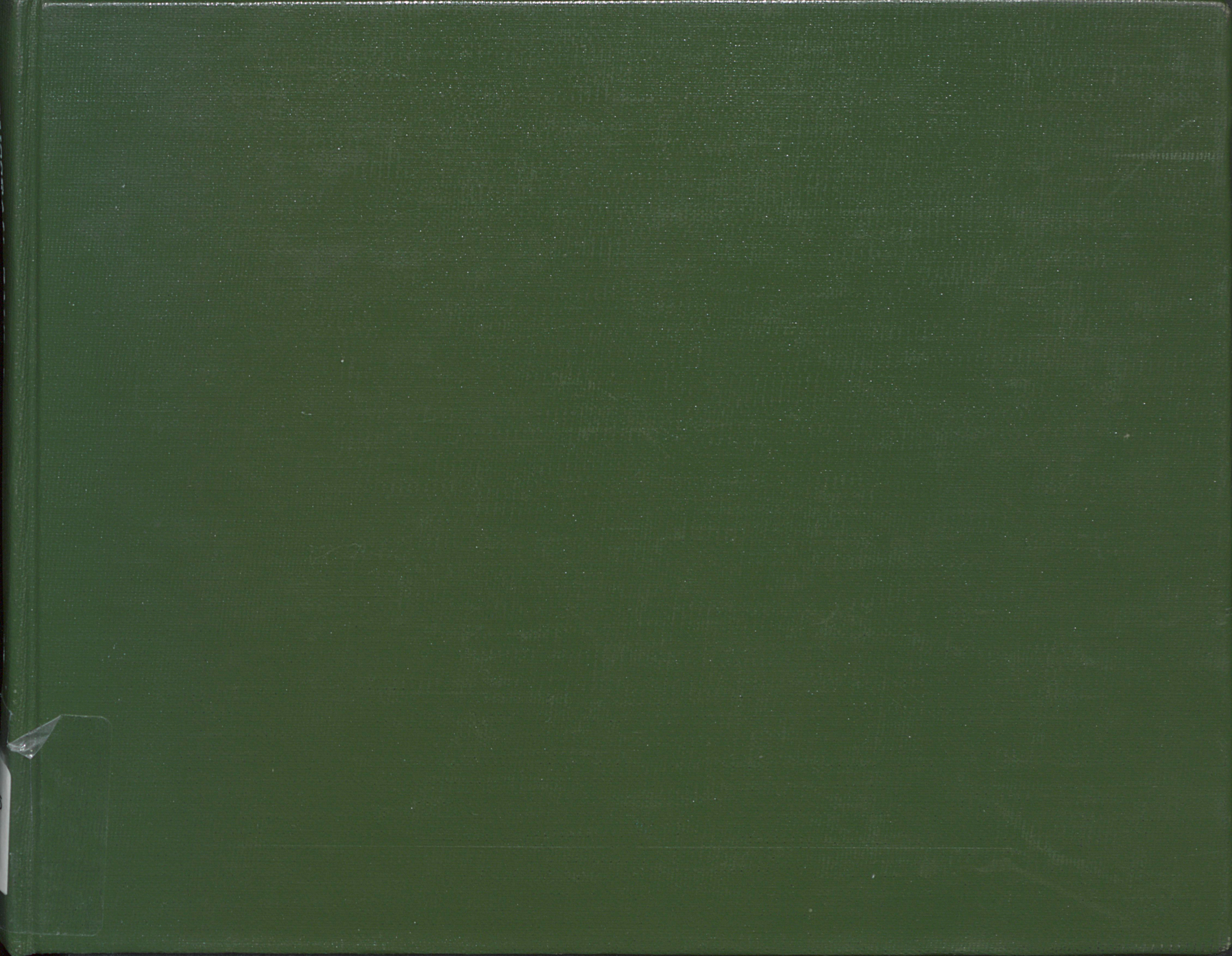




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AN INFIRMARY BUILDING
WARM SPRINGS STATE HOSPITAL

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BUILDING AN UNDERSTANDING OF THE PROBLEM

The main objective of my undergraduate thesis is a documentation of the design process used. This is an attempt on my part to develop an understanding of the problem in a systematic way, to determine the relevancy of the materials considered. My report somewhat follows a process chart developed by Professors P. A. Corkill and F. F. Guenther and that fact may explain a lack of transition between parts.

The design of an infirmary for a mental institute is a difficult problem. Much material has been published on various aspects of mental health; however, any direct application to the design of facilities has developed intuitively. The design of the general community hospital is well documented and is the main source of my understanding of hospital functions. I have included many diagrams mostly furnished by the U.S. Department of Public Health and Time-Saver Standards.

From the onset of my research, I have had to wade through one misconception after another; the aura of glamour and medical urgency belongs to the script writers. Warm Springs State Hospital is not in keeping with current thoughts of mental health care; for this reason, my thesis has become a hypothetical and an academic problem, not attempting a solution while holding to the reality of the hospital as it now exists.

AN INFIRMARY : WARM SPRINGS STATE HOSPITAL

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PRELIMINARY PROGRAM

CULTURAL CONTEXT

THE RESPONSIBILITY OF PROGRAMMING

It is the architect's responsibility to understand and subsequently design the facility. In order for the architect to be effective, he must respond to the client's understanding of his own needs, and subsequently the solution to his problem. The client has a project; the architect and the client must define, assess the worthwhileness, determine the appropriate level and nature of the solution which must be subjected to an evaluation system, then proceed to design for the needs - all in a recycling motion. "If the architect does not prepare the program, his act of accepting it is in itself a most serious responsibility which should be undertaken with adequate time for objective questioning and analysis of each of the stated needs of the client. No architect can gain much satisfaction from devoting a great deal of effort to the careful design of a building based upon an inaccurate program." (6, 1967: 94)

In our modern, highly organized society, the architect may find himself a part of a complex interdisciplinary team. Under these circumstances, the architect must understand how to draw objectively the necessary, relevant material. For projects such as government projects, it is wise to bring in all concerned together - administrative, financial, architectural, engineering, industrial, etc..., for an educational interchange. Alone, or as a member of a team of consultants, the architect can help the client realize new relationships and alternatives which may result in a better solution than was previously imagined. However, there is an inherent difficulty in probing beyond the immediate and obvious needs. Raising the level of consciousness results in the loss of innocence and naivete - without at all guaranteeing a better solution. (8)

EXISTING CONDITIONS

Warm Springs State Hospital is a typical institution - straight out of a novel and tranquilized by an avalanche of pills. It does have some competent staff; however, its competency is often expended by the incompetency of our bureaucratic system and a lack of public concern.

Patient wards are overcrowded, understaffed and inadequately designed. Based on an old standard recommended by the American Psychiatric Association of 70 sq. ft. of dormitory to 40 sq. ft. of dayroom space or a total of 110 square feet per patient, almost all wards are in excess of 50% overcrowded. Staffing has always been a problem; low wages, scarcity of trained personnel, isolation, and poor working and living environments serve as deterrents. Most wards are inadequately designed, especially for flexibility and innovations. Building material respond to economy and not to need, rendering the initial cost paper-thin while charging the inadequacies to emergency repairs and costly maintenance. (11)

The use of mental patients in the work force of the institute is decreasing. The two major reasons for this are a fast turnover in patients resulting in a lack of a chronic competent work force, and the increasing use of highly technical machines, requiring extensive skills and training. (10)

As a result of Warm Springs' isolation, the hospital must provide housing for approximately one-half of its personnel. A skilled resident staff is necessary for emergencies and are considered stable, reliable, and relatively "permanent" employees. The shortage, lack of variety, and poor quality of government housing is most unattractive. Housing in general is ill-planned, often located in various undesirable places. To date, new resident buildings include a single male employee complex and two cottages; hardly a start to satisfy the need. It is imperative for employee morale to have facilities for recreation, social functions, leisure relaxation, and the receiving of visitors. (11)

TRADITION AND NEW CONCEPTS

"It is well-known that most of the so-called mental 'hospitals' are not hospitals, but primarily places of detention contrived for the primary purpose of keeping the patients from harming themselves, and from getting loose and possibly harming others. Little attention has been paid to humanization of these institutions and a humane environment is one of few reasonably sure tools in the treatment of mentally ill as well as the mentally retarded." (3, 1969: 136)

President John F. Kennedy made an urgent call for "a new type of health facility, one which will return mental health care to the main stream of American medicine, and at the same time upgrade mental health services." As a result of his appeal, the architects and the mental health profession join together in search of a new concept - the Community Mental Health Center (CMHC). The essential elements of a Community Mental Health Center program are inpatient services, outpatient services, partial hospitalization services, including at least day care, emergency services, available around the clock within at least one of the direct treatment services, and mental health consultation and education services to community agencies and professionals. Additional desirable elements include diagnostic services, rehabilitation services, including vocational and educational programs, pre-care and after-care services in the community, including foster home placement, home visiting, and halfway houses, training of mental health professionals, and research and evaluation.

To say that a new mental health program is community-oriented, whereas in fact traditional methods in guise parade as innovations, is not a basic change; nor is it a basic change when the program is but an island in an indifferent society. A change in the mental health program must come as a part of change in society as a whole. With this in mind, in conjunction with the current state hospital, a therapeutic community based upon research experimentation and personal development of all involved might be established. In other words, let the community come to Warm Springs. A dedicated community concerned with man, a new set of values not motivated by monetary profit but by kindness, understanding, and motivated by the desire for personal development.

Warm Springs is the State Mental Hospital for Montana and burdened

with custodial service for the state. For some mental cases the damages are irreparable and it is this despondency of a horrible reality that Warm Springs has been charged with. If this situation is to become emphasized by first, the removal of retarded children and others, which has already taken place, and the return to the community of those patients for which there is hope, we leave Warm Springs with no positive results of encouragement. It is already isolated by society, the same society which is to have compassion for the Community Mental Health Center. Warm Springs is a training center for psychiatric nursing; perhaps it should also be a research center providing a full scope of services.

Because something is new, it does not follow that it is worthwhile. A break with tradition does not necessarily constitute a valid change. Newness has always been regarded skeptically for there is always a tendency to fear the unfamiliar. In a new direction and purpose for Warm Springs, I do not reject the Community Mental Health Center program but advocate the same program within a new milieu. Warm Springs represents a substantial investment and if it is to play a changing, beneficial role, it must come out of isolation. Warm Springs must not become a ship carrying plague. One way is to move it into the community or the community to it. The latter has value and merit in the fact that it can then become part of controlled environment, one decidedly beneficial to the cause of mental health. It is hoped that this milieu will be a positive force highly critical of itself, yet not under the scrutiny of an amateurish authority ready to condemn rather than to offer constructive encouragement. The system must be open to facilitate exchange of personnel, patients and ideas with society and particular with the CMHC. The two must form a coalition against mental sickness.

A community in association with Warm Springs would give the whole operation a sense of scale and balance. Instead of becoming a treatment center for the more difficult and hopeless cases, it could offer a full scope of services, perhaps going as far as offering large corporations a retreat resort for rest or encounter milieu for their personnel. But, on a more realistic plane, the community would offer educational and vocational training and would be open to the community at large as well as to patients from Warm Springs and hopefully, inmates of Deer Lodge.

THE NEED FOR COMPREHENSIVE PLANNING

At the stage of preliminary programming, the problems of mental health must be viewed in their broadest understandings. Mental health has suffered the stigma of images such as "snake pit," "savage sleep," and others. The supposedly incurable mental case is pathetic but mental health is not only concerned with the hopeless; it is concerned with mankind, beginning with the child. Tuberculosis, once a crippling, deadly disease has been suppressed to a great degree by an active program of early detection and treatment. Similar results and better must accompany any new program in mental health. In developing a program, the short term goals must attempt to establish means that give promise of rendering a useful service in the particular setting in which the program is acting; however, the program must never lose sight of the long term goal, the use of our experience as a basis for programs that ultimately and ideally would eliminate the need for the program altogether.

It is important for a program to relate to people and the program must become so important that the people will want to relate to it. We must begin to think in terms of flexibility and change, not in absolutes. No one solution can be viewed as the ultimate.

The failure of a program due to a lack of co-operation and strong resistance to change must be met with new attitudes and patience, a new manner of presentation and a new understanding of how the other person relates in the problematic environment. It is an evolutionary process based on empirical evaluation which sets the flexibility of programmatic concepts. Architectural flexibility can only be guided by a comprehensive direction in a mental health program. As a student in Architecture, I can only attempt to reflect my impressions of the program's directions or rather my assumptions as to its directions. For this reason, all assumptions will be made positive in spite of the reality of some contradictions. This must be done to permit me to attempt solutions without imposing unduly on consultants willing to help but lacking the time to do so, and the horrible realities of state bureaucracy and funding.

To proceed from this point, in spite of a lack of comprehension of the whole program, is to accept the fact that Warm Springs needs

an infirmary. Warm Springs State Hospital is an active, 'constructive,' unit of the current mental health thinking. Some of the assumptions and justification for this lie in the many facets of the problem. For instance, Warm Springs could be considered a foiled reflection of programs in the community. It is possible that the hospital's services could be extended to other states. Hopefully, the stigma attached to mental health will lessen, concentrated efforts in monies and resources will be made and new, possible directions will go towards research. We further assume that Warm Springs will develop into a community that will give its permanent staff and others some sense of stability and belonging. Presently, housing is government housing, badly in need of maintenance, landscaping, outdoor spaces, sidewalks and roads. The well-being of the staff will be reflected in its morale.

ADMINISTRATION

There are two major arms of administration : medical, and, let us say, auxiliary or non-medical. The first is concerned with the medical-professional aspects of hospital activity, such as performance by physicians, medical records, medical and para-medical education, and the like. The second has to do with business, finance, budget, payroll, operation of the institution, care of the property, performance of the auxiliary services, public relations, etc. It is desirable that both arms of administration adjoin each other, so there is no wall between medical and non-medical administration. To facilitate success, there must be frequent inter-communication between the two. However, in questions of authority, the ultimate responsibility is to the acting physician. It should be a matter of principle that nothing comes between a doctor and his patient - except perhaps a higher medical opinion.

First and foremost, in medical-surgical and psychiatric situations, the physician is the one held liable; in most instances, the auxiliary administration has absolved itself of all responsibility with the signature of admission papers. For efficiency, as well as harmony, both branches of the administration must complement one another.

Staff organization occurs as a natural efficiency-seeking phenomena; similarly architecture is expected to respond to such organization in the name of efficiency. Another factor comes into play - the therapeutic program. The program, which is the only truly positive force, is a staff responsibility - a well-trained and educated staff.

State institutions are notoriously understaffed; Warm Springs is no exception. At this point, two assumptions are made: there is an adequate staff and an active therapeutic program. Staff organization changes with the development of the therapeutic program. To illustrate this point, Mr. Harold Horowitz presents a flexible matrix which reflects the interrelationships of staff and tasks and which is adopted for the design of the infirmary. (6, 1967: 98-99)

DEVELOPMENT OF STAFFING PATTERN

STAFF

ACTIVITIES

	HEAD NURSE	SECRETARY	STAFF NURSE	STUDENT NURSE	PRACTICAL NURSE	NURSES' AIDE	NURSING TECHNICIAN	ORDERLY	VOLUNTEER
TOTAL NURSING ADMINISTRATION									
UNIT SUPERVISION									
TEAM SUPERVISION									
UNIT ASSIGNMENT									
WORK DISPERSAL									
MEDICAL ROUNDS									
NURSING ROUNDS									
MEDICAL CONFERENCE									
NURSING CONFERENCE									
TEACHING (med.) CONFERENCE									



COMPLETE INVOLVEMENT



PARTIAL INVOLVEMENT



PERIPHERAL INVOLVEMENT



NO INVOLVEMENT

	HEAD NURSE	SECRETARY	STAFF NURSE	STUDENT NURSE	PRACTICAL NURSE	NURSES' AIDE	NURSING TECHNICIAN	ORDERLY	VOLUNTEER
TOTAL NURSING ADMINISTRATION									
UNIT SUPERVISION									
TEAM SUPERVISION									
UNIT ASSIGNMENT									
WORK DISPERSAL									
MEDICAL ROUNDS									
NURSING ROUNDS									
MEDICAL CONFERENCE									
NURSING CONFERENCE									
TEACHING (med.) CONFERENCE									

Specimen corners of working print recording data from wall matrix that employs colored discs hung on nails, showing existing pattern of pediatric unit at left and proposed changes at right. Like contextual map, it is a visual display in two dimensions. Vertical columns list persons or pieces of equipment while horizontal rows show the activities. (From a study with US Public Health Service grant: Dr. Marshall Kreidberg and Herman H. Field, AIA, principal investigators, with Donald A. Kennedy, Delbert Highlands and Elliot P. Rothman.)

THE USER GROUP

Since architecture is for people, the user group is of the greatest importance, and extremely competent in the evaluation of its present environment. The opinions of the maintenance staff, medical staff, visitors, and, in some instances, perhaps patients, in facilities similar or related to the problem must be evaluated from two different aspects. The first provides an insight into the architectural deficiencies, and the second point gauges the user group's position relative to the envisioned programmatic concept of the problem. For example, a new plane designed to overcome the deficiencies of an older model will lose much of its effectiveness if flown as the old one was.

There are obvious problems which arise from the use of the user group. To a degree, none of those to be questioned or interviewed can be considered experts in their respective fields; nor can they be expected to be unusually perceptive about the environment in which they work. Their opinions may reflect their experiences and way of thinking about their work, their impressions and reactions to familiar and unfamiliar surroundings, or their moods, as influenced by the weather or the seasons.

In drawing conclusions, our own personal opinions must be evaluated and understood so far as possible. User conferences, questionnaires and interviews are tools; however, the most effective way for the user group to participate is in an educational charrette. This method not only brings out the deficiencies, goals and needs, but serves to educate the group in new and current programs. This group is, in a sense, a client and as such, an important factor to any design.

The tabulation of user requirement becomes a means of evaluation. Examples of such tabulation appear in the section "Investigation and Analysis." The evaluation is a part of the following section "Program Abstract and Confirmation." The evaluation is done by means of a matrix which scores the user and activity relationship of various alternate plans. The net result of the evaluation determines the advantages and disadvantages of various proposals according to the priorities established in the user requirements. Priority ratings are on a four-point scoring system.

- 0 Zero indicates that the requirements have not been satisfied in the proposal under question;
- 1 One indicates poor satisfaction;
- 2 Two, better;
- 3 Three indicates that the requirements have been met fully.

The product of this score and the weight of the respective user requirement is tabulated on a separate "scoring grid" for each proposal. This methodology was evolved by Davis Brody and Associates as reported in Architectural Record, August, 1969. This article goes on to say that the breakdown of users and activities into categories, which interact within the matrix to form subsets or totals, provides the scoring system with a user and activity profile.

MAINTENANCE

Mr. Charles Martin is chief of maintenance. This section reflects many of his thoughts.

To a considerable extent, repairs and remodeling depend upon decisions to abandon or to replace by new construction. In 1962, cost estimates on repairs to roofs, gutters, foundations, steps and stairs, windows and sills, plumbing, etc., were quoted at three quarters of a million dollars. Plumbing is a constant maintenance problem. Most fixtures and layouts are not appropriate for a mental institute. Maintenance has been preoccupied with emergencies. Through remodeling programs and effective repairs, preventative maintenance is beginning to take hold, especially in the electrical department.

Fire protection is minimal; most buildings do not have proper fire escapes. Maintenance throughout the complex is difficult, hampered by materials failing to withstand patient abuse and the unavailability of matching material replacements. Hollow-core doors in the Receiving Hospital are kicked and punched full of holes. Thermostats and other protruding devices have been ripped from the walls. Toilets (the wrong type for mental institutions) are kicked free and broken. Isolation rooms, and for that matter, most of the institution is not of escape-proof construction. Places of egress are battered with no attempt to systematically take apart the construction in order to escape. Escape does not seem to be a matter of intention but rather a rebellion against enclosure. Floors are a problem; Terrazo, an expensive material, has many desirable qualities and where used within the institution, has retained much of its original beauty, remaining practically maintenance-free.

Remodeling falls under maintenance. Many of the buildings are older, built for instance when plumbing was costly, scarce, and equipment not designed for use in a mental institute. It would seem that most of the institute was designed for custodial care; without adequate staffing, this tends to make sense. The trend seems to indicate a change from "institutionalization" to a therapeutic community.

In conclusion, new facilities must be so designed as to reflect the needs of the mentally ill. Materials used must be considered in terms of their initial, janitorial upkeep and replacement costs.

CUSTODY

For therapeutic reasons, welcomed by a constant shortage of staff and facilities, and a derelict tax dollar, drugs subdue most patients. The hospital gives the "impression" of a custodial institute. Custody, confinement, restriction, regimentation, and institutionalization help describe asylum and reassure man's sleep and is 'for their own good.' However, escape is not impossible ; security, such as locked doors, seem to be intended as a deterrent of sorts. Security is perhaps a necessity for the criminally insane and court referred cases. Court referred cases are retained for evaluation and their degree of competency is unknown. The criminally insane are considered dangerous and unpredictable.

Controls, such as thermostats, light switches, alarms, are broken for the sheer pleasure of disrupting services and routines. Windows, doors and grills receive a beating with few or no attempts to secretly and systematically undo the structure in order to escape. Some patients cunningly adapt to their institutional environment; others exist ramblingly in every and all directions, and still others, apparently having regained their balance, are allowed to attempt a return to the community.

For the convenience of the 'keepers' of security, a key system must be adopted : a master key for the institute, sub-master and departmental master, as reflected in staff authorization and responsibilities. Lock types must vary and be interchangeable. For instance, some wards must be locked at all times and should be equipped with dead-locking devices while other wards only require locking on occasion and should be equipped accordingly. Maximum security is supposedly prison-like confinement and not within the scope of the problem.

While concentrating on locking the patient in, the intolerable, devastating catastrophe occurs when the patient manages to lock the staff out. Doors must be so designed as to minimize the possibility of barricading oneself in some confinement. There are two different approaches: designing all doors to open outward, or collapsible hardware which would render the barricading force negative.

GEOGRAPHICAL CONTEXT

MENTAL HEALTH INTO REGIONS

The state has been divided into five regions in order to provide a comprehensive mental health program. Criteria considered: population, trade areas, geographic regions and natural barriers, location of urban centers, transportation routes, and availability of qualified personnel and facilities. Montana has many sparsely populated areas which limits the idea of centralized facilities.

Warm Springs is the State Hospital which serves on a state-wide basis. It is located within Region 111 (The Southwestern Montana Mental Health Region.). This region has the highest concentration of mental health facilities : Warm Springs State Hospital, Butte and Helena Mental Hygiene Clinics.

REGION 111 - SOUTHWESTERN

This region consists of Lewis and Clark, Jefferson, Broadwater, Meagher, Powell, Granite, Deer Lodge, Silver Bow, Beaverhead, Madison, and Gallatin Counties. It has an estimated population of 152,000 with a projected population of 162,900 in 1973. There is an estimated population of 15,992 persons aged 65 and over as of July, 1967 and projected to 16,380 in 1973. This area lies predominantly east of the Continental Divide and is mostly in mountainous areas. The transportation routes run along the valleys parallel to the mountain ranges. The main trade centers in this area are Butte, Helena, and Bozeman. The industries in the region include agriculture, livestock, meat packing, smelting, oil products distribution, mining, logging and lumber products, and some manufacturing.

The largest city in the region is Butte. The operations of the Anaconda Copper Mining Company are at Butte and Anaconda; these include mining, milling, smelting, and refining. The Montana College of Mineral Science and Technology (formerly Montana School of Mines) is located at Butte. It is also the trade center and medical center in the area.

Helena is the second largest city in the region. It is the location of the State Capitol and various Federal Offices. The Veteran's Administration operates a hospital at Fort Harrison.

This hospital is approximately six miles west of Helena. Helena is also the location of Carroll College.

Bozeman is the third largest city in the region and is the location of Montana State University.

There are good highways between cities and towns in the area. East-west highways include Interstate 90 and U.S. Highway 12 and 287. North-south travel is by Interstate 15, U.S. 91, 287, and 10. Railroad passenger service is by the Northern Pacific Railroad for travel east and west, while the Union Pacific operates south to Salt Lake City from Butte. Airline service is available in most directions.

