOTALS
INTAKE UNITS	1	4									5
PROBATION INVESTIGATION UNITS *			29	6	1				4	1	40
TYPING POOL						1	8	1			10
TOTALS	1	4	29	6	1	1	8	1	4		56

* There are 6 units headed by a supervisor; 3 units have 5 Probation Officers and 3 units have 6 Probation Officers.

Saseload established by branch chief: 170 weighted cases/year, (1/3 for Youthful offenders and 1 for an adult investigation.)

TABLE 19

MANPOWER PROJECTION DATA 1970 - 2000

OFFICE OF PROBATION, NEW YORK COUNTY

Job Titles	1970	1975	1980	1985	1990	1995	2000
Branch Chief	1	1	1	1	1	1	1
Supervising Probation Officer	6	8	6	6	7	7	7
Probation Officers	29	47	39	40	41	41	42
Para-Professionals	1	8	6	6	7	7	7
Court Liaison Officers	4	6	6	6	6	6	6
Office Manager	1	2	2	2	2	2	2
Clerks	5	8	6	6	7	7	7
Typists	8	15	13	13	13	13	14
Supervising Typists	1	2	2	2	2	2	2
TOTALS	56	97	81	82	86	86	88

Space standards for different categories of court personnel, developed as prescribed in Chapter Three, can be applied to the personnel projected for each category to calculate space requirements for each department or unit. In renovation projects, existing spaces may be larger than recommended standards. The application of unit space standards to personnel would provide only total work space. Common or shared spaces, such as conference rooms and public waiting and storage spaces, would have to be added

to work space to derive total departmental area (Table 20, page 81).

From projected manpower information, it is possible to establish standards, such as the number of departmental personnel per court part, or the number of supporting personnel per judge. Such standards would provide the total space needed when contemplating the addition of another courtroom. Additional area must be included in the calculation for ancillary spaces adjoining, or in close proximity to, the courtroom and related spaces. In New York County, total net space required for an additional criminal court courtroom, 1,200 to 1,500 sq. ft. in size, is 6,138 to 7,387 sq. ft. (Table 21, page 82). Supporting departmental space required for each courtroom is two to three times courtroom area, with ancillary spaces about two-thirds courtroom area. This information is especially important in assessing the adequacy of space in an existing court building, and in determining minimum unit floor space area for new construction.

Manpower projections, beyond their application to space requirements, have applicability in management studies aimed at improving operations and manpower assignment and utilization throughout the court system. By delineating factors that influence staff performance and efficiency, such studies should enable department heads and administrators to plan more realistically for the kinds of personnel needed in the future.

Manpower analysis and projection underlies a space study program, but other considerations can affect ultimate space management decisions. Two such considerations—security and comprehensive information communications systems—can impact significantly. Each is discussed separately in the two following chapters.

TABLE 20

SUMMARY OF MANPOWER AND SPATIAL REQUIREMENTS 1970 - 2000

SUPREME COURT CRIMINAL TERM AND CRIMINAL COURT, NEW YORK COUNTY

PERSONNEL	NUMBER OF PERSONS 1970	2000	EXISTING AREA (sq. ft.)	ASSIGNED MIN. WORK AREA* (sq. ft.)	ADDITIONAL SPACE* (sq. ft.)	TOTAL REQUIRED AREA* (sq. ft.)	TOTAL ASSIGNED AREA†† (sq. ft.)
Supreme Court Judges	14	22	22,950	21,862	2,625	24,487	36,064
Supreme Court Officers	172	264	19,253	21,300	12,000	33,800	27,723
Criminal Court Judges	28	37	8,400	16,183	1,750	17,938	11,088
Criminal Court Officers	104	115	11,341	12,269	9,812	27 081	12,589
Legal Aid Society	158	211	8,895	21,750	3,562	25,312	11,920
District Attorney's Office	386	535	135,341	62,394	33,250	65,644	188,124
Office of Probation—Supreme Court	121	171	21,862	18,500	3,938	22,644	30,825
Office of Probation—Criminal Court	55	88	4,657	9,562	1,688	11,260	7,311
Psychiatric Clinic—Supreme Court	10	11	1,774	1,425	1,188	2,613	1,951
Psychiatric Clinic—Criminal Court	24	32	1,856	4169	1,562	6,731	2,468
Department of Correction	257	330	43,244	28,900	31,250	61,050	54,522
Police Department	79	71	6,916	6,125	5,375	11,500	6,916
Youth Counsel Bureau	15	21	1,382	2,475	1,312	3,787	2,032
Manhattan Court Employment Project	68	79	3,250	8,912	4,000	13,912	4,420
Society for the Prevention of Cruelty to Children	3	4	350	575	126	700	467
TOTAL	1,484	1,991	291,471	236,406	113,937	352,243	398,420

††based on existing space use
*25% circulaton space added

TABLE 21

TOTAL SPACE REQUIREMENT FOR EACH ADDITIONAL COURTROOM

CRIMINAL COURT, NEW YORK COUNTY

SPACE	PERSONS PER COURTROOM	UNIT AREA (sq. ft.)	ASSIGNED AREA (sq. ft.)	PER CENT TOTAL
COURTROOM	participants 15—30 spectators 24—30		1200—1500	
ADJOINING SPACES				
Robing room	1		150—180	
Jury deliberation room with toilet	6		158—228	
Witness room	2—4 (varies)		80—90	
Conference room	2—4		70—80	
Court personnel's office	7—10		100—120	
Prisoner holding facility with toilet	5—20		60—180	
Circulation space (25% of adjoining spaces)			155—220	
Sub-total			773—1098	
RELATED SPACES				
Office of Probation	2.5 probation officer	80—90	200—225	
(investigation & supervision)	0.5 supervisors	110—120	55—60	
	0.3 paraprofessionals	80—90	24—27	
	0.3 liaison officers	80—90	24—27	
	0.1 administrative staff	150—180	15—18	
	1.4 clerical	65—75	91—105	
Legal Aid Society	2.7 legal aid attorneys	110—120	297—324	
	0.5 law assistants	80—90	40—45	
	0.1 administrative attorneys	150—180	15—18	
	1.6 supporting staff	65—75	104—120	
District Attorney's Office	2.6 assistant district attorneys	110—120	286—312	
	0.6 supervisory staff	150—180	90—108	
	2.0 clerical	65—75	130—150	
Department of Correction	3.3 correction officers	65—75	215—248	
	0.3 captains	80—90	24—27	
	1.0 administrative staff	110—120	110—120	
	2.2 clerical	65—75	143—165	
Manhattan Court Employment Project	0.5 career developers	80—90	40—45	
	1.0 representatives	80—90	80—90	
	0.3 administrative staff	110—120	33—36	
	0.3 clerical staff	65—75	20—23	
Psychiatric Clinic	0.5 psychiatrists	150—180	75—90	
	0.3 psychologists & social workers	110—120	33—36	
	0.4 administrative & clerical staff	65—75	26—30	
Administrative and Clerk's Office	0.3 administrative staff	150—180	45—54	
	3.9 clerical staff	65—75	254—293	
Police Department	1.7 supervisory staff	110—120	187—204	
	0.9 staff	80—90	72—81	
Judge's chambers with toilet & closet			350—400	
Jury facilites *			150—200	
Detention facilities *			100—150	
Circulation space (25% of related spaces)			837—958	
Sub-total			4,165—4,789	
SUMMARY				
COURTROOM			1,200—1,500	19.6—20.3
ADJOINING SPACES			773—1,098	12.5—14.9
RELATED SPACES			4,165—4,789	67.9—64.8
TOTAL SPACE PER COURTROOM			6,138—7,387	

*facilities that can be located centrally in another building

CHAPTER FIVE

COURTHOUSE SECURITY

Appropriate and adequate security, long a persistent, but not pressing, concern of court and law-enforcement facility administrators, was thrust into the national consciousness in the early nineteen seventies on the force of a few sensational incidents involving courthouse violence.

Official response to incidents such as these ranged widely, in some instances imposing security measures that transformed institutions symbolic of rule by law into veritable fortresses, patrolled by well-armed security officers, closed to public and staff without acceptable identification and personal searching, floodlit at night, and modified—typically at great cost—to contain special "secure" courtrooms allegedly resistant to violent attack from any quarter.

The urgency which now characterizes security operations may have reached a peak in 1972. A national television network news broadcast reported that $700,000 had been spent in one West Coast jurisdiction to improve security in one courthouse in preparation for a single trial.

With increased security measures have come new problems related to their propriety and legality; in some court facilities, complaints have been voiced that civil liberties have been infringed, that security measures inherently prejudice the ability of defendants to receive fair justice, and that first amendment rights have been denied press and public. Choosing the proper level of security and measures to achieve it in court facilities is not an easy matter; but neither will solutions be forthcoming if a systematic approach is ignored.

In many cities, routine searches are conducted several times a day for bombs. Probably no densely-populated area in the county has escaped some form of increased attention to courthouse security—but in all this activity, no comprehensive approach to security systems analysis has been evident.

To formulate such an approach, the Courthouse Reorganization and Renovation Program, in April, 1971, at the request of the Law Enforcement Assistance Administration, enlarged its scope of activities to examine courthouse security. Approached through system analysis, the security problems have been defined in terms of three classes of parameters; architectural, operational and technological. Two related directions have been charted: (1) development of a conceptual basis for comprehensive security analysis of metropolitan-area courthouses across the country, and (2) a case study analysis for facilities comprising the Foley Square court complex in downtown Manhattan, New York City.

This chapter, based on the security study, discusses first courthouse security in general, and second, the Foley Square analysis, applying the general findings to specific court facilities. Thus, the court administrator, facility planner and court security official have available one method and its application to replace what, until recently, have been for the most part piecemeal, expensive approaches to improving courthouse security.

SCOPE OF STUDY

Security in a courthouse is an intangible quality most easily defined by its breaches: where security is lacking, deficiencies in the courthouse are obvious, but where security is good, specific factors can be attributed only with difficulty. Thus, the measure of poor security becomes the number and seriousness of incidents—but the measure of "perfect" security is impossible by those means.

Despite the imperfections of this definition, a courthouse can be designed, operated and administered for the security function just as it can for

any other function, and guides to good security can be devised. Based on principles observed in courthouses currently in use, these guides can serve as readily to analyze security effectiveness within existing buildings as to aid in designing for security in new structures.

The material contained here draws heavily on results of a study of court building security, conducted as part of an analysis of criminal, civil, surrogate's and family courts encompassing functions found in nearly every court in metropolitan jurisdictions and some in non-urban areas.[1] The courts studied form an empirical base for a security analysis, the findings of which are presented here. From these findings, principles and practices of courthouse security design have been abstracted for use as guidelines.

Security is treated here not as a series of isolated functions but as a comprehensive system concerned specifically with measures of an architectural, technological and operational nature designed to increase courthouse security. Examined are interactions between security measures, the effects of these measures on other courthouse processes and their propriety. Drawn from a broad cross-section, the guidelines which follow are intended to be free of constraints peculiar to any one court system. Indeed, they should be applicable to facilities other than court buildings.

Clearly, the specific functions leading to courthouse security derive from the goal of better judicial administration. A guide to security should provide administrators with useful information to improve facilities and operations; these guidelines can be evaluated in accordance with local conditions in arriving at an optimum system.

WHAT IS COURTHOUSE SECURITY?

In the courthouse, security encompasses *deterrence, detection* and *limitation of damage.* Effective security design aims essentially to deter potential threats to the safety of persons and facilities within the courthouse. The more effective the deterrence, the lower the incidence of security problems. Where deterrance fails—and it will, at least when persons are intent on causing trouble—it remains for security design to detect threats rapidly and to signal the attention of those who can take appropriate action. If a bomb were smuggled into a courthouse, the earlier it can be detected, the more safely the incident can be handled. Finally, security design seeks to limit damage that may be caused by action following a threat. A building with a bomb emplaced, evacuated rapidly, safely and without prisoner escape, exemplifies damage limitation.

One is tempted to envision the fully secure court building as a kind of fortress, bristling with armed guards and all but inaccessible to the public. But such a theme is inappropriate to the courthouse—inappropriate to it as the place where justice is dispensed freely and openly, inappropriate to it as a repository of public records and, most certainly, inappropriate in relation to the presumption of innocence embodied in our criminal law. Nevertheless, a rational basis for comparing and selecting security measures can be found within the system of judicial administration.

A strong threat to courthouse security is inherent, in the broadest sense, among those who harbor disregard or contempt for the law and its instruments. Threats of this kind, whether arising from groups or individuals, may take the form of well-organized, planned actions or more spontaneous personal reactions. A threat may contemplate action related to a purpose within a courthouse (i.e., escape, revenge, intimidation of a judge, prisoner, or jury), or it may embody broader social or political implications (i.e., a bomb threat against "the establishment"). A threat may be directed at a specific courthouse situation (an obstreperous witness, a bullying attorney), or at a simple criminal goal (theft of personal property or office equipment). Whatever the purpose of such threats, counteracting security measures, unless integrated with a courthouse-wide effort to engender respect for the processes of justice, almost certainly will be self-defeating.

Most security measures discussed here assume the right of certain persons to enter and have use of certain areas of the courthouse at certain times (and the denial of that right to others). Implicit, therefore, in this examination of courthouse security is the assumption that the courts have the right and sole authority to determine, implement and enforce their own security measures.

Aspects of security discussed here relate directly to functions of criminal and civil courthouses, as follows:

- Security of participants in courthouse processes (judge, jury, attorneys, parties, prisoners, wit-

[1] Courthouse Reorganization and Renovation Program, Final Report and Appendices A-J. New York, 1972.

nesses, court staff) from threat by other participants or the public.
- Security of the public in courthouse processes from threat by participants or other members of the public.
- Security of public areas of courthouses from abuse by any persons.
- Security of courthouse records against loss, theft and damage while in short- or long-term storage or transit.
- Security of all persons and facilities during emergencies.

SECURITY PROBLEMS IN VARIOUS COURTS

The kinds of proceedings taking place within a courthouse are the major determinants of the kinds of security problems that can be expected. The common division into courts of limited, general and appellate jurisdictions is only partially appropriate; [2] a more useful classification is separation according to criminal, civil and family courts. Because these courts differ in function, administration, relationships between parties, space use and impact of penalty, it can be expected that each will have some unique security problems. In defining these problems, it is necessary to analyze the operation and functions of each court.

Criminal Courts. Although procedures may differ in detail around the country, metropolitan criminal courts can be described as follows:

Courts of First Appearance. The courtroom where an arrested or summoned person first appears for a hearing, presentment or arraignment is one of great activity. Complaints, police officers, sheriffs or court officers, relatives and friends of defendants, prosecuting attorneys, defense attorneys, prison guards, spectators and some defendants all may be in the courtroom at one time. Many arrive when court opens and wait for as long as it takes for the case in which they are involved to be called. The sheer number of persons present in or near a courtroom represents a security problem.

Defendants brought into court after having been taken into custody usually are held in police and court detention facilities or in jail. Others appear in answer to summonses. In either situation, the defendant, when his case is called, is escorted to the bench, confronts his accuser and has determined his immediate future—to be held or released. If he is held, bail usually is set, or he may plead to the original charge or to a lesser one, and possibly receive sentence immediately.

Many of those called into court are confused about where and when to appear and how to behave in and near the courtroom. In a first appearance court, cases follow one another rapidly, formal legal phrases are spoken in rapid monotone to satisfy requirements of protecting the accused, and court officers give frequent loud orders to be seated and to be quiet. In metropolitan areas, where not everyone may speak or understand English readily or at all, interpreters and multi-lingual signs may be needed. When defense attorneys are present, hurried whispered conferences are held with clients and with the prosecution. Representatives of legal aid and social service agencies move through the court calling out names of various persons. Clerks walk in and out of the courtroom. Arresting officers enter and leave the courtroom, moving between it and the prisoner holding facility or other parts of the courthouse. Bailiffs call loudly for defendants and officers to get ready, and bail bondsmen come in to be sworn. But, at the center of all this activity, only one hearing, involving only a small number of those present, is being conducted.

At the first appearance, a common difficulty is a defendant's emotional state, particularly in relation to others in court. Remanded prisoners may wish to say goodbye to family, turn over valuables for safekeeping, instruct associates on last-minute personal matters or give what money they have to wives or others. But the defendant is being rushed back into custody and must clear the bench area for the next case on a busy calendar. It is only a rare courtroom that has facilities and personnel adequate for these "last-chance" meetings. In many courtrooms, it is not unusual for a disturbance to follow the denial or abruptness of such meetings.

One increasingly prevalent condition arises in the arraignment of one or more similarly charged defendants, the subject of intense social or political interest. Large groups of supporters usually attend the proceedings, often with the aim of influencing or disrupting the court. Common tactics in or near the courtroom are shouting, singing, hissing, booing, standing and commenting loudly. Whether these tactics help defendants, they undoubtedly disrupt the orderly flow of cases and influence proceedings. Court appearances are delayed for defendants calendared later and subsequent hearings become even more hurried.

[2] American Bar Association, "Model State Judicial Article," (1962).

Tension can build in the presence of real or assumed dangers inherent in any large group, especially one that is unruly. Perilous to safety of participants and to administration of justice, tension can be reduced by employing a sufficient number of court officers trained for crowd control, equipped with appropriate (non-lethal) weapons and communications, and deployed around the courtroom.

Additional court officers may be needed to handle larger-than-normal numbers of spectators or unruly groups. Ordinarily they are temporarily assigned from other courtrooms, but borrowing court officers from their other duties reduces security effectiveness in other parts of the court building.

Cases not disposed of at first appearance proceed to hearings and, for an estimated 5 percent, to trial. Hearings are held in grand jury spaces and in courtrooms.

Criminal Trial Courts. Compared to an arraignment court, a criminal trial court is calmer, even for felony cases. Most often nearly empty of spectators with only one case being heard, the courtroom takes on a more restrained judicial atmosphere.

This characterization does not dismiss the fact that attorneys may argue forcefully and dramatically or that witnesses may vilify a defendant's motives, character and habits. As the trial proceeds, a defendant may become desperate and seek to escape, or harm a witness or co-defendant or attempt to have someone act in his behalf to free him or take revenge upon the judge or prosecuting attorney. A defendant may act on impulse or engage in premeditated behavior to prejudice the court in his favor.[3] Witnesses may act out their hostilities to an attorney. A spectator may direct some uncontrollable outburst against a trial participant. Almost by definition, a criminal trial pits individuals against each other and society and evokes deep emotions of fear and hate. An effective criminal trial court must be designed to cope with these conditions.

Hearings and trials of an individual defendant or a group, in cases of strong sociological or political overtones, are important because of their notoriety, the sheer number of defendants and, typically, a large number of spectators. Press coverage, defense and prosecution tactics and background issues often heighten emotional intensity. As the number of defendants increases, and with it the number of attorneys and court officers, space in courtrooms and ancillary spaces becomes crowded, compounding the security factor. It is doubtful whether many courtrooms or courthouses have been designed for multi-defendant trials; improvised operations and space use are typical solutions for such proceedings. Security difficulties have occurred—notoriously in California's Marin County Courthouse in August, 1970—while other multi-defendant trials have gone successfully to conclusion and jury verdicts have been rendered without incident. Unquestionably, special security measures are necessary, but debate is widespread about what form they should take—a question addressed later in this discussion.

Other Criminal Court Operations. Offices of probation, public defense attorneys and prosecuting attorneys involve some contact between defendants, courthouse staff and the public. Prisoners and defendants on bail or parole sometimes are brought to probation offices for interviews or physical and mental examinations. Cash or checks for restitution payments may be accepted and held for deposit. Family or friends of defendants who come for interviews with probation officers require waiting and reception spaces. Many probation offices remain open at night for the benefit of working clients. Records rooms, where storage and issuance can be controlled, usually occupy extensive space (unless modern microfilming has been implemented).

The prevalent practice of public defense attorneys having to conduct initial interviews with defendants in courthouse detention cells is considered unsatisfactory for procedural and security reasons. If defendants are bailed or paroled, then interviews may take place, preferably in legal aid offices, or an corridors, lobbies, or wherever space can be found. On a typical day, many persons visit the offices of public defense attorneys in search of information or assistance. Staff interviewed in these legal agencies express strong opinions on the need for secure and effective courthouse and courtroom interview spaces and protected office spaces to reduce danger to personnel.

Identification procedures, including lineups, routinely are conducted in prosecuting attorneys' office spaces, where witnesses and complainants may be present with defendants or suspects. Witness interviews also may take place in these spaces. Efforts may be made to limit public access because private information is on record there and because the nature of the work is sensitive to interference.

[3] D. Walsh, "Gorilla Cowed His Keepers," *Life*, Vol. 70, No. 3, pp. 42–48, June 25, 1971, New York.

Family Courts. The kinds of persons in a family court (also known as juvenile, childrens' or domestic relations courts) and their reasons for being there are unique, as are the courtrooms and related spaces, and the processes taking place within them. The distinguishing characteristic here in comparison to a criminal court is the inclusion of juveniles in most cases, whether as victims of neglect or accused of delinquency. Cases also involve disputes between family members and include matrimonial matters. The presence of young children, typically less than 16 years old, throughout the courthouse mandates special court procedures, trial practices, courtroom design and detention and supervision operations. In New York, boys to 16 and girls to 18 are treated as juveniles in Family Court, while older youths to age 19 are eligible for youthful offender treatment in Criminal Court.

The goal in family courts is toward conciliation, preservation of the family unit and treatment of underlying familial difficulties. As a consequence, matters are being consolidated and extensive use is being made of pre-trial probation and counselling by private social service agencies.

Cases coming to trial in a family court normally are conducted without juries and in private before a judge. As a rule, neither party retains an attorney, but it is not unusual for both parties to be represented by public or assigned counsel. Courtrooms, in contrast to those typically used for criminal procedures, often are smaller and more informal in layout and finishes, with less separation between participants (including the judge).

At a time when many jurisdictions are experiencing a peak age of 15 years for major property crimes,[4] the functions of the family court and its special security problems are increasing in significance.

Juveniles in difficulty with the law, who also may be unstable, may be prone to violence and escape. Juvenile victims, rather than parties, need protection and insulation from general courthouse atmosphere. Support cases between cohabitants can open deep wells of bitter recrimination and frustration which, in turn, can lead to verbal and physical disputes in the courtroom and near it.

Detention facilities in a criminal courthouse include intake areas and prisoner holding facilities adjacent to courtrooms. For the treatment of juveniles, however, the detention setting can be less severe, probably without bars or other obvious trappings of imprisonment. Supervision may be by adult counsellors or probation officers in civilian dress, rather than uniformed guards. Family court activities do not require extensive adult detention facilities or the isolation of defendants; on the contrary, much activity takes place with all parties present in probation interview offices or standing together before a judge. Even in the case of a group of juveniles charged with homicide, their parents normally will be present in the same general part of the courtroom, unless the family court waives jurisdiction and the case is transferred to criminal court.

In addition to juvenile victims present in family courts, young children and infants of families in court frequently are brought to proceedings for lack of any other place to leave them. Therefore, some means of supervising and caring for children who are not parties to proceedings is needed.

Family courts collect and disburse support payments and other funds. Checks, money orders and cash are received by mail and in person for safekeeping until deposited (usually daily) and checks generally are prepared for payment to recipients. New York City's Family Court, for example, annually processes in and out about one million checks. Procedural as well as spatial security clearly is required for the handling of large amounts of money.

Civil Courts. Functions common to the civil courts include appellate matters, probate, small claims, landlord-and-tenant actions, civil disputes between individuals and businesses, matrimonial (civil or family court) matters and claims against government agencies. A great amount of record-keeping is typical of all civil court operations.

Civil court matters can be handled by referees, heard by judges or panels of judges or tried before jury panels of various sizes. In most civil courts, receiving, storing and creating records is fundamental and provision is made for public accessibility to records. Cash or checks for filing fees, in large municipal or county courts, may be accepted at several locations in the courthouse for later consolidation and deposit. Adoptions frequently are handled in some part of the civil court (and sometimes in family courts), usually in private proceedings. It is safe to say that security needs in the civil courts can be considered according to operational units common to all the courts, rather than in terms of the nature of cases handled.

[4] "Task Force Report: Assessment of Crime, President's Commission on Law Enforcement and Criminal Justice," Washington, D.C., 1967 p. 68 (referred to hereafter as "T.F.R.").

In civil, as opposed to criminal matters, a major distinction in physical security and, to a degree, in operational procedure is that persons are not detained (guards, prisoners and weapons are not common to the civil courts). In fact, security problems in a large civil court building are not unlike those of a large modern office building—with a few notable exceptions.

Civil matters can involve intense emotions for some parties, as in the following cases:

- When an eviction order is handed down in a contested landlord-and-tenant dispute, a defendant facing the breakup of home and family can be easily overcome by emotion.
- When one party is represented by counsel but the other is not, tactics and legal maneuvering can lead to intense reaction on both sides.
- When matrimonial actions are contested, parties frequently display anguish and hostility.
- When disputes of principle are at issue, even more than damage settlement claims, parties can become excited beyond reasonable control.

Decorum in the civil courtroom is as necessary to the proper administration of justice as in any other court. When parties cannot control their own behavior, then court officers may be required to act.

Summary. Civil, family and criminal courts share many similar security problems, but implicit in the function and operation of each kind of court are specific differences of emphasis and degree.

The primary security considerations in all courts include:

- Safe storage of records.
- Privacy of certain records and proceedings.
- Easy access to public records.
- Protection of judges and other court personnel from unnecessary exposure to risk.
- Maintenance of personal safety for all persons in the courthouse.
- Isolation and protection of deliberating juries.
- Safety of witnesses.
- Safe occupancy of buildings.

Spaces requiring security analysis include courtrooms, offices with public access, records rooms, private offices and chambers spaces, public corridors and public waiting rooms.

The balance of this discussion places emphasis on a systematic method of analyzing specific security problems of the several kinds of courts, as well as those problems courts experience in common.

A SECURITY SYSTEMS CONCEPT

Courthouse security is achieved by combining specific measures into a comprehensive system. Because most security measures overlap one another as alternate choices, they can be implemented with some freedom. The following categories illustrate this range of choice:

- Renovating existing facilities as an alternative to new construction.
- Increasing staff and modifying their duties as operational alternatives to architectural modifications.
- Implementing technological systems and devices as alternatives to staff increases.

The eventual choice will be subject to constraints such as initial operating costs, propriety, legality, effectiveness of response, adaptability to change, administrative control and timeliness.

One goal here is to describe for the administrator a typical range of choices for security systems. Thus, this discussion examines the background of the courthouse security problem, explores measures to implement security systems analysis and presents, in a useful format, some security "do's" and "don'ts."

The security function should be an important determinant of courthouse design and operation. Although different types of courts and court functions have differing security needs, the methodology of security system design for all can be similar. By selecting architectural, operational and technological procedures appropriate to the function and security needs of all spaces within a courthouse, the desired level of security can be shaped. Constraints upon this model will include factors of:

- Legality and propriety.
- Capability of current technology.
- Availability of trained manpower.
- Feasibility of architectural methods.
- Comprehensive costs of construction and operation.

Ground Rules for Security Systems. To examine how space planning, technology and operations affect security, it is well to state first some general relationships and their applications:

1. The purpose of a security system is to provide desired levels of security, as previously defined, for people, functions and facilities.
2. Threats to the security of a courthouse can be directed against persons (disruptive behav-

ior in the courtroom, at spaces (a bomb in a closet or washroom), or at facilities (theft of dictating machines).

3. Analyses of security problems are based on courthouse functions, the persons performing them, facilities used and the spaces occupied. Because each of these factors can change over a period of time, measures relating to them should be flexible.
4. Some security problems are predictable and can be countered by particular measures; others can be anticipated only as contingencies and countered with adaptive measures.
5. Security measures involving space use are directed at the location and size of spaces in which functions are performed and through which people move. Space planning measures have in the main, a deterrent effect; secondarily, they affect detection of threats and limitation of damage.
6. Technological security measures, such as alarms, communications systems and weapons detectors, have a primary effect on detection of threats. Their mere presence can be a deterrent, and they may indirectly limit damage.
7. Operational measures, including the number and use of security personnel, have a more or less across-the-board effect on the level of security.

Interaction of Security Measures. Most security measures interact with one another. A private corridor for moving prisoners securely between courtroom and detention spaces may add to construction costs but requires a smaller number of guards than to secure movement through public corridors. The addition of private corridors—in fact, any architectural feature of privacy—may add to building area; but cost and difficulty of maintaining an increased force of security personnel for an adequate level of security over the lifetime of a courthouse may be excessive. Many design "trade-offs" of this kind contribute to a final security design; they become resolved in an economic bargain, subject to relevant constraints.

Designing for security must account for at least one intangible factor. Architectural measures are usually permanent, whereas spatial functions change. When architectural design is not easily adaptable to changing spatial functions, future problems may be set in motion. Changes in spatial functions reflect, as well as cause, changes in security problems—and spatial functions in courthouses *do* change as judicial processes are modified to accommodate accelerating changes in the life style of modern society.[5] Procedural safeguards, rights to jury and multi-judge trials in a wider number of cases, an increasing number of multi-defendant trials, jury size, numbers and types of criminal hearings and proceedings, and the importance of negotiated pleas are all recent procedural changes which are influencing courthouse spatial considerations.

It is clear that security is not an isolated design factor but a highly integrated and interactive design component. It can be isolated for purposes of analysis but not for purposes of synthesis.

Propriety of Security Measures. An important constraint ruling out the implementation of many simple security measures is their inconsistency with the principles of judicial administration. If the purpose of security ultimately must be to ensure the safety of persons in a courthouse, then certain approaches must be rejected as not meeting these requirements. Design of a criminal courtroom, for instance, that allows jurors to view a prisoner holding facility from the jury box generally might be construed as prejudicing jury deliberations.

Each security measure must be capable of withstanding challenge on the grounds of prejudice to individual rights. Operational measures, such as the indiscriminate search of all persons entering a courthouse or courtroom, may be challenged unless such procedures are properly authorized and conform to consitutional safeguards. Successful challenges might be mounted against the use of weapons-detection devices which operate by radiating energy fields into the bodies of persons being scanned. A strong force of opinion holds that the public and the press do not have the absolute right to witness all trials; certain court proceedings forbid it absolutely (juvenile and family matters, adoptions); but it is apparent that measures to limit public and press attendance must be subject to proper safeguards for the rights of all concerned individuals, including those rights guaranteed under the first amendment.

A concept frequently advanced for multi-courtroom buildings is that of providing in one courtroom an increased number of security measures. This "secure" courtroom, it is argued, would have special provisions for the safety of participants and would limit the capability of spectators to influence

[5] Tentative draft, "Standards Relating to the Judge's Role in Dealing With Trial Disruptions," American Bar Association, May, 1971, p. 17.

proceedings. In this regard, suggestions have been made to provide:

- A high, bullet-proof, transparent partition at the bar to separate spectators from the trial spaces.
- A transparent compartment to isolate defendants.
- Closed circuit television cameras and monitors in the court and detention spaces to transmit proceedings to a defendant being tried in absentia.
- Weapons-detection devices located in a soundlock at public courtroom entrances to scan all entering persons for concealed weapons.

The "secure" courtroom would be used when a large number of spectators was expected or when spectator or participant behavior problems were anticipated. Few jurisdictions, however, could afford to activiate such a courtroom only in special instances, but would have to assign routine cases to it as well. The use of such a courtroom does raise a significant legal question: Is such a courtroom, by virtue of its design and appearance, inherently prejudicial to the presumed innocence of a defendant? There has been at least one legal challenge along these lines.[6] Architectural and technical design could compensate—one might say, camouflage—an admittedly high-security courtroom to avoid charges of bias, as follows:

- A defendant isolation compartment could be located on an elevator platform which descends to a detention space directly below the court. In routine cases, the compartment would be completely out of sight, its top flush with the courtroom floor; but, when a judge ordered a defendant restrained, the compartment could be raised up to the courtroom.
- Armor-plate on judges' benches could easily be covered with wood veneer.
- Protective glass or plastic barriers could be treated as an integral part of design to reduce psychological objections.
- Weapons scanners, relatively inconspicuous pipe-like devices also can be incorporated unobtrusively in a facility design.

After all this is said, however, it would appear that extensive camouflage accomplishes little more than to increase security costs out of proportion to effectiveness. Certainly, to enhance the administration of justice all security measures within a courtroom should be carried out in the least visually objectionable way. But it is unlikely that the existence of unusual security measures can be kept from all parties. Legal challenges can be expected on the grounds of courtroom environmental differences compared to other spaces in the same building. The temptation might also be great to rely solely on these measures, which would not ensure anyone's safety absolutely, thereby weakening the use of fundamental security practices, such as good spatial design and adequate, trained staff.

