IOWA STATE BOARD OF REGENTS

PROPOSED CHARACTERISTICS AND LOCATION OF A NEW STATE INSTITUTION OF HIGHER EDUCATION IN WESTERN IOWA

Volume III

Planning, Site And Development Characteristics

THE PERKINS & WILL PARTNERSHIP, ARCHITECTS
in collaboration with
CRESAP, McCORMICK and PAGET

A REPORT ON THE SELECTION OF A SITE FOR AN INSTITUTION OF HIGHER EDUCATION IN WESTERN IOWA

Prepared For

IOWA STATE BOARD OF REGENTS

November 15, 1968

Prepared By

THE PERKINS & WILL PARTNERSHIP, ARCHITECTS

AND

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November 15, 1968

Mr. R. Wayne Richey
Executive Secretary
State Board of Regents
State of Iowa
Grimes State Office Building
Des Moines, Iowa 50319

Dear Mr. Richey:

We are pleased to forward herewith our final report on the selection of a site for an institution of higher education in western Iowa. Our work has been completed in fulfillment of our agreement with the Iowa State Board of Regents dated June 13, 1968 and in pursuit of their directives given upon the approval of our preliminary report at their meeting of August 28, 1968.

The Board, you and your staff and the various Federal, State and local agencies cited in this report have been most cooperative in assisting us in the preparation of this study. Our collaboration with Cresap, McCormick and Paget has been rewarding. We also wish to cite the enthusiasm and cooperation of the people of Atlantic, Carroll and Harlan; their collaboration has proven to be an essential ingredient in the success of this work.

Sincerely,

C. William Brubaker, F.A.I.A.
Partner

Robert J. Piper, A.I.A.
Project Director

CONTENTS

PURPOSE

This report describes the findings and recommendations of Phase 2 of a two phase project. During Phase 1 a Preliminary Analysis was made of eighteen sites in six communities as possible locations for a proposed Institution for Higher Education in Western Iowa. As a result of that analysis, (accepted by the Board of Regents, August 28, 1968) Prime Sites in the communities of Atlantic, Carroll and Harlan were selected for further evaluation. This Phase 2 Report completes the Final Evaluation of these three Prime Sites and ranks them as to their relative suitability as locations for the proposed institution.

STUDY TEAM

- THE PERKINS & WILL PARTNERSHIP, ARCHITECTS

· C. William Brubaker	Partner In Charge
· Robert J. Piper	Project Director
· John K. Holton	Architect and Site Development Engineer
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· Paul M. Handing	Site Development Engineer

- P & W ENGINEERS, INC., ENGINEERS

· Michael Durschmid	Electrical Engineer
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In Collaboration With:

- CRESAP, McCORMICK & PAGET, MANAGEMENT CONSULTANTS

· Howard Lovely	Project Director

ACKNOWLEDGMENTS

The Perkins & Will Partnership wishes to acknowledge the contributions of the following agencies and individuals to the success of this study:

Iowa State Board of Regents and their administrative staff under the directorship of Mr. R. Wayne Richey.

The City of Atlantic and Cass County and its representative Committee - Atlantic/ Cass County College Committee
Mr. Fritz Simpson, Chairman

The City of Carroll and Carroll County and its representative Committee - Carroll Committee, Western Iowa University
Mr. William H. Burgess, Chairman

The City of Harlan and Shelby County and its representative Committee - Shelby County Area College Committee
Mr. Spence Vanderlinden, Chairman

United States Corps of Engineers
Rock Island District
Colonel Walter C. Gelini

United States Corps of Engineers
Omaha District - Engineering Division
Mr. Charles L. Hipp

Iowa Development Commission
Mr. William McLaughlin, Director of Planning

State of Iowa
Honorable Melvin D. Synhorst, Secretary of State

State of Iowa
Office for Planning and Programming
Mr. Thomas Rice, Acting Director

State Conservation Commission
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Iowa State Highway Commission
Mr. P. Benjamin Klaus, State Park Institutional Roads Engineer

Iowa Natural Resources Council
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ACKNOWLEDGMENTS (Continued)

Abild Engineering Company
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Stalcup Agricultural Service
Land Appraisal
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PRINCIPAL REFERENCES

NISHNABOTNA RIVER AND TRIBUTARIES, IOWA
Corps of Engineers, Omaha Nebraska; February, 1968

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State Conservation Commission, Des Moines, Iowa; March, 1968

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Iowa State Highway Commission, Ames, Iowa; February, 1968

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Iowa State Highway Commission, Ames, Iowa; December, 1967

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Nason, Law, Wehrman & Knight, Inc., Minneapolis, Minnesota; 1964

ATLANTIC, IOWA INDUSTRIAL SURVEY
The Fantus Company, Chicago, Illinois; 1961

CARROLL, IOWA COMPREHENSIVE CITY PLAN
Leo A. Daly Company, Omaha, Nebraska; 1963

CARROLL COUNTY IOWA OUTDOOR RECREATION PLAN
Jon Crose & Associates, Des Moines, Iowa; 1967

CARROLL, IOWA PRELIMINARY INDUSTRIAL SURVEY
Carroll, Iowa Industrial Development Council and the Chamber of Commerce; 1968

HARLAN, IOWA COMPREHENSIVE PLAN
Leo A. Daly Company, Omaha, Nebraska; 1965

SHELBY COUNTY IOWA OUTDOOR RECREATION
H. P. Hoskins & Associates, Inc., Lincoln, Nebraska; 1967

SHELBY COUNTY IOWA COUNTY WATER & SEWER PLAN
H. P. Hoskins & Associates, Inc., Lincoln, Nebraska; 1967

VARIOUS CODES, REGULATIONS AND STANDARDS
As published by Federal, State and local agencies having programs affecting the proposed institution.

VARIOUS INTERIM STUDIES ON THE PROPOSED INSTITUTION
As prepared by Cresap, McCormick and Paget in their evaluation of the need, program and location of the institution.

SUMMARY OF FINDINGS AND RECOMMENDATIONS

SUMMARY OF FINDINGS

1. The Region, consisting of portions of Carroll, Cass and Shelby Counties, is well situated geographically to serve the people of Western Iowa as the location for an institution of higher education.

2. The Regional Support Facilities, i.e. highways, recreation, conservation, water quality control and utilities, as they exist or as officially proposed or now authorized, are adequate or can be easily modified through cooperative planning to match or exceed requirements imposed by the proposed institution at its initiation and during its maturing years. Public agencies having jurisdiction over these regional facilities are anxious to collaborate with the Board of Regents and other affected agencies on the further planning of these facilities.

3. The People of Atlantic, Carroll and Harlan enthusiastically look to the instance of the proposed institution in their region and will support the final selection of the Board of Regents in respect to specific location.

4. The Community of Atlantic and its Prime Site are given first preference as the location for the proposed institution since they are, on balance, equal to or superior to that of Carroll or Harlan in respect to:

- ·Distance from the nearest Regents' institution
- ·Distance from the nearest private four-year college
- ·Distance to the geographical center of students in the college-void area of Western Iowa
- ·Number of potential students within a 50-mile' radius
- ·Service by regional highways
- ·Access to regional highways
- ·Suitability of its specific site, including
  - Access and approach to the site from the region.
  - Physical relationship between site and community.
  - Physical aspects of the site including size, shape, orientation, topography, ground cover, drainage, soil conditions, buildable areas, local access and committed adjacent land uses.

5. The Community of Harlan and its Prime Site are given second preference as the location for the proposed institution since they are, on balance, equal to or superior to that of Carroll in respect to:

- Distance from the nearest Regents' institution
- Distance from the nearest private four-year college
- Distance to the geographical center of students in the college-void area of Western Iowa
- Service by regional highways
- Access to regional highways
- Cost of off-site requirements
- Suitability of its specific site including
  - Access and approach to the site from the region.
  - Physical relationship between site and community.
  - Physical aspects of the site including size, shape, orientation, topography, ground cover, drainage, soil conditions, buildable areas, local access and committed land uses.

6. The Community of Carroll and its Prime Site are retained as third preference as the location for the proposed institution since they are, on balance, equal to or superior to that of Atlantic or Harlan for such purposes in respect to:

   - Distance to the geographical center of students in Western Iowa
   - Number of potential students within a 50-mile radius
   - Service by proposed regional highways
   - Access to proposed regional highways
   - Relationship to existing recreation facilities
   - Size and capability of community support facilities
   - Suitability of its specific site, including
     - Physical aspects of the site including size, shape, ground cover, local access and committed adjacent land uses.

7. The costs of land acquisition, off-site utilities and campus development (from 1968 to 1981) for the proposed institution will total approximately $195,734,000.

RECOMMENDATIONS

That the Iowa State Board of Regents

1. Notify the community of Atlantic that its offered site has been given first preference as the location for the proposed institution and of its intention to enter into an agreement with that community to secure such site providing the following conditions are satisfied:

   The community indicates its intent to arrange for the off-site support facilities projected herein.

   The community presents by February 1, 1969, firm options to convey its Prime Site to the Board of Regents at the price indicated herein.

   The State Legislature appropriate by September 1, 1969, sufficient funds to allow the Board of Regents to purchase the site at the price indicated herein.

2. Notify the communities of Harlan and Carroll that their offered sites have been given second and third preferences, respectively, as locations for the proposed institution and that the communities are requested to retain options on these sites until September 1, 1969 so that they may be executed in appropriate order in the event the actions indicated under Recommendation #1 above are not achievable.

RECOMMENDATIONS (Continued)

3. Direct the selection of permanent staff and of management, educational and design consultants for the detailed planning of the proposed institution at the earliest time consistent with legislative actions.

4. Initiate immediate cooperative actions with the community of Atlantic and Cass County to secure, through appropriate codes and regulations, all reasonable assurances that the development of properties adjacent to the Prime Site will be devoted to uses and structures compatible with the use of the Prime Site as the location of the proposed institution.

5. Establish a permanent working liaison group with the community of Atlantic, the Iowa Development Commission and Board of Regents staff so as to coordinate on-site and off-site development planning.

6. Forward a copy of this report to each affected Federal, State and local agency informing them of the interest of the Board of Regents to form the liaison group described under Recommendation #5 above and that this group and appropriate consultants will shortly call upon each agency for their assistance in the coordination of detailed plans for the construction of on-site and off-site facilities.

BACKGROUND

OBJECTIVES AND PROCEDURES

The Iowa State Board of Regents, acting under provisions of House File 747, enacted by the 62nd General Assembly, State of Iowa, engaged The Perkins & Will Partnership on June 13, 1968 to assist the Board of Regents and its Consultants in the conduct of a study to initiate plans for the location, establishment, construction and operation of a state institution of higher education in Western Iowa. The Partnership's objective was to provide professional Architectural and Engineering Services for the analysis and evaluation of various sites as possible locations for the proposed institution.

In directing this study the Board of Regents and their management consultants, Cresap, McCormick and Paget, outlined an educational program for the proposed Institution and stipulated a specific georgraphical area of Western Iowa within which the study was to take place. Communities within this area were asked if they wished to propose sites for analysis. Six communities responded by designating sites and providing a variety of information on their communities and sites.

During Phase 1, initiated in late June 1968, a study team visited each community and its sites, interviewed local representatives, traversed the community and sites, and recorded pertinent information on appropriate physical, cultural and socio-economic factors. Various Federal, State and local agencies having programs affecting the project were contacted. Other consultants contributing to the total Board of Regents program were interviewed. Inter-disciplinary team meetings were held to adjudge the information thus gathered, to analyze its import and to recommend the communities of Atlantic, Carroll and Harlan and their Prime Sites for further evaluation. The Board of Regents accepted these recommendations at their meeting of August 28, 1968. Copies of this report on preliminary selection and evaluation and various supporting data are on file in the offices of the Board of Regents, Des Moines, Iowa.

During Phase 2, information collected on the three selected communities and their Prime Sites was extended and subjected to detailed evaluation. Specific appraisals were sought for each parcel, aerial photographs and topographical surveys were secured, soil tests were undertaken, study models of each site were constructed, the institutional program was

translated into facility requirements, construction cost estimates were projected, the feasibility of a water feature was evaluated for each site, and site/community visits were repeated in order to gain a detailed understanding of their potentialities. As the work progressed, various State agencies having jurisdiction over programs affecting the proposed institution were contacted and their opinions sought on the relationship between their programs and those of the proposed institution. Periodic inter-disciplinary team meetings were held to discuss and refine the findings and to develop the final recommendations set forth in this report.

The details of the institutional program and its translation into facility requirements is discussed in this report's section entitled: INSTITUTIONAL PROGRAM

The concepts, phasing and costs attached to planning and construction of the required facilities, and the off-site investments occasioned by the instance of the proposed institution are discussed in this report's section entitled: DEVELOPMENT CONCEPTS AND COSTS.

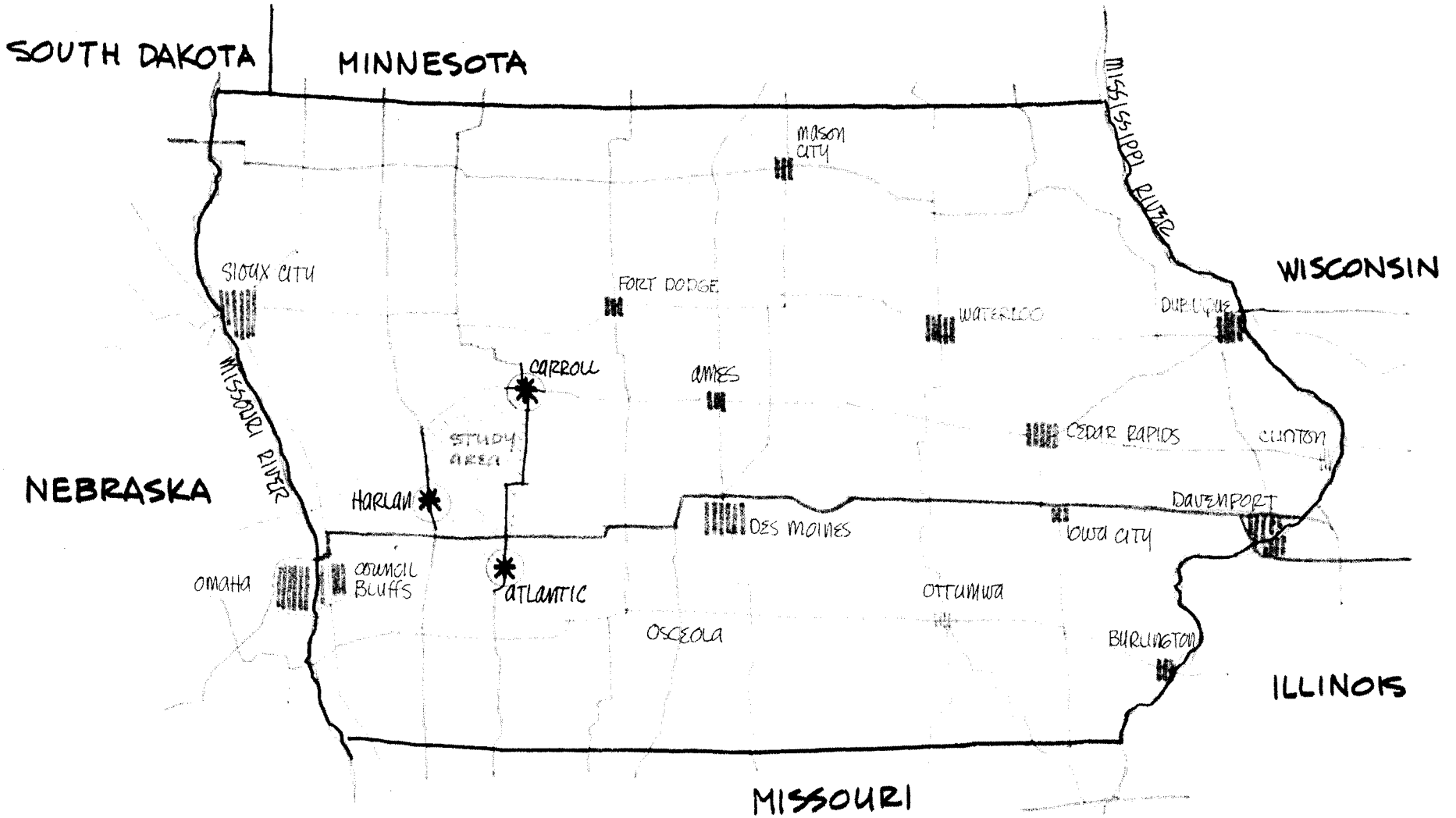
Specific findings relative to each site and its relationship to its community are reviewed in this report's section entitled: COMMUNITIES AND SITES.