THE CLARK FORK VALLEY

Warm Springs lies ten miles northeast of Anaconda and fourteen miles south of Deer Lodge. Here are a few comments on the surrounding towns and cities:

BUTTE -- Butte, at the upper end of the Clark Fork Valley, is a mining community actually being engulfed by Anaconda's open pit mining operations which are at present within a few blocks of the central business district. As a result, the city is fleeing into the valley - sprawling away from the high taxes of urbanization. The business district has but a 60% occupancy. The heart of the city seems to be dying in spite of the Model Cities Program.

ANACONDA -- Anaconda is situated eight or ten miles south-west of Warm Springs. As most towns in the valley, the central business district appears to have been prosperous at one time and vacant now. The Anaconda Company has a smelting operation on the outskirts of town. The fumes and smoke belching from its stacks seem to miss Warm Springs, slowly killing the mountain to the south and moving eastward towards Butte.

DEER LODGE -- Deer Lodge is the site of the Maximum Security Prison for the State of Montana. Its present state is antiquated and outdated, and not at all in keeping with current trends of prison reform. Because of the general lack of industry in the area, as well as in Montana, most solutions tend to make of the prison a farm operation;

however, most people do not want to be farmers. Current thought in prison reform favors sending the inmates into the community for work, returning to the prison at the end of the day. This is an impractical solution for Deer Lodge as it does not have a community in which to offer its inmates work.

GALEN -- Galen was conceived as a pulmonary hospital for the tuberculosis problem. The state, in 1956, built what was regarded as perhaps the finest surgical facilities in the state. However, the tuberculosis program changed to one of early detection and prevention, thereby reducing the necessity for the facilities at Galen.

SUN ANGLES : ALTITUDES & AZIMUTHS

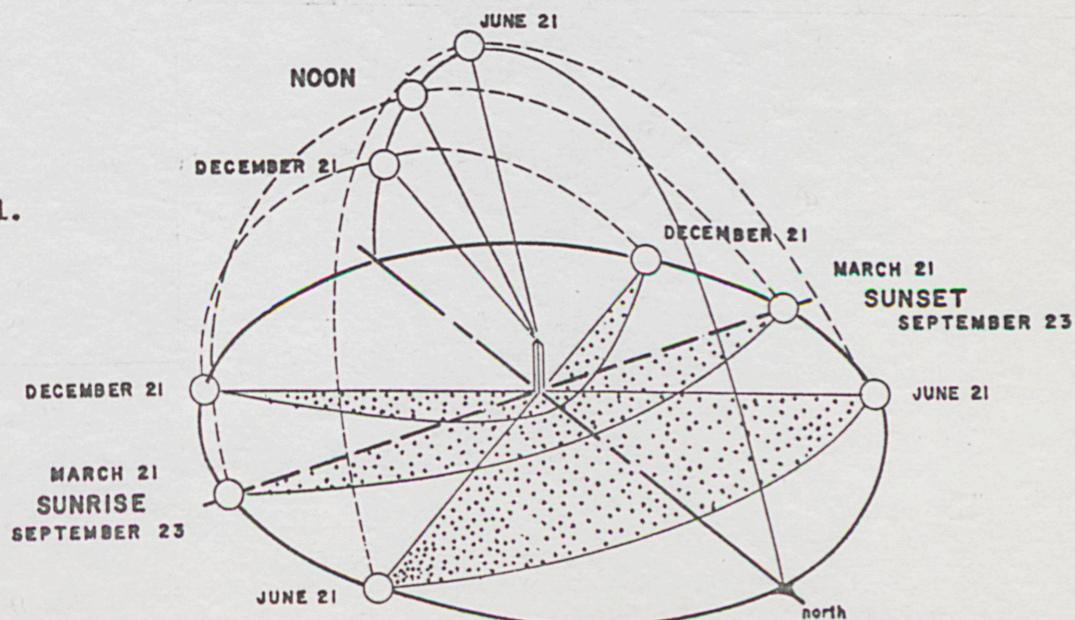
	WINTER SOLSTICE	VERNAL & AUTUMNAL EQUINOX	SUMMER SOLSTICE
TIME	AZIMUTH ALTITUDE	AZIMUTH ALTITUDE	AZIMUTH ALTITUDE
6:00 am	sunrise 7:40	east sunrise	S 69° E 15°
9:00 am	S 36° E 12°	S 53° E 28°	S 68° E 48°
12:00	south 20°	south 44°	south 65°
3:00 pm	S 36° W 12°	S 53° E 28°	S 68° W 48°
6:00 pm	sunset 4:20	west sunset	S 69° W 15°

WARM SPRINGS

latitude 46° 12' N

longitude 112° 42' W

altitude 4853 feet a.s.l.



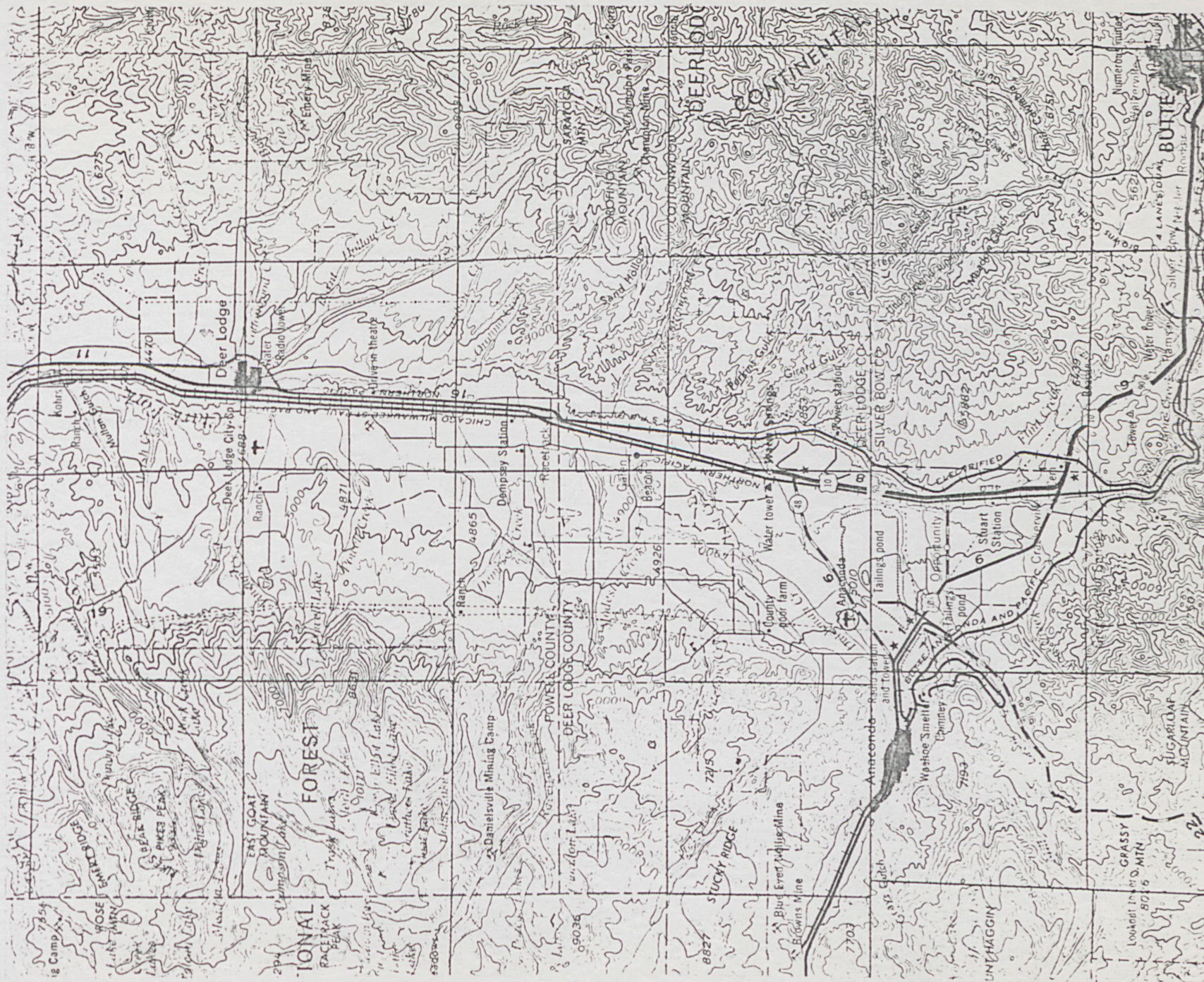
<u>TEMPERATURES</u>				<u>HUMIDITY</u>			
MONTH	LOW	HIGH	DEGREE DAYS	5:00am	11:00am	5:00pm	11:00pm
JAN	-44° F	+56°	1500	73%	69%	67%	71%
FEB	-41°	+64°	1180	74%	66%	62%	71%
MAR	-32°	+68°	1080	75%	61%	56%	70%
APR	-15°	+82°	750	75%	50%	43%	64%
MAY	+15°	+89°	405	77%	48%	44%	66%
JUN	+27°	+96°	250	79%	51%	47%	67%
JUL	+32°	+100°	72	73%	42%	43%	56%
AUG	+30°	+101°	90	71%	42%	33%	55%
SEP	+15°	+94°	380	75%	48%	39%	62%
OCT	-5°	+84°	660	76%	55%	49%	68%
NOV	-32°	+69°	1050	76%	66%	64%	72%
DEC	-35°	+61°	1400	74%	70%	69%	73%

MEAN TEMPERATURE EXTREMES

	January	July
Mean Maximum Temperature	30° F	82° F
Mean Minimum Temperature	10° F	48° F

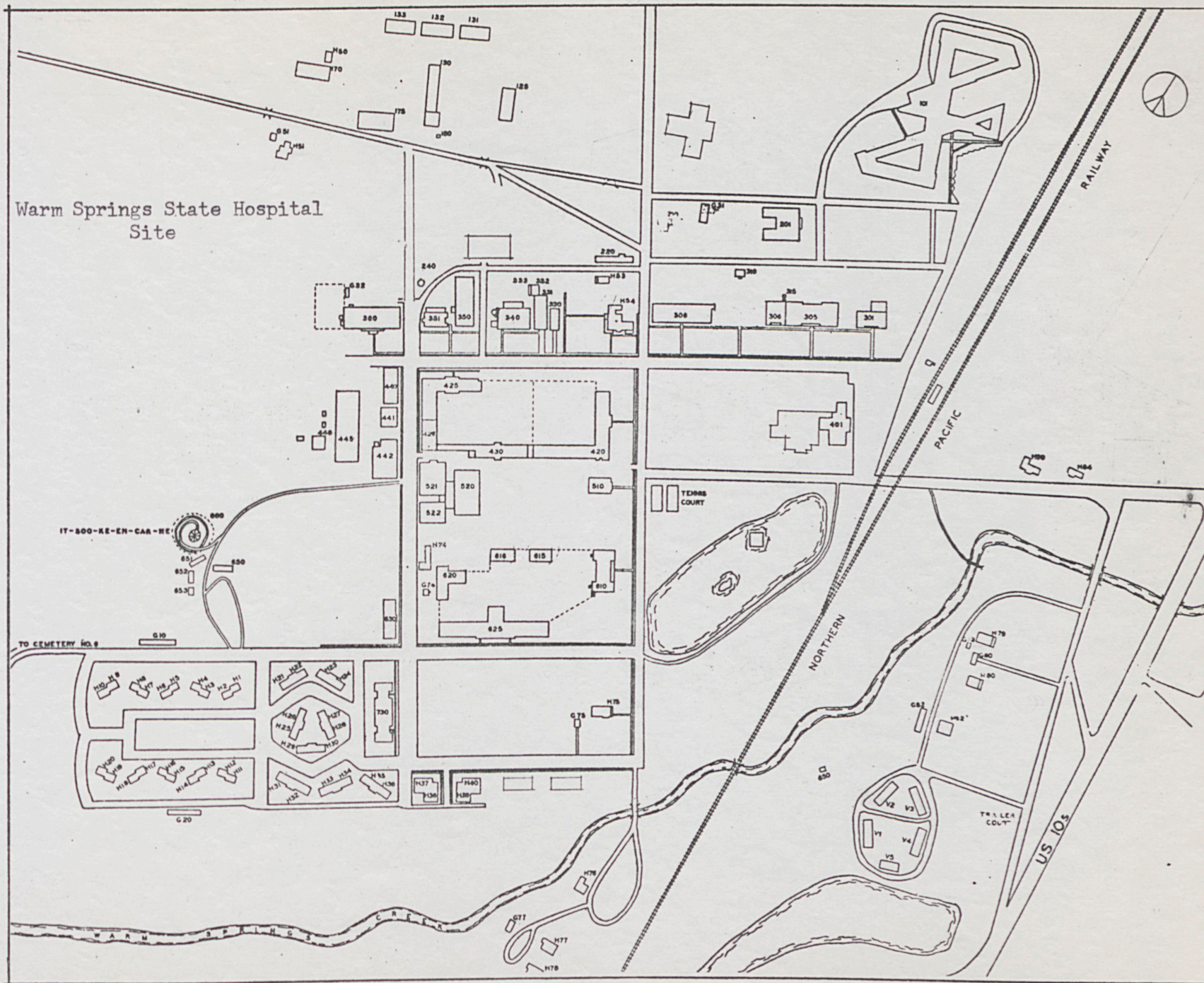
AIR MOVEMENT

<u>Storm Fronts</u>			<u>Prevailing Winds</u>	
Maximums			Average	
	Speed (MPH)	Direction	Speed	Direction
JAN	60	S	7.0	SW
FEB	60	NW	7.8	NW
MAR	50	NW	8.2	NW
APR	50	NW	9.3	NW
MAY	55	NW	9.4	NW
JUN	50	W	9.0	NW
JUL	60	SW	8.1	NW
AUG	60	S	7.6	SW
SEP	45	S	7.5	SW
OCT	55	SW	7.3	SW
NOV	45	SW	6.9	SW
DEC	55	NW	7.1	NW



U.S. Geological Survey

Warm Springs State Hospital
Site



BASIC CONSTRAINTS

PROJECT DEFINITION

PROJECT DEFINITION

After a familiarization period in which the architect has had an opportunity to assess a question and from an understanding of the client's programmatic needs, the architect and client can decide on the scope of the architectural program. The project is an infirmary for the care of the physically-ill mental patient. This unit will be but part of the larger complex - the State Mental Hospital. The term "mental" is omitted from the title because of its adverse connotation. The institute is called the Warm Springs State Hospital.

In a sense, there are two opposite types of people for whom the facilities will serve; the sick, not only physically but mentally, and the staff needed for their care. Staff consideration is important; the isolation and low-pay standards of the institute can only offer optimum working conditions or suffer by the loss in quality.

From Dr. Stanley J. Rogers came the following directive to the Architect and will be the basis of all needs to be considered in the actual limits of the problem with possibly one exception, the food service. Presently the remodelling of an antiquated kitchen will serve for Units 10, 17, 18, 27, 28, and 29. It is assumed that the new infirmary food service facilities will consist of a servery which will handle the general requirement and an auxiliary diet kitchen to handle special needs. Also the relationship of the special ward for disturbed and at risk female psychiatric patients to the infirmary will be questioned and possibly considered as a separate unit.

REQUIREMENTS FOR NEW BUILDING TO REPLACE ANNEX BUILDING

As previously submitted this is one of the oldest buildings on the grounds, being used for the housing of patients. It is a two-story, frame structure and represents a grave fire hazard, and has for many years been condemned by the State Fire Marshall and anyone else that has viewed the building relative to its fire safety and hygienic hazards. It is

planned to be demolished and completely replaced.

The new building will need to include a modern food preparation area with facilities for special diet preparation, easy handling and distribution to all wards served by this distribution point. It should also have cafeteria accomodation for at least 100 patients. This installation should completely replace the present obsolete diet kitchen and dining room located in the basement of the General Hospital. It is calculated that this new food preparation area would serve a potential total of 350 patients of which about 250 will be requiring food distribution to their wards. The wards it would serve would be General Hospital 27, 28, 29; Infirmary 17, 18; Unit 10; New Hospital ward; New Security ward.

It is proposed that the present clinical laboratory be removed from the Clinic Building basement to a location in the new building, appropriate design and location will need to be considered in consultation with our consulting pathologist and our laboratory technician. It should be planned to accomodate the available module laboratory equipment, provide sufficient useful work space, storage, and a small waiting area.

The present Annex Building to be demolished also contains a Dental Office and Laboratory, which also will be relocated in the new building. This should have appropriate design to accomodate two chairs and laboratory, again in consultation with our Dental Surgeon, Dr. McIntee.

A modern, appropriately designed hospital ward for up to 50 patients will need to be included to accomodate medically and surgically sick patients. The present hospital ward runs at near capacity (50 beds) most of the time carrying usually between one to two dozen critically ill patients and having

three to four deaths per week. This ward should be built in concurrence with the latest available planning for General Hospital beds, should have an isolation area, an area for intensive treatment care with suction and oxygen to the beds, should be built with good observation to all bed occupied areas from the nursing station, should have a number of beds on open ward areas, as well as several sound-proofed, private rooms for the more disturbed and critically ill patients. It should also have a proper food distribution point and dining area within the ward setting. It should have a visitor's room and a recreation area for convalescing patients. Doctor's examination and minor procedure room should also be provided. Its location should be convenient to laboratory, X-ray and dietary services and if possible, to the present operating room area in the clinic building.

A further ward is contemplated to accommodate up to 15 or 20 "disturbed" and "at risk" female psychiatric patients. This ward, again, will have to be appropriately planned to meet the specific needs of this type of patient, which can be discussed in more detail with the hospital authorities. Basically, it will need security planning with good all around observation, seclusion areas and distinct accent being placed on fire-proofing and sound-proofing. It will also require a small dining area. It would be preferable to have access to an enclosed exercise area outside, therefore probably should be a ground floor building. There should also be recreational and occupational therapy facilities within the ward area, also doctor's office and interview room.

The entire new building should be planned according to the criteria established by the United States Public Health Service for new hospital construction, including width of corridors, door openings, bed space, sanitary facilities, fire safety, etc. The building should include the latest in fire alarm

provision and provide for easy evacuation through internal and external fire escapes particularly suited to the requirements of the unique occupancy of the area.

It is hoped that if this is a multi-story building attached to the present clinic building that cost savings can be effected by the use of the present elevator shaft in the clinic building, which could be renovated with a new elevator car and hoist mechanism to serve both the present clinic building and the new structure.

Equipment needs will need to be discussed in detail. Preliminary inquiries have resulted in the good possibility of acquiring much fairly new hospital equipment, including beds, etc., from government surplus in Denver.

Provision should also be contemplated for standby emergency light and power needs. Special attention will need to be given to the planning of the dietary area, so that service needs can easily be maintained.

Reading Dr. Rogers' report, one cannot help but feel that the replacement of the Annex Building is intended as a sort of cure-all. The only unit not included in the new facilities is a surgical suite which remains in the old Clinic Building. Not replacing the surgery is an economy move -- a saving, by not replacing the old one, and a new, badly needed elevator for the Clinic Building. However, I shall consider a surgery in the architectural scope of my thesis.

ECONOMIC FACTORS

ECONOMICS

Signed by Governor Tim Babcock on March 16, 1967, the 'Extraordinary Sessions House Bill No. 13' appropriated monies through an authorized sale of bonds for the long range building program of the Department of Institutions for the biennium ending June 30, 1969. Warm Springs State Hospital was allocated monies for the following projects:

New building to replace annex	\$600,000.00
Heating plant and incinerator	\$550,000.00
Renovate Warren and Kansas building phase 1	\$112,000.00

The principal source of revenue for the operation, maintenance and construction of facilities at the various institutions under the jurisdiction of the Department of Institutions is by legislative appropriations. Other sources of revenue are from per diem charges for the care of patients and from various contributions.

The \$600,000.00 allocated to the replacement of the Annex Building was given the following breakdown in the original project description submitted to the architect:

Project budget : Preliminary outline of estimated project costs to include but not limited to the following:

Site survey	\$750.00
Soil testing	\$750.00
Other testing	\$1000.00
Administration and legal expenses	\$2500.00
Furnishings and special equipment	\$85,000.00

Landscaping and site development	\$1000.00
Construction cost	\$460,000.00
Architect/Engineer services	\$39,000.00
Contingencies	\$10,000.00
Total project cost	\$600,000.00

The original site surveyed was next to the 'Warm Spring' outlet source. Because of underground formations on the site, the foundation costs were prohibitive. A new, tentative site, next to the Receiving Hospital and Administration Building, is now under favorable consideration.

To compare the scope of needs with the budget within the document "Requirements for New Building" can only be described as a "mental breakdown." The budget is totally unrealistic; in fact, the budget ridicules the reality of the needs -- needs which are so great that through sheer frustration quality suffers, postponing and compounding the cost and consequences.

Ultimately, economics govern most of our decisions; however, to let economics restrict and limit the project from the very beginning, when needs are not fully understood and defined, may result in perpetuating inefficiency and obsolescence. Hospital costs are approximately thirty-five dollars a square foot. Initial costs are high in hospital construction because the institution cannot afford to shut down for repairs or alterations.

There is need for comprehensive planning, based on comprehensive economical studies. Economics must consider the initial cost as well as maintenance and service costs. For example, a decision to have a central heating plant was favored over units having individual heating sources. Steam leaves the main boiler plant under high pressure and temperature. This pressure is reduced before

distribution. For most units, this is the only temperature control for the system heating them. From this point, temperature is controlled by opening or closing a window. As an initial economy move, radiators were not equipped with valves and, as a result, there is an inordinate demand on the boiler plant.

SCOPE OF SERVICES

SERVICES REQUIRED

An academic situation should reflect the reality of a situation in as much as it can; however, it is more important, as the last academic exercise, to develop an approach to architecture than to hold to reality. In this section "Services Required," there must be some preliminary understanding as to the scope and feasibility of the project; but, any initial understanding should be re-examined upon the completion of the preliminary program.

It can only be after the completion of the preliminary program that the scope and context of the project can be determined with some reasonable degree of accuracy. In general, we speak of architectural and engineering services, but the needs of clients are changing and becoming more complex. A new breed of client seeks a comprehensive service that goes far beyond the traditional; a study in depth before authorizing design and/or construction, a well-documented program.

For my thesis project, I shall develop a solution to meet the needs of the physically ill patients of Warm Springs. The project itself will develop from "Investigation and Analysis."

TIME CONSTRAINT

TIME CONSTRAINTS

Time is the most constraining element of human endeavour and time lines are attempts at scheduling an orderly work process on the calendar and time available. Researching, planning, and designing is a cycling motion. Any attempt to systematically layout a problem tends to define the problem.

To date, that which seems to work the best is a three-part inter-related model : the first part is the available time, the second, examples of various methodologies, and the third part, the actual development of the problem and anticipated direction. The vertical link, as it moves across the model, reflects the progress in time.

CONSEQUENT RESEARCH

PUBLICATIONS

Publications are the current greatest source of information; however, they reflect the thinking of one to five years before the date of their printing. The following is a sample bibliography of consulted works on mental illness and hospital design.

Books

Hudenburg, Roy. Planning the Community Hospital. New York: McGraw-Hill Book Company, 1967.

Wessen, Albert. The Psychiatric Hospital as a Social System. Springfield, Ill., Thomas 1964.

Silverstein, Harry. (Editor) Selected Studies in Social Problems: The Social Control of Mental Illness. New York: Thomas Y. Crowell Company, 1968.

Rosenfield, Isadore. Hospital Architecture and Beyond. New York: Reinhold Book Corporation, 1969.

Psychology in Community Settings. Yale University, 1966.

Furnam, Sylvan S. Community Mental Health Services in Northern Europe. Public Health Service Publication 1407.

Periodicals

Goshen, Charles E. "Psychiatric Units in General Hospitals." The Modern Hospital, 93 (November, 1959).

"Health Care." Progressive Architecture, L (February, 1969), 94 - 141.

"Planning the Laboratory for the General Hospital." U.S. Department of Health, Education, and Welfare, Public Health Service, Division of Hospital and Medical Facilities Architectural and Engineering Branch,

in collaboration with College of American Pathologists, (February, 1961).