Public Access. In general, security is more effective when public access to a courthouse is limited. In Baltimore and New York City, for example, more or less regular searches of people entering courthouses or courtrooms during 1971 turned up quantities of potential weapons, mainly knives.[7] This is not to say that indiscriminate frisking or preventing the public from entering a courthouse is desirable; but it appears reasonable that public access should be subject to some form of control. Limiting the number of public entrances will expedite observation or surveillance to detect and deter suspicious persons.

After courthouse functions are analyzed according to whether public access is a requirement, provision for public movement can be designed for an appropriate security level. Considerations may include procedures to:

- Discourage the wanderer and pilferer by locating private spaces in proximity to each other, separated vertically and horizontally from public spaces.
- Deter the casual visitor and determined thief alike by:
  1. Limiting the number of unlocked access doors.
  2. Limiting the access to inter-floor staircases by locking them from the stairwell side, possibly connected to an alarm.
  3. Prohibiting stairwell openings onto detention floors.
  4. Preventing public elevators from stopping at private floors.
  5. Allocating those spaces most remote from public entrances to functions which, though perhaps not conveniently made private, need least public contact.

Common Offenses. A persistent annoyance in many courthouses is petty theft of personal and office property—a problem shared by administrators in many kinds of buildings. The simplest means of discouraging visitors who would commit these offen-

[6] Earl Caldwell, "3 Inmates Trial Delayed on Coast," *The New York Times*, New York, N.Y., Aug. 10, 1971.

[7] Based on staff interviews conducted by Courthouse Reorganization and Renovation Program with supervising court officers of Superior Bench of Baltimore and New York State Supreme Court.

ses is to prevent unidentified persons from moving freely through the courthouse. Basic to this end is to cluster spaces where unidentified visitors may be expected in units separate from more private spaces. Access to non-public spaces can be restricted by locked doors and reception areas planned so that visitors can be easily detected, even though staff moving through the building may be slightly inconvenienced. The thief, knowing that his presence in certain parts of the building is likely to be noticed and challenged (whether he is improvising an action or following a plan), probably will be deterred or slowed in committing an act.

Very little traffic should be expected or permitted to basement or upper-story mechanical or electrical equipment spaces. By locking entrances to such spaces, an unsupervised resting place is denied to the vagrant, the drunk or the addict whose presence may be a hazard to himself and to the building's legitimate occupants. Fire hazard is reduced and an attractive bombing target is denied. Because only maintenance and custodial personnel are the routine users of these spaces, effective key control and locking procedures are feasible.

In any courthouse, casual visitors are not desirable in a judge's chambers—in essence, his private office. Making chambers easily accessible only encourages public intrusion. The need for privacy is dictated primarily by the adjudicative function of the chambers. Aspects of this privacy include:

- Locating chambers spaces in as few as possible different parts of a courthouse, separated from all other spaces by walls and locked doors.
- Planning receptionists' areas on chambers floors.
- Implementing private, guarded street entrances and private elevators.

After-hours circulation is yet another security problem. A wide open court building is an invitation that need not be extended to potential troublemakers. Night criminal courts and night operations of small claims courts and probation departments do not require an entire building to be kept open. Better use of space would cluster night activities near the public entrance, well separated from other floors. Procedural safeguards such as locked doors and closed elevators (and others previously mentioned) would effectively close off the parts of a building unrelated to night activities, saving maintenance costs as well. In any event, routine building security patrols probably should include closed-off areas as an added measure of security.

COMPREHENSIVE SECURITY ANALYSIS

Security systems analysis is fundamental in assessing and improving security in existing courthouses. Four steps constitute this procedure:

1. Threat analysis: assessment of threats to people, facilities and functions of a courthouse.
2. Space use analysis: determination of the use of space by persons (circulation) and for functions.
3. Application of security measures: reduction of total risk.
4. Evaluation: comparison of alternative solutions for effectiveness, cost and impact on operations.

The security of persons and functions in a courthouse is inversely related to their exposure to risk: to increase security, reduce exposure. To reduce exposure, two categories of space are minimized: (1) functional spaces exposed to risk and (2) circulation spaces exposed to risk. Functional spaces within a courthouse are areas denoted by the functions taking place in them, typified by a courtroom and its ancillary spaces or a judges' spaces of robing room, bench area or chambers. Circulation spaces, on the other hand, are most directly defined as those spaces, such as corridors, elevators and stairs, providing paths of movement between functional spaces. It is also useful to speak of the circulation of a person or function within a courthouse, which is typified by the sequence of functional and circulation spaces occupied, for example, by a judge in the course of his day in a court building.

Effective security probably is defined best as the absence of security breaches in the face of security threats. Suppose, for instance, that a courthouse is troubled by consistent theft of office and personal property over a number of years. Suppose further that on a particular date a security system is made operative, including corridor patrols and a closed-circuit television surveillance system, which, within a month, reduces the incidence of successful thefts and maintains that level. It seems reasonable to state that the system is effective against that security threat to a point where the likelihood of theft has become satisfactorily low.

Now consider a courthouse which has never been the victim of attempted theft and in which no special anti-theft security measure is employed. It is not reasonable to say that there is an effective system here—there simply isn't any threat. In each

courthouse the result is the same—no problem with thievery. The relative cost of security against theft compares to the relative intensity of that particular security problem.

Predictions concerning the effectiveness of a proposed security system must take into account the probable performance of a system in the future, not just its actual performance in the past. Thus, potential threats and probable effectiveness against threats are of interest. Largely, reliance must be placed on past experience, projecting similar situations as accurately as possible upon expected future conditions. In addition, it is convenient to make a distinction between performance and effectiveness. As a rule, performance is taken as the quantitative measure of how a system operates, while effectiveness is taken as the relative measure of how realized performance compares to desired performance. Suppose that two systems are to be compared and each operates quantitatively at the same level—for instance, each allows an annual maximum of 10 security breaches. The performance of each then could be equated—10 breaches a year. But suppose one system operates in a courthouse where 10 security breaches is an intolerably high level and only two per year can be accepted. In that application, the security system is not effective, because it does not fulfill expected requirements.

A courthouse security system can be synthesized as a rational selection of constituent measures from feasible alternatives. To make an objective selection it is necessary to determine the effectiveness of different measures in comparable terms and to assess, on a common basis, the true cost of their use by analyzing all significant qualitative factors in an appropriate, quantifiable way. It should be clear that, because this is an optimizing process, its outcome is no better than its inputs allow, and that alternate security measures must be well-conceived in the first place.

Threat Analysis. Security system performance can be analyzed in terms of three factors: risk, space and circulation. Risk is the factor which relates a security threat to its object. We can say that person "A" is a risk to person "B," or that "A" is a risk to function "C," or that "A" is a risk to space "D," equipment "E," property "F," and so on. Risk implies the likelihood and aim of security threats, while circulation and space concern locations where the risk or threat can be expected.

Security is affected by the relative location of functionally related spaces and their distances from other spaces, accessibility of spaces to various categories of persons in the courthouse, methods of circulating between spaces and physical protection within spaces.

To minimize risk to all circulation, persons and functions within a courthouse can be analyzed for assignment to security categories. For this procedure, persons are compared according to their relative risk to each other and to courthouse functions and to the relative protection each may need. Circulations of those with significant categories of risk can then be traced. Similarly, functions can be categorized according to requirements for access or privacy. Then, because functions are performed in spaces, security needs for spaces can be developed based on occupants and functions.

The performance of a security system depends upon the circulation at risk and the spaces at risk. This dependence can be analyzed in several ways, but the most useful is to measure, to at least a first approximation, the relative performance of different systems and the relative security effectiveness of various courthouse designs. The approach followed here is to measure circulation at risk by counting the number of places where circulation of conflicting risk categories cross or run together, and to establish risk categories by rating relative risk of each participant to each other participant in courthouse processes. In other words, where movement of a judge through a courthouse crosses that of a defendant so that they both occupy the same space at the same time, that space is denoted as one where circulation of two conflicting risk categories is common. Similarly, in a space where circulation remains more or less static, such as in a courtroom, there may be conflicting risk categories simultaneously occupying the space.

The Risk Matrix. Risk categories can be evaluated by means of a "risk matrix" which relates each category of person to each other participating in courthouse processes. Among the categories are judges, jurors, spectators and defense attorneys, as shown for a *hypothetical situation* in Figure 19, page 93. On the left vertical axis, each significant category of person in a courthouse is listed, and the same order of categories is repeated across the upper horizontal axis. Each intersection of a horizontal and a vertical category, excepting those which are of the same category, represents a person-to-person relationship for which a relative risk can be esti-

PEOPLE FROM \ PEOPLE TO	JUDGE	PUBLIC	DEFENDANT	WITNESS	DEFENSE ATTORNEY	PROSECUTOR	JUROR	PRESS	COURT CLERK	COURT REPORTER	COURT OFFICER	TOTAL (To)
JUDGE		2	5	2	7	5	5	2	0	0	1	29
PUBLIC	45		38	16	24	24	18	0	0	0	0	165
DEFENDANT	41	2		41	14	11	5	0	0	0	6	120
WITNESS	19	0	5		0	0	0	0	0	0	0	24
DEFENSE ATTORNEY	10	1	5	20		5	20	0	1	1	0	63
PROSECUTOR	7	1	10	20	5		20	0	1	1	0	65
JUROR	2	0	0	1	0	0		0	0	0	0	3
PRESS	1	0	0	0	0	0	0		0	0	0	1
COURT CLERK	0	0	0	0	0	0	0	0		0	0	0
COURT REPORTER	0	0	0	0	4	0	0	0	0		0	4
COURT OFFICER	0	10	5	2	0	0	5	5	0	0		27
TOTAL (From)	125	16	68	106	50	45	73	7	2	2	7	

FIGURE 19
THE RISK MATRIX

mated, once from "A" (left) to "B" (right), and again from "B" (left) to "A" (right), since the "AB" relationship appears twice on the matrix. For example, from "Defendant" on the left to "Prosecuting Attorney" on the top, a risk is estimated and noted in the box corresponding to that intersection. Then from "Prosecuting Attorney" on the left to "Defendant" on the top, the inverse risk is estimated and noted. The entire matrix is filled in this way with notations of estimated relative risk *to* each category *from* each category.

The risk matrix shows the relative risks between persons in a court building. It is a composite or summary of eight matrices, all of which are based on the different types of threats. Each matrix is evaluated on a scale of 0–10, on the relative likelihood of a threat occurring, and on the relative effect of the threat if it does occur. The most obvious types of threats include: use of lethal weapons such as guns; assault of persons at close range with or without weapons such as knives or brass knuckles; throwing chairs, ash trays and other easily movable objects in the courtroom; and intimidating persons without recourse to physical violence. While the relative likelihood of threats occurring may vary between 0.1 to 10, the relative effect of threats when they do occur generally can be defined more broadly as follows:

THREATS	RELATIVE EFFECT		REMARKS
Use Of Weapons	Can Cause Death Or Serious Bodily Harm	10	Decrease With Distance
Assault With Or Without Weapons	Can Cause Bodily Harm	5	Increase With Time And Type Of Weapon
Object Throwing	Less Likely To Cause Bodily Harm; Better Chance Of Avoiding Attacker	3	Decrease With Distance
Intimidation	No Physical Harm; May Have Psychological Effects	1	Decrease With Distance

In developing the risk matrix, each relationship between two persons or types of persons is evaluated separately. For example, the analysis of the defendant-judge risk relationship is:

THREATS	LIKELIHOOD OF OCCURRENCE A	RELATIVE EFFECT B	COMBINED SIGNIFICANCE A&B
Use of Weapon	0.1	10	1
Assault	3	5	15
Object Throwing	5	3	15
Intimidation	10	1	10
Total Significance			41

After each risk relationship has been evaluated in this way, the matrix is completed. Total risk *from* and total risk *to* then is computed by horizontal and vertical addition. The person with the highest risk in the court building is the judge (125 units), followed by the witness (106 units), jurors (73 units) and defendants (68 units). Attorneys are next (45 and 50 units), followed by remaining participants whose risk factors are relatively insignificant because their role in the judicial process is not critical and their exposure to risk is not so great. On the other hand, persons who are most likely to create threats in a court building are the public (165 units) and the defendant (120 units). The combined matrix shows quite clearly that the

public, the defendant and, to a much lesser extent, witnesses are the persons who may create threats of violence in a court building. Most other weights for other persons are assigned for "intimidation," for example, attorney to witness.

Movement of persons between courtrooms and ancillary spaces and between all court spaces is shown for a *hypotetical situation* in two accompanying matrices Figure 20 and 21, pages 94 and 96). The matrices should be analyzed prior to analyzing circulation patterns in court buildings. Movement of persons who should be separated for security reasons is illustrated on the matrices by patterns. For example, judges' movement between courtroom and robing room should be separated from that of prisoners. Movement of jurors between the courtroom and the jury deliberation space also should be separated from prisoners' movement and be as direct as possible. These matrices form the basis upon which conflicting paths of movement can be evaluated in the study of circulation patterns within court buildings.

Space Use Analysis. A comprehensive analytic security study must: (1) trace the circulation one-by-one of each class of participants in courthouse processes, and (2) gradually combine these circulation patterns into a comprehensive pattern for all spaces. Sensitive to time and space, this procedure correlates to security measures dealing with persons (as they move in time through spaces) and spaces (as they are occupied at various times by persons).

The risk matrix indicates which relationships are of sufficient potential seriousness to merit security treatment of an appropriate type. It is used as a guide in analyzing space use to help locate spaces in the courthouse where security measures may be needed. The second step in security analysis is to analyze specific spaces using either of two alternatives: (1) circulation charts superimposed on floor plans or (2) flow charts of circulation. Floor plans are familiar to most court administrators and probably would be preferred. As illustrated in Figure 22, page 98, a floor plan can have a circulation chart drawn on it simply by tracing movement, under

	COURTROOM	ROBING ROOM or CHAMBERS (adj. courtroom)	JURY DELIBERATION ROOM	PRISONER HOLDING FACILITIES	WITNESS ROOM	CONFERENCE ROOM	INTERVIEW ROOM	PRIVATE ACCESS SPACE	PUBLIC WAITING & ACCESS SPACE
COURTROOM		Judge Attorneys Court Reporters	Jurors Bailiff	Prisoner Court or Correction Officers	Witnesses Bailiff	Judge Attorneys Court Reporter Attorneys Parties	Case Related Personnel Attorneys Correction or Court Officers	Judges Jurors Court Personnel Attorneys (with permission)	Attorneys Parties Witnesses Court Personnel General Public
ROBING ROOM or CHAMBERS (Adj. Courtroom)	Judge Attorneys Court Reporter		—	—	—	Judge Attorneys	—	Judge Court Personnel Attorneys	—
JURY DELIBERATION ROOM	Jurors Bailiff	—		—	—	—	—	Jurors Bailiff	—
PRISONER HOLDING FACILITIES	Prisoners Court or Correction Officers	—	—		—	—	Prisoners (Secured) Attorneys Court or Correction Officers	Prisoners (Secured) Correction Officers	—
WITNESS ROOM	Witnesses Bailiff	—	—	—		Witnesses Attorneys	—	Witness (Secret) Attorneys	Witnesses Attorneys
CONFERENCE ROOM	Judge Attorneys Court Reporter Attorneys Parties	Attorneys	—	—	—		—	Judge Attorneys Court Reporter	Attorneys Parties
INTERVIEW ROOM	Case Related Personnel; Parties Correction or Court Officers Attorneys	Attorneys	—	Attorneys	—	—		Court Personnel Attorneys Correction or Court Officers	Court Personnel Attorneys Court Officers Parties
PRIVATE ACCESS SPACE	Judge Jurors Court Personnel Attorneys (with permission)	Judge Court Personnel Attorneys (with permission)	Judge Bailiff	Attorneys Correction Officers	Witnesses Bailiff	Judge Attorney Court Reporter	Case Related Personnel Attorneys Correction or Court Officers		Court Personnel Attorneys Witnesses
PUBLIC WAITING & ACCESS SPACE	Attorneys Witnesses Parties General Public Court Personnel	—	—	—	—	Attorneys Parties Witnesses	—	Attorneys Witnesses Court Personnel	

FIGURE 20
MOVEMENT OF PEOPLE BETWEEN COURTROOM AND ANCILLARY SPACES

typical conditions, of each category of person subject to or presenting to others, a significant risk. Color coding usually is a convenient means of identifying on the floor plan the several categories of circulation of interest.

Where circulation of two categories of significant risk to each other, according to the risk matrix, intersect or run parallel, they may occupy the same place at the same time or at different times. When occupancy is simultaneous, that space is a locus of potential security problems. If there is a separation in time between occupancy by each category, the security hazard may exist anyway—if that time separation was imposed as a security measure. For instance, suppose that the corridor used by a judge to enter and leave his courtroom is also used by prisoners under escort. Ordinarily, a prisoner will be prevented from being in that corridor while it is used by the judge. The time separation is enforced by security personnel as an operational security measure.

Another space with simultaneous circulation is the courtroom where all participants occupy the same space for an extended period of time. Security measures of an operational nature are taken here but architectural measures are inherent, for better or worse, in the courtroom design. Similarly, other spaces in the courthouse—public corridors and waiting spaces, for example—are occupied simultaneously by differing risk categories.

Spaces where circulation of different risk categories is common, including spaces where time separation is imposed as a security measure, can be counted and totalled to give a summary risk measure for the courthouse. Spaces in which circulation remains static (the courtroom again being the prime example) cannot be counted as risk spaces when their functions are necessary to court processes; however, spaces in which risk circulations are mixed for any other reason have to be considered among rick spaces.

The method being used here can be easily summarized. First, estimate which kinds of persons in a courthouse represent a significant potential risk to others. Next, use that evaluation to determine which circulation patterns to examine and where to look for spaces where security breaches may occur. Finally, count and sum the number of such spaces to get a measure of the security problem in the courthouse. It should be remembered that this aspect of the work is analytic; the purpose of counting is to be able to compare the probable effectiveness or performance of different security systems. As a means of determining objectively which security system is most effective for prevailing conditions, simply count the number of spaces where risks are probable.

Some other considerations are relevant in analyzing a courthouse security system. All courthouses contain certain spaces which house functions demanding privacy, certain spaces and functions which are public, some spaces which are closed in the evening and some which are open, and spaces which must contain persons who present a risk to each other. In addition to the types of personal risk represented on the risk matrix, security threats include theft of property and equipment, bomb threats, accidental personal injuries and so on. Comprehensive analysis of courthouse security requires consideration of all security problems.

Let us consider the situation in which a new courthouse is to be constructed and several alternate architectural designs have been prepared. From the viewpoint of security, what procedure can be used to choose the most effective among them? Each design should offer at least the same courthouse functions and the same number of spaces, but with differing assignments of square footage and varied locations of functions. In this situation, security features and overall security effectiveness may be thought to differ, while the risk matrix would remain constant regardless of design. Thus, a simple count of spaces at risk is a very straightforward indication of the potential for security breaches.

Tacit in the foregoing explanation is a major assumption: security at any location of risk is achieved by eliminating all breaches of security at the location or by eliminating the location at which a security breach can occur. Assume a corridor shared by judges and prisoners, as mentioned earlier. An effective architectural security measure would be to eliminate that corridor and to replace it with a private corridor (or direct access) for judges' circulation and a second corridor (or direct access) for prisoners' circulation. No security breaches can occur because the two categories at risk—judges and prisoners—are completely separated. An effective operational security measure would be to have security officers escort prisoners and judges and control their times of passage through the corridor so as not to have it occupied simultaneously.

Here, to a first approximation, is an important difference between architectural measures and operational measures, namely that the architectural means of accomplishing the same security goal is, in general,

	COURTROOM & ANCILLARY FACILITIES	CHAMBERS	ADMINISTRATIVE OFFICES	DEPARTMENTAL OFFICES	CLERK'S OFFICE RECORD STORAGE	JURY ASSEMBLY SPACES
COURTROOM and ANCILLARY FACILITIES		Judge Judge's Secretary or Court Officer		Departmental Personnel	Court Clerks	Jurors Bailiff or Court Officer
CHAMBERS	Judge Judge's Secretary or Court Officer					
ADMINISTRATIVE OFFICES		Administrative Director		Administrative Staff	Administrative Staff	
DEPARTMENTAL OFFICES	Case-related Personnel; Attorneys	Case-related Personnel	Department Chiefs		Case-related Personnel	
CLERK'S OFFICE RECORD STORAGE	Court Clerks	Chief Clerk	Chief Clerk	Clerks		Jury Clerks
JURY ASSEMBLY SPACES	Jury Panels Bailiff or Court Officer				Jury Clerks Jurors	
JURY IMPANELLING SPACES	Jurors Impanelled Bailiff or Court Officer					Jurors not Impanelled
SOCIAL and WELFARE AGENCIES	Agency Staff Defendants	Agency Chiefs	Agency Chiefs	Agency Staff	Agency Staff	
MEDICAL SPACES	Medical Witnesses				Medical or Secretarial Staff	
POLICE SPACES	Police Officers			Police Officers Departmental Personnel	Police Officers	
DETENTION SPACES	Prisoners Correction Officers Court Officers			Prisoners Correction or Court Officers		
CONFERENCE and INTERIOR SPACES	Judge; Attorneys Court Reporter Attorneys; Parties Witnesses	Judge Attorneys		Case-related Department Personnel	Clerks	
PUBLIC ACCESS SPACES	Attorneys Parties Witnesses General Public			Department Personnel (if no private access exists)	Clerks (if no private access exists)	Potential Jurors (if no private access exists)
PRIVATE ACCESS SPACES	Judge Court Personnel Attorneys	Judge Judge's Secretary and Law Assistants Court Personnel Attorneys	Judge Judge's Secretary and Law Assistant	Departmental Personnel	Clerks	Jurors

FIGURE 21
MOVEMENT OF PEOPLE BETWEEN COURT SPACES

JURY IMPANELLING SPACES	SOCIAL and WELFARE SPACES	MEDICAL SPACES	POLICE SPACES	DETENTION SPACES	CONFERENCE and INTERIOR SPACES	PUBLIC ACCESS SPACES	PRIVATE ACCESS SPACES
	Defendant Social and Welfare Officers	Defendants Court Officers	Police Officers	Prisoners Defendants	Judge Attorneys Court Reporter Attorneys Parties	Attorneys Witnesses Parties General Public Court Personnel	Judge Jurors Court Personnel Attorneys
					Judge Attorneys Court Reporter		Judge Judge's Secretary Court Offices Court Personnel Attorneys (with permission)
					Administrative Staff Court Personnel	Administrative Staff (if necessary)	Administrative Staff
Attorneys	Case-related Personnel		Case-related Personnel	Case-related Personnel	Case-related Personnel	Case-related Personnel	Case-related Personnel
Jury Clerks	Clerks	Clerks			Clerks	Clerks	Clerks
Jury Panels Bailiff or Court Officers							Jurors Bailiff or Court Officers
							Jurors Bailiff or Court Officer
			Agency Staff		Agency Staff Defendants Court Officers	Agency Staff	Agency Staff Defendants Court Officers
					Medical Personnel Defendants Court Officers		Medical Personnel Defendants Court Officers
	Police Officers			Police Officers Prisoners Correction Officers	Police Officers Defendants Witnesses		Police Officers Defendants Witnesses
	Prisoners Correction or Court Officers	Prisoners Correction or Court Officers	Prisoners Correction Officers		Police Officers Prisoners Correction officers		Police Officers Prisoners Correction Officers (secured spaces)
	Agency Staff	Medical Personnel	Police Officers			Attorneys Parties Witnesses	Judge Court Personnel
	Agency Staff (if no private access exists)	Medical Personnel (if no private access exists)			Attorneys Parties Witnesses		Attorneys Witnesses Judge Court Personnel
Jury Panels	Agency Staff	Medical Personnel	Police Officers Prisoners	Police Officers Prisoners Correction or Court Officers	Judge Attorneys Court Reporter Witnesses Prisoners (in several spaces)	Court Personnel Attorneys	

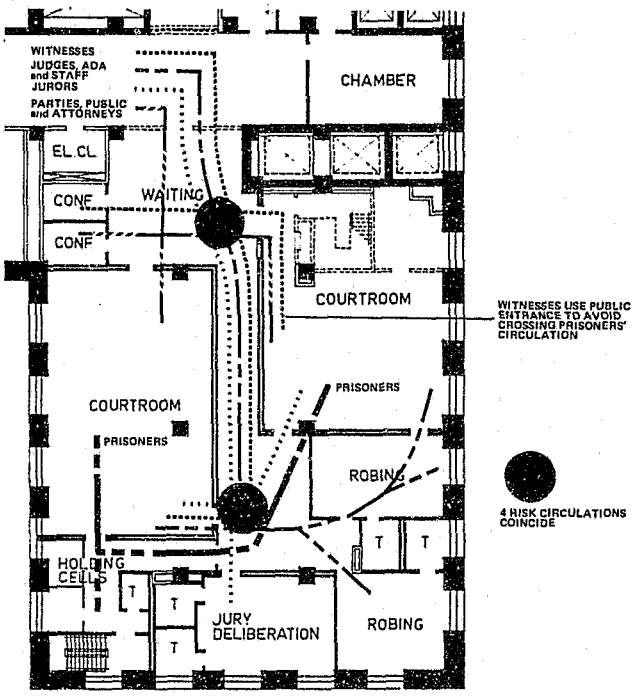


FIGURE 22
CONFLICT OF CIRCULATION PATTERNS IN COURT SPACES

more effective. Certainly this argument does not apply to every security situation, but it is persuasive in terms of the courthouse overall because it applies to greater area and more time and, therefore, more potential security threats. All other considerations aside, where an architectural or space management measure and an operational measure are true alternatives, the former is the best choice. The choice can be a practical one, as well, when new construction and major renovation is being contemplated. The analytic procedure presented here will be useful, then, in comparing alternate architectural measures, on the one hand, or, on the other, alternate operational measures. The method does not serve well to compare architectural to operational measures; in fact, no theoretical basis has been found for such a comparison.

Typical Results. The effects on security of this analytic procedure can be seen in some examples.

When a detained defendant is out of sight and hearing of all other parties to criminal court proceedings, he can neither reach nor be reached by anyone for any purpose, except as directed by the court. Only in the courtroom is he visibly and audibly part of the proceedings and there, as with paroled or bailed defendants, he is always individually guarded. His departure and arrival are out of sight of the jury, as is the detention cell adjoining the courtroom. Detention spaces are isolated from all others in the court building.

Separate spaces and passages for judges give maximum protection. Only in designated spaces (courtroom, chambers, conference room, hearing room, robing room) where rules of decorum and procedure govern do judges come in contact with other participants. Minimal opportunity for prejudicial contacts and minimal out-of-court exposure to litigants and other interested parties also result.

Jurors—isolated from the courtroom and other persons while deliberating, moving between the courtroom and deliberating spaces, and traveling between court and assembly spaces under escort—require the protection of several different kinds of security measures. To isolate the deliberation process, it must take place in a space near the courtroom and be connected to it by private passages, preferably as short as possible.

Impaneling procedures are separated only in space from the rest of the courthouse. When an impaneled jury moves between assembly area and courtroom, court officers guide it, protect it from any interference and keep the group together. Time or space separation even may be possible for this movement, depending on overall courthouse design.

Witnesses normally are given a lesser degree of privacy and isolation than juries, in part because they come and go more frequently and individually and need to be present in the courtroom only while on the stand. When separate witness ancillary spaces are provided, witnesses cannot see or hear the court proceedings except when testifying. They are separated temporarily from the public and trial participants and can be guarded to protect them from influence.

Certain courthouse operations involve public participation by persons having specific business within the building; others do not. Typically, the clerk's office where civil actions are initiated is closely involved with the public because the judicial process begins when a plaintiff files a complaint. The complaint room in a criminal court, visited by police officers and complainants who file papers to start the judicial process, has a public function. In contrast, the records room of a family court probation department is completely private and its contents may not be accessible even to judges at certain stages in a proceeding.

The location and space planning of staff office and clerical spaces, therefore, contribute directly to courthouse security. As a general rule, where staff spaces to which the public needs access are located close to the main entrances and, preferably, on the main floor, and where private staff spaces are located remote from public and public staff spaces, security is enhanced. In a multi-story courthouse, a great many security problems are deterred by locating the entire criminal arraignment process, including detention, court and complaint spaces, in close proximity on the main floor. Especially where night and weekend arraignment courts are held, one potential security problem is eliminated: unauthorized persons moving vertically through a building after hours. It is always a sound security practice to make public access to non-public areas difficult, either by locking the non-public spaces or making them difficult to reach.

SECURITY COST ANALYSIS

Cost enters a security analysis in two ways: (1) How much does each additional security measure add to courthouse cost and (2) how much do alternate security measures cost for the same performance? The basis of cost analysis is to determine the annual cost to use the security measure over its lifetime. Annualizing the cost over the total useful life, preferably on a straight-line basis, allows different kinds of costs to be compared. It does not differentiate, however, between capital and expense items; indeed, it joins them together; thus, it does not compare means of budgeting, but simply total costs. Also, factors other than actual dollar cost may enter strongly into deciding which security measure to buy, among them: the means of budgeting, immediate versus deferrable costs, problems inherent in the use of a particular measure, future growth of service costs and ancillary costs or problems of maintenance.

Four categories are included in assessing the cost of architectural security measures: construction, later renovation or modification, operating and maintenance. Whether in new construction or renovation of existing facilities, the total cost of adding or providing the security measure should be used. To assess the costs of security in new construction, a first approximation is to determine the number of square feet added to the basic courtroom complex by added features of privacy and separation. To this figure add the apportioned share of additional vertical and horizontal circulation space: judges' elevators, prisoner staircases, and the like. Total increase in space then can be priced by various methods.

One method of pricing is to use an appropriate budgetary ratio of dollar cost per square foot for the type and locale of construction, a figure available from various handbooks and other sources. Means' *Building Construction Cost Data* [8] gives data to compute courthouse construction costs in many parts of the country. From tables containing square-foot and cubic-foot building costs and cost indices, unit construction cost for New York City, including architectural fees (1971–72), is estimated between $60 to $70 per sq. ft. gross, or between $80 to $90 per sq. ft. net. In other parts of the country, the unit cost could be as low as $30 to $40 per sq. ft. gross.

As a rule, renovation costs will have to be estimated specifically for the proposed work, rather than by budgetary ratios, and should be developed by qualified architects. But cost estimates prepared by qualified personnel should be guided by the administrator so as to give him the data he needs for decision-making.

Operational manpower costs can be estimated according to the number of men who will be added to the staff for security purposes, based on the fundamental courtroom complex. Many security tasks are short-duration functions added to those required of existing staff. As such, they imply a dimunition of existing duties to fit in additional ones, assuming full prior utilization. In computing added cost, both direct and indirect costs should be included, so as to account for all overhead factors. The factor on base salary will vary somewhat around the country, but in major metropolitan areas a figure around 130 percent of base average salary should prove useful.

Overhead allowance of 30 percent is based on typical considerations of fringe benefits, administrative overhead, space requirements (offices, lockers), organizational structure (extra staff to allow for normal absences, supervisory personnel), allowances (uniform, weapons, equipment) and training. This percentage figure is believed to be accurate for relatively large security organizations, say with at least 75 men, in metropolitan areas, but will probably hold reasonably well down to jurisdictions about one-third that size.

[8] "Building Construction Cost Data 1971," Robert Snow Means Company, Inc., Duxbury, Mass.

Technological aids are available in increasing number and type to amplify coverage and speed of response of security personnel. An extensive descriptive list of measures, arranged according to functional categories, appears subsequently. Prices vary with the nature of the specifications for similar devices, generally increasing as the basic type of equipment is made more powerful, longer lasting, or capable of more versatile performance, so it is not useful to attempt a comprehensive price guide. In addition, prices depend on quantity, installation problems, general inflation and growth of competition in the security systems market. In Table 22, page 100, however, some representative costs are listed for various types of security equipment, simply to illustrate general dollar level. In any event, to the prices quoted it would be realistic to add an annual increment of about 10 percent to cover maintenance, depreciation and any other recurring costs.

