



UNIVERSITY OF MARYLAND BALTIMORE COUNTY CAMPUS

Master Plan for The University of Maryland Baltimore County Campus

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1

Background Developments



This report presents the Master Plan for the development of a new University of Maryland campus in Baltimore County. The report is offered for use as a record of University development and as a tool for future expansion. It is intended to serve as a point of departure for future planning and as a record of past decisions.

The Master Plan presented herein goes further than many campus master plans have attempted to do with their emphasis on land use and circulation. The attempt to describe design forms in diagrammatic abstractions and descriptions is a relatively new approach, but the experience of many master planners in recent years has shown the need for such an outline. This Master Plan uses the best arsenal of current techniques to develop an outstanding campus capable of rapid growth and possessing the ability to provide for the complex interrelationships between its parts.

Included within the report are background data pertinent to initial campus development, a summary of the planning process that led to the finalized Master Plan and a record of progress to date. A final section is included to offer recommendations which would be beneficial to orderly growth and future development.

Background

The provision of adequate facilities to meet the needs of the increasing number of college-bound students has been a matter of concern to all those involved with education in the State of Maryland. The idea of a second University of Maryland was conceived in 1962, growing out of studies begun in 1955. During these years several committees were established by the Governor to study specific aspects of the expansion of higher education in Maryland. In 1962, the Board of Regents recommended to the State that the University of Maryland establish a new campus to moderate the growth of undergraduate and graduate enrollments at College Park. The following year, 1963, the Maryland General Assembly enacted a bill enabling the University of Maryland to operate campuses within Baltimore County, the Eastern Shore, Central Maryland and Southern Maryland. This bill was approved in April of 1963 and became law on June 1, 1964.

In the two years preceding the legislative action for the establishment of the new campus, extensive studies were conducted by the administration of the University concerning the trends of higher education in Maryland. Considerable stress was placed on limiting the ultimate enrollment at College Park. The Board of Regents of the University felt that the establishment of a campus in the Baltimore metropolitan area was essential if the enrollment at College Park was to be moderated.

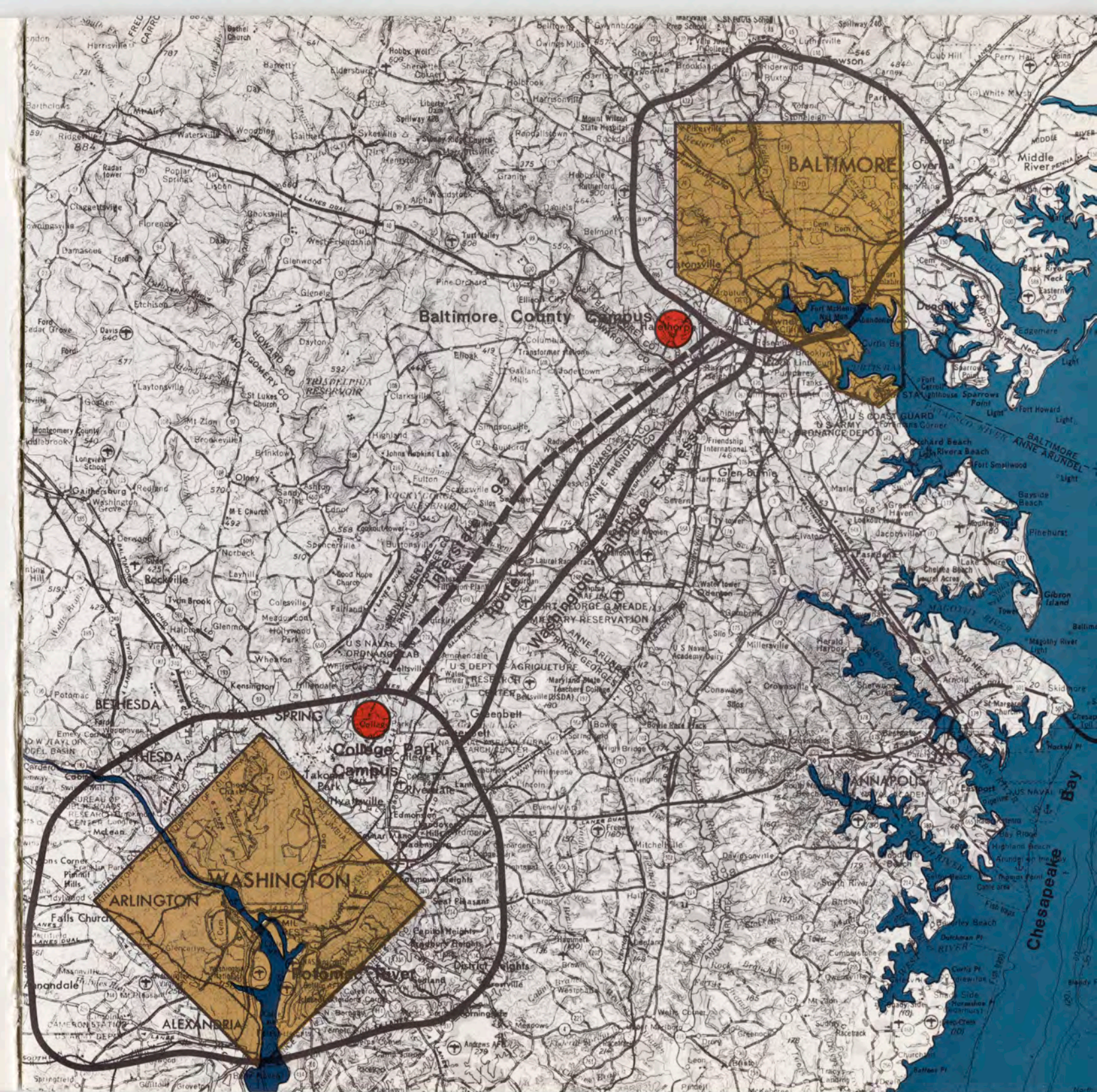
There was general agreement in the Legislature that the establishment of a Baltimore County campus should be given primary consideration. The Legislature felt that if a new campus of the University of Maryland were established in Baltimore County, it

would provide the facilities necessary for the ever-increasing number of qualified students and would also serve as the nucleus for scientific research and development in this area. In the past, Baltimore County has attracted a number of science-based industries which engage in highly specialized research and development work. A graduate branch of the University would undoubtedly be of great assistance to these industries and would attract new research firms into the metropolitan region. The Legislature also felt that it would take at least five years to plan, finance, and construct new facilities in the Baltimore metropolitan area, and further delay would mean overcrowding at the College Park campus, perhaps causing the denial of a college education to some qualified Maryland students.

After fully reviewing these considerations, the Board of Regents of the University of Maryland went on record recommending that the University establish a division in Baltimore County and initial screening begin to locate a suitable site.

1 Regional Relationship

-  Metropolitan Areas
-  University of Maryland Campuses
-  Water Ways



Site Selection

Various sites, both urban and suburban, were studied as locations for the new University of Maryland Baltimore County campus. After careful consideration, a site near Catonsville was selected. It is bounded by the Baltimore Beltway, Rolling Road, Wilkens Avenue and Sulphur Spring-Shelbourne Road and possesses a number of advantages which other sites lack. It is immediately adjacent to the Beltway, a major transportation link serving the entire Baltimore metropolitan area, and is close to the route of the developing Interstate 95, both of which are important transportation arteries to this commuting center. The site is within easy access to the existing campus at College Park as well as the professional school campus in Baltimore City so that efficient use can be made of the total resources of the University in its development and operation.

The original site contained 432 acres. The purchase of additional properties has increased this area to approximately 476 acres, an area adequate for the long term development of the University campus. It is an area of rapid population growth, which promises to become even larger in the years ahead. State ownership of the land insured immediate availability of the site. Planning could move ahead without delay and with a higher degree of certainty than could be associated with land under option. The availability of the land for reassignment of use made possible the initiation of this project with a minimum outlay of General

2 Metropolitan Area

-  Baltimore City
-  Major Educational Institutions
-  Mass Transit System
-  Major Open Space
-  Water Ways



Construction Loan funds for land purchase, thus effecting a considerable savings to the citizens of the State.




The site of the Baltimore County campus is located six miles southwest of downtown Baltimore, and twenty-five miles from the College Park campus of the University of Maryland. With completion of Interstate 95, the two campuses will be less than an hour's drive from each other.

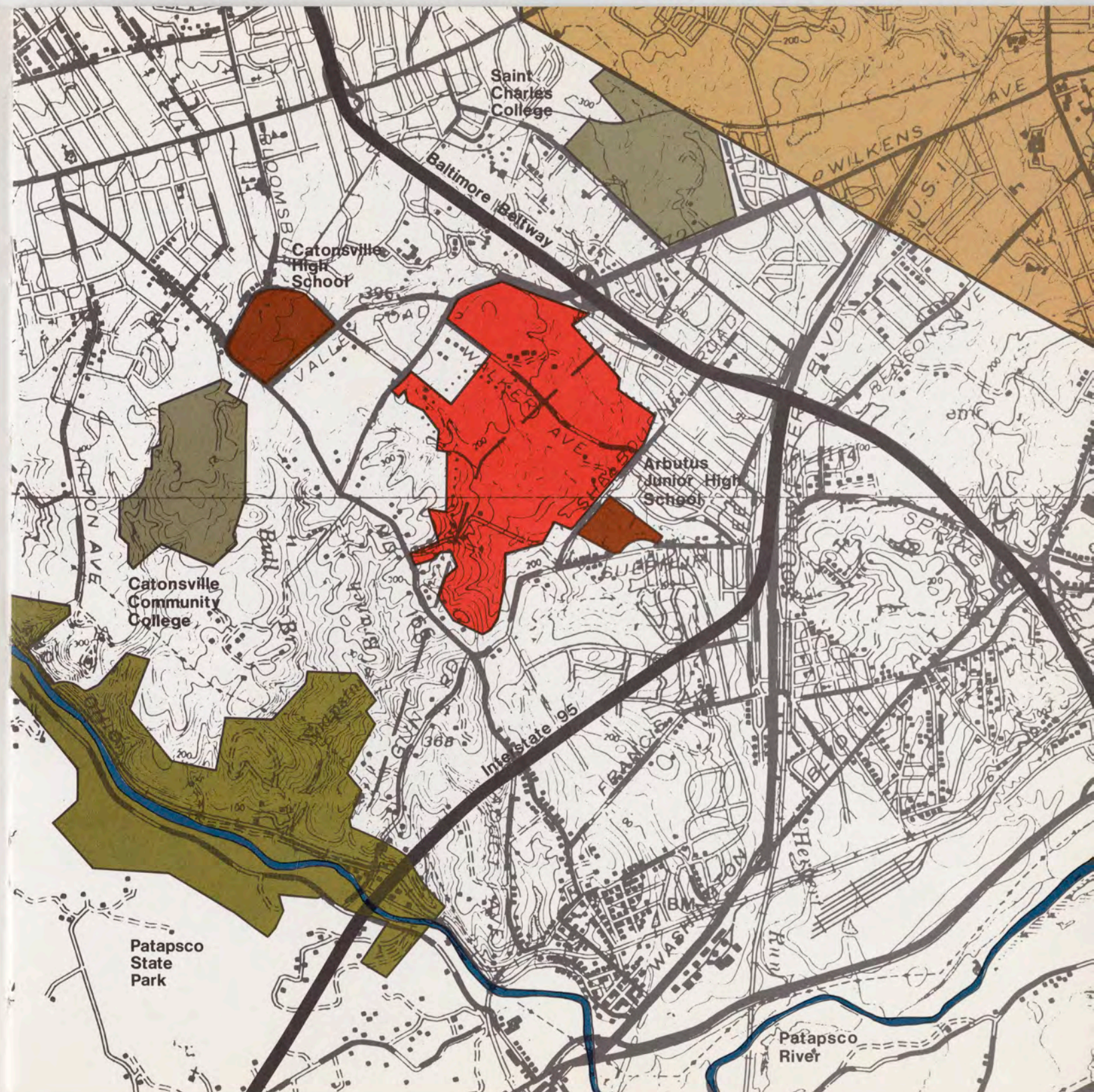
UMBC is within nineteen miles of Towson, thirteen miles of Dundalk and ten miles of Glen Burnie. The excellent relation of the campus to metropolitan Baltimore and to the region itself offers the opportunity for the educational and social development of the University.

