

THE DESIGN OF AN ARCHITECTURAL PROGRAM FOR
THE REPLACEMENT FACILITY OF THE TEXAS
MEDICAL CENTER CHILD CARE CENTER

A THESIS
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BY
MARJORIE PATTISON WHITEHEAD, B.S.

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CHAPTER I

INTRODUCTION

The Texas Medical Center Child Care Center has been providing services to seven of the institutions in the Texas Medical Center since 1968. These seven institutions are Ben Taub General Hospital, Hermann Hospital, M. D. Anderson Hospital and Tumor Institute, The Methodist Hospital, St. Luke's Hospital, Texas Children's Hospital and Texas Institute for Rehabilitation and Research. The Center was established for the purpose of providing high quality child care for the Texas Medical Center personnel whose work schedules were such that typical commercial centers could not meet their schedule needs. The Center is open seven days a week from 6:00 a.m. until midnight. (The Center is closed only on Christmas Day.) Due to the critical shortage of nursing staff, nursing personnel have traditionally been given first priority for usage.

The present facilities were provided by the Texas medical Center, Inc., from a Favrot Estate Grant. These facilities consist of prefabricated metal buildings that were remodeled to accommodate children. They were intended to serve as temporary facilities only. They have been in

constant use since 1968 and are rapidly deteriorating. The facilities, which were originally designed to accommodate sixty-six children, were expanded by adding a converted house trailer to include an additional sixteen infant spaces in 1975. This addition was provided through a grant from the Foley Brothers Store Foundation.

The Center has been a success from the outset; however, the enrollment has fluctuated over the twelve-year period of operation. This fluctuation is basically attributable to the supply and demand for spaces in specific age groups. The greatest demand has been for spaces in the Infant Department which serves children three months to thirty-six months. This department maintains a long waiting list. There are occasionally vacancies in the Preschool Department due to the wider range of options available for children three years and older. Although fees are charged, they cover only a portion of the operating costs. The participating hospitals make up the operating deficit based on usage from each hospital.

Since the Child Care Center opened, many groups in addition to the nursing personnel have continually inquired about the possibility of utilizing the Child Care Center. These groups include residents, technologists, technicians, students, faculty members and certain other staff members.

It is clear from these extensive requests that there is a greater demand for child care services than is now being provided. Several years after considering the need, the Board of Directors of the Child Care Center determined that a larger and more comprehensive facility was necessary. In 1976, the Board of Directors of the Texas Medical Center, Inc., reserved \$265,000.00 from the Foley Brothers Store Foundation for the purpose of providing funding for a new child care center. Moreover, after acquiring the Town and Country Addition, the Board determined that the new child care center should be located on this site.

It has also decided that the new child care center should be comparable to elementary school construction but should be designed to fulfill the unique demands of day care serving the medical community. A preliminary architectural program was presented to the Administrative Board of the Child Care Center in September of 1977. This plan provided space for more older children. In the fall of 1979, the Child Care Administrative Board voted to transfer two modules from the kindergarten/first grade area to the infant area.

It soon became apparent that due to the size of the building and the rapid increase in building costs, the money allocated was insufficient to complete the project. Since

the site for the new building is located in a Special Impact Area, the Economic Development Administration of the Commerce Department awarded the City of Houston a \$608,000.00 grant to expand the child care facility. J. J. Smith, city economic development director, said that child care was found to be the greatest need for potentially employable persons within the EDA-targeted area of the inner city who want to work in the Medical Center. This solved the financial problems and enabled planning and later construction to begin.

This program was developed to enable the architects to plan a child care center which meets the unique needs of children 0-7 years and at the same time is responsive to the medical community that it serves.

Purposes of the Study

The purpose of the study is to do a needs assessment for the architectural program for the Texas Medical Center Child Care Facility.

The specific purposes are:

1. To create a physical facility that will facilitate and enhance the goals of the developmental program which are more explicitly described as:
 - (a) To help each child appreciate his own unique qualities. The Center's staff and children

enrolled should function as an extended family unit.

- (b) To provide opportunities for quiet times and times to be alone within the concept of the extended family.
- (c) To continue to stress a quality developmental program.
- (d) To develop the whole child to his fullest potential.
- (e) To help each child to appreciate his own individuality in an institutionalized setting.
- (f) To promote independence and self-discipline.
- (g) To promote physical, social, emotional and intellectual growth.
- (h) To develop a child who is caring and sensitive to his own needs and the needs of others.
- (i) To provide interest centers and discovery situations to enhance creativity.
- (j) To develop a program to fit each child's needs.
- (k) To promote growth through development of sensory perception.

Problem Statement

The building design must conform to the following constraints:

1. Form

- (a) Create an architectural response that is residential in scale.
- (b) Create a neighborhood image.
- (c) Express a sense of openness emphasizing as indoor/outdoor relationship, yet provide for building and site security.
- (d) Provide a building that will enhance energy efficiency.

2. Function

- (a) Provide a flexible plan with emphasis on expansibility and convertibility.
- (b) Give each area strong identification, and yet, make the whole a strong functional relationship.
- (c) Provide opportunities for a variety of spatial and sensory experiences.

3. Economy

- (a) Utilize simple construction techniques, energy-efficient design, and strive to create beauty and excitement within budget limits.

4. Time

- (a) Plan to accommodate future growth and expansion of the center.

- (b) Utilize construction techniques that will allow for ease of future growth to the center.
- (c) Utilize construction techniques that will allow the facility to be built in a reasonably short period of time.

Definitions

For the purpose of this study the following definitions are used:

1. Board of Directors of the Child Care Center--a board composed of an administrator or other designated representative from each participating hospital and Texas Medical Center, Inc., who act as an advisory committee for the Child Care Center.
2. Board of Directors of the Texas Medical Center, Inc.--a board composed of civic leaders who act as an administrative board for the Texas Medical Center, Inc.
3. Center--refers to the Texas Medical Center Child Care Center.
4. Infant Department--designated area of the building that serves children from ages six weeks to thirty-six months.
5. Kindergarten Department--area of the building assigned to children ages five through seven years.

6. Personnel--employees of the seven participating hospitals who are eligible to use the Center.

7. Preschool Department--area serving children ages three and four years.

8. Staff--employees of the Texas Medical Center Child Care Center.

9. Special Impact Area--an area of Houston drawn geographically on the map which encompasses an area of low income and high unemployment.

