duluth campus
long range development plan

university of minnesota
The following resolution was passed by the Physical Plant and Investments Committee of the Board of Regents on December 8, 1978.

"Be it resolved that the Regents of the University of Minnesota adopt in principle the Long Range Development Plan for the Duluth Campus and that the strategies enumerated therein will be the basis for all future planning decisions."
The Duluth Long Range Development Plan is the result of several years of research and analysis of the needs and resources of the University of Minnesota-Duluth Campus. It represents the first phase of an ongoing planning process for the Campus.

The University Board of Regents has approved in principle the development plan and the planning strategies as the basis for all future planning decisions for the University of Minnesota-Duluth Campus. The plan is accurate and realistic, but it is not intended to convey the impression of finality. It is based on a flexible concept which will provide the maximum opportunity for adjustments to meet the changing and unpredictable conditions of the future. Recommendations for Plan revisions may result from periodic capital analyses and administrative review of problems and potentials.

The continued participation of faculty, staff, students and the surrounding community as well as public agencies in the planning process is important to ensure that the future development of the campus will appropriately respond to the needs of campus programs and residents, and at the same time, be consistent with the goals of the University community.

Clinton N. Hewitt
Assistant Vice President
and Associate Professor
Physical Planning
university of minnesota

duluth campus
long range development plan

december 1978

the planning team consisted of clinton hewitt,
laszlo fulop, greg kittelsen, ken stebbins,
chris levardsen, john byrd, fran trojanek
acknowledgements

Many people have contributed a considerable amount of their time during the preparation of the Long Range Development Plan and all its related documents. Special recognition, however, should go to the following people who have served on the current Planning Advisory Committee: Clifford Alexander, Robert Bridges, John Byrd, William Crawford, Thomas Flaschberger, William Fleischman, Laszlo Fulop, Steven Hedman, Harry Lease, John Leppi, Christine Levardsen, Larry Lindhart, Joseph Michela, James Rauker, Norman Rick, Kenneth Stebbins, and David Vose.

Other individuals who participated in the preparation of related documents during the planning process have been given recognition in the appropriate publications. A list of these related reports can be found in Appendix E.

The University of Minnesota is committed to the policy that all persons shall have equal access to its programs, facilities, and employment without regard to race, creed, color, sex, national origin, or handicap. In adhering to this policy, the University abides by the requirements of Title IX of the Education Amendments of 1972, by Section 504 of the Rehabilitation Act of 1973, and by other applicable statutes and regulations relating to equality of opportunity.

Inquiries regarding compliance may be directed to Lillian H. Williams, Director, Office of Equal Opportunity and Affirmative Action, 419 Morrill Hall, 100 Church Street S.E., University of Minnesota, Minneapolis, Minnesota 55455, (612) 373-7969, or to the Director of the Office of Civil Rights, Department of Health, Education, and Welfare, 330 Independence Avenue S.W., Washington, D.C. 20201.
# TABLE OF CONTENTS

<table>
<thead>
<tr>
<th>Part 1:</th>
<th>INTRODUCTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. History</td>
<td></td>
</tr>
<tr>
<td>2. The Long Range Development Plan - A Definition</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Part 2:</th>
<th>THE PROCESS</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Part 3:</th>
<th>RESOURCES</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. The Campus</td>
<td></td>
</tr>
<tr>
<td>2. Enrollments</td>
<td></td>
</tr>
<tr>
<td>3. Academic and Related Support Space</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Part 4:</th>
<th>NEEDS</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Issues</td>
<td></td>
</tr>
<tr>
<td>2. Academic and Related Support Space/Needs Projections</td>
<td></td>
</tr>
<tr>
<td>3. Housing</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Part 5:</th>
<th>GOALS/ANALYSIS/RECOMMENDATIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Land Use</td>
<td></td>
</tr>
<tr>
<td>2. Transportation/Parking</td>
<td></td>
</tr>
<tr>
<td>General</td>
<td></td>
</tr>
<tr>
<td>Access to Campus</td>
<td></td>
</tr>
<tr>
<td>Vehicular Circulation and Parking</td>
<td></td>
</tr>
<tr>
<td>Pedestrian and Bicycle Circulation</td>
<td></td>
</tr>
<tr>
<td>Transit</td>
<td></td>
</tr>
<tr>
<td>3. Physical Facilities</td>
<td></td>
</tr>
<tr>
<td>Academic Facilities</td>
<td></td>
</tr>
<tr>
<td>Housing</td>
<td></td>
</tr>
<tr>
<td>Campus Commons Facilities</td>
<td></td>
</tr>
<tr>
<td>4. Utilities and Service</td>
<td></td>
</tr>
<tr>
<td>5. Campus Character and Landscape</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Part 6:</th>
<th>IMPLEMENTATION</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Part 7:</th>
<th>APPENDICES</th>
</tr>
</thead>
<tbody>
<tr>
<td>A. UMD Mission Statement</td>
<td></td>
</tr>
<tr>
<td>B. Site Analysis</td>
<td></td>
</tr>
<tr>
<td>C. Space Analysis Data</td>
<td></td>
</tr>
<tr>
<td>D. Issues</td>
<td></td>
</tr>
<tr>
<td>E. Related Documents</td>
<td></td>
</tr>
</tbody>
</table>

1 3 3
7 11
13 16 18
19 21 25 28
29 31 38 38 38 41 54 59
63 63 68 72
77 79
87 97
## INDEX OF FIGURES

<table>
<thead>
<tr>
<th>Figure</th>
<th>Description</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Early Campus Plan Study - 1947</td>
<td>4</td>
</tr>
<tr>
<td>2</td>
<td>Early Campus Plan Study - 1947</td>
<td>4</td>
</tr>
<tr>
<td>3</td>
<td>1951 Campus Plan</td>
<td>4</td>
</tr>
<tr>
<td>4</td>
<td>UMD Campus Planning Process</td>
<td>10</td>
</tr>
<tr>
<td>5</td>
<td>Existing Campus Plan</td>
<td>14</td>
</tr>
<tr>
<td>6</td>
<td>UMD Fall Enrollment Projections</td>
<td>17</td>
</tr>
<tr>
<td>7</td>
<td>Campus Community Issues</td>
<td>22</td>
</tr>
<tr>
<td>8</td>
<td>Campus Issues</td>
<td>23</td>
</tr>
<tr>
<td>9</td>
<td>Transportation Issues</td>
<td>24</td>
</tr>
<tr>
<td>10</td>
<td>Summary, Space Analysis</td>
<td>27</td>
</tr>
<tr>
<td>11</td>
<td>Existing Traffic Circulation/Land Use</td>
<td>34</td>
</tr>
<tr>
<td>12</td>
<td>Recommended Land Use</td>
<td>35</td>
</tr>
<tr>
<td>13</td>
<td>Recommended Changes to the Regents Boundary</td>
<td>37</td>
</tr>
<tr>
<td>14</td>
<td>Traffic Flows and Minimum Travel Paths to Campus</td>
<td>42</td>
</tr>
<tr>
<td>15</td>
<td>Alternative Cross-Campus Circulation Routes</td>
<td>45</td>
</tr>
<tr>
<td>16</td>
<td>Alternative Locations - Visitor/Information Center</td>
<td>47</td>
</tr>
<tr>
<td>17</td>
<td>Vehicular Circulation System</td>
<td>50</td>
</tr>
<tr>
<td>18</td>
<td>Recommended Parking Plan</td>
<td>53</td>
</tr>
<tr>
<td>19</td>
<td>Motorcycle/Moped Parking</td>
<td>55</td>
</tr>
<tr>
<td>20</td>
<td>Bicycle Facilities Plan</td>
<td>58</td>
</tr>
<tr>
<td>21</td>
<td>Campus Transit Facilities</td>
<td>60</td>
</tr>
<tr>
<td>22</td>
<td>Facilities Expansion Potential</td>
<td>67</td>
</tr>
<tr>
<td>23</td>
<td>Recommended Housing</td>
<td>70</td>
</tr>
<tr>
<td>24</td>
<td>Dormitory Parking</td>
<td>71</td>
</tr>
<tr>
<td>25</td>
<td>Campus Commons Facilities</td>
<td>74</td>
</tr>
<tr>
<td>Figure</td>
<td>Description</td>
<td>Page</td>
</tr>
<tr>
<td>----------</td>
<td>------------------------------------------</td>
<td>------</td>
</tr>
<tr>
<td>26</td>
<td>Recreation Facilities</td>
<td>76</td>
</tr>
<tr>
<td>27</td>
<td>Don't Build Areas</td>
<td>84</td>
</tr>
<tr>
<td>28</td>
<td>Landscape Concept Plan</td>
<td>86</td>
</tr>
<tr>
<td>B1</td>
<td>Homogeneous Sites</td>
<td>B5</td>
</tr>
<tr>
<td>B2</td>
<td>Homogeneous Site Components</td>
<td>B6</td>
</tr>
<tr>
<td>B3</td>
<td>Site Suitability Components</td>
<td>B7</td>
</tr>
<tr>
<td>B4</td>
<td>Land Use Components</td>
<td>B9</td>
</tr>
<tr>
<td>B5</td>
<td>Passive Recreation</td>
<td>B11</td>
</tr>
<tr>
<td>B6</td>
<td>Organized Recreation</td>
<td>B12</td>
</tr>
<tr>
<td>B7</td>
<td>Housing</td>
<td>B13</td>
</tr>
<tr>
<td>B8</td>
<td>Academic Buildings</td>
<td>B14</td>
</tr>
<tr>
<td>B9</td>
<td>Outdoor Biological Education</td>
<td>B15</td>
</tr>
<tr>
<td>B10</td>
<td>Maintenance</td>
<td>B17</td>
</tr>
<tr>
<td>B11</td>
<td>Parking</td>
<td>B18</td>
</tr>
<tr>
<td>B12</td>
<td>Don't Build</td>
<td>B19</td>
</tr>
</tbody>
</table>
introduction
A PLANNING HISTORY

As is true for any developing institution, planning for expansion, growth, and change takes place over a long period of time. The University of Minnesota, Duluth is not unique in this respect. The original "master plan" for the campus was completed in 1951 shortly after the campus outgrew its facilities at the old Duluth State Teachers College (now referred to as the lower campus) and moved to its present location on an undeveloped tract of land comprised of a little more than 200 acres.

The earliest documented "concept plans" for UMD were developed in 1947 and were very classical in terms of layout. The theme was a central mall with symmetrical buildings flanking either side (Figures 1 and 2). However, these plans failed to take into account the unique topography of the site or the fact that Duluth weather is quite often severe. As a result, these plans were rejected and a new concept was developed which stepped the buildings along the contours of the site and interconnected the buildings with climate protected linkages (Figure 3).

The 1951 plan was based on an estimated maximum enrollment of 3,500 undergraduate students. Today that enrollment has almost doubled to 6,500 full time equivalent (FTE) day students (Fall Quarter 1977). The campus has also grown in diversity of programs offered and in its significance within the University of Minnesota system.

The original 1951 plan was a singular physical solution with little provision for updating and adapting to change. The plan was completed, however, and although its basic concepts of form and organization are still visible, a new comprehensive plan is desirable and necessary as a planning tool. With such a tool, current problems can be resolved and direction for future campus development can be established.

This document represents the culmination of the process undertaken to provide the University of Minnesota, Duluth with a long range development plan and an appropriate mechanism for conducting its planning efforts in an organized and rational manner.

THE LONG RANGE DEVELOPMENT PLAN - A DEFINITION

A long range development plan is the result of bringing together existing resources and projected needs. The completed document serves as an instrument for cataloging needs and resources and establishes the process through which
planning issues can be resolved to the highest degree possible. Within this process, planning goals are established along with strategies for attaining those goals.

With needs and resources in one hand and goals and strategies in the other, recommendations are developed. A variety of alternative ways of organizing resources are examined; the alternative which is most sensitive to the needs and goals of the institution is recommended as the course of action to follow. Specific planning recommendations include suggestions for immediate action, presentation of concepts, and policy recommendations. The immediate recommendations respond to specific pressing problems; but implicit in them and explicit in the policy and concept recommendations is a response to projected future needs. A specific, fixed physical plan is not presented because such a plan is bound to be superficial and grow obsolete quickly. However, guidelines for development which provide overall direction yet recognize the inflexibility of brick and mortar are documented. Ideally, these guidelines allow for the creative input of both the people being served and subsequent professional consultants retained to carry out the implementation of the plan.

Since needs and resources change over the years, specific recommendations may have to be adjusted; but the goals and strategies will remain to give direction to the implementation process. It is, therefore, important that the evaluation of needs and resources and list of goals and strategies be periodically reviewed to make sure they remain consistent with reality. Without such a review process and the ability to change over time, the framework plan becomes a powerless volume of waste paper.
the process
THE PLANNING PROCESS AND ITS PRODUCTS

The development of a long range plan for UMD involved a sequence of steps (Figure 4) and planning documents. This report is the final of a series of five reports which record these steps and together comprise the UMD Long Range Development Plan. The initial document, Tactical Report, outlined the major planning issues (many administrative in nature) at UMD and established the overall procedures for conducting the planning process.

The subsequent two documents (Reports 2 and 2a) comprised the Planning Base Inventory which catalogued existing resources and projected needs of the institution. Information gathered pertained to natural systems data (geology, soils, hydrology, shadows, weather, etc.), physical facilities data, space utilization data, and so forth.

Report 3 outlined more detailed planning issues and the goals and objectives those issues generated.

This final report, the Long Range Development Plan, presents: 1) a review of the overall process, 2) a summary of the existing situation (resources), 3) a summary of needs, 4) recommendations including a description of planning goals and strategies, and 5) a procedure for implementing the development plan. The entire process was overseen by a Planning Advisory Committee comprised of representatives (including faculty, staff, and students) of the UMD Campus and the Office of Physical Planning. This Committee was responsible for reviewing all work on the project. This group provided major input from the campus population relative to issues and resulting recommendations.

During the course of this project three additional studies were conducted which were more detailed in nature. The studies were: Concept Plan for UMD Central Entrance; UMD Parking Study; and UMD Facility Utilization Study. The recommendations of these studies have had an impact on the final recommendations of this report and have been incorporated where appropriate.
u. of m.-- duluth campus planning process

1. outlining the process
   - Identify scope & context of planning project.
   - Identify interest groups.
   - Identify general issues.
   - Develop time/task framework.
   - Establish management procedures.
   - Initiate planning base for inventory work.

2. assemble academic and administrative planning data
   1. Develop enrollment projections.
   2. Develop space utilization data.
   3. Develop space need projections.
   5. Predict future academic and administrative structure.
   6. Identify future departmental and program relationships.

3. assemble utilization data
   1. Conduct issue analysis.
   2. Inventory natural and ecological systems.
   3. Inventory support systems.
   4. Inventory movement systems.
   5. Inventory existing academic relationships.
   6. Conduct character analysis of existing campus environment.
   7. Develop format for presentation of data base information.

4. assemble planning base data

5. facilities utilization study
   1. Briefing and study organization by consultants.
   2. Assemble and analyze base information, issues, and existing goals and policies.
   3. Develop and test alternative planning guidelines.
   5. Develop and test land use and circulation plan alternatives.
   6. Coordinate planning framework.
   7. Print draft report.
   8. Present draft plan to state legislature.

6. formulate planning framework of land use and circulation

7. refine planning policies and framework
   1. Revise planning goals, policies, & framework plans.
   2. Finalize recommended policies & framework plans.
   3. Establish procedures for implementation & monitoring of plan.
   5. Present l.d.p. to all appropriate interest groups.

8. decisions on implementation
   1. Adopt or revise recommended plans.
   2. Implement policies and plans.

9. monitoring and implementation of plans
   1. Evaluate effectiveness of policies and plans.
   2. Revise goals if major changes occur.
   3. Revise policies if major changes occur.

plan update

long range development plan

plan refinement

continuing evaluation
resources
SITE ANALYSIS STUDY

To further evaluate the capability of the upper campus for future development, an extensive site analysis was conducted. This analysis divided the entire campus into smaller, homogeneous components. These smaller sites were then processed through a series of matrices to determine priority uses for each. The information generated by this process contributed greatly to the development of the final land use plan (Figure 12, p. 35). A more detailed description of this analysis and its findings can be found in Appendix B of this report.

ENROLLMENTS/CAMPUS POPULATION

Enrollment at UMD has been increasing slightly over the past few years and is expected to continue to increase for about three more years. The second week, Fall Quarter, 1977 statistics showed the following breakdown in campus enrollment:

<table>
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<tr>
<th>Program</th>
<th>Headcount</th>
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<tr>
<td>Business and Economics</td>
<td>1051</td>
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<tr>
<td>Education</td>
<td>1024</td>
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<tr>
<td>Fine Arts</td>
<td>331</td>
</tr>
<tr>
<td>Graduate School</td>
<td>258</td>
</tr>
<tr>
<td>Letters and Sciences</td>
<td>3862</td>
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<tr>
<td>Medicine</td>
<td>84</td>
</tr>
<tr>
<td>Post M.D. Fellows</td>
<td>24</td>
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<tr>
<td>Social Development</td>
<td>110</td>
</tr>
<tr>
<td><strong>TOTAL HEADCOUNT</strong></td>
<td><strong>6744</strong></td>
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For the same quarter the full time equivalent (FTE) student enrollment was 6500 FTE. For planning purposes in this report FTE numbers will be utilized particularly when discussing academic space and facilities.