The site is complementary to the location of the existing public and private four-year institutions of higher learning when viewed from the standpoint of serving the entire Baltimore metropolitan area.

The Baltimore City campus of the University, housing the professional schools, is conveniently situated for the transfer of students from UMBC to the schools of Dentistry, Law, Medicine, Nursing, Pharmacy and Social Work. Other institutions in the area include Johns Hopkins University and Medical School, Coppin, Towson, Morgan State, Loyola, Goucher and Notre Dame Colleges, University of Baltimore, Maryland Institute, Peabody Institute and the Catonsville, Baltimore and Anne Arundel Community Colleges.

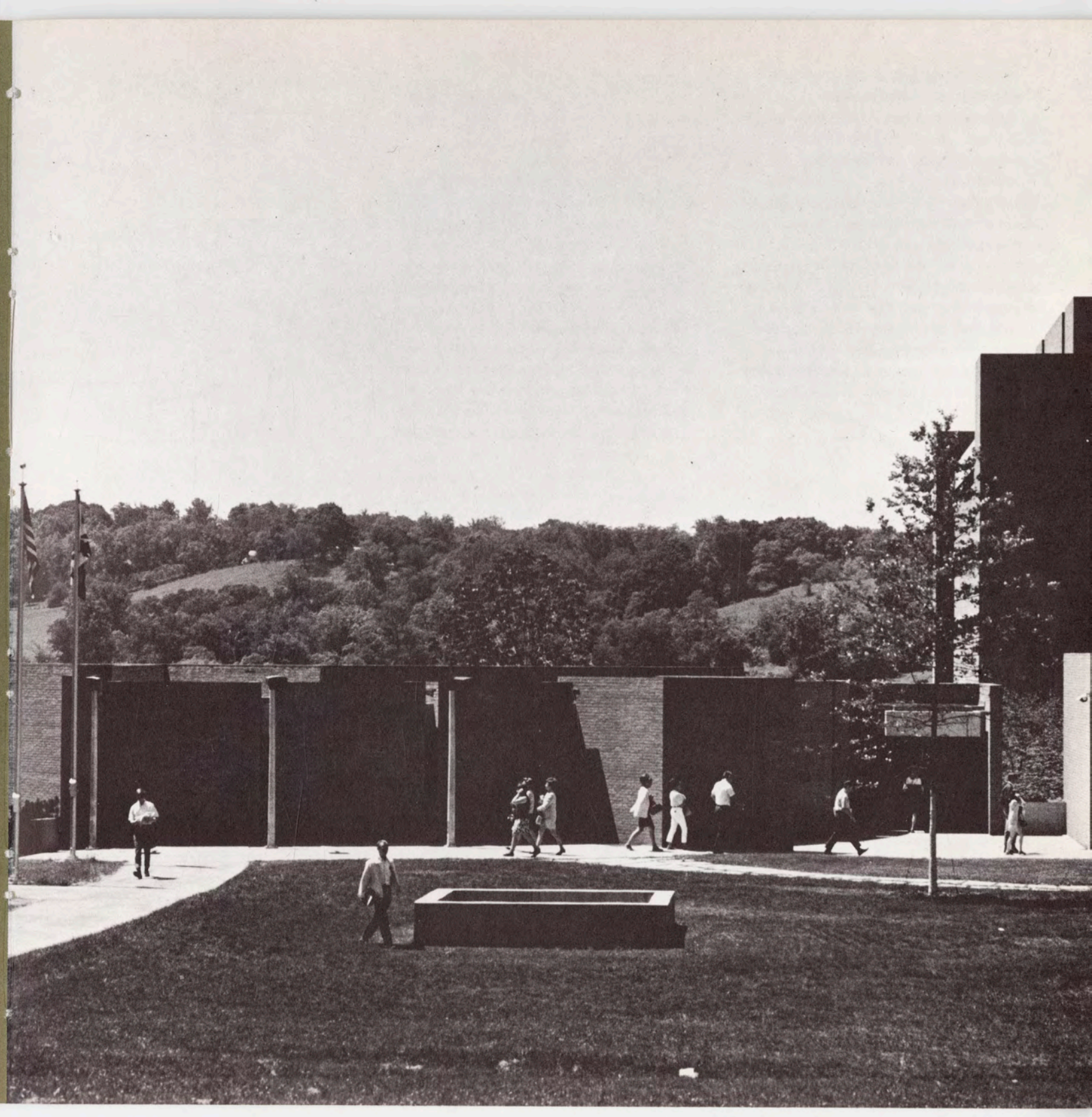
3 Site Location

-  Baltimore City
-  Patapsco State Park
-  Patapsco River
-  Colleges
-  High Schools
-  UMBC Site



2

Development Program



With the approval of the Board of Public Works in 1963, the actual planning process began. The firms of RTKL Inc., Architects and Planners, Rummel, Klepper and Kahl, Site Engineers and Egli and Gompf, Inc., Mechanical and Electrical Engineers, were given the task of developing a Master Plan for the new campus. Over the years, the University had reviewed the projected enrollment anticipated at such a campus, the general academic programs to be undertaken, and the facilities associated with meeting these needs. With this backlog of data available, a concentrated program of development was initiated.

Program

The initial program prepared by the University of Maryland in 1963 outlined the facilities necessary to accommodate an anticipated student enrollment of 20,000. The development of a campus of this size was estimated to require a minimum of twenty years. The University emphasized the need for campus development to follow a prescribed growth pattern so that at each stage of development the campus would appear and function as a complete entity.

Primarily, the Master Plan for UMBC must insure that the selected site will support facilities sufficient to accommodate the total anticipated enrollment. Secondly, the Plan must be flexible and able to accommodate the change and rapid expansion found on any new campus.

The following enrollment projections were provided by the University. They represent the enrollments anticipated during the initial years of campus development.

Projected Daytime Enrollments 1966-1974 (Fall Semester)

Year	Number of Students
1966	533
1967	1254
1968	1738
1969	2239
1970	2775
1971	3564
1972	4550
1973	5669
1974	6895

The success of the campus environment is largely dependent on the provision of functional and attractive physical facilities. Not only must the facilities be adequate to fulfill the program needs at any given time, but they must also provide the flexibility necessary in a rapidly expanding institution.

Curricula

The University of Maryland, Baltimore County Campus, planned to begin instruction in 1966 with an initial freshman class of approximately 700. With each succeeding year, courses would be added to complete the undergraduate curriculum. The academic disciplines will be organized initially into five divisions, which may later sub-divide: Division of Education, Division of Social Sciences (Economics, Geography, History, Political Science, Psychology, Sociology), Division of Humanities (Art, Classics, Dance, English, Foreign Languages, Music, Philosophy, Theatre), Division of Science (Biology, Chemistry), and Division of Mathematics (Mathematics, Physics). It is probable that these divisions will evolve into schools or colleges, so that each of them will have primary responsibility for a diverse group of students.

It is projected that large numbers of students who intend to obtain a degree from one of the professional schools of the University will spend their first years at UMBC. This will call for close cooperation among UMBC, College Park and the Baltimore City campus. The Baltimore County campus is ideally located for the interchange of students and faculty that will make such a relationship workable. UMBC will also be actively involved in continuing workshops and in-service training centers in the school systems of the surrounding area and in Baltimore City.

Courses to serve the Baltimore industrial-scientific community will be offered in applied mathematics; this will probably be the first graduate program at UMBC. Other programs will follow shortly in Psychology, Education, English and some of the sciences.

Physical Facilities

UMBC was initially conceived as a commuter campus and should be designed to provide for a majority of the students arriving by car. Facilities for a maximum of 13,300 cars must be anticipated. Public transportation to the campus is to be encouraged and the proposed rapid transit system which would follow the right-of-way owned by the Pennsylvania Railroad will make the campus convenient to many parts of the Baltimore area.

Pedestrian circulation and freedom of movement are of prime importance in designing the new campus. A separation of vehicular and pedestrian movement is desirable and should be included in every phase of development and design.

An attractive campus is basic to all phases of the facilities planned. An architectural style distinctive to the campus is desired. Ideally, the architectural style should reflect the character and achievements of the University of Maryland while expressing some identity with the region of the State in which the new campus is located. The facilities must be sufficient for the institution to achieve its educational objectives. Beyond this primary consideration, the design and materials of the buildings should produce a low average annual maintenance cost.

Reinforced concrete, exterior brick, minimal exposed glass and minimal roof slopes are subjects suggested by the University for consideration in selection of materials and standards for construction.

Building height will generally be three to five stories with elevators for use by staff, freight, and handicapped persons. The classrooms should be placed at the lowest level in the building or stacked in a separate wing. Offices should be planned for the upper floors, as narrow wings or a

separate building. Full attention must be given to the ease of servicing the building. Year-round use is to be expected for all facilities and will make total air conditioning essential. All major classroom facilities and undergraduate laboratories should follow a walk-up scheme. Academic buildings should be planned so that the initial phase of construction provides approximately 50,000 gross square feet of floor space. The building site must provide for expansion to approximately 200,000 gross square feet.

It will be necessary to construct buildings such as the library, student union, physical education facility, and administration building in phases as enrollment expands. If possible, the initial phase of construction should be in a location that will eventually serve the ultimate campus development.

Space Requirements

The following indicates the projected space requirements for the academic program during various stages of growth. These figures do not include space allowances for auxiliary and supporting facilities such as administrative and faculty offices, research facilities and other related needs.

Projected Space Requirements

Number of Students	500 (gross sq. ft.)	5,000 (gross sq. ft.)	20,000 (gross sq. ft.)
Academic	33,700	373,000	1,857,000
Library	11,100	90,000	250,000
Health Service	650	10,000	25,000
Cafeteria & Union	8,000	70,000	200,000
Physical Education	25,000	50,000	100,000
Auditorium	—	20,000	20,000
Plant Maintenance	3,300	37,000	148,000
Total	81,750	650,000	2,600,000
Sq. Ft./Student	162	130	130

Note: These space requirements do not include auxiliary facilities such as dormitory, dining hall and warehouse/storage buildings.

3

The Master Plan



The previous sections have outlined the various factors which preceded the development of the Master Plan for the University of Maryland Baltimore County campus and which lay the ground work for planning. This section of the report presents a series of proposed plans, their development and the final Master Plan which constitutes a comprehensive guide for University development.

Goals and Objectives

The major goals and objectives of the Master Plan are straight -forward, though the process of implementation and development is complex. In general, the objectives of the Plan are:

- to establish guidelines for development of a new commuter campus on the given site, projecting an ultimate student population of 20,000 and providing an environment which is conducive to intellectual and social stimulation and growth;
- to provide a comprehensive plan which includes all functional elements. (The scope of planning includes the broader community planning considerations and geographic areas, as well as individual departmental use or building site. In terms of functional elements, comprehensiveness requires that all facets of the University be examined and integrated into the plan.);
- to outline a system of growth, for all elements of the plan;
- to provide a basic design skeleton which allows for flexibility: a firm over -all structure within which detailed design decisions can vary as programs are defined;
- to provide a plan which is practical and achievable for both short and long -range objectives;
- to establish design principles and controls which will insure logical and significant continuity and a hierarchy of internal and external space uses;
- to integrate horizontal and vertical circulation and distribution systems for maximum efficiency and flexibility in use and for maximum economy in construction.

Summary of Development

Given the responsibility for the development of a new campus for the University of Maryland, the primary decisions of location and campus form were the first to be confronted. Working in close coordination with the University, a series of alternatives evolved. The following alternatives of on-site building locations were presented to the University for consideration: Alternative 1—Valley Location; Alternative 2—Hilltop Location; Alternative 3—Hillside Location.

The valley site offers a pleasant backdrop of hills as a campus setting and an economic advantage in construction cost. Expansion on this site, however, is limited in two dimensions and would require extensive roadwork and utility improvements in the early stages of development. In the total economic picture, combined utility and expansion costs prove prohibitive.

