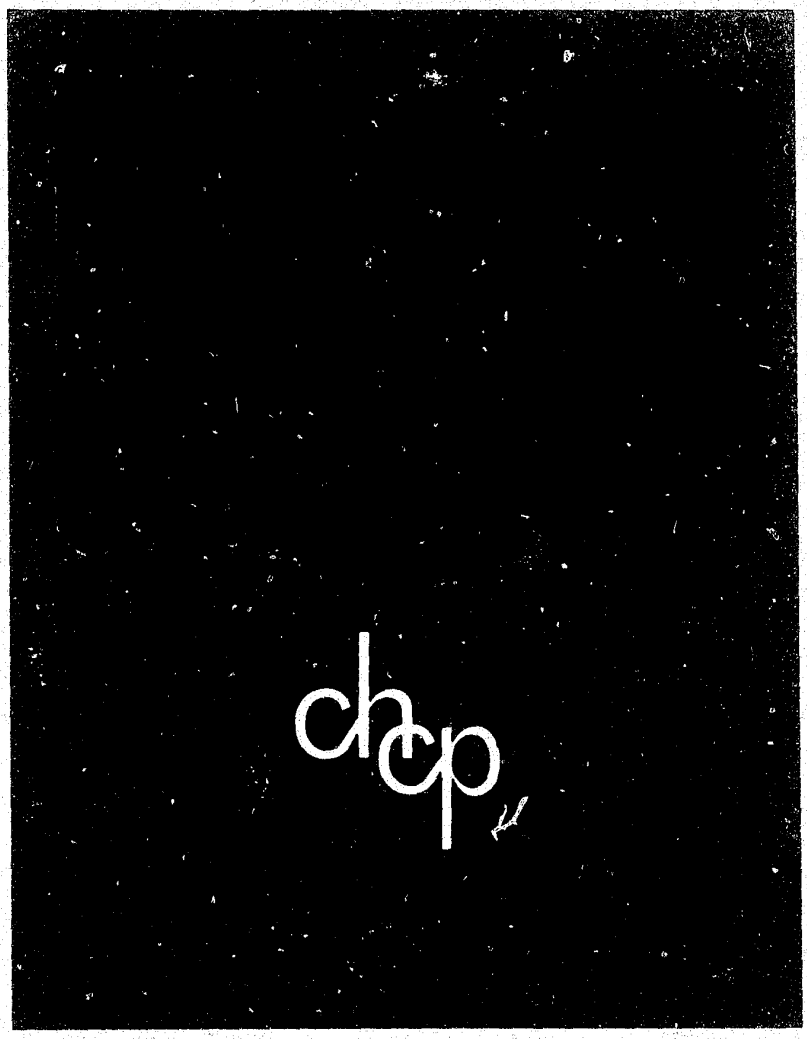




CORRECTIONAL HEALTH CARE PROGRAM

# Correctional Health Care Program

RESOURCE MANUAL

CORRECTIONAL HEALTH CARE FACILITIES:
PLANNING, DESIGN, AND CONSTRUCTION



MICHIGAN DEPARTMENT OF CORRECTIONS
OFFICE OF HEALTH CARE

LAW ENFORCEMENT ASSISTANCE ADMINISTRATION
UNITED STATES DEPARTMENT OF JUSTICE

Correctional Health Care Program
Michigan Department of Corrections
Office of Health Care

# CORRECTIONAL HEALTH CARE FACILITIES: PLANNING, DESIGN, AND CONSTRUCTION

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## FOREWORD

The issues of adequacy, accessibility, and quality of health care service delivery in correctional institutions are increasingly receiving well-merited attention. Long plagued by neglect and paucity of resources, most correctional agencies throughout the country have recognized the need for clear direction in addressing these issues. The unique characteristics of prison populations and facilities pose a problem in applying directly the standards and policies which prevail in community health care settings. Once the basic ingredients common to good health care practice have been identified, the challenge remains of their adaptation without essential compromise to the correctional environment. Implementation of a system which meets statutory and professional standards is the responsibility of correctional health care administrations in the 1980's.

Through a grant from the Law Enforcement Assistance Administration, the Michigan Department of Corrections has provided technical assistance to ten states with a view to improving their health care system for residents of correctional institutions. This manual is one of a series published under the auspices of the grant. Together, the manuals will support and extend the training sessions and technical assistance efforts of the past two years. Their purpose is to define concisely the major elements which must constitute a comprehensive health care program for a correctional agency.

There is no substitute for proper planning, adequate resources and good management. These manuals can assist in the planning effort to identify the kind of resources which will comprise an adequate program. In addition, they address the alternatives which must be considered, the integration of various components, and establish a foundation for the decisions which must be made by each agency.

The manuals have been compiled by persons who are experts in their professional field and by persons active in the delivery of health services to correctional residents. There are too many divergencies among correctional agencies to permit a single approach to be universally applicable. For this reason, the manuals are intentionally broad in scope and will require careful analysis and specification by each user.

A health care system does not stand alone and isolated from its environment. It can succeed only through a cooperative and carefully planned effort which involves health care personnel, staff of the correctional system, community health resources, and residents as interested consumers of the services. Where multiple institutions exist within a state correctional agency, appropriate central direction and coordination are essential for coherent and consistent form and quality of the services provided. It is at this level, in particular, that the overall planning, resource development, and management of policy should occur.

These manuals are written in simple "how-to" formats and are intended to be self-explanatory. Local regulatory agencies and other community and professional health resources can be helpful in interpretation and application.

The goal which has prompted development and issuance of this manual and of others in the series has been attainment of professional quality health care for residents of correctional institutions in the community. The sponsors will consider this e-fort well-rewarded if, as a result, changes are implemented which improve access and cost effective delivery of needed health services.

Jay K. Harness, M.D.
Director, Office of Health Care
Michigan Department of Corrections

# PREFACE

As correctional health care administrators, we are already committed to the basic premise that quality of health care provided to our incarcerated population must be comparable to that available in the free community. Courts in recent years have upheld this doctrine, but have not specified precisely what constitutes acceptable quality.

Among essential ingredients of an adequate system are properly qualified staff in sufficient numbers, functional equipment consistent with current technology, appropriate support services, capable management and a physical plant conducive to the delivery of health services. Many aspects of these areas are addressed in other manuals of this series. This manual focuses on a rational approach to the planning and design of a physical plant for a correctional health care program.

In corrections, we often face the problem of antiquated facilities which must either be replaced or renovated in order to conform to current professional standards. Since either process is costly, thorough planning involving appropriate persons is essential. While availability of resources may vary, important advice can be obtained from the state public health department, the state fire marshall, and the Joint Commission on the Accreditation of Hospitals. The architectural firm selected for the project should be one which has amply demonstrated ability in designing health care facilities.

Unfortunately, there is no source of definitive information which can provide guidance in developing specifications suitable for a correctional health care facility. Community hospitals and ambulatory clinics cannot serve as models without substantial modification. There are essential considerations of security, traffic flow, types and levels of service, administrative function, practitioner mix, etc., peculiar to corrections which cannot be ignored. At the same time, an overemphasis on security may result in a totally unacceptable design from the standpoint of efficient health care delivery.

Clearly the burden is ours to take the lead in responsible planning. This manual should be of assistance in identifying necessary resources and in establishing a sound approach which considers all relevant factors. It addresses the points which are of interest to those who must approve funds as well as to those who will provide or receive care in the facility. This manual does not design a facility for you. It does not define the exact square footage for each room nor stipulate the organizational layout of function. But it does describe the process for arriving at such decisions and the type of data needed.

The issue of health facility design is only one of many aspects of correctional health administration which makes our jobs so interesting and challenging. We are, in effect, pioneering in our efforts to establish professional quality health care systems in correctional institutions. Each of us can benefit from the collective experience of one another and from persons outside of the correctional system as well. I trust that this manual will be useful to you and encourage further advancement in the state of the art of correctional health care.

Jay K. Harness, M.D.
Director, Office of Health Care
Michigan Department of Corrections

## ORGANIZATION OF MANUAL

This manual is organized in four major sections supported by an extensive appendix and references. The sections are arranged so that the reader may progress from broad descriptions of the planning process to specific examples drawn from experiences in the State of Michigan.

### SECTION 1: PURPOSE OF MANUAL

The purpose of the manual is to provide an introduction to the necessary steps to be taken in the planning, design and construction process. The manual highlights those steps which are particularly important to correctional health care administrators and personnel.

### SECTION 2: THE PLANNING PROCESS

This section presents a planning process in which all the important steps are described, and related to planning decisions which are made in developing a correctional health care facility. The process is divided into two major phases. The first phase deals with issues relating to the need for health care services and is directed to an overall system plan or Master Plan; the second phase describes the steps necessary to implement the various facility improvement projects required to support the health care system plan. The two phases are clearly depicted in a diagram of the overall planning process.

### SECTION 3: PLANNING IMPLEMENTATION PROCESS

This section of the manual deals with key aspects of planning implementations with which health care administrators will have to be concerned. They are as follows:

a. Evaluation of Correctional Health Care Facilities. The necessity of sound evaluation is discussed, and an approach to evaluating the performance of health care facilities is outlined.

b. Project Delivery Methods. The construction of a building depends upon a specific building project delivery method. A number of delivery methods are presented in this section, and each one is discussed in terms of its benefits and limitations.

c. Cost Control. The issues related to the control of project costs in both Planning and Facility Acquisition phases of the project are outlined

d. Architectural Services and Compensation. The types of professional services which architects bring to a project depends upon the size, complexity, and requirements of the facility to be built. Various methods of compensation are discussed in this section.

SECTION 4: HEALTH CARE FACILITY GUIDELINES

This section presents material from two correctional health care facility types in order to demonstrate the issues which should be included in a building program. The material is selected from two studies carried out in the State of Michigan. The first deals with the requirements of a secure unit in a community hospital, the second with requirements for a health care unit in a maximum security prison setting.

SECTION 5: APPENDIX

The material included in this section is intended to serve as additional reference to issues dealt with in the body of this report.

Appendix A: Acute Care Referral Model

This material describes a cost/travel-time-distance model for evaluating the potential locations for secure units. The study was carried out by the Office of Health Care, Michigan Department of Corrections, in 1977 to provide information for the development of secure units in Michigan community hospitals.

Appendix B: The Requirements of Codes and Regulations

The major classes of codes and regulations which impinge upon the planning of health care facilities are listed in this appendix. References are given for essential documents in Building Codes and Zoning Ordinances, Fire Codes, Licensing Regulations, JCAH, OSHA, and Handicapped Regulations.

Appendix C: Health Facility Guidelines

This material is made up of planning and design concepts for a health care unit in the maximum security setting. The material was selected from the Facility Program document for the health care unit at Jackson, Michigan.

Appendix D: Data Sheet for Facility Program

Sample data sheets from a program for a health care unit are provided as an example of how facility requirements should be documented.

Appendix E: Scope of Architectural Services

The types and combinations of professional services are listed and described.

Appendix F: A Method for Evaluating Potential Sites for a Secure Unit in Selected Community Hospitals

Description of an evaluation method with sample data collection sheets and summary displays.

References

## SECTION 1: PURPOSE OF MANUAL

This manual is intended to assist administrators in developing plans for improved health care facilities in correctional systems. It addresses the broad health care system issues that form the basis for specific facility improvement projects and describes a step-by-step process for planning and facility acquisition. As an additional aid to understanding design requirements, the manual provides various examples taken from projects carried out by the Office of Health Care, Michigan Department of Corrections. The manual provides design information and procedures that will be useful in planning and implementing renovations and additions to existing health care buildings as well as working with new facilities.

Facility planning is inextricably linked to the philosophy and strategy of health care delivery. The manual recognizes this essential link and deals with both the process of making and carrying out plans, as well as the details of facility requirements. In addition, this manual is seen as a complement to others in the series that deal more specifically with the underlying health care strategies.

There is sufficient similarity between the problems faced by one state and those faced by another to safely allow a level of generality in the discussions of the planning process (yet dissimilarities are sufficient to preclude any simplistic cookbook approach to planning). Obviously the specific answers to problems and the procedural steps appropriate to one setting will not be identical to those of another.

The approach used in this manual thus describes the planning process in general terms so that each reader may input particular goals and constraints, needs and projections, and draw conclusions which are appropriate to the requirements of a particular health care system. Realizing that general principles are best illustrated through experience, examples are drawn from experience in the State of Michigan. The use of these examples in the manual should not be taken as the recommended approach, but should be used as illustrations of certain parts of the planning and design process as they were applied in Michigan.

## SECTION 2: THE PLANNING PROCESS

### PLANNING ISSUES

Planning for health care in the corrections setting is a unique application of more generalized health care planning principles. Both the system strategy and the facility provision must face and respond to the unique issues and conditions impacting upon health care delivery in the prison setting. The issues briefly stated below are included as substantive background to the articulation of a process for responding to these issues.

1. The special health care needs of the incarcerated population. By removing an individual from society and restricting his or her access to a self care regimen and medication, the institution assumes increased responsibilities and difficulties in providing a healthful life setting. Similarly, the support and comfort afforded by during times of minor illness must be provided by some surrogate mechanism in the institutional setting.

   The incarcerated person has much time to show concern for both real and imagined physical symptoms. The knowledge that health care cannot be withheld often leads to a significantly higher demand for services. This is a natural consequence of imprisonment.

   Even more significantly, the prison population is apt to bear the marks of past impairments and neglect superimposed on both real and imagined conditions encountered in the corrections setting. Thus the system of care must be tuned to reflect the special problems and circumstances inherent in the prison setting.

2. The aggravated housing, working, and social conditions common to prison settings. Prisons are, with some bright exceptions, frequently handicapped by problems of over-crowding, poor sanitation, industrial noise, poor ventilation, and other deterrents to the maintenance of good health habits. Demands for medical attention may be reduced as environmental improvements are made, but in the meantime, the reality leads to an increased demand for health care services.

3. The difficulty in recruiting and keeping concerned and qualified health care providers. Professional health care providers, whether physicians, specialists, nurses, paramedics, or technicians are in general demand and are difficult to recruit into the prison setting. Beyond the issues of a competitive salary scale, the work, equipment, and environment must be professionally equivalent to the public sector to permit these providers to practice at the level of their capabilities. They must also feel a sense of purpose and feel secure in their work setting. Planning efforts must assure these conditions if adequate care is to be a realistic goal.

4. The delivery of services while maintaining security. Health care providers, security officials, and residents all need to feel mutually confident that the health care environment is comfortably secure as a pre-condition to quality health care. Sound planning for health care needs is inextricably bound to sound security practices.

5. Appropriate utilization of community facilities. While some levels of care must be provided at every institution and while some institutions because of their size and/or location may appropriately provide the equivalent of secondary hospital care, all systems require community services at the level of tertiary care. Much of the secondary care needs of medium and maximum security prisons and virtually all primary and secondary care needs of those in minimum security institutions may be contracted through local physicians and hospitals.

   The intelligent utilization of already existing community resources must be a key aspect of planning efforts.

## INTRODUCTION TO PLANNING

In a complex, uncertain, and changing society everyone needs to plan to some degree their private, business, or professional lives. Planning may be described as an anticipatory activity and process wherein we establish goals, collect and analyze information, suggest possible strategies for achieving goals, predict as far as possible the likely consequences of those strategies and determine which is most likely to yield the desired results.

In every day use the phases of this process may be blurred or unappreciated but nevertheless the process is similar whenever planning is done. The more complex and costly the issue, the more likely we are to reply on a tried and tested planning process to reach a decision. The development of communities, institutions, facilities, and transportation systems all require specific types of planning and decision-making. While there can be said to be a generic planning process, it must be further specified through strategies and methods for each system problem. Thus we have urban planners, transportation planners, and health care planners.

It has been found that the planning activity can be made more accurate and predictive by adherence to readily acquired processes and techniques for focusing attention on relevant issues and describing a logical train of decisions to arrive at a course of action most likely to yield the -esired results.

Most corrections administrations have been involved in planning of one type or another, however, such planning experience may have been infrequent and too short to allow the development of real experience. This section is intended to augment the existing planning capabilities of those responsible for conducting prison based health care programs and to enable them to better participate in on-going planning for improved health care. The process can be characterized in the following ways:

### Planning is goal-oriented

We take the trouble to plan ahead because we wish to predict the effect of events before they occur. We have implicit or explicit goals. We plan for retirement because we prefer well-being to poverty. With careful planning we might be able to live in a warm, rather than cold climate.

It is obvious that making plans is meaningless if we cannot set goals which we want to achieve. On the other hand, if we are willing to accept whatever events turn out, we should not need to take the trouble to plan. Goals are usually both immediate and long term, and specific goals and objectives are needed to aid in judging our progress toward the broader and longer term needs.

Planning is a predictive activity

An effective planning process reduces uncertainty about future events and needs for resources. We set limits by looking at past events and problems and projecting likely trends into the future. We quickly realize that we are better able to predict future needs if we have better information about the past, if we know which conditions are apt to remain constant and which will change, and if we can anticipate the ways in which variable factors relate to known factors.

Planning is a process for interrelating these variables, and structuring a process to input all the relevant information we can count on to predict the uncertain future.

Facility planning derives from organizational planning

The provision of health care services to prison residents is one of a number of components of the overall corrections system. The system as a whole and each of its sub-units must be mutually supportive and serve the goals set by society at large. Before it is possible to determine the facility needs of the health care sub-system there are levels of organizational issues that need to be established. The process proposed in the flow chart (Fig. 1, Pg. 9) directs attention to organizational and policy issues during the early stages to clearly establish the purpose and character of the operation before determining the scope and type of facilities that are required to support the designated method of providing health care.

Each institution within the corrections system has particular characteristics and goals which will impact on the nature of the health care services required. The security classification, age profile of residents, sex, institution size, location, relationship to other corrections facilities, and the relationship to community-based health care systems will have an effect on the health care needs of residents within the institution. In recent years, significant progress has been made in recognizing the inadequacy of many of the health care programs in the prison setting. Excellent goal statements and reorganizational alternatives have been developed and partially implemented in many systems. Thus when the setting for health care in a specific institution is obviously in need of replacement or renovation or when a new institution faces its health care needs, it is important to root that set of decisions firmly in the context of system-wide plans.

Planning requires continuity

In years past, the planning profession suffered from a tendency to produce massive, handsome, and elaborately documented "Master Plans" that pointed to what were thought to be the future state of the city, region, or institution depending upon farsighted goals and anticipated needs. Inevitably, changes in an underlying premise, a shifting of priorities or other fortuitous events quickly made many such visions of the future obsolete and the "Master Plan" gathered dust while expediency reigned.

The focus of planning efforts has shifted. It is characterized less by a specific "Master Plan" formulated as the result of a definitive study than it

is by a more dynamic approach to how needs and changes can be accommodated, formed and reformed in the light of developing events.

Planning has become more continuous and less episodic. Progress toward goals is monitored through the periodic review of data generated by the system's operations. This requires an on-going commitment to planning principles and methods, the identification of required system information, the regular review and analysis of planning data, evaluation of outcomes and sensitive control interventions to achieve established planning milestones.

Continuous planning with feedback provides direction and attainable milestones. The pace of social, technical, and economic change requires a dynamic and varied approach to assure that the ever-changing organization is providing the services needed by its changing constituencies.

Planning must be feasible to be effective

Bold plans and stirring intentions make for good drama. They are satisfying to announce, but unless plans are rooted in realism and can prove to be achievable, they can do more harm than good.

Good planning is planning that is achievable. This does not suggest timidity or small expectations. Problems clearly identified and conscientiously pursued are highly amenable to solution. Feasibility checking is an important component of any successful planning effort. At each stage of planning that deals with goals and objectives, there should be explicit procedures for assuring that the agreed upon goals are feasible for the system in terms of time, staffing, and costs.

Cost feasibility is of central importance and must be checked periodically during the planning and design process. Because of its importance, Section 3 expands upon cost control methods and differentiates between the cost estimating during the early planning phases and the more precise estimates used in the later design phases.

Effective planning has high "visibility"

The likelihood of planning success is greatly enhanced by making it accessible and understandable to all personnel likely to be affected by change. The plan, and the process for arriving at that plan, which is clearly defined and easily accessible to affected personnel and potential contributors is most likely to succeed. This suggests that the process be diagramed graphically with scheduled dates for the completion of milestones. Briefings should be held so that individuals within the organization are aware of their roles, expected performance, and time table of events so that they can monitor those plan elements within their jurisdiction and complete assigned tasks on schedule.

Given the variety of backgrounds and skills necessary to develop a health care system in the highly specialized environment of the correctional institution, it is important to include all relevant inputs as decisions are made. Access to important inputs can be compromised if open communications is obstructed in any way.

Even though a variety of people are involved in the direct planning effort, posted and/or distributed progress reports and status reports to others in the institution will help channel feedback to the planning group.

Experience shows that the more people feel they have contributed to the planning effort, the more they feel committed to making the operation work.

Planning requires informed involvement

The skills for carrying through organizational and facility planning are rarely vested in a single individual. Planning can become more effective when it incorporates the skill and insights of all those having responsibilities in seeing that the system performs its mission effectively.

This is particularly true in the case of health care for corrections. The various health care providers, whether physicians, nurses, pharmacists, or technicians, have unique viewpoints to input and can be relied upon to stress the patient care aspects of the project. They require a safe and secure setting to deliver that care and knowledge of prison ways and security issues are input by prison administrative staff and on-line security officers. The ultimate recipient of the services, the resident, can also contribute a level of input neither of the other groups can. Since these groups must work together in the facility operation, their planning involvement inevitably provides each group with valuable insights into each others needs. This period of directed, mutual decision-making produces added respect for the problems of each group and leads to solutions to problems at a higher level than any authoritative planning approach.

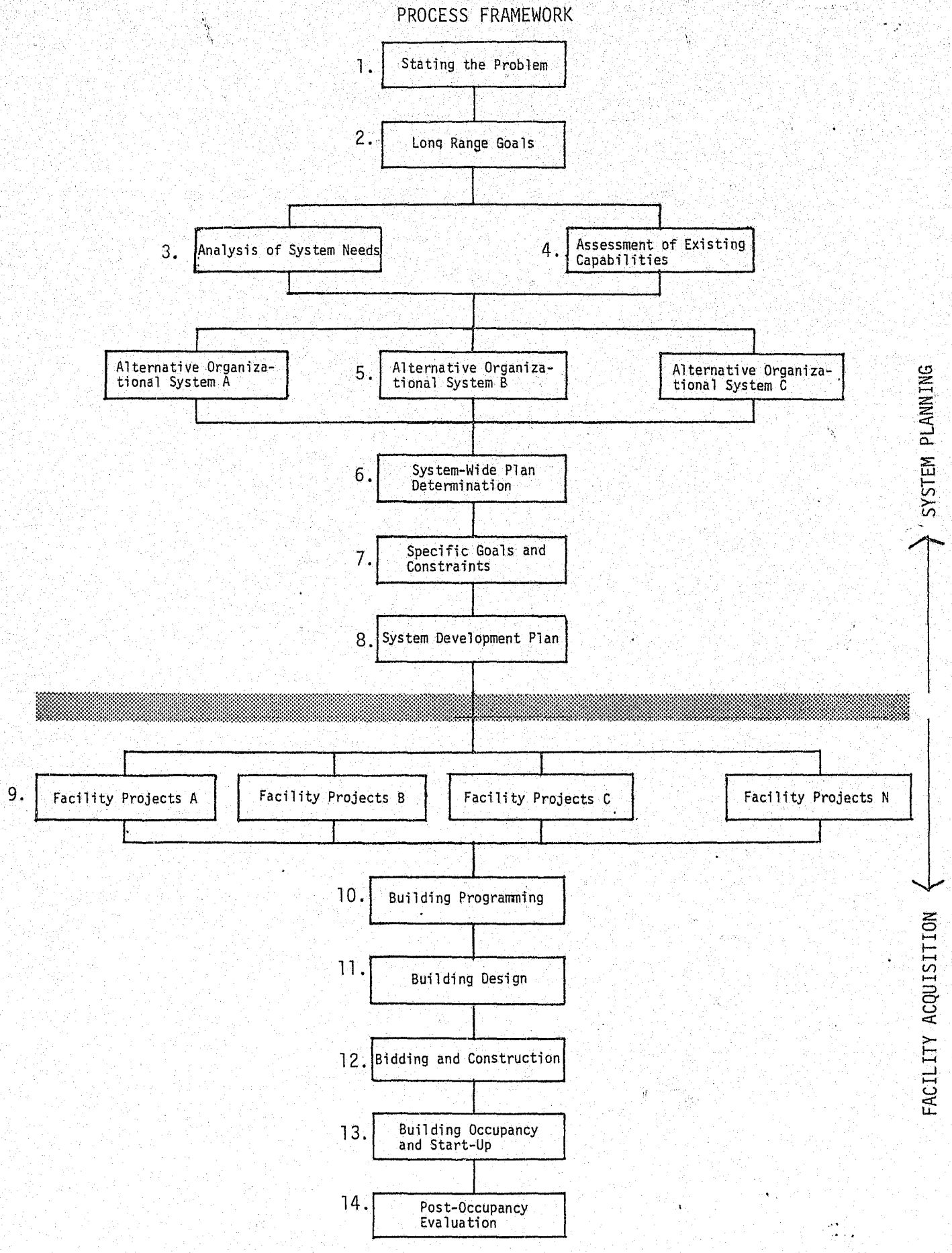


Fig. 1 Process Framework

## PROCESS FRAMEWORK

The step-by-step process illustrated in Fig. 1 represents a formal framework for facility planning decisions that incorporates the characteristics articulated in the introduction to the planning process. The description of the diagrammed steps represents a generic account of a sequence of analyses and decisions needed to systematically develop problem solutions. There has been no attempt to factor into the diagram an administrative review and approval process since protocols would vary greatly from state to state. It should not be difficult to augment this generic framework with the procedural reviews that would make it applicable to any particular jurisdiction.

The process in Fig. 1 is organized into two major components - System Planning and Facility Acquisition. The System Planning component presents a set of coordinated analyses and decisions that lead to the acceptance of a system-wide Master Plan and Development Plan for health care in the prison system. The Facility Acquisition component describes an implementation process for each specific project needed to carry out the system Master Plan. This process applies whether the improvement project involves remodelling or a new building. The descriptions of these steps indicate the type of substantive activity involved in that step. How these services are obtained and in what combinations will be further explored in Section 3 where alternative modes of building acquisition are described.

### 1. Stating the Problem

In any type of problem solving activity, one must be sure that the actions one takes are directed at the problems that are faced. While this may seem obvious, often considerable effort is expended on solving the wrong problem. Facility changes are required to achieve a higher order purpose. Planning should be built upon a clear understanding of the problems being faced. The ability of the system to perform at the desired level of performance may be due to insufficient facility capacity, functionally outmoded facilities, physically deteriorated facilities or economically obsolete facilities. Poor performance may be due to inappropriate methods, insufficient manpower or undertrained personnel, lack of budget or any combination of these factors.

Health care problems in prisons might be perceived as follows:

1. poor location of health care units;
2. overutilization of health care on the part of the residents;
3. overcrowding of facilities;
4. complaints and law suits about the quality of care;
5. inability to provide adequate professional staff;
6. problems with security.

Frequently the overt signs of need for planning efforts may be symptomatic without getting to root causes, but it is important to articulate as fully as possible the nature of the problems as seen at the outset of the planning

efforts. It is good discipline to avoid prejudging the nature of solutions. The nature of the problems being faced must be clearly stated so that all subsequent efforts will allow the planners to develop creative organizational strategies and ultimately determine appropriate responses in terms of facilities.

Doubling the size of an infirmary or adding more equipment without rigorously investigating the problems perceived is unwise. All too often the causes of problems have operational as well as spatial origins.

2. Long Range Goals

Planning has been defined as a goal-directed process. Without a clear vision of what the system hopes to achieve, it is quite fruitless to pursue any course of action. It is also a major source of frustration if goals remain unstated rather than explicit. Further difficulty is sure to ensue if system goals fail to reflect the desired outcomes of the various constituencies involved.

Thus, in this next important step in the process, the planners must be sure that:

1. the goals expressed will lead to the desired outcomes;

2. the goals are clearly stated and made visible to everyone within the system;

3. the goals incorporate the needs of the public at large, the legislature, the department of corrections, the office of health care, the health care staff, the residents and their families, the communities in which persons are located, and the community health care providers and hospitals utilized;

4. the goals are appropriate and feasible;

5. the goals are consistent with broad societal goals and as reflected in state and national goals for both health care and the criminal justice system.

Goal setting proceeds from very broad and often implicit rather than explicit societal goals through the various intermediate levels to highly specific concerns for delivering particular types of care at designated institution types. The planner seeks to achieve a consistency between the various levels of concerns and an increase in the ability to quantify and monitor progress toward goals on an operational level. Goals should address both system achievements and a time frame of accomplishment. Certain milestones should be achieved by certain times in order to keep the planning process moving on schedule. Having a well worked out schedule of accomplishment is a necessity in communicating needs to appropriate committees. To assure completeness in addressing goals, it helps to categorize system concerns and components in structuring the goal setting process. For example, sets of goals could be developed for health care administration, manpower, quality of care, scope of services, cost of care delivery, etc.

Within quality of care, the focus could be on the types of health services by isolating goals for prevention, health education, primary care, specialty care, dental care, emergency care, acute secondary care, tertiary care, rehabilitation, longer term care, and auxillary support services.

Further categorization of some of these health services could be successive efforts spelling out more and more detailed objectives to guide system progress. When one considers the scope and impact of system goals, the process for determining the goals is of prime importance. Broad input and discussion help to identify and refine a strong set of goals. It is often useful to compile a long list of potential goals in a relatively casual way and then set about editing the initial list ot eliminate redundant goals. Frequently one goal may simply be a means of achieving a more inclusive goal. Other potential goals may be eliminated or modified if further examination indicates that they are not appropriate or perhaps out of reach because of cost or other factors.

The remaining goals can be further subjected to discussion in order to determine a priority ranking. It is good to know the relative importance of the various goals when allocating resources to achieve them.

3. Analysis of System Needs

Few issues are more critical in health planning than the reliable determination of the needs that are to be addressed in the planning process. While the prison setting has characteristics that differentiate it from the general care setting, a good starting point is to apply the standard health planning techniques and then factor in the considerations that are special in the prison setting.

The typical process for each category of care is to:

1. review experience over the past 3-5 years;
2. determine the rate of use per hundred in the prison population;
3. determine the applicable workload;
4. apply space standards to determine facility needs.

This type of analysis will be needed for each class of service including:

1. intake screening and physical examination;
2. primary care visits;
3. specialty care visits;
4. diagnostic procedures (lab, X-ray, etc.);
5. infirmary care;
6. acute care hospitalization;
7. emergency treatment - on-and off-site;
8. long term care;
9. psychiatric care;
10. medications.

Log books should be available to derive the needed data on certain aspects of service such as on-site emergencies, radiology, appointments, or infirmary census. Off-site services can be ascertained from billing records. In accumulating data for analysis, deficiencies should be rectified by improvements in record-keeping to facilitate future studies.

Information can be displayed as follows:

| Year | Resident Population | Visits* | |
|---|---|---|---|
| | | Total Visits | Visits per Hundred |
| Year 1 | | | |
| Year 2 | | | |
| Year 3 | | | |
| Year 4 | | | |
| Year 5 | | | |

*This could represent visits for any specified service or it could be X-ray procedures, lab tests, etc.

Fig. 2 - Sample format for displaying visit information

Analyses can be further refined by breaking down the data by age, sex, and other relevant factors.

In reviewing the charted experience in the various care categories, it becomes possible to discern trends and detect discontinuities that reflect changes in policy or in the organization of care.

Workloads based on this volume of delivered care can be established. Based on the experience tabulated, the number of patients seen per hour by a nurse practitioner at sick call can be determined, modified by direct staff input, and utilized as the basis for future projections.

The number of radiological examinations in each category can similarly be established from past experience and applied to the projected population at the established target dates. Making estimates of future need is obviously easier and more reliable when dealing with a mature system undergoing slow evolutionary change. It is more difficult if the system is facing a discontinuous change. In the case of the former, the information routinely collected on patient services can be analyzed retrospectively as described and projected as a basis for services required for the periods of the planning study. Such straightforward projections need modification when the old operation is not comparable to the future expectation. For example, when the patient care capabilities of a prison-based infirmary are less than adequate, patients admitted to off-site acute care hospitals will reasonably have longer lengths of stay than that diagnosis would normally warrant. This history of acute care hospitalization length of stay would not be applicable to a new condition where the prison-based infirmary care is competent. Thus, quality consideration must be used to modify the numerical data available within the system.

The rules and procedures of sick call may have a great impact on the number of patients who respond, the rate at which they require services, and the time it takes to handle the average case. Care must be taken to use the best available basis for predicting future events. Most authorities agree that the character of sick call can be significantly changed when the health care system as a whole is recognized as capable and responsive to residents' needs. More resident/provider contacts can take place in the more meaningful context of scheduled, purposive visits rather than in sick call. The various components of the health care system are clearly interrelated, not independent. For example, improving the capabilities of the infirmary will tend to reduce the average length of stay for acute hospitalization by permitting certain pre-admissions and after-care functions to be performed on-site and at lower cost than in the hospital setting. Thus, planning for both infirmary needs and acute care hospitalization needs must be based on a clear policy of how each is to operate.

The availability of equipment and personnel to conduct certain diagnostic procedures similarly can serve to reduce hospital admissions or to at least reduce the time required in the hospital setting.

For this reason "need determination" is best approached in two stages. The first utilizes a "rough cut" to determine the overall features of health care needs as experienced within an on-going system. This will probably be only a rough approximation of the evolving system. Once the specific features of the new system and its operating potentials are established, a refinement to the original data can be undertaken which incorporates changed procedures, new equipment, or revised scheduling.

It should be obvious that good record-keeping facilitates good planning. Easily gathered and displayed information about the history of demand for each class of service for each of the institutions in the system greatly increases the speed and accuracy of making predictions of future needs.

In those cases where reliable history of utilization is not available or where delivery methods have recently undergone significant change, it may be necessary to develop predictive data from a study of current operations. In such cases efforts should be made to gain system-wide adherence to a uniform method of reporting utilization data. The investment in a well-conceived system of information gathering, display and analysis will set the stage for making reliable planning projections.

Since the number of women entering prisons is increasing rapidly, projections of health care needs should be more aware of the special needs of women.

Future demand for health care services must relate to projections for the expected prison population at each planning target date. The health care planner will utilize the projections of the system planners within the department of corrections. These projections should predict numbers, origins and age/sex characteristics of expected residents and be responsive to the demographic profile of the state, economic outlooks, social trends, etc. In planning to respond to the perceived needs, an influential assistant commissioner for health care should provide input into broad decisions relating to the number, size, type, and location of prison facilities. This input would reflect the relative ability to provide adequate health care at the considered sites. Planners should assess the availability of health care providers, the time-

distance to community health resources, and the quality and capacity of these resources.

4. Assessment of Existing Capabilities

Having ascertained the need for services in the various categories, it becomes necessary to know the extent to which these needs can be met within the capabilities of the present system. From this we can determine the unmet needs towards which new planning efforts can be directed.

This assessment of available resources includes health manpower in terms of numbers and capabilities, equipment capabilities and the availability and adequacy of physical facilities. When properly inventoried, the results will reveal which elements can be upgraded or utilized as part of the evolving system plan as well as indicate which elements need to be replaced or augmented.

Since it is such an important element of the planning process, (evaluation of the health care operation and facility will be covered in greater detail in a subsequent section of this report.) We can only project future needs when we have a clear picture of capabilities.

5. Alternative Organizational Systems

It has been stressed earlier in this document that facility planning must be based upon organizational planning. We work from broad and influential issues through successive phases to more detailed issues which, while important, have more restricted areas of impact.

The overall system plan should address the following three major elements. Each of these elements is discussed below:

a. system management

b. system regionalization

c. organizational strategy for care delivery

a. System Management. A most critical decision involves the position of health care in the organizational structure of the corrections system and the visibility of the health care function at the highest levels of the corrections system's decision-making and budget setting processes. While systems differ from state to state, a model seems to be emerging wherein the individual charged with the responsibility for health care has that responsibility system-wide rather than reporting to the warden in each of the several institutions comprising the corrections system. This individual can be either a physician with strong support from a peer with health administration skills or a qualified health administrator with a strong medical director. This individual should appear in the organization shart as an assistant commissioner (director) with a clearly allocated budget rather than having the health care budget buried in the allocation for specific institutions.

Dr. Della Penna in "Prescriptive Package - Health Care in Correctional Institutions" makes the following recommendation:

"The health care administrator should (as in New York State) be an assistant commissioner or have comparable status in the department. He should be responsible directly to the commissioner of corrections, invested with the same administrative powers, and receive the same pay as the assistant commissioners in charge of other essential correctional functions.

Each correctional institution should similarly have an administrator responsible for health care activities in that institution. He should have direct access to the warden or director. In all professional matters, however, he should report directly to the statewide health care administrator."

"A statewide correctional health care administrator should have at least ten clearly delineated fields of responsibility:

1. Developing programs for recruiting, training, and retaining of personnel;

2. Securing the other necessary facilities - space, equipment, supplies, etc.;

3. Preparing and defending the annual health care budget;

4. Monitoring the quality of care;

5. Controlling the cost of care;

6. Handling complaints and litigation;

7. Maintaining liaison with outside agencies, professional societies, and the public;

8. Preparing and revising a health care manual for the state's correctional institutions;

9. Planning ahead and establishing a statistical reporting system which will supply an adequate data base for sound planning;

10. Concern with health care in local and county correctional institutions (jails)".

b. System Regionalization. Higher standards of health care provision are being promulgated just as major building programs for corrections facilities are gaining public and legislative support. New building is generally oriented to providing more, smaller institutions more closely related to the areas from which the institutional population originates. The existing institutions tend to be too large and generally more remote from the population centers. These facilities, while frequently obsolete in many ways, continue to be utilized and unfortunately must be intergrated into the evolving system having both new, smaller prisons and some vestiges of the older. Depending upon the number, size, and geographical distribution of institutions, various approaches to regionalization will be applicable. Alternatives should be identified and systematically evaluated before determining the nature and extent of system decentralization. The relative cost of

providing services in one of a number of alternative ways can be projected utilizing an approach similar to the example included under "Cost Control in the Planning Process".

c. Organizational Strategy for Care Delivery. The system is further defined by deciding which services are to be supplied by specified types of care providers and in what settings. This will involve a series of make-buy decisions for specified prison classifications, services, and locations.

Major organizational issues will include:

1. The extent and pattern of utilizing community facilities;
2. The nature and extent of health care referrals and specialization within the institutions;
3. The allocation of manpower.

Secondary issues will include:

1. The organization of sick call, med-call for the various classifications of residents;
2. The referral patterns for acute care hospitalization;
3. The extent of on-site diagnostic and treatment services;
4. The manner in which continuity of care is provided between the hospitalization phase and the pre-and post-hospitalization phases.

Ultimately the systematic formulation of the delivery plan will permit the charting of how each level of care is to be provided to the residents of each institution within the system. Fig. 3 illustrates a summary format used for this purpose by the Department of Corrections in the State of Michigan.

| FUNCTIONS | INSTITUTIONS | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | SPSM | WOMEN'S PRISON | REFORMATORY | MTU | MARQUETTE | MUSKEGON | CASSIDY LAKE | CAMPS | R&GC |
| Sick Call & Dispensary | (2 units) | S | S | S | S | S | S | S | S |
| Routine Dental Care | S | S | S | S | S | S | S | S & L | C |
| Screening, Diagnostic & General Outpatient Treatment | S | S(at present) C(after 1976) | S(at present) C(after 1978) | S | S | S | C | C & L | C |
| Specialty Clinics | S | S or C | L | L | S | L | C | C & L | C & L |
| Infirmary (Short term) | S | S(at present) C(after 1976) | S(at present) C(after 1978) | S* | S | S* | S | C* | C |
| Extended Care Facility | L | L | L | L | L | L | L | L | L |
| General Hospital Care | L & U | L & U | L & U | L & U | L & U | L & U | L & U | L & U | L & U |
| Specialty Hospital Care | U | U | U | U | U | U | U | U | U |
| Emergency First Aid | S | S | S | S | S | S | S | S | S |
| Emergency Surgery | L | L | L | L | L | L | L | L | L |
| Major Laboratory Testing | S | L & C | L & C | L & C | L | L & C | L & C | L & C | C |
| Ambulance Service | S | L | C | S | S | L | L | L | C |
| Psychiatric Outpatient Services | S & L | L & S | L&S(at present) S&C(after 1978) | S & L | S & L | L | L & C | L | L & C |
| Short term psychiatric Inpatient Care | S & L | L(at present) L&C(after '76) | L&S(at present) L&C(after '78) | L&C(at present) L&S(after '78) | S & L | L | L & C | L & C | L & C |

S = Provided on SITE
L = Provided at a LOCAL or community hospital, clinic or nursing home
U = Provided at UNIVERSITY Hospital or Oakland Medical Center
C = Provided at another CORRECTIONAL Facility

*Personal living quarters may serve this function.

Fig. 3 - Summary Display of Arrangements for Health Care of Residents of Individual Correctional Institutions

6. System-Wide Plan Determination

This step in the process represents the conclusion to the previous exploration of alternatives. The choices enumerated in this step are subjected to thorough evaluation based upon the established goals and from this the various aspects of the system plan are established. Decision makers will require a preliminary level of cost data to validate their decisions.

Since the ramifications of this decision will have critical impacts on the evaluation of the system, the decision should be well-documented. Departmental representatives, as well as those from the legislative and executive branches of government, should be informed and involved to assure success in implementation.

The system plan should not be seen as a rigid prescription, but more as an evolving framework for continuing change incorporating new factors and reconsidering issues when appropriate.

7. Specific Goals and Constraints

While overall goals are necessary early in the planning process, it becomes possible and necessary to formulate much more specific and operational goals and constraints which apply strictly to the particular system plan that is being implemented. Thus, a generalized goal may have been to "provide prison residents with a level of care comparable to the population at large". In order to achieve this, one aspect of the system plan calls for acute care hospitalization in community hospitals and, where feasible, in secure units within these hospitals.

With this as background, specific goals as the following might be developed:

a. By 1985 60% of all system hospitalizations will be in secure units within community hospitals and by 1990 all prisons will be so served.

b. There will be a secure unit in a community hospital within 40 minutes drive for 90% of the prison population.

c. There will be a 10% reduction in the A.L.O.S. for acute care hospitalization each year until A.L.O.S. reaches .9 of the national average.

These are only used as examples. Each system can formulate performance goals appropriate to the nature of that system and its resources.

Performance goals should be established to mark progress in all aspects of the system including:

| | |
|---|---|
| staffing | meeting accreditation standards |
| scheduling delay | operating costs |
| quality of care | competitive salaries |
| reducing sick call | reduction of inappropriate admissions |
| environmental health | |

8. System Development Plan

The purpose of this planning step is to convert the general outlines and intent of the system plan into an action-guiding schedule for phased and coordinated development. To do this, it is necessary that each element of the system plan be translated into a number of specific improvement projects. Improvement projects may be operational, facility-oriented, or a combination of both. They may entail anything from minor remodeling, additions or major renovations and/or new or replacement facilities. Projects must be prioritized paying careful attention to coordinate related projects. Each project should have a capital cost estimate and an operating cost estimate. These estimates should reflect inflationary pressures and be revised periodically as requirements are further detailed. The development plan is expressed on a yearly schedule of achievement that serves to aid corrections officials in communicating their needs, systematically and coherently, to the state legislature. It might be convenient to categorize improvement projects around specific goals or services. Fig. 4 shows a hyopthetical annual schedule of improvement projects.

| Year | Improvement Project | Cost Estimate |
|---|---|---|
| 1980 | Infirmary Remodelling: Site D | 800,000 |
| | New Health Care Unit & Infirmary: Site L | 3,500,000 |
| | Health Care Unit Expansion: Site G | 1,200,000 |
| 1981 | New Health Care Unit: Site H | 3,850,000 |
| | Remodelling: Site B,C,F | 2,800,000 |
| 1982 | Replacement Facility: Site A | 4,500,000 |
| 1983 | Infirmary Remodelling: Site C | 1,200,000 |
| | New Health Care Unit: Site J | 4,200,000 |
| | Modifications: Site E | 450,000 |
| | New Radiology Unit: Site D | 600,000 |
| 1984 | New Health Care Unit: Site K | 4,500,000 |
| 1985 | New Health Care Unit: Site M | 4,900,000 |

Fig. 4 - Example of an annual improvement project schedule.

