CIRCULATION PATTERNS
PROGRESSION TO SITE

- Bus
- Train
- People Mover
- Edge of Site
MAJOR EMPLOYMENT AREAS

1 MANUFACTURING NONDURABLE
2 MANUFACTURING DURABLE
3 TRANSPORTATION
4 WHOLESALE
5 RETAIL
6 FINANCIAL, INSURANCE & REAL ESTATE
7 SERVICE
8 SERVICES/MANUFACTURING NONDURABLE
9 SERVICES/WHOLESALE/MANUFACTURING DURABLE
10 SERVICES/WHOLESALE
11 PUBLIC ADMINISTRATION

Division of Planning & Zoning - February, 1980.
1. A landmark is a physical element used as a point of reference.

2. A node is the junction of two or more paths.
EXISTING DAILY
TRAFFIC VOLUMES

Source: Indianapolis
Department of Transportation - 1977-1978.
ASSIGNED DAILY TRAFFIC VOLUMES YEAR 2000

Source: Division of Planning & Zoning - 1977.
PROJECTED VEHICULAR VOLUME: PERCENTAGE OF CHANGE: YEAR 2000

INDIANAPOLIS REGIONAL CENTER
STATIONARY SOURCE
PARTICULATE EMISSIONS
MARION COUNTY, IND.

Greater than 1,000 tons

500-999 tons

101-499 tons

Under 100 tons
costs
### Building Costs

- **Transportation Structure** - 230,445 gross sq. ft. x $50/sq. ft. = $11,522,250.00
- **Office Structure** - 1,251,000 gross sq. ft. x $65/sq. ft. = $81,315,000.00
- **Parking Structure** - 225,000 gross sq. ft. x $35/sq. ft. = $7,875,000.00

**Total Building Costs** = $100,712,250.00

### Fixed Equipment

- **Transportation Structure** - (15% of building costs) = 100,712,250.00 x 0.15 = $15,106,837.50
- **Office Structure** - (4% of building costs) = 100,712,250.00 x 0.04 = $4,028,490.00

### Site Development

- (5% of building costs) = 100,712,250.00 x 0.05 = $5,035,612.50

**Total Construction Costs** = $124,883,190.00

### Site Acquisition and Demolition

- (Site costs - $7,500,000 - Demolition costs - $2,500,000) = $10,000,000.00

### Movable Equipment

- (10% of building costs) = 100,712,250.00 x 0.10 = $10,071,225.00

### Professional Fees

- (5% of construction costs) = 124,883,190.00 x 0.05 = $6,244,159.50

### Contingencies

- (10% of construction costs) = 124,883,190.00 x 0.10 = $12,488,319.00

### Administrative Costs

- (1% of construction costs) = 124,883,190.00 x 0.01 = $1,248,831.90

**Total Budget** = $164,935,725.40
design issues

The following criteria is to provide the designer with various design alternatives dealing with vehicle size standards and vehicle circulation space as well as zone configurations by which this design may be influenced.

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**BUS SPECIFICATIONS**

**40' SCENICRUISER**
- **Length**: 40' 0''
- **Width**: 9' 0''
- **Height**: 10' 9''
- **Wheel Base**: 33' 7''
- **Rear Overhang**: 10' 7''
- **Front Overhang**: 5' 5 1/2''
- **Min. Outside Radius**: 42' 4''

**GM INTERCITY COACH**
- **Length**: 44' 0''
- **Width**: 9' 8 1/2''
- **Height**: 10' 10 1/2''
- **Wheel Base**: 33' 10''
- **Rear Overhang**: 9' 8''
- **Front Overhang**: 5' 5 1/2''
- **Min. Outside Radius**: 42' 4''

**FUTURE DEVELOP.**
- **Length**: 44' 0''
- **Width**: 9' 8 1/2''
- **Height**: 10' 10 1/2''
- **Wheel Base**: 33' 10''
- **Rear Overhang**: 9' 8''
- **Front Overhang**: 5' 5 1/2''
- **Min. Outside Radius**: 42' 4''

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**BUS CIRCULATION**

**TRAIN SPECIFICATIONS**

**Passenger Car**
- **Length**: 85' 0''
- **Width**: 10' 6''
- **Height**: 13' 6''

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vehicle size & circulation standards
PARALLEL SINGLE LANE ISLAND

SINGLE ISLAND BUS RAIL TRANSFER

STEPPED PARALLEL

PARALLEL LOADING

platform types

SAWTOOTH LOADING
AVERAGE CAR
Assumed average size. Larger cars may protrude into aisle; will have less space for door swing.

NOTE
No allowance has been made for columns on this page. Allow 1'-0".