Faculty and staff statistics documented below are from data available as of October/November, 1977. The breakdown identifies full time, part time, and FTE figures for faculty. Full time and part time figures are given for non-academic staff.
## Faculty

<table>
<thead>
<tr>
<th>Type</th>
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<tr>
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<tr>
<td>Part-time</td>
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<tr>
<td>Joint</td>
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**Headcount Total**: 652

## Staff

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<tr>
<td>Part-time</td>
<td>84</td>
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<tr>
<td>TOTAL</td>
<td>531</td>
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</table>

**Headcount Total**: 652

The total headcount for all employees was 1183.

*Student employees are not included.*

## Enrollment Projections

Enrollment projections by their nature cannot be relied on as hard, fixed facts. Analysts can at best look at the numbers of elementary students coming up through the educational system, recent education trends, and changes in social conditions and apply known formulas to estimate future enrollment levels. At UMD, and the University in general, enrollment predictions have been revised downward since this study was first initiated. Figure 6 shows what is now projected as the headcount enrollment for UMD through 1980 which, according to recent analysis, appears to be the peak year.

### Using Enrollment Projections

When enrollments are ultimately tied to space needs and academic plans, a set of planning horizons or intervals can be established. These horizons are:

a. **Short Range Planning (2 to 4 years)** - Enrollment predictions for this range must be specific and accurate. Planning within this time frame typically involves physical facilities that are in the programming or building request stage. Projections should include numbers of people using the facility, related space requirements, teaching methods, functional relationships and operational needs.

b. **Mid-Range Planning (up to 10 years)** - Projections within this time frame indicate basic societal, educational, and cultural trends which may affect enrollments, programs, teaching methods, and ultimately space needs. Such projection data allows physical planners to locate facilities and functions within the planning framework in very general terms.

c. **Long Range Planning (up to 30 years)** - Projections for this time horizon define enrollment ceilings, educational goals, and basic trends. Within this context, the planning framework functions as a statement of the ultimate physical goals of the institution.
<table>
<thead>
<tr>
<th>Year</th>
<th>NHS¹</th>
<th>NAS²</th>
<th>Returning Students</th>
<th>Total Undergrad</th>
<th>Grad</th>
<th>Medicine</th>
<th>Dental Hygiene</th>
<th>Total Headcount</th>
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<tr>
<td>1977</td>
<td>1866</td>
<td>453</td>
<td>4049</td>
<td>6368</td>
<td>258</td>
<td>82</td>
<td>36</td>
<td>6744</td>
</tr>
<tr>
<td>1978</td>
<td>1875</td>
<td>450</td>
<td>4100</td>
<td>6425</td>
<td>263</td>
<td>96</td>
<td>36</td>
<td>6820 Low</td>
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<tr>
<td></td>
<td>1925</td>
<td>475</td>
<td>4200</td>
<td>6600</td>
<td>288</td>
<td>96</td>
<td>36</td>
<td>7020 High</td>
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<td>1979</td>
<td>1890</td>
<td>460</td>
<td>4213</td>
<td>6563</td>
<td>285</td>
<td>96</td>
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<td>1940</td>
<td>485</td>
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<td>295</td>
<td>96</td>
<td>36</td>
<td>7180 High</td>
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<tr>
<td>1980</td>
<td>1900</td>
<td>470</td>
<td>4308</td>
<td>6678</td>
<td>290</td>
<td>96</td>
<td>36</td>
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<td>1950</td>
<td>490</td>
<td>4428</td>
<td>6868</td>
<td>300</td>
<td>96</td>
<td>36</td>
<td>7300 High</td>
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¹New high school graduates

²New advanced standing

Enrollment projections are based on statistics available as of 7/19/78.
Source: Management Planning and Information Services, University of Minnesota
To add even greater flexibility to long range planning, future needs of the institution should become a direct function of current enrollment levels rather than the anticipated enrollment levels of future years. This approach can provide a much more meaningful and realistic method for pacing future requests for additional facilities. Therefore, the needs discussed in this document are based directly on enrollments and not on a fixed time frame.

ACADEMIC AND RELATED SUPPORT SPACE

The University of Minnesota, Duluth presently has 1,180,450 gross square feet (g.s.f.) of academic and academic support facilities as a physical resource in which to conduct its mission (Appendix A). Most of the buildings are less than twenty years old, are located on the upper campus, and are in good to excellent structural condition. Maintenance and upkeep programming on the upper campus have been excellent, adding greatly to the life expectancy of campus facilities. The physical configuration of the various spaces in these buildings adequately serves a majority of the existing academic and support programs. However, some additional space is needed - changes in the way in which some of the existing programs are conducted and the addition of new programs necessitate a planned yearly remodeling and renovation program for the existing facilities.

To ascertain the kinds and amounts of space available at UMD, the existing facilities inventory was updated to reflect the functional uses of the space for Fall, 1976. This process was begun during the summer of 1977 and since little or no substantive changes were made to the existing space during the school year of 1977, the data also reflects the available space for Fall, 1977 (Appendix C).

The space inventory update was done in accordance with DHEW publication No. (OE) 74-11424, Facilities Inventory and Classification Manual, 1973. The Office of Space Programming and Management supervised the facilities inventory update to insure compliance with the inventory manual and policies at the University of Minnesota. The actual updating of the facilities inventory was conducted by the Office of Vice Provost for Academic Affairs at UMD. Computer print-outs of the existing space inventory were produced for each individual department. Each unit head or designated representative was personally interviewed to verify their space inventory. Corrections, additions and changes to the facilities inventory were then processed and the Available Space Analysis (Appendix C, pp. C6 - C9) was prepared.

The processes and procedures used to determine the kinds and amounts of available space provide no indication as to the quality of the existing space or the intensity of use of the existing space (utilization). The quality of the existing space is generally good, for reasons stated above. However, in a few programs, physical changes to the space have not kept abreast with the changes in the way the academic programs are conducted. This creates areas in which the quality of the space is inadequate, not in a physical sense, but programmatically. Adequate space for these programs, specifically arts, music, physical education, student commons space, and the greenhouse (inadequate sunlight), must be addressed to insure no deterioration in the program offerings.
needs
ISSUES - ISSUE ANALYSIS

The submission of issue analysis sheets served as a means of communication between the campus population, the Planning Advisory Committee, and the Planning Office. To encourage participation in the planning process, issue analysis sheets were distributed to students, faculty, and staff through direct mailings and the campus newspaper. Their comments suggested what the major planning concerns at UMD should be. Examples of the issue sheets and typical comments can be found in Appendix D. In addition, meetings were held with individuals, committees, organizations, city government officials, and other interest groups throughout the course of this project to identify their areas of concern.

The issues generated by the issue sheets and related meetings have been catalogued according to the general planning areas outlined in the Planning Base Inventory/Report 2 (natural systems; program relationships [academic issues]; housing, social, recreational and commercial facilities; utilities and service; and transportation). All issue sheets submitted are kept on file at the Office of Physical Planning for future reference.

The following drawings, (Figures 7, 8, 9) illustrate some of the more significant issues that were brought forth by issue analysis and interest group meetings. Figure 7 identifies those issues which involve the campus and the community. Figure 8 identifies those issues which are more specifically related to the campus proper. Figure 9 illustrates those issues which deal directly with transportation problems.

Approximately 300 issue sheets were returned during the survey periods. Although this is a relatively low response rate, the exercise served as a mechanism to identify some of the more important issues. It seems appropriate to highlight the issues that were most frequently identified.

- Thirty percent of the respondents felt that traffic circulation and parking were problematic in one form or another.
- Twenty five percent of the respondents commented on inadequate recreation facilities (both indoor and outdoor) with raquetball/ handball courts, swimming facilities, and developed field areas being the most frequent problem areas or lacking facilities.
- Fifteen percent cited the lack of housing as the most pressing problem.
- Ten percent of the comments related specifically to the lack of landscape development on the campus.
campus-community issues

- greenway systems
- dta bus
- campus bus

university of minnesota
duluth
long range development plan

fig. 7
preservation of rock hill and arboretum
to kenwood

future landuse of property along brainard avenue

pedestrian access to rock hill area

increased development of courtyard system

future use, location, and character of parking lots

access to neighborhood commercial facilities

preservation of existing campus open space

clearer vehicular orientation to campus

new central entrance

linkage of upper and lower campuses

preservation of the lower campus

campus issues

university of minnesota duluth
long range development plan
transportation issues
- Five percent commented on inadequate music facilities.
- Five percent specifically commented on the lack of adequate greenhouse facilities.
- Many other minor issues were cited including problems with the library, lack of student commons areas, lack of faculty/staff lounge facilities, lack of student lockers, and so forth.

These issues have either been resolved or partially resolved during the course of this study. Others will require further study. However, the Long Range Development Plan should be used as a guides for evaluating all issues in their context so that the most appropriate resolutions to these issues can be developed.

ACADEMIC AND RELATED SUPPORT SPACE/NEEDS PROJECTIONS

To determine the space needs of an institution of higher education it is necessary to develop a model that portrays the educational mission of a college or university in such a way as to project the amount of space necessary in which to conduct the educational activities of the institution. The method used in this document (see Appendix C) is an overall institutional model that uses averages to determine the total amount of space for various types of institutional space (i.e., classrooms, offices, library, etc.). The explicit purpose of this type of analysis is to determine the total space needs of an institution. This methodology can be used to analyze activities, but the space standards and/or guidelines used must be changed from an institutional average to a figure that is representative of the specific activity being analyzed.

The analysis compares the quantity and kind of available space, to the quantity and kind of institutional space needed to conduct the educational activities. Using this type of analysis, it is possible to determine the quantity and kind of additional space needed or the amount and kind of space that is available for conversion to other uses.

It should be noted that care must be taken in interpreting the quantity of space that is over or under the quantity of space suggested by the specific space guidelines/standard. A variance of ±10% from the space guideline/standard for a particular kind of space is normally considered within reason for this type of institutional space analysis. If a particular space classification has a variance of more than ±10%, the need for further, more detailed analysis is indicated.

The institutional analysis for UMD indicates that given the existing space, plus space under construction, plus space for which planning funds have been appropriated, plus conversion of existing space to meet other needs, UMD
will have an adequate quantity of space, in the appropriate mix, to meet an expected enrollment of 6500 FTE students, with two exceptions. One, the amount of space available to support the maintenance and operation of the physical plant is approximately 30% under the standard used in this model, and two, UMD presently needs to increase its existing general research space by approximately 100%. As is typical of a growing institution, instructional facilities take priority over research facilities when the undergraduate enrollment is increasing at a rapid rate. UMD either presently has or will have in the near future an adequate quantity of undergraduate space. Attention must now be turned to meet the need of general research space. Particular attention must be quickly given to the research laboratory needs of those individuals engaged in the programmatic areas of the life sciences.

Research space for the campus is severely lacking. The analysis assumes that much of the present facility occupied by the Medical School (former Laboratory School) will be converted to research space for the Medical School and other units. This assumes the present facility will be remodeled shortly after the Medical School relocates to its new facility on the upper campus. As the research activities of the UMD campus increase, the shortage of research facilities will become a more acute problem.

The analysis of the office space needs at UMD indicates that the square footage of present office space is ten percent (10%) over the suggested space guideline. The amount is not excessive, and should not be viewed with alarm. However, there is need to further analyze the available office space to determine the intensity of use. It has already been found that a number of present offices are larger than needed for the program to adequately function. However, the physical configuration of many of these rooms precludes reducing the size without an excessive expenditure of funds.

The analysis indicates the quantity of space needed at UMD, and makes no allowance for quality or inadequacy of existing space. As stated in the space resources section, several programs have inadequate space (i.e., do not meet current programmatic criteria). In addition, a number of programs are in need of additional space. The space needs analysis indicates areas in which it is the institution's intention to convert space from one use to another.

Included in this section is a summary of the space analysis for UMD (Figure 10). The details of this analysis are contained in Appendix C. The analysis is based upon the space needs for 6500 FTE students. No attempt is made in this section to predict the year in which this enrollment level will be reached.
Summary, Space Analysis  
University of Minnesota, Duluth

<table>
<thead>
<tr>
<th>Space Classification</th>
<th>NASF* needed to meet space standards and guidelines</th>
<th>Available Square Feet</th>
<th>Existing, Under Construction &amp; Planned Space</th>
<th>Additional NASF needed to meet space standards and guidelines</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Fall, 1976 5,989 FTE</td>
<td>Fall, 1976 5,989 FTE</td>
<td>Fall, 1976 5,989 FTE</td>
<td></td>
</tr>
<tr>
<td>Classrooms</td>
<td>59,650 64,740</td>
<td>60,499 67,284</td>
<td>-0-</td>
<td>-0-</td>
</tr>
<tr>
<td>Teaching Laboratories</td>
<td>104,927 113,880</td>
<td>99,544 118,580</td>
<td>-0-</td>
<td>-0-</td>
</tr>
<tr>
<td>Music Practice Studios</td>
<td>2,112 2,293</td>
<td>964 2,464</td>
<td>1,148</td>
<td>-0-</td>
</tr>
<tr>
<td>Teaching Gymnasiums</td>
<td>66,945 73,633</td>
<td>74,131 74,131</td>
<td>-0-</td>
<td>-0-</td>
</tr>
<tr>
<td>Libraries</td>
<td>89,450 97,465</td>
<td>66,277 88,662</td>
<td>23,173</td>
<td>8,803</td>
</tr>
<tr>
<td>Research</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>a. General Institutional</td>
<td>44,400 44,400</td>
<td>21,792 22,792</td>
<td>22,608</td>
<td>21,608</td>
</tr>
<tr>
<td>b. Medical School</td>
<td>65,250 65,250</td>
<td>11,777 25,893</td>
<td>53,473</td>
<td>39,357</td>
</tr>
<tr>
<td>Offices</td>
<td>88,560 94,365</td>
<td>96,152 112,047</td>
<td>-0-</td>
<td>-0-</td>
</tr>
<tr>
<td>Physical Plant</td>
<td>36,490 38,921</td>
<td>26,269 26,269</td>
<td>10,221</td>
<td>12,652</td>
</tr>
</tbody>
</table>

*NASF = Net assignable square feet

June, 1978

fig. 10
The majority of available housing offered at UMD is oriented to single students. Minimal married student apartments (10 units) and no faculty housing exist at the present time. The issue analysis process of this planning effort has indicated that there is a pressing need for all types of housing.

There are currently 1,679 apartment and dorm spaces on the UMD campus. For the past two years overflow housing for 200 students has been provided through lease arrangements with hotels in downtown Duluth. The 1976-77 academic year showed a 100% occupancy in campus facilities with a 100% occupancy rate at the beginning of Fall Quarter, 1977 in the leased hotel space.

Until recently, legislative policy had placed a moratorium on the construction of new student housing units. Changes in student attitudes, increasing petroleum products costs, and rising apartment rental rates has begun placing renewed demands on the existing supply of University owned housing. As a result, UMD has recently embarked on constructing new housing facilities on campus. A new 150 bed facility was recently completed.

The existing trend in housing demand is expected to persist, particularly as more and more students come to Duluth from outside the Arrowhead region of Minnesota. The housing office at UMD utilizes the following formula for predicting future housing demands:

\[
\text{Projected entering freshmen class enrollment requiring housing} \times 50\% + 60\% \text{ of students housed from the previous year.}
\]

Utilizing this formula in conjunction with enrollment projections, a maximum demand of approximately 2,200 beds can be expected. Even with the construction of the 150 bed facility, the campus will still be short of the projected demand by 370 beds.

An additional problem, which will require resolution in the near future and one which will place an even greater burden on future housing availability, involves the phasing out of the Village Apartments. This 296 bed complex consists of 19 four-unit clusters of mobile-home type structures. The life expectancy of these units is quite short and the maintenance on them is high. As a result, it is anticipated that within the next ten years, given available monies, UMD will have to begin replacing them on a systematic basis.
goals/
analysis/
recommendations
The direction the reconciliation of needs and resources will take is broadly determined by goals and strategies. From the planning goals and their related strategies flow specific recommendations for implementation. The intent of this section is to outline the overall planning goals, the means by which they can be achieved, and the end products which they suggest.

Recommendations include suggestions for immediate action, concepts, and policy. The immediate recommendations respond to specific pressing problems but inherent in them and inherent in the policy and concept recommendations is a response to future, as well as present, needs.

A specific, fixed, physical plan is not presented because such a plan is bound to be superficial and grow obsolete quickly. Ideally the development formulas provided will allow for the creative input of the user, the planning staff, and the professional consultant retained for future projects.

The material in this section is present in five discussion areas: 1) Land Use, 2) Transportation, 3) Physical Facilities, 4) Utilities and Service, and 5) Campus Character/Landscape.

LAND USE

Land use considerations deal with the large scale overview and general physical organizations of the campus. The following goals strive to provide a generalized concept for development which is sensitive to both the interrelationships among activities and the physical demands on the land.

GOAL: The highest and best use shall be made of all land within the established campus boundaries.

STRATEGIES: 1. A careful and thorough land use analysis should be conducted prior to any new development to insure consistency with the land use designations outlined in the Long Range Development Plan.

   2. Deviations from established land use policies should receive careful scrutiny so that conflicts with adjacent land uses are avoided.
GOAL: The University should avoid land use conflicts with neighboring residential areas.

STRATEGIES: 1. Housing should be developed at the periphery of the campus as a means of providing an appropriate transition between private residential development and institutional development.

2. An adequate (100'-150') buffer zone should be established at the edges of the campus where feasible, e.g., intensive landscaping treatment.

GOAL: Adjacent activities on campus should complement each other and not be in conflict.

STRATEGIES: 1. When sites are considered for new construction, the potential for the site to accommodate alternative uses should be thoroughly investigated prior to any final decision.

2. High density development should occur on carefully selected sites where: a) it will add visual interest to the architectural character of the campus; b) it will not destroy views of Lake Superior from the campus or surrounding neighborhoods; and c) it will functionally "fit" the rest of the campus.

