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Completed as required for a bachelor of architecture degree

at Montana State University.

Bozeman, Montana

March, 1989

George Gibson

George Gibson

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To my family and friends,
who make life more enjoyable.

Here's to the future.

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INTRODUCTION

PREMISE

The behaviors and lifestyles of the citizens in any society are largely dependent on the environment in which those people are living and interacting. The American society is comparatively mobile and this is reflected in the energy and space dedicated to movement. The urban organization is directly established by the transportation patterns which emerge. Improving the transportation network positively affects the environment in which society lives.

AUTOMOBILE

One of the most influential modes of travel in America has been the automobile. Recent settlement patterns and social organization have not only been orientated to the automobile, but dictated by its overwhelming use. A reordering of priorities is necessary[1], primarily concerning pedestrian and community space. Planned control should be made because of a desire to improve the living environment, not in response to the automobile's space consuming nature.



The result of an automobile society can be categorized into three areas, the effect it has on the built environment, the effect on the non-built environment, and how these directly affect mankind himself.

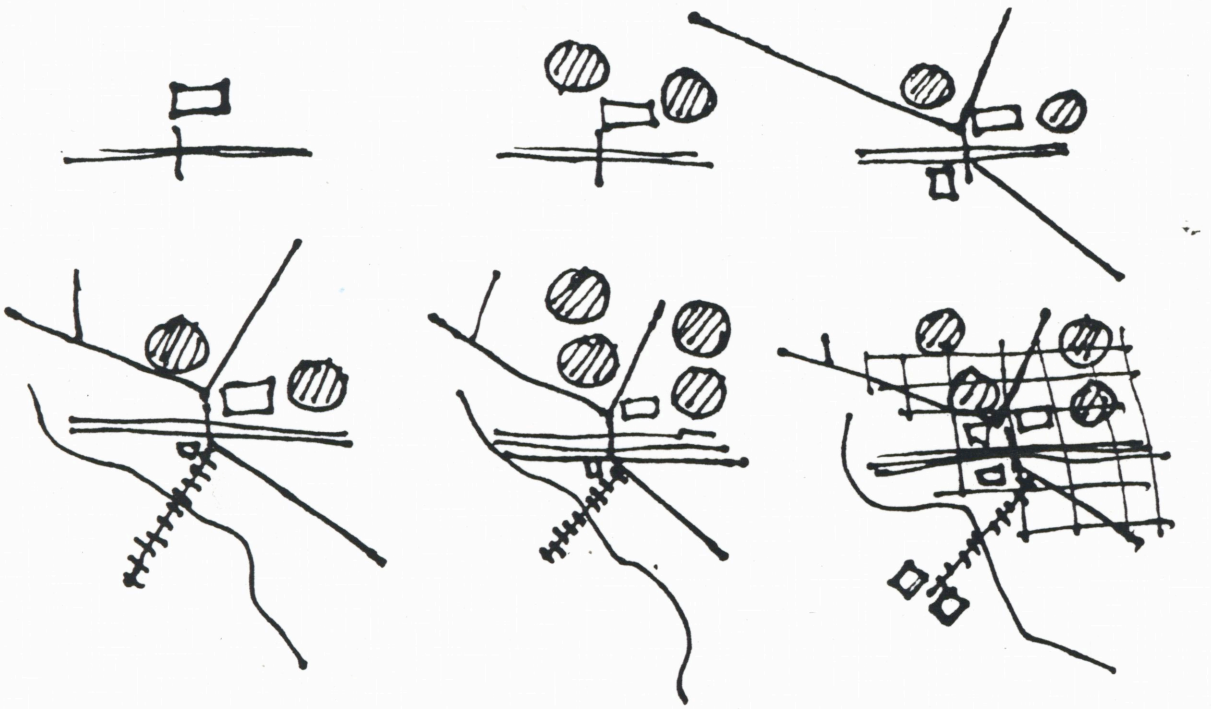
In the built environment the conventional approach to the problem of congestion has been the construction of more large scale roads and parking lots.[2] These solutions really only increase the magnitude of the problem, the wider the highways are the more cars will be on them. There are other options to the problem, such as reordering of development, reduction of the number of automobiles, and increased use of public transportation.

In the non-built environment the automobile has increased the level of pollution and the amount of energy used. In order for the pollution output to ultimately decrease it must be done small scale and individually. An increased amount of users on an efficient public transportation system would use less energy per capita, and pollute less than the equivalent driving automobiles. Better use of natural resources will uphold and increase the quality of living by keeping the skies clear, the waters clean, and the meadows unspoiled.

Congestion and pollution directly decrease the quality of life of a given population. There must be concern for how the physical environment can positively or negatively affect the people residing there. The stress involved in the daily hassle of driving, fighting traffic, and parking would be lessened with a considerable reduction of traffic. Reducing the amount of people in negative situations by providing superior public transportation, would result in a healthier and happier general public.

RECOURSE

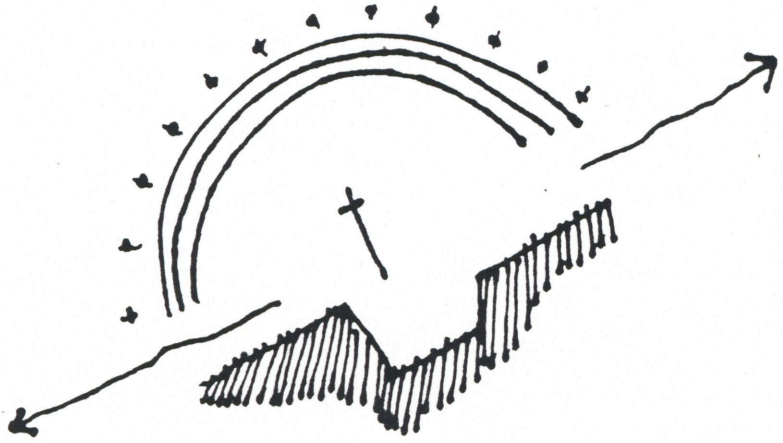
Two complementary trends, increasing complexity of our society and the accelerating pace of change have enticed individuals to anticipate the future[3]. In improving society, there are alternative futures of which to choose. Indecision and lack of action would result in a future dictated by other forces not beneficial to social advances. "Solutions will come through step by step advances and through more ingenious applications of what we currently know" [4].



INTENT

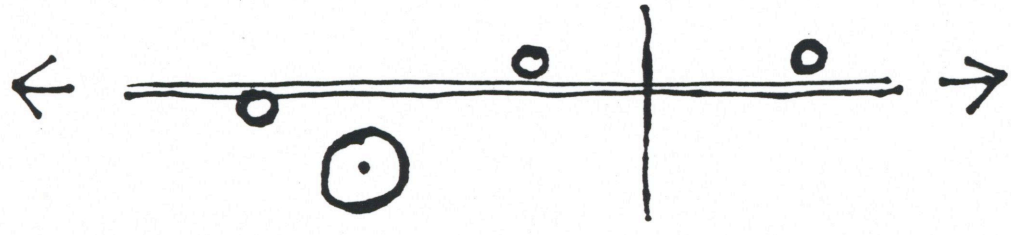
The intent of this thesis is to provide a suburban public transportation center with qualities associated with the 'traditional center'. Taking the existing concept of a commuter train stop and transforming it into a real focal point, providing citizens with a place they need to be, and want to be at. A center which provides the functions and opportunities that will allow the residents a fuller life. Further intention is that the convenience, quality, excitement, and attractiveness of this facility will encourage the population, now and in the future, to increase their public transport ridership. Decrease the dependence on the private vehicle, encourage surrounding development, and centralize urban areas. Cutting edge transportation technology has allowed for major improvements in time, comfort, and efficiency aspects of public transportation. The technology now exists, the implementation and future success of it is greatly related to the environment where man and machine meet. It is in this capacity of place-making that the architect can best put his knowledge and expertise to use, providing piece by piece, a better world in which to live.

An improved public transportation network has a series of theoretical benefits to society in general. Reduced congestion, urban sprawl, land interruption, pollution, human stress, and traveling costs would occur with a more centralized movement system. Increased convenience, social interactions, and a network for future growth would also occur.



METHODOLOGY

When determining a methodology for doing a large scale urban project there are a number of ways to organize the sequence of activities to be undertaken. If there is a specific question or problem to be answered, it is logical to start at that statement and work from there. If there is no specific question, but instead a series of general problems, the first step is to do wide ranging research on a number of issues relating to urbanism, such as growth patterns, culture, movement, and transportation technology. From preliminary research a more specific idea of the problem and feasible solutions can be found. When dealing with an urban ideal in general terms, a workable urban model or general plan must be determined. This model gives the groundwork and the overall relationships between different urban areas. Although this model is not involved in the specific project, the specific project is a part of the model as a whole. In fact, the specific project can be considered as a test for the urban model concept, showing how well a segment of the whole can be realized. The specifics can then be applied to an actual location where studies must be done regarding the character, environment, and needs of the site. Once the site specific information is collected time can be spent determining form generating ideas, such as sense of place, program, and schematics. Resulting, after design work, in a specific place, or places generated from the whole, yet very decidedly from itself. This process can assist the architect by allowing the work of general theoretical concepts and location specific solutions within the same project, coordinating aspects of thought and research.



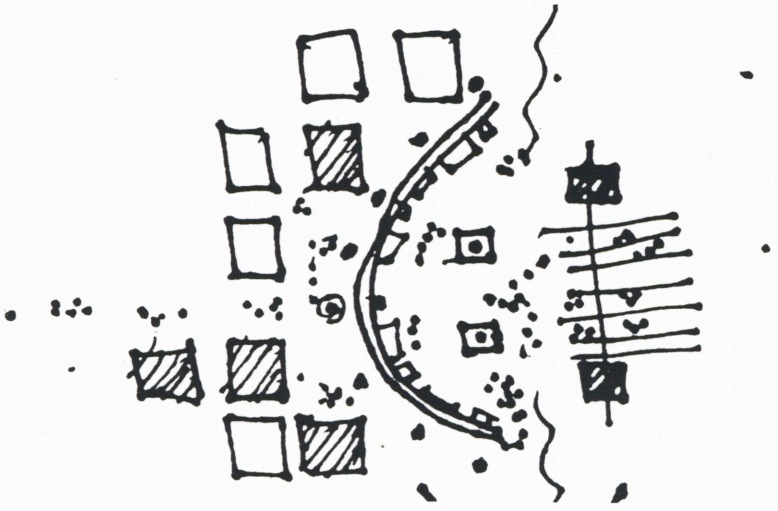
URBANITY

URBAN-SUBURBAN

The nature of the American society has continued to change and the settlement patterns of the workers has followed along. The industrial era saw a large migration to and growth of dense urban areas[5]. As the work force has grown and evolved, there has been a shift from industry and goods to a service and profession orientated society. This allowed for the home to be apart from the workplace, and has facilitated the growth of suburbanization.



The suburbanization of America has occurred. A majority of the current population prefer to live in the suburbs. Society associates a suburban house as the realization of the "American Dream". Along with the comfort, privacy, and luxury of living in a non-urban environment there is also a lack of "place" that occurs where people congregate and events happen. In the suburban world the traditional center has been replaced by the shopping mall. Many citizens especially near large urban centers have, in search for excitement, culture, choice, and economic improvement have been commuting for work and pleasure to large city centers. To promote public transportation and to centralize meaningful activities, a series of transportation centers can be established. Serving as the focal point for different modes of public transportation, and as the center of activities for the modern suburbanite.



The current living situation must be accepted and work must be done within the existing framework to improve the suburban existence. Major concern of this thesis is in the connection of the existing urban and suburban components. As well as in radically changing the publics' negative perception of public transportation by improving the environment with which it is associated.

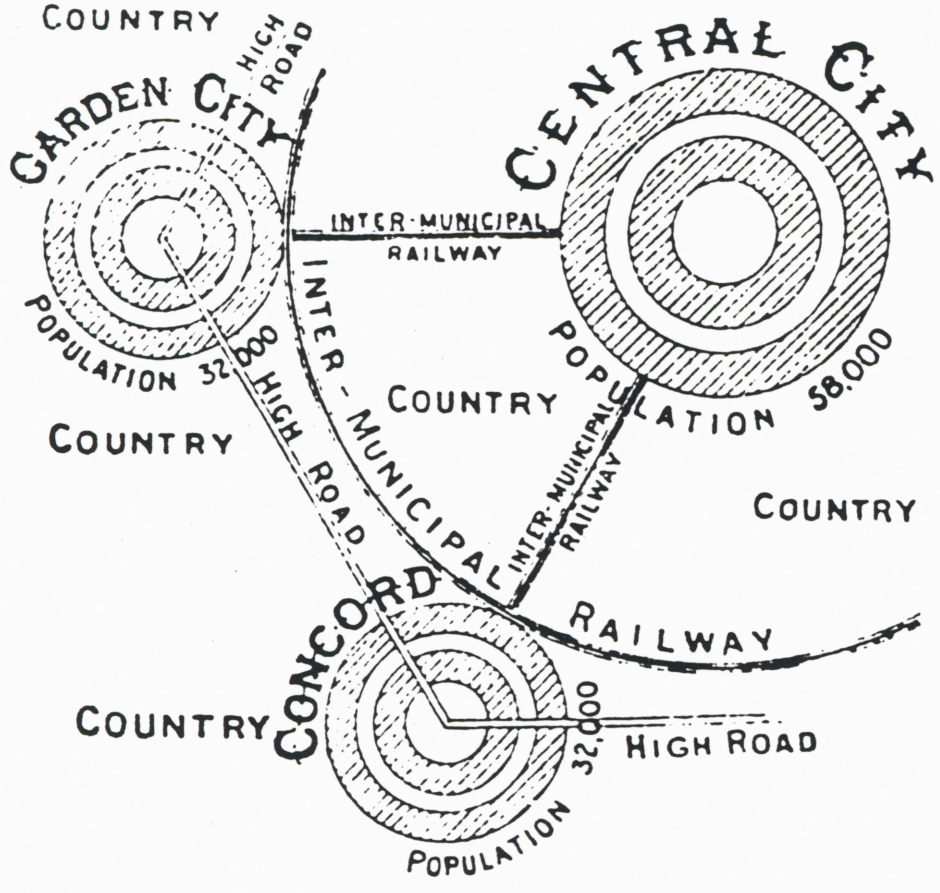
URBAN MODEL

In addition to working within the present living conditions, it is also necessary to look to the past in order to see how urban organization has evolved. Many settlements have developed from urban prototypes, their simplistic geometry provided understandable order and great adaptability.[6] In the early 1940's architects and planners founded the suburban ideal of development and the conquest of open land soon followed. Early in their development, suburbs developed around mass transit, and these connections provided the logical location for commercial and communal facilities, a traditional center[7]. As the concept of the suburb evolved from theory to realization the traditional center became unclear and development spread farther outward from the city, resulting in centerless sprawl. Ebenezer Howard proposed a very well known model for planning known as the "garden city"[8] or a ring of satellite cities surrounding a major urban center. "The garden city, as Howard defined it is not the suburb we know, but the antithesis of the suburb, it is a more integrated foundation for an effective urban life."[9] The urban model for this thesis is to re-apply the basics of this concept in order to establish a guide for controlled expansion and centralization of the existing suburban landscape.

