

NEEDS AND GOALS IN URBAN ARCHITECTURE

by MELISSA MARY SOREM UNDERHILL
B.A., Vassar College, 1967

SUBMITTED IN PARTIAL FULFILLMENT
OF THE REQUIREMENTS FOR THE
DEGREE OF BACHELOR OF ARCHITECTURE

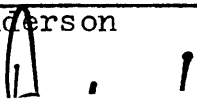
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June, 1971

~~Department of Architecture, May 26, 1971~~

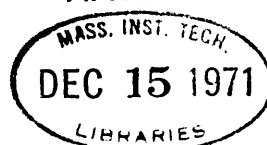
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by MELISSA MARY SOREM UNDERHILL
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SUBMITTED TO THE DEPARTMENT OF ARCHITECTURE ON MAY, 26,
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This thesis is concerned with methods of describing the environment which would aid the designer/planner to design/plan the urban environment with reference to the perceptions of the user as well as to architectural styles and economic needs. I have chosen for the thesis a site in Manhattan with which I have dealt in reference to the central issue of relationships on all scales: of a building to the city, of present local patterns to altered future ones, of building masses to each other, of people to building masses, of people to people within a framework.

I have looked into urban site studies which measure the environment in terms of frequency of elevators, piazzas above and below ground, and reach conclusions about what ought to go on what site and what physical forms they should take. It is not an illogical process, but it is a disturbing one, measuring things by numbers of telephone calls and amounts of garbage, for it operates exclusively within a framework of traditional priorities, seeing the future of the cities as lying within the power of large companies and offering as consolation to the people only the hope that in the gross manipulation of glass slabs, they will be left small bits of mezzanine levels and the false claim that the city is responding to the pedestrian user. This kind of study is useful, but something is missing and I have seen the need as being for a new emphasis on the response of the user to his surroundings.

It seems clear that architect/planners are not the only ones who should be looking at sites. Users should have some part in showing us what is really happening. The result in terms of my thesis was a film made by thirteen users of the site. It represents an imperfect beginning of the search for a tool with which we might see the city as a use-place through a set of user perceptions and as quite another thing than what it appears in diagrams or in the minds of architects/planners.

I have attempted to use this film tool. I have tried to put people into categories with respect to how they look around them.

I have attempted to make some generalizations from an analysis of the film which could amount to a way of looking at the film which might shed some light on the field of designing for users through a heightened understanding of their perception patterns.

I have attempted to use in a design sense some generalizations from the film, plus attitudes of my own towards architectural design in the city.

Thesis supervisor: Professor Lawrence B. Anderson
Title: Dean of the Department of Architecture and Planning

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I have been working on methods of describing the environment which would aid the designer/planner to design/plan the urban environment with reference to the perceptions of the user as well as to architectural styles and economic needs. I have chosen for the thesis a site in Manhattan which I will describe here as I have described it to myself; for this description embodies the central issue of the thesis. It is the issue of relationships on all scales: of a building to the city, of present local patterns to altered future ones, of building masses to each other, of people to building masses, of people to people within a framework. I am interested in a process which allows makers of the urban environment to think in terms of relationships rather than single entities, which allows them to deal simultaneously with all scales.

I have chosen a site in the Central Business District, on the East River, South of the U.N. More precisely, it covers the seven blocks on the River between 42nd & 34th Streets. *page 6* Getting closer you begin to see the position of the site on the edge of the grid between the city and the FDR Drive on the East and

West, between to major crosstown streets on the North and South. *page 7*

The next few diagrams have been extracted from a study done by the Regional Planning Association of New York City. They are published in book form under the name of URBAN

DESIGN MANHATTAN. *page 7*

Here you see more clearly the Con Edison plant as it stands now on the site with the Steam and Water works below it and other such light industrial establishments. *page 8, B.*

This shows the site again as it appears in the context of what the study calls functional areas: a gross representation of uses. We see that it is a bit of left over industrial left stuck between institutional uses to the North and South, with residential uses to the immediate West and office uses following further to the West. *8A, 9, 10B, 11*

Shows the position of the site in relation to the Island's rapid transit system. The site does not lie on any subway line , but is accessible by 1st and 2nd Avenue buses. At present, I am told, most people working at the United Nations arrive by subway at Grand Central Station and walk the five blocks over to the River. *Page 12-A*

This condition results in this diagram of accessibility of the site to those using the rapid transit system. As we see, it is not deemed at all accessible under present conditions. *Page 12-B*