STALL AND AISLE DIAGRAM

RECOMMENDED STALL AND AISLE DIMENSIONS

<table>
<thead>
<tr>
<th>ANGLE X</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
<th>F</th>
<th>G</th>
<th>H</th>
<th>UNIT DEPTH</th>
</tr>
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<tbody>
<tr>
<td>30°</td>
<td>0.5</td>
<td>16.9</td>
<td>11.0</td>
<td>26.4</td>
<td>17.0</td>
<td>12.7</td>
<td>29.2</td>
<td>44.8</td>
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<tr>
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<td>0.5</td>
<td>19.4</td>
<td>13.5</td>
<td>32.9</td>
<td>12.0</td>
<td>6.0</td>
<td>19.4</td>
<td>52.3</td>
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<tr>
<td>60°</td>
<td>0.5</td>
<td>19.6</td>
<td>13.0</td>
<td>33.3</td>
<td>12.7</td>
<td>6.3</td>
<td>19.7</td>
<td>57.6</td>
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<tr>
<td>75°</td>
<td>0.5</td>
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<td>36.7</td>
<td>9.0</td>
<td>1.0</td>
<td>7.5</td>
<td>61.1</td>
</tr>
<tr>
<td>90°</td>
<td>0.5</td>
<td>20.0</td>
<td>19.0</td>
<td>38.9</td>
<td>9.6</td>
<td>1.1</td>
<td>7.6</td>
<td>61.0</td>
</tr>
</tbody>
</table>

NOTE: Even number of spaces, "N" in length of curb.

"L" = \( N = \frac{L - H + C}{F} \)  
Stall length = 19'-0"

TYPICAL PARKING BAY

TYPICAL 2-LANE DRIVE - PARALLEL PARKING EACH SIDE

NOTE: Provide extra width for walks along side parking bay to compensate for bumper overhang.

parking criteria
PARALLEL LOADING

- Requires excessive amount of space.
- Busses must usually wait until first bus exits.
- Large terminal requires pedestrian under/overpass facilities to protect passengers while crossing lanes.

RIGHT-ANGLE LOADING

- Disadvantages include:
  1) Outswinging bus door which forms a barrier around which passenger must pass.
  2) Bus maneuvering difficult.

STRAIGHT SAWTOOTH LOADING

- Efficient-employed where lot is comparatively narrow and deep.
- Passenger has direct approach to loading door.
- Baggage truck can operate between busses for side loading.

RADIAL SAWTOOTH LOADING

- Most efficient-busses swing into position along natural driving arc.
- Space required at front is minimum-wide space at rear making maneuvering easy.

<table>
<thead>
<tr>
<th>BUS LENGTH</th>
<th>20'</th>
<th>40'</th>
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<tbody>
<tr>
<td>TAIL-OUT FEET</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>68'</td>
<td>92'</td>
</tr>
<tr>
<td>2</td>
<td>54'</td>
<td>80'</td>
</tr>
<tr>
<td>3</td>
<td>50'</td>
<td>66'</td>
</tr>
<tr>
<td>4</td>
<td>46'</td>
<td>66'</td>
</tr>
<tr>
<td>5</td>
<td>43-6'</td>
<td>56'</td>
</tr>
</tbody>
</table>

platform types & bus roadway dimensions
conceptual design
This phase of the design process involves the development of major issues on which the design solution will be based. These issues begin to dictate the organizational criteria in three areas: 1) positioning of elements on the site, 2) the physical relationships of the various programmed spaces and 3) volumetric relationships.

The major issues that influenced the development of this project were:

1) Circulation Patterns - These are the patterns for both vehicles and pedestrians. These patterns must be organized in a clear and logical pattern and must provide for the complete segregation between vehicles and pedestrians.

2) Image - The facility must present a favorable image to the users. This can be accomplished by creating a facility that provides the maximum use of light and color and creates an atmosphere of constant activity.

3) Energy - This facility must use energy efficiently.

A number of schemes were developed at this point dealing with alternative solutions to the above mentioned issues. The major areas where these issues were developed involved:

1) the basic volumetric form of the building including the number of floors and the heights of these floors.

2) The locations of major functional areas - subgroups of individual rooms or areas.

3) Basic decisions about the type of structural and mechanical systems to be used as well as exterior facing materials.

At this stage of the design process, one design scheme was chosen and the design development process was begun.
ECLECTIC - PROVIDE RELATIONSHIP TO MERIDIAN THROUGH USE OF MATERIALS OR FORM

METAL FACADES CEMENT CAST IRON
CONCRETE BRICK STEEL
STAINLESS WINDOW FRAMES

RELATE TO MERIDIAN

CONTemporary

ZONES OF STYLE - USE OF HISTORICAL ALLUSION
ENTRY SEQUENCES

1) OFFICE AS GATEWAY - NODAL POINT DRAWING PEDESTRIAN TO TD

WHAT CAN ENTRY POINT "SIGNIFY" - GATE - ENTER THROUGH WALL - DIRECT FLOW
WINDOW - VIEW AT SOME EXPERIENCE WANTING TO ATTAIN

CAN SUPPORT TWO ENTRIES.

RELATIONSHIP OF NUMBERS TO ENTRIES FROM PEDESTRIAN VS. VEHICLE PROPER FUNCTION OF USER WILL MOST BE TRANSPORT OR COMMERCIAL.