Comparative Cost Evaluation. The difficulty of comparing architectural to operational methods on an effectiveness rating scale has been discussed. Cost comparison is easier but may be misleading. When a certain level of security is required in a courthouse, the administrator must choose among available methods to implement it, based on both effectiveness and cost. In attempting to improve the security of an existing courthouse there ordinarily will be little chance to improve architectural features. It may be possible to improve the use of space to enhance security without major cost penalties; indeed, over a period of time there should be cost advantages to more effective space use. Usually, operational improvements are the primary approach. Fundamental organizational changes as well as procedural changes may be fruitful, but the level of security achieved by manpower applicatons is limited compared to architectural measures. The cost of bringing a typical operational measure to comparable effectiveness may be far higher than anticipated, as the following examples indicate.

Examples 1A and 1B are two basic criminal courtroom complexes. One provides security primarily by manpower operations and the other by architectural and space design in combination with manpower operations.

The examples are used to compare security costs on a roughly equivalent basis. For each model, a manpower complement has been estimated which would provide similar security for various functions. For the manpower security model this is a total of eight security officers; for the architectural model, six security officers. Note that the security officers are responsible in this example for all security within the complex, including that of detention spaces. For some courts this would represent a portion of cost in the corrections department or the sheriff's office, so it is an appropriate norm. In the architectural model, it is estimated that an additional 10 percent cost allowance should be made for the space and facilities added to provide security, although there may actually be a space saving and reduction of cost. Both models assume in common a courthouse large enough to make the courtroom complex a valid unit of cost comparison, a factor which would be true at least for most metropolitan courthouses.

TABLE 22

PRICES OF SECURITY EQUIPMENT

Item	Unit Price or Price Range (1971)*
Weapons Detector: Magnetometer	
Fixed Installation with Indicator	$ 1,800
Fixed Installation with Alarm	$ 1,000
Hand-held, Portable	100
Intrusion Alarm: Microwave	$ 525 to $900
Closed-Circuit Television Miniature Camera and Monitor System	$ 375
Computer-Controlled Lock and Key System Using Encoded Cards	$13,000 to $25,000 for up to 31 doors
Low-Light-Level TV Camera	$13,900
Weapons Detector: X-Ray Portable, for Package Inspection	$ 4,100
Intrusion alarms: Photo-electric	$ 200
Portable Walkie-Talkie Radios	$ 800

*The above prices are for equipment only and do not include installation costs.

EXAMPLE 1A. ARCHITECTURAL SECURITY MODEL: BASIC CRIMINAL COURT COMPLEX

The architectural security model of the basic criminal courtroom complex consists of a courtroom surrounded partially by private work and circulation spaces and partially by public waiting and clerical spaces. The private spaces included are: robing room, jury deliberation room, prisoner holding space and witness waiting room. All private and secure spaces are directly accessible to the courtroom or are directly connected to it by a private corridor. Prisoner holding spaces also are directly connected to detention facilities. Private access into the courtroom is separated from public access.

Security Features and Manpower Requirement:

- Prisoners are held in secure detention spaces

(also connected to the jail), except when in court, and are guarded by security officers. Assuming three prisoners in detention spaces, one security officer is estimated to be assigned.

(1 Security Officer)

- Security officers provide spectator control in court and a patrol in the public corridor. In the courtroom, it is estimated, one security officer is assigned as judge's guard/bridgeman, two security officers are used for spectator control, one security officer is assigned per prisoner appearing and one security officer is in the corridor on patrol and reserve.

(5 Security Officers)

- No escort is provided for the judge because his private spaces adjoin the court.
- Security officers on courtroom assignment escort and guard the jury while it is deliberating.

Total Manpower Requirement:

6 Security Officers

EXAMPLE 1B. MANPOWER SECURITY MODEL: BASIC CRIMINAL COURT COMPLEX

The manpower security model of this basic criminal courtroom complex consists of a criminal courtroom separated from its ancillary spaces and support spaces by public spaces. Access from all private spaces, including detention, to the courtroom crosses public corridors or other public spaces, including stairs and elevators. Prisoner holding spaces also are separated from the jail by public spaces.

Security Features and Manpower Requirement:

- Prisoners must be escorted by security officers between detention spaces and jail and between detention spaces and courtroom. It is estimated that one security officer is assigned per prisoner in transit (an average of two prisoners in transit), plus one security officer per three prisoners in detention (an average of three prisoners in detenion spaces).

(3 Security Officers)

- Security officers provide spectator control in courtroom and patrol the public corridor. In the courtroom, it is estimated, one security officer is assigned as judge's guard/bridgeman, two security officers for spectator control, one security officer per prisoner appearing. One reserve security officer is in the corridor on patrol.

(5 Security Officers)

- The judge is escorted between court and chambers by one of the courtroom security officers.
- The jury is escorted between court and deliberation room and guarded while deliberating by one or two of the courtroom security officers.

Total Manpower Requirement:

8 Security Officers

The increment of manpower for the manpower model is two security officers. The increment of space and facilities for the architectural model is estimated at 10 percent of the complex, assuming a basic area of about 6,000 sq. ft., a typical space for criminal courtrooms in New York City. To compute costs, an average base salary of $13,000 is increased by the 130 percent factor for overhead to arrive at a true cost per man year per security officer of $16,900. Thus, the cost increment of two security officers is assumed to be $33,800 per year.

For a 6,000-sq.-ft. courtroom complex with a new construction cost of $65 per sq. ft., a 10 percent cost increment for architectural security is assumed to be $39,000.

Comparing the costs of the architectural model to the manpower model, it can be determined that the addition of architectural security provisions in new courthouse construction will add about as much to the cost of the basic courtroom complex as one year of operation with additional security manpower. It has been assumed throughout this discussion that the courthouse with good security is more expensive than one with poor security. That assumption was made to avoid bias in the analysis but, in fact, experience indicates that a design which provides security by separating private and public spaces is also efficient in the overall use of space. It is to be expected that courthouse security, as provided by an effective architectural design, will minimize courthouse cost, rather than increase it. Where renovation rather than new construction is being planned, an increase in total space needs may be unavoidable because of the basic structural plan coupled with the costs of renovation. In short, a poor design can be improved with some penalty in cost, but a good design should be more efficient in the first place.

The above example illustrates a method of comparing architectural construction cost with the cost of additional security manpower to provide approximately the same degree of security. If the security factors could be considered as an integral part of the design process for a new facility project, the design of the facility could incorporate security precautions without any additional space being attributed to improved security. In some cases, the security precautions incorporated in the design may have significant influence on the final design of the facility.

For example, a plan developed for a multi-story court building could have internal courtrooms accessible from central public circulation and waiting spaces, with private courtroom-related ancillary and support spaces along the perimeter of the building accessible through a long private corridor. Secured prisoner access could be provided between each pair of courtrooms. This plan satisfies the functional requirement of the court as well as general security requirements. However the long private corridor occupies an unnecessarily large amount of floor space, and the connection between the corridor and public spaces could occur at several points, necessitating additional security manpower and technological equipment to provide adequate security. By considering the security precautions as an integral part of the design process, an alternative plan might be to design the courtrooms and adjoining ancillary spaces at one end of the building, with the remaining ancillary and support spaces, such as judges' chambers and departmental offices, at the other end. The public and private elevator core would separate the two spaces, with centralized control of persons entering the private spaces from one point. This control point could be manned by only one security officer on each floor. By utilizing an integrated design concept, the security factors can influence the basic design of the building to provide a higher level and more economical solution to security problems. Other technological, environmental and design factors can further influence the final design of the facility. It is important to stress that, in a comprehensive and integrated design process, whatever additional time is necessary to develop an optimum solution in the long run, is worthwhile. The cost of architectural programming, design and construction is a one-time cost (with the exception of future renovation, the cost of which can be minimized if maximum planning flexibility is provided in the initial design), whereas manpower and technological solutions to security problems would involve ongoing annual salary and operating and maintenance costs.

A number of factors enter into the decision concerning how to provide security which cannot be evaluated readily in a simple measurement scheme. The worthiness of an architectural design certainly involves qualitative factors which, though important, do not lend themselves to quantitative evaluation. Security measures, in particular, have very significant qualitiative aspects that must be considered carefully. There are differences in propriety and in the impact of the measure on courtroom behavior, decorum and defendant rights, among others. Deficiencies of security measures in these respects will have to be assessed outside a cost-effectiveness scale in terms of penalties to which dollar costs are not attributable.

APPLICATION OF SECURITY MEASURES

Space Planning Measures. Applying space planning techniques to security problems can be complex. Not only do different security needs interact with or inhibit each other, but other functional space needs may conflict with security needs. Where should chambers be located relative to courtrooms? What route should judges use to move between them?

Minimum distance between chambers and courtroom reduces exposure en route and is convenient for a judge, given that the courtroom is near the judges' entrance to the courthouse and, perhaps, the law library, and that a chambers space is adequate for law assistant or clerk, secretary and other aides. But when a chambers space is located adjacent to a courtroom, a number of other difficulties are introduced.

If judges are assigned to different court parts from time to time—a common practice in jurisdictions implementing new calendaring techniques—chambers also must be reassigned or the entire security precaution becomes meaningless. But when chambers are periodically reassigned, they no longer are functional as private, permanent offices. Chambers adjoining courtrooms cannot as readily be made private as if they were on a separate floor, because public, trial participants and others are in courtroom areas during most of the day. A few chambers spread across each floor are difficult and expensive to protect or provide with reception service after hours. Chambers tend to occupy more area than other ancillary spaces, and thus are an expensive competing use for relatively scarce space. Finally, it usually will be extremely difficult to arrange full private circulation for judges between chambers adjoining courts and other spaces they use.

A more useful approach is to provide adjacent to a court only a robing room which can be used in recesses and for informal conferences, and to locate all chambers together in another area of the courthouse. Separate chambers floors are easier and less expensive to secure, can have better reception services with fewer personnel, and permit a much

higher proportion of private circulation for all judges' functions. If complete chambers floors are not feasible, then one area of a floor can be reserved for chambers and made completely private. In either situation, the courthouse is an entity and can be thought of as a system of spaces containing a sub-system of private spaces dedicated to judicial and other functions and spaces of less restricted access and unrestricted access.

Space management is an architectural/systems discipline that is most effectively handled by professionals in the field. Some commonly used measures—which should not be applied piecemeal or indiscriminately—are listed in the tables below. Security measures within the architectural field are diverse, and include acoustical and lighting design, surface treatment and finishing, overall dimensionality and design esthetics. The following are lists containing a number of "do's" and "don't's" for security systems.

Useful Space Planning and Architectural Parameters

- Private corridors, stairs and elevators for each category of persons requiring complete privacy.
- Detention spaces directly feeding each criminal courtroom.
- Separate access to courts for judges and court staff, juries, witnesses and attorneys, public and detained defendants.
- Detention floors or floor areas in a criminal courthouse connected directly to a detention building and feeding directly and only to spaces where prisoners are routinely sent.
- Trial courtroom floors and floor areas in a criminal courthouse surrounding detention floors (vertical or horizontal).
- Chambers located in close proximity to each other on their own separate floors or floor areas.
- Limited and controlled public access to chambers spaces.
- Private building entrances for judges and prosecuting attorneys.
- Limited number of doors giving public access to building.
- Public functions (complaint, arraignment, bail and parole hearings) on first and lowest floors.
- Secured building entrance into detention spaces for prisoners under arrest.
- Facilities with higher security needs located in proximity to each other and away from public and low security areas.
- Double walls or soundproofed walls for jury deliberation rooms.

Space Planning Features to Avoid

- Courtrooms adjoining public spaces, such as washrooms, in which bombs can be easily hidden.
- Public spaces, such as washrooms, with false ceilings or removable ceilings, ducts or wall panels. Bombs can be easily secreted behind access panels and fixtures, especially where some measure of temporary privacy in public spaces is possible.
- *Cul-de-sacs* in corridors and little-used corridors or stairwells which would present an excellent environment for a would-be bomber to install an explosive device.
- Low ceilings and those with ducts and removable panels in public spaces are attractive locations for bombs.
- Public furniture, including ash trays, flower pots, benches, and seats which can be opened, moved, or otherwise used to conceal bombs. Where feasible, furnishings should be designed as an integral part of the wall, flush-finished to avoid good hiding places.
- Furnishings and objects of lightweight or flimsy construction in or near courtrooms which can be used, wholly or broken, as weapons. Chairs, ashtrays, tables, lamps and other furniture would be included in this category.
- Public elevators that are not easily programmed to bypass certain floors. Those floors designated as secured detention floors, for example, must not have public elevator access. A combination of no-stop programming and walled-over elevator door openings can achieve these ends. Floors which are to be inaccessible at night also should be bypassed by elevators.
- A high degree of accessibility for the public to all parts of the building. Stairways are necessary as fire escapes and other emergency routes, but need not be used for inter-floor access. Locks or crash locks and alarms can deny these routes to the curious and nefarious alike without seriously inconveniencing others.

Operational Measures. Security operations may have developed to accommodate court procedures and courthouse architectural design and space allocation. Optimal security operations, however are not the result of fitting manpower to cover deficiencies in overall security systems; rather, optimal security is a well-balanced mix of operational, technological and architectural security procedues.

Security operations are conducted by persons

operating in the architectural environment of a courthouse and using such tools as are available to them. These tools can range from the technological—weapons, alarms, detection, and communications, to name a few—to those of the medical, behavioral and management sciences. Perhaps the major contribution still lacking in most courthouse security operations is a complete range of these tools.

A paradox concerning court security officer requirements exists in some criminal courts in this country. The great mass of all criminal cases—misdemeanors, petty offenses and initial stages of felonies—are heard in criminal courts of limited jurisdiction, the lower courts. (Cases of this kind in 1970 amounted to at least 90 percent of the total.[9]) By nature of their procedures, these are courts of last resort for most citizens coming in contact with the criminal justice process.[10]

Yet the qualifications of court security officers in the lower criminal courts often are less stringent than officers serving in the higher courts. The lower criminal courts, those with the largest security problems in terms of numbers of persons processed, are served by security personnel with the lowest requirements for job entry. It follows that the lower courts may be served by security officers of less experience than their counterparts in the higher courts—except where training is available.

This paradox reflects a general attitude toward courthouse security best characterized, perhaps, as haphazard. At one extreme is a courthouse closed to the public except when court is in session. During the session, all persons entering are searched; some judges and prosecuting attorneys carry firearms.[11] At the other extreme are some jurisdictions in which court officer appointments require no particular experience or, at best, a high school certificate. No on-the-job training is offered, and the officer may be required to be in court only when requested on special occasions.

Salaries range from less than $4,000 to as much as $15,000 annually for responsibilities that may include simply keeping order in the court and escorting judges to and from court, or encompass building-wide responsibilities for security, such as regular searches of all spaces.

Some courts use security equipment, including alarms and weapons detectors; others do not arm their personnel. Police officers and deputy sheriffs are sometimes used as court officers and building security personnel; more commonly, building security is provided only by maintenance personnel. Keys generally are issued by a custodial superintendent, one of the loosest forms of control. Maintenance personnel, sometimes supervised by a building custodian, usually have unlimited access to all parts of the courthouse and often are not given background checks prior to hiring. Occasionally, an informal liaison is maintained with other security or police agencies in the courthouse or in nearby jurisdictions, but even this is rare.

These disparities probably reflect differing severities of local security problems. Given such a wide range of conditions, it may be fair to assume that the comments below, derived from studying metropolitan courts, are representative of serious security problems in general. The belief here is that what applies for these courts will hold, probably in relaxed form, elsewhere.

Operational security measures can be conveniently separated into three categories: procedures, personnel qualifications and management organization. Each can be discussed alone, although, in application, they function together.

Procedural Measures. From a security viewpoint, a courthouse is an entity where problems can spread from one location and one level of responsibility to another. A prisoner attempting to escape from a courtroom is not awarded freedom for successfully reaching the public corridor, but often he need go no further to make good his attempt. If there are several jurisdictions in a courthouse, security responsibilities may be fragmented with no group responsible for overall building security. In such a case, an effective form of unification must be structured, taking into account building-wide emergencies, such as fires, security control outside courtrooms, and after-hours protection. For this force to be effective, it should be able to communicate quickly with all other security units.

In courthouses subject to bomb theats, regular and thorough searches are basic deterrent and detection measures. If it is known that searches are routine practice, some threats and actual incidents may be discouraged. Regular patrols during and after court hours not only provide a highly visible function for security personnel, but also are a strong deterrent to prospective troublemakers.

Courtrooms and ancillary spaces kept locked, except while court is in session, discourage threats of

[9] T.F.R.: The Courts, p. 29, *op. cit.*
[10] Ibid.
[11] A. H. Goldstein, Jr., "Brief Case," San Francisco Bar Association, March-April, 1971.

hidden bombs or weapons (and the annoyance of littered and disordered courts). Clearing a courtroom when it is not in session enhances its dignity and importance as a place where justice is dispensed.

Doors to all private and public spaces not in use should be locked after hours. If the locking procedure is checked regularly, control of the premises is easier. Controlling the issuance of keys and noting their disposition on accurate, up-to-date records can help keep effective this aspect of security. But it is difficult to avoid the gradual loss and unauthorized duplication of keys in a large organization. A more effective policy would be to limit the number of spaces where denial of entrance is a security factor and to give keys to only one person in the spaces in question. Although a common practice, making the building custodian completely responsible for issuing keys seems an excessive security responsibility, one that might better be handled directly by building security personnel.

An effective procedure to improve security, if not already in use, is to encourage in non-public spaces an habitual challenge of all persons unknown to the staff. Receptionists, court staff personnel and security officers can make such simple challenges by offering to be of assistance. Suspicious persons in a courthouse ought also to be challenged (although suspicious persons frequently are unavoidable in courthouses). In large measure, common sense must rule. Someone carrying an unusually large box, for instance, or wearing a heavy coat in August, or asking unusually detailed questions about the location of private spaces in the courthouse might be considered suspicious and observed or questioned further.

A courthouse evacuation plan for fire, bomb threats and other emergencies is an inexpensive investment of high potential value. Three key elements characterize an evacuation plan:

1. Establishing procedures to control movement of all persons out of the building.
2. Establishing safe routes of evacuation from every space in the building.
3. Denoting, by job title, personnel to carry out the plan.

In developing an emergency plan, it must be remembered that persons do not act calmly or make rational decisions when they are frightened and uninformed. Security personnel directing such operations need accurate information to relay to building occupants—and accurate information is difficult to obtain during an emergency. Misinformation and rumors tend to spread rapidly; the telephone system may not be reliable. Security personnel should have alternate communications procedures such as runners or two-way portable radio or intercom systems. A chain of reporting and command linking responsible authoritative sources of information with security personnel directing operations is essential. Pre-established reporting procedures then can be used to determine quickly the status of evacuation and damage.

The courts, like banks and hospitals, cannot stop cold to exit in an emergency. Records in storage and in use, trial exhibits, detained prisoners, witnesses and jurors to name a few, each present special handling problems in respect to ongoing court processes. When court reconvenes after an evacuation, how can it be determined that normal procedural requirements and safeguards have been observed? Have jurors mingled with witnesses and attorneys or talked with parties? Have all records been returned to safe storage or been otherwise accounted for? If the emergency was found to be an action planned to release a prisoner or destroy certain exhibits, were routine precautions observed to guard against such possibilities? Emergency plans, prepared in advance, should anticipate these and other contingencies with a degree of assurance impossible under *ad hoc* measures.

The condition of a building and its services can be altered by damage. Lights may be out, glass may be shattered and spread across floor areas and elevators may be dangerously inoperative in a fire. Many new automatic elevators have heat-sensitive call buttons which have been known to malfunction during a fire by drawing all operating elevators to the floor on fire, where smoke-blocked photoelectric beams hold doors open. To allow for contingencies, an emergency plan should list primary evacuation routes, using the most reliable and directly accessible staircases and corridors, and alternate routes to be used if primary routes become blocked.

A final point on procedural measures concerns a regular need: the subjugation of violent persons. The New York State Supreme Court, New York County, has unofficially recorded 26 instances of courtroom violence over a recent 10-year period. In most of these instances, one or more court officers was injured subduing a violent defendant or spectator. In none is there a report of the use of guns although court officers were armed. Apparently,

restraining personal force is the preferred method for dealing with violent individuals.

A pre-established procedure for subduing violent persons would seem to be appropriate, using specific methods and means of cooperation among all court officers present. Such a procedure would offer increased safety for court officers and more effective performance in this difficult duty. Non-lethal weapons may be of use here and are deserving of study.

Personnel Qualifications. The court security officer holds a unique position. Neither policeman, prison guard, nor court clerk, in his job he combines requirements of all three. He is, above all, responsible for security in the courtroom—for maintaining order, carrying out the rules of decorum, and ensuring the judge's personal safety. He also may be responsible for security in corridors, chambers or other courthouse spaces. In some courts, the uniformed officer also is responsible for clerical functions of bailiff or court clerk. In any court, the officer must be thoroughly familiar with all court procedures, including handling evidence, proper placement and treatment of participants and attorneys and traffic through the court. Some duties are specific to the type of court, the particular courtroom and the wishes of the presiding judge; but most duties are common to all court officers.

To assure an adequate supply of professionally capable court officers, standard requirements, independent of court assignment, would be desirable. Standardized prior requirements for job entry, preassignment training and continual update training would accelerate professionalization. Over a period of time, available security tools and problems change; training could adapt court officer skills to such changes.

Job entry requirements are formulated to attract persons with desired skills. Specific deficiencies, especially experience with court procedures and security operations, can be remedied by a formal training program upon entry, as differentiated from fundamental qualifications of personality, intelligence and physical characteristics. The alternative of early on-the-job training, especially in crowd control and handling violent persons, appears to be a slow and inefficient procedure and, in any event, usually places a man on duty in the courtroom who may not be fully qualified. Periodic refresher training will update skills, improve readiness for new situations and refresh familiarity with changing court procedures. In many court systems, appropriate refresher and entrance training might be obtained at a local university or community college. Experienced court officers and security specialists could offer practical instruction either periodically, for short, intensive courses, or in regular after-hours classes.

Valuable fields of training to the court officer might include:

1. Adult and child behavioral psychology
2. Spanish or another locally-spoken language
3. Cultural backgrounds of ethnic groups
4. First-aid
5. Court procedures and trial rules
6. Crowd- and riot-control procedures
7. Bombs and bomb detection (incendiary and explosive)
8. Use of weapons (stressing non-lethal techniques and devices)
9. Subjugation of violent persons
10. Building space planning concepts and space use

Management Organization. Most courthouses contain spaces for non-courtroom functions, including those for clerical and records activities. Many large courthouses also provide space for several jurisdictions of courts, possibly criminal courts of limited jurisdiction and of general jurisdiction. Security problems occur in any building space, not only in courtrooms, and can spread across spaces and between jurisdictions. A basic problem in security is building-wide protection. The basic management activity of a court security force is to integrate all security efforts and personnel into a coordinated operation within the building.

Implementing security operations on a broader basis than the individual courtroom level may imply far-reaching consequences in some jurisdictions. Feasible means of achievement will differ, depending on local conditions, legislative traditions, civil service rules and other relevant practices. Security personnel in some courts are part of that system only; in other systems, they are part of a separate security force, such as sheriff's office, administered outside the courts.

With outside administration, building-wide operations are more easily coordinated. Security organizations administered by a court system may be more responsive to individual judges or courts. If the goals here considered desirable are to be realized—adequate minimum levels of training, building-wide operations, flexibility of assignment in emergencies, upgraded professionalism, appli-

cation of current technology and uniformly effective operations—then each courthouse will have to find an appropriate way to implement a security organization.

Whatever the management format, central security staffs can best be organized around lines of operational information flow. In the range of situations between routine daily courtroom assignments of court officers and emergency deployment of all available personnel for riot-control duties, the rapid flow of accurate information is necessary to effective operational control. Operations are effective when directed from a single operations center, whether it be a captain's office with phone and duty roster or a command center equipped with television, alarms, mobile radio, telephones and a public-address system. Effective operational control then can be achieved by security operations organized around these lines of communication and implemented with equipment for emergency and routine communications.

Not every court system has an organizational entity around which to construct building-wide security staffs. In fact, few court systems have any form of building organization. Many courthouse buildings simply are maintained and operated by a public works department and house a number of government agencies and non-related agencies. Security problems for the entire building are set by its most security-sensitive occupants—the courts. Unfortunately for the courts, building security provisions are not always equal to court problems. The remedy for this deficiency lies not in piecemeal security measures applied haphazardly in spaces where present jurisdiction permits, but in comprehensive application of security measures which integrate operational, technological and architectural features of courthouse design and use.

Elementary schools hold regular fire drills, both to prepare for safe evacuation and to educate students in non-panic response to emergencies. International agreements require lifeboat drills on passenger ships to rehearse passengers and crews to respond well in emergencies. Recently, New York City, after several disastrous fires in new buildings, instituted a requirement for fire drills in all large buildings.[12] It should not be difficult, considering the alternatives, to conduct evacuation drills in court buildings, perhaps annually or semi-annually. Because the major purpose of holding drills would be to rehearse court personnel, especially court security staffs, in the exercise of emergency responsibilities, it probably would be satisfactory to conduct the drills outside regular hours.

Technological Measures. Modern technology, especially electronics, offers many aids—but no panaceas—to the maintenance of courthouse security. Applicable devices and systems generally operate to reduce the number of personnel for a given function or to extend the capability of the previously unaided person. Most useful in the detection of security problems, technological measures also have some deterrent value in relation to all but the most experienced or determined, when it is known that such measures are being used. Technology is significant for information transfer functions, including voice communications and transmission of alarm signals. Finally, among technological measures, it is logical to include weapons, especially non-lethal devices.

Technological measures can be grouped under four headings: detection, signalling and communications, protection and weapons. They are described briefly below in terms of their security applications, physical configuration and major operational features.

Detection Technology. Detection technology provides three areas of security detection as listed in Table 23, page 109:

1. Unauthorized entrance to premises
2. Concealed metallic and non-metallic weapons and devices
3. Explosive materials.

Detectors of all types generally follow a standard method of operation. When a sensor detects a change in the physical condition it is monitoring, it compares the change to a standard reference and signals an alarm if the change exceeds an allowable value.

Explosives detectors generally operate on the principle of sensing vapors emitted by most explosives. No entries for such devices are made in the following tables because reliable detection techniques are more or less still in the range of esoterica.

At the time of this writing, two categories of detectors were being tested and evaluated: chemical devices and the use of dogs. Dogs have been used to detect marijuana and heroin by scent, and are being evaluated for use against explosives.[13] Chemical

[12] "Fire Drills Due In Skyscrapers," *The New York Times*, New York, July 6, 1971, p. 1.

[13] "Two Dogs Pass Bomb-Finding Test Successfully," *The New York Times*, New York, March 8 ,1972, p. 29.

and biochemical devices in development use reactions peculiar to explosive material vapors. Operationally, a certain amount of time is needed to confirm vapor identification. Present experimental techniques, therefore, do not appear applicable in detecting a bomb being carried into a courthouse past a checkpoint. Such devices promise more usefulness in locating explosives already placed within a courthouse.

Signalling and Communications Technology. In the area of technological systems described in Table 24, page 110, the following three functions can be included:

1. Personal safety
2. Space surveillance (including transmission of courtroom proceedings to remote locations)
3. General communications

The capabilities of this technology are particularly well adapted to:

A. Integrated alarm and communications systems having a multiplicity of purposes and individual users
B. Serving spaces and moving persons

Protection Technology. Various types of conventional and unconventional locking devices and systems under this category are shown in Table 25, page 111. One intriguing new concept, using computer-control, is capable of going far beyond ordinary lock-and-key control systems in systematizing and controlling the operation of all locks and authorizing access to all keyholders.

Weapons Technology. No comments are made here about weapons for security personnel, with the exception that non-lethal weapons appear to merit further study.

Courthouse security officers infrequently use guns. Most jurisdictions do not permit guns to be taken into detention spaces (with the paradoxical exception in some cases of police officers). The use of guns in courtrooms is considered hazardous, at best, to bystanders and spectators. For attorneys and judges to carry guns, which presumes their possible use, is an even greater risk to the safety of persons in the courtroom. A shot from the bench toward the trial participants' and the spectators' areas most likely would injure bystanders or other court personnel—to say nothing of its effect on the image of justice.

Several types of incapacitating gases ("Mace," tear gases) and other chemicals, such as tranquillizers, have been used or tested. Presumably other techniques are being studied by police and military units, but these apparently do not as yet offer the ease, speed of use or accuracy of guns.