This is a diagram of land ownership which shows the majority of the site to

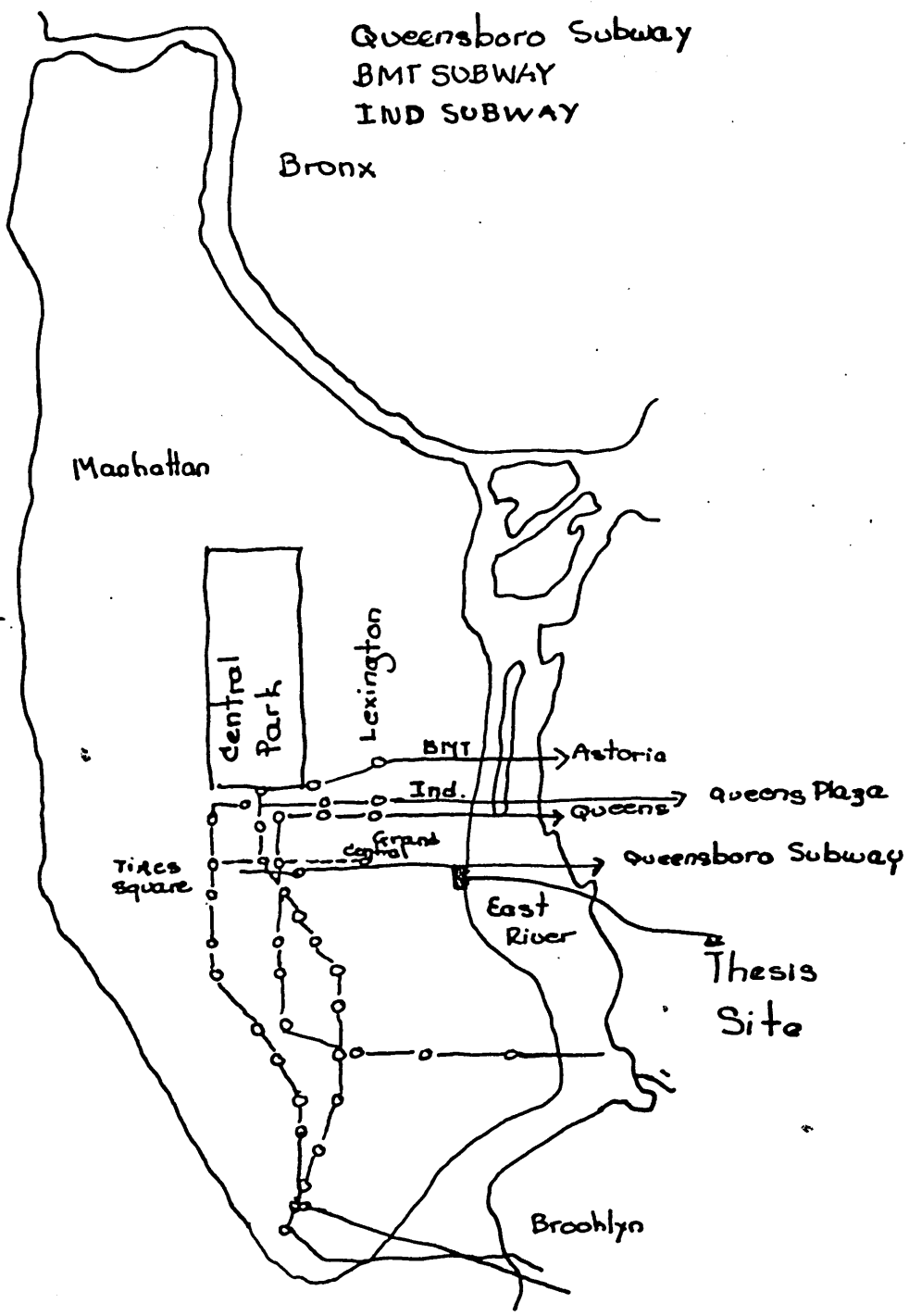


Page 6

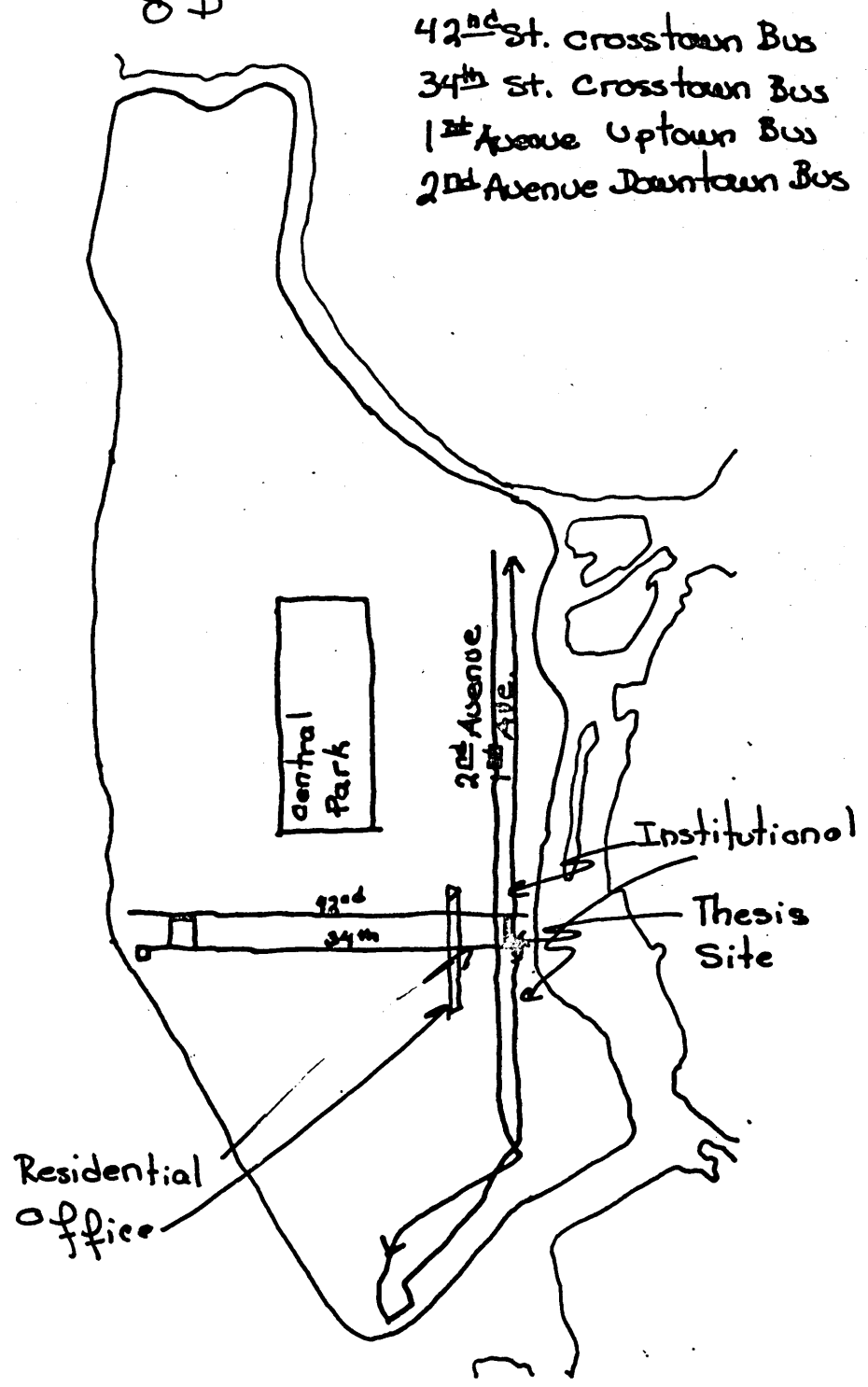


Page 7

8A



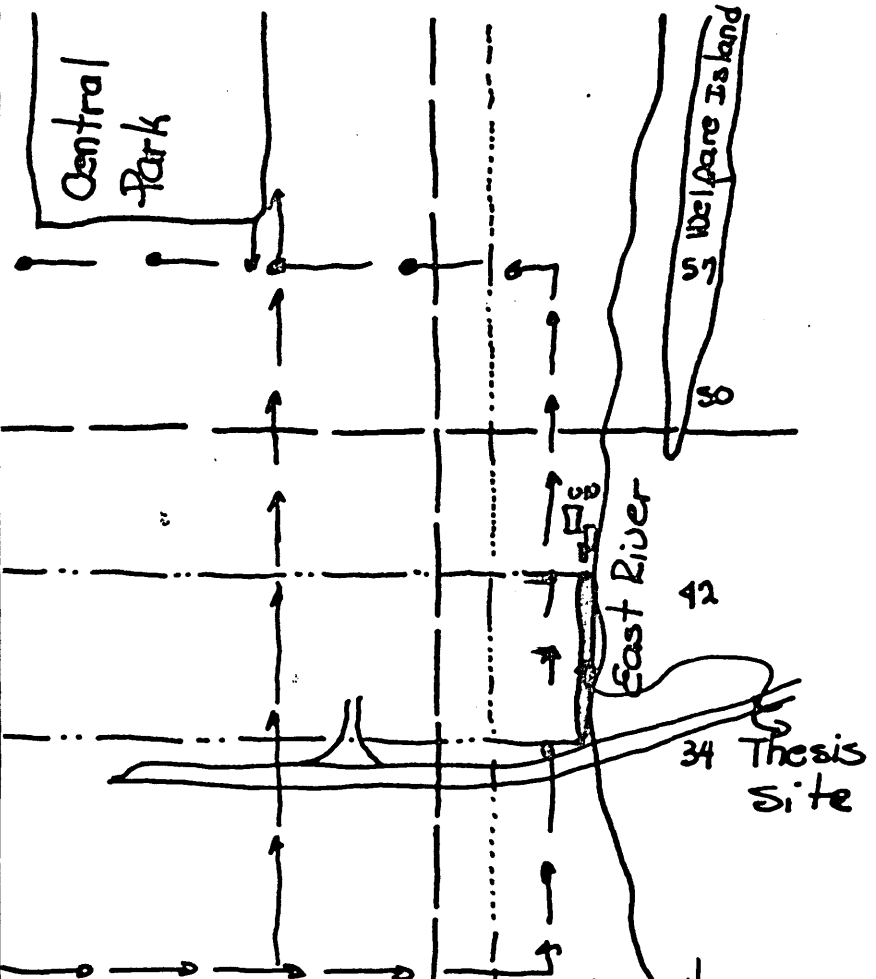
8B



Future Site Possibilities in Relation To:

