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An Ambulatory Surgery Center: Margaret R. Pardee Memorial Hospital Hendersonville, North Carolina

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AN AMBULATORY SURGERY CENTER

Margaret R. Pardee Memorial Hospital

Hendersonville, North Carolina


AN AMBULATORY SURGERY CENTER
Margaret R. Pardee Memorial Hospital
Hendersonville, North Carolina

MARY JANE CAMPBELL


Spring 1985
Health Care Facilities
Planning and Design Studio


A terminal project submitted to the Faculty of the College of
Architecture, Clemson University in partial fulfillment of the
requirements for the degree of


MASTER OF ARCHITECTURE


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to my parents

Honor your father and mother (which is the first commandment with a promise), that it may be well with you, and that you may live long on the earth.

Eph. 6:2-3

to my Lord

Commit your works to the Lord, and your plans will be established.

Prov. 16:3

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 Priscilla W. Ramsey, RN

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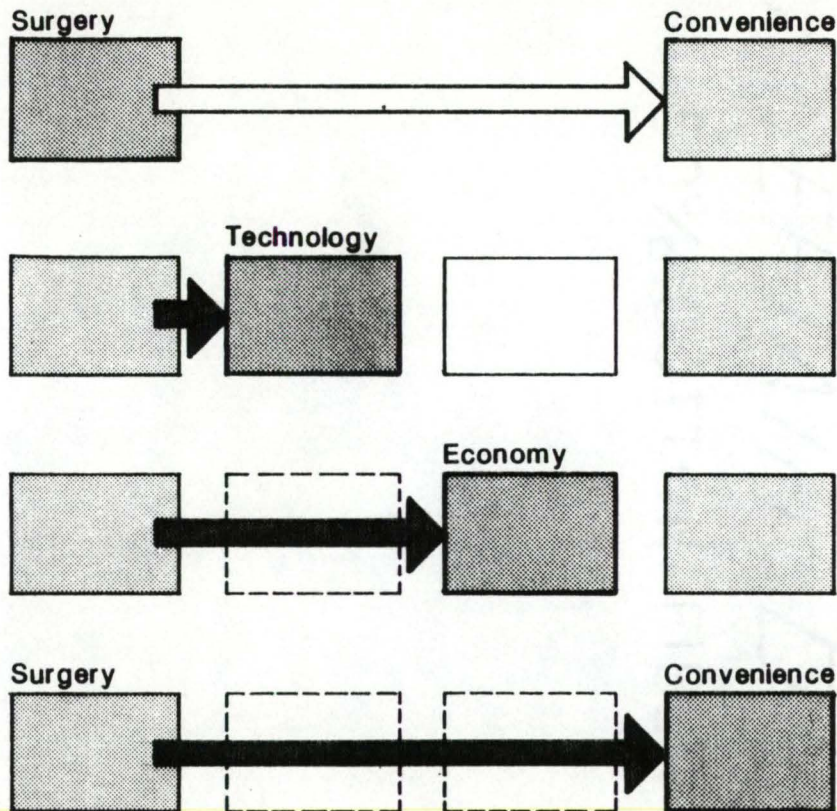
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Abstract



ABSTRACT

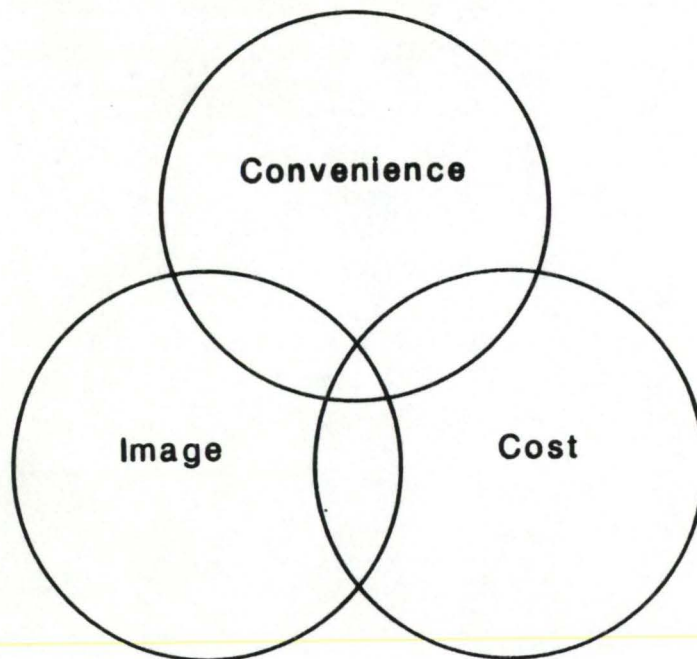
Television commercials, billboards, and commercial strip developments all reflect changes in attitudes and lifestyles prevalent in the 1980's. Computers produce instant information, drive-thru's give instant burgers, and bank machines hand over instant money. People now expect the utmost in convenience, efficiency, and immediacy, all at the best price and quality possible.

Such attitudes have spilled over to the health care market as well with changes in client roles and perceptions, technology, and financing mechanisms. Because clients more actively exercise their rights and responsibilities, their viewpoints must be considered more than in the past when physicians had the greatest influence. Technology, too, has developed such that many "major" procedures now classify as "minor", requiring less personnel, equipment, and overall length of stay for the client. Financing mechanisms have responded favorably to these technological changes and now pay for procedures which were previously refused coverage. With such constraints dissolved, ambulatory care represents a viable alternative in addressing changing attitudes and approaches to health care services.

National Perspective

ATTRIBUTES OF AMBULATORY CARE

Lifting the barriers of technology and economics paves the way for ambulatory care to benefit both clients and care givers. Convenience, image, and cost describe most of these advantages with time and location factoring into convenience. Free from the typical hospital trappings, ambulatory care saves time for the client by shortening the overall stay and for the care giver through less paperwork. A location separate from the main hospital, but linked to the community health care network, often breeds less confusion, greater accessibility, and clearer orientation for the client yet ties in sufficiently not to disrupt the care giver's practice.



Because of increasing competition in health care, an enhanced image plays an important role in securing clients, both patients and physicians. By again stepping out from the established hospital umbrella, the center can establish a more tranquil, approachable, even "home-like" setting. Finally, reduced costs often result since ambulatory care may come under a different pay structure than more costly inpatient services. This cost factor in itself leads third party payers to encourage their members to take advantage of ambulatory services when available.

TYPES OF AMBULATORY SERVICES

With new technology and greater user acceptance, ambulatory methods can apply to more health care services than before while the benefits make ambulatory care more appealing than traditional "in-hospital" counterparts. To a certain degree, minor emergency centers, one-day surgery units, various kidney dialysis facilities and cardiac catheterization labs, and other wellness oriented services employ ambulatory methods. Of these, ambulatory surgery holds the widest recognition nationally.

DEVELOPMENT OF AMBULATORY SURGERY

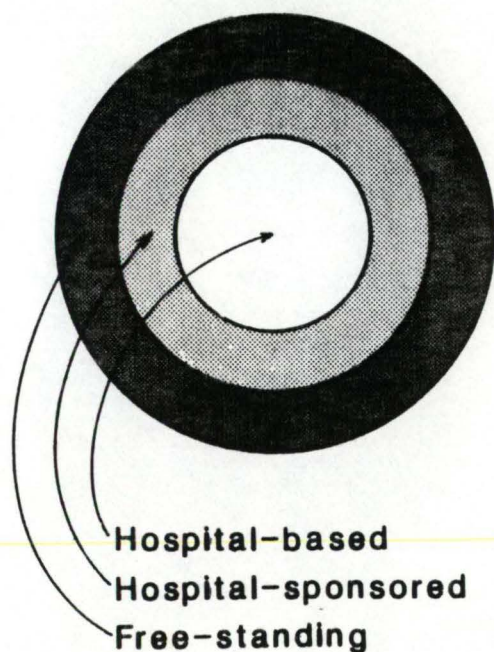
Ambulatory surgery refers to performing surgery more complex than office procedures using local anesthesia but less so than major work requiring prolonged post-op monitoring in a hospital setting. Although ambulatory surgery has only recently become prevalent, as early as 1909, Dr. J.H. Nicoll reported on 7,320 ambulatory surgeries performed at the Royal Glasgow Hospital for Children concluding that in certain procedures, ambulatory surgery met the need as well as inpatient. To this end, by 1979 the total ambulatory surgery caseload performed in the U.S. reached 18 million with the ambulatory:total surgery ratio near 30-40%.

Various approaches to ambulatory surgery have developed with three categories prevailing: hospital-based, hospital-sponsored, and free-standing. Each differs in management concept and relationship to a hospital setting with subsequent pros and cons.

In this instance, hospital-based applies to a center connected with an existing inpatient surgery. This location lends itself to readily available support, efficient hospital admission when required, convenience for the surgeon with inpatient and outpatient cases, and cost savings through sharing expensive equipment with inpatient surgery. Drawbacks often entail added client expense through cost shifting, extensive hospital red tape, and a more threatening, confusing environment for the client.

The majority of free-standing centers display a nearly reversed scenario from hospital-based units. These facilities boast lower client expenses, self-contained administration, plans encouraging staff to contain costs, and an environment tailored to ambulatory surgery needs. However, these centers may necessitate more cumbersome hospital admissions, lessened geographical convenience for the surgeon, the purchase of expensive but seldom used equipment, and duplication of support.

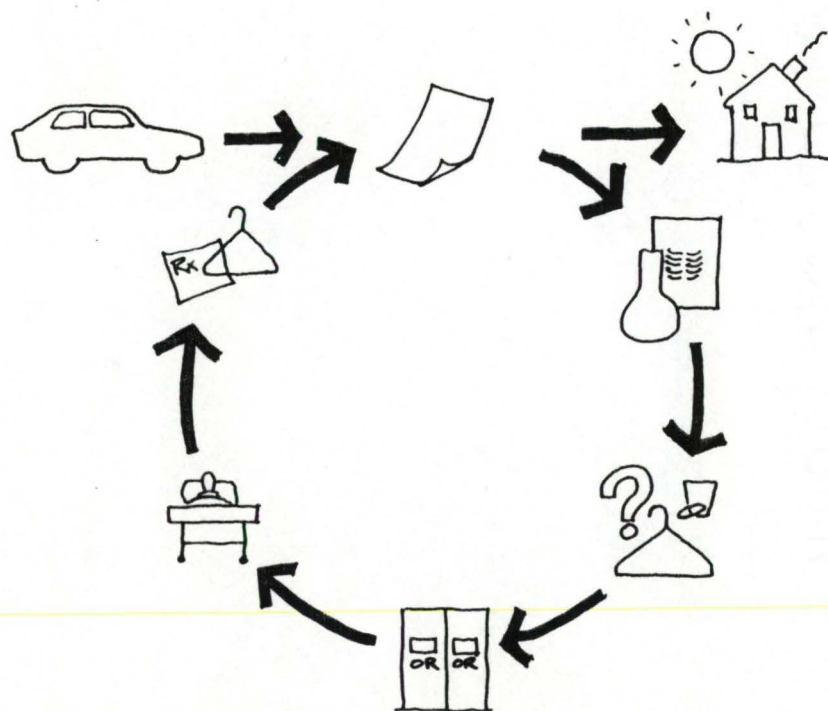
One hospital-sponsored option seeks to combine attributes of both hospital-based and free-standing centers with a hospital



system running a nearby, if not adjacent, ambulatory surgery facility. The accompanying chart outlines some of the major advantages and disadvantages associated with such a set-up.

AMBULATORY SURGERY PROCESS

Basically circular in nature, the ambulatory surgery process takes a client from home to surgery and home again in one day. On arriving at an ambulatory surgery center, a client sees the receptionist to take care of any recordkeeping still needed. He may then proceed to have outstanding labwork, x-rays, EKG's, etc. performed as dictated by the physician or standard policy, though most already will be completed. From there he moves to pre-op to change from street clothes, meet with the nursing staff for information and questions, and receive preps required prior to surgery. Anesthesia may be given now or at the operation itself, the next step in this process. Depending on the anesthesia used during surgery, the client transfers to either recovery or post-op, a step-down recovery unit. In post-op he dresses back into street clothes and receives needed medication and further instructions. Once officially discharged by the nurse, physician, and anesthesiologist, he may leave with his companion to further recoup in the comfort of his own home.



AMBULATORY SURGERY PROCESS

Regional Case Studies

MEMORIAL MISSION HOSPITAL ASHEVILLE, NC

The ambulatory surgery program at Memorial Mission began in 1979 as a make-shift arrangement on an existing nursing floor. Even with further remodeling and expansion, however, the facility soon reached overflow capacity. Over the last five years, Mission's ambulatory surgery caseload grew by 67.9% and last year, almost one-fourth of their total surgery was performed on an ambulatory basis.

To meet the growing need and hopefully reduce client costs by 25 percent, Mission opened the SurgiCare Center on November 19, 1984, as a freestanding ambulatory surgery center to the hospital's north side. Connected to the inpatient operating suite by a corridor, the facility maintains ready access to existing medical support. Nevertheless, the SurgiCare Center operates as a fully functioning surgery unit in its own right with three operating rooms, a minor treatment room, a 12-bed recovery area and satellite laboratory, as well as a staff conference room and a physician's dictation center. A "flow-through" system gives clients a sense of continuity, separate waiting areas accommodate both children and adults, and clients and physicians can park immediately adjacent to the building.

ST. JOSEPH'S HOSPITAL ASHEVILLE, NC

Eight years ago marked the start of ambulatory surgery at St. Joseph's Hospital in Asheville, North Carolina. Though the program has seen many evolutions, clients presently register along with inpatients in a common admissions area and proceed to surgery on either the first or fourth level. Recovery takes place on the fourth floor, after which the client rejoins his family in a nearby waiting area before discharge.

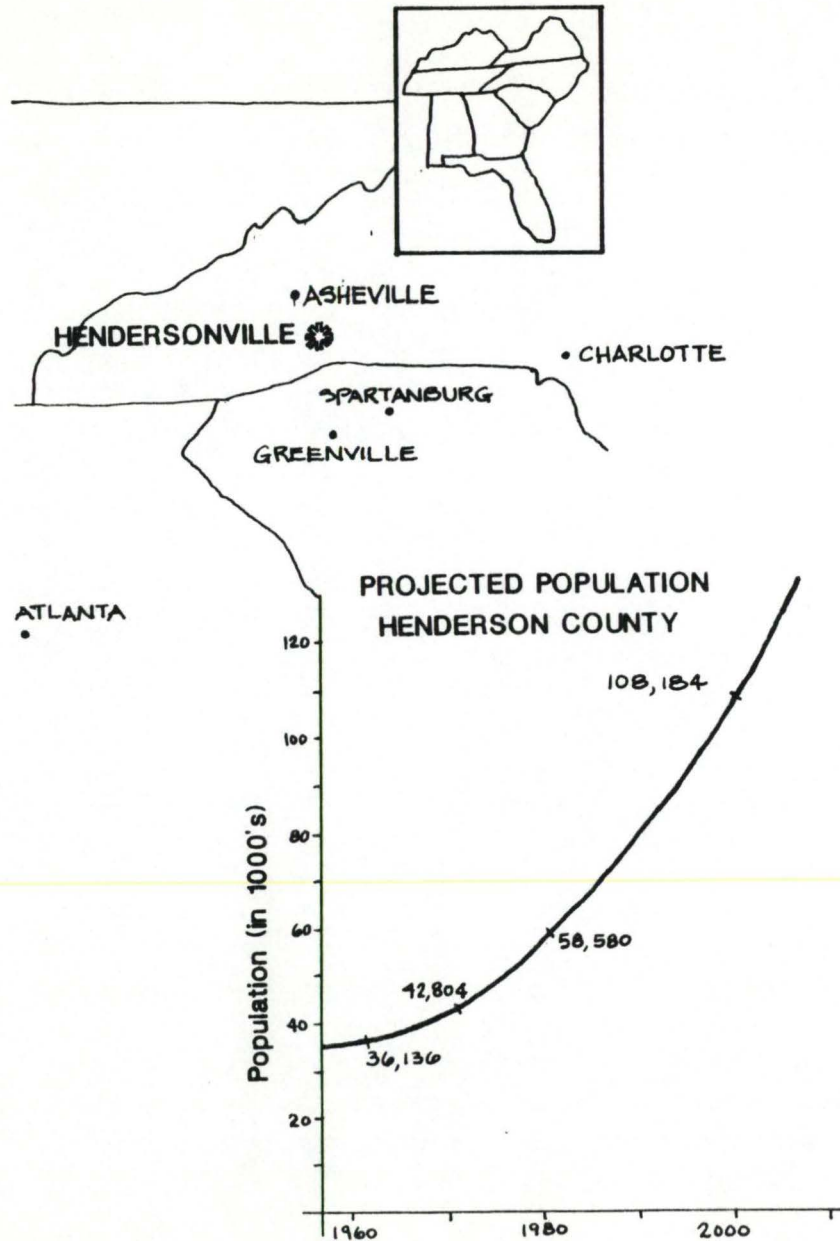
The most recent change for St. Joseph's is an adjunct facility now under construction on the hospital campus. While plans entail converting three existing OR's, four will be added in the new ambulatory surgery center. Other additions include new pre-op spaces, shared sterile areas between inpatient and outpatient OR's, separate admitting for ambulatory surgery clients, and adjacent client drop-off and covered parking.

**CABARRUS MEMORIAL HOSPITAL
CONCORD, NC**

Ambulatory surgery at Cabarrus Memorial Hospital saw its birth in 1980 with the provision of four preparation and holding cubicles and a smaller pediatric holding area. Because volume increased substantially over the next three years, two additional prep cubicles and several recliners joined the lineup. The growth in the number of clients under general anesthesia to be admitted accounts for much of this increase in volume.

During 1983 Cabarrus converted a section of the nursing floor adjacent to the existing surgery for expanded ambulatory services, allowing for sixteen client beds and recliners and the sharing of OR's between inpatient and ambulatory surgery. Designed as a short term arrangement, this move should handle the foreseeable increases in volume until other long range alternatives go into effect.

Local Determinants



THE GROWTH OF HENDERSONVILLE

Located in the southwest corner of North Carolina, Hendersonville had its start with the creation of Henderson County in 1838. Present-day Buncombe and McDowell counties border Henderson to the north, Rutherford and Polk to the east, South Carolina to the south, and Transylvania to the west. As the county seat, officials wanted Hendersonville to be central, so they chose an area east of the Buncombe Turnpike, or today's Interstate 25.