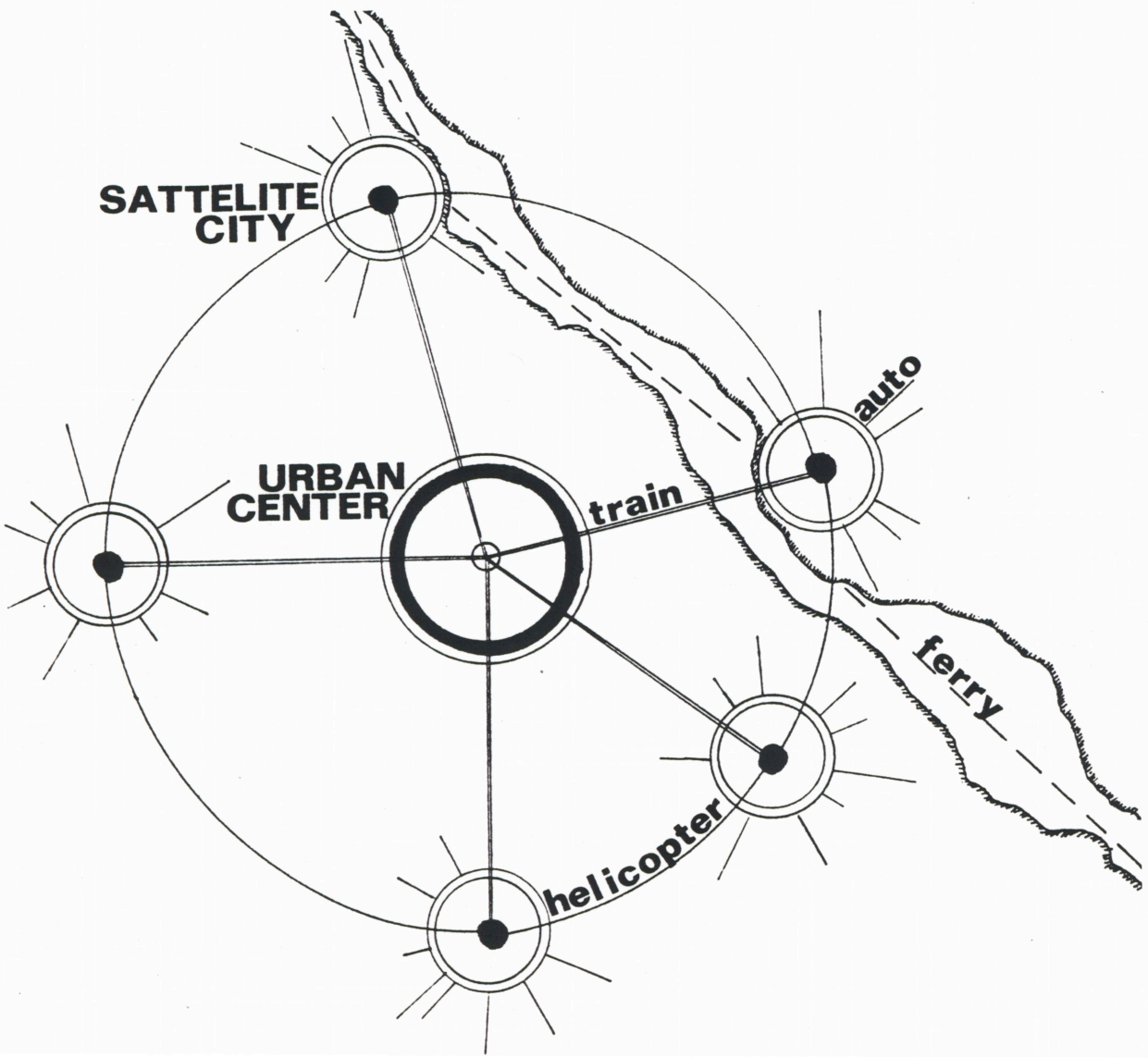
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— DIAGRAM —

ILLUSTRATING CORRECT PRINCIPLE OF A CITY'S GROWTH - OPEN COUNTRY EVER NEAR AT HAND, AND RAPID COMMUNICATION BETWEEN OFF-SHOOTS.



The urban concept to be used in this thesis is basically that of the satellite city system, applied to the existing landscape and using new modes of transportation. At the center is the existing large urban center, surrounded by a ring of satellite cities. Each of these cities is focused around a transportation center, which serves as the larger link as well as the smaller hub. Transportation connections are made radially from the city center to the satellites, and circularly from satellite to satellite. By concentrating development and activities at each of these centers, it will allow for periphery and in between areas to remain less developed. The specifics of the thesis will concentrate on a single transportation hub in a satellite city. Determining what elements are desirable for its realization.



TRANSPORTATION

A feasible way to establish workable urban relationships is through the positive manipulation of transportation technology. The transportation of the automated age has created new configurations of movement that generate different settlement patterns.[10] We must not only respond to these new patterns, but control the establishment of the patterns. Transportation can, and must be used as an integral part of an urban model when establishing the relationships and connections needed to successfully upgrade the existing infrastructure and handle future growth.

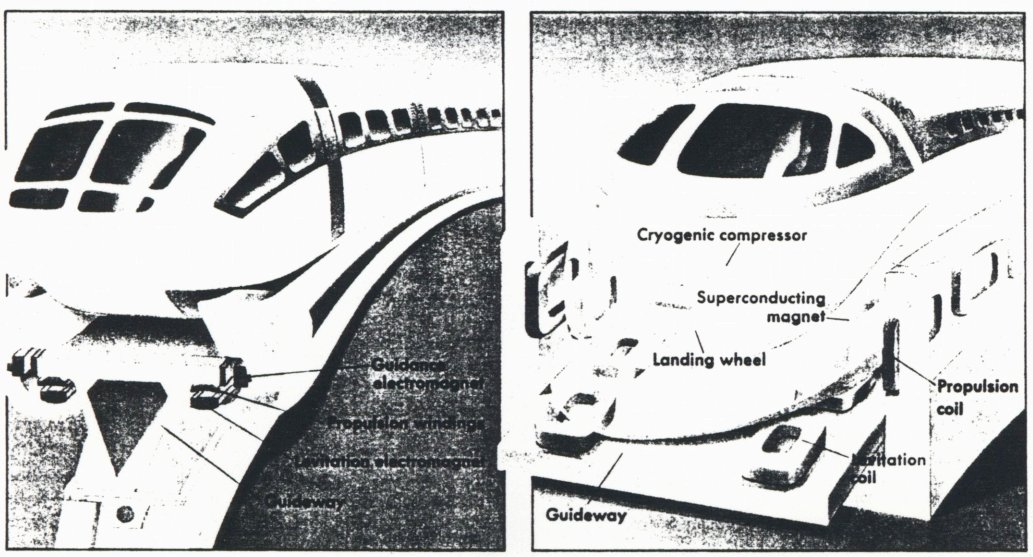
The immediate costs of implementing new transportation systems may be high[11], as in any operation start up. The resulting conditions, however will be worth the monetary costs, by the reduced the demand of fuel, the lower cost of travel, and the larger amount collected for ridership fees. Not to mention the biggest benefit, the investment made in the future which is missing from most current policies.

TRANSPORTATION TECHNOLOGY

There are a number of modes of transportation that have a great chance of revolutionizing the way people travel, commute, and ultimately live their lives. Although each are quite different in their means of movement, they all have qualities in common. Qualities, such as improved efficiency, increased speed, reduced environmental impact, and more pleasure in using act as incentives and reasons for their implementation. These different modes of movement that are applicable for short to medium length public use are, magnetic levitation trains, large scale helicopters, water ferries, as well as non-public modes such as private vehicles and pedestrians. All of these types of transportation can be applied to the urban model, depending on their specific attributes.

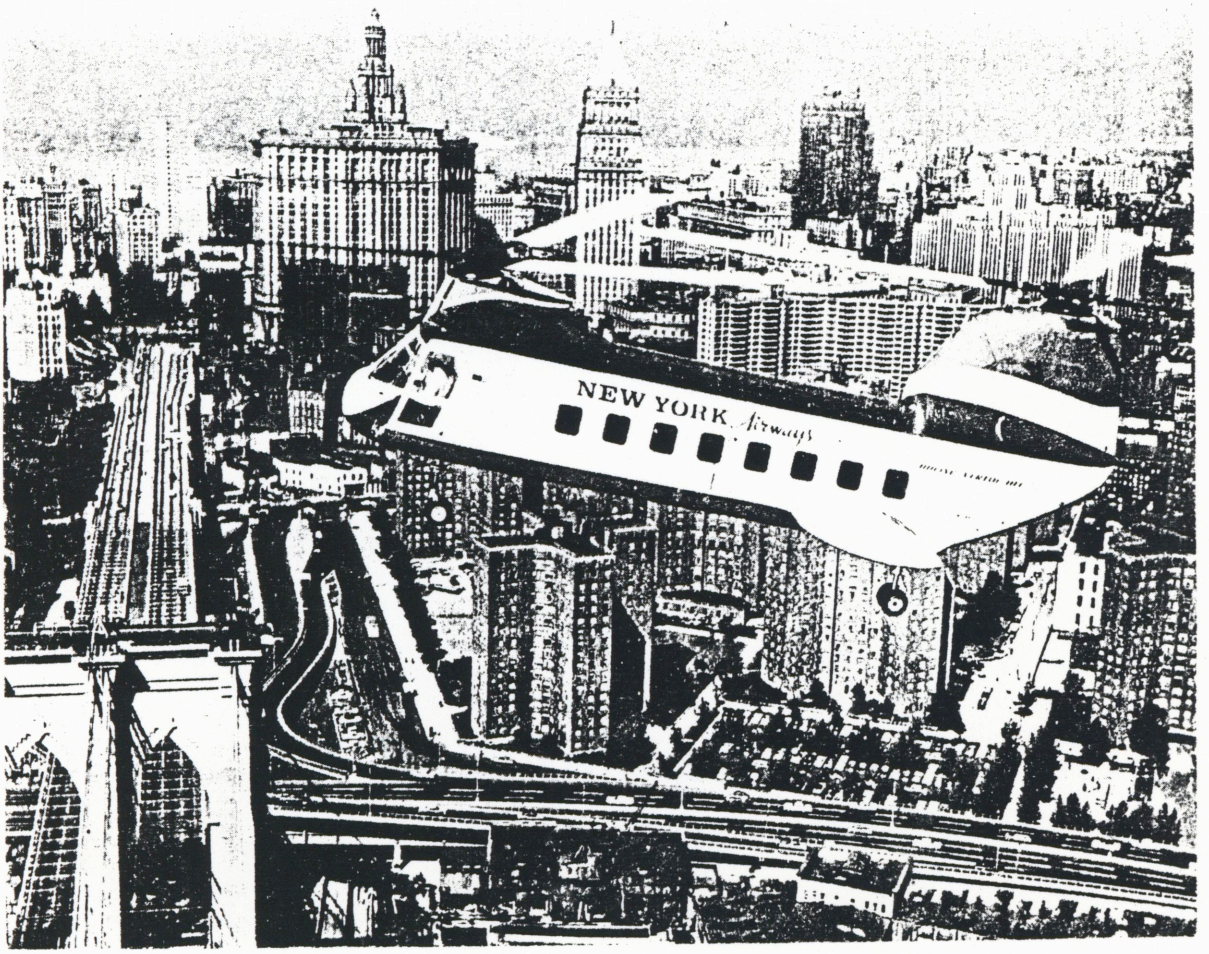
MAGNETIC LEVITATION TRAINS

Currently two different magnetic levitation (maglev) technologies are close to commercialization, in Japan and West Germany.[12] The system looks like the traditional train, but without the steel tracks. The trains fly above a concrete track on a magnetic cushion, riding the magnetic wave established by superconducting magnets.[13] According to tests maglev works quite well, it has achieved a speed of 252 mph on its test track and the ride is as smooth as a commercial jet flying in clear air.[14] Additional advantages to the maglev system are that they are cleaner and quieter than conventional trains, resistant to track wear and tear,[15] and adaptable to existing train corridors. The best role for this mode of movement is in the 100-500 mile range,[16] leaving longer distances to air travel. In applying this to the established urban model the maglev system could conceivably be used as the main mode of travel to and from the urban center and the satellite cities. Allowing very quick access and utilizing the existing train corridors with minimum disruption of existing settlements.



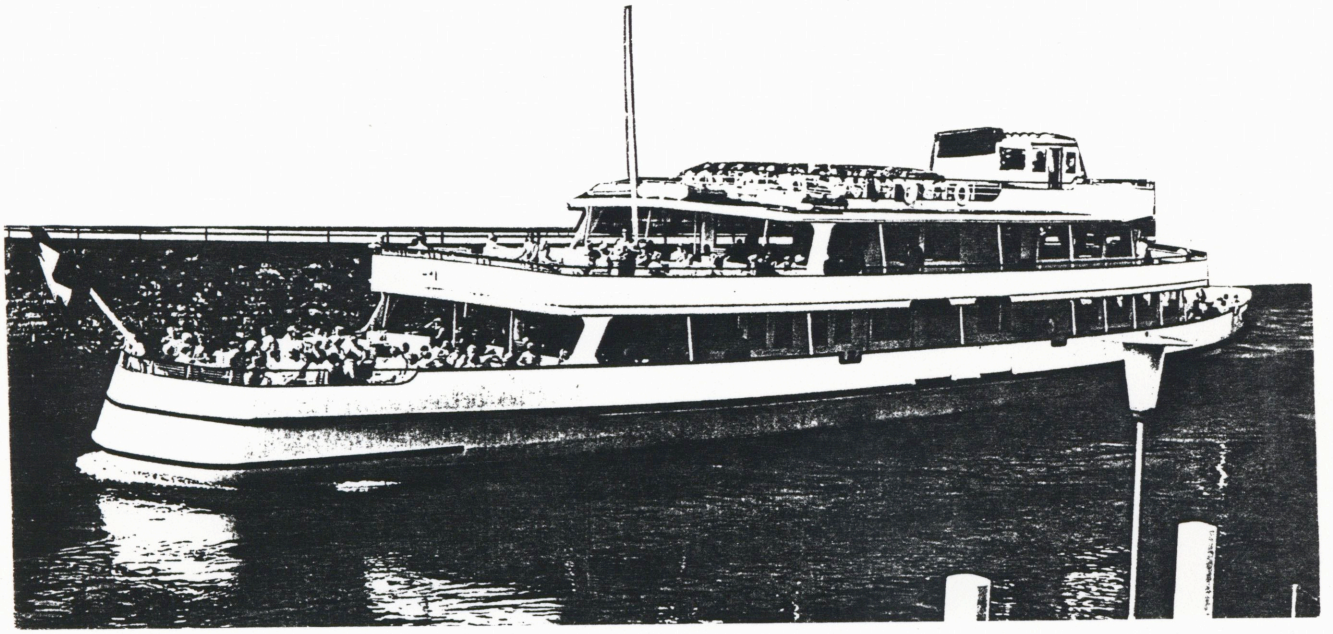
HELICOPTERS

Currently helicopters are being utilized as a tool for private and public business, but not in the role of public transportation.[17] Large scale helicopters do exist, and their application for public service is a very feasible idea. Ideal use would be in locations of limited size since the necessary landing space for the helicopter is only twice its overall length.[18] Comparative ease of the vertical landing/takeoff routine[19] lends the helicopter to short length distances, between stops without a direct ground route. Applying this to the established urban model, the helicopter would work well as the main mode of movement between satellite cities. Providing circular intra-city service above the network of ground roads, allowing quicker and easier travel to the established destinations.



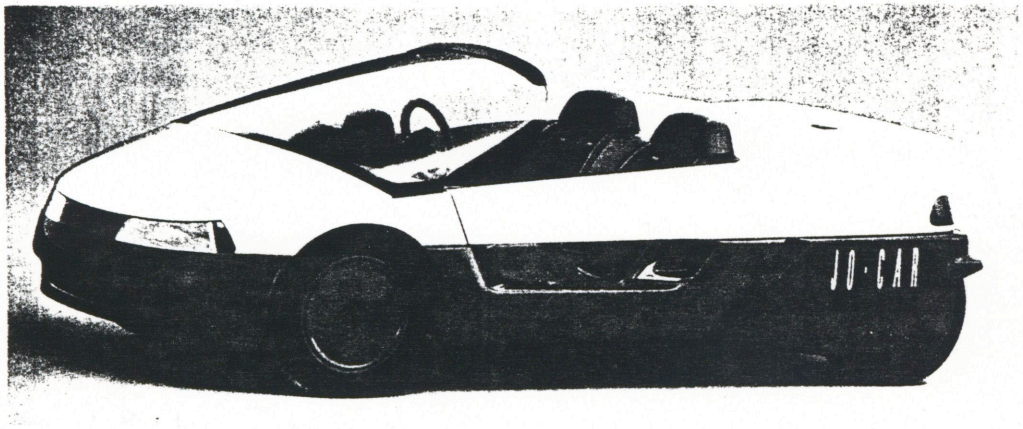
WATER FERRIES

Currently water transportation is becoming a workable option for many large cities located on the coastal areas. Its unique access to ports since forgotten allows for an alternative form of travel to places with water access or for a more relaxing type of trip. Applying this to the established urban model, the role of the water ferry would be along the highways of the water. Wherever the variable of water appears in the model, it is associated with growth along its shores. Access by ferry to these points would provide greater flexibility for water areas as well as an option for travelers with destinations located on the waterways.