The hilltop location would provide the most dramatic site for the campus. Considering long-range development, however, it is evident that insufficient area is available for future expansion.

The relationship of parking areas to academic structures on this site is undesirable.

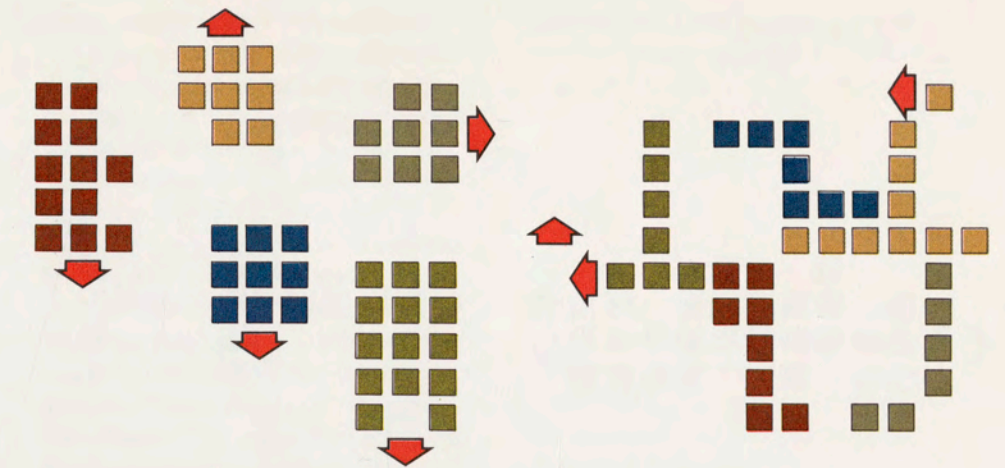
The hillside location allows the University the opportunity to develop first the central part of the campus and then opens the way to development in all directions, presenting the fewest possible barriers to growth. This site also offers the possibility of multi-level

entrances to the buildings and good utilization of interior space.

The University, after consideration of the various alternatives, chose to adopt the hillside location. A cross campus walking distance of ten minutes was requested by the University. The size of the campus and its compactness were thus to be limited by the above as well as the requirement that all major classroom facilities and undergraduate laboratories should follow a walk-up scheme.

Plan Organization

After consideration of the various site development proposals, the alternative concepts basic to Master Plan organization were outlined and presented to the University. These various concepts include:

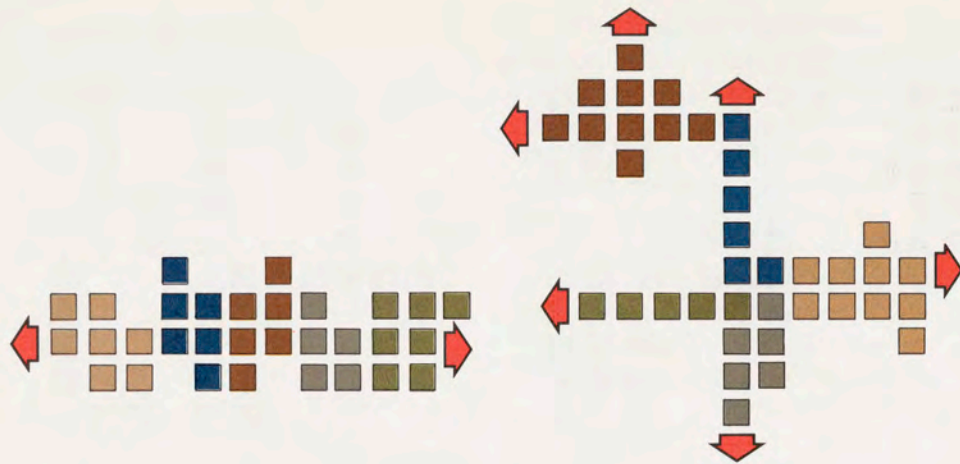


Land Use Concept

Specific areas of the site are designated or zoned for a particular type of use. Any expansion of a specific use must occur within the allocated area. This is a basic land planning approach to the development of the University campus. Only those services necessary for a particular use need be supplied to any given area. Elements sharing a common interest are within close contact of each other and can take full advantage of each others' growth. Interdepartmental communication becomes of secondary importance in the land use organization.

Space Creation Concept

The buildings are arranged to define spaces such as quadrangles, circles or courtyards. These exterior spaces, then, determine the development pattern of the campus. The relation of the spaces to the buildings becomes the controlling factor. Attaching most of the importance to the definition of exterior space is a basic landscape architectural approach to planning.



Acting upon the recommendations put forth by the campus planners, the University decided that development of the Master Plan should follow a systems development pattern. This concept allows flexibility within a controlled growth pattern and provides good practical engineering outlines for development of grading and site utilities.

Image Creation Concept

This completely architectural attitude toward campus planning employs a total building design as a basis for the development of the campus. Architectural design style and detail become the guideposts for planning of the entire project. The creation of a visual image becomes the prime factor.

Systems Development Concept

The systems approach to planning begins with the definition of a specific method for the development of buildings and site. Growth of the project is related directly to fixed reference points and in accordance with the outlined principles of development. This basic urban design approach allows expansion in any direction while keeping the essential relationships among all elements of the campus. Once the system has been established, expansion becomes a relatively easy, orderly procedure. Utility service is simplified and standard methods of development and construction are employed.

Concept Development

The first design for the UMBC Master Plan proposed development based on a system of grid lines and control points. This grid, which paralleled the contours of the hillside, formed a series of 250 foot squares which constitute the basic building unit of the campus. Within these 250 foot squares would be placed the major academic buildings. This pattern was divided into two groups as a result of topographic considerations and consequently set up a strong central axis.

Around the grid system a loop or ring road was proposed with extensions into the campus. Access to the ring road would be from four directions with major emphasis on the Baltimore Beltway. The central axis established by the grid would be reinforced by location of a formal campus entry and a dominant campus building, the library. All the academic areas, as well as administration and student services, would be located within the ring road. Located outside the ring road would be areas of plant maintenance, physical education and a large field house.

After presentation to the University of the first Master Plan, a preliminary

outline of the scheme was submitted to the State Planning Department, the Department of Public Improvements and the Legislature. Schematic plans for the first phase academic buildings were also submitted. These buildings consisted primarily of large areas of assignable open space located between vertical service towers containing stairs, elevators and utilities. The buildings were zoned for high density academic use on the lower ground floors with low density faculty offices on the upper levels. The Master Plan was under continual development during this period. The Plan at this stage continued to emphasize access from the Beltway. The ring road was studied and more closely coordinated with site and topographic conditions. An outline of building spaces was established around avenues that followed the grid lines. The library and other focal buildings were treated as contrasting masses. Major areas of open spaces were introduced into the Plan, including a library plaza and central common. Certain athletic facilities and plant maintenance were moved inside the ring road in order to condense the building area and shorten the travel distance to various facilities. Finally, certain existing well-developed wooded areas were incorporated into the Master Plan as part of an open space and land preservation scheme.

After approval of the preliminary Master Plan by the Board of Regents of the University of Maryland, a process was established to refine the preliminary Master Plan into a document which would form the basis for action in developing the University campus. This process required detailed consideration of all aspects of the Plan. Each aspect was isolated and all policy decisions were

presented in outline to the University and the Department of Public Improvements for review.

During this phase a further review and revision of the Master Plan was undertaken. The major point of access to the campus was shifted from the Baltimore Beltway to the proposed Interstate 95 and Rolling Road. With the major point of access shifted to the south, it became necessary to organize the formal drop-off and reorient the library to the natural ridge on the site which runs from the center of the campus to the southeast. This shift required the adjustment of the avenues for better relation to topography and emphasized the need for establishing certain grades and spot elevations that would relate to building heights and floor levels. The open space program was further developed and required the shifting of various athletic facilities in order to reinforce the entry approach. The site was further developed to include parking and physical education playing fields.

On the basis of the reviews, certain refinements, adjustments and revisions were incorporated into a final recommended Master Plan. The following is an in-depth development of that Plan which should serve as a useful tool and form the basis for action in developing the University campus.

A Master Plan

The Master Plan is the result of forces imposed by the program, the site and sound principles of development. The general campus organization is controlled by a system of grid lines which are related to the topographic conditions imposed by the site. These grid lines are located parallel or perpendicular to the contours of the land and identify the basic building unit for campus development. The primary academic areas are concentrated to reinforce the strong urban atmosphere which would exist in the heart of the campus and to ease the burden of utility development. The concentration of structures has allowed a tunnel system to develop which would not only house mechanical utility lines but would also act as service connections between buildings. The development of on-site lakes was encouraged to off-set the construction of downstream storm drainage facilities.

The UMBC campus is designed to include all the required academic space within the ring road. This area of high-density academic use is divided into a north and south campus by a central common. The central common is to be the location of the major focal structures for the campus. It includes the library, student services building, administration building and an auditorium and communications center. This area is the hub of the academic experience at UMBC.

4 General Campus Organization

-  Buildings
-  Roads and Parking
-  Open Space
-  Water Ways



Land Use

The clear and concise organization of a Master Plan is basic to the success of a university campus. The synthesis of the Master Plan is usually apparent in the land use or functional organization of that Plan. The land use plan for UMBC identifies the general location and amount of land allocated for the

major functions of the University. The primary functions which are examined here include:

- the major building area;
- the areas devoted to athletic fields and game courts;
- the major roads, rights-of-way and parking areas;
- the areas of dedicated open space;
- the residual open space.

The following is a breakdown of these areas according to size and relative usage, a useful tool in establishing the adequacy of the area designated to each use and to allow for the optimum usage of site resources.

Land Use Inventory

		Acreage	% Usage
Building Area:	Includes all structures, avenues, squares, court-yards and pedestrian cir-culation pathways.	56.14	13
Athletic Areas:	Includes all athletic fields, tennis courts, game areas and intramural fields.	73.32	16
Vehicular System:	Includes all major roads, rights-of-way, parking areas and service roads.	137.64	30
Dedicated Open Space:	Includes buffer strips, drainage ways and areas unsuitable as building sites.	166.80	36
Residual Open Space:	Includes the areas between parking lots, lakes, etc.	34.37	5
TOTAL SITE AREA		468.27	100%

5 Land Use Plan

- Buildings
- Roads and Parking
- Residual Open Space
- Dedicated Open Space
- Athletic Area
- Water Ways



From the information on land use quantities a number of conditions can be noted. With an ultimate campus population of 20,000 students in an area of approximately fifty-six acres there will exist a strong urban atmosphere. The built-up area will have a usage density of over 350 students per acre. This compares favorably with other universities of a similar nature. An area allocation of 400 square feet per car is required to provide for parking, service roads and landscape treatment.

The land use plan provides enough space for on-grade storage of nearly 9000 cars. This leaves approximately 4000 cars which would tentatively require storage in parking structures. On-grade parking areas should be constructed to allow for the future provision of additional levels of parking with grade approaches to each level. At the point in time when University growth would suggest construction of parking decks, a value judgment will have to be made comparing the construction cost that would be incurred versus the value of deleting space from other land uses.

It must be recognized that the allocation of land use quantities does not fully solve the architectural and planning problems of programming and development. The competition among the various uses is not only for the allocation of sufficient area, but also for site location. The introduction of other land uses into the existing plan will require a reassessment of locational priorities within the UMBC site.

Grid Control Plan

The underlying system for development control of the University of Maryland Baltimore County campus is based on a series of grid lines and control points which make up the primary structure of the Master Plan. The system is formed by two major grids: one on the north side of the campus and one on the south. The two grids are askew to each other and meet at the central focal point of the campus. Grid lines form a pattern of 250 foot squares. This pattern exerts a major influence on the Plan in that the movement of utilities, services, and pedestrians are organized to follow the grid. Organized within the grid are the major buildings or court yards: those within the north grid forming the north campus and those within the south grid forming the south campus. Where the individual grid lines cross, a network of control points has been established, each point with a set elevation or grade. Having established this grid control plan, the University will be able to undertake construction in any part of the campus at any time with a clear frame of reference, relating each grade point or coordinate to the total overall plan.