In its early stages, Hendersonville attracted many settlers from neighboring South Carolina, Virginia, and eastern North Carolina as well as the mountain ridges of Pennsylvania, New Jersey, and the New England states. Even today this resort town attracts large numbers on a seasonal basis, especially older Floridians and campers from around the region, so that the population nearly doubles every summer. Such a fluctuation causes problems in determining population growth, but general expectations call for 85% growth in the county by the year 2000.

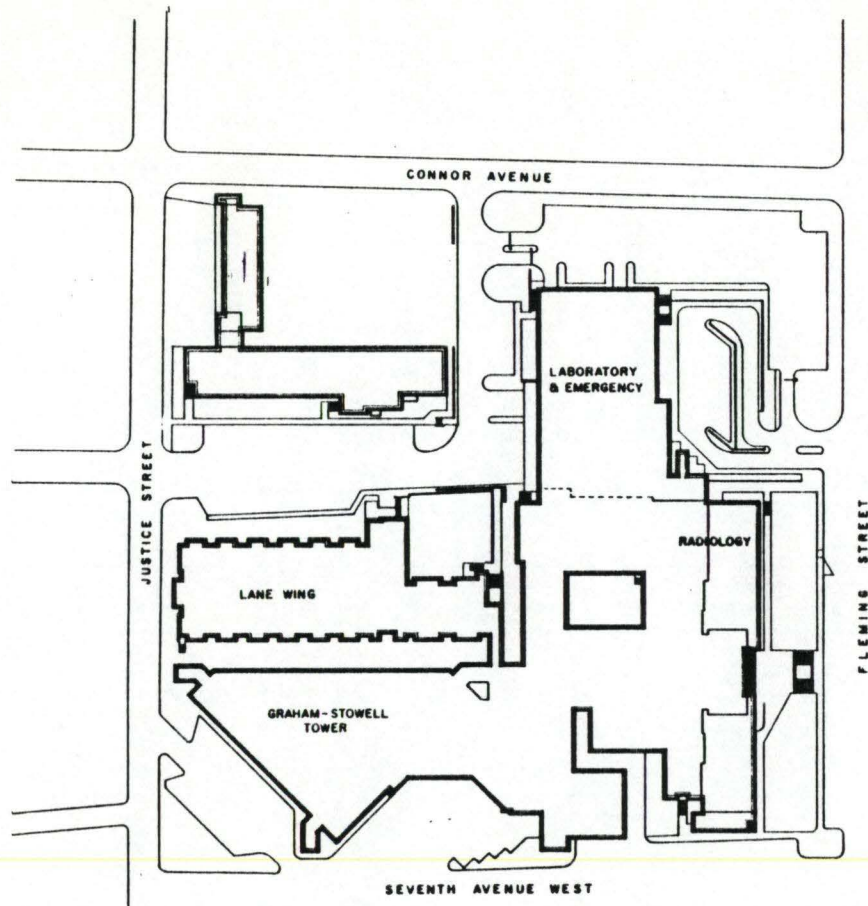
EARLY DEVELOPMENT OF HEALTH CARE IN HENDERSONVILLE

Pardee's history actually begins with a brief look at the development of Patton Memorial Hospital. During the summer of 1895, the worst yellow fever epidemic in Florida's history broke out, so Henderson County invited Floridians to the area to escape the rampage. Ten thousand people accepted, bringing with them a need for health care services to care for those who subsequently caught the fever and other illnesses. To meet this need, Hendersonville furnished a temporary hospital in a two-story building on Main Street. This facility was followed by the Flower Mission, one small room equipped and maintained as such until the building of Patton Memorial Hospital in 1913. Costing \$10,000, Patton included seventeen rooms with five doctors on staff, a nursing superintendent, and several nurses. In 1925 the hospital added the Trenholm wing and thirteen years later, a nurses' home as well.

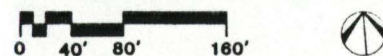
MARGARET R. PARDEE MEMORIAL HOSPITAL

Not long after, Patton Memorial Hospital and the Henderson County Hospital Association transferred the assets of Patton to a new hospital. Financing came through a \$100,000 donation from Ivor R. Pardee, a \$250,000 bond issue, and assistance through the North Carolina Medical Care Commission under the Hill-Burton Act. On November 15, 1953, Margaret R. Pardee Memorial Hospital was dedicated and named in memory of an aunt of Ivor Pardee. Its facilities consisted of a 70-bed hospital and nursing home, at a total cost of \$1,050,000. Several additions have included: a solarium (1955), two inpatient wings (1956, 1964), a 40-bed extended care facility (1973), the Graham-Stowell Tower (1975) with new dietary services, medical records, CCU, ICU, and acute care beds, and the Jamison wing (1981) with updated emergency, laboratory, radiology, and outpatient facilities. Pardee presently houses 273 beds, providing a complete range of services for a community hospital of its size.

In looking to the year 2000, the hospital has devised a master plan encompassing ambulatory, geriatric, home health, health care support, and management services. Although ambulatory services include many veins of health care, Pardee's medical planning committee has focused on improving ambulatory surgery as the top priority for the near future.



SITE PLAN



AMBULATORY SURGERY AT PARDEE

The ambulatory surgery program at Pardee was initiated in 1978 by Drs. John Bell and Colin Thomas when they developed the protocol for outpatient surgery as an adjunct to the inpatient surgical unit. At that time, only four to five cases per week were treated on alternate Wednesdays and Thursdays. During the following year, the ambulatory surgery caseload grew only slightly, but by 1980-1981, the program was off and running and has increased steadily ever since. Much of this growth stems from a greater interest on the part of the federal government, private industry, Blue Cross and Blue Shield, and other third-party payers to curb the rising costs of providing health care. By performing surgical and other procedures on an ambulatory basis when possible, costs can be cut related to staffing, equipment, and inpatient beds.

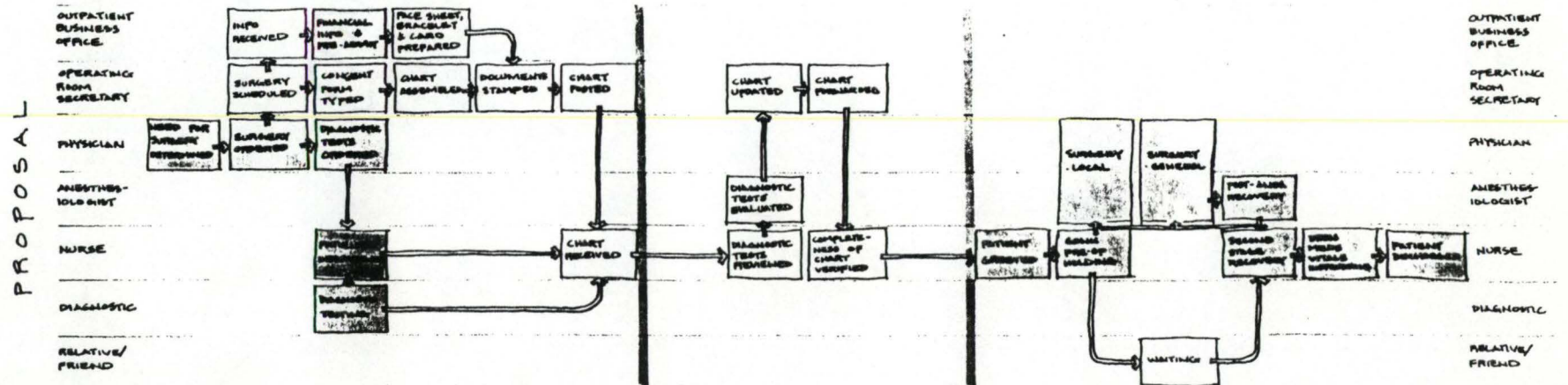
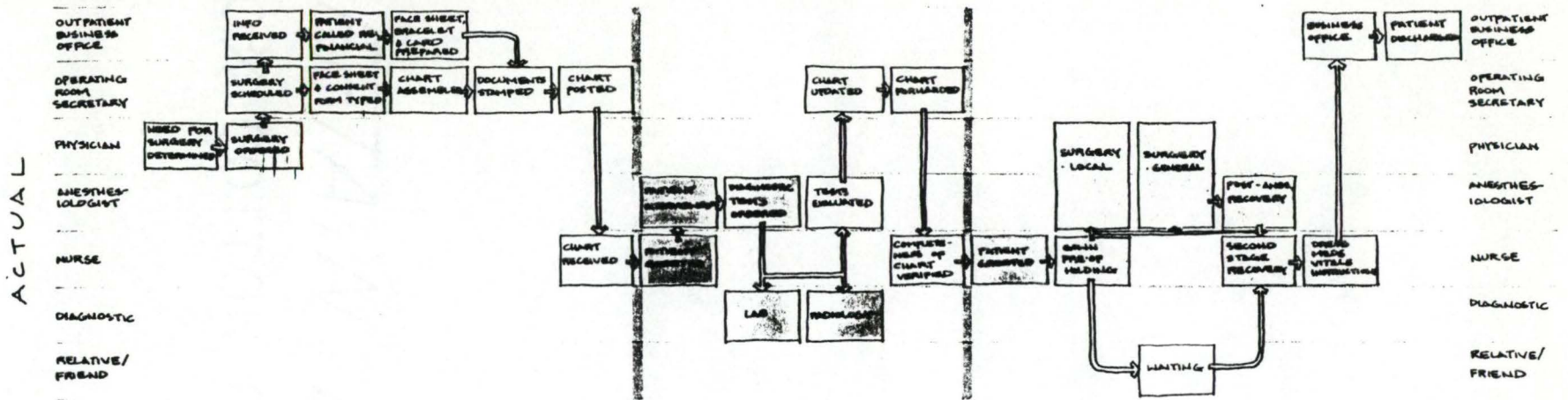
Presently, ambulatory surgery accounts for 27.5% of all surgery cases at Pardee with nationwide predictions setting 40% as a likely market share. With substantial numbers of ambulatory procedures already being performed at Pardee and trends pointing to even greater numbers in the future, the situation now calls for running the ambulatory surgery program as a full-fledged service of its own, closely associated with but distinct from the established inpatient surgery unit. Even though the caseload has grown tremendously over the last five years, the

process of scheduling, interviewing, testing, and evaluating clients for surgery has remained relatively the same during that time. Because ambulatory surgery cases are more elective in nature than most inpatient ones, more emphasis should be placed on both client and physician satisfaction to retain and capture this very competitive avenue of today's health care market.

AMBULATORY SURGERY FLOW CHART

The flow chart shown demonstrates in more detail the ambulatory surgery process existing at Pardee and a proposed change in that sequence. This chart follows the entire process from the time a physician determines a need for surgery, through the scheduling and diagnostic procedures, and on to the day of surgery itself. Both the actual and proposed situations include the same activities. However, the proposal attempts to reduce the number of client visits to the hospital area by arranging all diagnostic tests and business office matters on the same day as the initial physician visit, thus making this aspect more convenient for the client.

FLOW CHART - AMBULATORY SURGERY



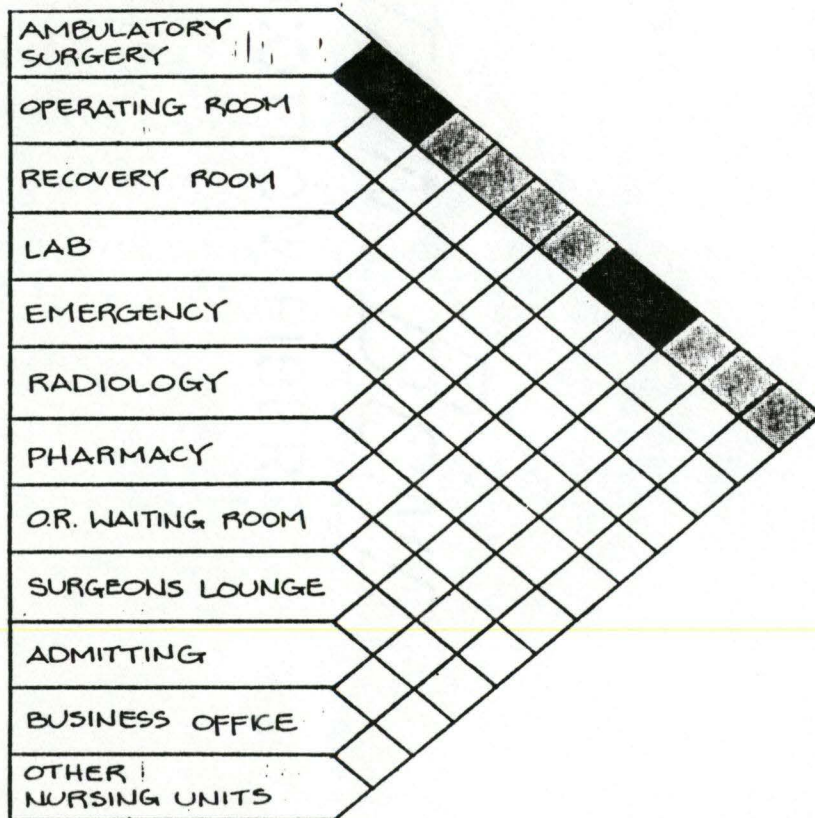
NOTE: AREAS IN GRAY SIGNIFY THOSE WITH THE GREATEST DIRECT PATIENT INVOLVEMENT.

INTER/INTRADEPARTMENTAL RELATIONSHIPS

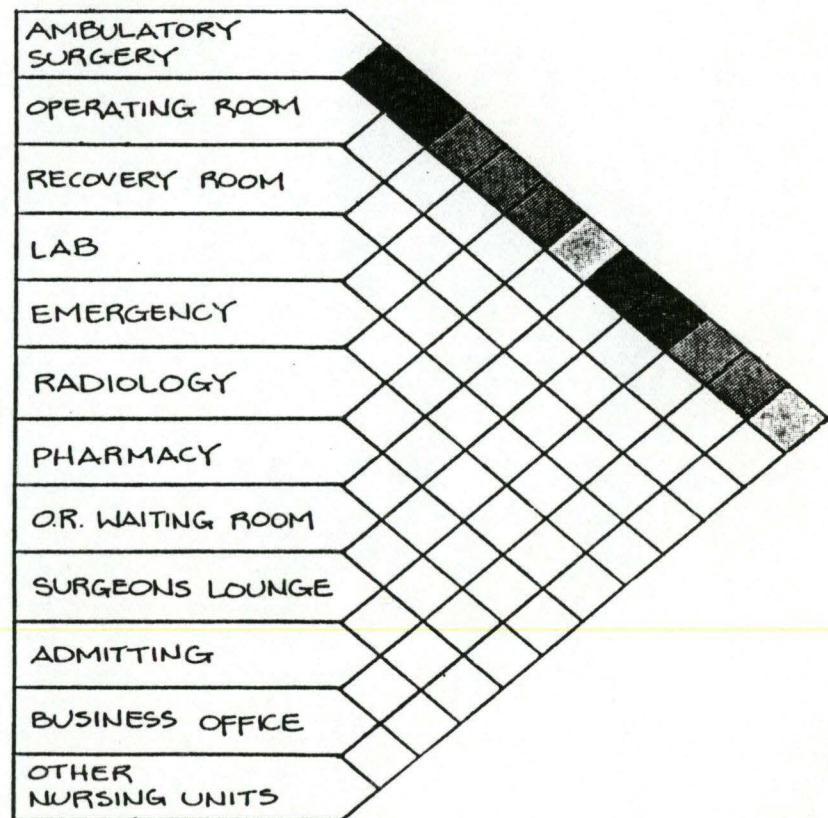
Throughout the entire surgical process, the client, staff, physicians, visitors, information, and materials pass through various spaces within the hospital setting. Based on certain programmatic issues, those spaces must be well-planned to function most effectively. The following matrices demonstrate relationships on both interdepartmental and intradepartmental levels for existing and "desired" conditions. On an interdepartmental basis, the unit must relate strongly to the business office and the laboratory, radiology, and emergency departments. In Pardee's present ambulatory surgery unit, the facility addresses the most critical relationships, but the long travel distances to lab, radiology, and emergency become somewhat excessive. Within the department itself, ambulatory surgery revolves around pre-op, the operating suite, recovery, visitor waiting, and staff support spaces, with the nurses station as the main control point. Again, Pardee's existing unit meets the most crucial functional requirements but comes up short in terms of the relative distance to support areas.