Mass Payment Systems

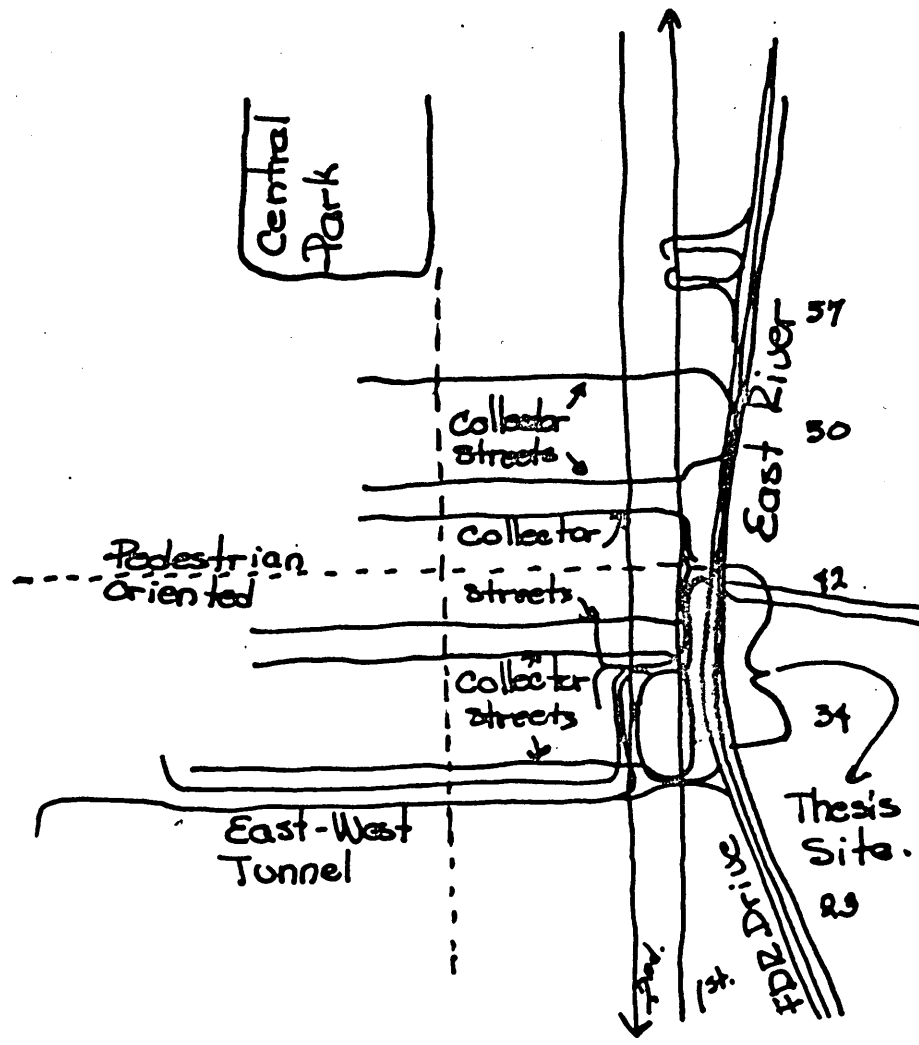
9A



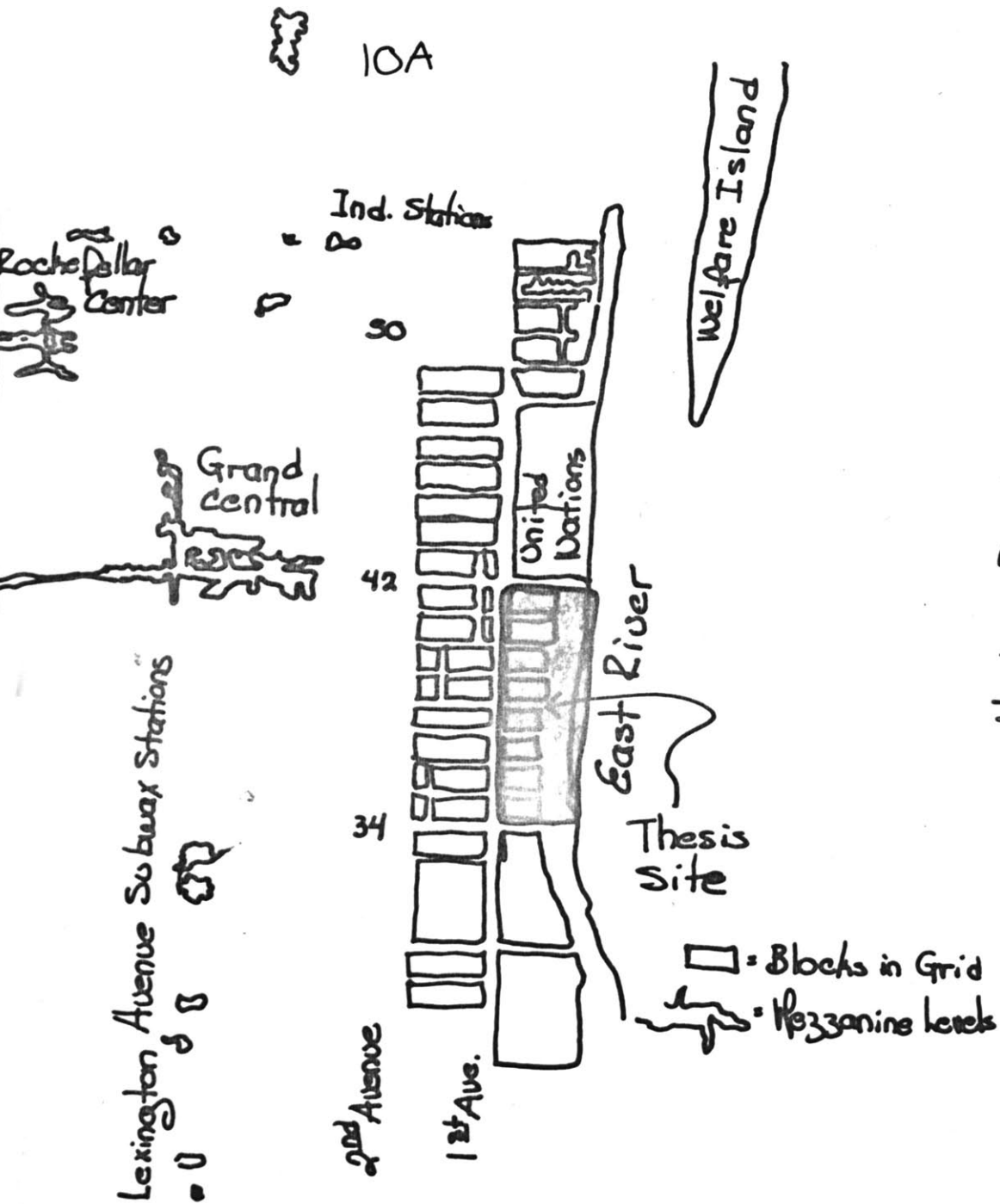
- = Commuter or Regional Rail
- = Gravity Vacuum Tubes
- = Metropolitan Subways
- → = Mechanically Aided Pedestrian Systems
- · — · — = Crosstown shuttles