CHAPTER 2

REVIEW OF LITERATURE

The review of the literature will focus on a historical perspective of the development of child care programs, on program and licensing needs for day care centers, and on the physical facilities designed to fulfill these special needs.

A concern for the welfare of children endangered by the social and economic consequences of the industrial revolution impelled the development of the first type of preschool program in the United States (Greenblatt, 1977). These infant schools were established around 1830 by charitable sponsors who hoped to prevent child neglect by providing custodial child care for poor and immigrant families.

The first day nursery in the United States was established in 1854 at the Nursery and Child's Hospital in New York City. It provided care for the children of former patients who had returned to work. The first industrial day nursery was a product of the Civil War. This program established in 1863 provided care for children whose mothers made soldiers' clothing or worked in hospitals.

Although the two-parent family with the mother in the home was seen as divinely sanctioned, married women

continued to join the labor force. These women had to look elsewhere for child care because the day nurseries were available only for fatherless children or for children whose fathers were unable to work. The need for regulation was soon apparant. Municipal and state regulation of day care began toward the end of the century followed by the formation of the National Federation of Day Nurseries in 1898.

At this time, large numbers of children of the poor were placed in institutions. President Roosevelt called a meeting at the White House in 1909 to discuss the care of dependent children. This first White House conference on children resulted in the passage in 1911 of the mothers' pension laws. As a result of mothers' aid, many widows chose to stay at home with their children. Declining enrollments in day nurseries resulted in the admission of children when both parents worked.

Just before the end of World War I, women were urged to join the labor force. Industrial day care centers were established in localities where the demand for workers was acute. Most of these factory centers closed after the war. Compulsory school attendance and wartime pressures led the Los Angeles Board of Education in 1917 to establish the first public day care centers. These were housed in available rooms within the school buildings and were staffed

by members of the Parent Teachers Association (Greenblatt, 1977).

Day nurseries traditionally provided custodial care only while nursery schools sought to provide an educational component. Toward the end of the 19th century, career-seeking professionals began to replace the volunteer staff of the day nurseries, and this trend accelerated with the availability of trained teachers. Day nurseries then began to offer educational and enriching experiences as well.

The modern preschool period began in the 1920's. Research centers to study child development and programs designed for teacher training were established. The Works Progress Administration established in 1933 authorized day nurseries and nursery schools to create jobs for unemployed teachers. These continued and were reorganized in 1942 to meet the demands of working mothers. The WPA was abolished in 1942 and the Lanham Act of 1941 was reinterpreted so as to permit allocation of funds in support of child care facilities and services. This crisis of a nation fighting a losing war overrode normal planning and construction procedures (Gibson, 1966). Since they were to serve only during this emergency, these child care centers were erected hastily and with slight consideration of program

needs. During this period of time Child Care services expanded greatly and served 60% of the children.

The Lanham Act was terminated in 1946 after the war had ended. Federally supported, industrial, and philanthropic day care declined considerably after the war. This void was filled by the expansion of proprietary day care, religiously affiliated day care, and laboratory schools. Although mothers were encouraged to return to the home, they joined the work force in unprecedented numbers.

The majority of nursery schools were housed in converted residences. About 15% of the post-war private nursery schools operated in structures especially designed for nursery school purposes. The number of child care centers continues to grow, but we have maintained our heritage of taking whatever we could get and doing the best with it. Head Start, Title One, and other preschool programs provided new emphasis for housing. Once again, although not constrained by money, the time urgency superseded adequate planning for physical facilities.

The advent of the nuclear family and the single family in the United States focuses the entire responsibility for child rearing on one or two individuals. Historically the extended family has shared in the child rearing process. The belief that a child should be cared for only by his/her

own mother appears to be a cultural rather than a universal human belief (Herzog, 1960). Anthropological evidence of crosscultural studies suggests that adjustment is most facilitated if the child is cared for by many warm friendly people (Mead, 1954). Many in our culture have become convinced that it is damaging to an infant or young child to have more than one "mother figure" at a time. Some research used to support this view concerns maternal deprivation (Bowlby, 1969). Separation during the working day is not to be equated with deprivation (Herzog, 1960). Caldwell, Wright, Honig, and Tannenbaum (1970) indicated that day care does not jeopardize the child's primary maternal attachment.

Attitudes are very different in Scandinavian countries, where, for a long time now, quality group day care of young children - among other social services - has been taken for granted as a right for all layers of society (Mattick, 1974). As the Scandinavians already know, both the program and the building need to be flexible in order to be responsive to the needs of young children. The purpose in studying child care in Sweden is to learn what alternatives exist and to use this information in designing programs to meet the needs of this culture (Benstrom and Gold, 1972). British planners have been cognizant of the fact that families must have space for a car, but few have considered the needs of young

children (The Plowden Report, 1966). Planners in this country have been equally remiss in providing spaces for children.

Programs that are planned for children six and under should be developmentally designed so that the most rapid growth period of children's lives is best accommodated. In the phylogenetic scale, nature provides the human infant with the longest and most dependent relationship with his caregivers. The development of complex cognitive and social functions must be a major goal during this early period (Brazelton, 1978). Freud (1938) identified the psychosexual stages of development that each individual must pass through. Erickson (1950) traces the ego qualities that emerge from each stage of psychosocial development. Personality development and mental health are dependent upon a balance between inner needs and outer demands (Frieberg, 1959).

Piaget and Inhelder (1969) have identified the four major stages of cognitive development. Hunt (1963) emphasizes the importance of achieving "a match"--that is, a close correspondence between the child's developmental level and his experiences. White (1975) believes competent children are developed in the critical age period from eight to thirty-six months. Although Dr. Gesell (1974) reiterates

that behavior changes with age in a patterned, predictable manner, he makes a strong plea for planning the program to meet the child's maturational age rather than chronological age. The maturational age reveals the maturity of the nervous system which has a biological time clock and cannot be hurried. Piaget (1969) believed that all children must pass through the same phases of understanding, although not at the same time. Since all phases of development interact and influence each other and are interdependent, it is important to keep the whole child in mind. Global debates have focused on the meeting of human needs and the enlargement of human potential as the main purpose and chief measure of all social, economic and political development. Human society perpetuates itself in and through its children. They are the legacy of its past and present and the bridge to the future (McHale, 1979).

The physical facility in which children work and play impinges on their growth and development (Gibson, 1966). There has been little attempt to study the needs of children in relationship to the design that best facilitates the children's needs. All too often, the needs of children are compromised by the construction of the building. Facilities for very young children should not be a copy of an elementary school on a smaller scale; but should have

their own unique entity with a purpose and program that stands alone (Nimnicht, 1980).