INTERDEPARTMENTAL RELATIONSHIPS

EXISTING



DESIRED



DAY OF SURGERY IN THE EXISTING SUITE

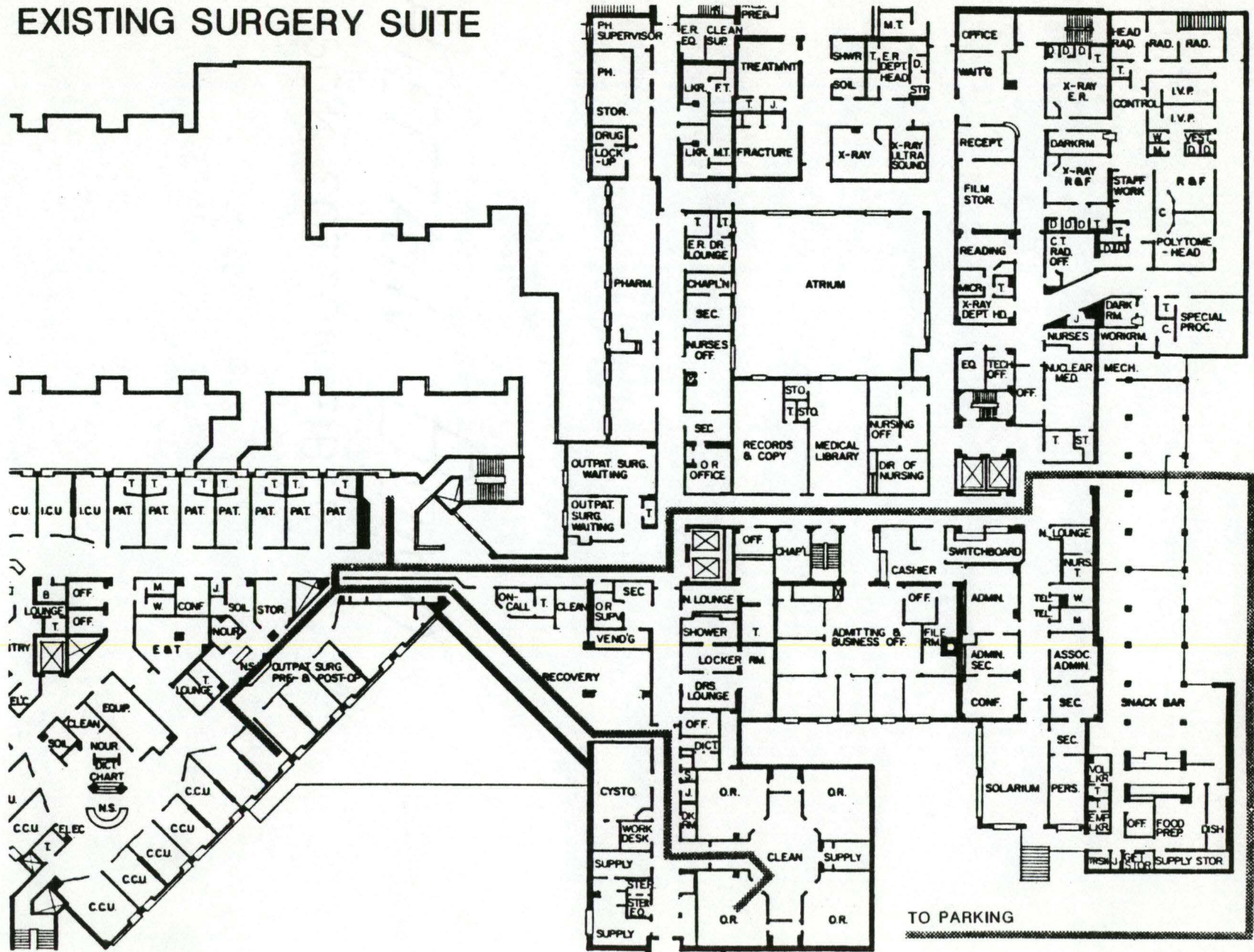
By examining the existing surgical process, some problems in flow and function come to light. Entering into the hospital on the day of surgery, the client and his companion may encounter problems in their initial orientation to the unit. Although most clients park west of the hospital, the main entry faces east. Thus they must walk the length of the hospital before entering and then backtrack through a maze of corridors to reach the surgery unit. There the client and visitors tell the pre-op nurse of their arrival, and meanwhile sit in an often congested waiting area designated for the sub-coronary, intensive care, and ambulatory surgery units. This very mix of individuals adds to the anxiety already present since most ambulatory surgery clients come for primarily elective procedures while those in the sub-coronary and intensive care units deal with much more serious problems, ones which the ambulatory surgery client would rather not face.

From this waiting area, the nurse summons the client and his companions to pre-op where the client changes, receives instructions and pre-op medication, and once again, waits. Except for the ever-present anxiety, this wait proves better than the first since the client can "settle in" to a private space where he returns after surgery. However, because the area was originally planned as an

intensive care unit, pre-op/post-op lacks the warm, "home-like" qualities possible in ambulatory surgery given the relatively minor procedures performed.

As the time for surgery approaches, companions leave to wait elsewhere while an orderly wheels the client through recovery, again adding to his anxiety, to the holding area off the main surgical corridor. From holding, the client heads for surgery and then recovery and post-op to reach a state of "street fitness" before discharge. An area typical of others built in the early 1960's, the operating suite works sufficiently for the most part, except for somewhat inflexible and inadequate storage space. The single corridor arrangement also poses problems in terms of mixing staff circulation and the flow of clean and soiled materials.

EXISTING SURGERY SUITE



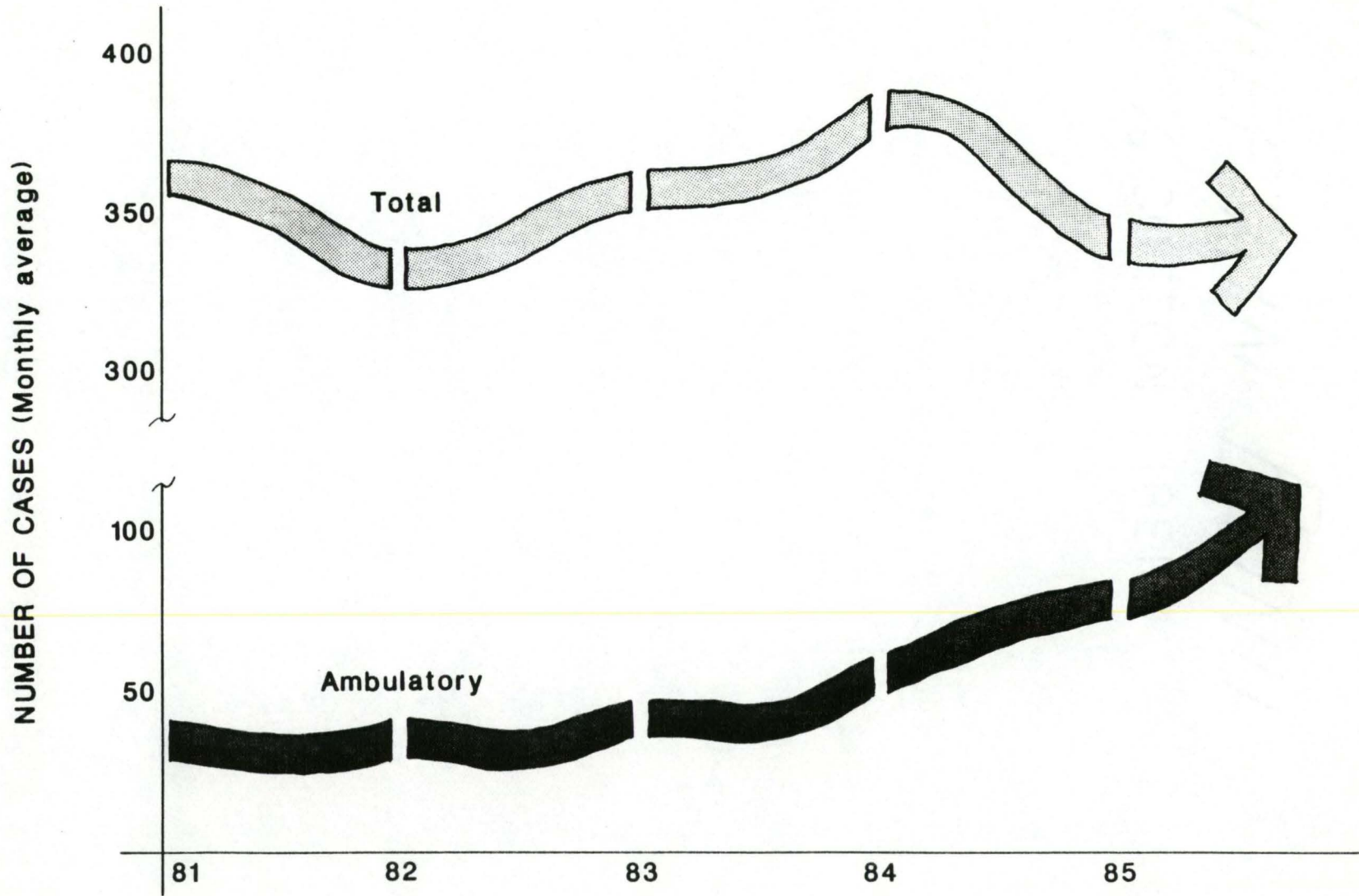
AMBULATORY SURGERY VOLUME

Substantial increases in the patient volume of ambulatory surgery compound the problems already demonstrated in the existing unit. Whereas inpatient surgery volume since 1980 has remained rather steady, even declining in the last two years, the number of ambulatory surgery cases has grown significantly in that time. The following charts spell out, respectively: the actual number of total and ambulatory surgery cases, the decline of total surgery cases versus the growth of ambulatory patient volume, and the percentage of ambulatory versus total surgery cases.

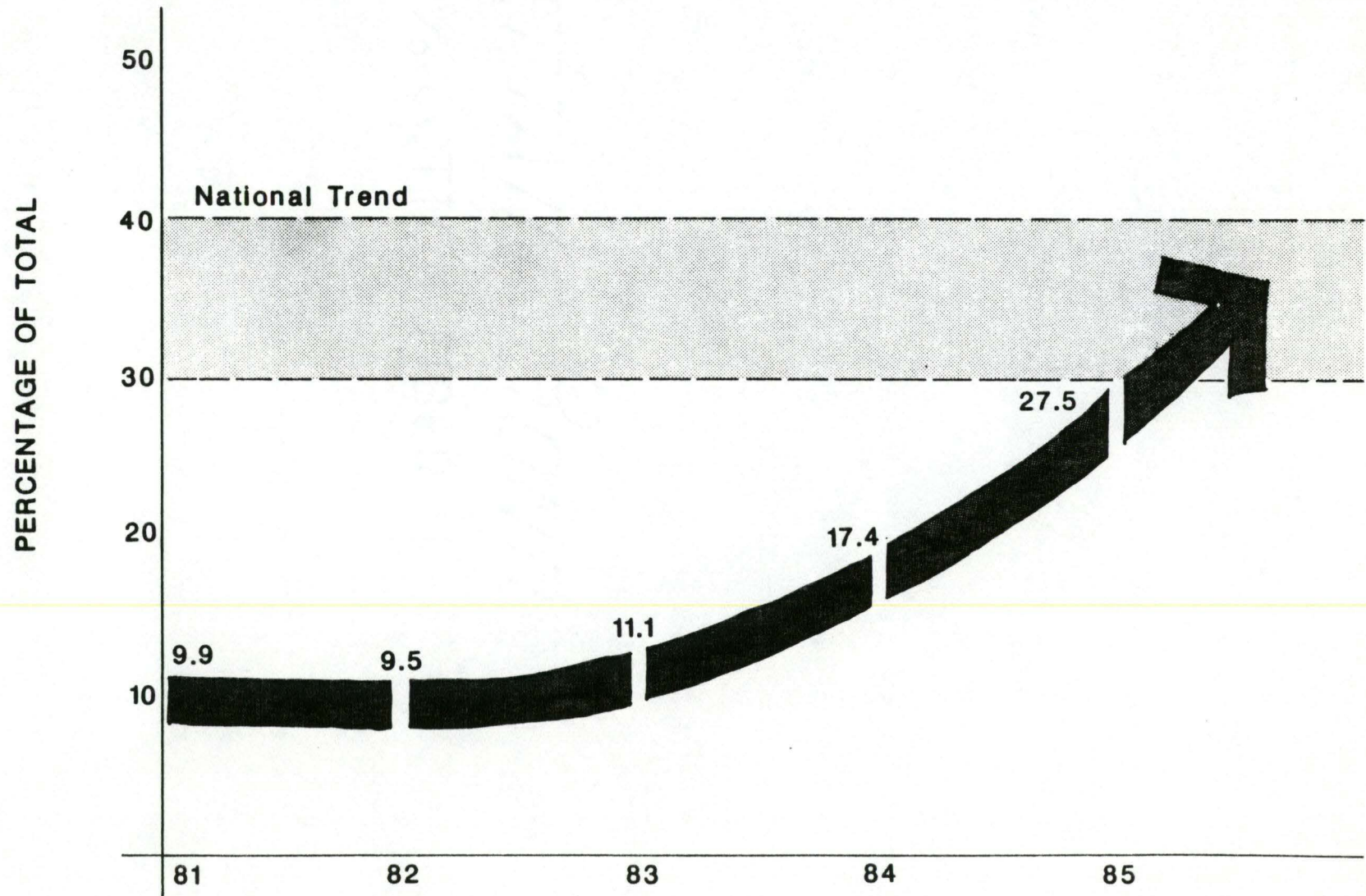
**PATIENT VOLUMES
TOTAL SURGERY VS. AMBULATORY SURGERY
1980-1984**

| | 1980 | | 1981 | | 1982 | | 1983 | | 1984 | |
|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|
| | <u>TOT</u> | <u>AMB</u> | <u>TOT</u> | <u>AMB</u> | <u>TOT</u> | <u>AMB</u> | <u>TOT</u> | <u>AMB</u> | <u>TOT</u> | <u>AMB</u> |
| JAN | 367 | 36 | 336 | 35 | 317 | 24 | 386 | 47 | 353 | 62 |
| FEB | 361 | 23 | 321 | 40 | 347 | 43 | 385 | 55 | 335 | 77 |
| MAR | 365 | 38 | 311 | 26 | 404 | 47 | 397 | 84 | 355 | 88 |
| APR | 321 | 46 | 363 | 37 | 358 | 40 | 372 | 50 | 304 | 84 |
| MAY | 354 | 25 | 346 | 29 | 362 | 32 | 368 | 37 | 368 | 119 |
| JUN | 391 | 31 | 367 | 20 | 360 | 32 | 388 | 76 | 319 | 89 |
| JUL | 378 | 38 | 412 | 50 | 384 | 51 | 376 | 90 | 384 | 75 |
| AUG | 346 | 25 | 388 | 33 | 370 | 46 | 413 | 72 | 389 | 140 |
| SEP | 330 | 33 | 365 | 31 | 390 | 49 | 369 | 74 | 292 | 118 |
| OCT | 361 | 42 | 341 | 35 | 365 | 46 | 309 | 60 | 369 | 112 |
| NOV | 273 | 34 | 328 | 30 | 326 | 37 | 314 | 44 | | |
| <u>DEC</u> | <u>321</u> | <u>42</u> | <u>288</u> | <u>29</u> | <u>324</u> | <u>59</u> | <u>305</u> | <u>74</u> | | |
| TOT | 4168 | 413 | 4166 | 395 | 4307 | 506 | 4382 | 763 | 4162 | 1157 (EST) |
| AVG | 347 | 34 | 347 | 33 | 359 | 42 | 365 | 64 | 347 | 96 (EST) |

SURGERY VOLUME



AMBULATORY SURGERY



SURGEONS' SURVEY ON AMBULATORY SURGERY

Surgeons' viewpoints toward ambulatory surgery have a great impact on how the program operates and in what facilities since they as much as patients serve as hospital "clients". A recent survey of the surgeons practicing at Pardee, involving both written questionnaires and personal interviews, reveals their high level of satisfaction with the ambulatory surgery staff and some of their displeasures regarding aspects of the existing facilities and the present scheduling practices. Some of the environmental factors they wish improved include:

- circulation - orientation, entry, and access
- business arranging area
- recovery room equipment and arrangement
- central area for blood collection, insurance, etc.
- designated area for ambulatory surgery waiting
- overall: free-standing, convenient facility

ALTERNATIVES TO THE EXISTING FACILITIES

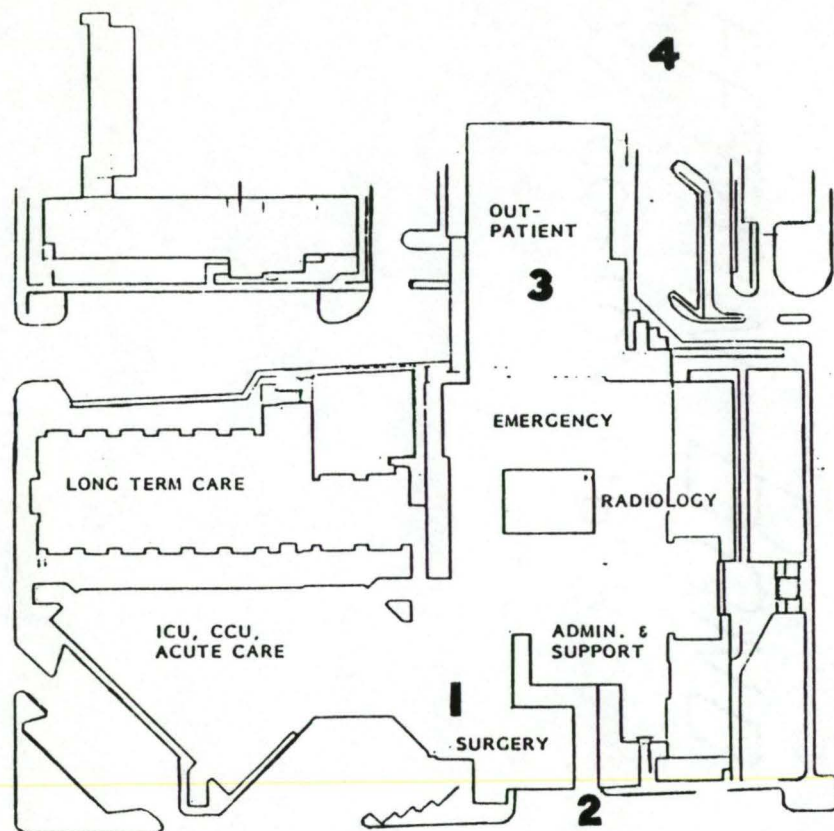
Given the material already presented, examining alternatives for providing ambulatory surgery at Pardee becomes quite plausible. By comparing various issues, one can determine the merits of one site alternative over another.