3. If animal holding areas are required for specific academic programs such as the Medical School: 1) Large animal holding areas and breeding colonies should be located off the campus proper; and 2) Short term animal holding areas should be located within the academic complex in areas and spaces where they can be serviced easily and will not be offensive to the activities of adjacent areas or uses.

GOAL: Expansion of physical facilities should occur only on those sites best suited for such development both programmatically and environmentally.

STRATEGIES: 1. A "Don't Build" policy should be adopted and periodically reviewed to assist in site selection decisions by identification of those sites which best serve the campus when left as open or undeveloped space.

2. Prior to any final decisions as to location of new facilities, all possible building sites should be considered so that facilities are built where they are most appropriate as viable additions to the existing complex.

Specific Recommendations

Recommended Land Use Plan

There are many situations where there is no land ideally suited for a needed facility. In other cases there may not be enough land available or functional
relationships may not be quite right. As a result, needed facilities, desired land use, and available land must be organized to insure the least destructive and disruptive use of the land. Figure 11 illustrates the land use plan that exists today. Figure 12 illustrates the land use plan that is recommended for meeting immediate and future needs at UMD.

The plan as shown provides adequate areas for all major land use components, including academic expansion, housing, open space, organized recreation, parking, and circulation. Although the basic organization is similar to what exists today, the recommended plan refines patterns through more intense development and consolidation so that no areas of the campus go unattended. Some of the proposed land uses, particularly in the area north of St. Marie Street, will require the acquisition of additional properties; however, not as much additional property is needed as was proposed several years ago.
existing traffic circulation/land use

- parking and service areas
- student housing
- academic facilities
- open space
- recreation facilities
- roads

university of minnesota

fig. 11
duluth

long range development plan

may 1978
recommended land use plan

- don't build
- organized recreation
- housing
- existing academic
- property for potential sale
- building expansion
- parking/service
- special use sites

university of minnesota
duluth
long range development plan

fig. 12
Changes to Campus Boundaries

An issue which the Long Range Development Plan was asked to address involved The Regents Boundary which was established in 1951 with major alterations approved in 1969 and 1974. The original purpose for establishment of such a boundary was to identify the maximum limits of campus expansion so that non-university properties within that boundary could be acquired in an orderly fashion to meet future University needs.

The original boundaries related to a projected enrollment of 12,000 students. Changes in enrollment patterns and an expected leveling in growth has indicated that the campus no longer needs to expand to the extent which had been originally anticipated. As a result, some property which the University currently owns and additional property which was anticipated for acquisition is no longer needed. These parcels are identified in Figure 13*.

There are, however, some exceptions to the suggested strategy for reducing land holdings. The properties abutting the creek, north of St. Marie Street, are still important to acquire as a protection for the creek which is a valuable campus amenity. The strip of land on the east side of Junction Avenue is currently owned by two local religious organizations. The property is presently available for purchase by the University and therefore its acquisition should be pursued so that greater continuity can be achieved for that portion of the campus.

*Specific policies and procedures should be developed and adopted before University land is disposed of.
recommended changes to the regents boundary

- existing regents boundary
- proposed boundary modifications
- land to be sold or no longer purchased

church property should be acquired

may want to retain if chester park elementary school is acquired by umd

fig. 13
TRANSPORTATION/PARKING

The following transportation goals, strategies, and recommendations were developed from data obtained during a survey taken on November 3, 1971 (see Planning Base Inventory/Report 2) and the data update used for the UMD Central Entrance Plan, March 1975.

The transportation goals and their related recommendations have been divided into five topic areas: 1) General goals, 2) Access to campus, 3) Vehicular circulation and parking, 4) Pedestrian and bicycle circulation, and 5) Transit.

GENERAL GOALS

GOAL: All modes of transportation should be coordinated to insure maximum efficiency and a high level of service convenience.

STRATEGIES: 1. All modes of transportation to and within the campus in conjunction with parking facilities should be treated as a single system. With this "system approach" the relationships between each element of the system may be determined, and the tradeoffs and/or impacts resulting from a change in one element of the system may be assessed.

2. The transportation system should operate effectively during all time periods (peak hours, as well as off peak hours and weekends).

3. The transportation system should be coordinated with local public transportation facilities.

4. The use of mass transit for access to campus as well as for inter-campus movement should be encouraged.

5. The elements of the transportation system should be coordinated so that all campus users, including visitors, can reach their building destinations directly without confusion.

6. The transportation system should serve as a tool towards implementing overall campus objectives, such as the establishment of a campus identity.

ACCESS TO CAMPUS

GOAL: Development of transportation access should be sensitive to community concerns, including social and environmental quality, property values, open spaces, recreational areas, and cultural and historic facilities.
STRATEGIES: 1. UMD should minimize the impact of traffic volumes on adjacent neighborhoods.

2. The campus should be directly accessible via the arterial street system, with travel on local streets discouraged.

3. Access to campus should be coordinated with other transportation planning studies conducted by other local agencies to insure continuity and compatibility.

GOAL: All campus users, particularly visitors, should be able to reach their destinations on campus directly and without confusion.

STRATEGIES: 1. The campus should be directly accessible via arterial streets.

2. Each parking facility on campus should be directly accessible from each major direction of approach to the campus.

3. A distinctive signing system should be implemented on the approaches to the campus to direct motorists to their appropriate destinations.

4. Access to the campus should be coordinated with other transportation planning studies in the Duluth area.

5. Pedestrian/bicycle routes should be coordinated with the city's pedestrian/bicycle system.

Specific Recommendations

Three major issues surfaced regarding access to the campus. These issues primarily affect persons who travel to the campus on a regular basis, persons who do not presently travel to the campus but would if access was improved, and residents who live near the campus. The major issues are:

1. Improved connection between the campus, West Duluth and adjoining suburbs

Persons traveling to the campus from the west presently have the choice of utilizing Mesaba Avenue or cutting through the downtown area. Neither of these routes is attractive because they both involve multiple turning maneuvers and considerable traffic conflicts.

A corridor study sponsored by the Minnesota Department of Transportation (MNDOT) was undertaken to identify the most feasible alignment and design characteristics for an extension of I-35 from Mesaba Avenue to 68th Avenue East. Traffic approaching the campus on this facility would exit at 21st Avenue East, proceed along 21st Avenue East to Woodland Avenue, and then take Woodland Avenue to College Street. This route would be much more convenient than the alternative Mesaba Avenue and downtown routes. The following insert identifies these major routes:
The I-35 project is still under study by MNDOT and should be monitored to determine its impact on future access to the campus.

2. Solution of traffic problems on Woodland Avenue near the campus

Analyses conducted during this study and the Duluth TOPICS Program revealed several problems on this portion of Woodland Avenue, including:

a. Congestion and hazards at College Street due to the inadequate weaving distance and the high traffic volume on Woodland Avenue.

b. Safety problem at St. Marie Street.

c. Lack of signal progression along Woodland Avenue.

The TOPICS Report recommended that College Street be extended to 8th Street East through the intersection with Woodland Avenue, that improved channelization be constructed, and that a traffic signal be installed. Further analysis by the City has indicated that 8th Street north of College Street has limited capacity and penetrates an existing neighborhood. As a
result, this connection was determined as not feasible and has therefore been dropped from the program. The improvements for signalization, however, should still be implemented. At St. Marie Street construction of a right turn lane on the north approach of Woodland Avenue was recommended under TOPICS to accommodate the heavy right turn movement by vehicles destined to the campus. Another TOPICS recommendation was to interconnect all the signals along this portion of Woodland Avenue.

These recommendations should be supported by the University because, when implemented, they will significantly improve the efficiency and safety of access to the Campus.

3. Implementation of a signing program to guide motorists to the campus

To minimize confusion and direct campus-oriented traffic to routes best designed to accommodate them, the system of directional signage should be expanded and upgraded.

Early in this study, it was determined that inadequate signage directing motorists to the UMD campus was a major problem. Efforts have been made to improve this situation by developing distinctive graphics which are compatible with the City of Duluth's signage improvement program. Some of the signage is now in place and is being evaluated. UMD should continue to work with the City in adding to this system and improving upon its graphic and functional qualities so that visitors to the campus can quickly determine routes to the campus and final destinations on campus.

Access Summary

In addition to improving the convenience of traveling to the campus, these recommendations will affect the routes chosen by campus-oriented traffic. Figure 14 illustrates routes to the campus which can be considered as minimal travel time paths and a breakdown of daily and visitor trips to the campus by direction of approach.

VEHICULAR CIRCULATION AND PARKING

GOAL: All users, particularly visitors, should be able to reach their destination directly and without confusion.

STRATEGIES: 1. A clearly defined and identifiable vehicular circulation system should be developed for the campus.

2. A ring road for cross-campus circulation should be developed so that the majority of vehicular movements can be kept at the periphery of the campus.
Traffic flows and minimum travel paths to campus

- Daily trips
- Visitor trips
- Minimum travel time paths

University of Minnesota Duluth
Long Range Development Plan

Fig. 14

May 1978
3. Facilities should be developed so that there is a logical sequence of progression from campus entry, to parking, to academic facilities.

4. Campus parking facilities should clearly relate to an established campus vehicular circulation system.

5. Short-term parking facilities should be strategically placed and enforced in areas immediately adjacent to academic buildings.

6. Long-term parking facilities should be linked to the academic complex by pedestrian ways which are either climate controlled or climate protected.

GOAL: All types of parking required for the normal functioning of the campus should be accommodated on campus.

STRATEGIES: 1. Two general types of parking should be provided: long-term, low turnover parking and short-term, high turnover parking.

2. Long-term and short-term parking needs should be satisfied through separate facilities.

3. Short-term parking spaces should be provided adjacent to buildings for the exclusive use of visitors and drop-off/pick-up purposes.

4. Long-term parking facilities should be located adjacent to major circulation routes - preferably near the perimeter of the campus.

5. Parking facilities should be planned to meet both current and future parking demands on campus.

6. An adequate number of handicapped parking spaces should be provided as part of both short and long-term parking facilities.

7. On-street student parking along adjacent residential streets should be discouraged or prohibited where possible.

GOAL: Parking facilities should not conflict with the campus character, natural amenities, or pedestrian activities.

STRATEGIES: 1. Long-term parking should occur at the edges of the campus in landscaped, surfaced lots or appropriately designed structures.

2. Short-term parking should be located in a limited number of strategically placed lots immediately adjacent to academic facilities.
3. The transition from vehicular circulation, to parking, to pedestrian circulation should be handled in an orderly and logical manner.

Specific Recommendations

1. Cross-Campus Circulation

Although the recent upgrading of Junction Avenue and St. Marie Street has done much to improve general campus circulation, other problems still remain which should be resolved with the implementation of the long range plan.

Presently cross-campus movements rely on Junction Avenue, Oakland Avenue, and Woodland Avenue. The heavy traffic and lack of adequate signalization on Woodland Avenue make cross-campus travel on this route not only difficult, but inconvenient.

Oakland Avenue, although separated from pedestrians by an overhead pedestrian bridge, splits the campus into two parts providing a through road which is very close to the academic complex. An alternative circulation route is needed which is convenient yet non-disruptive to the campus fabric.

Three alternatives to cross-campus circulation have been studied in order to determine which best served the campus and its functional relationships (Figure 15).

Alternative 1 continues to utilize Oakland Avenue on the west side of the academic complex requiring no additional physical changes to the campus.

Alternative 2 involves the creation of a new road on the east side of the academic complex forming a connection between College Street and the access road behind the Physical Education building.

Alternative 3 relies on Woodland Avenue to complement Junction Avenue in completing a "ring road" around the campus.

Analysis of the three alternatives has resulted in the recommendation that Alternative 2 be implemented as a new cross-campus circulation route. Although Alternatives 1 and 3 require no capital expenditures, functionally they do not serve the campus adequately. Alternative 1 would maintain the feeling that one is entering at the back door while not providing adequate access to the east side of the campus. Alternative 3 poorly serves the campus in that it forces campus traffic onto an already overburdened city arterial while at the same time keeping traffic at a distance from the academic complex.

Alternative 2 requires the construction of a new road approximately 2,500 feet in length. Although this suggests a substantial sum of money, the cost is justifiable in that the facility would allow traffic
alternative cross-campus circulation routes

existing routes
alternative routes
to circulate freely on the campus without depending heavily on city streets.

In addition, Alternative 2 provides easy access to existing parking facilities and creates the potential for the development of a "Central Entrance" serving visitors to the academic complex.

2. Central Entry to the Academic Complex

Traffic and issue analyses have indicated that the majority of daily and visitor trips to the campus come from the southeast along Woodland Avenue (Figure 14). However, a centralized, clearly identified entrance to the campus does not exist in this area. The campus, because of its multi-directional orientation, lacks a unique sense of identity and focus. Visitors to campus are constantly faced with deciding which entry point is the one that will lead them to their destination. This is compounded by the fact that a "campus ring road" as such does not exist, making it difficult to circulate freely about the campus. A "Central Entrance" in conjunction with an adequate number of short-term parking spaces is needed to properly orient campus visitors.

Although Midway Drive currently serves as a visitor or Central Entrance to the campus, its lack of definition and focus detracts from the purpose it serves. This road, by its design, serves a dual purpose as a major entrance as well as a service road. Visitors to the campus quite often end up in a dead-end situation at the service dock on the east end of the Administration Building.

Because of its importance, this issue has received special attention in this study and was evaluated in much greater detail in the Central Entrance Study, prepared in 1975.

Three sites (Figure 16) were studied as potential locations for a "Central Entrance" to the campus. Two take advantage of existing functional relationships while the third takes a dramatic departure by developing a presently under-utilized part of the campus into a very formalized entry.

Site 1 would maintain the present orientation of the Administration Building and provide a cul-de-sac facility with short-term parking between the Administration Building and Parking Lot B. Access to this facility would be from the east off the recommended campus ring road. Access to long-term parking would be reoriented to the east and west ends of a new parking facility made up of Lots A and B.

Site 2 is a new plaza-like development in the open space area between the Administration Building and A. B. Anderson Hall. Part of this development would include the widening of the lower concourse to accommodate seating, vending and other auxiliary functions along with a visitor's information facility from which campus visitors could obtain maps of the campus and be given directions to their campus destinations. This facility, as does Site 1, relies on the new leg of the campus ring road for access.
proposed campus road system
alternative locations
service drive only

university of minnesota
duluth

long range development plan
Site 3 encloses the space below the dining center, thereby providing a visitor/information facility. Although the portion of Oakland Avenue which connects the two turnarounds on the north and south sides of the building would be maintained for fire access and general emergency vehicle use, Oakland Avenue would be effectively severed at the dining center with cross-campus circulation being rerouted to the proposed campus ring road. The southern leg of Oakland Avenue would, in effect, become the new major central entrance to the campus.

The analysis on the following page highlights the pros and cons of each site. Based on this analysis, Site 2 would best serve the needs of the campus. The implementation of this site would provide the desired focal point and information/visitor center, as well as define the desired "front door" or central entrance to the campus.

After the reconciliation of the previously discussed issues and recommendations, a basic plan for vehicular circulation was developed. Figure 17 illustrates the recommended vehicular circulation plan which consists of a "ring road" comprised of College Street, Junction Avenue, St. Marie Street, and a new road just east of the academic complex. Branching off this "ring road" is a series of cul-de-sacs which serve as access to specific areas and functions on the campus. This system controls cross-campus circulation thus giving higher priority to the pedestrian.

3. Parking

A. On-Street Parking

Parking at UMD presently occurs in parking lots provided on-campus or on nearby streets. On-street parking has obstructed the safe and efficient movement of traffic and seriously inconveniences residents along those streets.

To eliminate the traffic hazards and inconveniences to residents caused by on-street parking near the campus, it is recommended that UMD work with the City to develop regulations which:

- Establish time limits for parking on residential streets.
- Prohibit parking on streets utilized exclusively by persons destined to the campus.

NOTE: The existing demand for on-street parking has been taken into consideration when developing parking space requirements.

B. On-Campus Parking

Parking facilities on campus can be grouped into two broad categories: dormitory and academic. Together both categories include general, handicapped, metered, and reserved classifications. The primary issues regarding both dormitory and academic parking requirements are: the
<table>
<thead>
<tr>
<th>SITE #</th>
<th>ADVANTAGES</th>
<th>DISADVANTAGES</th>
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</table>
| 1     | • Utilize existing orientation of Administration Building.  
       • Readily accessible from proposed ring road.  
       • Orient visitors to the Administration Building, their most likely initial destination.  
       • Directly adjacent to long-term parking.  
       • Orients to the east side of campus which correspond to primary direction from which visitors approach the campus. | • Not geographically central to the academic complex.  
       • Must anticipate an addition to the Medical Sciences Building.  
       • Access to it must also in part serve service access and parking access functions.  
       • Dependent on the completion of the eastern leg of the campus ring road for access.  
       • Restricted area for development. |
| 2     | • Located at the geographic center of the academic complex and campus in general.  
       • Immediately adjacent to the major campus pedestrian circulation system.  
       • Adequate space for development.  
       • In an area which anticipates no other development.  
       • Immediately accessible from ring road system.  
       • Location on east side of academic complex relates well to major orientation and approach to campus by visitors.  
       • Would provide impetus for additional campus development between Kirby Center and the lower concourse.  
       • Oakland Avenue could be terminated with a cul-de-sac on either side of the Dining Center. | • Dependent on construction of campus ring road.  
       • Requires additional construction of facilities for visitors' center and other expansion of the lower concourse.  
       • Displaces a passive recreation area and open space site.  
       • Would require changes to Administration Building if this orientation is desired. |
| 3     | • Uses existing road system.  
       • Immediately adjacent to high activity center of the campus.  
       • Located between major campus housing area and academic complex.  
       • Geographically located near the center of the academic complex. | • Located at the "back door" of the academic complex.  
       • Would require considerable construction to enclose plaza area under the dining center for visitors' center.  
       • Not near the Administration Bldg. Would require the construction of additional parking spaces.  
       • Not as convenient to the campus ring road.  
       • Not readily identifiable by the occasional visitor and not as well oriented to the normal approach by the campus visitor. |
vehicular circulation system

umd circulation system

city circulation system

university of minnesota

duluth

long range development plan

fig. 17
number of spaces needed, the preferable locations for parking facilities, and the types of parking facilities needed (e.g., parking lot or garage).

a) Dormitory: A historical analysis of the demand for dormitory parking, relative to the number of dormitory residents, indicates that the increase in dormitory parking demand is related to two factors: 1) increase in number of dormitory residents and 2) increase in car ownership by students.