A learning environment which recognizes that simplicity and beauty are compatible with the functional use of space provides an important contribution to the emotional fulfillment of each child (Gardner, 1966). The physical facilities can indeed provide a positive influence on education. Although favorite spaces are perceived differently, there are some spaces that are more highly valued by most people. These spaces are: enclosed spaces, enclosed spaces within a large space, places with vegetation, bright sunlight or water, and spaces from which one can see and not be seen (Hester, 1979).

Robert Lewis believes that his preschool environment, Wildwood, will foster the creation of an American environment ethic by allowing small children to experience the exciting interrelationships of nature (Gibson, 1979). The actual building can motivate the child's curiosity and create the potential for learning (Hasse, 1966). Byron Bloomfield's research on the effect of environment on children's learning greatly influenced his design for the Mesa Center (Galinsky and Hooks, 1977).

The open classroom concept allows each child to direct his/her own activities. The classroom is carefully planned

and structured by the teacher who acts as a resource to the children (Evans, Saira, Evans, 1974). The preschool curriculum is designed to support the child's ongoing developmental pattern with an emphasis on selfhood, language and communication. This openness promotes community and allows for flexibility but provision must also be made for small areas to provide privacy and security.

Day care centers serving hospitals must fulfill special needs. These are enumerated by Gibson and Shoup (Note 1) in the Preliminary Architectural Program.

Color, the amount and kind of lighting, acoustics, climate control, and interior surfaces have a great impact on the comfort of those who use the building (Environmental Criteria: MR Preschool Day Care Facilities). Basic planning considerations also include strict attention to health and safety requirements established by the City of Houston. In addition, the State of Texas has established fire, sanitation and safety standards that must be met by the building, grounds, and equipment used for day care centers (Minimum Standards for Day Care Centers, 1980).

Since day care is indeed a business enterprise, the state also provides standards for organization and administration, personnel, physical health, and food services and nutrition (Minimum Standards for Day Care Centers, 1980).

Cherry, Harkness, and Kuzma (1973) provide a comprehensive guide to help the administrator manage the responsibilities effectively and to provide wholesome and helpful service.

The ultimate test of any facility depends on the people who use it. Even the best planning will not produce a perfect design but should produce a facility that can be changed continually to remain an effective environment for children and that is a joy to use.

CHAPTER 3

METHODOLOGY

The decision had already been made by the Texas Medical Center, Inc. Board of Directors to place the new child care center at the W. Leland Anderson campus of the Texas Medical Center. This satellite campus provides much needed space and the potential for easing traffic congestion when shuttle bus service becomes available.

Funds from the Foley Foundation had been committed for the construction of the new child care facility. Since the site chosen is within the Special Impact Area designated by the Economic Development Administration, Texas Medical Center, Inc. was eligible to apply for a grant from the United States Department of Commerce. With help from the mayor's office of the City of Houston, a matching grant of \$380,000.00 was approved. While planning progressed, building costs escalated rapidly and it was soon evident that additional funding would be needed to complete the project. Due to the location, the project was eligible for 80% funding rather than the 50% originally requested. Texas Medical Center, Inc. then sought an increase and EDA approved the grant for the amount of \$608,000.00.

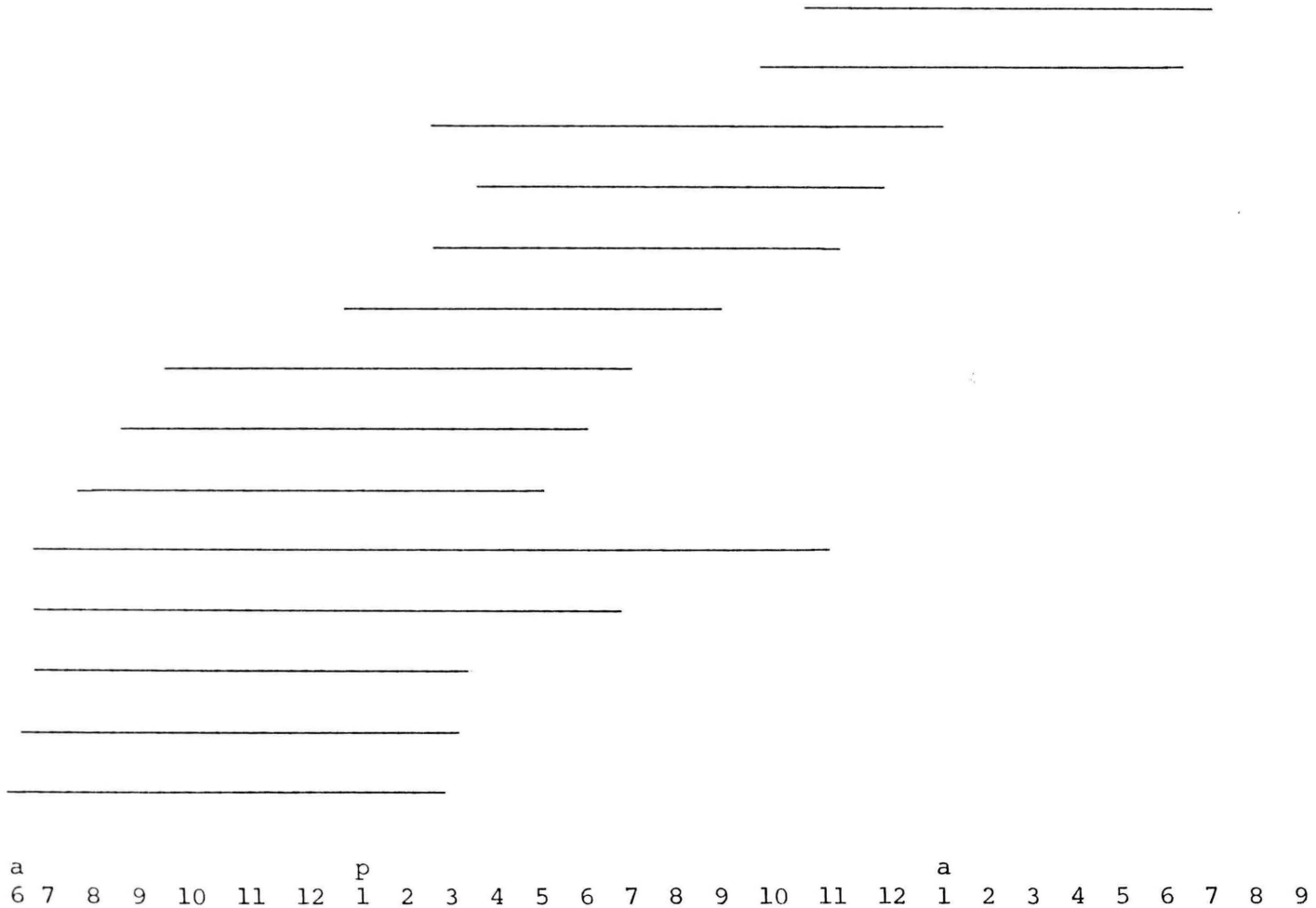
In July of 1979, the director began a series of meetings with the architects, Ronald Ray Shoup, Jr., Michael Johnson, and James L. Marshall, Jr. James Marshall was responsible for collecting the data to support the architectural programming. Out of these meetings evolved the goals, facts, concepts, and needs that the facility must meet.