TABLE 23: DETECTION TECHNOLOGY

2.1 DETECTING ENTRANCE TO PREMISES

TECHNIQUE	OPERATION	COMMENT
A. At building perimeters		
Photo-electric beams —visible light —infra-red light	Establish light beams from point-to-point along outside perimeter of courthouse; person or object interrupting activates alarm; light source and receiver	Works during hours of darkness
Floodlights	Light building exterior decoratively, and for personnel or TV monitor surveillance	Personnel must observe directly or on monitors
Closed-circuit television (CCTV)	Normal TV cameras for daylight or floorlit buildings and ultra-sensitive cameras for unlit night surveillance; monitors also can be fitted with automatic detectors to activate alarms	Unless automatic detector used, requires constant attention
B. At building entrances		
Door alarms Magnetic switch Mechanical switch Open or closed circuit	Applied to doors, windows, gates, etc; alarms locally (buzzer on door), remotely or both when door opened by key or force	Can be connected to commercial, police, or security staff central office; alarm location identified by central office equipment
Wall vibration pickups	Applied to walls to sense and amplify unusual vibration levels, send remote or local alarm; sensitive to sledge hammer blows, boring drills, etc.	Main use: vaults, safes; prone to false alarm at normal building vibration levels
Light sensors	Detects light entering when safe or closed dark space opened; remote alarm routine	Very sensitive and reliable
C. For interior spaces		
Switch cords and mats	Placed near entrance, sounds alarm, local or remote, when depressed	In stores, signals customer's entrance
Ultra-sensitive microphone	Picks up indistinct room sounds; possible false alarm detecting rodents, cat, birds, street noises	Used in vacated building, otherwise false alarm on normal activity
Microwave	Small wall transmitters, receiver(s) flood corridors, rooms with "radar-like" energy; adjusted and calibrated to space; movement detected of greater than set minimum velocity of objects greater than set minimum size. Signals locally or remotely when beam disturbed	Possible false alarms on electrical interference from radios, elevators, etc; can be jammed and deceived
Ultrasonic	Similar to microwave but emits sound energy of higher than audible frequency; transmitter (loudspeaker) and receiver (microphone)	False alarm prone on air movement, from heat, wind, vibration, vents, blowers; can be jammed and deceived
CCTV	Similar to building perimeter application	Similar to building perimeter comment
Capacitance	Safes, file cabinets; detects change in electronic capacitance to ground when person touches	Not too reliable; setup may be too complex
Door alarms Wall vibration pick-up Light sensors	Similar to operation at building entrances	Similar to building entrance comment

2.2 DETECTING CONCEALED WEAPONS

TECHNIQUE	OPERATION	COMMENT
At doorways, turnstiles, desks, gates, search point and in corridors		
Magnetometer	Senses alteration in normal ambient magnetic field when magnetic metals (steel, iron) brought near	No radiation from devices; can indicate falsely on keys, coins, when sensitive enough to reliably detect weapons
	Can detect concealed guns, knives, metal combs, tools, ice picks, etc., carried on person or in packages; alarm signals audible or visually, local or remote	Can fail to detect weapons when made insensitive to false alarms; useful to screen possible weapons carriers and limit number of personal searches
	Models hand-held (night stick size) and fixed (two tall tubes); aimed at person or walk between tubes—immediate reaction	Can be useful to locate metallic objects, frisking still necessary
X-ray	Compact machine radiates into packages; X-ray film, including Polaroid, used for indicator	Can detect weapons hidden in items ordinarily not opened; portable radios, tape recorders, briefcase, false bottoms, etc. Not useful if packages can be opened. Film must be developed, relatively slow indication. Trained interpreter must read picture for dynamite, bomb components, other eye discrimination. Cannot be used on persons, X-rays harmful

TABLE 24: SIGNALLING AND COMMUNICATIONS TECHNOLOGY

3.1 PERSONAL SAFETY: SIGNALLING EMERGENCY CONDITIONS

TECHNIQUE	OPERATION	COMMENT
Alarm button concealed and fixed to bench, desk, chair, etc.	Connection by wire or radio system (see below) to remote courthouse location. About 4"x2"x1". Connects to central office where space identified, alarm network can cover many spaces Actuated by finger on button, removing weight (a book) from switch, pulling paper from switch jaws, foot pedal, etc. Actuating device also can activate surveillance equipment (TV or audio pickup) to transmit to central office visible and audible activities	Useful in courtrooms, chambers, other offices; unobtrusive; reliable and precise, usually difficult to actuate false alarm. Location depends on personal judgment—in court, probably at bench. Courtroom courthouse must be wired, if wire device used, to connect each location; can give local alarm (in courtroom), if desired. Available from any sources
Alarm button concealed on person	Similar to above; cigarette-pack size radio transmitter signals to receiver and relays to central station; transmitting frequency and possibly other signal characteristics identify unit, person carrying it and assumed location; not restricted to one location; can be transferred to another person	Similar to above except does not directly identify location, only bearer; simpler to install than wired alarms; needs additional equipment to actuate local alarm

3.2 REMOTE SURVEILLANCE: TRANSMISSION OF COURTROOM PROCEDURES AND REMOTE SPACE ACTIVITY FOR OBSERVATION ELSEWHERE

TECHNIQUE	OPERATION	COMMENT
Closed circuit television (CCTV)	TV cameras fixed to walls, ceilings; operated from remote location; zoom or turret lenses; transmits picture of space to monitor via wires. In courtroom application, as for defendant tried "in absentia," can be manually operated in studio-type situation. A monitor panel for camera network throughout courthouse feasible; ultra-sensitive for low light levels, normal cameras; automatic monitors to detect movement feasible	Manual or auomatic/manual monitoring needed (continual manual monitoring fatiguing); can reduce security manpower patrol duties. When used "in absentia" trials, may require special legal precaution; should not be subject to possibility of unauthorized recording
Film cameras	As in banks, automatically operated, remotely actuated cameras photograph persons in emergencies for subsequent identification	Possible use as evidence and identification for apprehension
Audio	Emergency-actuated system transmits courtroom situation to central security office	

3.3 COMMUNICATIONS

TECHNIQUE	OPERATION	COMMENT
A. Point-to-point, wired		
Telephones, intercom	Emergency signalling with special dial codes to and from security offices; party-line broadcasts of emergency messages from central security office to all others	Telephone on cradle also used in system to pick up and transmit sounds to prearranged receiver, under local or remote control
B. Sound broadcasting		
Audio public-address system	Broadcast to public in crowd- and riot-control operations or to security personnel control operations Notification of evacuations, fires; in selected spaces and times, public information on calendars, court locations; to call participants into court	
C. Mobile		
Radio Portable "walkie talkie" Fixed or portable central station Broadcast or two-way operation Voice transmissions or alarm signals	Broadcast messages throughout courthouse from central transmitter to unlimited number of portable receivers—voice or alarm signals; two-way transmissions throughout courthouse between central transmit/receive station and limited number of portable transceivers; multi-channel capability to handle multiple communications simultaneously, either broadcast or two-way; coverage throughout courthouse, including all closed rooms, sub-basements, elevators; selective calling capability to address specific receivers	Requires FCC license and frequency allocations; portable units battery operated, can be small and secreted, if desired; system can connect to PA or telephone systems; courtroom alarms can feed system; integrates into courthouse communications for normal (non-security) operations; receivers can be silent (visual alarm notifies bearer to go phone or take other specific action) or squelched (to be silent except when called)

TABLE 25: PROTECTIVE TECHNOLOGY

4.1 LOCKING SYSTEMS: DOORS, GATES, TURNSTILES, OTHER ACCESS MECHANISMS

TECHNIQUE	OPERATION	COMMENT
Mechanical locks	Conventional lock-and-key systems with hierarchical mastering	Various devices using mechanical and magnetic keys inserted in lock actuate it; function only to lock and unlock access (no record keeping); locks difficult to alter; difficult to limit availability of keys; most keys easily duplicated
Electrical locks	Lock operated by electrical solenoids, no conventional key; actuated by switch (pushbutton on desk, etc.) or inserted magnetically-coded card; lock measures magnetic code and actuates itself, if set for that code; key cards issued to personnel as keys can also be ID cards; hierarchical mastering possible; control of all or some courthouse locks from central office possible, i.e., to seal off particular area	Magnetic keys difficult to duplicate; code usually cannot be changed; new key card must be made if lock code is changed by rewiring or inserting a permanent or temporary code card; standby power source required; locks can be networked into door alarm system, replacing separate alarms
Computer-controlled locks	As above, but with added control and recording capability provided by small digital computer wired to all courthouse locks. Computer determines key cards allowed to actuate each lock, according to memory-stored list; hierarchical mastering associated with key card code also can be assigned to bearer for pre-determined access; one key per person for any number of doors; lock time control by central computer can be programmed to lock public doors after hours; all lock status (open or closed) computer-monitored, custodial operations included	Record kept, printed out of each time lock opened and by which key; list of key/door authorizations can be modified at central computer in real time. Overriding control by computer can open or close any lock selectively; locked doors automatically relock and cannot be left open; computer will automatically signal malfunction, blocked door, etc; feasible to check automatically from central office any door left open

CONCLUSION

Many court administrators have an opportunity to make use of architectural security measures when a major renovation or new construction program is to be undertaken for their court buildings. The architectural approach to security is more desirable, in that case, than manpower, even assisted by technology. The reasons include cost advantages, performance improvements, a more efficient use of overall space and a minimal qualitative penalty. Many features of architectural security are simply those of effective design for the functions of a court and allow also for the inevitable changes in plan that accompany changing functional and procedural court requirements. Comparisons between different architectural means to achieve courthouse security can be made using a cost and effectiveness evaluation method outlined here, as can comparisons between different operational methods. In general, where architecture, space management or operations are alternatives, the architectural method will have a greater and more constant effectiveness, and is preferable. In situations when it is only possible to modify operational procedures, including the installation of security equipment, a cost and effectiveness comparison of different methods is feasible and can be conducted in accordance with the procedures described here.

CHAPTER IX

A COMPREHENSIVE INFORMATION COMMUNICATIONS SYSTEM

In the mind's eye of many a court administrator there no doubt is the vision of a not distant day when judicial facilities will be equipped to process many levels of information with the aid of a variety of communications devices and techniques.

These administrators see cases flowing from inception to disposition unencumbered by information processing delays now attributed in large measure to ubiquitous and unwieldy bureaucratic procedures and manpower shortages.

To many administrators, the public entrance area of a courthouse will be, not the place of confusion it is in too many facilities today, but rather, will function as an efficient nerve center, displaying case status electronically and retrieving in seconds from computer memory banks case and related information, or automatically printing out instructions for locating data in a nearby microfilm bank—itself having miniaturized room-upon-room of laboriously compiled and inefficiently stored record ledgers.

Floors above this communication center, a judge needing data vital to a decision would activate a computer terminal in his chambers for instantaneous retrieval. Attorneys preparing case papers elsewhere in the building might have similar access capability.

In a comprehensive communications system, the computer is but one component. Another relates to the security function. Making extensive use of closed-circuit television and other monitoring devices, and tied into the entrance-area nerve center, the security function could substantially minimize threats to court procedures.

A trend toward a more sophisticated communication system is indicated in the use of video-tape equipment and systems for the recording of depositions of witnesses not readily available for a trial, for recording trial procedures as an alternative to shorthand court reporting, and even for presenting an edited version of the trial to the jury, deleting all irrelevant matters. This trend is bound to have a significant effect on judicial facilities planning.

Another component, clearly lacking in most locations, is a directional sign system to guide motorists, users of public transportation and pedestrians to their final destination within a court facility. The model for such a system might well be patterned after those used in conjunction with major transportation terminals.

Signs as all-encompassing as those carefully provided for airport users are a marked contrast to typical court application of random placement of a diverse collection of rudimentary displays having little in the way of design to distinguish them from other directional information, and much about them that is confusing. It is tempting to speculate on how many court procedures are delayed because a principal participant is wandering aimlessly through a passage under the court building or is still in his car searching in vain for a parking lot he was told is nearby.

No court complex to date is known to possess a comprehensive information communications system, although some, notably Philadelphia and Chicago, are developing components of a system. It is the intent of this chapter to provide the foundation for such a basic system for general application.

DEFINING SYSTEM COMPONENTS

A comprehensive information communications system for courts and related law-enforcement facilities can be defined as a comprehensive arrangement of essential information within a logical network of relationships, each contributing toward improving the administration of justice.

In any judicial facility complex, a comprehensive information communications system can be identified by its several subsystems.

- An integrated network of signs and other visual devices to direct persons from outlying areas to a facility complex, to a building within a complex and a final destination within a building.
- Public information communications systems within the court complex that can provide to qualified persons as expeditiously as possible all essential information relating to a case.
- Information input and retrieval systems that store all relevant historical and current case information for automatic and instantaneous retrieval, when required.
- Security communications systems that provide optimum security for court buildings at minimum expenditure.

This chapter describes the major components of a comprehensive information communications system, and a method implementing such a system throughout a court complex. The comprehensive information communications system, hereafter referred to as "CICS," can be used to provide a wide range of interrelated services.

Integrated Network of Directional Signs. An integrated directional sign system is necessary to direct the public, including attorneys, witnesses, jurors, litigants and the general public to a final destination within a court facility. A series of simple, yet well-designed signs and maps in major subway stations, on subway trains and buses and on local streets is recommended as an initial step.

The sign system, however, should be only one component of an overall program for the courts. The design of summonses, warrants and other court legal documents and forms, should be unified in design and, perhaps, standardized for easy identification. Summonses, subpoenas and notices of appearance, all requiring the presence of the summoned person in court, should include specific directions to the appropriate courtroom or clerk's office in a court building within a judicial complex.

It would be very useful to include on such forms a simple map of the judicial complex and its geographical relationship to major public transportation routes, major roads and available parking areas at or near the complex. This map should be designed for standard all-purpose use, easily recognized in many applications. An identical map in larger scale can be placed at strategic locations near the judicial complex to orient and direct persons once in the area.

In planning such a system, reference can be made to directional sign and graphic systems sometimes used to guide motorists to airport terminals. In large metropolitan airports, such as New York's John F. Kennedy International Airport, where various airlines operate their own widely-dispersed terminals, a system of number-coded and color-coded signs guides motorists to their destinations. Such a system, color-coded signs installed on roads, beginning several miles from a court complex, could guide the motorist to his destination.

At major airports, a large number of private cars, taxis and airport buses have been known to overload roads and car-park facilities. Much as some cities are attempting to discourage the use of cars in overcrowded city centers, the trend at airports is toward providing large car parking structures along the periphery of the facility and relying on intra-terminal buses (mini-buses, in some cases) or monorail to move passengers to their destination. A similar approach could be evaluated for feasibility in relation to urban court complexes.

Public Information Communications Systems

Building-Wide Approaches. A public information communications system would provide case information such as case number, litigants' and attorneys' names, case status, hearing date, courtroom number, presiding judge, court decisions on the case to date, and so on.

The analogy of the airport information communications system again can apply here. In an airport terminal building, a passenger is directed to the appropriate gate by a series of signs displaying flight number, destination, time of departure and gate number. Having arrived at the waiting and check-in area outside the gate, a closed-circuit television display unit or other posting device informs the passenger of boarding time and other up-to-date flight information.

In designing such a system for court use, more entries would have to be posted. Flight information can be accommodated and updated continuously usually within a relatively small posting space. Furthermore, passengers arrive at and depart from an airport at various times; under most existing court operations, persons tend to arrive at the facility at about the same time, typically for 9:30 a.m. and 2:00 p.m. sessions.

Today, the only sources of information available to the public entering most courthouses on court business are an information desk manned by a court officer who may be able to confirm cases being heard on that day, and calendar sheets posted on a bulletin board. Many persons, experience shows, wander from space to space within a facility trying to determine where their cases are being heard.

To repair this inefficient communications technique, a series of signs in the lobby should direct the public to major parts of the building (for example, to the clerk's office and courtroom floors), as well as to an information center where clerks on hand would be equipped to provide case information to those involved in cases. Automatic visual display units similar to those used at airport ticket counters to retrieve flight information and seat availability could be used in the courts to retrieve case information in response to public inquiries.

An extension of the lobby sign system on each floor and an information and security station near the elevator lobby on each public floor would provide a much-needed service, particularly for those who use the facility infrequently.

Courtroom Requirements. The kind of information communications system used for each courtroom would depend on the method of court operation. In courts where individual calendaring is used, cases assigned to a judge remain with that judge, until they are disposed, and persons involved in those cases would go to the same courtroom for every action taken. In courts where a master calendaring system is used, ready cases are assigned by a calendar judge to a number of hearing and trial courtrooms.

In the latter case, it is recommended that the calendar courtroom have a large public waiting area equipped with a large information display similar to those used at main passenger waiting lounges in airport concourses—but designed here as an integral part of the building environment, so as to preserve dignity appropriate to court building spaces. This display would show cases ready to be heard in chronological sequence during the morning and afternoon court sessions (when the court calendar can be split into two sessions). As each case is disposed by the court, information relating to it would be removed automatically by the computer from the display board to provide a continuous updating of cases throughout the day. (A more detailed description of this system is contained in a later section of this chapter under the heading, "Specifications: Information Input, Retrieval and Display System.")

For courts using individual calendaring, some type of smaller posting device, either a closed-circuit television display unit or a three-line modular flap unit, could be installed outside each courtroom to display information pertaining to the case then being heard in that courtroom, as well as two or more ready cases to follow.

To obtain accurate information on average time per type of case (hearing and trials of both misdemeanor and felony cases), detailed time studies of all kinds of cases over an extended period of time, and possibly simulation studies made through computer programming, would be necessary. Such information would be posted on display boards, cathode-ray tube (CRT) or visual display units. For example, if the kind of hearing being conducted in the courtroom averages 15 minutes and the type of case following averages 30 minutes, and if the first case started at 10 a.m., then the second case would be scheduled for 10:15, and the third case at 10:45. These times, of course, can be updated and rescheduled continuously.

In the master calendar courtroom where adjournments are granted and dates for subsequent appearances are determined by the judge, the clerk of the court should have a visual display unit with two-way operator-computer communication through a typewriter keyboard (CRT terminal) which would supply, on demand, information on the first available date and approximate time and courtroom number for the court to hear the adjourned case. When the judge decides on the date, time and place for the case, a card printout would be produced automatically by the machine as a reminder for the litigant and his attorney of their next appearance in court.

Trial and hearing courtrooms would not need such units; the rare request for an adjourned date can be referred to the clerk in the master calendar courtroom who would seek the necessary information for the clerk in the trial and hearing courtrooms.

An alternative approach would be for the judge in the trial or hearing courtroom to return the case to the master calendar judge for rescheduling. The system described above maximizes the use of available court personnel and existing facilities.

Information Input, Retrieval and Display Systems

Visual Display Systems. It is envisioned that automatic visual display units or CRT terminals could be installed in chambers and offices for instant information retrieval during case preparation and processing by judges, probation officers, prosecuting attorneys, legal aid attorneys and other appropriate court personnel. Information relating to the status of a case, the time and place of next court appearance and prior judicial actions could be retrieved on demand.

The cost, however, of installing a terminal in each office or chamber within a facility, at least in the near future, would be prohibitive. A small number of units could be positioned centrally in strategic locations for sharing by several persons or departments. As an alternative use, department personnel requiring specific information could phone an operator at each unit location who would request the information from the main computer for distribution.

For legal research and planning, the researcher may require information on, say, the average time elapsed between arrest and sentencing for a specific type of felony case in a specific city; or he may desire information on major causes in delays on the work output of judges for estimating the number of judges needed to reduce case backlog to an acceptable minimum. To research such information manually through case files or in a library could consume thousands of man hours—and still be incomplete.

It is technologically possible to input legal research information into a computer memory bank for complete and accurate retrieval through computer terminals and printout equipment. The availability of such a system would enable problems to be accurately defined, alternative solutions to be clearly evaluated and historical information on legal interpretation to be comprehensively cross-referenced.

Although work is moving forward to compile, index and cross-reference statutes, laws and case information, and to make computer inputs of it, the initial cost of the system now is prohibitive for most facilities. However, it is envisioned that such a system eventually will be within reach for many courts, and that it will substantially reduce the time attorneys and legal researchers spend in tedious and repetitious research.

Video-Tape Systems. Another area being experimentially developed is the use of video-tape for recording depositions and trial proceedings.[1] Video-tape is especially useful for recording depositions from witnesses who are either too old, too ill or whose professional obligations limit their time to serve as witnesses in court. If the video-tape system is approved and adopted by the courts, it can also be used for security surveillance, to record physical evidence and for presenting trial procedures to juries on request.

Video-tape system components to record a typical court proceeding are a multi-track video-tape recorder, a recorder monitor, three high-resolution, low-light-level cameras, a special-effects generator for using split-screen techniques, a remote control pan head for one camera and, where not already available in the courtroom, a sound system consisting of four to six microphones and a quality pre-amplifier.[2]

Two of the three cameras would be installed in the courtroom, one capable of 180-degrees rotation to cover the entire judicial area, and the other fixed for concentrating on the judge and witness. Each would have a zoom lens for close-up views of participants in the judicial area. Each camera also could transmit images to a television screen in a nearby room, where a defendant could be placed because of unruly courtroom behavior. A monitor room would be located outside the courtroom, separated by a glass wall for viewing court proceedings. The third camera would be used to cover conferences between judges and attorneys during the trial and would be located either in the judge's chambers or a conference room. In metropolitan court complexes with multiple courtrooms, it is more economical and better security to have a central monitor room for a group of courtrooms rather than to have one per courtroom. Tapes then could be stored at one location and fewer technicians and equipment operators would be needed.

[1] One experimenter, William M. Madden, in the "Interim Report on Experimental Videotaping of Court Proceedings," Chicago, Nov. 1968, p. 1, says: "When used to record discovery depositions, video-recording or video-tape systems offer the trial attorney an opportunity to review the demeanor and effectiveness of prospective witnesses, even though he may not have personally been present at the deposition."

[2] Op. cit., p. 2.

Experimentally, the video-tape system has been shown to be a generally adequate substitute for a competent court reporter when one is not available. Alaska has relied on voice recorders to record all trial proceedings, but video-tape systems have to overcome many technical problems and objections before they become widely adopted.[3] Regardless of the recording system, it should be possible to input the recording of court proceedings directly into the computer, and to retrieve the transcript as a printout. A number of copies of the transcript can be produced in a very short time, when compared to the normal amount of time required for manual transcript typing.

While it is predicted that video-tape applications will expand in the courts, existing system problems require attention before its use becomes widespread. There is potential broad application of video-tape in the recording of depositions from disabled or inconvenienced witnesses. When problems such as equipment maintenance and servicing of large-scale installations are overcome, extensive use of video-tape for recording trial proceedings, with edited tapes for jury deliberation (possibly with the jury excluded from the actual trial), will become more feasible. To date, experimental use of video-tape has been limited to small-scale operations.

Microfilming Systems. Documents reduced to microfilm size can be easily handled by relatively inexpensive equipment and stored in an inexpensive central records library containing millions of documents. Such a library could result in considerable savings in information search time. A central microfilm library would protect record integrity. Documents in microfilm, unlike ordinary records which can be taken and lost, would be viewed on library equipment. An inexpensive duplicate set of microfilm documents could be stored in a remote safe location.

A standard 24:1 reduction ratio of ordinary records compared to microfilmed records can result in more than a 95 percent storage space saving. Even greater savings would accrue from using higher reduction ratios. At a ratio of 150:1, 3,200 documents (8½ x 11 in.) can be contained on a 4 x 6 in. microfilm card. The standard file drawer holds approximately 3,000 (8½ x 11 in.) documents filmed at 24:1 reduction ratio, all photographed on a 100-ft. roll of 16-mm microfilm. A 215 ft. Datapak would hold twice the number of documments. Standard two-drawer microfilm cabinets are 52-in. high, 24-in. wide and 20-in. deep. Total capacity is approximately 1,350 rolls of 16-mm film. Thus, a microfilm cabinet can accommodate film containing 4,050,000 documents (8½ x 11 in.), double that if Datapaks are used.

Some idea of microfilm's potential space savings is apparent in this example of practices in New York County's Criminal Courts Building: Records storage cabinets have been occupying over 15,000 sq. ft. of prime space on two floors of the building. The same records on microfilm can be easily accommodated in three microfilm cabinets, occupying less than 1 percent of the former storage area. Copies then could be made from the original microfilm copy with very little additional cost and stored at a remote location. Initial costs of microfilming can be recovered rather quickly in the form of space savings and improved manpower utilization. (It has been estimated that the process of microfilming old, folded documents, some, in this case, dating back to 1774, would require two men working full time for approximately nine months.)

Microfilmed documents can be retrieved at speeds comparable, in some applications, to real-time computer systems—usually in less than five seconds. More than 60 seconds can be saved by randomly retrieving information on microfilm, as compared to using a large tub file.

Security Communications Systems. All security communications systems installed in court complexes should be monitored from a central security station and, possibly, a number of substations. The central security station should be located on the entrance floor, or at a level central to the floors with public and court activities. In multi-story court buildings, there can be a security substation on each floor or group of floors, with the central station strategically located on a floor most convenient to the substations. (A comparable system is used in Chicago's Civic Center Building.)

In the criminal trial courtroom, with its need for adequate security, a communications system to be linked to a central security station or substation is essential. A push-button located on the side wall of the judge's bench and the clerk's or bailiff's station, when pushed by the knee (to avoid noticeable overt upward or downward movements caused by the hand or foot), would activate in the security station a control panel alarm and light, signifying location of the disturbance. By depressing the lighted

[3] Op. cit., pp. 8-1.

button (if circuit completion does not open a communications channel), a security officer would listen to courtroom activity. Depending on his evaluation of the urgency of conditions, the officer would begin a plan of action. In situations of extreme emergency when instruction to persons in the courtroom is necessary (for example, evacuation directions during a bombing incident), the security officer would depress another pushbutton to speak directly over a loudspeaker system mounted in the courtroom. By installing such emergency devices in courtrooms, hearing rooms, robing rooms, chambers and other spaces where security problems may arise, security level of a court building can be increased proportionally. It is important to stress that proper space planning for security prior to final court facility design is more effective as a security risk deterrent than indiscriminate selection and installation of costly security equipment. Such equipment should only be used to enhance security when space planning concepts alone prove to be inadequate.

Other security communications options between courtroom and security station include:

- A simple alarm located in the security station activated when a push-button is depressed at the judge's bench or at the clerk's station (no communications channel).
- A simple two-way intercom telephone between judge, clerk or bailiff and the security station.
- An inter-connected alarm-telephone system which activates an alarm when the phone at the judge's bench or clerk's station is off the hook.
- A transistorized radio alarm unit the size of a cigarette lighter which can be carried in a pocket and which, when depressed, would activate an alarm at a remote security station. If necessary, this unit also can provide two-way intercommunication with the security station. A similar-size unit with an alarm that can be activated by abnormal physical movements also is available, but is much more costly.

Handling disruptive defendants and unruly spectators poses yet another security risk. While it is technologically possible to separate courtroom judicial and public areas by a shatter-proof, one-way glass or plastic partition, it raises questions of restrictions upon defendants' rights to a "public" trial. Similarly, the public shut behind such a "wall" may question whether the court is dispensing fair and equal justice. In short, a partition conveys that the court has lost respect of public and participants alike to the extent that it is compelled to take extreme measures for its own safety.

Should the court resort to such a solution, a communications system linking the two spaces would be essential. The trial proceedings will have to be transmitted from the judicial to the public areas through loudspeakers placed in locations to prevent echoes or "fluttering" effects.

If a room separate but adjoining the courtroom is needed for detaining a disruptive defendant during the trial, assuming its legal acceptability, the same sound system or a closed-circuit television or video-tape system (as described in the previous section) would be required for the defendant to see and hear the court proceeding. In several states, the law permits the court to remove disruptive defendants and the trial to continue on the basis that the defendant gave up his right to presence as a result of his actions. Other states, including California, have passed laws requiring transmission of the trial proceeding to the isolated defendant in an adjoining room.

Court and law-enforcement facilities can be television-monitored for security much in the same way as are modern multi-story apartment buildings. A surveillance system for such buildings usually consists of a television camera scanning each entrance, with images appearing on receiver screens at an attended central main entrance.

Television surveillance in court buildings can help detect possibly suspect persons at entry and assist in locating a prisoner or detainee during an escape attempt. Such a system might use a camera strategically located on each courtroom floor, with a panel of television receivers centrally located in the security control room on each courtroom floor or on the entrance level, or both. Unusual disturbances in public spaces on each floor could be detected visually and audibly, and measures taken immediately to restore order.

RECOMMENDED INTER-SPATIAL COMMUNICATIONS SYSTEMS REQUIREMENTS

Figure 23, page 119, shows the major types of communications systems recommended for use between major court spaces. The systems considered include audio communication (AC) which takes into account telephone and intercom; visual communication (VC) which involves button lights, video-tape and picture phones; visual surveillance (VS) which

covers closed-circuit television, video-tape, and watchman's tour; security communication (SC) which encompasses signals, alarms, combined alarm-intercom and alarm-intercom-video; and information input and retrieval systems (IR) which involve computer interface and video-display units. The types of communications systems required from one space to another vary widely. For example, audio and security communications are shown from courtroom to security station whereas, from security station to courtroom, audio communications and visual surveillance are shown. Some recommendations, especially the use of video-tape for surveillance and recording of evidence, depositions and proceedings, depend on future court rulings or legislative changes.

SPACES	COURTROOMS	CHAMBERS	SECURITY STATIONS	JURY DELIBERATION ROOMS	JURY CONTROL SPACES	DEPARTMENTAL OFFICES	CLERK'S OFFICE	COMPUTER ROOM	TEMPORARY PRISONER HOLDING FACILITIES	DISRUPTIVE DEFENDANT HOLDING FACILITIES	LAW ENFORCEMENT FACILITIES	PUBLIC WAITING SPACES
COURTROOMS		AC VC[1]	AC SC		AC	AC	AC	IR	AC[2]	AC VC[3]	AC	AC VC
CHAMBERS	AC		AC SC		AC	AC	AC	IR[4]			AC	
SECURITY STATIONS	AC VS	AC		AC[5]	AC	AC	AC		AC[2] VS	AC[2] VS	AC SC	AC
JURY DELIBERATION ROOMS	SC											
JURY CONTROL SPACES	AC	AC	AC					IR				
DEPARTMENTAL OFFICES		AC	AC SC[6]				AC	IR			AC	AC[7] VC[7]
CLERK'S OFFICE	AC	AC	AC		AC	AC		IR			AC	
COMPUTER ROOM	IR	IR			IR	IR	IR				IR	
TEMPORARY PRISONER HOLDING FACILITIES	AC		AC								AC	
DISRUPTIVE DEFENDANT HOLDING FACILITIES	AC[8]		AC								AC	
LAW ENFORCEMENT FACILITIES		AC	AC			AC	AC	IR	AC	AC		
PUBLIC WAITING SPACES		AC	AC			AC	AC	IR[9]			AC	

LEGEND

- AC Audio-communications including telephone and intercom systems
- VC Visual communications including video-tape and picture phones when available and if approved
- VS Visual surveillance including closed circuit television, video-tape and watchman's tour systems
- SC Security communications including signal, alarm, combined alarm-intercom and alarm-intercom-video systems
- IR Information input and retrieval systems

1. Record private conference between judge and attorneys
2. Guard's location in prisoner holding facilities
3. If facilities remote from courtroom
4. If economically feasible
5. Used only in emergency situations
6. Only in specific locations
7. Communications with clients, litigants, when applicable
8. Private communication between defendant and attorneys
9. From information clerk's location

FIGURE 23
RECOMMENDED INTER-SPATIAL COMMUNICATION SYSTEMS REQUIREMENTS

INTEGRATED SIGN SYSTEM (ISS): COURT COMPLEX RELATED TO CITY

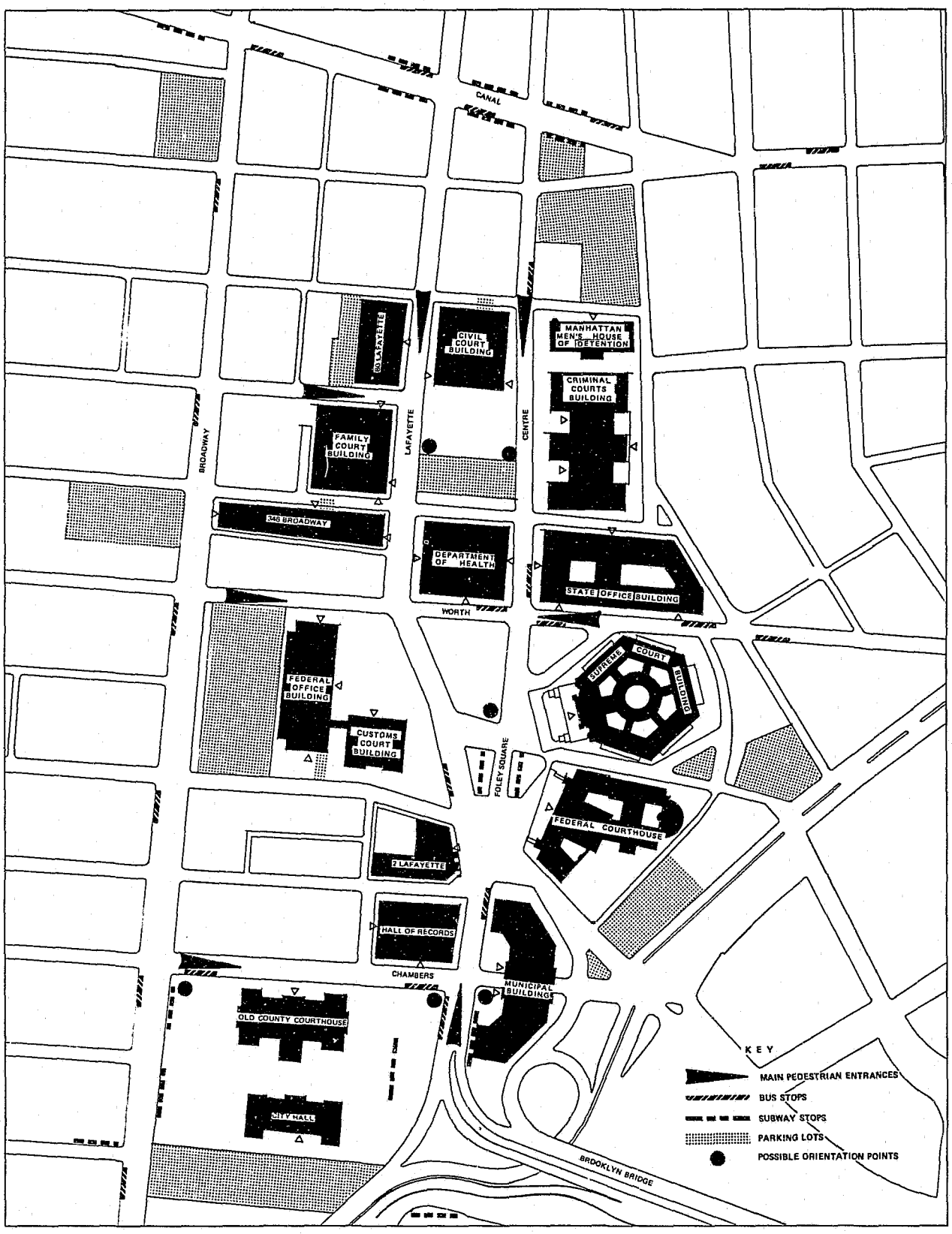
A well-integrated sign system is the keystone in an effective information communications system. In this section, guidelines for such a system are presented. A methodology based on findings of the Courthouse Reorganization and Renovation Program in New York City is capable of being applied in many areas to solve communication breakdowns common, unfortunately, to jurisdictions large and small.

Defining System Scope. An integrated sign system (ISS) should seek to direct a person in the most effective manner to a facilities complex, to a building within a complex, through a building to his destination and back again to his mode of transportation. In the Foley Square area of downtown Manhattan (See Map 1, page 120), where most of the courts of New York County and some federal courts are located, this means communicating effectively each day with many of the more than 450,000 persons who, it is estimated, travel to the area known as Lower Manhattan (incorporating Foley Square) to work, visit, or use the court facilities.[5]

The initial consideration in ISS design should be one of determining the scope such a system should encompass. It is essential, for instance, to establish frequency of use and volume of various modes of traffic into the courts area. ISS should become an integral part of a citywide sign system, and it would be desirable to assess the relative significance of a contemplated ISS to other such systems in the city. One of the most distressing attributes of many sign systems is their blight on the cityscape. ISS, foremost, cannot further proliferate urban ugliness.