The demand for resident parking should be satisfied in parking lots near each dormitory. Therefore, planning for future dormitory facilities should include provision for an adequate number of conveniently located parking spaces. To determine the number of parking spaces needed the accepted standard is one parking space for every three residents. This ratio would be less for married student facilities. Dormitory parking is discussed further in Part 5: Goals/Analysis/Recommendations.

b) Academic: Initial projections for academic parking facilities in 1973 indicated that, based on enrollment estimates at that time, 3,300 parking spaces or a two-fold increase in parking resources would have to be available by the year 2000. However, as enrollment projection techniques were refined and enrollment trends were analyzed, a much different picture emerged indicating that approximately 2,100 parking spaces are required to meet revised peak enrollments (7,300 students in 1980).

Recognizing the limited accuracies of enrollment forecasting, the following approach is taken to guide planning of future parking facilities:

- Definition of the standard which the University should follow meeting parking space demand.

- Interpretation of a total student enrollment of 7,300 as representing the "ultimate" situation (which may occur in 1980; before, or after); and identification of the parking facilities needed to meet the academic parking space demand created by this population.

- Presentation of a staging program, which identifies the order in which parking facilities should be constructed.

Academic parking facilities should continue to be concentrated at the north and south ends of the campus. This will allow traffic to distribute itself so that access is not necessarily confined to one point on campus. The implementation of the campus ring road plan will also aid in providing a wider dispersal of access.

Generally, there should be a 50/50 split in parking facilities between the north and south ends of the campus. In addition, a .90 utilization factor representing the maximum practical rate for utilization of parking spaces should be allowed. This means that
about 10 percent of available parking is unusable due to parkers using more than one space, etc. Distribution of parking space should satisfy all identified needs for: general parking, reserved parking, special permit parking, metered parking, and handicapped parking.

To meet the requirement for 2,000 long-term and 100 short-term parking spaces in the "ultimate" situation, the parking plan shown in Figure 18 has been developed. Several alternatives for implementation of the required spaces were evaluated to determine which alternative best met the needs and resources of the campus.

1) Parking structures would utilize the least amount of available land and could provide climate controlled linkages to the academic complex. Costs for such facilities are extremely high ($3,000 - $5,000 per space), and such costs would have to be passed on to the user. Parking, being self-supporting, would be unable to finance such facilities. 2) Expansion and addition of existing parking facilities is relatively inexpensive, but it does require careful placement so that other land uses such as open space and recreation facilities are not eliminated or negatively impacted. Adequate land for parking is available within an easy 10 minute walk of Kirby Center, at the heart of the campus, and can be developed immediately. 3) The development of remote facilities would have the least negative physical impact on the campus environment but at the same time would require the implementation of a shuttle system to transport students to and from the campus. Land would have to be leased or bought for the remote facilities.

The most logical alternative, therefore, is to continue to develop surface parking facilities on campus. It must be emphasized, however, that parking not be developed in areas designated for recreation or open space. The development of additional facilities should be carefully evaluated at each stage of development so that an overabundance of parking is not constructed, e.g., if bus ridership increases.

Specific recommendations for the development of additional parking include:

- The bulk of the general parking should be constructed near the periphery of the campus.

- All new facilities should be in surface lots.

- New facilities for visitor and guest parking should be located close to the academic core, even if existing general spaces are displaced.

- The existing parking rate structure should be altered to reflect a new parking organization whereby a higher rate is charged for more convenient parking.
does not include dormitory parking

surface parking facilities
access points

note: an additional 75 spaces are on the lower campus

university of minnesota
duluth

long range development plan

fig. 18
- All new and existing facilities should be properly landscaped so that they become more visually integrated with the rest of the campus.

- If at some point in the future less parking is required than what is built, then parking facilities should be recycled to other land uses such as recreation facilities.

**MOTORCYCLE/MOPED CIRCULATION AND PARKING**

Although motorcycles and mopeds are generally seasonal modes of transportation, their increasing numbers warrant consideration in any circulation/parking plan.

State statutes govern the operation of motorcycles and motorized bicycles (mopeds). These statutes are enforceable by University police. Revised Regents' ordinances will incorporate regulations governing the operation and parking of motorcycles and mopeds.

At the present time, Parking Lot "C" provides the only adequate (i.e., concrete), authorized parking area for motorcycles on campus. Although unauthorized by the parking committee, the concrete surface adjacent to Griggs Hall and Lake Superior Hall Lounge, south side, is used for motorcycle parking. A concrete motorcycle parking surface is preferable to a bituminous surface as it lends better support to the cycle and does not deteriorate under the cycle's weight. Figure 19 identifies the existing motorcycle parking areas.

**GOAL:** Adequate parking facilities should be made available to motorcycles and motorized bicycles.

**STRATEGIES:**
1. Parking for motorcycles and mopeds should be on concrete surfaces wherever possible.
2. The on-campus distribution of motorcycle and moped parking should be based on need.

**PEDESTRIAN AND BICYCLE CIRCULATION**

Concerns have arisen regarding pedestrian/bicycle conflicts and pedestrian walkways, both indoors and outdoors. The use of bicycles on campus is increasing, creating additional problems and conflicts with pedestrians. Therefore, it is important that both the pedestrian and bicycle modes of travel be accommodated with efficiency and safety.

**GOAL:** The pedestrian circulation system should be developed in response to varying and severe weather conditions unique to the Duluth area.

**STRATEGIES:**
1. The existing indoor pedestrian system should be maintained and extended to new facilities as they are developed.
2. Provisions should be made for separated bicycle movement and parking.

GOAL: The pedestrian circulation system should promote maximum use of facilities both on and off campus.

STRATEGIES: 1. The existing indoor circulation system should be extended as the campus grows to facilitate greater cross-use of facilities.

2. The outdoor pedestrian circulation system should be developed in such a way as to make the total campus an educational resource.

Specific Recommendations

Pedestrian Circulation

The UMD campus is currently served by a well-defined interior circulation system which provides a climate controlled environment for the campus population. As new facilities have been constructed, each has been connected to the existing complex through extensions of the concourse system.

As well thought out as the system is, a number of problem areas still exist which will require additional detailed study to determine feasible modifications. Such areas include: the lack of a connection between Industrial Education and the rest of the campus; the upper concourse splitting the Library study rooms; the constriction of the concourse at the Bookstore and Kirby Center; and the difficulty in determining level relationships between buildings as they step down the hillside.

To assure that pedestrian movements on campus are adequately accommodated, the following recommendations are made:

- Maintain the enclosed pedestrian concourse system with extension to serve new buildings as well as form new linkages with existing facilities presently not connected.

- Investigate the possibility of a campus-wide floor level identification system to give additional continuity to the campus as a whole.

- Provide a comprehensive network of outdoor sidewalks connecting campus buildings to 1) accommodate movements not served by the concourse system and 2) accommodate traffic during hours when the concourse system is closed.

- Locate sidewalks and vehicular roadways to minimize potential pedestrian/vehicular conflicts.

- Design the sidewalk and concourse system to accommodate handicapped persons.
Bicycle Facilities

At UMD, as at most college campuses today, the bicycle is becoming increasingly popular as an inexpensive mode of transportation. The flexibility of movement which the bicycle allows requires well-defined routes and parking facilities to accommodate bike movement and storage. Without such a system the bicycle becomes just another element competing with the pedestrian and automobile for supremacy on campus. To provide a general framework for bike movement on campus, a bikeway plan has been developed which basically parallels the vehicular circulation pattern but, where possible, is physically separated from the automobile roadway or lane (Figure 20).

The following recommendations provide a basis for the development of a bikeway plan and regulations for the campus:

- Develop bicycle routes which provide minimum conflict with pedestrians and automobiles.

- Integrate campus bikeways with those being developed by the City.

- Provide physically separated facilities whenever possible. Absolute minimum width of bikeways should be 8'0".

- Provide bicycle parking racks at appropriate locations and in sufficient numbers to meet bike parking demand. Parking facilities should be of standard design such that maximum theft protection for the bicycle is provided. Two accepted bike racks are shown below:

- Adopt or develop a set of enforceable bicycle regulations which can be used to control the misuse of the bicycle on campus.
connect to city routes

connect to city routes

route in combination with pedestrian path

connect to city routes

indicates bicycle path which requires special attention due to conflicts within pedestrian areas

bicycle facilities plan

- major bikeway facilities (physically separated where possible)
- major bicycle parking areas
- city bicycle route

university of minnesota duluth

long range development plan

fig. 20
TRANSPORTATION

Although bus service accounts for only a small percentage (less than 10%) of the total daily person-trips to campus, it is an important element in UMD's transportation system and may prove to be even more important in the future. Buses serve two significant purposes: 1) they contribute to the reduction of parking space requirements on campus, and 2) they provide a means of transportation for people who do not own automobiles and an alternative for those who prefer not to use automobiles extensively.

GOAL: Use of transit for access to campus and for inter-campus movement should be maximized.

STRATEGIES: 1. City and campus bus routes and schedules should be coordinated.

2. Efficient campus bus service should be provided to upper campus, lower campus, off-campus student populated residential areas, and to the St. Scholastica campus.

3. Campus bus schedules should be coordinated with class schedules.

4. Incentives should be developed to encourage greater transit ridership.

5. UMD should work closely with the Duluth Transit Authority (DTA) in developing an aggressive advertising campaign to encourage wider use of transit facilities.

Specific Recommendations

There are currently three types of bus service to the UMD campus: 1) the inter-campus bus system shuttles students to and from downtown, the lower campus, and upper campus, 2) a Lakeside bus runs from Lakeside, to UMD, to St. Scholastica and back again, and 3) two city lines, the Kenwood route and East Eighth route, also accommodate students (Figure 21).

Campus Bus Routes

In 1976 the inter-campus bus routes and Lakeside route were carrying approximately 670 passengers per day or approximately 9% of the student/staff population.

The campus routes not only serve the purpose of transporting students between the upper and lower campuses of UMD and the St. Scholastica campus, but also fulfill the role of bringing students temporarily housed in hotels in downtown Duluth, apartment dwellers along the route and students living along the Lakeside route north and east of the campus to UMD.
Although the system has had a small impact to date, it remains as a valuable demonstration of how to reduce auto trips to campus and thereby lower the parking requirement for the campus. To maintain present ridership levels and encourage greater use of the service in the future it is recommended that UMD:

- Maintain existing routes with revisions and extensions as necessary in the future to better serve concentrations of student housing.
- Extend bus service as late into the evening hours as practical to provide the highest possible level of service.
- Actively market the system to promote additional ridership and discourage auto trips to the campus.
- Coordinate activities, routing, and scheduling of the inter-campus system with that of local routes to provide transferring opportunities whenever possible.

City Bus Service

The UMD campus is currently served by two city bus routes: 1) the Kenwood route which comes from the west side of the campus to drop off at Ordean Circle, and 2) the West Eighth route which lets off passengers at Kirby Student Center. In 1976 these routes carried 124 and 109 passengers per day, respectively. As with the campus routes, the ridership figures are not high. However, a valuable service is being performed in terms of reducing parking demands on campus and providing those who do not own a car or do not wish to drive an alternative mode for getting to the campus.

The DTA has indicated to the University that additional service to the campus could be possible if the campus ring road system were implemented. With a visitor entrance/bus stop facility the bus on Woodland Avenue could be routed onto the campus and remain within its established time scheduling.

It is important that UMD and the City continue to provide adequate bus service to the campus from various sections of the city. To maintain the viability of bus service it is recommended that:

- An active marketing program should be established with the cooperation of the DTA to publicize the availability of public transit and the benefits of using transit as a means to get to campus.
- Bus service should be continually evaluated based on analysis of student housing, ridership counts, and suggestions from transit users. Make recommendations to the DTA for appropriate route and/or schedule changes.
- Incentives should be developed to encourage greater use of public transit through parking restrictions and rate structure changes.
Express Bus Service

No express bus service is presently provided to the UMD campus. Express service has been successfully implemented at other universities to serve concentrations of persons destined to the school. Analysis of travel patterns has revealed the concentration of origins for trips to UMD. Examples of locations which have a high number of auto driver origin trips to UMD are the West end area of Duluth, Cloquet, Carlton, and Proctor.

Routes which serve a number of these areas may provide enough patronage to warrant express bus service to UMD.

It is therefore recommended that UMD, with assistance of the Duluth Transit Authority (DTA), conduct a detailed analysis of the feasibility for the establishment of express bus service to the campus. This analysis should include:

- Further identification of potential service areas.
- Survey of student and staff attitudes towards express bus service.
- Development of potential routes with estimated costs and revenues.
PHYSICAL FACILITIES

The term "physical facilities" generally refers to all permanent improvements, but for the purpose of this document its definition is limited to the built form which is necessary to accommodate 1) academic, 2) housing, and 3) student commons functions.

ACADEMIC FACILITIES

GOAL: UMD should establish a standard building programming process.

STRATEGIES: 1. Departments at UMD should identify the academic goals they wish to achieve and periodically review those goals to insure that the direction in which they are heading academically is reflected in the physical facilities on campus.

2. Complete and accurate data concerning enrollment projections, staff and faculty needs, space needs, and time and facility scheduling should be readily available from UMD to insure rational implementation of the Long Range Development Plan.

3. All programming data should be kept in a standard format so that it can be easily used by anyone involved in the development of new programs and facilities. Computer tabulations of existing space should be regularly updated by an on-campus staff person.

4. All programs should reflect the goals and strategies outlined in the Long Range Development Plan.

GOAL: Programmatic studies for new facilities should accommodate needs which are important to and benefit the campus as a whole.

STRATEGIES: 1. Internal circulation linkages connecting new facilities with the existing building complex should be part of all building programs.

2. Common outdoor circulation should be provided and be considered part of building programs.

3. Commons spaces (both interior and exterior) should be part of all building programs when feasible.

4. Access for the handicapped should be provided in all new facilities, interior and exterior.

5. Landscaping should be a part of building development.
GOAL: UMD should carefully regulate the expansion of its academic facilities to maintain the generous open spaces existing on campus (see Land Use); and to facilitate the continuance of the indoor pedestrian circulation system.

STRATEGIES: 1. New academic space should be provided only after careful analysis of departmental space utilization and projected space needs.

2. All the following potential methods of meeting space needs should be explored each time new facilities are requested: increased utilization, renovation, infill building, and expansion.

GOAL: UMD should seek ways of improving utilization of existing facilities.

STRATEGIES: 1. The feasibility of developing shared facilities, rather than departmental "territories" should be studied so that a high degree of space utilization may be achieved and duplication of facilities avoided.

2. Space should be utilized to its highest potential through efficient class scheduling.

3. Extension and evening programs should be expanded so that academic facilities are utilized throughout a greater part of the day.

4. Existing and future facilities should be available for public functions whenever possible so that greater use of facilities is made while at the same time making the campus a more viable part of the community.

GOAL: New facilities should possess a high degree of flexibility (adaptability of space to alternative uses through a variety of physical changes) so that they may readily accommodate new teaching methods or alternative uses.

STRATEGIES: 1. New facilities should attempt to build in three scales of flexibility:

   a) changeability of furnishings and services within a single space,

   b) changeability of entire floor layouts, and

   c) conversion of entire facilities to house different functions.

2. New facilities should be designed whenever applicable with partitions of materials such as gypsum board and metal studs to facilitate low-cost conversion.

3. Building utilities and services should be concentrated into those areas of a building where minimal disruption will be made by conversion.
4. New structures should, if at all possible, be adaptable to new teaching methods.

GOAL: Future expansion of academic facilities should be based on rational functional relationships and accurate space need projections.

STRATEGIES: 1. All academic space should be continually categorized, evaluated, and catalogued for future programming purposes.

2. A standard model for analyzing space needs should be established and adopted.

3. Programs and related facilities serving the campus as a whole should be located where they have the highest accessibility and exposure.

4. Interrelated activities should be logically located adjacent to each other.

5. Large lecture halls and library facilities should be located where they are easily accessible to large numbers of students.

GOAL: All facilities and spaces within facilities should be designed to accommodate handicapped students, faculty, and staff.

STRATEGIES: 1. All facilities should meet regulations established by the University, the State and Federal agencies regarding handicapped accessibility.

2. Existing facilities inaccessible to the handicapped should be retrofitted to eliminate all mobility barriers.

GOAL: Built form and landscape development should provide protection against severe climatic conditions while taking advantage of beneficial conditions.

STRATEGIES: 1. Built forms and landscape development should be used to link the academic complex, parking areas, housing facilities and transit stops with climate protected pedestrian routes.

2. Built forms and landscape development should preserve and create both warm, sunny sheltered areas and highly shaded areas.

3. Built forms and landscape development should protect against severe winter winds and take advantage of cool summer breezes.