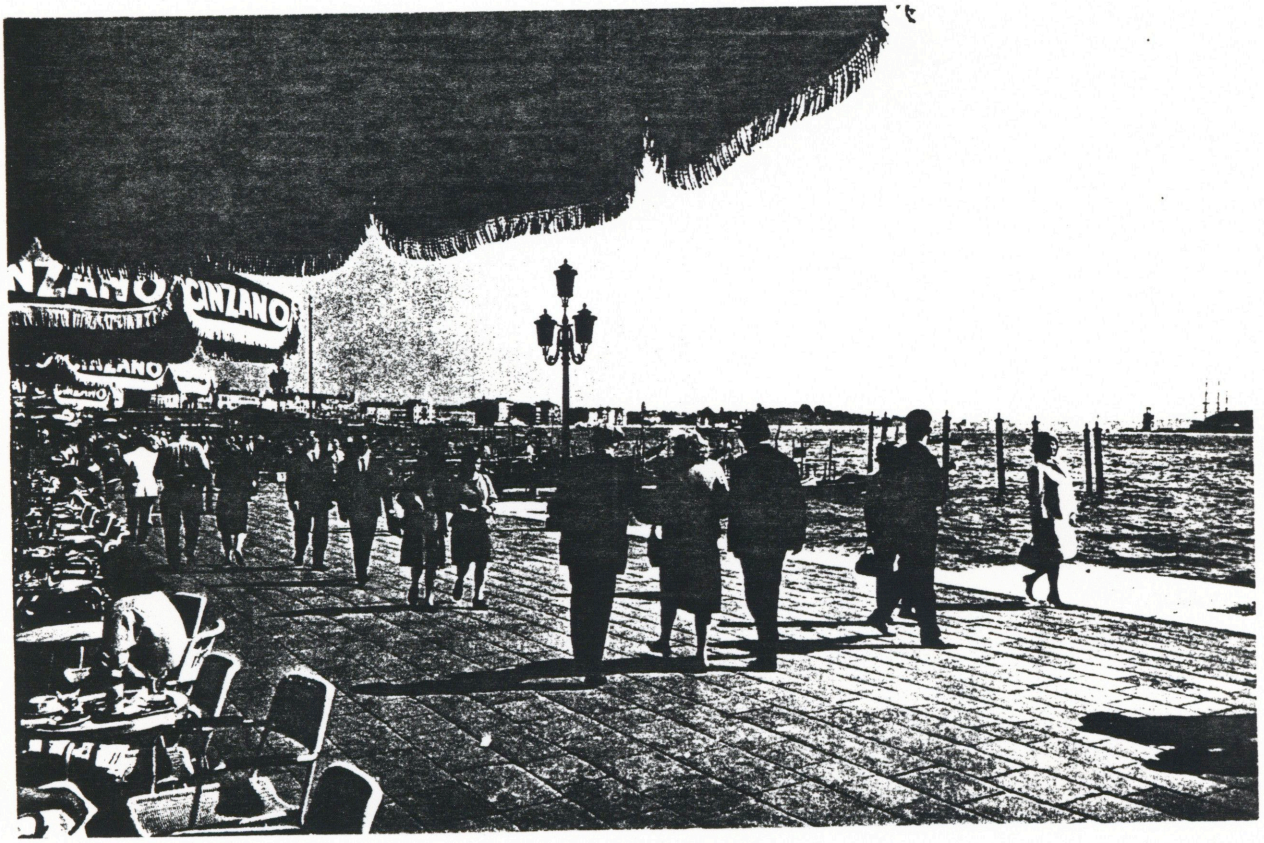
PRIVATE VEHICLES

Currently private vehicles are basically limited to that of the automobile. Theoretically the concept of private vehicle ownership could apply to air vehicles, water vehicles, and automated guideway vehicles. In a suburban environment and in an urban model, the role of the private vehicle is still important. Although the automobile is an inefficient vehicle where mass movement and a confined area are concerned, outside of the urban area it possesses considerable advantages.[20] Obviously public transportation can not serve every function or be in every location, but can be provided in central locations. Applying this to the established urban model, the role of the private vehicle is limited to the transfer from the home to the transportation center and in traveling to outlying areas where the transportation network does not go.



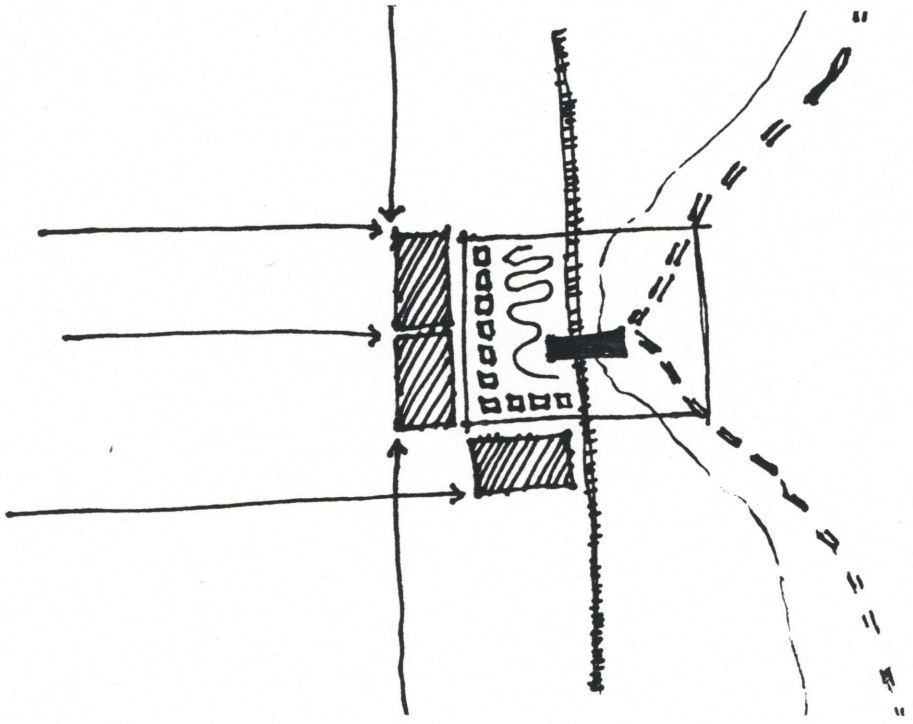
PEDESTRIANS

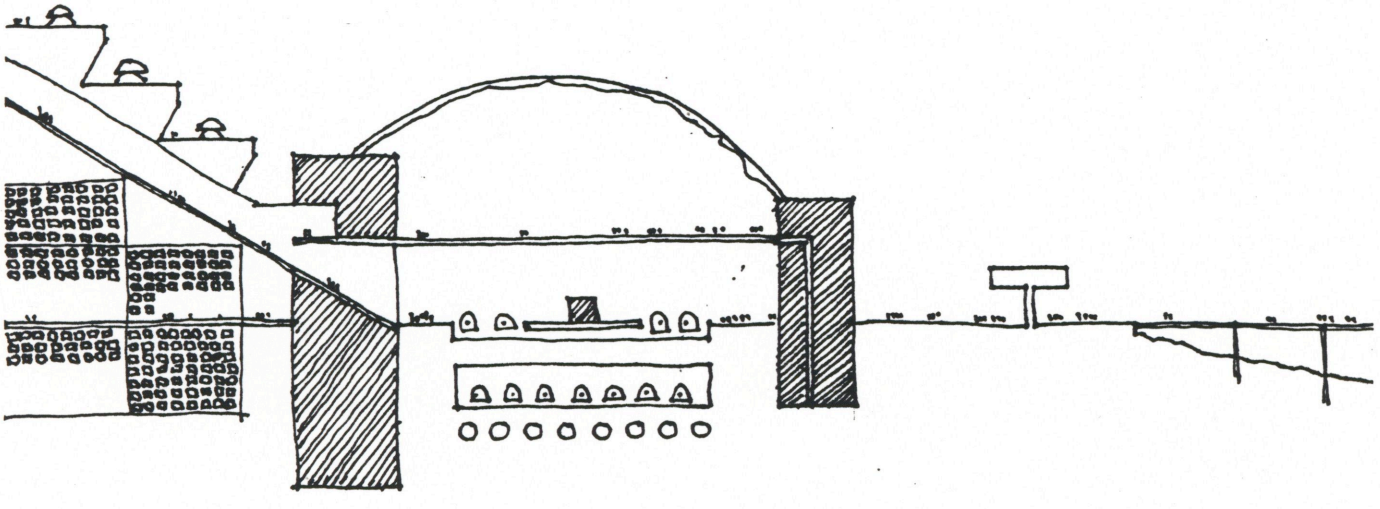
Just as important as the various types of transportation is the most basic, the human body. Coordination of activities and destinations within 5-10 minute walking distance along a pedestrian orientated route can evoke a more lively environment and assist in more public socialization. Longer distances can be supplemented with slow, automated, pedestrian devices such as moving sidewalks and escalators to compliment the faster movement[21] of the previous mentioned modes.



INTERCONNECTIONS

In order to establish a center where numerous modes of movement interconnect it is important to discover the relationships which result in the meeting of man and machine. The transferring of passengers from one mode of transportation to another must be made as easy as possible. Physical vehicle separation can be both vertical and horizontal, with all modes linked directly to a central space. Travel corridors should be completely isolated, easing movement.



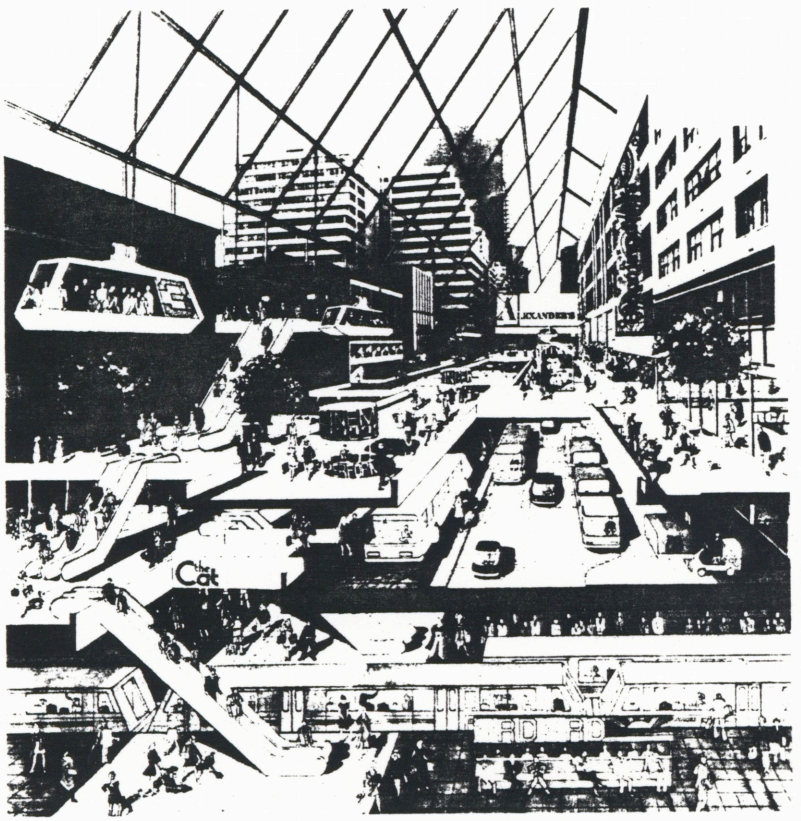


PRECEDENTS

Precedents can be used in order to see what ideas have been built or proposed in the past. This can assist in developing a design solution by understanding how the ideas have been realized. The following projects all relate to this thesis because they deal with transportation, urban development, or future life.

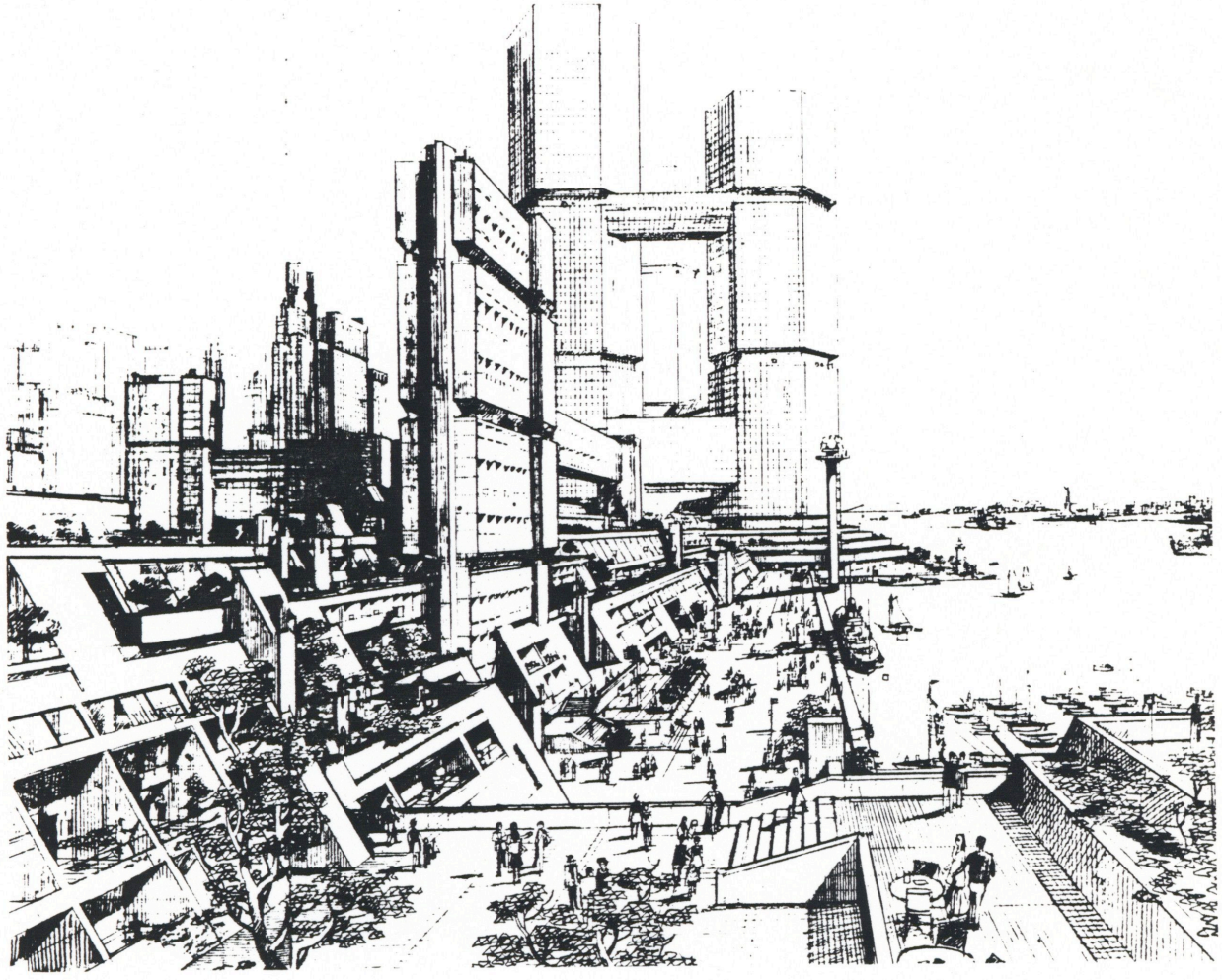
REGIONAL DEVELOPMENT CENTER

The Regional Development proposal for Manhattan[22] combines subway access, monorail service, retail space, and a pedestrian circulation spine. It is interesting because it organizes the activities in a stratified manner. All levels are interconnected by escalators. It is successful in its separation of movement and activities. It does not work as well in its relationship to the surrounding area, because it is enclosed with a glass covered mall.