6 Grid Control Plan

- Buildings
- Roads and Parking
- Open Space
- Water Ways
- Grid







Site Development

The University of Maryland Baltimore County campus is situated southwest of Baltimore City on a site of approximately 476 acres. It is located adjacent to the existing Baltimore Beltway, Interstate 695, which circles the city and links with the Harbor Tunnel. The property lies generally between the Baltimore Beltway and Rolling Road, and between Wilkens Avenue and Sulphur Spring - Shelbourne Roads. All these roads are under the jurisdiction of the Maryland State Roads Commission except Sulphur Spring and Shelbourne Roads which are under the jurisdiction of Baltimore County. The Maryland State Roads Commission is presently planning the construction of I-95 south of the campus and the improvement of Rolling Road.

The site originally consisted of cleared farm land with scattered trees, residences, and out-buildings. The terrain is of a rolling nature with slopes ranging generally from eight to twenty per cent. Land elevations within the tract range from approximately elevation 100 to 300. Five drainage courses flow south-easterly through the site and discharge into Herbert Run to the southeast; these streams tend to subdivide the land into development areas.

The site is underlain on the north-western half by gabbro rock and on the southeastern half by "Relay Quartz Diorite" and a small area of "Baltimore Gneiss". No outcrops appear on the

7 External Utilities

-  Water
-  Electrical
-  Gas
-  Sewer






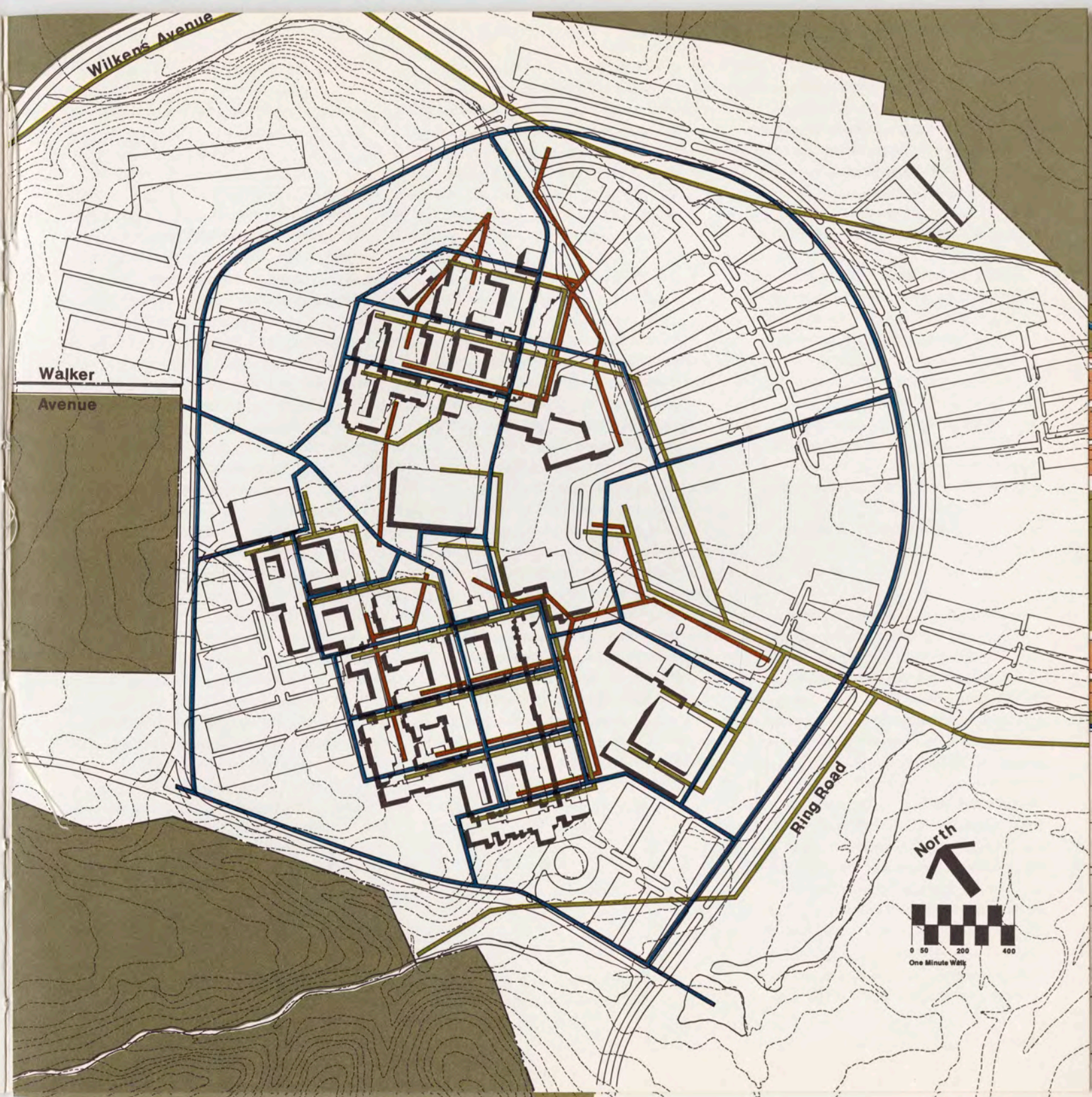
surface except in the stream bed along Wilkens Avenue. This rock is well below the surface elevation of the property adjacent to it. Judging from experience in other parts of the Baltimore area underlain by these rock formations, the residual soil and soft decomposed rock probably occur from eight to twenty feet in depth above the bed rock. The soils are residual except for a small area of alluvium adjacent to the stream bed in the eastern part of the property. Foundation conditions should be good throughout the property for normal spread footings and/or caisson piles.

The development of a system of site utilities is important to the orderly construction of a campus. At UMBC, the locations of the site utilities, which include water, sewerage and storm drainage, are controlled by the grid framework. A separate but integral part of the utility scheme is a network of mechanical support tunnels which link the various buildings and provide the necessary housing for the intricate mechanical and communications services.

The site lies at the south extremity of the Baltimore City Water Bureau's Western Third Zone which terminates

8 Ultimate Utility Plan

-  Water
-  Sewerage
-  Storm Drainage



at Shelbourne Road. Water mains of this system presently exist in Wilkens Avenue and Rolling Road. Water service should be taken from Wilkens Avenue or Rolling Road, although it will be necessary to provide pressure reducing valves because the pressure for this system is at a topographic elevation of 267 which would cause damaging high pressures.

The water supply and distribution system for the campus will be developed by bringing a supply main to the center of the campus complex with extensions looping the various buildings and areas to minimize the chance of interruption of service. The supply main will be extended into and along the avenues in the south campus and into the north campus area as development occurs. Fire hydrants and a secondary network of small diameter mains for supplementary water uses will be provided as required.

The sanitary sewerage system of Baltimore County in the vicinity of the site follows Herbert Run south from Shelbourne Road. A sewer exists on the site in Herbert Run east of Walker Avenue from Shelbourne Road to Wilkens Avenue serving the eastern third of the site. The sanitary sewers required to serve the western two-thirds of the property and the drainage areas above it should extend from the existing sewer below Shelbourne Road and be constructed through the property to the northwest.

The sewerage system for the campus and the western two-thirds of the site

will be developed by bringing a sewer from the Herbert Run interceptor, south of Shelbourne Road, along the drainage course south and west of the campus building area. The upper portion of this sewer will serve the campus complex.

The entire tract drains in a south-easterly direction via five natural drainage courses which join within the property and cross Shelbourne Road in two existing culverts. The culverts are presently inadequate and would not support extensive campus development. A storm drainage system will be required on-site and will be more extensive than normal due to the number of drainage courses traversing the tract and the steep grades of the land.

The storm drainage system for the campus will serve only areas within the property and will be developed by installing drains to serve the building complex area, parking areas and roads. These drain into natural drainage courses at their nearest points consistent with the site development requirements of the individual areas.

Mechanical Services

To determine the most advantageous methods of providing heating and cooling services to the new campus buildings, economic studies were made of the following: the various plant arrangements—individual building plants, group plants, and a central station; of the various fuels - gas alone, gas and oil combined, both heavy and light oil, coal and electricity; of the cycles to provide cooling media for campus distribution; of the media for carrying heat to the buildings; of methods of distribution of these services to the buildings.

Studies of fuels and plant arrangements and heating and cooling media included analysis of each item for overall economy, flexibility and growth and reliability. The engineering data upon which these criteria were evaluated are highly technical and are not within the scope of this Master Plan report.

A central station has been recommended as a source for both the heating and cooling media. This would permit a consolidation of labor effort, a reduction in total capacity afforded by diversity in demands and effected economy in fuel storage and handling. It is also possible to include in the central station the installation of a central control and supervisory system permitting the most advantageous utilization of the heating and cooling facilities throughout the campus.

The media suggested for heating is high temperature, high pressure water

which would provide for economical distribution and would meet the limitations of the terrain. The cooling media would be chilled water generated from the central station.

The central station anticipated for the final campus would create an unusual burden upon the first several buildings to be constructed; therefore, a small plant limited to services for 350,000 square feet of building space is planned for the initial building program. This small plant will be operated on gas on an automatic interruptible schedule using oil for stand-by. Refrigeration in this small plant will be 1,000 absorption chiller using gas as the basic fuel.

The first phase of the ultimate central station will be put into service when the campus buildings pass 350,000 square feet. Additional phases for the central station will be on pre-planned additions and will serve the projected long-range ultimate expansion of the campus. With the completion of the first stage of the central plant in 1970, the original small plant will become a subordinate distribution center to continue those services originating from it. The ultimate central station will use interruptible service gas and light oil for stand-by suitable to the load conditions. This arrangement provides the best economical arrangement based upon the current price structure and the best use of planned labor.

The Baltimore Gas and Electric Company has a gas distribution system

in the general area of the campus with a high pressure main in Rolling Road and a high pressure main in Wilkens Avenue east of Rolling Road. A low pressure main exists eastward from Linden Avenue and Shelbourne Road. Therefore, adequate capacity for service to the institution for gas heating, laboratory and kitchen requirements is available.

To provide maximum use of their gas distributing facilities the Baltimore Gas and Electric Company has encouraged the use of gas during off peak periods. This would be accomplished through the use of another fuel such as oil used in place of gas during peak demand periods. This service is called interruptible service. This interruptible service is again divided into automatic interruptible service or interruptible service. Automatic interruptible service is controlled through outdoor sensing devices which change fuel burning operations automatically. Interruptible service is handled through 12-hour notice to change from gas fuel to the other stand-by fuel. Past experience indicates that this occurs a total of 30 days in each heating season.

An economic analysis for the first phase of the Central Heating and Cooling Plant and careful studies of the rate schedules for gas indicated that the interruptible service schedule with fuel oil for stand-by was desirable.

The University buildings are to be supplied electricity at 13,200 volts.

under schedule T, by a single overhead feeder of the Baltimore Gas and Electric Company.

Initially, a temporary 13,200 volt switching and metering structure should be constructed and three overhead feeders installed as required to serve the first buildings.

A 40,000 KVA, 33,000 volt substation with secondary voltages of 13,200 volts for campus distribution and 4,160 volts for air conditioning compressors and other large motors will form the major electrical supply system for the campus. The substation will be supplied by two 33,000 volt feeders from the Baltimore Gas and Electric Company, either of which will carry the load of the substation.

Campus distribution will eventually be entirely underground with a multi-loop system supplying pad-mounted unit substations located in vaults adjacent to the tunnels. Secondary feeders from these substations will supply power to the buildings at a utilization voltage of 480/277 volts. Lighting and power loads within the buildings will be supplied at 480/277 volts while dry transformers at 480-208 Y/120 volts will supply outlets, incandescent lighting and fractional horsepower motor loads.

Tunnel System

To provide a suitable service corridor for the intricate utility and communication services for a modern university, a system of tunnels has been selected for the best flexibility and long-range economy. These tunnels will be arranged with continuous rack systems to support the heating supply and return piping, chilled water supply, the multiple telephone cables, fire alarm cables, central control supervisory systems and gas service for the initial stages. Space will be provided for additional future racks to carry cables for television, cables for computer circuits and data retrieval circuits, piping systems for central compressed air and other laboratory gases, and a reasonable facility for such other services as developments would bring.