4. Detrimental snow drifting should be prevented through built forms and landscape development.

Specific Recommendations:

The demand for physical space is a direct result of changes in enrollment and related program space requirements. Ultimately, space needs should be directly
assignable to academic units (departments, divisions, schools, etc.) located on campus. However, for the purposes of this long range plan, space needs have been based on an overall campus perspective related to space types (see Part 4, NEEDS). In addition, space needs and related enrollments have not been geared to specific target years.

Changes in academic structure and instructional techniques can also play an important role in establishing space needs and future growth. At this time, only one major project is anticipated in the immediate future which will impact on total campus space resources. However, the process has already begun to prepare the next capital request for legislative appropriations which may result in additional facilities or the remodeling of existing facilities to better meet projected needs. As indicated in the previous section on needs, the campus appears to be in the greatest need of research space with additional needs in the areas of library space, fine arts, and physical plant space. It cannot be understated that the needs analysis is based solely on a space/enrollment relationship and does not attempt to reflect the quality of existing space. Issue analysis has indicated that certain areas and types of spaces have substantial quality problems; particularly fine arts and physical education. Therefore, although the analysis shows that adequate amounts of space exist for certain uses, the quality of the space assigned can effectively negate the proper use of the space leaving certain departments with an actual space shortage.

Specific recommendations for academic facilities include:

- Expansion of academic facilities should occur only after careful and thorough evaluation of projected needs and capabilities of existing facilities. Once needs are established the following methods (listed in priority order) should be evaluated to best determine the most logical method of meeting the program requirements: 1) higher utilization of existing space, 2) renovating existing structures, 3) infill (adding vertically or horizontally to existing structures and developing below grade space beneath courtyard spaces), and 4) expansion of facilities in areas of the campus where buildings currently do not exist. This sequence of analysis is an accepted University standard and therefore should be followed at UMD.

Figure 22 indicates the potential quantity of space available within academic expansion limits. Available expansion potential involves three types of space: 1) additional floors added to existing buildings, 2) below grade expansion adjacent to existing buildings, and 3) new structures adjacent to the existing complex. Total gross square footage available through these three options is approximately 608,000 g.s.f. This would permit approximately 340,000 net assignable square feet to be constructed in the future which would represent an increase in current academic support space of approximately 52 percent (see Appendix C4).

Analysis indicates that there is an adequate amount of expansion space available within a very short distance of the existing academic complex. It is therefore recommended that expansion of the academic complex not go beyond the identified limits. By maintaining a tightly knit, highly compact campus, space utilization can be increased and the entire academic core can effectively be treated as a single building. Subsequently, greater emphasis can be put on cross utilization of facilities, thereby breaking down the existence of departmental boundaries.
location of new greenhouse facilities
- total area available: 16,000 g.s.f.
- 3 levels maximum
- 1 level at 16,000 g.s.f.

facilities expansion potential
- additional floors on existing buildings: 88,150 g.s.f.
- above grade additions: 322,800 g.s.f.
- below grade additions: 114,000 g.s.f.

university of minnesota
duluth
long range development plan

note: reuse and renovation of old main
on lower campus can yield an additional 88,000 g.s.f.
The integrity of the internal circulation system can be preserved and the system can easily be expanded by maintaining the compactness of the campus. Utility runs can also be more economical because of the short distance required to extend them to new facilities. Careful analysis will be required to determine which type and location of space best meets programmatic needs. All possibilities should be explored in depth before any final decisions are made.

- Academic facilities on the lower campus should be located only in existing structures. An important precedent was established with the renovation of the Lab School to accept new functions. It is recommended that this same approach be taken with other older structures on the campus. Old Main, although expensive to renovate, has the capability of being remodeled into needed instructional, research and office space.

The aesthetic and architectural character of the lower campus is heavily dependent upon the preservation of the existing structures. The City of Duluth, through the Department of Research and Planning, has recognized the historical value of Old Main and the lower campus in general and documented it as such in their publication: *Duluth's Legacy Volume 1, ARCHITECTURE*.

**HOUSING**

Housing records at UMD indicate that a marked increase in enrollment has occurred each time new housing facilities have opened on campus. In addition, since 1976, UMD has been required to lease 200 hotel spaces in Duluth hotels to handle the pressures for campus housing.

As a result, the University administration must reevaluate current housing policies in order to meet present and future housing demand.

**GOAL:** UMD should establish a housing policy that reflects student needs as well as overall campus and University goals.

**STRATEGIES:**
1. Future planning for UMD must anticipate the construction of additional student housing.
2. Complete records should be kept of student housing trends and preferences so that future projections will be realistic.
3. A continued variety of housing types should be provided so that students are presented with a choice of living styles. This should include married student housing and all elements unique to these housing types such as play and laundry areas, and adequate storage spaces.

**GOAL:** Student housing should be easily accessible from the academic complex.

**STRATEGIES:**
1. Housing should be linked to the academic complex by climate protected linkages wherever possible.
2. Campus bus service should serve any remote housing facilities and neighboring residential areas with large student populations.
GOAL: Land use conflicts between campus housing and adjacent residential areas should be avoided.

STRATEGIES: 1. Housing should be developed at the periphery of the campus.
2. Vehicular access and automobile storage associated with campus housing should not adversely affect neighboring residential areas.

GOAL: Appropriate auxiliary facilities should be developed as part of all University housing.

STRATEGIES: 1. Resident student parking should be located adjacent to housing facilities whenever possible.
2. Housing should be convenient to outdoor recreation areas.
3. Married student housing should provide for such facilities as children's play areas, laundry rooms, commons rooms, day care facilities, and so forth.
4. Adequate parking facilities should be provided as part of all housing facilities.

Specific Recommendations:

The site analysis study has identified areas of the campus that would be appropriate for student housing. Taking into consideration the amount of land area available, densities of living, and the additional land area needed for related parking facilities, a maximum limit has been developed for the number of on-campus living units. As discussed in the "Needs" section of this report, it is assumed that the maximum amount of housing provided by the University will be 30 percent of the peak enrollment projection of 7,300 students or a total of 2,200 beds. The remaining 70 percent will be provided by students living at home and through the private market place.

Figure 23 shows the location and suggested densities for new housing. Four assumptions have governed the decision for establishing housing sites: 1) housing development should occur at the periphery of the campus away from the academic core yet close enough to be within easy walking distance, 2) higher densities are required to preserve adequate open space and allow for other adjacent support functions, 3) a variety of housing types are desirable, and 4) 1 car per 3 residents will be the ratio used to determine residential parking facilities. Figure 24 identifies the location of dormitory parking facilities.

A reasonable staging plan for constructing the required additional housing would be:

1. & 2. Area west of Junction Avenue (phase one is already under construction) - 300 residents (150 residents in each phase).
recommended housing locations

university of minnesota
duluth

long range development plan
3. Replacement of Village Apartment units as they become obsolete - 300 residents.

4. Area north of St. Marie Street - 300 residents.

Housing on the lower campus should be maintained and kept in good condition. The character of the structures on the campus and the unique quality of the neighborhood add to its viability as an alternative choice among the various housing types provided by UMD.

CAMPUS COMMONS FACILITIES

Campus commons facilities are those non-academic facilities which play an important part in the development of the students' college experience. Such facilities include game areas, lounges, student activities offices, student/faculty conference areas, bookstores, and the like. The thoughtful development of these functions will create an environment that is active for a greater share of the day and encourage higher use of facilities year round.

GOAL: The campus should provide a total living-learning experience by providing facilities which cater to the students non-academic needs.

STRATEGIES: 1. A variety of indoor and outdoor recreational facilities should be provided to fulfill the non-academic needs of the students.

2. The main center for communal facilities should remain at Kirby Center/Food Service Center while smaller sub-centers or activity nodes should be located at either end of the academic complex.

3. All communal facilities should be an integral part of the pedestrian circulation system and related to the exterior courtyard system when possible.

4. The feasibility of providing more commercial facilities on campus should be studied.

5. The University should encourage and support the further development of nearby commercial areas, such as the Mount Royal Shopping Center.

GOAL: Outdoor open space serves a communal function and should be developed accordingly.

STRATEGIES: 1. A wide variety of recreational activities should be provided on campus (sports, swimming, sitting, hiking, etc.).

2. The system of open spaces on campus should be coordinated with the City's open space system and its associated policies.
Specific Recommendations:

The non-academic activities of the campus population also require facilities within convenient access of housing and the academic core. Within the less formal commons areas a great deal of exchange between students, faculty, and staff takes place. Existing social and recreation facilities seem to fulfill the needs of the campus population, with the exception of a lack of smaller more secluded lounge spaces where smaller numbers of people can get together. Issue analysis has also shown a lack of faculty lounge space located within other parts of the campus.

Most lounge space and communal areas are concentrated within Kirby Student Center. Although the majority of student activities should occur in the student center, additional student and faculty commons areas are needed in other parts of the academic complex.

Additional lounge spaces should be located at the north and south ends of the academic complex. These spaces should relate directly to the concourse system for easy access. Commons areas in these locations would give commuting students a place to wait for rides at points relatively close to their departure points. Figure 25 shows the suggested location for additional communal areas as well as the location of existing areas.

Lounge areas should offer a variety of environments (from highly active to quiet study areas) which would provide a mix of functions and spacial experiences. Additional vending areas should also be incorporated into these facilities so that alternative eating locations would be available to commuting students. However, there should be physical separation of such facilities so that areas intended for quiet conversation and faculty/student interaction are not adversely affected by other commons activities.

A potential resource for additional commons facilities can be found in space which becomes classified as excess based on enrollment. Existing spaces, such as general purpose classrooms, could, if properly located, be converted to serve as commons areas.

Great potential exists for expanding the activities located in Kirby Center by developing below grade facilities under Kirby Terrace, as well as establishing satellite commons areas. Existing activities would be reinforced by adding functions in this area. Additional development might include:

1. Expanding the lower concourse to give added significance to this area as a people space by creating seating and vending alcoves rather than just placing these functions in a wide corridor.

2. Adding specialty shops, student organization facilities, a cinema, a post office, etc. to supplement existing Kirby activities.

3. Developing a major visitor center as part of the "ring road" system.
campus commons facilities

- existing corridor system
- extensions of corridor system
- limit of academic expansion
- commons areas

existing student commons area
satellite activity center as part of new construction

major commons area
expansion of Kirby center below grade

satellite activity center as part of new construction

university of minnesota
long range development plan
4. Developing Kirby Terrace - the creation of a more formal plaza which would make it more usable as a student gathering place.

Outdoor Recreation Facilities

Beyond the provision of indoor facilities for non-academic student activities, outdoor facilities must also be developed so that students can be offered a wide variety of choice in activities. The UMD Campus has the unique characteristic of possessing a large and varied amount of open space within which to develop both passive and active recreation facilities.

It is particularly important to develop these areas to preserve the inherent character of the campus as well as improve facilities which are at present less than acceptable. Active recreation facilities, particularly for intramural sports and physical education have been neglected in the past and, as a result, are now unable to handle the demand for their use. Outdoor recreation facilities fall into two categories: passive outdoor and active outdoor.

Passive outdoor areas include all open space areas on the campus which can be utilized for activities such as hiking, sunning, picnicking, studying, etc. Rock Hill and the creek are good examples of areas used for these activities.

Active outdoor areas are those which have a more formalized layout of facilities for field games, tennis, club sports, etc. and include lighting and fencing.

It is recommended that the plan shown in Figure 26 be implemented in a series of stages so that active as well as passive recreation needs of the campus population can be met. Three areas have been identified to serve this function. The first area just east of Junction Avenue primarily serves intramural activities and relates well to student housing facilities. The second and single largest area, located between the proposed campus ring road and Woodland Avenue, serves intramurals, physical education, and intercollegiate athletics. The third area is located north of St. Marie Street. This site is geared to intercollegiate athletic functions such as baseball and ice hockey. Part of the property has not yet been acquired. The implementation of these facilities should therefore be considered as a long range development project.

The areas identified have been studied in preliminary fashion and early layouts for activity areas indicate that nearly all of the desired facilities for intramurals, physical education, and intercollegiate athletics can be accommodated. Detailed studies will be required to determine exact layout and orientation.
1.  
2 softball fields  
2 touch football fields  

2.  
3-4 softball fields  
4 touch football fields  
2 regulation football fields  
1 baseball field  
1 club sports field  
10 tennis courts  
1 running track  

3.  
2 baseball fields  
2 club sports fields  
1 ice arena  

recreation facilities  

- passive recreation areas  
- active recreation areas  

university of minnesota  
duluth  
long range development plan  

fig. 26  
may 1978
UTILITIES AND SERVICE

Although the presentation of utility and service recommendations may have appropriately appeared within other major headings (transportation and physical facilities, respectively) they are presented here to emphasize their individual importance. These elements of the overall campus system are often overlooked as minor issues, but such neglect, especially for UMD, could easily lead to unnecessary expense and a variety of conflicts.

Utilities

GOAL: A consolidated, integrated utility grid should be developed in conjunction with future building projects and utility upgrading projects and confined to lower levels of buildings where possible.

STRATEGIES: 1. All utility systems should be analyzed in detail to determine their capability of handling future campus growth and maximum load capacities.

2. Funds should be made available on an annual basis to maintain all utility systems at a high level of serviceability.

3. Utility runs should be consolidated to the highest degree possible and located in areas where they will not be disrupted by future growth and change.

Specific Recommendations:

The utility systems at UMD, like many systems implemented in parts over a long period of time, are lacking in total coordination as a single unified system. Parts of some of the utility lines are still below standard and are in need of upgrading. Current legislative requests have included monies for: additional conversion of the electrical distribution system to a 13,800 volt system; additional improvements to the south leg of the campus storm sewer system; and continued improvements to the water distribution system so that it meets the State Fire Marshall's requirements.

UMD is in the unique situation whereby it can develop a truly consolidated utility system. Because of the internal circulation network and the interconnection of all facilities, a system has begun to develop that is easy to maintain and expand as new facilities are added to the academic complex. By utilizing the same grid that is established by the concourse system, utility chases can be kept totally within the confines of the built-up academic area. Obviously, not all utilities can fall within these limits, but by consolidating as many of the utility runs as possible into a single system, maintenance can be simplified and extensions or expansion of the utility network will be less costly. Major interruptions of utilities due to new construction projects
can also be prevented.

Adding the coal-gasification system to the existing heating plant should serve as an important demonstration of alternative energy generating systems. The campus should continue to look for other energy alternatives that can be positive demonstrations of energy conservation. Other potential alternatives could involve solar collectors for heating, underground construction to make use of the earth's insulating properties, and passive systems that use the sun to heat buildings and lake breezes to cool buildings.

Service

GOAL: Delivery and pickup of goods should be coordinated in such a way so that other campus activities are not disrupted.

STRATEGIES: 1. Space for servicing individual buildings should be incorporated into short-term parking and intra-campus circulation systems.

2. Service areas should be restricted to as few locations as possible with the majority of servicing occurring at the central loading dock and service tunnel below the Residence Hall Dining Center.

3. Secondary loading docks should be carefully integrated with building massing and plan composition.

Specific Recommendations:

As originally designed, servicing of the academic complex was through a scattered system of loading docks and delivery doors. Goods were usually brought to a service point nearest its final destination and, if necessary, moved through the concourse system to wherever the materials were to be delivered.

With the completion of the Residence Hall Dining Center, servicing of the academic core is through a centralized loading/delivery area located in the basement of the Center. Materials are brought to this centralized point and then delivered throughout the campus by utilizing the concourse system. A service tunnel constructed on the west side of the Math and Geology Building and Life Science Building extending south to link up with M. W. Alworth Hall at first appeared to be a good idea but in actuality has evolved into a general storage area for adjacent departments.

At this time it is evident that the current system of a centralized delivery point with scattered secondary service docks works well and should be continued into the future.

Major storage and servicing of maintenance vehicles and other equipment is currently handled in an area east of the stadium bleachers. If at all possible this function should be moved to the Research and Field Studies Center. This
would allow the present site to be utilized for another function, particularly additional dormitory parking or recreation space, and would remove a very unsightly use from the view of both campus residents and nearby residential areas.

CAMPUS CHARACTER AND LANDSCAPE

The external appearance of the campus is highly dependent on two factors: the character of the built form and the character of the natural environment as maintained and enhanced by the various users. The "character" of the campus embodies a wide variety of elements such as: building materials, building forms, building scale, spacial flow, street furnishings, landscaping materials, landscape and building maintenance, building graphics, and many others. The way these elements are treated individually and as a total composition play an important role in how the campus population responds to the environment in which they learn, work, and play.

The following goals, strategies, and recommendations describe means of harmoniously combining these elements to produce an appealing overall environment for campus activities.

GOAL: The UMD campus possesses unique characteristics in its landscape, geology, topography, and architecture. The natural qualities of the campus should be considered a valuable resource and should be preserved and enhanced through campus development.

STRATEGIES: 1. The unique and inherent topographic features of the campus should be maintained and pursued with new construction.

2. The preservation of environmental systems which typify the "naturalness" of areas of the campus should have the highest priority. The unique features of these systems should be regarded as a valuable resource.

3. Plant materials used should be native to the Duluth region except in specific cases where non-native materials are required for special effect or teaching purposes.

4. The feasibility of using the natural surface drainage ways and streams on campus should be studied as a means of linking together areas of the campus and of relating the campus to the community and its green way system.

GOAL: The campus should present an image with a high degree of continuity and quality.

STRATEGIES: 1. The natural character of the Rock Hill area should be used as a unifying characteristic for the entire campus.
2. Every effort should be made to unify the campus by simplifying the palette of materials used on future buildings, relating them to the most commonly used materials on existing campus buildings, and by using a consistent set of native landscaping materials for general site work.