The issues involved follow:

- Convenience
- Circulation
- Expansion
- Image
- Access
- Parking
- Support
- Views
- Cost
- Visibility
- Orientation
- Land ownership

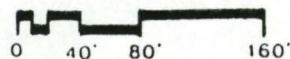
The next list outlines possible sites:

1. Renovation of the existing surgery
2. Expansion of the existing surgery
3. Relocation below the Jamison Wing
4. Free-standing across from the Jamison Wing
5. Free-standing within two blocks of the hospital
6. Free-standing near Blue Ridge Mall



MARGARET R. PARDEE MEMORIAL HOSPITAL
HENDERSONVILLE, NORTH CAROLINA

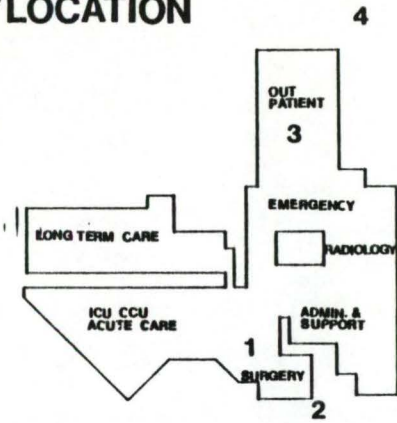
SITE PLAN



Although renovating or expanding the existing surgery would cost less, either option would also limit any significant improvements or expansion. Relocating below the Jamison Wing could provide additional space and better circulation, but the rest of the hospital trappings

ISSUES/LOCATION

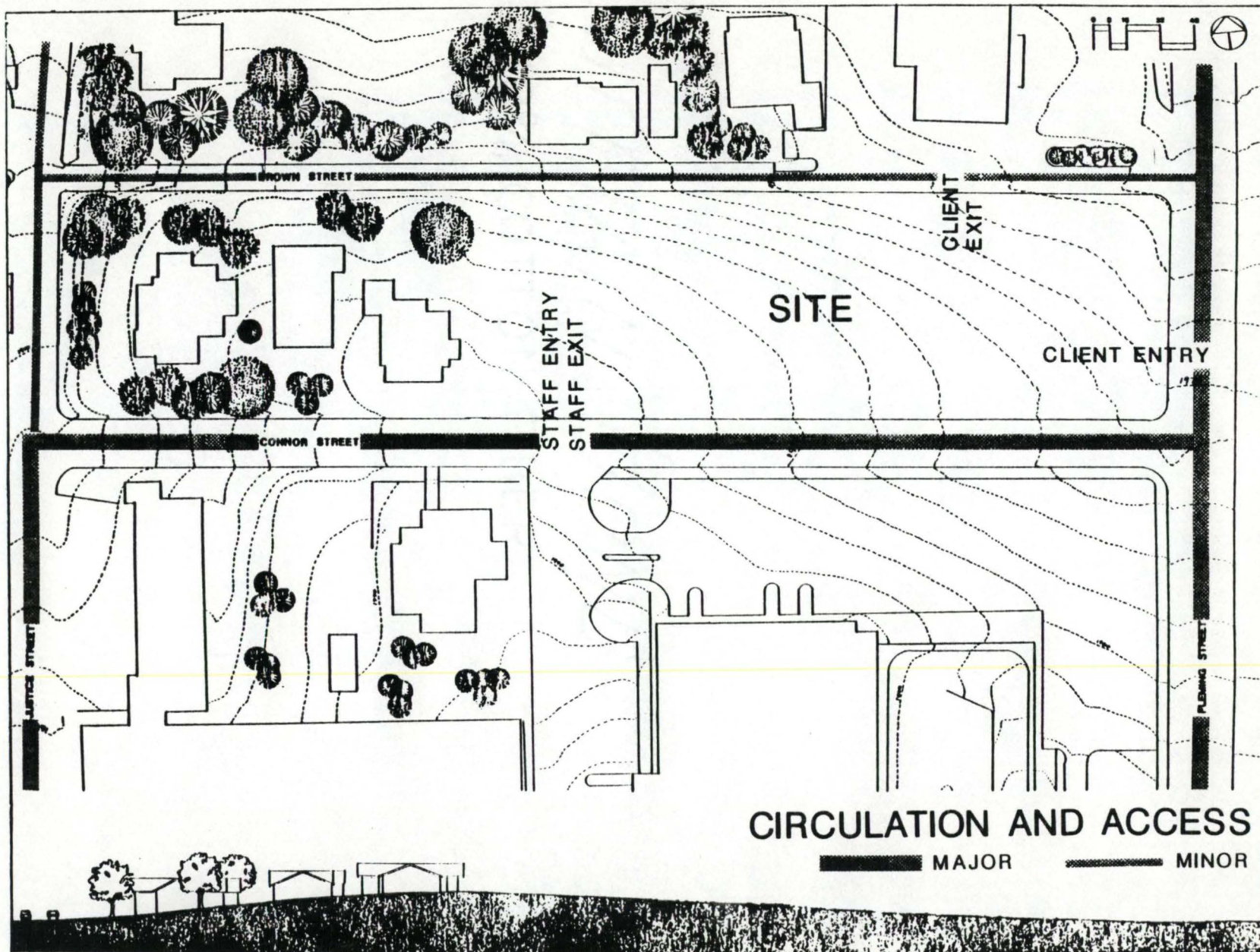
6 (freestanding near Blue Ridge Mall)



| | 1 | 2 | 3 | 4 | 5 | 6 |
|----------------|---|---|---|---|---|---|
| CONVENIENCE | ■ | ■ | ■ | ■ | ■ | ■ |
| CIRCULATION | ■ | ■ | ■ | ■ | ■ | ■ |
| EXPANSION | ■ | ■ | ■ | ■ | ■ | ■ |
| IMAGE | ■ | ■ | ■ | ■ | ■ | ■ |
| ACCESS | ■ | ■ | ■ | ■ | ■ | ■ |
| PARKING | ■ | ■ | ■ | ■ | ■ | ■ |
| SUPPORT | ■ | ■ | ■ | ■ | ■ | ■ |
| VIEWS | ■ | ■ | ■ | ■ | ■ | ■ |
| COST | ■ | ■ | ■ | ■ | ■ | ■ |
| VISIBILITY | ■ | ■ | ■ | ■ | ■ | ■ |
| ORIENTATION | ■ | ■ | ■ | ■ | ■ | ■ |
| LAND OWNERSHIP | ■ | ■ | ■ | ■ | ■ | ■ |

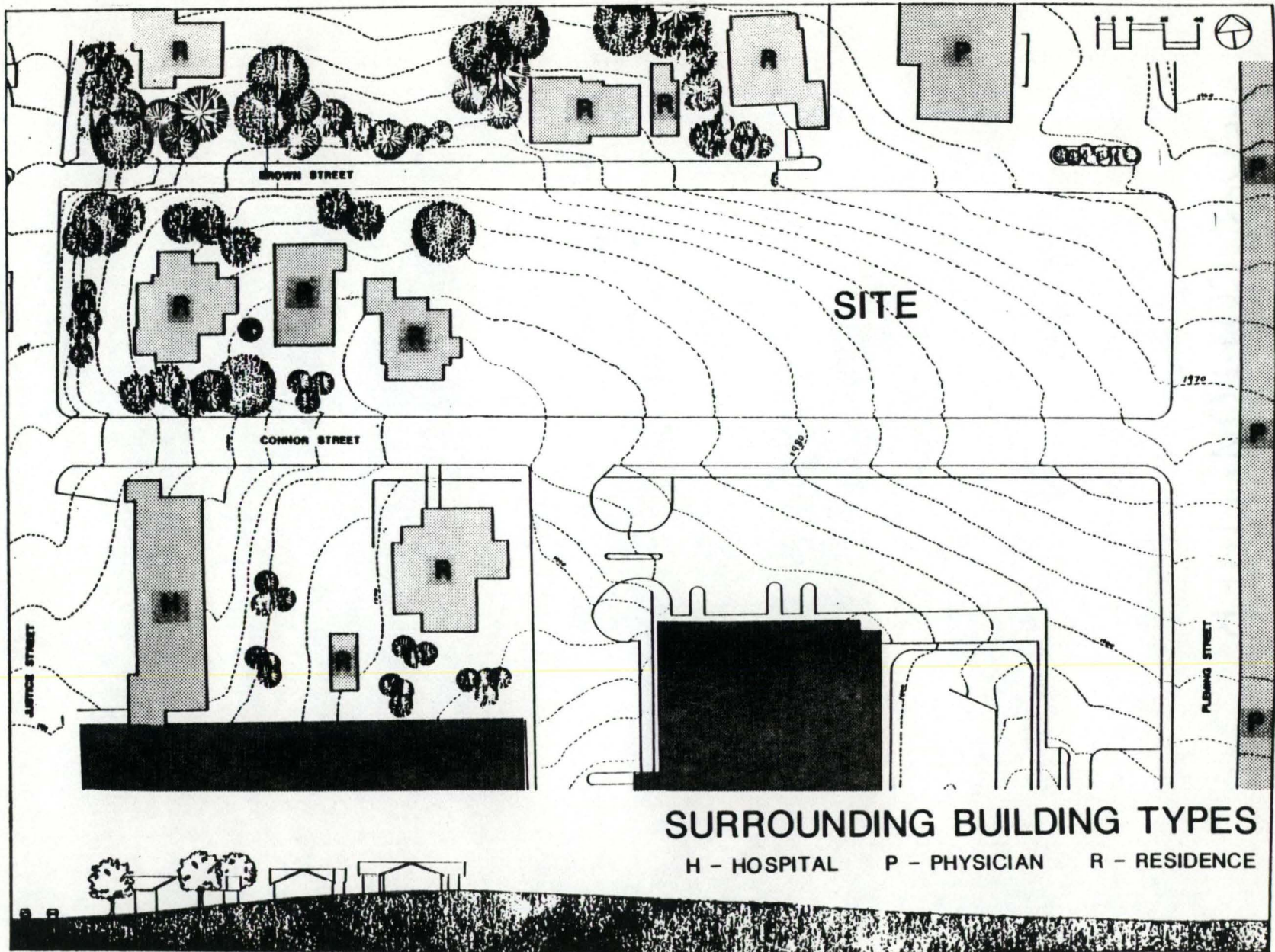
would compromise the access, orientation, and image. By stepping away from the existing campus, image, access, and expansion can improve whether the facility simply moves across the street, within two blocks of the hospital, or across town near the Blue Ridge Mall. In the latter two options, nevertheless, the distance to hospital support services and the health care network around Pardee would be less convenient for both clients and staff. This then leaves the fourth option, developing a free-standing unit across the street from the Jamison Wing, as the site with the most potential for a successful ambulatory surgery facility. While retaining the convenience afforded by its location within the health care community, the facility can step just beyond the hospital's acute care influences and create an environment conducive to the image, activities, and expansion capabilities called for in ambulatory surgery.