In the floor of the tunnel, ducts will be cast for the 13 kv electric loop and additional ducts for second and third loops, when growth in load requires it. Manholes for splices and for pulling cable will be located in the floor of the tunnel as needed. Underground electrical substations will be constructed adjacent to the tunnel, each to serve, generally, two adjacent buildings by the extension of secondary circuits through the tunnel branches.

Additional width has been planned for the tunnel so the materials can be handled between buildings through the tunnel system. Arrangement of the utility service in the tunnel racks will provide

for accessibility for maintenance, repair and replacement, as well as for the connection of additional buildings and the installation of additional services.

9 Tunnel System

-  Buildings
-  Roads and Parking
-  Open Space
-  Water Ways
-  Tunnels



Vehicular Access

Vehicular access to the University of Maryland Baltimore County campus has been designed to serve the entire Baltimore metropolitan area. Major campus access has been oriented toward the existing and proposed expressway system with lesser emphasis on the local feeder roads. The campus access system will require:

- a connection to Metropolitan Boulevard (Rolling Road) and I-95;
- a connection to I-695;
- connections to Westland, Wilkens and Hilltop;
- a campus loop road.

Access to I-95 will be made via a connection to Metropolitan Boulevard (Rolling Road) and must be considered as the most important means of access to the UMBC site. The Maryland State Roads Commission is presently planning the construction of I-95 south of the campus and the improvement of Rolling Road be relocated to the east in order to minimize damage to developed properties along existing Rolling Road and to provide more undeveloped acreage for the proposed interchange at I-95 and Rolling Road.

The connecting road from Metropolitan Boulevard to the campus will be a dual highway consisting of two roadways and a median. Directional high speed connections oriented toward I-95 will be required at Metropolitan Boulevard. Initial construction of the dual highway and a temporary at-grade intersection at Rolling Road should be constructed as soon as the State Roads Commission completes I-95 and Rolling Road. In order to maintain adequate access to the campus, I-95 and Rolling Road should be opened to traffic by 1972.

The connection to I-695 (Baltimore Beltway) will consist of two additional ramps incorporated as part of the existing Wilkens Avenue Interchange. These ramps will lead directly from the Beltway to the campus loop road. The ramp carrying traffic to the campus will require a bridge over Wilkens Avenue and a tunnel under the Beltway. Maintenance of Beltway traffic during the construction of this underpass will be very difficult and costly.

Because of the extremely large desire for access from the Baltimore Beltway, the State Roads Commission should be urged to complete this connection and have it opened to traffic by 1984. Until that time, vehicles approaching the campus on the Beltway would utilize the existing ramp connections at Wilkens Avenue and Edmondson Avenue.

The arterial road system, both existing and planned, will serve as a means of access for communities in the vicinity of UMBC. Three connections to the campus loop road are being provided to accommodate local access to the campus. One section would connect the campus loop road with Westland Boulevard on the southeast side of the campus. Planned county improvements to Westland Boulevard and Shelbourne Avenue will provide access for Halethorpe, Lansdowne and the northern section of Anne Arundel County. Existing Walker Avenue may be utilized as the access road for this area until the parking spaces outside of the campus loop road are developed, at which time the Westland connection should be constructed.

Another connection is located on the north side of the campus and extends from the campus loop road to Wilkens Avenue along the alignment of existing Walker Avenue. This point of access will serve the western and southwestern portions of Baltimore City via Wilkens Avenue and the Baltimore Beltway until such time as the connection to I-695 is constructed. This road will be built during the early stages of campus development.

The Hilltop connection is located on the northwest side of the campus and is actually an extension of Hilltop Road from Wilkens Avenue to the campus loop road. Baltimore County is presently planning to realign Wilkens Avenue along the route of Valley Road and to

improve Ingleside Avenue and Bloomsbury Avenue from Edmondson Avenue to the Caton Loudon Railroad. Baltimore County should be requested to extend this improvement southerly along the line of Hilltop Road to Wilkens Avenue. This road system will serve the Catonsville and Ellicott City areas and portions of Howard and Anne Arundel counties.

The above described connector roads all serve as points of access to the campus loop road. This loop road will act as a collector-distributor road for all campus traffic and is vital to the smooth, efficient flow of traffic to parking lots and campus drop-off points.

For this reason and because of anticipated traffic volumes, it is recommended that the ultimate Master Plan include construction of a dual roadway system with a median for the entire length of the road.

Vehicular Circulation and Parking

Vehicular circulation for the UMBC campus will follow a loop or ring road around the main structures of the campus with drop-off points convenient to the main avenues of pedestrian circulation. Emphasis must be given to the development of the ultimate campus road system by degrees, starting in the early stages. On site campus roads should be designed to move traffic at a steady but relatively slow pace on gentle and continuous grades. The density of the campus building area is based on the normal distance that a student can be expected to walk between classes; thus, vehicular movement is for access to the campus rather than for movement between clusters of academic structures. Within the academic area, certain specified pedestrian routes will be graded and maintained as campus roads for occasional access of service vehicles, deliveries and fire trucks.

Parking will be staged to move outward from the center of the campus as additional academic structures are required. Interim parking areas may be placed on land subsequently designated for building areas, but care should be taken in their location to avoid areas designated for landscaping. All campus parking is not uniform in its requirements, and the categories by which it can be defined greatly determine the degree of emphasis each should receive

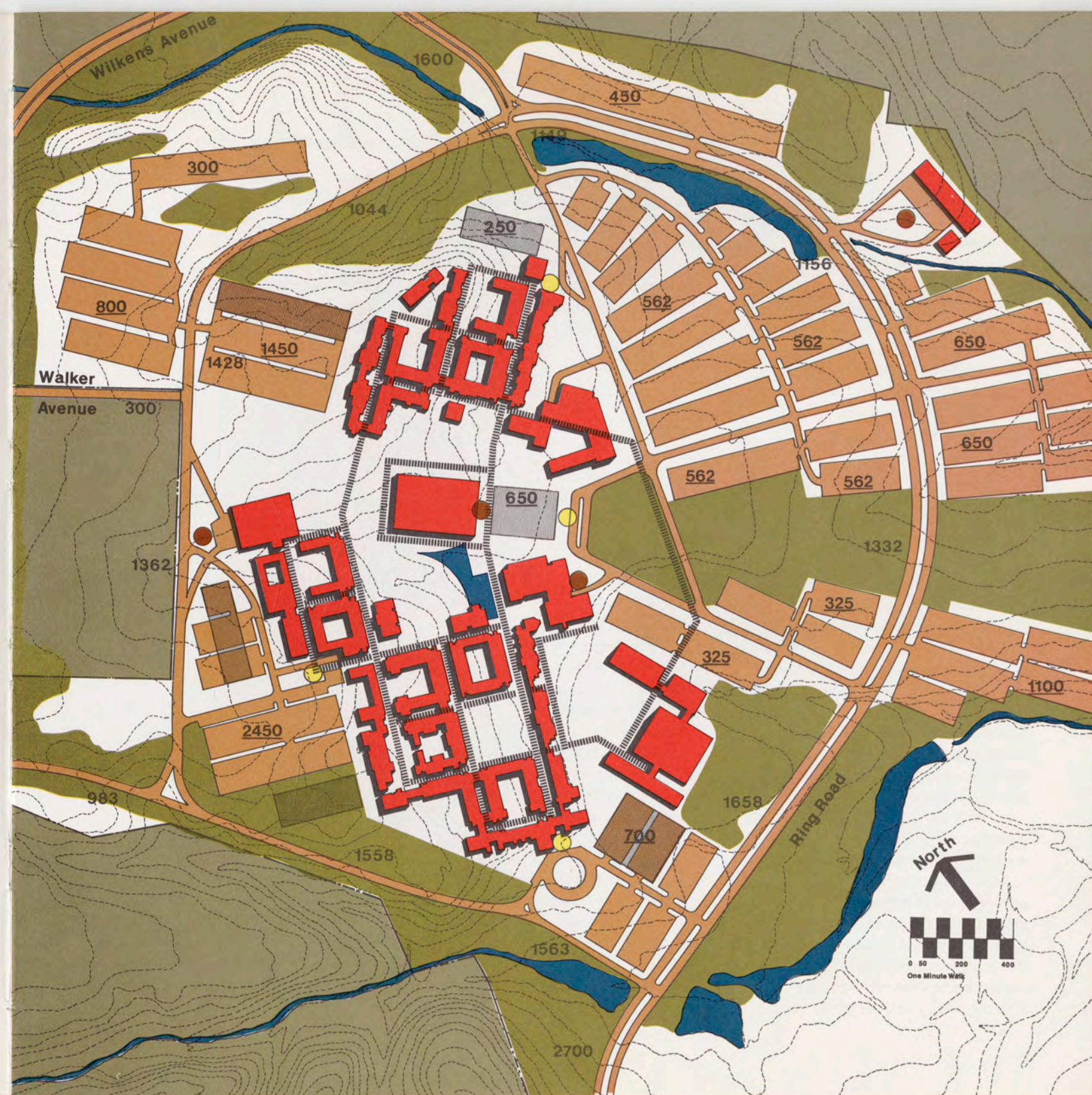
in locational consideration.

The accompanying drawing shows the location and proposed size of each parking facility, as well as the assignment of vehicles to the segments of the campus loop road during the morning peak hour. The distribution of parking spaces around the loop road in the ultimate development of the campus is fairly uniform. This is a desirable situation as, even with this distribution, several of the intersections between parking entrance roadways and the loop roadway will be heavily traveled.

Land allocated to vehicular circulation represents approximately one-seventh of the entire campus area. The vehicular circulation requirements when combined with the parking areas brings to 30 per cent that portion of the site devoted to the movement and storage of vehicles. Any expansion in the enrollment or changes in campus policy concerning the provision of on-site student housing will change the scale and context of traffic problems related to UMBC development. These considerations, combined with the contemplated service to the area by a new metropolitan mass transit system, will play a major role in the vehicular land use requirements for the campus.

10 Parking and Circulation

- Buildings
- Roads and Parking
- Open Space
- Water Ways
- Primary Pedestrian Movement
- Parking Structures
- Service
- Drop-Off Points
- Parking Capacity
- Morning Peak Hour Volumes



Physical Development Factors

The Master Plan for the UMBC campus purposely confines the academic area to a high density framework. This highly concentrated area would reflect its position as the hub of campus academic experience, just as the central city is the heart of the metropolitan area. The intense activity generated here in the academic center is an important stimulus to the learning experience.

The physical environment of the campus is planned as a systematic arrangement of buildings interwoven with carefully defined paths of pedestrian movement. The academic area has been planned to keep the cross campus walking distance at a comfortable ten minutes. This necessitates the use of high rise structures to fulfill the area requirements requested by the University. These buildings would be integrated into the hillside in order to facilitate the provision of entrances on more than one level and to retain and emphasize the rolling nature of the site. It is important to create and maintain a unified human scale in the buildings and spaces to provide the student with a sense of identity.

The architectural quality of the buildings should exhibit the design characteristics appropriate for a state university: simplicity, dignity, unity of design and human scale. The recommendation by the University for brick and concrete to be used as the major

building materials is an excellent one. These materials not only reflect an identity with the College Park campus, but also lend themselves to a variety of applications in contemporary design idioms. In contrast, the major focal buildings of the campus should be given stronger architectural emphasis and executed in a more distinctive material. Primary consideration should be given to the establishment of an architectural style distinctive to UMBC.

The relationship between significant features of the landscape and the physical development of the University is essential in providing a sense of order and continuity to the campus experience.

This tightly knit building complex has allowed for over one-third of the site to be designated as open space. Most of this space acts as a buffer zone and defines the campus as a working part of the surrounding community. The leisure spaces provided by the lakes, wooded areas and open lawns lend themselves to the creation of a pleasant, stimulating, academic environment when contrasted to the active urban character of the architecture.

The grid system used to establish the location of buildings and pedestrian systems also defines specific areas of open space. The character and continuity of the campus will depend to a great extent on the detailed treatment of these areas, on the provision of attractive and durable surfaces and plant material of good quality and size.