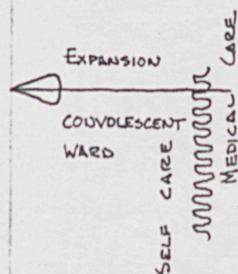
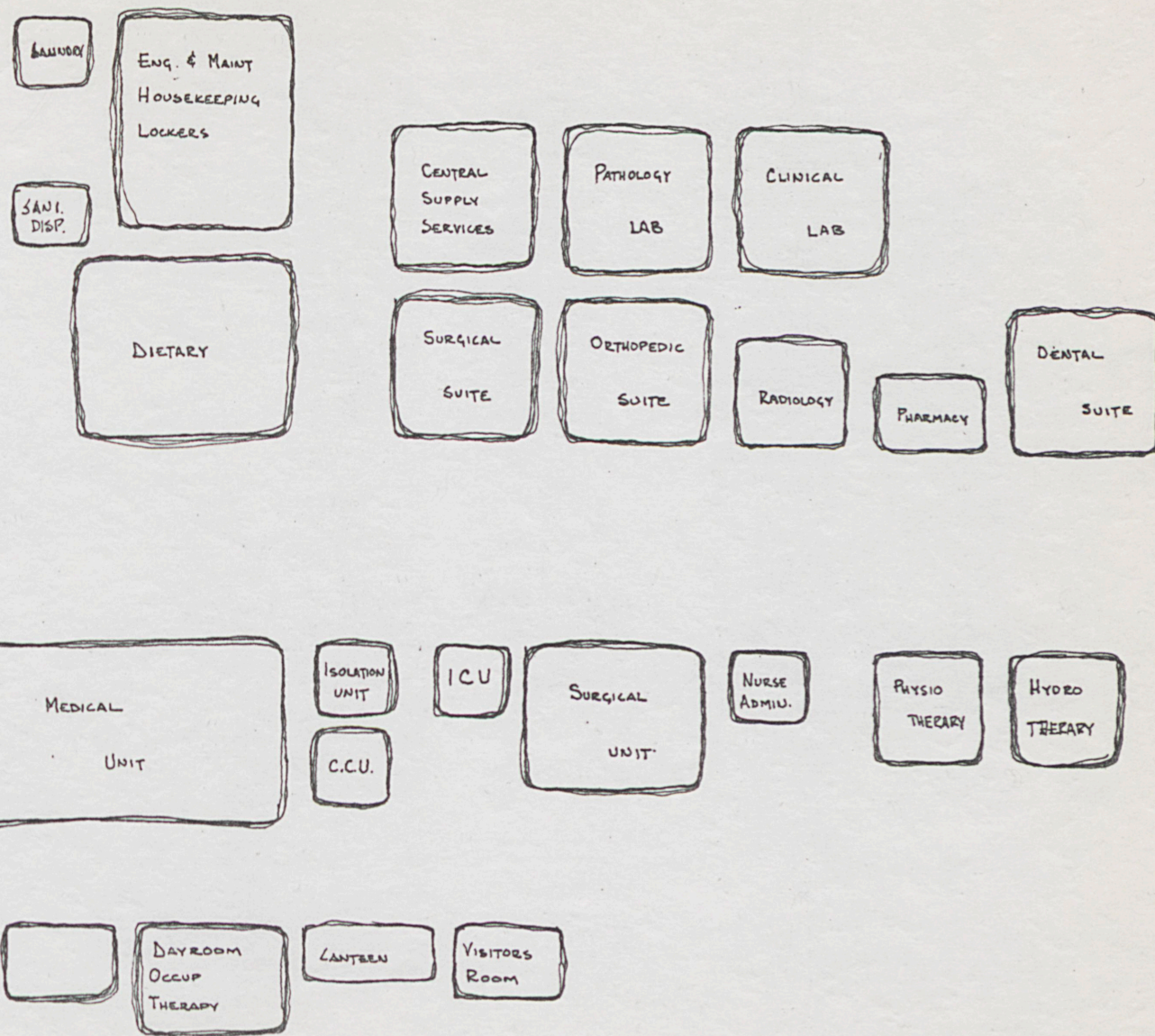
Runge, Allis. "Beating the Systems Game." Progressive Architecture, LI (March, 1970), 106 - 109.

Taylor, Wilbur R. , Nelson, Clifford E. , and McMaster, William W.
"Diagnostic X-ray Suites for the General Hospital." Architectural Record, 126 (October, 1959).

INVESTIGATION & ANALYSIS

**ACTIVITIES &
OPERATIONS**

TO BE DETERMINED
IN/OUT EGRESS
ON GRADE
BELOW GRADE



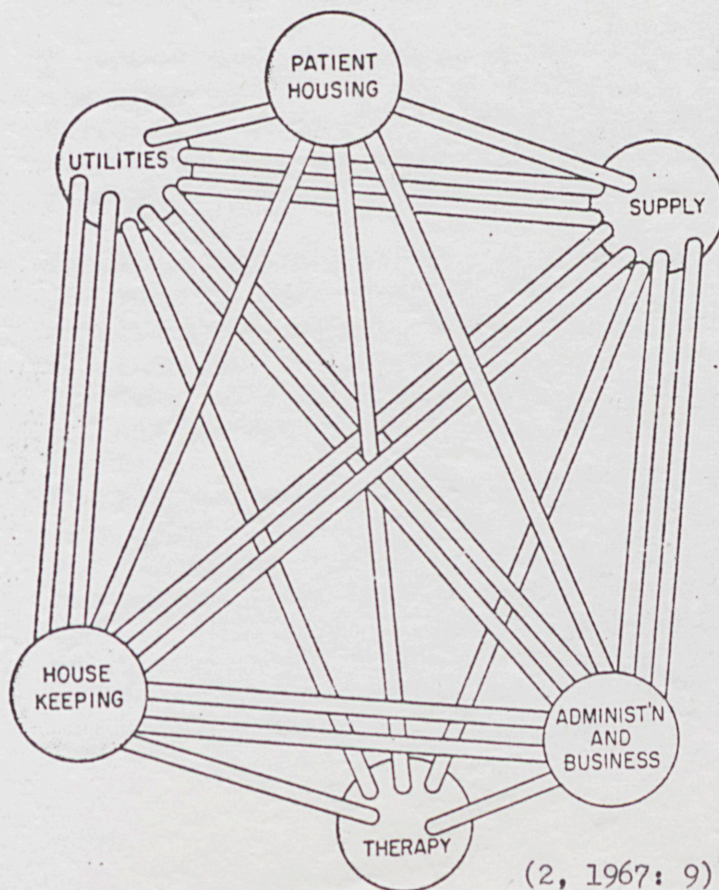
P/A MARCH 70

(7,1970: 107)

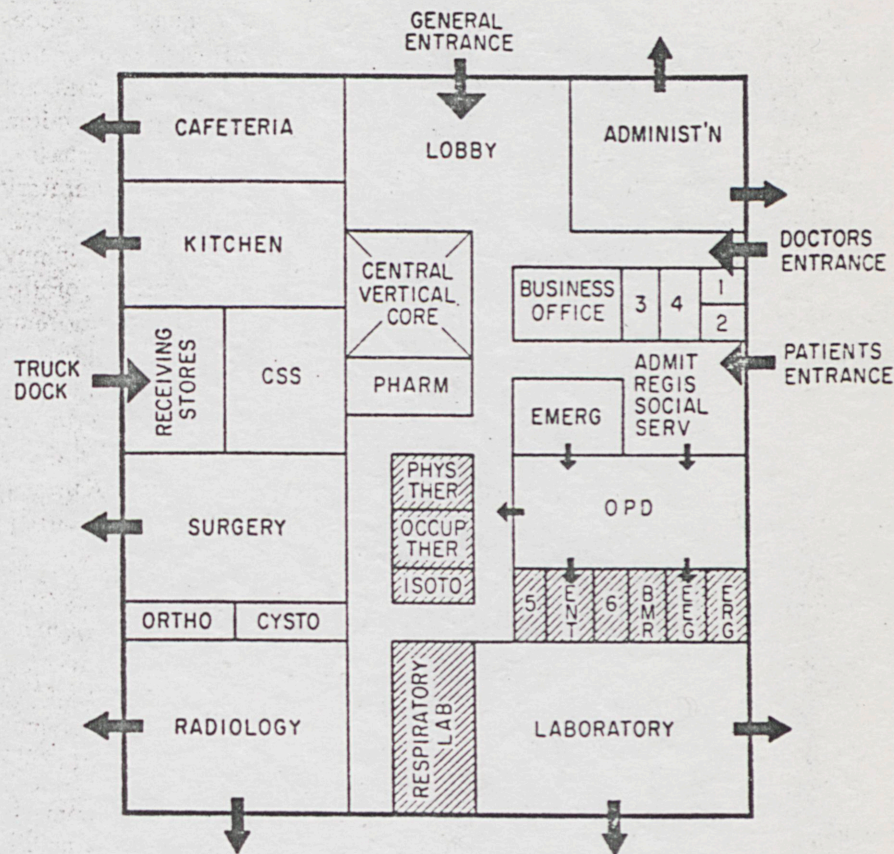
The hospital with its six systems represented as a molecular model.

Single rods indicate the one-way services provided to patient housing and therapy.

Double rods indicate mutual support.



(2, 1967: 9)



Priority of location of ground floor elements of the hospital in relation to the central core of vertical transportation is diagrammatically represented. Elements are also arranged to indicate mutual interrelationships. Outpointing arrows show avenues of expansion, and shaded areas show functions that can move elsewhere to permit internal expansion. Inpointing arrows show four principal entrances.

Legend: CSS-central sterile supply department; ORTHO-orthopedic surgery; CYSTO-cystoscopy room; PHARM-pharmacy; PHYS THER-physical therapy; OCCUP THER-occupational therapy; ISOTO-isotopic therapy; ADMIT REGIS-admissions, registration for outpatients, and social service counseling; EMERG-emergency; OPD-outpatient department; 1-physicians' lounge; 2-telephone switchboard; 3-cashier; 4-medical records; 5-endoscopy; 6-ophthalmology. (2, 1967: 145)

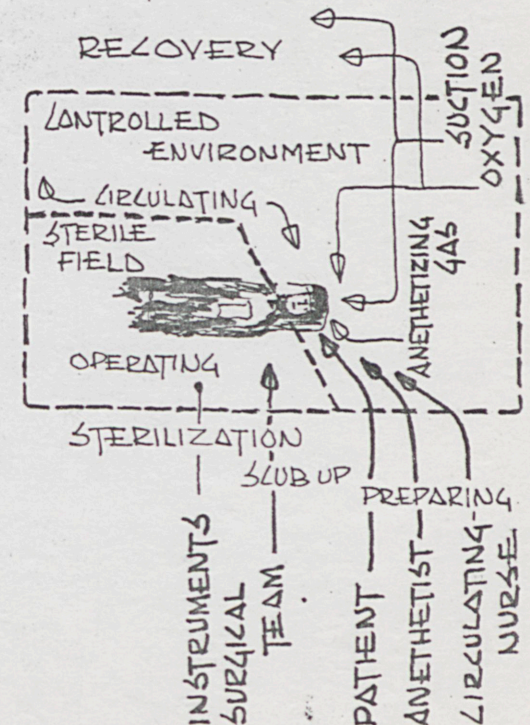
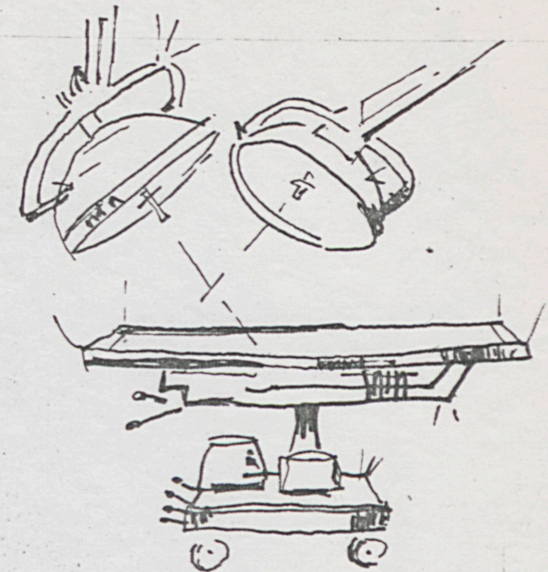
SURGICAL SUITE

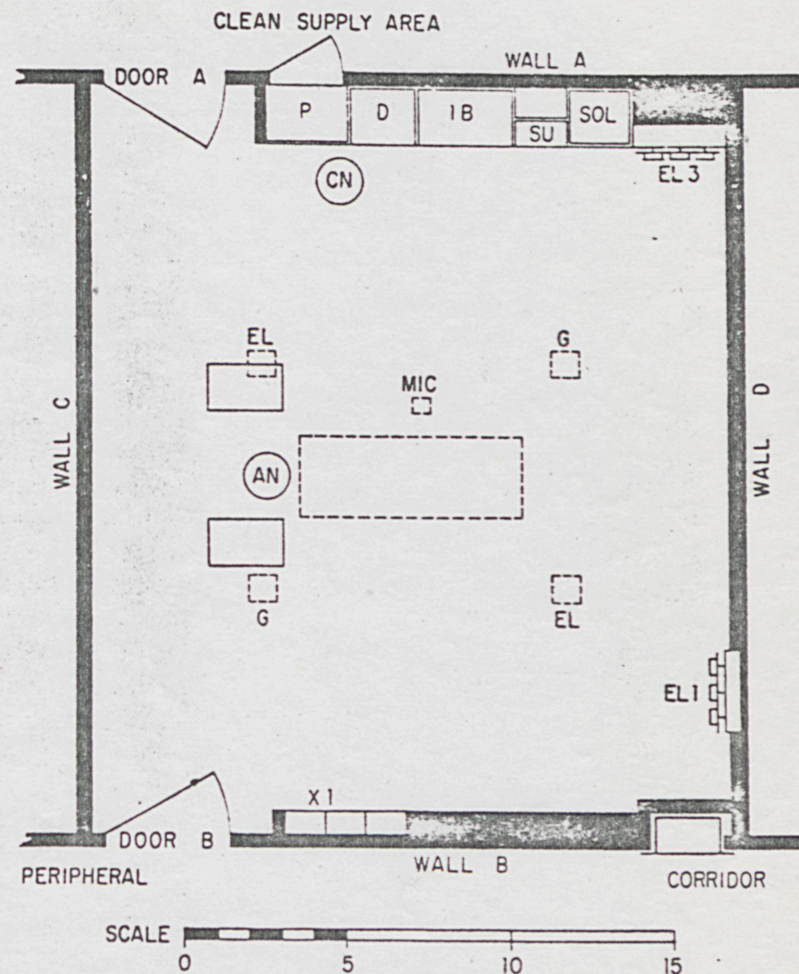
In preparation, the surgical team changes into clean scrub garments, clean conductive shoes and head coverings, and scrub outside of the operating room. In surgery, the patient, after being anesthetized, is positioned on the table. The site of the operation is thoroughly cleansed, the patient draped with sterile drapes from a sterilized linen pack. Sterile linens, basins, suture materials, and instruments have been brought into the operating room in large, double-wrapped packs. The outer wrappings of the packs will act as coverings or drapes for the various instrument tables on which the respective items are to be placed. The scrub nurse, after putting on sterile gown and gloves with the aid of the circulating nurse, may handle the sterile items, hand out the gowns and sterile gloves to the surgeons, and arrange the instruments.

A typical surgical team consists of the surgeon, his assistant, the scrub nurse, the circulating nurse, and the anesthetist. The circulating nurse is responsible for performing any required tasks away from the table; the anesthetist sits by the patient's head, separated from the sterile field by a draped barrier.

Three distinct functions must be studied in connection with supplies for surgery. These include: the continual and safe provision of sterile and clean materials, and the quick sterilization needed on short notice, the removal of soiled and used materials, including the terminal sterilization of instruments that may be contaminated, and the inspection and storage of instruments.

The surgical recovery room specifications do not differ greatly from those of the intensive care unit. At the head of the bed area are oxygen and suction outlets, a sphygmomanometer, and handy storage for items such as emesis basins that might be needed urgently. The mobile recovery bed is a stretcher equipped with relatively large, conductive rubber-tired wheels, adjustable side rails, sockets to hold intravenous poles, and a holder for small oxygen cylinders. (2, 1967: 205)





Typical surgery layout for the peripheral corridor type of suite. The anesthesiologist's stool is shown at the head of the table flanked by anesthesia gas machine and table, and served (dotted lines) by overhead gas and electrical consoles, also duplicated at other end of table. *XI* near door *B* is the x-ray film illuminator, while the box on the corridor side of wall *B* is an electrical control, which has alarm indicators and circuit controls at *EL 1*. Each receptacle at *EL-1* and *EL-3* is supplied by a separate circuit. The cabinets on wall *A* are (l. to r.) pass-through, writing desk, instrument pegboard, sutures, and solutions. (2, 1967: 207)

AN OUTLINE OF CONSIDERATIONS FOR THE INFIRMARY BUILDING

Sanitation disposal system and facilities

Soiled laundry removal system

Soiled dishes and food carts - return, cleaning, and sterilization system

Janitor service; central air exhaust and vacuum system

Lockers: patient storage and personnel changing area for the nursing staff, medical staff (doctors), and maintenance people

Dietary and food servery : easy handling and distribution to all wards

General and central service : receiving and storing supplies; distribution to other areas

Surgical suite : sterilization and preparation of surgical supplies and instruments; operating theater and recovery room

Intensive care and continual care units: one to two dozen critically ill/ three to four deaths, per week; mostly geriatric

Orthopedics services : cast room; X-ray service; mentally-ill patients would appear to have brittle bones

Laboratory activities : waiting area; clinical ; pathology ; radiology

Wards : medical - surgical; 50 patients load, open ward-private wards; isolation units

Dayroom : recreational and occupational therapy; visiting area with refreshment facilities

Nursing supervision

Examining room : a facility for physicians for the examination of patients

Physiotherapy : exercising - bars, weights, traction ; massaging, sonic or electronic treatments ; hydrotherapy - swirling baths, heated and mineral waters

Dental suite : two chairs and laboratory

Pharmacy : the dispensing of drugs

Outpatients department : emergency and minor treatment activity

Barbering and hairdressing : perhaps to be included with an extension of the infirmary building; for long-term, convalescing patients ; seems essential for the morale of the patients

SPECIAL CONSIDERATIONS : PERHAPS BELONGING IN A DIFFERENT CONSTRUCTION PHASE

Special ward : This is a special unit not necessarily for physically-ill patients; should perhaps be included with the psychiatric evaluation facilities for the state and courts.

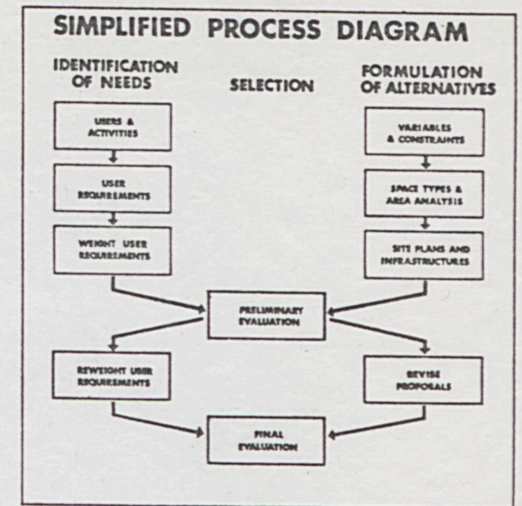
Pyromaniacs - 15 to 20 "disturbed - at risk," female patients

- 1- security planning
- 2- all around observation
- 3- seclusion area
- 4- fire-proofing
- 5- sound-proofing
- 6- enclosed exercise area - outdoors

Maximum security ward for the observation and evaluation of referred court cases

SURGICAL SUITE REQUIREMENTS

In attempting to experiment with an evaluation system, hopefully leading to a better understanding of and systematical design process, I have adopted a method devised by Davis Brody and Associates which appeared in the August, 1969 issue of Architectural Record -- "A Technique for Designing the Laboratory: User Requirements and the Development of Alternatives." The following pages contain definitions of users, their activities, and statements of their requirements. Scoring grids for the evaluation of alternatives appear in the section "Program Abstract and Confirmation." (4, 1969: 136-141)



(4, 1969: 137)

TOTAL

[illegible]

ALL USERS

This category contains all users who come into contact or have some functional relationship with the surgical suite.

PATIENT/STAFF

That group of users defined by the hospital as having a direct relationship with surgery.

PATIENT

The person undergoing surgery.

SURGICAL TEAM

This group is responsible for the actual surgery and is composed of the following members: surgeon, anesthetist, scrub nurse, and circulating nurse.

SURGEON

The member of the surgical team directly responsible for performing the operation. He is attired in sterile gown, mask, cap, and gloves, and works within a sterile field.

ANESTHETIST

The member responsible for the administration of anesthesia to the patient, working outside the sterile field.

SCRUB NURSE

The supporting member of the team who is also attired in sterile gown and gloves. She assists the surgeon in such activities as the handling of instruments, preparing sutures and sponges, and is responsible for the activity and equipment within the sterile field.

CIRCULATING NURSE

This member, not gowned or gloved, supports the personnel working in the sterile field. She assists in such activities as the counting of sponges, the administration of drugs to the patient, the regulating of intravenous solutions, in short, all activities not considered within the scope of the sterile field.

SUPPORTING PERSONNEL

That group responsible for supervisory, clerical, maintenance or various other support tasks.

ADMINISTRATIVE PERSONNEL

Those supporting personnel doing office and/or clerical work, directly or indirectly for the surgical suite.

MAINTENANCE/SERVICE PERSONNEL

Those supporting personnel responsible for maintaining facilities/equipment, making alterations, delivering goods, distributing materials, etc.

OTHERS

All other users, including visitors, handicapped, etc.

ALL ACTIVITIES

This category contains all common activities taking place within the surgical suite.

CIRCULATION/CONTROL

The movement of materials and personnel throughout the suite.

ANESTHETIZING

Those activities directly related to the administration of and the recovery from anesthesia.

SURGERY

The actual process of correcting deformities, defects, and repairing injuries by manual and instrumental operations.

SCRUBBING

The process of cleansing the hands with a brush and an antiseptic solution in preparation for surgery.

CHANGING/WASHING

The process of showering and changing into clean scrub garments, clean, conductive shoes, and caps.

RESEARCH

The use of a laboratory for investigation, experimentation, and consultation with personnel.

ADMINISTRATIVE/CLERICAL

Those activities pertaining to the staffing of the hospital and the recording of data.

RECOVERY ACTIVITIES

Post-surgical process wherein the patient regains consciousness under close supervision.

CLEANING/STERILIZATION

The preparation of antiseptic tools and environment for the performance of surgery.

REST/RELAXING

Those activities not directly related to surgery, permitting staff to remain within a "clean environment."

USER REQUIREMENT STATEMENTS FOR THE SURGICAL SUITE

ALL USERS

Surgery is restricted to hospital personnel, and in particular, to the surgical staff.

USER
CATEGORY

ACTIVITY
CATEGORY

PRIORITY
RATING

A

2

3

STAFF/PATIENT

All should have a comfortable, dust and contamination-free environment.

B

2

3

STAFF

Dressing rooms should be provided near the entrance to the operating suite where staff may leave their clothing, wash and/or shower, and change into scrub garments, conductive shoes and head covering.

C

2

2

A control desk should be next to the main entrance.

C

2

1

A coffee and snack facility should be contained within the suite.

C

11

1

There should be a centrally controlled intercommunication system, emergency convenience.

C

2

2

Music should be piped into all areas.

C

11

People working within the suite should be able to move from one clean area to another without having to pass through unprotected or traffic areas; thus, the surgeon, after he has changed into his operating suit, should be able to move to the scrub room without passing through the entrance lobby.

C

2

3

Automatic means should be provided for the disinfection of wheels of all movable equipment and the shoes of those entering the operating room.

C

2

3

Pneumatic or automatic doors are a help.