9. Facility Projects (A-N)

Realization of the system plan will require a variable number of improvement projects. The projects identified for improvement may vary from minor renovation to additions or major new construction. Each project proceeds through the remaining steps 10 through 14.

10. Building Programming

Building programming is the process of translating the perceived needs of each facility improvement project into a clearly organized and detailed document which describes the essential characteristics and performance requirements of the proposed facility. A well-developed program is the vehicle for communicating the client's needs to the design architect formally and clearly so as to permit the architect to focus his creative abilities on problem solutions.

The program should contain:

1. a narrative statement of the problem;

2. a set of long range organizational goals;

3. a set of architecturally achievable objectives quantified as far as possible into specific performance requirements;

4. determination of number and type of activity spaces needed to achieve the goals;

5. site analysis;

6. desired relationships between activity spaces;

7. environmental and spatial characteristics of each activity space describing purpose, activities, square footage, occupancy, adjacencies, equipment, building services, materials, and finishes.

Building programming is accomplished in a variety of ways:

Programming by client. An individual or committee within the organization is given responsibility to compile the program. In some states assistance may be available from the office of the state architect.

Programming by design architect. A single contract for Architectural and Engineering (A&E) services may be let in response to a brief client-proposed program, which is then developed and detailed by the architect during the early phases of the project.

Programming by a programming specialist. The importance of this pre-design effort has led to the emergence of firms which specialize in the preparation of highly responsive and complete programs prepared in collaboration with client groups.

While each approach is suitable under the proper circumstances, it is strongly recommended that the program document be sufficiently inclusive and incisive to clearly carry the intent of the department and to permit the departmental representatives to monitor the design and construction to see that requirements are met. Departmental representatives usually lack the architectural knowledge to translate organizational needs into requirements that have meaning for the design architect. The programming specialist can structure the process to make the client's input available to the design architect while bringing in related experiences that bear upon the problem.

Regardless of which of these methods are utilized, the administration is responsible for seeing that the facility specified will meet the need. There is no simplistic way to determine the space standards for health care in the prison setting. While the AMA Committee on Health in Corrections has proposed a draft of Space and Basic Equipment for Prison Health Facilities, this effort needs greater support before it can prove useful.

It is difficult to imagine that the courts will continue to allow less stringent standards for prison health care delivery than good practice dictates for the remainder of the population. This suggests that the space standards promulgated in federal and state guidelines be the basic reference. In any case, the care providers and internal decision-making team will need to work with professional assistance to factor their own unique requirements onto the prevailing standards being utilized in civilian settings.

The facility guidelines in Section 4 illustrate the space allocations determined by a specific team for a given setting working with the authors of this manual. The space and configuration requirements reflect just such an adaptation of medical facility requirements to that particular prison setting. The references at the end of this (section provide input into this) critical planning step.

See Appendix D for a sample of a data sheet detailing room requirements.

11. Building Design

The design architect translates the program requirements into tangible physical form in a staged sequence of client submissions and approvals. Typically, this takes the following course:

Schematic design. During this phase, the architect explores broad form concepts and physical organization and presents the major options (to the client group) for review and discussion. Approval to proceed may be based on one or a combination of the options or may be held up pending a further development of new schematic drawings.

Design Development. Following approval of schematic drawings, the selected concept is further defined and developed through more detailed two-and three-dimensional drawings and models. Presentations, reviews, and discussions at various stages within this development process provide opportunity for client group input before approval is given for the development of working drawings and contract documents.

Working drawings and contract documents. Following design approval, the architects and engineers develop the detailed drawings and specifications for the architectural, structural, mechanical, and electrical systems of the building. These documents become the basis for the bidding and construction that follows.

12. Bidding and Construction

Through the years, this phase of the process has remained relatively stable. In most cases the architect assisted the client in putting the project out to bid and helped in evaluating the bids received from the various contractors. Under the pressure of rapid price escalation and increasing building complexity, building clients have experienced major budget and schedule problems when project bids greatly exceed budget estimates. Costly and time consuming redesign and rebidding adds additional time to the schedule while prices continue to escalate.

In order to reduce total project costs, shorten the time required and provide earlier guarantees of building costs, a number of alternative modes of handling the bidding and construction have been developed. These options are not neatly limited to the bidding and construction phase but affect, in some cases, the design phase as well. Since the options are many and somewhat complex, they are treated extensively in the next section of this report.

13. Building Occupancy and Start-Up

The well-planned start-up of building operations is a frequently neglected aspect of facilities planning and management. The capital cost of the facility is usually equalled by the operating costs for staff, energy, and maintenance after only a few years. Proper attention to this aspect of facility planning will pay significant dividends in efficient operations. Staff involvement in facility-related decision-making is heaviest during the planning and building programming phase when operational requirements are impacting upon facility characteristics. During the design phase, there is considerably less active staff involvement. This time should be utilized by staff to carefully plan and schedule the building start-up.

The constructed facility must be properly equipped, furnished, staffed, and maintained to assure effective operation. Equipment choices must be studied, selected, and ordered with sufficient lead time to be available at the target date for occupancy. Staff must be trained in the operation and maintenance of building systems and equipment to assure safe, efficient, and effective operation.

Operating protocols should be established along with appropriate systems of record-keeping to maintain a building information system that can be used for building evaluation and future planning efforts.

## 14. Post-Occupancy Evaluation

Building users are in constant interaction with the physical environment in a dynamic rather than static pattern. User needs, operations, and activities change over time, as do other aspects of the environment. The interactive nature of the users and their environment should be systematically monitored to enable institutions to make periodic changes in both operations and physical settings in order to maintain or improve upon the desired facility performance. This is particulary true for health care facilities. The nature of activities tends to evolve over time and initial facility requirements are likely to be established by individuals other than those who will actually be working in the facilities. Vigilance in maintaining a good match between operations and facilities is essential.

Beyond these reasons, all new facilities should be evaluated to check on the performance of the design teams as well as on the suitability of the building programs to which the design teams responded. Evaluation of each completed building, when properly fed back into future programming efforts, will tend to raise the performance potential of new construction.

Section 3 presents a more detailed treatment of operational and facility evaluation.

## SECTION 3: PLANNING IMPLEMENTATION PROCESS

The administration of prison-based health care programs is presumed to possess the requisite knowledge of health care delivery, corrections philosophy, and administrative procedures. It is not at all likely, however, that this individual has extensive knowledge or experience in carrying out major facility remodelling or new construction.

This section is included to present the various options for facility acquisition and the ways in which the client group relates to the building construction professionals in terms of roles, responsibilities, and methods of compensation.

In the course of developing facilities to implement planning goals, one must initially evaluate existing facilities in order to determine program requirements and then, subsequent to occupancy, to determine the effectiveness of the solution. The importance of evaluation is sufficient to warrant the inclusion of the following material before describing the various facility acquisition options.

### EVALUATION OF CORRECTIONAL HEALTH CARE FACILITIES

#### What Are Facility Evaluations?

Facility Evaluations are periodic studies, reviews, and inspections of health care facilities within the correctional system. A facility may be evaluated as a whole building, or as components or systems within the building. Some important issues for evaluation are maintenance costs and operating utility, the effectiveness of security features, user safety and satisfaction, compliance with health care standards and codes, and the ability of the facility to support the health care program.

Surprisingly little is done about evaluating the effectiveness of correctional health care buildings. The daily demands of immediate problems leave prison administrators with little time to evaluate the needs of their facilities in a formal and structured way. The architects and engineers responsible for design and construction seldom return to the scene, once their buildings have been completed, to see how well their buildings meet the stated objectives. Finally, there has not been, until recent years, an agreed upon method of evaluating a facility.

Whatever the reasons for this neglect, it is now clear that the increasing demand for improved health care, the rising costs of energy and building maintenance, and the changing patterns of health care needs have encouraged a lively interest in facility evaluation, both as a way of measuring ongoing effectiveness of health care, and as a way of predicting needs for improvement of facilities.

It is important that facility evaluation not be seen as an activity unto itself, but as an important part of the planning and design process, where evaluation supplies an ongoing and intelligent thread of information to those who make decisions about changes to health care facilities through remodelling or new construction.

## Why Evaluate a Health Care Facility?

There are a number of important reasons why a correctional health care facility should be evaluated. The first is to gain information about how the building and its equipment is actually used and in turn how these uses affect the buildings' effectiveness and utility. The second is to use the information gained from evaluations to improve the existing physical plant, or if needed, to apply such information to the design of new buildings.

From these, more detailed purposes for evaluation can be enumerated:

1. To determine if the building(s) meets the needs of the health care program in operation;

2. To determine if deficiencies in operation can be remedied by simple changes to the building and its equipment, or whether more drastic changes must be undertaken in both the operation and the building;

3. To determine if buildings meet and will continue to meet health care codes, standards, and prevailing good practice necessary for accreditation;

4. To assist in the estimation of the building's useful life in its present form;

5. To determine the effectiveness of periodic changes in layout, equipment use, security measures and so on, so that modifications can be made before serious problems arise;

6. To determine the cost of maintaining the building in an effective state.

## What Should Be Evaluated in a Correctional Health Care Facility?

It should be initially understood that what to evaluate is conditioned by basic differences of interest in performance and outcomes. For example, health care personnel will be concerned with the problems of running health care services in the current facilities and with finding ways to overcome these problems as quickly and effectively as possible. Correctional administrators will see the health care facility as part of the larger picture of the prison as a whole and will try to prioritize health care needs along with those of other facilities in the prison system. Planners and designers look to ways in which they can improve the performance of the building and its equipment through remodelling or new construction, within the constraints of regulations and codes.

Typically, evaluations are carried out on all or some of these facility features:

- Allocation of Space - current space allocation and its effectiveness in meeting current functions and activities.

- Operational Layout - the relationship between the activities of the health care program and its users and the physical layout of the various areas; the effectiveness of building circulation; security features such as check points, sight lines, and supervised areas.

- Equipment and Furniture - the safety and effectiveness of all health care equipment used in the facility; the use and upkeep of general building furnishings such as tables, chairs, and room fixtures.

- Security Features - the ongoing effectiveness of doors, locks, panels, grills, and other security devices used in the health care facility.

- Environmental Systems - the effectiveness of heating, ventilation, air-conditioning, lighting, and noise control in meeting the needs of the health care facility and its various functional areas.

- Building Fabric - the condition of the building structure, materials, and finishes.

It is clear that while any one of these features might be evaluated in isolation, the information which results must be placed in the context of the building and its operation as a whole if it is to be properly understood.

For this reason, it may be useful to view the health care facility as an inter-related set of components, each one having an effect on the other in the over-all performance of the building. Any health care facility might be said to have the following five components which can be evaluated for their effectiveness. They are discussed in the accompanying diagram:

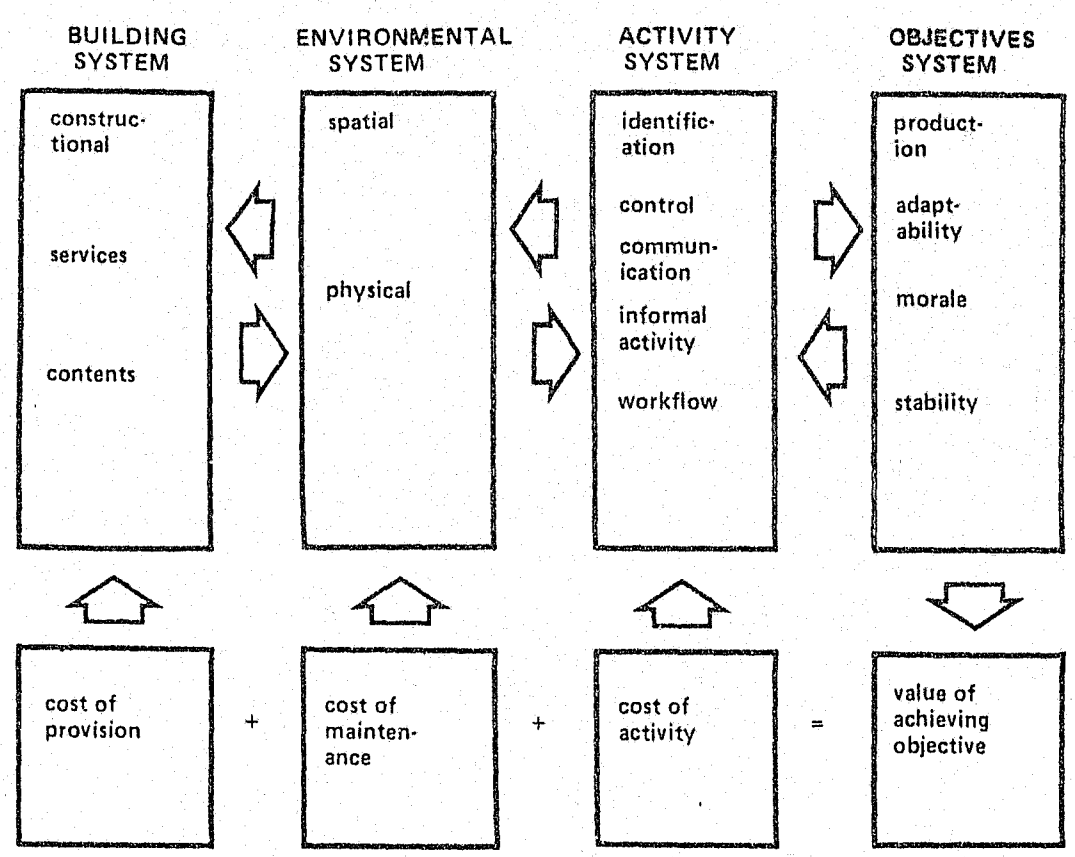


Fig. 5 - Building System Evaluation Model by Thomas Markus

While this diagram or model is a very simple one, it can easily be seen that each component interacts with its neighbor; problems and changes in any one of the components is likely to have an impact on one of the others and then on the facility as a whole. The model can be read starting from the building system and following the arrows to the right to trace the origins of the completed form, or it could be read from right to left to correspond to the sequence of making facility decisions. The descriptions below will follow the latter approach.

- Objectives System - Each health care facility has goals and objectives which shape its functions and activities. The staff and administrators of the organization work to achieve the health care objectives as they are structured within the organization of health care services. Information on work effectiveness, productivity, morale, and user satisfaction can be drawn from evaluations of this component.

- Activities System - The day-to-day activity, work-flow, and formal and informal behavior can be evaluated as one way of measuring the effectiveness of the facility. The structure and quality of "work" within the health care facility, the links between individual employees and groups, and the satisfaction of of employees with their work are important issues for evaluation.

- Environmental System - The comfort, well-being, and safety of building users depends upon the effectiveness of two main types of environment. The first is experienced by users through light, heat, sound, and smell, and these are subject to control through the design of heating, ventilation, lighting, and so on. The second is spatial, and is made up of all the building spaces designed to support and control activities.

- Building System - All of the components listed above are contained within the structure of the building itself which includes the shell, its service system, and its equipment and furniture. The building should be designed to fit the needs of the health care service in operation, and should be flexible enough to continue to meet the needs of its programs.

- Resources and Costs - In order to function, the health care facility is allocated resources in the form of an operating budget, wages, maintenance, energy, and so on. Thus, the cost and effectiveness of the uses of resources are important issues for evaluation.

## The Role of Evaluation in the Facility Planning and Programming Process

A key concept in the development of a well-planned building is that of evaluating building performance. More often than not, completed buildings receive only informal evaluation after occupancy. This information is then diffused rather than focused on continuing improvement in new building performance. For a facility evaluation to be more effective, it should be formalized and regularly incorporated into developing requirements for new facilities. In addition, evaluation should be carried on periodically during the life of the building.

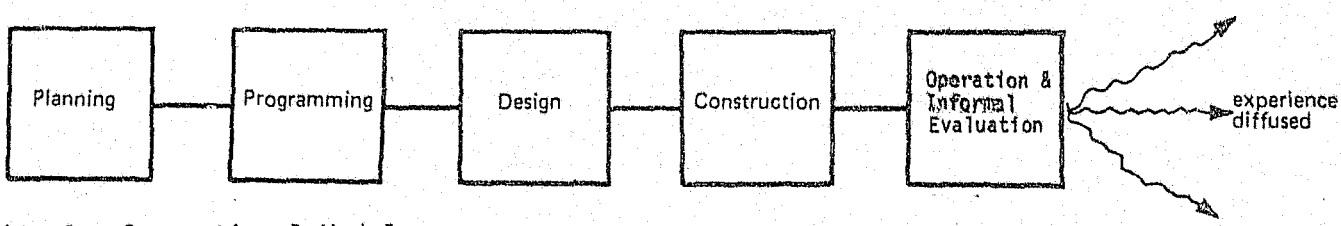


Fig. 6 - Conventional Model

- Conventional model - Figure 6 shows a typical process for building acquisition. It is essentially a linear process where each facility project is separate and involves only informal evaluation after occupancy.

- Evaluation/feedback model - Figure 7 shows how the addition of a formally structured evaluation phase allows evaluation data to impact on successive stages of facility development, and may be carried over from one related project to another.

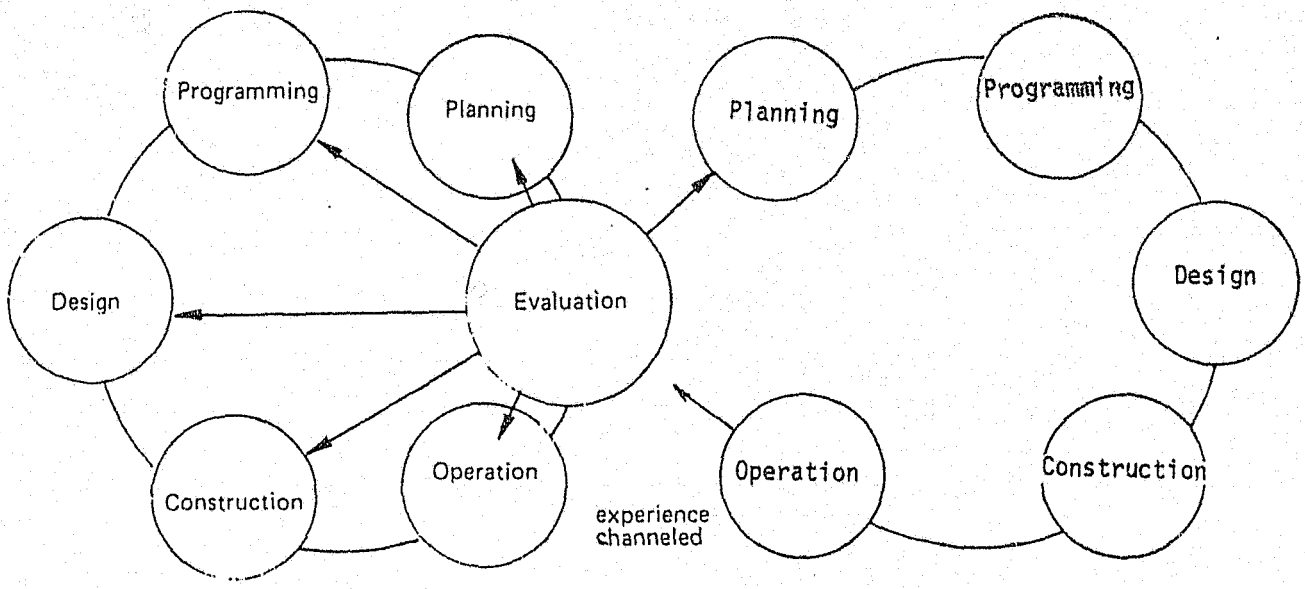


Fig. 7 - Evaluation /Feedback Model

Facility acquisition requires teamwork to succeed; the client group, staff, users and professional designers and engineers have to combine their skills to assure a successful project. Building evaluation built into the process has distinct benefits for all concerned. The following represents some of the benefits involved:

Benefits of Building Evaluation to Client

1. Increases likelihood of improved performance in each new building through cumulative experience;

2. Provides information leading to operational as well as environmental improvements;

3. Higher levels of employee satisfaction, stress reduction and potentially improved worker effectiveness;

4. Provides a method for monitoring performance of design professionals;

5. Permits timely modification of operations/environment as part of a continuing facility management process.

Benefits of Building Evaluation to Users

1. Potential for improving quality of working life;

2. Satisfaction gained through participation in a process that affects working conditions.

Benefits of Building Evaluation to Design Professionals

1. Provides the basis for improved design performance on subsequent buildings;

2. Permits the development of a knowledge bank based on systematic collection of data;

3. User feedback tends to encourage more responsive approaches to building design.

## Who Should Be Involved in Facility Evaluations?

The composition of the evaluation team depends upon the scale of the evaluation to be carried out. If the evaluation is a small scale, periodic check on building maintenance and clean up, then obviously this can be taken care of by in-house maintenance personnel. On the other hand, if the evaluation is prompted by a need to assess the performance of the health care facility as a whole, then care should be taken to include those who have a detailed knowledge of the workings of the facility. If the evaluation is being done as part of a study of new or remodelled building needs, then the architect selected for the project should be involved.

Typical members of an evaluation team may be as follows:

- Health Care Administrator or Medical Staff - staff with experience in the specific area of evaluation.

- Corrections Administrator/Security Staff - administrative staff with a knowledge of operational problems in the correctional facility as a whole.

- Operations/Plant Maintenance Personnel - persons responsible for the operation and maintenance of facilities with experienced assessments to offer on the performance of buildings.

- Health Care Planners - professional consultants or staff of the department of corrections with assessments of efficient utilization and projections of need.

- Specialists in Evaluation - professionals with building evaluation experience and building survey skill, with specialized knowledge of building performance criteria. Very often they are associated with architectural and engineering or health care planning firms and should be retained to advise and lead any evaluation of significant scope.

- Building Users - various categories of staff who regularly work in the facility or whose work brings them regularly in contact with the health care facility and its operation with a unique view of the workings and problems of facilities.

## Benefits of the "Team" Approach to Evaluation

Well carried out facility evaluations should benefit all involved, particularly the staff of the health care facility. Periodic evaluation allows building users to express their needs, attitudes and preferences in a manner which is not possible in day-to-day operations of the unit. The involvement of staff in the planning process frequently results in a stronger sense of responsibility and a greater sense of work satisfaction through "feeling involved".

Involvement and work satisfaction are achieved in the following ways:

1. Collecting information on the work area needs of various staff groups and individuals in the health care facility;

2. Involving staff in the assessment of their work areas and in making suggestions for improvement;

3. Communicating between various groups on the staff, the needs of other departments and other points of view.

Given the opportunity, most people want to be involved in decisions which affect their job and their work environment. The "team" approach to building evaluation will result in more feelings of involvement, and also a greater responsibility for and awareness of the way the health care facility operates.

Evaluation Plan and Phasing

The following evaluation plan includes all steps typically undertaken to evaluate a facility being assessed for redevelopment and possible additions of a new facility. However, each evaluation project must be tailored to the specific issues of the facility in question. A typical evaluation plan would have the following steps:

1. State the Purpose of the Evaluation - The objectives and scope of the evaluation must be clearly stated so that all evaluation efforts can be based on identifiable objectives. The purpose of the evaluation must be set with due consideration for the time and funding available. Objectives must be feasible and realistically within reach of the available resources and personnel.

2. Select the Evaluation Team - Depending on the scope of the project, the evaluation team should be built around those who have the most experience and future involvement in the facility. Evaluation consultants should be part of this group if the evaluation project is beyond the evaluation skills and experience of the staff.

3. Set Up Facility Performance Criteria and Select Measures - Determine the aspects of the facility fabric, system, equipment need to be evaluated to get an adequate evaluation of the facility's effectiveness and the kinds of measurements or surveys which have to be carried out to do this.

4. Decide on Survey Design and Sample - If staff and other users are to be surveyed as part of the evaluation, determine the groups that are to be studied and how many of each group should be surveyed to assure a large enough sample size for the analysis.

5. Decide on Evaluation Strategy - It is important to weigh the objectives of the evaluation against available time and funding. Determine if evaluation should be a simple in-house survey or if it should be a more sophisticated and complex series of evaluation measures. The choice of the appropriate evaluation design should be related to the anticipated value of the results.

6. Collect Information - Information will be collected by one or more of the following methods. Evaluations tend to be more useful and reliable when information is collected by at least two or more methods.

   Observations and Direct Measurements

   - physical measurements of building fabric and systems
   - environmental measurements, e.g. noise, light levels, air quality
   - work study observations
   - photographic studies of building use and condition

   Surveys

   - staff/user questionnaire
   - interviews
   - activity logs on health care activities

   Secondary Source Material

   - health facility records
   - site plans and reports
   - plans and drawings of facility and adjoining buildings

   Group Participation Methods

   - informal discussions/panel
   - work groups to discuss and report on specific problems

7. Analyze Information - Two major techniques are used to analyze the data collected.

   1. Quantitative Technique: uses statistical and numerical techniques to make objective assessments of the various measures collected in the evaluation.

   2. Qualitative Technique: uses informal assessments, open-ended answers and opinions to facility issues, expert opinions on facility problems, photographic assessment of building quality, and so on.

8. Presentation of Evaluation Findings - There are a number of ways in which the findings can be assembled and communicated to the relevant audience:

   1. Written and Illustrated Reports: the primary and obligatory way to report the evaluation, keeping the report concise and clear and substantiating all findings.

2. Seminar/Discussion Groups: present the evaluation report to groups for discussion, allowing particular parts of the report to slant towards the interests of the groups.

3. Department Memoranda or In-House Newspapers: major findings of the evaluation may be summarized for circulation through the correctional system.

4. Planning Reports: evaluation findings should be used to substantiate and support recommendations for improvements to health care facilities, and to aid in the planning of new units.

9. Decide on a Course of Action - If the evaluations point to poor or inappropriate use of facilities, use the information to move promptly to planning what to do about it. Too many reports sit in the back of the drawer and are never acted upon.

While each evaluation has its own purpose, internal rationale and structure, it was felt that inclusion of an example would be an aid in understanding the concept. Appendix F contains an approach to a specific evaluation (A Method for Evaluating Potential Sites for a Secure Unit in Selected Community Hospitals) and includes formatted sheets for recording on-site information and tables used to compare findings.

## PROJECT DELIVERY METHODS

In view of the range of facility projects likely to be considered within a correctional health care system, it is necessary at this point to briefly review some of the methods by which a building might be appropriately delivered. There is no one simple delivery method which will meet every project need; the size and type of building, the time and cost involved, remodelling or new structure, are all factors which might have a bearing on the type of project delivery method required.

This section will describe project delivery variations as they impact on:

1. design/documentation
2. bidding
3. construction

There are many variations of the methods described. What should emerge, however, is that the owner has a range of options, that each option has characteristics that make it a good choice for given circumstances, and that a thoughtful matching of project delivery methods for each building package is desirable and necessary. Each of the project delivery methods described below has valid areas of application in the total spectrum of building needs. The choice is related primarily to the balance between the variables of time, cost, and quality. The choice is also affected by the owner's need for control and his confidence in the efficacy of the methods.

In the following pages, six project delivery methods will be illustrated in a diagram and briefly explained in the accompanying text. The following comments are in order to explain the graphic conventions in the diagrams.

- The size of the blocks used to denote a phase of activity is shown in proportion to its relative importance. For example, facility programming has equal importance in the first three methods but takes on added importance (and time) for the Limited Competition and Design-Build-Bid methods.
- The vertical tone block represents the issuance of a "Request for Proposals" from architectural-engineering firms and the review of qualifications prior to selection.
- The multiple lines at the bottom of each diagram are used to indicate the nature of the owner's control of the project. Four lines indicate maximum owner input and control, fewer lines indicate proportionately less. The dotted line stands for limited control and an interruption shows that for that period, the owner cannot exert control.

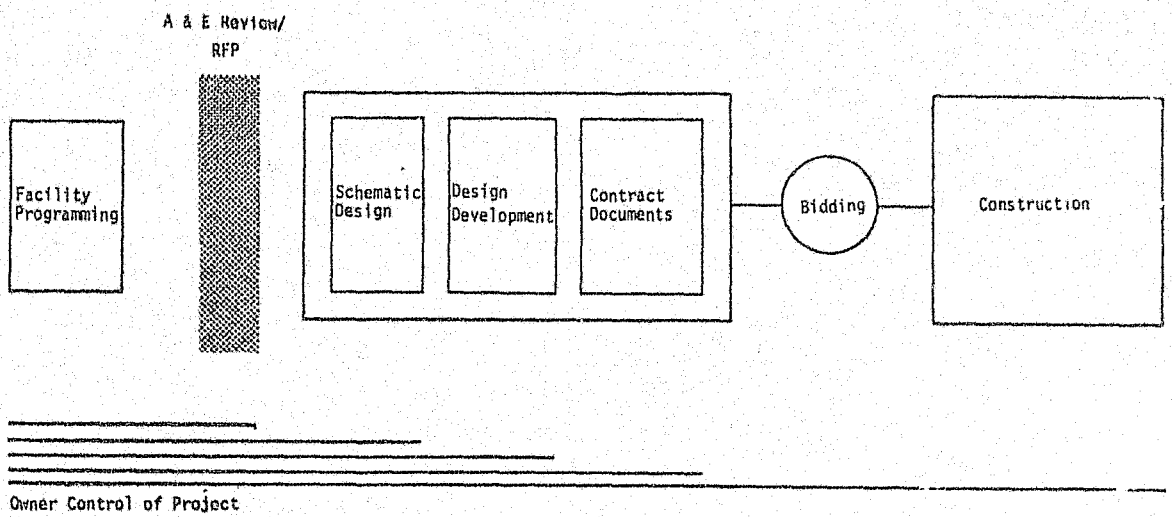


Fig. 8 Traditional Linear

Process Description

The owner initiates the need for a facility, provides a program of requirements and engages an Architectural & Engineering (A&E) firm to serve as his agent in transforming the program into a complete facility. The owner can select the A&E firm by direct selection. In this method, the client bases his selection on the reputation of the firm, its work, and recommendations of other clients or another professional. This method works best on small, personal commissions and is not well suited to large, complex projects calling for extensive planning and design development.

The most widely used method for retaining professional services is comparative selection. In this method, a number of firms respond to a proposal and are compared and evaluated on the basis of predetermined selection criteria. Comparative selection is done by the client or with the help of a 'panel of experts' who are knowledgeable about the needs of the project. The bidder submits a proposal documenting the requirements of the project, his approach, and evidence of ability and resources to complete the project successfully within the time, cost, and quality conditions specified by the client.

The selected architect/engineer proceeds with the elaboration of the initial program. At the point when he has enough information to substantiate the overall scope and size of the project, he begins schematic designs. After various schematic options have been reviewed and approved, detailed design development takes place, culminating after approval in the preparation of working drawings, specifications, and documents necessary for the costing and construction of the project.

The drawings and specifications become the basis for competitive bidding or a negotiated price for construction. Bidding may be an overall bid from a general contractor or separate bids from the various major sub-contractors (mechanical, electrical, architectural, etc.).

During construction, the A&E firm represents the owner in monitoring the progress of the construction and authorizing payment on the basis of work completed.

## Comments

This process functions well when time is not critical, cost overruns are tolerable, and excellence of design is essential. It permits owner control and input throughout the process. Since project cost is not known until the contract documents are completed and the project is bid, there is, in the event the project exceeds the budget, potential necessity to either rebid the project, redesign to meet the budget, or reduce the scope and/or quality in order to come within the budget.

During periods of high rates of inflation, the sequential time phasing characteristic of this method tends to result in cost increases proportional to the time involved. The methods that follow will attempt to counter this tendency by reducing the time if takes to bring the project to bid or by transforming some of the risks of rising costs to the construction team.

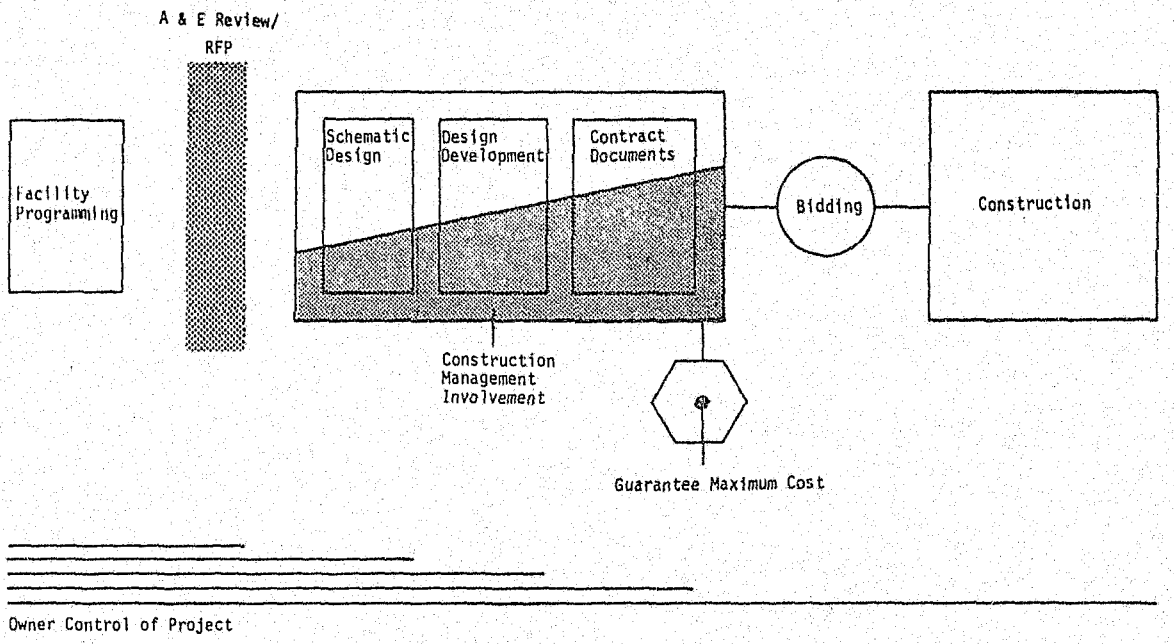


Fig. 9 Traditional Linear with Construction Management

## Process Description

The owner initiates the need for a new facility and provides a program of requirements. He forms a team consisting of an A&E firm and Construction Management (C.M.). Selection of firms follows the methods described for the Traditional Linear method. From the outset, the owner relies on this team for assurance that design decisions are made with full consideration of all issues bearing upon the time and cost of construction.

The project proceeds through schematic design, design development, and contract document phases similar to that described for the Traditional Linear process, except that cost and construction input is provided by the C.M. During this time he may undertake value engineering and life cycle costs analyses for alternative construction processes.

The bidding phase may be similar to the Traditional Linear process, or the C.M. contract may call for the C.M. to prepare a guaranteed maximum cost of construction. If and when the contract price comes in lower than the guaranteed maximum, various methods for allocating the savings are possible. They range from all savings occuring to the owner, to all going to the C.M. Some method of sharing the savings is more typical.

Comments

This variation on the Traditional Linear process tends to improve the likelihood of having project bids come in within budget while retaining the design quality attributed to the basic program. The familiarity of the C.M. with the realities of construction practices tends to permit cost savings sufficient to offset the fee for the service.

By using the guaranteed maximum cost options, the owner can be assured of a firm cost before putting the project out for bids. It follows that the guaranteed cost figure can be more reliably determined in the latter stages of the delivery process. Thus, if the owner wishes to have the assurance of a guaranteed price at an earlier stage in the process, the C.M. must be given a greater share in determining methods and materials to be utilized. Guaranteed maximum costs established in the early stages of a project are likely to contain more allowances for contingencies and thus a higher price can be expected.

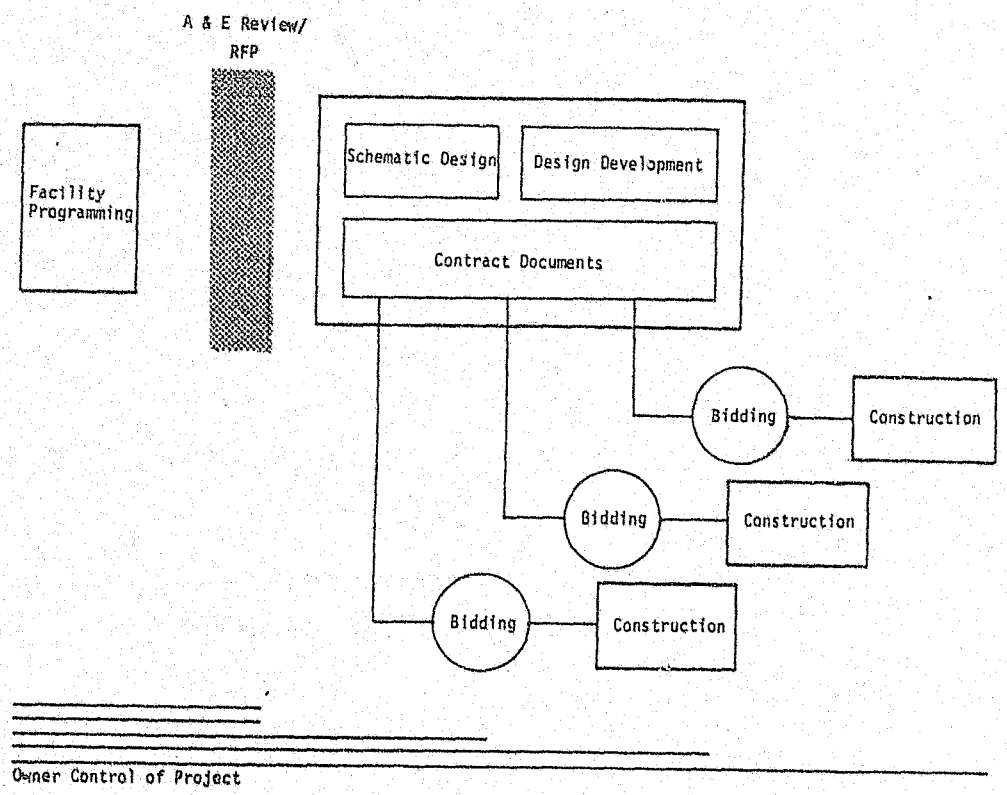


Fig. 10 Phased Construction (Fast Track)

Process Description

Phased Construction is a variant of the Traditional Linear process developed to minimize the total time from project inception to completion. It was developed as a means of controlling costs during periods of inflation. The process can be utilized both with or without C.M. services, though the use of C.M. services is particularly applicable. Selection of the A&E and C.M. follows the methods described under the Traditional Linear method.

The selected A&E reviews the established program and develops schematic designs. Upon the owner's approval of a schematic design, the project is broken down into a number of bid packages for which contract documents are prepared and bid as they reach completion. Since construction will have begun on foundations and then structured while design development is still in progress, it is essential to schedule the input of ample design and engineering skills during the early phases to be assured that the decisions reached will permit the anticipated type of subsequent design development.

Comments

The likely cost savings possible with this approach must be weighed against the possible limitations on design due to the fact that the basic form and structure have been determined before the spaces are designed in detail. Because of this, the use of this approach is more suited to somewhat predictable building types rather than to complex, unfamiliar and one-of-a-kind facilities.

In addition to shortening the total time for the process, it is also advantageous to:

1. award contracts for portions of the work at the most propitious time relative to market conditions, weather, and project phasing;

2. award contracts for items requiring long lead times earlier than their normal construction sequence;

3. hold those contracts that are required later in the sequence to permit the greatest possible design time and permit last minute redesign or rebid to accommodate latest developments.

Each project considered for this process should be examined to see if the potential cost savings are apt to result in an excessive loss in design flexibility. The architectural and engineering resources must be organized early enough in the project to reach basic, important design decisions in order to capitalize on the advantages of this process.

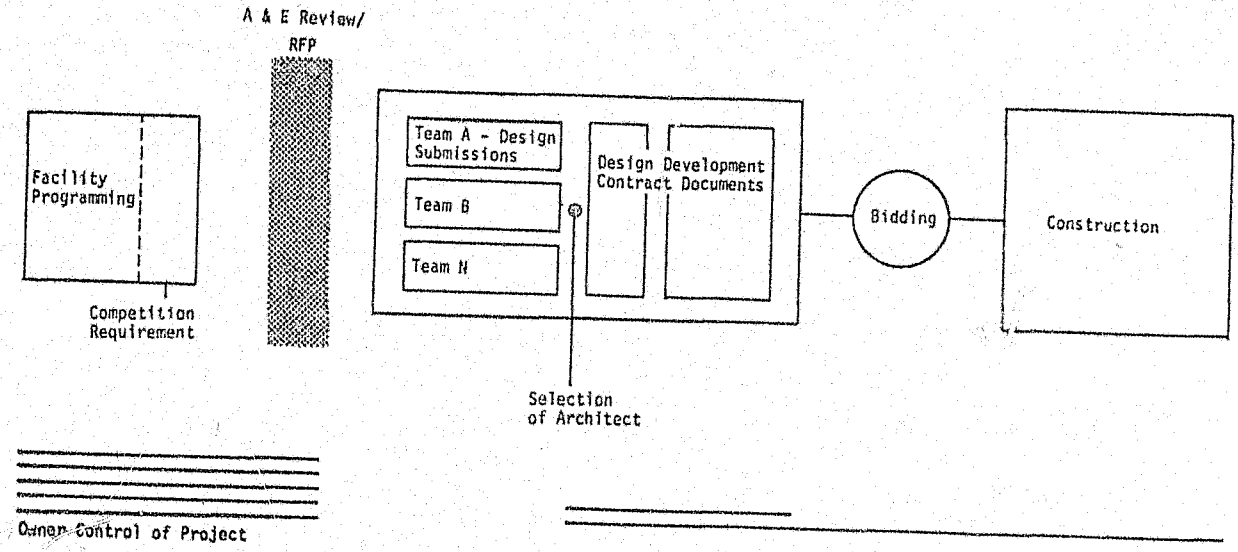


Fig. 11 Limited Competition

Process Description

The owner initiates the need for a new facility and develops, with the aid of a facility programming firm, an explicit facility program to serve as the basis for a design competition. The owner also engages a professional advisor to administer the competition and designates a panel of judges whose decision will be binding. The judges can represent various interests but must be of such a character as to gain the respect and confidence of the competitors.

A pre-qualification phase selects a limited number of A&E firms deemed qualified and desirable potential designers of the facility. Each agreeable, qualified firm is paid a design fee to assure a maximum effort by the most qualified personnel in that office.

Working from a program containing all necessary information on both the subject of the competition and on the conditions necessary to maintain confidentiality and uniformity of submissions, the selected firms are given a fixed time period in which to submit design drawings and supporting data.

The awards jury is empanelled and, with the aid of the professional advisor, ascertain whether or not all required provisions of the submission have been observed. They then proceed with a substantive and qualitative evaluation of the submissions. A winning solution is determined by a majority vote of the judges (the professional advisor votes only in the case of a tie).

After a firm is selected by the judges, a contract for services is signed, and the project proceeds in a manner similar to that described for the Traditional Linear process.

Comments

The Limited Competition method is a way to achieve design excellence, but it provides even less cost control assurance than the Traditional Linear method. The excellence is a natural result of being able to select the best design from a select list of highly qualified firms. Higher costs often accrue as a result of each competitor introducing innovative ideas to capture the imagination of the judges who tend to place less importance on cost than might the owner.

The project budget should allow for the compensation of the unsuccessful bidders. This is beneficial to the owner group for the following reasons:

1. if firms receive no compensation for their work, design proposals may be prepared by less experienced staff or may not be undertaken at all by the most sought-after firms;

2. financial pressures entailed in proposal preparation may lead to the use of "standardized" design solutions rather than original solutions;

3. many relatively small or medium-sized firms with excellent professional reputations cannot afford to prepare designs without partial compensation; loss of these firms would have the effect of narrowing the potential range of competitors.

Fair compensation for all selected entrants will help ensure that all submissions are thoroughly prepared by the best people in each firm and that the range of firms for selection remains appropriately wide.

While the owner group delegates the selection of the firm to the judges, further owner input and control can be resumed after the architect has been selected. The comments that were made for the Traditional Linear method would apply to this model as well. This process carries a greater potential for design innovation. This is particularly important when the nature of the building calls for a high degree of symbolic expression.