Individual Payment Systems

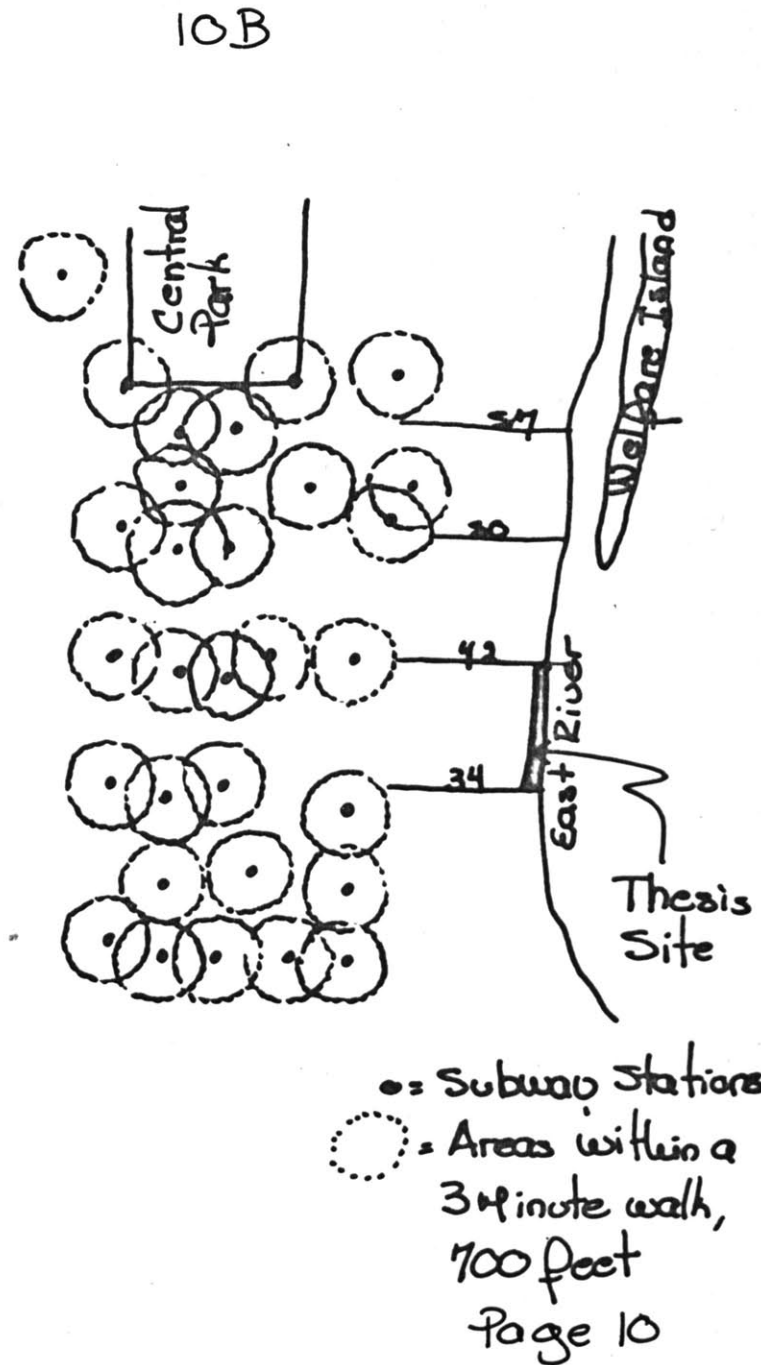
9B



Existing Mezzanines One Level Below Ground

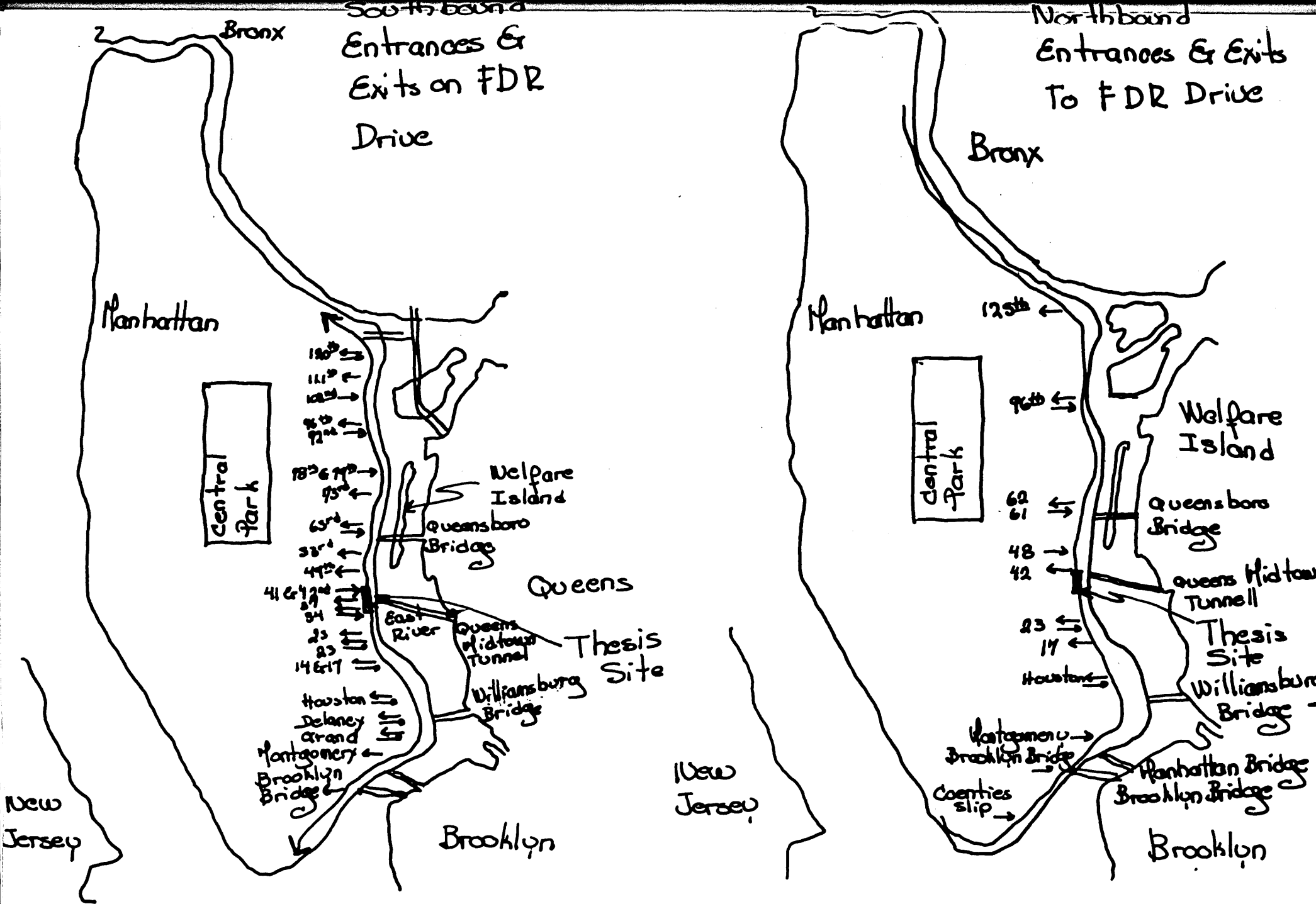


Sphere of Influence of Subway Stations

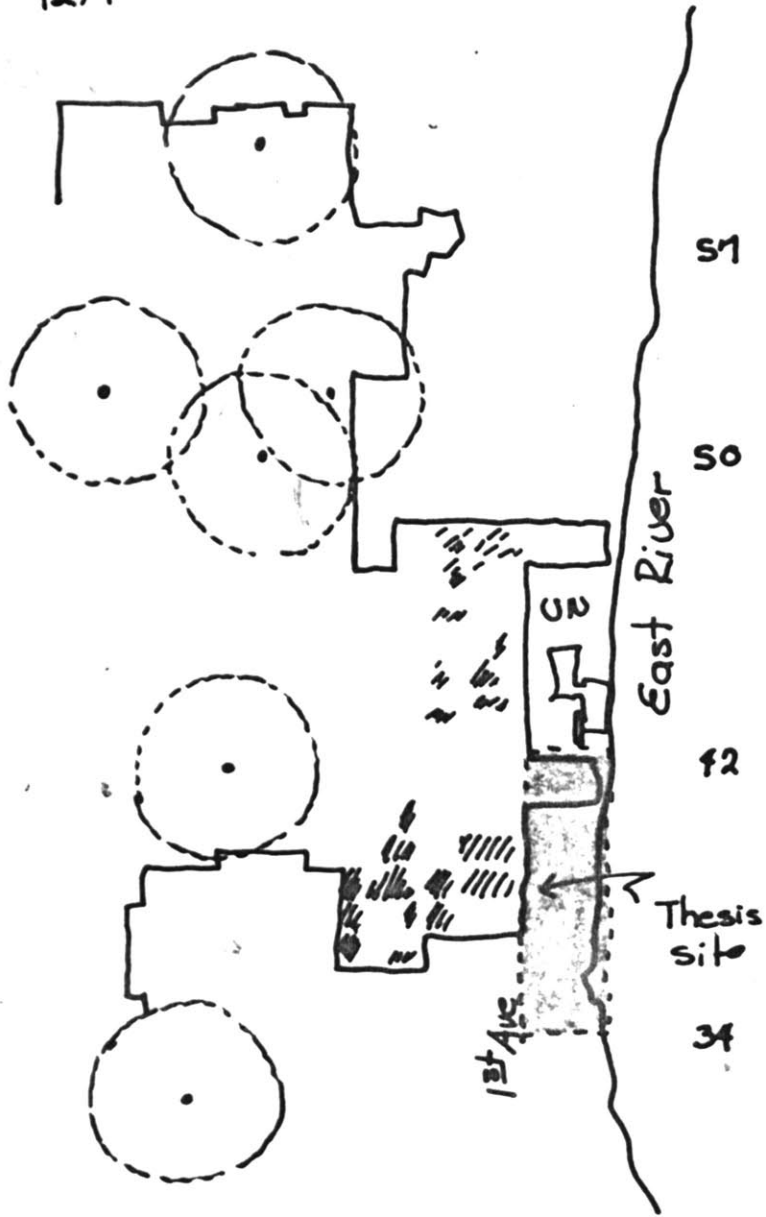


Southbound
Entrances & Exits on FDR
Drive

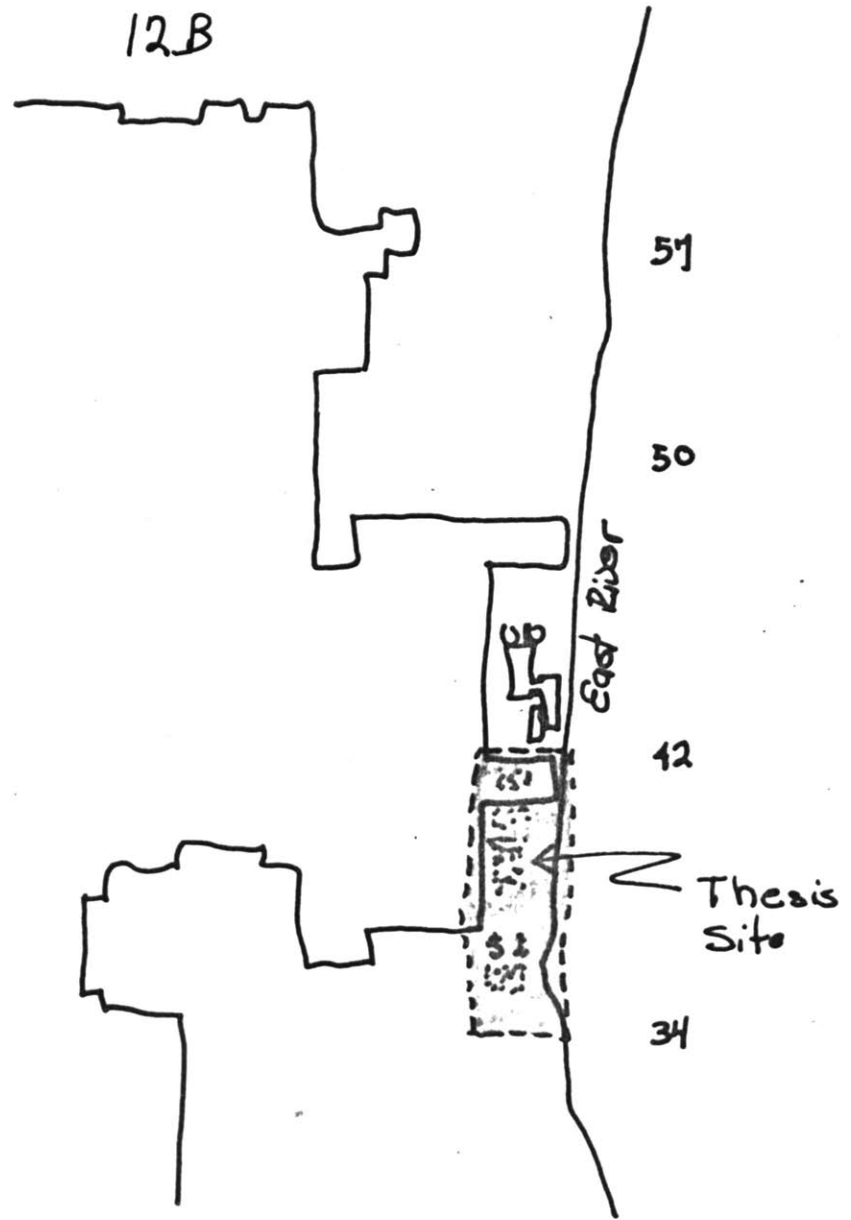
Northbound
Entrances & Exits
To FDR Drive



12A



12B



- = Accessibility in terms Subway
- = subway stops with accessible areas
- = Thesis site
- = soft areas

- = Public Ownership within the Thesis Site
- = lines of Accessible Area

be publicly owned , making it appear quite hopeful for development in terms of compiling a package of land of the size which I have previously stated as being suitable for consideration on the urban scale. Page 11

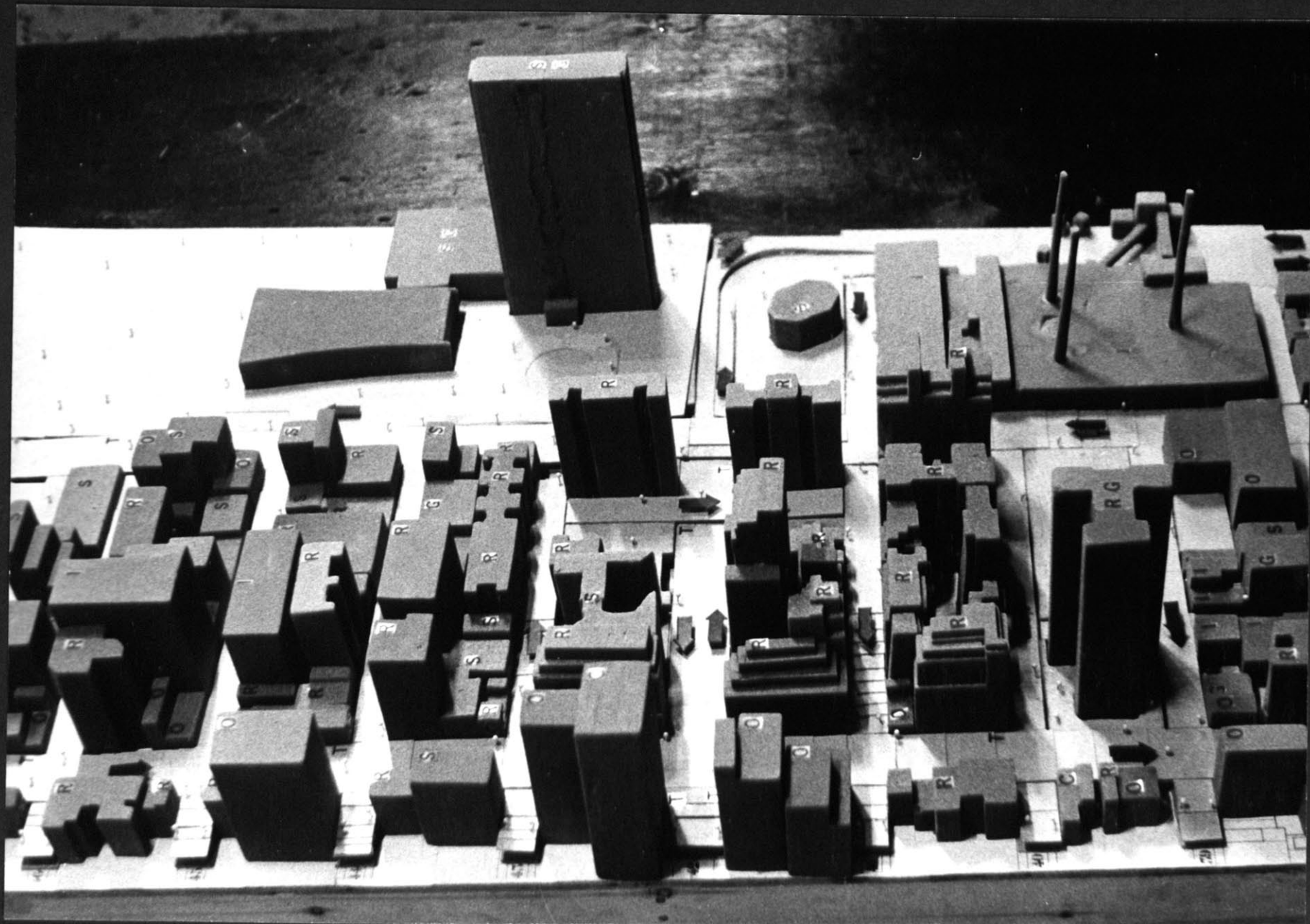
Here again we see the site caught between the grid system and access highway.