Various supporting studies and materials such as reports on soil investigations, lake feasibility analysis, study models, etc., are on file in the offices of the Board of Regents, Des Moines, Iowa.

Finally, it is noted that the Partnership's work in the preparation of this Report has been executed in close collaboration with Cresap, McCormick and Paget. Community support facilities are enumerated and evaluated in this report's parallel reports prepared by Cresap, McCormick and Paget.

STUDY AREA

The maps and charts on the following three pages indicate the location and regional facilities of the study area, i.e. the counties of Cass, Carroll and Shelby, and their respective county seats, Atlantic, Carroll and Harlan. Proposed highway relocations and proposed reservoirs that may become the focus for future recreation areas are shown. The CITIES COMPARATIVE CHART relates certain statistical data pertinent to locational and community support evaluations.



STUDY COMMUNITIES

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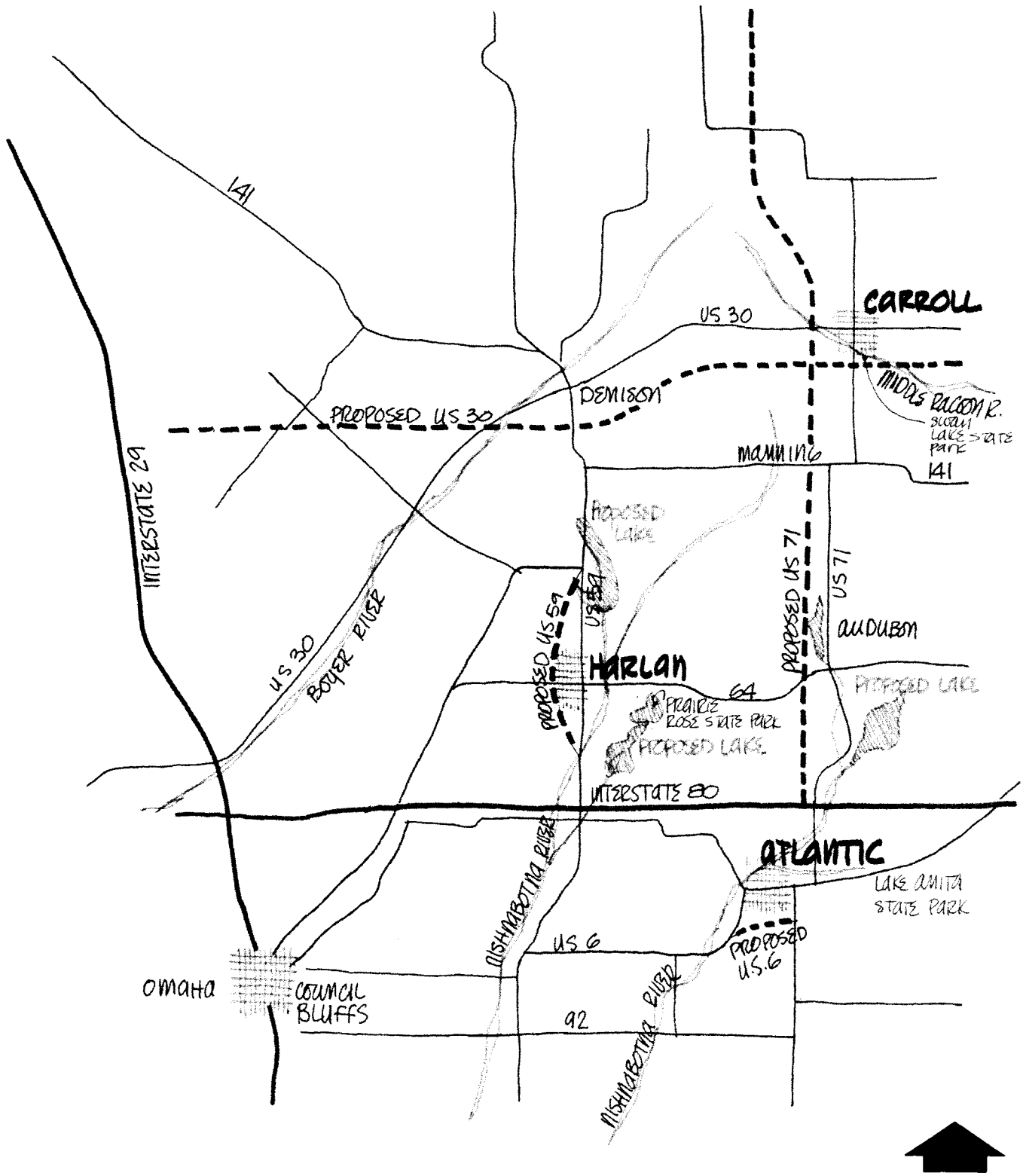


REGIONAL FACTORS

CITIES COMPARATIVE CHART

Factor	Atlantic	Carroll	Harlan
Population (1970)	6890	7682	4350
Population rate of growth/ 100 (1950-1960)	6.5	23.3	11.1
Population Composition (%)			
- Under 18	31	41	32
- 18-45	32	28	29
- Over 45	37	31	29
House Starts, per 1000 during past five years	25	37	29
Distance to geographical center of students in Western Iowa (miles)	54	23	35
Distance to geographical center of students in college-void area of Western Iowa (miles)	10	48	16
Distance to nearest Regents' University (miles)	85	65	91
Distance to nearest private four-year college (miles)	47	26	27
Potential students within 50-mile radius (1973)	10,483	11,866	9,783
Distance to nearest Interstate highway (highway miles)	6	44	11

THE REGION

An evaluation of the adequacy of regional support facilities centered upon the facilities of the three west central Iowa counties containing the Prime Sites: Cass County (Atlantic), Carroll County (Carroll) and Shelby County (Harlan). The three communities each happen to be county seats of their respective counties. The facilities of several adjacent counties, particularly Crawford and Audubon, were also evaluated. This region covers roughly 4800 square miles and is the residence of some 100,000 persons. The center of the region lies 60 miles northeast of the Omaha Metropolitan Area and 90 miles west of the Des Moines Metropolitan Area.

The region is characterized as one of rolling prairies, croplands and wooded lands interrupted by meandering drainages. The basins of the Nishnabotna River flowing southwest to the Missouri and the Racoon River flowing southeast to the Mississippi dominate the area. This region is principally rural and its economy is centered on raising livestock and growing of grains for livestock feeding. In recent years some industry has moved into the area, particularly meat processing and small farm equipment fabricators. The larger towns serve also as regional distribution centers and as places of residence for regional sales personnel.

TRANSPORTATION

The region is readily accesible from all parts of the State. Railway passenger service is, of course, all but non-existent. Scheduled air service to the region is in its infancy although local airports are in existence at all three communities studied.

Regional highways criss-cross the entire area. Interstate 80 and U.S. Route 6 traverse the southern part of the area, U.S. Route 30 the northern, U.S. Route 71 the eastern and U.S. Route 59 the western portion. All of these routes are well developed and maintained highways providing all-weather, high speed vehicular access to the entire area.

Planned improvements to regional and local roads will provide still better access. Immediate (by 1972) relocation and improvements are planned for Route 59 north and south of Harlan, and to U.S. Route 71 south from Atlantic. Long range relocation improvements to both U.S. Route 30 and U.S. Route 71 are planned in the Carroll area. The relocation of U.S. Route 6 to a position just south of Atlantic has been discussed for some years but to date no official proposals have been made.

All of these highway improvements have a beneficial effect upon the sites investigated here. They are discussed in more detail in the section entitled: COMMUNITIES AND SITES.

RECREATION

The region presently contains four major public parks: Lake Anita (735 acres) and Cold Springs (104 acres) both within 10 to 15 miles of Atlantic; Swan Lake (229 acres) adjacent to Carroll, and Prairie Rose (684 acres) 10 miles southeast of Harlan.

Several U.S. Corps of Engineer water quality projects are currently in various stages of authorization. These include the David's Creek Reservoir, a 600 acre pool in Audubon County north of Atlantic and east of Harlan, and the Jefferson Reservoir, a 5200 acre pool on the Racoon River 20 miles northeast of Carroll. A number of other projects are proposed for the region by the Corps and for the Soil Conservation Service. These will be some years in execution but are justified, feasible projects. These include the Bluegrass dam and reservoir, a 395 acre pool just north of the community of Audubon; the Avoca, a 2200 acre pool near the intersection of U.S. Route 59 and Interstate 80, and the Harlan dam and reservoir, a 2860 acre pool five miles north of Harlan. In gross total these projects as constructed will provide the region with over 10,000 acres of water surface as a nucleus for additional acreages devoted to water-related recreation.

These existing and proposed facilities will be more than adequate to support the additional off-site recreation demands imposed by the instance of the proposed institution.

LOCAL PROGRAMS

The communities of Atlantic, Carroll and Harlan have already undertaken a variety of long-range planning and development programs that demostrate a deep concern for the balanced growth of their region and a practical appreciation and understanding of the means by which this balance may be maintained. Each of the communities, for instance, recently completed comprehensive city planning studies and have a variety of codes and regulations presently at work implementing these plans; industrial surveys have been completed for Carroll and Shelby (Harlan) Counties; Shelby County has also completed a comprehensive county water and sewer plan; the City of Carroll has a "Workable Program" certified by the Federal government which underlies its urban renewal program presently in execution; and each of the communities are in close collaboration with Federal and State agencies planning highway, water quality and recreation improvements discussed elsewhere in this report.

A tour of the region reveals many recently completed public, semi-public and private facilities - schools, hospitals, airports, local parks, country clubs, conservation projects, shopping and industrial complexes, housing areas and utility plants - whose design and construction quality demonstrate

the competence of this long-range planning and the value the people of the communities place upon putting their plans into action. They have demonstrated unusual support for public/private collaboration in planning and constructing their physical environment. The selection of Atlantic, Carroll and Harlan for final evaluation as potential sites for the proposed institution resulted in no small part from this demonstration.

The success of the institution proposed here will depend very much on continuing collaboration between the institution and the people of the host community.

The community's initial support and existing facilities, while adequate for the initiation of the institution, must grow as the institution expands in the years ahead. The host community, working with the Board of Regents and the Iowa Development Commission, might consider the establishment of a local agency responsible for community/institution liaison to create, implement or coordinate programs responsive to development pressures occasioned by the instance of the institution. If the agency were established coincident with the selection of the host community, it could begin

immediately to develop an administrative structure and programs in anticipation of the formal opening of the institution in two to three years.

The agency ought to be county-wide at a minimum or regional (multi-county) at the optimum. It should be a public agency and State enabling legislation permitting such an agency should be adopted if it does not already exist. If for some reason a public agency is not feasible or possible, a private non-profit organization should be established to carry out the objectives noted here.

The agency's program should include responsibility for creating, implementing or coordinating the preparation of:

- A county (regional) development plan
- A county transportation plan
- A county community facilities plan
- A county recreation plan
- A county public safety plan
- A set of comprehensive development standards
- A capital budgeting program for local improvements
- A program for creating a "development reserve" for those lands adjacent to the institution whereby development of those lands is more closely controlled than elsewhere through direct option or purchase of those lands or of their development rights

A CAUTION

There is no magic in the institution proposed here that will make its growth any less a complexity of interactions and change-over-time than that which has been experienced in the development of Iowa's established universities. Certainly, in planning this institution every effort should be made to structure and direct these interactions, to transform happenstance into predictable circumstance, and to compress the time span within which these actions take place. But, in all events, change-over-time, often unpredictable, is essential to the institution's maturity and a vital ingredient of its total design.

INSTITUTIONAL PROGRAM

PROGRAMMING

Certain criteria and assumptions, plus information provided by the Board of Regents Advisory Committee, and data from other institutional sources, were used to project characteristic building and land area requirements to test the relative suitability of the Prime Sites at Atlantic, Carroll and Harlan as locations for the proposed institution.

The projections draw upon the best programming data available. Undoubtedly, modifications in this data will occur in the future as planning continues for the proposed institution. These early projections must be viewed in this light.

CRITERIA

Prior decisions of the Board of Regents indicated an institutional program structured on four principal criteria:

1. Four-year residential institution.
2. Liberal arts curriculum.
3. Admission requirements comparable to other Regents' institutions.
4. Projected enrollments (by Cresap, McCormick & Paget).

Year of Operation	Total Enrollment Projected	Commuter Students	Total in Residence*
Initial	1250	240	1010
5	5500	484	5016
10	8400	749	7651
15	8500	748	7802

*See Assumptions, following, for On-Campus housing provisions.

ASSUMPTIONS

General assumptions included the following:

1. Resident student population will be in the ratio of 85% single to 15% married.

2. On-Campus housing is to accommodate 100% of the projected resident single student population to year 10.

3. Single student housing projected on the basis of 240 sq.ft./student.

4. On-Campus housing is to accommodate 50% of projected married student population to year 10.

5. Married student housing is projected on the basis of 650 sq.ft./student (assumes 75% 1 bedroom units at 600 sq.ft. and 25% 2 bedroom units at 800 sq.ft.).

6. Faculty population will be in the ratio of 1 faculty member to 15 FTE students.

7. Total faculty-staff population will be in the ratio of 1 faculty-staff member to 8.5 FTE students.

ASSUMPTIONS (Continued)

It is noted that in year 10 a total staff population of some 1100 persons is indicated. Assuming a family size of ± 4.0 persons, a community population increase of approximately 4400 persons can be expected. To provide community support for this increase will require an additional 550 service families or about 2200 persons. Therefore, the direct population increase in town, due to faculty and staff, would be 6600 persons in year 10. Further, by adding to this figure the 7150 single students and 1250 married student families (at 2.5 persons/family = 3125 persons) the host community can reasonably expect a total population increase of 16875 persons by year 10. This would not include any industries or activities attracted to the town due to the influence of the institution.

Between years 10 and 20 the annual projected student population growth is relatively minor. This could fluctuate somewhat but in all events the host community's growth pattern should be by then sufficient to absorb these minor fluctuations. If, however, the year 10 to year 20 projections as presently seen are substantially modified, additional On-Campus housing - beyond that indicated here - should be budgeted and constructed.

ASSUMPTIONS (Continued)

Further, it should be noted that student attitudes are changing in respect to living in on-campus halls. If present trends continue, students will increasingly choose to live off-campus in commercially managed apartments and other housing. These trends, of course, could modify the housing projections herein. These projections are based on assumptions of 100% on-campus housing to year 10. It is felt these assumptions are valid in view of the relatively small size of the communities under study here and their consequent limited rental housing market.

PROJECTIONS OF BUILDING AREA REQUIREMENTS

Year 15 -- 8500 FTE Students

ACADEMIC FACILITIES — 585,900 sq.ft.

Classrooms
8500 students x 12 clock hours/student x 1.6 gross sq.ft.
= 163,000 sq.ft.

Teaching Laboratories
8500 students x 4 clock hours/student x 5.6 gross sq.ft.
= 190,500 sq.ft.

Faculty Offices
8500 students x 1/15 students x 150 gross sq. ft.
= 83,900 sq.ft.

Resource Center
8500 students x 17.5 gross sq. ft.
= 148,500 sq.ft.

PHYSICAL EDUCATION — 156,000 sq.ft.

Gymnasium
8500 students x 16 gross sq. ft.
= 136,000 sq.ft.

Pool
= 20,000 sq.ft.

ADMINISTRATION AND SERVICES — 174,100 sq.ft.

Administrative Offices
8500 students x 10 gross sq. ft. = 85,000 sq.ft.

Conference Rooms, Reception, Storage, etc.
8500 students x 7.5 gross sq. ft.
= 63,500 sq.ft.

Infirmary
8500 students x 1.5 gross sq. ft. = 12,800 sq.ft.

Police/Fire
8500 students x 1.5 gross sq. ft. = 12,800 sq.ft.