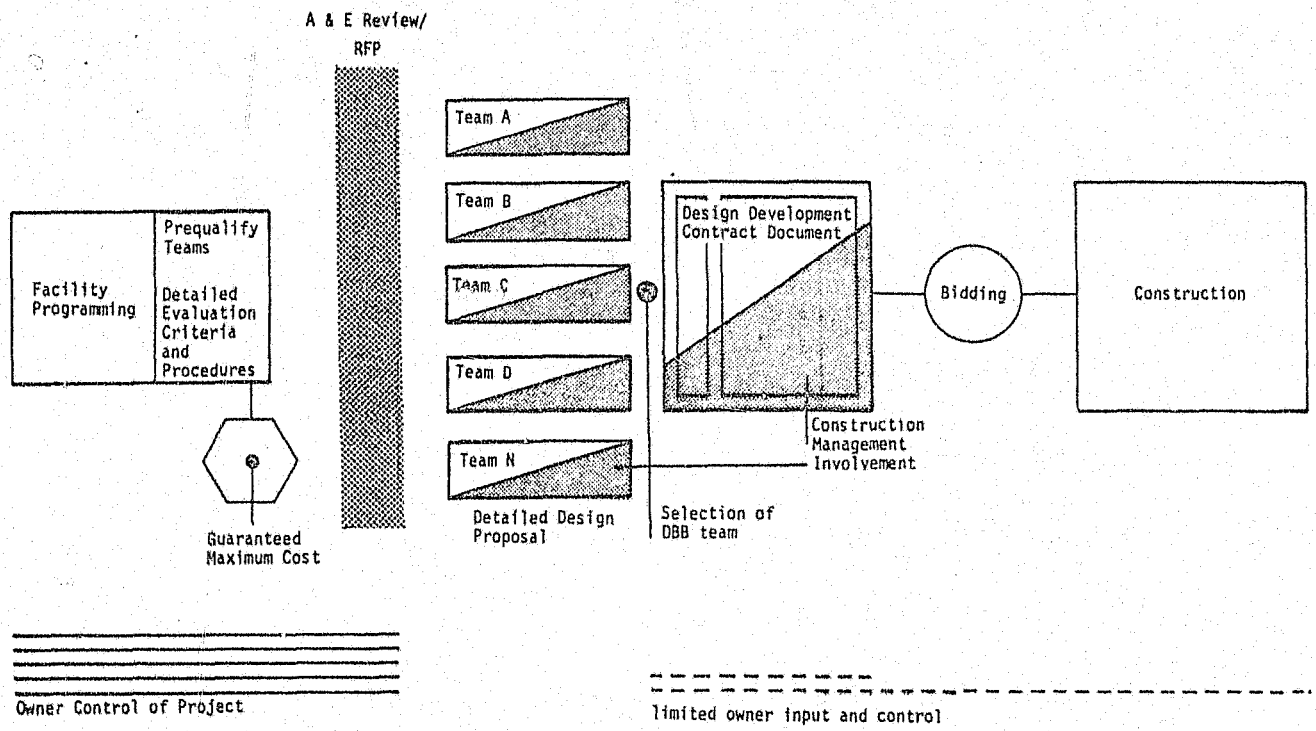


Fig. 12 Design-Build-Bid

## Process Description

The owner initiates the need for a new facility and engages a team of facility programmers who work with the owner to establish a highly explicit set of program requirements, time schedules, cost schedules, evaluation criteria, evaluation teams and protocols.

The program consultant assists the owner in pre-qualifying several Design-Build-Bid teams consisting of an A&E firm and a construction firm. These teams are paid a fee to submit a design in sufficient detail to permit detailed evaluation against all program requirements. Submissions must be guaranteed to meet the cost and time conditions established by the program. The owner agrees to accept the recommendations of the evaluation team and the competing DBB teams agree to complete the project at the fixed cost, if selected. Frequently, optional building features are proposed with specified cost adjustments to the base price.

Every aspect of the design proposals is separately evaluated by experts in that area. Scores are totaled and the highest ranking entry is selected. The successful team then proceeds to develop the working drawings and specifications, and builds the building.

## Comments

This method tends to maximize the quality of the building within the allowable cost and time constraints. It provides the owner with an opportunity to select the best detailed design from the work of outstanding teams of A&E and construction firms.

The owner's input occurs mainly in the extensive programming phase which, in this case, requires a highly competent team of facility programmers, engineers, and cost estimators. The owner delegates evaluative responsibility to individuals selected by the team. With the detailed program in hand, the design teams can produce their design proposals in a relatively short time. The design fee paid to each pre-qualified team assures a serious effort as does the required bond which commits each entrant to enter into a contract at the predetermined cost in the event they are chosen.

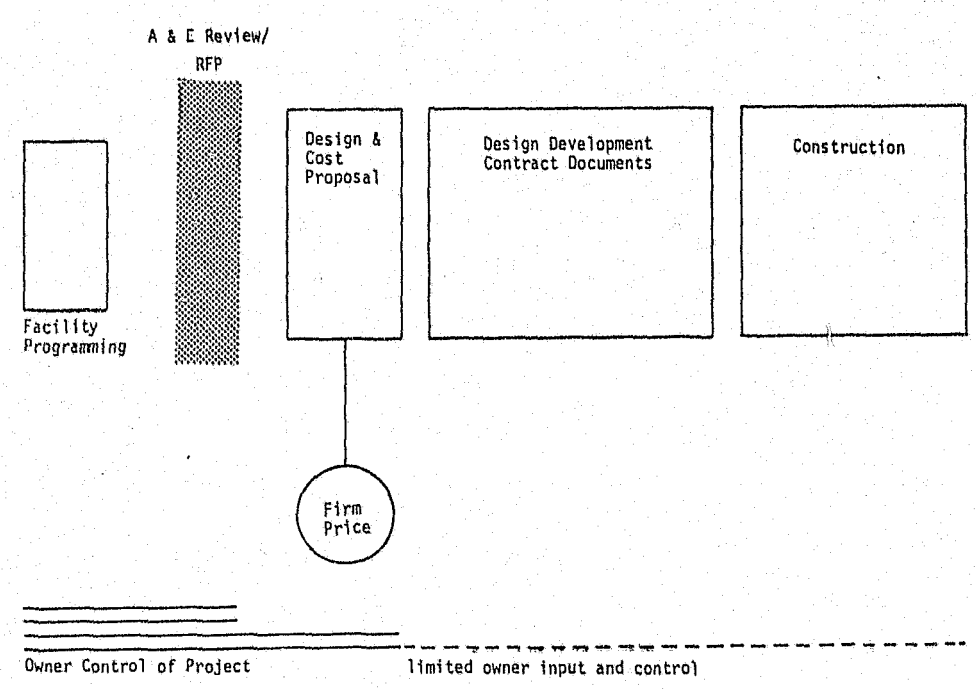


Fig. 13 Design-Build

## Process Description

The owner initiates the need for a facility, defines the scope of the project and a set of building requirements, and engages a Design-Build team to both design and build the building.

The team, consisting of design professionals and building contractors, prepares a design proposal with a fixed price for a completed building as specified. Upon the acceptance of the proposal by the owner, the team develops the design in detail, completes the working drawings and specifications, and constructs the building with little further involvement of the owner.

In this process there is a single source of responsibility. This is usually the building contractor, with the design professionals being employees of the contractor or under contract to the contractor.

Comments

This process has applicability particularly when there is a need for short project delivery time and early assurance of total project cost with lower priority for high quality and individualized building features. It lends itself to simple industrial, commercial, or warehouse space rather than more complex structures having complex design requirements.

Since the project cost is established at an early stage, it is important to have clear agreements on the required performance standards to avoid later misunderstanding. When the owner feels he can sufficiently specify his needs, and time and costs are critical, this method may be applicable.

Summary Comparison of Delivery Methods

In light of the foregoing project delivery descriptions and comments, it is clear that the project delivery method for a specific project should be chosen with great care, and should be assessed within the formal process of planning and evaluation which has been adopted for the health care system. The following features should also be taken into account:

1. the need for each building project should be thoroughly substantiated by evaluation studies to determine true need;

2. each building project should be thoroughly programmed by a firm with established planning and programming capabilities, and this program should be one which meets with the approval of the appropriate executive review group, and be finalized before A&E services are retained;

3. the facility acquisition process should be monitored and documented so as to gain information and experience which will afford improvements to the overall process;

4. post-occupancy review and evaluation of the facility and its operations should be formally carried out to check the outcome of the project against stated system-wide goals.

## COST CONTROL

A central concern running through each of the facility acquisition options is related to the control of project costs as they impinge on the quality of the institution and the time required to complete the process.

The administration of a prison health program realizes that the construction cost control of the physical facility is only one aspect of a larger problem that has its origins in the planning decisions that impact on the scope and type of facilities needed. This cost control will be commented upon first, in terms of its impact on system planning and second, in terms of its impact on facility acquisition.

Cost Control in Planning: The facility planner faces few problems, if any, that are more pervasive and difficult than those related to the control of costs. Budgets are always tight and money available is seldom sufficient for the tasks at hand. All the decisions outlined in the recommended planning process have cost implications which must be carefully considered if the resulting plan is to have a chance for success.

In developing the system-wide plan for health care, the scope of services provided, the number of residents served, the quality of the services, and the location at which they are provided all have major cost impacts.

Decisions on these issues must reflect the availability of funding. When the number of residents is given and a budget has been established, only the scope and quality of services may be controllable. Given the realities of public institution financing, the health care administrator must, by second nature, place cost figures on each option being considered. Costs for providing on-site and off-site services should be projected from past experience and should be within accepted ranges for including the impact of inflationary pressures.

Nothing will handicap a development program more than an initial underestimate of budgeting requirements. The administrator should prepare himself to be able to forcefully defend the scope and quality of services necessary to achieve a first class operation.

A planning effort that displays the cost implications of various options will stand a better chance of receiving budgetary support. An example of a cost-comparative approach to making a system planning decision is included in Appendix A.

Cost Control in Facility Acquisition: As system plans move into the facility acquisition and improvement phases, good cost data on facility alterations is essential. It is also essential to develop a continuing cost-monitoring process whereby the methods of estimating likely construction can become increasingly refined as the project proceeds towards realization.

At the earliest stages, the estimate may be based on rough assessments of gross square footage and/or cubage multiplied by generally accepted unit costs for the building type. The office of the state architect can be helpful in assisting with this type of estimate. These figures should take into account the unavoidably higher costs of construction located within the secure boundary of a prison. It should be noted that unit costs do not usually include:

1. site improvements and landscaping;
2. utilities beyond five feet from the building;
3. features such as flagpoles, radio and television antennae, sculptures, murals and signs;
4. unusual foundations;
5. other items not normal for a building of the type reported;
6. architect's compensation or the cost of other professional services, i.e., surveys, tests, bonds, soil borings, etc.;
7. cost of the land;
8. furnishings and movable equipment.

Early cost estimates are generally based upon a tentative definition of net square footage required. Net square footage accounts only for usable spaces in the building and for cost purposes must be supplemented with allowances for circulation spaces, building systems spaces, and space taken by interior and exterior partitions. The administration should be alert to the need for using gross rather than net square footage in early estimates of costs.

Following the completion of the detailed programming document, the architect, construction manager, or professional cost estimator can produce a considerably more accurate estimate since the scope and features of the building are defined. One advantage of producing the more detailed program rather than a sketchy program is the greater amount of confidence in the estimated cost.

As the project moves into the design phase, the architect makes frequent cost updates to keep the project within the budget. At this time the estimates can reflect the actual rather than estimated gross square footage. Costs can be based upon material take-offs rather than estimated overall cost/square foot and therefore should become quite accurate predictions of the bid price as more and more decisions are finalized.

Throughout this process, the administration should be vigilant of design changes and insist upon receiving cost information whenever asked to decide between options.

## ARCHITECTURAL SERVICES AND COMPENSATION

The type and range of professional services which architects bring to a project depend upon the size, complexity, and special requirements of the facility to be designed. In recent years clients have begun to request additional services which go beyond those traditionally required to get a facility designed and built. The nature of many building projects has demanded it.

The range of architectural services defined as "basic services" in the AIA "Architects Handbook of Professional Practice"*, provide those services which are needed in any project, regardless of its size, cost, and complexity. They include schematic design, design development, construction documents, bidding or negotiations, and construction contract administration.

Additional services are increasingly demanded, especially in large and complex projects. Typically these are in the planning and programming stages (or as the architect often refers to them, the 'pre-design stage'), site analysis, and post-construction phases of the project. Depending on the client's wishes and the organization of the project, these may be performed by the architect or by specialized consultants retained by the client.

Other services known as supplemental services are frequently required by the client. These are performed by the architect or, once again, by special consultants retained by the client.

Supplemental services include such items as signage or environmental graphics, the design of special equipment or furnishings, and specified studies such as life cycle costs. A complete listing and definition of these services are included in Appendix E.

### Methods of Compensation for Professional Services

#### Percentage of construction costs

The most widely used method of compensation is based on the premise that the value of the architect's services is directly related to the complexity and size of the project. It assumes that the skills and time required on the architect's part can be directly related to the size and amount of building, its complexity, and its construction costs. Compensation is derived from three basic elements: the construction costs, the building type, and an agreed upon percentage of the construction costs. Compensations calculated in this manner are for the performances of "basic services" only (AIA Document B131)*. Services provided beyond those designated as basic services are covered by other methods.

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*Architects Handbook of Professional Practice, Vol. 1 & 2. (The American Institute of Architects, 1977).

*AIA Document B131: "Standard Form of Agreement Between Owner and Architect on a Basis of Percentage of Construction Cost".

Multiple of direct personnel expenses

This cost-based method of compensation is directly related to the number of technical hours expended on the project with a multiplier to cover overheads and reasonable profit. Clients frequently ask for a maximum estimate of compensation to ensure that their fees for professional services do not exceed budgeting or statutory limits. Agreed upon levels of compensation for a project are subject to owner-architect agreements relating to "changes in the scope of work", and the assessment of additional compensations. This type of agreement is frequently used in projects of undetermined scope and complexity.

Fixed sum or fee

Governmental agencies are frequently limited by law to a form of contract which establishes a fixed sum for architectural services. In these projects the scope, amount of building, and project constraints have to be clearly defined for the architect.

Professional compensation plus costs

This method is used when the client wishes to establish an ongoing relationship on a series of projects and an agreement can be reached on the general scope of the work and the number of projects. The client pays the architect a fee plus technical time and overhead for each project.

Per diem or hourly

Similar to the multiple of direct personnel expense method, per diem or hourly compensation is based on rate schedules for different categories of technical staff agreed upon by the client and the architect.

Mixed methods of compensation and special compensation arrangements

Because of the wide variation in client needs from project to project, and because of differences in scope and complexity of building types and building conditions, it is clear that no one of the above mentioned compensation methods is likely to fit every case. As a result, it is common for clients and architects to agree to more than one type of compensation on a single project. For example, planning, programming, or 'pre-design' services might be reimbursed on the basis of a multiple of direct personnel expenses, while basic services might be reimbursed on a percentage of construction cost or fixed sum basis.

It is essential that the type of contracts for professional services provide both client and architect with unambiguous agreements of what services are to be provided, and where the responsibilities for each phase lie.

A clear understanding of architectural agreements and methods of compensation protects the client from retaining services not needed on the project, and protects the architect from costly delays and changes in scope of the project.

## SECTION 4: HEALTH CARE FACILITY GUIDELINES

This section is intended to supplement the earlier process-oriented sections with information more specifically bearing on physical design features, space requirements, and spatial relationships in correctional health care facilities.

There are many excellent and useful guidelines available for health facilities serving the general population, but very little is directly applicable to the corrections field. To a considerable extent it can be said that the clinical requirements remain relatively constant for the two groups, but that additional security-related issues must be factored into the requirements of the facilities used in correctional settings. These needs have begun to be addressed in "Health Care in Correctional Institutions" by Edward M. Brecher and Richard D. Della-Penna, M.D., "Standards for Health Services in Correctional Institutions" an Official Report of the American Public Health Association, and "American Medical Association Standards for Health Services in Prisons."

These references fall short, however, of constituting a definitive source of specific information to guide those in the process of planning and designing new facilities for prison-based health care . Until the time that more suitable and specific guidelines are available, planners can best accommodate the situation by:

1. utilizing a thorough planning and programming process that brings together those with clinical inputs, security inputs, and facility planning skills;

2. utilizing the best available general design guidelines and adapting these with reference to the emerging literature on correctional health standards and further refining the process by utilizing the best available professional help;

3. capitalizing on the experience of other institutions that have recently faced the same or similar problems.

The authors of this manual have, in their professional work, prepared facility guidelines and comprehensive building programs for correctional health facilities that could provide useful guidance for others faced with similar problems.

The first example covers guidelines for developing a secure unit within a community hospital, and the second example develops the design materials, siting, security requirements, and area relationships for an ambulatory health care unit and infirmary for a large prison serving a maximum security, medium security, and trusty division population (State Prison of Southern Michigan).

Even though the requirements were developed for a specific institution, the user should find that the information is readily adaptable to other related areas of correctional health care.

## GUIDELINES FOR THE DEVELOPMENT OF SECURE UNITS IN COMMUNITY HOSPITALS

These guidelines describe the establishment of one or more secure units in community hospitals for prison residents requiring acute care hospitalization.

These secure units will be located at hospitals with staff and facilities which can provide a full range of services for the prison patient populations. These units provide a secure enclave within a community hospital setting for the delivery of high quality medical and nursing care in an environment that ensures the safety and well-being of the staff and public through the utilization of security procedures and security design features.

The patients cared for in a secure unit will tend to require more diagnostic and treatment services than the typical hospital patient. Since the patient types will not be screened and treated according to a particular medical service (except intensive care), the staff provided must be capable of a wide spectrum of care.

These guidelines will document the objectives and the operational and architectural attributes of a secure unit as a basis for evaluating the relative suitability of alternative community hospital settings for such units.

### Secure Unit Objectives

The purpose of developing these guidelines is to provide criteria by which the needs of secure units can be reviewed against the potential location and amenities in appropriate community hospitals.

It is assumed that the policy of the department of corrections is to provide care in the community hospital setting rather than in the prisons themselves, and to provide care for resident patients of the quality comparable to that received by the general population.

While it is the goal of the department of corrections to provide all necessary acute care and services afforded by the community hospital, such care must be provided without jeopardizing the security and well-being of the hospital staff, visitors, and the general population. For these reasons, meeting the criteria for the location, secure design, and processing of resident patients is of paramount importance.

The functional and operations objectives of a secure acute care nursing unit based in a community hospital should be as follows:

1) to provide a quality of acute care for prison patients equal to that offered to the general population;

2) to avoid costly duplication of acute care facilities and staff at each prison by providing such care at a community hospital within convenient distance of the prison;

3) to provide a full range of acute health care to the prison patients in the secure unit;

4) to locate and design the secure unit in such a way that the delivery, care and processing of prison patients may be effected without jeopardizing the safety and well-being of the hospital staff and population, as well as the community;

5) to establish continuity of care for prison patients by locating their acute care in a hospital which permits follow-up care by their prison physicians;

6) to take into account the joint use of secure units by city and county jail patients, as well as prison patients, to reduce costs and duplication of services;

7) to develop within the resources of the department of corrections a cost-effective operation matched by appropriate staff and physical resources.

Location Factors

Typically, corrections systems are faced with the problem of matching health care needs of a prison population to a prison system which may be increasing in size and shifting its population emphasis towards the center of urbanization. Provision of acute care hospitalization should conform to this shifting pattern of population distribution and minimize travel time to hospital-based acute care, while still achieving good utilization of designated hospital beds. The following criteria should be met in selecting a location for a secure unit:

- A hospital should be able to provide acute medical, surgical and OB-GYN services along with facilities for intensive care and specialized diagnostic and treatment services. The hospitals chosen should be able to make their full patient care resources available without disrupting normal operations.

- For the best provisions of continuity of care, hospitals in which physicians supplying on-site care have privileges are to be preferred.

- An appropriate location would be able to accommodate and efficiently utilize a secure unit, sized in accordance with a demand analysis, while keeping a patient's travel time to approximately one hour from prison to hospital.

- Consideration should be given to the potential expansion capabilities of secure units to accommodate any future expansion of correctional populations.

Organizational Factors

- The secure unit should be located as near as possible to the hospital's diagnostic and general treatment areas so as to facilitate the transfer of security patients when required.

- When resident patients have to leave the secure nursing unit to receive diagnostic or treatment services in the other areas of the hospital, they do so under strict custodial control. It is therefore of the highest priority that the route to hospital-wide services be as controlled as possible so as to guarantee transfer without difficulty or danger to the hospital population at large . To a lesser degree, the unit should be located so as to facilitate the movement of personnel and supplies to the unit in an efficient manner. It is assumed that admission procedures will be arranged to permit direct transfer of the patient to the secure unit without entering a hospital's admission area.

Proximity Relationships

- Since many of the patients are admitted for surgical procedures, the secure unit should be located for direct and simple access to the surgery suite.

- Since many of the patients will require diagnostic work-ups, close proximity to radiology, nuclear medicine, heart station, and diagnostic areas is desirable.

- Since patients may require emergency treatment, a security-controlled arrival area near the emergency room is desirable.

- While most treatment will be given within the secure nursing unit, it should be near Physical Therapy, if possible.

- The secure nursing unit should be similar to other nursing areas in terms of required accessibility to food service, central supply, lab, pharmacy, etc..

- Since arriving patients may be seriously ill, close proximity to a weather-protected, secure, controllable entry point is desirable.

Configuration Factors

The adequacy of a secure unit location in the hospital will be significantly affected by specific physical characteristics of each locational option. This will include consideration of (a) the relative fixity of the various building elements, (b) the size of available contiguous space packages necessary for functional requirements, and (c) the relationship of available space to the circulation system of the hospital. Specifically, options should be evaluated on the following criteria:

- The area should be easily isolated from general traffic.

- The perimeter of the area should be securable against passage of contraband.

- The area should provide enough space to house the required beds and support spaces.

- The area must meet all "Exit Code" (NFPA101 and BOCA) requirements.

- The area should be modifiable to provide a secure perimeter with single point access controlled by a security control station and remotely controlled exit and entry doors.

- The area should be easily reached from a controlled vehicle unloading point, located away from the general public access.

- Elevators serving the area should accommodate one patient on a stretcher and four attendants.

- The area layout should provide good visibility of the patient corridor from security control station.

Space and Resource Allocation Factors

Planning changes in hospital facilities requires careful consideration of resource allocation within a hospital-wide framework. The allocation of space and resources to a secure nursing unit must be compatible with space and location needs of overall hospital services and departments. The factors discussed in previous sections were directed toward optimizing the facility provisions for the secure nursing unit itself. Allocation factors go beyond this concern and deal with a full range of cost-benefit factors as they influence the overall operation of the hospital.

- Space allocated to the secure unit must be consistent with the overall planning goals of the hospital.

- In-hospital locations should have the potential for modifications and expansion.

- The renovation of a selected area should disrupt other services and departments as little as possible during changeover.

- The selected option should not significantly disrupt the revenue-producing services which would be displaced by secure unit operations.

- The location selected should minimize turn-around time to put the secure nursing unit into operation.

- An appropriate location is one which will require the least cost of conversion and operation while providing for all security factors.

Space Considerations

The following considerations outline the broad security issues which should be taken into account:

1) Vehicular Arrival

The vehicular arrival and unloading area should:

a) be protected from weather;

b) be easily kept free of ice and snow;

c) provide adequate space on all sides of the vehicle for security staff to control patients;

d) be located near the hospital emergency room, if possible;

e) be well-lighted to permit safe access at any hour;

f) be shielded from exposure to the general public;

g) provide remote voice communication between unloading area and security control personnel in the secure unit.

2) Peripheral Security

The building perimeter around the secure area should conform to the following requirements:

a) Windows:

- no prison type bars should be used
- all window openings are to be glazed with fixed laminated glass and sized to prevent human passage
- frame and sash must be designed to be vandal-proof
- specially-designated rooms will be equipped for psychiatric screening

b) Louvers and through-wall openings:

- all through-wall openings (e.g., mechanical systems) must be tamper-proof
- steel grilles must be used to prevent unauthorized entry, exit or passage of contraband

3) Interior Movement of Patients

The controlled movement of secured patients requires appropriate operational protocols, proper levels of staffing, and supportive physical design features.

a) elevators used in moving secured patients should be large enough to hold a stretcher and up to four attendants

b) elevator controls should be provided which prevent stops at any floor other than the entry floor and secure unit floor

c) emergency stairwell doors serving the secure unit should have remote controlled locks and electric monitors. These stairs should discharge at a point that can be readily secured (e.g., into a fenced area). Whenever possible there should be no other access to this stairwell.

4) Control of Traffic to the Secure Unit

a) access to secure nursing unit should be through one point only

b) all traffic (staff, patient, visitors, supplies, etc.) must pass through a secured sallyport

c) the sallyport should be controlled from a secure guard station with good visibility of sallyport approaches and main circulation within the unit

d) a private area adjacent to the sallyport should be provided for the body search of visitors, patients and staff as needed

e) space should be provided for inspection of incoming and outgoing supplies without blocking the sallyport

5) Internal Organizational Requirements

The secure unit differs in function from a typical nursing unit in that it is more self-contained and amenable to surveillance (from a security control station) than areas in the rest of the hospital.

a) sufficient storage space should be within the unit to minimize movement within the unit and out of the unit

b) circulation areas, waiting areas, and key support areas within the unit should be easily controllable and amenable to visual surveillance

c) supplies and storage areas normally within open access, should be under direct supervision or in lockable areas

Summary

The potential trade-offs that are possible when considering alternative sites in a given hospital or alternative sites in different hospitals become highly case-specific and do not lend themselves to a general discussion. To provide the reader with further assistance in this area, Appendix E has been included to describe a method for evaluating secure unit sites in community hospitals.

## MAXIMUM SECURITY HEALTH CARE UNIT AND INFIRMARY

This section will trace the development of physical design requirements from the organizational objectives for health care, the structure of care delivery, and the security issues imposed by the prison setting. For present purposes it seems appropriate to use a specific care setting as an example and from this, draw a set of principles that may be extrapolated and judisciously related to other care settings.

The facility described in this section is to be the most complete health care facility within the given system. It is located at the State Prison of Southern Michigan on a site which consists of a walled, close-custody compound of 3400 beds, a new, separate 500 bed medium security unit, and a 1600 bed Trusty division located outside the walls. The unit will provide primary health care, out-patient specialty care, dental care, and infirmary care to all on-site residents as well as to camps and other elements of the prison system on a referral basis. Services will include:

1. ambulatory primary and specialty medical, surgical, and dental care;
2. 24-hour emergency care;
3. short-term and some extended infirmary care.

This facility will replace the health care facilities currently utilized in the present close-custody compound.

The Health Care Unit is to be operationally related to necessary supportive and auxillary services provided by the prison, such as laundry, food services, and triage or "sick call" stations in the maximum security compound and trusty division.

Major emergencies and acute life-threatening conditions will be referred to the nearest community hospital for diagnosis and treatment. However, this Health Care Unit must have capabilities for resuscitating and stabilizing patients until they can be transported to a community hospital. Minor emergencies and injuries will be treated in the emergency area. The patients will be observed and then returned to their institutional location or admitted to the infirmary if necessary.

Most complex secondary and tertiary care will be referred to community hospitals having a secure unit.

Many chronically diseased, disabled, and geriatric patients will be cared for at a designated facility once they are stablized, and will receive continuing ambulatory care and infirmary care at that institution. Patients requiring long-term skilled nursing care and/or rehabilitation will be transferred to a community hospital or to the designated facility, whichever is most appropriate.

Psychiatric outpatient services and short-term acute inpatient psychiatric services are to be included in this unit. Intermediate and long-term psychiatric treatment will be provided elsewhere within the system.

The Health Care Unit is under the medical directorship of an on-site physician and is administrated by a chief administrator, both responsible to the Director of the Office of Health Care. The recommendations contained in this section were developed by a team consisting of health care administrators, security officials, nurses, physicians, technicians, and residents working in conjunction with Clipson/Wehrer, Programming Consultants.

Objectives of the Health Care Unit

In the broadest sense, the Office of Health Care of the Michigan Department of Corrections seeks to provide for the residents under its supervision a level of health care equivalent to the population at large. The underlying basis for this commitment is well articulated in Key to Health for a Padlocked Society: Design for Health Care in Michigan Prisons.* This document identifies the following system features within which the specific objectives for the Health Care Unit were developed.

I. General

1. The State of Michigan and, in particular, the Department of Corrections, recognize that health care is basic to the total correctional rehabilitation and resocialization process.

2. The level of health care afforded to persons served by the Michigan Department of Corrections shall be consistent with modern professional practice in an adequately served community.

3. A central authority shall be designated as responsible for developing and maintaining a comprehensive and effective health care system for persons served by the Michigan Department of Corrections.

4. Residents shall be afforded a means of effective participation in the process of making policies and arbitrating grievances with respect to health care.

5. Health care in the correctional system must be adequately financed with a clearly identifiable budget.

6. Respect for the dignity, rights, and reasonable free choice of the individual must characterize every aspect of the health care process.

7. Every aspect of the correctional system must be continually evaluated in terms of its long-range effectiveness and impact on the physical and mental health and social well-being of all persons involved. Practices found to be ineffectual or detrimental shall be eliminated whenever possible.

8. All governmental programs providing health or rehabilitation benefits should include the population of correctional institutions to the same extent as the general public.

*Key to Health for a Padlocked Society: Design for Health Care in Michigan Prisons, March 1975, Prepared by Office of Health and Medical Affairs, Lansing, Michigan 48913.

II. Process of Health Care Delivery

1. Delivery of health services should, to the extent feasible, be provided within the mainstream of community health care, i.e., in facilities and by personnel serving the general public. When an exception must be made, procedures shall be established for review and inspection by appropriate representatives of professional peers and the public.

2. Health care must be of high professional quality, delivered in a personal, compassionate and confidential manner, and characterized by mutual collaboration among those engaged in the rehabilitative process.

3. Assessment of request for health services must be made by qualified health care personnel.

4. Each request for health care must be expeditiously screened and referred to the appropriate practitioner or facility according to the urgency and nature of the problem and with attention to continuity of care.

5. A program for regular sick call, suited to the needs of each institution, should be devised by the appropriate health care authorities in collaboration with representatives of the resident population and the administration.

6. Adequate first aid equipment and personnel trained in its use is to be readily available to all residents.

7. Treatment ordered by health care professionals must be effectively made available to the residents as prescribed.

8. An appropriately supplied pharmacy must be maintained at each institution. Procedures for procurement, storage, dispensation and administration of drugs and medications must be inspected by and meet the requirements of the State Board of Pharmacy.

9. In addition to a complete physical examination and psychological assessment of each individual at the time of entry, there shall be provision for periodic physical re-examination.

10. Suitable programs to provide information and education on health care must be available to residents.

III. Health Care Personnel

1. All persons engaged in the provision of health care shall possess training and experience appropriate to their function, and must be certified or licensed when applicable.

2. A sufficient number of health care professionals must be available to provide care in accordance with standards of good practice.

3. Health care facilities must, to the extent possible, be located in areas which do not preclude the employment of women.

4. Reimbursement rates for health care services must be at a level sufficient to obtain well-qualified and dedicated personnel.

5. Efforts should be made to promote interest and awareness among students of the health care professions in the specific problems of correctional institutions.

6. Strict limitations shall govern the employment of residents of correctional institutions in the provision of health care. In no case shall the health care delivery system place significant reliance on resident help.

IV. Facilities and Related Equipment

1. All facilities and equipment utilized for delivery of health care shall be periodically inspected without prior notice, and shall be in substantial compliance with standards established by the Michigan Department of Public Health and the appropriate agency of accreditation for that type of facility, including the Joint Commission on Accreditation of Hospitals.

2. A comprehensive referral plan is to be adopted and periodically reviewed for each institution with approval by the state correctional health authority. This plan must designate health care facilities which are adequately equipped for each specific type of need and are accessible within reasonable time limits.

3. Residents requiring specialized health care shall be transferred to institutions which are located reasonably close to providers of such care.

4. When community health facilities are utilized, reasonable security precautions will be required to minimize interference with normal operation of the facility or risk to any person.

V. Health Records

1. Comprehensive and accurate health records shall be maintained for all current and former residents.

2. Health care records must be readily available for use by appropriate health care personnel, but will be kept confidential from unauthorized persons without explicit permission of the resident.

3. The health records system must be designed to permit the monthly collection and reporting of summary statistical data on important aspects of health status of the population and utilization of the health delivery process.

4. An abstract of the patient's health record should be available to a resident upon request.

5. Upon release, health care records of a resident must be safely stored for immediate retrieval in case of his return and for transmittal, at his request, of an abstract of its contents to an outside health care practitioner.

VI. Environmental and Social Factors Which Affect Health

1. Every effort must be made by the Michigan Department of Corrections to provide a healthful environment in order to facilitate the rehabilitative

process and prevent the occurrence of mental and physical illness.

2. Routine procedures must be established governing dating, refrigeration, and appropriate use of perishable food items.

3. Annual physical examination and, if feasible, appropriate initial psychological screening shall be required for persons who come in frequent close contact with residents such as food handlers and corrections officers.

4. All facets of the institutional environment must be subject to regular inspection for cleanliness.

5. Heat, ventilation, and lighting provided in living and working areas shall be adequate for comfort.

6. Correctional facilities must be routinely inspected by the Fire Marshal and the Departments of Public Health and Labor for conformity to health and safety standards. After a reasonable time to make changes, a residential facility which does not substantially comply with the standards shall be closed to human occupancy.

7. Legislation should be enacted to indemnify residents against industrial injury, including occupational disease, on terms not less favorable than those extended by law to free workmen.

8. Special attention shall be paid to the improvement of family and social ties conducive to good health and rehabilitation.

9. A resident may never be assigned a punishment or work detail which is clearly prejudicial to health.

The objectives for the Health Care Unit and other health related services are to be supportive of the system standards and objectives listed. This unit is to provide a suitable environment for resident and civilian in-house training programs, and generally must provide a secure, reassuring, quality atmosphere and working conditions for users, visitors, and employees.

The objectives of the Health Care Unit can be summarized as follows:

1. to provide "first contact medicine" and "all non-hospital care" in quality and quantity equivalent to that available to the public at large;

2. to provide a care setting which meets professional and State of Michigan licensing standards without compromising security standards;

3. to provide a secure, reassuring, professional environment condicive to the recruitment and maintenance of high quality medical, nursing, and support staff;

4. to maintain security standards and procedures appropriate to maximum security confinement;

5. to provide secure yet convenient entry and exit for civilian personnel without passing through yard areas;

6. to serve all three of the security classifications while minimizing contact among residents from the three areas;

7. to provide a building layout that minimizes the number of ambulatory patients within the secured perimeter of the unit and maximizes surveillance of the areas having patient access;

8. to provide services and staffing levels which should reduce the number and average length of stay for off-site hospitalization.

In a qualitative sense, the building represents a major commitment to provide, within the prison setting, a highly professional level of health care consistent with the standards of care available to the general population. In order to attract and retain a professional medical and nursing staff, the unit must, in fact and appearance, be well-controlled and provide a secure working environment. Staff must, of course, maintain a level of vigilance and attention to security protocols, but these precautions should be natural and be such as to keep the apprehension level down.

The facility provisions should be of comparable standards to new construction in civilian settings. Staff should not be limited in providing care by lack of appropriate equipment or space settings.

From the standpoint of patients, the overall impact of the setting should add to their perception of being cared for well. Hopefully, greater satisfaction with treatment received will reduce unnecessary return visits and ease the excessive utilization common to the prison setting.

For the staff, access and egress (via security check) should be quick, hassle-free, and possibly even reassuring in the sense that it contributes to unit security and their own safety. The total environment should be attractive without extravagance, be efficient yet not overly clinical in appearance, and have private spaces for relaxation that refresh and reinvigorate.

The architect should take as a challenge the problem of achieving the visual amenities suggested without compromising the needed security or suggesting the "coddling of residents".

It must be remembered that first class health care depends upon the skill of the providers. With heavy demand for the same skills in other health care settings, it becomes highly important that the facility setting be a positive factor in recruiting the necessary staff.

Locational Factors

In the example selected for review, a large walled prison with a Trusty division outside the walls is being augmented by a separate but adjacent 500 bed medium security prison. The present walled compound is poorly served by the health care unit and infirmary shown in Fig. 14. This unit is a converted housing structure and is inadequate from any point of view; physical condition, capability or functional adequacy. There is little possibility of attracting the necessary health professionals into this environment particularly since all civilian workers would have to cross the prison yard of a dangerously overcrowded prison.

While long range plans call for the phasing out of the large walled prison, the site itself will be intensively used in a staged replacement of the large prison by smaller facilities. While the population is to be progressively reduced, it will be many years before the total site has significantly fewer residents.

The problem is to identify potential sites which could serve the three distinct resident groups without physical contact between them, provide a secure and convenient access to civilian personnel, facilitate ambulance traffic both in and out, provide a positive and professional image for the Health Care Unit, and provide a facility capable of meeting current professional standards.

Site Characteristics and Constraints

In any new building, the site choice is influenced by site grading, soil conditions, location of utilities, configuration of existing buildings, climatic orientation, security and access. While all these play a part, the issue of security and access is the most demanding and figures conclusively in the location choice.

A review of site conditions and constraints reveals that the most appropriate location for the Health Care Unit is at the southeast corner of the Northside compound (see Site Plan - Fig. 14). This location provides the desired setting for direct staff access while permitting direct controlled access from both medium and close custody divisions. The site is highly dependent upon the need for specific access characteristics that recognize its position as a maximum security facility within the medium security perimeter. Assess to the Health Care Unit is to be via controllable entry points as follows:

Entry A

- staff and visitor entry
- entry for patients from Trusty division
- ambulance pick-up for emergency transfer to community hospitals

Entry B

- escorted patients from the close-custody compound
- unescorted patients from the medium security compound
- emergency arrivals from within the perimeter (either by vehicle or other mode)
- non-emergency vehicular transfer to and from community hospitals or other service sites
- staff movement to food services within the medium security enclosure

NOTE: This entry must also serve to control movement of medium security residents to the fenced industry area within the close-custody compound.

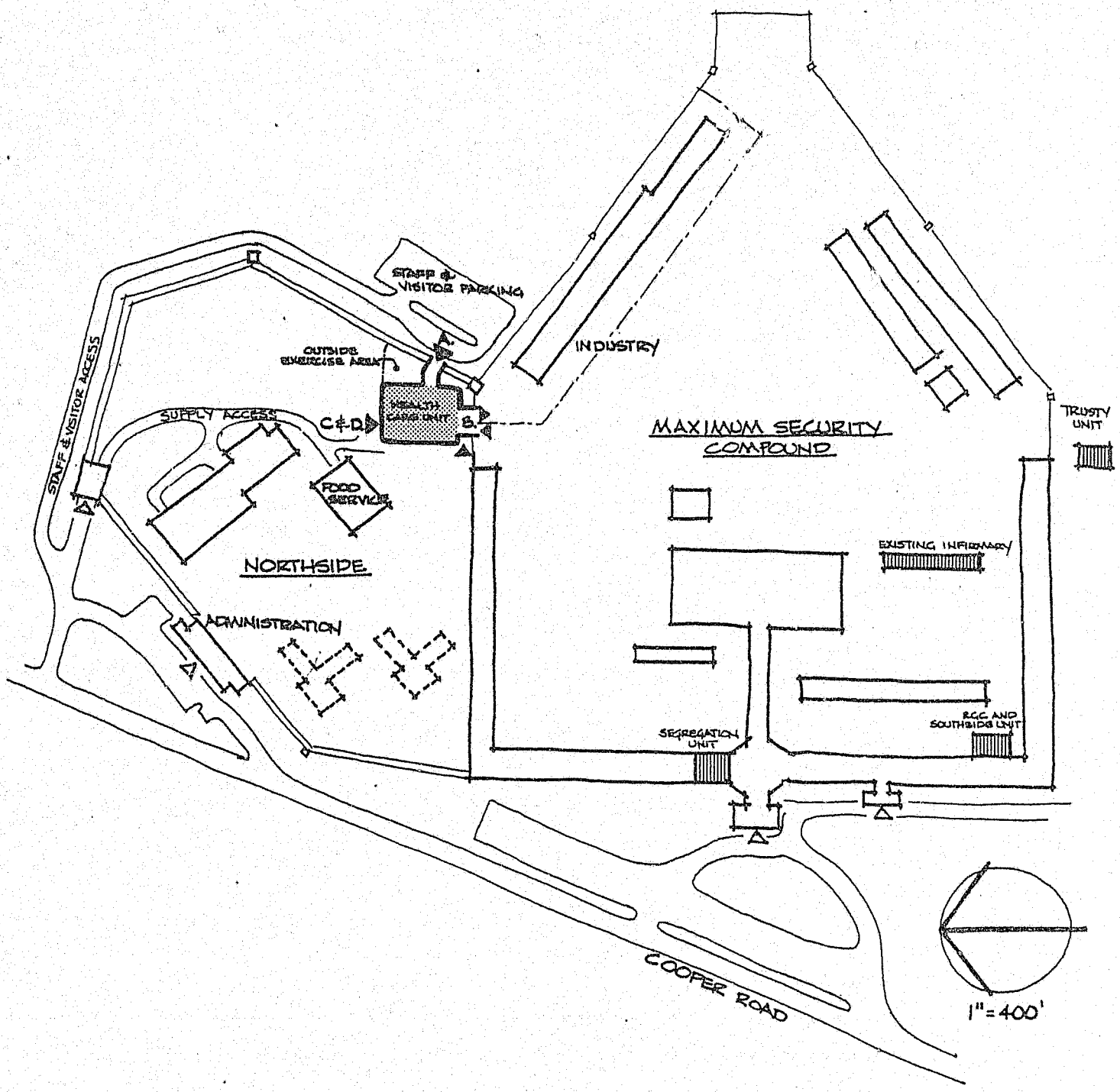



Fig. 14 - SITE PLAN: State Prison of Southern Michigan
Jackson, Michigan

Entry C

- food, laundry, and supply delivery and removal
- resident work crews

The specific building outline and location should be determined while keeping in mind the need for good visual control of the perimeter from the guard towers. The specific location of the Health Care Unit exercise yard should provide both ease of surveillance from the towers as well as a direct, easily controlled route from nursing units to the exercise area entry.

Because of its proximity to the medium security perimeter fence, staff will be afforded safe and immediate access to the Health Care Unit without penetrating the compound and will be provided with convenient parking near Entry A. The location near the perimeter fence also provides for de-emphasizing the institutional appearance of the building without sacrificing its secure operation.

An entry and road will be provided from the medium security sallyport to a covered entrance-way attached to the Health Care Unit at Entry B for ambulance loading. A road will also be provided for points within Northside to supply Entry C of the Health Care Unit.

Pedestrian pathways will be provided between the Health Care Unit and the Food Services Building, the Visiting Area, and the Administration Building.

Access points, entrances and exits to the Health Care Unit should carefully take account of mixed traffic modes and their security/control requirements.

Staff and visitor traffic to the Health Care Unit will proceed along a paved road around the outside of the medium security perimeter fence to a lighted parking area nearest Entry A.

Relationship of Health Care Unit to Existing Facilities and Services

The Health Care Unit is to be operationally related to the support services as follows:

Laundry Services. The laundry located in the Trusty division will service all units on site, including the Health Care Unit. The laundry will handle the Health Care Unit laundry needs including the stringent standards of washing, packaging, and transportation of clean and soiled linens. All laundry items will be delivered to a distribution point within the medium security compound, and then delivered to the Health Care Unit on a daily basis.

In the Health Care Unit itself, the following functional areas are indicated in such an operation: a central receiving area including a storage, sorting and distribution area; a main soiled linen holding room; a decentralized soiled and clean linen room in each nursing unit.

A loading/unloading area should be incorporated in Entry C to facilitate the laundry supply system along with other supply traffic. All incoming and outgoing laundry items will be subject to stringent security inspection for contraband and illegal movement.

Food Services. The new Food Services Building within the medium security compound will supply food for patients and staff and will produce special dietary meals and snacks for the infirmary population. No food preparation will take place in the infirmary area or its nursing units. All traying will be done in the food services kitchen instead and transported by closed carts to the nursing units for distribution.