C

2

There should be ample storage for sterile and non-sterile equipment and supplies.	C	8	1
---	---	---	---

There should be recessed cabinets in the operating room.	C	4	
--	---	---	--

All soiled materials leaving the operating room should leave by way of a soiled corridor and be taken to a clean-up room or, alternately directed to the central sterile supply department.	C	2	3
---	---	---	---

Ventilation should be so designed as to protect the operating room and the clean central area from infiltration of unfiltered air.	C	2	3
--	---	---	---

There should be adequate, controlled lighting.	C	2	3
--	---	---	---

A central work area from which any needed article can be dispatched immediately to the operating room should be established, and access to this area should be limited to surgical personnel wearing clean scrub garments. Scrub areas may be, when properly safeguarded against splatter, incorporated in this work area.	C	4	2
--	---	---	---

PATIENT

Reaching and waiting to enter the operating room should be a relaxing experience.	D	2	2
---	---	---	---

The patient should not pass through clean work area or corridors cluttered with surgical paraphernalia.	D	2	2
---	---	---	---

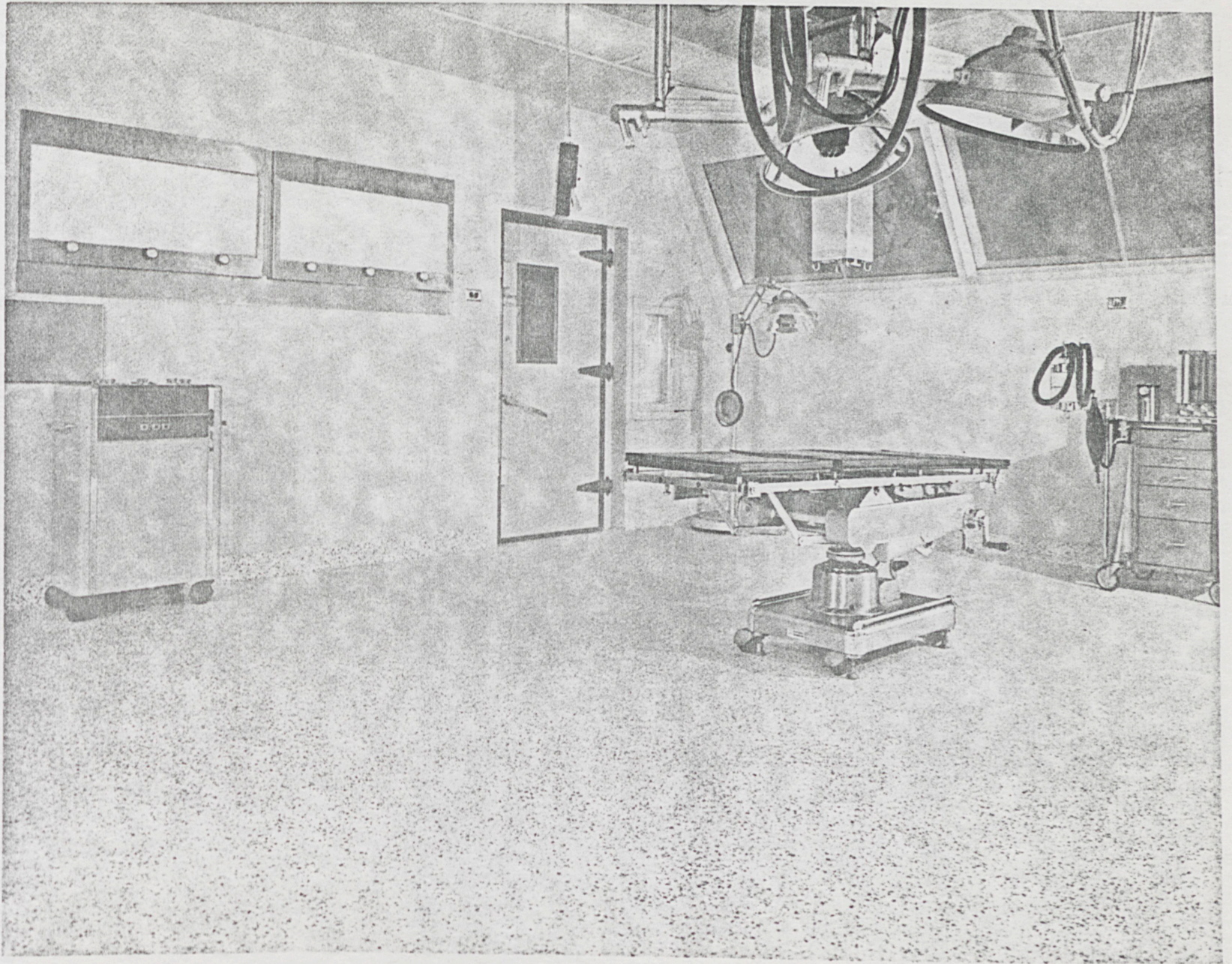
The waiting or holding area should not be related to the post-anesthesia recovery area.	D	2	1
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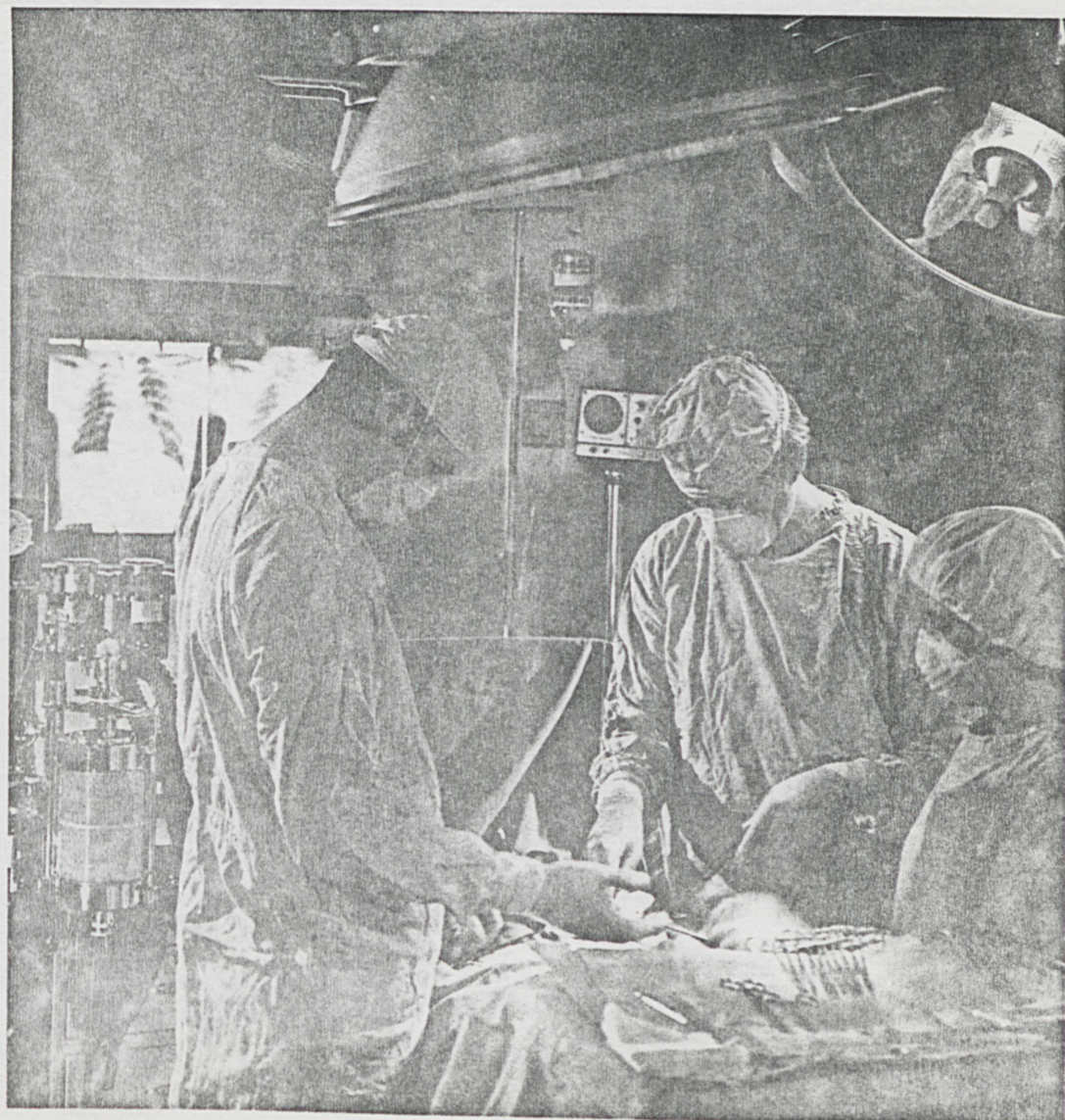
SUPPORTING PERSONNEL

Support personnel need pleasant surrounding for preparing sterile surgical supplies and preparing reports.	E	10	1
--	---	----	---

Dirty materials must leave by some aseptic method.	E	2	3
--	---	---	---

Services and maintenance should not interfere with normal surgical activities.	E	2	3
--	---	---	---





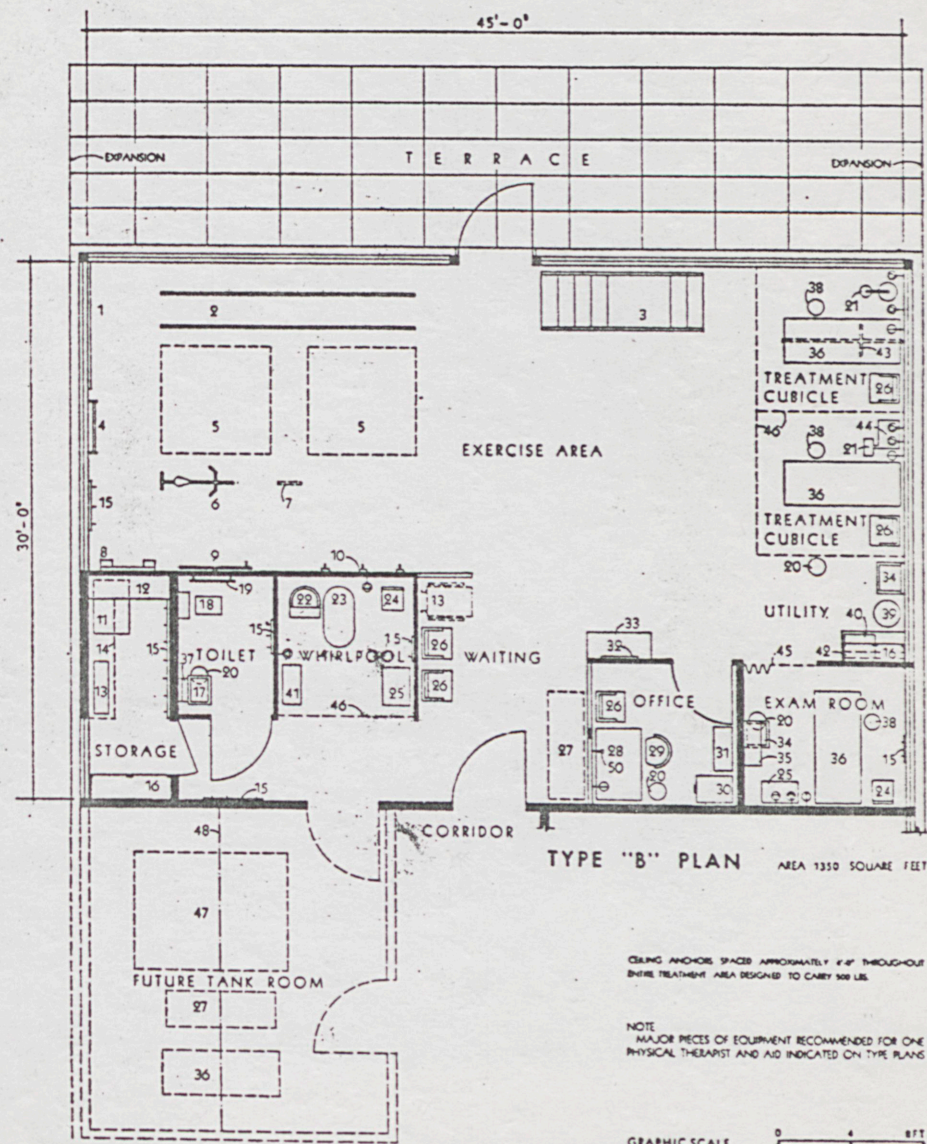
PHYSIOTHERAPY

Physiotherapy not only relates to orthopedic problems but also recognizes a multitude of other disorders which hamper the muscular nervous system. The recognized aims of physical therapy form the basis for judging performance. The objectives are to aid physicians in the care of patients, to combat the cumulative disabling effects of prolonged physical or mental illness, to minimize residual physical disability, to help return the individual to optimum living with his capacities, to hasten convalescence and reduce time in the hospital, and to contribute to the comfort and well-being of patients.

Physical therapy divides itself essentially into three types of activities. There are a variety of exercise activities. Some of these activities include assisted walking, which is frequently conducted in such a manner that the patient can watch his own progress in a mirror, and gymnasium-type activities, which help restore muscular dexterity. Another type of activities requires more supervision, guidance and controlled treatment: Massage with heat, ultrasonic or electronic equipment, controlled exercise usually with the patient in bed or on a table, and ceiling suspended equipment. A third type of activity, hydrotherapy, consists of whirlpool baths in which patients may exercise a limb or the whole body while water at a controlled temperature swirls around the treated areas.

Physical therapy (9)

1. Posture Mirror
2. Parallel Bars
3. Steps
4. Stall Bars
5. Gym Mat
6. Stationary Bicycle
7. Sayer Head Sling Attached to Ceiling
8. Pulley Weights
9. Shoulder Wheel
10. Gym Mat Hooks
11. Cart with Open Shelves
12. Open Shelves
13. Wheel Chair
14. Shelf
15. Wall Hooks
16. Wall Cabinet
17. Lavatory, Gooseneck Spout
18. Water Closet
19. Hand Rail
20. Waste Paper Receptacle
21. Portable Equipment
22. Adjustable Chair
23. Whirlpool
24. Chair
25. Table
26. Chair, preferable with arms
27. Wheel Stretcher
28. Desk
29. Swivel Chair
30. File Cabinet
31. Bookcase
32. Bulletin Board
33. Wall Desk (counter, shelf below)
34. Lavatory, Gooseneck Spout and Foot Control
35. Wall Cabinet with Lock
36. Treatment Table, Storage below
37. Mirror and Glass Shelf over Lavatory
38. Adjustable Stool
39. Laundry Hamper
40. Sink with Drainboard
41. Paraffin Bath
42. Glass Shelf over Sink
43. Overbed Trapeze
44. Three Single Outlets on separate branch circuits. 1 outlet 2-pole, 2 outlets 3-pole
45. Folding Door
46. Cubicle Curtain
47. Under Water Exercise Equipment
48. Overhead Lift
49. Coat Rack
50. Telephone Outlet

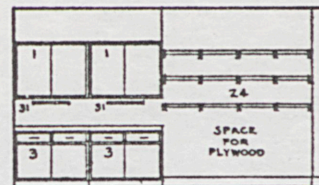


Occupational therapy (1)

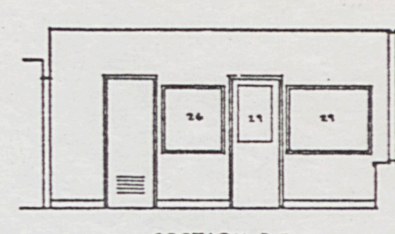
LEGEND

1. Shadow board cabinet
2. Electric tool grinder
3. Tool storage and work bench
4. 2-man bench
5. Electric jig saw
6. Drill press
7. Weave frame
8. Step stool
9. Stainless steel sink
10. Chair
11. Table—11A. Adjustable table
12. Floor loom
13. Warping board
14. Open shelving
15. Pull-out shelf
16. Storage cabinet
17. Bench for loom
18. File cabinet
19. Book shelf and cabinet
20. Tool cabinet
21. Paint cabinet
22. Finishing bench and cabinets
23. Electric hot plate
24. Lumber rack
25. Drinking fountain
26. Bulletin board
27. Storage bins and work bench
28. Table loom
29. Glass panel
30. Ironing board
31. Fluorescent light
32. Ward cart
33. Desk
34. Trash basket
35. Sand box
36. Play house
37. Circular table
38. Cut-out table—adjustable

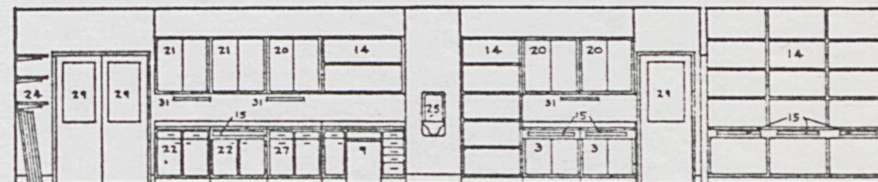
39. Power lathe
40. Bicycle jig saw
41. Treadle sander
42. Accordion type folding door
43. Large kiln
44. Small kiln
45. Damp closet
46. Potters wheel
47. Imposing table
48. Type cabinet
49. Printing press
50. Electric circular saw
51. Typewriter table
52. Electric belt sander
53. Electric disc sander
54. Sewing machine



SECTION A-A



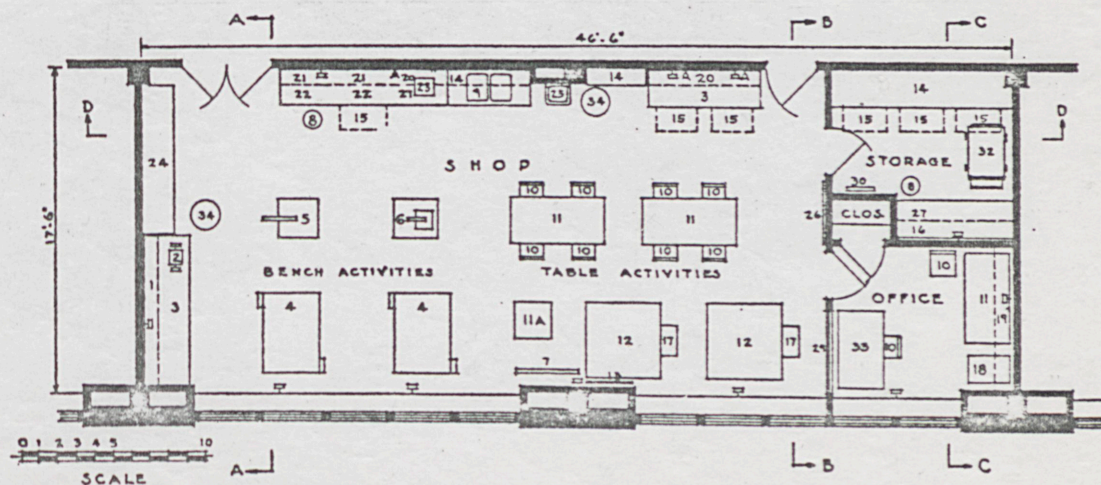
SECTION B-B



SECTION D-D



SECTION C-C



Basic plan for psychiatric, tuberculosis and general hospitals

DISTRIBUTION SYSTEM

Laundry and food services are becoming highly specialized processing functions. We have entered the age of electronics with increasingly specialized processing methods requiring a highly competent, trained staff. To provide training and employment for patients is not a function of the institution, at least not in its present organization. Such rehabilitative programs are wards of the community.

Of major concern to the institute is an effective distribution system for utilities as well as services which radiate from central points. Presently a steam tunnel links most of the existing building to the steam plant. An older, four by seven tunnel is used for herding patients between various enclosures. Because of climate, economics, and expediency, an enclosed, service and utility tunnel system should be considered for the new facilities. The theoretical solution favors a double-deck, tri-service tunnel. The first deck is above ground and oriented towards pedestrian traffic. The two below ground are for clean and dirty utilities and services.

CLINICAL LABORATORY

Planning the clinical laboratory for the infirmary requires a substantial analysis. The College of American Pathologists lists the following technical divisions within the activities of the laboratory: bacteriology, including parasitology and mycology; biochemistry; blood banking; clinical microscopy; exfoliative cytology; hematology; histology; pathological anatomy, including surgical, autopsy and animal; serology; urinalysis; and virology and tissue culture...

The old laboratory facilities of Warm Springs occupied approximately 1000 square feet and provided facilities for hematology, urinalysis, biochemistry, histology, serology and bacteriology as well as a waiting area for patients.

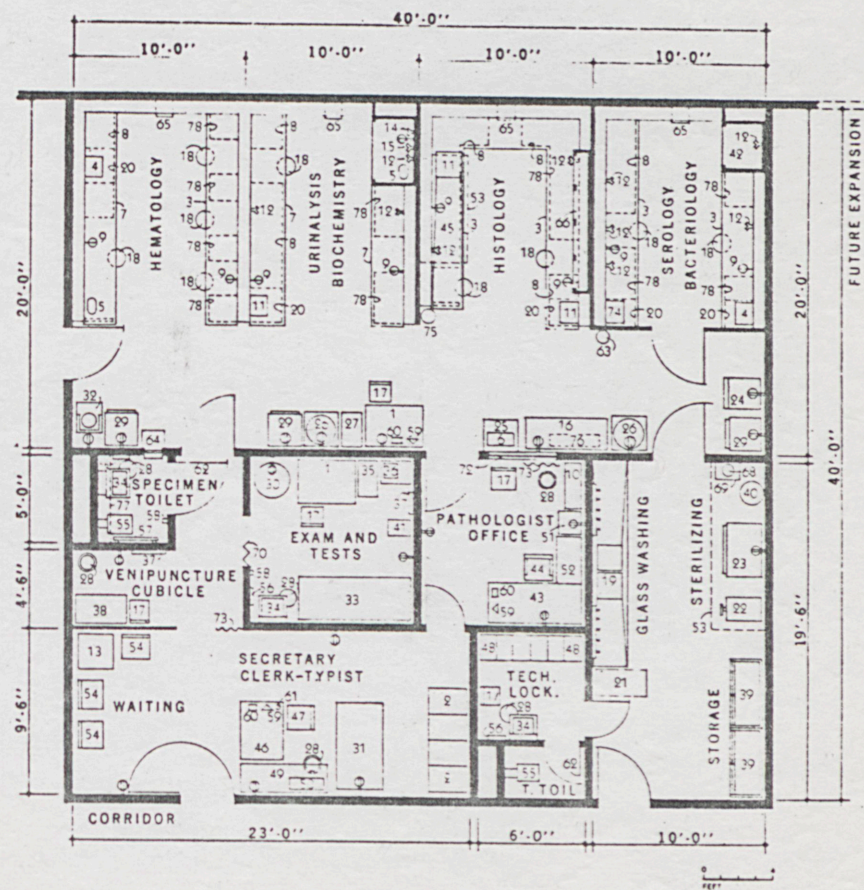
Physical illness and mental illness are often closely related; for this reason the importance of a clinical laboratory should not be underemphasized -- on the contrary, it should be a key note.