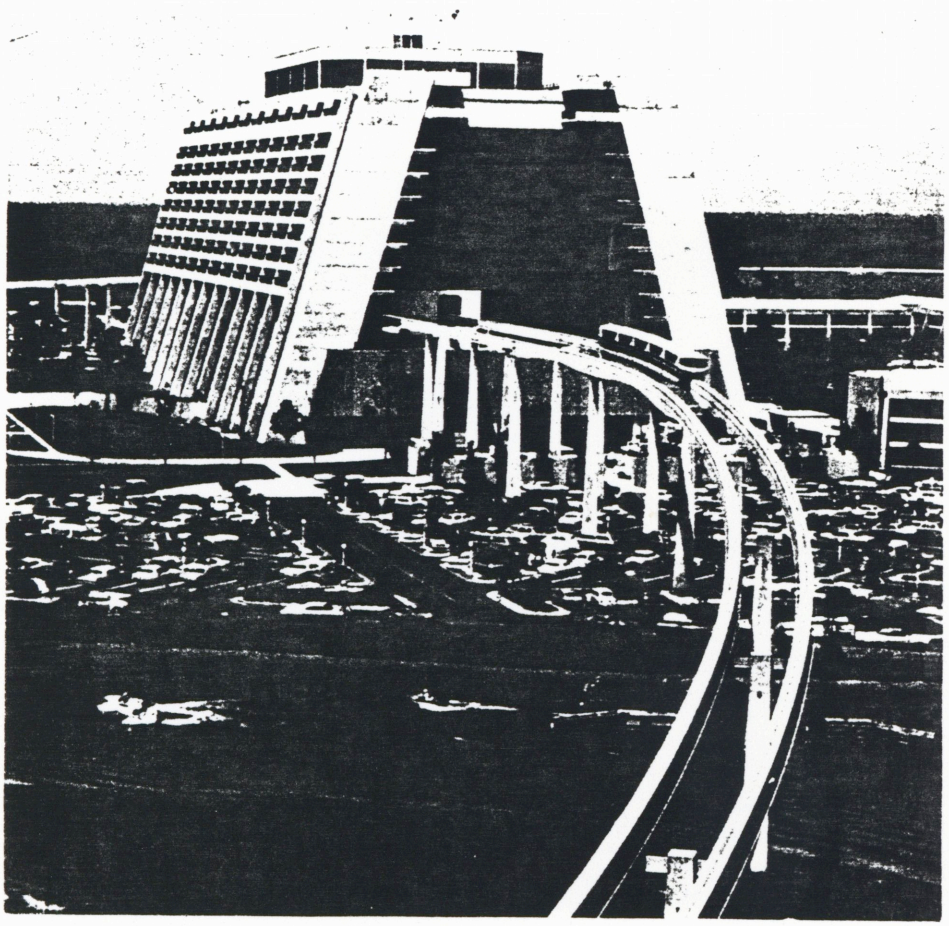
BATTERY PARK CITY

Battery Park City on Manhattan Island[23] can be considered a city within a city. Elements included are housing, retail, a public square, as well as a transit-building linkage system. The basic concept of this project works well, but it doesn't operate as other Manhattan districts do. Increased time and popular acceptance of the development may give it the character and identity it is missing.



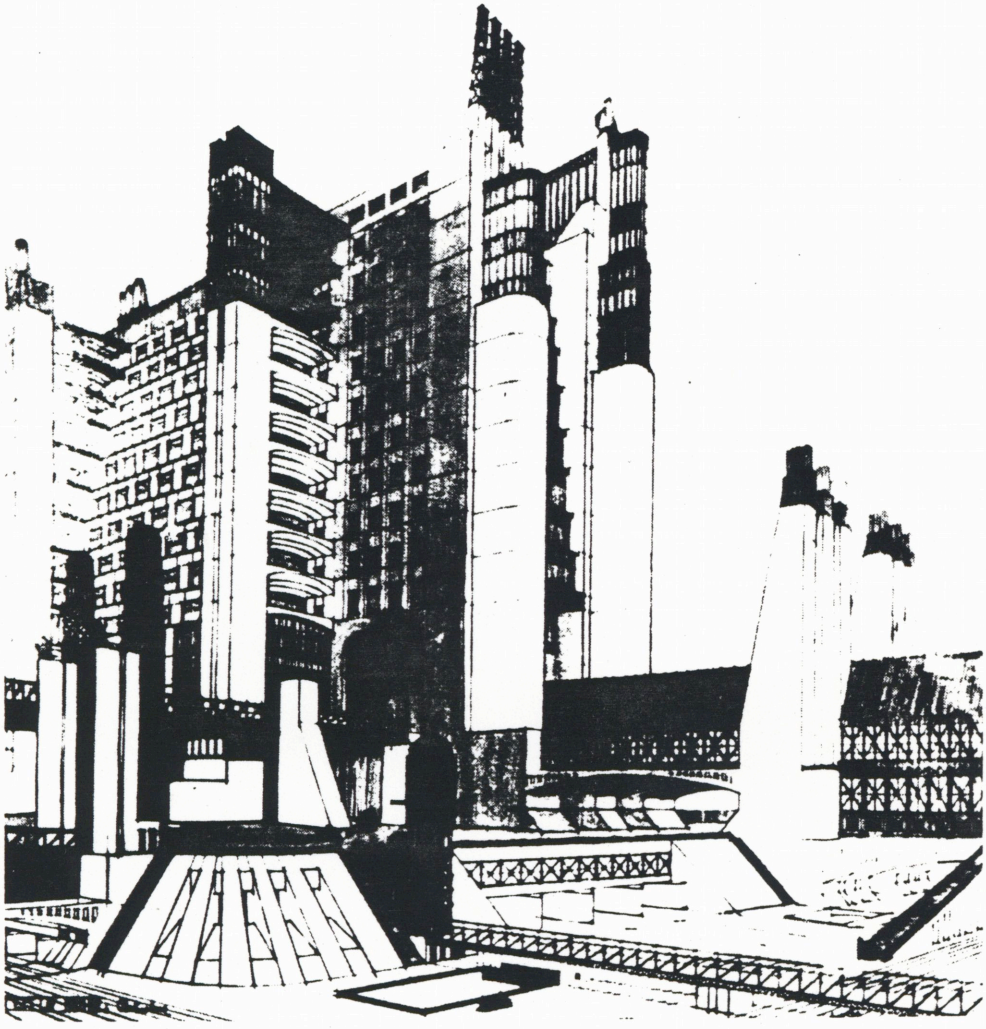
MONORAIL AND CONTEMPORARY RESORT

The Monorail and Contemporary Resort Hotel at Walt Disney World, FL[24] links many separate activities together. Parking, recreation, lodging, and the Magic Kingdom are all accessible through a monorail system. Interesting is how the transportation system flows right through the actual building. As a closed system it works well, if connected with outside elements it may not work as smoothly.



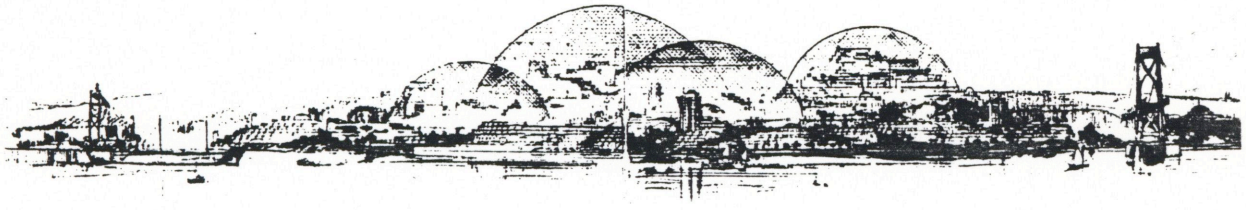
LA CITTA NUOVA

La Citta Nuova[25] is a futurist city separating different types of motion to different levels. It is an attempt to fuse circulation and structure into a new city. The forms generated by strict motion segregation work well, but the project stands self-sufficient, oblivious to any existing conditions.



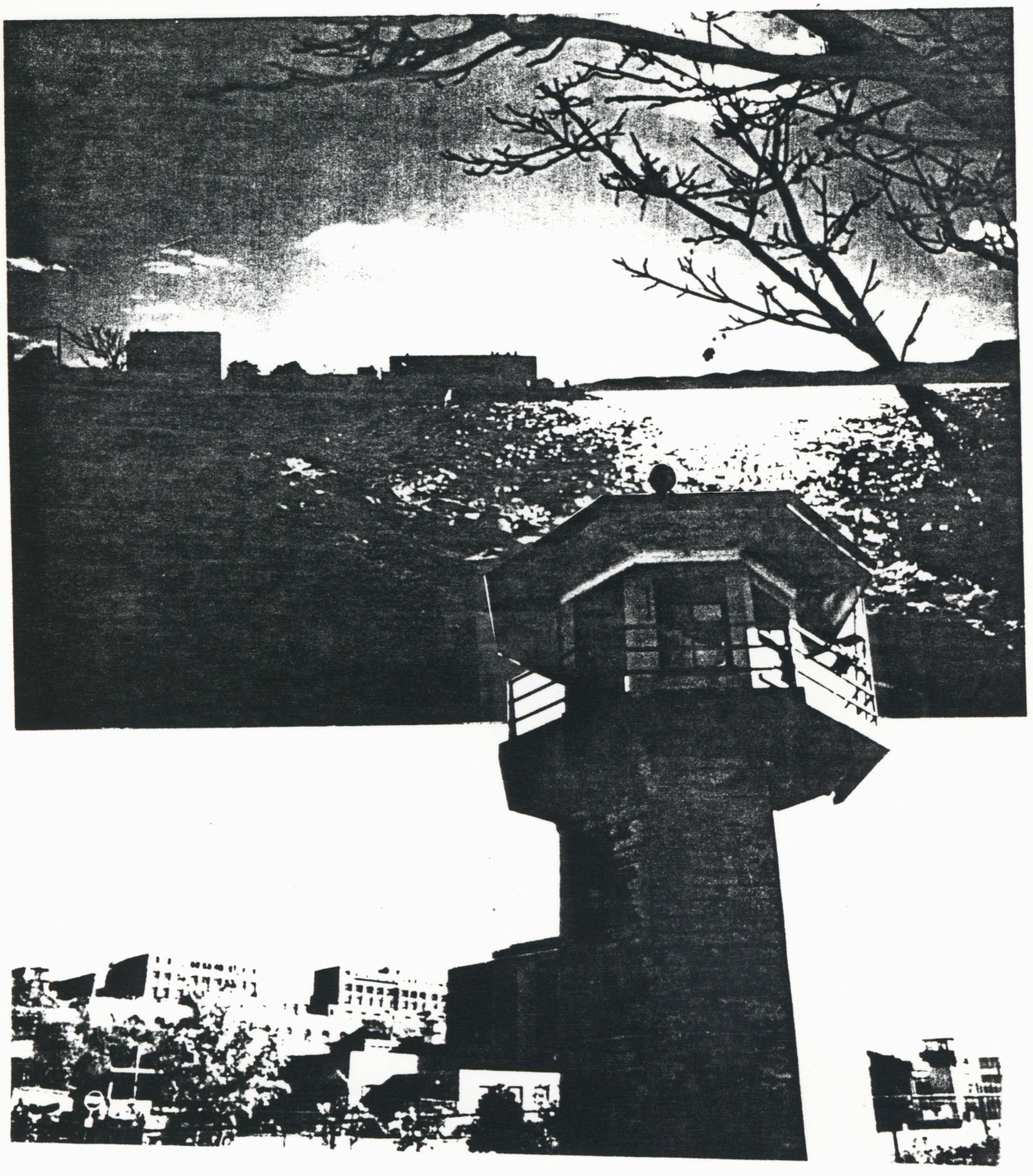
POUGHKEEPSIE DOMES

The domed spaces for Poughkeepsie, NY[26] was generated because of environmental issues. The proposal is a complete enclosure for an existing city on the Hudson River. The idea of a totally enclosed environment is interesting, but highly unlikely that it would appeal to the citizens.

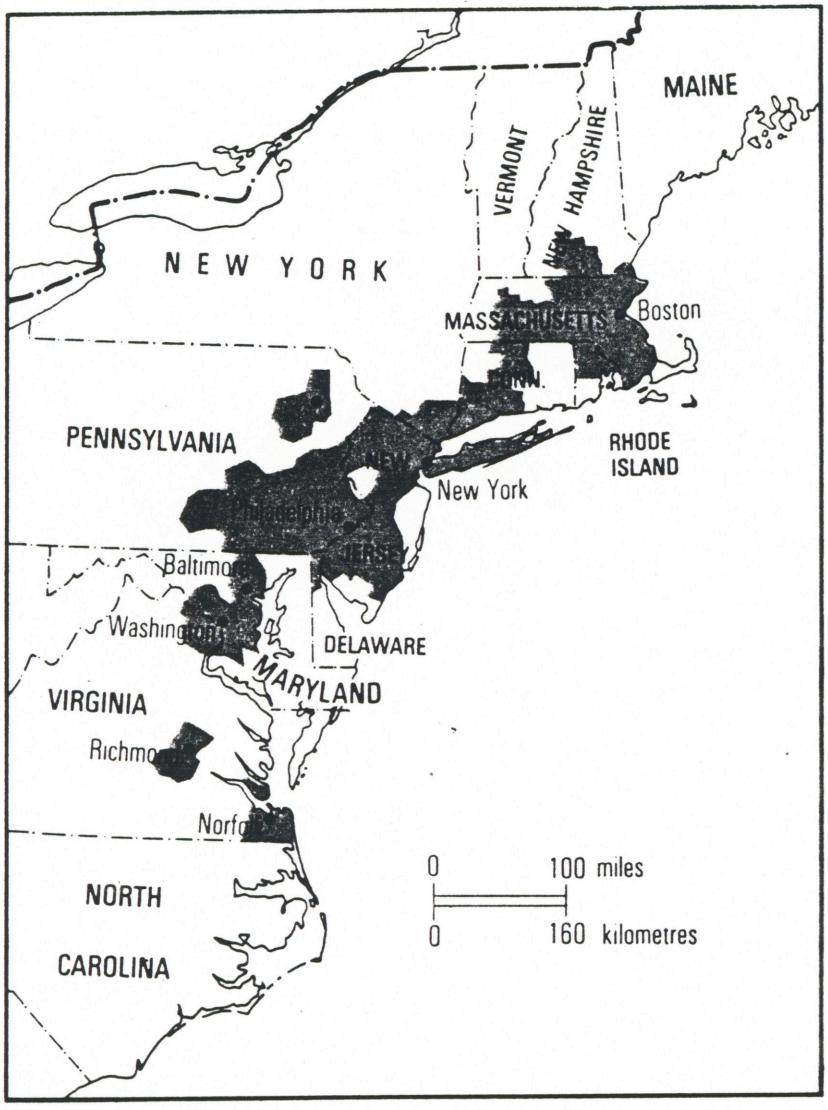


SITE

The specific site was selected in order to act as a test for the established urban model. Items taken into consideration were location near the extreme example of an urban metropolis - New York City, growing suburbanization, an historic path of movement, existing commuter service, and a population sympathetic to the concept of public transportation.

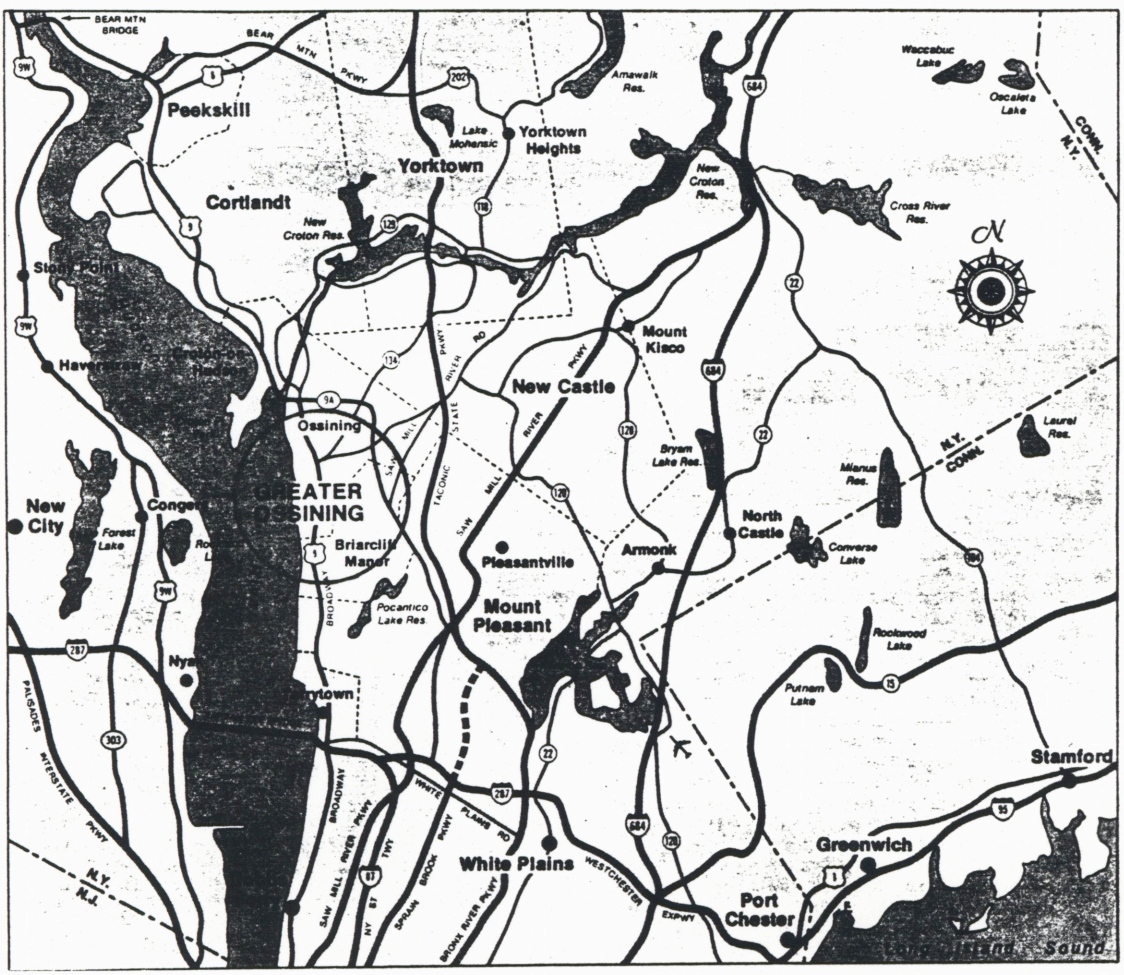


The continental United States is populated very disproportionately according to its land mass. Approximately 20% of the United States population lives in 2% of the country's land area, called The Northeast Corridor.[27] The Northeast Corridor contains 42,000 square miles,[28] and a population of 36 million[29]. The country's largest metropolitan areas are here, including Boston, Washington D.C., Baltimore, Philadelphia, and New York City. 75% of these populations commute[30] to the city centers 5 days a week. It is in this corridor that society is at a crisis in population and movement, and it is here that an urban model can be implemented at its most effective level.