Continuing initial research, a survey would be conducted to gauge pedestrian movement patterns to court facilities from transportation terminals, such as subway stations, bus stops and parking garages. Of the estimated 450,000 persons who daily travel to Lower Manhattan, about 22,000 arrive by car (including taxi), 90,000 by surface transportation (buses and ferryboats) and an overwhelming number, 337,500, by subway (including "PATH," a New York-New Jersey connection). While it is estimated that about one-fifth of this total number

[5] New York Office of Lower Manhattan Planning. "Manhattan Plan." New York City Planning Commission, 1970, Vol. 4, p. 23.



MAP 1
TRANSPORTATION STOPS AND PEDESTRIAN ENTRANCES

works in the Foley Square area,[6] ISS would communicate with many others along many routes.

Heavily traveled and direct routes to areas in which courts are located should be traced on a scale map of the locality. This procedure will provide the first indication of strategic locations—"terminals"—along an ISS system at which court directions are called for and should be posted.

Major transportation routes to the Foley Square area by car, bus and subway are shown on Map 2, along with major interchange points for the three transportation modes (bus, subway, bus-subway, car-subway, and car-bus). Major car routes into Manhattan shown on the map are those from Brooklyn, Queens, the Bronx and New Jersey. The map also indicates major Manhattan highways leading to the court complex.

Sign Design. The next stage in ISS development is the actual design of signs to be prominently displayed along frequently-used roads and at significant locations in or near mass transportation facilities.

The design settled on should complement and relate to—but not necessarily copy—previous or current court information display systems and above all should provoke instant identity with the court complex and buildings within it.

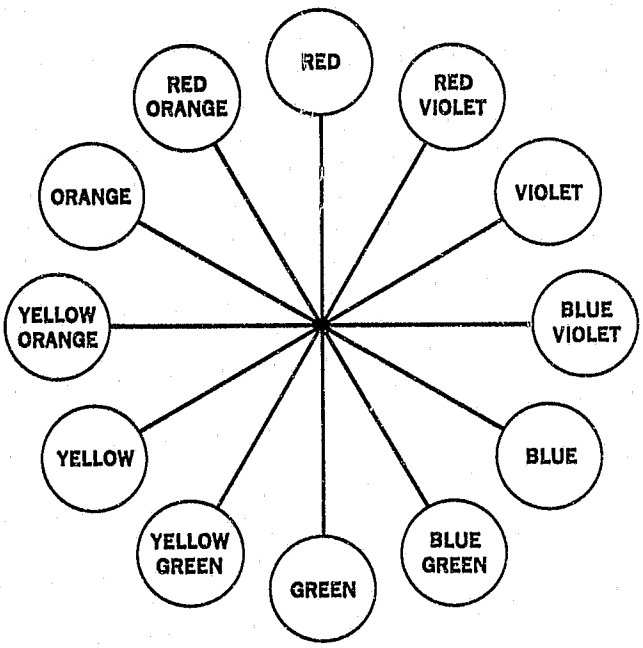
Simple geometric shapes are perceived far more easily than complex multiple shapes.[7] Certain colors are better perceived, too, as described subsequently. But, in shaping ISS identity, it would be well to avoid those shapes and colors commonly associated with standard road signs.

The choice of lettering can significantly enhance or detract from the effectiveness of a sign. Letters should be crisp, simple and well-shaped.[8] Sign functions should dictate sign size, but the total lettered area should not exceed 25 percent of total sign area,[9] providing an optimum ratio with the background field of 1:3.[10]

Required field of vision is a major determinant of letter size. One study suggests the following relationships for viewing a sign from a moving vehicle: [11]

Traffic Speed	*Letter Size*	*Readable From*
50 mph	6 in.	97 yds. (15 car lengths)
25–30 mph	4 in.	65 yds. (10 car lengths)
10–20 mph	2½ in.	38 yds. (6 car lengths)

Equally important for good visibility is the contrast between letter color and background field. Maximum contrast should be the guide; contrasting colors can be selected from the color wheel reproduced below.[12]



Studies of color preference and retention can aid the ISS designer. A study by a leading advertising agency [13] lists this order of preference by persons interviewed: blue, red, green, violet and orange. Women in the study voted in large part for yellow instead of orange.[14]

Psychological studies have demonstrated that colors can evoke subjective feelings.[15] Many studies show that among the primary colors, red excites, blue relaxes and that yellow stimulates ebullience. Light or pastel colors generally are considered "ac-

[6] Ibid.
[7] Lake George Park Commission. "Welcome to Lake George," New York State Natural Beauty Commission, Ticonderoga, N.Y. 1968, p. 4. This profusely illustrated booklet offers a broad range of sign designs and construction guidelines.
[8] Ibid.
[9] Young & Rubicam, Inc. "Research Results Reports," New York City, 1970.
[10] Parry Moon, *The Scientific Basis for Illuminating Engineering*, Dover Publications, Inc., New York, 1961.
[11] Solari and Udine, "Schipol Letterings."
[12] R. L. Gregory, *Eye and Brain*, McGraw Hill Book Company, New York.
[13] Young & Rubicam, *op. cit.*
[14] Ibid.
[15] Ibid.

tive," while "passive" colors are deeper or more somber.[16]

Whatever the final design of signs, they should be placed, at the very least, at major points of entry into the court area.* Using Manhattan and the Foley Square court complex again as the example (Map 2), signs would be placed at all bridges entering Manhattan, as well as at points of exit onto Canal Street from Franklin D. Roosevelt Drive (East Side Highway) and the Henry Hudson Parkway, (West Side Highway). Signs also would be located at intersections along major streets leading to Foley Square, including Broadway.

Signs at mass transportation facilities should be placed adjacent to route signs, at bus ramps, for instance, in major stations and at each transfer point. Directions to the court also should be installed on subway cars and in buses to familiarize local residents with court locations even for future use.

Staying with the New York example, signs could also be placed near stop designations inside each subway station (including the platform area) and along pedestrian transfer passages (at the major locations on Map 1).

Directions and court designations also should be placed at bus departure points, as well as along routes to the courts area.

Another suggestion that may merit implementation is to provide with appearance summonses a small, clearly drawn map indicating how to get to the courts area by car or mass transportation. Color used to designate locations should relate to signs used elsewhere in the system. Where precedent and legality permit, such a map might even be printed unobtrusively on the summons itself.

Road signs should be mounted at an appropriate height for reading from a moving vehicle. Height will be a function, in part, of vehicle speed and distance from the sign. Car manufacturers have investigated these variables in a number of studies. One reports the following findings: [17]

Speed Limit	*Distance To Sign*	*Ground To Bottom of Sign Height*
50 mph	97 yds.	10 ft.
30 mph	65 yds.	8 ft.
20 mph	38 yds.	6 ft.

Sign placement obviously must be coordinated with the agency that will implement the system for public roads and transportation facilities—usually the public works department.

In some areas, private transportation companies should be encouraged to participate in an information communications improvement program. In collaborating with all such agencies it may prove beneficial for the sake of overall community appearance to incorporate some existing directional information in the new ISS—without impairing the effectiveness of the new signs. It bears repeating that the guiding principle of ISS design must be to minimize "clutter" on roads and other transportation facilities.

ISS: COURT BUILDING RELATED TO COURT COMPLEX

Within a court complex, ISS would function through a series of "information banks" located at places prior research has shown to be strategic for persons to confirm directions. Central to this concept is a simplified area street map or aerial photograph clearly marked with distinguishing court and other symbols, colors and shapes. Certain more complicated directions—none should be too obtuse—may have to be given in a second language.

A variation on this "pictorial" system used in some European cities could serve as a model for the "information bank." An electrically-operated map board would be keyed to its location. A person would select a location to which he wants to travel, then depress a push-button designating that location. A chain of miniature lamps would light up in sequence, showing the most direct route to that destination.

Map elements should include the court and court-related buildings, major streets and traffic direction leading to them, parking lots and garages (public and private), and major public transportation routes. On another map—or on the same one if it does not hinder clarity—should be shown stops and terminals for public transportation and taxis.

For large court complexes like Foley Square in New York City, two maps should be used to research ISS. One would depict mass transportation routes

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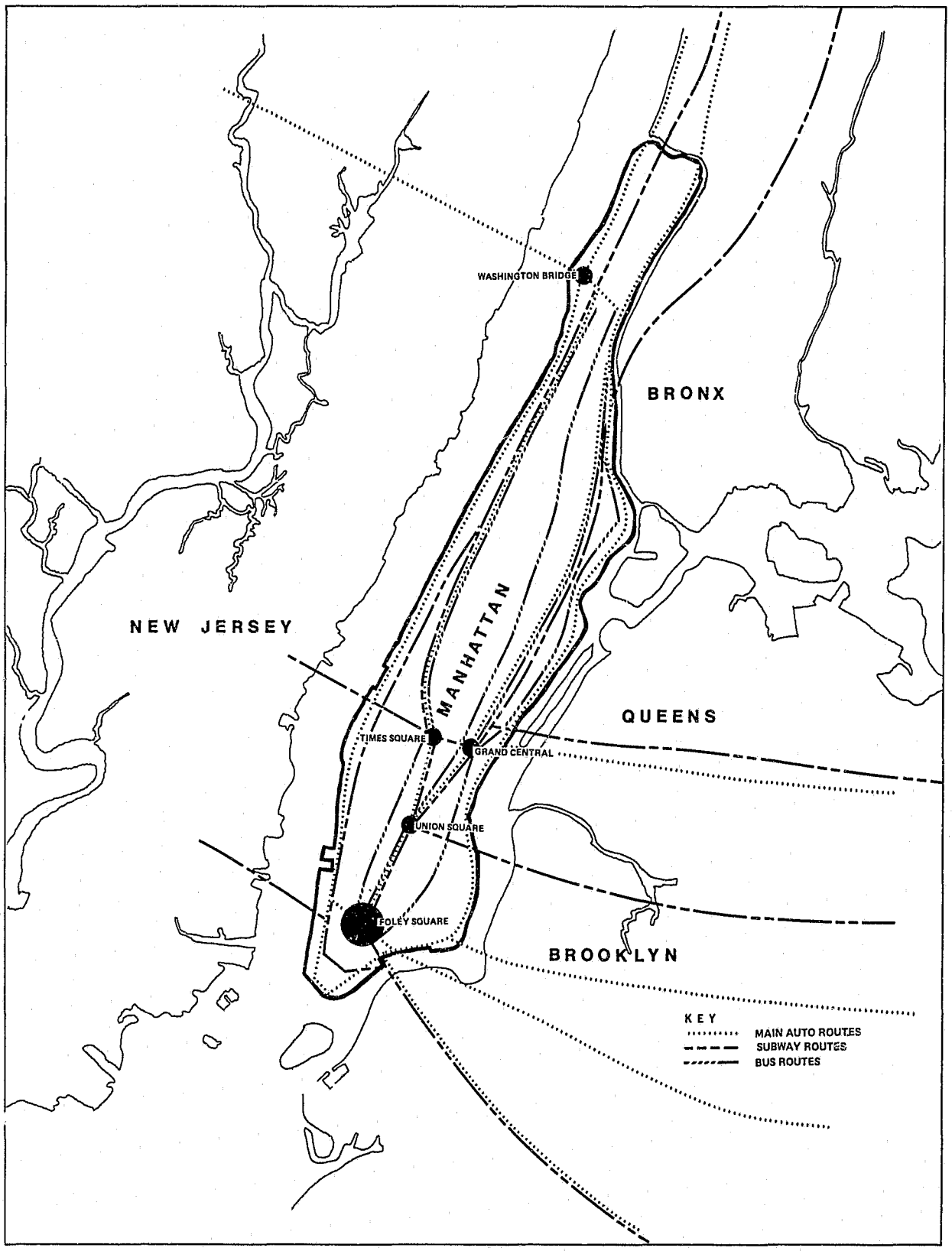
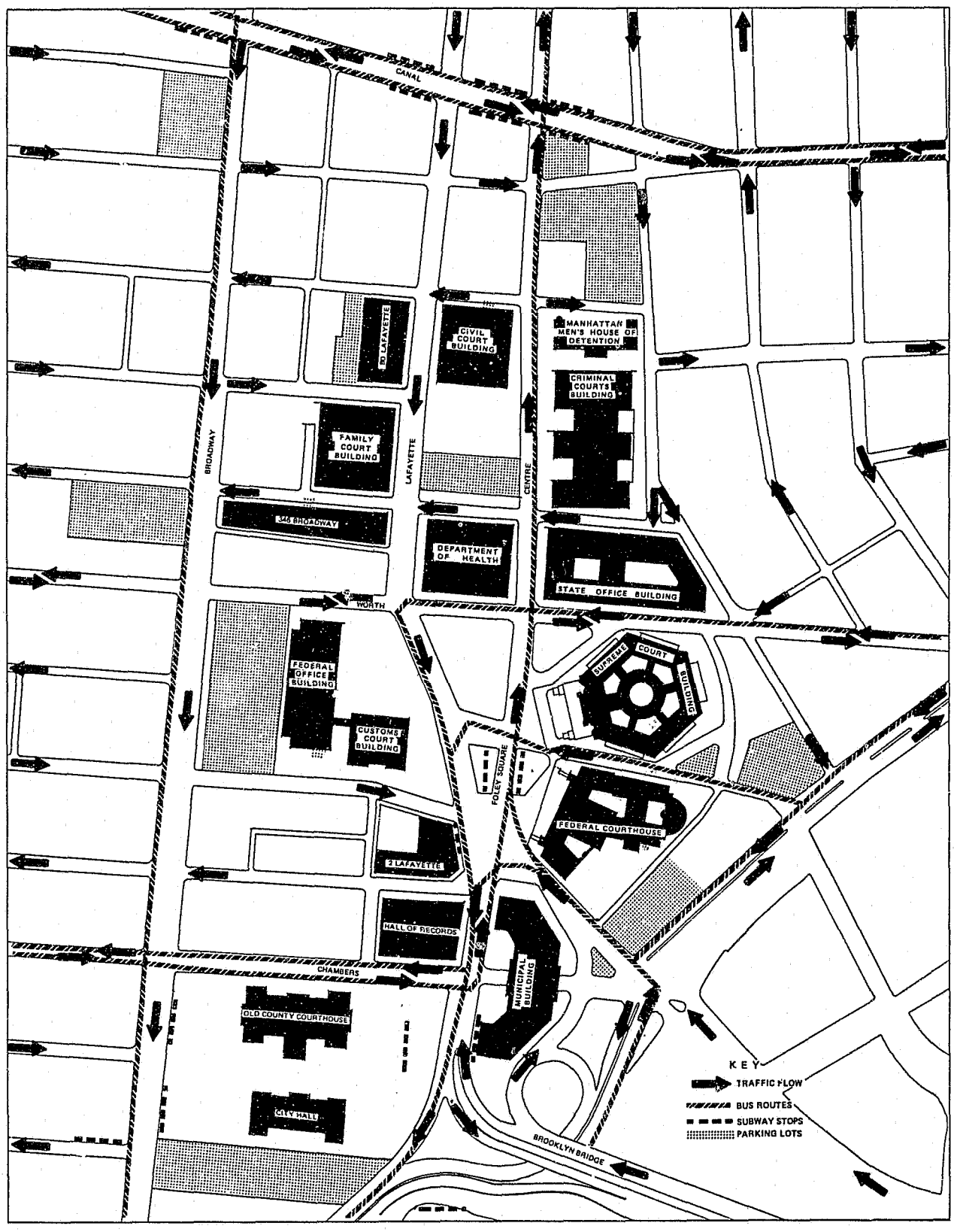
[16] Ibid.

*Vehicular traffic causes severe street congestion in downtown court areas and should be discouraged. It is strongly recommended that the pedestrian mall concept be considered for use around court buildings, with adequate parking garages located on the periphery of the complex, perhaps with a small fleet of mini-buses to ferry to their destinations those having business in the complex.

[17] W. H. Ittelson, *Visual Space Perception*, Springer Publishing Co., New York, 1960.



MAP 2
MAJOR TRANSPORTATION ROUTES



MAP 3
FOLEY SQUARE TRANSPORTATION ROUTES

and direction of traffic in the area (Map 3). The other would indicate stops made by buses and subways and the location of parking lot areas within close walking distance of court buildings (Map 1).

Map 1 shows most frequently-used ingress and egress for the Foley Square area. In this case, subways are the most frequently used means of travel to the complex, and ISS should extend to each station in the area.

Pedestrian orientation signs can be similar to those designed to be seen by persons in a moving vehicle. Lettering obviously does not need to be so large—¾ in., or less, for upper-and-lower-case information and, for titles, 1½ in. indoors and 2½ in. outdoors.[18] Pedestrian orientation signs typically are read from within 6 ft. The bottom of the sign should not be less than 4 ft. above ground level to facilitate easy reading. In some instances, such as intersecting paths, a multi-sided sign could be used to convey the same information in more than one direction. Consideration may also be given to providing seating in a sign location area.

Black circles on Map 1 indicate proposed locations for orientation signs. The system is used to draw persons away from main traffic flow, either vehicular or pedestrian. Orientation signs must serve the dual purpose of attracting the attention of those seeking information, while at the same time allowing other patterns of movement to proceed unimpeded.

ISS: INTERIOR SPACES RELATED TO COURT BUILDING

ISS components in court building interiors aid in moving persons from the entrance to their destination expeditiously and with minimum confusion. For this reason, information should be conveyed in stages on a series of signs.

The place of maximum confusion in most court buildings is the entrance area, and persons unfamiliar with the building tend to seek directions at this level. An orientation sign posted in this area within easy viewing range should attract attention through its shape, color and lettering, keyed to signs that guided the person to this location. Entrance-area signs should contain only the minimum information to direct a person to a second orientation point along the route to his final destination, preferably on the same floor as his final destination. Second-level orientation will allow for more leisurely reading and decrease primary-level congestion and confusion.

The concept of the entrance-area sign system can be similar to that used at airports and train terminals. A sequence of information boards suspended from the ceiling permits easy reading without needing to stop. Electrically-controlled display boards or closed-circuit monitors can serve a like function. But design of similar systems for court buildings and related law-enforcement facilities has to maintain "dignity" of the court or related facility, and would not convey all case information at this level.

Orientation signs in the form of large display boards should be located in an information alcove off the main entrance area away from lobby pedestrian flow. In addition to conveying major function information, the signs can direct persons to elevators, escalators, stairs or hallways.

Lettering for entrance-area signs need not exceed 2½ in. in height, a dimension that, on the average, can be read easily from a distance of 38 yds.[19] Signs at this level also should maintain the 1:3 lettering-to-background ratio described earlier, and should convey information with as few words as possible, precisely used. The more information given to a person at one time, the more he tends to forget.[20]

Communicate in Stages. A symbol or color designed and used throughout ISS to represent a particular facility should be prominently used in the building it represents. Repeating a simple design element injects into the sign system a sense of order, orienting persons more easily than does a mix of colors and symbols.[21]

Major functions in a court or related facility and their locations, should be communicated simply, particularly at the entrance level, as in these examples:

CLERKS FLOOR 3
or
COURTROOMS BLUE WING

After a person arrives at a major area or floor of destination, additional information can direct him to a specific location, or secondary waiting space. On this level, sign lettering can be smaller—1½ in. maximum— a dimension readable from a

[18] Solari and Udine, *op. cit.*

[19] Solari & Udine, *op. cit.*

[20] Alpern, Lawrence & Wolsk, *Sensory Processes,* Brooks Cole Co., Belmont, California, 1967.

[21] Erickson, *Fundamentals of Teaching With Audio-Visual Technology,* McMillan Co., New York, 1955.

distance of 19 yds.[22] The secondary breakdown in functions on this level could be:

CLERKS

Cashier ---------- 418
Record ---------- 419
428 ---------- Calendar
431 ---------- Juvenile

Signs at secondary locations should be placed at eye-level, with the lowest line of lettering at least 4 ft. above the floor and the highest line no more than 7 ft. above the floor.[23] Signs should be placed so that information conveyed can be seen easily upon exiting an elevator.

Room entrances should be well-identified so that a person knows he is at his final destination. A simple title giving room and occupant (when there is one) positioned at eye-level, above or to one side of the door frame, is an effective solution. Placing this information on the door will conceal it when the door is open. If a room has several entrances, then the entrance for the public should be displayed clearly with number and title. The other entrances should merely be titled without the room number. Lettering for such signs should be at least ¾ in. high.

Signs in Other Public Places. Information signs at public spaces inside rooms, such as a county clerk's office, are useful in assisting the public to complete and file forms. Titles of 1-in. lettering in this location can be read from 40 ft., if letters are bold and crisp. Information printed in ¾-in.-high letters can be read from 25 ft.[24]

In such spaces where forms must be completed, it may also be useful to post at eye-level an enlarged completed sample as a guide to lessen workload of court personnel. Mixing of languages in one visual block of lettering should be avoided.[25]

Emergency Signs. Signs such as these should be presented without words or letters, when possible, to minimize confusion and reading time. Symbols can be used to lead people quickly and safely out of buildings.[26] A sign depicting a fire symbol, for instance, could be used in conjunction with arrows to direct persons to emergency fire exits or shelters. Another concept is to apply to interior walls an emergency color stripe that persons can follow to an exit or shelter from any point in a building. Lettering, if needed, should be integrated with the stripe.[27]

Lettering, when used for emergency signs, should be at least 1½-in. high in clear, bold type for easy reading from half the distance between such signs. Colors in such signs should stimulate appropriate action during an emergency.

ISS is only one aspect of the comprehensive information communications system. In planning CICS, the sign system should be integrated with the other subsystems, including the information input, retrieval and display and security communications systems, which are next discussed.

THE ROLE OF EDP IN AN INFORMATION COMMUNICATIONS SYSTEM

Electronic data processing (EDP) systems are being used extensively in courts for many applications. The most significant uses, perhaps, are creation of an adequate data base related to the judicial function and control of case processing.

Used as a management and information communications tool to improve court administration and operation, EDP applications to date include notification, control, updating and processing of traffic cases, jury selection and administration, and docketing and calendaring. Several large urban areas, including Los Angeles, Chicago and New York, have been using EDP to process parking and traffic violations. Reportedly, fines collection has increased, the computer system providing positive and automatic follow-up on delinquent traffic violations. With input of vehicular registration records, the computer automatically locates the violator's name and address. In operation, the computer first prints a warning notice, then, when the first notice is ignored, prints a summons or arrest warrant. Among other uses, EDP can print information on case judgments for governmental departments, traffic calendars and notices to appear, and cumulative violation records.

EDP has been used extensively to replace manual registration of jurors' names and addresses. Initially, jurors' names are selected at regular intervals, generally from election or tax rolls. The computer prints notices and, in some cases, addresses questionnaires for mailing to prospective jurors. Re-

[22] W. H. Ittelson, *op. cit.*
[24] Solari & Udine, *op. cit.*
[25] Erikson, *op. cit.*
[26] Design Concern, "88 Pine Street Presentation," 1971.
[22] Solari & Udine, *op. cit.*
[27] Ibid.

turned questionnaires are screened automatically by the computer which then prints out lists of qualified jurors. The system can update jury lists, record length of jury service and print out checks to reimburse jurors. EDP can improve jury administration by rapidly selecting and screening jurors.

Automation of docket files improves statistical analysis of court records and increases the court's administrative capability to manage the calendaring system. The cities of Philadelphia, Washington, D.C., Chicago, Pittsburgh, Los Angeles and San Diego, among others, have developed computerized calendaring systems that provide automatic updating of ready civil cases and, in some locations, ready criminal cases. Simulation work, although largely in developmental stages, enables tentative scheduling of various types of cases in terms of amount of time per case. Computerized calendaring systems can automatically provide conflict-free scheduling for attorneys (thus eliminating, or at least reducing, the possibility of their being assigned to two places at the same time), make docket inventories, rank cases by age, group cases according to attorneys or law firms and schedule pre-trial or motions hearings.

For criminal cases, the computerized calendaring system can prepare a daily criminal docket index, schedule a daily calendar of criminal cases, provide case status and report case delay patterns and judges' sentencing patterns.

An automated calendaring system, integrated with a comprehensive information communication system, would provide up-to-date case information for display or posting devices (for the public) and visual display units (for court personnel).

Specifications: Information Input, Retrieval and Display System

The Information Input, Retrieval and Display System (IIRDS) specified here is designed to alleviate delay time in case processing in courts having congested case flow (See Figure 24, page 127). Providing completely integrated information display, system capability is sufficient to post and retrieve defendant names, courtroom numbers, type of crime, scheduled time and courtroom assignments. The heart of the system is an independent "mini-computer" linked to a primary computer. Ancillary equip-

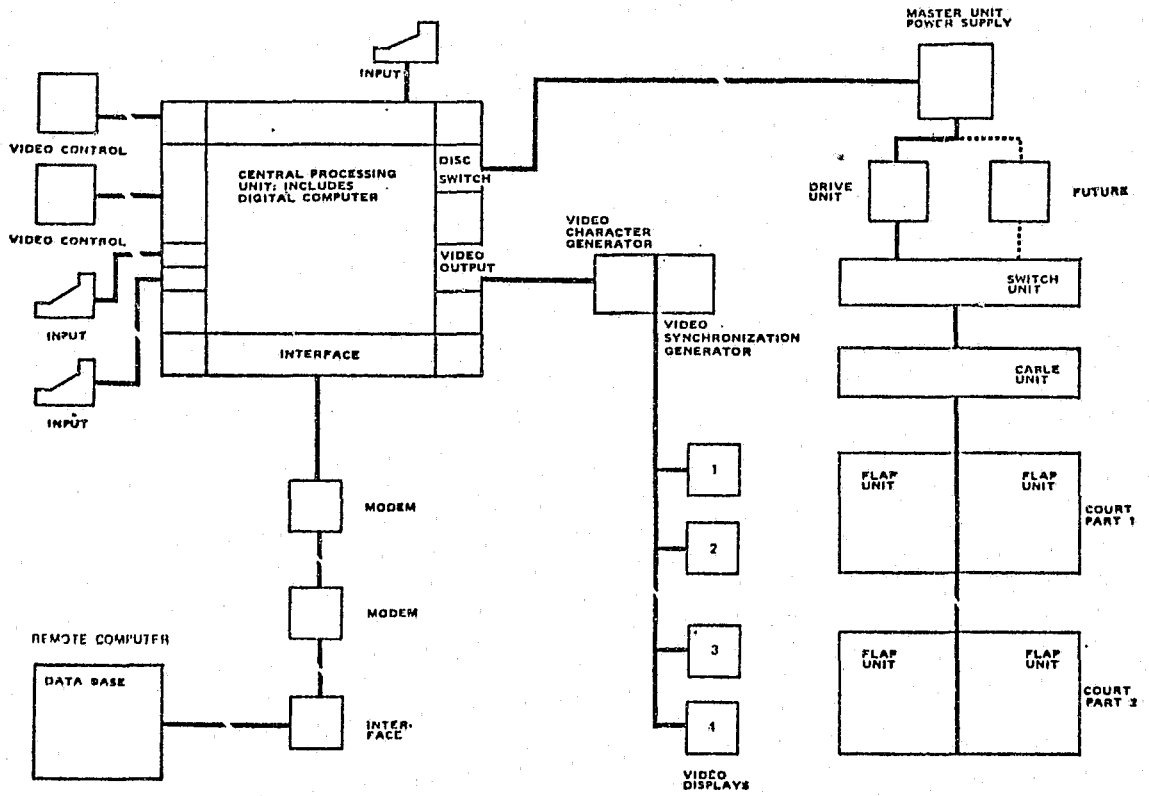


FIGURE 24
INFORMATION INPUT, RETRIEVAL AND DISPLAY SYSTEM

ment consists of a control unit, input devices, interfaces, a programmer, display boards, video monitors and display units.

System Intent. Specifications define system objectives with regard to performance functions, capabilities, operations and interfaces with other systems and units. Bidders should be restricted in their choice of equipment to recognized brands in accordance with a list of court-approved manufacturers. If the bidder wishes to offer equipment of a non-recognized manufacturer, the substitute equipment should be approved in writing by the court administrator or his delegate.

General Description. IIRDS should be designed and installed to provide a complete information communications display facility for participants in court proceedings. Elements should include courtroom assignments, case names, types of criminal charges, and approximate time of the scheduled cases. The system should provide automatic programming of displays, accepting manual and automatic programmed entry to accomplish changes in or additions to displayed information. Furthermore, the system should be capable of entering into an existing data base through interfacing and other equipment required for such entry and recall. The computer location should be considered remote.

System Criteria. IIRDS should be the most advanced and flexible information communications display system available from the bidder, and should permit construction to be expanded in stages up to maximum capability.

Initial Phase. Initial major equipment required is given in the "Equipment Schedule" at the end of this section. The schedule represents only major functional equipment and does not constitute a complete list of materials, panels, relays, switches, and so on. The contractor should be responsible for providing and installing all additional equipment and materials required to make the complete system operational. Actual physical configuration of system components and additional or substitute equipment should be defined and listed in the bidder's technical proposal.

Equipment Locations and Configurations. Locations of major equipment items should be indicated on shop drawings for court or court delegate approval. Specific configurations and mounting arrangements should be approved by the court administrator or his delegate before each item is shipped to the site.

Expandability. IIRDS should be designed to permit modification or additions of equipment with minimum interruption to the active system. Guidelines relative to minimum expandability are set forth in subsequent sections; however, unforeseen requirements may require expansion beyond minimum specifications. The bidder should indicate areas in which expandability is limited.

System Requirements. IIRDS should consist of a central programming major subsystem, video display subsystem and a display board subsystem. Quantity and locations of substation equipment and the performance capability of the central processing unit should be furnished and installed in accordance with specification drawings and equipment schedules. IIRDS should be capable of integrated operation of the display board and video-display subsystems, and be controlled by the central programmer. The system should be capable of integrating the operations of the display boards and the video sets for automatic simultaneous display. All subsystems should have built-in adequate input devices to permit future additions of compatible equipment to increase the basic IIRDS facility to its maximum capability.

Performance Criteria

Operation Modes. Basic mode of operation should be automatic, whereby display boards and video displays are controlled in accordance with a preprepared program. The program should provide automatic roll-up and insertion of new court data at predetermined times, and should have minimum storage capacity adequate for required court display information during a two-week period.

The system should have capability for temporary modification or correction of automatic program through the central key board or remote inputs. Location of remote inputs should be indicated by room number and department on an equipment location diagram. Typical program modifications should include roll-down of displayed data to insert new case information, changes in appearance times and back-up courtrooms, and insertion of other temporary changes relative to cases displayed.

Permanent Program. The permanent program input may be generated selectively, either from the

main computer data base or from the digital computer of the central processing unit, and stored in the disc storage unit. The program should contain all court schedule information relative to the daily case calendar.

Data should appear chronologically and should indicate case designations, part numbers or rooms to which the case is assigned, docket numbers, case status and other pertinent data.

It is desirable that maximum case period covered by the program, as constrained by storage capacity, be of a duration to minimize the number of required pre-prepared programs. The program period, therefore, should be referenced to schedule cases with longest time duration. The estimated minimum program period would be about one month, although longer periods may prove desirable, for reasons of economy and operational simplicity.

Program Modifications. Provisions should be made in the programmer (see subsequent section, "Equipment Specifications") to permit both temporary and permanent program modification. Permanent modification should include changes of unpredictable duration, such as date changes due to new adjournments granted by the courts. It is desirable that initial preparation and permanent modifications of the permanent program be accomplished through the central control unit.

Temporary changes should be carried out by a temporary data-storage medium which would accept scheduled data from the permanent program, as well as data relative to changes, additions or deletions from the central keyboard or remote input displays.

Program Addressing. It is desirable that the programmer be addressed for changes by case name and docket number, with court part being designated by a code identification. Addressing by display line number is not feasible because of requirements for remote updating and entry of changes prior to actual display of particular case information.

Automatic Roll-Up. The programmer should provide automated roll-up of the case pending and ready information on the display boards and video displays. Provisions should be made for entry into the programmer of data relative to actual arrival of participants in each case. The sign, "READY," with courtroom location and room number would be displayed. Following a predetermined time interval relative to case status data, court action or other case disposition would be indicated. The programmer then would initiate the automated roll-up by removing the case from the display.

Following removal of the disposed case data, remaining case load information would be rolled up on a line-by-line basis so that current information is not interrupted. Upon completion of the roll-up, new scheduled data would be inserted on the bottom line. When case information is divided into two equal information boards or columns, data would roll up on the information column and transfer to the bottom line of the other column. New schedule data then would be inserted on the bottom line of the first information column.

Automated roll-up of displayed information would be initiated by manual command. Following roll-up, the next line of schedule information would be read automatically from the memory of the permanent program. Manual entry of changes or schedule updating should be provided without affecting the remainder of the display.