11 Landscaping Plan

-  Buildings
-  Roads and Parking
-  Water Ways
-  Formal Landscaping
-  Primary Open Space



The landscaping areas must reflect the character and functions of the roads and buildings they define. The total landscaping scheme should provide for the contrasts of quiet, intimate court-yards, areas for social interaction, formal entrances and natural woods, all arranged in accordance with the Master Plan.

The landscaping will be programmed to proceed in stages related to the construction of buildings and roads. General site planting and grading should proceed extensively in the early stages of construction, so that subsequent work may progress with a minimum of inconvenience. Areas needing extensive planting, such as the buffer zones, should be started at this time, so the plant materials can reach maturity as the campus grows. The existing stands of trees should be placed under the direction of a pertinent academic department for development and study. An area of the site adjacent to plant maintenance should be set aside for a site nursery.

The commons separating the library from the north and south campuses are the focal areas of open space. The character of the south commons is determined by an existing stream bordered by tall hardwood trees. The north commons is marked by the steepest hillside slope of the campus. These areas should provide a strong contrast of natural forms to rectilinear lines of the avenues. The acceptable lines of pedestrian movement should be emphasized by retaining walls and lines of planting. The large squares created by groups of buildings and the smaller open spaces within the quad-rangles should retain the natural land shapes but formalize them.

Relating to the entry road from the north, a small lake will be developed to help control storm water flow. It will be kept fairly open and will help define the northern campus entrance. To the south, a water-walk will be developed in a more intimate manner. It will be tree-lined and curving so that its ends can never be seen simultaneously.

The major entrance drives should be treated as tunnels of trees. All roads and parking facilities would be planted to define them linearly and screen them from the academic complexes.

The site lighting must be coordinated with the overall plan and related to the planting. Roadway and parking area lighting will be color corrected mercury vapour. In contrast, incandescent lighting will indicate drop-off and major turning areas. The pedestrian walkway lighting will be accomplished from the buildings defining the avenues or, in areas where no spill light is available, from low level luminaries. The library will be the major building to be flood-lighted. Park areas will receive special lighting not related to typical standards.

The pedestrian circulation framework for UMBC is organized around systems

of both horizontal and vertical movement. This framework is controlled and reinforced by the master grid plan. The location of all academic structures is related to the master grid plan which also designates the pedestrian movement paths about the campus. The grid control lines are located 250 feet on center in each direction with the buildings designed to set back from these grid lines to allow for paths of movement. The major avenues of circulation which parallel the existing grades are crossed by uphill connectors. At the intersections of these avenues and uphill connectors are located the principle points of vertical circulation.

These vertical connections will be used to distribute all forms of movement onto the various building levels. These vertical connectors are to be considered as independent of the assignable building area to afford fixed increments. They should have the ability of receiving corridors in two directions as well as permitting inter-building connections to be made. The provision of upper level connections between buildings should be utilized. This would allow for a more rapid and flexible system of circulation as well as providing safe, dry movement during inclement weather. The upper level connectors would also provide the flexibility necessary for the expansion of departmental space into adjacent structures, an important requirement for a new and rapidly expanding university.

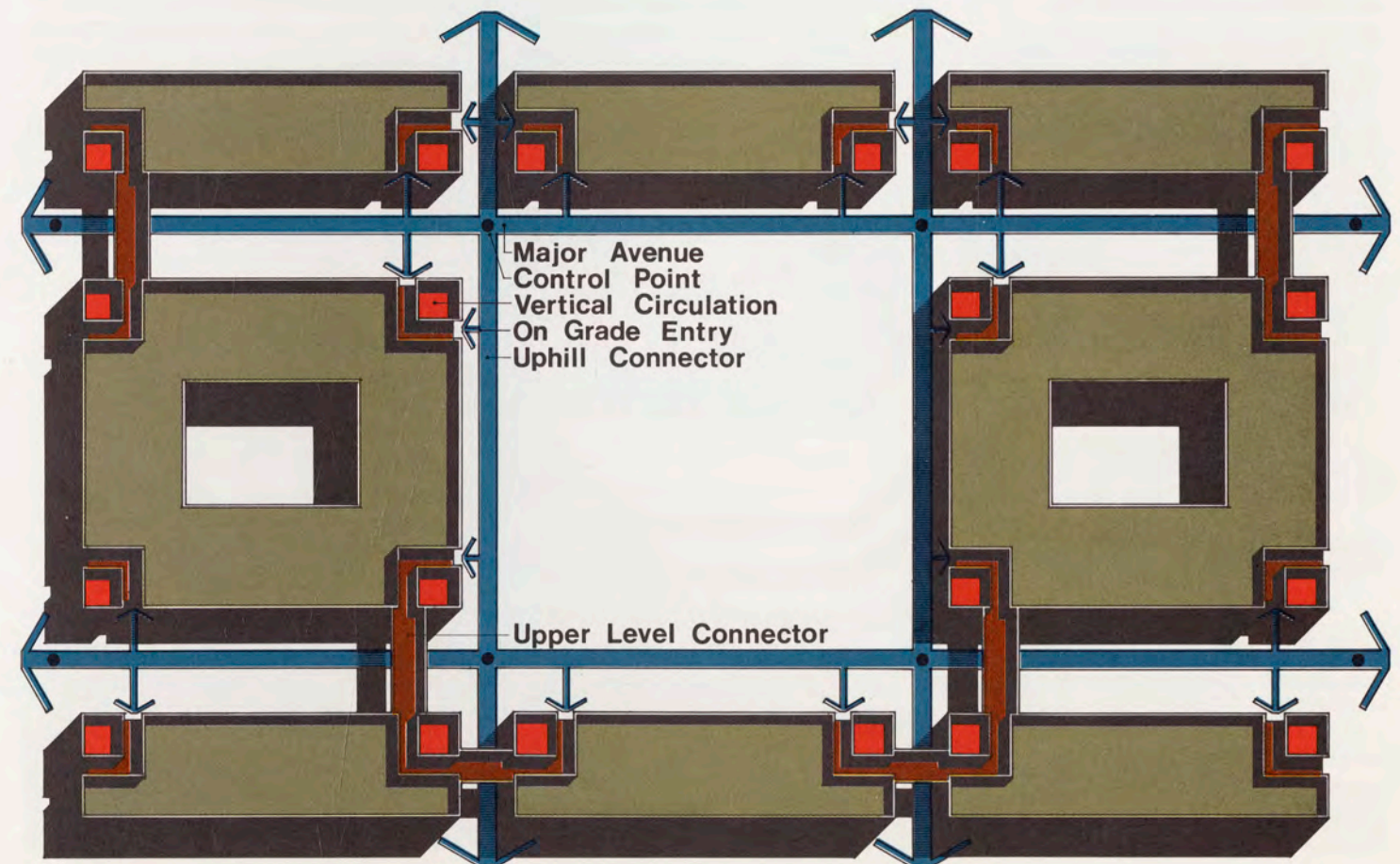
The academic structures which are proposed at UMBC will, in their lifetime, have a variety of uses and should be designed to allow for the utmost in flexibility. The designation of specific buildings for specific departmental assignments is not a part of this Master Plan. The overall policy of this Plan, however, is one of obtaining maximum interchangeability, independence and

interrelationships between the various departments of the University. The departmental relationships within the University are flexible and this should be allowed for in the design of the various buildings.

The typical academic building is represented as a quadrangle with the corner service-circulation towers linked by usable academic space. Corridors

between these towers may be in any desired location within this space or may be omitted entirely if a single use should occupy the entire floor. The spacing of the towers is based on a building code requirement that the maximum travel distance to the nearest exit is one hundred feet.

The typical quad has been designed to have five floors for a total of approxi-



mately 150,000 square feet. The grid control elevations in the Master Plan are set on the basis of multiples of twelve feet between avenues. If the floor to floor height of the quad structures could be kept to twelve feet, this would allow for the provision of entrances on two levels.

General classrooms for multipurpose use should be placed at the lowest level in the building with laboratories and faculty offices occupying upper level space.

The quadrangle arrangement provides the flexibility necessary for efficient academic use as well as providing the option of staged construction. The variations possible with the quad are a function of program requirements and

fiscal conditions. The growth pattern would follow a system of sequential construction beginning along the downhill avenue with two towers and the connecting academic space. The second stage would be a perpendicular wing, located closest to the library, connecting to an additional tower. This process would be duplicated in the third stage on the side away from the library. The final step would be to close the quadrangle on the uphill side.

The flexibility of the Master Plan and the quadrangle system provides for quad development to stop at any point. This would allow for wide variations in the state of development and a variety of building forms such as: single building between towers; linear building with

partial extensions; "L" or two winged building; "U" or three winged building; buildings with variation in wing height.

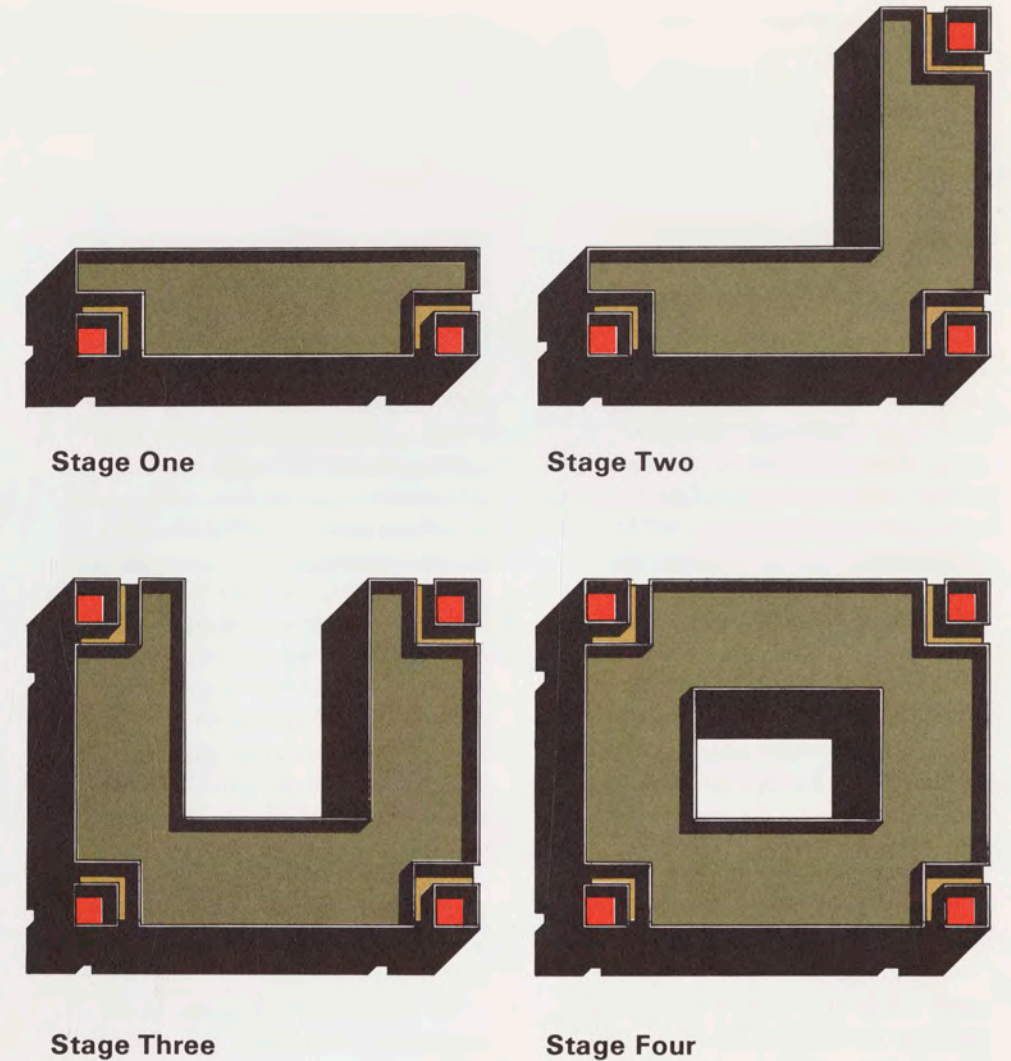
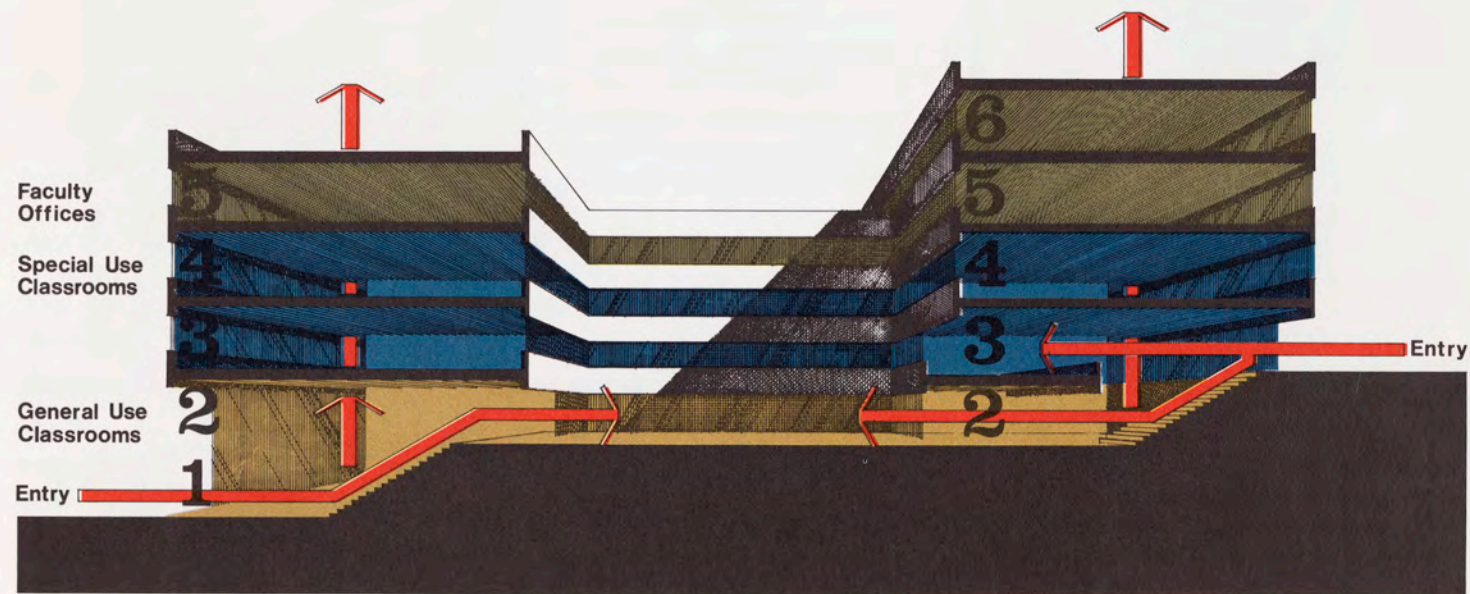
The dimensions of the quadrangle wings may vary as conditions dictate. The widths may be reduced as necessary although a dimension of less than thirty feet would seem hard to justify. The widths may increase as program needs dictate, although it is anticipated that few wings greater than seventy feet in width would be required. The continuity of the structures may be varied by setbacks, offsets, projections, overhangs, height variations or other devices subject to the satisfactory design resolution of the resultant space.