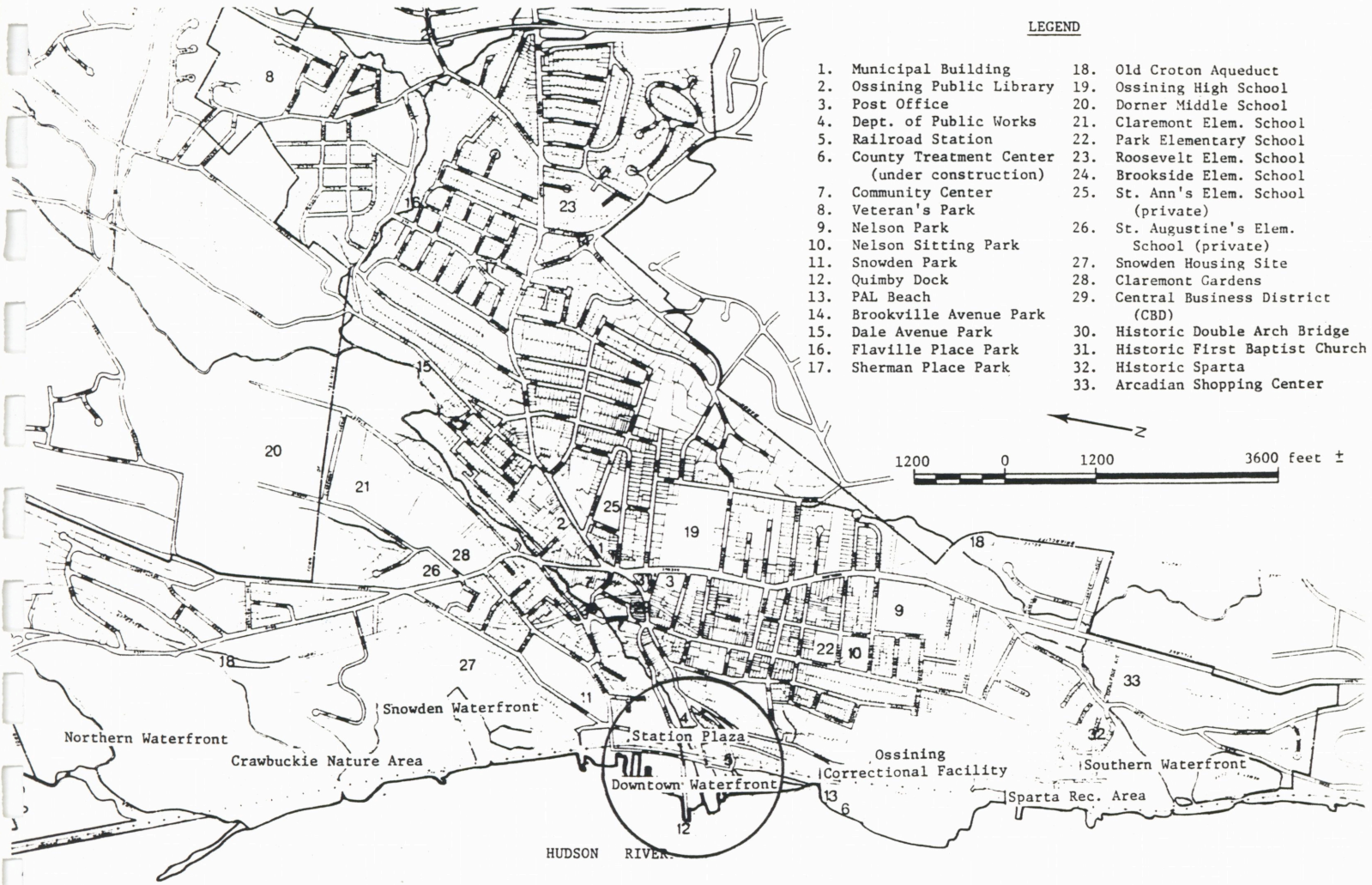


LOCATION

The specific site is in the rolling hills on the east shore of the Hudson River in the village of Ossining, New York. Located 31 miles north of New York City[31]. Ossining is one of a number of small semi-rural towns in which many citizens commute to New York City via the existing "Hudson Commuter Line". As the New York suburban population continues to grow the potential for increased public transportation ridership is great. Ossining is centered in the northern suburbs, and is a reasonable location for a transportation center,



The rivershore area contains 3 miles of waterfront, currently being used for industrial and marina purposes. Nature areas occur to the northeast, untouched parcels of land to the northwest, the existing city to the west, and the SingSing Correctional Facility to the south.[32]



HISTORY

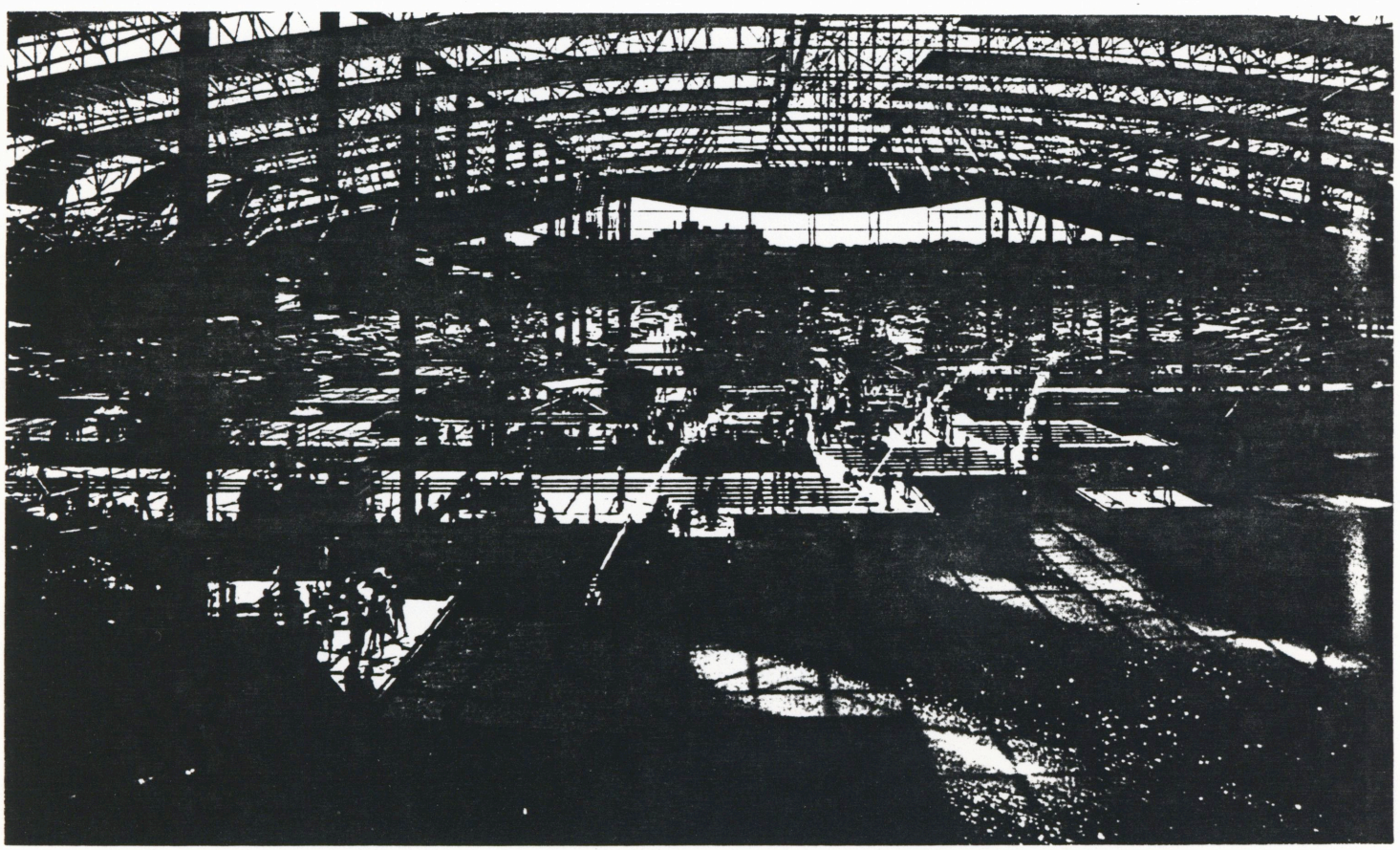
The 315 miles length[33] of the Hudson had established itself as an avenue of commerce and as a transportation corridor since the time of the Mohegan Indians. Numerous settlements appeared along its shores, and Os-sin-ing, "a stony place" was established in 1845.[34] Ossining was known for its abundance of marble, boat building, "Sing Sing State Prison", and rail service between New York City and Albany[35].

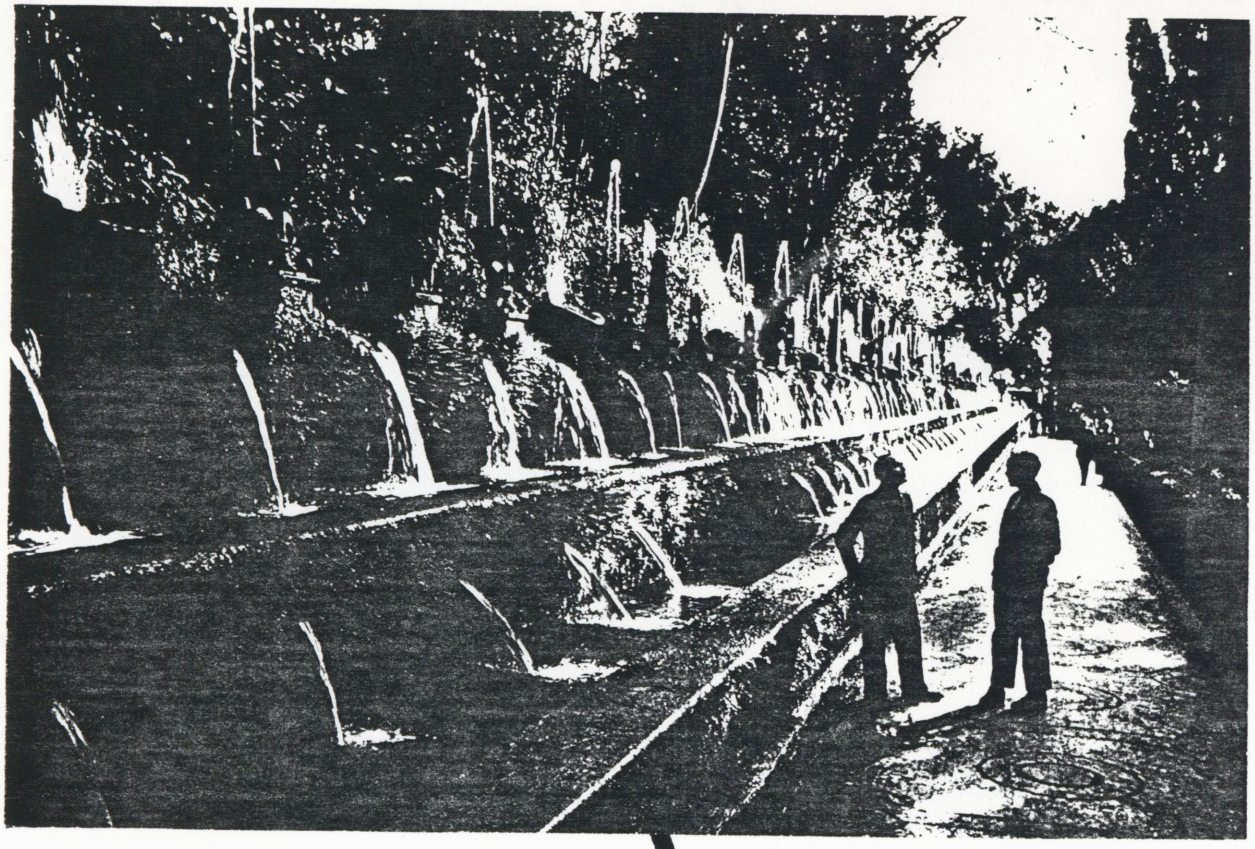
SITE IMPACT

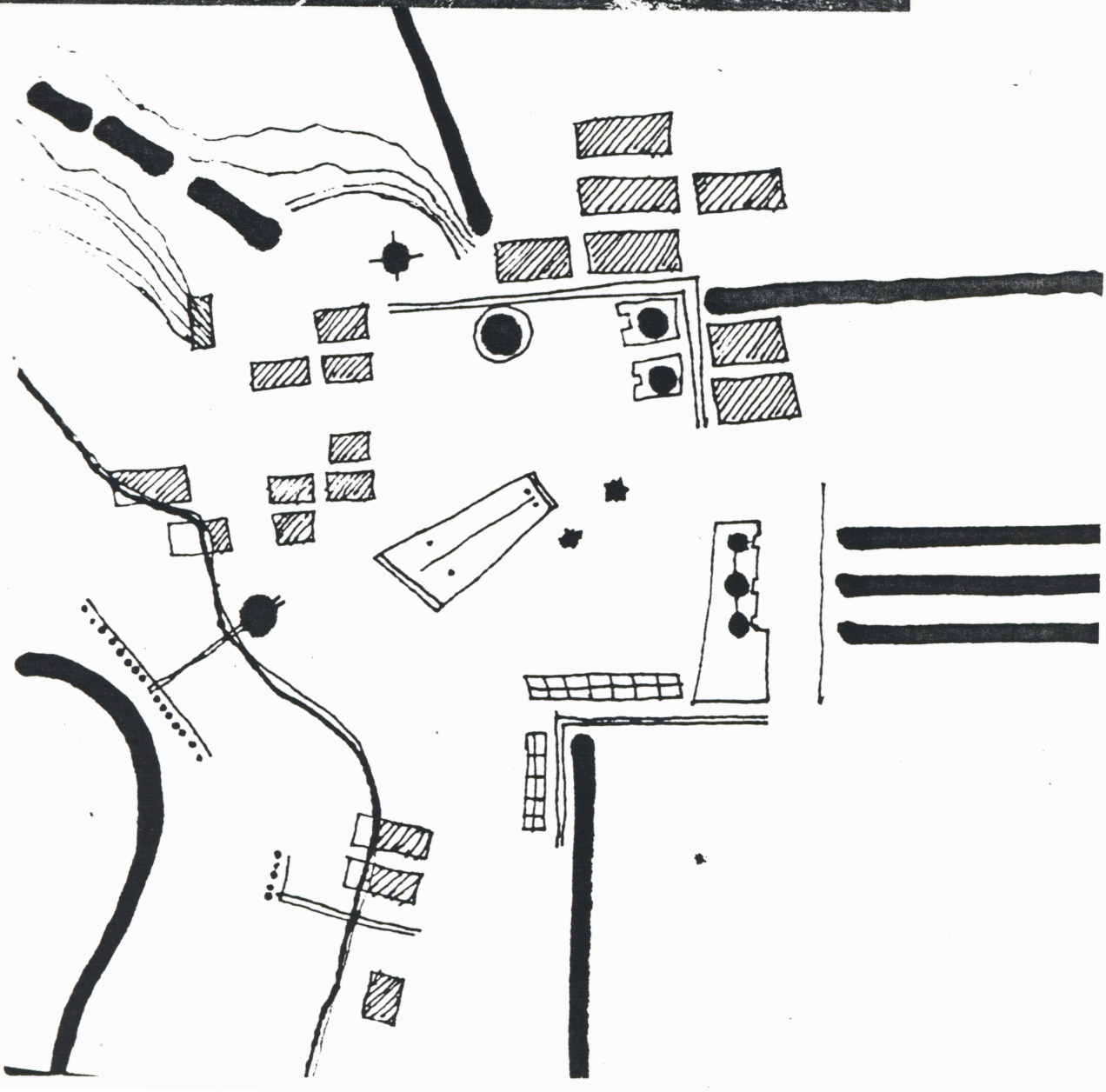
Increased activity and noise will definitely have an effect on the quality of life in the surrounding area and on the specific site. These effects will be both positive and negative. Some outlying areas will benefit from a reduction in automobile traffic, while other corridor areas will experience increased ground and air noise. Although central areas will also have more noise, the benefits from increased social and commercial activity will offset those negatives. The existing city will see a large increase in growth as it merges with the transportation center. Providing needed services and residences to support the population increase.