Equipment Specifications

Programmer. The programmer, or "mini-computer," should be a digital control unit capable of providing central control, data acquisition and distribution functions for IIRDS. The control should be on a real-time performance basis, and include permanent and temporary data storage media consisting of a 400-word memory bank, disc storage capacity of 65,000 characters and ample logic circuits to accomplish control, arithmetic and input-output functions. The memories should be protected from primary power loss by tie lines to an emergency power source.

Programmer inputs would come from the central control unit, remote keyboards, computers and other devices employed for program updating. The programmer should provide outputs to the display boards, character generators, video display units and the central control unit. Outputs to all displays would be control and data signals, as required by the type of display equipment. Outputs to the character generator should be American Standard Code Information Interchange (ASCII) serial-coded data and central signals at the rate required by the character generator. Outputs to the control unit would consist of feedback data and control signals, as required for operation and display monitoring and supervision.

Modular construction should be employed whenever possible, using integrated circuitry and solid-

state devices exclusively. Provision should be made for expandability as to number of outputs, inputs and program volume. Minimum expandability capabilities in these areas should be 200 percent.

Display Boards. The automatic programmer will control display board information. Information display would be initiated by entry of case data into the programmer, provided that space were available on the board; otherwise the information would be displayed automatically by the roll-up method described previously, upon removal of the case from the particular board. All boards should be single-faced unless otherwise noted on the equipment schedule.

The display boards would be capable of programming, with graphic displays operating in the modes described above. Several basic types would be supplied as standard equipment. The boards can be flap-type, dot-matrix or other electro-mechanical types. Incandescent lamp matrices should not be used.

Modular construction should be utilized to the maximum practical extent. Information display can consist of all alpha-numeric modular or, as in the case of flap-type displays, of alpha-numeric, numeric and word modular. Access for maintenance and module replacement should be from the front of the board.

Lightweight, corrosion-resistant materials should be employed to the maximum practical extent in the frame and display modules. Corrosion-resistant metal finishes and hermetic sealing should be used to protect against dust, grease and humidity.

Size and weight of each display board will have to be the minimum consistent with the information, character, size, number of characters and number of lines specified for the particular board. The bidder should indicate overall dimensions, weight and mounting requirements for each type of board. Location drawings for known dimension constraints must be referenced in preparing the technical proposal to accompany the bid.

The alphanumeric display module should be a combination single-character unit providing a minimum of 39 characters and one blank position. The characters would include the alphabet, numerals 0 through 9 and two blank positions. Word module would be a 40-position module of a length adequate to display specific information, with at least one blank position.

Permanent legends, including board identification and column heading must be provided on each display board. Character sizes should be consistent with legend functions and with considerations of maximum legibility and overall aesthetics, as approved by the court administrator or his delegate. Board identification legend should employ the largest practical characters.

"Futura Condensed" characters are appropriate for column headings. Board identification characters should be similar to "Futura Demi-Bold Graphic" characters, 1¼-in. high, and would be proposed in writing before fabrication for approval by the court administrator or his delegate.

Each display board for a court building should have a capacity of 20 lines for case listing, with a permanent legend as follows:

DOCKET NUMBER	DEFENDANT'S NAME	COURTROOM NUMBER	STATUS OR CRIME
6 spaces	18 spaces	4 spaces	10 spaces

The makeup of each information line should include appropriate spaces and punctuation:

DOCKET NUMBER	ALPHANUMERIC FLAP TYPE	6 CHARACTERS 6 ALPHANUMERIC MODULES
DEFENDANT'S NAME	ALPHANUMERIC FLAP TYPE	18 CHARACTERS 18 ALPHANUMERIC MODULES
COURTROOM NUMBER	ALPHANUMERIC FLAP TYPE	4 CHARACTERS 1 NUMERIC MODULE
STATUS OR CRIME	ALPHANUMERIC FLAP TYPE	10 CHARACTERS 1 WORD MODULE

Display boards should be furnished and installed in waiting rooms and other spaces indicated on the "Equipment Schedule."

Electronic Character Generators. The electronic character generator will perform digital-to-video conversion functions for video subsystems. The display unit initially should provide three data channels. Character generators should accept ASCII serial-coded data and control input at the levels and rates characteristic of the various input devices. The character generators should accept inputs from the central control unit and from specified remote devices.

Each channel must have adequate storage capability for digital input data. Memories must be protected from primary power loss. Logic circuits should be built-in to convert stored data to video signals, to provide video synchronization generation, multiplexing and control functions. Video spectral limits should be adequate to ensure sharp definition and more contrast of displayed characters. The units will provide for automatic roll-up insertion of new data and changes, as previously specified.

Each channel should provide a composite video output at Electronic Institute Association (EIA) standard timing suitable for driving standard video displays and monitors. Display formats would be designed as specified earlier.

Construction should be modular. All circuits should be integrated, employing solid-state devices. Each character generator should have a built-in feature for easy expansion of a minimum of six additional channels. Means also should be provided for the addition of output amplifiers capable of driving an additional load of displays equivalent to 100 percent of loss, as specified.

Central Control Unit. The central control unit should provide for manual system control. The unit would include keyboard, print-out devices, controls, circuits and devices, as may be required for operation of those systems.

The control unit should accept manual inputs by means of the keyboard and operational controls, and additionally should accept electrical inputs from the programmer for the feedback of data and control signals. The keyboard should have full alphanumeric, punctuation and special symbolic characters in standard typewriter format. Data feedback from the programmer would be ASCII serial-coded data at the optimum rate required by the printer.

Data entered by means of the keyboard and data fed back from the programmer would be printed out. Display revisions entered by the control operator would be displayed upon the command of the operator following a check of printed information. Changes entered from remote sources to the programmer also would be printed out but not displayed until the operator commands. A control should be provided to override this function and to permit direct display of remotely-generated changes.

The control unit will print-out periodically, under control of the programmer or upon demand by the operator, complete information showing on display boards. Provision should be made for call-up of information and for changes thereto prior to actual display, as constrained by the programmer memory capacity. A check of information being displayed on the individual boards also should be available to the operator. Control of all boards would be from the central control unit, either directly or through the programmer.

Preparation or modification of permanent programs would be accomplished by the central control unit. Input outlets for devices such as tape punches and tape readers would be built into the control unit, which would have visual outputs from printers and would provide ASCII serial-coded data and control signals to the programmer.

Construction of the central control unit would be modular to provide maximum flexibility in operation and ease of maintenance. Mechanical configuration, location, types and quantity of controls and indicators, and labeling of all controls and displays should be of quality construction and materials consistent with the performance and reliability modes.

Video Control Units. Each video control unit would include a keyboard, video monitor, punched-tape readers and inch controls and indicators as will be required for control of three channels of the video display subsystem.

Each control unit section would accept manual inputs by means of keyboard and operational controls.

The keyboard should provide full alphanumeric punctuation and special symbolic characters in standard typewriter format. Tabulator controls also should be provided.

Each video control unit should provide semi-automatic and manual control of the video subsystem, as specified earlier. Control would be provided

for selection of channels, lines, columns and spaces, and for insertion and removal of displayed information. A cursor would flash selected lines, words or characters. Video monitor characteristics will be as specified earlier.

Each control unit would provide visual outputs through the video monitor. Electrical outputs, ASCII serial-coded data at levels and rates characteristic of the keyboard and tape readers, also would be provided to the selector channel in the character generator.

Video control units should be designed and constructed to provide maximum flexibility in operation and ease of maintenance. Each control unit should be designed and constructed to accommodate three additional channels. Integrated circuits employing solid-state devices should be utilized throughout, except where cathode-ray tubes and a high-voltage rectifier are specified.

Video Displays. Video displays should be standard, monochromatic cathode-ray tube displays. Display size should be 23-in. nominal diagonal measurement. Characters should be displayed white against a black background. Displays must accept composite video signals at EIA standard timing and at the levels supplied by the electronic character generator.

Input sensitivity must be adequate to ensure normal operation under all worst-case conditions and combinations thereof, including minimum output levels from the character generator and maximum attenuation introduced by the video distribution subsystems and loading thereof.

Voltage is required in high- and low-voltage supplies. Regulation should be sufficient to ensure no objectionable display variations due to voltage fluctuations.

Controls and adjustments requiring frequent regulation or adjustments should be accessible from the front of the display. Controls should be recessed and provided with locking flush-hinged covers.

Displays should be designed to provide maximum legibility in areas of high ambient lighting. Etched, laminated safety shields should be bonded to the picture tube to minimize reflection and glare at ambient levels of 100 ft.-candles. All locations of displays should be approved in writing by the court administrator or his delegate. A minimum of 16 lines should be provided in each video unit. Character heights and the number of characters per line should be optimum, commensurate with maximum legibility.

Column headings and line makeup for video displays should provide formats simultaneously with board displays. Abbreviations can be used to display complete board information on the video display.

Solid-state construction should be used exclusively, except in the cathode-ray tube and the high-voltage rectifier. In addition, lightweight, corrosion-resistant materials should be utilized to the maximum possible in cabinets, chassis, panels and covers. Corrosion-protective finishes for metal, hermetic sealing and conformal coating should be employed throughout video unit fabrication and formulation.

Video Monitors. Video monitors should be standard, monochromatic cathode-ray tube monitors, with display sizes of 18-in. nominal diagonal measurement, providing optimum legibility for their particular application. Input and operational characteristics and construction requirements should be as given for video-display specifications. The monitors should be installed to operate in parallel with their respective video and board displays.

Information channels displayed by each monitor should be identical to those of respective video displays, except for the cursor used for operational channel control.

Video Distribution. A video distribution subsystem would be supplied with each video display system for transmitting video signals generated by the character generator to the various video displays and monitors. The distribution subsystem should use coaxial cable and connectors, fittings and other devices, as may be required to complete the installations. Attenuation, phase and flatness characteristics over the frequency range of interest should not introduce objectionable distortion of video signals.

Coaxial connectors would be provided in the immediate vicinity of the displays. Connections to the displays would be made by jumper cables. Connectors would be mounted in standard wall receptacle boxes, as required by the local electrical code, and should be fully recessed. In all wet areas, or when outlets are located in floors, waterproof boxes with screw-on covers should be used.

The design of the subsystem would be integrated with the video subsystem to make the entire system compatible and interfaced. Electromagnetic interferences must be filtered out. The bidder, in his initial proposal and bid, would indicate methodology of providing an integrated system free of interference.

Intercabling. The bidder additionally should de-

pict on drawings and schedules submitted with his bid, intercabling of wiring requirements from existing power supply sources to each piece of equipment requiring electric power.

COST CONSIDERATIONS

Cost considerations for the Comprehensive Information Communications System (CICS) can be divided into two distinct applications: (1) integrated sign system (ISS) and (2) information input, retrieval and display (IIRDS) and security communications system (SCS). While cost considerations are different for each system, project phasing for cost estimating can be similar. Major phases include research and planning, design and documentation, testing and implementation, and evaluation and improvement.

In planning CICS, it is essential from an economic standpoint to develop optimum solutions at each level of system development, especially when more than one system is involved. Relationships between various systems must be assessed carefully to find a balance between available alternatives.

The size of a court facility and its caseload may determine to a large extent whether a manual or an automatic information communications system should be adopted. For example, a small court building with one or two courtrooms located in a rural county would not need more than an information center, whereas a large metropolitan court complex, such as that in New York or Los Angeles, would need a sophisticated information communications system as an effective solution to its vast information communications problems.

At any point in system development, alternative solutions involving both equipment or personnel may be available. In such cases, the most suitable solution at the lowest cost would normally be selected; however at all stages of system development, the choice should accord with major decisions in the selection of a comprehensive and integrated system.

Inadequate funds being a major obstacle for some implementation processes, it is important to structure implementation in phases according to available budget. For instance, budget in the first year may be adequate only for research, planning and preliminary design phases; budget in the second and third year could be used for detailed design and implementation. In another instance, the sign system might be implemented as the first phase, followed by installation of the information input, retrieval and display, and security communications systems as subsequent phases when budget permits.

For any information communications system, the planning phase is the most critical and special effort should be made to ensure that overall planning concepts take into account all contributory factors in a comprehensive plan. It is far less costly to make and remedy mistakes in this early phase than to rectify the system after it has been installed.

Depending on the scope of a geographical area covered by CICS, the sign system usually is less costly than IIRDS and SCS. There are fewer components and most are merely directional signs or maps not requiring sophisticated electrical wiring.

Depending on scope of the work, the cost of IIRDS can be prohibitive outside of major court complexes. System components as described in this chapter are complex, and many require special transistorized parts and electrical wiring systems. Consequently, system material costs could increase significantly if adequate power is not available and new power lines have to be installed, or if long conduit runs are required to remote CRT terminals and other components.

During installation of equipment in an existing facility, materials costs can be expected to increase as demolition and repair work increases. Lack of staging and storage areas, resulting in the delivery of materials in small quantities, also can increase material costs.

High labor costs occur in situations where strong labor unions exist, where disruptions to court operations can be minimized only by overtime work on nights and weekends, where slow contract payments force the contractor to increase his cost estimates, and where the scope of demolition and repair work in a renovation project is overly extensive.

Cost savings can be accomplished by maximizing use of available existing equipment. For example, if the courts have a main computer memory bank from which information can be retrieved directly, storage capacity of the "mini-computer" can be reduced, thus lowering the cost of the unit. IIRDS cost also can be reduced by decreasing the number of display components, especially large display boards, and relying primarily on video display units and posted print-outs.

CHAPTER EVEN

SPACE MANAGEMENT APPLICATIONS

Space management, as described in earlier chapters, is a contemporary approach to facilities operation based on a systematic research, programming and planning process formulated to achieve alternative flexible spatial solutions at lowest cost over a number of years.

Pivotal in this process, whether applied to existing or new facilities, is adequate space allocation based upon functional and spatial relationships established during the process, and relying, in turn, on goals and priorities, projected space and manpower needs, security requirements and other research findings of the organization being studied.

This space management process, or others similar to it, has been used with marked success for facilities planning in a number of fields. Only recently, however, have courts and related agencies turned to such programs in an effort to free procedural logjams and to avoid them in the future.

Over a recent two-year study, actual application of the space management process has been shown effective in recommending space solutions for several courts of varying jurisdiction in one of the largest complexes of its kind anywhere—Manhattan's Foley Square.[1] This chapter discusses some general applications of space management concepts which have proven feasible and economical.

The same space management process can be applied to new court and related facilities planning, adding only 1 percent to 2 percent to overall project planning cost, and returning over the long run a far greater percentage in terms of improved operations.

RENOVATION OF EXISTING COURT BUILDINGS

The space management process, when applied to reorganization and renovation of existing facilities, must in early stages of program work assess structural constraints and variables for their often significant affect on project costs. Court and related facilities in many regions of the U.S., many constructed 50 or more years ago, impose many such constraints upon the space planning process. Preliminary studies may indicate that only by injecting large sums of money could such facilities attain required performance. And even at high renovation cost, operational efficiency may suffer from spatial allocation compromised beyond reasonable levels. In such cases, new construction probably would be the wisest course in meeting future needs.

Consider, for instance, conditions that weigh upon expanding criminal court facilities in existing buildings:

- Would structure and layout of building services hinder secure prisoner movement?
- Would spaces now used for receiving and transferring prisoners be adequate for expanded facilities?
- Is existing vertical transportation service suitable for increased use?
- Are floors of sufficient area permit low-cost con-

[1] Courthouse Reorganization and Renovation Program, Final Report and Appendices A–J, New York, 1972.

struction of separate secured prisoner access corridors to courtrooms?

- In the case of physical modifications to the building, will proposed construction impinge on operations of other facilities whose occupants may object to the proximity of criminal court operations?
- Related to the previous consideration, in the case of expansion into a multi-story, non-court building, who are tenants on non-court floors and will they object to criminal court operations in the same building?

Constraints such as these—and many not so obvious—are among the initial considerations in deciding whether to pursue renovation or to reject this approach in favor of new construction.

Planning Constraints. With few exceptions, structural constraints bear critically upon renovating an existing building of most any type for court use. A contemporary office building selected for court expansion probably was constructed economically with spaces between columns not more than 25 ft.—a dimension that at first may appear to be too restricted to contain a trial courtroom without obstructing public and even participant vision of all proceedings. Courtrooms smaller than traditional size, which are increasingly becoming the rule, require space of about 30 ft. x 40 ft., or 1,200 sq. ft. Competent space planning can resolve this seeming incompatibility between space and function.

Four structural bays, each 20 ft. x 20 ft., would provide total courtroom area of 40 ft. x 40 ft., a more-than-adequate space for routine judicial proceedings. Columns at the center of the space pose the biggest problem. A solution developed for an office building in New York City to house an expanded Supreme Court and Criminal Court[2] is to locate the courtroom judicial area, including judge's bench, witness box, clerk's station and attorneys' and litigants' tables, within a structural bay, 20 ft. x 20 ft., with an additional 5 ft. to 10 ft. behind the judge's bench in an adjoining bay. Thus, the central judicial area is surrounded on the three sides by half to three-quarters of adjoining bays, one bay for the jury box, another for the jury prior to impaneling, and the third for spectators. The four columns, still within the courtroom, but located on the periphery of the judicial area, help to spatially define adjoining jury and public spaces. Unobstructed views are maintained at all times for public and participants (Figure 25 page 137).

[2] Ibid. Progress Reports, Vols. I and II.

Another structural constraint commonly encountered in court renovation projects is limited available floor area, a factor related to location of the service core within the building. Service cores in office buildings with floor areas of less than 5,000 sq. ft. usually are located on one side or at a corner of the building to maximize rental space on each floor. A benefit to the renting agent, however, may be a detriment to the court facilities planner.

To convert such a building into a facility to process criminal or family court cases involving prisoners or detainees, secured access must be provided. Structural constraints all but rule out constructing a separate security access corridor for prisoners on courtroom floors. For maximum security, prisoners may have to be transferred from an upper- or lower-floor detention facility by a private staircase located between courtrooms.

But the building in which the service core limits rentable floor area may work to the advantage of the court facilities planner. A service core constructed five or more feet from the wall or corner could serve as secured access along the building perimeter to the courtrooms on the same floor, assuming no other prohibiting structural constraints and depending upon existing use of spaces adjoining the core.

Another structural constraint to be considered is the structural capability to support heavier loading of renovation. The addition of computer equipment, expanded law libraries, and mezzanine levels within existing two-story building spaces to accommodate new courtrooms and ancillary facilities are just some of the factors which may be relevant here.

In court buildings constructed 20 to 30 years ago—and in some built more recently—courtrooms were conceived as large, two-story spaces, intended, perhaps, to convey "dignity" of the judicial process, but, for the most part, lacking in human scale.

Poorly utilized spaces such as these abound in New York City's Criminal Courts Building of late '30's vintage, and even in the adjacent New York County Civil Court Building completed in 1962. One solution formulated to better utilize such spaces is to construct a mezzanine floor over the public area in each large courtroom, leaving the two-story ceiling only over the judicial area. The effect is to retain a more formal setting in the judicial and participant area, separated visually from the public seating area, which would take on a scale more appropriate to its use. This solution:

- Increases useable space for offices, courtrooms and ancillary facilities on the mezzanine level

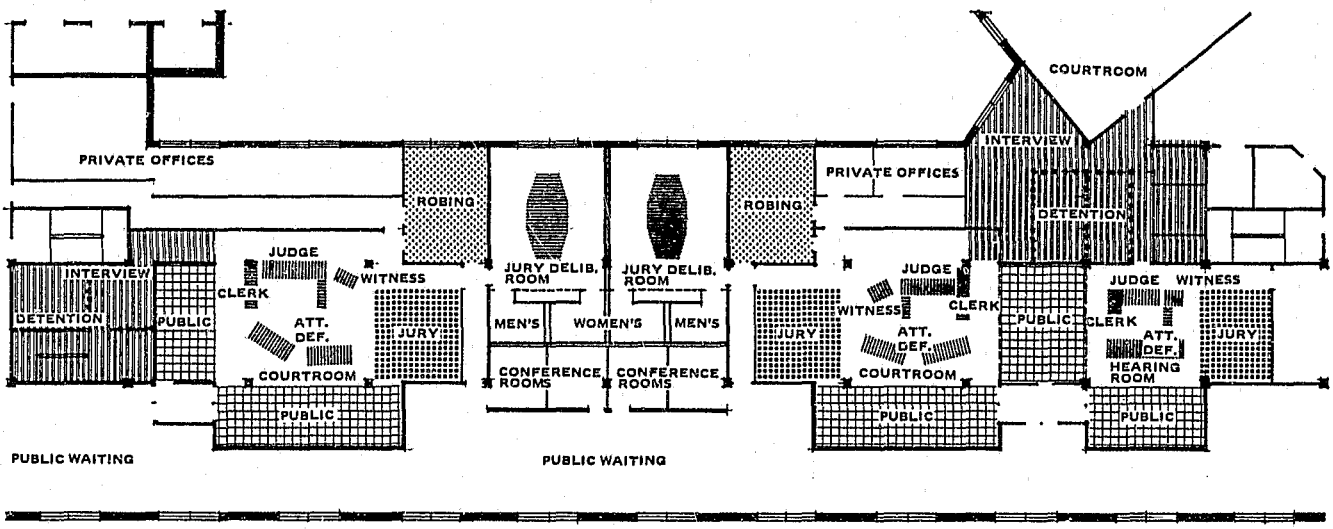


FIGURE 25
PROPOSED COURTROOM AND ANCILLARY SPACES
NEW YORK STATE OFFICE BUILDING, 80 CENTRE STREET

within the volume of the two-story space. If the upper courtrooms are used for hearing criminal cases, and existing prisoner holding facilities are located behind the main courtroom, then enclosed balconies could be constructed along the side walls above the judicial area linking the mezzanine floor to the upper level of prisoner holding facilities. Under this arrangement, prisoners could be transferred to courtrooms by means of secured prisoner access. A detailed structural analysis would have to be made of the structural capacity of the building prior to the final design of additional spaces.

- Provides visual separation between public and judicial areas in the main courtroom at a cost lower than some means of physical separation such as a glass barrier. A glass barrier was used experimentally to separate judicial and public areas in the trial of the "Soledad Brothers" in San Francisco in 1971. In addition to its high cost factor, it also raises legal problems in the matter of prejudicing a person's right to a public and fair trial. (See, "3 Inmates' Trial Delayed on Coast." *The New York Times,* New York, Aug. 10, 1971.)
- Improves acoustical properties. Public movement in and out of high-ceiling courtrooms can disrupt courtroom procedures. Installing absorptive acoustical ceiling tiles in a renovated single-story public seating area will minimize such disruptions.

Limited ceiling height imposes still another planning constraint. The vertical dimension of a space is determined by floor structure and by service ducts and pipes within the ceiling space. A standard 9-ft. ceiling creates a space inadequate for design of trial courtrooms. A judge's bench usually is about 18 in. above floor level to ensure that the judge's eye level when he is sitting is higher than that of a standing attorney who should not be able to view legal documents on the bench. The raised bench also tends to convey a sense of "judicial dignity." A 6-ft. judge standing at the bench could raise his hand to touch a 9-ft. ceiling. While a 9-ft. ceiling height is appropriate for the public seating area, the judicial area should have minimum ceiling height of 10 ft., 6 in. to 11 ft. In a new building, service ducts and pipes could be housed along the perimeter of the judicial area and above the public seating area to allow a higher ceiling over the judicial area. Conditioned air, in this case, would be supplied through registers on the side of a dropped ceiling along the perimeter of the judicial area.[3]

A similar solution was devised for the office building with 20-ft. column spacing referred to previously. The judicial area occupying one structural bay is designed with a higher ceiling than jury and public areas, which incorporate a lower suspended ceiling housing building equipment and ducts to air-condition the judicial area.

Planning for courtrooms and ancillary facilities to handle criminal cases in an existing building keys on location of the service core and freight

[3] Ibid.

elevators. Width of useable space between service core and external windows also is critical.

The "rehabilitation potential" of existing office buildings for conversion into criminal court spaces, to a large extent, depends upon arrangements available for transferring prisoners securely from a remote detention facility to courtrooms. The general practice is to convert an existing freight elevator into a prisoner elevator, programmed for key operation by authorized correction officers. When a building has only one freight elevator, then a passenger elevator should be equipped to serve as a freight elevator during the time that it is used for moving prisoners. A freight elevator can be used for prisoner transfer only when adequate security precautions can be taken to assure safety of both prisoners and correction officers.

A loading dock located in conjunction with entrance and exit driveways of an interior garage to be used in whole or part as a prisoner arrival and departure area must be adequately walled off from the surrounding area; if necessary, an additional roller shutter or pair of gates remotely controlled by the prisoner van driver can serve this purpose.

Two adjoining freight elevators sharing a limited-area loading dock can be modified for secure prisoner movement, as well as transport of large equipment. A roller shutter separating the elevators and dividing the dock could be opened when prisoners are not being moved to maneuver large pieces of equipment into the elevator designated for moving freight. If, at the planning stage, spaces to be used for criminal court functions are known, it would be preferable to separate the two elevators, each provided with a separate, adequate dock area.

If a freight elevator is modified to move prisoners, and if the building service core is centrally located, then space on courtroom floors adjoining the prisoner elevator can be used to house secured prisoner holding facilities from which prisoners could be taken to surrounding courtrooms. Adequate distance between service core and external building walls for such an arrangement is about 50 ft. Spectators, in this case, would enter courtrooms from an outside public corridor or waiting space.

In high-rise buildings with more than one bank of elevators, (some high-rise, others low-rise), only part of any floor, depending on building design, could be used for courtrooms and ancillary facilities. Courtrooms and prisoner detention facilities occupying entire floors in such buildings could result in prisoners crossing paths with public entering or leaving floors from the central service core. Beyond breaching general security precautions, this arrangement would be undesirable in a building occupied as well by non-court tenants.

Such an alternative can be ruled out, too, on the basis of construction cost for additional secured private staircases from central detention facilities on floors above or below courtrooms. In an existing building, this procedure would require breaking through existing floors, bridging the stairwell with beams and installing a number of staircases between pairs of courtrooms. Such a solution also imposes serious restrictions on the use of space remaining on detention floors.

In planning multiple courtrooms, consideration should be given to the location of public waiting spaces. While it is essential to have major public waiting spaces adjoining elevator lobbies with a central information facility, it is equally important on large-area floors to decentralize the waiting function to spaces near remote courtrooms. Interesting spatial variations can be created by introducing, in relatively narrow public access corridors, larger waiting spaces equipped with fixed, sturdy public seating.

A large public waiting area is essential adjoining arraignment courtrooms. An appropriate space management concept here may be to retain an average-size courtroom (1,200 sq. ft.) for conducting arraignments. Only current and following case participants and some spectators normally would be present. Participants in cases lower on the arraignment calendar would remain in the waiting space until called, thus minimizing excessive noise, movement and confusion common to large metropolitan arraignment courtrooms. If necessary, an intercom system could be installed to permit the courtroom clerk to announce in the waiting space names of parties next to enter the courtroom.

SPACE PLANNING RECOMMENDATIONS

Court Complexes

Nearly every U.S. urban center of more than 500,000 population contains court facilities consisting of more than one building. In some of these centers, court facilities may be part of a larger government building complex. It might be said that grouping court buildings, most constructed prior to concerted application of space management techniques, expressed a desire for efficient operation.

Despite these best intentions, however the result, in some instances, has been just the opposite. Too frequently, in fact, siting and spatial use in judicial facilities has run counter to basic concepts of effective space management.

Even a cursory survey of court complexes in nearly any major urban center reveals a serious imbalance in space allocation and use. Contributing substantially to this imbalance is the common practice of isolating courts in separate buildings. A prime example of this approach is evident in the several multi-story buildings that make up the Foley Square court complex in downtown Manhattan, New York City. The Manhattan Criminal Court and the State Supreme Court Criminal Term (equivalent in most other states to a court of general jurisdiction, such as a district court or circuit court) occupy the 18-story Criminal Courts Building, which is connected to the Manhattan Men's House of Detention, where defendants not on bail await arraignment or trial. Both structures were constructed in the late 1930's. The Criminal Courts Building annually handles hundreds of thousands of criminal cases, and operates throughout the summer in poorly air-conditioned quarters.

Opposite the criminal court facility is the 13-story Civil Court Building, having jurisdiction over civil cases under $10,000, small claims and landlord-and-tenant cases. Completed in 1962, it is the only fully air-conditoned building in the Foley Square court complex—and most of its facilities are closed down during the summer!

Other Foley Square court buildings include the Supreme Court Building (handling civil cases above $10,000 and matrimonial cases), the Hall of Records or Surrogate's Court Building (handling probate and some adoption cases) and, now under construction to replace an uptown facility, the Family Court Building (handling all family and juvenile matters, adoptions, paternity and support cases).

In Foley Square and elsewhere, the strain on court and related facilities is not so much a paucity of space, as a need to correct imbalances and reallocate space use. Detailed analysis of existing facilities within most multi-story court building complexes probably would reveal:

- Overly-rigid facilities planning, failing to provide flexible solutions to accommodate future space needs.
- Under-utilized and over-utilized spaces within buildings.
- High percentage of space used to store inactive records and those unrelated to court operation.
- Piecemeal allocation of available space to departments requesting it, resulting in poor functional and spatial relationships among departments.
- Lack of effective communications among essential court functions.
- Duplication of some functions, especially records keeping.
- Non-court-related functions housed in court buildings.

To check and begin to reverse space-use imbalances in an urban court complex, to speed case disposition, and, in general, to improve overall court operation, the planning process first must establish functional and spatial relationships within facilities. Non-essential functions or those unrelated to daily court operation should be moved to a location outside court buildings. Such functions could include investigation and supervision units, the staffs of which usually devote many hours to field work.

In a crowded criminal court building with space at a premium, removing non-essential functions is one way of increasing space use flexibility. In urban centers, federal, state and municipal governments normally own a number of buildings in the vicinity of the court complex or government center. If space in one such building can be obtained, the cost of renovation to house non-essential court departments usually is minimal in comparison to the value of space freed in the court facility for more vital court and related functions.

Most court buildings devote more than 10 percent of prime space to records storage. Those same records placed on microfilm could be contained in a space many hundreds of times smaller and more efficient than that required to store standard-size documents. In lieu of microfilming, moving inactive or non-essential records to municipal archives or other municipally-owned records storage facilities, in many instances, can reduce total court building space devoted to records storage to less than 1 percent. While the problem of records storage is more critical in metropolitan courts, courts in non-urban areas are not immune to records proliferation. Even in these smaller courts, especially in rapidly growing communities, long-range plans should be instigated to phase-in microfilming and alternative space-saving techniques in anticipation of court expansion.

Flexible Planning of Existing Buildings for Expansion. Analysis of existing buildings in urban

court complexes may reveal that relocating non-essential functions will meet only short-range space needs, say, for five to ten years. In such cases, investigation should be undertaken early to determine availability, adequacy and suitability of surrounding buildings or sites for expansion needs. If, for instance, a criminal court building adjoins a detention facility, it might be feasible to obtain a building or site either on the other side of the detention facility or adjacent to the court building for expansion of both facilities, connected, perhaps, by tunnels or bridges. Procedures such as these are a vital part of comprehensive planning of court complexes in accordance with projected needs to ensure continued availability of adequate court facilities for the metropolitan center over a number of years.

Clearly, courts have to rely on both short- and long-term facilities planning. Short-term planning, as used here, is not synomymous with "stop-gap" planning; rather, planning for the near future must be a systematic and integrated part of long-term planning. Because of their interdependence—short-term planning often involves detailing for implementation of long-range recommendations—both kinds of planning must be coordinated in facility planning projects.

Alternative Solutions. Current and projected urban financial austerity, and its uncertain relief, makes all the more imperative the development of alternatives to new court facilities construction.

If expansion of court facilities, for instance, relies solely on a municipality acquiring a state-owned building, a sudden change of political climate or a change in elective office within the state may see the demise of such a space source. If alternate space nearby is unavailable, and space must be sought remote from the court complex, every effort should be made to obtain only a short-term lease (say, five years) in the event a building eventually becomes available closer to the court complex.

Alternative solutions, while they should be fully investigated, should not deter attention from overall direction and emphasis of a well-defined priority scheme for achieving long-term sufficient space. By keeping in perspective the priority scheme, and tailoring short-term alternatives to it, public works and budget departments and other state and municipal agencies responsible for project implementation would be more apt to give vital support.