3. Buildings such as those on the lower campus which are judged to have high historic or aesthetic value should be thoroughly evaluated to determine the feasibility for renovation and preservation.

4. To avoid leaving undeveloped spaces between and around new facilities, building programs should include as part of project contracts the landscaping of sufficient adjacent site areas.

5. Landscape treatment adjacent to buildings should be utilized to reduce the visual impact of large bare walls and create a more pleasing and human scale.

GOAL: Existing open space should be preserved to the greatest extent possible.

STRATEGIES: 1. Open space typically involves a wide range of intensities of use. Such uses may vary from highly active organized forms of recreation to passive activities such as sitting and/or sunning. Other open space areas may exist basically for visual effect. Therefore, a wide range of open spaces should be preserved and dispersed throughout the campus to provide a pleasant variety of spatial experiences.

2. Existing open space should be carefully evaluated before any facilities expansion takes place in order to preserve those areas of high quality, value, and use.

3. The system of intimate exterior courtyards adjacent to academic buildings provides a unique amenity that most campuses do not have. This feature should be considered of great value and should be preserved, improved, and expanded through campus development.

4. As physical facilities expand, open space areas should be made readily accessible from the academic core through an organized pedestrian circulation system and should link areas to form a consolidated system of open space.

5. A variety of views should be developed in conjunction with open space. These should take advantage of both natural features such as the lake and unique features of the campus itself.
Specific Recommendations:

Preservation

Preservation means: maintaining that which is of high intrinsic value by establishing planning policies which take advantage of existing good qualities and expanding upon them where possible to further add continuity to the campus.

- The UMD campus possesses unique characteristics in its landscape geology, topography, and architecture. The natural qualities of the campus should be considered a valuable resource and should be preserved and improved as the campus develops. Planning should, therefore, take advantage of the natural resources on the campus by establishing a policy of conservation and preservation rather than casually expanding physical facilities into any open areas on campus that seem available.

- Building expansion should be confined to those areas identified for such use in the recommended campus land use plan.

- The general architectural character of the campus is one that relates well to the pedestrian. The system of total internal circulation and the system of intimate exterior courtyards adjacent to academic buildings provide unique qualities that many campuses do not have. Additional courtyard spaces should be developed as new buildings are added to the academic complex. Existing courtyards should be enhanced by developing them further giving each a character of its own.

- Although economics will play an important role in the future of the lower campus the quality and character of this area rely heavily on the architecture of its old buildings and the spacial arrangement created by them. Careful analysis should be conducted to further determine the ability to recycle Old Main as a viable academic facility.

Continuity - Buildings and Landscape

Continuity on the UMD Campus is particularly important due to the integration of one building with another. This is not to say that no variety can be accommodated but rather that buildings and their surroundings should work together rather than compete in creating a successful visual composition.

- Every effort should be made to unify the campus by simplifying the palette of materials used on future buildings, relating them to the major materials previously used on campus and by using a consistent set of native landscaping materials for all site work.

- Plant materials consistent with the natural character should be used throughout the campus. More exotic landscape treatments should be limited to intimate spaces around and between buildings. Only native and hardy plant materials should be utilized in the campus landscape. This approach will reinforce the natural character and insure a better mortality rate for new plant materials, thereby maximizing the economy of installation and
Achievement of reasonable continuity should be carefully considered when choosing plant materials for specific landscape treatment. The number of different plant materials used in an individual treatment area should also be limited. Varying situations will naturally dictate reasonable departure from this rule, but in general use of this basic concept should be followed.

- All landscape furniture, such as benches, planters, trash receptacles, kiosks and lighting standards and luminaries should reflect uniform design and materials. Landscape furniture should be made of wood wherever possible except in special treatment areas where other materials may be appropriate.

- Walks can be constructed of similar materials to unify the pedestrian circulation system. This is not to imply that everything should look identical, but that a consistent design theme should prevail.

**Improved Procedures**

Although efforts have been made to oversee an organized process for improving the character of the campus through annual maintenance programs, additional procedural changes should be made to further enhance the campus, particularly in the area of landscape development.

- UMD should establish a landscape nursery at the Research and Field Studies Center. The nursery would provide a readily available supply of plants suggested for general use on campus as well as create a valuable teaching resource for biology and botany programs. Such a resource would also promote a more extensive use of the University-owned tree moving machine.

- Plant materials should reflect the use or effect for which they are intended. Masses of large trees are properly located in generous open areas. More intimate, human-oriented spaces require plants of appropriate scale and textures. Site conditions such as drainage, soil fertility, salt spray and exposure must be carefully considered in plant selection.

- A direct and detailed inventory of existing trees and shrubs should be prepared for the portions of the campus that have been developed. These inventory documents should consist of a Master Tree List, Master Grid Plans for trees and Master Grid Plans for shrubs and lawns. The documents should be placed on file in the Office of Grounds Service Supervision at UMD and in the Office of Physical Planning in Minneapolis. The grid plans and lists should be updated by adding or deleting materials and noting changes in size or conditions immediately after they occur. A master planting plan should be developed to provide an overall guide for future development.

"Don't Build" Policy

One of the dominate features of the UMD Campus is its extensive open space. It is essential that the integrity of a great portion of this space be maintained.
The open space system for the campus is composed primarily of the homogeneous sites, defined as "Don't Build" areas in the Site Analysis. However, the term "Don't Build" should not be interpreted as "don't use": "Don't Build" areas have been identified as either too valuable as open space, or physically unsuited as construction sites. Nearly all areas designated for preservation will be utilized in some manner, however. Some will provide areas for active and passive recreation and outdoor study and research. The remainder will serve the functions of protecting views and providing essential buffers. Furthermore, the term "Don't Build" does not exclude improvements within the areas so defined. The construction of pedestrian paths, ballfields, backstops, sitting areas and similar improvements is encouraged. "Don't Build" simply means that no road, parking lot or major structure should be allowed to encroach upon these open areas.

Figure 27 depicts the various elements of the "Don't Build" plan and indicates through code numbers the primary restrictive characteristic which causes a specific site to be designated as a "Don't Build" area.

<table>
<thead>
<tr>
<th>Code</th>
<th>Restrictive Characteristic</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Possesses unique natural features which are irreplaceable and of high scenic value. Rock Hill provides natural study and recreation areas and creates a unique character for the entire campus. It should remain in its natural state.</td>
</tr>
<tr>
<td>2</td>
<td>Bodies of water, including ponds, creeks and adjacent wetlands. Obviously, structures cannot be placed in a pond, but these features must be protected from any encroachment which would reduce or destroy their natural beauty. The use of these sites for casual recreation and biological education is encouraged.</td>
</tr>
<tr>
<td>3</td>
<td>Organized recreation areas that should be retained for that use. The location and physical characteristics of these sites (near student housing and adjacent to physical education facilities) make them highly suitable to active recreational use. The openness of these areas also preserves major views from housing areas and the academic complex.</td>
</tr>
<tr>
<td>4</td>
<td>Buffer areas essential to provide a transition between University property and the adjacent land uses. While most of these sites also possess natural features of scenic value, their primary function is to act as a buffer.</td>
</tr>
<tr>
<td>5</td>
<td>Open area to preserve and protect major views into and from the campus. This area also provides space for casual recreation, and will serve as the focal point for the proposed main visitor entrance to the campus.</td>
</tr>
<tr>
<td>6</td>
<td>Primary wildlife habitat suitable for outdoor biological educational use. The pond and natural vegetation make the site ideal for this function. It also provides casual recreation space adjacent to student housing developments.</td>
</tr>
</tbody>
</table>
don't build areas
Code  Restrictive Characteristic

7  Essential open space used to separate buildings and differing use areas. While not particularly useful spaces, these sites protect building relationships and provide minimal viewing areas.

For a more detailed examination of Don't Build areas, see Appendix B.

Landscape Concept Plan

The naturalness of the UMD Campus with its large areas of virgin or high quality trees, ponds and creeks provides a unique opportunity to create a campus environment that is less urban in nature and is of a pedestrian scale. Through the wide use of tree masses and generally capturing the qualities of the northern Minnesota environment, a campus can be created which is both environmentally comfortable yet highly aesthetic without departing from a feeling of sophistication. The general concept for landscape development is shown in Figure 28.

The plan does not go into great detail as its purpose is to establish an overall theme for development. The major massing of trees should remain to the north and west of the academic complex. However, "fingers" of tree masses should extend into the campus at strategic points such as along the campus ring road and cul-de-sac drives leading into various parts of the complex. These landscape fingers should consist of the most common and native vegetation found on campus and include both deciduous and coniferous materials.

The periphery of the campus should also be maintained in a more or less natural state while the more highly manicured areas should be developed closer to the center of the campus. The more exotic landscaped areas would appropriately be developed within the system of courtyards between buildings and within buildings themselves.

Appropriate landscaping treatments should be utilized to develop the sense of scale which is primarily pedestrian in nature.
Landscape concept plan

- Major overhead tree canopy
- Courtyard landscape development

University of Minnesota Duluth
Long range development plan

Fig. 28

May 1978
implementation
ON-GOING PLANNING

Since needs and resources change over the years, specific recommendations may have to be adjusted; but the goals and strategies remain to give direction to the adaptation process. It is therefore important that the evaluation of needs and resources and the list of goals and strategies be periodically reviewed to make sure they remain consistent with reality.

The success and implementation of the plan rely heavily on a well established method of on-going planning. The key to the on-going process is the establishment of a regular periodic review of the Long Range Development Plan and all its related elements.

The format, techniques, and methods established in this report and the series of reports that preceded it should be maintained as UMD implements the various components of the plan. The following elements summarize the basic ideas that should be utilized in on-going planning:

1. The Planning Base Inventory, Space Needs Projections, and Enrollment Projections, should be continuously updated to provide current and useful programming data.

2. Participatory planning should be continued as the proper method of user input in the on-going planning process. Issue analysis sheets and periodic meetings should be utilized to interpret planning problems and clarify planning tasks.

3. The planning goals and strategies as outlined should be continuously reviewed to insure continuing validity.

4. The Planning Framework should be used as a reference for all projects implemented on Campus.

The Inventory, Goals and Strategies, and Framework represent UMD's position at the present time and responds, to the best of its ability, to circumstances as they are now. If they are to continue to be useful, it is important that they are reviewed periodically, refined, and changed as necessary. An accumulation of changes will occur through the collection of issue sheets and recommendations, through feedback from built projects, through policy changes, and through the updating of the planning base documents. This document, and particularly the recommendations, must be reviewed and ratified at least every two years, in association with the legislative requests.
MONITORING

There are two areas where general monitoring is required to maintain the validity of the Long Range Development Plan. The first area involves the monitoring of the Goals and Strategies so that all issues are considered, recommendations are recognized, "Don't Build" and "Building Expansion" sites are accurate and adhered to, and that the Goals and Strategies are appropriate and useful. The responsibility of this process lies with the personnel within the Office of Physical Planning in Minneapolis in conjunction with the assistance of an appropriately appointed person from the UMD Campus (preferably a resident staff planner).

The second level of monitoring involves the programming, design and construction of individual projects. This task lies with the individual in charge of Project Planning within the Office of Physical Planning. The Long Range Development Plan will establish the terms of reference for these projects and will be utilized to evaluate building design.

The planning process outlined in this study should be used in developing future legislative requests. It should clarify objectives, strategies, timetables and the physical shape that the campus is taking so that the legislature can make financial allocations that are based on knowledge of both the projects themselves and the physical framework of which they are a part. It is hoped that with this knowledge, realistic priorities for funding projects will be easily established.

PRIORITIES

Previous University long range planning studies adopted by the Board of Regents have established a concisely staged sequence of events leading from the development of a facility's need to the actual construction of the facility.

For the sake of consistency in technique and administration of all long range development plans for the various Campuses of the University it seems logical that the same process should be followed for all. The process outlined below is recommended for use on the UMD Campus. With a few minor changes where appropriate, the process is the same used for the Twin Cities Campus.

The implementation of the plan will occur through the programming, design, and construction of individual building projects as the need and funds for them arise. The rational sequencing of operations beginning with the first expression of need and leading to the occupation and use of space, is, therefore, of crucial importance. It should be as follows:

1. An expression of need which culminates in the appointment of an in-house committee to produce the ACADEMIC BRIEF.
2. The appointment of a Building Advisory Committee which produces a GENERAL FACILITIES BRIEF and BUILDING PROGRAM.

3. ARCHITECTURAL DESIGN AND CONSTRUCTION.

4. POST CONSTRUCTION EVALUATION.

Academic Brief

Purpose: To describe as fully as possible the academic group or groups who have expressed a need for physical facilities. (In the case of non-academic groups, a similar brief would be prepared under the title, "Users Brief").

Physical facilities are required when existing facilities no longer fulfill the existing and projected needs of an existing group, or when a new group appears with a new set of needs. Technically, the real need is not for physical facilities per se, but rather for the ability to carry out desired activities. Therefore, the production of an ACADEMIC BRIEF is not necessarily the initiation of development of building space. A careful examination may point to non-physical solutions such as administrative or curriculum changes, to the provision of a building, or to a combination of both.

A committee of the academic group or groups concerned should be formed to produce the Brief. The project itself would be managed by a representative from the Projects section of the Office of Physical Planning.

The ACADEMIC BRIEF should contain:

1. General statement of the goals, objectives, policies, and philosophy of each academic group presently or potentially concerned.

2. Program statements for each program area within each academic group amplifying their goals and objectives, with a full description of activities, methodologies, staff and students (both kinds and numbers), and relationships to other program areas both within and outside the academic group. Information should cover both present and projected situations, to the three planning stages.

3. Program oriented population projections (students, faculty, staff) for each program area, to each planning stage.

4. Course names and enrollment charts, present and projected.

5. Statement of any projected changes (e.g. addition of new programs) not included in the above sections.

The BRIEF should contain no reference to physical facilities, other than as necessary to illustrate the inadequacy of existing facilities. It should adopt a uniform format for all sets of similar information, and should present as "pure" a model as possible of the goals and actions of the groups concerned, free of the distortion which may have been exerted by physical restraints.
With the ACADEMIC BRIEF as a basis, discussion of the real needs will determine whether physical facilities will help to satisfy these needs. If it is agreed that physical facilities are required, a building committee should be appointed to commence production of a GENERAL FACILITIES BRIEF.

General Facilities Brief

Purpose: To establish the functional requirements of the academic programs; compare these requirements to existing suitable space to establish a complete overview of new and/or renovated facilities required to fulfill these requirements; and finally, to establish an implementation sequence for construction and/or renovation.

The extent and form of the need for physical facilities must be established so that optimum use will be made of available funds, existing space, and available building site area. This examination will establish how existing facilities can best be utilized, what new facilities are required to completely fulfill present and projected needs, how both needs and facilities can be modified in accordance with available resources, and what effect the Long Range Development Plan and University building and space standards will have on facilities development. The utilization-renovation-in-fill-expansion priority sequence described in the Planning Recommendations should structure this examination of facilities requirements. It is essential to establish a general overview of all required facilities so that individual building projects are identified in, and related to, an overall facilities context. The GENERAL FACILITIES BRIEF thus ensures maximum benefit for each building project.

The GENERAL FACILITIES BRIEF should contain:

1. Functional Requirements of Users:
   a. Program Oriented Space Predictions relating space categories to types of activity in each program area.
   b. Statement of categories of space used communally within and among the academic groups concerned.
   c. Statement of categories of space used communally with others.
   d. Diagrams showing relationships between space categories and activities for each program area.
   e. Master relationship diagram, encompassing all program areas and all communally used areas, as well as external relationships.

2. Facilities Inventory and Assessment:
   a. Charts listing all space presently used by the academic groups concerned by space category, together with space evaluations in terms of utilization and suitability.
b. Examination and evaluation of any owner existing space which is available for use by the academic groups.

c. Master chart of existing space related to suitability by space category.

3. Functional Requirements for New Facilities:

a. Comparison of existing suitable space with the functional requirements of users to establish the additional facilities required.

b. Charts of functional requirements for new facilities and future use of existing facilities by program area and population, indicating growth and replacement over time. (Implementation sequence.)

4. Policies and Standards:

a. University space standards for room sizes, space utilization, net/gross ratios, etc.


c. University building standards for construction, maintenance, housekeeping, etc.

d. Other authorities.

5. Available Funds:

a. Present and future fund allocation for physical facilities for the academic groups concerned.

6. Site Studies:

a. Determination of location or locations based on an examination of required facilities, their relationships, and Planning Recommendations

b. Land use relationships and land circulation (pedestrian, transit, auto) requirements.

The GENERAL FACILITIES BRIEF identifies optimum needed facilities, and established an implementation sequence. The new construction and/or renovation which has been identified for immediate implementation is the basis for the first BUILDING PROGRAM. In some cases, all facilities needed for a foreseeable time period may be included in this initial BUILDING PROGRAM, but in many cases financial and organizational constraints will necessitate phased implementation.

Building Program

Purpose: To provide an information base for the design of new and/or renovated
facilities required in one building phase.

The PROGRAM contains detailed information on all aspects of the phase, and each phase requires a separate program. The PROGRAM is used in conjunction with the GENERAL FACILITIES BRIEF, which provides information on programs and activities.

The Building Committee acts as the coordinating and approving body for the production of the BUILDING PROGRAM. The detailed work involved in site studies, activities sheets, relationship diagrams, etc. is carried out by the Architect in consultation with various user groups. Conflicts are presented to the building committee for resolution, and the products of the various activities are presented to the committee for approval. Outside advice is obtained as required to arrive at rational decisions on siting, space utilization, costs, etc. The committee's constant monitoring of the development of the program is essential for rapid completion of a useful document, as it prevents "snowballing" of conflicts and misunderstandings, which would culminate in a program which does not reflect needs accurately.