The buildings may be linked together to form areas of continuous interior

space so departments would not be limited to the size of a single quad. It is proposed that the maximum number of such links be constructed to increase departmental flexibility and inter-relationships. Connections or links would be related to the service-circulation towers. In no case should the links interfere with pedestrian movement at ground level.

The simple link would provide a covered enclosed passageway between buildings and across avenues. The extension link would continue the assignable space along the corridor between quads. The extension link is an intra-departmental device to be used where it is desirable to have greater continuity than the simple link provides.

The spaces around and within the quadrangles are the negative areas of an integral system of positive and negative volumes which are part of the Master Plan. The courtyards and avenues form the exterior spaces which will be the primary elements experienced by the student moving between buildings within the campus. The overall continuity of the avenues must dominate over variation. Setbacks and breaks, however, may occur and are desirable. The pace of the avenue must be related to the pedestrian's rate of movement and emphasis should be given to projections, planting, and avenue level detail. Equal attention to detail and planting in the courtyard areas will be required. Because of the concentration



Stage One

Stage Two

Stage Three

Stage Four

of the campus, attention to these elements is essential.

At most institutions of higher learning the library has become the symbolic center of student life; here, the scattered knowledge of all the disciplines is gathered together in a collective body. At UMBC, this symbolic meaning will be translated into visual significance, so that physically, as well as intellectually, the library will be the focal point of the campus.

In order to emphasize the dominance of this structure over the rest of the campus, the library will be centrally located between the two campus complexes, at the pivotal point of their main axes. The building will be viewed on axis from the main approach drive, appearing unquestionably as the major building on campus.

The site for the library is adjacent to a heavily wooded area in which rises a small spring-fed stream. The general slope is from west to east, affording a fine view of Baltimore from the higher ground. The proposed building should utilize these natural characteristics to the fullest, taking advantage of the pleasant slope of the hills to develop interesting building shapes.

The functional difference between this focal building and the academic buildings on the campus should be visually established. The initial selection of materials should be carefully considered to further the concept of contrast between certain building types,

as these decisions will influence the character of the campus for years to come. This would suggest a light stone for the library and other focal buildings and a brick of contrasting color for the academic buildings.

UMBC plans to begin operation with approximately 500 students, which will grow to 20,000. The library should correspond in growth to the expanding student population. To accomplish this, the library will be a phased structure built in three or four stages. Each phase should appear complete and aesthetically satisfying. The first stage is scheduled for construction in the second year of the campus building program. It is to house a library for approximately 2,500 students, with 100,000 volumes and seating for 667 students. The next stage would develop space for an additional 100,000 to 150,000 volumes, would double the number of seats and expand other services as necessary to provide for 5,000 students. The third stage will serve 10,000 students and have 500,000 volumes. The final stage anticipates 20,000 students on campus, 1,000,000 volumes in the library and a total gross area of approximately 400,000 square feet.

Because of its symbolic and visual importance, the library is expected to set a pattern for the other buildings. It

The communications center is a part of the academic function as well as being a facilities and operations center. All television and other electronic

communications will originate from here. As a lecture and publications center, the building will become a hub of both academic and operational functions. During all phases of campus development, the communications center will house the major auditorium facilities for the University.

The communications and lecture centers for the campus would be located around the central common in order to serve the greatest concentration of students. The spaces are distributed between the north and south campus areas, in order to facilitate maximum utilization. The lecture centers would not be assigned to individual departments. Facilities of varying size would be equipped for audio visual presentation.

Physical education facilities play an important part in a student's development. They should be located as near as possible to the central campus and not be displaced by parking requirements. Initial emphasis in the playing field program will be on a variety of uses, which allows demand and utilization patterns to control future development.

Summary

The Master Plan for the University of Maryland Baltimore County campus provides the flexibility necessary to accommodate the rapid growth of a new university. A number of development principles evolved which would give direction to future growth. The principle lines for control of campus development follow the contours of the land in a manner that would allow for the utilization of the site without major excavation or fill, thus minimizing site preparation costs. The natural elevations have been used to form an attractive setting, both for the initial years of development and for the long term campus plan. The physical education, recreation and outdoor activities areas would be developed on the more gently sloping well drained land, requiring a minimum of grading and site preparation.

The proposed utilization of the site would allow for the introduction of great variety in the size and shape of buildings. This would enable the University to meet its needs without restriction on the stage at which a part or all of a particular building site might be utilized. The total building site is considerably more compact than the College Park campus of the University. This facilitates the reduction of costs for utilities and services. The close proximity of the various buildings will minimize the annual costs associated with landscaping and grounds maintenance.

A basic concept of the Plan is the removal of vehicular traffic from the academic area of the campus in order that students may be able to move freely between classes without crossing roadways.

The principal aspects of the Master Plan are presented above. The Plan, however, is one in which the University

will have the opportunity, year by year, to select the specific locations for the buildings that are to be added in meeting the needs of an expanding institution.

Comparison of UMBC and College Park

The purpose of this comparison is to relate the known spatial and functional conditions of the College Park campus to distances which will be encountered at the Baltimore County campus. This is done in order that the nature and size of the UMBC campus may be more clearly visualized.

In 1964, when the initial planning began on the Baltimore County campus, the College Park campus had an enrollment slightly in excess of 20,000 students. The academic requirements, therefore, were considered substantially equal to those which would be found at UMBC.

The College Park campus is planned around a central quadrangle which is approximately 500 feet wide and 1200 feet long. The total distance across campus, from engineering through Fine Arts, is nearly 3000 feet. At the Baltimore County campus the central common on which the library is located is approximately 500 feet wide and 750 feet long. The extreme dimensions of the building area are approximately 2300 feet by 1600 feet. The extreme distances at Baltimore County will be substantially less than those at College Park; however, the basic cross campus connections are not substantially different. At College Park the extreme distances from library to parking range from 2500 feet to 3000 feet while UMBC varies from 1800 feet to 2800 feet. From this brief comparison, one is better able to understand the scale of the campus - a high density campus which allows ease of circulation and provides pedestrian movement within a specified time period.

12 UMBC - College Park Comparison

- UMBC Buildings
- College Park Buildings



4

Master Plan Implementation



Since conception, the construction of physical facilities at the Baltimore County campus has advanced at a strong rate, reflecting the pressure being placed on the University. Over the years the physical plant has grown, the enrollment has increased and various changes have occurred. This section concerns itself with these developments.

Present Development

The Master Plan, which was adopted by the University, has remained the determining force in the development of the Baltimore County campus. The Plan has proven its flexibility and has withstood the continual development and change found on the new campus. There has been little deviation from the fundamental concepts put forth in the Master Plan. This is not to say that change has not occurred. A plan must be flexible and able to accept variation. The original location of the facilities set aside for physical education has been shifted to preserve wooded areas. The ring road and campus drop-off points have taken on somewhat different locations, thus necessitating their redesign. A new requirement for residential facilities has been introduced and accommodated into the framework of the Master Plan. Throughout these changes, the Master Plan has remained intact and continues to exert a major force on the physical development of the campus.

The University of Maryland Baltimore County campus began as an idea, became a dream and is now a reality. The 1969 enrollment exceeded 1700 with a physical plant in excess of 290,000 square feet. The demand for space and new facilities shows little indication of slackening. The University is presently contemplating the construction of a number of new buildings. At present, planning is underway on the second phase of the library, additional academic

structures and a 400-600 bed dormitory. A variety of facilities is presently in use, under construction or under detailed planning. The following is a summary of these facilities.