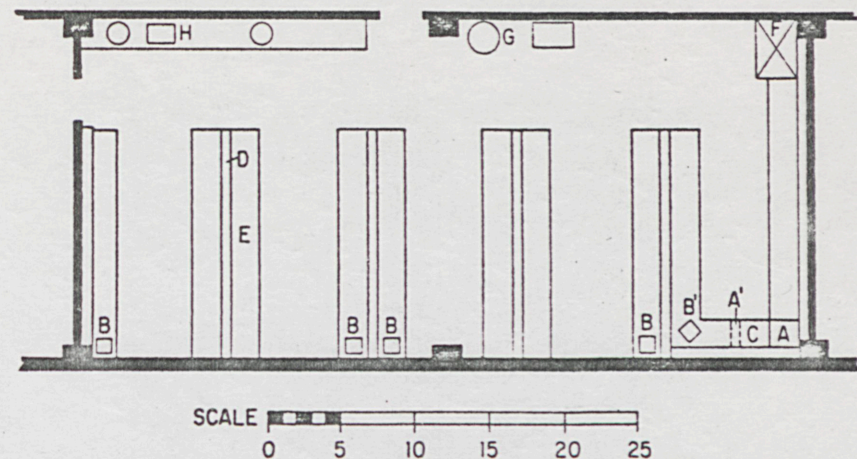
Laboratory (9)

1. Desk 30 by 40 in., single pedestal
2. Filing cabinet, letter size
3. Counter, 30 in. high
4. Staining sink
5. Cup sink
6. Analytical balance
7. Counter, 36 in. high
8. Cabinets with adjustable shelves, below counter
9. Electric strip outlets, continuous
10. Bookcase
11. Utility sink
12. Gas outlet
13. Table for magazines
14. Suction outlet
15. Compressed-air outlet
16. Table for instruments
17. Straight chair
18. Stool
19. Two-compartment sink, 8 in. deep with drainboards of noncorrosive metal, pegboards located above drainboards
20. Cabinet with trash receptacle mounted on inside of door
21. Utility cart
22. Laboratory pressure sterilizer
23. Hot-air oven
24. Incubator
25. Shelf or table for analytical balance
26. Centrifuge
27. Table for Harvard trip balance
28. Wastepaper receptacle
29. Refrigerator, 8 cu ft
30. Refrigerator, 6 cu ft, blood bank
31. Worktable
32. Microhematocrit centrifuge
33. Examination table
34. Lavatory
35. Basal metabolism apparatus
36. Electrocardiograph
37. Hook strip
38. Table, 24 by 36 in.
39. Storage cabinets
40. Water still, 2 to 5 gal per hr
41. Adult scale
42. Fume hood
43. Double-pedestal office desk
44. Office chair, swivel, with arms
45. Noncorrosive metal work surface, slight pitch to sink
46. Typewriter desk
47. Posture chair
48. Technicians' lockers
49. Specimen-receiving table
50. Request file with pigeonholes
51. Slide file cabinet
52. Microscope table
53. Exhaust hood
54. Easy chair
55. Wall-hung water closet
56. Paper-towel dispenser
57. Grab bar, continuous
58. Emergency calling station (push-button) connected to buzzer at secretary's desk
59. Telephone outlet
60. Intercommunication system outlet
61. Buzzer at receptionist's desk from emergency calling stations
62. Hook on toilet side of door
63. Fire extinguisher
64. Pass-through between toilet and laboratory
65. Exhaust air grilles near floor
66. Wall cabinet
67. Refrigerator, 11 cu ft
68. Pipette washer
69. Shelf, for pipette washer, 10 in. from floor
70. Folding door
71. Table for electrocardiograph
72. Window
73. Curtain
74. Sink with electric waste disposal
75. Carbon dioxide cylinder
76. Gas cylinders under table
77. Shelf for urine bottles
78. Drawers with adjustable shelves, below counter
79. Sink with electric waste disposal

LABORATORY

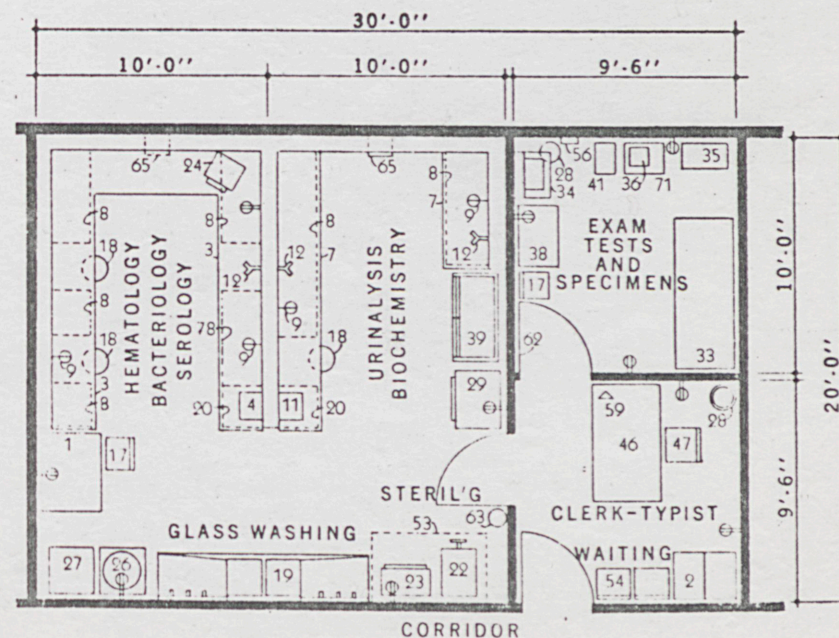
by U.S. Public Health Service

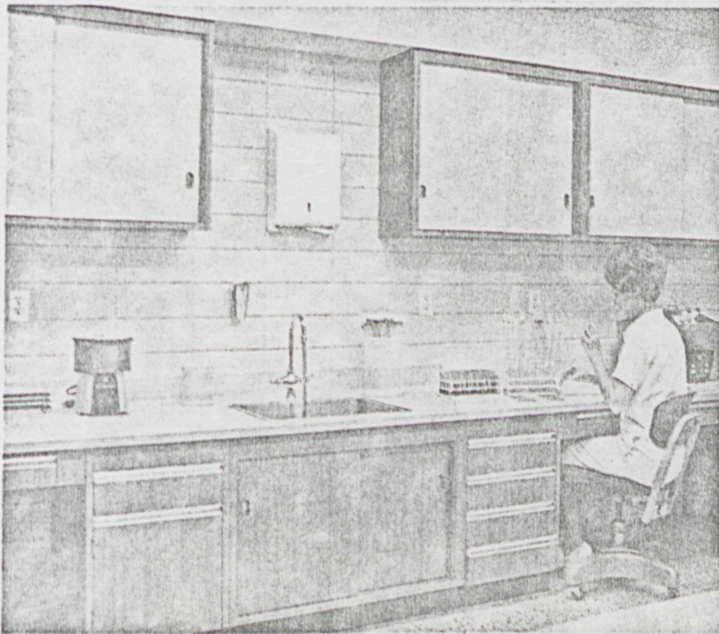




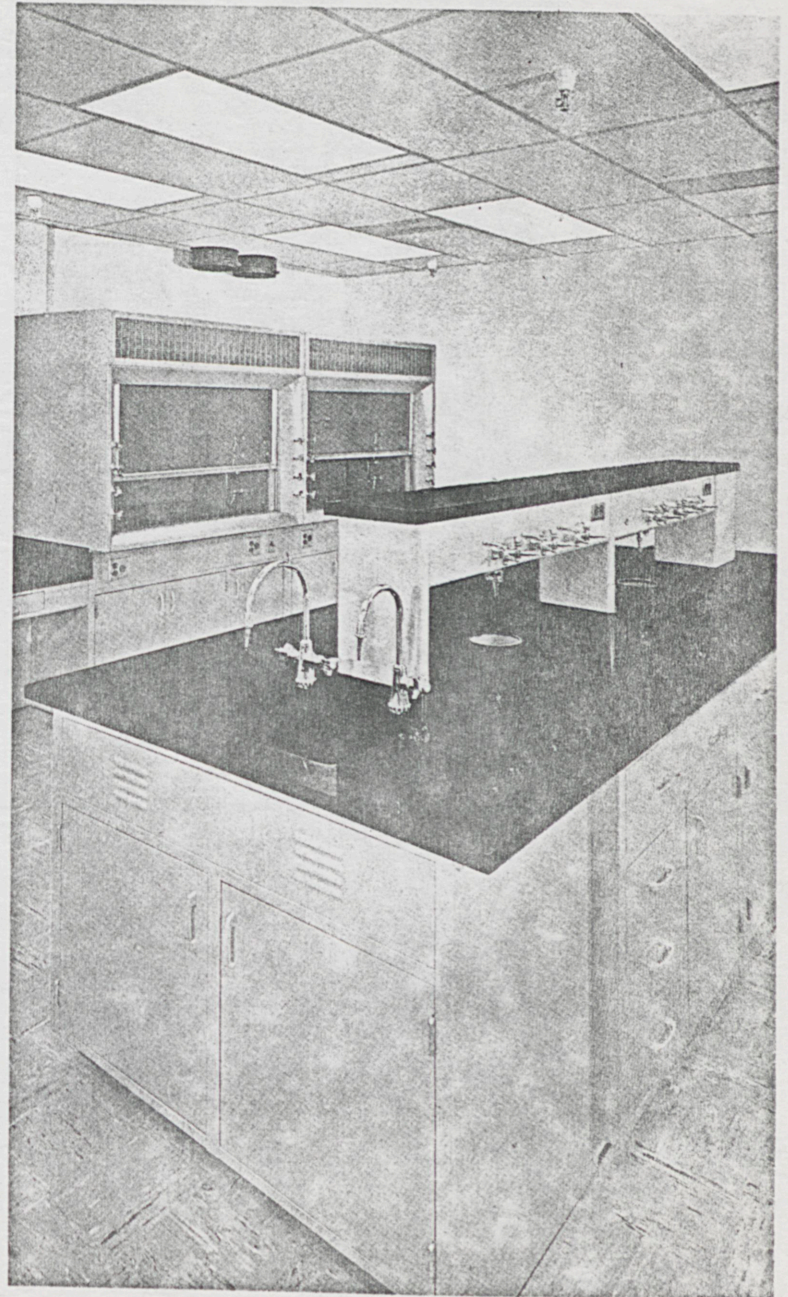
Laboratory prototype, based on 10-foot bench spacing. Utilities would run along the outside wall A-B and transversely under the bench monitors-D. B indicates sinks close to the utility wall to minimize pipe runs. A' shows the short bench length gained by running the bench under the windows, since C only compensates for A corner space lost unless it is used for diagonal sink B'.

Legend: E = bench; F = fume hood away from drafts and traffic; G = space for floor-standing equipment; H = bench for small commonly used equipment.





St. Joseph's Hospital, Houston. Architect: Goleman & Rolfe. Cabinets and lab tops:
Hamilton Mfg., Two Rivers, Wisc.



RADIOLOGICAL FACILITIES

Diagnostic and therapeutic services are increasing with new acquired skills, techniques and equipment. X-ray is playing an increasingly diagnostic and therapeutic role in modern medicine. It is possible that the highly sophisticated X-ray machines will become obsolete; however, the spacial requirement should remain fairly similar.

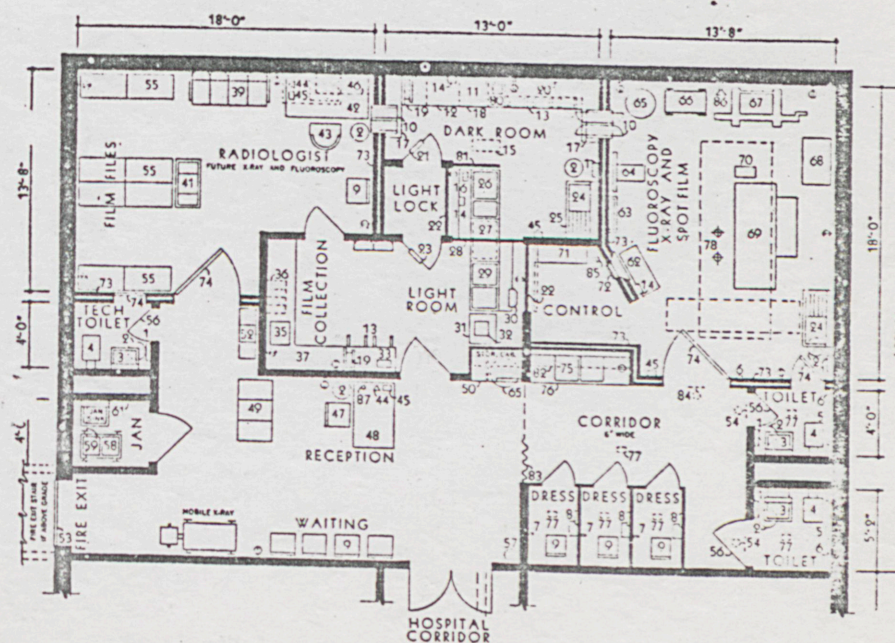
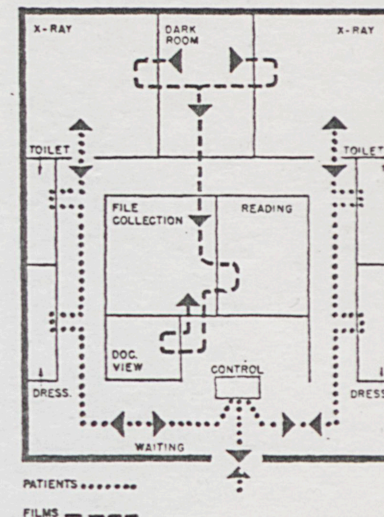
To understand the needs of radiology the following must be considered: the patient type and load, the nature and potential versatility of diagnostic and therapeutic services possible, the availability and type of equipment as well as personnel... The problem can be examined from two aspects: the theoretical, idealized model which would fulfill their needs, and the limiting realities of their situation. Assuming that a carefully systematic analysis has been made, their needs were determined to be a radiology suite with provisions for fluoroscopic, orthopedic, and cystoscopic work. The present existing equipment will be used with the possible purchase of a mobile unit in the future. This means one area sufficient for taking X-rays and doing minor surgery or adjacent rooms so designed as to permit a restricted mobility of equipment.

Diagnostic X-ray Suites (9)

LEGEND

1. Paper towel dispenser
2. Waste paper receptacle
3. Lavatory
4. Wall-hung water closet
5. Continuous grab bar
6. Emergency calling station (push button)
7. Hook strip
8. Mirror and shelf below
9. Straight chair
10. Cassette pass box
11. Film loading counter
12. Film storage bin
13. Film hanger racks under counter
14. Safelight
15. Ceiling light, white and red
16. Timer
17. Counter with storage cabinets below
18. Cassette storage bins
19. Trash deposit cabinet
20. Cassette cover retainer and wall guard
21. Door with light-proof louver in upper panel
22. Access panel
23. Door with light-proof louver in lower panel
24. Utility sink with drainboard
25. Refrigerating unit under drainboard
26. Developing tank with thermostatic mixing valve
27. Through-the-wall fixing tank
28. Light-proof panel
29. Washing tank
30. X-ray film illuminator (wet viewing)
31. Film dryer
32. Film dryer exhaust to outside
33. Film corner cutter
34. Film pass slot
35. Flush-mounted counter illuminator
36. Film sorting bins above counter
37. Film sorting counter
38. Counter with cabinets below
39. On-wall or mobile film illuminators
40. Temporary film file cart
41. Stereoscope
42. Executive type desk
43. Executive type chair
44. Telephone outlet
45. Intercommunication system outlet
46. Bookshelves, 42 in. by 14 in.
47. Typist chair
48. Typist desk
49. Filing cabinet, letter size
50. Gown storage, open shelves, storage cabinet above
51. Gown storage, open shelving with laundry hamper below
52. Technicians' lockers
53. Fire door
54. Dome light, buzzer and annunciator at receptionist's desk
55. Closed metal film files, 5 shelves high
56. Hook on toilet side of door
57. Fire extinguisher
58. Mop truck
59. Shelf

60. Curb and receptor on janitor's sink
61. Mop hanging strip
62. Storage cabinet and writing counter
63. Fluoroscopic apron and glove holder
64. Fluoroscopic chair
65. Laundry hamper
66. Clean linen cart
67. Cassette changer
68. Transformer
69. Radiographic fluoroscopic unit with spot film device
70. Foot stool
71. Control unit
72. Leaded glass view window
73. Lead lining (or other shielding material) as required
74. Lead-lined door, light proofed
75. Barium sink
76. Barium storage (below counter)
77. Red light for dark adaptation
78. Fluoroscopic ceiling light
79. Counter with gate
80. Film identifier, cabinet below
81. Anti-splash panel
82. Wall cabinet over sink
83. Curtain, floor to ceiling
84. Warning light
85. Microphone
86. Loudspeaker
87. Annunciator (for emergency calling station)



THE NURSING UNIT

Bedside care consists of the following list of activities which vary in degree according to the broad categories - intensive, bed-ridden, or ambulant, all of which suggest certain equipment or facilities. The breakdown of patient care into categories implies a similar architectural response: intensive care, continual care, surgical care, medical care, and self-help care, units. However, any degree of response to needs must be weighed in terms of priorities often governed by economics.

In the reality of the situation, Warm Springs has barely one nursing team for a 24-hour period and a 50-patient load of which one to two dozen are critically ill. By recommended standards, there should be at least two nursing units of a 25 to 30 bed load. The present need is for 50 beds of which one to two dozen are required for critically ill patients. The high death rate, which is one to three patients per week, is attributed to the large number of geriatric cases.

ACTIVITIES

REMARKS

CHECKING VITAL SIGNS

- * blood pressure
- * respiration
- * temperature

sphygmomanometer
administering oxygen
thermometer

GIVING

- * medication
- * food - intravenously
 - self feeding
 - aided feeding
- * special treatment
- * oxygen

narcotics safe, syringes, needles , swabs for injections
I.V. equipment such as poles, tubing, syringes, needles, tape

three hot meals; other nourishment at intervals
preparing sterile trays for treatment, e.g. compresses
catheters and masks, fire danger

THERAPY

- * occupational - weaving
 - table work
 - bench work
 - printing
 - ceramics

- * physiotherapy - treatment
 - cubicles
 - exercise area
 - hydrotherapy

wheelchairs, stretchers for transportation

SPECIAL SERVICES

- * suction
- * drainage

special apparatus,
usually surgical cases

CLEANING PATIENT - hygiene

- * aided bed
- * aided tub
- * self

changing bedding, linens
soap, water, bed pans, wash basins

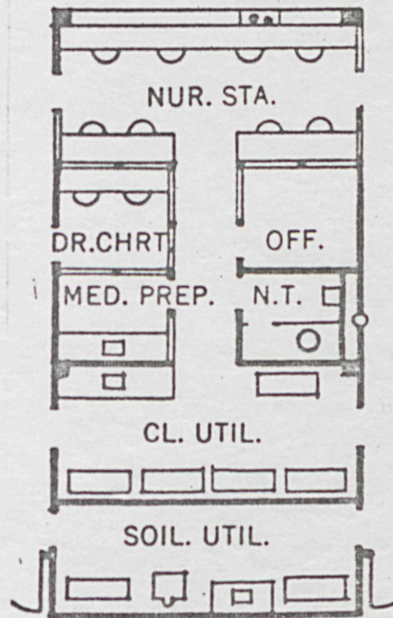
CLEANING EQUIPMENT

cleaning room, storage, preparations

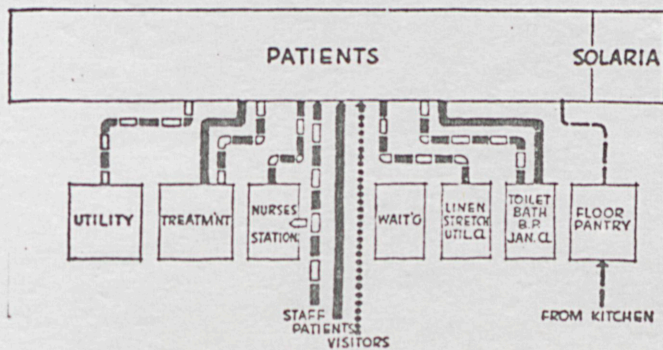
CLERICAL - ADMINISTRATIVE

- * charting
- * medical rounds
- * inventory
- * staff organization

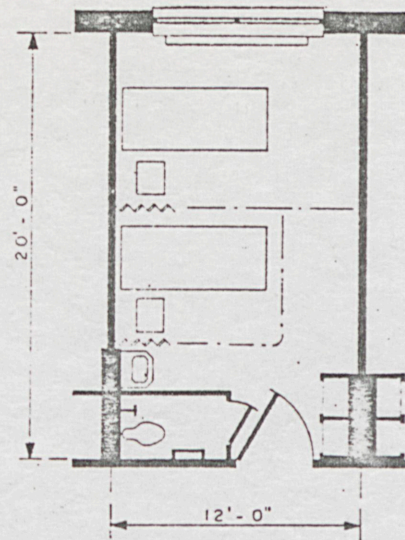
forms for doctor's orders, nurses' notes, etc.



Detail of nursing station and utility unit

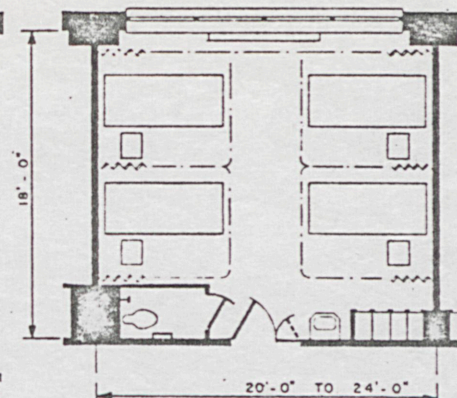


Flow chart of nursing unit



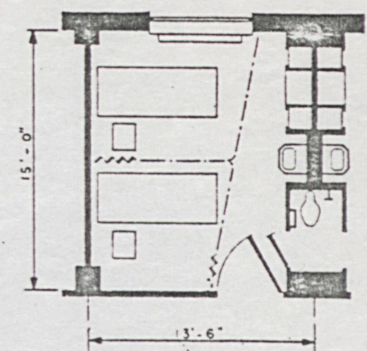
ROOM NET = 202 ϕ
SUITE NET = 240 ϕ

Double room, medium size



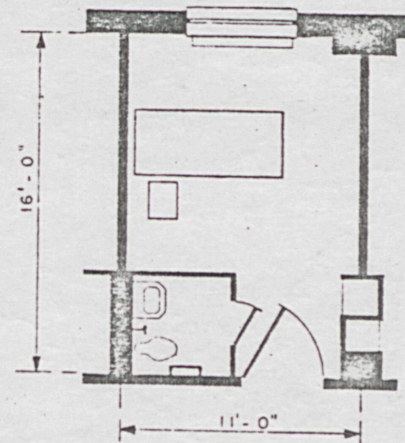
ROOM NET = 315 ϕ TO 380 ϕ
SUITE NET = 360 ϕ TO 432 ϕ