Staff dining facilities will be in the Food Service Building rather than in the Health Care Unit itself; however, refreshment areas (coffee, snacks) will be provided for the staff throughout the Health Care Unit.

A refrigerator and some dry food storage areas will be provided in the Health Care Unit to accommodate non-typical food requirements (minimal). Each nursing station nourishment area will be equipped with a microwave oven to reheat those meals which were unable to be consumed at normal meal times.

Food service personnel will deliver meals in closed meal carts to the receiving sallyport. Carts will be taken from the sallyport to the nursing units. After the meal service is completed, the meal carts and trays will be returned to the soiled holding room.

All food services procedures and operations must conform to the Joint Commission on the Accreditation of Hospitals (JCAH) standards.

Medical Supplies. Medical supplies will be delivered directly to the Health Care Unit. Deliveries are normally on a weekly, or less frequent basis. A central supply room directly connected to the delivery area is to be provided under the control of a civilian supervisor. In turn, each nursing unit will be provided with a clean and soiled supply room.

The central supply area will have its own sterilizing unit.

Housekeeping and Maintenance. Housekeeping and maintenance services will be under the direction of a civilian housekeeper utilizing resident porters.

Waste Disposal. Waste disposal will be dealt with in the following ways:

1. Bagging and storage of disposable material and waste is to be held for daily pickup for removal to the central disposal area.

2. All food waste is to be contained on the trays and returned to food service before sorting and disposal.

3. Bagging and storage in containers of pathogenic waste is to be held for pickup and removal for incineration. A marked holding area must be provided for these purposes.

Organizational Factors

Detailed planning of the facility provisions must be based upon the considered demand for services in each category and upon the strategy for delivering these services. The unique circumstances surrounding the project utilized as an example resulted in the organizational decisions enumerated below.

Within the Health Care Unit, the clinic and infirmary facility will provide ambulatory and infirmary services on a 24-hour hasis. While most ambulatory care activities will occur on a "daytime" schedule, all components of the Health Care Unit must be responsive to unscheduled evening and night use as well. The following summary of patient utilization expectations and delivery system models is included to clarify the general daily demand on the facilities. These projections are based on current planning assumptions which have been articulated by Michigan Department of Corrections personnel.

The design of the Health Care Unit must allow for evolutionary changes in these assumptions as they become operationalized.

Ambulatory Care. While the Health Care Unit is intended to be the main site for the delivery of medical care services, resident utilization of the facility will vary significantly by ambulatory delivery mode. The current population on-site includes 5700 male residents in three security classifications - maximum close-custody, including Segregation and R&GC, medium security, and Trusty. The designed capacity is based on a total population of 4500 residents including 500 from a nearby training school. The location of the Health Care Unit in the medium security compound enhances case finding, and projected reductions in the total population numbers on-site are expected to affect future utilization patterns. As currently planned, however, ambulatory utilization of the Health Care will include:

Sick Call Triage, Walk-In and Urgent Visits. First contact triage of medical complaints for medium security residents only will be held in the Health Care Unit. Two morning triage sessions currently accommodate the 200 residents per week who sign up for sick call. In addition, another 200 medium security residents are seen weekly on an approved walk-in or urgent visit basis. Thus, approximately 400 visits by medium security residents can be anticipated each week for first contact traige and minor treatment.

Staffing and scheduling of triage, walk-in and urgent visits activities remain for future policy determination; however, nurse supervisors and physician assistants are expected to continue as the primary providers of this care which is designated to occur in the Triage Module (see Appendix C).

All other residents will be triaged at sub-stations elsewhere in the maximum security compound. Minor first aid treatment facilities and staff for walk-in and urgent visits are expected to also be available at these sub-stations.

Sick Call, Walk-In, and Urgent Visit Referral. All residents requiring immediate and more extensive consultation, treatment, and/or examination following sick call, walk-in, or urgent visit encounter will be seen in

the Health Care Unit. Between 20 and 30 residents per day, referred from the various triage sub-stations, are expected to need such immediate follow-up. This care will generally be rendered by a physician in the Primary Care and occassionally in the Specialty Modules (see Appendix C).

In addition, such patients may be referred to the lab and Radiology Modules (see Appendix C).

Specialty Clinics. All residents will utilize the specialty clinics which will be held in the Health Care Unit. A scheduled appointment system will regulate patient flow through these clinics. Clinic hours and sessions per week will reflect the availability of specialist consultants.

Current utilization data indicates that a combined total of approximately 1200 resident visits per month are made to the specialty clinics which include:

- ENT
- Optometry
- Opthalmology
- Dermatology
- Orthopedics
- Plastic Surgery
- Internal Medicine
- Urology
- Endocrinology
- Neurology
- Hypertension
- Pulmonary
- TB Chest
- Physical Therapy
- Orthopedic Shoe

Monthly specialty clinic activities and utilization are expected to increase by 10-20 percent as case finding and on-site specialist availability are enhanced. Daily scheduling of these clinics remains for future policy determination, however, patient flow through specialty clinics can be expected to include approximately 80-100 visits per day occuring in the Specialty and Primary Care Modules (see Appendix C).

In addition, such visits may result in referrals to the Lab and Radiology Modules (see Appendix C).

Minor Surgery. Current utilization data indicates that approximately 160 ambulatory surgical procedures (those not requiring blood products) are presently performed monthly. Physician scheduling and availability, future policy determinations regarding elective procedures, and enhanced case finding may ultimately increase this utilization. Thus 8-10 minor surgical procedures daily can be projected to occur in the ER/Minor Surgery Module (see Appendix C).

In addition, ambulatory surgery patients can be expected to utilize the support services of the Radiology Module (see Appendix C).

Emergencies. An "emergency" situation currently occurs on the average of twice per day. All residents requiring emergency care resulting in the sudden onset of a serious life-threatening trauma will be treated and/or stabilized in the ER/Minor Surgery Module (see Appendix C).

Laboratory. Laboratory facilities will be housed in the Health Care Unit. The lab currently processes approximately 2000 blood and urine analyses per month on more than 1000 patients with total volume expected to increase as the new equipment becomes available. While some samples are collected in triage, exam/treatment and inpatient areas, approximately 80 percent of the patients return to the lab on an appointment basis to provide specimens. These visits are generally scheduled in the morning beginning at 6:00 a.m.

Such patient visits and all analyses will occur in the Laboratory Module (see Appendix C).

Radiology. Comprehensive X-ray facilities will be housed in the Health Care Unit. Current data indicates that approximately 1200 X-ray procedures are performed each month and approximately 85 percent of the X-ray visits are related to ambulatory services and are scheduled during daytime working hours. X-ray volume is expected to increase as additional staff and new equipment becomes available.

X-ray services will occur in the Radiology Module (see Appendix C).

Security Factors

- The Health Care Unit is classified as a maximum security facility, and as such will be subject to rigorous security controls, surveillance, and procedures.

- Patients from medium security and the close custody compound will be controlled under close-custody conditions. Patients from Trusty division will be segregated from the above mentioned classes of patients upon entry.

- All staff, patient, visitor, material, supply and waste disposal traffic must be checked through one of the listed entry points to the Health Care Unit; a check will be made both on entering and upon leaving the Health Care Unit.

- All close-custody patients coming to the Health Care Unit and leaving the unit after treatment and/or consultation will do so under escort at all times.

- All patients entering and leaving the Health Care Unit may be searched to prevent the conveyance of contraband. Patients in the infirmary unit who have received visitors in the Health Care Unit may be searched and their rooms searched upon departure of their visitor(s); visitors themselves will be searched upon arrival at the Health Care Unit prior to visiting with a patient.

- The number of patients in the various areas of the Health Care Unit will be kept to a minimum for security and control reasons. Waiting areas will be under direct surveillence and supervision, and large numbers of patients will not be allowed to congregate in waiting or circulation areas.

- Circulation will be segregated wherever desirable to keep staff and service movement separate from patient movement. Patients will be under escort when they are moving to and from their clinic appointments.

- The elevator should open into an area where the door, as well as traffic to and from the elevator, is under direct visual surveillance from the security control station. Elevator controls should be capable of either key or push button operation at the discretion of the security administration. Elevator cab size should accommodate a stretcher and 4 attendants with space for auxiliary resuscitation equipment. Cab surfaces are to be easily cleanable and highly resistant to physical damage. No sharp projections are to be permitted inside the cab. Maintenance access panels in the cab are to be secured by lock. Light fixtures are to be vandal-resistant. Two-way speaker communication from cab to security control are to be provided as well as floor indicator lights above door opening at each floor and in the cab.

- The emergency stairwell should open into the same secure area as the elevator at each floor and at the ground floor level.

- Secondary emergency stairwells should be within visual surveillance of security control, remotely locked, intrusion alarmed, and should exit at the ground floor level into the medium security fenced perimeter. (It may be possible to exit into the infirmary's fenced exercise area).

- Residents admitted to the infirmary will be secured in their assigned rooms unless directed by the medical staff to be ambulatory and under direct supervision.

- Provisions for the control of patients occupying the Health Care Unit must be at a level that will not violate the security integrity of the prison as a whole.

- All rooms used for the storage of supplies and equipment must have heavy duty hardware that requires key operation. Entry points are to be equipped with intrusion detectors with alarm signals located in the security control station; a location annunciator panel for signal origin location should be provided.

- All doors must be capable of locking with a key; electrically operated hardware must be capable of being unlocked by key in the event of a power failure.

- All windows and vision panels must be of security specification, non-opening, and glazed with clear laminated glass with one maximum dimension of 5 inches.

- All infirmary bedroom doors must be capable of being locked so that the occupant may be secured as required.

- No openings for access to plenum, attic or unoccupied spaces are to be provided without secured access panels located in secured rooms. Mechanical openings such as grills, registers, etc., leading into ductways which are located in plenum spaces must not be large enough to allow a prisoner to enter an unauthorized area.

- Service access for mechanical equipment should be considered outside the security area, but under surveillance of security itself.

- The use of prison steel bars and gratings is to be avoided. Security type laminated glass and wireglass is to be used throughout.

- No heating controls (thermostats) are to be located within infirmary rooms or other areas where prisoners have access to them when not under supervision.

- All water supply lines serving infirmary rooms shall be valved outside each infirmary room and under control of staff only. Sewer line cleanouts for each infirmary room shall be located outside the perimeter of the infirmary room.

- Lighting in infirmary rooms will be controlled within the room with provision for separate low-level lighting controlled outside the room for security check purposes. All convenience outlets shall be equipped with current interrupters to provide safety from dangers of short circuiting.

- All the electrical fixtures and plumbing fixtures as well as mechanical system fittings shall be fastened in place with tamper-proof fasteners.

- Provisions for a public phone for patients' use is to be included in a location within visual surveillance of the security control station. Provisions for a patient phone accessible to each nursing unit in the infirmary and under the visual surveillance of the security control station is to be included also.

- Alarm systems for the Health Care Unit shall be monitored at the security control station at a simplified alerting panel with indicator lights identifying which system is sending the alarm. The various types of alarm systems are to have their individual annunciator panels grouped at an easily read position near the alerting panel either in a cabinet or in a compact grouping. Alarm systems to be included are as follows:

    1. Combustion detectors shall be in all rooms, with those detectors which are located in infirmary patient rooms to be behind tamper-proof grills. Combustion detectors shall be inter-connected to motorized dampers in the supply

and return duct serving the individual space to prevent spread of fumes and smoke. Where exhaust fans are called for, they shall be wired to be activiated when the detector is set off, in addition to the manual switching called for. The annunciator panel is to be located in the security control station with a system alarm indicator light in the alert panel.

2. Ambush alarms will be carried by medical and other civilian staff in the form of a pocket ambush alarm which they may activate when in need of assistance. The ambush alarm is to activate an "ambush system" light on the security control station. Ambush alarms are to have voice transmission capabilities when set off.

3. An intrusion alarm system is to be provided at doors so designated in the data sheets. This system is to have the capability of arming and disarming the individual door's alarm. Provide a system indicator light on the alert panel and an annunciator panel in the security control station.

4. A nurse call system is to be provided as outlined in the data sheets and shall further have a system indicator light on the alert panel in the security control station which will monitor the conditions of the annunciator panel in the nurses' station.

5. Remote door locking shall have door locking indicator lights at the alert panel as well as operating switches at each indicator light on the alert panel.

6. A TV monitor with a motion detector will be installed where indicated. Monitor screens will be located in security control station with a motion indicator light on the alert panel and monitor screens at a nearby, easily viewed position.

7. Food and related supplies will originate from the medium security Food Services Building. Equipment, food containers, and food waste being returned to the Food Services Building will require security checks before leaving the Health Care Unit.

8. Medical supply deliveries and deliveries of consumable items and pieces of equipment will be checked by security before entering the unit; returnable items and waste will also be carefully searched before leaving the unit. Drugs and syringes will be secured under supervision in locked storage in the Pharmacy. Used needles and syringes are to be immediately destroyed using crushing devices located in the soiled utility rooms. Narcotics will be strictly supervised by nursing and/or pharmacy personnel, and all containers and syringes or dispensers will be carefully checked each day. Refuse from this unit must be kept in a secure area until it is collected for removal from the unit; containers should be chosen for their ease of inspection.

9. Resident work details moving under escort from medium security to their jobs in the industrial plant in the close-custody compound will use Entry B. There will be one penetration through the wall and this will be used by all traffic moving between the two compounds. Patient traffic moving to and from the Health Care Unit will be separated both physically and by scheduling from work detail the traffic moving to and from the industrial plant.

Major Organizational Features

General Form Criteria

In the broadest sense the Health Care Unit is composed of an ambulatory care component and a distinct, though related, infirmary component. All ambulatory care services should be grouped at ground level. The infirmary areas may either be stacked as required adjacent to the ambulatory care unit (Fig. 15a) or above the ambulatory care unit (Fig. 15b). To reduce the required ground area some supportive services may occupy a level wholly or partially below grade (subject to site conditions).

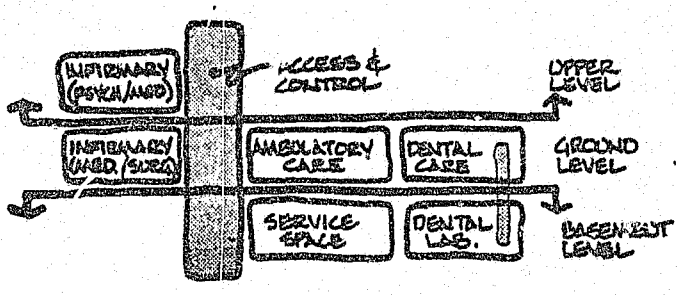



Fig. 15a - Vertical Organization

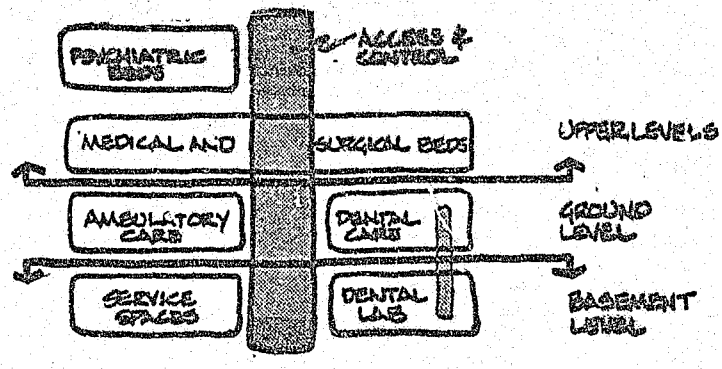



Fig. 15b - Vertical Organization

The ground floor should be in some way incorporate relationships as expressed in the accompanying illustrations. Major areas should relate to a control spine or center from which good visual surveillance to all major use areas is possible. Major areas of patient concentration (primary corridors) should be visible from the control area and lesser concentrations (secondary corridors) should visible from the nursing station. (See Fig. 16)

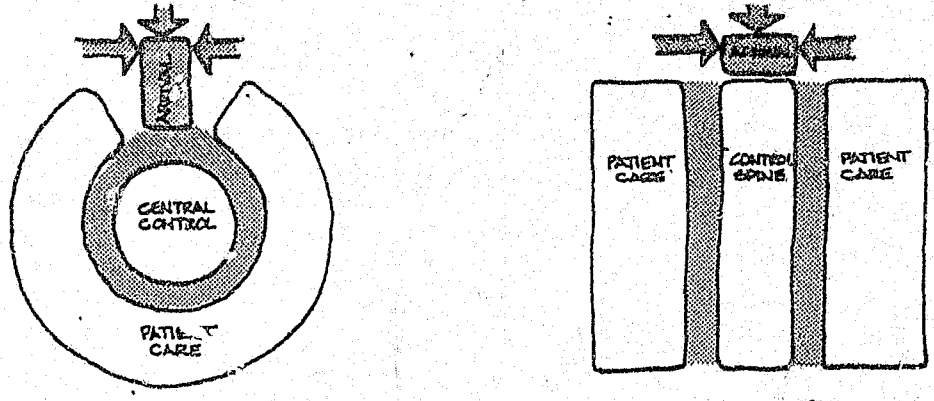



Fig. 16 - Control Diagrams

While the schematic plan illustrated (Fig. 11) is based upon the central spine concept, the architect is encouraged to explore any feasible alternative layouts that provide the desired relationships.

The organization of the infirmary areas must provide a high proportion of perimeter space to achieve natural lighting in patient rooms. The architectural solution may involve infirmary wings built over a base of ambulatory care areas, or an infirmary block adjacent to the ambulato. area, or a combination of both. The relationship of security control areas may take alternative forms as shown in Fig. 16. Depending upon the number of beds finally determined, this may require one or more floors to accommodate the total need. In any case, psychiatric patients should be housed in a distinct wing as remote as possible from activity centers. The remaining bed areas should provide a degree of flexibility in meeting changing care strategies.

Specific Form Criteria

The Health Care Unit's layout and design must conform to the following organization features. These features will be initially described below and elaborated upon in the following section as they are embedded in functional relationship diagrams and incorporated into a rough schematic plan layout. These organizational needs are separately presented so that the design architect understands the reasoning behind the schematics and is thus able to creatively explore the range of physical alternatives that meet the functional requirements.

a. Minimizing the number of ambulatory care patients in the building at a given time

In order to achieve an environment expressing competency and a professional quality of health care, and thus communicating a safe and controlled environment for the benefit of both staff and patients, it is necessary that only those receiving care and only a minimum number of those waiting for care are present at any one time. The following measures are projected to achieve this end:

- Triage and screening, except for medium security residents, will take place at separate locations with the result that only referrals, patients with appointments, and emergency visits will be sent to the new building.

- A scheduling and communication system will be developed to assure a controlled arrival rate designed to maximize the valuable time of the health care providers by having the right number of waiting patients without permitting a build-up.

- Waiting is to be outside the security perimeter of the unit. Once admitted within the unit, the patient should be in the company of a care provider with only brief periods of potential waiting (waiting for a prescription, waiting for the evaluation of an X-ray, etc). This incidental, short-term waiting is provided in open waiting areas in full visual control from the security station and/or the nurse station. There should be no free wandering patients in the unit.

b. Activity zoning based on work flow

The Health Care Unit is to be organized around the effective delivery of health care without compromising security issues. Both are achievable by grouping first contact, high volume care activities near the unit entry and security control areas. Less frequently utilized services are further removed, yet near the examination/treatment areas from which referrals are made. Pharmacy, a "last stop" type of service and one that may experience a small buildup of waiting patients, is also near entry/exit and under good supervision from the security control station.

c. Visual surveillance of heavy use areas

The organization of all care modules around an easily supervised control spine keeps most patient movement and waiting in clear sight of security personnel. Nursing staff augments surveillance in the same areas and in secondary corridors (into primary and secondary care areas).

Staff corridors should be off-limits to patients and controlled via CCTV monitoring from the security control station.

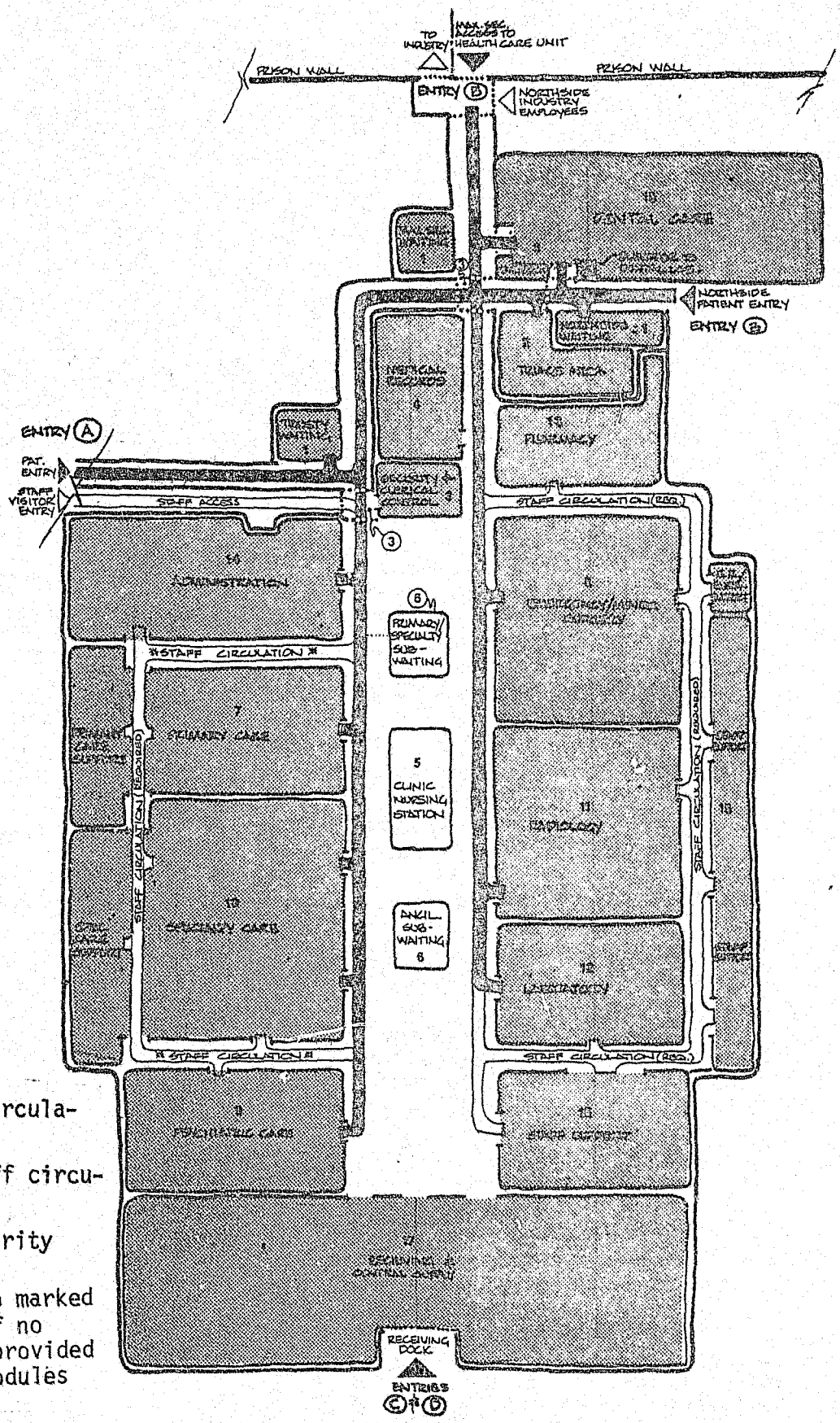
d. Vertical continuity of security control

The movement of patients to the infirmary level is controlled by the security control station at the ground level and passed to centrally located control points at each of the floor levels. Upper floor layouts should permit convenient surveillance of all corridors.

Security personnel should have floor to floor access without leaving the protected security areas in the event of a disturbance.

Summary

This portion of the manual has described the goals, organization, and major design features of a comprehensive Health Care Unit and Infirmary in a maximum security setting. For further, more detailed information, each of the numbered functional modules on the schematic floor plan (Fig. 17) is expanded upon in Appendix C. Each module is diagramed, all required rooms are listed with recommended areas, and a narrative description of the function is included.




DRAWINGS NOT TO SCALE

KEY TO DRAWINGS

- Main patient circulation
- Restricted staff circulation
- Controlled security gate

* Staff circulation so marked is necessary only if no through traffic is provided through treatment modules

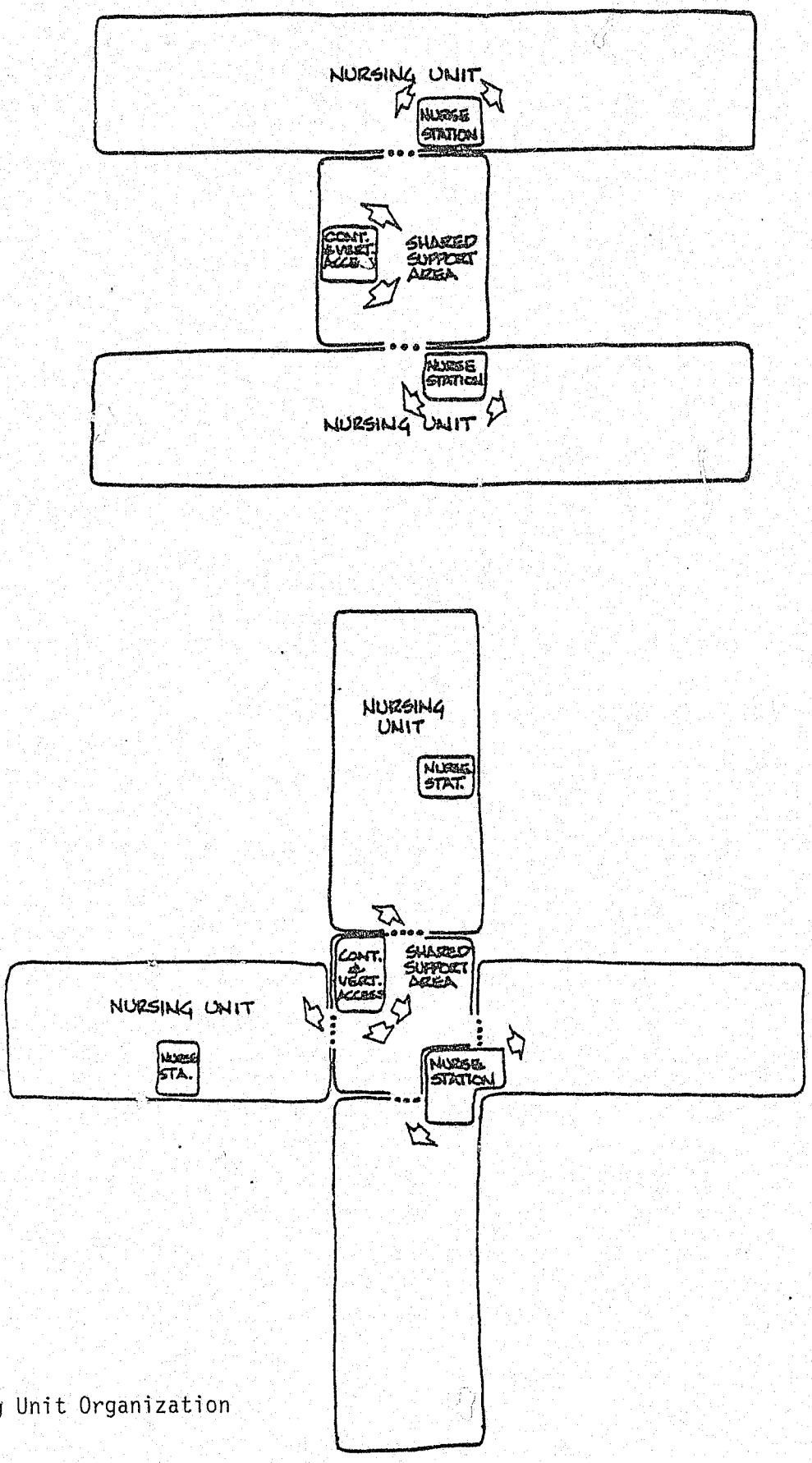



Fig. 18 - Nursing Unit Organization

## APPENDIX

The material included in this section is intended to serve as additional reference to issues dealt with in the body of this report.

Appendix A describes a cost/travel-time-distance model for evaluating the potential locations for secure units. The study was carried out by the Office of Health Care, Michigan Department of Corrections, in 1977 to provide information for the development of secure units in Michigan community hospitals.

Appendix B lists the major classes of codes and regulations which impinge upon the planning of health care facilities. References are given for essential documents in Building Codes and Zoning Ordinances, Fire Codes, Licensing Regulations, JCAH, OSHA, and Handicapped Regulations.

Appendix C contains material made up of planning and design concepts for a health care unit in the maximum security setting. The material was selected from the Facility Program document for the health care unit at Jackson, Michigan.

Appendix D contains sample data sheets from a program for a health care unit as an example of how facility requirements should be documented.

Appendix E lists types and combinations of professional services.

Appendix F describes an evaluation method with sample data collection sheets and summary displays.

## APPENDIX A: ACUTE CARE REFERRAL MODEL

### Purpose and Description

The study described in this section was undertaken in 1977 by the Office of Health Care, Michigan Department of Corrections to provide decision-making information for the development of secure units in Michigan community hospitals. The study describes a cost/travel-time-distance model for evaluating "secure unit" location options. A key planning strategy of this and other interrelated planning studies of health care need is that while comprehensive primary care capability may be feasibly provided at each correctional institution, the utilization of community hospital resources for acute hospital care provides the best strategy for achieving the health care goals of the Department of Corrections. The study delineates the system-wide assumptions and issues related to the distribution of residents in the existing and planned prison sites and the impact of this distribution on the location or locations of secure units in community hospitals.

The demand for hospitalization in the Michigan Department of Corrections' system is superimposed upon the project population patterns and models in such a way as to both identify and combine the major cost factors on a comparative basis. The modules will describe the populations, numbers requiring hospitalization, transportation costs, security costs in transit, daily hospital charges, and security costs at the secure unit. The model is used to both aid in conceptualizing the system and draw immediate location conclusions.

Given the demand for acute care hospitalization along with prison population statistics and projections, it becomes feasible and desirable to picture the system in model form. The model describes the system in terms of its quantifiable aspects and display the alternatives in a way that discloses the cost components as well as the overall resources needed to provide care based on given assumptions. The model is a cost-based model that serves to compare alternatives rather than to accurately predict operating costs. In its present form, it accurately presents costs involved in transporting patients and providing security guards in transit and in the hospital while also representing the basic room charge. Additional charges within the hospital are not included since they are highly variable and, since they are independent of location, they would tend to be somewhat proportional to daily room charges and therefore would not tend to vary the outcome on location.

Four model runs have been selected and displayed to derive locational advantages under differing but somewhat predictable circumstances. A cursory analysis of the prison site locations and population concentrations strongly suggested that a solution geared to solving the problem for the next decade would require a hospital site near the center of the state. Preliminary cost analysis also favored a single site. On this basis each assumption on prison sites and population distributions was tried using a hospital site in Ann Arbor, Jackson and Lansing. The study treated the four model runs as though they were concurrent in time so that the magnitudes of the comparative costs can be directly compared. In actuality, these different system configurations will occur at different times and therefore if one were interested in actual cost figures, the costs should be escalated to reflect inflationary pressures.

Run (A) pictures the system as it now exists and uses the population distribution from January 7, 1977 (Fig. 1).

Run (B) assumes a system population increased to 14,335, which is beyond its capacity. The system capacity was increased by the addition of the Ypsilanti facilities, the Holland, Michigan site and two units in the Detroit area, along with the closing of the Detroit House of Corrections (Fig. 2).

Run (C) assumes the same sites as in (B) but with populations based on capacity rather than the present overcrowding (Fig. 3).

Run (D) assumes the location of secure units at both Lansing and Ann Arbor with populations based on prison capacity as in Run (C) (Fig. 4).

In order to demonstrate the economic validity of the secure unit concept, calculations are displayed that indicate comparable costs for referring all acute care hospitalizations to the nearest local hospital under guard (Fig. 5).

## Model Assumptions

Hospital Charges. The basic charge for a private room was used to indicate the relative impact of the cost factor. This will not indicate the likely cost of hospitalization since it does not include operating room charges, diagnostic and treatment charges. Yet it can be appreciated that inclusive hospital charges are highly variable and care specific and do not lend themselves to a comparative analysis.

Security Charges. It is assumed that similar costs would prevail regardless of location. The yearly salaries for secure unit staffing are added to the yearly totals of transportation and hospital charges so that the percentage differences from one site to another can be more realistically presented.

Transportation Costs. The transportation costs are composed of two components; a mileage charge assumed to be 11.5¢/mile and a charge for a security guard at $7.50/hour. It is assumed that, regardless of destination, a minimum of 1½ hours total is required to clear the patient from the prison and admit and gain entrance to the secure unit at the hospital. Returning the prisoner in a similar fashion after discharge involves another 1½ hours of time. Thus, if a patient is moved from Jackson Prison to a hospital in Jackson, the security guard would be paid for 1½ hours, plus the round trip travel time for both admitting and discharging that patient. If the secure unit is more distant, the 1½ hours plus the round trip travel time increases. In the examples worked out in this report it has been assumed that each patient is driven by a security guard. In actual practice, there are times when a particularly aggressive patient may require two guards and also some instances where more than one lesser security risk is moved.

## Demand for Hospitalization

Parallel studies of demand for hospitalization showed that 6 to 7% of the correctional population (621 admissions of 9,820 residents) require hospital

care. The average length of stay of these patients is 9.2 days. This is somewhat higher than the national average length of stay which is 8.0 days. Studies indicate that correctional residents in Michigan will need 2 beds/ 1,000 population. This calculation of bed need is based on admissions, length of stay and total patient days of 10,000 residents. At an 80% occupancy rate, 1.89 beds are required for 1,000 population.

Hospitals. In the model the three sites selected were Ann Arbor, Jackson, and Lansing.

Description of Terms for Fig. 1, 2, 3, 4 Comparative Models

1. Population - Lower Peninsula prison residents
   Model Run A - Resident populations on January 7, 1977
   Model Run B - Estimated population January, 1979
   Model Run C - Estimated population mid to late 1980's

2. Admissions/1000 residents

3. Annual Admissions - Obtained by applying the admission rate from column 2 to population of the given prison (col. 1 x col. 2).

4. Patient days/1000 residents - This figure is based on hospitalization demand studies and reflects differences due to the age and sex of residents at the various sites.

5. Annual patient days - Obtained by applying the appropriate experience rate (patient day/1000 residents) to be given prison ( col. 1 x col. 4).

6. Mileage per admission (2 round trips from prison site to hospital) - For purposes of modeling clarity it is assumed that each admission will involve a separate trip, one security officer and one patient for both delivery to and pick-up from the hospital. Road mileage is based on the shortest route.

7. Annual mileage - The number of admissions times the mileage for two round trips (col. 3 x col. 5).

8. Vehicle charge - Annual mileage times the State of Michigan rate of 11.5¢/mile for state vehicles.

9. Annual hours of travel - This entry converts the total mileage into hours using average rates of speed appropriate to the type of road and traffic conditions involved.

10. Variable staff cost during travel - This represents the annual hours of travel times an average salary rate of $7.50/hour assuming some regular and some overtime rates (col. 9 x $7.50/hour).

11. Fixed staff costs in transit - It is assumed that each trip will involve 1½ hours of security guard time getting the patient cleared from the prison and admitted into the hospital. A similar time is required at discharge and reentry into the prison. With a total of 3 hours at $7.50/hour, the fixed cost equals $22.50 x the number of admissions.

12. Total bed charges - Each of the three locations have different daily charges. Current rates are being charged at the Ann Arbor site (col. 5 x daily bed charge).

13. Total comparative costs - This figure combines the total transportation - related costs with the bed costs (col. 8 + col. 10 + col. 12).

14. Total comparative cost - This figure adds a constant cost reflecting the security costs and is similar for all locations (col. 13 + 147,063).

Discussion of Model Implications

Number of Units. At the outset it was assumed that comparisons would be made for various locations of single secure units as well as for combinations of locating 2 units. Having determined a total bed requirement of approximately 20 beds, it becomes difficult to justify duplication of security guards at another location.

Based on input from the Michigan Department of Corrections, staffing for a unit of 20 beds as well as for any smaller unit would require 2 people at all times and a third person added to the day shift from Monday through Friday. The costs for this staffing are as follows:

| | | |
|---|---|---|
| Day Shift: | 8 x 6.00/hr X 3 X 5 X 1.2 X 52 = | $44,928 |
| | 8 X 6.00/hr X 2 X 2 X 1.2 X 52 = | $11,980 |
| Evening: | 8 X 6.30/hr X 2 X 7 X 1.2 X 52 = | $44,029 |
| Night: | 8 X 6.69/hr X 2 X 7 X 1.2 X 42 = | $46,126 |
| | | $147,063 |

Thus a total cost of $147,063 is required to provide a security staff at a secure unit. In order to justify a second location that would require an additional $147,063, the time-distance savings should be such as to offset this cost. Since the cost of mileage and security costs in transit for the total system movement to the least favorable location is in order of $44,000, the second site cannot be justified on this ground.

Another way of viewing the trade-off would be to see how many patient days under 24-hour guard in a non-secure hospital bed can be purchased with the same number of dollars. Since the daily cost of 24-hour guards amounts to $181.44/day, the system could afford local care for 810 patient days before exceeding the secure unit staffing cost.

This analysis can be used to demonstrate that the Upper Peninsula population would have to generate 810 patient days of hospitalization before it would prove cost-effective to establish a secure unit. The present experience of 174 days/year indicates that the present mode is the proper one.

In conclusion, there is no justification for providing more than one secure unit based on cost factors. Any conclusion to the contrary must be based on other measures of consideration which lie outside the scope of this study.

Secure Unit Location. The outputs of the four model runs are summarized in Fig. 5. In each case heavy concentration of prison population in Jackson and Ionia, along with Lansing having the lowest daily room charge, resulted in the Lansing site being the most cost-effective solution in terms of the factors considered.

When compared with the Ann Arbor site, it can be seen that the 23% advantage for the Lansing site is both a function of shorter travel times and a more favorable daily room charge.

When compared with the Jackson site the differences are slight, approximately 3%. In this case, the travel times favor the Jackson site and the total favors Lansing due to its slightly lower room rate. The decision between the two should be based on the quality assessment of the hospital and the specific contractual arrangements.

From Model Run (D) it can be seen that the provision of two secure units, one at Lansing and one in Ann Arbor, entails an approximately 25% increase in system cost over the single site at the Lansing location. When the needs of the Michigan Department of Corrections are viewed in isolation, this additional cost may not be warranted. When the issues are broadened to include provisions for local and county prisoners and in modified form for patients of the Michigan Department of Mental Health, this option may require further consideration.

From an examination of the model results it would appear that a Jackson or Lansing location would remain viable as a single site solution as long as present or projected prison sites conform to the expressed Michigan Department of Corrections strategy. Should the system undergo a rate of growth considerably beyond what is currently seen as possible, and if this growth is concentrated in the Metropolitan Detroit area, the second unit in Ann Arbor or even further east might become feasible. If this possibility is considered likely, the capacity of the initial unit should be held at a lower level equal to the average daily census so that the two units, when required, are both of an efficient size.

Cost Effectiveness of Secure Units. A comparison of Model Run (A) and Fig. 14, which develops the costs involved in the current mode of providing acute care hospitalization, shows the magnitude of the probable savings. The services that can be provided in a secure unit at an annual cost of $677,850.00 would cost over twice this amount ($1,466,940.00) if patients were to be sent to local hospitals under 24-hour guard.