PROJECTIONS OF BUILDING AREA REQUIREMENTS (Continued)

Year 15 -- 8500 FTE Students

AUXILIARY FACILITIES	326,000 sq.ft.
Union 8500 students x 12 net sq. ft. x 1.6 gross	= 163,000 sq.ft.
Auditorium 8500 students x 12 net sq. ft. x 1.6 gross	= 163,000 sq.ft.
PHYSICAL PLANT	136,000 sq.ft.
8500 students x 16 gross sq. ft.	= 136,000 sq.ft.
SUB TOTAL	1,378,000 sq.ft.
RESIDENTIAL FACILITIES	1,934,000 sq.ft.
Single Students x 240 gross sq. ft.	=1,560,000 sq.ft.
Married Students x 650 gross sq. ft.	= 374,000 sq.ft.
TOTAL BUILDING AREA	=3,312,000 sq.ft.

PROJECTED PARKING REQUIREMENTS

Facilities For	Initial			Year 5			Year 10		
	Number People	Ratio	Parking Spaces	Number People	Ratio	Parking Spaces	Number People	Ratio	Parking Spaces
Faculty	85	1:1	85	365	1:1	365	570	1:1	570
Staff	65	1:2	35	280	1:2	140	500	1:2	250
Commuting Students	240	2:3	160	485	2:3	165	750	2:3	500
Resident Single Students	935	1:4	235	4380	1:4	1095	6500	1:4	1625
Resident Married Students	75	3:4	55	635	3:4	475	1150	3:4	860
SUB TOTAL			570			2400			3805
Visitors approx. 10% x SUB TOTAL			60			240			380
TOTAL			630			2640			4185
Area @ ± 400/space			252,000 s.f.			1,056,000 s.f.			1,674,000 s.f.

ON-SITE UTILITIES

Utility assumptions included the following items for all Prime Sites:

The entire campus facilities, with the exception of storage areas, mechanical rooms and other unoccupied areas, will be air conditioned, and all facilities will be heated. The campus heating and cooling requirements will be generated and supplied from a central power plant facility.

The centrally located power plant will contain all equipment and systems required to generate steam for heating and chilled water for air conditioning. The steam generating system will consist of natural gas fired high pressure steam boilers, boiler feed pumps, condensate system, chemical feed equipment, boiler controls, and other required accessories. The chilled water generating system will be complete with steam absorption chilled water units, system pumps, chemical feed equipments, controls, and a cooling tower located adjacent to the power plant building.

The steam and chilled water will be distributed to the campus buildings through an underground tunnel system. At each building, steam and chilled water will be supplied to the building heating and cooling systems.

ON-SITE UTILITIES PROGRAMMING (Continued)

In each building, a mechanical room will be provided and will contain double duct air handling units with steam coils and chilled water coils. The heated or cooled air will be filtered, humidified or dehumidified, and distributed to the occupied spaces. A system of individual room zones temperature control will be provided.

Exhaust systems will be provided for toilets, kitchens, shops, equipment rooms and all other areas as required.

Domestic hot water will be generated at several selected locations in both the student housing and academic building groups. Steam from the central distribution system will be used for water heating.

A central control room located in the power plant will include a control system to monitor the remote buildings systems and also to operate selected remote equipment.

ELECTRIC POWER PROGRAMMING

The electric power utilities at each of the subject communities have stated their operating policies are such that a large new institution built within, or adjacent to their present area of operation would receive service extensions to the institution property lines at no cost to the customer.

It is also the policy of these utilities to bear the cost of the required primary service entrance equipment which will be located on the customers property, e.g. primary disconnect switches, primary fusing, main service substation transformers and substation structure and metering equipment.

All of the subject communities possess electric power distribution systems which could support the requirements of the proposed institution in its earlier years. Expansion of these local systems would be necessary prior to the projected 5th year campus growth. Utility investment to cover these costs will be retired by the increased energy revenues derived from this large institutional customer.

Each of the subject communities has the capabilities of generating electric power locally. This equipment, under normal conditions, is not operated at full capacity because of the higher cost of power generated at small stations. The major significance of a local source at each of the towns is its stand-by feature in the event of a wide area system failure. The loss of connection to distant, large hydro and thermal inputs could be sustained for limited duration with these local power plants.

ELECTRIC POWER PROGRAMMING (Continued)

Basic energy costs are the combined effect of K.W.H. costs and Demand Costs. For a large institution of this type taking power at primary voltage, the net costs from each of the electric power utilities are essentially the same.

At each Prime Site electric power service will be received at primary voltage and primary metered at an outdoor main service substation located near the campus property line. An underground loop system will provide distribution of power to the individual building load-center substation.

COMMUNICATIONS PROGRAMMING

Atlantic has filed application with the F.C.C. for a community TV antenna. Carroll has a community antenna which brings in Des Moines and Ames. Harlan has been granted a franchise for a community TV antenna.

Telephone facilities were found to be as follows: Atlantic and Carroll are served by Northwestern Bell, Harlan is served by the United Telephone Company of Iowa. At each of the towns, service could be extended to the Prime Site at no cost to the subscriber. The cost of expansion and revisions to the area exchange would be paid for by the utility. The amount of expense that an institution would incurr for

on-site telephone facilities would be largely dependent upon the type of service selected for use. The scope and depth of public telephone usage on campus is largely dependent upon specific academic programming and operations planning.

Interconnections for the communications and regional systems will be carried in underground ducts. Central control and monitoring of these systems will be provided at the central power plant.

Campus wide systems will include fire alarm, security alarm, mechanical malfunction, telephone, master TV antenna, clock and program.

LAKE DEVELOPMENT

Most institutions controlling large acreage campuses find it desirable eventually, if not initially, to consider the development of a ponded water element such as a lake or a flow-control stream. The element may serve several functions, i.e. fire protection, cooling, grounds irrigation and maintenance, and erosion and flood control in addition to its obvious recreation and aesthetic purposes. This possibility was examined for each of the Prime Sites.

The analysis assumed the maximum use of natural topography, watershed supply, stream flow and ground cover with a minimum of excavation and construction of retainage and erosion control structures. The size, shape and extent of such a facility is determined by the natural topography abutting the stream thread and the soil, ground cover and size characteristics of the watershed. The quality of the water retained and the maintenance problems to be expected are a function of surface pollutants and silting. In rural areas, pollution may be aggravated because of the extensive use of agricultural chemicals and the silting problem may be aggravated by cultivation procedures. Large scale construction activities during the formative years of the institution may increase the rate of siltation. Thus, while a water feature

may be impractical during the early years of the institution, it may be feasible in future years as off-site watershed land uses are changed from rural to urban and as construction activities abate.

Findings of the study for each site are detailed in the section "COMMUNITIES AND SITES". The broad conclusions of the study are as follows:

Atlantic Prime Site: A 25-acre lake is feasible during the formative years of the institution.

Carroll Prime Site: A 65-acre lake is possible but not recommended - either initially or in the future - without provision for considerable excavation and construction investment.

Harlan Prime Site: A 20-25-acre lake is possible and feasible but not recommended until some later time when pollution and silting problems are abated due to urban development.

DEVELOPMENT CONCEPTS AND COSTS

DEVELOPMENT CONCEPTS

To fairly compare the qualities of the Prime Sites, a common development concept was used on each. It is quite obvious that a final architectural scheme for any might vary considerably from the selected concept because of program considerations of the design approaches of the architect. However, this common approach represents an acceptable standard of design and planning for contemporary developments. All schemes are based on a number of similar premises. The elements of similarity are:

1. Circulation and Parking
   - 1.1 Combination access and service road around academic facilities.
   - 1.2 Connecting roads provide access to academic loop road and to housing areas.
   - 1.3 Parking areas are dispersed in small increments near all facilities.

2. Distribution and Relationships
   - 2.1 Three general areas or zones of development.
     - 2.1.1 Single student housing
     - 2.1.2 Married student housing
     - 2.1.3 Academic facilities
   - 2.2 Playing fields adjacent to academic areas and open and undeveloped space for recreational use adjacent to housing.

2. Distribution and Relationships (Continued)

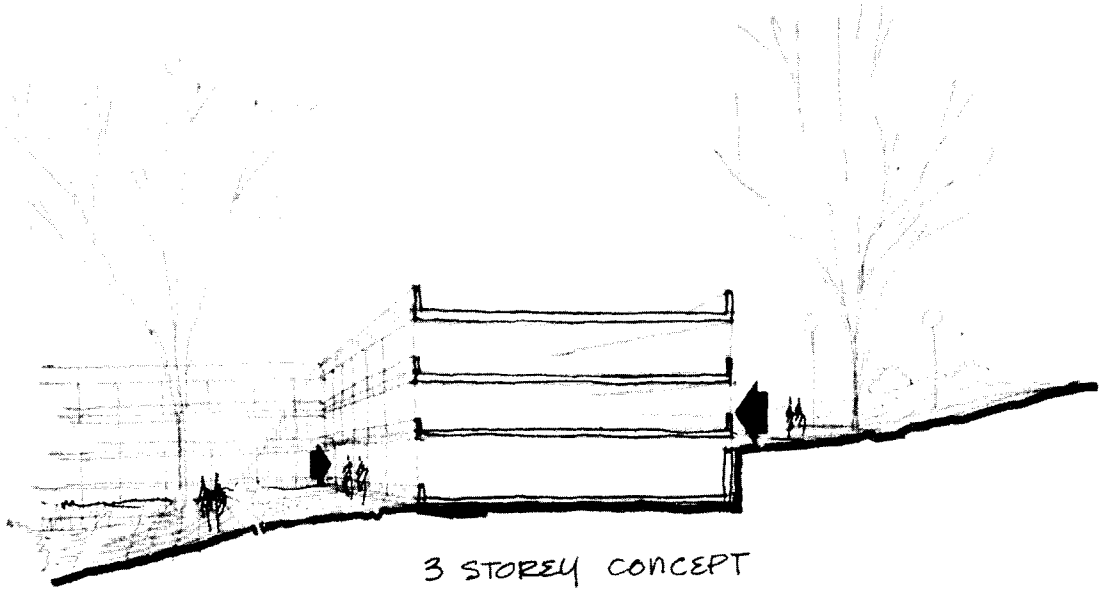
2.3 Single student housing and the academic area should be as closely related as possible. Of secondary importance is the adjacency of the married student housing to the academic area.

3. Building Characteristics

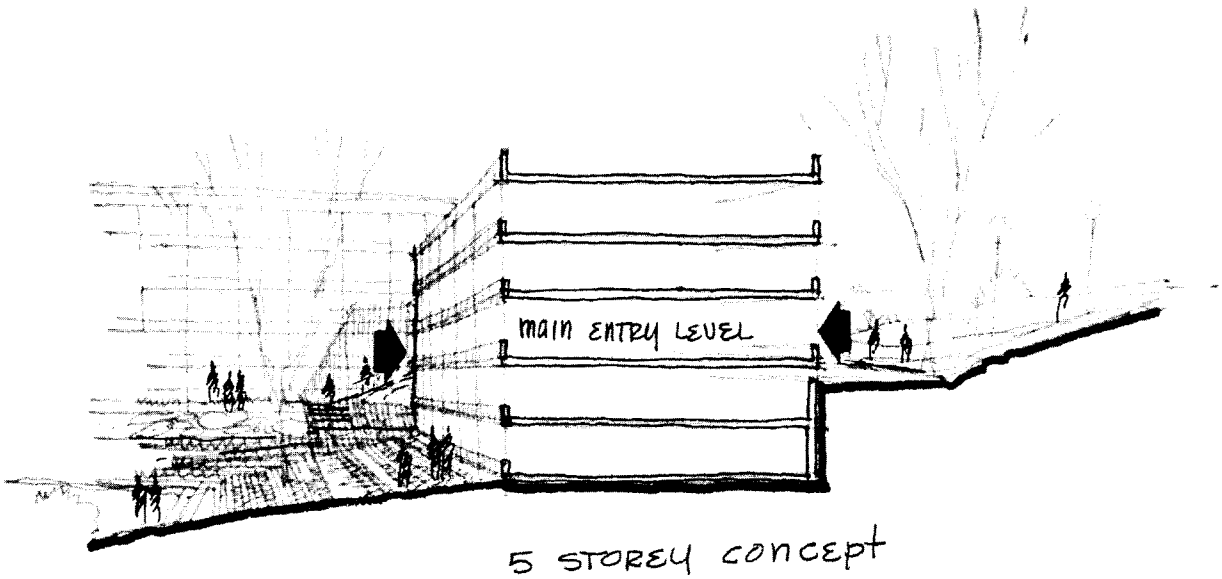
3.1 Academic facilities at all locations are of a semi-continuous form. The projected heights vary from one to four storeys. Consideration of maximum pedestrian travel time between classes placed the limitations on horizontal dispersion.

3.2 The single student housing varies in height from three storeys at Harlan and Atlantic to five storeys at Carroll. (Variations in height are in response to varying sub-soil characteristics) All schemes would have facilities built into the slopes with entry at a mid-level.*

*(See housing concept diagrams on page 38)



3 STOREY CONCEPT



5 STOREY concept

HOUSING DIAGRAMS

3. Building Characteristics (Continued)

3.3 Married student housing varies in height from one to three storeys and is of a more modest scale than the other facilities. These facilities should not only provide a desirable environment but should relate to off-campus residential areas.

Variations in the basic concept are due to the following factors:

1. Land forms (i.e. distribution of suitable building zones)
2. Sub-soil conditions
3. Site features (i.e. major stands of trees)
4. Adjacent uses or features (i.e. State park or water storage tank)
5. Access characteristics

COSTS

One of the most serious tasks undertaken during this study was that of analyzing and projecting probable on-site and off-site costs occasioned by the instance of the proposed institution. To the people of the State of Iowa the reasonable correctness of these projections are of importance because they provide guides to required expenditures. To the institution's administration and to the host community's local officials the cost projections represent a vital part of the total institutional/community programs that exert enormous influence over their decisions as to elements to be included in their programs and as to the scheduling of their design and execution.

The costs projected herein (with the possible exception of some land costs) should be construed only as a guide. The estimates are projected on the basis of generally accepted standards of construction, comparable in quality to current projects at other Regents' institutions. The estimates will require further modification based upon definition of program and development of a more detailed architectural design. Further, pending technological changes in educational procedures, in environmental and living patterns, and in planning and construction techniques indicate a cautious usage of the projections. None-the-less, the costs projected herein are as accurate as possible with the present limits.

Because of the great similarity of the selected sites, the costs developed here represent an average which is applicable to all. There is one exception however. The sub-soil conditions at Carroll require special foundations for any building in excess of one storey where as at the other sites special foundations are not required until the building exceeds three storeys.

This factor will increase foundation costs by the unit shown. It has also indicated the desirability of an increase in heights where possible to take advantage of the special foundations. This is apparent in the decision to utilize five storey dormitories. This is possible without elevators by utilizing a mid-level entry setting the building into the slope. Of course, either a three-story or five-storey scheme could be developed at any site; however, a cost premium would still exist at Carroll.

BUILDING DEVELOPMENT PHASING

The construction phasing schedule is intended to provide a guide for proper development and required capital expenditures. Each type of building has variations in its expansion capabilities and this consideration plus others indicated the phasing program. This program envisions college growth preceeding projected enrollment so that there is minimum pressure placed upon the local municipality, particularly in housing. However, it also proposes the utilization of some in-town facilities until such time as appropriate facilities can reasonably be created on campus.

Since preliminary projections indicate that the institution will reach its 20 year level at about year 10, the schedule proposes all construction for the 20 year level be completed within the first decade.

The phasing assumptions and recommendations for each building type are as follows:

1. Classrooms, laboratories and faculty offices - It is assumed these functions would be grouped within the same building. These facilities can be expanded incrementally. However, it is disruptive and uneconomic to have the increments too small. It is recommended that construction be phased in four approximately equal elements.

2. Resource Center - This building type can also be expanded without major difficulty. However, its increments should not be made too small for efficiency and economy. It is recommended that one-half of the total phase be constructed initially and that growth occur in two equal increments.

3. Gymnasium - The characteristics of this building type indicate that phasing should occur in major increments. It is recommended that half be constructed initially and the remainder in one phase.