PRINT OF ENTRY WHERE EXAMINE ISSUES

FLOW FROM 2ND Level Wall
FLOW FROM 2ND Level Wall
FLOW FROM 2ND Level Wall

FLOW FROM 2ND Level Wall
FLOW FROM 2ND Level Wall
FLOW FROM 2ND Level Wall

ALLOW ENTRY TO VIEW PLACE
**RELATIONSHIP OF MASS TO MASS - NORTH OF SITE**

**Mass of ITC -**
1) Nodal point onaxe
   Inday alaylia
2) Create varied & experienced spatial experience - Italy

**FUNCTION** - Will the buildings to the north remain separate or will and eventual integration of use be involved? What is relationship to function & form?

**SUN** - Shading of buildings might issues provision of solar access from ITC.

Being mass away from building allow sun & direct access to building.

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**OFFICE TOWER ISSUES**

1) **Massive - Tower Vertical Emphasis**
   Nodal point
   - Horizontal - spread over entire area of site - relate to scale & height of area.

2) **Positioning** -
   - Solar
   - Function cate etc.
CIRCULATION

Major Circulation Axis
Make sure cues (visual, physical) do not conflict

How to make special space
Spatial experience - interior facades, height emphasis - exterior facades

A separate drop off zone for auto, limos, van segregated from buses.
This phase takes the schematic design and allows for the further development of the scheme. This development is accomplished through the incorporation of additional detail and the refining of the schematic design.

The major refinements that occurred in this phase were in the following areas:

- Development of the transportation concourses, the transportation administration areas and location of the vertical circulation elements.

- Development of the lower tier of office floors (3rd - 6th). The development of this area includes the feasibility of spanning the track area with these levels of office area.

- Creation of one large atrium area rather than a number of smaller atriums.

This phase included the determination of the number of floors that were to be in the complex, including the functions that were to occur on these floors. At this stage of development, the complex was determined to require five levels consisting of two levels of transportation related functions and three levels of leasable office space.

The structure and exterior cladding at this point were to consist of a concrete structural system with exposed structural members and a brick exterior facing that would relate directly with the existing fabric surrounding the site in terms of the type of material used and the scale of the materials.

The creation of a singular large atrium was brought about by the need to create a central focus that would tie the building together to form a large complex rather than a complex of fragmented pieces.
3rd LEVEL PLAN
final design
This phase is the final step in the design process. Final development to the design was made in the following areas:

- Central atrium space was enlarged in order to create a more open public space. This created a large, monumental space that creates the central focus for the complex.
- The upper office floors were developed.
- The facades were developed to create a more horizontal massing effect. This was done by dealing with solar shading and passive solar affects such as using overhangs to create shading at various times of the day and create large masses to act as solar collectors.
- Placing the parking ramp to create an ending point for the central axis of the complex.
- Changing the construction system used in this complex from a vernacular system that related to the surrounding fabric to a high technology system that relates directly to the functions occurring within the complex.

The final design of this facility consists of a twenty floor multi-use complex. The sub-level, ground and second levels are the primary activity levels of this complex that are for public use. On these levels, the transportation functions occur with a number of commercial rental areas adding support to the transportation areas. These areas are primarily providing services that the transportation users need. The commercial areas also provide the office workers with services primarily dealing with food preparation.

The third thru twentieth floors consist of sixteen floors of leasable office space with the seventh and twentieth floors providing the mechanical service.

The materials of this complex were chosen in order to relate to the high technology functions that occur in the complex. For the materials of this complex were chosen in order to relate to the advanced technology functions that occur in the complex (relating the image of the building directly to the trains and buses that will use this complex). For this reason steel was selected as the material that would be used for the structure of the building. A secondary reason for the choice of steel was the ease of construction and assembly to the consideration of the accumulated weights that the structure would have to carry due to the nature of the height of the structure.

The skin was to be constructed of a metal panel system for three reasons; 1) in order to relate to the high technology image, 2) in order to create a variety of forms and shapes and 3) allow the creation of a modular system that will allow development of a large module.
that allows a minimization of the labor due to the large amount of exterior skin.

The mechanical is a high velocity, low volume system. The sub-level mechanical zone serves the loading and service area and the bus platforms. The primary purpose of this area is to clean the air of carbon monoxide from the vehicles that use these areas. This area also provide supply air to the interior atrium space. The seventh level mechanical zone serves the low level office areas. The twentieth level mechanical zone serves the upper level office areas and recycles air that rises from the atrium space.
1 Bus Concourse
2 Emergency Concourse
3 Bus Maintenance
4 Parts Storage
5 Maintenance Office
6 Mechanical
7 Shipping & Receiving
8 Storage

Sub-level Plan
3rd - 6th Level Plan

1 Leasable Office
2 Leasable Commercial
3 Parking
7th - 18th Level Plan
South Elevation

North Elevation
Research and reference materials that were helpful in providing criteria and in developing guidelines for criteria for this project were as follows:


"Indianapolis Regional Center Plan: Preliminary Information Summary." Department of Metropolitan Development, Division of Planning and Zoning, Division of Economic and Housing Development. Indianapolis, Marion County, Indiana, May, 1980.