This dramatic cost-saving, when added to the improved security and administrative control advantages, should accelerate efforts to implement the secure unit concept as soon as possible.

| Institution | ① Population | ② Adm. per 1000 | ③ Annual adm. ①X② | ④ Patient days per 1000 | ⑤ Annual patient days ①X④ | ⑥ Mileage (2 round trips) | ⑦ Annual mileage ③X⑥ | ⑧ Vehicle charge at $.115/mi. ⑦X .115 | ⑨ Annual hours at 50mph ⑦÷ 50 | ⑩ Staff travel cost at $7.50/hr. ⑨X 7.50 | ⑪ Fixed staff cost at $22.50/adm ③X 22.50 | ⑫ Total bed cost at $/day ⑤X $/day | ⑬ Total comparative cost ⑧+⑩+⑪+⑫ |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ANN ARBOR | | | | | | | | | | | | $131/day | |
| SPSM | 5523 | 53 | 293 | 492 | 2717 | 156 | 45708 | 5256 | 912 | 6840 | 6592 | 355927 | 374615 |
| MTU | 802 | 57 | 46 | 484 | 388 | 428 | 19688 | 2264 | 394 | 2955 | 1036 | 50828 | 57083 |
| MR | 1483 | 57 | 85 | 484 | 718 | 428 | 36380 | 4184 | 728 | 5460 | 1912 | 94058 | 105614 |
| Riverside | 466 | 53 | 25 | 492 | 226 | 428 | 10700 | 1231 | 214 | 1605 | 562 | 29606 | 33004 |
| Muskegon | 607 | 57 | 35 | 484 | 294 | 700 | 24500 | 2818 | 490 | 3675 | 788 | 38514 | 45795 |
| DEHOCO | 324 | 263 | 85 | 1760 | 570 | 80 | 6800 | 782 | 136 | 1020 | 1912 | 74670 | 78384 |
| TOTALS | 9205 | | 569 | | 4913 | | 143776 | 16535 | | 21555 | 12802 | 643603 | 694495 |
| | | | | | | | | | | ⑭ Including security cost | | | $ 841558 |
| LANSING | | | | | | | | | | | | $100/day | |
| SPSM | 5523 | 53 | 293 | 492 | 2717 | 160 | 46880 | 5391 | 938 | 7035 | 6592 | 271700 | 290718 |
| MTU | 802 | 57 | 46 | 484 | 388 | 144 | 6624 | 762 | 133 | 998 | 1036 | 38800 | 41596 |
| MR | 1483 | 57 | 85 | 484 | 718 | 144 | 12240 | 1408 | 245 | 1838 | 1912 | 71800 | 80204 |
| Riverside | 466 | 53 | 25 | 492 | 226 | 144 | 3600 | 414 | 72 | 540 | 562 | 22600 | 24116 |
| Muskegon | 607 | 57 | 35 | 484 | 294 | 416 | 14560 | 1674 | 291 | 2183 | 788 | 29400 | 34045 |
| DEHOCO | 324 | 273 | 85 | 1760 | 570 | 340 | 28900 | 3324 | 578 | 4335 | 1912 | 57000 | 66571 |
| TOTALS | 9205 | | 569 | | 4913 | | 112804 | 12973 | | 16929 | 12802 | 491300 | 537250 |
| | | | | | | | | | | ⑭ Including security cost | | | $ 684313 |
| JACKSON | | | | | | | | | | | | $106/day | |
| SPSM | 5523 | 53 | 293 | 492 | 2717 | 10 | 2930 | 337 | 59 | 440 | 6592 | 288002 | 295371 |
| MTU | 802 | 57 | 46 | 484 | 388 | 304 | 13984 | 1608 | 280 | 2100 | 1036 | 41128 | 45872 |
| MR | 1483 | 57 | 85 | 484 | 718 | 304 | 25840 | 2972 | 517 | 3878 | 1912 | 76108 | 84870 |
| Riverside | 466 | 53 | 25 | 492 | 226 | 304 | 7600 | 874 | 152 | 1140 | 562 | 23956 | 26532 |
| Muskegon | 607 | 57 | 35 | 484 | 294 | 576 | 20160 | 2318 | 403 | 3022 | 788 | 31164 | 37292 |
| DEHOCO | 324 | 263 | 85 | 1760 | 570 | 236 | 20060 | 2307 | 401 | 3009 | 1912 | 60420 | 67648 |
| TOTALS | 9205 | | 569 | | 4913 | | 90574 | 10416 | | 13589 | 12802 | 520778 | 557585 |
| | | | | | | | | | | ⑭ Including security cost | | | $ 704648 |

Fig. 1 — Acute Care Model Run A

| Institution | ① Population | ② Adm. per 1000 | ③ Annual adm. ①X② | ④ Patient days per 1000 | ⑤ Annual patient days ①X④ | ⑥ Mileage (2 round trips) | ⑦ Annual Mileage ③X⑥ | ⑧ Vehicle charge at $.115/mi. ⑦X .115 | ⑨ Annual hours at 50mph ⑦÷ 50 | ⑩ Staff travel cost at $7.50/hr. ⑨X 7.50 | ⑪ Fixed staff cost at $22.50/adm ③X 22.50 | ⑫ Total bed cost at $/day ⑤X $/ day | ⑬ Total comparative cost ⑧+ ⑩ + ⑪ + ⑫ |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ANN ARBOR | | | | | | | | | | | | $131/day | |
| SPSM | 5523 | 53 | 293 | 492 | 2717 | 156 | 45708 | 5256 | 912 | 6840 | 6592 | 355927 | 374615 |
| MTU | 802 | 57 | 46 | 484 | 388 | 428 | 19688 | 2264 | 394 | 2955 | 1036 | 50828 | 57083 |
| MR | 1483 | 57 | 85 | 484 | 718 | 428 | 36380 | 4184 | 728 | 5460 | 1912 | 94058 | 105614 |
| Riverside | 515 | 53 | 27 | 492 | 253 | 428 | 11556 | 1329 | 231 | 1733 | 608 | 33145 | 36813 |
| Muskegon | 607 | 57 | 35 | 484 | 294 | 700 | 24500 | 2818 | 490 | 3675 | 788 | 38514 | 45795 |
| Ypsi. Womens' | 270 | 263 | 71 | 1760 | 475 | 32 | 2272 | 261 | 45 | 341 | 1598 | 62225 | 64424 |
| Ypsi. Mens' | 400 | 57 | 23 | 484 | 194 | 32 | 736 | 85 | 15 | 110 | 518 | 25414 | 26127 |
| Holland | 400 | 57 | 23 | 484 | 194 | 660 | 15180 | 1746 | 304 | 2277 | 518 | 25414 | 29955 |
| Detroit | 500 | 53 | 27 | 492 | 246 | 164 | 4428 | 509 | 89 | 664 | 608 | 32226 | 34007 |
| Detroit | 500 | 53 | 27 | 492 | 246 | 164 | 4428 | 509 | 89 | 664 | 608 | 32226 | 34007 |
| TOTALS | 11000 | | 657 | | 5725 | | 164876 | 18961 | | 24719 | 14786 | 749975 | 808441 |
| | | | | | | | | | | ⑭ Including security cost | | | $ 955504 |
| LANSING | | | | | | | | | | | | $100/day | |
| SPSM | 5523 | 53 | 293 | 492 | 2717 | 160 | 46880 | 5391 | 938 | 7035 | 6592 | 271700 | 290718 |
| MTU | 802 | 57 | 46 | 484 | 388 | 144 | 6624 | 762 | 133 | 998 | 1036 | 38800 | 41596 |
| MR | 1483 | 57 | 85 | 484 | 718 | 144 | 12240 | 1408 | 245 | 1838 | 1912 | 71800 | 76958 |
| Riverside | 515 | 53 | 27 | 492 | 253 | 144 | 3888 | 446 | 78 | 585 | 608 | 25300 | 26939 |
| Muskegon | 607 | 57 | 35 | 484 | 294 | 416 | 14560 | 1674 | 291 | 2183 | 788 | 29400 | 34045 |
| Ypsi. Womens' | 270 | 263 | 71 | 1760 | 475 | 316 | 22436 | 2580 | 449 | 3368 | 1598 | 47500 | 55046 |
| Ypsi. Mens' | 400 | 57 | 23 | 484 | 194 | 316 | 7268 | 836 | 145 | 1088 | 518 | 19400 | 21842 |
| Holland | 400 | 57 | 23 | 484 | 194 | 376 | 8648 | 995 | 173 | 1297 | 518 | 19400 | 22210 |
| Detroit | 500 | 53 | 27 | 492 | 246 | 352 | 9504 | 1093 | 190 | 1426 | 608 | 24600 | 27727 |
| Detroit | 500 | 53 | 27 | 492 | 246 | 352 | 9504 | 1093 | 190 | 1426 | 608 | 24600 | 27727 |
| TOTALS | 11000 | | 657 | | 5725 | | 141552 | 16278 | | 21244 | 14786 | 572500 | 624808 |
| | | | | | | | | | | ⑭ Including security cost | | | $ 771833 |
| JACKSON | | | | | | | | | | | | $106/day | |
| SPSM | 5523 | 53 | 293 | 492 | 2717 | 10 | 2930 | 337 | 59 | 440 | 6592 | 288002 | 295371 |
| MTU | 802 | 57 | 46 | 484 | 388 | 304 | 13984 | 1608 | 280 | 2100 | 1036 | 41128 | 45872 |
| MR | 1483 | 57 | 85 | 484 | 718 | 304 | 25840 | 2972 | 517 | 3878 | 1912 | 76108 | 84870 |
| Riverside | 515 | 53 | 27 | 492 | 253 | 304 | 8208 | 944 | 164 | 1230 | 608 | 26818 | 29600 |
| Muskegon | 607 | 57 | 35 | 484 | 294 | 576 | 20160 | 2318 | 403 | 3022 | 788 | 31164 | 37292 |
| Ypsi. Womens' | 270 | 263 | 71 | 1760 | 475 | 188 | 13348 | 1535 | 267 | 2003 | 1598 | 50350 | 55486 |
| Ypsi. Mens' | 400 | 57 | 23 | 484 | 194 | 188 | 4324 | 497 | 87 | 653 | 518 | 20564 | 22232 |
| Holland | 400 | 57 | 23 | 484 | 194 | 536 | 12328 | 1418 | 247 | 1849 | 518 | 20564 | 24349 |
| Detroit | 500 | 53 | 27 | 492 | 246 | 320 | 8640 | 994 | 173 | 1296 | 608 | 26076 | 28974 |
| Detroit | 500 | 53 | 27 | 492 | 246 | 320 | 8640 | 994 | 173 | 1296 | 608 | 26076 | 28974 |
| TOTALS | 11000 | | 657 | | 5725 | | 118402 | 13667 | | 17767 | 14786 | 606850 | 653070 |
| | | | | | | | | | | ⑭ Including security cost | | | $ 800133 |

Fig. 2 — Acute Care Model Run B

CONTINUED

1 OF 2

| Institution | ① Population | ② Adm. per 1000 | ③ Annual adm. ①X② | ④ Patient days per 1000 | ⑤ Annual patient days ①X④ | ⑥ Mileage (2 round trips) | ⑦ Annual Mileage ③X⑥ | ⑧ Vehicle charge at $.115/mi. ⑦X .115 | ⑨ Annual hours at 50mph ⑦÷ 50 | ⑩ Staff travel cost at $7.50/hr. ⑨X 7.50 | ⑪ Fixed staff cost at $22.50/adm ③X 22.50 | ⑫ Total bed cost at $/day ⑤X $/day | ⑬ Total comparative cost ⑧+ ⑩ + ⑪ + ⑫ |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ANN ARBOR | | | | | | | | | | | | $131/day | |
| SPSM | 4000 | 53 | 212 | 492 | 1968 | 156 | 33072 | 3803 | 661 | 4960 | 4770 | 257808 | 271341 |
| MTU | 724 | 57 | 41 | 484 | 350 | 428 | 17548 | 2018 | 351 | 2632 | 923 | 45850 | 51423 |
| MR | 1394 | 57 | 79 | 484 | 675 | 428 | 33812 | 3888 | 676 | 5071 | 1778 | 88425 | 99162 |
| Riverside | 515 | 53 | 27 | 492 | 253 | 428 | 11556 | 1329 | 231 | 1733 | 608 | 33143 | 36813 |
| Muskegon | 589 | 57 | 34 | 484 | 285 | 700 | 23800 | 2737 | 476 | 3570 | 765 | 37335 | 44407 |
| Ypsi. Womens' | 270 | 263 | 71 | 1760 | 475 | 32 | 2272 | 261 | 45 | 341 | 1598 | 62225 | 64425 |
| Ypsi. Mens' | 400 | 57 | 23 | 484 | 194 | 32 | 736 | 85 | 15 | 110 | 518 | 25414 | 26127 |
| Holland | 400 | 57 | 23 | 484 | 194 | 660 | 15180 | 1746 | 304 | 2277 | 518 | 25414 | 29955 |
| Detroit | 500 | 53 | 27 | 492 | 246 | 164 | 4428 | 509 | 89 | 664 | 608 | 32226 | 34007 |
| Detroit | 500 | 53 | 27 | 492 | 246 | 164 | 4428 | 509 | 89 | 664 | 608 | 32226 | 34007 |
| TOTALS | 9292 | | 564 | | 4886 | | 146832 | 16885 | | 22022 | 12694 | 640066 | 691647 |
| | | | | | | | | | | ⑭ Including security cost | | | $ 838710 |
| LANSING | | | | | | | | | | | | $100/day | |
| SPSM | 4000 | 53 | 212 | 492 | 1968 | 160 | 33920 | 3901 | 678 | 5088 | 4770 | 196800 | 210559 |
| MTU | 724 | 57 | 41 | 484 | 350 | 144 | 5904 | 679 | 118 | 886 | 923 | 35000 | 37487 |
| MR | 1394 | 57 | 79 | 484 | 675 | 141 | 11376 | 1308 | 228 | 1706 | 1778 | 67500 | 72292 |
| Riverside | 515 | 53 | 27 | 492 | 253 | 144 | 3888 | 446 | 78 | 585 | 608 | 25300 | 26939 |
| Muskegon | 589 | 57 | 34 | 484 | 285 | 416 | 14144 | 1627 | 283 | 2122 | 765 | 28500 | 33015 |
| Ypsi. Womens' | 270 | 263 | 71 | 1760 | 475 | 316 | 22436 | 2580 | 449 | 3368 | 1598 | 47500 | 55046 |
| Ypsi. Mens' | 400 | 57 | 23 | 484 | 194 | 316 | 7268 | 836 | 145 | 1088 | 518 | 19400 | 21842 |
| Holland | 400 | 57 | 23 | 484 | 194 | 376 | 8648 | 995 | 173 | 1297 | 518 | 19400 | 22210 |
| Detroit | 500 | 53 | 27 | 492 | 246 | 252 | 9504 | 1093 | 190 | 1426 | 608 | 24600 | 27727 |
| Detroit | 500 | 53 | 27 | 492 | 246 | 252 | 9504 | 1093 | 190 | 1426 | 608 | 24600 | 27727 |
| TOTALS | 9292 | | 564 | | 4886 | | 126592 | 14558 | | 18992 | 12694 | 488600 | 534844 |
| | | | | | | | | | | ⑭ Including security cost | | | $ 681907 |
| JACKSON | | | | | | | | | | | | $106/day | |
| SPSM | 4000 | 53 | 212 | 492 | 1968 | 10 | 2120 | 244 | 42 | 318 | 4770 | 208608 | 213940 |
| MTU | 724 | 57 | 41 | 484 | 350 | 304 | 12464 | 1433 | 249 | 1870 | 923 | 37100 | 41325 |
| MR | 1394 | 57 | 79 | 484 | 475 | 304 | 24016 | 2762 | 480 | 3602 | 1778 | 71550 | 79692 |
| Riverside | 515 | 53 | 27 | 492 | 243 | 304 | 8208 | 944 | 164 | 1230 | 608 | 26818 | 29599 |
| Muskegon | 589 | 57 | 34 | 484 | 285 | 576 | 19584 | 2252 | 392 | 2938 | 765 | 30210 | 36166 |
| Ypsi. Womens' | 270 | 263 | 71 | 1760 | 475 | 188 | 13348 | 1535 | 267 | 2003 | 1598 | 50350 | 55486 |
| Ypsi. Mens' | 400 | 57 | 23 | 484 | 194 | 188 | 4324 | 497 | 87 | 653 | 518 | 20564 | 22232 |
| Holland | 400 | 57 | 23 | 484 | 194 | 536 | 12328 | 1418 | 247 | 1849 | 518 | 20564 | 24349 |
| Detroit | 500 | 53 | 27 | 492 | 246 | 320 | 8640 | 994 | 173 | 1296 | 608 | 26076 | 28974 |
| Detroit | 500 | 53 | 27 | 492 | 246 | 320 | 8640 | 994 | 173 | 1296 | 608 | 26076 | 28974 |
| TOTALS | 9292 | | 564 | | 4886 | | 113672 | 13073 | | 17055 | 12694 | 517916 | 560738 |
| | | | | | | | | | | ⑭ Including security cost | | | $ 707801 |

Fig. 3 — Acute Care Model Run C

| Institution | % | ① Population | ② Adm. per 1000 | ③ Annual adm. ①X② | ④ Patient days per 1000 | ⑤ Annual patient days ①X④ | ⑥ Mileage 2 round trips | ⑦ Annual mileage ③X⑥ | ⑧ Vehicle charge at ⑦X .115 | ⑨ Annual hours at 50mph ⑦÷ 50 | ⑩ Staff travel cost at $7.50/hr. ⑨X 7.50 | ⑪ Fixed staff cost at $22.50/adm ③X22.50 | ⑫ Total bed cost at $/day ⑤X$/day | ⑬ Total comparative cost ⑧+ ⑩ + ⑪ + ⑫ |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ANN ARBOR | | | | | | | | | | | | | | $131/day |
| SPSM | 25% | 1000 | 53 | 53 | 492 | 492 | 156 | 8268 | 951 | 165 | 1240 | 1192 | 64452 | 67835 |
| MTU | 0% | | | | | | | | | | | | | |
| MR | 0% | | | | | | | | | | | | | |
| Riverside | 25% | 129 | 53 | 7 | 492 | 63 | 428 | 2889 | 332 | 58 | 433 | 152 | 8286 | 9203 |
| Muskegon | 0% | | | | | | | | | | | | | |
| Ypsi. Womens' | 100% | 270 | 263 | 71 | 1760 | 475 | 32 | 2272 | 261 | 45 | 341 | 1598 | 62225 | 64425 |
| Ypsi. Mens' | 100% | 400 | 47 | 23 | 484 | 194 | 32 | 736 | 85 | 15 | 110 | 518 | 25414 | 26127 |
| Holland | 0% | | | | | | | | | | | | | |
| Detroit | 100% | 500 | 53 | 27 | 492 | 246 | 164 | 4428 | 509 | 89 | 664 | 608 | 32226 | 34007 |
| Detroit | 100% | 500 | 53 | 27 | 492 | 246 | 164 | 4428 | 509 | 89 | 664 | 608 | 32226 | 34007 |
| Sub-totals | | 2799 | | 208 | | 1716 | | 23021 | $ 2647 | | $ 3452 | $ 4676 | $ 224829 | $ 235604 |
| | | | | | | | | | | | ⑭ Including security cost | | | $ 382667 |
| LANSING | | | | | | | | | | | | | | $100/day |
| SPSM | 75% | 3000 | 53 | 159 | 492 | 1476 | 156 | 25440 | 2926 | 508 | 3816 | 3352 | 147600 | 157920 |
| MTU | 100% | 724 | 57 | 41 | 484 | 350 | 144 | 5904 | 679 | 118 | 886 | 923 | 35000 | 37487 |
| MR | 100% | 1394 | 57 | 79 | 484 | 655 | 144 | 11376 | 1308 | 228 | 1706 | 1778 | 67500 | 72292 |
| Riverside | 75 | 384 | 53 | 20 | 492 | 190 | 144 | 2916 | 334 | 58 | 439 | 456 | 18976 | 20204 |
| Muskegon | 100% | 589 | 57 | 34 | 484 | 285 | 416 | 14144 | 1627 | 283 | 2122 | 765 | 28500 | 33015 |
| Ypsi. Womens' | 0% | | | | | | | | | | | | | |
| Ypsi. Mens' | 0% | | | | | | | | | | | | | |
| Holland | 100% | 400 | 57 | 23 | 484 | 194 | 376 | 8648 | 995 | 173 | 1297 | 518 | 19400 | 22210 |
| Detroit | 0% | | | | | | | | | | | | | |
| Detroit | 0% | | | | | | | | | | | | | |
| Sub-totals | | 6491 | | 356 | | 3150 | | 68428 | $ 7869 | | $ 10266 | $ 7792 | $ 299515 | $ 323128 |
| | | | | | | | | | | | ⑭ Including security cost | | | $ 470191 |
| GRAND TOTAL | | 9292 | | 564 | | 4896 | | 91449 | $ 10516 | | $ 13718 | $ 12468 | $ 524344 | $ 852858 |

Fig. 4 — Acute Care Model Run D

| Location of secure unit | ① Population | ③ Annual adm. | ⑤ Annual patient days | ⑦ Annual mileage | ⑧ Vehicle charge | ⑩ Staff travel cost | ⑪ Fixed staff cost | ⑫ Bed cost | ⑬ Total comparative cost | ⑭ Total including security guard cost | % Cost differential |
|---|---|---|---|---|---|---|---|---|---|---|---|
| MODEL A | | | | | | | | | | | |
| ANN ARBOR | 9205 | 569 | 4913 | 143776 | $ 16535 | $ 21555 | $ 12802 | $ 643603 | $ 694495 | $ 841558 | +23 |
| LANSING | 9205 | 569 | 4913 | 112804 | $ 12973 | $ 16929 | $ 12802 | $ 491300 | $ 537250 | $ 684313 | 0 |
| JACKSON | 9205 | 569 | 4913 | 90574 | $ 10416 | $ 13589 | $ 12802 | $ 520778 | $ 557585 | $ 704648 | + 2.9 |
| MODEL B | | | | | | | | | | | |
| ANN ARBOR | 11000 | 657 | 5725 | 164876 | $ 18961 | $ 24719 | $ 14786 | $ 749975 | $ 808441 | $ 955504 | +24 |
| LANSING | 11000 | 657 | 5725 | 141552 | $ 16278 | $ 21224 | $ 14786 | $ 572500 | $ 624808 | $ 771871 | 0 |
| JACKSON | 11000 | 657 | 5725 | 118402 | $ 13667 | $ 17767 | $ 14786 | $ 606850 | $ 653070 | $ 800133 | + 3.7 |
| MODEL C | | | | | | | | | | | |
| ANN ARBOR | 9292 | 564 | 4886 | 146832 | $ 16885 | $ 22022 | $ 12694 | $ 640066 | $ 691647 | $ 838710 | +23 |
| LANSING | 9292 | 564 | 4886 | 126592 | $ 14558 | $ 18992 | $ 12694 | $ 488600 | $ 534844 | $ 681907 | 0 |
| JACKSON | 9292 | 564 | 4886 | 113672 | $ 13073 | $ 17055 | $ 12694 | $ 517916 | $ 560738 | $ 707801 | + 3.8 |
| MODEL D | | | | | | | | | | | |
| ANN ARBOR AND LANSING | 9292 | 564 | 4886 | 91449 | $ 10516 | $ 13718 | $ 12468 | $ 524344 | $ 558732 | $ 852858 | |

Fig. 5 — Summary Sheet

| | ① Annual adm. | ② Annual patient days | ③ Mileage (2 round trips) | ④ Annual Mileage ①X 3 | ⑤ Vehicle charge at $.115/mi. ④X .115 | ⑥ Annual at ___mph ④÷ mph | ⑦ Staff travel cost at $7.50/hr. ⑥X 7.50 | ⑧ Fixed staff cost at $22.50/adm. ①X 22.50 | ⑨ Bed cost at $/day ②X $/day | ⑩ Security costs at $181/day ②X 181 | ⑪ Total cost ⑤+⑦+⑧+⑨+⑩ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| SPSM residents at U of Michigan | | | | | | 50mph | | | $131/day | | |
| SPSM | 56 | 258 | 156 | 8736 | $ 1005 | 175 | $ 1310 | $ 1260 | $ 33798 | $ 46698 | $ 84071 |
| SPSM residents at Foote Hosp. | | | | | | 30mph | | | $106/day | | |
| SPSM | 237 | 2459 | 20 | 4740 | $ 545 | 158 | $ 1185 | $ 5333 | $260654 | $445079 | $712796 |
| MTU residents at Ionia and Blodgett Hospitals (½ adm. at each.) | | | | | | 30mph | | | $98.25/day | | |
| MTU | 46 | 388 | 60 | 2760 | $ 317 | 92 | $ 690 | $ 1035 | $ 38121 | $ 70228 | $110391 |
| MR residents at Ionia and Blodgett Hospitals (½ adm. at each) | | | | | | 30mph | | | $98.25/day | | |
| MR | 85 | 718 | 60 | 5100 | $ 537 | 170 | $ 1275 | $ 1913 | $ 70544 | $129958 | $204227 |
| Riverside residents at Ionia and Blodget (½ adm. at each) | | | | | | 30mph | | | $98.25/day | | |
| Riverside | 25 | 226 | 60 | 1500 | $ 173 | 50 | $ 375 | $ 563 | $ 22205 | $ 40906 | $ 64222 |
| Muskegon residents at Muskegon Hospital | | | | | | 30mph | | | $103/day | | |
| Muskegon | 35 | 294 | 20 | 700 | $ .81 | 23 | $ 175 | $ 788 | $ 30262 | $ 53214 | $ 84540 |
| DEHOCO residents at W.C.G.H. | | | | | | 30mph | | | $175/day | | |
| DEHOCO | 85 | 570 | 60 | 5100 | $ 587 | 170 | $ 1275 | $ 1912 | $ 99750 | $103170 | $206864 |
| SYSTEM WIDE TOTALS | | | | | $ 3245 | | $ 6285 | $12804 | $555354 | $889253 | $ 1466941 |

**Fig. 6 — Cost of Acute Care at Local Hospitals**

## APPENDIX B: THE REQUIREMENT OF CODES & REGULATIONS

The ultimate aim of health care planners and administrators must be to develop and maintain health care facilities which meet accepted levels of quality, cost and accessibility, and standards comparable to the public sector. This "quality control" is achieved from within the Office of Health Care or its equivalent, and from without in the form of codes, regulations, and "minimum requirements" governing design, construction, and operation. Prison-based health care facilities have not, in the past, been adequately covered by codes and accreditation standards. Not having been eligible for funding from the Hill-Burton program, the facilities were not covered by minimum federal standards. State health departments have tended to exempt prison facilities from compliance with minimum facility requirements. As a result, prison-based health care facilities are generally considerably inferior to their counterparts in the community.

To remedy the situation, corrections officials through their national organizations have urged and continued to urge the Congress to include prison inmates in federal health programs. Such inclusion would assist in funding but, in addition, would require compliance with regulations for both operational and facility provisions and thus serve the goal of providing services equivalent to those available to the general population.

While inclusion in federal programs is both reasonable and desirable, one cannot be overly optimistic for quick progress. In the interim, some systems have initiated efforts to have state health departments develop facility standards and a process for regular inspection and approval of facilities. When existing facilities are found to be non-conforming with state regulations, funding for corrective action should be easier to obtain.

The impact of codes and regulations is both restrictive and beneficial. While the guidelines and standards set by local authorities, state and federal bodies are intended to regulate and recommend requirements for health care facilities, they also have a tendency to complicate the building acquisition process, frequently making it more time-consuming and therefore more costly. Codes and regulations are often inconsistent and are subject to change in requirements; thus they are sometimes subject to interpretation from one project to another, which in turn modifies planning procedure.

The administrators charged with developing care delivery in the prison setting cannot be expected to be conversant with the many and detailed aspects of all codes and regulations. They should however be familiar with the major classes of regulations as listed below and then rely on their contracted professionals to provide the detailed understanding and interpretation of requirements.

1. Building Codes and Zoning Ordinances
2. NFPA (National Fire Protection Agency)
3. Licensing Regulations
4. Accreditation Regulations (Joint Commission on Accreditation of Hospitals)
5. OSHA (Occupational Safety/Health Act)
6. Handicapped Regulations

Codes and regulations are a planning "fact of life", and there is little evidence that they will be simplified or become more consistent. A clear understanding of how the various codes and regulations will affect facility projects is a critical step in the planning process. Administrators planning new facilities should attempt to meet the requirements for the general population counterpart of the facility even if not specifically required at the present time. This is advised both as a means of achieving equivalency and avoiding future changes if and when prison facilities become subject to the same regulations.

## REFERENCES TO CODES AND STANDARDS

American National Standards Institute (ANSI)
Standard No. A117.1
"American Standard Specifications for Making Buildings and Facilities Accessible to, and Usable by, the Physically Handicapped"

American Society for Testing and Materials (ASTM)
Standard No. E90
"Recommended Practice for Laboratory Measurement of Airborne Sound Transmission Loss of Building Floors and Walls"

American Society of Heating, Refrigerating and Air Conditioning Engineers (ASHRAE)
"Handbook of Fundamentals"

American Society of Heating, Refrigerating and Air Conditioning Engineers (ASHRAE)
Standard No. 52-68
"Methods of Testing Air Cleaning Devices Used in General Ventilation for Removing Particulate Matter"

Compressed Gas Association (CGA)
Pamphlet P-2.1
"Standard for Medical-Surgical Vacuum Systems in Hospitals"

DOP Penetration Test Method, MIL STD No. 282
"Filter Units, Protective Clothing, Gas-Mask Components and Related Products: Performance Test Methods"

International Conference of Building Officials (ICBO)
"Uniform Building Code Vol. 1"

Joint Commission on Accreditation of Hospitals (JCAH)
"Accreditation Manual for Hospitals"

National Association of Plumbing-Heating-Cooling Contractors (PHCC)
"National Standard Plumbing Code"

National Council on Radiation Protection (NCRP)
Report No. 33
"Medical X-ray and Gamma Ray Protection for Energies Up to 10 MeV Equipment Design and Use"

National Council on Radiation Protection (NCRP)
Report No. 34
"Standard for the Use of Inhalation Anesthetics (Flammable and Nonflammable)"

National Fire Protection Association (NFPA)
Standard No. 56F
"Standard for Nonflammable Medical Gas Systems"

National Fire Protection Agency (NFPA)
Standard No. 70
"National Electrical Code"

National Fire Protection Association (NFPA)
Standard No. 80
"Standards for Fire Doors and Windows"

National Fire Protection Association (NFPA)
Standard No. 82
"Standard for Incinerators"

National Fire Protection Association (NFPA)
Standard No. 90A
"Installation of Air Conditioning and Ventilating Systems"

National Fire Protection Association (NFPA)
Standard No. 101
"Life Safety Codes"

Public Health Service Publication No. 934
"Food Service Sanitation Manual"

Underwriters' Laboratories, Inc. (UL)
Publication No. 181
"Air Ducts"

Joint Commission on Accreditation of Hospitals (JCAH)
"Hospital Self-Evaluation Form for Safety and Sanitation"

NON-GOVERNMENT PUBLICATIONS

American National Standards Institute
1430 Broadway
New York, New York 10018

American Society for Testing and Materials
1916 Race Street
Philadelphia, PA 19103

American Society of Heating, Refrigerating, and Air Conditioning
United Engineering Center
345 East 47th Street
New York, NY 10017

Compressed Gas Association
500 Fifth Avenue
New York, NY 10036

International Conference of Building Officials
5360 South Workman Road
Whittier, CA 90601

Naval Publications and Form Center
5801 Tabor Avenue
Philadelphia, PA 19120
(for DPO Penetration Test Method)

National Association of Plumbing-Heating-Cooling Contractors
1016 20th Street, N.W.
Washington, D.C. 20036

National Council on Radiation Protection and Measurement
P. O. Box 30175
Washington, D.C. 20014

National Fire Protection Agency
470 Atlantic Avenue
Boston, Mass. 02210

Underwriters' Laboratories, Inc.
207 East Ohio Street
Chicago, IL 60611

Government Publications are available from:

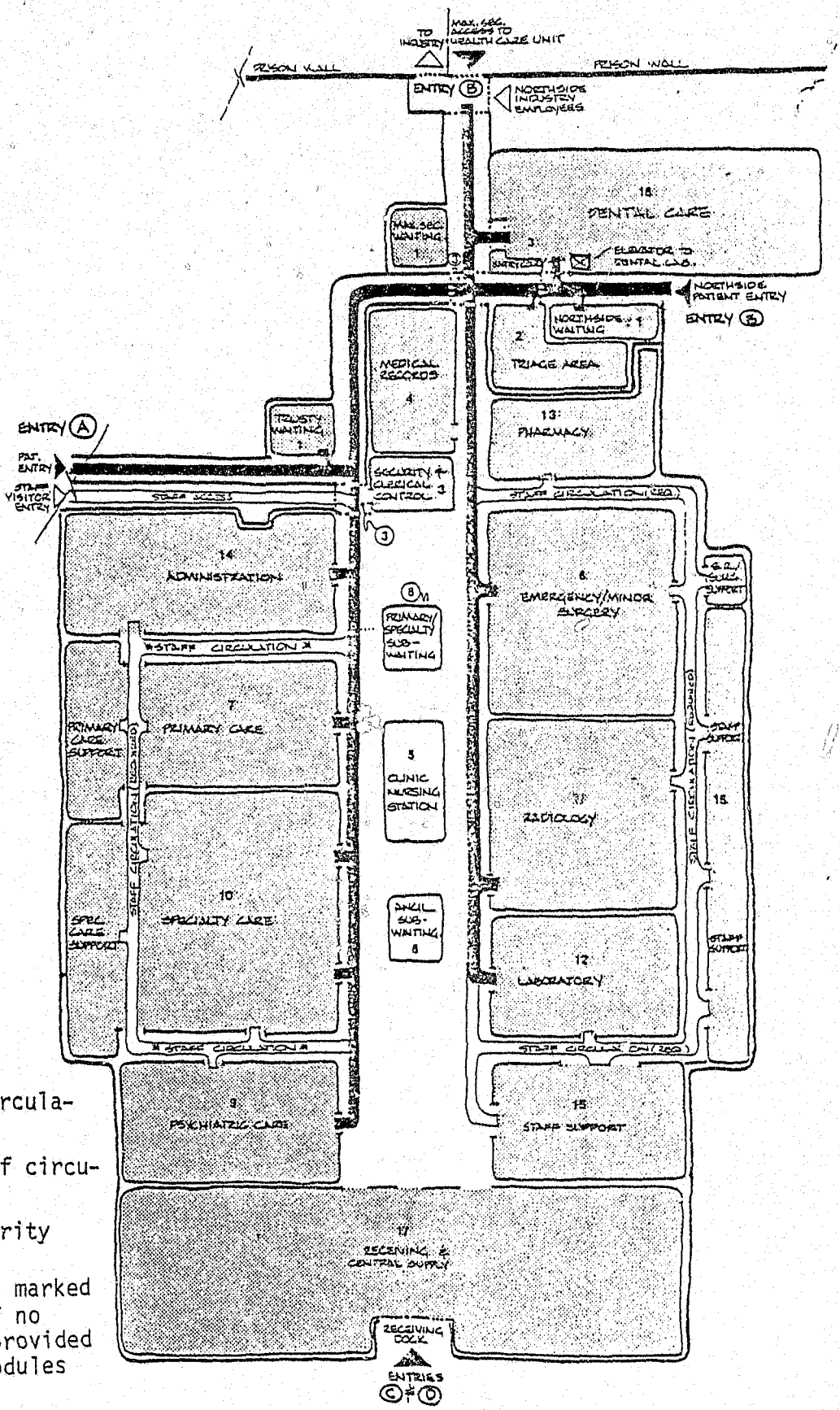
Superintendent of Documents
U.S. Government Printing Office
Washington, D.C. 20402

H.E.W. Public Health Service
Publication No. (HRA) 74-4000
"Minimum Requirements of Construction and Equipment for Hospital and Medical Facilities"

## APPENDIX C: HEALTH FACILITY GUIDELINES

This appendix is included to provide more detailed information on space requirements, spatial relationships, and functional organization to supplement the material included in the main text. Figs. 11 & 12 are reproduced here for convenient reference. This schematic plan layout identifies each of the functional modules by number and provides the reader with an overall sense of how the individual modules are related to the scale of the overall building.

The module descriptions follow in order.

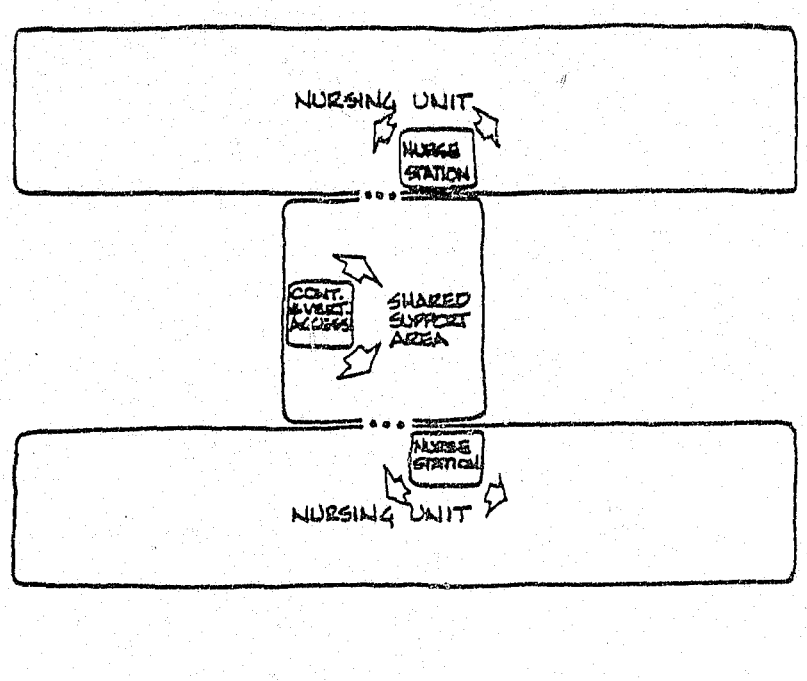



DRAWINGS NOT TO SCALE

KEY TO DRAWINGS

- Main patient circulation
- Restricted staff circulation
- : Controlled security : gate
- * Staff circulation so marked is necessary only if no through traffic is provided through treatment modules

Fig. 11 - Clinic Organization



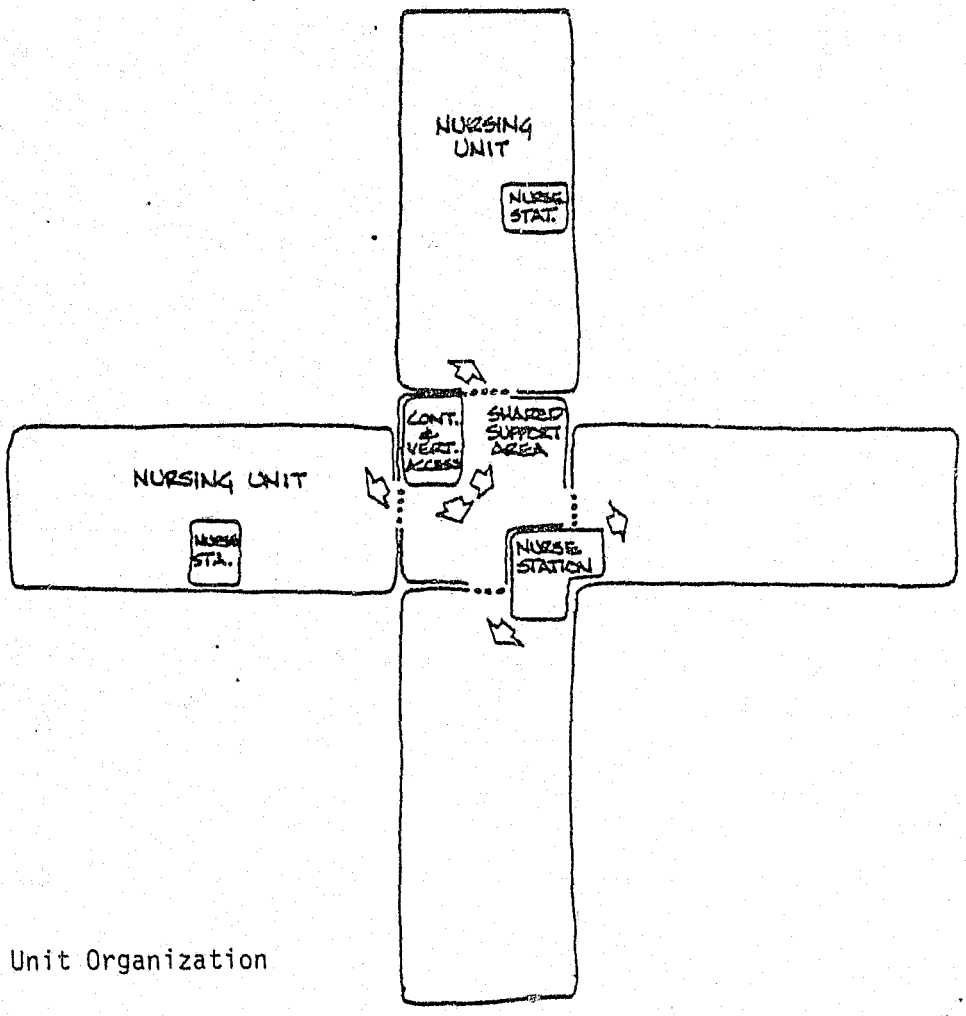
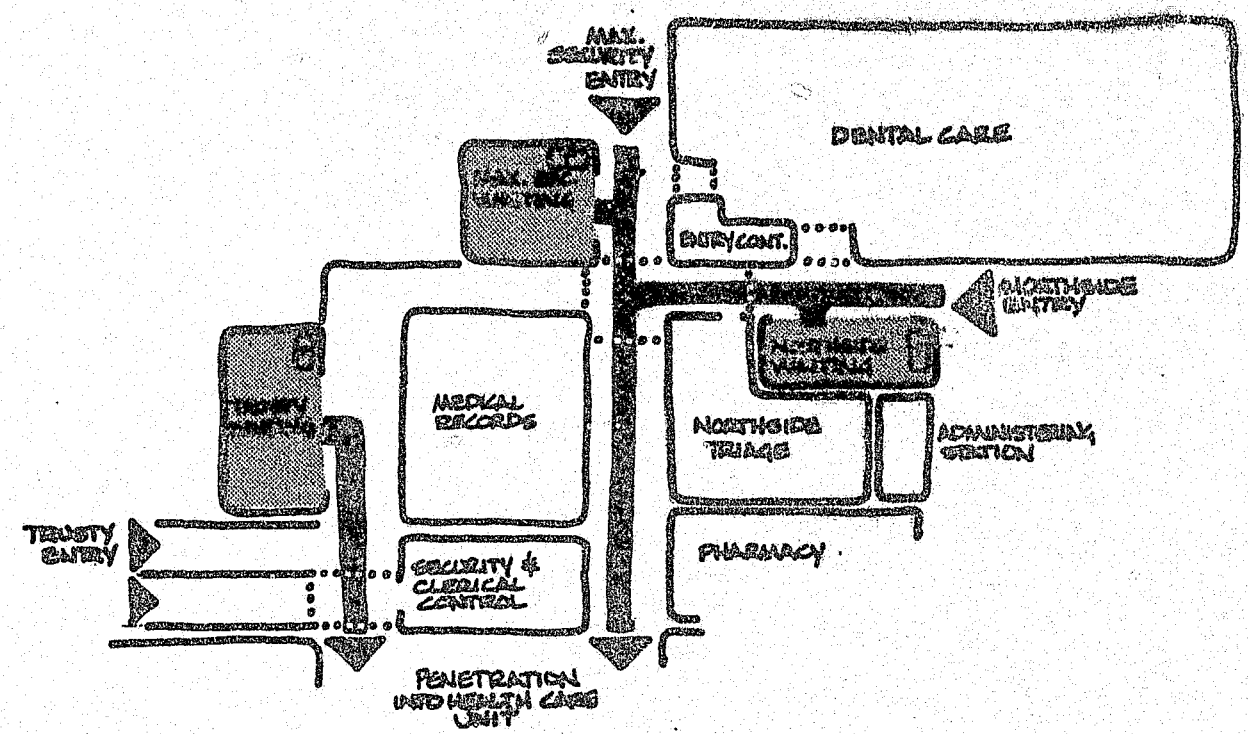




Fig. 12 - Nursing Unit Organization

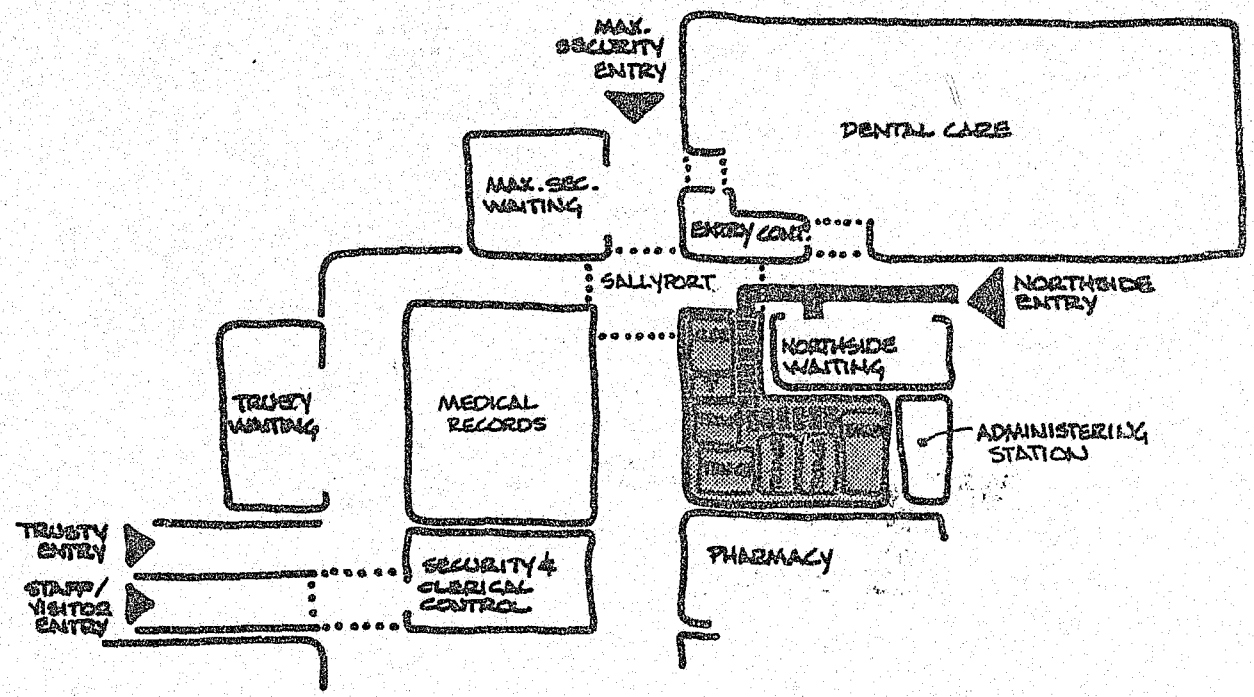



| Space | Total SF |
|---|---|
| TRUSTY WAITING | 300 |
| MAXIMUM SECURITY WAITING | 190 |
| NORTHSIDE WIATING | 300 |
| PATIENT TOILETS (3 TYPICAL) | 90 |
| Total | 880 SF |

Three separate waiting areas should be located outside the secured zones of the Health Care Unit and adjacent to the entry points for residents of each of the three security classification compounds (close custody, medium - Northside, and minimum - Trusty). This decentralized exterior waiting configuration is intended to preclude unnecessary contact among residents of different security classifications and to facilitate a tightly controlled flow of small numbers of residents into the interior examination and treatment areas of the unit.

A security control station should be located to allow direct visual supervision of the Northside and close custody waiting areas and to permit entry clearance activities (including resident search and verification of appointment). This security control station should be situated to act as the clearance and access point to the Dental Unit.

Health Care Unit operating policies and procedures should minimize resident waiting so that waiting area capacities need not exceed the following provisions: Northside - 25 residents, close custody - 15 residents, Trusty - 25 residents.