The Regional Planning Association study goes on to make projections concerning the future position of the site as it sits on 1st Avenue, the arterial collector, with subways going crosstown at both 42nd Street and 34th Street- thus improving the accessibility diagram.

p 9 B I have gone on to record in two photographs of the model Page 15 & Page 16 uses of each building around the site, ownership of each building and the "soft" bits as determined by the Regional Planning Association. Their study continues with a description of 42nd Street, the trip along it, how drab it is at one end, how beautiful at the other. It sees the trip in terms of frequency of elevators, plazas, above and below ground, and it reaches conclusions about what ought to be on the site and what physical form it should take. It is not an illogical procedure, but it is a disturbing one, operating exclusively within a framework of traditional city priorities, seeing the future of the cities as lying within the power of large companies and offering as consolation to the

people only the hope that in the gross manipulation of glass slabs, they will be left small bits of mezzanine levels of which we can make misleading diagrams p 10,A claiming that the city is responding to the pedestrian user. The Regional Planning Association study is a nice one as far as it goes, but something is missing; for this study plus the New York Zoning and Building Codes will get you three or four mile high sponges with a place to spend money near the door. So, I am not satisfied that the area has been adequately described or understood.

All of us can see the decrepid state of our cities; the old parts left in filth and disrepair, the new parts repressive and isolated- static structures standing in competition with each other, themselves symbols of a fragile attempt at efficiency which shatters continually a bit more as the gap between the user-worker and the employer-maker widens. They form nothing outside themselves. They cannot last. The situation cries for a new approach and I have seen it as one which must be based on an emphasis on the response of the user to his surroundings. The idea is not new in the Architectural profession, and it would seem that we are approaching a time when even big business must recognize that loss of confidence on the part of the people, as employees





as well as consumers, will have negative effects on their profits.

We are not satisfied with the General Motors building, the World Trade Center, Sixth Avenue...

What kind of people do these buildings imply?

There are efficient techniques in use for measuring what people do in their environment. Statistical analyses count numbers of telephone calls, trips to the bus, amounts of garbage, frequency of breakdowns--all of which amounts to helpful information for the designer/planner. But there are drawbacks to the procedure of collecting behavioral data. The bias of the collector/experimenter is inevitable as he assembles the data through the haze of a set of goals so well established as to have become part of the subliminal value structure of the experimenter. Thus the system perpetuates itself. As a trained observer, the data collector sees people going from the office to the bus, which seems an important trip, but the unanswered question is, "What does the person making the trip see himself as doing?" What is his relationship to the environment? What does he want and what does he get?

Somewhere in an office on Madison Avenue there sits a well-intentioned designer/planner who has a chart of the trip from the office to the bus. He points out to

you how the user passes several nice events on his way to the bus. But does the user know this, or is it an image of the overdeveloped sensibilities of designers who might as much have lost contact with the user as have the goal establishing developers?

Returning to the site, then, I was wary to say that the Regional Planning Association and I had even begun to scratch the surface of what was going on there. It was clear that we were not the ones to be looking at the site. It was the users who had to show us what was happening. The result is a film, the description of which follows. It was made by thirteen users of the area. It represents merely an imperfect beginning of the search for a tool with which we might see the city as a use-place through a set of user perceptions and as quite another thing than what it appears in diagrams or in the minds of architects/planners.

I have made up a list of participators and descriptions of their trips:

- 1- A United Nations Guard
- 2- Boston Architect
- 3- A Parking Lot Attendent
- 4- A Con Edison Worker
- 5- New York Architecture Student
- 6- New York Architect
- 7- New York Landscape Architect

- 8- United Nations Secretary
- 9- Writer
- 10- United Nations Secretary
- 11- United Nations Secretary
- 12- New York Urban Designer
- 13- United Nations Photographer

1- The United Nations guard is standing by the gate when encountered. During his observations, he moves outside the U.N. grounds and North along the East side of 1st Avenue about one block. He is filming the buildings on the other side of 1st Avenue. He returns to his position at the gate and films several people ascending and descending the stairs which he patrols.

2- The Boston architect begins his viewing from the bridge across 42nd Street. He was taken to the U.N. plaza between 45th and 46th Streets from which he proceeded to the 42nd Street bridge. From the bridge, he looks West towards the Chrysler building. He moves North toward 41st Street on the Tudor City level, down the stairs to 1st Avenue, and North to the plaza at 45th Street. He stands in the plaza almost at the river edge and films the river, the boats and a bit back at the United Nations buildings from this spot. He moves to the U.N. gate which is being guarded by the

U.N. guard from which spot he films North along the West side of 1st Avenue, straight across 1st Avenue and South along the West side of 1st Avenue. Then South along the East side of 1st Avenue and East towards the Secretariat building. He moves South along the East side of 1st Avenue to 42nd Street from where he shoots West across 42nd Street, then North along the East side of 1st Avenue towards the gate he has just left.

3- The parking lot attendant is standing in the parking lot where I found him on the North West corner of 39th and 1st Avenue. He stands still and pans across the lot to the West of him and then into 1st Avenue.

4- The Con Edison worker was leaning against the Con Edison building on 1st Avenue and 40th Street when he began filming. He did not move but filmed 1st Avenue in front of him and up the side of Tudor City. From there, he returned to filming the Avenue and trucks coming out of the Con Edison building entrance to the North of him.

5- The New York architectural student was given the camera in the U.N. plaza at 45th Street and moved to the South side of 48th Street between 1st Avenue and 2nd Avenue to begin filming. She moved along 48th Street to 1st Avenue where she filmed directly East at the opposite side of 1st Avenue. From there

she moved South along the West side of the Avenue to between 46th and 47th Streets from where she filmed directly West at the buildings behind here and then South East at the U.N. buildings. From there she moved South again along the West side of the Avenue to between 45th and 44th Streets where she filmed a 360 degree turn. She then moved South again, up the stairs to the Tudor City level and onto the bridge across 42nd Street where she filmed down onto 42nd Street, East and finally North shooting Tudor City.

6- The first New York architect was given the camera in front of the U.N. and began filming on 42nd Street at the East River. He filmed the river across the FDR Drive from that point. Then he moved West along 42nd Street to 1st Avenue and North across the street from where he shot South at the park on 42nd Street and 1st Avenue. He then moved South along the East side of 1st Avenue stopping on the East side of 41st and 1st Avenue where he shot almost 360 degrees. He then moved South again to an entrance to the Con Edison building and shot again towards the river. From there he moved North and East on 41st Street to the FDR edge from where he shot North, North East and East towards the River. He then moved South, West and North to the Secretariat entrance where he shot East towards the Secretariat. Then he moved South to the

Secretariat gate where he shot the Secretariat building .
Then he shot West towards the stairs to Tudor City.

7- The New York landscape architect was given the camera in the U.N. plaza at 45th Street. He began shooting at the gate to that plaza. From there he shot North and North East. He then moved East to two spots within the plaza where he shot around himself in a 360 degree circle.

8- The U.N. secretary began in the U.N. plaza at 45th Street shooting East, North East and North. She moved West in the plaza near to 1st Avenue and shot South, South East and West. She moved half a block South and shot all directions except South East. She moved South to the Secretariat entrance gate and shot East and South East.

9- The writer from a nearby office was given the camera in the U.N. plaza at 45th Street. He walked North to the pedestrian bridge over the FDR Drive at 52nd Street from where he filmed the Northbound traffic looking South. He filmed East, South East, South and South West towards the U.N. complex from there. He then moved down 1st Avenue to the North West corner of 1st Avenue and 42nd Street where he filmed North along 1st Avenue and then West along 42nd Street. He crossed first Avenue towards the East and shot North and West again.

10- The second secretary was given the camera in the U.N. plaza at 45th Street, but began in the garden to the North of the U.N. where she shot East and South. She moved South along 1st Avenue to the entrance to the Secretariat where she shot West, North, East and South East towards the Secretariat.

11- The third U.N. secretary, having also been given the camera in the same plaza, began in the garden along the river edge and from there shot in a 360 degree angle around herself.