4. Pool - The major investment in this facility should not be made until student population on campus is of sufficient size to justify it. During the interim, local facilities such as a municipal pool or high school facility could be utilized. It is recommended that this element be constructed in one phase at such time as the population reaches approximately one-half its projected enrollment.

5. Administration - While this facility may be expanded with relative ease, it is suggested that phasing occur in two equal phases. This will avoid the problem of many small, uneconomical and disruptive increments of construction.

6. Union - Depending upon design philosophy and approach, this facility could have varying expansion capabilities. For simplicity, economy and lack of definitive program it is recommended that two equal phases be constructed. This would tend to increase the flexibility of usage.

7. Auditorium - This type of facility is not readily expanded. Further, local available facilities such as the high school auditorium could be utilized until a new on-campus unit is justified. This should be constructed in one phase at such time as the student body reaches approximately fifty per cent of its projected twenty year enrollment.

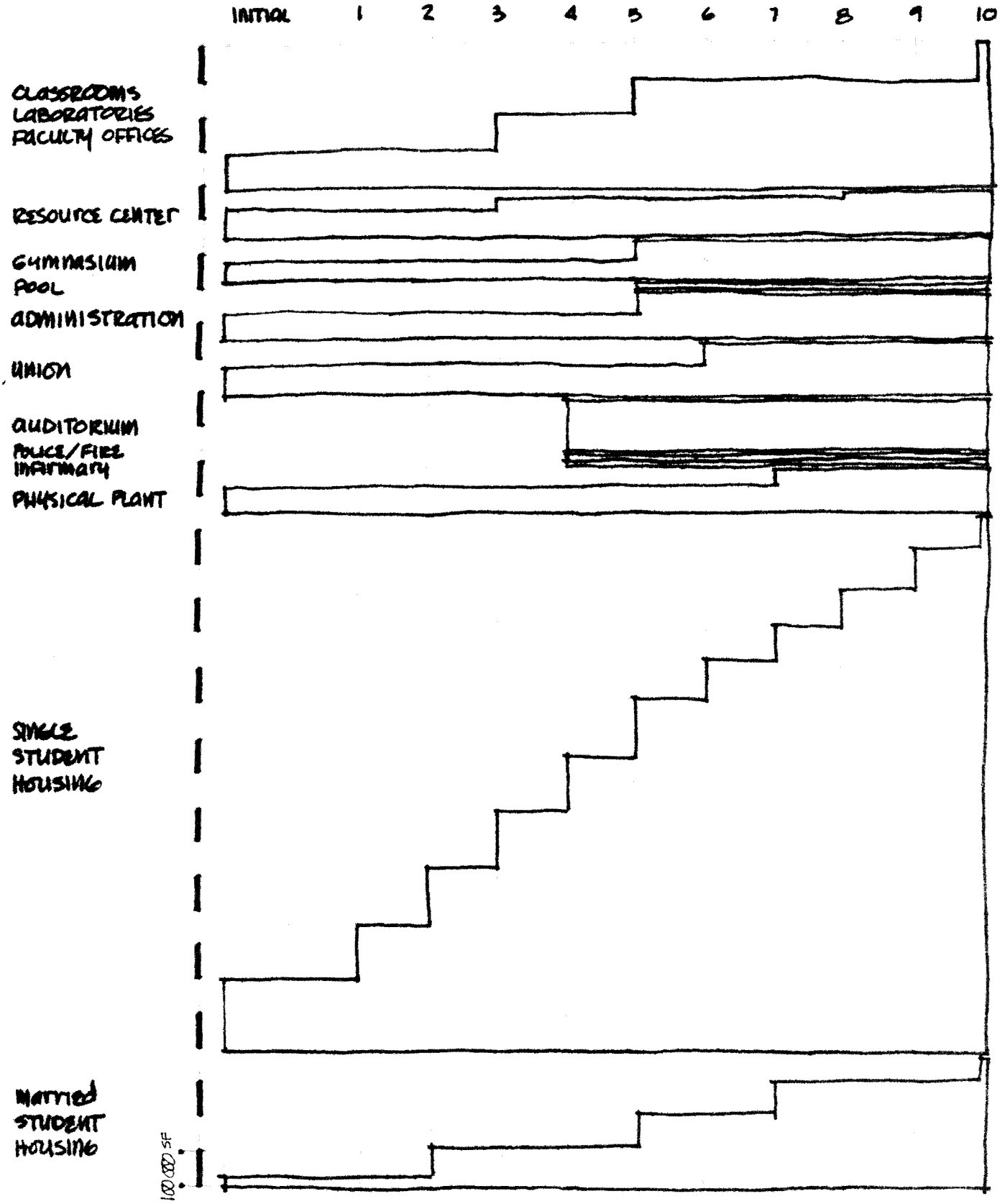
8. Infirmary - Local facilities and staff should be utilized until on-campus need is sufficient to justify a separate facility. It is recommended that this relatively small element be constructed in one phase at approximately year four of operation.

9. Police and Fire Facility - Local facilities and services should be sufficient to serve the campus for a period of approximately four years. At that time a facility should be constructed.

10. Physical Plant - It is difficult to describe accurately the actual phasing of some facilities under this heading. Certain major increments such as the power plant or shops can be scheduled. However, minor increments such as maintenance areas or storage areas often grow in an erratic manner. For the sake of simplicity and clarity, based upon the information available, the schedule of development indicates an initial increment of about 55% of the projected total, and one additional phase of the remaining area.

11. Single Student Housing - This building type can be readily built in varying sized units. It is recommended that it be in yearly increments of growth in relation to projections of student body expansion.

12. Married Student Housing - This building type can also be readily phased. However, because of its smaller requirements, the number of phases have been reduced to four. These phases are scheduled to respond to projected growth of the student body.



GROWTH INCREMENTS

ESTIMATED UNIT COSTS AS OF OCTOBER, 1968

BUILDING CONSTRUCTION

Building Type	Estimated Cost/sq.ft.
1. Classrooms, laboratories and faculty offices	$29.00
2. Resource Center	31.00
3. Gymnasium	24.60
4. Swimming Pool	47.00
5. Administration	27.70
6. Union	37.00
7. Auditorium	31.00
8. Infirmary	33.00
9. Police/Fire Facility	21.00
10. Physical Plant	27.50
11. Single Student Housing*	27.50
12. Married Student Housing	24.75

*Includes kitchem equipment and furnishings for common areas.

Due to the sub-soil conditions at the Carroll site, an additional 50¢ per sq. ft. cost must be added for special foundations.

ESTIMATED UNIT COSTS AS OF OCTOBER, 1968

UTILITIES AND MECHANICAL SERVICES FOR TOTAL DEVELOPMENT

1. Power Plant (excluding building)

Electrical system	$ 250,000
Chilled water system	1,450,000
Steam boilers and heating system	830,000
Misc.(plumbing, drainage, etc.)	20,000
SUB TOTAL*	$2,550,000

*Note: This cost included in the building unit construction cost. This unit cost is 77¢ per sq.ft.

2. Tunnel Distribution System $1,028,000

3. Site Utilities

Natural gas mains	$ 44,000
Primary water service	112,000
Sanitary sewer mains	136,000
SUB TOTAL**	$1,320,000

**Note: This cost when divided by the total building area provides the basic unit cost for site utilities. This unit cost is 40¢ per sq.ft.

SITE DEVELOPMENT

Site development actions including grading, planting, roads, parking and storm drainage is estimated at approximately 9% of the building construction cost.

FURNISHINGS AND EQUIPMENT

A factor of 12% of building construction cost is projected as an appropriate allowance for furnishings and equipment for academic facilities.

A per student unit estimate for furnishing of dormitory rooms is utilized for projecting costs for housing facilities. These unit are:

Single Students -- $600 per student.

Married Students -- $800 per student.

CONSTRUCTION PHASING COSTS IN OCTOBER 1968 DOLLARS

INITIAL CONSTRUCTION

Building Type	Construction Cost	Equipment& Furnishing	Site Development	Utilities and Mech.Services	Total Cost
Classrooms,labs, faculty offices	3,175,000	381,000	289,000	43,000	3,888,000
Resource Center	2,325,000	279,000	209,000	30,000	2,843,000
Gymnasium	1,675,000	205,000	151,000	27,000	2,058,000
Administration	2,061,000	248,000	186,000	29,000	2,524,000
Union	3,015,000	362,000	271,000	33,000	3,681,000
Physical Plant	2,200,000	264,000	198,000	32,000	2,694,000
Single Student Housing	6,075,000	552,000	546,000	88,000	7,261,000
Married Student Housing	604,000	30,000	54,000	9,000	697,000
TOTAL	21,130,000	2,321,000	1,904,000	291,000	25,646,000

YEAR 1 CONSTRUCTION

Single Student Housing	4,550,000	414,000	409,000	66,000	5,439,000
TOTAL	4,550,000	414,000	409,000	66,000	5,439,000

CONSTRUCTION PHASING COSTS IN OCTOBER 1968 DOLLARS (Continued)

Building Type	Construction Cost	Equipment & Furnishing	Site Development	Utilities and Mech. Services	Total Cost
YEAR 2 CONSTRUCTION					
Single Student Housing	4,550,000	414,000	409,000	66,000	5,439,000
Married Student Housing	2,260,000	112,000	207,000	37,000	2,616,000
TOTAL	6,810,000	526,000	616,000	103,000	8,055,000
YEAR 3 CONSTRUCTION					
Classrooms, labs, faculty offices	3,175,000	381,000	289,000	43,000	3,888,000
Resource Center	1,160,000	139,000	105,000	15,000	1,419,000
Single Student Housing	4,550,000	414,000	409,000	66,000	5,439,000
TOTAL	8,885,000	934,000	803,000	124,000	10,746,000
YEAR 4 CONSTRUCTION					
Auditorium	5,050,000	455,000	606,000	65,000	6,176,000
Infirmary	422,000	51,000	38,000	5,000	516,000
Police/Fire	269,000	32,000	24,000	5,000	330,000
Single Student Housing	4,550,000	414,000	409,000	66,000	5,439,000
TOTAL	10,291,000	952,000	1,077,000	141,000	12,461,000

CONSTRUCTION PHASING COSTS IN OCTOBER 1968 DOLLARS (Continued)

YEAR 5 CONSTRUCTION

Building Type	Construction Cost	Equipment & Furnishing	Site Development	Utilities and Mech. Services	Total Cost
Classrooms, labs, faculty offices	3,175,000	381,000	289,000	43,000	3,888,000
Gymnasium	1,675,000	205,000	151,000	27,000	2,058,000
Pool	940,000	113,000	85,000	8,000	1,146,000
Administration	2,061,000	248,000	186,000	29,000	2,524,000
Single Student Housing	4,550,000	414,000	409,000	66,000	5,439,000
Married Student Housing	2,260,000	112,000	207,000	37,000	2,616,000
TOTAL	14,661,000	1,473,000	1,327,000	210,000	17,671,000

YEAR 6 CONSTRUCTION

Union	3,015,000	362,000	271,000	33,000	3,681,000
Physical Plant	1,540,000	185,000	138,000	23,000	1,886,000
Single Student Housing	2,830,000	340,000	254,000	41,000	3,465,000
TOTAL	7,385,000	887,000	663,000	97,000	9,032,000

CONSTRUCTION PHASING COSTS IN OCTOBER 1968 DOLLARS (Continued)

Building Type	Construction Cost	Equipment & Furnishing	Site Development	Utilities and Mech. Services	Total Cost
YEAR 7 CONSTRUCTION					
Single Student Housing	2,830,000	340,000	254,000	41,000	3,465,000
Married Student Housing	2,075,000	104,000	187,000	33,000	2,399,000
TOTAL	4,905,000	444,000	441,000	74,000	5,864,000
YEAR 8 CONSTRUCTION					
Resource Center	1,160,000	139,000	105,000	15,000	1,419,000
Single Student Housing	2,830,000	340,000	254,000	41,000	3,465,000
TOTAL	3,990,000	479,000	359,000	56,000	4,884,000
YEAR 9 CONSTRUCTION					
Single Student Housing	2,830,000	340,000	254,000	41,000	3,465,000
TOTAL	2,830,000	340,000	254,000	41,000	3,465,000

CONSTRUCTION PHASING COSTS IN OCTOBER 1968 DOLLARS (Continued)

YEAR 10 CONSTRUCTION

Building Type	Construction Cost	Equipment& Furnishing	Site Development	Utilities and Mech.Services	Total Cost
Classrooms,labs, faculty offices	3,175,000	381,000	289,000	43,000	3,888,000
Single Student Housing	2,830,000	340,000	254,000	41,000	3,465,000
Married Student Housing	2,075,000	104,000	187,000	33,000	2,399,000
TOTAL	8,080,000	825,000	730,000	117,000	9,752,000
GRAND TOTAL	93,517,000	9,595,000	8,583,000	1,320,000	113,015,000

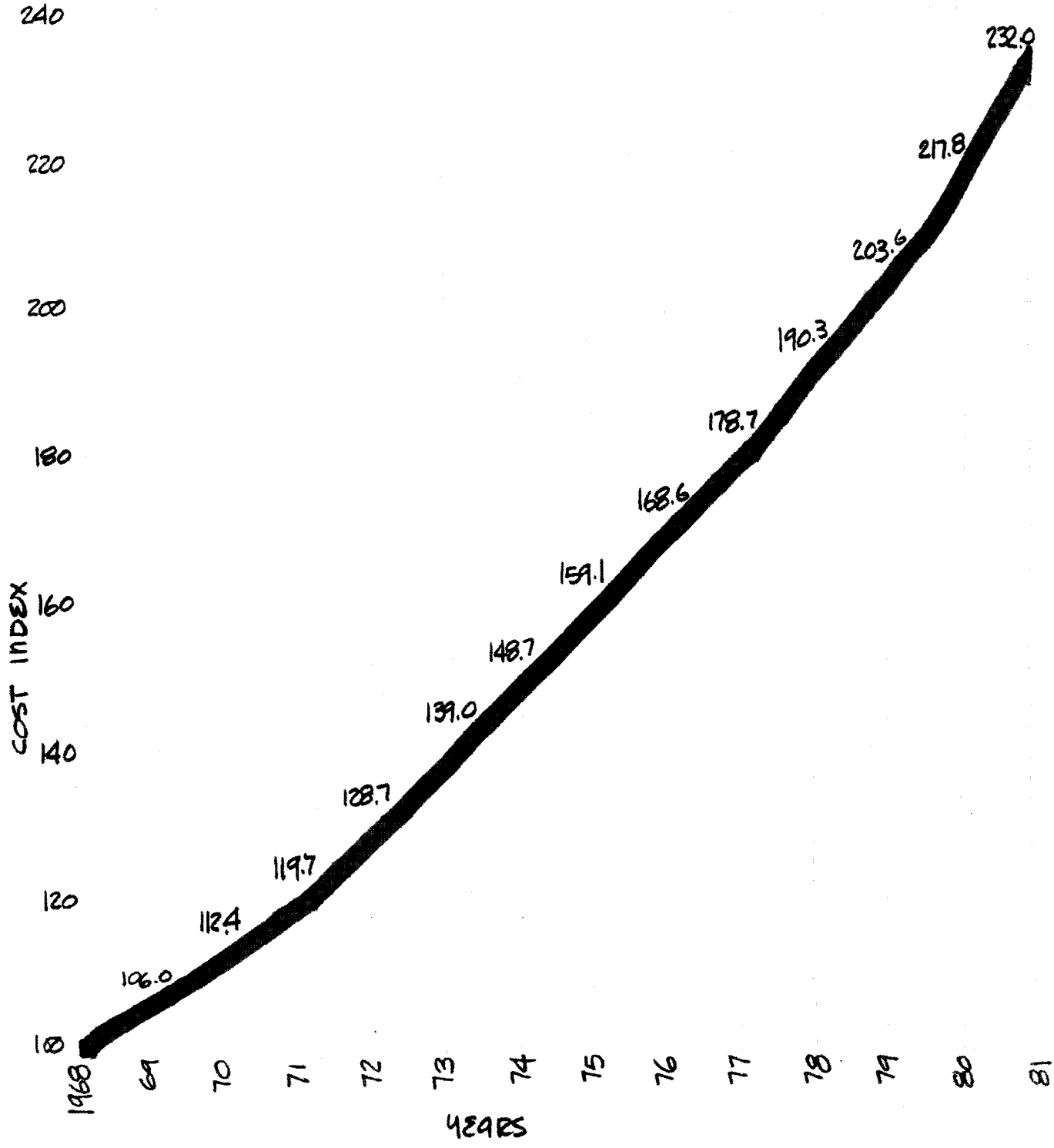
Note: Projecting an increase of 50¢ per sq.ft. for special foundations the costs for development of the Carroll Site is as follows:

95,173,000	9,595,000	8,583,000	1,320,000	114,671,000

COST INCREASE INDEX

This graph (located on page 55) projects the escalation of construction cost from 1968 to 1981. This projection is based upon present trends and any major reversal in these trends would have a major impact on the rate of increase.