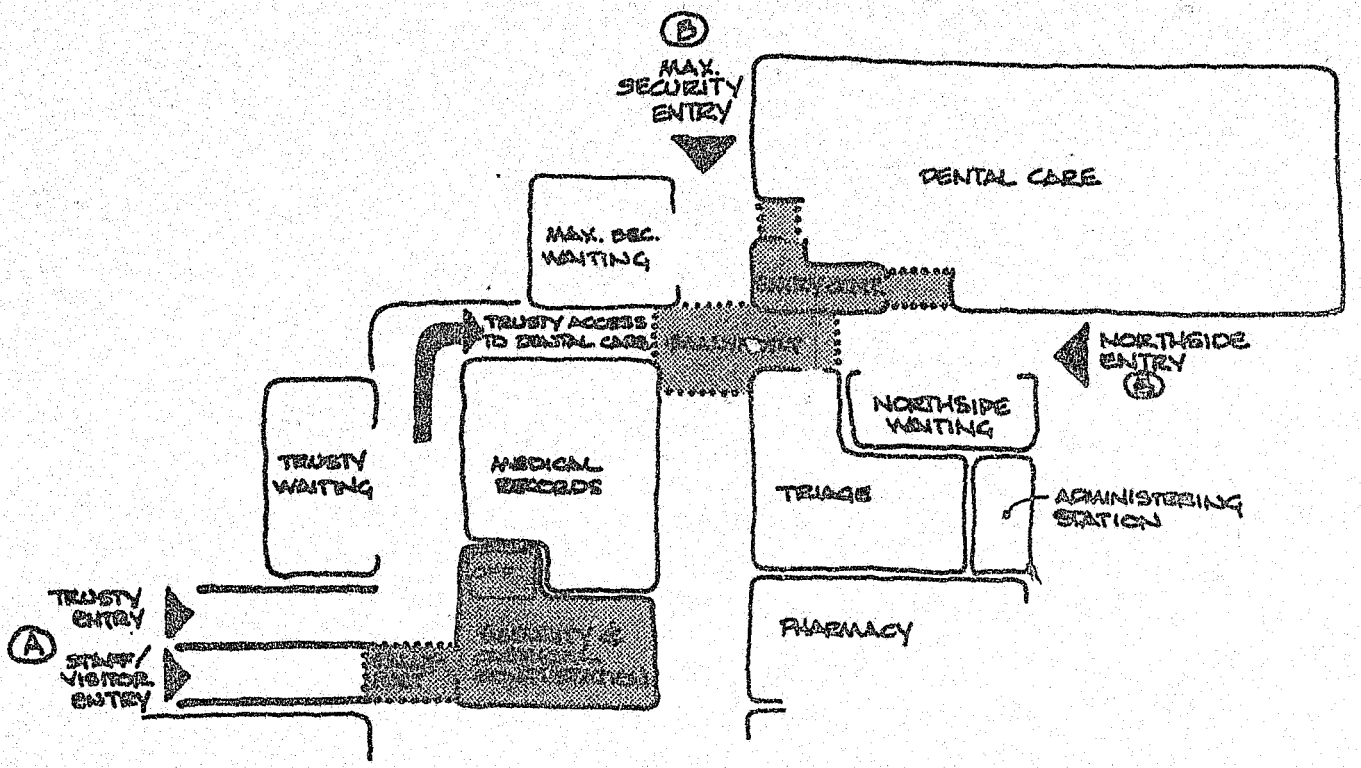

| Space | Total SF |
|---|---|
| CLERICAL/RECEPTION STATION | 100 |
| TRIAGE CUBICAL (4 TYPICAL) | 280 |
| MINOR TREATMENT AND FIRST AID ROOM | 100 |
| TOILET/SAMPLE COLLECTION | 30 |
| Total | 510 SF |

First contact triage of medical complaints (sick call) for Northside residents is designated to occur in the Health Care Unit. A triaging unit should be located in an intermediate security zone adjacent to the Northside resident entry and waiting areas and under the supervision of perimeter security control.

Triage medical care activities generally will be brief, interview-oriented, private contacts between residents and non-physician staff. Resident complaints will most frequently be handled without physical examinations. One examination/treatment room, however, should be provided in the triage area to expand the potential functional uses of the module. Further, the triage process will usually result in the dispensing of medication and occasionally in the collecting of blood and/or urine specimens for laboratory analyses. Proximity to the pharmacy and provision of a toilet and lavatory are thus desirable for triaging.

Clerical support is important to the triage process since immediate and return appointments with staff physicians, consulting specialists and lab and X-ray work-ups must be scheduled. In addition, medical records must be available for each triage episode.

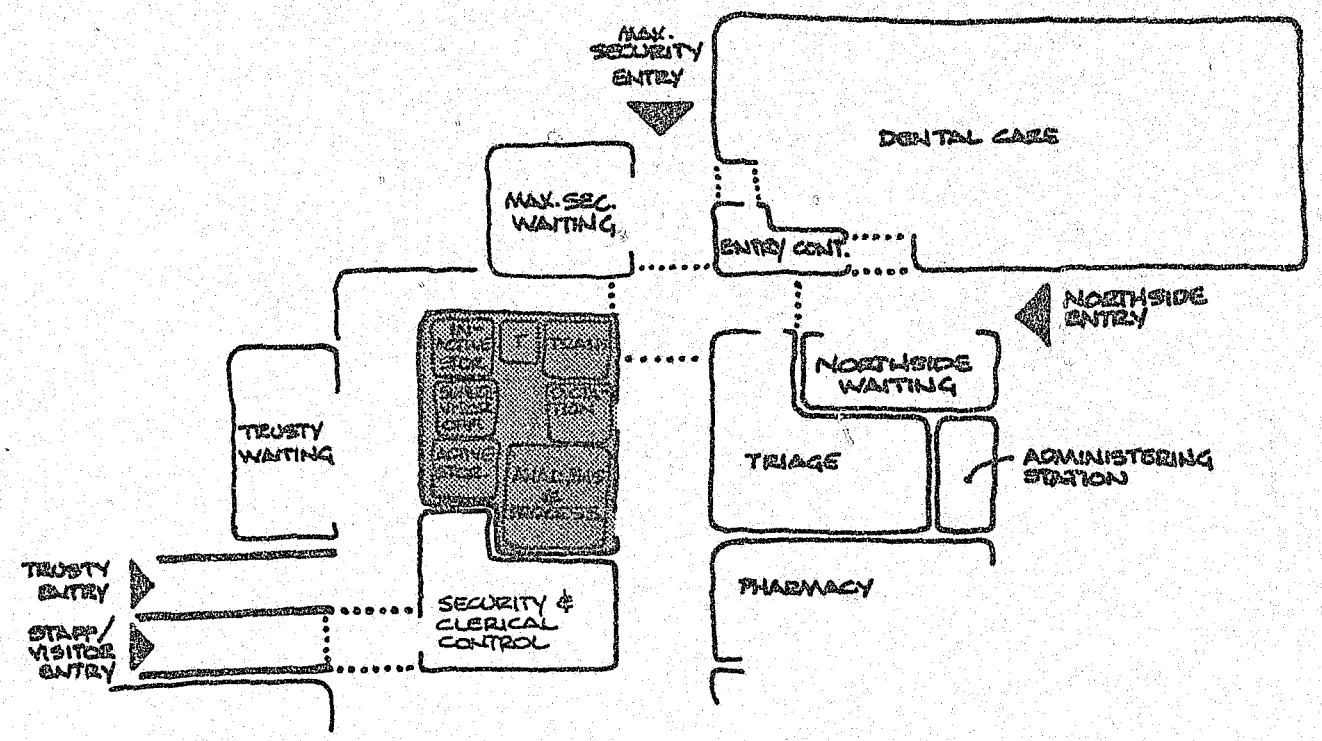
First contact triage is a high volume activity - large numbers of Northside residents must be screened in a short period of time. Efficient triaging should contribute to controlling the flow of residents into interior health care areas.




| Space | Total SF |
|---|---|
| ENTRY CONTROL STATION | 150 |
| SECURITY AND CLERICAL CONTROL STATION | 300 |
| HEALTH CARE UNIT SALLYPORTS (2 TYPICAL) | 200 |
| ENTRY A (TRUSTY, STAFF, VISITOR ENTRY) | --- |
| ENTRY B (MAXIMUM SECURITY AND NORTHSIDE ENTRIES) | --- |
| PARKING AREA | --- |
| Total interior area | 650 SF |

Primary security and clerical control should be combined in a station located so as to readily monitor all access into the interior zones of the Health Care Unit. In addition to handling clearance functions for the Trusty and staff and public entries, this station will monitor internal electronic surveillance systems and vertical access to the infirmary, coordinate switchboard and intercom communications, and schedule, verify and summon residents for appointments.

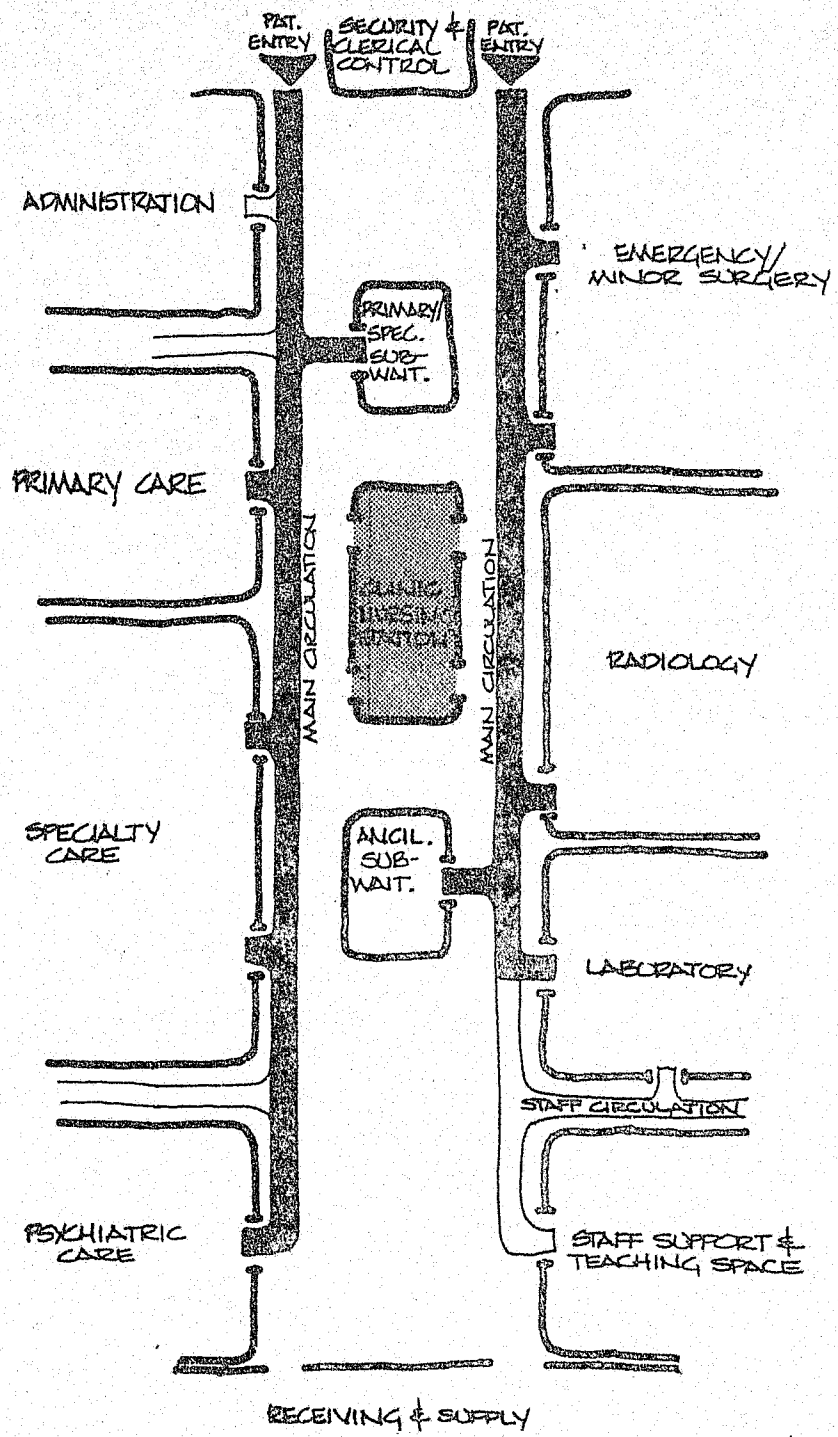
Clerical and security staff will work together in this station but without overlapping responsibilities.




| Space | Total SF |
|---|---|
| ANALYSIS AND PROCESSING AREA | 160 |
| DICTATION | 80 |
| TRANSCRIPTION | 120 |
| SUPERVISOR'S OFFICE/CONFERENCE | 140 |
| ACTIVE STORAGE | 125 |
| INACTIVE STORAGE | 100 |
| STAFF TOILET | 30 |
| Total | 755 SF |

A centralized medical records area for the institution should be situated within the Health Care Unit interior to facilitate distribution and retrieval of records in all patient care locations (ambulatory, inpatient, and triage). Daily medical record distribution and retrieval at triage sub-stations in the maximum security compound and Trusty compounds will also be required, this will necessitate a secure delivery and return system, which does not require penetration into clinical areas.

All medical records storage and processing (including dictation, transcription, correspondence and analysis) will occur in the medical records area. As suggested above, record filing (distribution and retrieval) will be high volume activities since the patient's medical record must be available for all health care encounters (visits, admissions, and transfers).



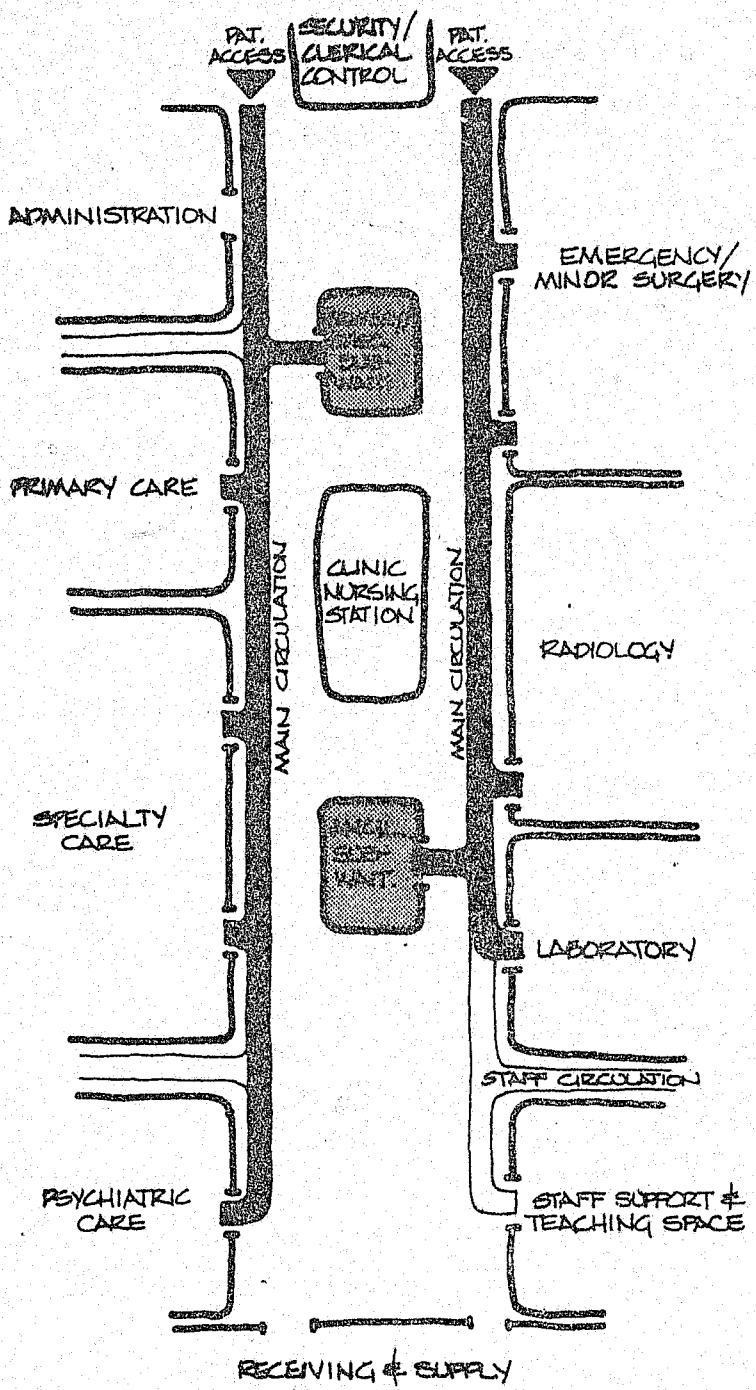

| Space | Total SF |
|---|---|
| CLINIC NURSING STATION | 250 |
| Total | 250 SF |

The Clinic Nursing Station should provide for staff circulation of the ambulatory care activities in each of the clinic areas and should provide staff with a work area for charting, medication preparation, supervision over internal sub-waiting areas, and control of patient movement. Storage space should be allocated in this area for treatment carts and miscellaneous treatment supplies.

The Nursing Station perimeter should permit a view into the primary care circulation areas and, if possible, to the specialty care circulation. The Nursing Station should permit easy movement to any of the ambulatory care modules but particularly to primary care and emergency.

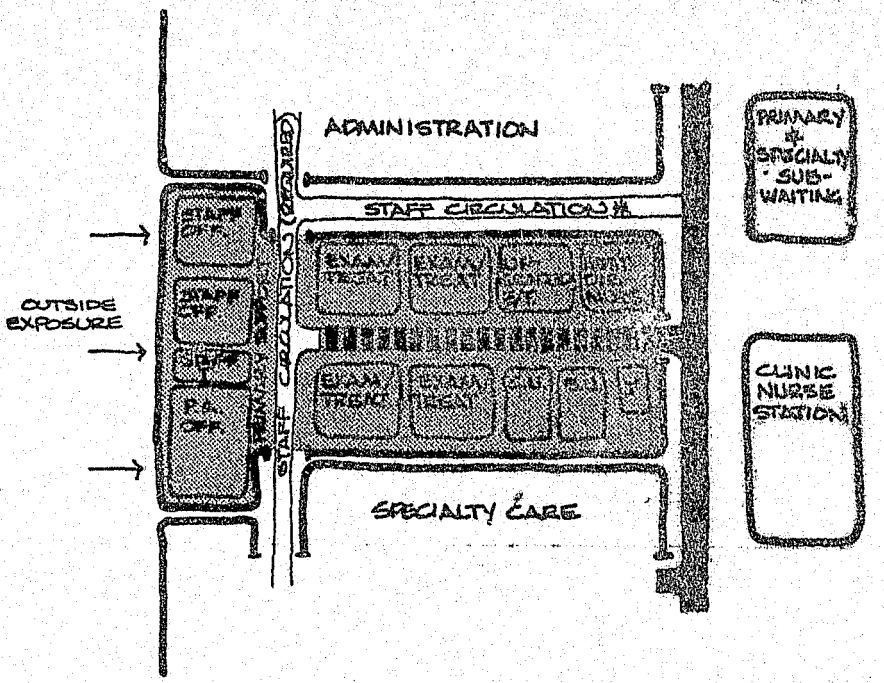
The Nursing Station should be supported with convenient clean and soiled utility rooms. One pair of these rooms is to be connected with primary care, another with the Emergency/Minor Surgery Module, and a third located so as to conveniently serve the remaining clinical modules.

The schematic may be somewhat misleading in showing the large open areas surrounding the Nursing Station. In reality, the space should be large enough only for necessary visibility and circulation.




| Space | Total SF |
|---|---|
| PRIMARY CAND SPECIALTY SUB-WAITING AREA | 150 |
| ANCILLARY SUB-WAITING | 150 |
| Total | 300 SF |

Internal Waiting areas should be provided in proximity to examination/treatment and ancillary service areas. Minimal internal waiting should be provided. Supervision over these areas will be maintained by both the clinic nursing station and the security control station.

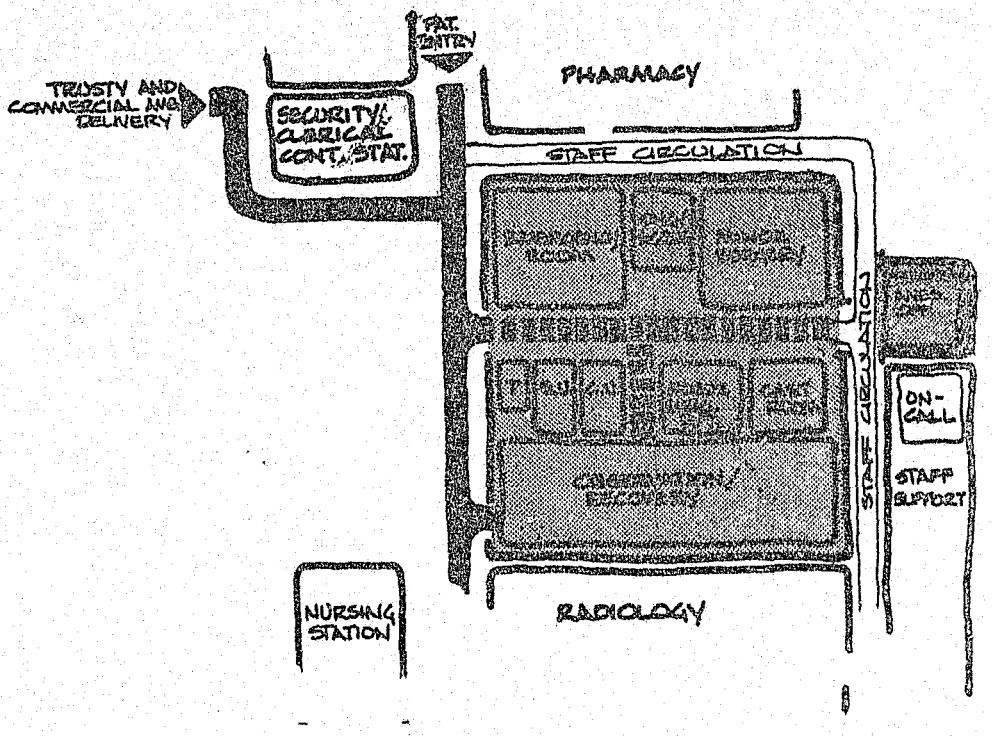



* THIS STAFF CIRCULATION IS NECESSARY ONLY IF NO THROUGH TRAFFIC IS PROVIDED THROUGH THE TREATMENT MODULES

| Space | Total SF |
|---|---|
| EXAMINATION/TREATMENT ROOMS (4 TYPICAL) | 480 |
| UPGRADED EXAMINATION/TREATMENT ROOM | 160 |
| PATIENT TOILET | 30 |
| CLEAN UTILITY ROOM | 80 |
| SOILED UTILITY ROOM | 80 |
| STAFF OFFICES (3 TYPICAL) | 330 |
| PHYSICIAN ASSISTANTS' OFFICE | 200 |
| STAFF TOILET | 30 |
| Total | 1390 SF |

As one of the most heavily used areas, the Primary Care Module should be closely related to the patient entry point and under the direct supervision of the clinic nursing station. Patients will be called from the waiting area outside the security perimeter and taken directly to an examination/treatment room. The nursing station will be the control point for assigning patients and providers to examination/treatment rooms.

Patients will be seen in examination/treatment rooms in a manner completely similar to that of the private setting except that some patients will not be left alone in the room. The upgraded examination/treatment room is to be located nearest to the main circulation. These rooms will also be used to handle unscheduled "urgent" visits at any time of the day or night.

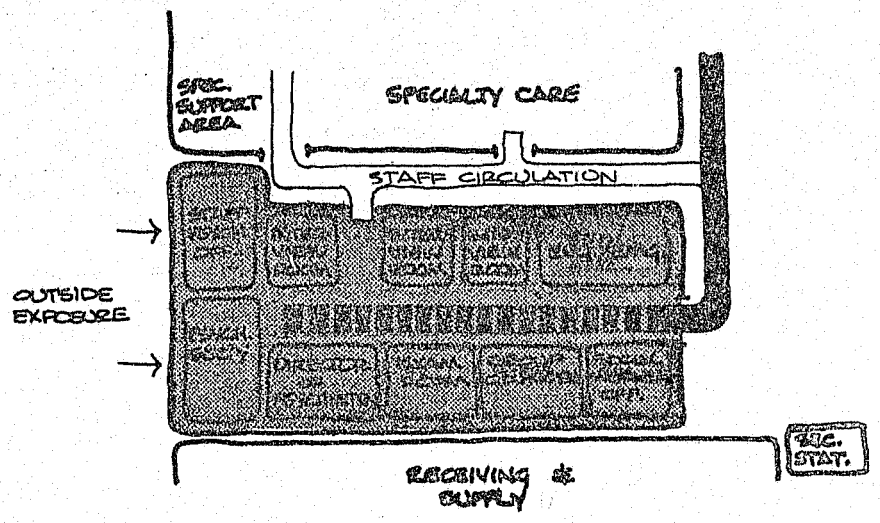



| Space | Total SF |
|---|---|
| EMERGENCY ROOM | 250 |
| MINOR SURGERY | 250 |
| CHANGING/SCRUB ROOM | 100 |
| MINOR SURGICAL EXAMINATION/TREATMENT ROOM | 160 |
| CAST ROOM | 180 |
| PATIENT TOILET | 3[illegible] |
| CLEAN UTILITY ROOM | 80 |
| SOILED UTILITY ROOM | 80 |
| OBSERVATION/RECOVERY | 320 |
| PATIENT TOILET (OBSERVATION/RECOVERY) | 30 |
| ANESTHESIOLOGIST OFFICE | 110 |
| Total | 1590 SF |

An emergency room/minor surgery suite should be located within the ambulatory patient care area of the Health Care Unit. While utilization of the minor surgery component will be scheduled, the emergency room must be fully accessible on a 24-hour basis. Patient arrivals to the emergency room may be either ambulatory or vehicular and the emergency room must be situated near a primary circulation corridor to facilitate transfer of critically ill or injured patients to an ambulance for transport to a community hospital. Through traffic should be limited by providing double-door access to circulation space within the module.

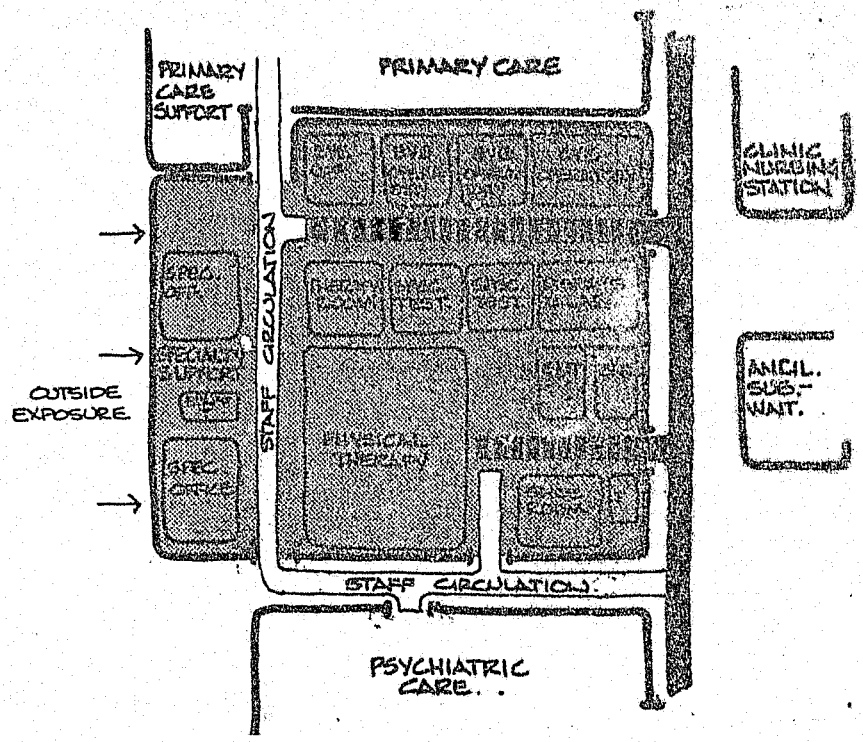
The emergency/minor surgery suite should be in close proximity to the nursing station and radiology.

The office for the director of outpatient services, assistant director of nursing, PA's and physician-in-charge should be immediately accessible yet distinct from examination/treatment areas. Of these, the assistant director of nursing should have the most central position to permit supervision of the primary care area. This area should have access to the administrative area, and if possible, quick access to the emergency room.




| Space | Total SF |
|---|---|
| GROUP COUNSELING ROOM | 160 |
| INTERVIEW ROOMS (3 TYPICAL) | 210 |
| NEURO-PSYCHIATRIC EXAMINATION ROOM | 120 |
| SOCIAL WORKER'S OFFICE | 110 |
| PSYCHIATRIC DIRECTOR OFFICE | 110 |
| STAFF PSYCHIATRIST OFFICE | 110 |
| SECRETARIAL OFFICE | 80 |
| EEG/EMG | 140 |
| Total | 1040 SF |

Residents coming to the outpatient psychiatric care facility are expected to be on a schedule basis, although provisions must be made for the occasional psychiatric emergency. The psychiatric outpatient clinic need only be located on the main outpatient circulation.

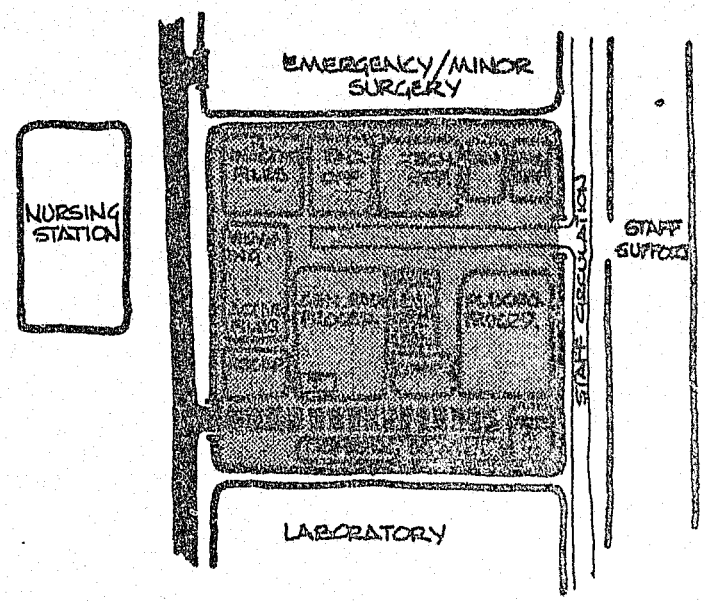



| Space | Total SF |
|---|---|
| EYE CLINIC OPERATORIES (3 TYPICAL) | 390 |
| SPECIAL TEST ROOMS (2 TYPICAL) | 140 |
| THERAPY ROOM | 100 |
| DISPENSARY AND LAB | 200 |
| PATIENT TOILET | 30 |
| OFFICE | 110 |
| ENT ROOM (2 TYPICAL) | 120 |
| SHOE ROOM | 120 |
| PHYSICAL THERAPY | 750 |
| SPECIALTY OFFICE (2 TYPICAL) | 320 |
| STAFF TOILET | 30 |
| Total | 2310 SF |

This area will be used for scheduled clinic visits based upon demand and availability of the specialty providers. Patient arrivals for appointments will be controlled by the security control station. Initial waiting will be in external waiting areas. Patients will be cleared for entry and taken directly to the examination room. If intermediate waiting is necessary (pupil dilation, etc.), it will take place in the internal sub-waiting area.

While this area is designated "Specialty Care", it should be understood that many of the visiting specialists will utilize examination/treatment rooms in the Primary Care Module.

Office space provided in this area is for use of the visiting specialists during their presence in the facility.




| Space | Total SF |
|---|---|
| RADIOGRAPHIC PROCEDURE ROOM | 250 |
| RADIOGRAPHIC/FLUOROSCOPIC PROCEDURE ROOM | 300 |
| DRESSING BOOTHS (4 TYPICAL) | 70 |
| PATIENT TOILET | 30 |
| PATIENT PREPARATION/TOILET ROOM | 70 |
| BARIUM PREPARATION AND CLEAN-UP ROOM | 80 |
| DARKROOM | 50 |
| FILM CHECK AREA | 60 |
| VIEWING ROOM | 150 |
| RADIOLOGIST OFFICE | 110 |
| TECHNICIAN'S OFFICE | 160 |
| INACTIVE FILE STORAGE | 200 |
| SUPPLY AND STORAGE AREA | 80 |
| RADIOLOGY RECEPTION AREA | 80 |
| Total | 1640 SF |

Radiology services will be essentially on a scheduled basis. Fluoroscopic examinations requiring the presence of a radiologist will be scheduled to coincide with the availability of a consulting radiologist. The two procedure rooms should share a control area. Patients, in so far as possible, will come directly to the procedure rooms or changing rooms as necessary. Incidental waiting will take place in the ancillary sub-waiting area which should have voice communication and visibility from the X-ray receptionist's office.

In addition to the specific requirements in the attached data sheets, there are a number of overriding operational, aesthetic, and technical issues which have ramifications for the Radiology Module as a whole. These relate to future expansion and change capabilities, control of patient traffic, spatial organization and spatial quality.

Room Flexibility. The data sheets included in this set represent as clear an articulation of present day needs as can be made at this time. The high rate of technological change in the field of radiology necessitates a strategy that permits more flexibility in selecting equipment of the various manufacturers. Flexibility is also required to permit changes in equipment location to correspond to changing needs. For this reason, all radiology rooms should be equipped with a universal structural ceiling grid to allow for flexible positioning of tube supports. This capability should be matched in the floor and wall construction by the inclusion of electrical raceways so positioned as to accommodate equipment relocation.

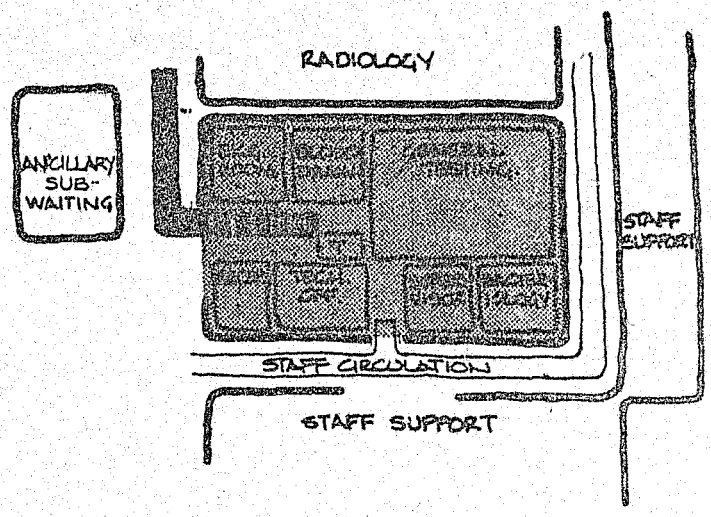
Since predetermined lighting fixture locations will tend to conflict with X-ray equipment, it is suggested that a lighting allowance be established for each X-ray room, but installation be made after X-ray equipment has been selected. Wall-mounted indirect fixtures tend to be non-conflicting.

When the supplier of equipment for the various rooms has been selected, the architect should verify all installation data and determine any specific requirements not anticipated in these sheets. Door openings and clearances required for installing and removing equipment should be specifically checked.

Door locations should be related to equipment layout to permit simple movements of patient stretchers into positions for easy transfer of patients to the X-ray tables. Control areas should provide both good views of the X-ray table from the foot side and convenient access to the technician's corridor.

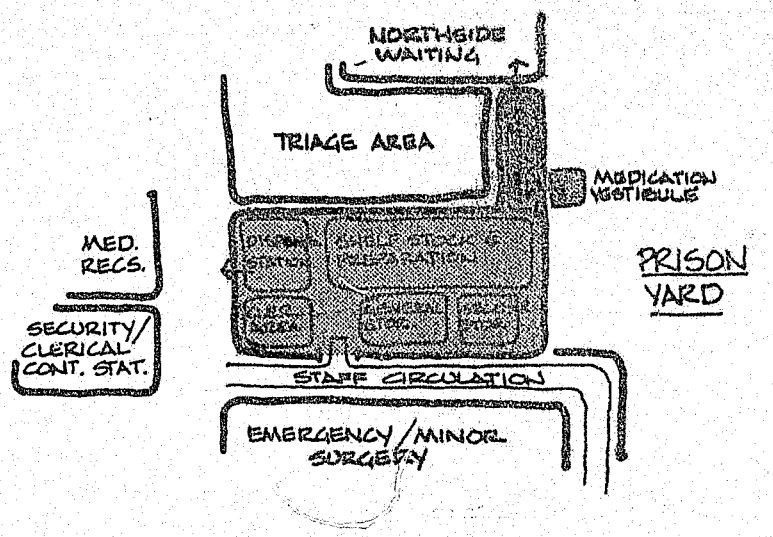
Radiation shielding. Shielding requirements are to be derived from manufacturer's specifications and applicable code requirements.

Spatial quality. Despite the many technical requirements of the equipment that are absolutely essential to the success of the operation, the Radiology Module must be designed as an area of patient service. The needs of the patient for a cheerful, pleasant and humane setting for care must be integrated with the requirements of efficient operation. Layout of room openings and decentralized patient holding areas must be arranged to provide for the privacy of the patient




| Space | Total SF |
|---|---|
| LABORATORY RECEPTION AREA | 80 |
| EKG | 120 |
| BLOOD DRAWING | 120 |
| PATIENT TOILET | 30 |
| SUPERVISOR'S OFFICE | 110 |
| TECHNICIANS' OFFICE | 160 |
| BACTERIOLOGY | 150 |
| GENERAL TESTING | 480 |
| Total | 1250 SF |

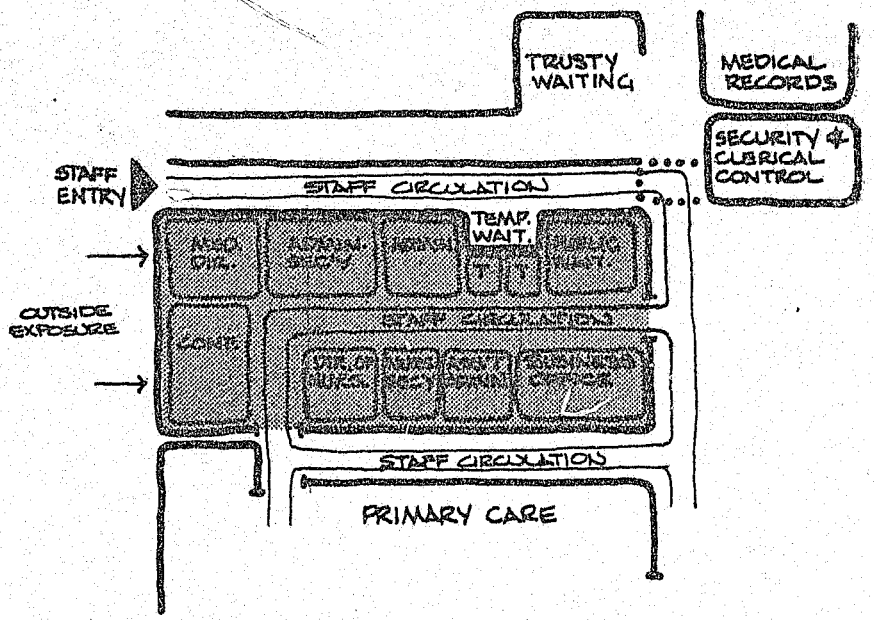
Patient access to this area will be for the provision of blood and urine samples and EKG testing. These rooms can be located near the major circulation corridor and ancillary sub-waiting area. The clerk/receptionist in charge will control the flow of patients both from the external and ancillary sub-waiting areas.




| Space | Total SF |
|---|---|
| PHARMACY CLERICAL AREA | 80 |
| DISPENSING STATION | 50 |
| SHELF STOCK AND PREPARATION AREA | 150 |
| GENERAL STORAGE ROOM | 100 |
| SECURE STORAGE | 40 |
| ADMINISTERING STATION | 60 |
| MEDICATION VESTIBULE | 50 |
| Total | 530 SF |

The institution's central pharmacy has been designated for the Health Care Unit and should be located in the interior security zone of the Unit. The pharmacy will have responsibility for the short-term storage of pharmaceutical supplies and medications and should be maximally secured. All medication preparation and dispensing for both inpatient and outpatient services will be done in the pharmacy area and will be extremely high volume daily activities.

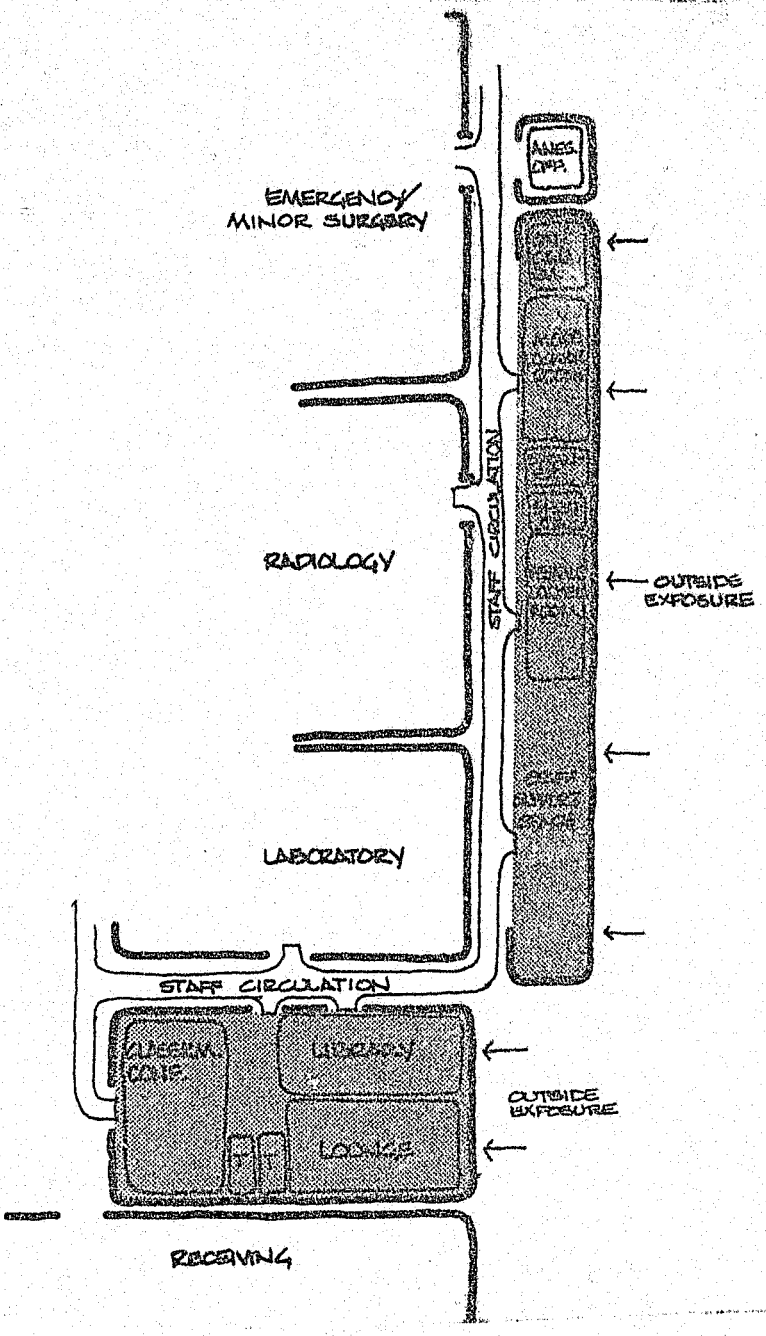
In addition, direct administering of medications to Northside residents during both sick call (triage) and medication call will be handled in the Health Care Unit. An administering station thus should be adjacent to the pharmacy but must, by law, be separate from the pharmacy itself.




| Space | Total SF |
|---|---|
| MEDICAL DIRECTOR'S OFFICE | 140 |
| ADMINISTRATOR'S OFFICE | 140 |
| ADMINISTRATIVE SECRETARIES' OFFICE | 180 |
| ASSISTANT ADMINISTRATOR'S OFFICE | 120 |
| BUSINESS OFFICE | 250 |
| NURSING DIRECTOR'S OFFICE | 120 |
| NURSING SECRETARY'S OFFICE | 100 |
| CONFERENCE ROOM | 225 |
| PUBLIC WAITING | 150 |
| TOILETS (1 MALE, 1 FEMALE) | 60 |
| Total | 1485 SF |

The administrative component of the Health Care Unit should be located with proximity to both the public and staff entry and patient care areas while precluding resident (patient) access. The administrative area should enhance the performance of office and conference tasks and should include the basic amenities for limited contact with the public.

Consideration might be given to some modified form of open planning in order to permit some exposure to outside view for the area as a whole.