PLACE

To determine a comprehensive final design solution it is necessary to apply all pertinent known information within the framework of place making images. The broadest image making concept is that of a "traditional town center". All activities and spaces should reinforce and compliment the transportation center as a focal point. The transportation center itself should allow for ease in transfer and simplicity in circulation. The overall environment should invoke positive reactions from the users. Creating a balanced whole by applying the best of man, nature, and man-made. Gathering spaces should be pedestrian scaled, filled with elements of nature, high technology and art. The facility should through its form, represent the idea of movement. This could be shown as a point on a line, a continuum, or as a node. Building techniques implemented also determines the facility as a "place". The techniques and materials used should be of high technology and possible futuristic in nature.







PRE-DESIGN

PROGRAM

In order to determine a program for a large transportation center, urban model requirements and place making images must act as a basis. The overall center has general reinforcing spaces as well as specific transportation spaces. Broken down into general and specific categories, relating to the activities of the larger complex and to that of the specific transportation facility.

GENERAL COMPONENTS

Attributes and activities which are necessary in order for a town center to work as intended can be very numerous and varied, but there are some which definitely should be included. They should entice the surrounding population to visit and use the specific transportation facility. These activities are shopping, housing, business, lodging, entertainment, education, and culture. The increased surrounding community and daily travelers will providing a market for this development increase. The intent of including these components is to provide a guideline for possible development surrounding the transportation center. The actual establishments to be included will develop from community needs and wants, as well as the supporting market.

SPECIFIC COMPONENTS

The transportation facility itself will contain a number of the general activities, but on a smaller scale than could conceivably happen in the surrounding area. These activities and spaces should include a central interior lobby, waiting/loading areas, ticketing area, display areas, drop-off area, offices, central exterior "square", various shops and restaurants, open market, vehicle maintenance shops, parking, power plant, and a waterside park.

1. CENTRAL INTERIOR LOBBY

The central lobby space should be the major focus of interior activities. It is the meeting and transferring point for all passengers. An open feeling and free-flowing circulation should prevail. Other areas encompassed within or adjacent to this space are waiting areas, ticketing, and displays. 10,000 s.f. of area is needed.

2. WAITING/LOADING AREAS

The various waiting areas should correlate with the loading areas for each mode of transportation. There should be an area for train, helicopter, ferry, and bus loading, as well as a general waiting area. Plenty of seating, services, and information should be offered. 4 areas at 2000 s.f. each for 8000 s.f. total.

3. TICKETING AREA

The ticketing area should be in a high visibility and frequently traveled area. Adequate ticket booths, baggage handlers, as well as automated ticket machines should be included. Departure and arrival information should be plainly visible from a far distance and easily understood. 4000 s.f. of area is needed.

4. DISPLAY AREAS

The purpose of the display areas is to expose and demonstrate to the traveler new advents in technology and art. Various different items could be displayed here, depending on the needs and wants of the public. These areas should catch the attention and wonder of the passerby, yet be passive enough to foster relaxation and contemplation. Three areas at 1000 s.f. each for 3000 s.f. total.

5. DROP-OFF AREA

The drop-off area should be closely linked to the interior lobby, ticketing area, and parking structure. Primary use should be for commuter drop-off, and taxi loading. 50 cars parked for 20 minutes each requires 200 linear feet of curb parking.

6. OFFICES

Administrative services and other offices should be included in the form of an office block. Offices for such things as security, medical, maintenance, and travel services should be included. Being basically private spaces, efficiency and convenience should be strived for. 20 offices at 150 s.f. each requires 3000 s.f. total.

7. CENTRAL EXTERIOR SPACE

The central exterior space is the outside compliment to the interior lobby. It should be formed as public space by the adjacent buildings, paying close attention to pedestrian elements and scale. It should be the focus of street activities such as cafes, shopping and entertainment. Close proximity between this space and the interior lobby would be beneficial for both spaces and convenient for the user. Other areas encompassed within or adjacent to this space are shopping, restaurants, market, and parklike areas. 10,000 s.f. of area is needed.

8. SHOPS-RESTAURANTS

Allocations should be met for a limited number of retail shops and eating establishments. These areas should embrace the public space and be individual in character. Business should be geared toward the traveler as well as the community resident. 6 interior shops at 600 s.f. each for 3500 s.f. total, and 10 exterior shops at 1000 s.f. each for 10,000 s.f. total.

9. OPEN MARKET

There should be a specific area for open-air market types of activities. Close proximity to existing shops and the waterfront would contribute to an interesting lively atmosphere. 3000 s.f. of area is needed.

10. VEHICLE SERVICES

Each separate transportation area should include space for vehicular repair and servicing. Close in location to the loading area, it should be used for fueling, repairs, and storage. Three areas at 5000 s.f. each for 15,000 s.f. total.

11. PARKING STRUCTURES

The parking structures should be located in the same general area, close to the central exterior space. Set back into the existing hill the structures themselves should have the minimal visual impact possible Efficiency should be used in automotive circulation and parking arrangements. 4000 cars at 250 sq ft/parking space for 1,000,000 sq ft total.

12. WATERSIDE PARK

An urban type waterside park should include both built and non-built spaces. Featuring elements of trees, vegetation, water, seating, open and enclosed spaces, as well as river views. Increasing the harmony and interconnections between man and nature. Close proximity to the exterior "square" and existing nature areas are desirable.

13. POWER PLANT

Space should be allocated in order to house power generating equipment. Enough energy should be provided for the continual operation of the facility. 20,000 s.f. of area is needed.

SURROUNDING AREAS

There are three important areas which surround the waterfront site, the existing city(14), nature area(15), and the Sing Sing Correctional Facility(16). The existing city is to the west of the site, overlooking the waterfront. A pedestrian connection from the city to the transportation center should be established. Nature areas occur to the north of the site, and should be used for community purposes. A link to the center could happen through the urban park and other waterfront activities. The old Sing Sing Correctional Facility is directly to the south of the site. It is slated to be converted into a local museum. Direct access between the exterior "square" and the museum is very desirable.

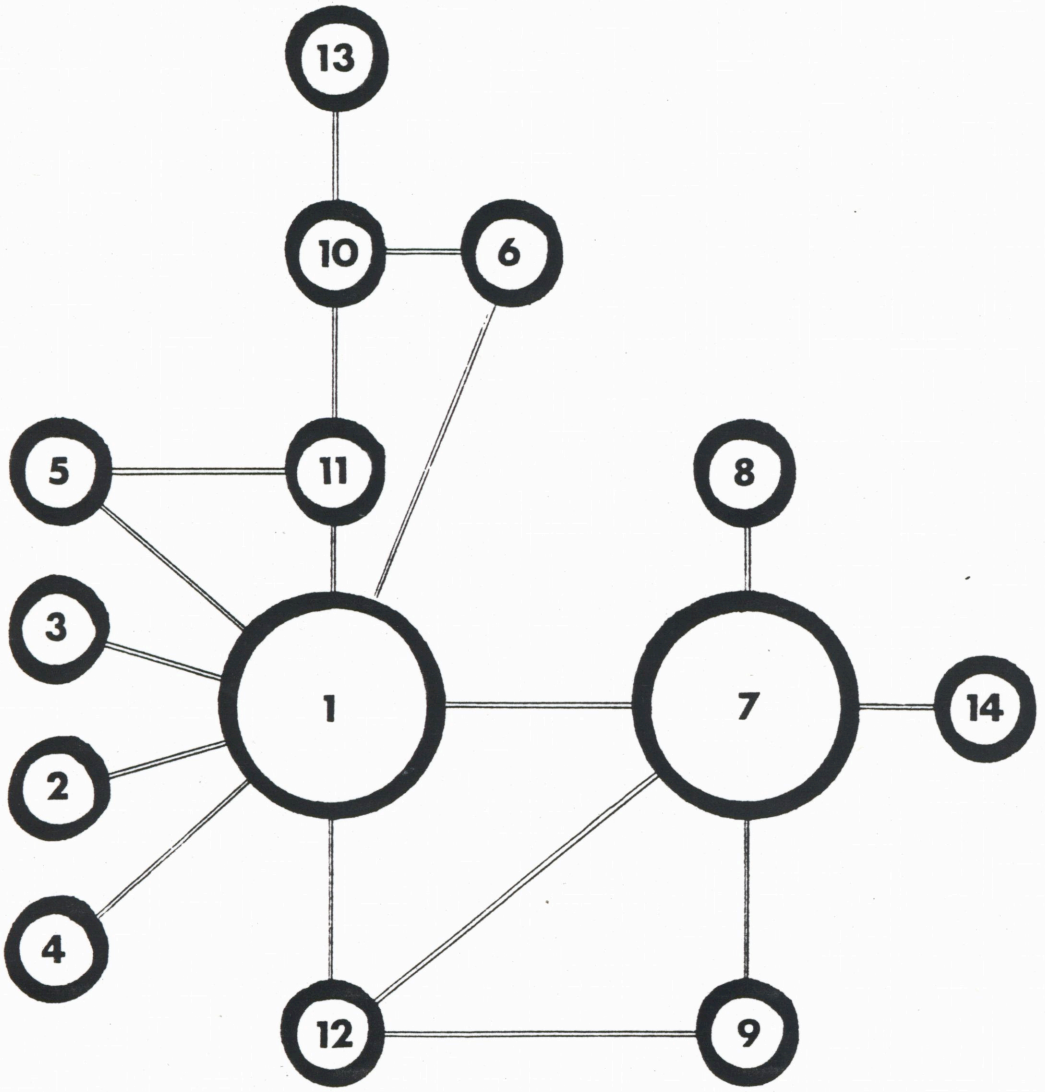
MAXIMUM CAPACITY

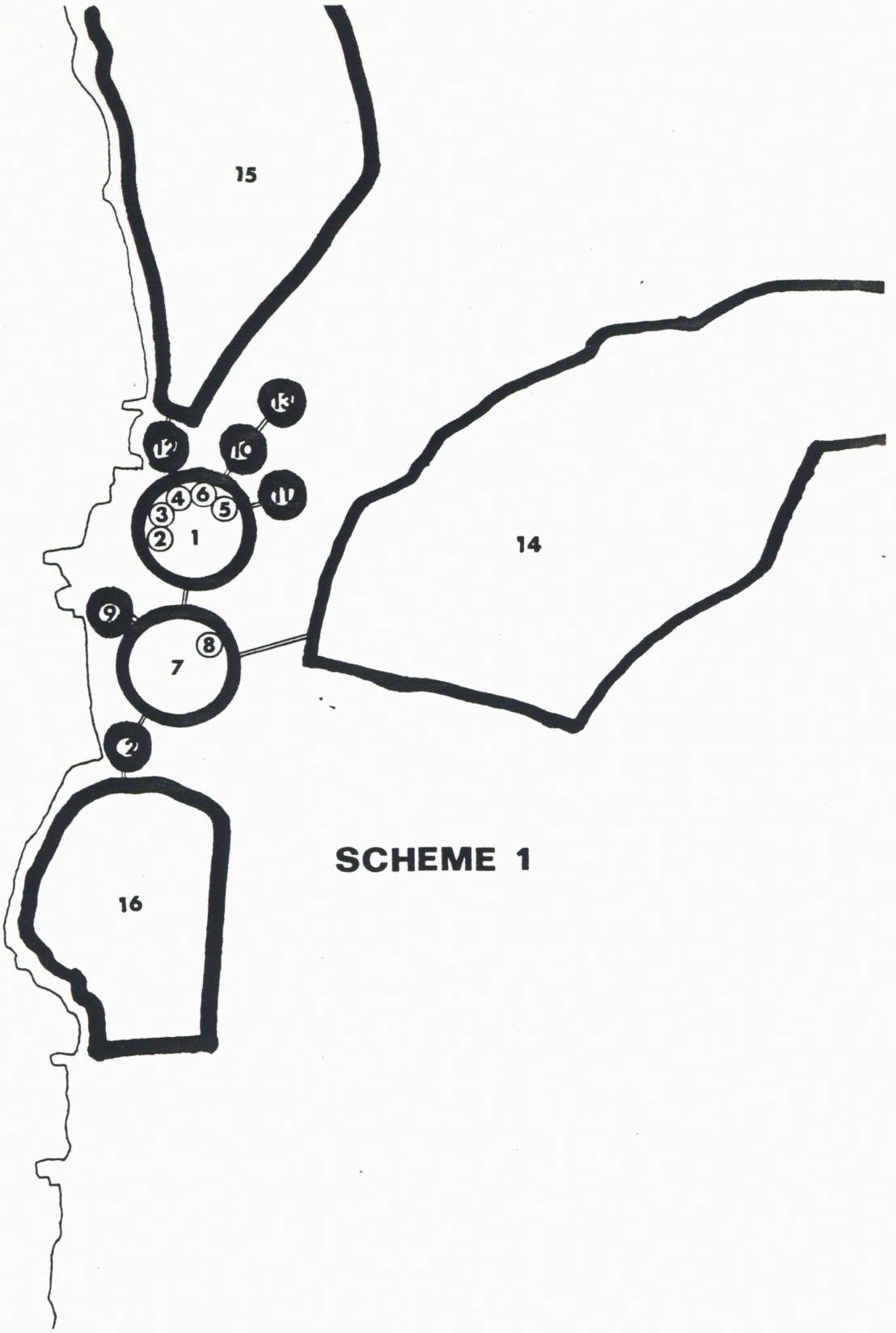
The maximum capacity of the transportation facility is based on estimated calculations of the number of people expected during the peak hours of 7:00-9:00 A.M.