These rates of increase, which are multipliers of the 1968 developments costs, are the basis for data on projected expenditures.



COST INCREASE INDEX

PROJECTED DEVELOPMENT EXPENDITURES BASED UPON 1973 INITIAL OCCUPANCY

Initial Construction	Bidding 1971	Occupancy 1973		
Development Cost in 1968 Units	Escalation Factor	Projected Cost	Fees	Total Cost
25,646,000	119.7	30,708,000	1,690,000	32,398,000

*Does not include land cost

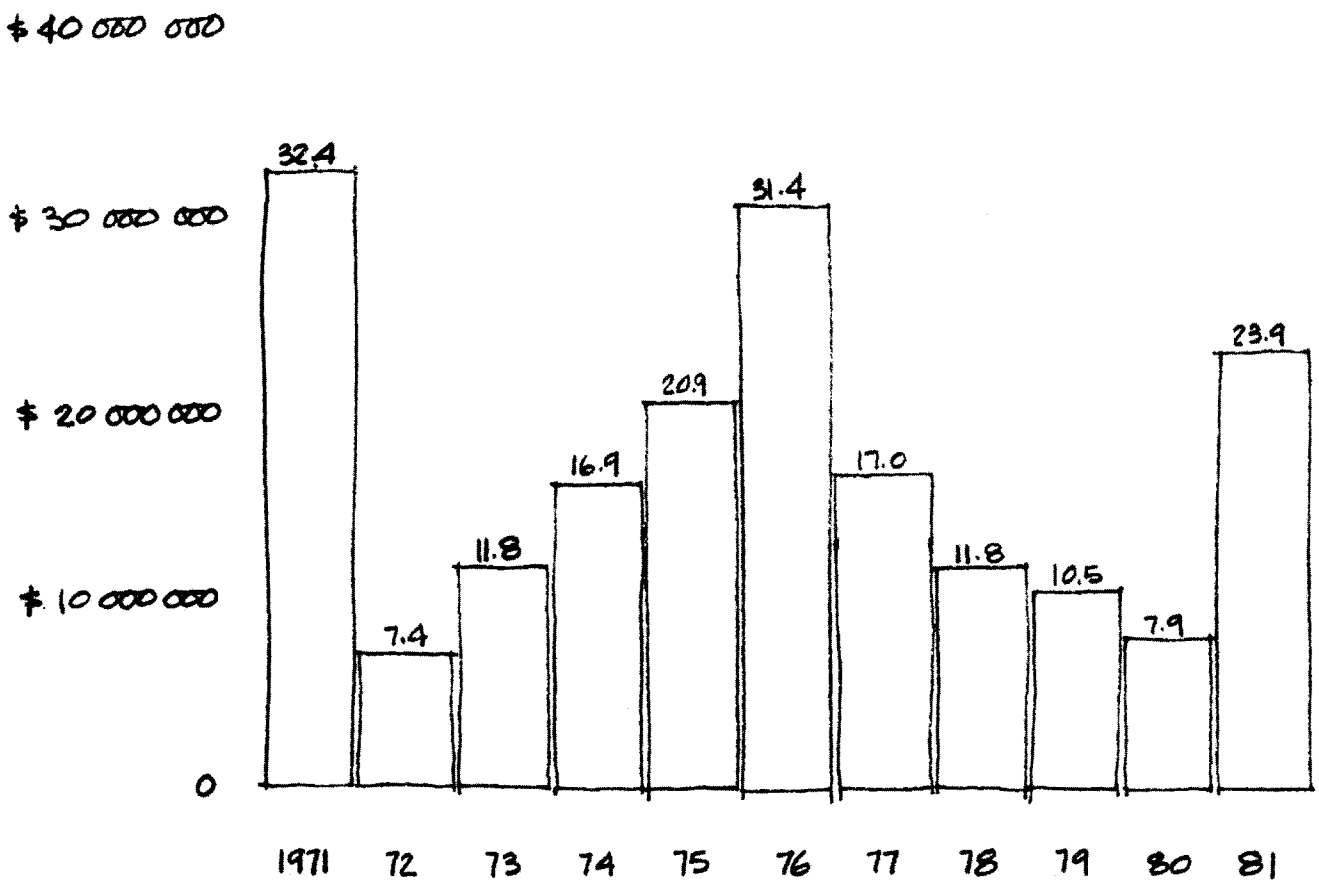
Year 1 Construction	Bidding 1972	Occupancy 1974		
5,439,000	128.7	6,980,000	384,000	7,364,000
Year 2 Construction	**Bidding 1973**	**Occupancy 1975**		
8,055,000	139.0	11,210,000	616,000	11,826,000
Year 3 Construction	**Bidding 1974**	**Occupancy 1976**		
10,746,000	148.7	15,980,000	875,000	16,855,000
Year 4 Construction	**Bidding 1975**	**Occupancy 1977**		
12,461,000	159.1	19,850,000	1,091,000	20,941,000
Year 5 Construction	**Bidding 1976**	**Occupancy 1978**		
17,671,000	168.6	29,800,000	1,639,000	31,439,000

PROJECTED DEVELOPMENT EXPENDITURES BASED UPON 1973 INITIAL OCCUPANCY (Continued)

	Development Cost in 1968 Units	Escalation Factor	Projected Cost	Fees	Total Cost
Year 6 Construction	Bidding 1977		Occupancy 1979		
	9,032,000	178.7	16,140,000	887,000	17,027,000
Year 7 Construction	Bidding 1978		Occupancy 1980		
	5,864,000	190.3	11,190,000	615,000	11,805,000
Year 8 Construction	Bidding 1979		Occupancy 1981		
	4,884,000	203.6	9,950,000	547,000	10,497,000
Year 9 Construction	Bidding 1980		Occupancy 1982		
	3,465,000	217.8	7,550,000	415,000	7,965,000
Year 10 Construction	Bidding 1981		Occupancy 1983		
	9,752,000	232.0	22,640,000	1,246,000	23,886,000
TOTAL	113,015,000	-	181,998,000	10,005,000	192,003,000

Note: The revised projections for the Carroll Site, including escalations and fees are as follows:

114,671,000	-	184,450,000	10,841,000	195,291,000



CAPITAL EXPENDITURES

BASED UPON 1973 INITIAL OCCUPANCY

ESTIMATED DEVELOPMENT COSTS - OFF-SITE UTILITIES

These estimates are for required increases in municipal support facilities due to the effects of the location of the proposed institution on the town. The agency which will bear these costs is presently undetermined.

All costs are based upon current (October, 1968) estimates and would be subject to escalation based upon the year of implementation.

ATLANTIC	Initial	5-Years	10-Years	Total
1. Sewage Treatment Plant	$125,000	$300,000	$ -	$ 425,000
2. Sanitary Piping	58,000	-	-	58,000
3. Water Treatment Plant	175,000	400,000	-	575,000
4. Water Storage and Pumping System	-	160,000	-	160,000
5. Water Piping	7,000	-	-	7,000
6. Storm Water System	7,000	-	-	7,000
7. Off-Site Lighting	55,000	42,000	42,000	139,000
TOTAL*	$427,000	$902,000	$42,000	$1,371,000

*Note: Gas and electric utilities install service to property line without cost.

ESTIMATED DEVELOPMENT COSTS - OFF-SITE UTILITIES (Continued)

CARROLL	Initial	5-Years	10-Years	Total
1. Sewage Treatment Plant	$250,000	$250,000	$ -	$ 500,000
2. Sanitary Piping	8,000	-	-	8,000
3. Water Treatment Plant	880,000	300,000	-	1,180,000
4. Water Storage and Pumping System	-	325,000	-	325,000
5. Water Piping	25,000	-	-	25,000
6. Storm Water System	7,000	-	-	7,000
7. Off-Site Lighting	55,000	42,000	42,000	139,000
TOTAL*	$1,225,000	$917,000	$42,000	$2,184,000

*Note: Gas and electric utilities install service to property line without cost.

ESTIMATED DEVELOPMENT COSTS - OFF SITE UTILITIES (Continued)

HARLAN	Initial	5-Years	10-Years	Total
1. Sewage Treatment Plant	$125,000	$250,000	$ -	$ 375,000
2. Sanitary Piping	50,000	100,000	-	150,000
3. Water Treatment Plant	325,000	325,000	-	650,000
4. Water Storage and Pumping System	-	325,000	-	325,000
5. Water Piping	2,000	-	-	2,000
6. Storm Water System	-	-	-	-
7. Off-Site Lighting	55,000	42,000	42,000	139,000
TOTAL*	$557,000	$1,050,000	$42,000	$1,641,000

*Note: Gas and electric utilities install service to property line without cost.

LAND APPRAISALS AND COSTS

Two appraisals "to estimate the fair market value of the proposed site as of October 10, 1968" were secured for each Prime Site. The appraisals were completed by John D. Ingraham, MAI #1997 and by H. E. Stalcup, ARA #59. Copies of their appraisal reports are one file with the office of the Board of Regents, Des Moines.

Their reports make it clear that these appraisals were somewhat different than the typical real estate appraisal in that the intended highest and best use as a "college site" is unusual and therefore was undertaken with little or no precedential or comparable data at hand, that limitations of time prohibited a detailed survey of the properties involved as is usually done, that legal descriptions and other data on availability, etc., furnished to the appraiser had to be assumed to be correct, and that only the "Market" approach to estimating the value of the property was utilized whereas the normal appraisal employs three approaches: "Market", "Earnings" or "Income", and "Cost". (The "Market" approach involves comparison of the subject property with properties which have actually sold or which the terms of the sale are known.) For these reasons the appraisers, while rendering their opinion relative to the fair market value of each of the Prime Sites, will not testify to the estimated values in court without an

opportunity to make the usual search for information normally used in a complete appraisal.

The appraisal reports contain maps and text describing the Prime Sites, the appraisers findings as to land values indicated by other sales in the area, certain assumptive data relative to community aspects, assessed values and taxes, zoning, utilities and improvements to be provided in view of the college's being located on the site under examination, and various exhibits describing buildings and other improvements now existing on each site or on properties in the area of the site.

The appraisal opinions as to Prime Site values may be summarized as follows:

Prime Site	Ingraham	Stalcup
Atlantic		
Acres	698.81	698.81
Cost/Acre	$725.00	$700.00
Total Value	$506,650.00	$489,000.00
Carroll		
Acres	852.10	852.10
Cost/Acre	$875.00	$900.10
Total Value	$745,600.00	$766,900.00
Harlan		
Acres	730.40	730.40
Cost/Acre	$1,000.00	$980.00
Total Value	$730,400.00	$715,800.00

These costs do not allow for condemnation costs since it is anticipated in each case that the land can be acquired without condemnation. Closing costs and boundary survey costs will total approximately $1000 for any one of the three Prime Sites.

COST RECAPITULATION

In addition to the development, land, and off-site costs previously enumerated; certain preliminary fees must be expended. These will include educational consulting fees, program development costs, legal fees and miscellaneous administrative costs. (Administration costs are included in the section on Operation.)

These costs may be shared to some degree or another by the State and the Municipality or they may be borne entirely by the State. Assuming an initial occupancy date of 1973 and a schedule similar to that projected, the following costs are a valid estimate of funding required. The expenditures indicated cover the span of time from 1968 to 1981. All figures include an appropriate factor for escalation.

Preliminary Costs		$ 150,000
Land Acquisition	(Average Cost)	659,000
Off-Site Utilities	(Average Cost)	2,922,000
Campus Development*		192,003,000
TOTAL		$195,734,000

*Note: Development cost for Carroll Site will be higher by the factor indicated in the section on Projected Development Expenditures.

INITIAL FUNDING REQUIREMENTS

The following expenditures are based upon an assumed initial occupancy date of 1973. These estimates do not include administrative, operational or off-site costs which are to be borne by the community.

1969 Biennium

Land Acquisition (Average Cost)	$ 659,000
Consultants Fees (Programming and Master Planning)	150,000
Initial Stage Construction (Bidding 1971 - Occupancy 1973)	32,398,000
TOTAL	$33,207,000

1971 Biennium

Year 1 Construction (Bidding 1972 - Occupancy 1974)	$ 7,364,000
Year 2 Construction (Bidding 1973 - Occupancy 1975)	11,826,000
TOTAL	$19,190,000

COMMUNITIES AND SITES

ATLANTIC AND ITS PRIME SITE

ATLANTIC COMMENTARY

THE COMMUNITY: For a description and evaluation of the Atlantic Community, its support facilities and their suitability in respect to servicing the student population of the college-void area of Western Iowa, reference is made to this Report's companion reports prepared by Cresap, McCormick and Paget.

THE SITE: The Atlantic site, measuring 698.81 acres, lies immediately south of and adjacent to the community. Recent expansion of the community has tended to encompass the site on the east along Chestnut Street, an extension of the community's "main" business district street, and along a portion of the site's southern border. The site's topography is rolling, cut by several moderate ravines and is partially covered by a fine stand of open oak timber. Developed, high quality residential, city park and private country club properties border the site to the north and east and partially on the south. Open farm land encloses the remainder of the site to the south and west. The use of the site is mostly devoted to grazing and meadows and its general slope is from high points on the south and east down to lower points on the west bordering the Nishnabotna River flood plain. Several local streets extend to or onto the site. US Route 6 borders the site on the west.

Although not yet officially proposed, there have been discussions about routing US 6 south of the community to a point just south of the site. If that were done, direct regional access to the site would be considerably improved. Under present conditions most regional traffic would proceed to the site after filtering through the community from existing US 6 and Interstate 80 north of the site.

The site configuration is generally rectangular with its long axis running east-west. Its northern and eastern borders are well integrated with those of the community and the city and campus flow together minimizing visual and physical boundaries. At Atlantic there will be less physical separation between campus and community than at either Carroll or Harlan.

The Atlantic Prime Site offers significant opportunities for creating a campus setting of real merit. Visual approaches to the site are very good, particularly from US Route 6 which borders the site along its lower elevation and from which the campus rises and would be entirely visible and thus comprehensible in its entirety. The wooded slopes would serve to soften the raw edges of the institutional plant in its early years while forever providing a natural background for the built facilities. These

factors combined with the fine integration between campus and community land areas make for an excellent environment within which to develop a very real "sense of place" for the campus. Moreover, the companion reports prepared by Cresap, McCormick and Paget indicate the regional location advantages inherent in Atlantic and its Prime Site as compared to Carroll, and reveal certain community support advantages of Atlantic relative to Harlan. These advantages combine with the site advantages discussed herein to cause Atlantic and its Prime Site to be the more desirable location for the proposed institution.

THE FACILITIES: Examination of the site reveals two east-west ridges running nearly the length of the site and overlooking the Nishnabotna River Valley. The schematic master plan places the institution's physical facilities on these ridges and their slopes, leaving the lower western portions of the site, adjacent to US 6, for eventual development of a field house and stadium facilities.

Principal regional access will be from the present US 6 on the west and from a relocated US 6 on the south. Local access would be from the various existing community streets that either touch or extend into the site.

Academic facilities occupy the center of the developed portion, married student housing is placed east of the academic facilities and nearest to existing residential areas while single student housing occupies the ridge south of the academic facilities. The timber areas filter in and around the building complexes and act as a backdrop to these facilities.

Sub-surface soil investigations indicate that one, two and three storey buildings can be supported on spread footings with a design bearing pressure on the order of 3000 pounds per square foot. Buildings exceeding three storeys will require deeper foundation systems such as driven piles or cast-in-place concrete caissons.