12- The next New York urban designer was given the camera in the U.N. plaza at 45th Street from where he proceeded to the stair leading to Tudor City. He filmed up the stair and into Tudor City.

13- The U.N. photographer placed himself at the base of the U.N. secretariat and shot up the building three times.

I have attempted to use this film tool. I have tried to put the people into categories with reference to how they look around them. I have found that most of them tended to move in relation to their subject rather than to film a moving subject. Most of them shot large scale matter. Most of them seemed to recognize

some amount of detail. The balance was almost equal in regard to the issue of who filmed inside and filmed outside the boundaries of the U.N. grounds (accessible to the general public). There was a near equality also on the issue of who concentrated on far views and who on near views. Most people seemed to see their surroundings in terms of objects rather than of places. Only four people out of thirteen seemed to be aware of the site as part of the city as a whole. Only four people gave importance to the bridge across 42nd Street. Eight people out of thirteen emphasizes 1st Avenue activity. Five people shot the East River. Three people shot the steps going up to Tudor City. ONLY one person paid a noticeable amount of attention to the industry South of the U.N. Four people shot the U.N. garden and four people shot the flags in front of the General Assembly Building.

I have attempted to make some generalizations from these facts which could amount to a way of looking at the film which might shed some light on the field of designing for users; it might help you to design for certain perception patterns which you can observe to be already in existence. You might be able to alter or heighten these patterns through a more detailed awareness and understanding of them. There are two ideas which come out strongly in the film:

- What one sees and what one thinks is important and whether one thinks that what one sees is important

this measured in terms of attention span of the users

the users' apparent regard for the object/place relationship

the frequency with which they do or do not change scale during their observations

- Whether or not the users seem to have a convincing relationship to their environment thereby endorsing the goals which form it

this measured in terms of the near-far viewing factor

the ability or concern with placing themselves within a locality and the locality within the larger city framework

The first of these seems mainly oriented towards pointing up the differences between architect/ designer perceivers and visually untrained perceivers.

Discussions can be had concerning exactly what happens in the film... Whether or not people show what they usually see, look around the way they usually do.

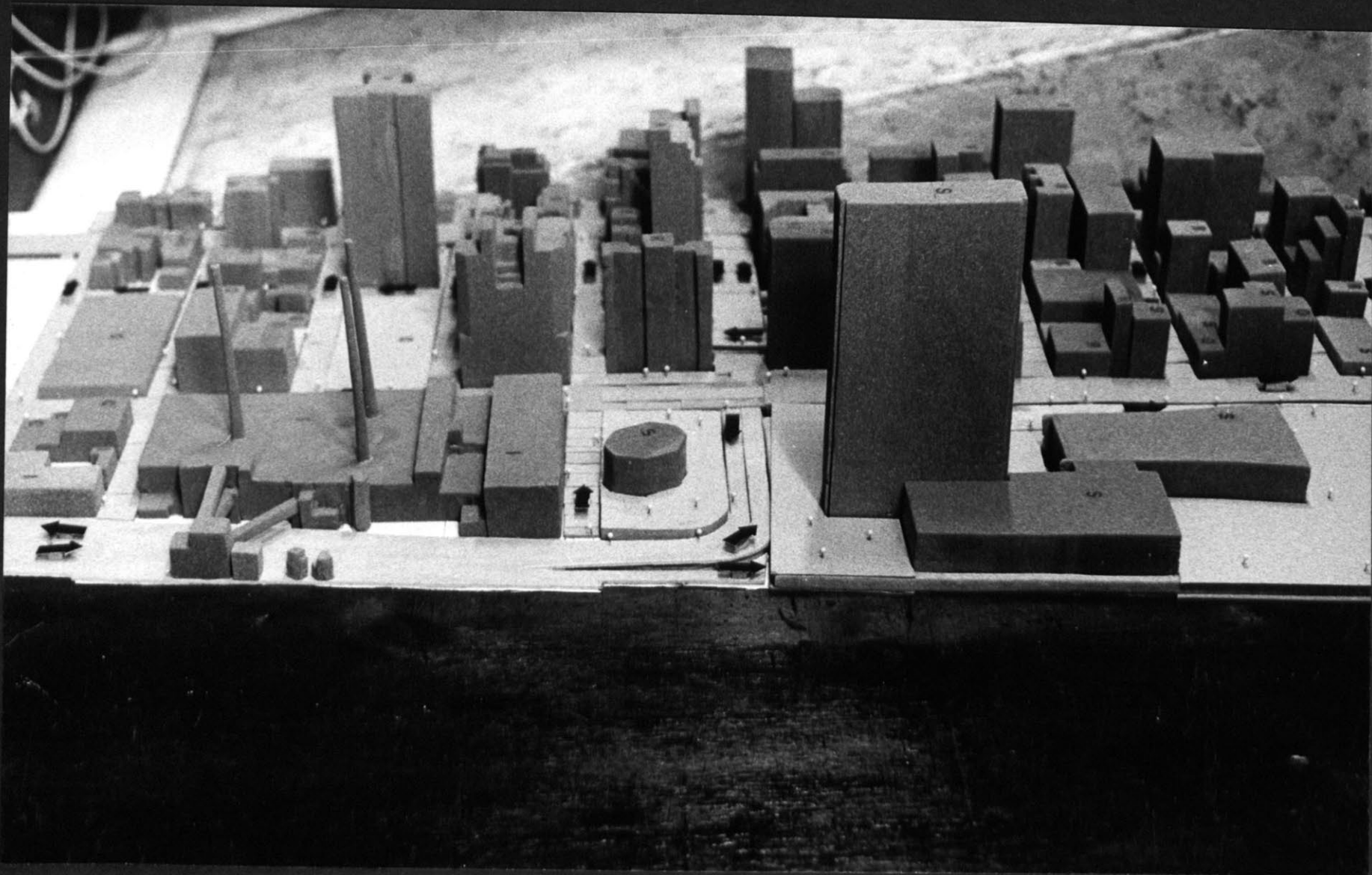
Whether they show things only as they have been trained to attach importances. Why they don't show certain things. The film is inexact as an experiment, but it

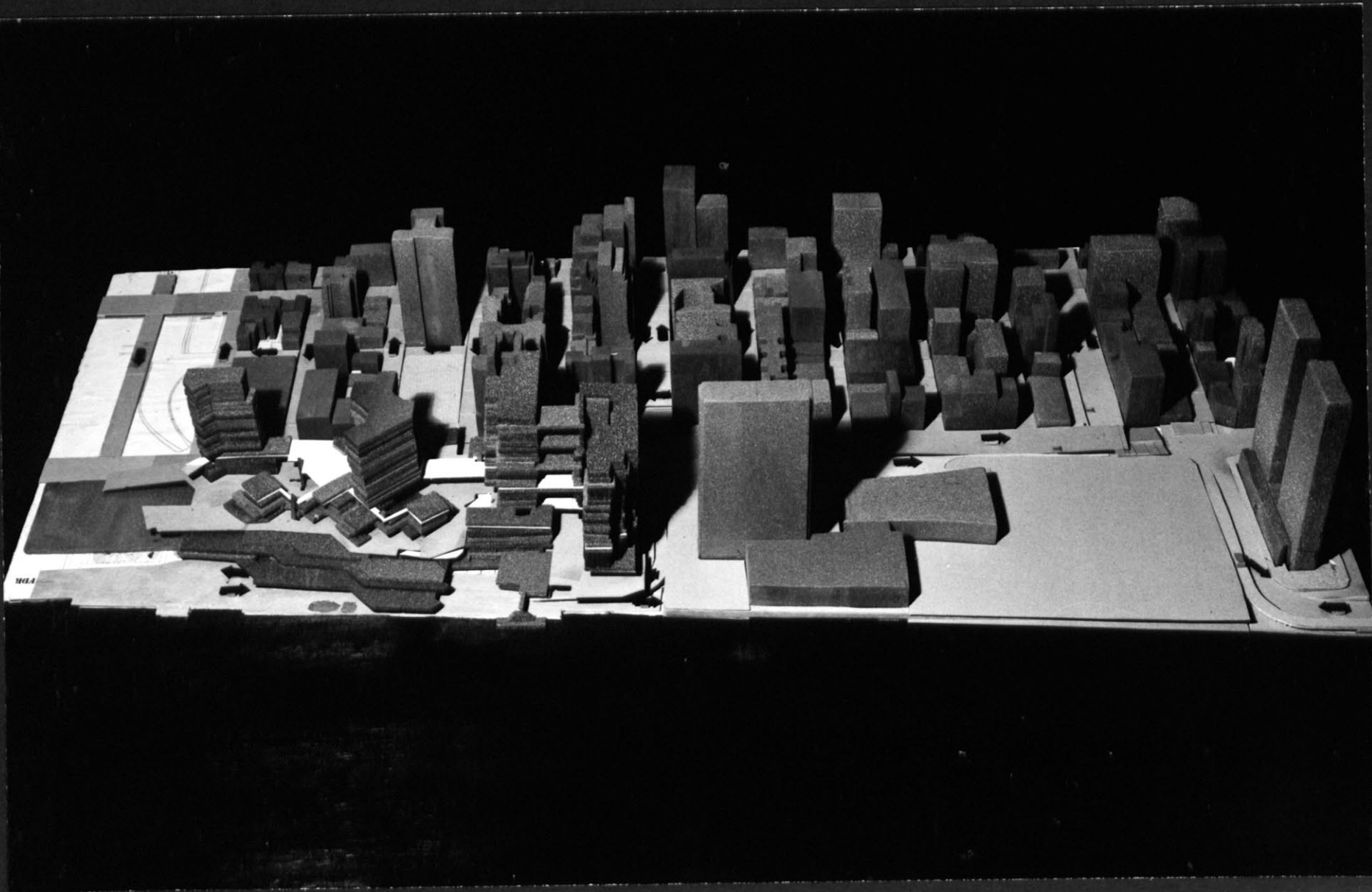
is, I believe, a beginning of an effort to find a method of measuring perceptions and human needs in the urban environment. I wanted to draw issues from it, to use it to get at certain effects which I supposed the urban environment to be having on the user and which usually go unmeasured due to the lack of a way of measuring these user perceptions. I want to find a method for measuring human needs.