This facility must operate 7 days per week, 24 hours per day. The building must be flexible to serve 14 shifts of children with the largest capacity being served between 2:00 and 4:00 p.m. (see Table 1). The staffing must accommodate the ever changing composition of children of differing age groups, attendance schedules, and arrival and departure times as well as having one person responsible at all times (see Table 2). The building and playground must accommodate this flow of children, also.

The following concepts were developed:

1. Allow for linear expansion to better accommodate future growth requirements.
2. Provide a facility to meet the various activities and to serve large numbers of children, but yet maintain a scale comfortable for small children.
3. Provide a relationship between the various functional areas of the center that will enhance

SHIFT SCHEDULES



HOURS OF THE DAY

TABLE 1

Table 2
Staff-child Ratio

Age group	Staff	Children	
		DHR licensing	TMC
0 - 12 mo.	1	5	4
12 - 18 mo.	1	6	6
18 - 2 yrs.	1	9	6
2 - 3 yrs.	1	11	8
3 - 4 yrs.	1	15	10
4 - 5 yrs.	1	18	10
5 - over	1	22	10

The space requirements were divided into three main areas: lobby and administration, 1,745 square feet, education and training, 12,500 square feet, and ancillary, 3,560 square feet. The activities and character to be found in each area are as follows:

administrative duties, promote viable education and training programs, and facilitate service and support activities.

4. Provide control of access of the public from teaching and care spaces.
5. Provide infant care areas that will be comfortable for the staff and at the same time provide a suitable setting for infant development and behavior.
6. Provide activity/classrooms to accommodate the diverse needs of preschool education, yet remain flexible and open in approach.
7. Develop the "commons" area as the major space and building hub.
8. Allow ease of operation 24 hours per day, 7 days per week.
9. Provide ample storage for mats, educational and play equipment, instructional aids, food, and supplies.
10. Provide for protection from inclement weather when entering the building and for play activities.
11. Provide a site arrangement that allows for imaginative development of playground areas and emphasize safety and security requirements.
12. Provide natural lighting and visual access to the outside, yet provide for security.

Lobby and Administration

Lobby

The entrance to the center should welcome and reassure. This area should provide access to any rooms or spaces that will be used by the public, and adult restrooms should be located near this area. The lobby should also be utilized as a display center to provide a setting for examples of student work, important announcements and messages. This area should be warm and friendly and should express a relaxed atmosphere with cheerful and attractive decor.

Secretary/Receptionist

The secretary/receptionist will be responsible for the center's clerical needs and will also provide information, direction and control over the reception and lobby area. The secretary/receptionist should be easily accessible to the administrative office and should have visual access to all persons entering the building.

Director

The director is the chief administrator of the center. In this role, the director coordinates the personnel, supervises the program and maintains contact with the public. This office should be conveniently

located for visitors, but away from the main line of traffic. It should be adjacent to the secretarial services and the conference area. The director's office should reflect an executive atmosphere and that of a pleasant study.

Conference Room/Library

The conference room will be used for board meetings, staff meetings, group counseling, parent meetings and other similar type of gatherings. It should be located near the administrative offices and may provide for the use of audio-visual equipment. This space may also contain a library consisting of reference materials, books, periodicals, and other items that would be provided for both staff and parents. This space would compliment the administrative offices and it should provide an atmosphere for direct problem solving and a free flow of ideas.

Teacher's Lounge and Workroom

The teacher's lounge would provide a room where the staff can relax. The informal conferences, information exchange and planning sessions which spontaneously take place when staff get together can make a valuable contribution to the program. Ample working surfaces should be provided for making posters and other kinds

of instructional material. This room should contain an area for coffee making, should have a counter with a sink, and a small refrigerator. Locker space should also be available for part time employees. Shelves should be available for professional books and journals, and the staff restroom should be located nearby.

Central Resource Center

This center will be utilized to serve as a central distribution point for books, toys, instructional aids, and supplies that can be used by different groups within the facility and to avoid duplication of items that can be shared. This process insures better control over items and allows a more efficient use of space within the activity/classrooms. This space should contain ample shelving and space for audio-visual equipment and duplicating machines.

Isolation Room

The isolation room should be a space where a child who has become ill can lie down, isolated from others. This room can also be used to store first aid supplies and other health related equipment and supplies. It must be adjacent to the receptionist area so that the ill child will have supervision.

Education/Training

Crib Infants

This area is for infants six weeks to twelve months. The arrangement must provide for sleeping, floor play, bathing, diaper changing, food preparation, laundry facilities, feeding, rocking, and swinging. This area should be separated from that for older children and operate as a self contained unit. A counter of convenient adult height for changing diapers, dressing and bathing should be located adjacent to plumbing facilities. Diaper supply shelves and diaper disposal containers should be within arm's reach. Ample storage space should be provided for bedding and for storage of personal clothing. The food preparation area and the laundry area should be in a separate adjoining space. The infant area should be bright and cheerful. Comfortable seating and rocking chairs must be provided for the staff.

Infant Toddlers

This area serves infants from one to two years of age. The arrangement must provide for floor play, eating, sleeping, climbing, and changing diapers. Provision for dramatic play equipment, dolls, art supplies, music equipment, books, manipulative materials, and

climbing equipment must be made. A table or counter of convenient adult height for changing diapers, dressing and bathing should be located adjacent to the plumbing facilities. Bathing and dressing supplies along with diaper supply shelves and diaper disposal containers should be provided for other supplies and for individualized storage of personal clothing. This area should be attractive, bright, and cheerful.