Soil and topographical conditions are such that a lake is feasible at this site although its development should await completion of initial building phases. The watershed is primarily all on-site and is approximately 250 acres in extent. Surface conditions are good for water quality and silt control. Pollutants are minimal, being restricted to residential septic systems which can be eliminated by extension of the sanitary sewer system. Stream threads are presently dry. However, farm wells

in the vicinity are some 25 feet in depth and adequate underground water supply should be available. These conditions make possible a lake of approximately 25 acres in extent. A natural lake with minimum excavation would result by constructing an earth dam, with a top elevation of 1220 feet, near the northwest portion of the site. Surface elevation would be 1215 feet and average depth approximately 17 feet. The lake is not shown on the schematic master plan herein since it is doubtful that its development would be considered in the early years of the institution.

ON-SITE UTILITIES: Campus utilities planned for service of an institution located on the Atlantic Prime Site are similar to those proposed for the Prime Sites at Carroll and Harlan. These are described in this report's section entitled: INSTITUTIONAL PROGRAM.

OFF-SITE UTILITIES: The City of Atlantic's utility distribution systems, natural gas, city water, sanitary sewer, and electric power are available near the north boundary of the Prime Site.

The city water supply is obtained from deep wells located near Troublesome Creek northeast of the city. The water is treated with chlorine, fluoride, mineral removal, but is not softened. Existing supply mains are available approximately 600 feet east of the northeast corner of the Prime Site. The connection and extension of an 8 inch main for water supply to the Prime Site will need to be provided.

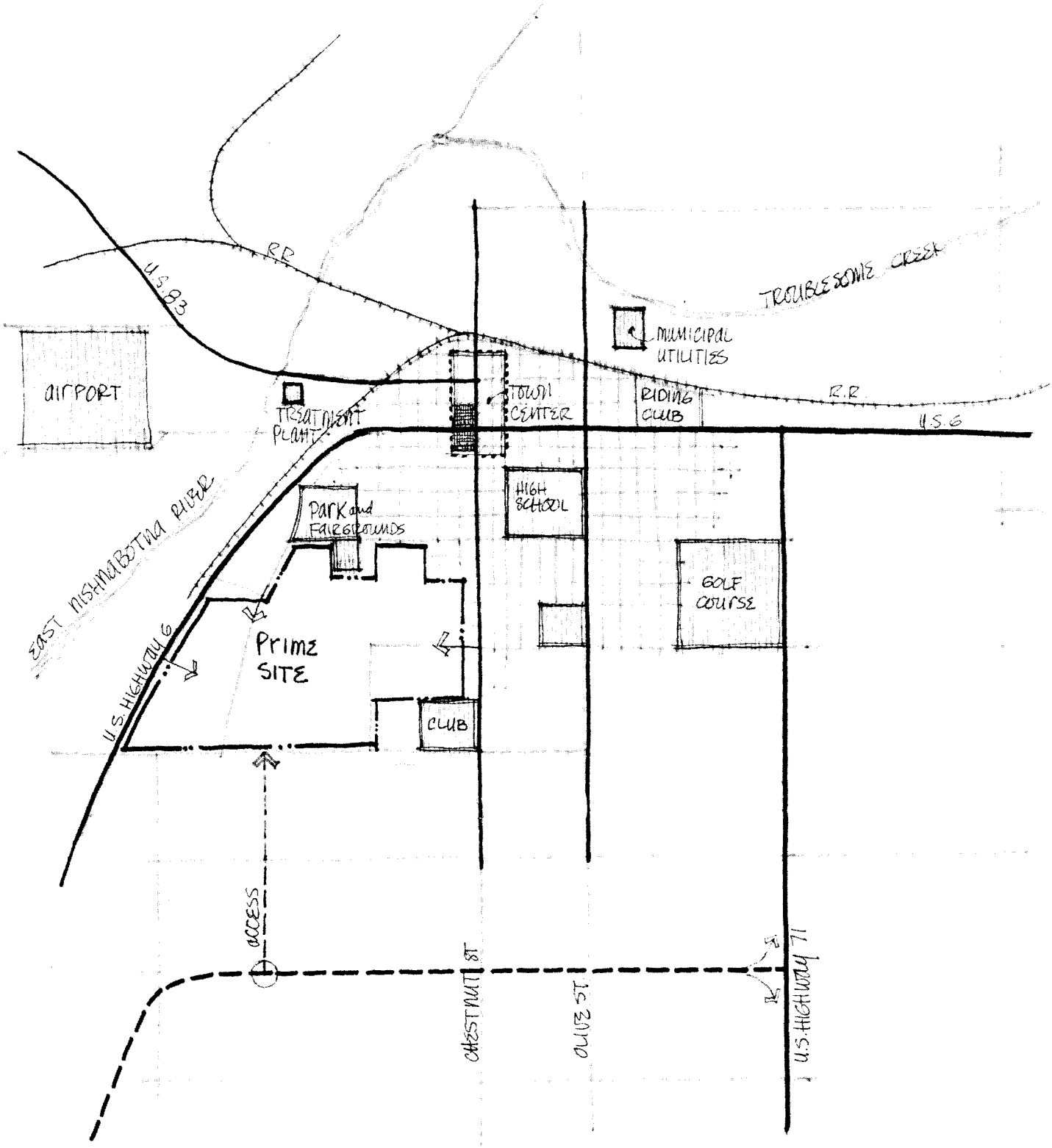
The present sewage disposal plant is located northwest of the city, adjacent to the Nishnabotna River. The total capacity of the plant is 1,500,000 GPD, and to accommodate the demand of the future population increase and the present population, the sewage plant will need to be expanded to a capacity of approximately 3,200,000 GPD. A 12 inch sanitary sewer main 400 feet north of the Prime Site and an 8 inch main the northwest corner of the site are available. A 15 inch main to the site will need to be provided. The topography of the Prime Site will permit gravity flow from the building areas to the sanitary disposal system.

A 3 inch low pressure natural gas main is available at the northwest corner of the site. The existing high pressure gas regulating station is located near 10th Street and Sunnyside Lane approximately 1500 feet north of the northwest corner of the site. A 4 inch gas supply main will need to be extended to the site.

Surface storm water from the site will drain to the west, under US Route 6, into the Nishnabotna River. A campus storm water system will drain northwest from the building areas to an existing storm ditch that drains into East Nishnabotna River.

Electric power will be provided by the Atlantic Municipal Utilities from the existing 13.2 KV line at the south edge of the community. The principal power sources for this system are local generation and allotments from the Iowa Power and Light Company. Current revisions, to be completed by late 1969, will restructure principal power source to the U.S. Bureau of Reclamation (through the Northwest Iowa Power Cooperative) and local generation.

COSTS: Development costs for the facilities indicated here are discussed in this report's section entitled: DEVELOPMENT CONCEPTS AND COSTS.



TOWN AND SITE

ATLANTIC


CRUM LYNN CLUB
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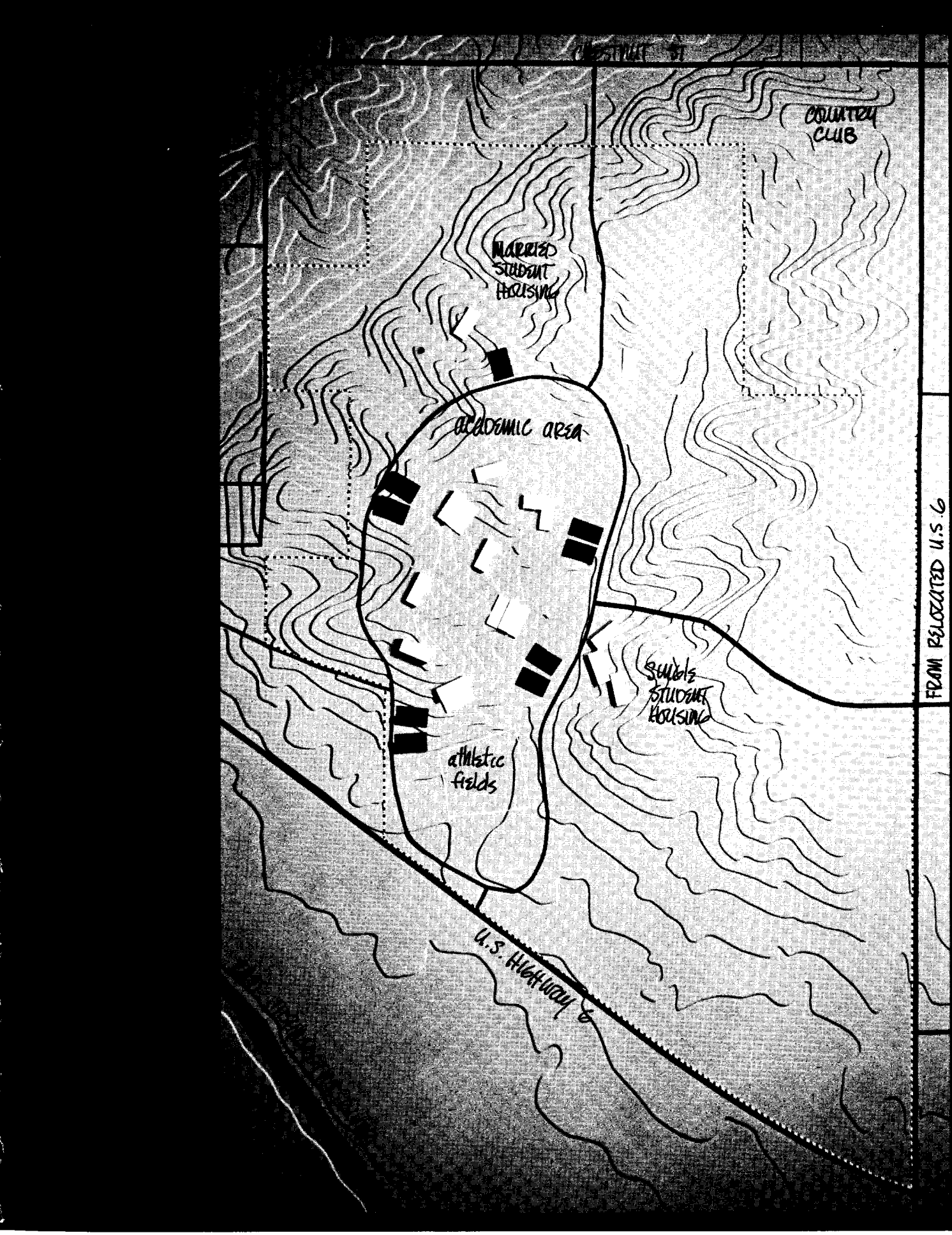

INITIAL PHASE

ATLANTIC

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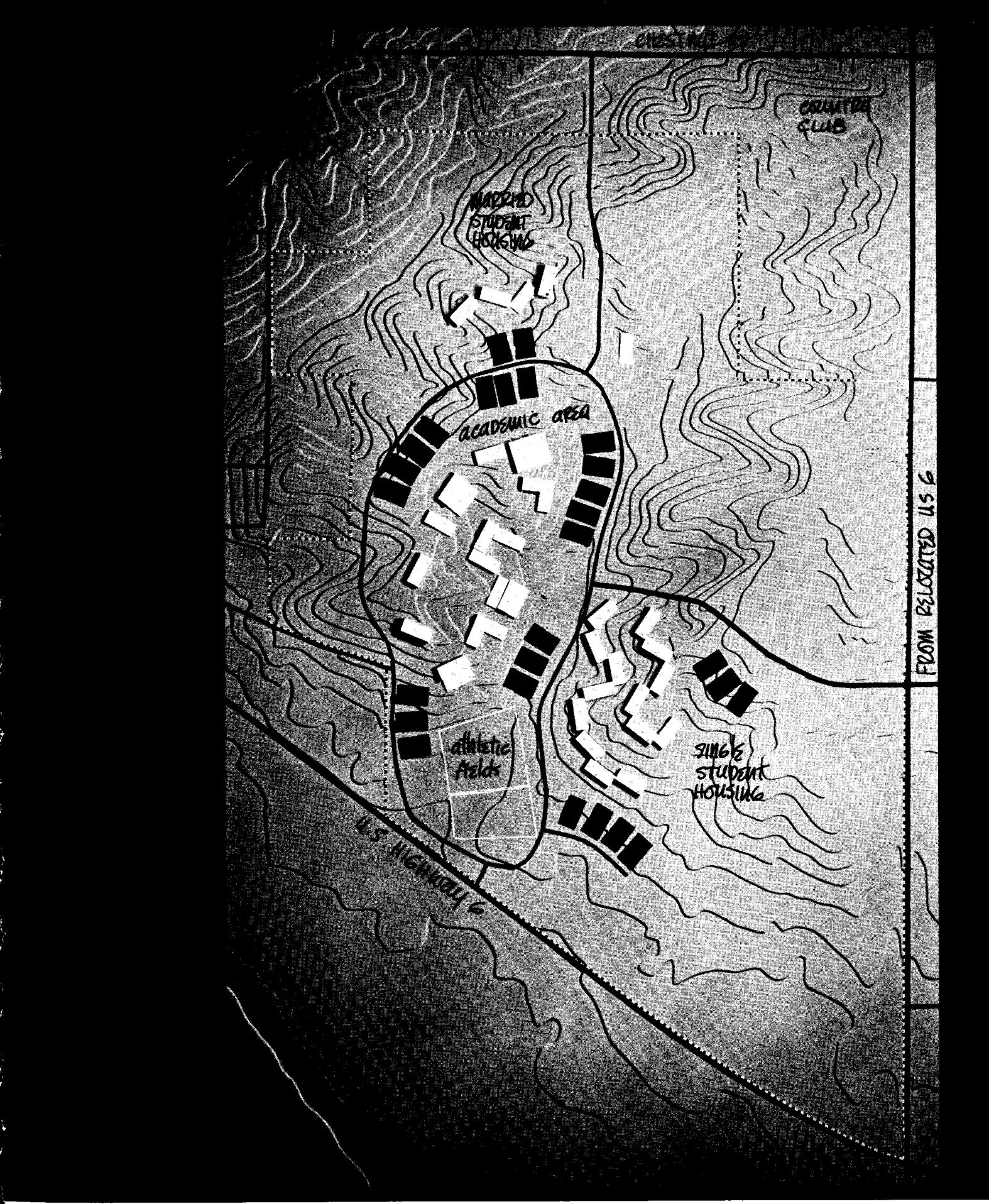

YEAR 5 PHASE

ATLANTIC

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YEAR 10 PHASE

ATLANTIC

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CARROLL AND ITS PRIME SITE

CARROLL COMMENTARY

THE COMMUNITY: For a description and evaluation of the Carroll Community, its support facilities and their suitability in respect to servicing the student population of the college-void area of Western Iowa, reference is made to this Report's companion reports prepared by Cresap, McCormick and Paget.

THE SITE: The site, measuring 852.10 acres, and nearly square in configuration, lies south across the Racoon River Valley from the community.

Swan Lake State Park borders the campus on the east. Expansion plans for this park indicate some possible minor conflict over the common border between these two land uses. However, a design mutually supportive of the objectives of both users is easily accomplished. Without question, the uses are compatible and would serve to enhance the facilities of both public agencies.

Principal access to the campus is provided by Grant Street extending south from the city through the east central portion of the Prime Site, and by US Route 71 bordering the campus on the west. US Route 71 will have direct access, probably by grade separation interchange, to a relocated US Route 30 just to the south of the campus. Recent official

state highway proposals also suggest that US Route 71 be relocated some three to four miles to the west of its present alingment. However, the best judgment at this time indicates that a major access interchange to the Carroll area from a relocated US Route 30 will most likely be at or very near the southwest corner of the Prime Site. These existing and relocated highway facilities offer excellent regional and local access to the campus.

The resources of the Carroll Prime Site, properly coordinated through collaborative design efforts with those of adjacent Swan Lake State Park, would produce an asset of unusual and major proportions to the people of the State of Iowa. Further, the lands north of the campus/park area, i.e. lands bordering the Racoon River, are relatively undeveloped and could be combined with the campus/park lands to provide an even more extensive regional educational and recreational complex. However, as pointed out elsewhere herein and in the companion reports prepared by Cresap, McCormick and Paget, Carroll and its Prime Site are less well situated within the region than either Atlantic or Harlan in respect to servicing the locational objectives

of the proposed institution. This regional location factor is the major disadvantage of the Carroll Prime Site relative to its selection as the location of an institution of higher education in Western Iowa.

