Formulation "A"

Siting alternatives were directed by a compilation of restrictions drawn from investigations into existing conditions at the industrial park site.

Restrictions, program area requirements, and projections for future growth provided the basis for initial massing studies. These studies represent varying ways to satisfy site requirements.
Restrictions

- Existing and proposed vehicular circulation
  Degree: None
- Existing buildings on site
  Degree: None
- Existing pedestrian circulation
  Degree: None
- Existing and proposed service mains
  Degree: Adjacent to site only
- Access to existing site utilities and service areas during construction
  Degree: Excellent
- Service and emergency vehicular access to all existing and proposed facilities
  Degree: Excellent
- Climatic condition influencing site
  Degree: Severe
- Condition of site
  Degree: Stark
- Subsoil conditions
  Degree: Excellent for Industrial Building
- Existing character of surrounding property
  Degree: Rural
- Water table
  Degree: 1'-5'
- Industrial Park restrictions
  Degree: Extension of existing codes
### Quantifiable Information

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<th>Building Measures</th>
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<td>1. Does alternative respond to site influences.</td>
<td>1. Does building allow full use of flexibility.</td>
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<td>2. Does alternative reflect future user needs.</td>
<td>2. Does building make full use of adaptability.</td>
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<td>3. Does alternative allow for best use of entrance locations to site.</td>
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<td>4. Does alternative leave ample room for expansion.</td>
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<td>5. Does alternative recognize a total concept for the Industrial Park.</td>
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<td>6. Does building provide best user environmental capability.</td>
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Alternative #1

Limited to adequate growth possibilities, low-building height, greatest administrative-lab interaction, maximum coverage, good interior-exterior relationship.

Alternative #2

Maximum expansion, least site coverage, maximum interconnection of interior elements, extended corridors, least envelope.

Alternative #3

Open ended expansion, extended corridors, least interior element interaction, circulation control minimum.
CONCEPTUAL SOLUTIONS

Maximum Expansion
Unlimited By Parking

Analytical
Electronics

Organic
Rubber
Plastics
Packaging

Engineering

Glass
Metals

Entrance

Parking On Ground Level

ALTERNATIVE *4
Alternative #4

Maximum expansion, unlimited by parking, fragmented organization, greatest corridor length, greatest envelop, least administrative-lab interaction.

FORMULATION "B"

Three prototype building schemes were developed in accordance with program area requirements with future growth methods, intended theme of building, assumption of circulation and mechanical space, matrix organization and the process of the facility.
PREDICTION

At this point a preliminary evaluation was made to determine the advantages and disadvantages of various proposals according to the priorities established in the user requirements. The four alternatives for site plans, three building schemes and the "weighted requirements" were used in the evaluation. Each site alternative and building scheme was evaluated and ranked in relation to how well each fulfilled the user requirement statements.

SCORING GRID PROPOSALS AS MEANS OF OBJECTIVE EVALUATION

Scoring grid proposals show results of ranking (higher score means better fulfillment). Individual scores form a basis for knowing how well a scheme fulfills a particular user need. A four-point scoring system was adopted; zero indicates that a requirement had not been satisfied, one indicates satisfaction, two, better, and three indicates that the requirement had been met fully.

The product of this score and the weight of respective user requirement was tabulated on a separate scoring grid for each proposal. Also, activity user profiles indicate the distribution within the total score.
**User Requirement**

**SCORING GRID PROPOSAL**

(Proposal total)

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**ACTIVITY PROFILE**

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**Activity Profile**

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<td>- Integrated</td>
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<td>- Greater separation of Engineering Department</td>
<td>- Easy access</td>
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<td>- Smaller parking areas</td>
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<td>- Make usable exterior space</td>
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<td>- Research separated from Development</td>
<td>- Expansion, though provided for, is not as flexible for all departments</td>
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<td>- Too much separation</td>
<td>- Expansion process not good</td>
<td>- Engineering Department separation not defined</td>
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<td>- Communication Breakdown</td>
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<td>- Greater cost of mechanical services</td>
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</table>
Development of Probable Solution:

a) Concept  
b) Organization  
c) Expansion method  
d) Structural  
e) Mechanical

Pros and Cons of Suggested Solution:

PRO

- Integrated  
- Easy access  
- Makes use of exterior space  
- Controlled expansion  
- Greater use of natural influences  
- Good scale relationship  
- Integrated corridor circulation and office-lab circulation  
- Good interior-to-exterior relationship

CON

- Expansion not flexible for all departments  
- Exterior space not usable all seasons

Suggested Areas of Improvement:

- Flexibility of those labs which do not foresee future expansion but may require it due to new development
- Readjust service elements closer to parking
- Greater definition of separation of Engineering Department
- Development of exterior court
EVALUATION:

Much time and effort has gone into the "decision process" outlined above. The outcome of these studies revealed countless practical problems of relationship and organization which are best resolved in the solution pursued. This is not to say that they are ultimately solved but rather that the "enclosed" solution represents a good start toward design development.

With the knowledge and experience gained during the development of these solutions, the step into design development should see investigation in the following areas:

a) Expanding the exterior space into areas adjacent to labs with "expansion" controlled outward from there.

b) Segmented parking.

c) Introduction of water into expanded exterior space for esthetic as well as air conditioning use.
REVISIONS

In keeping with the original inward looking solution previously explained, a revision was incorporated to allow the concept to remain constant. This was done by extending the circulation element to form a four-cross pattern. The intersecting points thus formed were developed into central nodal points of circulation and common use space. The arms of cross were developed into separate research elements and were grouped according to function to radiate around these points. The inward looking concept remains via grouping the function that require visual relief around the enclosed spaces or around the spaces that provide closure.

Maximum flexibility of space usage was a major design criteria met by having each element identical in structure and mechanical. The spaces are infinitely changeable within the space module.
EVALUATION

Through the use of systems buildings to accommodate the program spaces, the most economical and flexible space type variables could be employed in the solution. Also, the final proposal developed in response to the site plan alternative previously evaluated favored low buildings and extensive site coverage. As a result of these two outcomes, the final solution possesses many aspects of the previous proposals yet is a better solution as is borne out by its score against the user requirements.
User Requirement

SCORING GRID PROPOSAL

(Proposed Total)

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E SUPPORT PERSONNEL

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G LIBRARY | 2 |

H MAINTENANCE/SUPERVISION | 6 | 12 | 12 |

I OTHER

ACTIVITY PROFILE

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