Alternative schemes also are useful to make comparative studies such as cost optimization and to encourage careful application of experimental space planning techniques to promote more innovative use of existing space. Comparative analysis of alternatives can result in refining space standards and guidelines for court and related facilities.

Physical Connections Between Court Buildings. In planning renovations or new court complex construction, ample consideration should be given to physical connections—bridges or tunnels—between court and court-related buildings.

Priority functional and spatial relationships between individual buildings, established at earlier planning stages, would determine the need and justification for recommending overhead or underground connections. Gathering within the building all court, court-related, correction and law-enforcement facilities, while possible in urban centers, is not recommended for maximum space use flexibility—nor for "psychological" reasons. Defendants, litigants and public may respond negatively to having functions such as probation, legal aid, psychiatric services and other social-welfare agencies within a court building. Such agencies should be located outside the court building, in keeping with a trend toward decentralization into communities where their impact should be greatest. In some jurisdictions, social-welfare services maintain only liaison offices at or near the court complex. Correction and law-enforcement facilities, in particular, should be separate from court buildings, connected to them by tunnels primarily for secure prisoner transfer.

Renovating old court buildings to add physical connections invariably is costly and structurally complicated. In many urban court complexes, including Manhattan's Foley Square, sub-surface levels are crisscrossed with utility lines and subway tubes, making tunneling extremely costly and complex.

Bridges between buildings with varying architectural styles would have to harmonize with the court complex as a whole.

Beyond disadvantages of cost and structural constraints, construction of bridges or tunnels almost certainly would unduly disrupt adjoining on-going court operations.

The only sound justification for physically connecting court buildings is to provide secure prisoner transfer. While it is conceivable that a divided bridge or tunnel could be used by judges and court staff, experience shows that non-prisoner groups account for only a small volume of movement between court buildings, which tend to have specialized jurisdic-

tions and be self-contained. Attorneys, perhaps, represent the only non-prisoner group which would find useful such a connection; however, their convenience is not considered sufficient to justify costly bridge or tunnel construction.

Centralization vs. Decentralization of Court Facilities. Densely-populated urban centers, such as New York City, must strike a balance between centralized and decentralized court and related facilites. With a heavy case volume weighing on most jurisdictional levels in such areas, it would seem equally important to centralize court facilities for effective and economical court administration as to decentralize support facilities to communities to improve their impact away from a central complex. Centralized facilities, while perhaps theoretically conserving more manpower services, should be supplemented by branch courts to expedite case dispositions, while at the same time, providing more effective judicial service to communities. There is, in fact, a healthy trend in this direction in a number of U.S. jurisdictions.

Geographical or political subdivisions within urban centers may have courts of general jurisdiction to handle civil, criminal, family and probate cases. From one point of view, such facilities represent a decentralized system; overall administrative supervision, however, should remain centralized, where feasible, for maximum overall court operating efficiency.

The criminal justice system in major metropolitan centers begs for a more effective means of screening and referring cases prior to their reaching the courts. One solution is to spot facilities at various locations within a subdivision, where persons involved in a case—arresting police officer, probation officer, prosecutor, legal aid attorney and social-welfare agency worker—in unison can determine as soon as possible after arrest sufficiency of evidence and alternatives to court referral. If all agree that evidence is insufficient to prosecute, the charges could be dropped and the case dismissed. For cases referred to the court, plea negotiations could begin to minimize the time now taken in court for this procedure. Referrals to social and welfare agencies or to a treatment and rehabilitation center would be made without court intervention.

Such facilities should not be located in local police precincts. Facilities should include spaces for interviews, detention, conference, hearings and staff offices (Figure 26 page 142).

Regardless of whether court facilities are decentralized or centralized, decentralized case-screening prearraignment facilities hold potential for unburdening overtaxed centralized courts.

Court Buildings

Moving from broader aspects of planning facilities as part of a court complex, the next consideration is planning for individual buildings and departments within buildings. Certain common constraints can be observed.

Among factors influencing planning at these levels are:

- Volume and distribution of court staff and public
- Planning flexibility for future expansion
- Security considerations
- Departmental functions
- Size and location of courtrooms and ancillary facilities.

Volume and Distribution of Court Staff and Public. While perhaps not a significant factor in small communities, volume and distribution of court staff and public does exert substantial influence on space planning for large urban court buildings. In large urban court buildings, places of peak activity are clerk's offices, jury assembly and impaneling spaces, arraignment and motions courts, and small claims and landlord-and-tenant courts. Such spaces should be located as close as possible to the main public entrance to minimize elevator loading, particularly in early morning, at mid-day and in late afternoon. When site or building limitations prohibit locating these functions on one or two floors easily accessible from the main public entrance, consideration could be given to installing escalators to move the large volumes of persons to and from these spaces on lower floors, allowing fewer elevators to serve upper floors. (Escalators are commonly used in large department stores for this reason.)

Movement between departments is a constraining factor upon department planning, and, whenever possible, inter-floor movement should be held to a minimum.

Planning Flexibility for Future Expansion. A space "implosion" in many court buildings—piecemeal space allocations to departments based primarily on availability—sets up increasingly tighter rigidities to further expansion. The situation is all too common in which a department in need or space is hemmed

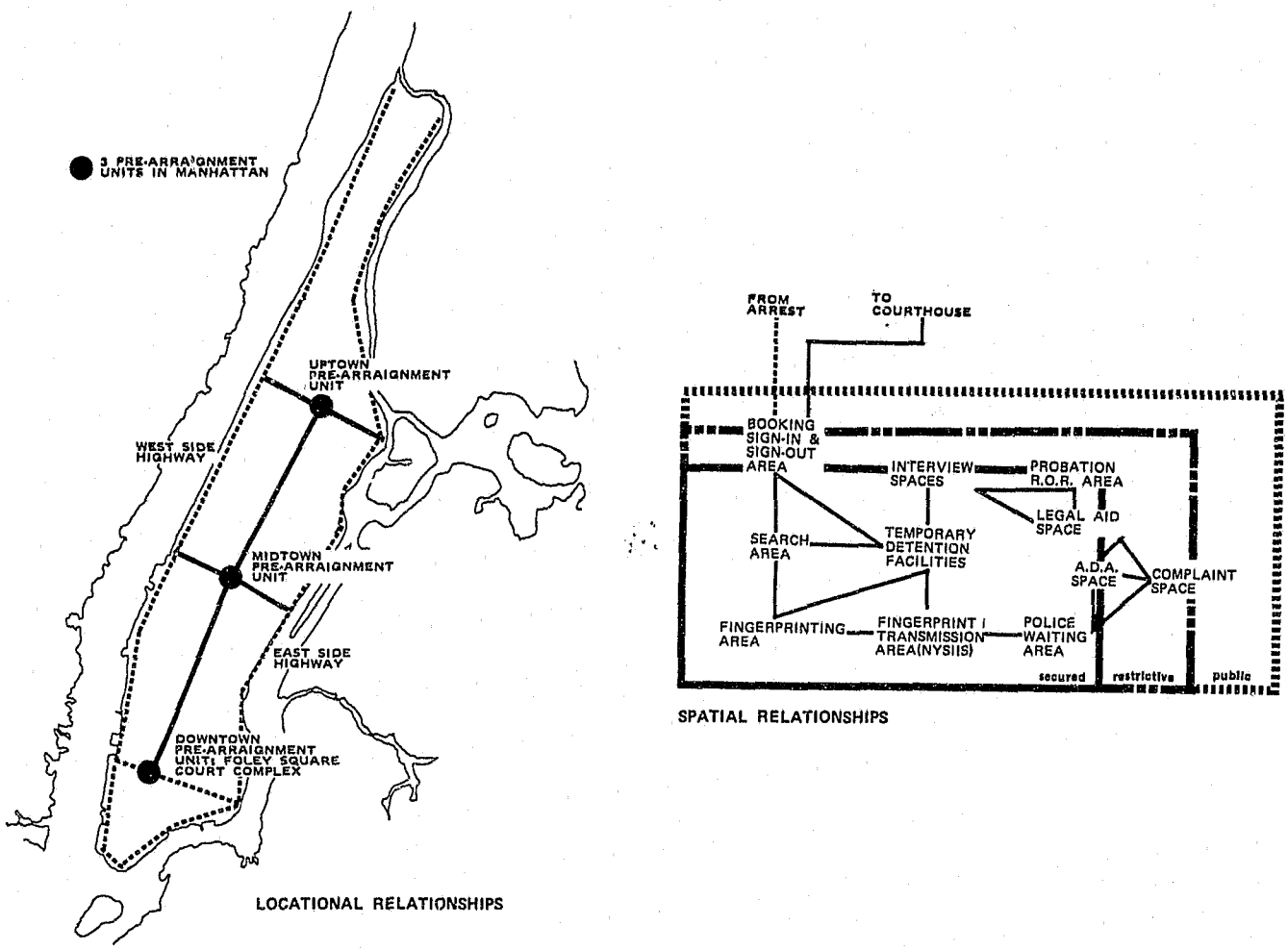


FIGURE 26
LOCATIONAL AND SPATIAL RELATIONSHIPS OF PRE-ARRAIGNMENT UNITS
NEW YORK COUNTY

in by detention cells or courtrooms and ancillary facilities, design of which is inappropriate for general offices, and usually cannot be reallocated in any case.

Developing a flexible plan to check and deter chaotic expansion begins with a detailed analysis of departmental operations. Those with similar functional and spatial relationships should be located contiguously, wherever possible. In a multi-story criminal court building, for instance, it is preferable for operating efficiency to subdivide space horizontally by functions. Departmental offices in this case should be clustered on floors with lower ceiling heights than those on courtroom floors, thereby helping to assure expansion flexibility for departmental, judicial and related functions. Expansion outside a court or related facility in office buildings can be accomplished satisfactorily under certain constraints, as described earlier.

Court facilities traditionally have been funded at county or district levels under a system that does not easily permit the introduction of planned expansion space. Even in those infrequent instances when expansion space can be provided, departments, once space in the facility is assigned, tend to "invent" programs to justify using the space. Consequently, planning methods are required that not only satisfy initial space needs but that also allow the "creation" of additional space when expansion warrants.

One such method, frequently used in commercial buildings, is to postpone interior finishes above floors thought to be required at the outset. The

drawback here is similar to the one above—the tendency will be to force early completion of these floors—for "invented" programs, despite more critical expansion needs.

Designing excess structural column loading capacity to support additional floors at a later date is another approach—but one with several disadvantages for a court facility.

Noise and dirt associated with major construction over occupied floors would unduly disrupt court functions. On-site storage of building materials on a limited city plot and their transfer to upper floors could pose major handling problems and significantly add to expansion costs.

Prefabricated or self-contained modular building units of the kind used extensively in housing in many parts of the world, but on only a limited basis in the United States, might be one solution to such construction problems. The concept is a challenging one: a kind of "instant" courthouse expansion plan. High initial costs of modular construction can be justified only for large-magnitude projects or "alternate" funding approaches such as state support, an apparent trend. Consolidating court facilities at fewer locations and adopting standard court facility components over a large geographic area could enhance the economics and structural feasibility of modular construction.

Under such a system, most, if not all courtroom components—judges' chambers, courtrooms, ancillary and support offices, and so on—could be prefabricated in standard sizes for "plug-in" to court building frameworks constructed at sites most in need. The structural framework could be designed to accept the components necessary for immediate and projected needs, and as expansion needs arise, additional components could be transferred from prefabrication factory to site for assembly in accordance with a facility master plan developed prior to project implementation.

An added advantage of introducing the modular system is that it would allow components to be transported to a proposed expansion site to serve as temporary court facilities in the interim between expansion approval and completion of renovation or construction, usually up to five or more years later.

Security Considerations. Security precautions contemplated for a court building exercise yet another constraint upon space planning. Chapter Five treats at length security systems methodology and applications. Discussed here are security considerations as they relate to space planning solutions.

Departments in need of similar security precautions should be located in close proximity—an extension of the previously discussed concept of locating those operations with similar functional relationships contiguously for maximum space-use flexibility. Functions requiring similar levels of security are probation, legal aid (public defender), and social-welfare agencies. Conversely, spaces such as clerks' offices to which the public has routine access usually have less stringent security requirements and should be located on lower floors close to the main public entrance.

Court facilities functioning after regular working hours also should be located on the ground floor, or close to it, so that upper floors can be closed to the public at such times, thereby helping to minimize theft and vandalism.

Judges' chambers should be grouped on the private side of a courtroom floor, or, more preferably, on a floor separated from courtroom floors, and accessible by the public only from one location—the elevator lobby. Under this arrangement, all visitors seeking access to a chambers floor would be screened by a court officer or receptionist. Such a security procedure is especially desirable in existing criminal court buildings where, experience shows, chambers tend to adjoin each courtroom.

An essential practice to achieving an adequate level of security is to separate prisoner or detainee circulation from that of judges, court staff and public. Secured circulation can be planned in the following ways.

A building "core" could be utilized with design modifications to move prisoners from ground or basement levels to temporary holding facilities on a courtroom floor. The entire route would be completely separate from circulation of judges, staff and public.

In a large criminal court building, with several courtrooms on each floor, a central prisoner holding facility could be "sandwiched" on a floor between two courtroom floors. From holding areas, prisoners could be transferred on secured staircases to small holding facilities located to the rear of every two courtrooms. Courtrooms, in essence, would be clustered around small prisoner holding facilities. Public would enter courtrooms from the side opposite the holding facilities.

A variation on this approach is to locate limited prisoner holding facilities on mezzanine floors above

public seating areas in two-story or otherwise high-ceiling courtrooms. Courtroom judicial spaces, under this solution, would remain as high-ceiling spaces. Prisoner elevators would stop only at mezzanine levels. From holding facilities, prisoners would be escorted down a staircase constructed between courtrooms. The advantage of this solution over the previous one is that holding facilities could occupy all space on the limited-area mezzanine level, without potential conflict arising in public or staff circulation crossing on the same level.

Departmental Functions. Spatial needs vary among departments, and intra-departmental functions, as well as inter-departmental spatial and functional relationships, should guide planned space allocation.

Clerk's offices, for instance, may require public counters and a supervised reading room within large open office spaces. Public prosecutors' offices may be partitioned into interview, witness, conference and work spaces. Probation departments may operate under a concept of fixed functional units, say, a supervising probation officer and six probation officers, a clerk, typist and a paraprofessional staff member.

Some departmental functions require greater public access than others. Probation and public defender offices and social-welfare agencies, for example, being community- and defendant-oriented, should include a public waiting area easily accessible from an elevator or entrance lobby. Interview spaces and private offices, however, should be isolated from the public areas and soundproofed. Prosecuting attorneys' offices, on the other hand, should not be so readily accessible to the public. Many prosecuting attorneys' procedures are private—interviewing prisoners and witnesses and presenting cases to a grand jury, for instance—and should be secure.

Size and Location of Courtrooms and Ancillary Facilities. A trend toward smaller courtrooms has been receiving impetus over the past few years. In 1971, a modular courtroom, 28 ft. x 40 ft., or less than 1,200 sq. ft., was adopted by the federal court system. In most court buildings more than 20 years old, and in some built more recently, large, two-story courtrooms of 2,500 sq. ft. or more are common. Only criminal courts can reasonably justify retaining a small number of such courtrooms to accommodate large jury panels for major felony cases. Traditional large arraignment courtrooms should be rejected in favor of an average-size courtroom of no more than 1,200 sq. ft. in urban areas, smaller in less populous regions. An appropriately designed waiting area should be provided adjacent to such courtrooms for litigants, attorneys and public waiting for cases to be called. Changes in jury selection and impaneling procedures should encourage adoption of standard-size courtrooms and smaller hearing rooms for family court cases, minor civil cases and small claims matters.

Extension to more cases of the right to trial by jury, and, for some cases in some states, a trend away from 12- to 6-man juries, are typical of concepts now shaping space management thinking. Undoubtedly, the 12-man jury will be retained for serious felony cases; but, for cases involving minor criminal offenses, violations and civil matters, the six-man jury is becoming prevalent. A trend is evident toward allowing jury trials in misdemeanor cases, a factor which could promote allocating space only for a six-man jury box in such criminal courtrooms.

Increasing legal safeguards of juveniles involved in criminal offenses probably will not foster jury trials for minors; however, should jury trials be introduced in family courts, current distinctions between juvenile delinquency cases and adult criminal cases would be narrowed considerably. Should juvenile cases move to open court, facility requirements would have to be changed drastically. Hearing rooms now used to process such cases, would have to take on spatial characteristics of regular courtrooms with adequate jury accommodations. For most existing family courts, critical needs probably would concern jury assembly and jury clerks' spaces.

In achieving more flexible courthouse design, shared facilities—conference rooms, jury deliberation rooms and the like—should be clustered and separated from all-purpose courtrooms by private and secured access corridors. Why an all-purpose courtroom? Again, the trend is toward a more unified court system with one level of trial court judges handling many kinds of cases.

In practice, multiple use maximizes space use. Large jury assembly spaces in many court buildings are fully used for only several hours on the morning prospective jurors report—a single and poor utilization of space which need not continue in a well-planned court facilities program. Controlled from a centrally located jury clerk's office, part of a large jury assembly space could be converted quickly into a courtroom by enclosing it with motor-operated

soundproof partitions. Movable modular courtroom furniture would complete the set-up. Such furniture, used throughout a court facility in combination with lightweight, easily transported partitions, would reinforce planning flexibility. Courtroom furniture, including judge's bench, witness and jury boxes and clerk's station, could be stored centrally for rapid movement by freight elevator and electrically-powered vehicles to any space designated for use as a courtroom. The routinely long wait in submitting a request for furniture, letting a contract and its construction could be eased by having a short inventory of "back-up" components.

Other potential multiple-use spaces are joint conference/witness rooms, jury deliberation/conference or hearing rooms and ground-floor courtroom/community meeting rooms (the latter use taking place outside court hours).

Movable furniture is a yet-undeveloped concept in courthouse flexibility, but, its potential is large. Spaces normally used as offices could be converted, quickly, if of sufficient size, into courtrooms when emergency dictates. Judges' bench, witness box, clerk's station, jury box and attorneys' tables and chairs—all could be easily-assembled modular units, the largest dimension determined by the width of elevator doors, doors into spaces and corridor widths, and capable of easy transport. Conceivably, such courtrooms could be ready to function within an hour of the space being cleared.

Arriving at realistic cost levels that promote rather than discourage implementation of applications like those just described is another essential component of the space management process. Procedures for cost planning comprise the following chapter.

CHAPTER EIGHT

COST PLANNING

Implementation of program recommendations, devotedly-to-be-wished-for as one measure of facility study success, springs in reality from a complete set of considerations, chief among which in most instances is priority and estimated cost measured against overall facility needs.

A well-conceived, phased implementation scheme, incorporating proven scheduling techniques, not only minimizes disruption to the courts—a major concern in construction projects in this field—but also enhances project feasibility for agencies responsible for implementation.

Cost estimating, to be reasonably accurate, should key on a number of constraints, some general, others of special relevance to judicial and related facilities, as subsequently described, relying on only to a limited degree and using with great caution published general cost estimates.

Beyond a discussion of cost estimating, this chapter also outlines a method for researching building costs and relating costs to building performance and user convenience, comfort and output. Given a trend toward state management and financing of court facilities, a method of assessing the fair rental value of court facilities as well as the need for developing in-house space management capabilities within the state administrator's office also are described in this chapter.

COST PLANNING FOR PROGRAM IMPLEMENTATION

Having developed and evaluated the feasibility of program recommendations relating to solving facility problems in a court building or complex, the next essential step in planning is to structure phased implementation giving consideration to constraints such as availability of implementation funds, maximum disruptions which can be tolerated by the courts during renovation and construction and availability of the space for renovation.

In a facility renovation program, phased implementation usually begins with 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, but as an integral part of a comprehensive master plan for that building or for a court complex.

A major obstacle in renovation work is potential disruption of court operations during regular working hours. Construction noise and dust can filter into adjoining courtrooms. During at least one recent project, a judge became so annoyed with construction activities that he threatened to issue a court order to prevent a contractor from proceeding with the work during trial proceedings. As a result, some work had to be completed after regular hours at unanticipated higher labor overtime costs. The incident referred to here occurred in an East Coast jurisdiction. However, it could have happened anywhere implementation had not been properly phased to coincide with court operations. Given large case backlogs and the financial crisis prevalent in large U.S. metropolitan centers today, it is all the more essential that renovation projects be phased and scheduled to minimize disruptions to court operation.

Relocating departments occupying spaces to be renovated also can disrupt court operations. If an occupied multistory court building is to be renovated, it is obvious that, unless adequate space can be provided to relocate all occupants at the same time, the renovation project will have to be carefully

scheduled to minimize disruptions to essential court functions and to minimize construction cost.

When long-term planning projections are required in urban court complexes and when renovation work involves several buildings, then phasing becomes even more critical, geared to the availability of buildings. For example, if a building adjacent to a courthouse is planned for use in court expansion but does not become available at the time the court expected, interim means for providing space will have to be devised.

Priority of Recommendation Implementation. Municipal financial crises today confronting principal cities mandate that major construction and renovation based on study recommendations, be implemented according to a priority determined jointly by the court with supervision responsibilities and by the local agencies responsible for implementation. Persons responsible for conducting a facility research and planning program have a prime responsibility to act as liaision between the court and agencies responsible for recommendation implementation, in conveying planned project phases and priorities, according to urgency of need and project cost.

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

In some metropolitan areas such as New York City, public building construction and renovation costs are appropriated by the budget department as capital construction budget lines. A fiscal year generally runs from July 1 to June 30, the budget for any given year usually being finalized before the end of the previous calendar year. General internal construction funds usually exist, however, within the public works department for minor renovations and operation and maintenance of public buildings.

Providing adequate court facilities is, in most states, the responsibility of local counties, each governed by a board of supervisors or county commissioners. Most large construction projects are funded through bond issues which are passed by a vote of 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 bond issue is voted. Obviously, such a funding system 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 in great 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 within their borders, in Hawaii and Alaska, for instance, facilities are more equitably distributed and construction and architecture tends to be of overall high quality. Experience shows that fewer court buildings are required when facilities are consolidated and located in fewer but more strategically planned sites, according to a comprehensive, statewide plan. Such obvious advantages, including as well long-term construction, operation and administrative cost savings, may encourage more state governments to support court facilities.

Budget Planning. For major city-funded construction projects it is essential to plan a budget at least five years ahead of required facility completion.

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 have approved a project, the proposal would be submitted to the local public works and budget departments of equivalent agencies for review, budget approval and appropriation, a process which may consume another year.

The next step is to hire an architectural firm to develop plans and all necessary documents for submission to the building department for approval. Functional and spatial changes may delay completion of preliminary schemes, final detailed plans and working drawings and specifications. For large projects, this phase will take at least a third year. Construction of foundation, steelwork and superstructure will easily require another two years—for a total of approximately five years.

BUILDING CONSTRUCTION COST ESTIMATES

Feasibility evaluation of alternative schemes represents the next step in the planning process. For renovation projects, feasibility studies would be made on structure, building services and equipment and cost comparisons.

Cost estimates can be preliminary, based generally on unit cost per square foot gross or net, or detailed, 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 usually are not accurate because of complexities which may be encountered in demolition, construction and finishing phases. For this reason, most contractors will add to their estimates a high contingency sum—15 percent to 25 percent—depending upon project complexity. Most cost estimates do not include architectural and engineering fees (4 percent for new projects over $15 million to 12.5 percent for projects under $100,000; and additional 2 percent to 3.5 percent usually is added for renovation projects).[1] Not included either, in most instances, are movable furniture and furnishings, overtime charges, interest, taxes and legal fees.

One of the major factors in cost estimating for courthouse renovation programs is significant cost increase 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.

To minimize disruptions to court operations, temporary or permanent quarters should be provided to house displaced personnel and records during renovation. Where noise will be a major factor, temporary masonry walls may have to be constructed to insulate the space being renovated so that operations in adjoining spaces are not unduly disrupted. For 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.

[1] "Building Construction Cost Data 1972," Robert Snow Means Company, Inc., Duxbury, Mass., p. 175.

Among other factors which influence cost estimating are: type of building, nature of construction, site and program restrictions, project size, service or utility availability, delay factors, building-code restrictions, high cost construction labor practices and, possibly, a tight money market.

Types of Buildings. Buildings requiring specially designed spaces generally are more costly than commercial office buildings with repetitive open office floors. Traditional court buildings usually have been designed with large, two-story spaces for courtrooms and jury assembly spaces, often impressively constructed and ornately decorated as one of the most ostentatious structures in the community.

Until recently, this tradition of having large courtrooms persisted. Now it has been shown that 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, generally maintaining a higher unit cost then 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 1972 unit cost data. For other cities, unit construction cost (including labor costs) can be adjusted according to city cost indexes shown in Table 26, page 150.

Nature of Construction. For new construction, detailed site investigation and project design control eliminates most unknown factors commonly associated with renovation projects, the contingency sum generally being 5 percent of total project cost.

For renovation projects, cost estimates usually contain a contingency sum varying from 15 percent to 25 percent to account for unknown field conditions. For instance, 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 generally is used to complete construction, 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

TABLE 26

CITY COST INDICES

Average 1972 Construction Cost & Labor Indices						Historical Averages	
City	Labor	Total	City	Labor	Total	Year	Index
Akron, Oh.	110	107	Milwaukee, Wi.	103	108	1971	100
Albany, N.Y.	99	100	Minneapolis, Mn.	101	102	1970	90
Albuquerque, N.M.	83	93	Mobile, Al.	94	91	1969	82
Amarillo, Tx.	75	83	Montreal, Cn.	75	87	1968	75
Anchorage, Ak.	129	140	Nashville, Tn.	79	83	1967	71
Atlanta, Ga.	87	93	Newark, N.J.	120	109	1966	68
Baltimore, Md.	96	97	New Haven, Ct.	103	98	1965	65
Baton Rouge, La.	86	89	New Orleans, La.	86	93	1964	64
Birmingham, Al.	78	84	New York, N.Y.	129	116	1963	62
Boston, Ma.	104	103	Norfolk, Va.	72	78	1962	61
Bridgeport, Ct.	103	101	Oklahoma City, Ok.	82	86	1961	59
Buffalo, N.Y.	110	110	Omaha, Nb.	89	92	1960	58
Burlington, Vt.	86	89	Peoria, Ill.	99	100	1959	57
Charlotte, N.C.	68	76	Philadelphia, Pa.	106	100	1958	55
Chattanooga, Tn.	79	84	Phoenix, Az.	99	96	1957	54
Chicago, Ill.	108	104	Pittsburgh, Pa.	112	106	1956	52
Cincinnati, Oh.	110	105	Portland, Me.	79	86	1955	49
Cleveland, Oh.	121	113	Portland, Or.	99	99	1954	47
Columbus, Oh.	107	100	Providence, R.I.	97	99	1953	46
Dallas, Tx.	84	87	Richmond, Va.	72	80	1952	45
Dayton, Oh.	108	105	Rochester, N.Y.	109	107	1951	44
Denver, Co.	94	91	Rockford, Ill.	102	98	1950	40
Des Moines, Ia.	91	93	Sacramento, Ca.	115	109	1949	39
Detroit, Mi.	119	113	St. Louis, Mo.	108	103	1948	39
Duluth, Mn.	102	100	Salt Lake City, Ut.	89	94	1947	35
Edmonton, Cn.	79	84	San Antonio, Tx.	80	83	1946	29
El Paso, Tx.	72	81	San Diego, Ca.	110	104	1945	25
Erie, Pa.	103	102	San Francisco, Ca.	120	107	1944	24
Evansville, In.	91	93	Savannah, Ga.	70	78	1943	24
Fort Worth, Tx.	84	91	Scranton, Pa.	94	95	1942	23
Fresno, Ca.	107	106	Seattle, Wa.	100	95	1941	21
Gary, In.	103	104	Shreveport, La.	78	85	1940	20
Grand Rapids, Mi.	99	97	South Bend, In.	98	97	1939	19
Harrisburg, Pa.	89	90	Spokane, Wa.	97	98	1938	19
Hartford, Ct.	105	103	Springfield, Ma.	97	96	1937	19
Honolulu, Hi.	94	105	Syracuse, N.Y.	103	100	1936	17
Houston, Tx.	88	90	Tampa, Fl.	81	87	1935	16
Indianapolis, In.	99	97	Toledo, Oh.	110	108	1934	16
Jackson, Ms.	72	76	Topeka, Ks.	89	94	1933	15
Jacksonville, Fl.	78	81	Toronto, Cn.	87	91	1932	14
Kansas City, Mo.	99	95	Trenton, N.J.	113	103	1931	17
Knoxville, Tn.	78	82	Tucson, Az.	98	95	1930	18
Las Vegas, Nv.	109	105	Tulsa, Ok.	82	86	1929	19
Little Rock, Ar.	73	80	Vancouver, Cn.	89	91	1928	19
Los Angeles, Ca.	109	100	Washington, D.C.	97	93	1927	19
Louisville, Ky.	94	95	Wichita, Ks.	84	91	1926	19
Madison, Wi.	94	98	Winnipeg, Cn.	65	83	1925	19
Manchester, N.H.	86	90	Worchester, Ma.	104	96	1924	19
Memphis, Tn.	80	83	Yonkers, N.Y.	118	108	1923	19
Miami, Fl.	101	100	Youngstown, Oh.	108	104	1922	17

From: "Building Construction Cost Data, 1972", published by R. S. Means Company, Inc., Duxbury, Mass.

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

reasons such as this, a contractor will add a contingency sum large enough to insure against serious losses, the amount varying with the complexity and concealed portion of a renovation project.

The experienced contractor ordinarily will visit the project site, evaluate field conditions and develop a cost estimate based on previous experience with similar construction projects. At the same time, the contractor will assess the existing staging area and facilities for materials and equipment storage areas that will be required during construction. All other conditions being equal, bids received from experienced contractors retain a lower contingency factor.

Site and Program Restrictions. The availability of the entire job site for uninterrupted construction work can significantly influence the construction cost estimate. When a project that could be completed as a whole is broken into several sub-projects completed sequentially, increased labor costs easily can account for 15 percent to 25 percent added costs. In renovation projects, this situation may occur when the occupants of one space have to be re-

located to an adjoining renovated space while the vacated space is being improved.

Noise and dust supression requirements add materially to base costs. The ease of loading and unloading of materials and removing waste materials from the site can significantly influence cost estimates. In major downtown urban sites, narrow streets and limited site area can create serious problems for materials delivery and removal; in some areas, 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 generally are lower than those for 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 also would 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 savings in construction time and handling costs. The use of movable partitions and office landscaping techniques, not only increases space use flexibility, but also 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. A central refrigeration plant strategically located within a court complex, for example, 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 planning new uses for 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 result from many factors, including inclement weather, poor project management, lack of proper project scheduling and delayed payment schedules and union disputes. Cold weather in the winter months causes difficult working conditions, resulting in work reduction, and bids generally are higher for work at that time, 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 a period of 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 frequently are used by contractors for this purpose. The shorter the construction time, the higher the contractor's 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 have been known to bankrupt a contractor.

Delay in payment can 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 high unit costs of 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 a 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 percent, and it is estimated that the annual cost increase in the future will be at least 15 percent.

Unit construction costs are published in several available textbooks; however, such costs should be used discriminately. Generally, unit costs include the contractor's overhead and profit, but not archi-

tectural and engineering fees, movable furniture and equipment and overtime wages.

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 will not provide optimum building cost. For the court administrator and planner to evaluate optimum unit construction costs on which to base cost estimates, the following basis of evaluation has been established.

METHODOLOGY FOR COST ANALYSIS AND COMPARISON

The following brief outline of a method for researching building costs and relating costs to building performance and user convenience, comfort and work output, first developed for office buildings,[3] can be applied equally well to court and related facility analyses.

Establish Area and Volume Relationships. To develop realistic unit costs, the net (rentable) and gross areas and volumes of buildings of similar type have to be carefully compiled and organized into 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. Computing overall unit construction cost for total space, alone, is an inaccurate basis for cost estimating. Unit cost breakdown into various kinds of spaces is 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 will evolve in relating the number of ancillary spaces to each courtroom or hearing room. Using building and zoning codes, relationships can be established between net and gross building area and site area.

Compile and Analyze Cost Data. Cost data can be compiled by means of a questionnaire from 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 to relate costs 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, cost figures for each court building would have to be adjusted by means of local cost indices 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 will be available to the researcher. In such cases, the only adjustment that can be made is in applying the total building cost index (Table 26, page 150).