There are certain generalizations concerning film as a medium for working on this problem:

- the removal of the observation of the environment at least one step from the eye
- the possibility with film of recording what might be assumed to be the flow of observation as cannot be had with still photography
- the naivety of the person who picks up a camera for the first time and is asked to describe his surroundings

I have attempted to use in a design sense some generalizations which one might be able to see in a film of this kind. These issues are: eye level activity, trip/activity relationships, territorial boundaries, diversification of access, intensification of activity. It has been my choice as to what I would do about these issues.





The following paragraphs will describe the project design as it relates to the city, as it relates to the locality, as it relates to the user.

THE CITY

-the transportation interchange- location of the last stop of the new 42nd Street crosstown shuttle. Location of bus and taxi stops at 20' level on 1st Avenue

-the parking garage making available places for cars to be left as people enter the city off the FDR Drive and prepare to take mass transportation into the city proper.

-the city grid as it is maintained in the project as access to building lobbies on the 35' level

-the hard edge along 1st Avenue in response to the rapid moving uptown arterial traffic

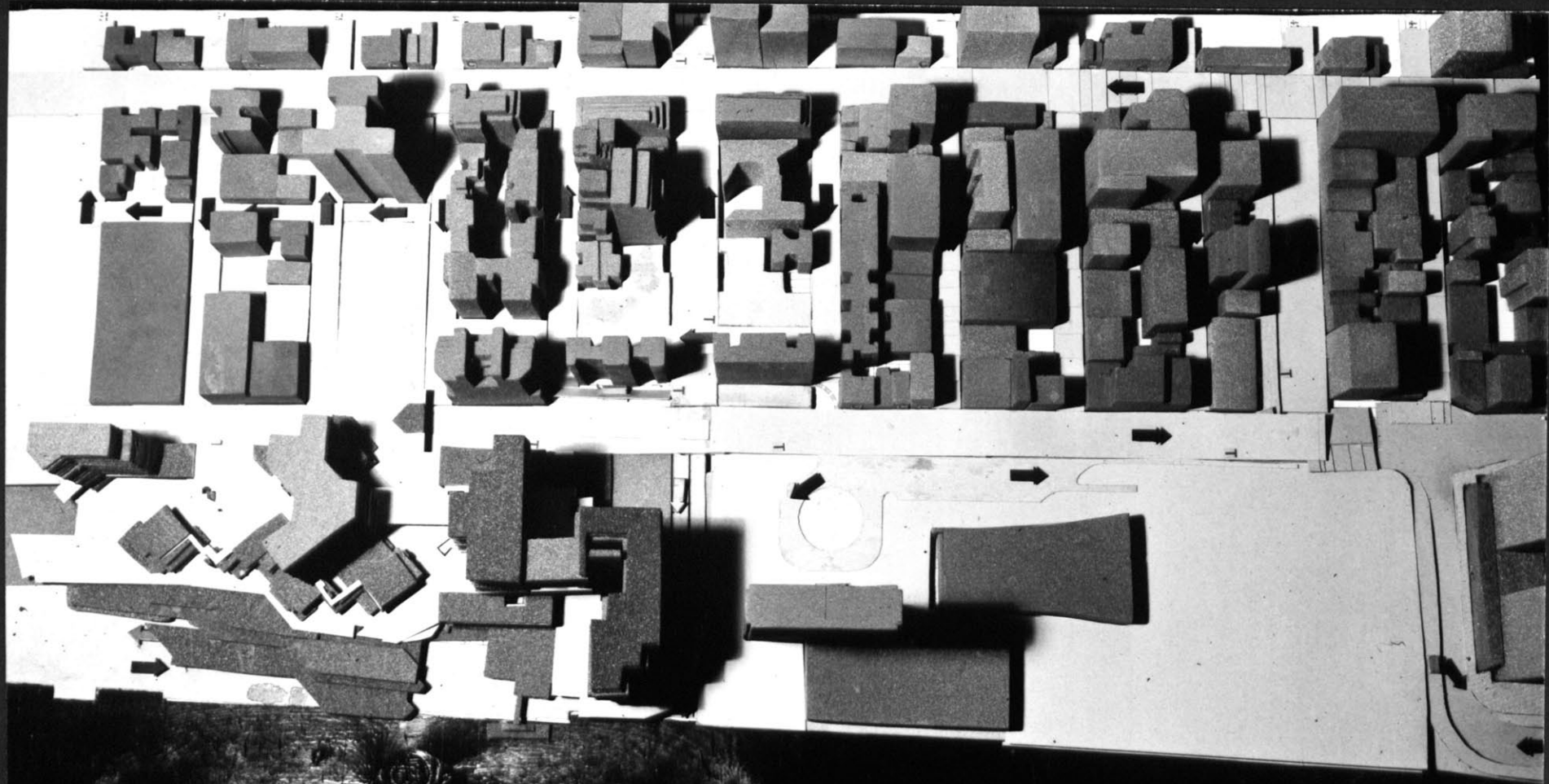
-the green edge along the river and its relation to the city's plan for itself (an extensive green area is planned along the length of the newly developable south edge of the East River)

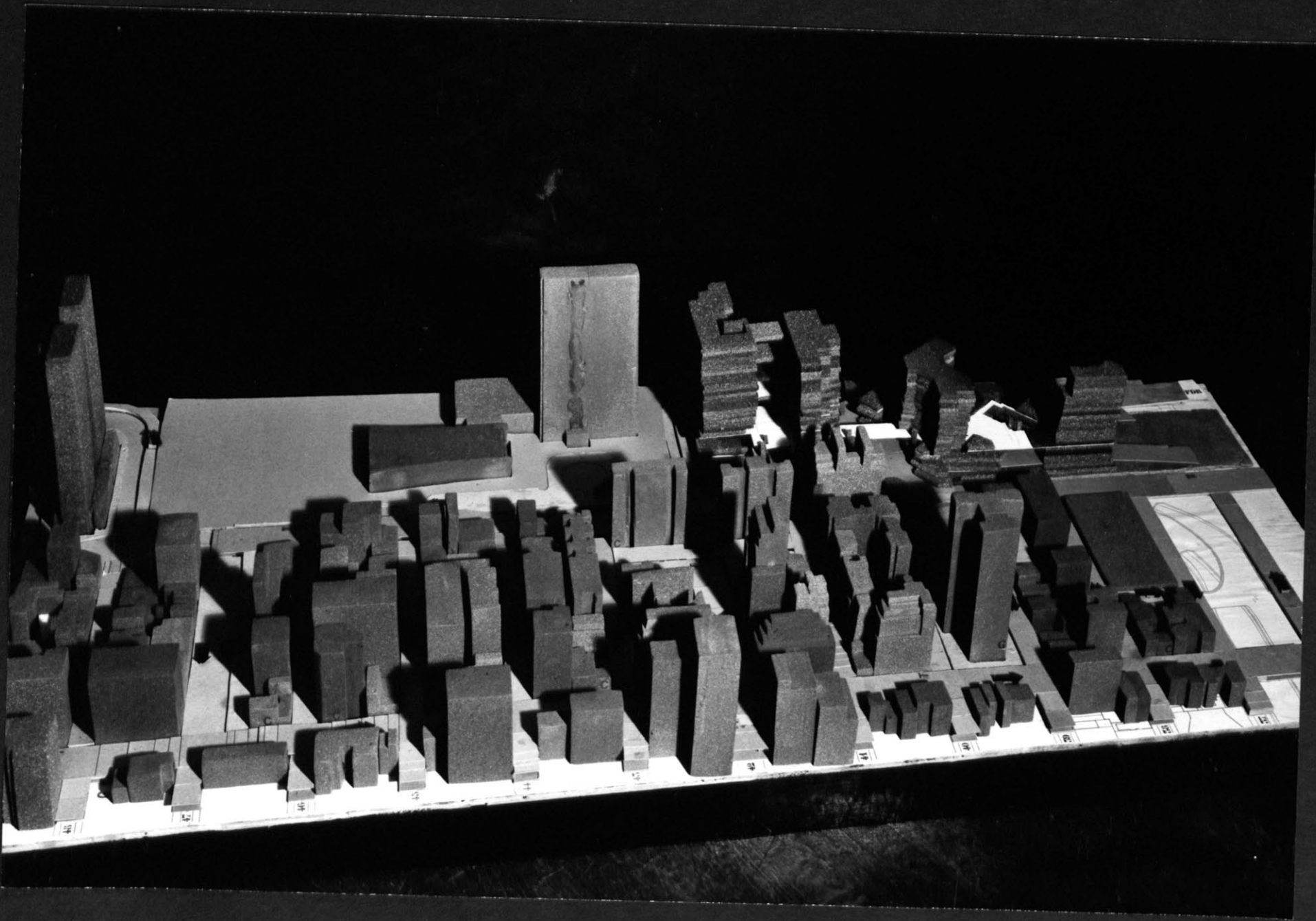
-the extension of tentacles out into the city in the form of coordinating land uses, plus bridges connecting the new development to the existing.