The BUILDING PROGRAM should contain:

1. General Content
   a. A short description of the phase described in the context of the GENERAL FACILITIES BRIEF.

2. Site Studies
   a. A general account of the studies pursued in selecting a site or sites considered, including brief descriptions of each site and the reasons for the selection of specific site or sites.
   b. Description of site boundary in accordance with the strategies dealing with natural systems and landscape development.
   c. A detailed analysis and description of the site chosen, including a topographical survey, soils analysis, access and other pertinent information outlined in the Long Range Plan documents.
   d. Application of site constraints -- massing, density, climate.
   e. Organizational studies to investigate the relationship of circulation, common and departmental space; the relationships of outdoor to indoor space, net to gross space ratios.

Note: No project should be sited within the "DON'T BUILD" areas without first: (1) establishing that alternative sites are unsuitable, and (2) obtaining an approved revision of the "DON'T BUILD" drawing.

3. Program Requirements
   a. Description of space requirements in each program by space categories.
b. Application of space utilization criteria to teaching space requirements to determine area requirements.

c. Application of University space policies, other applicable space policies, and anthropometric data to space requirements to determine area requirements.

d. Relationship diagrams for all spaces by program area, indicating proximity requirements and external relationships.

e. Master relationship diagram for all program areas, synthesizing internal and external relationships and proximity requirements.

f. Sets of Activity Sheets giving detailed descriptions of actual spaces: their servicing equipment relationships and uses.

g. Area lists giving net area of each program area by space name and space type.

4. Cost Studies

a. Comparative cost studies of available applicable building systems, including time versus cost studies.

b. Rough determination of gross cost based on standard net-to-gross ratios by space type and net areas by program.

c. Initial cost estimate for gross area required to fulfill the space requirements of the building phase, based on most economical applicable building systems.

When a total cost "ceiling" has been established prior to the cost studies, it is necessary to adjust gross cost (usually through adjustments of program related net areas) related to the initial cost estimate as required to achieve an acceptable cost. If a square foot cost "ceiling" has been established, cost studies of building systems must result in a system which is within the cost. It should not be assumed in a BUILDING PROGRAM that a known cost ceiling can be met regardless of net area required and systems used. The financial viability of the phase must be examined as part of the PROGRAM.

5. Design and Construction Schedule

a. Activity Networks

The architect uses the completed PROGRAM as his basic tool in the development of schematic design. In addition, feedback to the GENERAL FACILITIES and/or ACADEMIC BRIEF may result from the detailed study of needs required to produce a BUILDING PROGRAM.

The project architect must be involved in the preparation of the BUILDING PROGRAM, and is usually responsible for its actual
preparation. During the site studies, he may carry out schematic design studies—the program and design studies should overlap.

This is the normal step of producing design and construction drawings in an architect's office. It is during this phase that the final built form of the campus is achieved and is the physical culmination of the process outlined in this report. The actual production of design and construction drawings, however, is a traditional and well-understood part of the planning process, and will not be explained in detail here.

**Post Construction Evaluation**

Purpose: To evaluate the completed building project so that findings which will be useful to future projects can be incorporated into the University information system.

The ACADEMIC and GENERAL FACILITIES BRIEFS, if they are to be used as the basis for future programs, should be revised to reflect any developments in academic attitudes and/or facilities attitudes which have occurred as a result of a specific building project. Projected relationships, spacial arrangements, etc. may operate quite differently in reality than in theory, and information on such differences should modify theories, projections, and relationships in future documents.

The project manager is responsible for modifying the ACADEMIC and GENERAL FACILITIES BRIEFS in consultation with the building users, the architect, and the contractor. All potential modifications should be discussed and approved by the Building Advisory Committee.
appendices
Appendix A

UMD MISSION STATEMENT
UMD MISSION STATEMENT

(Excerpt From: A Mission and Policy Statement for the University of Minnesota, July, 1975)

The Coordinate Campuses:

Each of University's four coordinate campuses has a distinctive role and atmosphere. The mission of each is, in most cases, determined by the history of the region in which it is located, its geographical location, the current needs of the population it serves, and reference to the original purpose for establishing the campus.

The University of Minnesota, Duluth

Since its inception in 1947, the Duluth Campus has strengthened and broadened its undergraduate offerings; it has added Master's programs in sixteen disciplines, it has embarked on the organization of the School of Social Development, a School of Basic Medical Sciences, and a program for the preparation of dental hygienists; it has responded to regional concerns, exemplified in particular by the establishment of the Lake Superior Basin Studies Center; and it has become a cultural center for northeastern Minnesota through its efforts in museum and performing arts activities. UMD has, to a limited degree, developed traditional attributes of a university in graduate education and research work. Although this is not its main mission, the efforts to generate new knowledge in this manner are important to the faculty and community at large and have indirectly contributed to the strength of undergraduate programs by making higher level course work available to upper-division undergraduate students. These graduate efforts have also stimulated faculty development through individual scholarship, to the benefit of the entire teaching program.

The University of Minnesota, Duluth, should continue to strengthen and broaden its undergraduate offerings: This should be its primary goal, and it is essential that appropriate resources be provided to strengthen these activities.

The on-going program of review of graduate degree programs being conducted through the Graduate School of the University is also applicable to UMD. If graduate programs have not developed due to difficulties in recruiting qualified graduate students, or because of higher priority diversion of funds into other areas of UMD, then such programs should be phased out. This does not preclude new program development at the Master's level in areas where UMD has unique interests due to its location in northeastern Minnesota. Nor does it suggest that cooperative graduate work with graduate departments in the Twin Cities cannot be arranged. As an example, the effort to develop graduate offerings in the Basic Medical Sciences Program at UMD at a reasonable cost should be managed through cooperative work at the graduate level with those Twin Cities basic medical sciences departments that are represented in a disciplinary sense on the UMD Campus.
New Master's programs which hold strong interest for students in the Duluth region should be carefully considered. Consideration must be given to recurring commitment of University funds for capital investment, operational costs, and any necessary expansion of campus-wide resources (such as libraries or computing support) which would be required. The University should undertake only those programs that are clearly within the reach of slowly expanding resources bases in the next few years, or which can be funded, in large measure, by interested groups in northeastern Minnesota that may be desirous of such programs.

The Basic Medical Sciences Program at UMD was developed as a two-year program with emphasis on introductory medical education of students who wish to practice in non-metropolitan areas. Its total enrollment is currently projected to 96 students. Any future changes in this projected enrollment level must be coordinated with health manpower needs in the state.

Additionally, the University will support the Residency Program in Family Practice in the Duluth area in cooperation with local hospitals. Until the next revision of this Mission Statement, the UMD Campus should not consider the addition of doctoral programs.
Appendix B

SITE ANALYSIS
SITE ANALYSIS

The future growth of the Duluth Campus is not only dependent upon the number of students and staff, their needs and desires, but also upon the amount and potential of available land to support such growth. While there appears to be sufficient land area for currently anticipated expansion, the characteristics of different areas vary greatly in their ability to support various types of functions and intensities of use. Some areas will readily support major structures or development while conditions in other areas would make construction economically infeasible. In addition, areas have varying topographies, vegetation, microclimates, and visual appeal all of which effect the value and potential use of the land.

Homogeneous Sites

Planning for the future use of the available land must be based on thorough investigation and analysis of all areas of the campus. To aid in determining the best use of the land, the entire campus was divided into sites which were considered to be homogeneous in their characteristics and which could be treated as units for future use and/or development. All land currently under University ownership, except the Research and Fields Studies Center (old N.E. Experiment Station), Alworth and Provost's property, and land programmed for future acquisition, was analyzed.

In defining homogeneous sites, three basic factors were considered: ecological/physical land characteristics; current land usage; and visual characteristics. Homogeneous sites were established through visual inspection. The boundaries of some sites are well defined by existing development while others are defined only by a change in topography, vegetation, or variations in natural habitat. (Figure B1 identifies these homogeneous sites. The numbers correspond to the following matrices, B2, B3, and B4).

Matrices

Following the identification of the homogeneous sites, each unit was analyzed by testing it through a set of matrices. The initial matrix, "Homogeneous Site Components" (Figure B2) defines the major characteristics of each site relative to the three basic factors mentioned above. The second matrix, "Site Suitability Components" (Figure B3) rates the characteristics of each site against specific requirements of various land uses. This matrix generates an evaluation of the ability of a site to support the following functions: recreation, housing, academic buildings, outdoor biological education, maintenance (service), and parking facilities. Definition of terms is on page B20.

Each site was evaluated according to specific requirements for each land use category. If an element did not apply to the site in question, it was not rated. If an element had a minor effect upon the future use of the site, an
open circle was noted on the matrix. Only those elements which exert a major influence upon the character and potential of a site were noted by solid circles. The matrices are used to determine the primary factors that dictate the potential use of each site. Not all factors rated are of equal importance; it is possible that a site might possess several attributes that would appear to make it suitable to a certain use, yet it might be deficient in a single element which is essential to that use. The result is that such use would not be considered the best for that site. This evaluation of all sites indicated that some sites are suitable for many uses, while others have very limited potentials.
homogeneous sites
### Homogeneous Site Components

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**Legend:**
- Good: High contributing factor
- Poor: Low contributing factor

*Fig. B2*

May 1978
Land Use Components

To determine the future land use of each homogeneous site, a third matrix, "Land Use Components" (Figure B4) was utilized. While the first two matrices represent a more scientific evaluation of characteristics and suitability, the third is intended to combine the information generated from the first two with visual observations and intuitive input. The first two matrices deal strictly with the characteristics of specific use requirements; and the third, giving strong consideration to the existing use and potentials of adjacent sites, identifies the proposed future land use options for each site. Primary uses are noted with solid circles and greatly influenced the development of the Land Use Plan found in the recommendations section. Those uses noted with open circles are logical alternatives.

It should be emphasized that the Land Use Components indicate the general use of each site. For instance, organized recreation components identify only sites that could be utilized for all fields, tennis courts, and other common facilities. Special uses, such as ski slopes, would not be appropriate in all sites identified for organized recreation. Only detailed analysis of each site will determine the suitability of a specific development proposal.

While the evaluation process is complex and occasionally difficult to interpret, it must be emphasized that the function of the components matrix is the provision of a guide and reference for the planner/designer in making decisions concerning future uses for the land available. It is an organized method of sorting and evaluating information relating to characteristics and potentials of all remaining sites on campus. It will continue to be useful in the preparation of detailed development plans.
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May 1978
Site Suitability Components

The following are the primary elements which were considered in evaluating site suitability.

Passive Recreation (Figure B5)

Sites to be used for casual recreation should offer a pleasant retreat from highly developed areas of the campus. Since casual recreation requires virtually no alteration or development of the land other than the possible creation of trails or sitting areas, such a use can be accommodated on land that is marginal for more intensive use. Passive recreation uses can occur without destroying the natural landscape or interfering with wildlife habitats.

A variety of spaces for passive recreation is essential. Spaces should be usable in different seasons and for varying moods of the user. Sites may vary from a rocky, densely wooded hillside to a surfaced public plaza; from a woodland marsh to a manicured lawn area adjacent to a building. Sites with scenic features, high quality vegetation, and good views are very desirable for passive recreational use.

Organized Recreation (Figure B6)

Organized recreational facilities - ballfields, tennis courts, etc. - require relatively spacious sites. Since major vegetation and other natural features are not only unimportant, but may actually be detrimental to such uses, flat, open areas are most suitable. Soils must provide good drainage and support adequate ground cover. Accessibility from residential areas and from physical education buildings is of primary importance.

Housing (Figure B7)

Sites for residential use must be serviceable and capable of supporting structures, and should also provide a desirable living environment. Quality vegetation, good views from dwellings, and protection from harsh climatic elements are desirable. Of primary importance for student housing is proximity to the University academic complex and accessibility to recreational areas - both active and passive.

Academic Buildings (Figure B8)

Sites for future academic buildings must be capable of servicing and supporting major structures. While views and vegetation are of limited value to a site to be used for the expansion of the academic complex, proximity to the existing academic buildings is of utmost importance to allow for interior pedestrian linkages to the existing complex.

Outdoor Biological Education (Figure B9)

Areas for outdoor biological study should provide unique plant and animal life. Native vegetation, wetlands, and natural habitats for a wide variety
passive recreation

- priority use
- secondary use

University of Minnesota
Duluth
Long Range Development Plan

Fig. B5

May 1978
organized recreation

- priority use
- secondary use

university of minnesota
duluth

long range development plan

fig. B6
outdoor biological education

- priority use
- secondary use

University of Minnesota Duluth
Long Range Development Plan

Fig. B9
of animal types are essential. Sites should be of adequate size to protect the natural characteristics of such areas and insure their continued existence. Areas of high quality, ornamental (not native) vegetation which would be used for specimen study also have potential for biological education use.

Maintenance (Figure B10)

Maintenance functions require areas that are relatively flat and well drained to provide for the necessary garage structures and outdoor storage yards. Good vehicular access to the entire Campus is essential. However, maintenance facilities should be screened from surrounding neighborhoods and the campus where possible or removed from the campus entirely if feasible.

Parking (Figure B11)

Although parking may be considered as an interim use on any site programmed for future development, it is and will remain a permanent element of the campus. Sites for major surface parking facilities should be flat and well drained. Since parking lots by nature are open and unobstructed, sites void of vegetation and unique natural features are preferable. However, where significant tree masses or specimens do exist attempts should be made to preserve them and incorporate them into the facility design.

"Don't Build" (Figure B12)

Certain homogeneous sites have been identified as "Don't Build" areas. (Figure B12). The current condition or use of areas so marked is considered to be of such significant value to the campus environment that removal would be undesirable and replacement nearly impossible. Therefore, these areas must be completely preserved. Homogeneous sites that have been noted with an open circle in the "Don't Build" column can tolerate only a limited amount of development.
maintenance

- priority use
- secondary use

university of minnesota
duluth
long range development plan

fig. B10
don't build

- priority use
- secondary use

university of minnesota

Duluth

long range development plan

fig. 5.12
Definitions - Site Suitability Study

To better understand the "Site Suitability Components" matrix, several terms should be defined.

UNIQUE NATURAL FEATURES - natural topographic or geological formations which may present severe limitations for physical development but have inherent visual qualities which should not be destroyed, e.g. rock outcrops, swamps, natural forests.

GOOD VIEWS - expansive overviews of the campus, the city, the lake, or other scenic areas.

SCENIC FEATURES - features that are of great value for viewing in their natural state and cannot be replaced if destroyed, e.g. rock outcrops, swamps, natural forests.

EASY ACCESS - can be reached with minimum delay and/or obstruction; not necessarily related to distance.

MAJOR VEGETATION - dense, mature trees and other vegetation of high replacement value; primarily, but not exclusively, relating to native vegetation.

MAJOR SOIL LIMITATIONS - obvious limitations to building construction or other development based on available research information; more extensive soil exploration and testing would be required for construction on any site.

PROXIMITY TO SERVICE/COMMERCIAL - close physical relationship to existing commercial and service facilities.

UTILITY RESTRICTIONS - geological, topographic, or soil characteristics that would cause construction of utility lines to be economically infeasible or otherwise undesirable.

PROXIMITY TO EXISTING BUILDINGS/LINK - adjacent to or located sufficiently close to the existing buildings to facilitate the uninterrupted extension of the interior pedestrian circulation system.
Appendix C

SPACE ANALYSIS DATA
FACILITIES ROOM DEFINITIONS

Classroom
Rooms used primarily by scheduled classes that do not require special-purpose equipment for student use. Includes rooms that service classrooms.

Instructional Laboratory
Rooms used primarily by regularly scheduled classes, by informally (or irregularly) scheduled classes, for student participation, experimentation, observation, or practice in a field of study and rooms used primarily for individual student experimentation, observation, or practice in a particular field of study. Includes rooms that service instructional laboratories.

Research Laboratories
Rooms used for laboratory applications, research, and/or training in research methodology that require special-purpose equipment for staff and/or student experimentation or observation. Includes rooms that service instructional research laboratories.

Office
Rooms used by faculty, staff, or students working at a desk (or table).

Library
Rooms used (a) by individuals to study books or audiovisual materials, (b) to provide shelving for library or audiovisual material or (c) rooms providing supporting service to such rooms.

Special Use

General Use

Support
(1) Date Processing/Computer, (2) Shop, (3) Storage, (4) Vehicle Storage, (5) Central Food Stores, (6) Central Laundry

Health Care
Rooms used in student health facilities and in-health professions, clinics and in hospitals for both humans and animals - (1) patient bedroom, (2) patient bath, (3) nurse station, (4) surgery, (5) treatment, (6) service laboratory, (7) supplies, (8) public waiting, (9) health-care service.
## AVAILABLE ACADEMIC AND SUPPORT BUILDINGS

### May 1978

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Explanation of computations:

660,000 g.s.f. ÷ 1,180,450 g.s.f. = 55.96% efficiency

608,000 g.s.f. x 55.96% = 340,237 nasf

340,237 ÷ 660,631 = 51.5% increase
COMPONENTS OF A BUILDING

Gross square feet: ......................... 100%
   The sum of the floor areas of the building included within the outside faces of exterior walls for all stories, or areas that have floor surfaces.

Structural area: ......................... 15%
   That portion of the gross area which cannot be occupied or put to use because of structural building features.

Public/Service areas: ..................... 30%
   Circulation - custodial - mechanical

Assignable (NASF) area: .................. 55%
   The sum of all areas on all floors of a building assigned to, or available for assignment to, an occupant, including every type of space functionally usable by an occupant.