To complicate matters further, court buildings in each locality usually have been constructed at different times. To compare the costs of such buildings, cost figures would have to be adjusted by applying the local historical cost index. For example, if the basic cost index for a locality in 1970 is 100 and the 1950 cost index is 50, then the cost index has doubled in 20 years. Overall cost of a court building erected in 1950 should then be adjusted to the equivalent cost in 1970 for comparative purposes. Other factors, such as labor market and material shortages, also may influence the adjustment; in some cases, a compromise index has to be developed for each local trade. The desired level of cost adjustment accuracy should be a function of the manner in which 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 operating and maintenance costs for personal or political reasons. Second, building engineers may wish not to expose to public view inadequacy of building systems and equipment. Third, even when such information is available, each building owner compiles information according to his own

[3] F. Michael Wong, "Significance of Cost, Performance and Comfort Relationships in Office Buildings," University of Sydney, Australia, 1965.

bookkeeping method, complicating comparison of similar buildings. 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, primarily because power costs of most systems overlap and are combined in one total cost. In general, annual operating and maintenance costs of office and institutional buildings (if they are maintained at an acceptable level) are approximately 5 percent to 10 percent of building capital cost.

Depreciation of buildings generally is distributed over 50 years; building equipment usually depreciates over 20 years.

Measure Building Performance. Performance levels established for a building and its services are an important basis for classifying the facility and developing cost-performance relationships. Performance levels can be established by analyzing the degree to which a building satisfies the function or functions for which it was designed and constructed. To facilitate this analysis, a building has to be categorized into major and minor components including structure, finishes, HVAC, 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 to interviews. Such information can be compiled by means of questionnaires and field research.

Personal observation of building components in operation provides the most useful assessment of performance level. Measurements can be recorded for waiting intervals of vertical transportation systems, lighting intensity and color, effective temperature measurements for HVAC systems and acoustical sound levels. Information compiled through interviews, measurements and observations would be subsequently analyzed and synthesized to arrive at building performance standards. 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.

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.

One method of measuring convenience and comfort is to evaluate subjective responses of building occupants to environmental, building service and psychological factors.

Environmental factors consists of sensations of warmth, moisture, "stuffiness," light and noise, and so on. Subjective responses then can be related to the physical measurements of environmental conditions.

Service factors include subjective responses to the performance of a building service such as air-conditioning, heating, ventilation, elevator service, artificial lighting, furniture and equipment, toilet facilities and other provisions made for the staff.

Psychological factors include convenient location of place of work in relation to home, transportation terminals, and shopping centers, as well as working relationships with colleagues, the health and psychological condition of the person concerned and the effect on work output of family and personal problems. In the study of persons 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 measured with equipment and recorded on work sheets. Questionnaires can be devised to record subjective responses. A weighted scale with values 0 to 5 or 0 to 7 can quantify subjective responses into weighted units. By applying this weighted scale to each variable, all subjective responses can be quantified. 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.

Establish Cost-Performance-Comfort Relationships. Cost-performance-comfort relationships 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 that beyond that point 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. Local unit construction costs can vary considerably; cost indices of cities, states or regions will have to be used in applying this technique on a broad scale. 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 funds to municipalities for building space rentals.

ASSESSING FAIR RENTAL VALUE FOR JUDICIAL FACILITIES

There is a trend in the United States toward state management and financing of court facilities, to replace separate administration and funding by local counties. Two states, Hawaii and Alaska, now operate in this manner 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 assuming this role is assessing fair rental value for facilities used by the courts. Courtrooms in most county courthouses are far too large for their function, while 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. A law library, grand jury facilities and attorneys' lounge, for example, are shared spaces, their areas not directly related to the number of courtrooms in the facility. In fact, a small increase in courtrooms (say, from one to three) normally would not 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. However, such facility standards may vary slightly at various state or local levels, and Table 27, page 154, should be used only as a guide.

IN-HOUSE SPACE MANAGEMENT CAPABILITIES AT STATE LEVEL

At the state administrator's level, it is more economical in the long run to develop in-house space management capabilities. Initially, the state administrator's office may have to develop both in-house court management (if the state administrator's office has not developed a scientific and systems approach to court management) and space management capabilities, with the court management component developed in its logical sequence prior to the space management component. The sequence of in-house space management capabilities development is illustrated in Figure 27, page 155.

A space management consultant is employed after the development of in-house court management capabilities. The consultant is responsible initially for solving emergency facility problems as an integral part of a long-term planning program of conducting a space inventory system, developing planning models for courts of varying size and complexity, establishing space standards for statewide adoption and ap-

TABLE 27
ANCILLARY FACILITIES AND RECOMMENDED AREA FOR EACH COURTROOM

Facilities	No.	Area of Spaces for First Courtroom	No.	Area of Spaces for Each Additional Courtroom
COURTROOM-RELATED				
Courtroom	1	1,200–1,500	1	1,200–1,500
Chambers	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 1	120	1	120
SHARED				
Grand Jury Facilities		600		
Library		1,200		
Attorneys' Lounge		150		
Net Area (sq. ft.)		6,190–6,490		3,260–3,560
Gross Area (sq. ft.) (Add 50% Net Area)		9,285–9,735		4,890–5,340

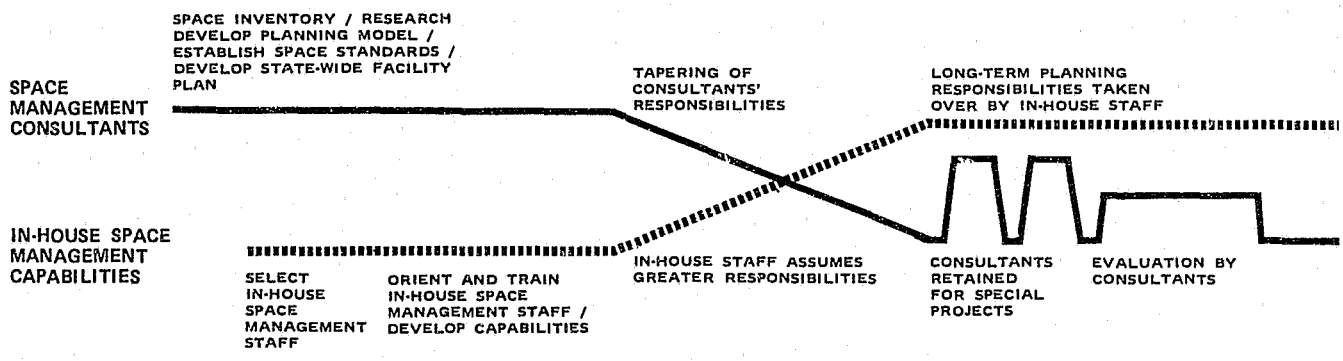
*Only in criminal and family courts.

plication, and developing a statewide facilities plan for the court and related systems. The time period for this scope of work usually is between 18 and 24 months, depending on the size of the state, the levels of court jurisdiction and the number of facilities involved. During this period, in-house space management staff would be selected and trained by the consultant, and would gradually assume greater space management responsibilities. At the same time, responsibilities of the consultant would be tapered off gradually until the in-house staff is able to take over every facet of long-term space management. After this point, the space management consultant would be engaged only for special projects which are either too large or too complex for the small in-house staff to handle, and for evaluation of programs, when necessary.

The development of in-house space management capabilities at the state level has several important advantages:

- Feasibility of developing a central repository of facility information which would eliminate to a large extent duplication of research efforts in subsequent facility projects.
- Development of operational and space standards for statewide adoption and application in all facility renovation and construction projects.
- Ability of in-house staff to delineate clearly the goals and scope of work of facility projects so that duplication of effort by consultants would be minimized.
- Feasibility of in-house staff to update facility information when changes occur and at regular intervals.
- Significant cost savings in facility renovation and construction can be realized as a result of better in-house project control, supervision and integration within the framework of a state plan.

FIGURE 27
SEQUENCE OF IN-HOUSE CAPABILITIES DEVELOPMENT IN STATE ADMINISTRATOR'S OFFICE



CHAPTER NINE

PROGRAM ADMINISTRATION

Successful administration of a facilities study entails considerably more effort than is implied simply in responsibility for program operation over its life. This chapter discusses the many components involved in administering facility programs.

Program administration, if it is fully effective, probably traces its roots to pre-proposal planning prior to funding approval. It certainly must extend beyond final report submission to promoting before appropriate persons and agencies implementation of recommendations according to assigned priorities, and to evaluating the degree to which program objectives are accomplished after facility completion.

Effective liaison, in fact, is a sometimes underrated aspect of successful program administration, when it should be a prime obligation. Integration of the space management component as an integral part of a major court management study is another essential element of program administration.

These and other essential qualities of program administration discussed in this chapter have shown to improve the coordination of program components and to advance the likelihood of project implementation.

SCOPE OF PROGRAM ADMINISTRATION

Pre-Proposal Activities. A facility planning program generally is conceived by a court administrator, in collaboration with justices and court personnel, or by a consultant familiar with the local court system and its problems. Program conceptualization, invariably derived from problems, is solution-oriented.

Court administrators, in most jurisdictions, are thoroughly familiar with local problems, enabling them to conceive the scope of work required for a program proposal to recommend facilities adequate to achieve optimum operation and personnel work output. But, in some areas, particularly in large metropolitan centers, problem urgency and magnitude may suggest the need for engaging a consultant experienced in facility and operations management to assist in defining problems and the program scope. A consultant should be required to conceive an action program for incorporation in a preliminary proposal submitted to the court administrator, facility committee members and others associated in significant ways with the proposed project.

Generally, it is preferable that the administrator or other court officials initiate a program proposal. The court, in this case, would be placing itself in a stronger negotiating position with funding agencies which tend to more quickly approve and finance internally-developed programs. Experience has shown that considerable time is consumed when a consultant must "convince" the court of the worth of his ideas before the court will submit a proposal for approval and funding.

Preliminary Proposal. Program conceptualization generally leads next to a preliminary proposal outlining program goals and objectives, work scope and impact, proposed methodology and research procedures, time and staff needed and preliminary budget estimate, based on a yearly or phase basis for the entire program. The preliminary proposal, either a brief description or an outline, should be distributed to all key involved personnel and consultants for comment and criticism. Program scope and proposed staffing should receive special attention at the first meeting to discuss the proposal.

When it is obvious that a project will require the use of consultants, the court should announce a request for proposals in widely-read media and in mail-

ings to known court facility planners. 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 courthouse and related law-enforcement facility planning. A discussion on selecting consultants is presented in Chapter One.

The request for proposals should contain an outline description of problems to be resolved and a deadline for submitting proposals, all of which should be evaluated by the court administrator, chief judge and court facility committee.

At the preliminary proposal stage, it is essential that court and consultant establish an effective working relationship. If the court contemplates hiring a consultant who then would assemble a project team, the type of contract and method of funds disbursement could have great impact on program operation and outcome. Bureaucratic procedures of governmental agencies, including court and related law-enforcement facilities, can hamper project effectiveness unless a way is found to make those procedures function optimally. If program budget and funds disbursement is to be controlled by the court, a budget officer ordinarily will process all bills, regardless of the amount. Delays in payment to small creditors, experience shows, can damage a program's credit rating, delay program progress and cause generally poor relationships between creditors and program staff. Regardless of whether an individual or large consulting firm is contracted, the program funds should be allocated on a fixed-price or cost-plus-fixed-fee contractual basis, to provide the consultant with essential flexibility in hiring personnel, paying creditors and planning overall program expenditure within available funds. Regular financial statements should be submitted to the court and to funding agencies.

Another advantage in giving full operational and budgeting responsibilities to the consultant is to relieve the usually over-burdened budget officer in the court. Program budget problems, in any case, usually are lower on his priority than those 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 agency personnel, court personnel and the consultant (if already appointed) to clarify problems that may have arisen since proposal submission, and to work toward the formal submission of a full proposal. If federal funding is being sought, then local matching contributions (varying from 25 to 50 percent of project cost) first would have to be committed.

Program staffing, having been considered only in outline during the preliminary proposal stage, takes on full significance at this stage. If the consultant has been selected, even on a tentative basis, it would be beneficial for him to be included in program staffing discussions with funding agency personnel. In the operation of a facility planning program, staff requirements at each stage—research programming, planning, design, costing and presentation—can differ markedly; for this reason, not all positions requested in the proposal should be full-time for program duration. For example, during the research and programming stages, interviewers, manpower planners and researchers are essential. 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 are required. (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, would have a firm basis on which to report to their superiors that grant money has been allocated to produce the best possible results.

For some projects, particularly in urban areas, it would be wise to include adequate funds to pay commercial personnel agency fees during the personnel selection process and to advertise available positions in local newspapers, assuming local laws permit such disbursements. The amount specified for this purpose need not be substantial in cities and locations where staffing is not a major problem, or where other employment benefits such as climate and surroundings may attract competent personnel from other parts of the country.

Local Matching Funds Required. The kind and extent of matching funds will vary with project nature and scope. Research and planning grants usually require a 25 percent match, generally known as a "soft match," whereas grants for construction and renovation may require a 50 percent "hard match." Soft-match funds need not be cash but can be rental of office space, equipment and supplies

cost or personnel fees or salaries. Hard-match funding is defined as cash provided by local agencies. Matching requirements are stipulated by each funding agency, depending upon the priority and emphasis the agency places on research, planning and construction. Generally, research and planning grants are easier to obtain than construction grants because many funding agencies are geared toward assisting local agencies in finding ways to solve local problems. Once solutions have been proposed, funding agencies expect local agencies to fund the major part of implementation.

For research and planning grants, courts can be expected to 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 be responsible for reproduction services, and a fourth for document printing and binding services. Consideration also should be given to having in-house court personnel assist program staff in legal interpretation of laws and formulation of assumptions for manpower and spatial projections.

Long-Term Considerations. A constant reliance on different consultants for projects in the same field will needlessly duplicate efforts. On the other hand, consultants tend to restrict distribution of their project data lest competitors gain an unfair advantage. One essential step a large city should take is to establish centralized coordination and control of data and information developed by consultants on similar projects. In this way, existing information can be distributed to consultants involved in further projects, minimizing duplication of effort.

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 court and related agency personnel involved in court improvement projects. Such a procedure could result in local cost savings and help assure implementation of program recommendations after program work has been completed.

Office Organization

Space. Office organization involves three major components: space, equipment and personnel. A facility project staffed by architects, engineers, planners, and possibly persons trained in law, sociology and psychology would require spaces appropriate for drafting, secretarial and office functions, model construction, reception and storage.

Commercial rental is costly and funding agencies usually require, where possible, that local agencies supply program space. In downtown areas of major cities, annual rental of air-conditioned office space in a good location can range from $8 to $12 per sq. ft. (based on 1972 rental prices in New York City). Obtaining and planning office space, then having it partitioned and furnished, is time-consuming, especially when city agencies are responsible for letting contracts for this work to local contractors. Potential union disputes and strikes in related trades could delay for many months completion of adequate working facilities. Consequently, planning for program office spaces should commence as soon as proposal funding has been approved and the courts have assigned necessary space. Experience has shown that a program director has to allocate considerable time during initial program stages to work with local agency personnel responsible for partitioning and furnishing of office spaces.

Office space partitioning and furnishing can be expedited by establishing good working relationships 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, effective working relationships should be cultivated with at least the public works department (the General Services Administration for federal buildings), and the planning and budget departments. In fact, to enhance recommendation implemention, the consultant, in effect, should become a liaison between the courts and these local agencies. Not generally versed in space management principles, court officials, in most cases, can only request assistance from agencies responsible for providing adequate facilities; however, implementation agency personnel need to understand project substance and priority before proceeding on an implementation program. Experience has revealed situations when not even basic communication exists between the courts and local agencies responsible for providing adequate judicial facilities.

Furniture and Equipment. A major program budget item is furniture and equipment, if not provided by the courts as a grantee contribution. Beyond supplying general office furniture, a facility planning program office requires special furniture such as drafting tables, drafting equipment, high stools, model construction surfaces, equipment and supplies, reproduction equipment for printing plans

and reproducing documents, a special "composing" typewriter for preparing presentation documents and, possibly, a mechanical punch and spiral binder for completing interim and final reports. (Slip binders do not hold pages effectively, 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 grant approval.

In funding requests, consideration should be given to the availability of equipment for reproducing and binding documents and other functions which could be overlooked. While it may seem feasible during initial program stages to accept offers by the courts to use such equipment, the on-going work of the program has to be geared to machine availability in the courts. A large reproduction job, for instance, could be delayed if it were to coincide with courts' machine use. Should conflict in the use of shared equipment be anticipated, equipment rentals might be more expedient for program duration, and adequate funds should be requested for such costly items.

Personnel. A major program staffing problem is recruiting professional personnel with previous experience in judicial facilities planning. Being a relatively new field in general, architectural and planning research personnel with appropriate experience in the United States are scarce. Typically, the only way of staffing a competent judicial facilities professional planning team is to assemble one for training. Therefore, unless a team has experience in such projects, time must be allowed for orientation and training. The program director, however, must be vitally involved with staff at various stages of the program to guide 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 a new staff to work on one of the minor sub-projects to establish approaches and techniques. Based on pilot project experience, staff members then can begin to work in teams on simultaneous sub-projects.

During facility planning programs for renovation of existing buildings, obtaining original building architectural and engineering drawings and documents can be tedious and time-consuming. Again, close collaboration between program and city agency personnel should expedite this task. Obtaining such drawings and documents from various departments, including public works, city planning, the archieves (for old buildings) or the real estate department, is another priority program task. Copies of building and occupancy permits (showing maximum occupancy on each floor), local zoning plans and other local building documents also should be obtained so that subsequent reorganization and renovation can be planned within such constraints.

Working Relationships with Court Departmental Personnel. Before beginning research and data compilation for each department of the courts to be studied, it is essential to establish effective working relationships with departmental personnel. An effective technique is for the presiding judge of the courts or his administrative director to inform all department heads of program existence, and of need for cooperation by all personnel. Each department head should also be requested to assign a liaison officer to work closely with program staff, to refer them to appropriate persons in departments, and to serve, in general, as a resource person. The liaison officer should be aware of detailed departmental operations, personnel and space, and be authorized to 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 value of liaision officers cannot be underestimated for a facility program which aims at maximum recommendation implementation. A major reason courts or other government agencies fail to implement recommendations contained in facility planning reports is a lack of user approval. Another reason for failure of implementation is ineffective communication and collaboration between program staff and user departmental staff, which can result in erroneous assumptions and unrealistic projections. Implementation agencies, in general, cannot proceed with work until securing written approval from heads of departments for which the proposals were made.

Working Relationships with Sponsoring Agency. Collaboration between program staff (especially the program director) and the court or department responsible for monitoring the program is essential for a number of reasons.

First, full support of the highest court involved, as well as the other related courts studied, is essential for program effectiveness and eventual recommendation implementation. Because staff is serving in a consulting capacity to the court, all recommenda-

tions should be addressed directly to the court which, through its presiding judge or his administrative director, would make requests for implementation.

Second, the court has a readily available resource—the legal profession—which program staff can tap for information. In making manpower projections and in interpreting Supreme Court decisions, for instance, this source would be helpful. To arrive at realistic personnel projections for the court, manpower planners have to establish parameters, assumptions and approximate effective dates of assumptions. 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.

Third, it is essential that 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, particularly if more than one court is involved. To be responsible to a lower court could create another obstacle to recommendation implementation; to be responsible to more than one person could lead to conflicting decisions impeding implementation.

Working Relationship with Funding Agency. Working relationships between the program and the funding agency should be established through the court to which the program is responsible. However, with the agreement of the court, the program director should form working relationships with at least one top-level person in the funding agency to expedite preliminary and routine 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 director normally can provide more readily than court officials. 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. In any case, an available working and communication relationship should always be clearly defined at the beginning of any program.

Both the court and the funding agency should receive regular progress reports from the program director, formally forwarded to the funding agencies through the court. Facility program progress reports should be submitted at completion of each major phase of work, rather than at strict time intervals. 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. By this means, comment and criticism can be made regularly and approaches and techniques 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 and feasible recommendations have to be promoted, often vigorously, by the program director and staff. Promoting a program is a continous process beginning even before the program begins and going beyond making recommendations to urge full implementation. In a judicial facility planning program, promotion may be required sequentially with a number of consultants and local government agencies: the space management consultant who is responsible for programming and planning, architectural and engineering consultants who are responsible for design, construction and supervision of implementation, and landscaping, acoustical, lighting and interior decorating consultants who are responsible for specifying environmental aspects of the facility. Government agencies involved in the process are city planning, public works, transportation and the city building departments. A facility planning program is in many ways more significant than subsequent documentation and construction. It is in this early stage that the decision-making process and programming for existing and future needs is accomplished. The programming and planning process, described in detail in Chapter Two, is implementation oriented; recommendations should be based on an in-depth study, realistic assumptions and practical planning.

Promoting implementation also means conveying 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 in New York City rests on a basic assumption: modernizing existing court buildings with high "rehabilitation potential" is less costly than constructing new court facilities,

and that this approach should result in substantial construction cost savings to the city. This assumption has been shown to be especially appropriate for court buildings in downtown metropolitan centers strapped by acute land shortages and high construction costs. If projection of court and related facility needs in existing buildings continues to substantiate this assumption, then implementation of similar recommendations should increase.

Presentation of facility program recommendations takes many forms: charts, plans, drawings, statistical tables, scale models, photographs, slides, renderings, films and graphics. But, in each case, the presentation has to be geared to the audience for which it is intended. For example, judges and court personnel generally interpret architectural and engineering plans only with great difficulty. Experience has shown that architectural models, supplemented by photographs, graphics and slides, are an effective method of presenting space planning concepts to persons not conversant in these techniques.

A scale model of a multi-story building as a presentation tool is perhaps most useful when constructed by floors, with all partitions included to illustrate in three-dimensions proposed space use. Floor space on the model can be color coded to indicate overall space assigned to departments or units.

A 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 to illustrate examples of facilities elsewhere or procedures such as sequential flow of cases, persons, and documents.

The number of presentations would vary with the number of agencies and committees involved in a particular project. The minimum number of formal presentations probably should be four: the first, to the court to which the program is directly responsible; the second, to the funding agency; the third, to facility users; and the fourth, to city and other local agencies responsible for the implementation of program recommendations. (When a program involves a complex of buildings, this presentation process may have to be repeated several times.)

Experience has shown that it is beneficial to those who will attend a presentation to have received beforehand a brief statement summarizing program approach, methodology and recommendations, including reduced-size charts and graphics and floor plans to be used at the presentation. Prior distribution of these materials should help assure that details of originals at the front of the room will be seen by all.

During the course of a program, liaison officers and other departmental personnel will have communicated work progress leading to recommendations. A major reason for the presentation is to obtain general overall acceptance of recommendations from user departments of an entire building or complex of buildings, and to rectify conflicts or discrepancies in spatial relationships among the departments. It is essential that heads and representatives of all 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 acceptance. If at all possible, signatures should be obtained from department heads under a general statement of acceptance so that concepts and plans can be forwarded to the department of public works or equivalent agency for detailed documentation and contract letting.

The 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 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 its buildings; the funding agencies are interested in program progress and whether their funds are being spent in the best possible way to achieve objectives.

The 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 renovation of existing buildings at a relative fraction of the cost of new building construction is feasible, and that the program has demonstrated beyond doubt the validity of this assumption.

Program Evaluation. One of the least known facets of facility project administration is program evaluation. Evaluation of a facility project amounts to considerably more than just balancing the amount of space provided in the completed facility with the statement of space needs listed in the facility program. Evaluation basically entails an assessment of

the degree to which the completed facility satisfies the functional requirements of occupants. Such an evaluation can be arrived at only through an evaluation of the use of the facility six months to a year after its completion when occupants have had an opportunity to adjust their activities to the new environment. The same methods and parameters used to determine facility needs should be tested in evaluating their validity as well as the degree to which basic goals of the system have been accomplished through improved functional and spatial relationships made possible by improved facilities.

Beyond the accepted concept of evaluation after recommendation implementation, it is suggested that evaluation be continuous throughout the study period prior to making recommendations. Carefully controlled evaluation during a study would tend to lessen the amount of evaluation necessary after recommendation implementation. In a judicial facility project, it is the responsibility of the court administrator, serving as the project coordinator, to constantly evaluate (with the assistance of court as well as external personnel, if necessary) progress of the consultant's effort and to assess the degree to which such effort accomplishes one or more sub-goals established for that part of the project. This serves an added advantage in requiring the court administrator to delineate clearly all the goals and sub-goals for each project, and to sustain a continuous interest in the project beyond the expectation of a final report from the consultant.

Integration of Court Management and Space Management Studies. In any court management study involving the reorganization of the court structure or operations, the space management component should be an essential and integral part of that study. Court reorganization invariably necessitates space reorganization, renovation or construction if existing facilities were not to dictate reorganized court operations. Figure 28, page 163, shows how space management and court management components could be integrated within a carefully phased work sequence.

During the court management study which determines the direction of the court or justice system, and the assignment of judges and cases, a study of existing facilities should be conducted siumltaneously

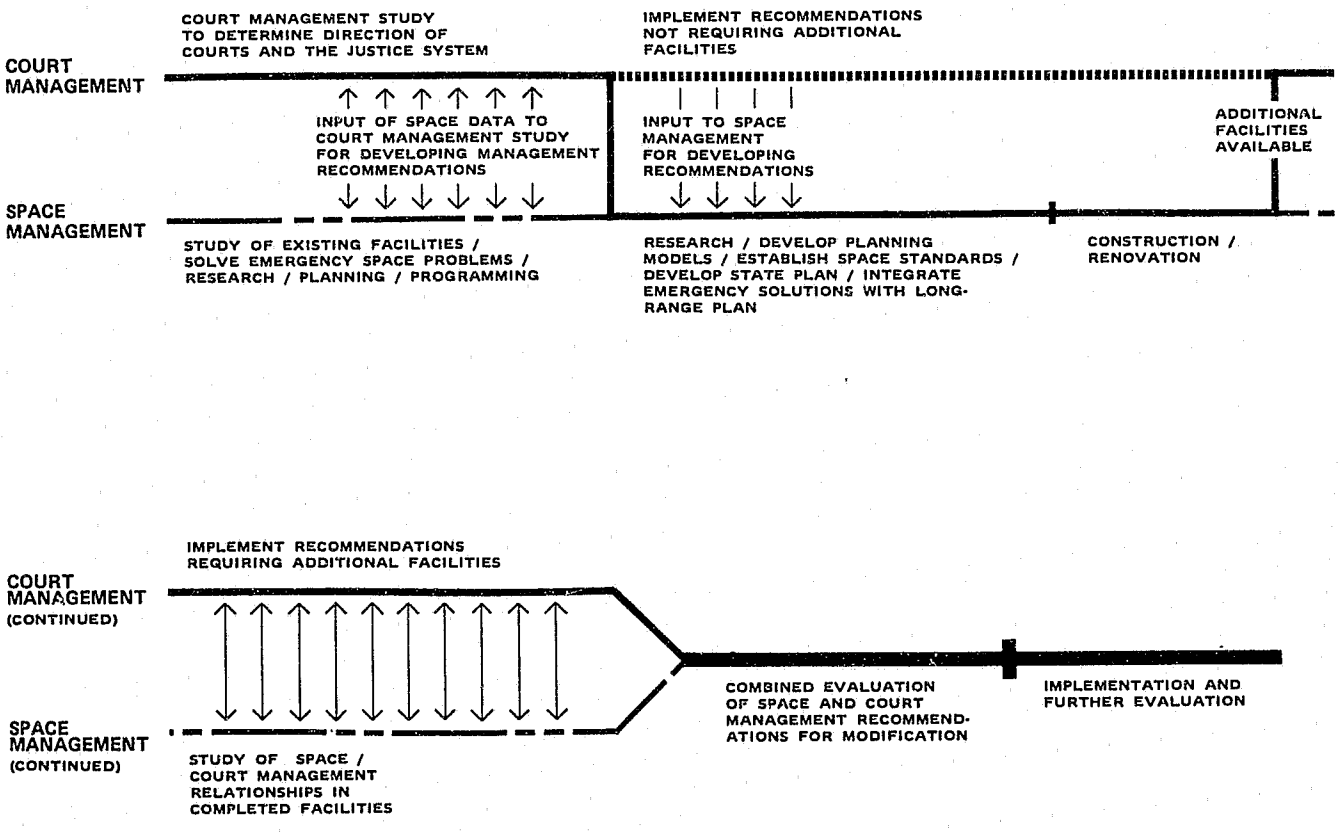


FIGURE 28
INTEGRATION OF SPACE MANAGEMENT STUDIES WITH COURT MANAGEMENT STUDIES

so that existing space data input is available at a later stage of the court management study to support court management recommendations.

A space management study to establish future needs, to develop planning models, space standards and state/county facility plans for court and related facilities, cannot be conducted effectively until court management recommendations have been adopted by the courts and responsible state and local agencies. At this point, inputs from the court management study are essential and remain so until adequate information has been received which enables space management consultants to proceed with detailed space planning for future needs. In the meantime, court management recommendations which do not require additional facilities or facility changes can be implemented (for example, reassignment of judges and cases using existing facilities).

After space management recommendations have been completed and adopted by the courts and related state and local agencies, a significant period of time would be needed for the detailed design, specification and renovation or construction of recommended facilities. The space management consultant should collaborate closely with the court administrator and the local architect in evaluating project progress and in making suggestions on the use of materials and detailed design of spaces.

The completion of facilities renovation or construction would enable court management recommendations requiring additional facilities to be implemented. After the new or renovated facilities have been occupied, the space management consultant would collaborate closely with court management consultants in evaluating the degree to which preestablished goals of the project have been accomplished and the extent to which established functional and spatial relationships have been satisfied. Modifications can be recommended, with implementation of such modifications and further evaluation to follow.

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 minimum-cost project phasing at least disruption to court operations (as discussed in the previous chapter).

Program Cost Planning. A facility program can be categorized into the following major functions and approximate percentage of total program effort which is based on experience of the Courthouse Reorganization and Renovation Program, New York City, and on other programs conducted by the same program staff:

Functions	*Approximate Weighted Percentage of Total Program Effort*
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
	100%

The low percentage accorded to program orientation in the breakdown would be higher if the consultant's experience is limited or his access curtailed to extensive court information, data and reports; time allotted to the background research phase also is relative to these factors.

The major functions of data compilation and organization, through documentation and presentation, account for approximately 75 percent of program effort. Of the remaining phases, it should be stated that program planning, administrative and editorial functions are continuous throughout the program. Secretarial functions, which can vary considerably among projects, were not considered for the above list.

The preceding percentages of total project effort have been based on a weighted measurement of effort, not solely on actual time spent for each function. Initially, priority activities were listed for each function, and the significance of each activity within each function; the function within the program then was evaluated. For example, analysis and evaluation 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, higher-

level personnel being assigned higher values than lower-level personnel.

In a program proposal, a budget estimate consists of several major categories, among them salaries, consulting services, equipment, operation and travel. A program staffing problem arises when funds for salaries are inadequate to attract appropriate personnel. Some knowledge of local employment conditions, including current salary levels for program positions and the availability of manpower, should be gained prior to requesting funds for salaries. Another important itemization is one to be made for funds 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 part-time consultants required and the approximate amount of time needed to complete the work in their special fields. Depending on the nature and scope of work, consultants should be hired on a fixed price, cost plus fixed fee or a per diem basis, and 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 a funding 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 a "composing typewriter", mag-card and mag-tape equipment, reproduction unit, report binding machines, electric calculators and typewriters should be written into the proposal. Maintenance and servicing may be 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 courts as part of a grantee contribution. Generally, the funding agency would require that other listed operational costs be covered as well by the courts. Terms, however, should be clearly stated in writing to confirm the courts' contribution.

A not-to-be-overlooked operational item is petty cash for minor operational and travel expenses, supplied by either the courts or the 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.

A travel funds request depends largely on program type and 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 representatives to travel widely to gather data. On the other hand, if the program has only local impact, the need for 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 traveling to meet with program staff.

As emphasized earlier, responsibility for 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 other consultants and suppliers. To do otherwise can imperil program operation and staff effectiveness.

With 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 approved budget. Transfer of funds from one category to another should be made as simple as possible, avoiding a waiting period for approval of such changes.

Concluding Statement.

An underlying theme throughout this handbook has been that every space management study of court and related facilities must strive to be as comprehensive as funds and imagination permit. What may be only implicit in the foregoing discussion is the need for more studies of an even broader scope than was possible in the New York program upon which the handbook has drawn. Much greater emphasis should be placed in subsequent studies of this kind on the wider goals of court management of which, in the final analysis, space management can be considered only a vital part.

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