Four-bed room



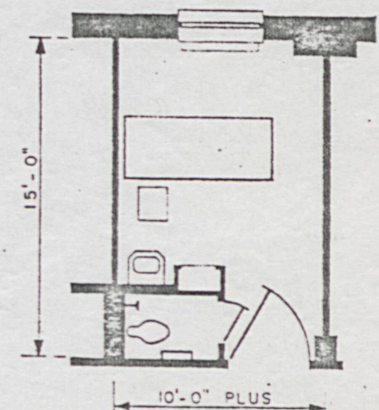
ROOM NET = 170 ϕ
SUITE NET = 202 ϕ

Double bedroom, small, shared toilet



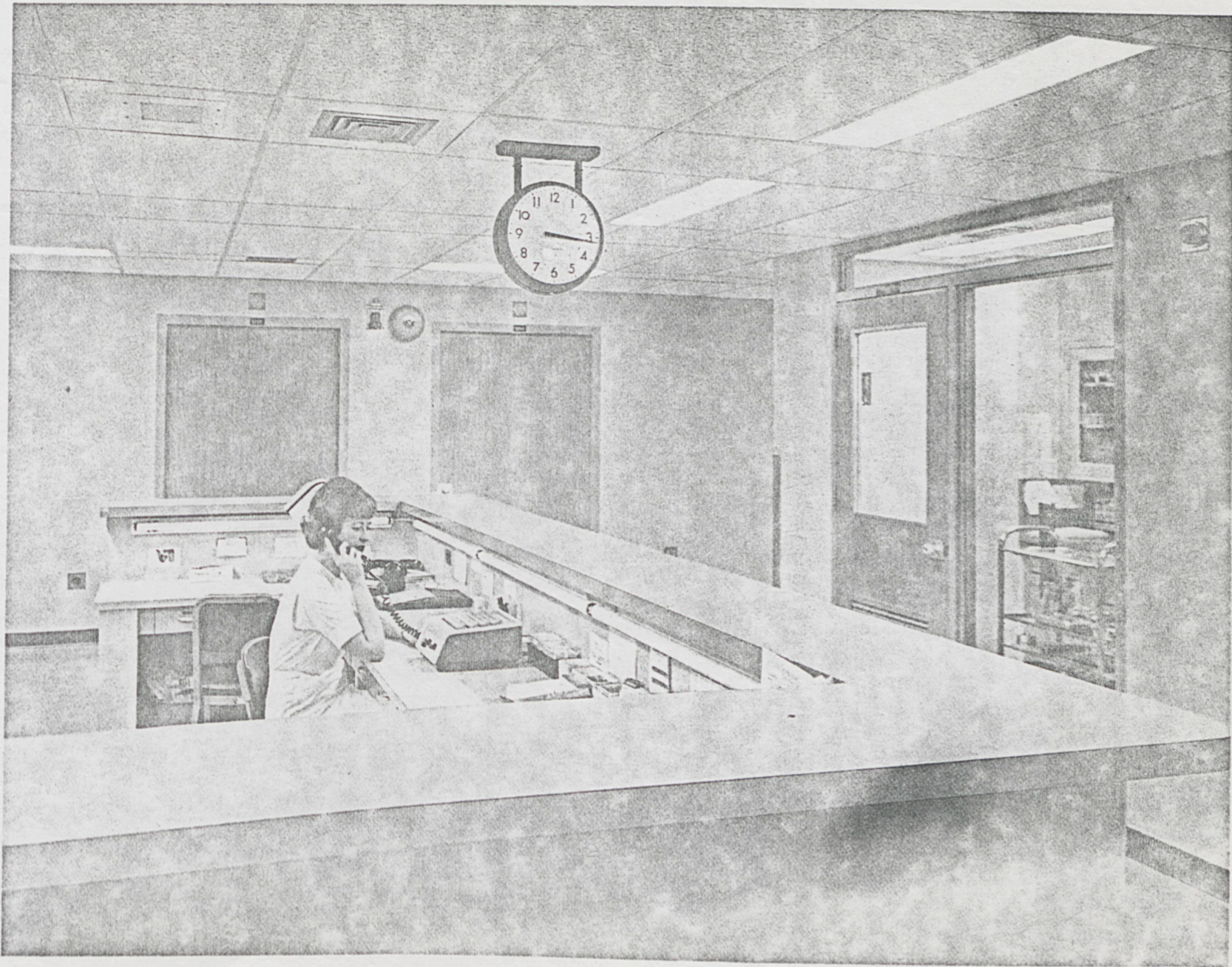
ROOM NET = 136 ϕ
SUITE NET = 176 ϕ

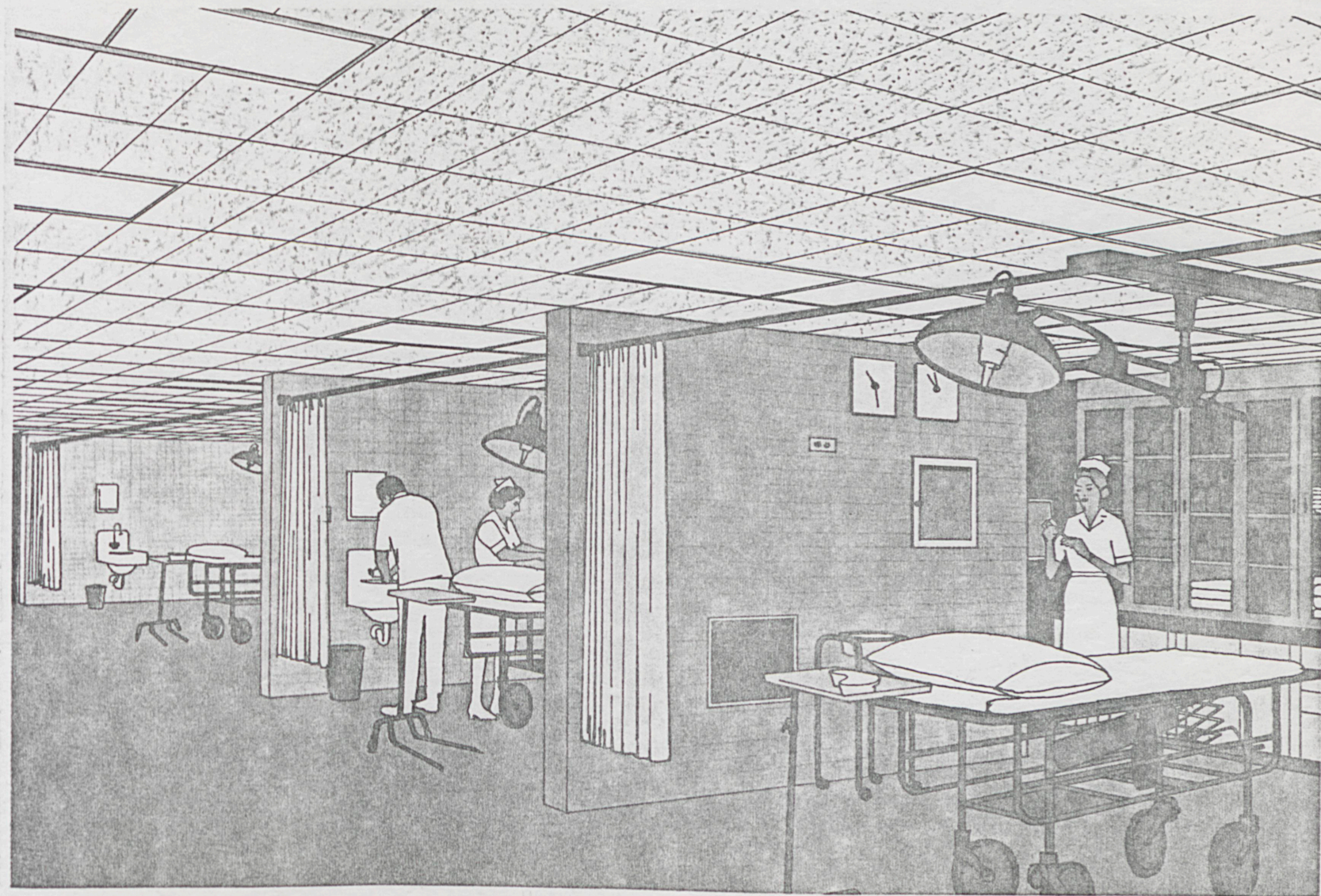
Single room, medium size

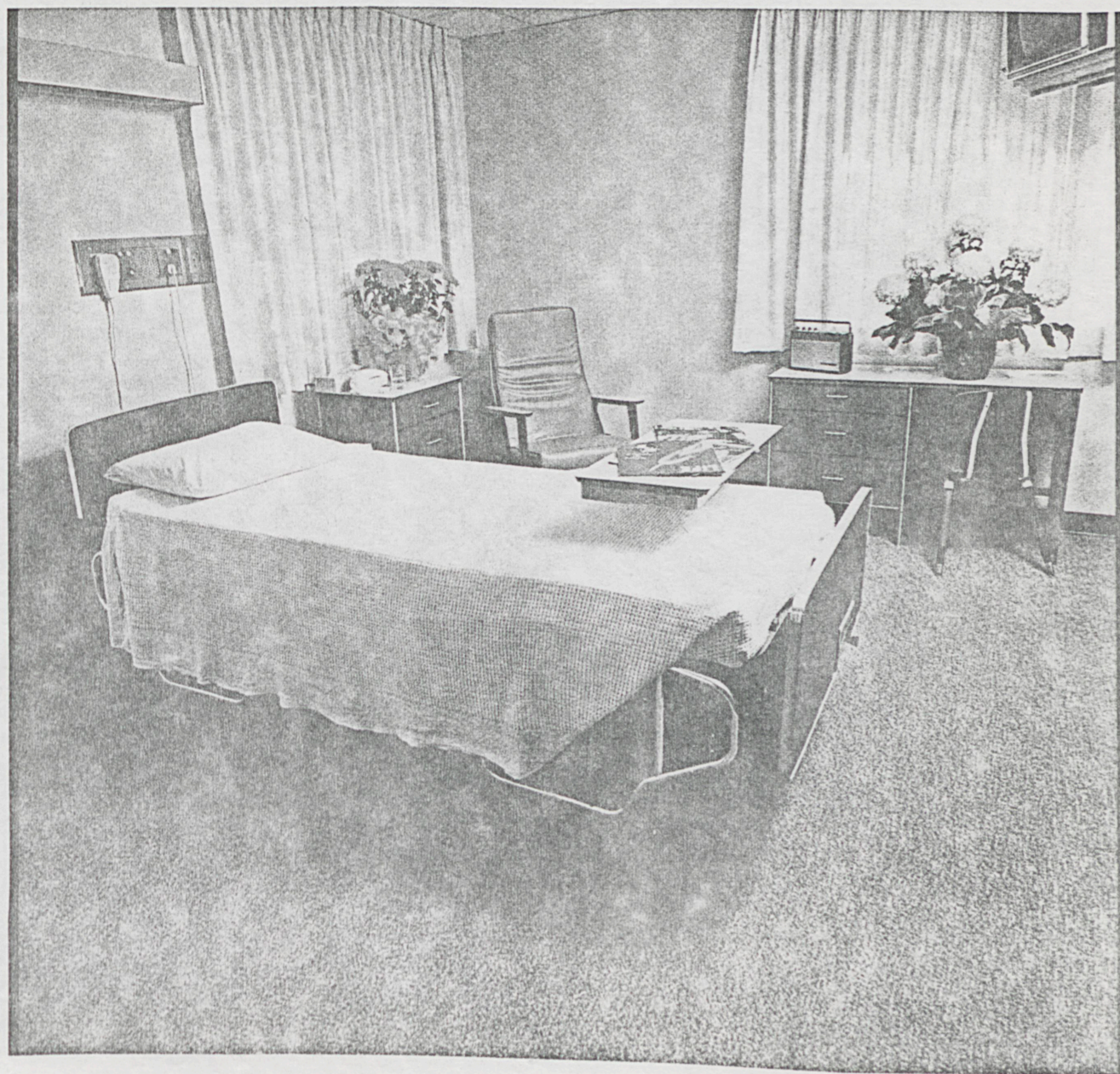


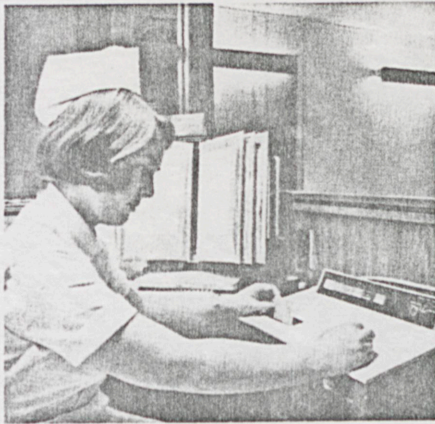
ROOM NET = 120 ϕ PLUS
SUITE NET = 150 ϕ PLUS

Single room, small

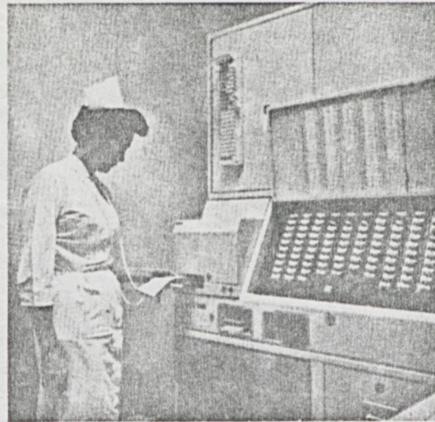




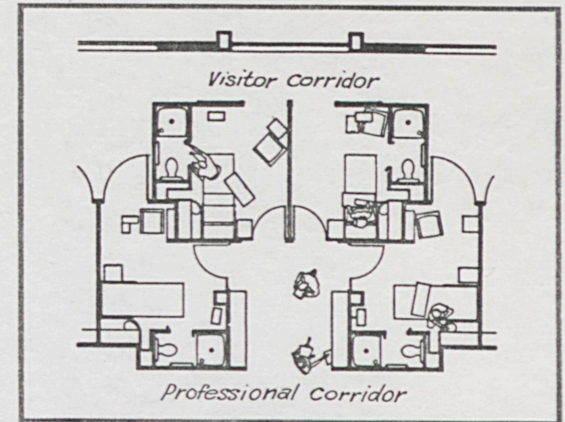




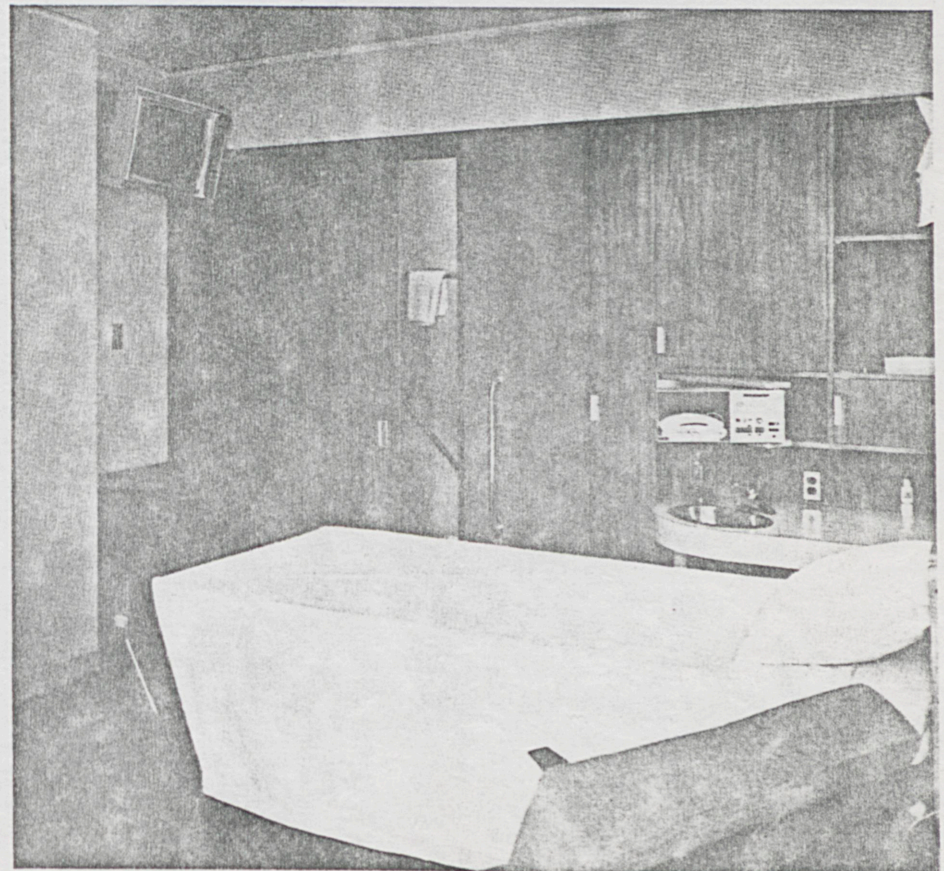
Nursing stations with EDP input terminals reduce staff paperwork.



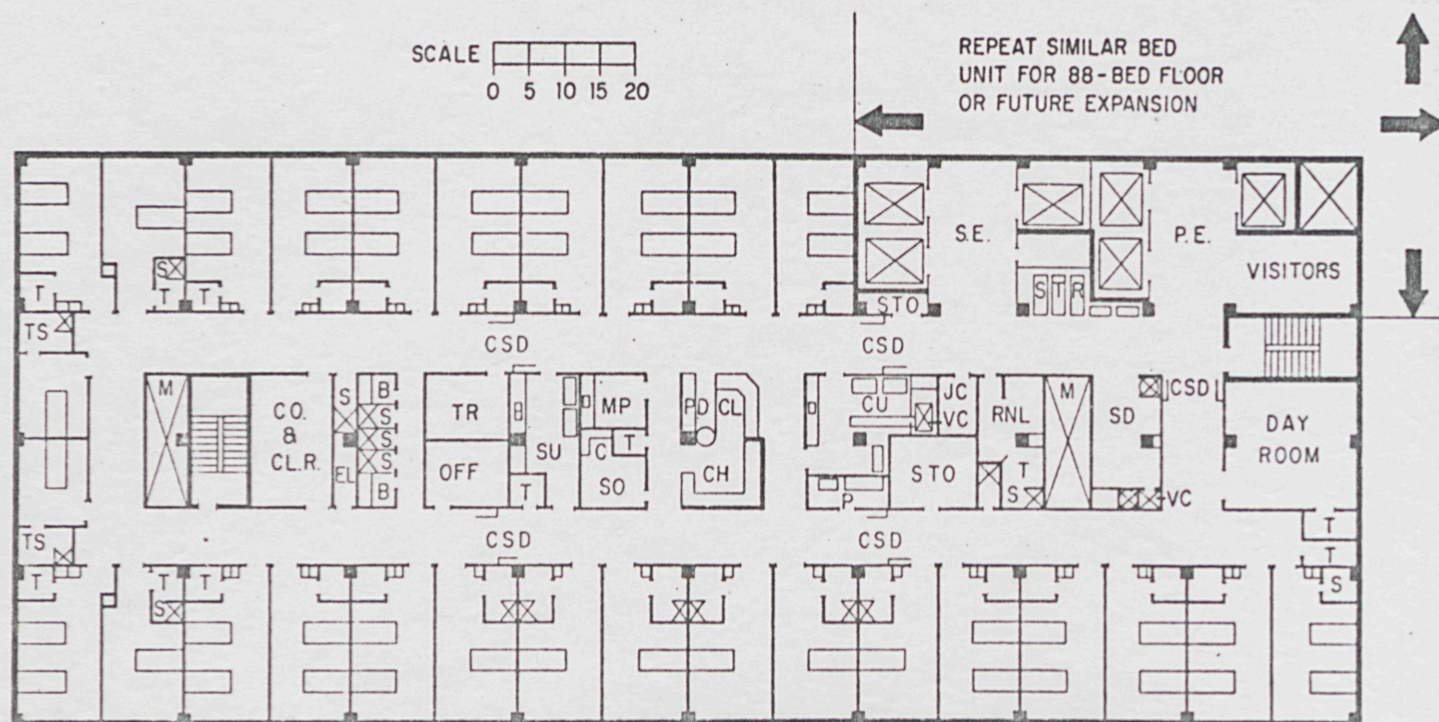
Drugs dispensed from this machine are automatically recorded in the center's EDP system.



Rooms are laid out in 4-room complexes to provide optimum staff efficiency and patient privacy.

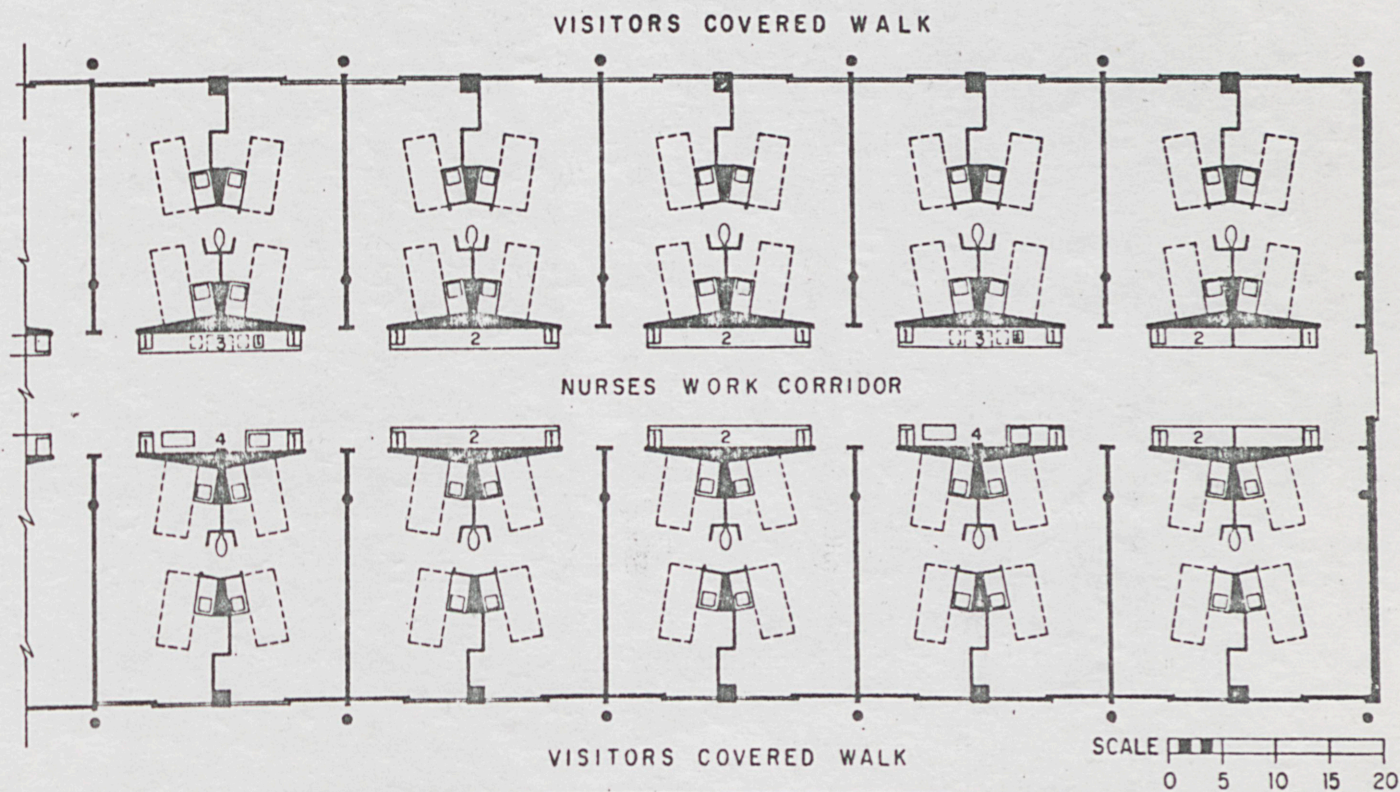


DOUBLE-CORRIDOR WARD SYSTEM (2)



Double-corridor bed unit prototype, with thirty-six semiprivate beds and eight private bedrooms, utilizes center service core to minimize nurse travel. This is made possible by artificial lighting and air conditioning. This design is currently favored in the United States.

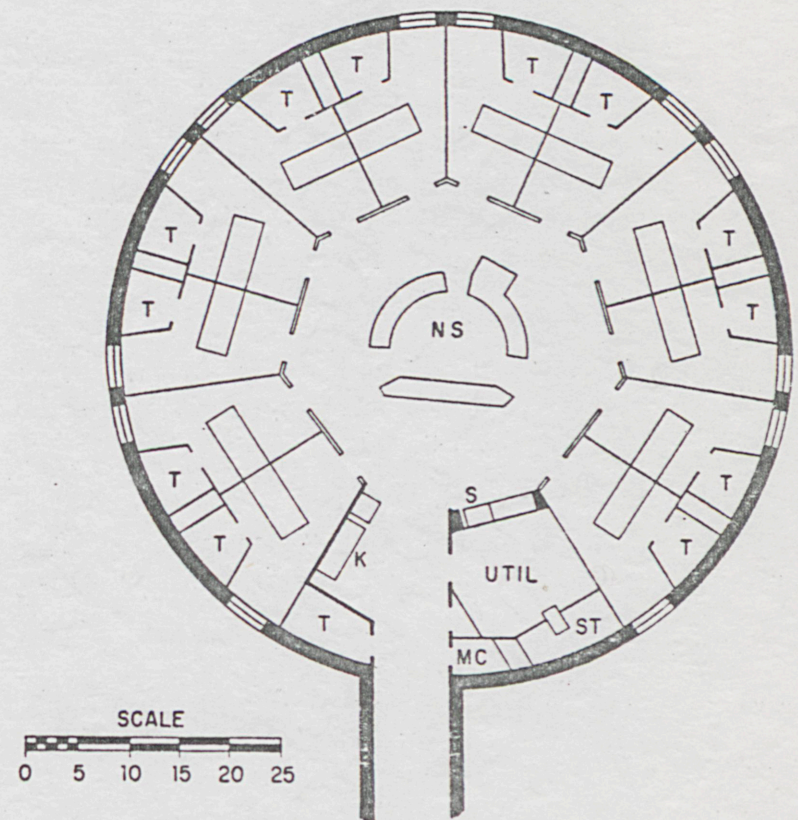
Legend: CH = charting area; CL = ward clerk; CO & CL.R. = conference and class room; CSD = corridor smoke door; CU = clean utility room; EL = electrical center; JC = janitor closet; M = (mechanical) duct and pipe shaft; MP = medication preparation; OFF = office; P = pantry; PE = passenger elevators; PD = physicians' dictation; RN L = nurses' lockers and lounge; SD = soiled dispatch center; SE = service elevators; S = shower; SO = supervisor (nursing) office; STO = storage; STR = stretcher; SU = soiled utility room; T = toilet; TR = treatment room; VC = vertical conveyor.