Total 100%
### AVAILABLE SPACE ANALYSIS - UNIVERSITY OF MINNESOTA, DULUTH

#### 3/20/78

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(1) Individual Study Labs
(2) Music Practice Studios
### Department/Unit Operations

**Business & Economics Adm.**  
 subclasses include:  
- Business Administration  
- Finance  
- Internal Services  
- Technology Center  
- **Total Academic & Support**  
  
**Business & Economics**  
 subclasses include:  
- Business Administration  
- Finance  
- Internal Services  
- Technology Center  
- **Total Academic & Support**  

**Accounting**  
 subclasses include:  
- Administration  
- **Total Academic & Support**  

**Business Administration**  
 subclasses include:  
- Administration  
- **Total Academic & Support**  

**Business Office & Economics Education**  
 subclasses include:  
- Administration  
- **Total Academic & Support**  

**Economics**  
 subclasses include:  
- Administration  
- **Total Academic & Support**  

**Business/Economics Research**  
 subclasses include:  
- Administration  
- **Total Academic & Support**  

**Sub-Total Business & Economics**  
 subclasses include:  
- Administration  
- **Total Academic & Support**  

**Library**  
 subclasses include:  
- Administration  
- **Total Academic & Support**  

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<th>Research Laboratories</th>
<th>Office</th>
<th>Library</th>
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**Total Academic & Support**  
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- **Total Academic & Support**  

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**UMD Units not in Space Needs Analysis**  
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- **Total Academic & Support**  

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* 2,333 NASF devoted to research activities*
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(1) Individual Study Labs

*Prepared by University of Minnesota - Office of Space Programming and Management*
## Space Analysis - University of Minnesota, Duluth - Projections

### May 1978

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<th>FY 1976</th>
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### Music Practice Rooms

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<tr>
<td>TOTAL</td>
<td>74,131 74,131</td>
</tr>
<tr>
<td>5. NASF to be constructed</td>
<td>-0- -0-</td>
</tr>
<tr>
<td><strong>Libraries</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Reading Room</strong></td>
<td></td>
</tr>
<tr>
<td>1. Number FTE</td>
<td>5,989 6,500</td>
</tr>
<tr>
<td>2. Assignable sq.ft. per FTE</td>
<td>x 6.25  x 6.25</td>
</tr>
<tr>
<td>3. NASF Reading Rooms</td>
<td>37,431 40,625</td>
</tr>
<tr>
<td><strong>Carrel Area</strong></td>
<td></td>
</tr>
<tr>
<td>4. Number of graduate students</td>
<td>300 330</td>
</tr>
<tr>
<td>5. Assignable sq.ft. per graduate student</td>
<td>x 3.75 x 3.75</td>
</tr>
<tr>
<td>6. NASF carrel area graduate students</td>
<td>1,125 1,238</td>
</tr>
<tr>
<td>7. Number FTE non-Laboratory Science faculty</td>
<td>267 277</td>
</tr>
<tr>
<td>8. Assignable sq.ft. per non-Laboratory Science faculty</td>
<td>x 3.75 x 3.75</td>
</tr>
<tr>
<td>9. NASF carrel area non-Laboratory Science faculty</td>
<td>1,001 1,039</td>
</tr>
<tr>
<td>10. Number FTE Laboratory Science faculty</td>
<td>148 158</td>
</tr>
<tr>
<td>11. Assignable sq.ft. per Laboratory Science faculty</td>
<td>x .75 .75</td>
</tr>
<tr>
<td>12. NASF carrel area Laboratory Science faculty</td>
<td>1111 119</td>
</tr>
<tr>
<td>TOTAL Carrel</td>
<td>2,237 2,396</td>
</tr>
<tr>
<td><strong>Library Service Area</strong></td>
<td></td>
</tr>
<tr>
<td>13. NASF carrel and reading room</td>
<td>39,668 43,021</td>
</tr>
<tr>
<td>14. % of item 13 for service area</td>
<td>x .32 x .32</td>
</tr>
<tr>
<td>15. NASF for service area</td>
<td>12,694 13,767</td>
</tr>
<tr>
<td><strong>Stack Area</strong></td>
<td></td>
</tr>
<tr>
<td>16. Number volumes</td>
<td></td>
</tr>
<tr>
<td>a. bound volumes</td>
<td>240,000 264,000</td>
</tr>
<tr>
<td>b. current periodicals</td>
<td>3,600 3,960</td>
</tr>
<tr>
<td>c. micro forms</td>
<td>45,000 49,500</td>
</tr>
<tr>
<td>TOTAL</td>
<td>288,600 317,460</td>
</tr>
<tr>
<td>17. Assignable sq.ft. per volume</td>
<td>x .10 x .10</td>
</tr>
<tr>
<td>18. NASF for stacks</td>
<td>28,860 31,746</td>
</tr>
<tr>
<td><strong>Learning Resources Area</strong></td>
<td></td>
</tr>
<tr>
<td>19. NASF classroom and teaching labs</td>
<td>164,577 178,620</td>
</tr>
<tr>
<td>20. % of item 19 for learning resources</td>
<td>x .05 x .05</td>
</tr>
<tr>
<td>21. NASF for learning resources area</td>
<td>8,228 8,931</td>
</tr>
</tbody>
</table>
Space Category

Libraries (cont'd.)

22. NASF needed to meet library standard
   Reading rooms
   Carrels
   Service
   Stacks
   Learning Resources

23. Current inventory
   Current
   Under Construction
   Library
   Medical School Resource Center

* Does not include 6,768 NASF departmental reading/library rooms

24. NASF to be constructed

Research

A. General Institution
   1. Number life sciences x 2,250 nasf
   2. NASF needed to meet guideline
   3. Inventory
      Current: Laboratories
      Office
      Proposed: Office
   4. NASF to be constructed

B. Medical Sciences
   1. Number medical science x 2,250
   2. NASF needed to meet guideline
   3. Inventory
      Current: Laboratories
      Under Construction: Laboratories
      Office
      To be Remodeled—Medical School (additional)
   4. NASF to be constructed

* 9,152 NASF presently in the Medical School building
### Space Category

**Offices**

1. **Number FTE needing offices**
   - a. Administrative: 45, 48
   - b. Faculty: 381, (4) 406
   - c. Teaching Assistant - \( \frac{1}{6} \) of headcount: 34, 37
   - d. Clerical: 161, 170
   - e. Other: 35, 38

2. **Total needing offices**
   ![656, 699]

3. **NASF per FTE**
   - 135
   - 135

4. **NASF needed to meet guideline**
   - 88,560
   - 98,365

5. **Inventory**
   - **Current**
     - Total: 93,049
   - **Under Construction**
   - **Proposed**
   - **To be converted to other use**
     - \(<2,500>\)
   - **TOTAL**
     - 93,049
     - 108,944

6. **NASF to be constructed**
   - -0-
   - -0-

### Physical Plant

1. **Area to be served**
   - **Classrooms**
     - FY 1976:
     - 59,650
     - 64,740
   - **Teaching Laboratories**
     - 104,927
     - 113,880
   - **Music Practice Studios**
     - 2,112
     - 2,293
   - **Teaching Gymnasiums**
     - 66,945
     - 73,633
   - **Libraries**
     - 89,450
     - 97,465
   - **Research**
     - 109,650
     - 109,650
   - **Offices**
     - 88,560
     - 94,365

2. **Total area to be served**
   - 521,294
   - 556,026

3. **% of item 2 as space standard**
   - FY 1976: x .07

4. **NASF needed to meet standard**
   - 36,490
   - 38,921

5. **Inventory**
   - **Current**
     - 26,269
   - **Under Construction**
   - **Proposed**
   - **To be converted to other use**
     - \(<2,500>\)
   - **TOTAL**
     - 26,269
     - 26,269

6. **NASF to be constructed**
   - 10,221
   - 12,652

---

**NOTES:**

1. Estimated high enrollment headcount of 7,300 converted to FTE by the ratio 88 to 100. This is an 8\% increase.

2. Represents an 8\% increase.

3. Represents a 10\% increase.

4. Present -- 15.7:1 student/faculty ration to include Medical Science
   - Future -- 16:1 student/faculty ratio to include Medical Science

   Student/faculty ratio is an average used only to determine space needs. An increase of faculty from 381 to 406 is a 6.6\% increase; remaining staff needing offices was therefore increased by the same proportion, 6.6\%.
SPACE STANDARDS AND GUIDELINES USED IN UMD SPACE ANALYSIS

Classrooms

*15 sq. ft. per station (average) = .83 sq.ft. per student contact hour

30 hours in use x 60% fill when in use

* Includes related services.

Teaching Laboratories

* 70 sq. ft. per lab station (average) = 4.38 sq.ft. per student contact hour

20 hours in use x 30% fill when in use

* Includes related services.

Music Practice Rooms

* 90 sq. ft. per student station = 2.25 sq.ft. per student contact hour

40 hours in use x 100% fill when in use

* Includes related services.

Teaching Gymnasiums

157 sq. ft. per student station = 15.7 sq.ft. per student contact hour

20 hours in use x 50% fill when in use

Included in this category are gymnasium playing floors, swimming pools, handball courts and other similar indoor physical education facilities. Also includes related service areas such as equipment rooms, shower rooms, locker rooms, etc.

Libraries

Reading rooms - 25 NASF per student seating 25% of student body.

Carrel Area

Graduate student - 15 NASF per graduate student seating 25% of headcount graduate students.

Non-laboratory Science faculty - 15 NASF per FTE faculty seating 25% of non-laboratory Science faculty.

Laboratory Science faculty - 2 NASF per FTE faculty seating 25% of laboratory Science faculty.
Research

<table>
<thead>
<tr>
<th>Category</th>
<th>NASF per FTE Researcher</th>
</tr>
</thead>
<tbody>
<tr>
<td>Life Science</td>
<td>3000</td>
</tr>
<tr>
<td>Physical Science &amp; Engineering</td>
<td>1500</td>
</tr>
<tr>
<td>Behavioral Science</td>
<td>500</td>
</tr>
<tr>
<td>Social Science &amp; Humanities</td>
<td>100</td>
</tr>
</tbody>
</table>

Guideline assumes an average faculty ratio of 20% research and 80% teaching, public service, committees, advising, etc. at a research oriented, doctoral degree granting university.

This guidelines accounts for all space that directly or indirectly supports the research activities. All personnel that support the research activities are assigned space within this research area.

The University of Minnesota-Duluth has research activities as a part of its mission. While the research activities at UMD are not as intense as the research activities at a research oriented, doctoral degree granting institution, it is, nevertheless, an integral part of its education activities. The less intense research activity at UMD is acknowledged by using 75% of the above research guideline to ascertain the amount of research space needed for UMD to adequately fulfill the research component of its educational mission.

<table>
<thead>
<tr>
<th>Category</th>
<th>NASF per FTE Researcher</th>
</tr>
</thead>
<tbody>
<tr>
<td>Life Science</td>
<td>2250</td>
</tr>
<tr>
<td>Physical Science &amp; Engineering</td>
<td>1125</td>
</tr>
<tr>
<td>Behavioral Science</td>
<td>375</td>
</tr>
<tr>
<td>Social Science &amp; Humanities</td>
<td>75</td>
</tr>
</tbody>
</table>

Offices

135 sq. ft. per FTE person needing office space. Guideline provides offices of 120 NASF for the faculty and staff, work space for clerical staff, a larger office for administrators, conference rooms, reception areas and file/work rooms.
Due to the virtual impossibility of personally contacting everyone (campus users) on the Duluth Campus to solicit issues which were important to the planning process, an alternative method of gathering this information was developed. This method of "user participation" is called Issue Analysis.

Issue sheets were distributed several times during the planning process through the UMD Statesman, direct mailing, and visual displays. Responses to these sheets were collected by the Office of Physical Planning, catalogued according to common topics, and utilized in determining those issues which were pertinent to the planning process. All sheets returned remain on file in the Planning Office for future reference.

The following few examples of returned issue sheets are included here to illustrate how people responded to the Issue Sheets and to show the various types of sheets distributed.
November 23, 1977

TO: UMD Students, Staff, and Faculty
FROM: Office of Physical Planning
RE: Participation in the Update of the Long Range Development Plan for UMD

The University of Minnesota is in the process of updating and revising the existing Long Range Development Plan for the UMD Campus. In an effort to provide a mechanism which would allow all students, faculty, and staff interested in the smooth operation as well as in the future of the campus, to have input into the planning process, a planning tool termed Issue Analysis is being initiated.

An Issue Analysis form has been prepared so that interested persons can put in writing issues which they feel should be addressed in the plan. The updated plan will be organized according to generalized policies dealing with land use, transportation, physical facilities (academic, housing, support), services and utilities, campus character, and campus landscape. Planning issues can be of any scale of concern within the context of these broad topic areas. For example, some may feel that not enough organized recreation facilities exist on campus, others may indicate that snow removal is inadequate, while others may feel that access to campus is extremely difficult. All issues submitted will be catalogued according to generalized issue topics and kept on file in the Planning Office for future reference and used as a data base for formulation of overall campus plans, and suggest solutions to the issues raised.

The major purpose of Long Range Development Plan is to provide through future campus development, an exciting, stimulating, and functional environment within which to learn, work, and live. It is therefore of great importance that those who are directly associated with its daily use have an opportunity to participate in the planning process.

Please fill out the attached issue form and return it by January 15, 1978, to the main desk at Kirby Student Center or drop it in the Campus Mail for delivery to Robert W. Bridges, Vice Provost for Business Affairs, 297 Administration Building. Extra forms may be obtained at the Kirby desk or by copying the attached form.

Thank you for your cooperation and assistance in helping us more effectively plan for your campus.

U.M.D. Long Range Development Plan Issue Analysis

From: [ ] student [ ] staff [ ] non-university [ ] male [ ] female

Date: Jan 14, 1978

Issue

Preservation of currently available areas for intramural field sports and informal outdoor activities

Source of information

Direct observation!

Current situation

UMD is blessed with a ready available extensive field area for numerous outdoor activities between Adm, Boyd and tennis courts and around behind Boyd towards Woodland.

Comments

This area is widely used throughout the year; it is very attractive and pleasant just to be in — there always seems to be room enough for everybody.

Recommendations

As far as possible preserve and maintain the open spaces; when future building expansion is contemplated.
# U.M.D. Long Range Development Plan

## Issue Analysis

<table>
<thead>
<tr>
<th>From:</th>
<th>☑ student</th>
<th>☑ staff</th>
<th>☑ faculty</th>
<th>☑ non-university</th>
<th>☑ male</th>
<th>☑ female</th>
<th>Date: 1-17-78</th>
</tr>
</thead>
</table>

### Issue

Parking

### Source of information

**Personal Experience and Observations**

### Current situation

Parking lots are growing in size & number. They are eating up open spaces and are aesthetically unattractive. They are an un-economic use of land!

### Comments

What has been the environmental impact of the sprawling lots? Where will they stop?

### Recommendations

Building of parking facilities, attractively and efficiently designed either above or below ground. Parking lots do not add to an "exciting, stimulating or functional environment," as they now exist!
The UMD's Long Range Development Planning Committee needs your input. This committee is made up of administrators, faculty, and students. At this time they are revising the long-range plans for the physical development of the campus and desperately seek objective input. The major issues under discussion at present are:

(1) A Central Entrance - which will be displayed on February 6 - 20, 1978 in Kirby Student Center.
(2) Parking Facilities
(3) Recreational Areas
(4) Housing (on and off campus)
(5) Locker Space
(6) Academic Facilities
(7) Other Service Facilities

PLEASE USE THE SPACE BELOW TO EXPRESS YOUR SUGGESTIONS/RECOMMENDATIONS.
(On these and other issues concerning you and the future planning of UMD. Please be specific.)

Concerning the issue of the Central Entrance to the campus I feel that it is both unnecessary and costly.

1. It is costly in terms of money and in the disruption of land that is otherwise used by the student population for play and relaxation.
2. The other service roads serve the campus efficiently enough as they are.
3. As to orientation to the campus... a person is sufficiently oriented to locations on their first visit which does not warrant the cost of building and disruption in the next several years of attendance.
4. Putting an entrance would be noisy to the art department, would disrupt the Phy-Ed department, and destroy the view from the campus windows.
5. It is not necessary and is actually wasteful of land, to put in such an entrance merely for the sake of show (as they do in the Southwest U.S.)
6. There would be an increased cost in maintenance of another road, and policing of such an area not to mention the fact that once you have that in you will probably want to add parking there as well.
7. You would be better off simply to improve the loop system off of the administration parking lot by making that loop enter in one place off of college street and exit in another place... without going through the campus... and doing the same on the other side of the campus at the loop in front of Tweed. Through traffic would increase the risk of accidents on campus because people tend to go faster on through streets than they do on loops.
8. Building a road through the campus would destroy the basic feeling of isolation and tranquility needed for good concentration in learning........

Return this form to Kirby or Griggs/LSH Information Desks by March 1, 1978. Additional forms are also available at these areas.

Thank you for your cooperation.
Appendix E

RELATED DOCUMENTS
The following documents were part of or related to the development of the Long Range Development Plan and have played an important role in the findings of this report.

**BUILDING SPACE INVENTORY; UMD - Master Plan.**

**TACTICAL REPORT, An Outline of the Planning Process; UMD - Master Plan.**

**PLANNING BASE INVENTORY; UMD - Master Plan.**
Office of Physical Planning; Bather, Ringrose, Wolsfeld, Inc. April, 1972.

**PLANNING DIRECTIVES, Guidelines for the Long Range Plan; UMD - Master Plan.**

**LONG RANGE DEVELOPMENT PLAN (Draft); UMD - Master Plan.**

**FACILITY UTILIZATION STUDY; UMD - Master Plan.**

**UMD CENTRAL ENTRANCE, Concept Plan.**

**UMD PARKING STUDY.**