4 northbound trains/hr with 200 people/train =800 people/hr
4 southbound trains/hr with 500 people/train =2000 people/hr
2 cargo trains/hr with no people
2 northbound water ferries/hr with 100 people/boat =200 people/hr
2 southbound water ferries/hr with 150 people/boat =300 people/hr
6 radial heli-flights/hr with 50 people/flight =300 people/hr
=3600 people/hr

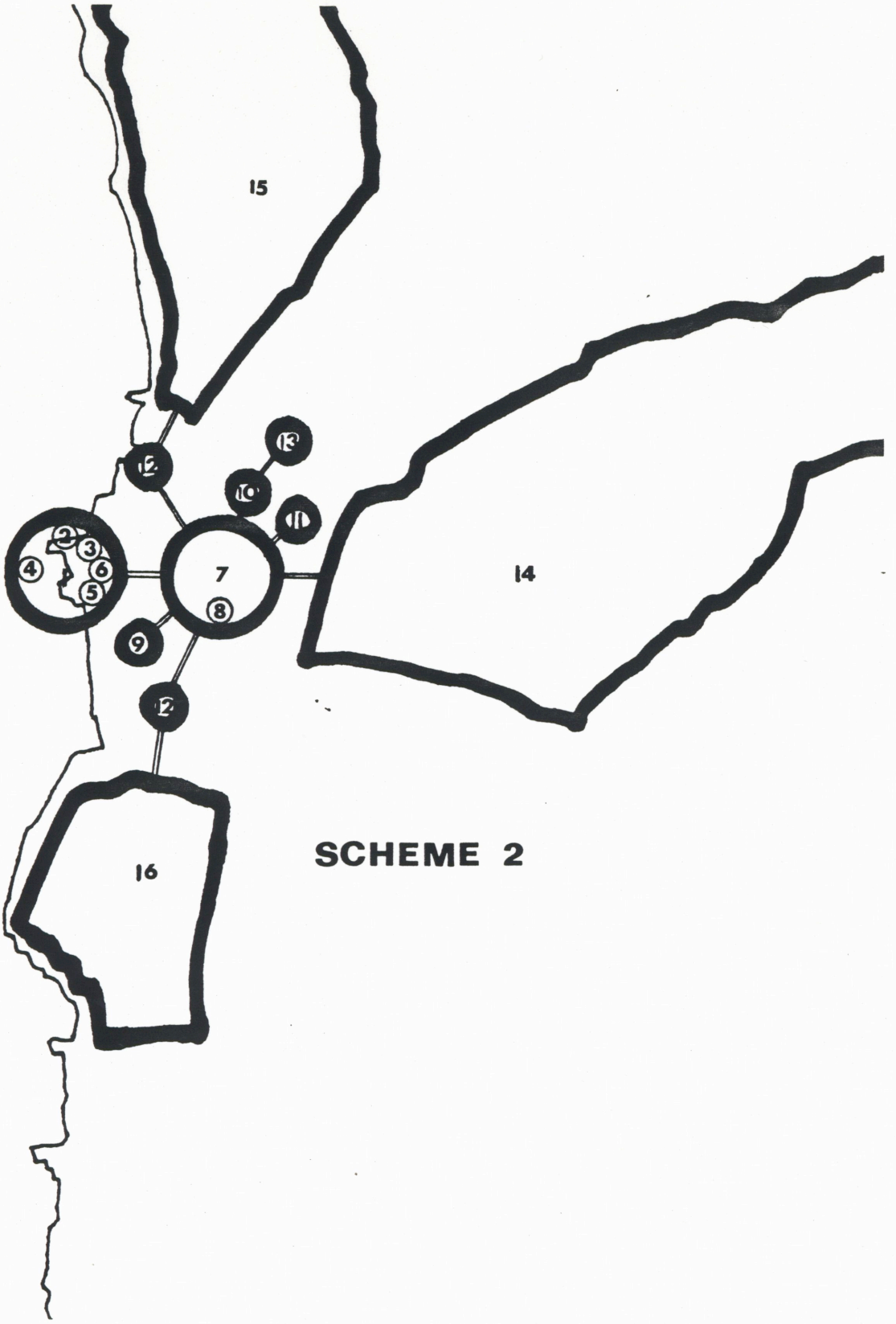
SCHEMATICS

It is important to diagrammatically show the relationships between required spaces. Three different schematic plans can assist the design process by allowing visual comparisons. The end result being one scheme or a combination of schemes to be used for the final design.

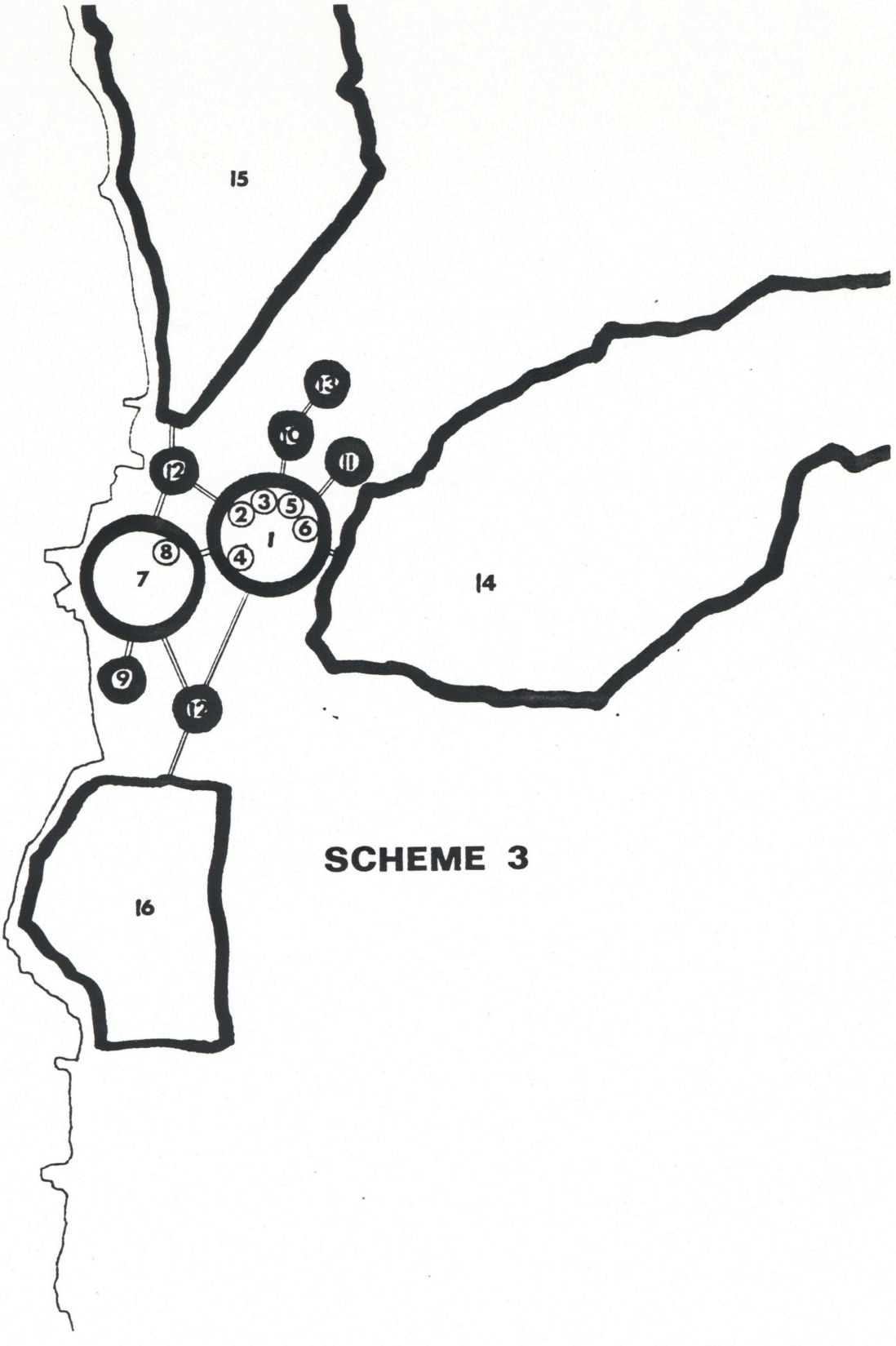




SCHEME 1



SCHEME 2



SCHEME 3

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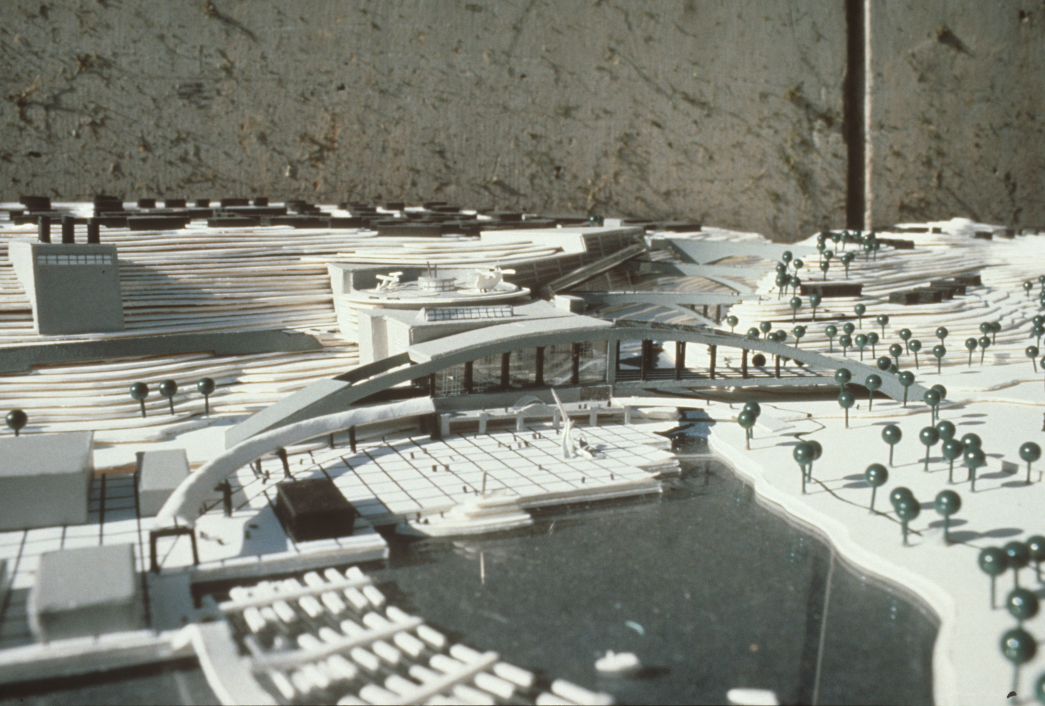
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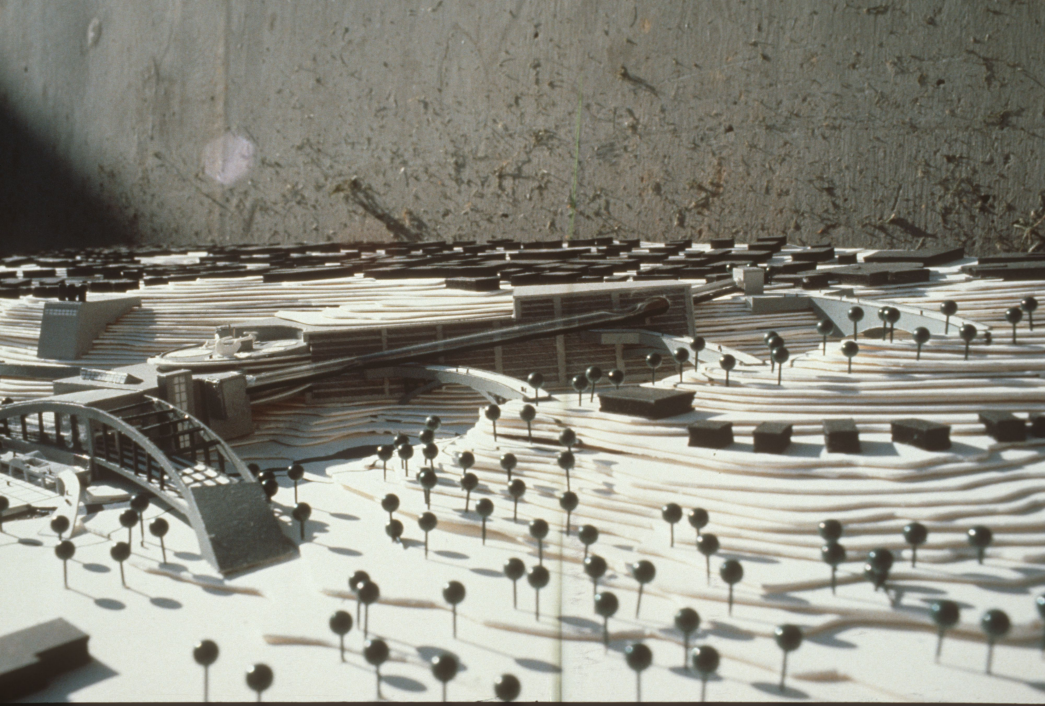
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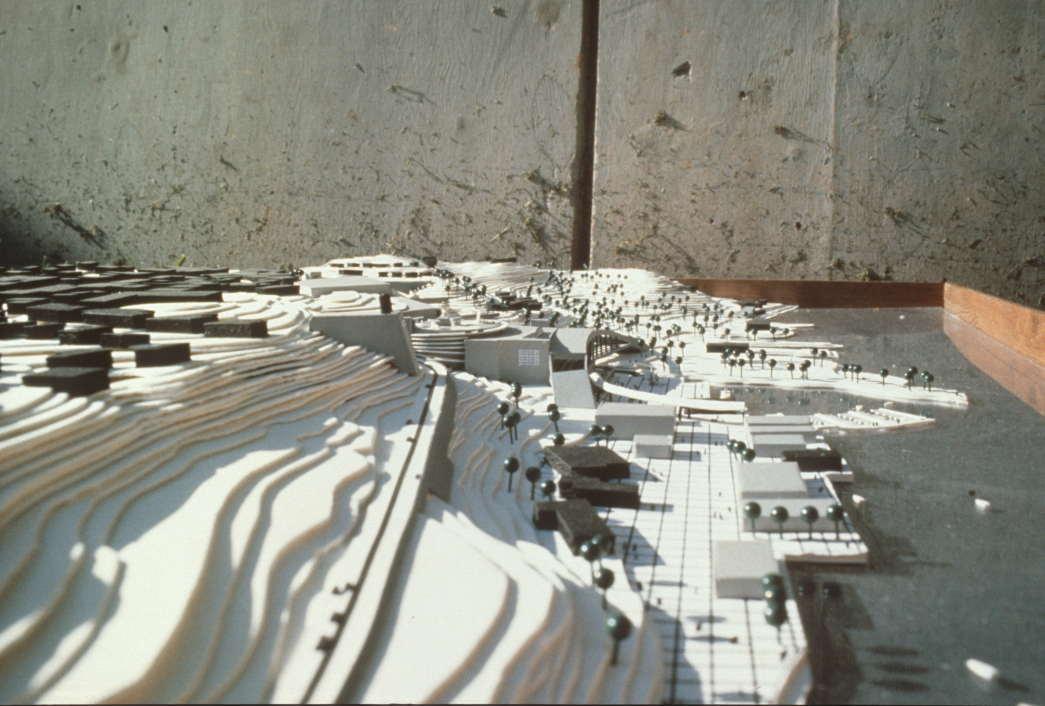
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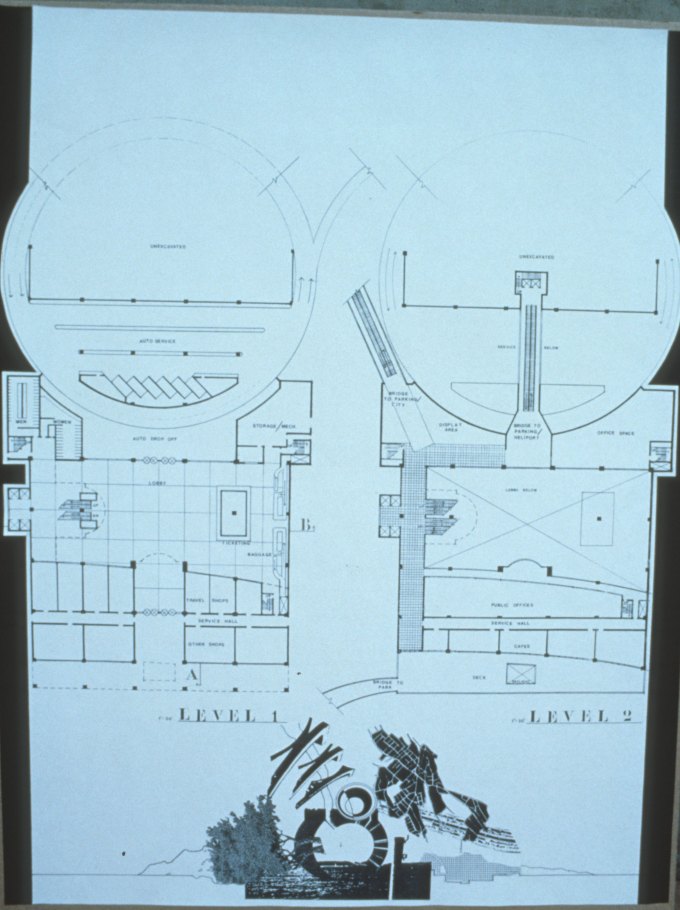
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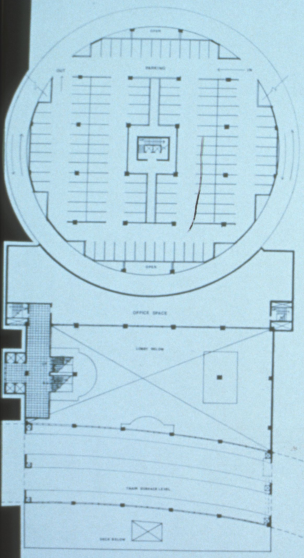
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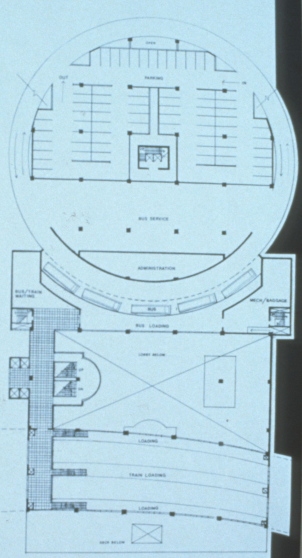