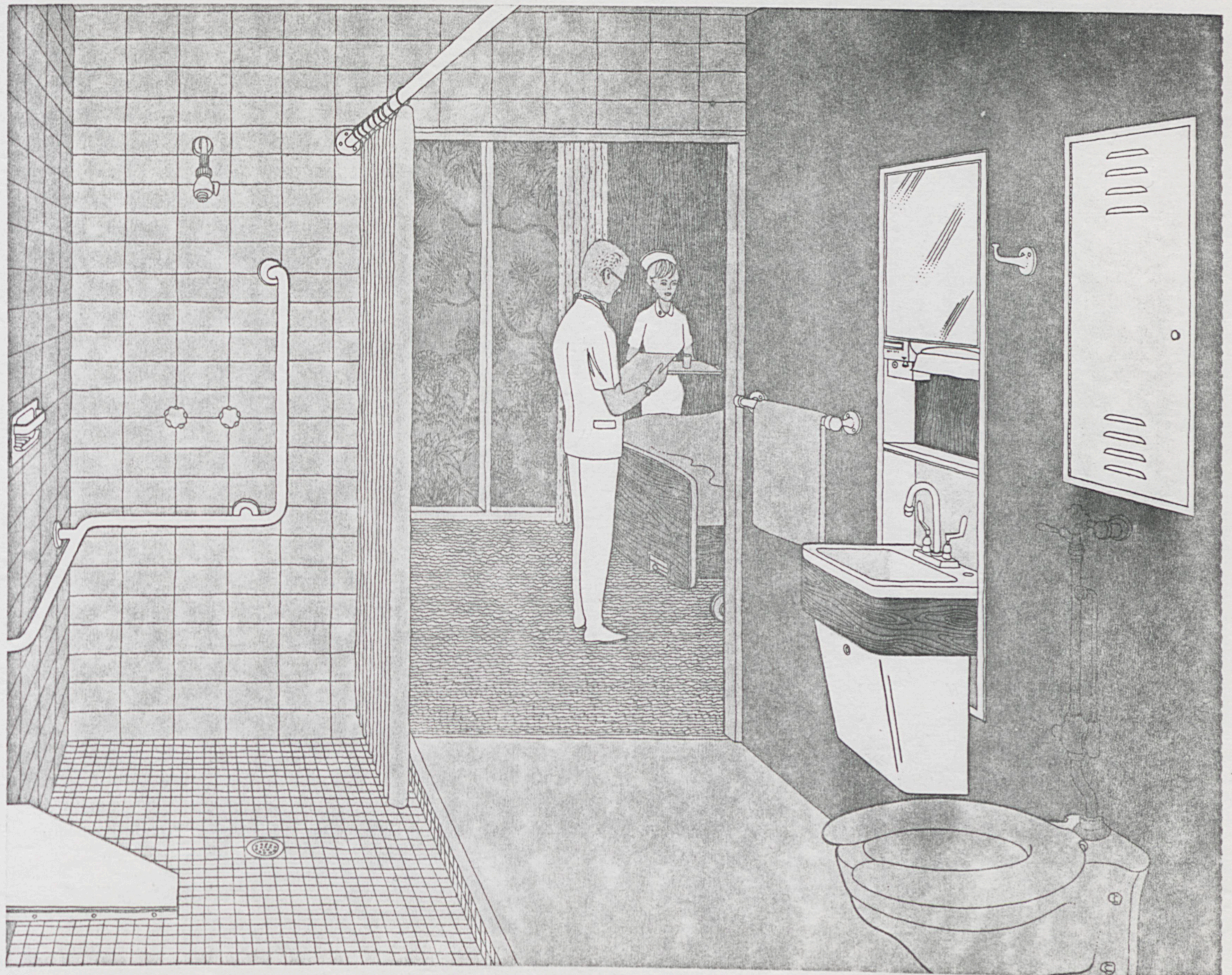
California patient floor concept which uses the central corridor for service and nurses' work area and routes visitors to patient rooms by way of an outdoor covered walk. This design was developed for Kaiser-Permanente Foundation Hospitals, this particular version being the Foundation's Walnut Creek unit. Sidney R. Garfield, M.D., was the hospital consultant and Clarence Mayhew the architect.

Legend: 1 patient chart rack; 2 nurses' station; 3 nourishment pantry; 4 utility center.

A Circular Unit Another study of specialized nursing care involved the construction of a prototype intensive nursing care unit of circular design. This study was carried on by Madelyne Sturdavent, with the collaboration of Harold C. Mickey, administrator at Rochester (Minnesota) Methodist Hospital, and others.



This twelve-bed intensive care nursing unit represents the most successful application of the circle to hospital planning. The nursing station NS commands visual observation of every bed. K = nourishment pantry; S = handwashing facility; MC = mop closet; ST = sterilizer; UTIL = utility room; T = toilet. The unit was built at the Rochester (Minnesota) Methodist Hospital as a research project to study intensive nursing service in a circular and a rectangular nursing unit. The visual contact in this circular unit was found to have positive advantages.

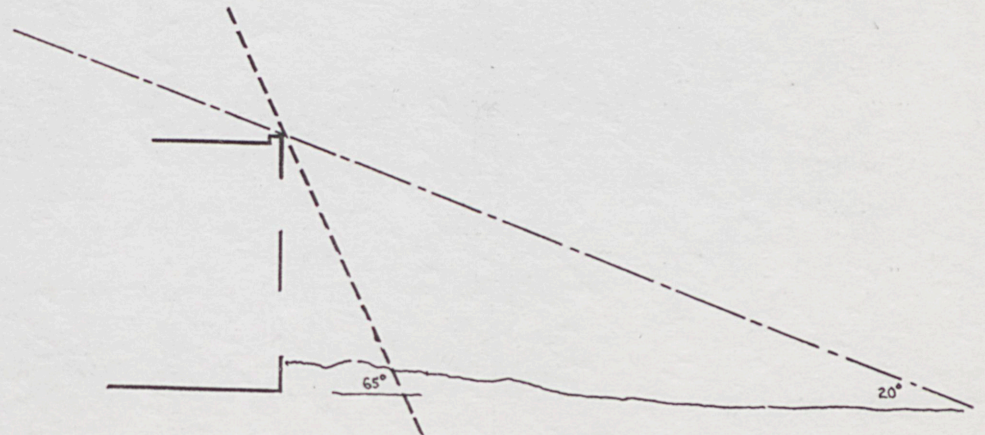
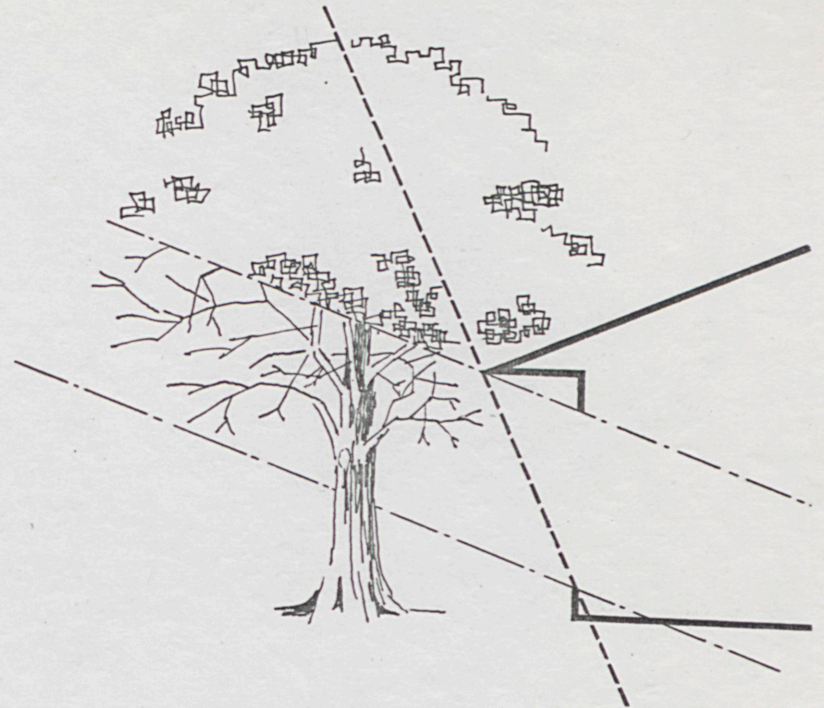


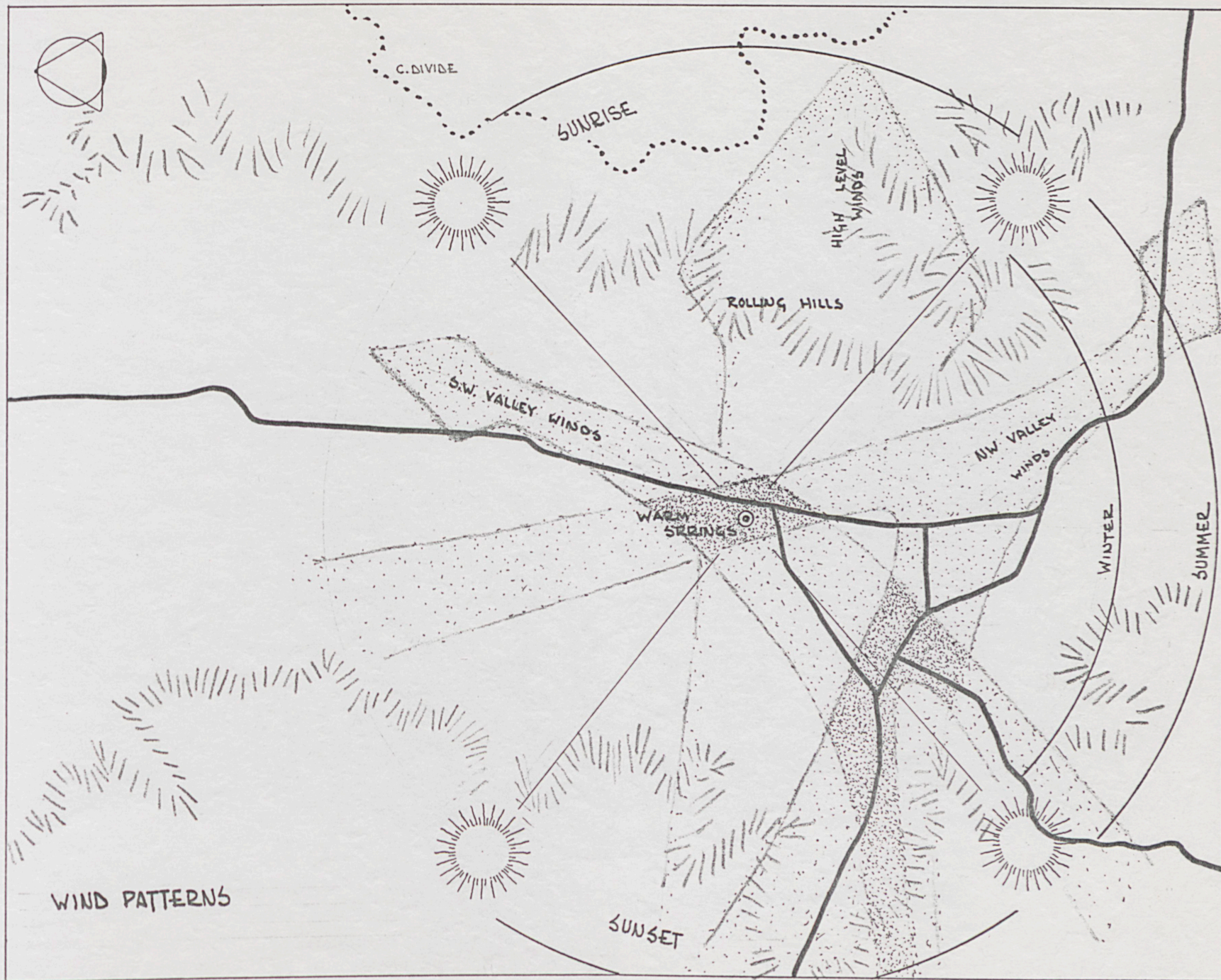
ORIENTATION

ORIENTATION

Orientation is a response to climate and topography. Climatological conditions are usually dealt with subconsciously unless some need or circumstance calls them to mind. Topography, with such variables as views, land forms, vegetation, circulation, utilities, and others, is not as easily controlled or conformed by man, as climatological conditions which he seems to manipulate practically at will. This section attempts an understanding of the conditions and examines implications of orientation.

EFFECTS OF SUN ANGLES





ENVIRONMENT

ENVIRONMENT

Standards set by the U.S. Department of Public Health insist that landscaping be an integral part of mental hospital design; however, landscaping usually falls victim of an inadequate budget as the first alternative to go.

Many geriatric cases come to Warm Springs. A sad picture -- the old protecting themselves, holding this mad world at bay with a tooth-pick, returning to the days of their childhood, watching the steam-boats come up the river. What is the proper environment for the old and dying especially when the mind has left for pleasanter memories? What is the proper environment for any deranged mind?

Creating an environment is perhaps the solution; there are no true guidelines in designing for mental health. For research the environment must respond to flexibility; however, the infirmary, because of the need for a high degree of specialization, tends to reflect functional rigidity.

In the past, hospitals have had a tendency to be sterile in character as well as necessity; today, with modern plastics and fabrics coupled with mechanized cleaning, hospitals can enjoy the luxury of rich wood grains, carpets,... Plastics and air conditioning make possible large "bullet proof" picture windows; such institutions no longer need to be decorated with iron bars and the traditional, sterile hospital green.

From reading impressions, in general, dashing, loud, bold patterns should be avoided, except perhaps in therapy. For example, a pronounced, tight, square pattern for floors should not be used. On the positive side, the environment can be of warm, earthy colors counter-balanced with cool pastels or greys. The creation of an environment is actually a matter of taste and difficult to justify.

COLOR

The following are excerpts from an article "Color it Color," by Faber Birren, one of the most noted color consultants.

HOW THE MENTALLY ILL REACT

Among the mentally ill, reaction to color is highly meaningful. In the Rorschach test, in which cards with abstract ink-blot patterns are used, favorable reaction to color will be observed in manic-depressive types. Others, however -- mostly schizophrenic types -- will be quite upset by color. They may reject it as an unwanted intrusion into their inner world. It would seem from much evidence that hysterical types of persons like green, perhaps as a symbol of peace in the greenness of nature and escape from their misery. Red becomes the choice of the manic and hypermanic patient, being a color that expresses their inner violence.

Dr. E. P. Moss has noted that "Yellow is the proper and intrinsic color of the morbid mind. Whenever we observe its accumulative appearance, we may be sure that we are dealing with deep-lying psychotic disturbances."... The abstract painter Wassily Kandisky was fervid about the hue: "Yellow is the typically earthy color. It can never have a profound meaning. An intermixture of blue makes it a sickly color. It may be paralleled in human nature with madness, not with melancholy or hypochondriacal mania, but rather with violent, raving lunacy."

Blue may be associated with schizophrenia, an escape from earth to sky. Blue-green goes with narcissism, with fastidiousness. Brown goes with paranoia, obstinacy, delusions of persecution. In severe dejection and depression, colors may "black-out" entirely.

Practical Applications

To live and work with color, the observations and

research presented above can be given practical application. If there is no such thing as direct color therapy -- to cure disease, physical or mental -- one is not to doubt the psychotherapeutic value of the spectrum. A high percentage of human ills are of mental and emotional origin... ...it will help to take his mind off what may ail him. And, these days, people have anxieties as never before in history...

Some Conclusions

... In the emotional realm, and among normal humans, it is a common error to recommend cool colors for excitable persons and warm colors for phlegmatic ones. In small children, a pacific environment and pacific attitude may serve only to increase tension and prod irritability. Here, bright color may relieve nervousness by creating an outward stimulus to balance an inner and wholly natural fervor. On the other hand, in timid and shy humans, an attempt to "cheer up" a mood of dejection (through color or anything else) may serve merely to aggravate the misery and drive it even deeper. For most of us, at least, an extroverted temperament may be content in a bright and colorful environment, whereas an introverted temperament may find greatest peace in a more sedate and conservative setting.

Yet where neurotic and psychotic patients are concerned the prescriptions may have to be reversed. Patients in a frantic and manic state may require sedation with color, blue and green tones, dim illumination. The extremely melancholic may need a compensating warmth of hue and brightness of light.

The best way to live and work with color is to
AVOID RULES FOR PRINCIPLES. (5, 1967: 132-133)

RESTRAINTS

RESTRAINTS

The U.S. Department of Health, Education, and Welfare sets forth recommendations, regulations, and standards which are supplemented by local and State building codes. The following is taken from PUBLIC HEALTH SERVICE REGULATIONS (PART 53).

53.1 Definitions.

(a) Mental hospital. A hospital for the diagnosis and treatment of nervous and mental illness.

53.21 State allowance. The number of beds required to provide adequate hospital service for mental patients is 5 per thousand.

53.102 Size of mental and psychiatric hospitals. No application for construction of a psychiatric hospital with a capacity of more than 500 beds or of a mental hospital with a capacity of more than 3,000 beds shall be approved.

53.136 Mental hospital.

(a) General. (1) A mental hospital should be on a large acreage with ample space around all buildings for recreation, attractive landscaping and the proper segregation of the various patient classification groups and building functions; and should be readily accessible to the community which it is to serve. It is strongly urged that mental hospitals be not greater than 1,500 beds. (2) The mental hospital presents a special problem of patient classification, treatment and supervisory function. In the following minimum requirements an over-all organization is designated with certain supervisory or organizational functions mentioned in their most desirable, but not mandatory, locations and these may, therefore, be changed to other locations. (3) Patients have been classified and grouped according to behavior, and requirements vary somewhat for each classification. Minimum room area requirements are grouped into the following main categories, as follows: (i) Medical and surgical and chronic disease classification: 70 square feet per bed in alcoves and four-bed rooms; 100 square feet in single rooms.....

(i) Medical and surgical. This area will house patients who have been hospitalized from nursing units of other classifications for short periods of illnesses, and should be housed in a modern general

hospital complete with all facilities to serve the entire mental hospital community. Nursing units should be arranged for easy segregation of patients and the adjunct diagnostic and treatment facilities are recommended to be on the first or ground floor for easy access to the out-patient department. All security and safety measures should be incorporated in this building. The number of beds shall be approximately 4 percent of the total patients which this building serves.

Location: Between main group of nursing area and reception area.

General: Entrance lobby.

Information counter.

Visitors' toilets (male and female).

Mechanical room.

Administration:

Chief physician's office.

Medical record room

Head nurse's office

Secretaries' offices.

Personnel toilets (male and female).

Staff facilities:

Doctors' locker and shower room.

Nurses' locker and shower room.

Adjunct diagnostic and treatment facilities:

Laboratory: Separate spaces for office, clinical pathology, bacteriology and serology, washing and sterilizing.

Basal metabolism and electrocardiography : Near laboratory and convenient to out-patient department.

Morgue and autopsy room: Combination morgue and autopsy with mortuary refrigerator.*

Radiology: Radiographic room with an adjoining dark room and office. X-ray therapy suite.*

Physical therapy: Suite for electro-therapy, hydro-therapy, and exercise room with adjoining office.

Pharmacy: Drug room with minimum facilities for mixing. (May be in service area).

Nursing units (to contain not more than 30 beds) suggested bed distributions:

Medical wards (25 beds each): Patients

Two 4-bed wards ----- 8

Three 2-bed rooms ----- 6

Nine 1-bed rooms -----	9
Isolation suite* -----	2
Total -----	25

Surgical wards (25 beds each) same as medical wards.
 Employees' wards: Maximum size, 25 to 30 beds.*

Note: Where isolation suite or contagious disease nursing unit is available the small units in each nursing unit are not required.

Facilities in each nursing unit:

Doctors' examination room (one for each two nursing units).
 Nurses' station.
 Utility room.
 Bed pan facilities.
 Pantry (one for each two nursing units).
 Patients' bath and shower room.
 Supply closet.
 Patients' toilet room (male and female).
 Day room (approximately 25 square feet per patient). Omit for employees' wards.
 Storage closet (recreational and occupational therapy equipment).
 Stretcher and wheel chair closet.
 Linen closet.
 Janitor's closet.

Surgical department: Should be located to prevent traffic through it to any other part of hospital.

Operating rooms:

Major: One for each 50 beds up to and including 200 beds.
 Above 200 beds the number of operating rooms will be based on the expected average of daily operations.
 Minor: One in each hospital over 50 beds.
 Cystoscopy: One in each hospital over 100 beds. Shall have an adjoining toilet room.*
 Fracture room: One in each hospital over 100 beds. Shall have an adjoining splint room.

Auxiliary rooms:

- Substerilizing facilities.
- Scrub-up facilities.
- Nurses' locker room with toilet and shower.
- Instrument room beginning at 100 beds.
- Clean-up room.
- Anesthesia equipment storage.
- Surgical supervisor's station.
- Doctors' locker room with toilet and shower.
- Storage closet.
- Stretcher closet.
- Storage room for sterile supplies beginning at 100 beds.
- Janitor's closet.
- Dark room beginning at 100 beds.

Central sterilizing and supply room:

- Divided into work space, sterilizing space, and sterile storage space.
- Adjacent room for storage of unsterile supplies.

Emergency department:

- Ambulance entrance.
- Receiving bath and toilet.
- Utility room.
- Supply and stretcher storage.
- Emergency operating room, near out-patient department.

Service department:

- Kitchen (serving).
- Dishwashing room.
- Refrigerated garbage room.
- Can washing room.
- Dining rooms (for 1/3 of patients).
- Storage.
- General storage (20 square feet per bed).
- Housekeeper's office.
- Linen storage room.
- Sewing room.
- Linen sorting room.
- Personnel facilities:
 - Locker and toilet rooms (male and female).
 - Attendants' locker and toilet rooms (male and female).

Out-patient department:

Waiting room.

Examination and treatment rooms (including eye, ear,
nose and throat rooms and gynecology room^{*}).

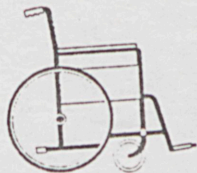
Record room.

Dental facilities (2 chairs desirable).

Electroencephalographic unit.

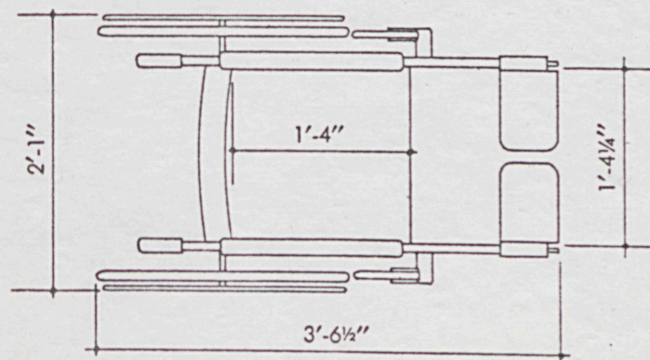
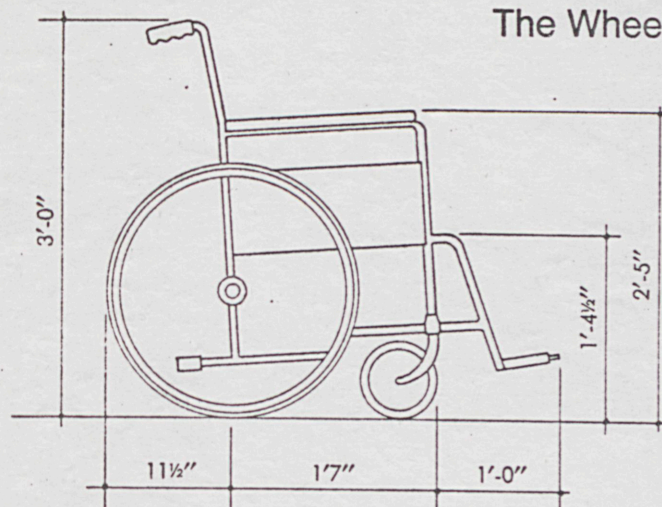
Note: Out-patient department should be convenient to
radiology, laboratory, therapy, emergency, etc.

* Desirable but not mandatory.



Many aids are employed by the handicapped to maintain mobility. The wheelchair is the most affected by design because of its fixed dimensions. When design caters to the needs of the wheelchair user, it caters to the needs of everyone.

The Wheelchair



Stairs

rail should extend 1 foot 6 inches or more beyond top and bottom steps. Riser should not exceed 7 inches.

The diagram illustrates the requirements for a handrail on stairs. It shows a side view of a staircase with a handrail. The handrail is labeled 'HANDRAIL'. The top and bottom sections of the handrail are labeled 'TOP & BOTTOM' and are dimensioned as 1'-6" long. The handrail is shown extending 1 foot 6 inches or more beyond the top and bottom steps. The riser height is dimensioned as 7" and is labeled 'LEAST DIFFICULT'. The tread depth is dimensioned as 2'-8". The nosing is labeled 'NON-SKID TREAD NOSING IN CONTRASTING COLOR'. The diagram also shows a section of the stairs labeled 'MOST DIFFICULT'.