Toddlers

This area is for children between two and three years of age. It would be similar in layout and character to the infant toddler area, but must provide a bathroom with small toilets and low sinks to promote potty training and independence.

Preschool

This area is for three and four year olds, and its arrangement should provide for a variety of activities. It should be composed of two kinds of spaces: a relatively large open space for activities which will involve the whole group of children and smaller, more structured spaces where specific activities can take place. The interior arrangement must be flexible, having few fixed partitions and providing multi-functional furniture and storage units which can double

as partitions. These units can also provide structuring for group activities with the play area, such as the utilization of "interest centers".

Interest centers are clusters of functionally related materials. Some are permanent and some are mobile and capable of being shared at different times by different groups. Examples of permanent interest centers would include housekeeping, dramatic play, blocks, manipulatives, art, books, etc. Shared or mobile interest centers would include cooking, woodworking, rhythm band, office, science, etc. Toilets should be provided adjacent to or between classrooms for ease of supervision. No locks should be on the inside doors of bathrooms used by preschool children. These children will rest and sleep on mats. This area must be attractive and stimulating.

Kindergarten

This area is for children who are five years of age. Its layout and character would be similar to that of the preschool area. These children will spend more time on directed learning activities. They will rest on mats, also.

Commons

The commons will be utilized as a multi-purpose space to provide a setting for several activities. The

day children will use this space for large motor activities, the evening children will use it for activities and sleeping, and it will also be available for parent and staff meetings. Ample storage space should be located adjacent to this area to accommodate the variety of equipment and furnishings that will be used at various time periods. Mobile casework will provide for room division and the storage of personal clothing and educational materials.

Ancillary

Kitchen and Pantry

Space must be available for preparing three meals per day and three snacks. Commercial equipment must be used but the kitchen must maintain a "homey" atmosphere. Cabinet space for dishes, utensils, and cooking equipment must be provided. The adjacent pantry provides for volume food storage.

Bulk Storage and Receiving Dock

A receiving dock is located at the back of the building where food supplies, general supplies, and equipment are received. The bulk storage area has shelves for storage until these items are needed.

Corridors and Circulation

The corridors provide for an easy flow of children and adults. Some corridors can be incorporated into the actual classroom space by using the mobile casework.

Janitor's Closets

These closets provide for handy storage of cleaning equipment and supplies. Water must be available and a sink for the disposal of mop water.

Mechanical Room

This room is needed to house the telephone equipment, electrical equipment, hot water heater, and breaker boxes. This facility must comply with all the specifications as listed in the Minimum Standards for Day Care Centers and with the City of Houston Building Code Requirements for Day Care Centers.

Child Care Building Specifications

DHR 2-80

1. Space

- (a) Thirty square feet of indoor activity space per child.
- (b) Eighty square feet of outdoor play area for each child.

2. Furnishings

- (a) A telephone with a listed number.

- (b) Cots, beds, or mats at least 1 inch thick that are waterproof and washable. The floor must be warm, clean, and dry.
- (c) Individual storage must be provided for personal belongings.
- (d) Comfortable seating shall be available.

3. Equipment

- (a) Indoor and outdoor equipment must be appropriate to the developmental needs and individual interests and age of the children. The supply must be adequate for the number of children served.
- (b) Books, art materials, music materials, blocks and block accessories, manipulative materials, dramatic play materials, science materials, and climbing equipment must be available.

4. Toilet Facilities

- (a) Inside toilets and bathrooms must be of a size so that the children can use them independently. No locks shall be on bathroom doors. Children shall have privacy if needed.
- (b) One flush toilet must be provided for every 17 children.
- (c) There shall be one lavatory for every 17 children.

- (d) A diaper flush shall serve 17 infants.
- (e) A lavatory must be available in the infant area.

5. Fire

- (a) The first responsibility of the staff is the evacuation of the children.
- (b) Annual fire inspection by local authorities must have a written report available at the center. Any corrections must be made.
- (c) At least one fire extinguisher must be readily available.
- (d) A fire evacuation plan shall be posted in each room. Staff members must be trained in emergency procedures. Fire drills must be held quarterly. Evacuation must be completed in 3 minutes.
- (e) Children under 8 years of age must be housed on the first floor.
- (f) Two exits must be available on different sides of the building.
- (g) Doors opening into a fenced yard shall be easily opened by children. Doors between rooms must not be locked.
- (h) Doors and pathways must not be blocked.

- (i) Heating devices shall present no fire hazards. Gas appliances shall have metal tubing and connections.
- (j) Combustible materials shall be kept away from light bulbs and other heat sources.
- (k) Gas pipes shall be tested annually for leaks with a copy of the report available at the center.

6. Sanitation

- (a) The facility shall have an annual sanitation inspection by local authorities, with a written report available for inspection. Any corrections needed must be made.
- (b) The day care centers building, grounds, and equipment shall be cleaned, repaired, and maintained.
- (c) There shall be adequate light, ventilation, and heating.
- (d) The supply of water must be adequate and approved by the Texas Department of Health.
- (e) Drinking water shall always be available to the children in a safe and sanitary manner.
- (f) The temperature of any hot water available to the children must be not higher than 120° F.

- (g) Adequate and safe flush toilets and sewerage systems shall be provided.
- (h) Garbage shall be in containers with tight lids, away from areas used by children, and removed from the center at least twice a week.
- (i) Measures shall be taken to control insects and rodents.
- (j) Staff and children shall wash hands after toileting and before eating. Staff shall wash hands before and after changing a diaper and before and after feeding a child.
- (k) Clean individual wash cloths shall be used for each child.

7. Safety

- (a) Building, grounds, and equipment shall be repaired and maintained.
- (b) Electrical outlets shall have child-proof covers or safety outlets.
- (c) The play area shall be dry and free from sharp objects. Garbage cans and flammable material shall not be permitted. Trash cans are permitted.
- (d) Outdoor play equipment shall be secured and away from busy areas.

- (e) Toys that explode or shoot are not allowed.
 - (f) Toys, furnishings, and equipment shall have no lead painted surfaces or contain toxic materials.
 - (g) Toxic materials shall be inaccessible to the children.
 - (h) First aid supplies shall be handy but stored out of children's reach. A guide to first aid and emergency care shall be posted.
 - (i) Cleaning chemicals must not be mixed.
8. Illness or Injury
- (a) An ill child must be isolated from other children and supervised until the parents arrive.
9. Medications
- (a) Medications requiring refrigeration shall be kept separate from food.