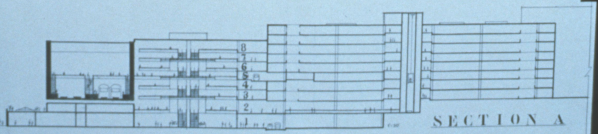

UNEXCAVATED
AUTO SERVICE
MEN
STORAGE / MECH.
AUTO DROP OFF
LOBBY
TICKETING
B
BAGGAGE
TRAVEL BOOTH
SERVICE HALL
OTHER SHOPS
A
UNEXCAVATED
SERVICE
BELOW
BRIDGE TO PARKING / CITY
DISPLAY AREA
BRIDGE TO PARKING / HELIPORT
OFFICE SPACE
LOBBY BELOW
PUBLIC OFFICES
SERVICE HALL
CAFES
DECK
BRIDGE TO PARK
LEVEL 1
LEVEL 2



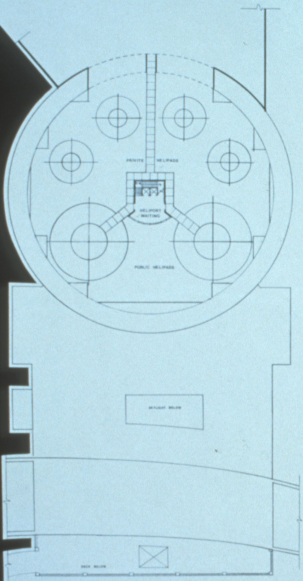
FOR LEVEL 3–8



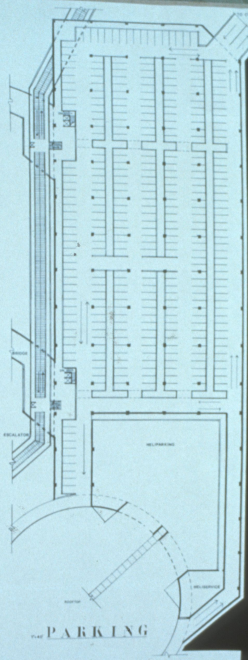
FOR LEVEL 5



SECTION A



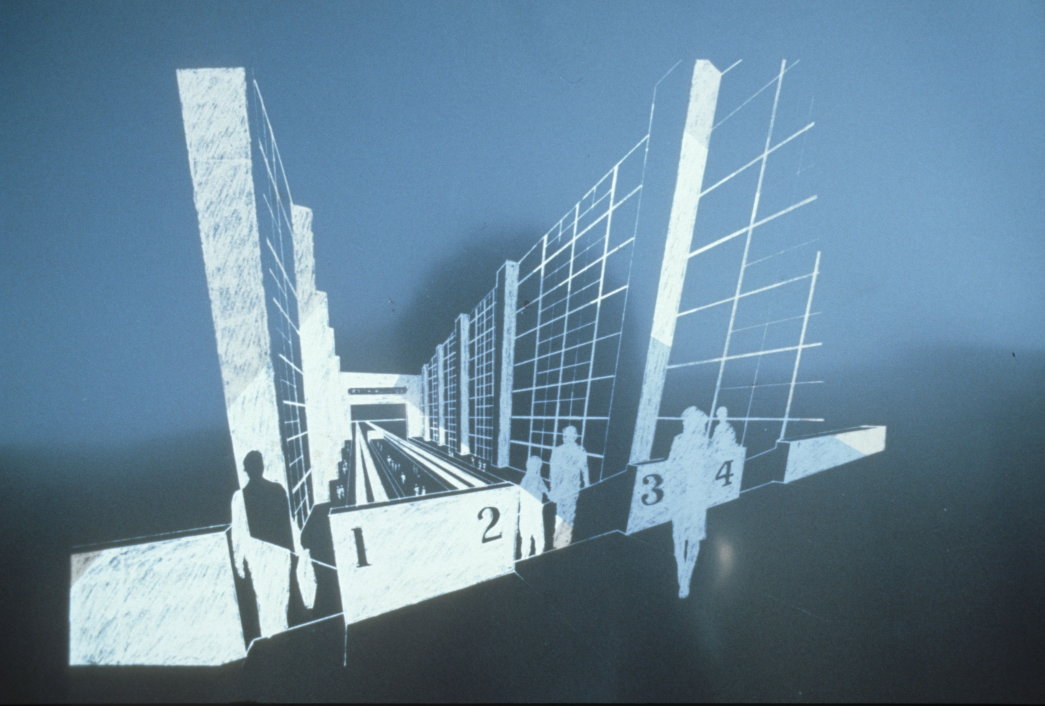
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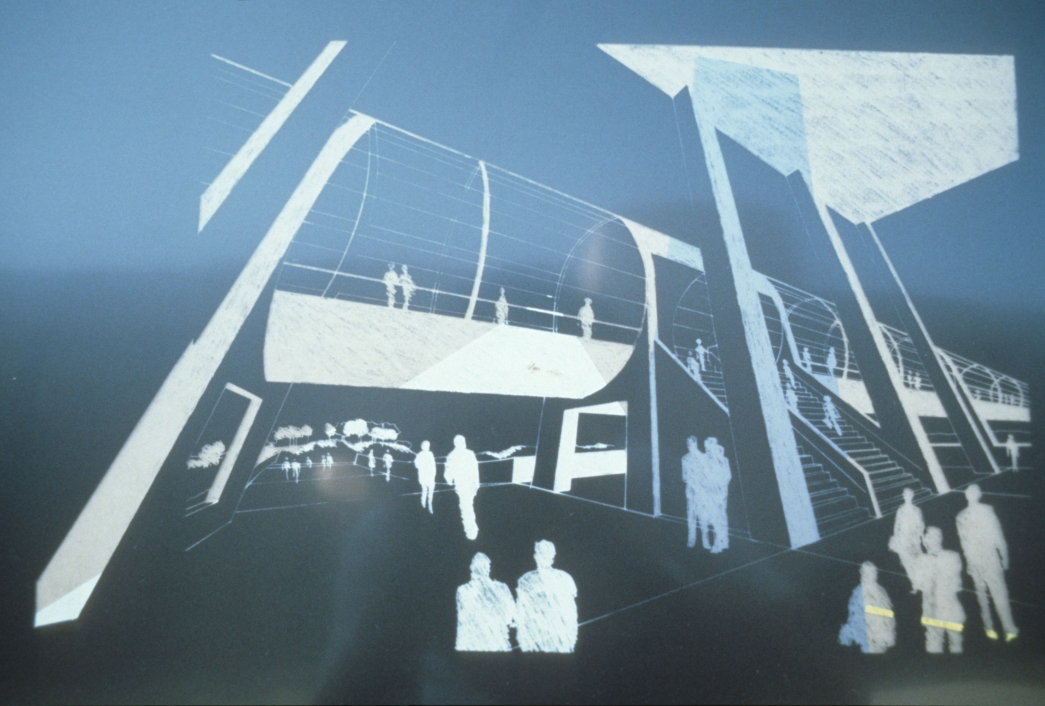


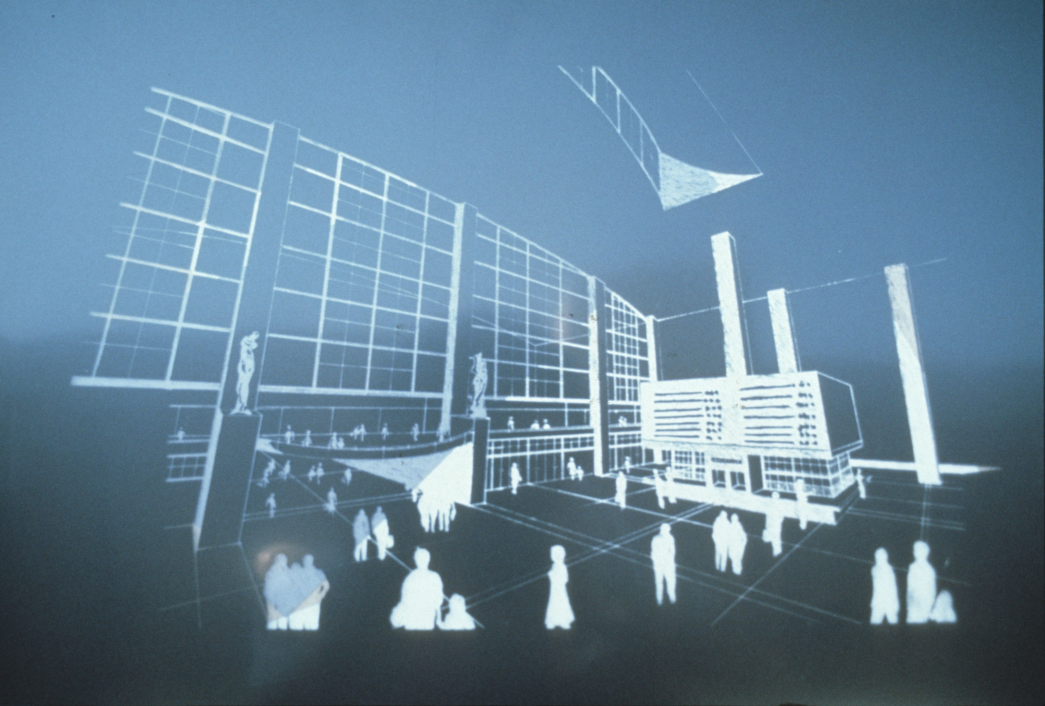
PARKING

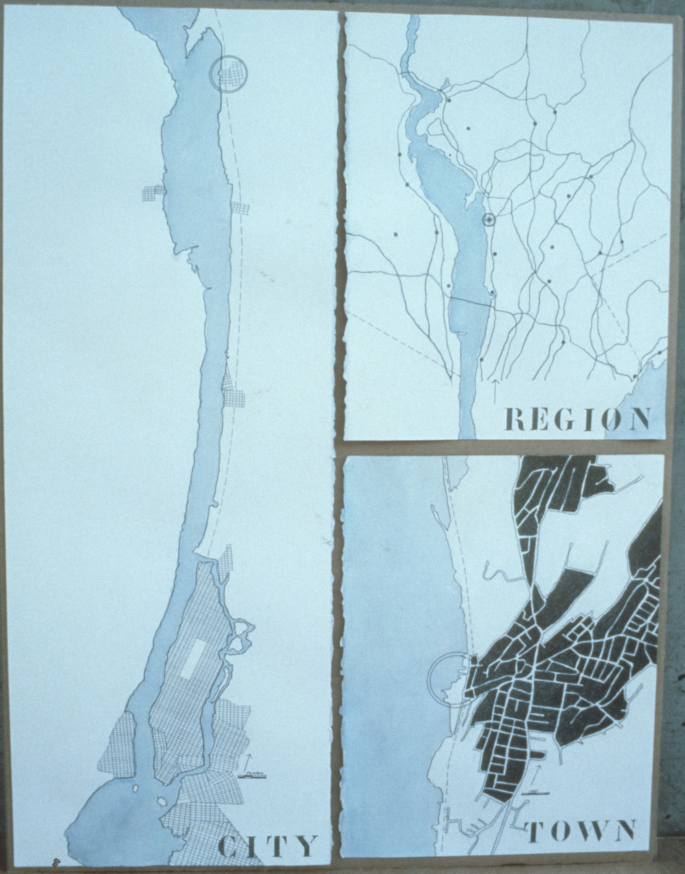


SECTION B


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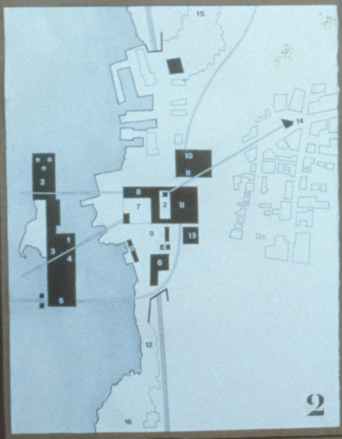





REGION
CITY
TOWN







1. CENTRAL RAILWAY HALL
Adequate railway space should be the major focus of railway activities. It is the starting and transferring point for all passengers. Its name, feeling and time-keeping orientation should prevail. Other railway accompanied within or adjacent to the space are waiting areas, ticketing and bookings. 12,000 s.f. of area is needed.

2. RAILWAY LOADING DOCK
The railway loading dock connects with the loading areas for each mode of transportation. Space should be so wide for train, information, ferry and bus loading, as well as a general waiting area. Paving of loading sections, and entrance/exit should be inferred. 1 place at 3,000 s.f. each for 9000 s.f. is need.

3. TICKETING AREA
The ticketing area should be in a sign enabling and transparent, inviting feeling. Its location should be easily recognized by all passengers, as well as pedestrians and motor vehicles, should be necessary. Signs/clear and simple information should be posting media from a far distance and easily readable. 1000 s.f. of area is needed.

4. BAGGAGE AREA
The entrance or the checking areas is to organize and measurement to the counter and elevator in technology and etc. Various different sizes used for displayed items, depending on the needs and wants of the users. Various areas should catch the entrance and exterior of the surroundings, and its provide enough to further interaction and accommodation. Total area of 1500 s.f. and for 1500 s.f. needs.

5. SHOP SPACE
The shop/gift space should be closely linked to the leisure hiking, the shop/gift and parking amenities. Entering can always be for customers' drop off, and loading. 10 unit places for 20 stores in each modules 250 linear feet of cost parking.

6. OFFICE
Administration entrance and other offices should be inclined on the form of an office block. Offices for each riding or existing landlord performance, and inland activities should be included. Riding learning, priority access, efficiency and convenience should be inferred for. 25 offices at 120 s.f. each needed. 3000 s.f. needs.

7. CENTRAL HEATING AREA
The central heating area is the access compartment to the exterior facility. It is convenient to public space by the adjacent buildings. Parking, it is convenient to pedestrian elements and roads. It should be the center of mixed activities such as visits, shopping and entertainment. Those providing services like space and the like. Heating areas should be controlled for both service and the public. Total 2000 s.f. should accommodate similar to other. Offices and are shopping, restaurants, saunas, and satellite areas. 10,000 s.f. of area is needed.

8. VARIETY ENTERTAINMENT
Attractions should be used for a limited number of retail shops and eating establishments. Indoor public should maximize the public space and be subdivided as interactive. Services should be general located the counter as well as the surrounding outdoors. A exterior shops at 500 s.f. each for 2500 s.f. retail, and 10 exterior shops at 1500 s.f. each for 15,000 s.f. needs.

9. MOTEL AMENITY
There should be a specific area for users on various types of activities. Those providing a family atmosphere. 5000 s.f. of area is needed.

10. PUBLIC AMENITY
The important transportation area should isolated space for vehicular travel and servicing. There is location by the loading area. It should be used for loading, repairs, and storage. Three areas at 5000 s.f. each for 15,000 s.f. area.

11. PARKING CONCOURSE
The parking structures needs be located in the most general area close to the central activities space. Not each site the parking will be structured. Accessories should have the minimal circuit travel possible. Efficiency should be used to accessories circulation and parking arrangements. 5000 cars or 250 sq ft parking space for 1,250,000 sq ft total.

12. MAINTENANCE YARD
Maintenance yard should provide access to/with both land and sea level to other type automobile and general circulation, vehicles, washing, space, and vehicular circulation, and to each other. Surrounding the surrounding and other connection between area and sectors. Trees proceeding to the exterior "space" and watching nature spaces are desirable.

13. FERRY PORT
Space should be allocated in order to ensure proper goods/servicing, equipment. Enough serving should be provided for the continued operations of the landing. 15,000 s.f. of total is needed.

ARCHITECTURE DESIGN
There are three important areas needed surround the waterfront city, the central city, industrial, suburbs around City and The Ring Ring Transportation Technologies. The entering city is in the west of the city, overlooking the waterfront. A pedestrian connection from the city to the transportation center should be established. Indoor access area is in the north of the city, and should be used for industrial activities. And the north of the city, and should be used for industrial activities. And the city is the center could express through the visitor park and ship transportation. The Ring Ring Transportation Technology is entering in the north of the city. It is entered to be established with a ferry terminal. Direct access between the exterior "space" and the terminal is very desirable.



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