THE FACILITIES: Its topography gives the site a semi-circular, or horseshoe-shaped, building area. Its low open heel faces Route 71 on the west, its high toe overlooks Swan Lake to the east, and ridges rim the central bowl to the north and south. These rims and ridges present opportunities for multi-level structures stepping down the slopes with entry at upper levels.

This design approach fits nicely with requirements dictated by soil requirements. Sub-surface soil investigations indicated single storey structures can be supported on spread footings with a design bearing pressure on the order of 3000 pounds per square foot. Buildings exceeding one storey will require deeper foundation systems, such as driven piles or cast-in-place concrete caissons.

Principal entry is through the heel from Route 71, past field houses and stadium facilities in the bowl, and up the ridge to a ring road serving the academic facilities which occupy the toe and overlook Swan Lake. The ring road is

formed by relocating the Grant Street extension to the east of the toe permitting views of the Lake and of the institution while preserving unimpeded pedestrian circulation within the academic zone. The ring road circumscribes sufficient area for future academic facility expansion within the ring. Academic facilities generally do not exceed four storeys in order to permit easy circulation without elevators.

The power plant is positioned directly north of the academic zone, a location most suitable for connection with existing utilities and service facilities.

Single student housing occupies the south rim and is served by both the main entry road and by the county road bordering the site on the south. To minimize foundation expense, all single student housing facilities are of five storeys with entry at either the second or third level. Future growth could occur westward along the southern rim.

Married student housing is located along the north rim and would be of residential design, i.e. one or two storeys and of domestic scale to relate to the existing city housing area to the north. These structures are not served by the central power plant and would be treated as a separate residential area.

Soil and topographical conditions make it unrealistic to seriously consider a water feature - such as a lake - at this site either in initial stages of development or in later years. While a natural bowl occupies its center portion and its drainage area is sufficient for purposes of supply, the bowl's section is extremely shallow and its control points not well defined. Moreover, soil types are such as to present sediment problems and the flow characteristics of entry water would tend to be lethargic. Eutrophication would be a major concern without constant maintenance.

ON-SITE UTILITIES: Campus utilities planned for service of an institution located on the Carroll Prime Site are similar to those proposed for the Prime Sites at Atlantic and Harlan. These are discussed in this report's section entitled: INSTITUTIONAL PROGRAM.

OFF-SITE UTILITIES: Existing city water, natural gas, and sanitary sewer systems are available near the north boundary of the Prime Site.

The City of Carroll water supply is obtained from deep wells located along the Middle Racoon River north of the Prime Site.

The water is chlorinated, but is not softened. Existing supply mains are located approximately 2400 feet north of the Prime Site. The connections and extensions for an 8 inch water supply main will need to be provided.

The sewage disposal plant, located northeast of the Prime Site, is being expanded to a total capacity of 1,600,000 GPD. To accommodate the demand of future population increases, the sewage plant will need to be further expanded to a total capacity of 3,500,000 GPD. An existing 30 inch sanitary sewer main is available and located about 600 feet northeast of the Prime Site. The connections and extension of a 15 inch main to the site will need to be provided. The topography of the site will permit gravity flow from the building areas to the sanitary disposal system.

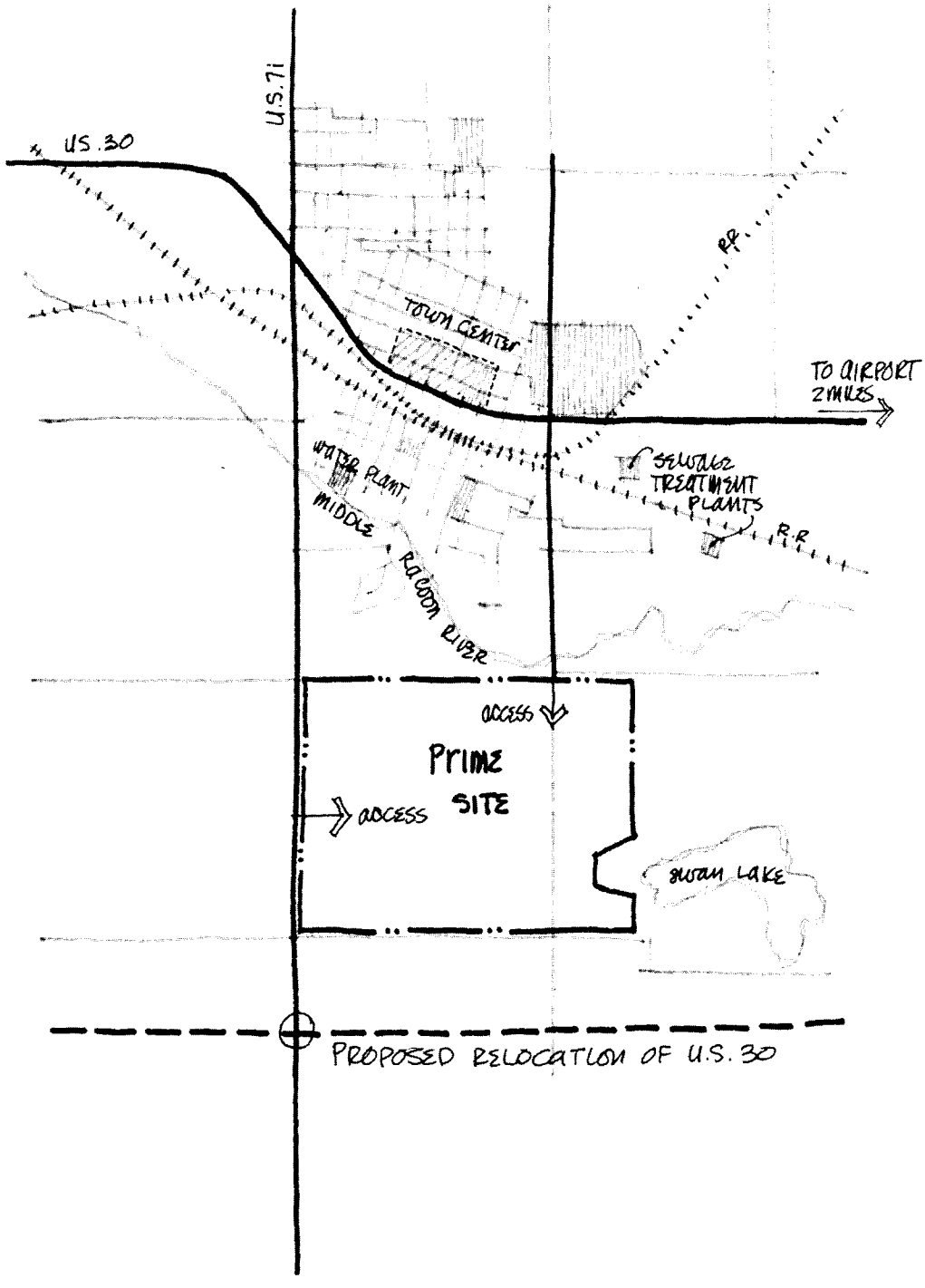
An 8 inch natural gas high pressure supply main is located at the northeast corner of the Prime Site. A pressure regulating station and a 4 inch supply main will need to be provided and extended to the site.

The Racoon River, parallel to the north boundary of the site, and Swan Lake, directly east of the site, will accommodate storm water run-off. The topography of the site and surrounding area shows that surface drainage from the site and

building areas will, for the most part, be directed to the Racoon River.

The Iowa Public Service Company will provide electric power service from the 34 KV transmission lines at the south end of the community. This company's system provides multiple sources in this area, among them being an "on-line" local plant (10,000 KW), and 161. KV and 69. KV ties to the Iowa Public Service Company's power pool.

COSTS: Development costs for the facilities indicated above are discussed in this report's section entitled: DEVELOPMENT CONCEPTS AND COSTS.



TOWN AND SITE

CARROLL

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SITE

CARROLL

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INITIAL PHASE CARROLL

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YEAR 5 PHASE

CARROLL

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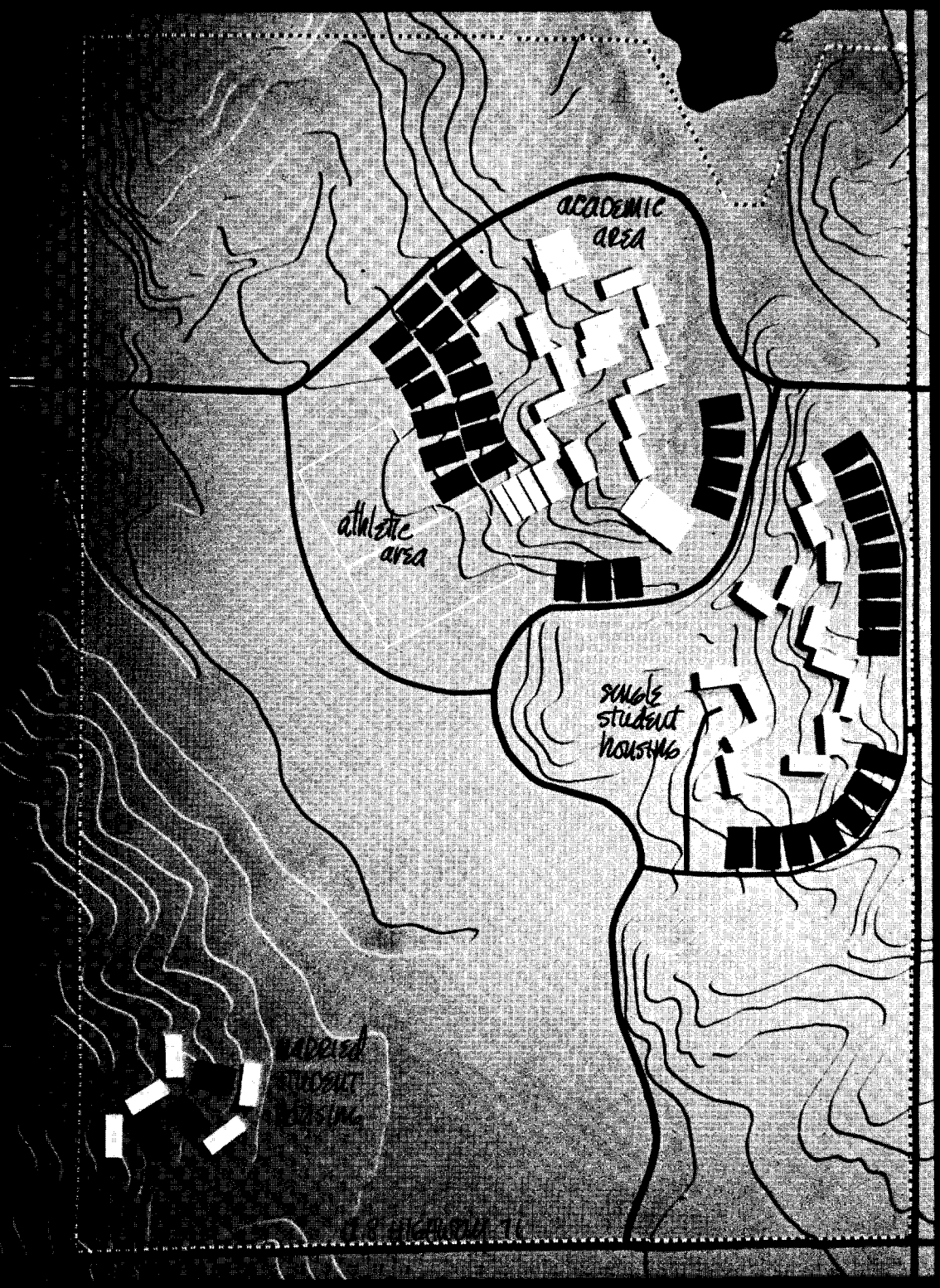

YEAR 10 PHASE

CARROLL

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HARLAN AND ITS PRIME SITE

HARLAN COMMENTARY

THE COMMUNITY: For a description and evaluation of the Harlan Community, its support facilities and their suitability in respect to servicing the student population of the college-void area of Western Iowa, reference is made to this Report's companion reports prepared by Cresap, McCormick and Paget.

THE SITE: The Harlan Prime Site, measuring 730.4 acres, lies directly north of and adjacent to the community. It is buffered from the community by a cemetery and a tract of large-acreage residential properties bordering the site on the south. It is rectangular in shape with its long axis running north-south.

Its gently rolling topography places it high above the Nishnabotna River Valley off to the east. Drainage-ways and intermittent ridges traverse the site west to east.

Existing US Route 59 runs the length of the site on its eastern border and a relocated Route 59 - now in the design stage - will be constructed along the western border in the early 1970's. Local and regional access to the site is excellent.

For the most part adjacent land uses are agricultural, providing an open, pastoral setting for the campus site. The site's ridges and swales are nicely spaces and well

defined, creating many building sites, each with fine orientation and view potentials - particularly to the east and southeast out and over the river valley.

The spirit and attitude of the people of Harlan deserve special mention. They are optomistic, energetic people whose desire to develop a healthy, balanced, growing community is evident in all of their community programs.

This report's compansion reports prepared by Cresap, McCormick and Paget indicate that Harlan is disadvantaged relative to Atlantic in regards to regional location criteria and to community support facilities. A similar situation pertains to site suitability for the purposes of the proposed institution. The Harlan Prime Site, while very adequate for the purposes of the institution, does not have the same potential of the Atlantic Prime Site as a setting for a college campus. It is less well related to its community, lacks the timber cover found at Atlantic, has more uncommited adjacent land areas, and because of its setting does not have the quality of landscape resources for creating a "sense of place" that the Atlantic Prime Site possesses.

THE FACILITIES: Master planning for the facilities makes maximum use of the major ridges traversing the site. Married student facilities are placed on the southern ridge closest to the developed community. Academic facilities occupy the center ridge and single student housing is placed on the northern most ridge. All of these facilities are placed to provide views down the slopes and draws, principally toward the Nishnabotna River plain. Ring roads serve both the academic and housing areas, and multiple access is provided to both the existing and relocated US 59 routes.

Sub-surface investigation indicates that one, two and three storey buildings can be supported on spread footings with a design bearing pressure on the order of 3000 pounds per square foot. Buildings exceeding three storeys will require deeper foundation systems such as driven piles or cast-in-place concrete caissons.

A water feature at the Harlan Prime Site is feasible but not recommended during the early years of the institution. The center drainage-way appears to be the most practical location for such a water feature. A lake of some 70 acres is possible. However, due to topography, a natural lake with minimum excavation would contain approximately 20-25 acres. Its watershed would measure approximately 700 acres with 200 of these acres being on-site. Possibilities of springs is

apparent in the area and the north drainage-way is presently wet and flowing. Construction of an earth dam at the east edge of the center drainage-way would produce a water elevation of 1250 feet and a depth of approximately 15 feet. The lake would be generally long and narrow, stretching through the center of the site between the academic facilities and the single student residential facilities.

For the forseeable future, agricultural cultivation could aggravate silting, and residue from agricultural chemicals could create pollution situations. These problems will abate as urbanization of the agricultural areas proceeds.

ON-SITE UTILITIES: Campus utilities planned for an institution located on the Harlan Prime Site are similar to those proposed for the Prime Sites at Atlantic and Carroll. These are described in this report's section entitled: INSTITUTIONAL PROGRAM.

OFF-SITE UTILITIES: The city of Harlan utility distribution systems, i.e. city water, natural gas, sanitary sewer, and electric power, are available near the southeast corner of the site.

The city water supply is obtained from deep wells located south of the city. The water is treated with chlorine, fluoride, and is softened. An existing 10 inch supply main is

available and located at the southeast corner of the site. The connection and extension of an 8 inch main for water supply to the site will need to be provided.