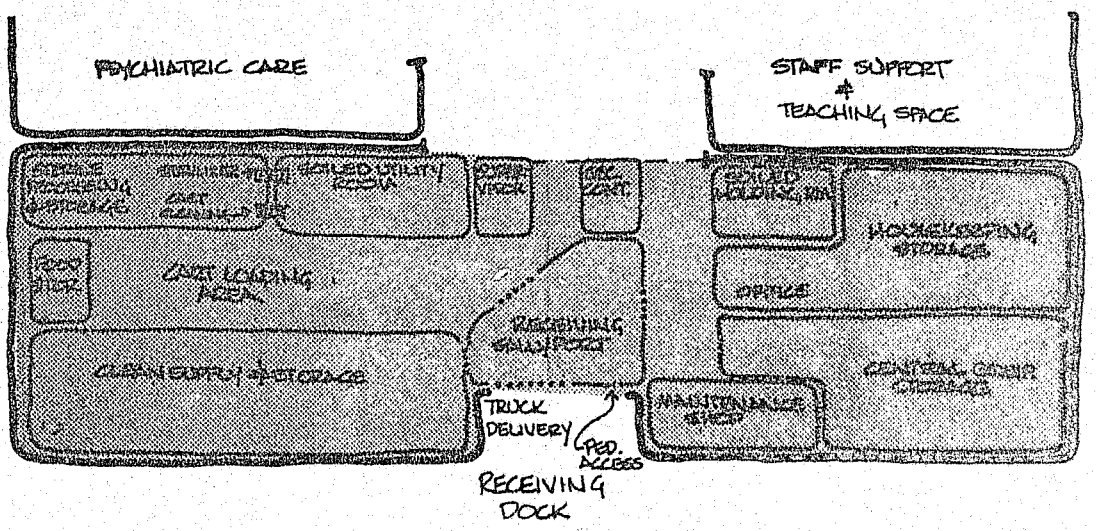

| Space | Total SF |
|---|---|
| CLINICAL STAFF LOCKER ROOM (MALE) | 200 |
| CLINICAL STAFF LOCKER ROOM (FEMALE) | 200 |
| STAFF SHOWER ROOM (MALE) | 90 |
| STAFF SHOWER ROOM (FEMALE) | 90 |
| ON CALL/PRIVATE STUDY AREA | 120 |
| STAFF LOUNGE | 250 |
| STAFF LIBRARY | 200 |
| CLASSROOM/CONFERENCE | 250 |
| STAFF TOILETS (1 MALE, 1 FEMALE) | 60 |
| Total | 1460 SF |

This area will include teaching and library facilities to support in-service educational programs as well as having lockers and toileting facilities for medical, nursing, and technical staff. The locker area for civilian staff does not anticipate clothing changes, but merely storage of personal articles and clothing. The unit should be organized to minimize resident access to staff corridors.

Spaces in this module access at various locations in the building at the discretion of the architect.

| Space | Total SF |
|---|---|
| CLEAN UTILITY ROOM | 80 |
| SOILED UTILITY ROOM | 80 |
| HOUSEKEEPING/JANITOR'S CLOSET | 50 |
| STAFF TOILETS (MALE AND FEMALE) | 60 |
| STRETCHER/WHEELCHAIR HOLDING | 60 |
| OUTDOOR EXERCISE AREA | -- |
| Total | 330 SF |

The rooms included in this module are the rooms providing clinical support functions and yet are specifically indeterminate in location. For this reason the room requirements are described in the following sheets with the specific number and location of these spaces left to the design architect.

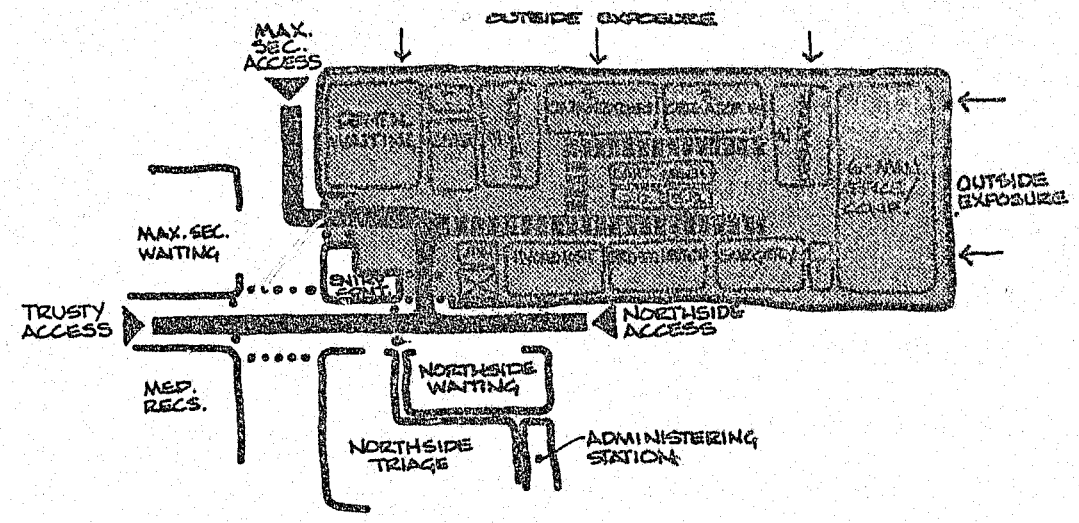



| Space | Total SF |
|---|---|
| SECURITY CONTROL (RECEIVING) | 80 |
| RECEIVING SALLYPORT | 180 |
| LOADING DOCK | 220 |
| SOILED HOLDING ROOM | 180 |
| SUPERVISOR'S OFFICE | 120 |
| FOOD STORAGE | 100 |
| MAIN SOILED UTILITY | 230 |
| STERILE PROCESSING AND STORAGE AREA | 200 |
| CLEAN SUPPLY STORAGE AND DISPATCHING | 750 |
| MAINTENANCE SHOP | 180 |
| HOUSEKEEPING STORAGE AND OFFICE | 350 |
| CENTRAL EQUIPMENT STORAGE | 400 |
| Total | 2990 SF |

The receiving area controls the flow of supplies into the building and from here to the points of use in the building.

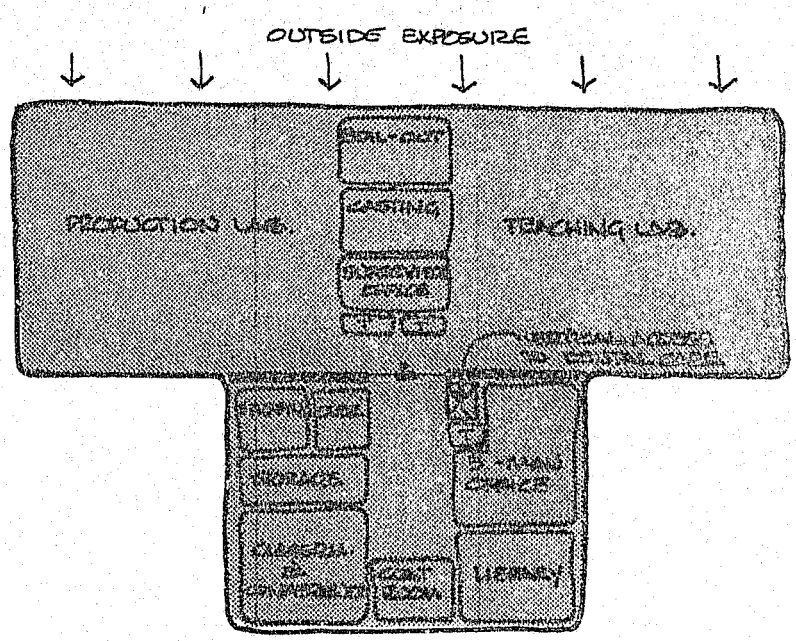
There are four major types of material movement: (1) food; (2) linen; (3) reusable supplies; and (4) disposable supplies. In any case all materials arrive and leave from this secured area.

Food will arrive in hand carts at the receiving dock. The carts will be checked in the sallyport and passed through the controlled gate for distribution on the floors. Following meals the carts will be returned to the soiled holding room until they are picked up for return to the Food Services Building. At this time the carts move into the sallyport for inspection before being passed through the secured opening to the yard.



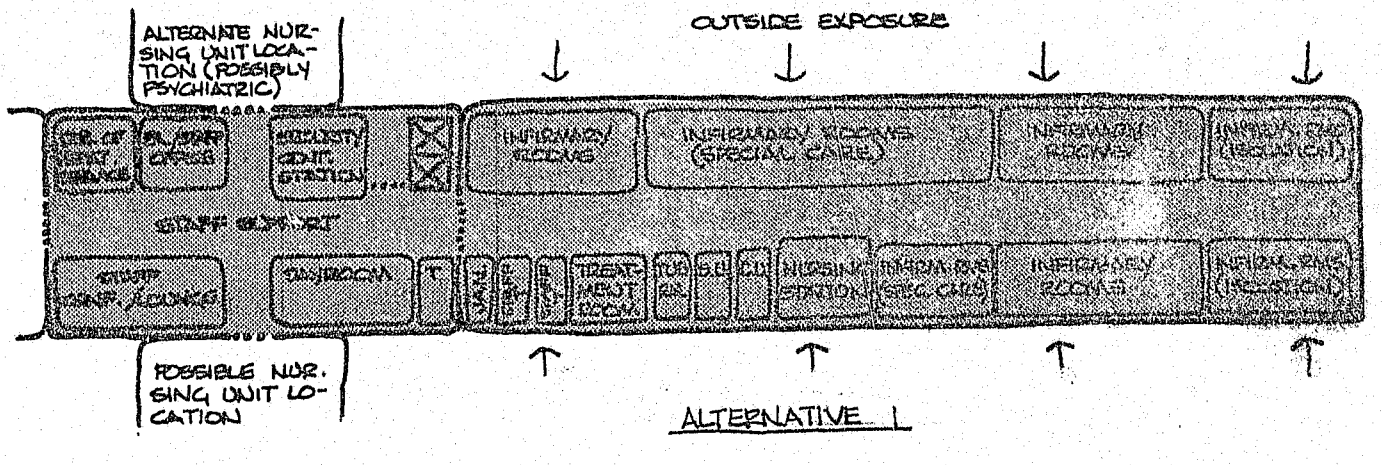

| Space | Total SF |
|---|---|
| DENTAL SALLYPORTS (2 TYPICAL) | 140 |
| DENTAL WAITING | 180 |
| PATIENT TOILET | 30 |
| CLERICAL AREA | 140 |
| DENTAL OPERATORIES (8 TYPICAL) | 960 |
| HYGIENIST OPERATORIES (2 TYPICAL) | 240 |
| PROSTHETIC OPERATORIES (2 TYPICAL) | 240 |
| SURGICAL OPERATORIES (2 TYPICAL) | 240 |
| ASSEMBLY AND CART STORAGE | 120 |
| DENTAL DARKROOM | 40 |
| CLEAN UTILITY ROOM | 60 |
| SOILED UTILITY ROOM | 60 |
| STAFF TOILETS (1 MALE, 1 FEMALE) | 60 |
| 6-MAN OFFICE AND CONFERENCE AREA | 600 |
| HOUSEKEEPING/JANITOR'S CLOSET | 50 |
| Total | 3160 SF |

With exception of emergencies, all visits will be scheduled with the arrival rate controlled in a manner similar to the medical unit. Internal waiting for a maximum of 15 patients should be under surveillance of the security station. To avoid mixing patients from different security classifications, visits will be scheduled in blocks from within the same groups. Each of the dentists will work two operatories which are to be open except for low privicy partitions. The shared office space should provide a minimal level of privacy with access to a large meeting space. Internal communication between the Dental Unit and labs should be provided. However, resident trainees are to be limited to the lab areas.

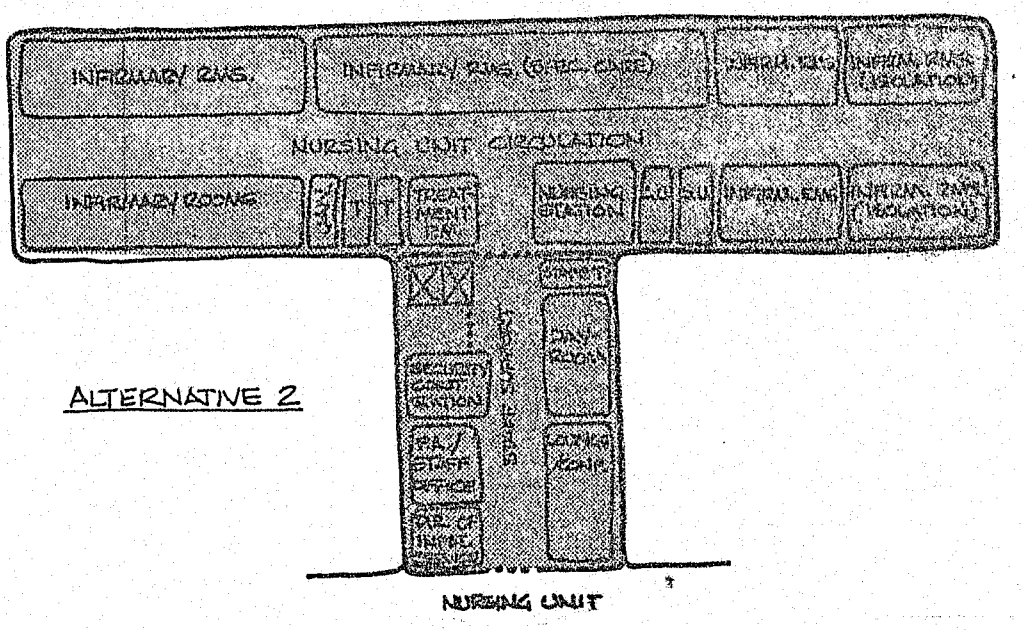



| Space | Total SF |
|---|---|
| TEACHING AND PRODUCTION LABS | 4000 |
| CASTING ROOM | 150 |
| BOIL-OUT ROOM | 150 |
| STORAGE ROOM | 170 |
| CLERICAL AREA | 140 |
| SHIPPING ROOM | 144 |
| SUPERVISOR'S OFFICE | 120 |
| 5-MAN OFFICE | 600 |
| STAFF TOILETS (3 TYPICAL) | 90 |
| CLASSROOM | 350 |
| LIBRARY | 250 |
| COATROOM | 110 |
| HOUSEKEEPING/JANITOR'S CLOSET | 50 |
| Total | 6324 SF |

This area will provide a production lab serving the new Dental Unit in the building as well as other units in the system. The teaching lab is similarly layed out and equipped. Students in the program take conventional classroom courses as well as lab work. There may be as many as 75 residents in this area - 25 in each of the labs and the same number in the classroom. Except for the delivery of work to the dental area, the labs should be as separate from the operation of the Health Care Unit as possible.




ALTERNATIVE 1




ALTERNATIVE 2

| Space | Total SF |
|---|---|
| INFIRMARY ROOM (83 TYPICAL) | 9960 |
| INFIRMARY ROOM TOILETS (83 TYPICAL) | 3320 |
| TREATMENT ROOM (EACH NURSING UNIT) | 240 |
| NURSING STATION (EACH NURSING UNIT) | 450 |
| TUB ROOM (EACH NURSING UNIT) | 160 |
| SOILED UTILITY (EACH NURSING UNIT) | 160 |
| CLEAN UTILITY (EACH NURSING UNIT) | 160 |
| HOUSEKEEPING/JANITOR'S CLOSET (EACH NURSING UNIT) | 100 |
| STAFF TOILET (5 TYPICAL) | 150 |
| PA/STAFF OFFICE | 160 |
| DIRECTOR IN INPATIENT SERVICES OFFICE | 140 |
| LOUNGE/CONFERENCE | 120 |
| DAYROOM | 200 |
| SECURITY CONTROL | 100 |
| Total | 15,420 SF |

Patients admitted to the infirmary will be escorted to the assigned nursing unit. They may arrive on foot, wheelchair or stretcher. All patients except for those in the psychiatric ward will be locked in individual rooms. Room assignments will be based on conventional medical, surgical and psychiatric groupings. Within these categories, those requiring a higher level of nursing care will be grouped close to the nursing station and those requiring isolation will be located away from traffic.

Once admitted, patient movement will be limited and controlled. The largest volume of movement will be the scheduled option (privilege) to use the dayroom. This and all other movement will be supervised by custodial personnel. Other patient movement will involve infrequent use of the bath and examination/ treatment room.

Visiting will be infrequent since all ambulant infirmary patients will receive visitors in the visiting areas in the Administration Building. When a patient is bed-ridden long enough to qualify for a visit, the visit will take place in the patient room.

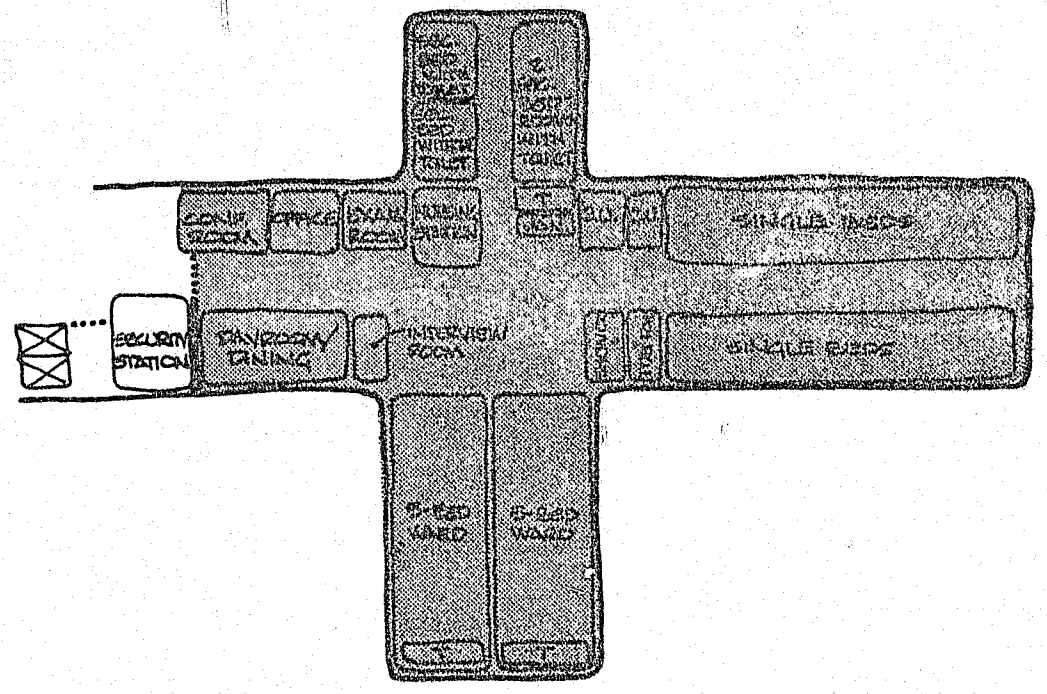
It should be emphasized that the schematics herein contained are intended to convey desired relationships rather than a specific architectural configuration. The design architect must develop an approach to relating the infirmary areas to the ambulatory care components in such a way as to achieve as many of the following requirements as possible.

- Provide security control of all movement into and out of nursing units.

- Provide direct visual surveillance of nursing unit circulation from security station in so far as possible. Where direct visibility is not possible, utilize CCTV monitoring.

- Organize nursing units to minimize number of required nursing stations. Provide not less than 20 nor more than 36 beds per station.

- Locate nursing stations to minimize travel distances to patient rooms and augment visualization of nursing unit circulation.




| Space | Total SF |
|---|---|
| PSYCHIATRIC NURSING STATION | 225 |
| SINGLE ROOMS (10 TYPICAL) | 1500 |
| SHOWER ROOM | 40 |
| 5-BED WARDS (2 TYPICAL) | 1000 |
| PATIENT TOILETS (2 TYPICAL) | 60 |
| SECURITY BEDROOM WITH TOILET AND LAVATORY (3 TYPICAL) | 420 |
| SECURITY BEDROOM WITHOUT TOILET AND LAVATORY | 120 |
| TUB ROOM | 80 |
| PATIENT TOILET | 30 |
| DAYROOM/DINING ROOM | 300 |
| STAFF CONFERENCE ROOM | 150 |
| OFFICE (DIRECTOR/PSYCHIATRIST) | 110 |
| UPGRADED EXAMINATION/TREATMENT ROOM | 120 |
| HOUSEKEEPING/JANITOR'S CLOSET | 80 |
| CLEAN UTILITY | 80 |
| SOILED UTILITY | 80 |
| INTERVIEW ROOM | 70 |
| Total | 4465 SF |

Three modes of accommodation are required ranging from open ward accommodation for those who benefit by association with others to more typical single rooms with toilet, less shower, and specially prepared, less vulnerable rooms for disturbed security patients. The Psychiatric Infirmary Unit will be separate from all other infirmary units with its own staff and treatment space to minimze movement out of the unit.

Acute psychiatric patients may be admitted to the infirmary directly from a housing unit, work assignment, or following examination in the outpatient psychiatric unit. In some cases, the patient will be sufficiently agitated to require 3-4 attendants to effect the transfer.

**State Prison of Southern Michigan** — **Health Care Unit**

3.2 Security and Clerical Control Station

| Location | Sheet |
|---|---|
| M-3 | P. 51 |

FUNCTION

To provide space for security and clerical personnel to coordinate and control staff, visitor, and Trusty resident access to the Health Care Unit. To provide space also for the overall security supervision of health care areas and activities and for the coordination of voice communication and electronic monitoring.

ACTIVITIES

Monitor and control the entry and exit of the Trusty Division residents.

Monitor and control activities in the Trusty waiting area.

Search Trusties and verify appointments

Communicate with the nursing station in the examination and treatment area.

Coordinate telephone and EMS communications.

Control resident flow into examination and treatment areas.

Monitor and control the entry and exit of staff and visitors.

Operate designated doors and gates.

Monitor and control as necessary activities in interior clinical areas including corridors and infirmary.

Operate and monitor as necessary electronic surveillance devices in remote Health Care Unit areas.

Monitor voice communication systems.

Monitor fire detector and fire alarm indicator lights.

Monitor computer terminal.

Coordinate and temporarily store newly admitted patients' personal items.

SPECIAL CONSIDERATIONS

Provide private office space for sargeant (custody) with vision panels in walls and doors for maximum visibility into module.

Provide a spatially "open" plan for ease of movement within and maximum visibility to all adjacent spaces and corridors. (The sargeant's office must not obstruct vision to adjacent circulation spaces).

Locate indicators/annunciators so as not to interrupt visual access to adjacent areas.

Provide acoustic privacy from adjacent spaces and corridors.

Provide a fully secure counter-height work station with glass enclosure promoting maximum visual communication and control of adjacent spaces.

Provide for verbal communication with Trusties, staff, visitors and to the secure interior of the Health Care Unit by way of baffled glass or equal.

OCCUPANCY

2-3 security guards

2 clerks + swith board operator

LOCATION

Directly accessible to/from: Health Care Unit sallyport (Trusty, visitors, and staff), sargeant's office.

Directly adjacent to: all incoming patient circulation, Trusty waiting area, the Trusty, visitor, and staff entry, the secure interior of the ambulatory care portion of the Health Care Unit, the patient and staff elevators to levels above or below.

Direct visual access to/from: interior sub-waiting areas, main patient circulation space within the Health Care Unit, entries to patient care suites, clinic nursing station, Trusty waiting room, the Trusty, visitor and staff entry to the Health Care Unit, corridor leading to vehicular sallyport, patient toilet (in trusty wait.)

AREA

300 SF (including office space)

EQUIPMENT

Fixed

a) Built-counter; 30" working height at perimeter of space with lockable storage units and leg space below
b) Remote door lock control console
c) Combustion indicator/annunciator
d) Intrusion indicator/annunciator
e) Telephone switchboard
f) Master intercom station
g) Ambush indicator/annunciator panel
h) Computer terminal and print out
i) Wardrobe (in office)
j) Tackboard (in office)
k) Bookshelving (in office)
l) Telephone (in office)

Major Movable

a) 6 posture chairs (in general area)
b) Desk (in office)
c) 2 - two drawer file cabinets (in office)
d) Swivel Armchair (in office)
e) Two straight armchairs (in office)

## MECHANICAL SERVICES

**Air Treatment**
Dry-bulb temp.: 67-75° F

**Air Movement**
Room pressure :
- ☐ Negative
- ☐ Positive
- ☒ Equal

Air change rate: 8 per hour
Exhaust:
- ☐ 100%
- ☒ Recirculated

**Piped Services**
- ☐ Hot water
- ☐ Cold water
- ☐ Oxygen( )
- ☐ Vacuum( )
- ☐ Compressed air( )
- ☐ Waste drain
- ☐ Floor drain
- ☒ Sprinkled

## ELECTRICAL SERVICES

**Illumination**
General: 30 FC
- ☒ Interior switching
- ☐ Exterior switching
- ☒ Dimmable
- ☐ 2 fc security check

Special: 70 FC - work surfaces

**Power Supply**
- ☒ 110v duplex outlets, to be spaced evenly ( 5 )
- ☐ X-ray power circuit
- ☒ To fixed equip. per specifications
- ☐ Emergency power supply
- ☒ Supply to power-operated door

a) 3 above counter spaced evenly, 2 on opposite wall

**Communication**
- ☒ Telephone ( 1 )
- ☒ Telephone switchboard
- ☐ Remote intercom station
- ☒ Master intercom station
- ☐ Emergency nurse call station
- ☐ Nurse call - two way ( )
- ☐ Nurse call console
- ☒ Ambush indicator/annunciator
- ☐ Combustion detector
- ☒ Combustion indicator/annunciator
- ☐ Physiological monitor outlets

## SECURITY SYSTEMS

- ☒ Keyed entry
- ☐ (with option to leave unlocked)
- ☐ Keyed exit
- ☐ Remote over-ride locking/unlocking
- ☒ Remote door-lock control panel
- ☐ Exterior dead-bolt lock
- ☒ Power-door control console
- ☐ Unauthorized intrusion alarm
- ☒ Intrusion indicator/annunciator
- ☐ Room occupancy dome light
- ☐ TV surveillance monitor
- ☐ TV surveillance screen
- ☐ Locked cabinetry
- ☐ Security check low-level lighting

a) Controlling remote fire doors
b) Health Care Unit sallyport

## BUILDING ELEMENTS

**Floor**
Finish : Type 1 - carpeting
Special:

**Walls**
Finish :
Special: Type A - secure

**Vision Panels**
Ht. above floor: 36" - all walls adjacent to patient circulation

**Interior Partitions**
Height :
Special:

**Window Pass Through**
Type : Type 2
Special:

**Ceiling**
Finish : Type 2 - secure
Min. ht.: 8' - 0"
Special :

**Door**
Access to: Health Care Unit sallyport
Construction: Type 1 - steel
Width: 36"
Action: swinging inward
Locking system: See SECURITY SYSTEMS
- ☒ Vision panel
- ☐ Lead lined
- ☐ Armored panel attached
- ☐ Power operated

a) Above 36"

**Door**
Access to: Sargeant's Office Area
Construction: Standard
Width: 30"
Action: Inward Swinging
Locking system: Keyed entry
- ☒ Vision panel
- ☐ Lead lined
- ☐ Armored panel attached
- ☐ Power operated

## SCOPE OF SERVICES

The combinations of services required for specific projects are as varied as the projects themselves. Similarly, the allocation of responsibility for specific services varies from project to project; one owner may undertake responsibility for a reasonable number of the requirements, while another may request the architect to provide most services. The following list of services is offered to help establish responsibilities for services required for a specific project prior to developing the estimated cost of those services and the terms of the owner-architect agreement. The services described below are grouped into generally chronological design and construction phases for consistency with groupings used in current AIA documents. Asterisks on the summary list of services designate those services historically considered "Basic Services" under AIA Document B141, Standard Form of Agreement Between Owner and Architect, and it is suggested these be considered the minimum services to be provided by the architect under most circumstances.

The detailed list of services provides broad descriptions of individual phases, a list of the services included under each phase, and narrative descriptions of each item of service. While these lists and descriptions are intended to be guidelines only, they hopefully will establish consistency of terms that will permit interfacing compensation management with business management and project management in architectural offices.

The descriptions of items of service, which are general indications of the potential elements of each item of service, should be carefully reviewed for each project and revised as appropriate for specific proposals and cost estimates. The lists and descriptions of services are not to be construed as standards of performance for the architect on any particular project. Rather, they are intended both to permit better understanding between owner and architect of the scope of services required and to assist the architect in estimating the cost of those services. The listed descriptions are intended to be only a starting point and should be modified appropriately to reflect the understanding reached by owner and architect for each specific project.

Users of these guidelines may supplement the printed list of services provided on certain of the forms by filling in the blank spaces or deleting headings for services not required. Not all architects will offer the full scope of services described and few projects will require all of the listed services. The lists and forms herein are intended to be used for estimating costs of services and preparing proposals only.

SUMMARY LIST OF SERVICES

Phase 1. Pre-Design Services

1.01 Project Administration
.02 Facility Programming
.03 Space Schematics/Flow Diagrams
.04 Project Development Scheduling
.05 Project Budgeting
.06 Economic Feasibility Studies
.07 Agency Consulting/Review/Approval
.08 Existing Facilities Surveys
.09 Owner-Supplied Data Coordination
.10 Presentations
.11 Marketing Studies
.12 Project Financing

Phase 2. Site Analysis Services

2.01 Project Administration
.02 Site Analysis and Selection
.03 Site Development Planning
.04 Detailed Site Utilization Studies
.05 On-Site Utility Studies
.06 Off-Site Utility Studies
.07 Environmental Studies and Reports
.08 Project Budgeting
.09 Agency Consulting/Review/Approval
.10 Zoning Processing Assistance
.11 Owner-Supplied Data Coordination
.12 Presentations
.13 Project Development Scheduling

Phase 3. Schematic Design Services

*3.01 Project Administration
* .02 Architectural Schematic Design
* .03 Civil Design Concepts
* .04 Structural Design Concepts
* .05 Mechanical Design Concepts
* .06 Electrical Design Concepts
.07 Landscape Design Concepts
.08 Interior Design Concepts
* .09 Statement of Probable Construction Cost
* .10 Agency Consulting/Review/Approval
* .11 Owner-Supplied Data Coordination
* .12 Presentations

.13 Project Development Scheduling

Phase 4. Design Development Services

*4.01 Project Administration
* .02 Architectural Design Development
* .03 Civil Design Development
* .04 Structural Design Development
* .05 Mechanical Design Development
* .06 Electrical Design Development
.07 Landscape Design Development
.08 Interior Design Development
* .09 Outline Specifications
* .10 Statement of Probable Construction Cost
* .11 Agency Consulting/Review/Approval
* .12 Owner-Supplied Data Coordination
* .13 Presentations
.14 Project Development Scheduling

Phase 5. Construction Documents Services

*5.01 Project Administration
* .02 Architectural Working Drawings
* .03 Civil Construction Documents
* .04 Structural Construction Documents
* .05 Mechanical Construction Documents
* .06 Electrical Construction Documents
.07 Landscape Construction Documents
.08 Interior Construction Documents
* .09 Specifications
* .10 Statement of Probable Construction Cost
.11 Detailed Construction Cost Estimates
* .12 Agency Consulting/Review/Approval
* .13 Owner-Supplied Data Coordination
* .14 Document Checking/Coordination
.15 Special Bid Documents

Phase 6. Bidding or Negotiations Services

*6.01 Project Administration
* .02 Bidding Documents
* .03 Addenda
* .04 Bidding/Negotiations
* .05 Bid Evaluation
* .06 Construction Contract Agreements
* .07 Agency Consulting/Review/Approval
* .08 Owner-Supplied Data Coordination

.09 Analysis of Alternates/Substitutions
.10 Special Bidding Services

Phase 7. Construction Contract Administration Services

*7.01 Project Administration
* .02 Construction Observation
* .03 Shop Drawings/Submittals Review
.04 Construction Cost Accounting
* .05 Supplemental Documents
.06 Quotation Requests/Change Orders
.07 Testing and Inspection Coordination
* .08 Project/Monitoring Schedule
* .09 Agency Consulting/Review/Approval
* .10 Owner-Supplied Data Coordination
.11 Full-Time Project Representation
* .12 Project Close-Out
* .13 Civil Engineering
* .14 Structural Engineering
* .15 Mechanical Engineering
* .16 Electrical Engineering
.17 Landscape Architecture
.18 Interiors

Phase 8. Post-Construction Services

8.01 Project Administration
.02 Maintenance and Operational Programming
.03 Start-Up Assistance
.04 Record Drawings
.05 Warranty Review
.06 Post-Construction Evaluation

Phase 9. Supplemental Services

9.01 Special Studies
.02 Computer Applications
.03 Fine Arts and Crafts
.04 Non-Building Equipment Selection
.05 Design of Special Furnishings
.06 Value Analysis
.07 Life Cycle Cost Analysis
.08 Environmental Monitoring
.09 Presentation Models/Renderings
.10 Mock-Ups
.11 Demolition Projects
.12 Tenant-Related Services

.13 Graphics
.14 Energy Studies
.15 Project Promotion
.16 Quantity Surveys

## DETAILED LIST OF SERVICES

### PHASE 1: PRE-DESIGN SERVICES

#### Phase Description

In the Pre-Design Phase the architect provides those services necessary to establish the programmatic, financial and time constraints and requirements for the project prior to beginning design.

#### List of Services

1.01 Project Administration
.02 Facility Programming
.03 Space Schematics/Flow Diagrams
.04 Project Development Scheduling
.05 Project Budgeting
.06 Economic Feasibility Studies
.07 Agency Consulting/Review/Approval
.08 Existing Facilities Surveys
.09 Owner-Supplied Data Coordination
.10 Presentations
.11 Marketing Studies
.12 Project Financing

#### Description of Services

1.01 Project Administration services relate to all administrative functions necessarily undertaken by the architect in providing services during this phase of the owner's project and may include initial consultation in project development and project-related research, conferences, correspondence, travel, progress reports, etc. These services do not include general firm management.

1.02 Facility Programming services relate to establishment of a detailed set of requirements for a proposed facility. This often includes determination of: quantity, size, technical, human, and physical requirements of each type of space; functional interrelationships among spaces; requirements for flexibility and expandability; needs relative to special equipment and systems; and site requirements. Programming may be staged to provide only basic requirements initially, with more detailed requirements established as needed.

1.03 Space Schematics/Flow Diagrams services relate to development of diagrammatic studies and pertinent text relative to: internal functions; human, vehicle and material flow patterns; and general space allocations. They are customarily developed in collaboration with the owner and may include a detailed analysis of all operating functions and studies of adjacency, circulation and traffic patterns. The studies will normally relate to: numbers of personnel; special facilities and equipment requirements; materials handling; flexibility and expandability; and site requirements/ constraints.

1.04 Project Development Scheduling services relate to establishing with or for the owner a schedule for overall development of a project. It will usually entail careful determination of the architect's services, the owner's responsibilities and the design and construction procedures to be followed. Scheduling is used to establish a time framework for pre-design services, decision-making, design, documentation and construction. It can reflect overlapping of the various service phases, including design and construction, when appropriate. The schedule should usually be kept flexible at this early stage, and a contingency to permit schedule adjustment should be incorporated.

1.05 Project Budgeting services relate to development of probable costs based on programming and scheduling studies. It usually consists of: conversion of net programmed areas to gross areas, use of factors appropriate to the particular project to develop an initial probable gross area; conversion to a probable construction cost range by application of updated unit cost data from other completed projects with similar requirements; and the addition of estimates of related costs such as site development, landscaping, utilities, furniture, equipment, and design costs. Adjustments in scope of program, quality standards and/or project budget may be required at this time. When the owner has approved a project budget it can be used in economic feasibility studies.

1.06 Economic Feasibility Studies services relate to economic analysis and determination of economic feasibility of a building project. The services may include: estimates of total project cost; projection of owning and operating costs; cash flow requirements; return on investment; and probable financing needs. Total project cost estimating will usually include costs of land, construction, furnishings and equipment; compensation for design professionals; interest, insurance and taxes during construction; legal fees, miscellaneous and contingency items. Projecting financial needs includes establishing necessary equity, cash and loan requirements, and expected interest and amortization payments. Cash flow requirements may be projected for the pre-design, design, documentation and construction periods based on the estimated project costs and the project development schedule. Owning and operating cost projections may include both total project cost amortization and operating management

costs including: utilities, maintenance, repairs, replacements, supplies, staff and contracted services. Comparative economic feasibility studies may be needed for alternative design schemes and options for a particular project.

1.07 Agency Consulting/Review/Approval services relate to both governmental and non-government entities which have statutory or non-statutory impact on a proposed project. They may be local, county, regional, state and/or federal agencies having jurisdiction regarding applicable laws, statutes, regulations and codes; or they may be user or community groups with little or no statutory authority but significant influence on approving agencies and individuals. The architect may: do extensive agency consulting, research critical applicable regulations and community attitudes, prepare written and graphic explanatory material, and appear on the owner's behalf at a wide range of agency and community meetings.

1.08 Existing Facilities Surveys services relate to researching, assembling, reviewing and supplementing information for projects involving alterations and/or additions. They may include photographic, measurement and capability surveys of existing facilities and systems. When original construction documents and initial systems design data are available, a building measurement check and a review of the design data may be needed to verify accuracy of original documents and to record any changes from the original.

1.09 Owner-Supplied Data Coordination services relate to reviewing, handling and coordinating data furnished for the project as a responsibility of the owner. Site visits may be needed and the architect's services may include establishing criteria and assisting the owner in arranging for the data. In this phase, acquisition of preliminary and exploratory surface and subsurface site information is a typical activity.

1.10 Presentations services relate to presentations, to the owner and closely related groups, of the material and studies prepared under this phase. They may include presentations to individuals, building committees, staff and user committees, boards of directors, groups and individual representing financial interests, and any special consultants retained by the owner.

1.11 Marketing Studies services relate to determination of need for and/or the social, economic and political acceptability of a proposed project and may range from a very simple to a highly sophisticated survey of the market. Marketing studies do not apply to all building types but do often apply to non-profit as well as profit-making entities. The service is often provided by consultants and is often required by financial approving entities.

1.12 Project Financing services relate to obtaining financing commitments from financing entities. The service may be provided in its entirety, or the architect may simply assist the owner in preparing and submitting data, including supplementary drawings and documentation, to private and/or public financing institutions. Project financing may include the need for seed money and financing for: interim planning and development; construction; and long term mortgaging.

On the forms the blank lines numbered .13 through .20 are provided for entry of additional services for a specific project and/or for entry of estimates or quotations from consultants and others falling under the classification of "Outside Services."

## PHASE 2: SITE ANALYSIS SERVICES

### Phase Description

In the Site Analysis Phase the architect provides those services necessary to establish site-related constraints, requirements and planning for the project. Some of the services will normally be provided during pre-design activities and some during project design. They are grouped here for convenience to identify the site analysis services normally required during the early stages of project development.

### List of Services

2.01 Project Administration
.02 Site Analysis and Selection
.03 Site Development Planning
.04 Detailed Site Utilization Studies
.05 On-Site Utility Studies
.06 Off-Site Utility Studies
.07 Environmental Studies and Reports
.08 Project Budgeting
.09 Agency Consulting/Review/Approval
.10 Zoning Processing Assistance
.11 Owner-Supplied Data Coordination
.12 Presentations
.13 Project Development Scheduling

### Description of Services

2.01 Project Administration services relate to all administrative functions necessarily undertaken by the architect in providing services during this phase of the owner's project and may include initial site consultation and project-related research, conferences, coordination of the work of in-house personnel and outside consultants, correspondence, travel, progress

reports, etc. These services do not include general firm management.

2.02 Site Analysis and Selection services relate to the process of analyzing and ultimately selecting a site and basically entail assisting the owner in evaluating sites for a proposed project or locating a site, for the owner, to meet the needs of the proposed facility. Specific operations may include comparative studies of the physical characteristics of alternative sites to test the adequacy of each with regard to the proposed project. Site analysis also usually entails a detailed study of topographic and subsurface conditions, utilities, zoning and land use requirements, parking and traffic flow regulations, and determination of deed restrictions and any existing or proposed easements, etc. Studies of labor potential, availability of special skills, labor relations and public relations values may also be included.

2.03 Site Development Planning services relate to the preparation of development plans for a site considering land utilization, structures placement and massing, facilities development, development phasing, circulation and utility systems, and parking and landscape forms for the creation of a pre-planned, total environment.

2.04 Detailed Site Utilization Studies services relate to more detailed analysis of a particular site than is needed under site development planning and may be necessary to develop the full utilization capability of the site and to determine optimum location of facilities. Activities within this service heading may include: a review of existing conditions and site information, a soils report, and research of all code and planning requirements to establish all facility locations, grounds improvements and landscaping concepts needed to prepare site development drawings.

2.05 On-Site Utility Studies services relate to development studies of all on-site utility requirements to determine practical and economical solutions prior to preparing for design review, engineering and final working drawings. These may include electrical service and distribution, sewer and storm collection and drainage, water supply and distribution, fire control and alarm, emergency lighting, security, air conditioning, pollution control, site illumination and telephone service. Where master planning for future development is needed, preliminary selection and routing of utility systems may be included under this service heading.

2.06 Off-Site Utility Studies relate to confirming the location and size and determining the adequacy of all existing utilities serving the building site, and determining the cost and physical requirements for making connection thereto in preparation for engineering design and working drawings. Design of separate off-site utilities facilities would normally

not be included under this service heading.

2.07 Environmental Studies and Reports services relate to obtaining approval of environmental agencies and may include: determination of the need and/or requirements for environmental monitoring, assessment and/or impact reports; preparation of reports in accordance with the requirements of governing authorities; attendance at hearings and presentations if needed; and general follow-through of processing. Environmental monitoring is considered a supplemental service included under Phase 9 of the scope of services.

2.08 Project Budgeting services relate to development of probable site development costs based on programming and scheduling studies. A probable construction cost range is usually developed by application of updated unit cost data from other completed projects with similar requirements. It normally includes estimates of such costs as on-site utilities, utilities connections, drainage, roads and paving, site lighting, lawn and landscaping work and site furniture. Adjustments in scope of program, quality standards and/or project budget may be required at this time.

2.09 Agency Consulting/Review/Approval services relate to both governmental and non-government entities which have statutory or non-statutory impact relative to site analysis on a proposed project. They may be local, county, regional, state and/or federal agencies having jurisdiction regarding applicable laws, statutes, regulations and codes; or they may be user or community groups with little or no statutory authority but signigicant influence on approving agencies and individuals. The architect may: do extensive agency consulting, research critical applicable regulations and community attitudes, prepare written and graphic explanatory material, and appear on the owner's behalf at a wide range of agency and community meetings.

2.10 Zoning Processing Assistance services relate to changes of variances in zoning as opposed to normal zoning research and compliance. The architect may assist the owner in preparing applications for adjustments, variances, or use permits with supporting data and evidence that the project will be constructed in accordance with designated requirements. Specific activities may include: assistance in preparation of petition for rezoning, when indicated; attendance at hearings; presentations, if requested or required; and assistance in application and presentation of appeal, if required.

2.11 Owner-Supplied Data Coordination services relate to reviewing, handling and coordinating data furnished for the project as a responsibility of the owner. Site visits will usually be needed and the architect's services could include establishing criteria and assisting the owner in arranging for the data. In this phase, acquisition of detailed surface

and subsurface site information is a typical activity.

2.12 Presentations services relate to presentations, to the owner and closely related groups, of the material and studies prepared under this phase. It may include presentations to individuals, building committees, staff and user committees, boards of directors, groups and individuals representing financial interests, and any special consultants retained by the owner.

2.13 Project Development Scheduling services in this phase relate primarily to establishing with or for the owner a schedule for overall site development of a project. It will usually entail careful determination of the architect's services, the owner's responsibilities and the design and construction procedures to be followed. Scheduling is used to establish a time framework for pre-design services, decision making, design, documentation and construction. It can reflect overlapping of the various service phases, including design and construction, when appropriate. The schedule should usually be kept flexible at this early stage, and contingency to permit schedule adjustment should be incorporated. If a project development schedule was established under Pre-Design Phase services it may require updating as part of the Site Analysis Phase services.

On the forms, the blank lines numbered .14 through .20 are provided for entry of additional services for a specific project and/or for entry of estimates or quotations from consultants and others falling under the classification of "Outside Services."