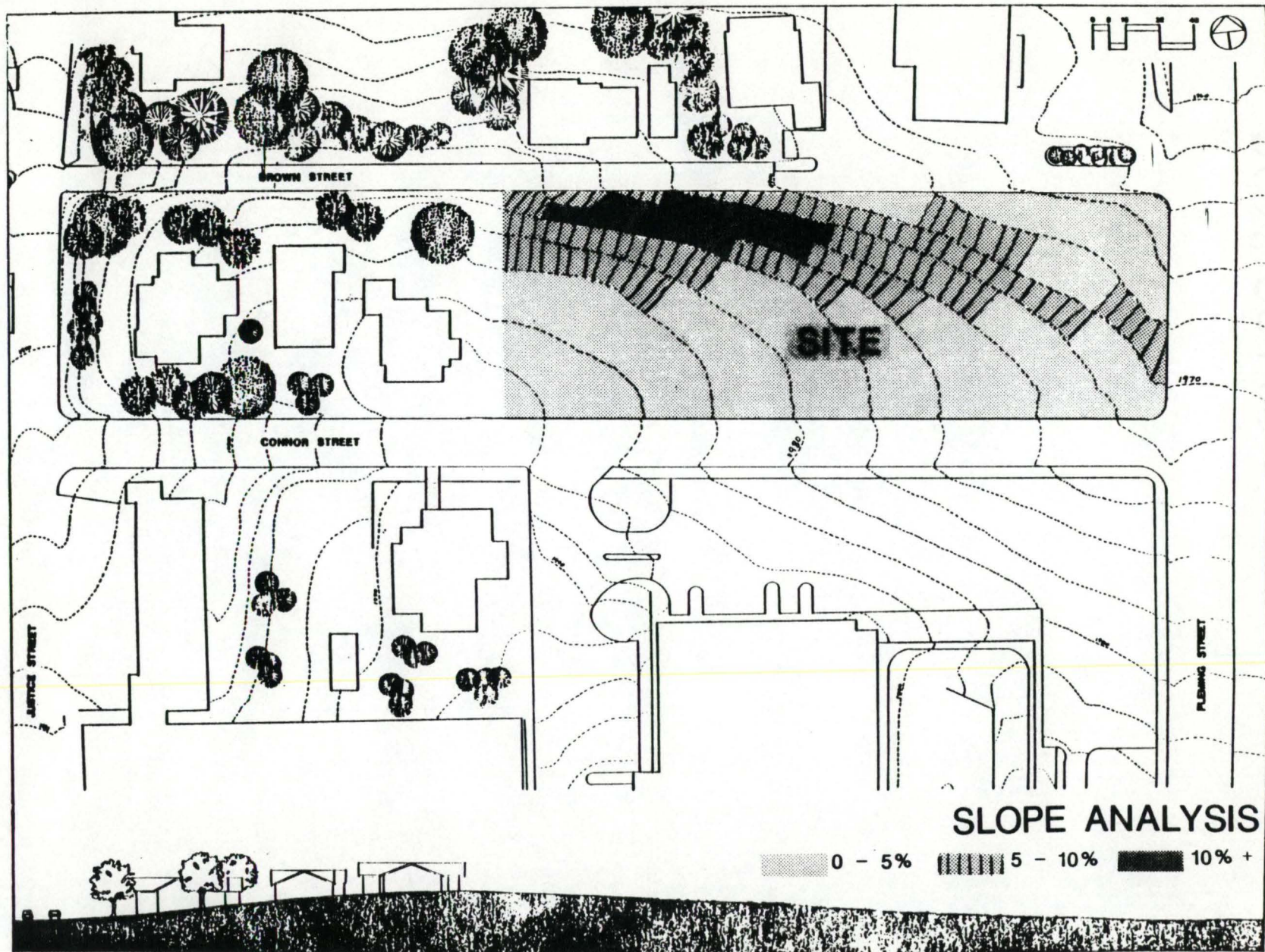
Site Analysis

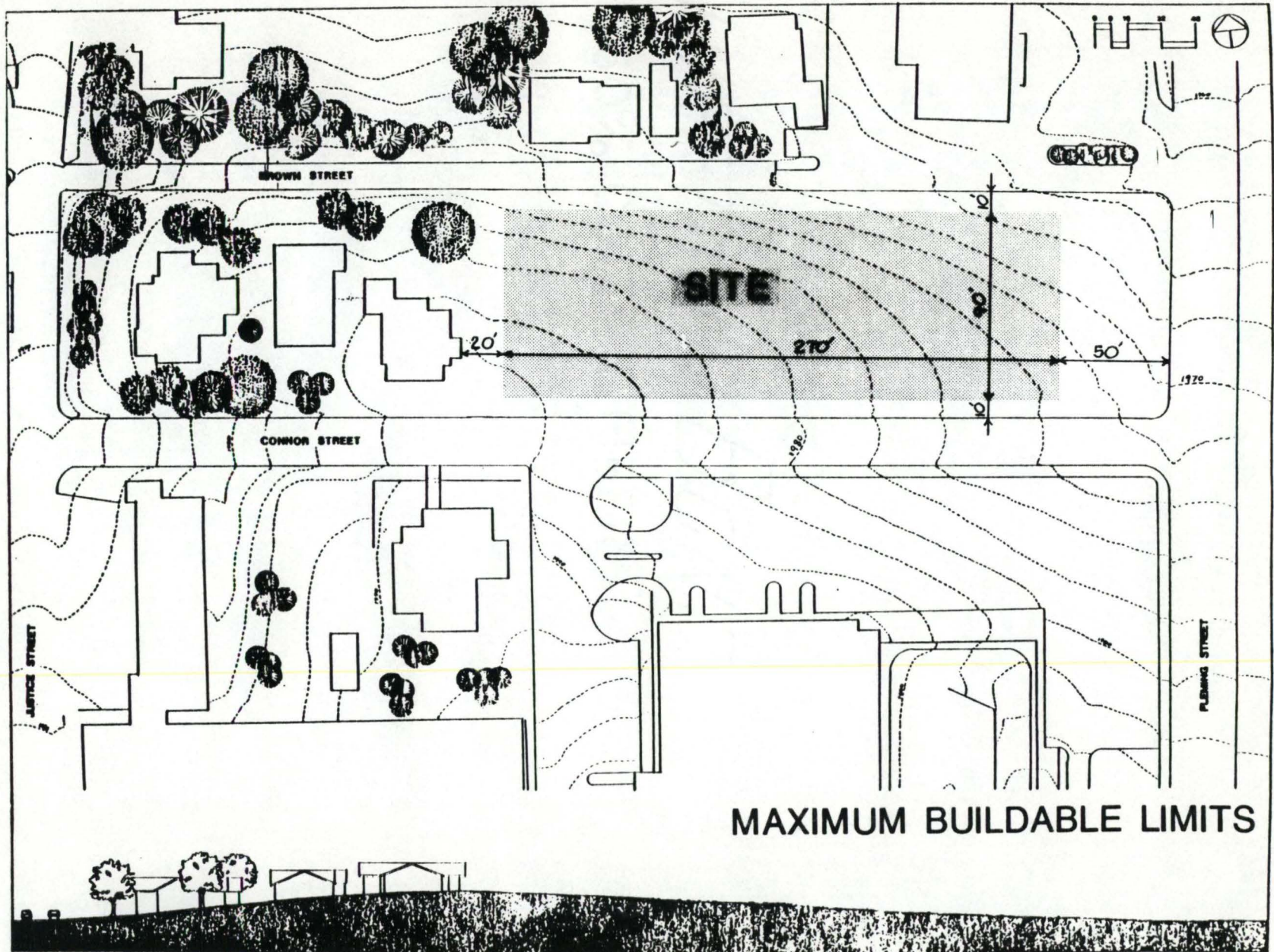


CIRCULATION AND ACCESS

MAJOR MINOR

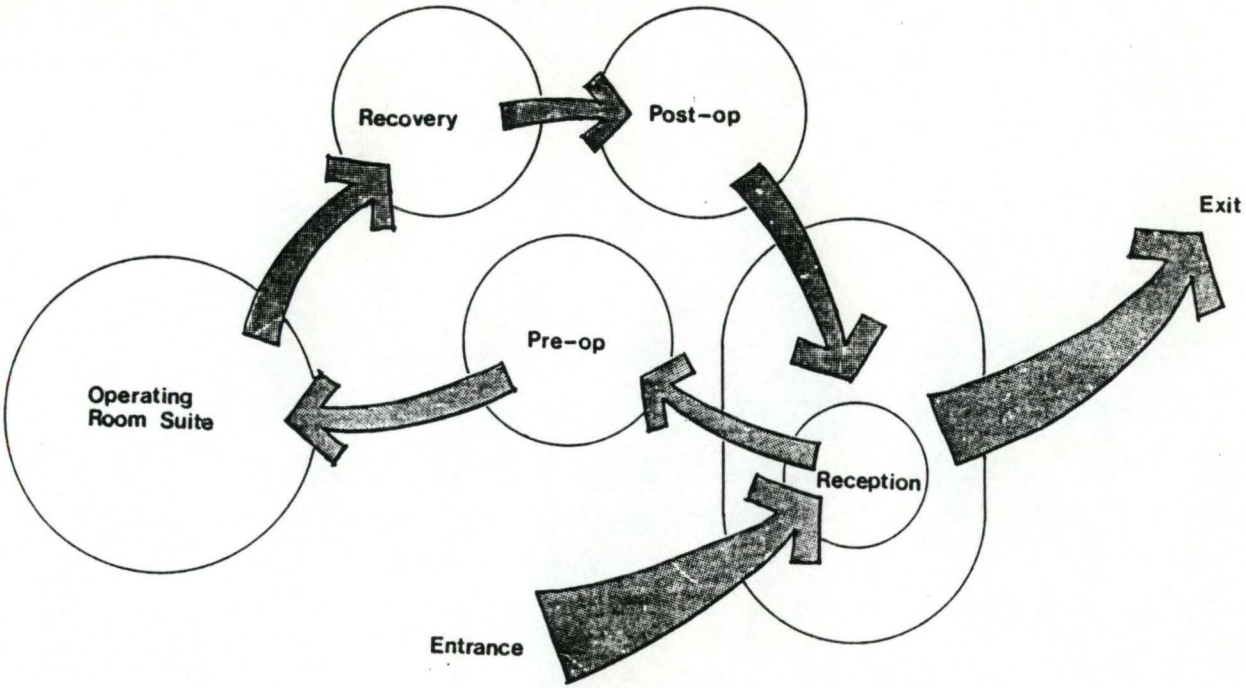




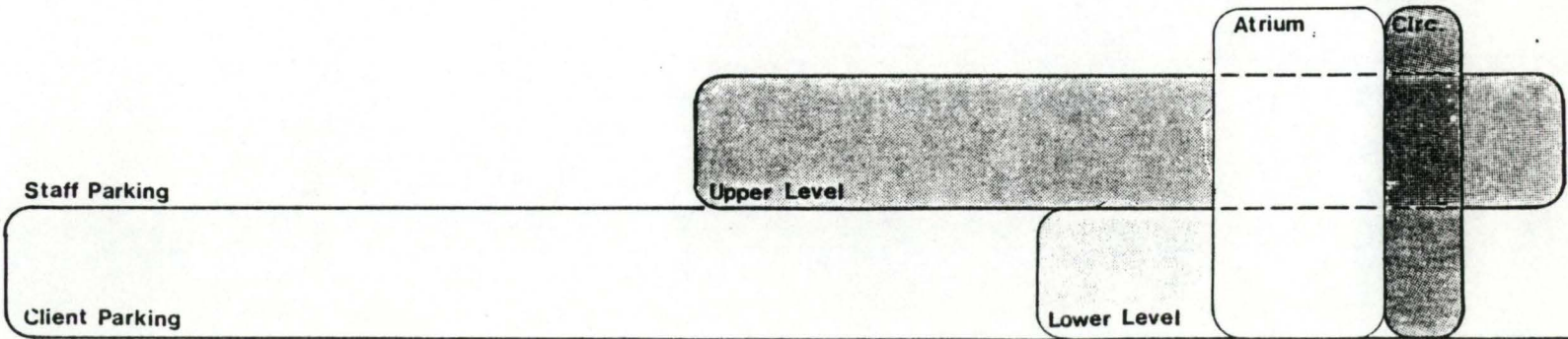


MASSING CONCEPT

PLAN



SECTION



Program

NUMBER OF OPERATING ROOMS

Because the operating suite size determines the remaining spaces needed, one should first calculate this figure to detail the net space program. Based on current total surgery volume and an 85% projected growth in county population, total surgery cases may approach 8000 by the year 2000. With the ambulatory/total surgery ratio at 30-40%, ambulatory work could in turn near 3500. Still, Pardee could reach this amount earlier if current growth continues since Asheville handles more of the major inpatient cases, thus affecting the ambulatory/total surgery ratio. A formula follows for estimating the number of operating rooms based on various caseloads. From these calculations, three operating rooms seem most suitable since two and four rooms, respectively, either under or over estimate the expected caseload.

$$P \times L \div H = N$$

P: number of procedures/day

L: average length of procedures

H: number of surgery hours/day

N: number of operating rooms

$$12 \times 1 \div 6 = 2 \text{ OR's, } 3000 \text{ cases/yr}$$

(1 yr = 250 working days)

$$16 \times 1 \div 8 = 2 \text{ OR's, } 4000 \text{ cases/yr}$$

$$18 \times 1 \div 6 = 3 \text{ OR's, } 4500 \text{ cases/yr}$$

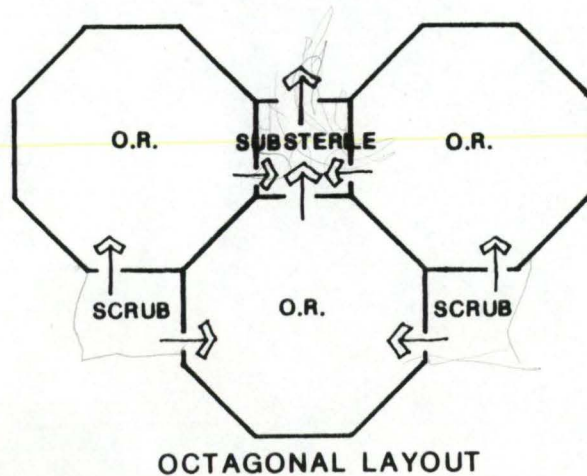
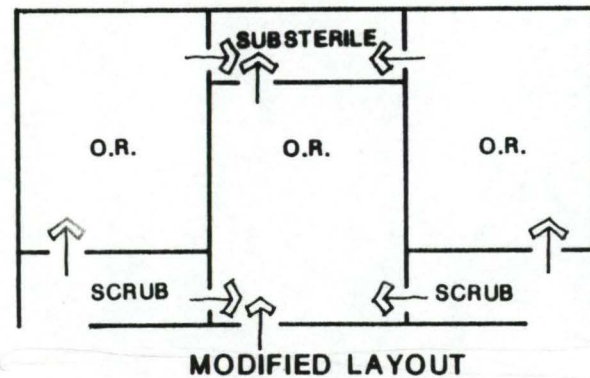
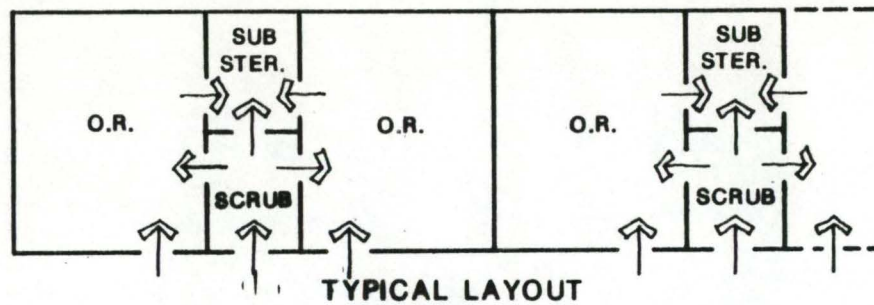
$$24 \times 1 \div 8 = 3 \text{ OR's, } 6000 \text{ cases/yr}$$

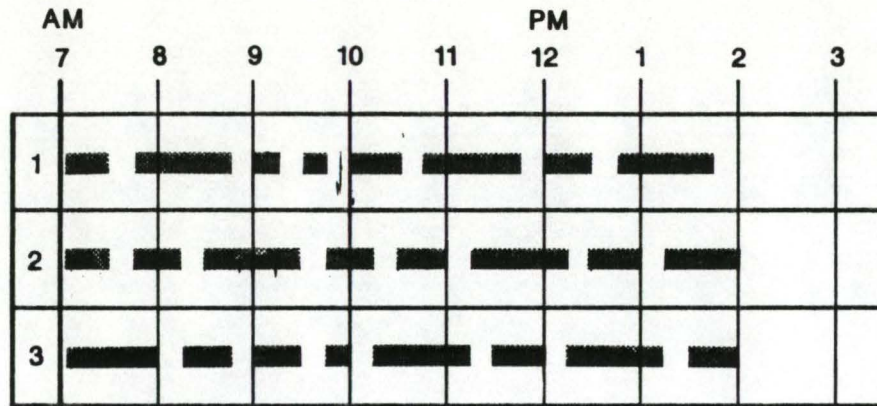
$$16 \times 1 \div 6 = 4 \text{ OR's, } 6000 \text{ cases/yr}$$

$$32 \times 1 \div 8 = 4 \text{ OR's, } 8000 \text{ cases/yr}$$

OPERATING ROOM CONFIGURATIONS

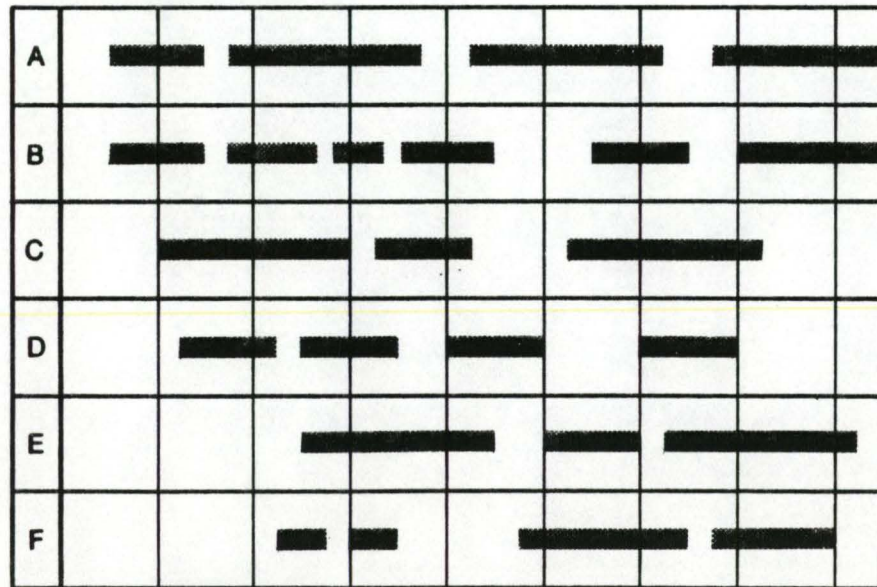
With three operating rooms, the next question arises on how to most efficiently arrange OR's and their support services. Traditional arrangements call for pairing rooms with sub-sterile and scrub in between and instrument processing elsewhere in the suite. However, following this tactic with three OR's results in one "pair" of rooms and one "single" with the single still requiring the same support areas as a pair. Thus the challenge comes in discovering a cluster method to eliminate unnecessary support duplication and create a more convenient relationship to processing. A trifoil pattern used as a modification of the traditional grouping or a scheme based on octagons answers both requirements. Each plan calls for one central sub-sterile and provides pass-through cabinets directly to processing for two out of the three OR's. Additionally, the octagons form a tighter cluster and eliminate corners within the OR's themselves which often become dust-traps and secondary "storage" spaces.





OPERATING ROOMS

RECOVERY BEDS



UTILIZATION ANALYSIS

UTILIZATION ANALYSIS

After determining the number and arrangement of operating rooms, a utilization analysis covering a typical day can verify the number of related spaces required. This study calls for various assumptions as follow:

- Minimum 15 minute turnaround
- Recovery time = 2 x surgery
- Total procedure = 1 hour
(set-up to clean-up)

Based on these assumptions and the accompanying graph, in most cases, two recovery and two post-op beds can cover each OR. Similarly, one pre-op bed per operating room can handle the number of clients prior to surgery.

ATRIUM ALTERNATIVES

The split level massing concept calls for a unifying element to connect the major components, draw clients upward from the lower parking level, and give an interior focal point to the facility. An atrium as opposed to a courtyard best meets this need both from a fire safety standpoint, given the proximity of the lower parking level, and because an enclosed space could incorporate waiting and reception as well. Since the relationship of spaces and circulation throughout the facility remain basically fixed, the question comes as to whether the atrium should be bordered by:

1. Pre-op, OR's, and Recovery
2. Pre-op, Recovery and Post-op, or
3. Pre-op, Post-op, Reception, and Waiting.

Of these options, the third allows more spaces to focus on the atrium. Also, the people in those areas could better appreciate views of the atrium than could those in either the OR's or recovery.

NET SPACE PROGRAM

LOWER LEVEL

| | | |
|---------------------|--|----------|
| Atrium | Focal point and unifying element | 1,530 sf |
| Reception | Space for client interviews and recordkeeping | 200 sf |
| Waiting | Grouped seating for pediatrics and adults | 540 sf |
| Toilets | | 250 sf |
| Emergency Generator | | 80 sf |
| Electrical | | 80 sf |
| Telephone panels | | 40 sf |
| (Circulation) | | 760 sf |
| (Walls) | | 380 sf |
| <hr/> | | |
| Sub-total | Net square footage | 2,720 sf |
| | Gross square footage | 3,860 sf |

UPPER LEVEL

| | | |
|---------------------|---|----------|
| Operating Rooms (3) | Cluster arrangement with access to scrub sinks, sub-sterile, and processing; ceiling - 10' high | 1,020 sf |
| Sub-sterile | Flash sterilizing for instruments during surgery | 70 sf |
| Instrument storage | Ample storage space | 400 sf |
| Processing | Cleaning, sterilizing, and instrument wrapping | 420 sf |
| Receiving | Breakdown of supplies from cardboard containers | 30 sf |
| Lab/X-ray | Ancillary diagnostic tool for surgeries in progress | 150 sf |
| Anesthesia workroom | Storage and workspace for anesthesiologist | 100 sf |
| Dictation | Desks, pass-through window to adjacent nurses station | 60 sf |
| Clean supply | Shared with recovery, pre-op and post-op | 120 sf |
| Soiled handling | Clinic sink and storage | 120 sf |
| Nurses station | Central to recovery, pre-op, and post-op | 340 sf |
| Storage | | 100 sf |
| Pre-op (3-4 beds) | One bed per operating room Minimum 3' between beds Gas & vacuum outlets @ each bed | 360 sf |

| | | |
|-------------------------------|---|--------|
| | | 46 |
| Change rooms (3) | | 120 sf |
| Recovery (6 beds) | Two beds per operating room Minimum 4' between beds One sink for every 2 beds O , suction, air, elec. @ ea. bed | 800 sf |
| Post-op (6 recliners) | Should be more "home-like" than first stage recovery; can include recliner chairs, plants, music (even "walkmans" for adolescents) | 700 sf |
| Change rooms (3) | | 120 sf |
| Pediatric Post-op (2 beds) | Separate area for ped's with carpet, toys, and TV | 180 sf |
| Change room (1) | | 40 sf |
| Post-op waiting | Area for client and companions to gather for last minute instructions, etc. before discharge | 340 sf |
| Staff Lounge | Break room for administrative and care giving staff; complete with kitchen facilities | 320 sf |
| Staff Lockers | | 450 sf |
| Medical Records | Hard copy and computer generated storage | 320 sf |
| Offices | Business manager Operating suite manager Secretary | 400 sf |
| Waiting | | 280 sf |

| | | |
|------------------|----------------------|-----------|
| | | 47 |
| Toilets | | 180 sf |
| Janitor's closet | | 30 sf |
| HVAC | | 300 sf |
| (Circulation) | | 3,358 sf |
| (Walls) | | 1,200 sf |
| <hr/> | | |
| Sub-total | Net square footage | 7,750 sf |
| | Gross square footage | 12,308 sf |
| | | |
| Total | Net square footage | 10,470 sf |
| | Gross square footage | 16,168 sf |

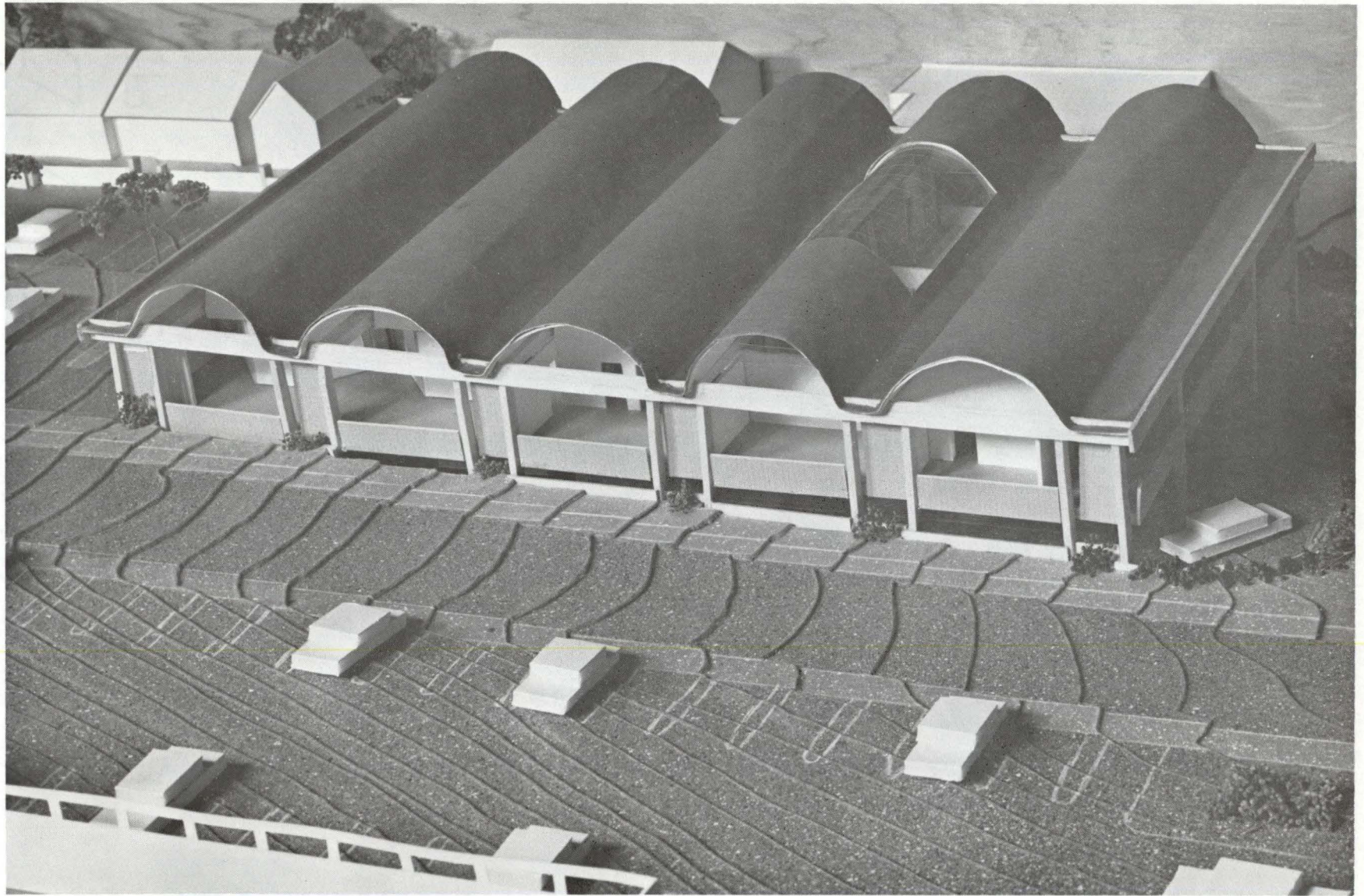
Design Proposal

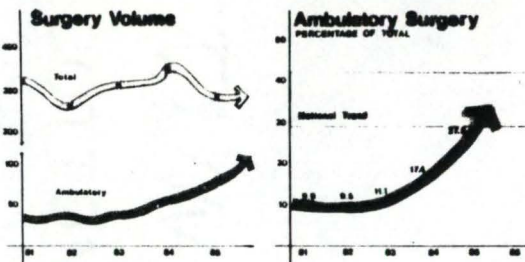
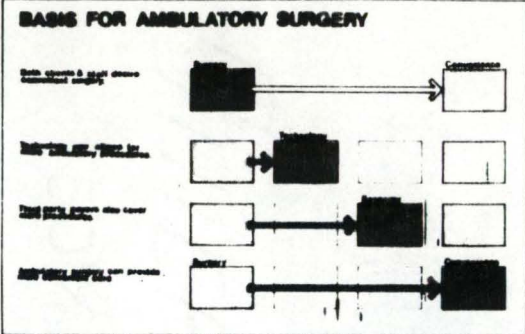
AN AMBULATORY SURGERY CENTER
MARGARET R. PARDEE MEMORIAL HOSPITAL
HENDERSONVILLE, N.C.