1'-6"

HANDRAIL

NON-SKID TREAD NOSING IN CONTRASTING COLOR

2'-8"

7"

1'-6"

TOP & BOTTOM

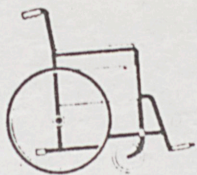
LEAST DIFFICULT

MOST DIFFICULT

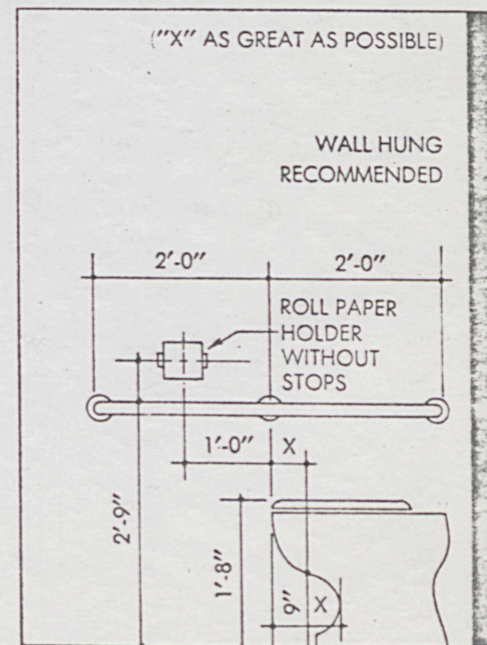
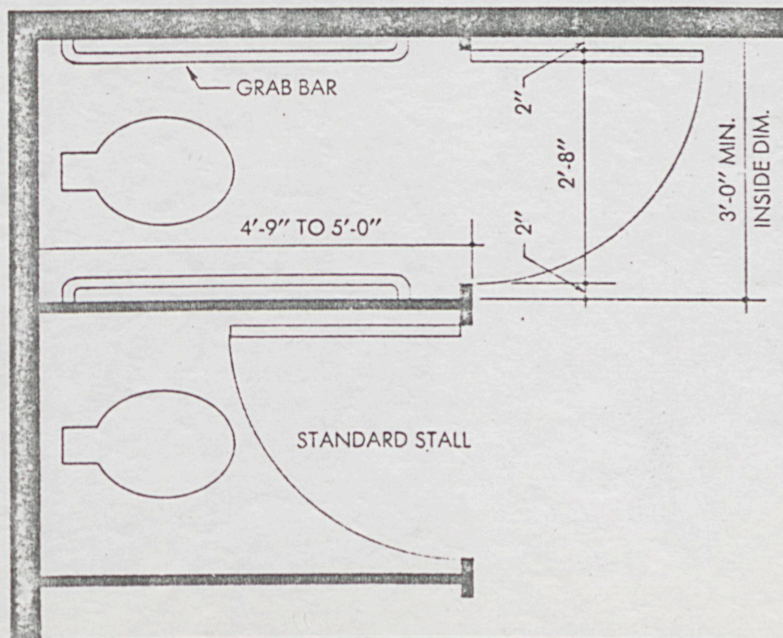
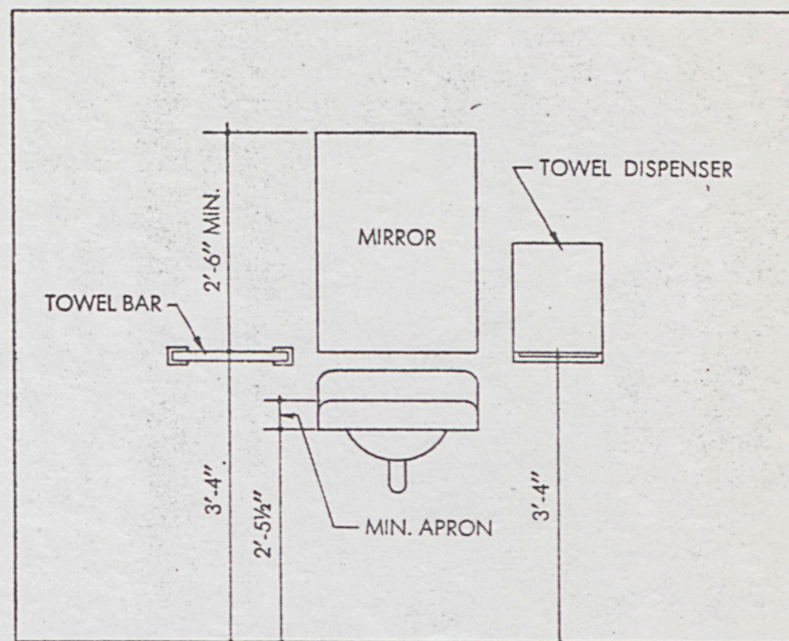
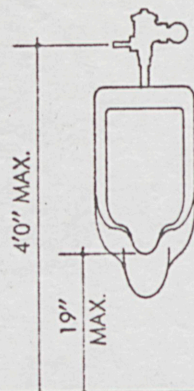
Stairs cause great difficulty to individuals with knee, ankle or hip restrictions, artificial legs, leg braces or crutches. Most difficult are steps with projecting nosings which catch the toes; least difficult are steps with a nosing flush with the riser, especially if the steps have a non-skid tread. The nosing should be in a contrasting color. The stairs should have handrails 2 feet 8 inches high, measured from the tread at the face of the riser, and the rail should extend 1 foot 6 inches or more beyond top and bottom steps. Riser should not exceed 7 inches.

[illegible]

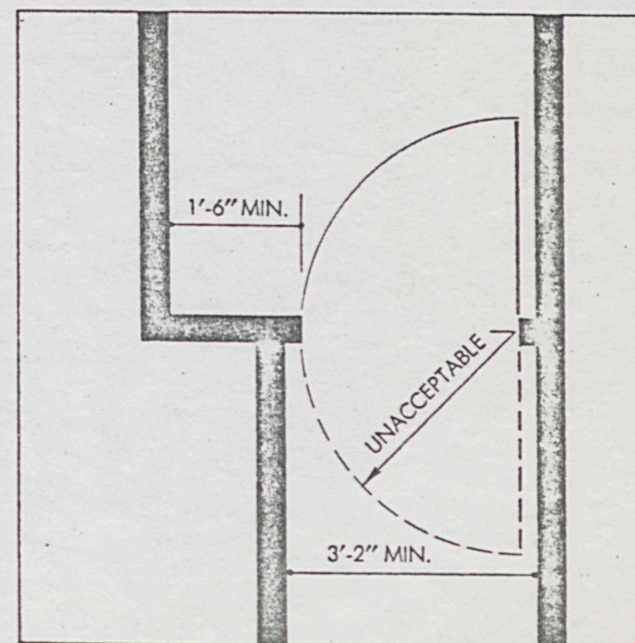
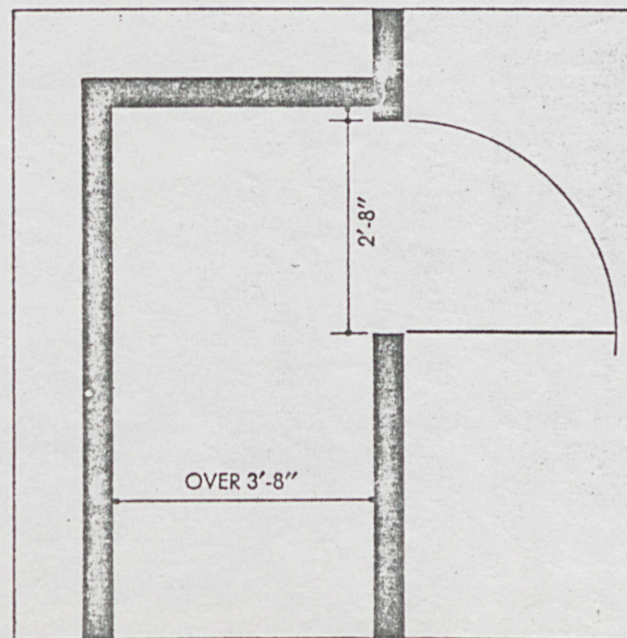
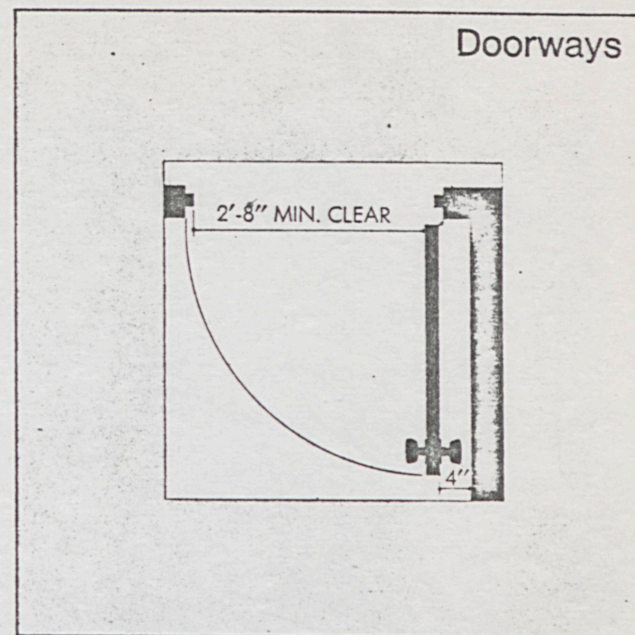
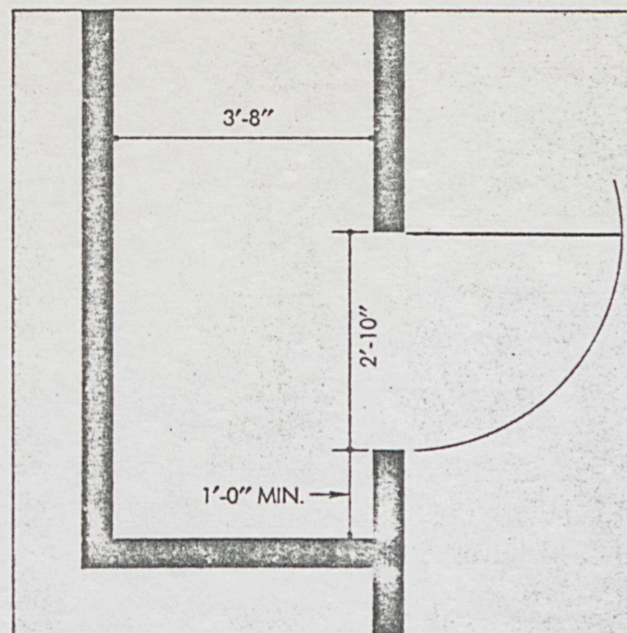
Showers should be available to handicapped or elderly people in institutions, dormitories or other places where they might be housed. Shower stalls should have a seat for those who must or prefer to be seated while taking a shower. This seat should be hinged so it can be folded out of the way for those who prefer to stand up.

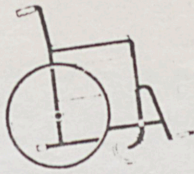


Restrooms should have one toilet stall for the handicapped. Sink etc. should be no higher than 4 feet from the floor. lip of urinals no more than 1 foot 7 inches and flush valve no higher than 4 feet.



Doorways, both exterior and interior, are convenient and usable by everyone if they have a minimum clear opening of 2 feet 8 inches. However, if a hallway is only 3 feet 8 inches wide, the door should be wider and more room should be left around it for easy maneuverability. The floor on either side of the doorway should be level for a distance of 5 feet and extend at least 1 foot 6 inches on the latch side of the door on the inswinging side. Sharp inclines and abrupt changes in levels should be avoided at doorsills, thresholds kept to a minimum.

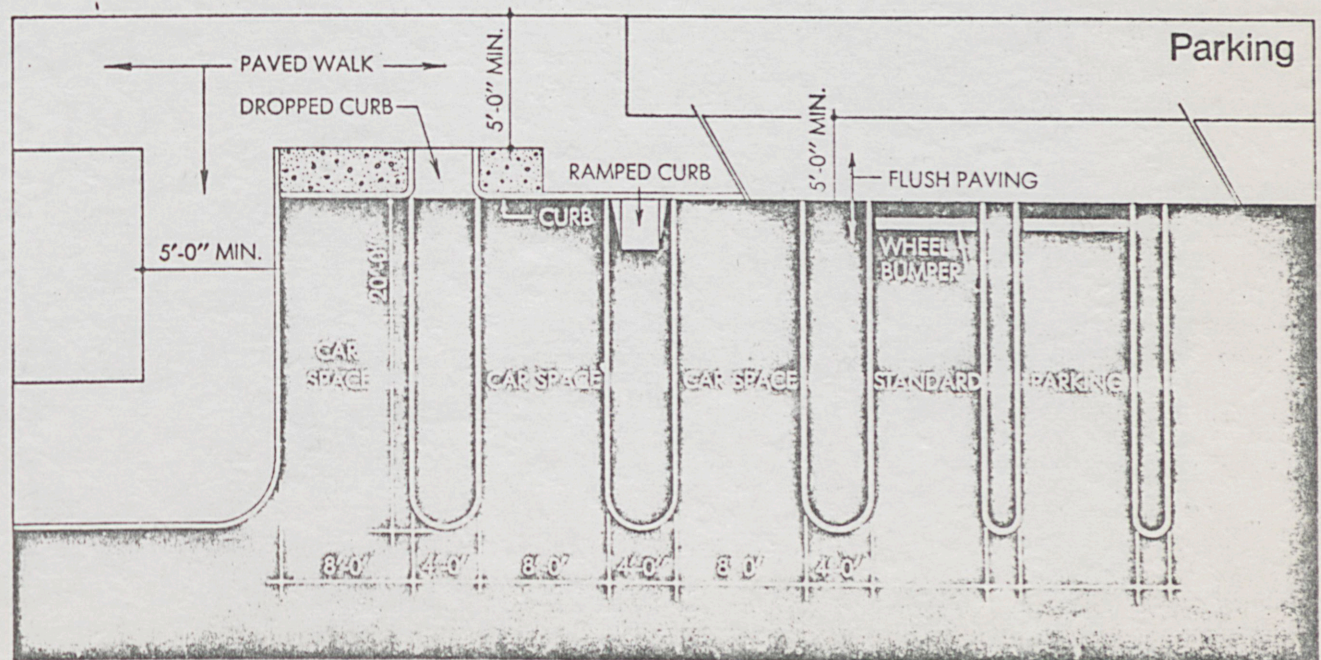
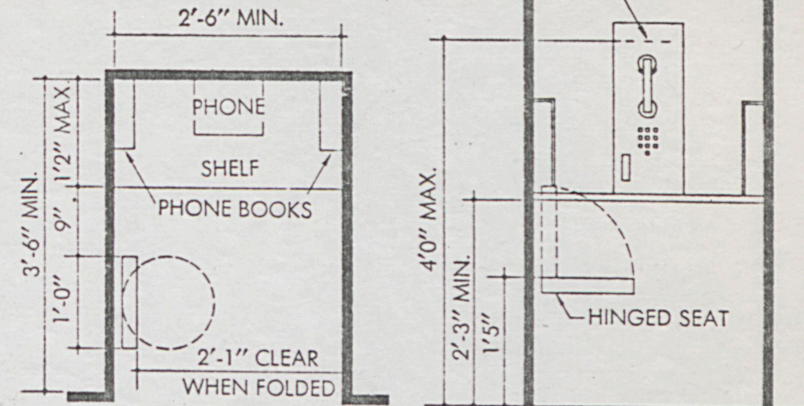




Parking is easier when spaces are provided near the building entrance and clearly marked for the handicapped. The spaces should be 12 feet wide, arranged to allow the individual to get out of his car onto a level surface and placed so the handicapped are not required to move behind parked cars. Access from parking lot to walkways is facilitated when lot is flush. Wheel bumpers should be spaced for access between them.

Public Telephones

Public telephones should be placed so there is no more than 4 feet to the dial, coin slot and receiver. An optional folding seat should be easily operable. Doors must not impinge on clearance of 2 feet 8 inches.



**PROGRAM ABSTRACT
AND CONFIRMATION**

**CRITERIA FOR
SYNTHESIS**

CRITERIA FOR SYNTHESIS

Based on assumptions, the problem defined itself as an infirmary with such facilities as a clinical laboratory, a physiotherapy suite, a dental suite, a surgery, and a radiology suite. The infirmary serves the institute and provides treatment for a select population whose growth should be limited to a desired two thousand patients. Present population fluctuates between twelve hundred and two thousand patients.

The design of the infirmary is based upon a present acute need for 50 beds and a possible expansion to 100 beds. Criteria for synthesis is largely based upon an article entitled "Beating the Systems Game," which was published in the March, 1970 issue of Progressive Architecture and an understanding of the problem by means of a hypothetical model of the total complex. The development of a hypothetical model is a valid gauge for evaluating what can be accomplished within the constraints (which I have chosen to ignore) of the problem. "Beating the Systems Game" provides a way to the solution with an hierarchy of relationship and a maze of technical data.

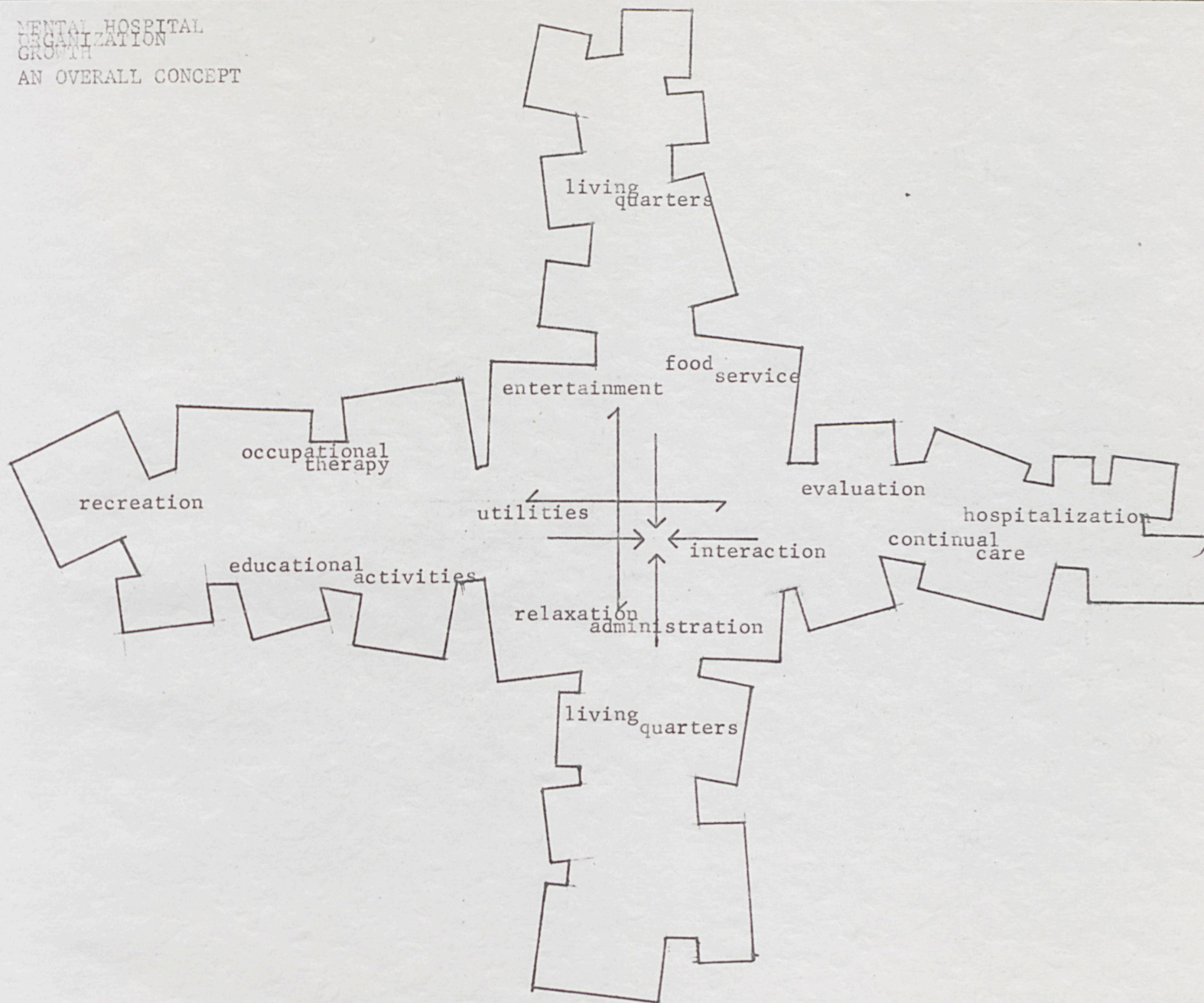
The infirmary concept is an offspring of an earlier understanding of the total complex. The total was envisioned as an organism which facilitated the interaction of patients; thus, the mall concept. A longitudinal housing section intersects with a therapeutic section. The administration, the library, the food service and the entertainment center as the brain, the mind, the stomach and emotions respectively form the intersection of the complex.

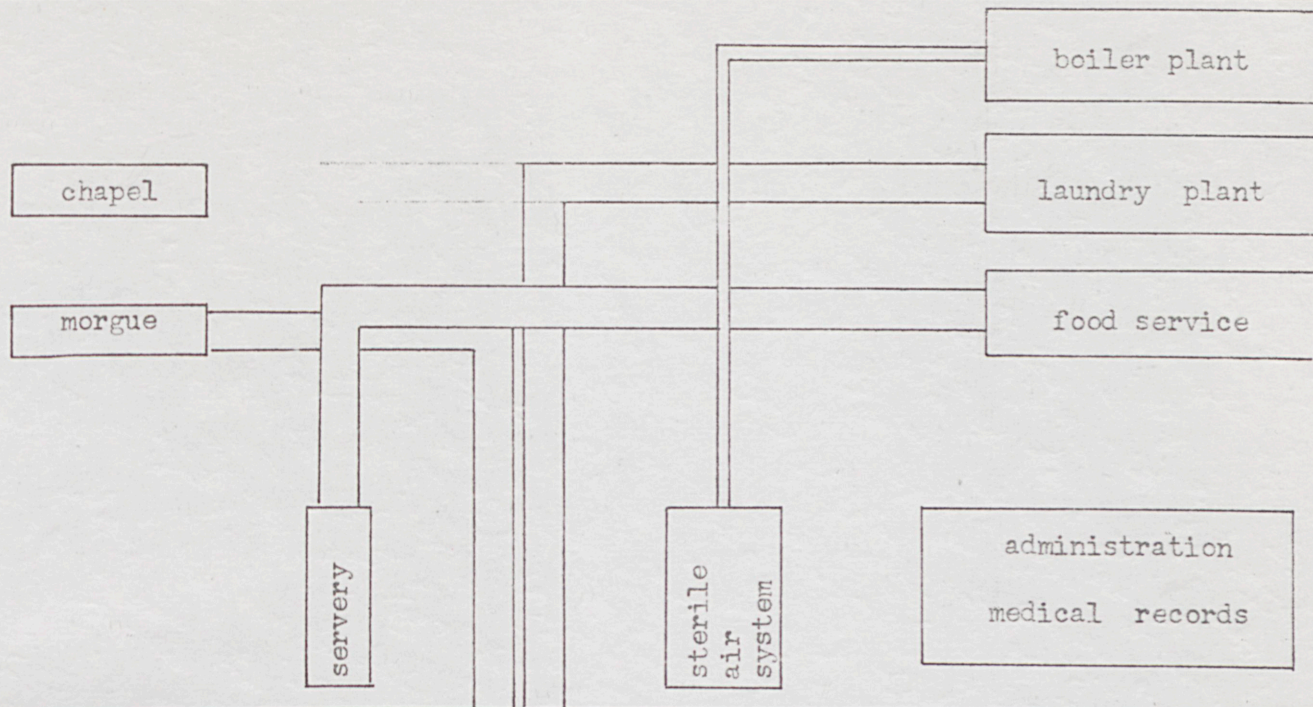
The infirmary itself divides into two parts: the patient-housing facilities and the therapeutic facilities. The solution forms a square surrounding an interior court which developed as a result of joining the male and female wings to each other and to the therapy wing. Hopefully, the infirmary, a long-needed chapel, new living facilities, and eventually, the total complex can be linked to form an interacting community; however, at present, I view the solution as an entity in itself.

There are many gaps in my attempt to develop the program. In places, I have entered in depth, examining techniques, seeking, understanding and evaluating the problem and subsequently, developing a solution from the analysis.

As a basis for my research, I have been guided by Professors P. A. Corkill and R. F. Guenther who published charts outlining a "Systematic Approach to Architectural Design."

MENTAL HOSPITAL
ORGANIZATION
GROWTH
AN OVERALL CONCEPT





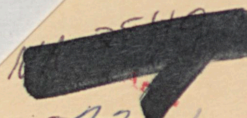
THERAPY CORE
 hairdressing
 barbering
 * occupational
 therapy * physio-
 * hydro-
 canteen
 visitors

PATIENT CORE
 wards
 * medical unit
 * surgical unit
 * isolation unit
 * continual care unit
 CIRCUS CROWD
 POLITICIANS
 VISITORS
 PATIENTS
 NURSING
 STAFF
 MEDICAL
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