City of Houston

"Building Code Requirements

for a Day Care Nursery"

1. Occupancy C-3
- (a) Occupant load of 35 square foot per child.
 - (b) At least one hour fire-resistive construction throughout.

- (c) Rooms for children second grade and under shall not be located above the first story.
- (d) One hour fire-resistive construction shall apply to exterior walls, residence and day nurseries, boiler and heating plant buildings, and janitor closets.
- (e) All curtains, drapes, and carpet shall be flame-proofed.
- (f) Approved fire alarms if having an occupant load of more than 50 persons.
- (g) Two exits are required where five or more are housed. Exits doors shall open out and have panic hardware if 100 hundred or more are housed. Floors or landings on each side of the door shall not be more than 2 inches lower than the threshold. Glass doors and fixed glass panels must be of safety glazing material. No coridor shall be less than 6 feet wide.

2. Plumbing

- (a) Toilets and lavatories with hot and cold running water. One for every 10 children; two for every 20 children, and three for every 35 children.
- (b) There shall be one drinking fountain for every 75 children.

- (c) Water heaters must not be installed in bedrooms or bathrooms. Temperature relief valves must be provided. They must have type B or BW vents. Every gas appliance must have a shut off valve.

3. Toilet Rooms, Floors, and Walls

- (a) Floors shall have a smooth, hard, nonabsorbent surface that extends upward 5 inches, or 4 feet near urinals and toilets.
- (b) Walls must be of a type that is not adversely affected by moisture.
- (c) The availability of city water and city sewer depends on the existing water and sewage lines and the present capacity.

4. Fire Prevention Code Requirements

- (a) The nursery must prominently display the certificate of occupancy and must not exceed the occupancy load.
- (b) Exit drills shall be held once a month. The time and date must be recorded. All persons must vacate the building. Approved exit plans must be posted in each room.
- (c) Cooking ranges shall be equipped with an approved grease and vapor hood vented through the roof.

- (d) Annual pressure tests for all gas pipes shall be performed. This must be done by a licensed plumber who must provide a certificate of approval.
- (e) Approved fire alarm system with smoke detectors for night care.
- (f) Portable fire extinguishers must be available at all times. The staff must be trained to operate them. One 2A unit must be provided for every 2,000 foot of space. The kitchen must have a special fire extinguisher.
- (g) All scrap paper must be collected in metal containers and removed from the building daily.
- (h) Flammable liquids must be stored in approved metal containers in separate buildings or in a room separated by a one hour fire wall.
- (i) All interior decorations shall be flame retardant. Carpet must have a flame spread of 0 to 25.

CHAPTER 4

RESULTS

The original plan of having a number of small buildings like a village became impractical when flexibility of staff, efficiency of energy, and safety were considered. The building is designed with a "commons area" similar to a village green which provides a meeting place. The infant, preschool, and kindergarten areas open from this main area. The large open window areas face onto the fenced play yard. The ceilings in the lobby and infant areas are low to convey a feeling of closeness and security.

The open plan permits the use of only the amount of space needed at that time. Mobile storage units for individual storage and educational materials are used to define the space. The different areas are further defined by colors. The infant area is reached through the orange doors to the left of the lobby. The blue area straight ahead serves three and four year old children, and the green area to the right serves kindergarten children. The carpet reinforces the colors used and unites all four colors in the commons area. The floor coverings and furnishings provide a variety of tactile experiences.

The large kitchen provides space for food preparation. Meals are served in the individual rooms. Baby food is prepared in the infant area, but table food is brought from the kitchen for the older babies.

The infant area is divided by the laundry and food preparation area. Sinks and changing areas are provided for every four infants. There is one diaper flush in the laundry area that serves the entire infant area. Cribs, swings, and high chairs are provided. There is ample space for rocking chairs and for crawling babies.

At approximately 1 year of age or when the baby is developmentally ready, he/she is moved to the 1 year old room. More space is available for running and climbing. The 1 year olds spend a large amount of time on the playground. Low sinks are provided to begin hand washing training, and low tables and chairs foster the development of independent eating. A large diaper changing area with a diaper flush serves this entire room. These infants rest and sleep on individual custom designed mats that can be used for tumbling and climbing as well. Lots of windows provide visual contact with the out-of-doors. Two covered areas are provided for outdoor play even in rainy weather. The floor covering is part carpet and part vinyl tile.

The area for two year olds is similar except for the addition of a bathroom with small toilets and low sinks. Mats are used throughout for resting and sleeping. This space is divided with the mobile casework into areas for activities, rest, and play.

The blue area for threes and fours has small areas with low ceilings, bathrooms for each classroom, and large carpeted areas that can be shared or incorporated into the individual rooms. There is a large covered area outside for play in rainy weather.

The green kindergarten area is designed the same, but has two classrooms. As in the other areas, this group also uses mats for resting and mobile casework for room division. The water fountains, sinks, and furniture throughout the building are sized to the age of the children using the area. This enhances comfort and promotes independence.

The large "commons area" is used primarily by the evening children, although it is available for large motor activities, parent meetings, and staff meetings. There are two bathrooms for children off this area. One by the back outside door easily accessible from the playground, and the other is equipped with shower facilities for bathing.

The teacher's lounge and workroom, the resource center, the director's office, the sick room, the lobby, and the

conference room complete the areas in the building. There are four fire exits from the building with panic hardware. One is from the blue area, one from the green area, one from the back hall that serves the 2 year olds and the kitchen, and the double front doors. None of these doors open into the fenced yard.

Energy efficiency is enhanced by zone heating and air conditioning and by orientation to the angle of the sun for minimum heat gain. Steel studs with gyp board and brick facing were used rather than brick with cement blocks. The construction cost is lower, but the maintenance and fire insurance costs are higher. The building may be expanded on either end by adding additional 24' by 24' grids. In fact, two of these grids were taken from the kindergarten area and added to the infant area just before the construction began.

The children are especially delighted with the building. For the first time they can be independent and have things on their own scale. The parents are pleased and the staff finally has plenty of storage space and a place for meetings and relaxation.

CHAPTER 5

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

By planning carefully beforehand and working with a group of architects who were open to suggestions, it has been possible to create a building that is esthetically pleasing and a pleasure to use. Although the size of the building is triple that of the old facility this is not obvious from the outside or from the lobby. The scale of a building designed for small children needs to be in keeping with their size so they will not be overwhelmed. The divisions of the building into distinct areas allows for ease of use by parents and children alike.