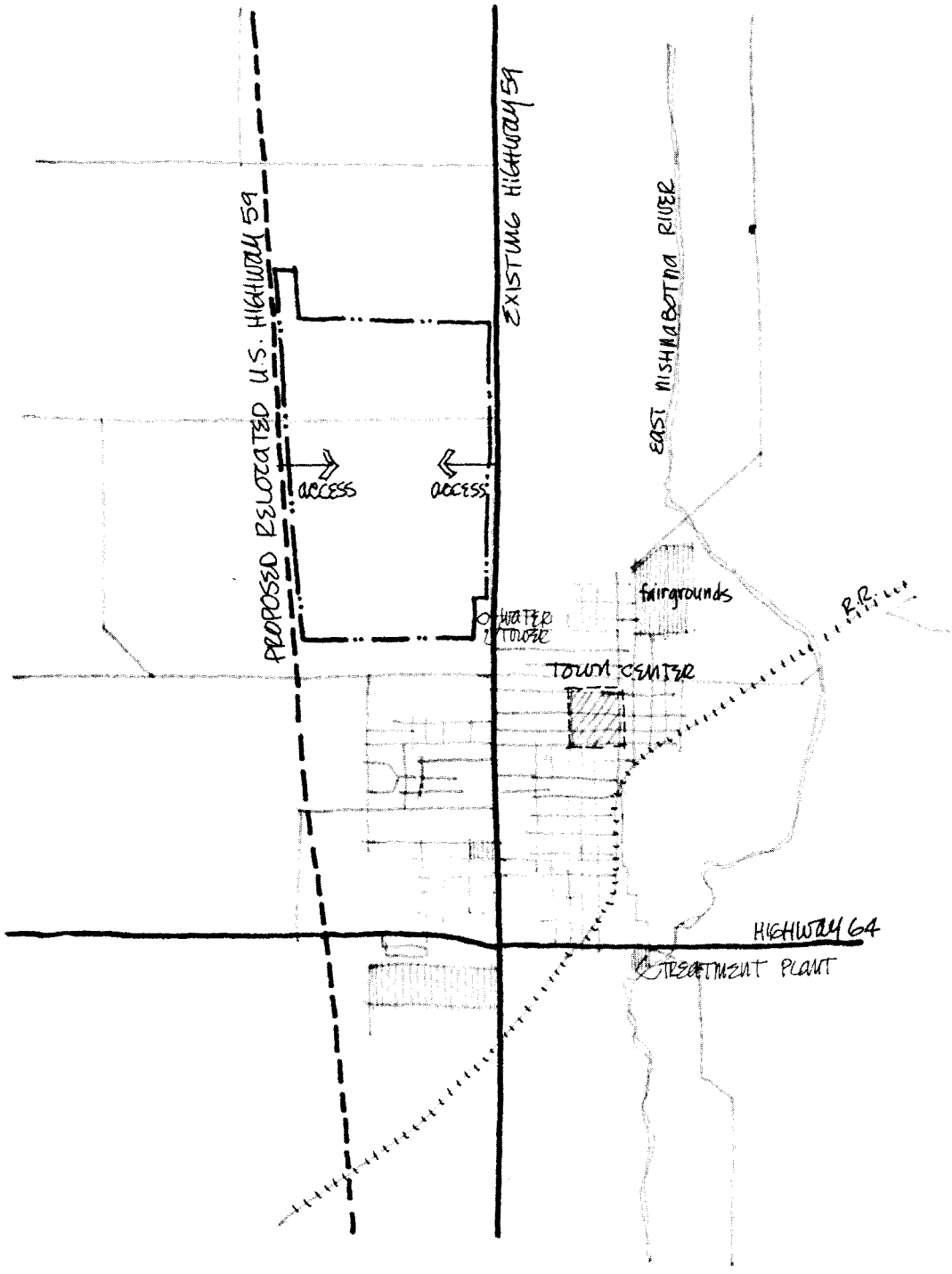
The present sewage disposal plant is located south of the city, adjacent to the Nishnabotna River. The total capacity of the present plant is 1,500,000 GPD. To accommodate the demand of the expected future population, the sewage plant will need to be expanded to a total capacity of 3,000,000 GPD. An existing 15 inch sanitary sewer main is available near 5th and Dye Streets, some 2000 feet east of the southeast corner of the site. Also, an 8 inch main is available near 12th and North Streets, approximately 1400 feet south of the site's southeast corner. A 15 inch main to the site will need to be provided. The topography of the site will permit gravity flow from the building areas to the present sanitary sewer system.

Natural gas supply will be supplied from an existing main located near 12th and Tarkington Streets, approximately 1000 feet east of the site's southeast corner. A 4 inch main will need to be extended to supply the site.

Storm water from the site will drain to the east and into the Nishnabotna River. Separate storm water systems from each of the building areas will drain into the stream threads that flow through the site under existing US Route 59 and into the river.

Electric power will be provided by the Harlan Municipal Utilities from the 69. KV loop now projected along 19th Street and Broadway south of the Prime Site. This loop is now in construction as are its associated distribution substations. The U.S. Bureau of Reclamation supplies power to Harlan through the Northwest Iowa Power Cooperative.

COSTS: Development costs for the facilities indicated above are discussed in this report's section entitled: DEVELOPMENT CONCEPTS AND COSTS.



TOWN AND SITE

HARLAN

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SITE **HARLAN**

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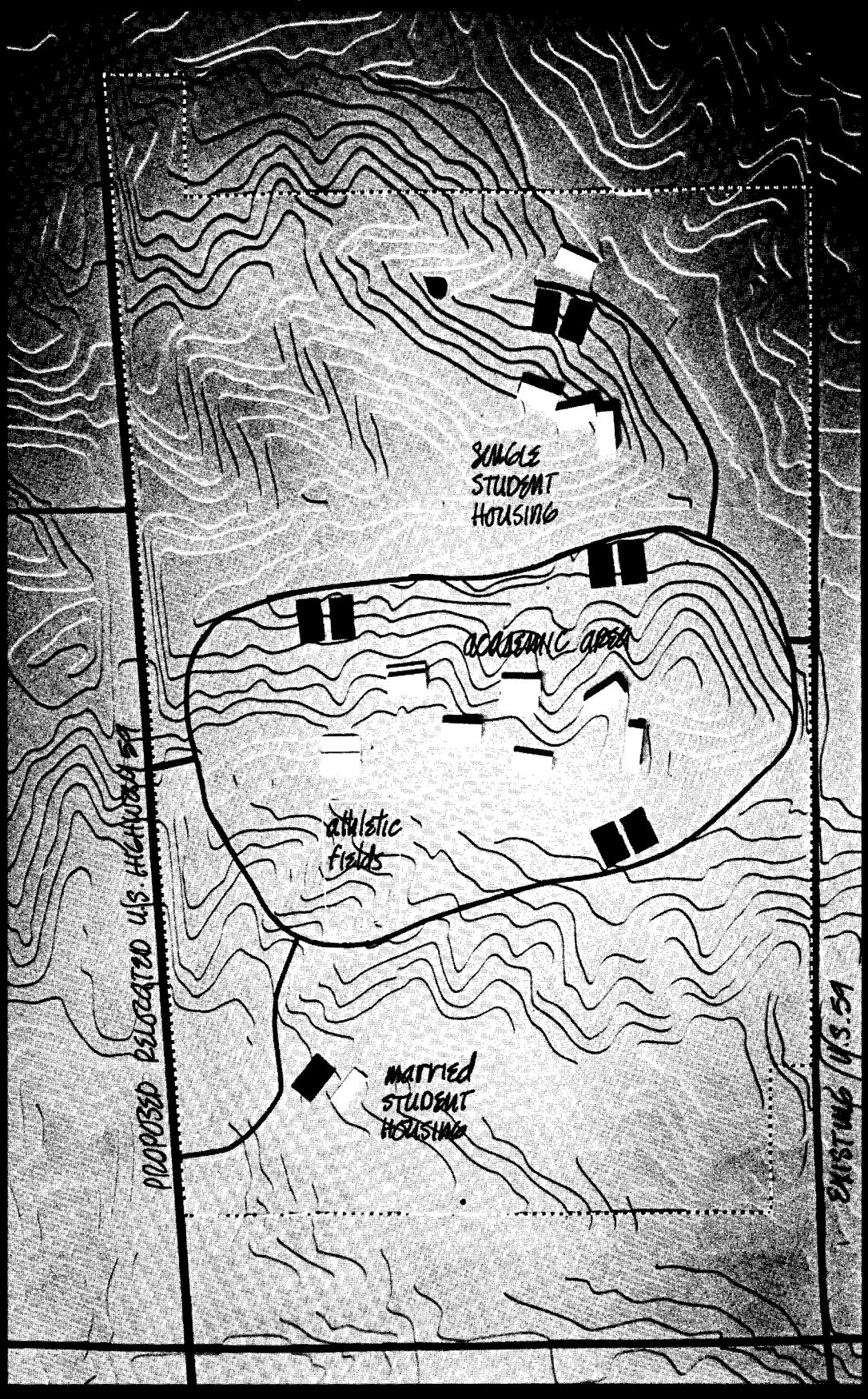

INITIAL PHASE

HARLAN

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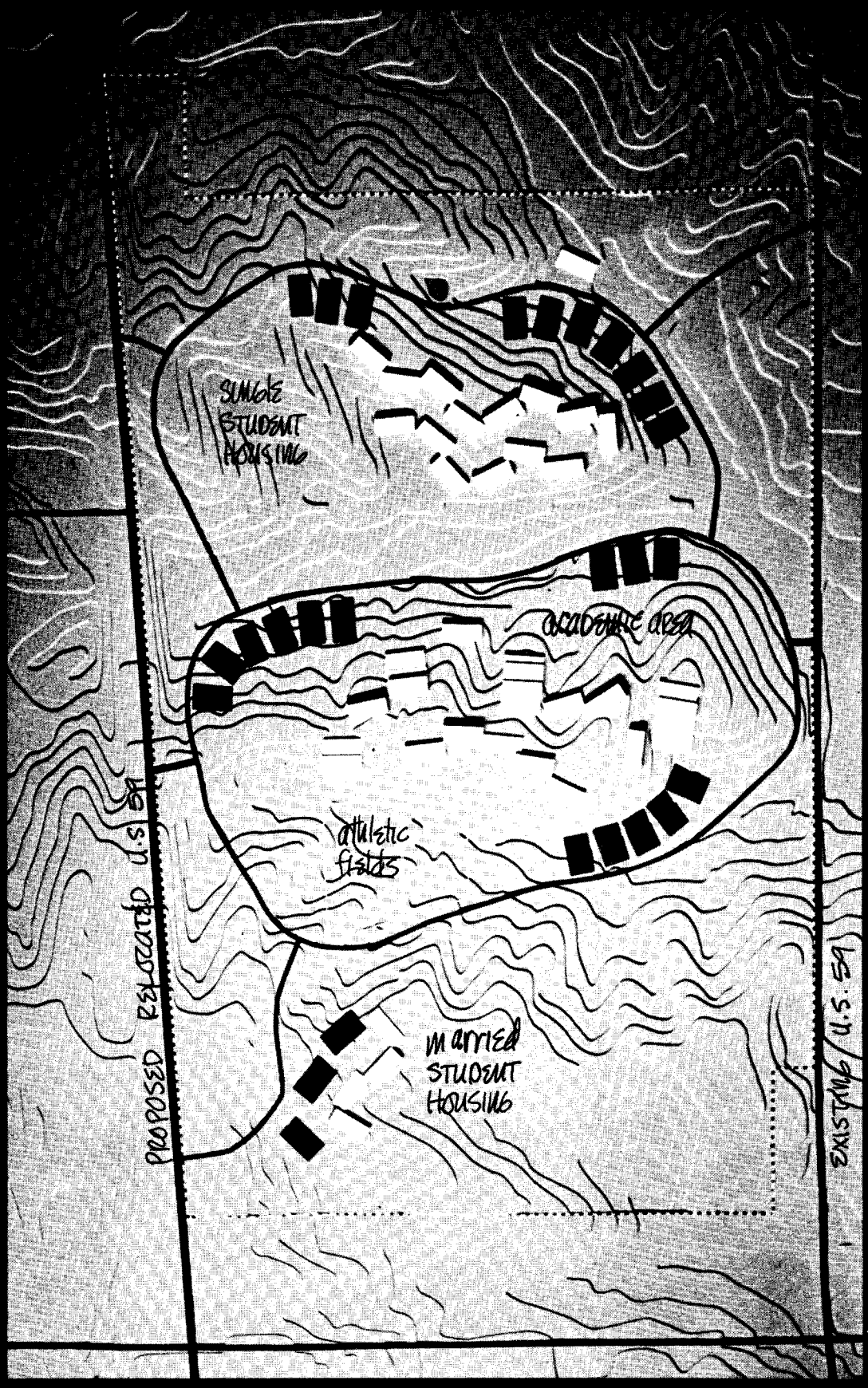

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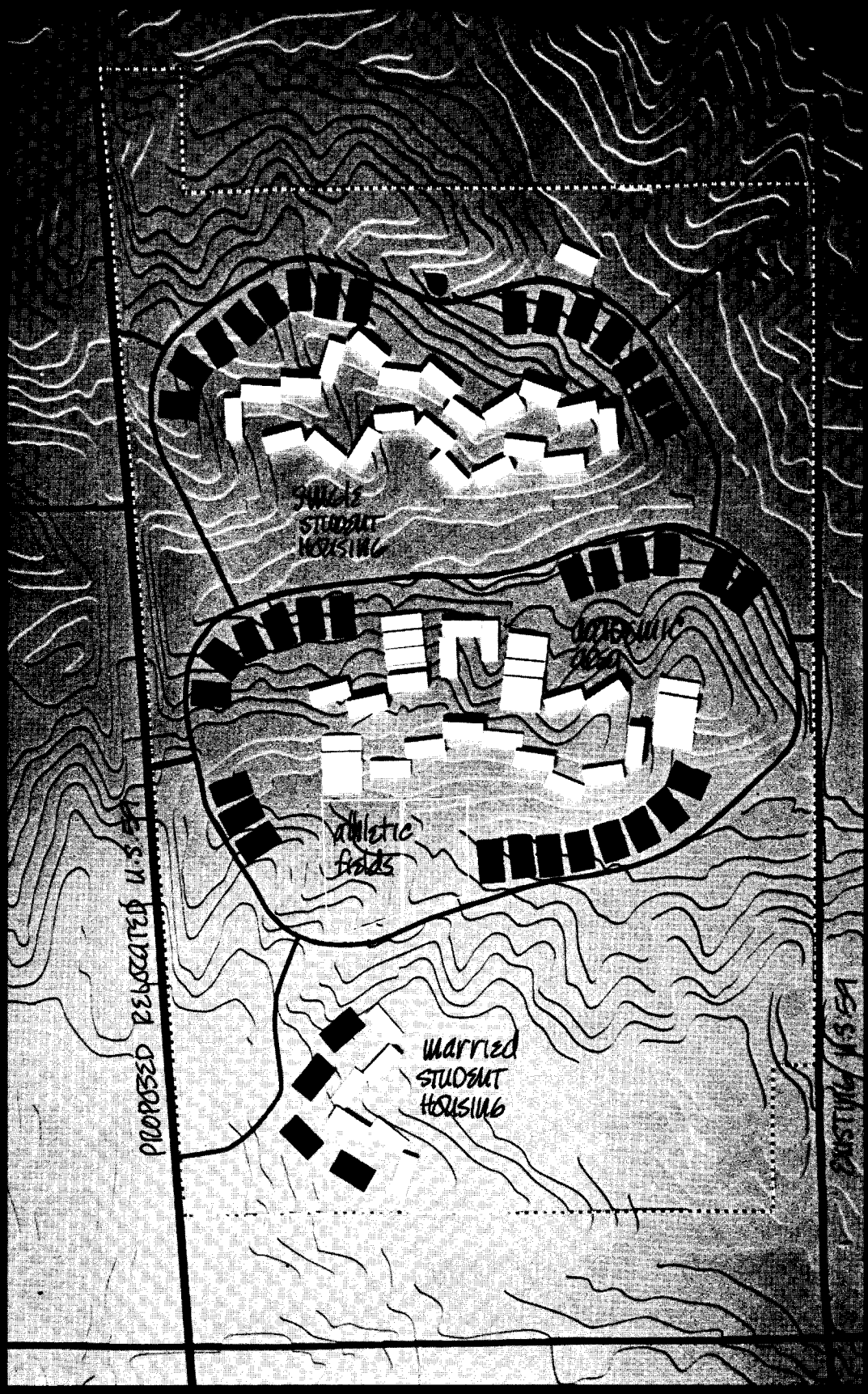

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HARLAN

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