PHASE 3: SCHEMATIC DESIGN SERVICES

Phase Description

In the Schematic Design Phase the architect provides those services necessary to prepare Schematic Design Studies consisting of drawings and other documents illustrating the scope and relationship of project components for approval by the owner. Designs are normally conceptual in character and are based on the requirements developed under previous phases and approved by the owner and/or provided directly by the owner and reviewed and confirmed by the architect.

List of Services

3.01 Project Administration
.02 Architectural Schematic Design
.03 Civil Design Concepts
.04 Structural Design Concepts
.05 Mechanical Design Concepts
.06 Electrical Design Concepts

.07 Landscape Design Concepts
.08 Interior Design Concepts
.09 Statement of Probable Construction Cost
.10 Agency Consulting/Review/Approval
.11 Owner-Supplied Data Coordination
.12 Presentations
.13 Project Development Scheduling

Description of Services

3.01 Project Administration services relate to those administrative functions necessarily undertaken by the architect in providing services during this phase of the owner's project and include project-related research, conferences, correspondence, travel, progress reports, etc. These services may include coordination of the work of in-house personnel and outside consultants for normal architectural work and for normal civil, structural, mechanical and electrical engineering disciplines. Coordination of the work of other disciplines should be included in the appropriate line item. These services do not include general firm management.

3.02 Architectural Schematic Design services relate to initial physical representations responding to the requirements of the program and normally include simplified site and building plans, vertical sections, elevations and perspective sketches or other three-dimensional representations to obtain the owner's approval. Preliminary material selections may be made at this time. Development of approximate dimensions permits calculation of gross areas and volumes based on physical planning for comparison with programmed gross areas.

3.03 Civil Design Concepts services relate to development of initial basic solutions for on-site utility systems, fire protection systems and drainage systems for consideration of alternatives. The systems selected are normally developed in sufficient detail to permit coordination with building and landscape design and preparation of specific cost projections.

3.04 Structural Design Concepts services relate to development of initial basic structural design concepts to determine the specific structural system(s) appropriate for the project. Preliminary designs are often developed for consideration of alternatives. The designs selected are normally developed in sufficient detail to permit coordination with other building elements and to allow preparation of specific cost projections.

3.05 Mechanical Design Concepts services relate to development of initial basic mechanical design concepts to determine the specific heating, ventilating, air conditioning and plumbing systems appropriate for the project. Preliminary designs are developed for consideration of alternatives. The systems selected are normally developed in sufficient detail to permit

coordination with other building elements and to allow preparation of specific cost projections.

3.06 Electrical Design Concepts services relate to development of initial basic electrical design concepts to determine the specific power service and distribution systems, lighting, telephone, fire detection and alarm, security and electronic communications systems appropriate for the project. The designs selected are normally developed in sufficient detail to permit coordination with other building elements and to allow preparation of specific cost projections.

3.07 Landscape Design Concepts services relate to the development and coordination of landscape design concepts entailing analyses of natural, physical and social determinants. Studies usually include locations of planting, amenities and ground improvements.

3.08 Interior Design Concepts services relate to development and coordination of interior design concepts through studies of all interior spaces based on programmed usage, economic considerations and compatibility with the architectural concepts.

3.09 Statement of Probable Construction Cost services relate to development of a probable cost range for project construction based on updated historic unit cost information and appropriate contingencies. Sources of data may be the architect's records of previous similar projects, published data or data banks with broad based professional input. The data may be expressed in overall probable area or volume cost or in unit costs per area, volumes or building elements. Cost projections will normally reflect the current project schedule and the latest schematic design studies. Adjustments in facilities, quality standards and/or project budget may be needed at this time.

3.10 Agency Consulting/Review/Approval services in this phase relate primarily to governmental entities which have statutory impact on a proposed project. They may be local, county, regional, state and/or federal agencies having jurisdiction regarding applicable laws, statutes, regulations and codes. The architect may: do extensive agency consulting, research critical applicable regulations, prepare written and graphic explanatory material, and appear on the owner's behalf at agency meetings.

3.11 Owner-Supplied Data Coordination services relate to reviewing, handling and coordinating data furnished for the project as a responsibility of the owner. Specialized health care, research, educational, process and manufacturing equipment are examples under this phase.

3.12 Presentations services relate to presentations, to the owner and closely related groups, of the material and studies prepared under this phase.

They may include presentations to individuals, building committees, staff and user committees, boards of directors, groups and individuals representing financial interests, and any special consultants retained by the owner.

3.13 Project Development Scheduling services in this phase relate primarily to a review and updating of previously established project schedules. If schedules were not established earlier, they would be set in this phase. See item 1.04 for a typical description of this service.

On the forms, the blank lines numbered .14 through .20 are provided for entry of additional services for a specific project and also provide for entry of estimates or quotations from consultants and others falling under the classification of "Outside Services."

PHASE 4: DESIGN DEVELOPMENT SERVICES

Phase Description

In the Design Development Phase the architect provides those services necessary to prepare from the approved Schematic Design Studies for approval by the owner, the Design Development Documents consisting of drawings and other documents which fix and describe the size and character of the entire project.

List of Services

4.01 Project Administration
.02 Architectural Design Development
.03 Civil Design Development
.04 Structural Design Development
.05 Mechanical Design Development
.06 Electrical Design Development
.07 Landscape Design Development
.08 Interior Design Development
.09 Outline Specifications
.10 Statement of Probable Construction Cost
.11 Agency Consulting/Review/Approval
.12 Owner-Supplied Data Coordination
.13 Presentations
.14 Project Development Scheduling

Description of Services

4.01 Project Administration services relate to those administrative functions necessarily undertaken by the architect in providing the services required during this phase of the owner's project and include project-related research, conferences, correspondence, travel, progress reports, etc.

These services may include coordination of the work of in-house personnel and outside consultants for normal architectural work and for normal civil, structural, mechanical and electrical engineering disciplines. Coordination of the work of other disciplines should be included in the appropriate line item. These services do not include general firm management.

4.02 Architectural Design Development services relate to more detailed development and expansion of the architectural design in terms of the building's size, appearance and form, and coordination with engineering systems, through sketches and/or three-dimensional studies and two-dimensional drawings of plans, elevations, sections, and certain critical construction details. Major materials selections are normally made at this time.

4.03 Civil Design Development services relate to development of on-site utility systems, fire protection systems and drainage systems in sufficient detail to permit close coordination with building and landscape design and to allow preparation of refined cost projections. Consideration is usually given to availability of materials and labor, construction sequence and scheduling, economic trade-offs, safety and maintenance requirements.

4.04 Structural Design Development services relate to development of the specific structural system(s) in sufficient detail to permit preliminary sizing of major components and establishment of clearances, and to allow preparation of preliminary structural plans, sections and refined cost projections. Consideration is usually given to availability of materials and labor, access to site, construction schedule and economic trade-offs.

4.05 Mechanical Design Development services relate to development of the specific heating, ventilating, air conditioning and plumbing systems in sufficient detail to permit preliminary sizing of major components; establishment of required equipment areas, chases and clearances; and preparation of diagrammatic plans, sections, riser diagrams, equipment layouts and refined cost projections. Consideration is usually given to availability of components, construction sequence and scheduling, economic trade-offs, acoustical and vibration control, safety and maintenance requirements.

4.06 Electrical Design Development services relate to development of the specific power service and distribution systems, lighting, telephone, fire detection and alarm, security and electronic communications systems in sufficient detail to permit preliminary sizing of major components; establishment of required equipment areas, chases and clearances; and preparation of diagrammatic plans, sections, riser diagrams, equipment layouts and refined cost projections. Consideration is usually given to availability of components, construction sequence and scheduling, economic trade-offs, safety and maintenance requirements.

4.07 Landscape Design Development services relate to development and coordination of scope and location of all ground improvements, amenities and planting closely coordinated with building placement. Designs are usually sufficiently developed to permit refined cost projections.

4.08 Interior Design Development services relate to development and coordination of interior designs based on programmed usage, economic considerations and compatibility with the architectural development. They may include finish materials selection, furniture and equipment layouts, sound attenuation and basic color palette and are normally based on plans, elevations, schedules, sketches and material samples. Designs are usually sufficiently developed to permit refined projections of cost for items in general construction and interiors installation contracts.

4.09 Outline Specifications services relate to development of an itemized list of major components of each section of the specifications, including the General and Supplementary Conditions of the Contract, and reflecting initial materials and systems selections.

4.10 Statement of Probable Construction Cost services relate to development of a refined probable cost range for project construction through updating of the Schematic Design Phase statement of probable construction cost, taking into account such information developed during this phase as availability of material and labor and construction sequence and scheduling. Adjustments in facilities, quality standards and/or project budget may be needed at this time.

4.11 Agency Consulting/Review/Approval services in this phase relate primarily to governmental entities which have statutory impact on a proposed project. They may be local, county, regional, state and/or federal agencies having jurisdiction regarding applicable laws, statutes, regulations and codes. The architect may: do extensive agency consulting, research critical applicable regulations, prepare written and graphic explanatory material, and appear on the owner's behalf at agency meetings.

4.12 Owner-Supplied Data Coordination services relate to reviewing, handling and coordinating data furnished for the project as a responsibility of the owner. Specialized health care, research, education, process and manufacturing equipment requirements are examples under this phase.

4.13 Presentations services relate to presentations, to the owner and closely related groups, of the material and studies prepared under this phase. They may include presentations to individuals, building committees, staff and user committees, boards of directors, groups and individuals representing financial interests, and any special consultants retained by the owner.

4.14 Project Development Scheduling services in this phase relate primarily to a review and updating of previously established project schedules.

On the forms, the blank lines numbered .15 through .20 are provided for entry of additional services for a specific project and also provide for entry of estimates or quotations from consultants and others falling under the classification of "Outside Services."

PHASE 5: CONSTRUCTION DOCUMENTS SERVICES

Phase Description

In the Construction Documents Phase the architect provides services necessary to prepare from the approved Design Development Documents, for approval by the owner, drawings, specifications and other documents setting forth in detail the requirements for construction of the entire project.

List of Services

5.01 Project Administration
.02 Architectural Working Drawings
.03 Civil Construction Documents
.04 Structural Construction Documents
.05 Mechanical Construction Documents
.06 Electrical Construction Documents
.07 Landscape Construction Documents
.08 Interior Construction Documents
.09 Specifications
.10 Statement of Probable Construction Cost
.11 Detailed Construction Cost Estimates
.12 Agency Consulting/Review/Approval
.13 Owner-Supplied Data Coordination
.14 Document Checking/Coordination
.15 Special Bid Documents

Description of Services

5.01 Project Administration services relate to those administrative functions necessarily undertaken by the architect in providing services during this phase of the owner's project and include project-related research, conferences, correspondence, travel, progress reports, etc. These services may include coordination of the work of in-house personnel and outside consultants for normal architectural work and for normal civil, structural, mechanical and electrical engineering disciplines. Coordination of the work of other disciplines should be included in the appropriate line item. These services do not include general firm management.

5.02 Architectural Working Drawings services relate to preparation of the architectural working drawings from the approved Design Development Phase drawings with two-dimensional graphic presentations such as plans, elevations, sections, and details, plus notes and schedules, illustrating the design, location, size and dimensions of the project and of the parts thereof for the purpose of construction. Architectural drawings are coordinated with and referenced to the other working drawings.

5.03 Civil Construction Documents services relate to preparation of civil working drawings to represent graphically those features dealing with on- and off-site improvements such as utilities, roadways, bridges, culverts, drainage, grading, excavation, compaction, shoring, underpinning, retaining walls, parking lots and fire systems. The services usually include both the engineering calculations which establish the size, shape, dimensions and capacity of the work involved, and careful coordination with landscape, mechanical, electrical, structural and architectural drawings.

5.04 Structural Construction Documents services relate to preparation of structural working drawings in concert with the architectural working drawings, which present graphically the complete structural concept of the project and include details, schedules, notes and information necessary to facilitate construction. The services usually include both the preparation of engineering calculations, which establish the size, dimensions and capacity of foundations, structural reinforcing walls, columns, beams, floor and roof structure, and careful coordination with mechanical, electrical, civil and architectural drawings.

5.05 Mechanical Construction Documents services relate to preparation of detailed engineering calculations and drawings for heating, ventilating, air conditioning, plumbing work and building fire protection systems related to the approved architectural design and engineering analysis in order to establish the size, shape, dimensions and capacity of the various elements involved. Mechanical working drawings services usually include plans, sections, details, schedules, diagrams and notes as necessary to construct the mechanical work, and careful coordination with the structural, civil, electrical and architectural drawings to insure proper clearances and location for all ductwork, piping, support and equipment as necessary.

5.06 Electrical Construction Documents services relate to preparation of detailed engineering calculations and drawings for electrical work entailed by the approved architectural design and engineering analysis in order to establish the size, location and capacity of the various elements involved. Electrical systems may include power acquisistion and generation (on- and off-site), major power distribution, interior and exterior lighting, telephone and communication systems, low voltage

systems, direct current applications, and emergency and special effects lighting. Electrical working drawings services usually include plans, sections, details, schedules, diagrams and notes as necessary to construct the electrical work, and careful coordination with mechanical, structural, civil and architectural drawings for proper location of electrical outlets, fixtures, panels, switchgear, equipment and appurtenances.

5.07 Landscape Construction Documents services relate to preparation and coordination of landscape working drawings from approved Design Development Phase documents for all ground improvements, amenities, planting and irrigation systems. Calculations necessary to establish the size, shape, dimensions and capacity of the work involved are usually included.

5.08 Interior Construction Documents services relate to preparation and coordination of detailed interior working drawings to represent graphically, usually with plans, sections, details, schedules, and notes, all information necessary to provide interior services.

5.09 Specifications services relate to assistance in review of general conditions of the contract for construction, which are normally standardized provisions of the construction contract describing the rights, responsibilities and relationships of parties to the contract and the related duties and responsibilities of the architect; preparation of supplementary conditions, which may be written to modify or extend the general conditions as the special requirements or location of the project may indicate or as may be required by the owner and legal counsel or by regulatory agencies having jurisdiction over the project; and preparation of specifications, which are written requirements complementing the working drawings to amplify and further describe materials, systems, methods of construction, performance, and quality to be obtained and tests to verify performance of all the components of the project. Included with these services may be assistance in developing bidding documents which describe the time, place and conditions of bidding and the form of bonds and agreements to be executed by the contractor(s) and the owner.

5.10 Statement of Probable Construction Cost services relate to updating, when the construction documents are approximately 90 percent complete, of the statement of probable construction cost prepared at completion of the Design Development Phase in order to reflect changes in materials, systems or details of construction which have been effected during the preparation of construction documents. Adjustments are usually also made for known changes in the cost of materials, labor and services vs. those allowed for in the previous statement of probable construction cost. Adjustments may also be made for known or anticipated changes in the bidding market for the project.

5.11 Detailed Construction Cost Estimates services relate to development, when the working drawings and specifications are approximately 90 percent complete, of a detailed final statement of probable construction cost, which may include alternative adjustments for the project and which is normally based on estimates of the quantity and cost of all materials, labor, tools, equipment and services needed for the work. To this total direct cost is added an estimate of the contractor's overhead, estimates of the cost to comply with the General and Supplementary Conditions, a reasonable contingency, and an allowance for the contractor's profit. The detailed construction cost estimate serves as a check on the budget and provides valuable information for bid review, approval of progress payments and evaluation of future contract modifications. This service is usually furnished by a special consultant and replaces the updated statement of probable construction cost. Coordination, research and computation by the architect is normally needed.

5.12 Agency Consulting/Review/Approval services in this phase relate primarily to governmental entities which have statutory impact on a proposed project. They may be local, county, regional, state and/or federal agencies having jurisdiction regarding applicable laws, statutes, regulations and codes. The architect may: do extensive agency consulting, research critical applicable regulations, prepare written and graphic explanatory material, and appear on the owner's behalf at agency meetings.

5.13 Owner-Supplied Data Coordination services relate to reviewing, handling and coordinating data furnished for the project as a responsibility of the owner. Specialized health care, research, educational, process and manufacturing equipment are examples under this phase.

5.14 Document Checking/Coordination services relate to reviewing all input from architectural, engineering and related disciplines and checking all contract documents for compliance with project scope, accuracy and interface among disciplines.

5.15 Special Bid Documents services relate to preparation and coordination of special drawings and specifications for alternate bid proposals as may be needed when the owner wishes to insure a bid within a limited appropriation. Alternate bid documents may cover changes in material quality, finishes or equipment and areas to be added to or deleted from the project. Special drawings and specifications for advanced bid proposals may be needed when the owner wishes to occupy the new building at the earliest possible date. Advanced bid documents may cover subcontracts for site preparation, foundation or structural steel contracts to permit fast-tracking or phased construction while the architect is completing the contract documents. Special drawings and specifications for segregated bid proposals may be needed when the owner wishes to order certain mechanical equipment, furniture, fixtures, or technical

services prior to the receipt of bids from the prime contractors.

On the forms, the blank lines numbered .16 through .20 are provided for entry of additional services for a specific project and/or for entry of estimates or quotations from consultants and others falling under the classification of "Outside Services."

PHASE 6: BIDDING OR NEGOTIATIONS SERVICES

Phase Description

In the Bidding or Negotiations Phase the architect, following the owner's approval of the construction documents and of the latest statement of probable construction cost, provides those services necessary to assist the owner in obtaining bids or negotiated proposals and in awarding and preparing construction contracts. In the case of phased construction the owner may authorize bidding and negotiation of portions of the work prior to completion of the construction documents and prior to completion of the Construction Documents Phase statement of probable construction cost.

List of Services

6.01 Project Administration
.02 Bidding Documents
.03 Addenda
.04 Bidding/Negotiations
.05 Bid Evaluation
.06 Construction Contract Agreements
.07 Agency Consulting/Review/Approval
.08 Owner-Supplied Data Coordination
.09 Analysis of Alternates/Substitutions
.10 Special Bidding Services

Description of Services

6.01 Project Administration services relate to those administrative functions necessarily undertaken by the architect in providing services during this phase of the owner's project and may include project-related research, conferences, coordination of the work of in-house personnel and outside consultants, correspondence, travel, progress reports, etc. These services do not include general firm management.

6.02 Bidding Documents services relate to assistance in organizing bidding documents and may include the review, checking and reproduction of all the general bidding documents, such as the invitation to bid, instructions to bidders, proposal forms, the conditions of the contract (general, supplementary and other conditions), the working drawings,

the specifications, and an example of the agreement form. Bid security requirements, performance bonds and labor and material payment bonds requirements may be included.

6.03 Addenda services relate to preparation and distribution of addenda documents as may be needed during bidding and may include supplementary drawings, specifications, instructions and notices of any changes in bidding procedures.

6.04 Bidding/Negotiations services relate to the bidding and/or negotiation process and may include prequalifying bidders, issuing copies of the bidding documents, maintaining records of documents issued, handling of document deposits required of prospective bidders, receiving and responding to questions from bidders, participation in bidders conference, attending bid opening, recovering documents from unsuccessful bidders, and checking and repair of documents sets for use in construction.

6.05 Bid Evaluation services relate to bid evaluation, which may include consultation with the owner subsequent to the receipt of bids, certification of bids if needed, recommendations on award of contract(s), and participation in post-bidding negotiations between the owner and the successful bidder.

6.06 Construction Contract Agreements services relate to assisting in the final preparation of the construction contract agreement(s) and may include notifying the successful contractor(s) of award of contract; drafting owner-contractor agreement form(s) for review and approval by the owner's attorney, providing complete sets of the contract documents for signature and distribution to the owner and the contractor(s); receiving certificates of the required insurance and bonds; and notifying the contractor(s) to proceed with the work.

6.07 Agency Consulting/Review/Approval services in this phase relate primarily to governmental entities which have statutory impact on a proposed project before construction begins. They may be local, county, regional, state and/or federal agencies having jurisdiction regarding applicable laws, statutes, regulations and codes. The architect may: do extensive agency consulting, research critical applicable regulations, prepare written and graphic explanatory material, and appear on the owner's behalf at agency meetings. There may be a similar need for dealings with non-governmental entities such as community and user groups to assure that updated and accurate information is available before construction begins.

6.08 Owner-Supplied Data Coordination services relate to reviewing, handling and coordinating data furnished for the project as a responsibility of

the owner. Specialized construction arrangements, procedures and bidding requirements are examples under this phase.

6.09 Analysis of Alternates/Substitutions services relate to consideration, analysis and recommendations of proposed alternates or substitutions prior or subsequent to receipt of bids or conducting negotiations for the purpose of determining a final basis for the construction contracts(s) award.

6.10 Special Bidding Services relate to providing any additional contract documents over and above those required for normal bidding procedures when phased construction, systems bidding/building and similar procedures are used.

On the forms, the blank lines numbered .11 through .20 are provided for entry of additional services for a specific project and/or for entry of estimates or quotations from consultants and others falling under the classification of "Outside Services."

PHASE 7: CONSTRUCTION CONTRACT ADMINISTRATION SERVICES

Phase Description

In the Construction Contract Administration Phase the architect provides administration of the construction contract as set forth in AIA Document B141, Standard Form of Agreement Between Owner and Architect.

List of Services

7.01 Project Administration
.02 Construction Observation
.03 Shop Drawings/Submittals Review
.04 Construction Cost Accounting
.05 Supplemental Documents
.06 Quotation Requests/Change Orders
.07 Testing and Inspection Coordination
.08 Project/Monitoring Schedule
.09 Agency Consulting/Review/Approval
.10 Owner-Supplied Data Coordination
.11 Full-Time Project Representation
.12 Project Close-Out
.13 Civil Engineering
.14 Structural Engineering
.15 Mechanical Engineering
.16 Electrical Engineering
.17 Landscape Architecture
.18 Interiors

Description of Services

7.01 Project Administration services relate to those administrative functions necessarily undertaken by the architect in providing services during this phase of the owner's project and include project-related research, conferences, correspondence, travel, progress reports, etc. These services may include coordination of the work of in-house personnel and outside consultants for normal architectural work and for normal civil, structural, mechanical and electrical engineering disciplines. Coordination of the work of other disciplines should be included in the appropriate line item. These services do not include general firm management.

7.02 Construction Observation services usually include periodic visits to the site to generally monitor the progress and quality of the work and to determine in general if the work is proceeding in accordance with the contract documents. Based on observations made at the site and on the contractor's applications for payment, the amount owing to the contractor may be determined and certificates for payment in such amounts issued.

7.03 Shop Drawings/Submittals Review services usually include receipt, review, and comment on all shop drawings, samples, material submittals and other submittals required by the contract documents; review with the owner of items of particular interest to the owner; provision of copies to full-time project representative; return of copies to the contractor, properly marked as to their disposition and status; and verification that changes required are actually effected.

7.04 Construction Cost Accounting services relate to monitoring and administration of construction cost accounting and may include maintenance of records on the cost of the construction and all changes (additions and deductions) thereto, evaluation of the amount owed to the contractor based on the progress of construction and payments certified theretofore, and adjustments for unsatisfactory or uncorrected work. The complexities of construction cost accounting increase as the construction contract arrangements vary from single to multiple contracts and lump sum to unit price to "cost-plus." This service encompasses only the exercise of judgment relative to the value of work performed. It does not include verification that the contractor has paid subcontractors, material suppliers or workmen.

7.05 Supplemental Documents services relate to responsibilities for supplemental documents and usually include receipt and processing of requests from the contractor(s) for clarifications of the contract documents (including errors and/or omissions in the documents); modifications required by construction exigencies; consultation with and advice to the

owner on those matters which may affect the utilization of the project, extra cost or additional time; and issuance of the appropriate instructions to the contractor or modifications to the contract documents.

7.06 Quotation Requests/Change Orders services relate to administration, preparation and issuance of necessary drawings and specifications to describe work to be added, deleted or modified; review of contractors' proposal and detailed breakdowns of quantities of labor and materials and their costs for general accuracy of quotations; review for general validity of any changes in contract completion time; recommendations to the owner to accept, reject or question quotations; negotiations with contractors; securing of the owner's approval to act on the modifications; and preparation of appropriate documents to modify owner-contractor agreements.

7.07 Testing and Inspection Coordination services relate to testing and inspection coordination and administration, and may include making arrangements, on behalf of the owner, for independent testing and inspection agencies to perform those services, either specified or required, which the owner will pay for; determining (and informing those agencies) what materials or procedures are to be tested and/or inspected and the frequency thereof; establishing a procedure for notification of the agencies as to when their services are required; ascertaining whether those services are being performed; and reviewing the reports generated thereby for compliance with the requirements of the contract documents of the materials or procedures. The architect does not conduct technical tests and inspections or make arrangements for those which are to be paid for by the contractor or to be made by governmental agencies having jurisdiction. The architect usually reviews any reports generated by the same for compliance with the requirements of the contract documents.

7.08 Project/Monitoring Schedule services relate to monitoring the progress of construction relative to an established schedule, the maintenance of the schedule by the contractor(s), and the reporting of such information to the owner. When required due to multiplicity of contracting parties or complexity or scope of the project, these services may include monitoring relative to all entities involved in the construction process and the reporting required to coordinate the work and services of all parties with the master project schedule. Integration of this information with construction disbursements and project cash flow may also be included.

7.09 Agency Consulting/Review/Approval services in this phase relate primarily to governmental entities which have statutory impact on the project. They may be local, county, regional, state and/or federal agencies having jurisdiction regarding applicable laws, statutes,

regulations and codes. The architect may: do extensive agency consulting, research critical applicable regulations, prepare written and graphic explanatory material, and appear on the owner's behalf at agency meetings.

7.10 Owner-Supplied Data Coordination services relate to reviewing, handling and coordinating data furnished for the project as a responsibility of the owner. Specialized health care, research, educational, process and manufacturing equipment are examples under this phase, as well as specialized construction arrangements and procedures.

7.11 Full-Time Project Representation services relate to the need on some projects for the architect to be represented at the project site on a full-time basis. If authorized, the architect's service includes selection, employment, and direction of such a representative. The duties, responsibilities and limitations of authority of the full-time project representative should be set forth in an exhibit appended to the Owner-Architect Agreement and incorporated in the contract documents.

7.12 Project Close-Out services may be initiated on receipt of the contractor's notice that the project is sufficiently complete to permit occupancy by the owner for its intended use, and usually include a detailed inspection, with the owner's representative if desired, of the project for conformity to the contract documents; review of the contractor's list of items to be completed or corrected; determination of the partial contract sum(s) to be retained until final completion is secured; receipt of consent by the surety, if any, on the performance and payment bonds to all payments; and issuance of a certificate of substantial completion. Services usually include detailed follow-up inspection and comparison of the work with the contractor's list(s); conveyance to the contractor, by an appropriate means, of the nature of any discrepancies found; final inspection of the work with the owner, if desired, to ascertain whether corrections have been made; receipt and review of warranties, affidavits, etc.; receipt of lien release or bond indemnifying the owner against any lien; receipt of consent of surety to final payment; and issuance of final certificate for payment.

7.13 Civil Engineering services relate to the services of the civil engineering discipline which may be needed to assist the architect in the performance of services in this phase as related to civil engineering work.

7.14 Structural Engineering services relate to the services of the structural engineering discipline which may be needed to assist the architect in the performance of services in this phase as related to structural engineering work.

7.15 Mechanical Engineering services relate to the services of the mechanical engineering discipline which may be needed to assist the architect in the performance of services in this phase as related to mechanical engineering work.

7.16 Electrical Engineering services relate to the services of the electrical engineering discipline which may be needed to assist the architect in the performance of services in this phase as related to electrical engineering work.

7.17 Landscape Architecture services relate to the services of the landscape architecture discipline, coordinated by the architect, which may be needed to assist the architect in the performance of services in this phase as related to landscape work.

7.18 Interiors services relate to the the services of the interior design discipline, coordinated by the architect, which may be needed to assist the architect in the performance of services in this phase as related to interior design work.

On the forms, the blank lines numbered .19 through .20 are provided for entry of additional services for a specific project and/or for entry of estimates or quotations from consultants and others falling under the classification of "Outside Services."

PHASE 8: POST-CONSTRUCTION SERVICES

Phase Description

In the Post-Construction Phase the architect provides those services intended to facilitate utilization of the project.

List of Services

8.01 Project Administration
.02 Maintenance and Operational Programming
.03 Start-Up Assistance
.04 Record Drawings
.05 Warranty Review
.06 Post-Construction Evaluation

Description of Services

8.01 Project Administration services relate to those administrative functions necessarily undertaken by the architect in providing services during this phase of the owner's project and may include project-related research, conferences, coordination of the work of in-house personnel and outside

consultants, correspondence, travel, progress reports, etc. These services do not include general firm management.

8.02 Maintenance and Operational Programming services may include establishing a program for either in-house or contract operation and maintenance of the physical plant and its equipment. Provision may be made for instruction by equipment manufacturers' representatives and the preparation of an operations manual.

8.03 Start-Up Assistance services may include on-site observation, troubleshooting, and assistance in the operation of building systems during initial occupancy and subsequent periods until proper operations are established and building maintenance and operating personnel are adequately trained and experienced. This service is supplementary to the construction phase services which establish the contractor's responsibilities to demonstrate completion and initial proper operation of building systems, usually before occupancy. The services usually include coordination of contractors' call-backs, accelerated familiarization of building maintenance and operating personnel with complex systems, and in-depth troubleshooting to establish responsibilities for corrective measures or procedures as may be needed.

8.04 Record Drawings services relate to preparation of drawings by the architect, after completion of construction, from data supplied by the contractor(s) and subcontractors showing significant changes in the location of concealed piping, etc., from the diagrammatic locations indicated on the contract documents, or other revisions made during the construction period. If the owner wishes more precise data relative to these or other items of construction, the owner should so indicate to the architect prior to beginning construction. The architect can then make arrangements for obtaining and certification of such data by other parties, if necessary, and check on the progress and general accuracy of such data gathering periodically during construction. On completion of the service, the architect transmits all data, with appropriate identification, to the owner.

8.05 Warranty Review services may include consultation and advice in the event that a particular material, item or piece of equipment fails to perform its expected function during the warranty period. The services usually include a detailed inspection prior to expiration of the warranty period to ascertain whether any previously undetected failures of materials, items or equipment exist. The findings of this inspection are incorporated into a report, and instructions for correction of noted defects are presented to the contractor.

8.06 Post-Construction Evaluation services may include evaluation of the initial programming vs. actual use of a facility; of the operation and

effectiveness of the various building systems and materials in use; of the functional effectiveness of the facility plan; and of the applicability and effectiveness of the design/construction process used. The services may include project inspection; review with supervisory, operating and maintenance personnel; user interviews; and review of operating costs and related data.

On the forms, the blank lines numbered .07 through .20 are provided for entry of additional post-construction services for a specific project and/or for entry of estimates or quotations from consultants and others falling under the classification of "Outside Services."

PHASE 9: SUPPLEMENTAL SERVICES

Phase Description

The Supplemental Services Phase is not precisely a phase in the sense that it has no specific sequential position in the overall work of the architect. The services provided herein might be performed during any single or several of the eight sequential phases. In addition to the services listed below, this phase would include any services not provided for in any other phase and which the architect agrees to perform. One of these might be construction management. Some offices consider construction management a separate discipline and therefore it is not included in this document. Others may offer construction management service and may wish to include it in the following list.

List of Services

9.01 Special Studies
.02 Computer Applications
.03 Fine Arts and Crafts
.04 Non-Building Equipment Selection
.05 Design of Special Furnishings
.06 Value Analysis
.07 Life Cycle Cost Analysis
.08 Environmental Monitoring
.09 Presentation Models/Renderings
.10 Mock Ups
.11 Demolition Projects
.12 Tenant-Related Services
.13 Graphics
.14 Energy Studies
.15 Project Promotion
.16 Quantity Surveys

Description of Services

Because the substance of many of the services in this phase is likely to be determined largely by the nature of the specific project to which they contribute, no attempt has been made here to provide generalized definitions. It is critical, however, that the owner and the architect discuss any such services and be in general agreement as to their nature.

Section D, Using the System, discusses application of the above scope of services. Section C discusses compensation principles and accounting procedures, which should be understood before making the calculations which are also discussed in Section D of these guidelines.

## APPENDIX F: A METHOD FOR EVALUATING POTENTIAL SITES FOR A SECURE UNIT IN SELECTED COMMUNITY HOSPITALS

In the following example, six hospitals are to be surveyed as potential locations for a "secure unit" for the treatment of correctional residents. Each of the hospitals would be visited and surveyed by personnel experienced in building, health care, and security issues. The hospitals surveyed are evaluated in terms of the overall condition and appearance of the facility and the security potential for treating resident patients in the community hospital setting. The survey is divided into three parts consisting of:

1. The general condition of the building and area under consideration. The evaluation of the general condition of the building takes into consideration the age of the structure, levels of prevailing maintenance, apparent cleanliness and general appearance and finish.

2. The proximity relationships of the potential secure unit to other hospital service units. The proximity relationships refer to the distances and routing for resident patient movements to and from the proposed secure unit and other key service units in the hospital at large. Long distances (approximately 250 ft. or more), and floor level transfers, along with prolonged exposure of the resident patients to the general public during movement through the building, are considered less than desirable from a security point of view.

3. The security potential of the surveyed area in the hospital, and of the building as a whole. The evaluation of the security potential of a proposed site for a secure unit considers its potential ability to isolate the resident patient from escape, reception of contraband from outside the unit, self-inflicted injury, and to prevent threats or violent incidents between resident patients. The overall "security rating" of a potential site relates to its ability to provide the resident patient with an "equivalent level of care" within a nursing unit with a secure perimeter in such a way that the overall hospital, its patients, staff and visitors are guaranteed safety and freedom from disruption.

Certain architectural features are evaluated for their security contributions to the proposed site:

- windows and their size, fastening, and mounting;
- mechanical, ductwork, and electrical systems and their potential accessibility for escape or damage;
- layout of the corridors, access points, and patient rooms and their ability to provide good visual access;
- adjacent building features, such as roof tops and external stairways, as potential escape routes for resident patients.

The establishment of a secure nursing unit in any community hospital requires substantial modification to provide the security level needed. Controlled locking access doors, detention window coverings, lockable patient room doors, controlled locks on emergency exits and other detailed security provisions need to be studied for any site finally considered as suitable for the establishment of a secure unit.

The blank format sheets on the following pages provide an example of a hospital survey form suitable for this purpose and should be supplemented by a careful review of the floor plan of the proposed hospital site.

Finally, the results of such a hypothetical survey are summarized and rated from "less than acceptable" to "optimal". In this way the relative advantages of each hospital can be compared and used as a basis for the decision.

HOSPITAL_____

ADDRESS_____

PHONE_____

Field Survey For
Secure Acute Care
Nursing Unit

Sheet Of

DESCRIPTIVE DATA FOR UNIT LOCATION:

Floor Level_____

Location on Floor_____

Gross Floor Area Available_____

Inventory of Spaces (Existing):_____

General Condition_____

PROXIMITY RELATIONSHIPS TO LOCATION

Vehicle Unloading:_____

Emergency:_____

Surgery:_____

Ob/Gyn:_____

Radiology:_____

Physical Therapy:_____

Inhalation Therapy:_____

Lab:_____

Other:_____

HOSPITAL _____

ADDRESS _____

PHONE _____

Field Survey For
Secure Acute Care
Nursing Unit

Sheet Of

HOSPITAL DATA

Type of Organization _____

_____

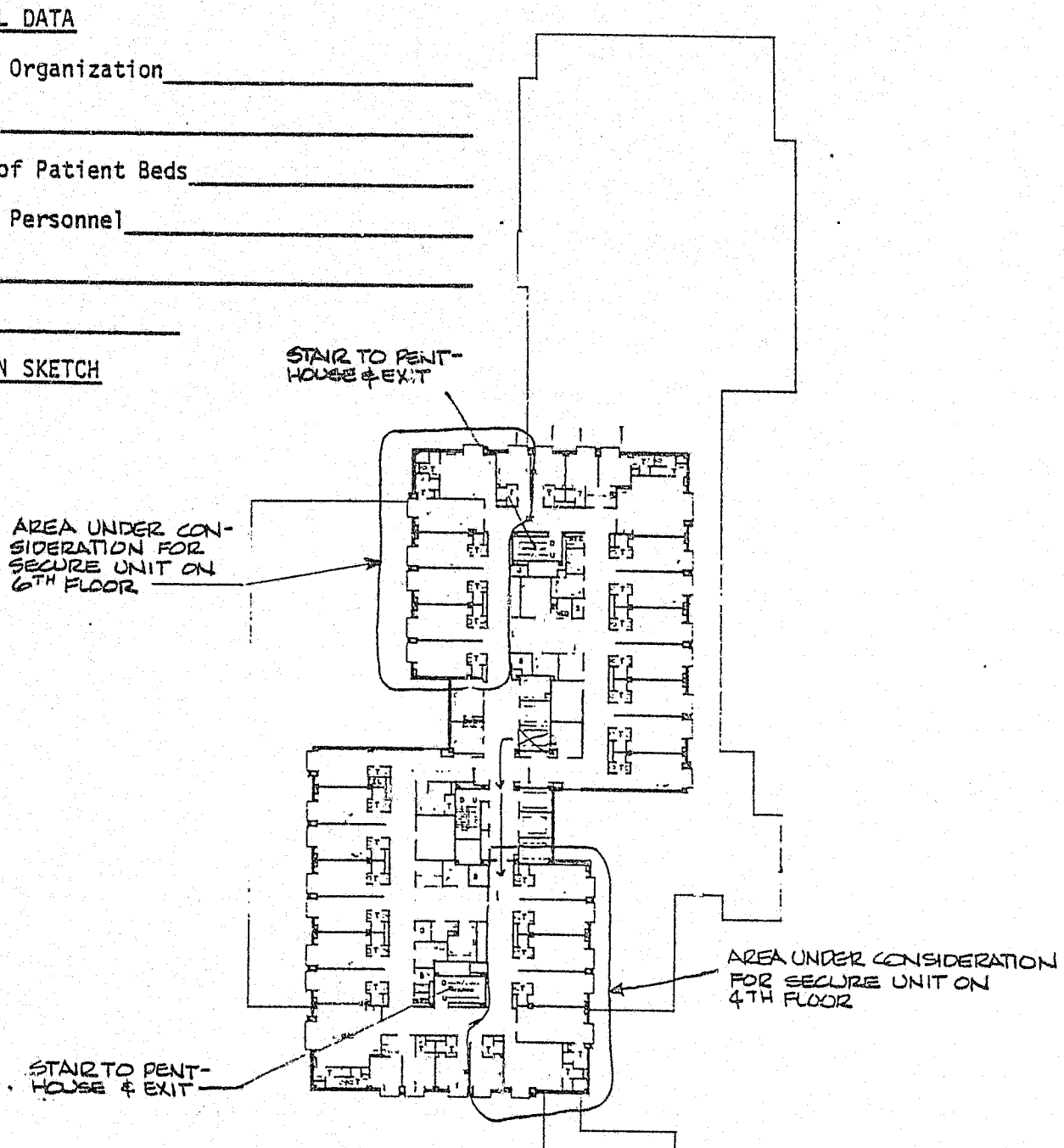
Number of Patient Beds _____

Contact Personnel _____

_____

(phone) _____

LOCATION SKETCH





Clipson/Wehrer Planning Consultants
308½ South State St. Ann Arbor, Mich.
Telephone 313/995-0550


State of Michigan
Department of Corrections

Fig. 18

HOSPITAL_____

ADDRESS_____

PHONE_____

Field Survey For
Secure Acute Care
Nursing Unit

Sheet Of

SECURITY POTENTIAL

Exterior

- Vehicle Unloading:

  Cover_____

  _____

  Screening_____

  _____

  Adequate area:_____

  _____

  Proximity to Emergency_____

  _____

  Visual Surveillance_____

  _____

- Windows:

  Material_____

  _____

  Type_____

  _____

  Glazing_____

  _____

  Condition_____

  _____

  Accessibility from ..terior_____

  _____

- Roofs

  Access to Hatches_____

  _____

  Proximity to Unit_____

  _____

  Comments_____

  _____

Interior

- Access Route from Unloading to Unit____

  _____

  _____

  _____

UNIT AREA DETAILS

Ceiling_____

Walls_____

Floor_____

Doors to patient rooms_____

_____

Visual surveillance_____

_____

_____

Emergency Exits_____

_____

HOSPITAL_____

ADDRESS_____

PHONE_____

Field Survey For
Secure Acute Care
Nursing Unit

Sheet Of

H.V.A.C. SYSTEM AND CONTROLS
(Type, grilles, control location, etc.)

ELECTRICAL SYSTEM
(Patient room lighting, controls special features)

Piped Utilities and Control

FIRE PROTECTION AND DETECTION
(Types, etc.)

GENERAL COMMENTS

Cilgson/Wehrer Planning Consultants
308½ South State St. Ann Arbor, Mich.
Telephone 313/995-0550

Fig. 21

State of Michigan
Department of Corrections

HOSPITAL_____ APPENDIX A

ADDRESS_____

PHONE_____

Field Survey For
Secure Acute Care
Nursing Unit

Sheet Of

CONFERENCE NOTES

Date of Visit_____1977

HOSPITAL POTENTIAL AS A SECURE UNIT

KEY:

1 - less than acceptable
2 - acceptable
3 - optimal
X - not available

| | Hospital A | Hospital B | Hospital C | Hospital D | Hospital E | Hospital F | Hospital G |
|---|---|---|---|---|---|---|---|
| 1. GENERAL CONDITION OF BUILDING | 3 | 1 | 3 | 3 | 3 | 1 | 3 |
| 2. PROXIMITY RELATIONSHIPS | | | | | | | |
| Vehicle unloading | 3 | 1 | 1 | 3 | 3 | 1 | 3 |
| Emergency | 3 | 1 | 1 | 3 | 2 | 1 | 3 |
| Surgery | 3 | 1 | 1 | 3 | 1 | 2 | 2 |
| OB/GYN | X | 1 | 2 | X | 3 | X | 1 |
| Radiology | 3 | 1 | 1 | 3 | 2 | 2 | 2 |
| Physical therapy | 2 | 1 | 2 | 3 | 2 | 1 | 1 |
| Laboratory | 3 | 1 | 2 | 3 | 2 | 2 | 2 |
| Sub-total | 20 | 8 | 13 | 21 | 18 | 10 | 18 |
| 3. SECURTIY POTENTIAL | | | | | | | |
| Vehicle unloading | 2 | 1 | 2 | 3 | 1 | 2 | 3 |
| Windows | 2 | 1 | 2 | 3 | 2 | 1 | 3 |
| Roofs | 3 | 1 | 2 | 3 | 1 | 1 | 3 |
| Access route | 3 | 1 | 1 | 3 | 3 | 1 | 3 |
| Building material | 2 | 1 | 2 | 3 | 2 | 2 | 3 |
| Visual surveillance | 3 | 1 | 2 | 3 | 3 | 1 | 3 |
| Emergency exit | 3 | 2 | 3 | 3 | 1 | 2 | 3 |
| Mechanical systems | 3 | 1 | 2 | 3 | 1 | 1 | 3 |
| Electrical system | 2 | 1 | 2 | 3 | 1 | 1 | 3 |
| Piped utilities | 2 | 1 | 2 | 3 | 2 | 2 | 3 |
| Fire protection | 3 | 1 | 3 | 3 | 3 | 1 | 3 |
| Sub-total | 28 | 12 | 23 | 33 | 20 | 15 | 33 |
| GRAND TOTAL | 48 | 20 | 36 | 54 | 38 | 25 | 51 |

* not constructed but under consideration for design

Fig. 23

HOSPITAL POTENTIAL AS A SECURE UNIT

KEY:

1 - less than acceptable
2 - acceptable
3 - optimal
X - not available

| | Hospital A | Hospital B | Hospital C | Hospital D | Hospital E | Hospital F | Hospital G |
|---|---|---|---|---|---|---|---|
| 4. ABILITY TO ACCOMODATE NEEDED BEDS | | | | | | | |
| 6-12 beds - 6-8 months after approvals | 3 | 1 | 1 | 3 | 3 | | 1 |
| 15-20 beds - 6-8 months after approvals | 1 | 1 | 1 | 1 | 1 | | 1 |
| 15-20 beds - 3 years | 3 | 1 | 1 | 1 | 3 | | 3 |
| TOTAL | 7 | 3 | 3 | 5 | 7 | | 5 |

Fig. 24

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END