It is hoped that someday the three items that were deleted from the original plans due to budget considerations can be restored. A covered area for unloading children would be much appreciated in inclement weather. Skylights need to be restored to two outside areas so that these, also, can be used in rainy weather. Vinyl wall coverings would contribute substantially to the ease of keeping fingerprints off the walls.

A project of this magnitude requires a great deal of time and energy. Anyone undertaking such a project would do

well to have one person responsible only for the planning of the building. It is imperative that architects who plan buildings for children be sensitive to the suggestions from those who will use the building.

Business and industry have long been aware that employees have cars and that space is provided for them. Perhaps in the future they will begin to meet the needs of the employees' children as well. The very first day care was provided as a support system for families. Day care can enhance the family by offering much needed support like that formerly provided by the extended family to the parents and children in order to promote the well-being of the family.

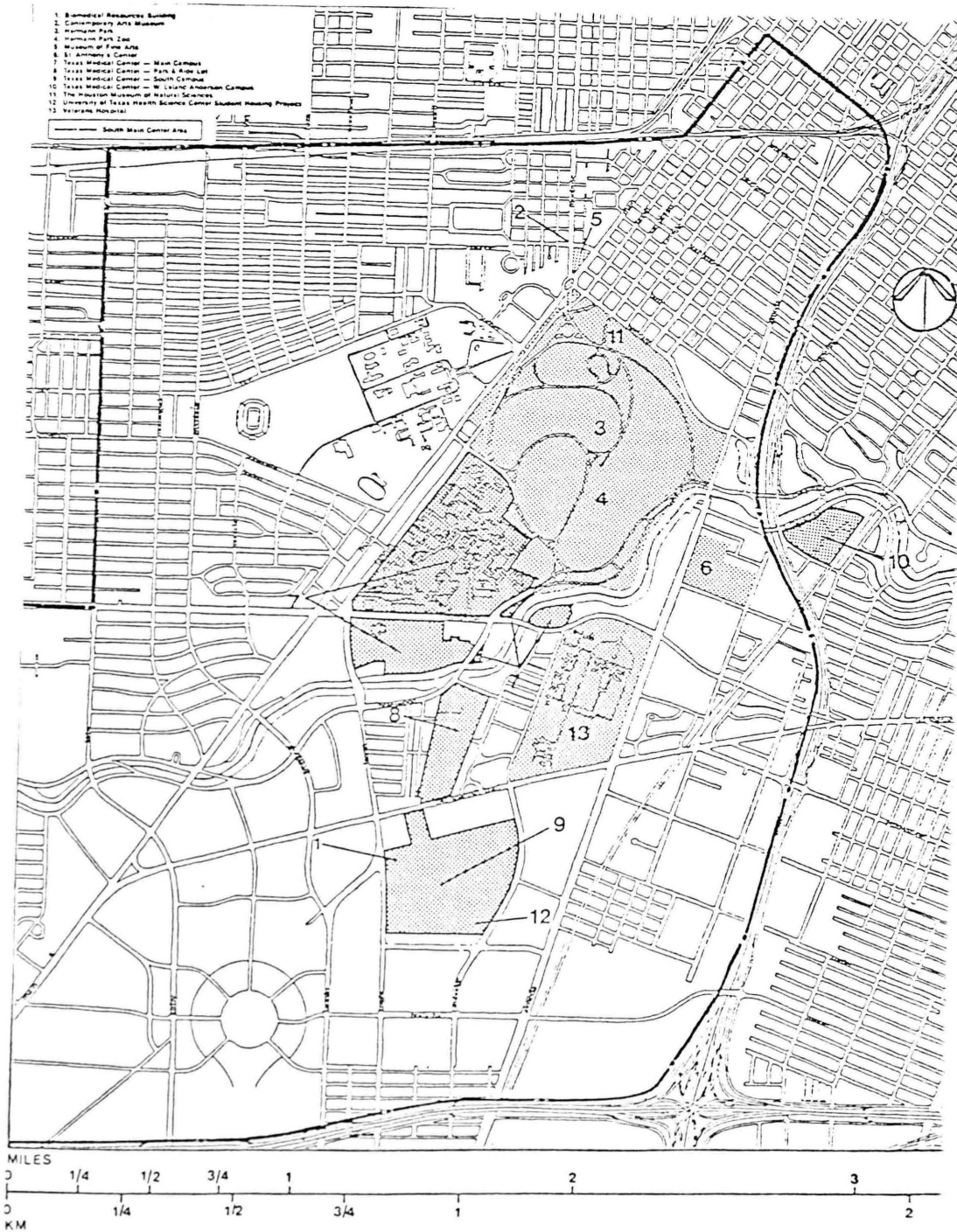
It is recommended that during the planning stages for a new structure the following categories should be reviewed:

1. Employee needs in terms of work schedules, physical comfort, job description, and income levels.
2. Children's developmental needs.
3. Parents needs in terms of location, ease of bringing and picking up children, meetings needs, ease of communication, and their physical needs.
4. Visitor and public needs.
5. Delivery of supplies and food.
6. Program needs.
7. Space requirements.