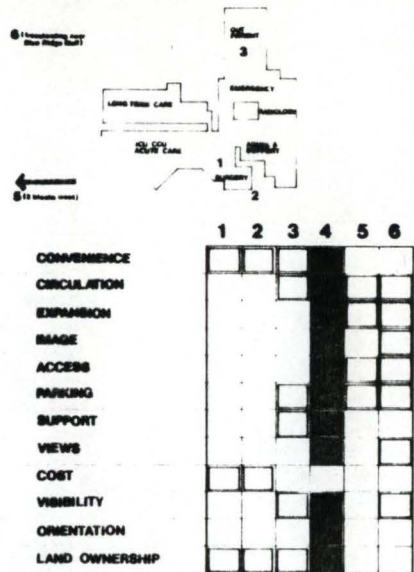
A terminal project submitted for the degree of Master of Architecture, Spring 1985

Mary Jane Campbell

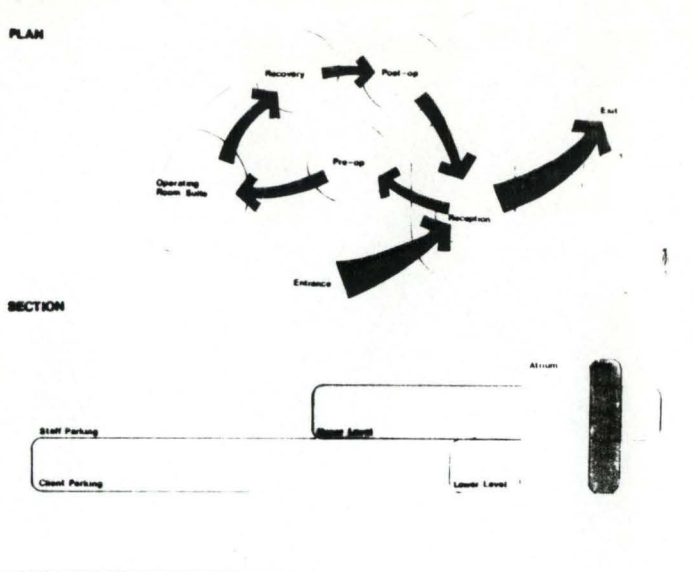




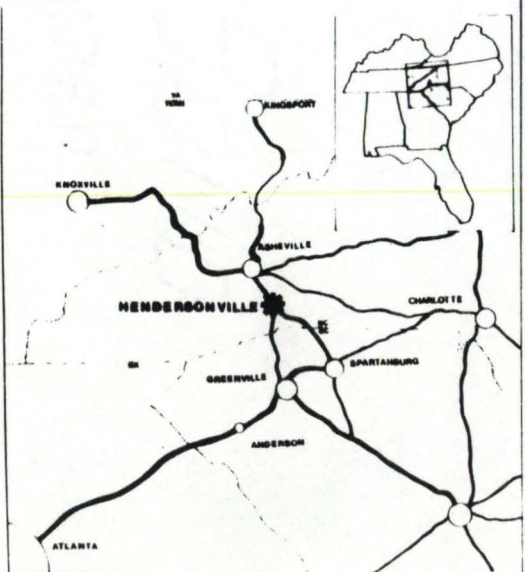
ISSUES/LOCATION



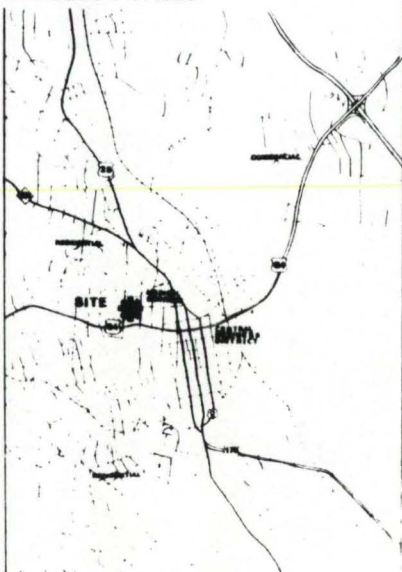
CONCEPT



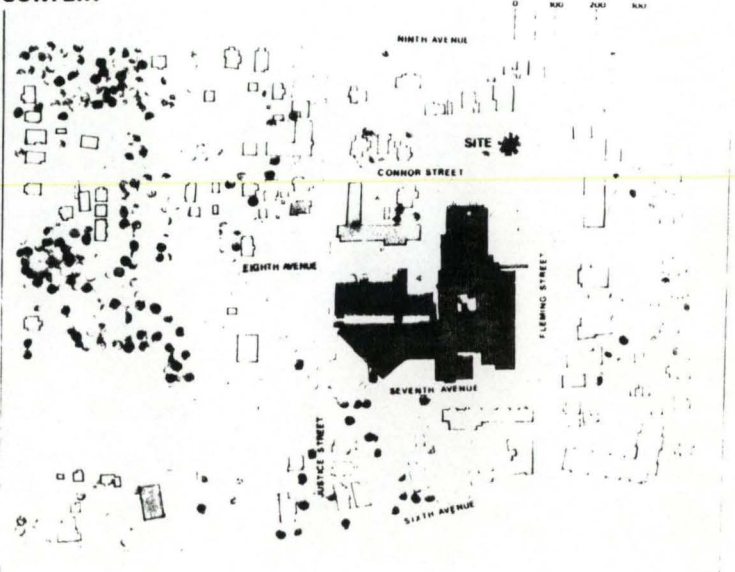
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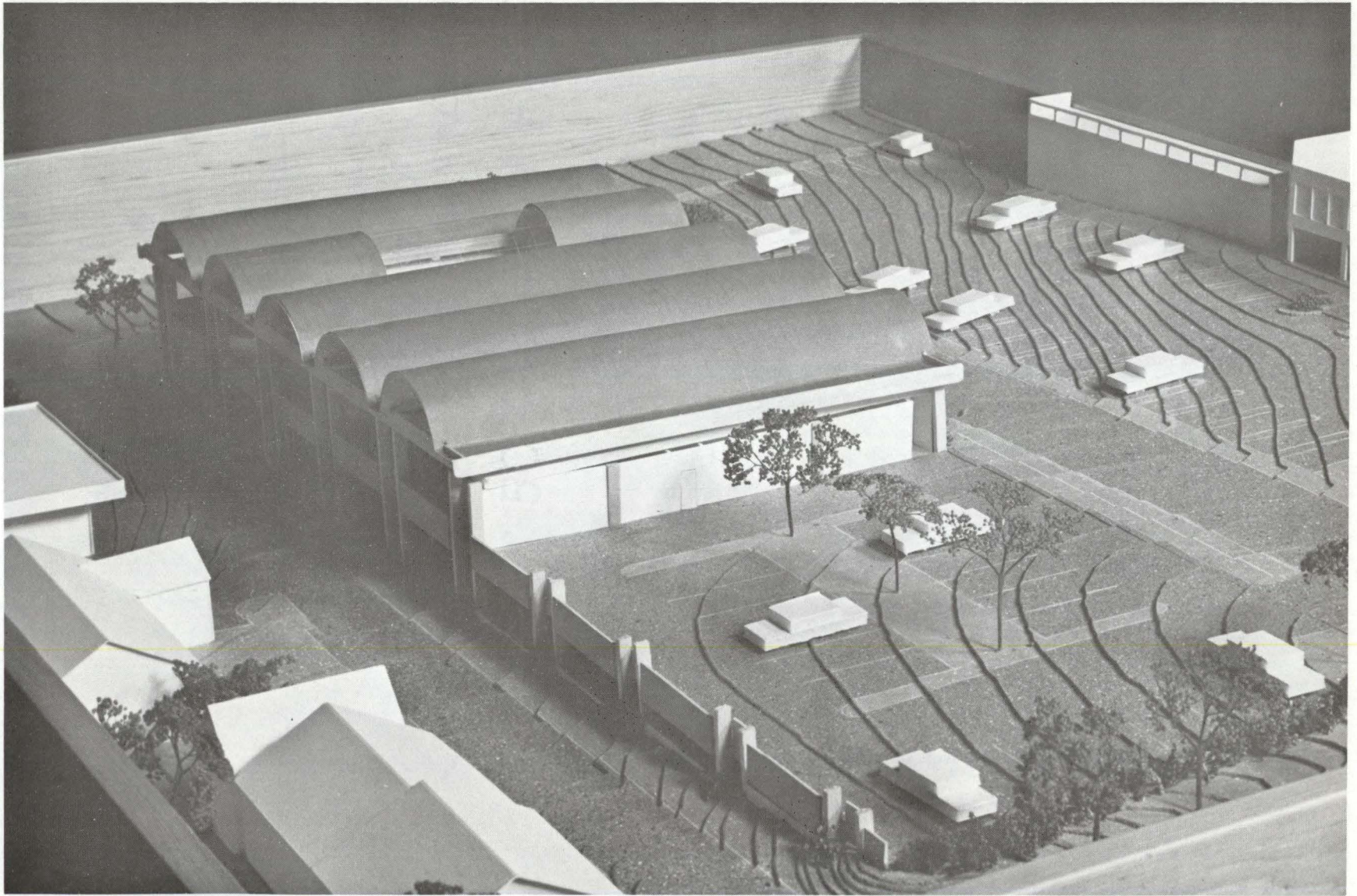