BUILDINGS COMPLETED AND IN USE

Building	Gross Area in Sq. Ft.	Date Completed	Architects-Engineers
First Phase Buildings			
Multi-Purpose Building	39,000	Sept. 1966	RTKL INC. - Architects Rummel, Klepper and Kahl Egli and Gompf, Inc. Van Rensselaer P. Saxe
Lecture Hall	6,000		
Classroom-Faculty Office Building	62,000		
Hillcrest (Administration)	24,500		
Utility Barns (Maintenance and Grounds, Storage)		Remodeled	Existing
Student Activities Building	8,100	Oct. 1967	RTKL INC. - Architects Rummel, Klepper and Kahl Egli and Gompf, Inc. Van Rensselaer P. Saxe
Library (Phase One includes Classrooms)	69,800	Feb. 1968	RTKL INC. - Architects Rummel, Klepper and Kahl Egli and Gompf, Inc. Van Rensselaer P. Saxe
Faculty Office-Classroom Building	65,000	Sept. 1968	RTKL INC. - Architects Rummel, Klepper and Kahl Egli and Gompf, Inc. Van Rensselaer P. Saxe
Addition to Student Activities Building	16,200	Sept. 1969	University of Maryland

13 Existing Development

- Buildings
- Roads and Parking
- Open Space
- Water Ways
- Athletic Areas
- Tunnels



BUILDINGS UNDER CONSTRUCTION

Building	Gross Area in Sq. Ft.	Expected Completion	Architects-Engineers
Dining Hall	32,800	Jan. 1970	Donald N. Coupard and Associates - Architects Rummel, Klepper and Kahl Smislova and Associates Geoghegan and Associates Lulie and Associates
Greenhouses	10,300	Sept. 1970	RTKL INC. - Architects Rummel, Klepper and Kahl Palmer and Clark William L. Greene and Associates
Site Work (Roads, Parking, Athletic Fields, Utilities, Walks, Site Work)		Sept. 1969	Rummel, Klepper and Kahl
Chemistry-Physics Building	145,000	Jan. 1970	RTKL INC. - Architects Rummel, Klepper and Kahl Egli and Gompf, Inc. Van Rensselaer P. Saxe
Two Dormitory Buildings	144,000	June 1970	Ted Englehardt - Architect William C. Perna - Associate Rummel, Klepper and Kahl Scullen, Keller and Marchigiani H. Walton Redmile and Assocs. Kenneth W. Cob
Central Heating and Cooling Facility	32,930	Feb. 1971	Booth and Sommers - Architects Egli and Gompf, Inc. Rummel, Klepper and Kahl Stevenson and Kelly
Men's Physical Education Building	59,000	June 1971	RTKL INC. - Architects Rummel, Klepper and Kahl Palmer and Clark Van Rensselaer P. Saxe

14 Existing Utilities

- Water
- Sewerage
- Storm Drainage



BUILDINGS UNDER DETAILED PLANNING

Building	Gross Area in Sq. Ft.	Expected Completion Date	Architect-Engineer
Academic II	82,895	Feb. 1971	Booth and Sommers - Architects Rummel, Klepper and Kahl Egli and Gompf, Inc. Stevenson and Kelly
Academic III (Classroom-Lab and Faculty Office Building)	92,344 85,922		Gaudreau, Inc. - Architects Rummel, Klepper and Kahl Faisant and Assoc. Albert Gipe and Assoc. Egli and Gompf, Inc.
Library (Phase Two)			RTKL INC. - Architects

On-Site Housing

The interim period of development has involved not only construction of the initial building phases, but also consideration of additions to the planned program. Principle among these is the decision to construct on-campus residential facilities for the student body. It was necessary to determine whether 10,000 to 12,000 students could be housed on campus if such a total need should develop. While this does not alter the basic framework of the Master Plan, it does introduce a significant new land use to be studied within the organization of the Plan.

Ideally, construction of a university should start in a single area and grow organically. This, in fact, is the existing process at UMBC. If dormitories are included as part of campus growth, then they must be integrated as part of this process. There are several planning procedures by which this can be accomplished. One method would seek actual physical integration, always maintaining dormitory construction immediate to the already functioning areas, insuring at each stage of growth the closest relation of facilities. It is also possible to build dormitories at different parts of the campus, separated at first from the academic core. Growth would then take place in relation to the ultimate campus development.

For an analysis of dormitories, it is important to establish a residential density against which their development can be considered. To establish a more exact estimate of space requirements, the development of a detailed architectural program is necessary.

The present density of dormitories on the College Park campus of the University of Maryland (approximately 190 students/acre) compares favorably

University of Rhode Island (5 stories) low units - low density	1600 students 115 students/acre
Hofstra University, Long Island, N. Y.	7200 students 175 students/acre
Harvard University, Boston, Mass. Married student housing (5-21 stories) high density	1464 tenants 248 tenants/acre
University of California (10 stories) high density	840 students 311 students/acre

with other typical examples. Therefore, the standard of 190 students per acre shall be assumed for the assessment of UMBC dormitory requirements. In terms of the contemplated residential student body (12,000) this density will require the utilization of 63 acres. For the determination of dormitory building volume the following unit space allocation will be used: 240 square feet per student for residential, social and circulation space; 50 square feet per student for dining and kitchen space; a total of 290 square feet of space allocated per student. Twelve thousand students will then impose an on-site requirement of 3,480,000 square feet in building area. This amounts to a floor-area ratio of 1.26/1.

The inventory of existing land use has shown that only 34.37 acres remain unprogrammed. As the floor area ratio indicates, actual building site coverage need only be a portion of the dormitory area (e.g. at an average height of only

5 stories, building coverage for dormitories would be between 16-18 acres). The balance of the 63 acre requirement exists in the necessary allocation of open space by which any building or system of buildings becomes environmentally acceptable. Should this need be realistically incorporated as part of the already dedicated open space areas on campus, provision for dormitories within the existing space use inventory is possible.

Since the UMBC academic core was originally planned at a high usage density, it is evident that, in consideration of the overall site, this density can be raised without unfavorably affecting the environmental conditions of the campus.

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Recommendations



The Master Plan for the University of Maryland Baltimore County campus was adopted in 1964. The following recommendations are offered as suggestions and standards for subsequent growth and development.

Master Plan Coordination

The speed and impetus of the University's development necessitates careful and continuous scrutiny of the policies, recommendations and provisions of the proposed Plan. It is urged that periodic review and updating in the following areas be made by the University: enrollment and population projections; parking program; building space program; land acquisition and site locations.

These reviews should evaluate the recommendations of the Plan in the light of current conditions and newly arising needs and programs. On this basis, special planning and design studies to re-evaluate site recommendations, sharpen preliminary programs or accommodate new programs can be initiated as required. The coordination of individual departments of the University in the formation of their programs of expansion and relocation must be considered. This will insure that day to day planning administration and short-range decisions on the use of facilities will be made with an overall picture of all University needs in mind.

As the UMBC campus increases in size and complexity, the Master Plan will require constant monitoring to reflect changing conditions and new demands. This implies a need for an updating process in which new inputs are applied to the Master Plan to maintain its usefulness as a decision making tool. This function can be performed best by either an outside planning consultant retained by the University to oversee expansion of the campus and make recommendations in matters affecting a continuing structured growth, or an in-house UMBC planning staff to perform the above function and update the Plan.

The role of the Master Plan coordinator should be one of interpretation of the Master Plan for future architects and consultants involved at UMBC. In order to avoid conflict and confusion with the efforts of the State Board of Architectural Review, the responsibilities of the planning consultant or the UMBC planning staff should be defined. Further, the Department of Public Improvement should continue to judge and monitor the development of architectural and functional aspects of all construction as it relates to the campus. The responsibility of either the planning consultant or the in-house UMBC staff should include: consultation with architects and consultants regarding intent of the Master Plan as it applies to building construction; advising all architects and consultants who perform work affecting the total framework of the campus; determination of typical elements for use throughout the campus.

Master Plan Model

As an aid in planning, the use of a three dimensional model is invaluable. It is recommended that a master site plan model at 1" = 40'-0" scale be used by the University to aid in campus development. The model should show all the existing buildings, site improvements and topography. New projects would be tested for massing, site relationship, design vocabulary of individual buildings and Master Plan continuity. Finished models would be added as final designs are approved.

Master Plan Graphics Summary

In order to insure orderly development, a system of site drawings should be established and updated annually to provide current information for design coordination and development, and to provide a yearly account of campus growth. The following system of site plan drawings should be instigated to enable the University to stay up to date on all developments of the campus.

Base Map Units

1. Scale to be 1" = 40'-0", showing existing ground plan, interior and exterior spaces, paved areas, and contours. Site to be divided into 1000 feet by 1000 feet units (approximately 25 acres) coinciding with the existing survey grid.
2. Units to include all property owned by UMBC.
3. At 1" = 40'-0" scale, each unit will be 25"x25".

General Planning Composites

1. Scale to be 1" = 200'-0", composed of reduced unit drawings; overall site should be approximately 30"x40".
2. This drawing to be used to illustrate general planning aspects of the Master Plan design.

This report has presented the Master Plan for the development of a new University of Maryland campus in Baltimore County. It is offered as a record of the University's evolution and as a tool for future architects and planners. It includes a background to University development, the program requirements, the Master Plan and its implementation to date. While the Master Plan indicates the ultimate form of the campus and establishes general design principles and guides, it does not insure accomplishment of the full design potential. To achieve a high order of quality this University should continue to seek the very best professional advice. In addition, a process of design review is essential to the continuity of the campus and the realization of the total concept.

The University is cognizant of the need for long-range planning and the intelligent design of its physical facilities. It is hoped that the proposals included in this Report will provide the University with the sound means for achieving these goals.

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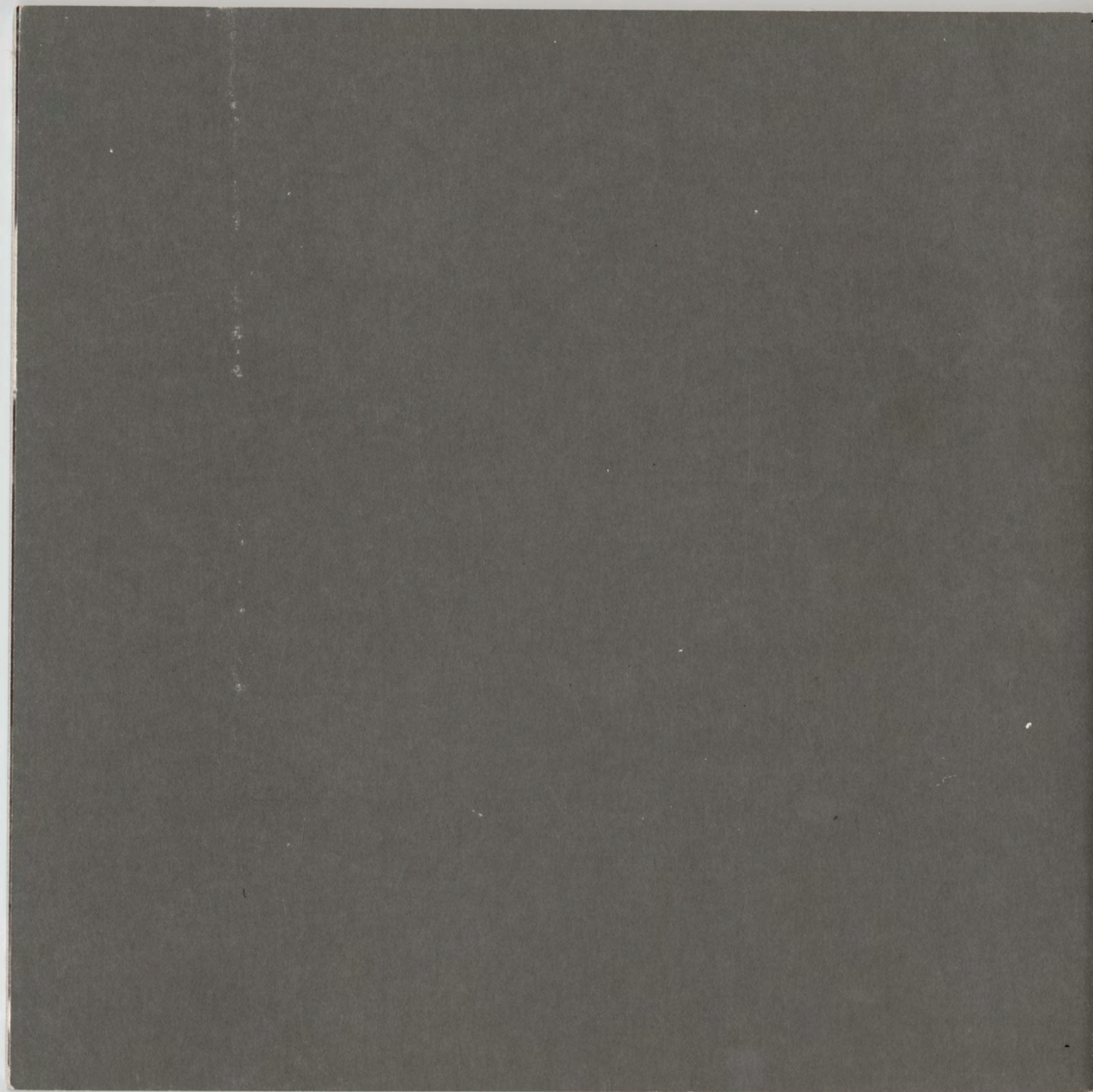
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