8. Furnishing requirements.
9. Needs of volunteers and students.

APPENDIX A

Site Diagram--Texas Medical Center Area

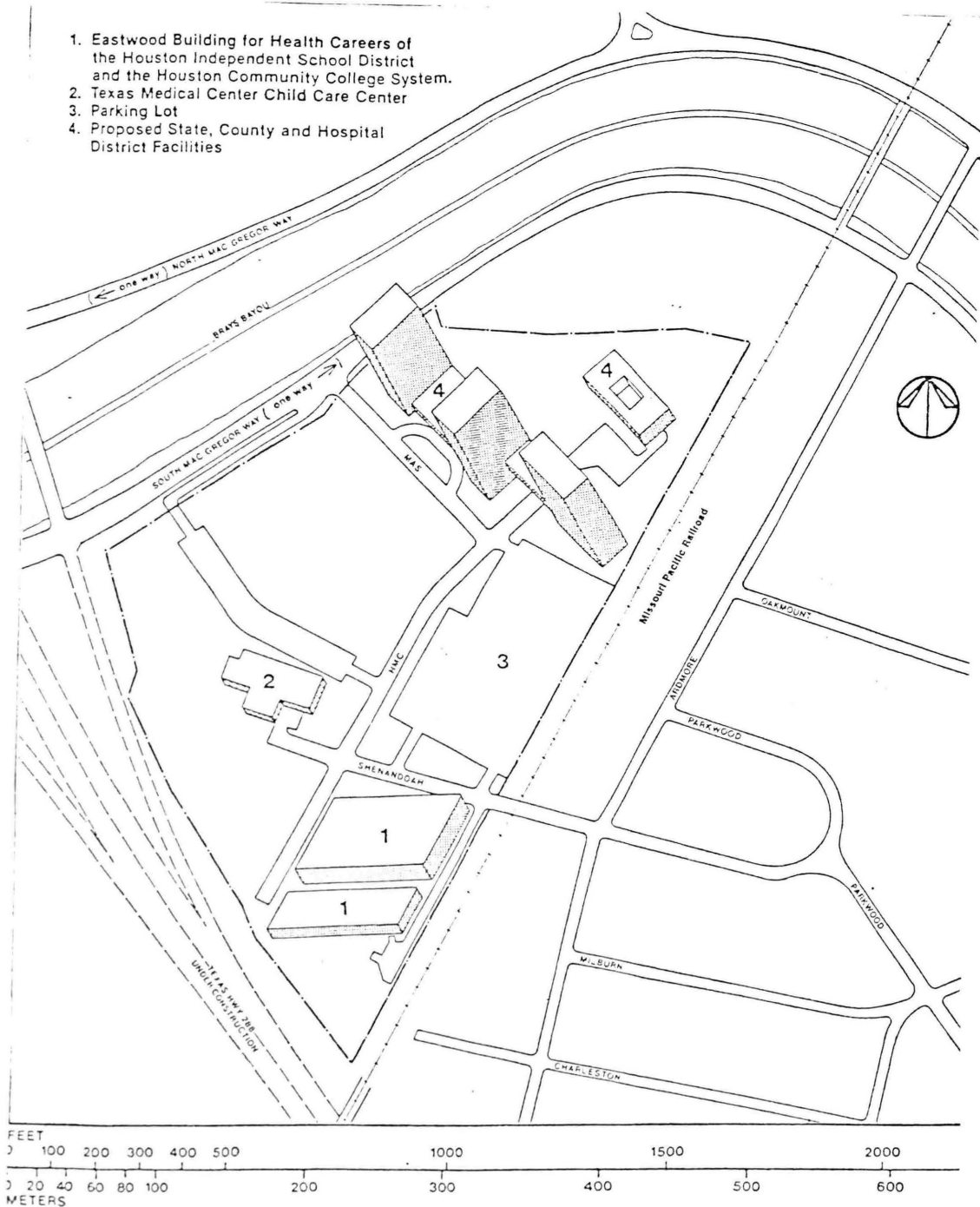


Texas Medical Center Area

APPENDIX B

Site Diagram--TMC W. Leland Anderson Campus

1. Eastwood Building for Health Careers of the Houston Independent School District and the Houston Community College System.
2. Texas Medical Center Child Care Center
3. Parking Lot
4. Proposed State, County and Hospital District Facilities

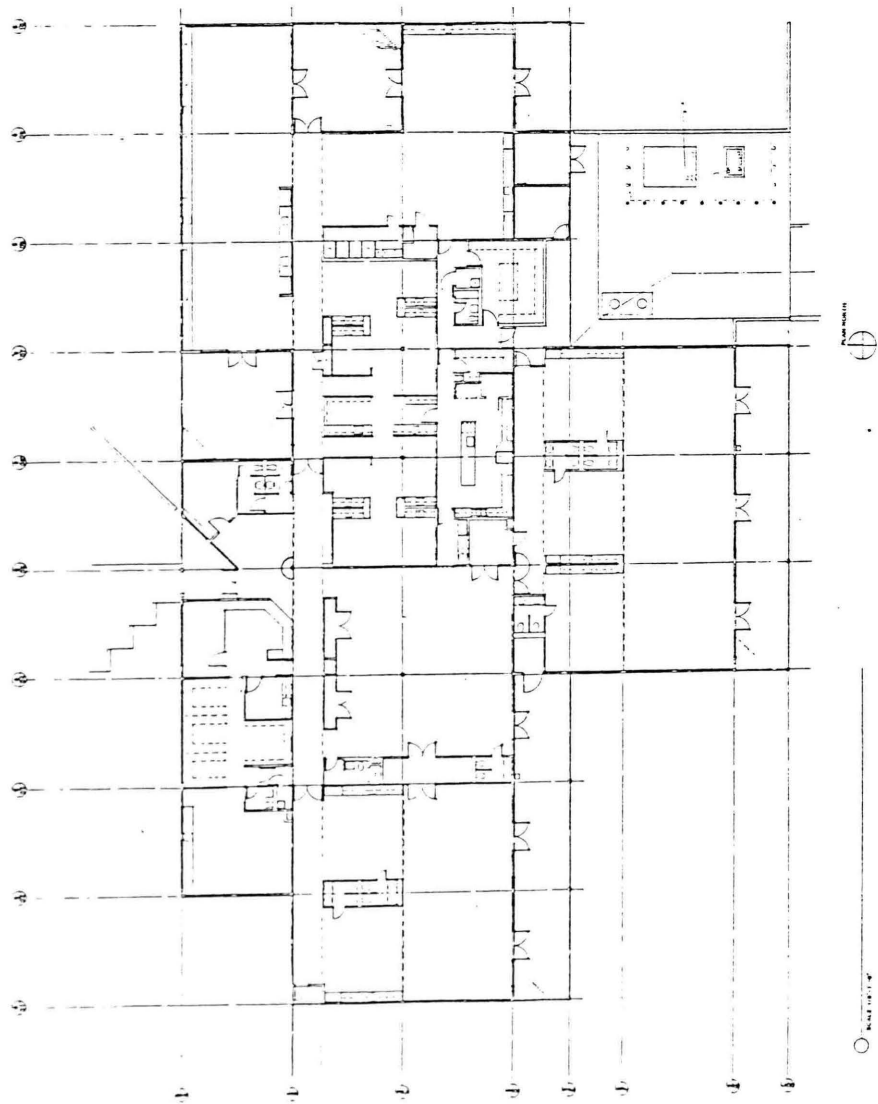


T.M.C. - W. Leland Anderson Campus

TMC/F&S 6-1

APPENDIX C

Floor Plan



APPENDIX D

Floor Plan with Narrative

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