HENDERSONVILLE

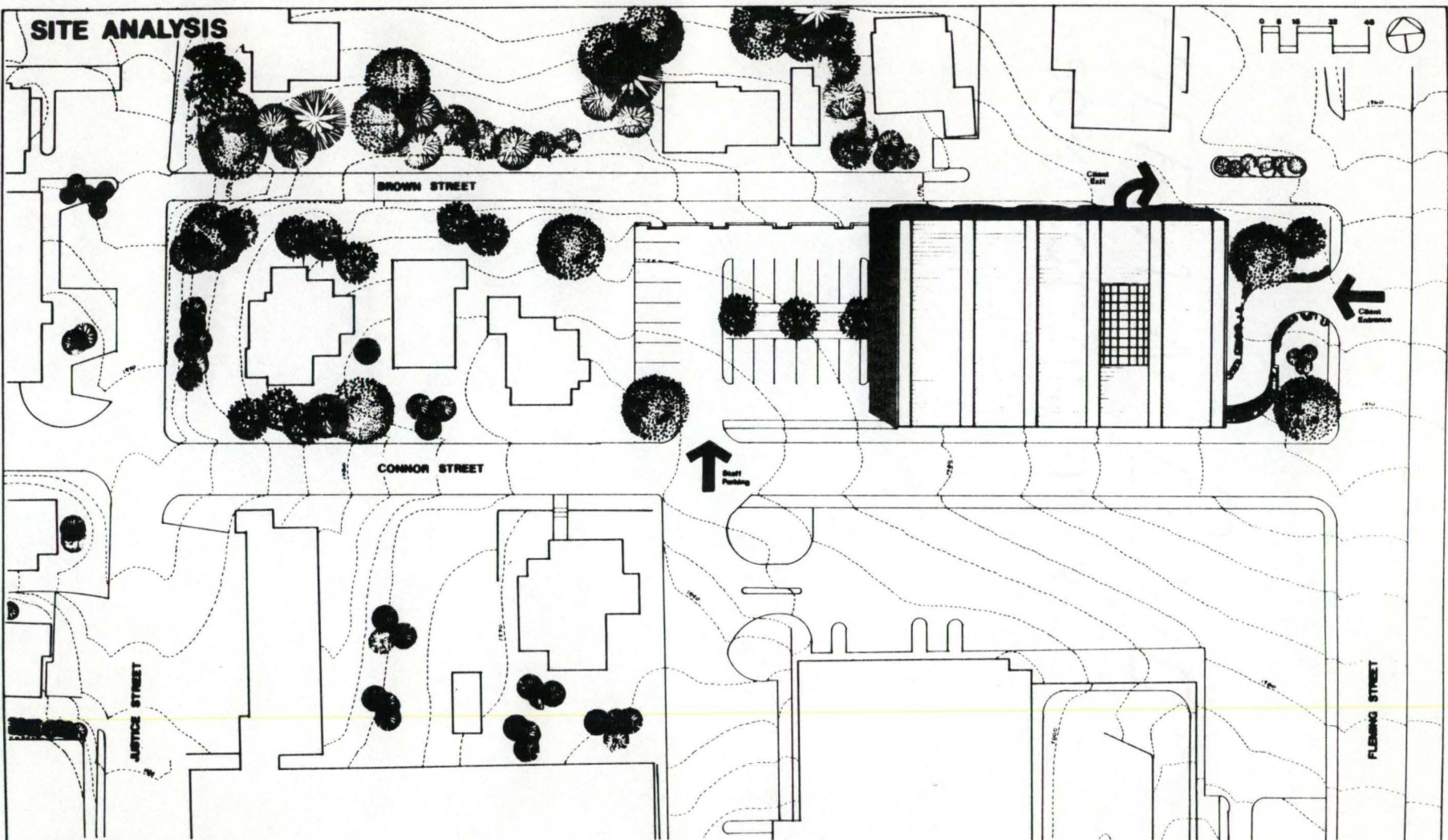


CONTEXT

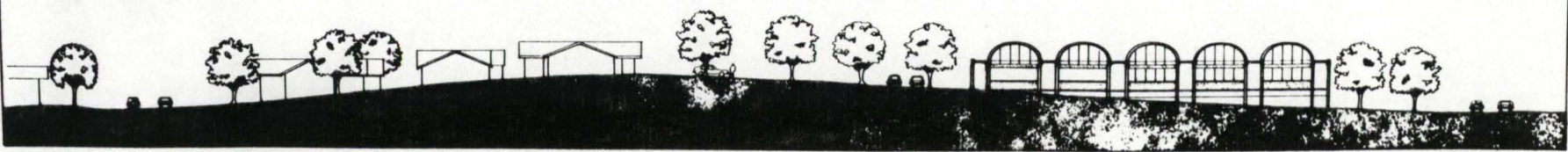


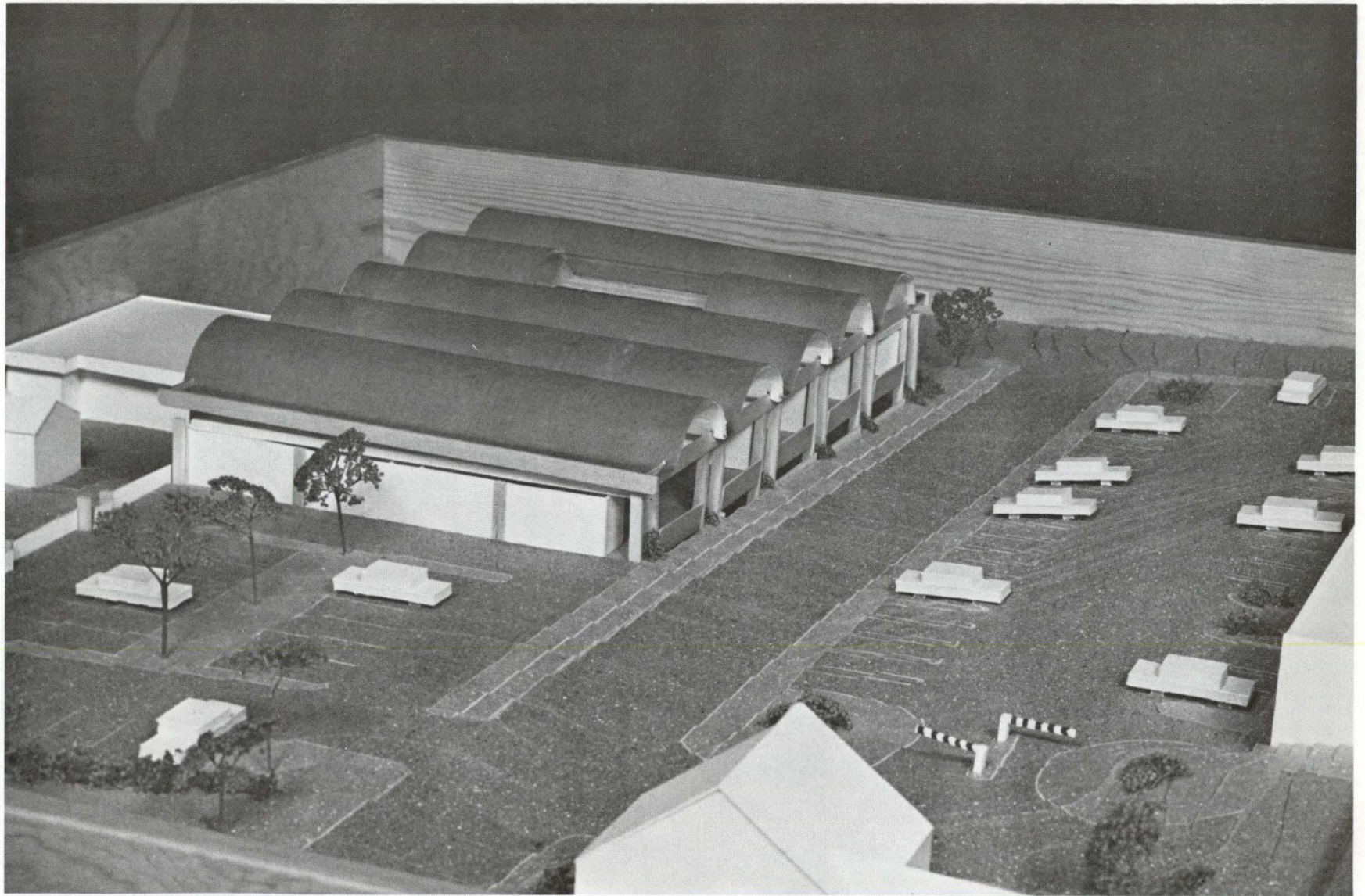


SITE ANALYSIS

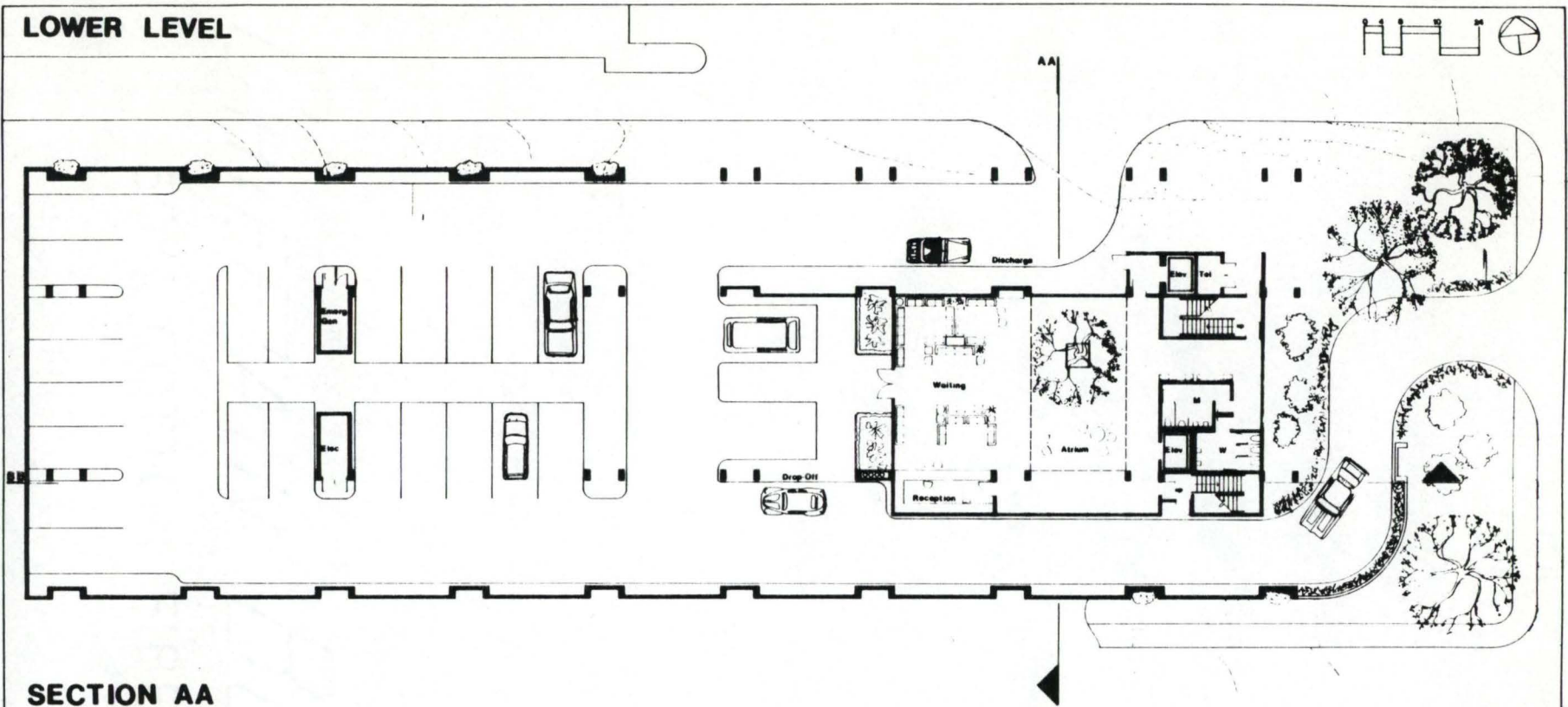


SITE SECTION

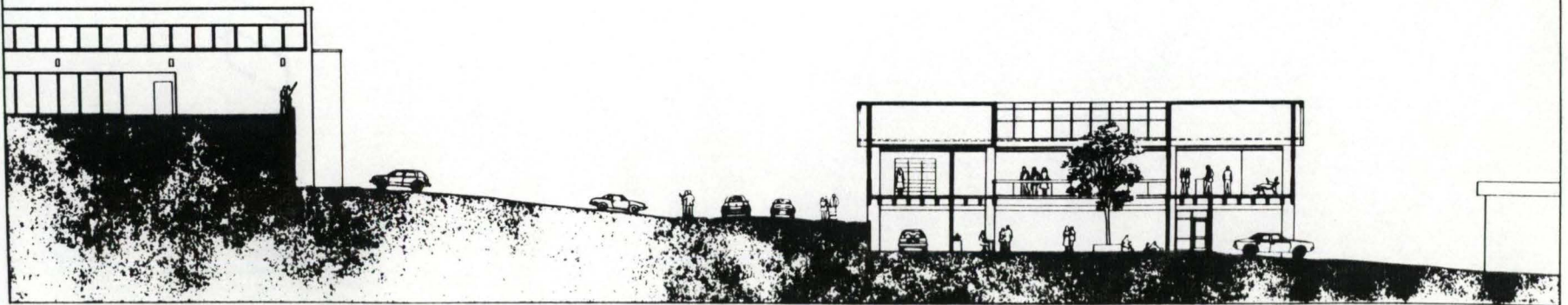


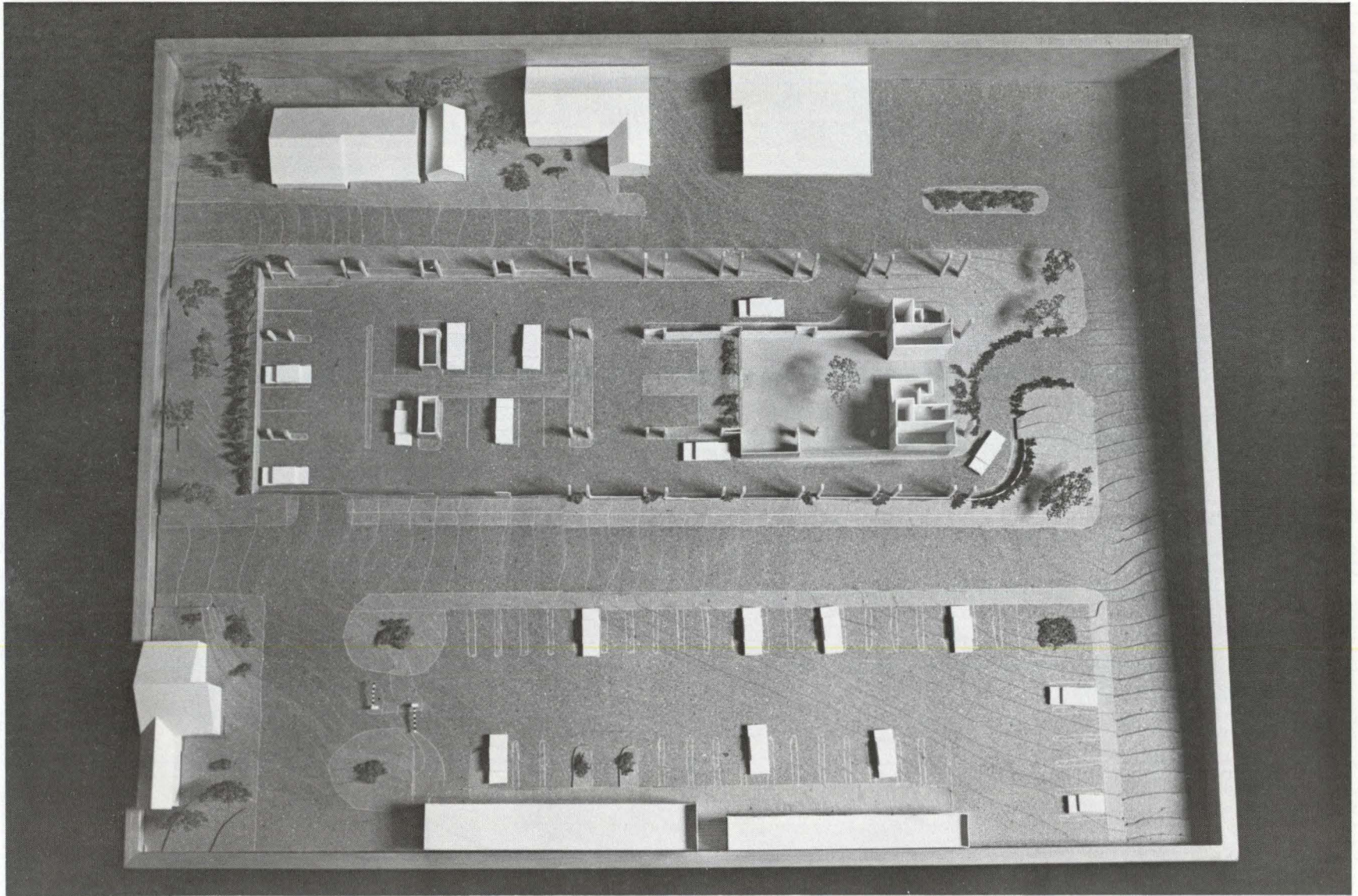


LOWER LEVEL

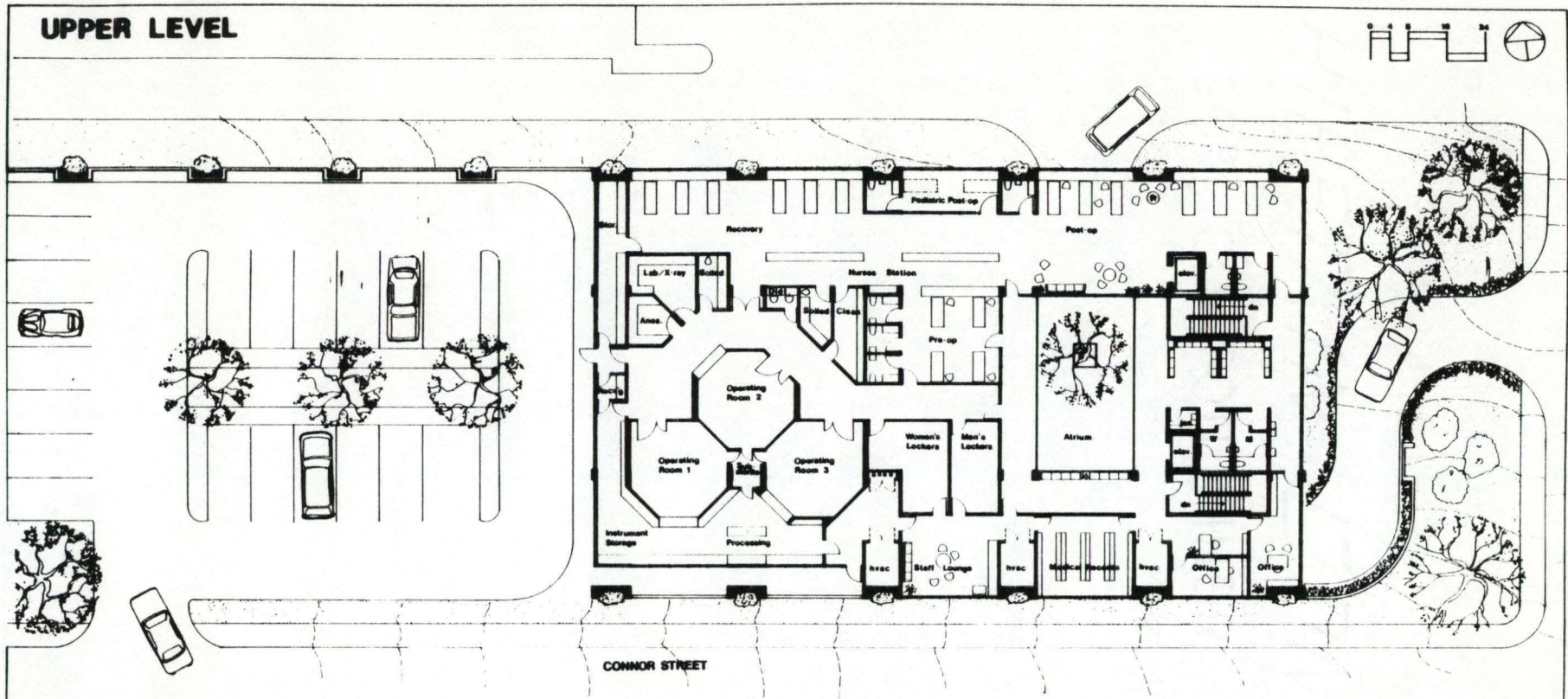


SECTION AA

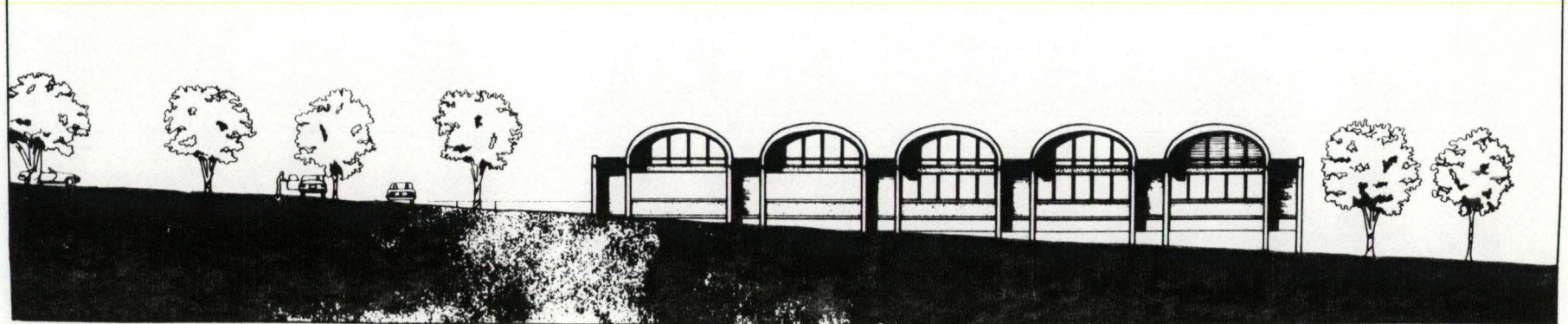


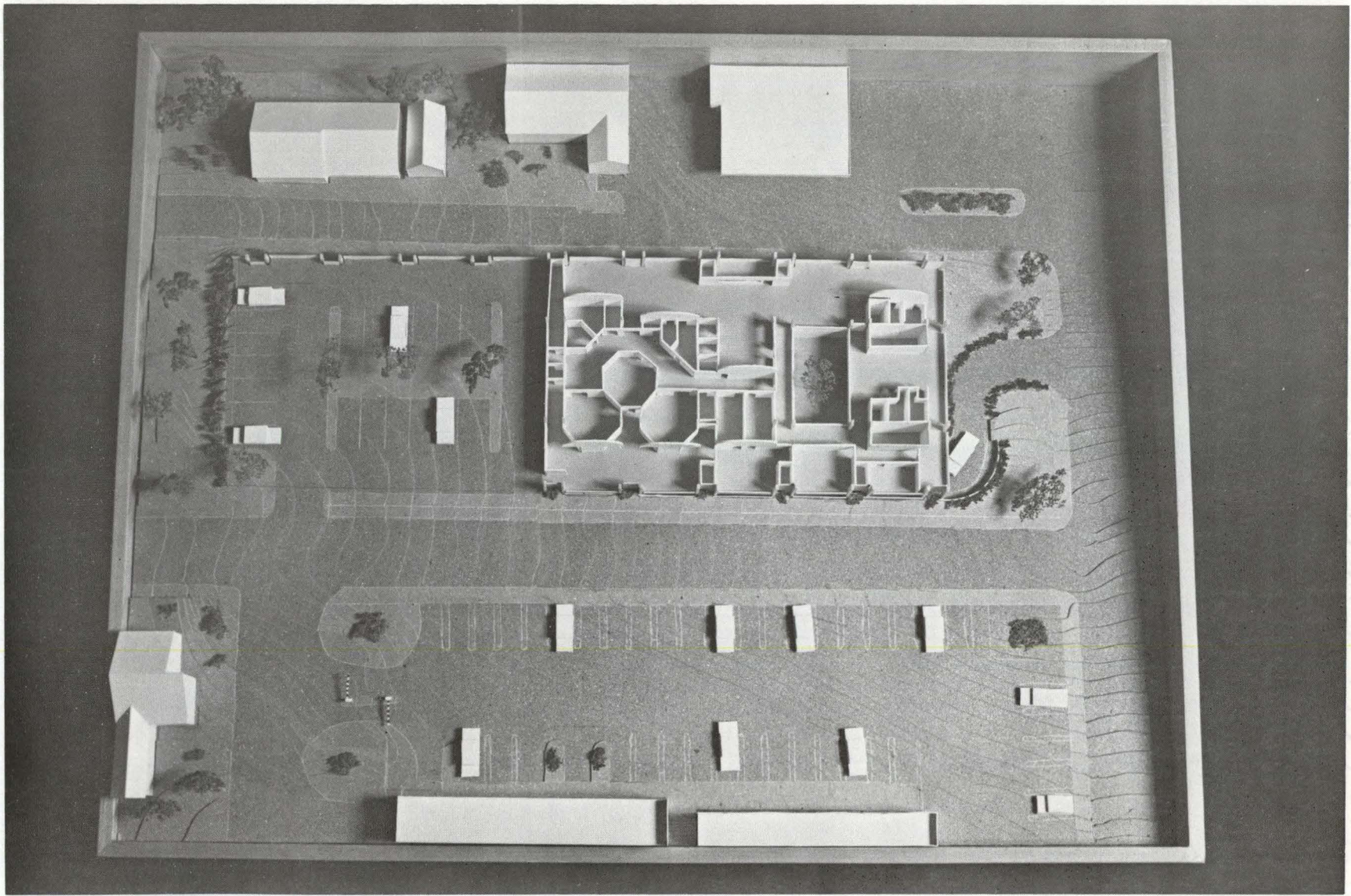


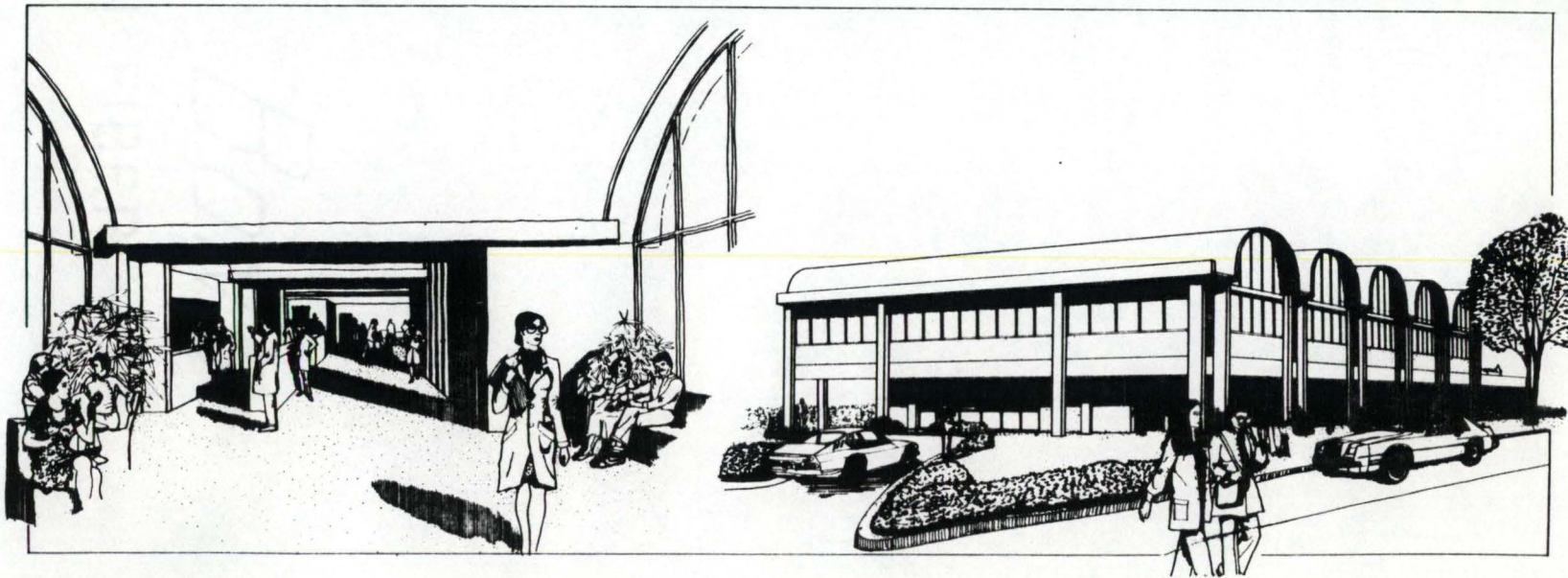
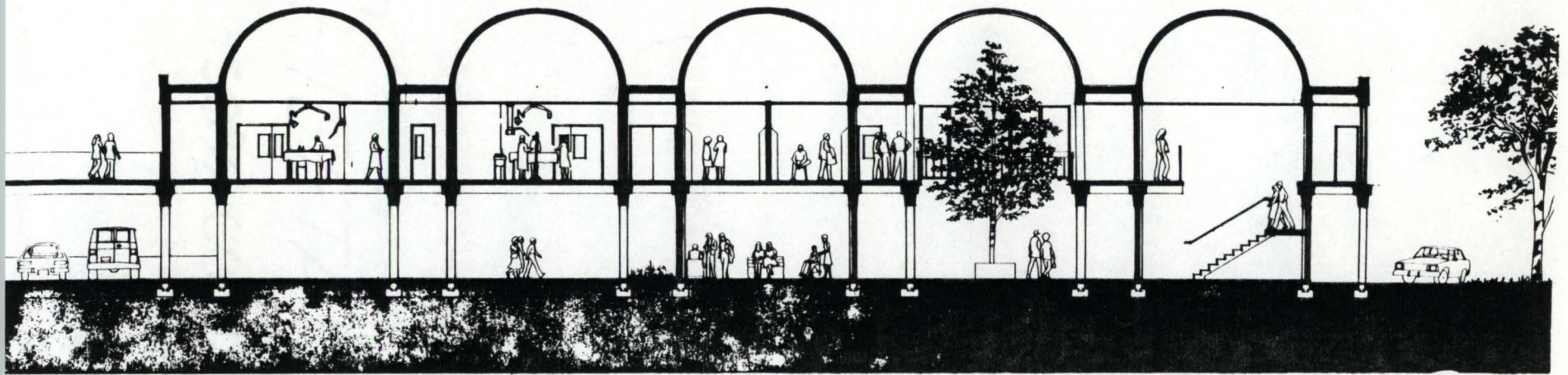
UPPER LEVEL

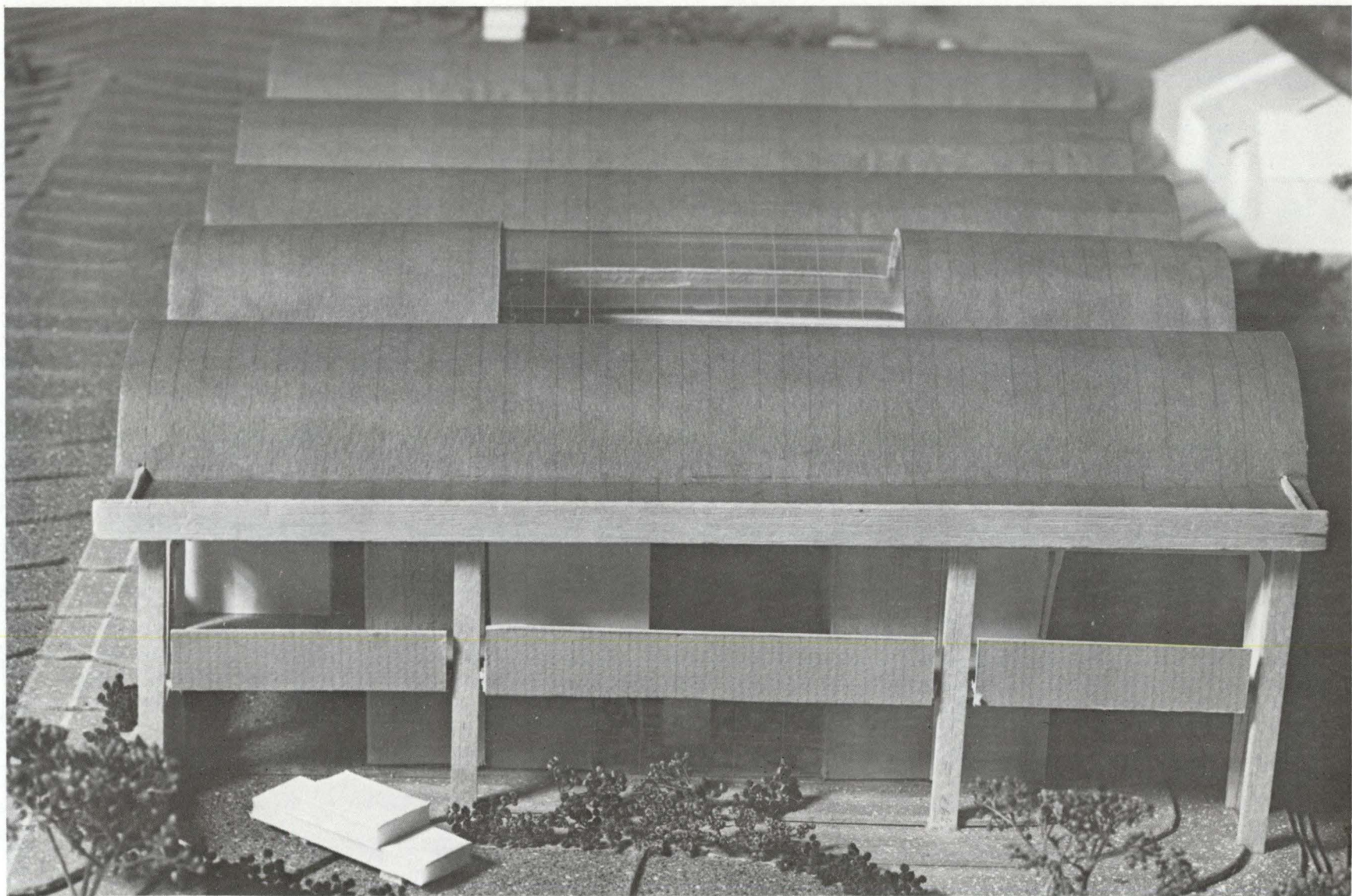


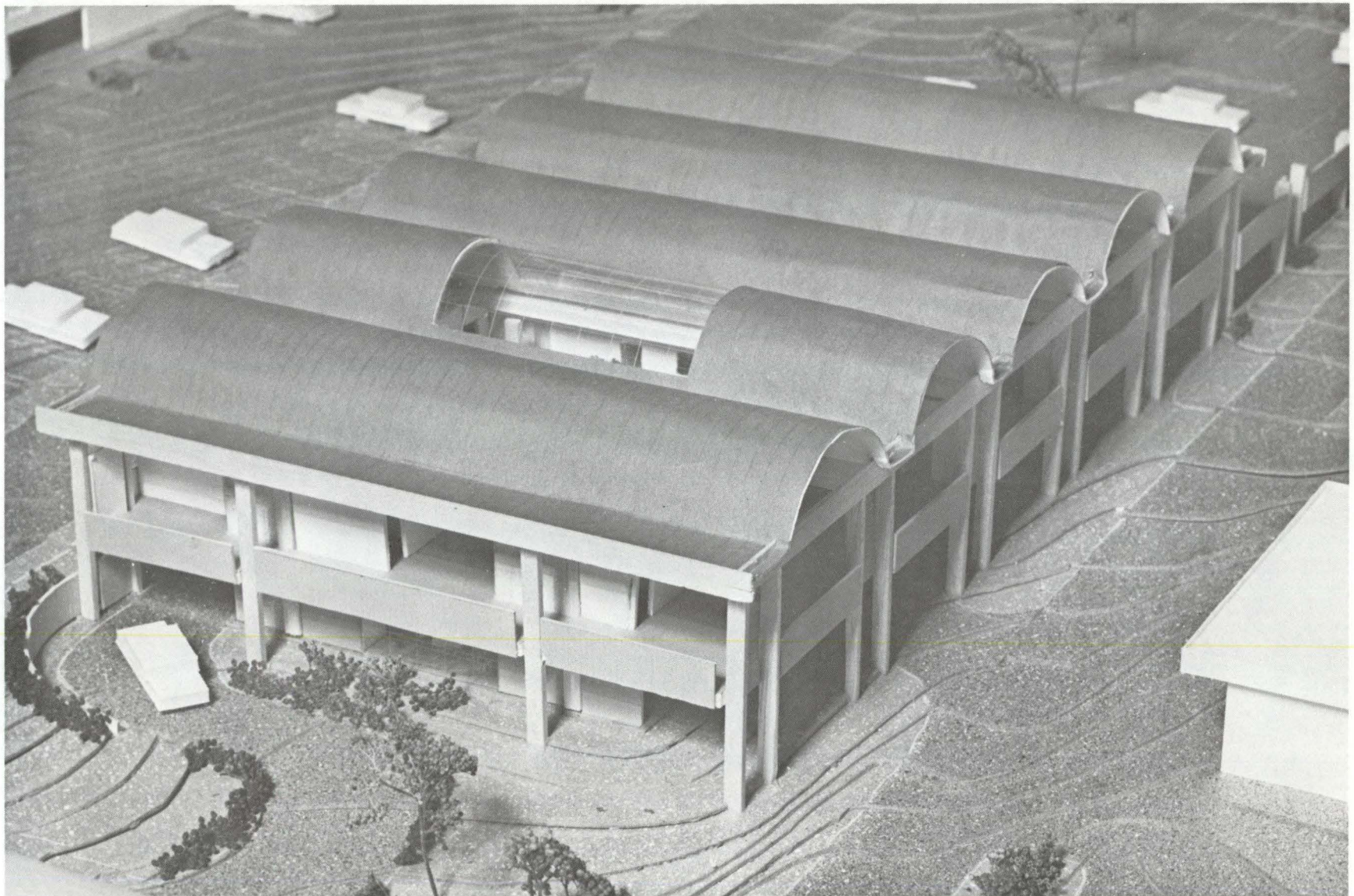
ELEVATION











Resources

NOTES

¹ Don E. Detmer and Dorothy J. Buchanan-Davidson, "Ambulatory Surgery," Surgical Clinics of North America, 62 (August 1982), 689.

² Ibid., p. 686.

³ "Tremendous Growth Predicted in Ambulatory Surgery Market," Same Day Surgery, 5 (November 1981), 137.

⁴ Patricia A. Stetson, "Hospital-affiliated or Freestanding Units," AORN Journal, 38 (December 1983), 1049-1050.

⁵ Cathy McJunkin, "Outpatient Surgery Center Ready To Open," The Asheville Citizen, November 2, 1984, p. 11.

⁶ Personal interview with Mildred Sams, St. Joseph's Hospital, Asheville, NC, October 18, 1984.

⁷ Personal interview with Mark Needham and Bobbie Wilkerson, Cabarrus Memorial Hospital, Concord NC, November 5, 1984.

⁸ Report from the staff of the Medical Planning Committee, (Subject: Analysis of Future Growth), Margaret R. Pardee Memorial Hospital, Hendersonville, NC, August 1984, p. 2.

⁹ Margaret R. Pardee Memorial Hospital.

¹⁰ Personal interview with Dr. John Bell, Margaret R. Pardee Memorial Hospital, October 5, 1984.

¹¹ Personal interviews with the staff of Margaret R. Pardee Memorial Hospital, Fall 1984.

¹² Jan Valentine, Operating Room Secretary, Margaret R. Pardee Memorial Hospital, Fall 1984.

¹³ Harold Laufman, Hospital Special-care Facilities, (New York: Academic Press, 1981), pp. 47-48.

BIBLIOGRAPHY

- Albright, James W., et. al. The Day of Program. Chapel Hill, NC: The North Carolina Memorial Hospital, February 1978.
- Allen, Rex W. and Ilona V. Karolyi. Hospital Planning Handbook. New York: John Wiley and Sons, Inc., 1976.
- Berkoff, Marlene J. "Planning and Designing Ambulatory Facilities for Hospitals." The Journal of Ambulatory Care Management, 4 (August 1981), 35-51.
- Burns, Linda A. Ambulatory Surgery: Developing and Managing Successful Programs. Rockville, Maryland: Aspen Systems Corporation, 1984.
- Burns, Linda A. and Mindy S. Ferber. "Survey Indicates Extensive Ambulatory Surgery by Hospitals." Hospitals, 1 July, 1981, pp. 69-70.
- _____. "Ambulatory Surgery in the United States: Development and Prospects." The Journal of Ambulatory Care Management, 4 (August 1981), 1-13.
- Copenhaver, Curtis, Administator, et. al. Personal Interviews with Hospital Staff during Internship, Margaret R. Pardee Memorial Hospital, Hendersonville, NC. 1984-1985.
- Crozer, Clark. Personal Interview. Memorial Mission Hospital, Asheville, NC. October 24, 1984.
- Detmer, Don E. and Dorothy J. Buchanan-Davidson. "Ambulatory Surgery." Surgical Clinics of North America, 62 (August 1982), 685-701.
- Epstein, Burton S., et. al. "Outpatient Surgery." Hospitals, 47 (1 Sept., 1973), 80-84.

- Goldsmith, Seth B. Ambulatory Care. Germantown, Maryland: Aspen Systems Corporation, 1977.
- Johnson, Nell E., compiled by. Light is the Theme: Louis I. Kahn and the Kimbell Art Museum. Fort Worth, TX: Kimbell Art, 1975.
- Komendant, August E. Eighteen Years with Architect Louis I. Kahn. Englewood, NJ: Aloray Publisher, 1975.
- Komendant, August E. Contemporary Concrete Structures. New York: McGraw-Hill Book Company, 1972.
- Laufman, Harold, ed. Hospital Special-care Facilities: Planning for User Needs. New York: Academic Press, 1981.
- Mace, Ronald L. and Betsy Laslett, ed. An Illustrated Handbook of the Handicapped Section of the North Carolina State Building Code. Raleigh: North Carolina Department of Insurance, 1977.
- Means, George C., Jr., FAIA.
- Medical Planning Committee, Report from the staff of. (Subject: Analysis of Future Growth). Margaret R. Pardee Memorial Hospital, Hendersonville, NC, August 1984.
- Mills, Alden B., ed. Functional Planning of General Hospitals. New York: McGraw-Hall Book Company, 1969.
- National Fire Protection Association, Inc. NFPA 101: Code for Safety to Life from Fire in Buildings and Structures. Quincy, MA: National Fire Protection Association, 1985.
- Needham, Mark and Bobbie Wilkerson. Personal Interview. Cabarrus Memorial Hospital, Concord, NC. November 5, 1984.

Planning and Zoning Board, City of Hendersonville. Zoning Ordinance. Hendersonville, NC, June 1974.

Roberts, Marshall. Personal communication. Six Associates, Inc., Asheville, NC. 1984-1985.

Sams, Mildred. Personal Interview. St. Joseph's Hospital, Asheville, NC. October 18, 1984.

Smith, Warwick. Planning the Surgical Suite. New York: F.W. Dodge Corporation, 1960.

Stetson, Patricia A. "Hospital-affiliated or Freestanding units: Which are Best?" AORN Journal, 38 (December 1983), 1049-1050.

"Tremendous Growth Predicted in Ambulatory Surgery Market." Same Day Surgery, 5 (November 1981), 137-139.