THE LOCALITY

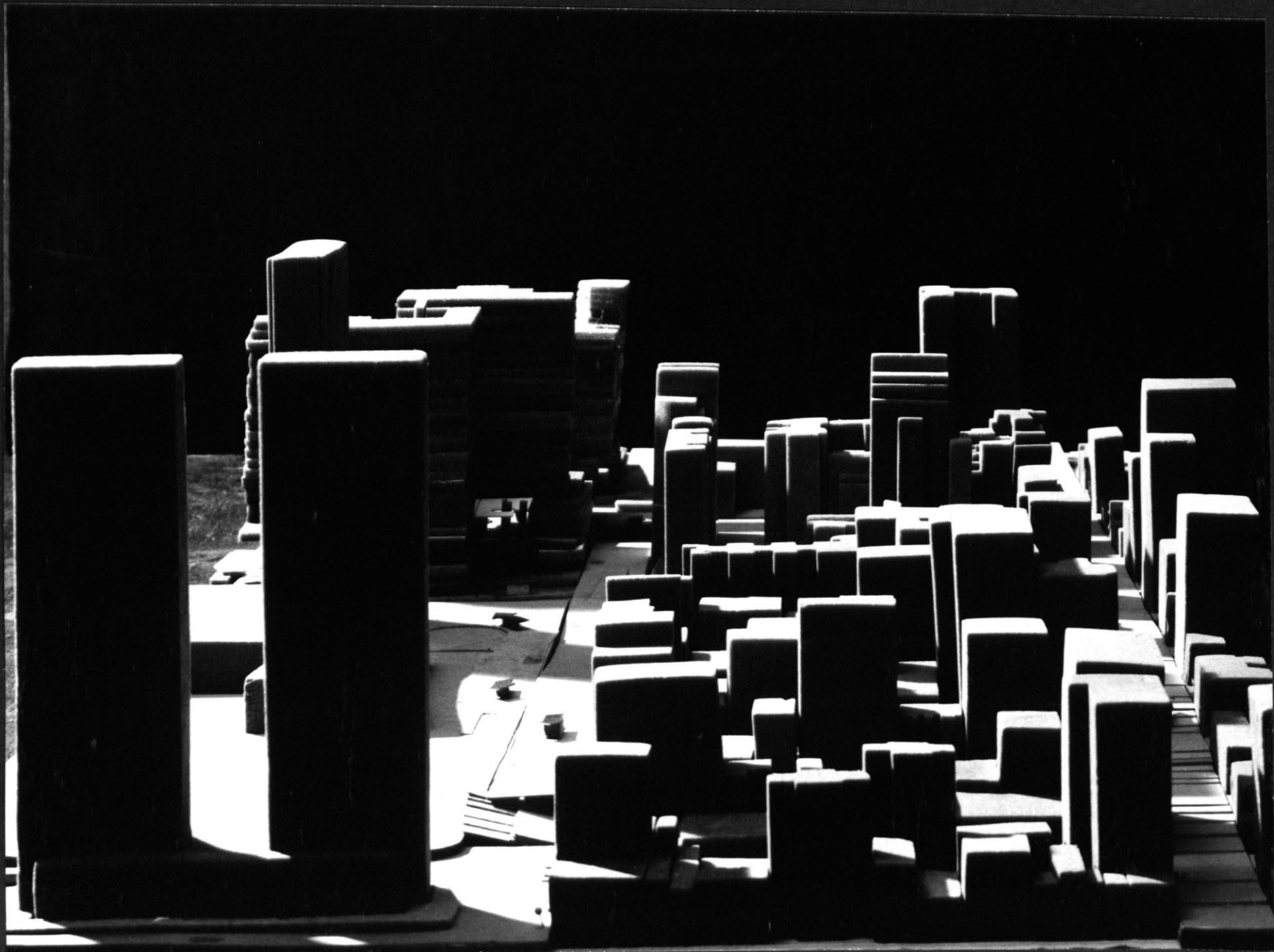
-use coordination with the surrounding buildings on the building scale and smaller

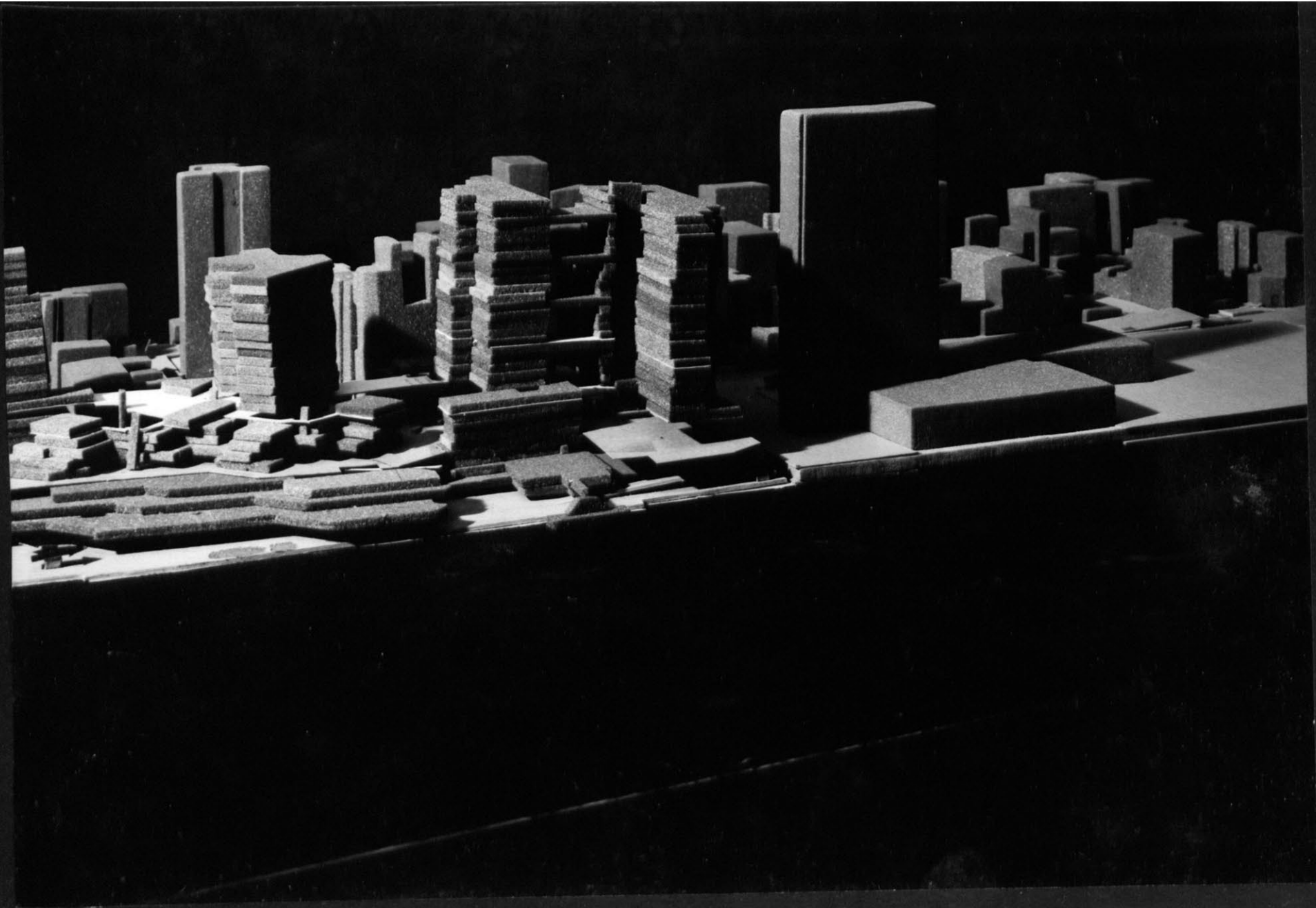
-issue of views, new and existing, the











site is prime for views sitting there on the River. The 48 degree angle of most of the new construction allows the new stuff to be of a rather massive scale without blocking out as much light and views for existing structures as might be expected. The angle of the sun is also such that direct daylight is maximized by the setting of the buildings at this angle.

-need in terms of facilities at present- the people now using Tudor City refer to it as being severely lacking in shopping facilities as well as transportation to other parts of the city. The nearest subway stop is Grand Central Station, the trip to which is too short for a bus ride and too long for a walk; especially with the wind conditions along 42nd Street in the winter.

THE USER

-involves all the issues stated above as having been brought out by the film

-the issue of relationships of building masses to each other and the kinds of useable space they can make outside between them. I am interested in seeing what kinds of relationships tall, big buildings can form between them that will be typical only to buildings of great height, but which will at the same time be more of an experience than we seem to be having at present out of existing tall buildings.

-the issue of easy access to all the uses on the site while at the same time avoiding overlapping of different scales of transportation; that is, primarily, pedestrian and automotive. This is an effort at modulation and definition of this problem rather than acceptance of separation as the only answer.

-an effort to make the pedestrian places significantly different and particular to pedestrian movement rather than just places where cars aren't

OTHER ISSUES

-choice, in terms of movement and use
-the designer's propensity for trying to discover ways of combining large and small scale building masses in direct and semi-direct relationships, i.e., buildings coming out at the base to accept smaller scale stuff, or a grid framework infilled with a great tall building at the top and small scale changeable stuff at the base, or either of these in combination with open spaces, perhaps partially definged by walls or columns around which small scale stuff of varying dimensions might tend to gather- a framework type of design leaving room for people impact.

-the designer's interest in the relationship of function and symbol in architecture;

that is, the recognition factor in the urban environment. Is it the amount of details, quality of materials, etc., which make buildings recognizable as containing certain functions, or are they not recognizable on that level?

-the attitude assumed with regard to Tudor City. It is isolated and very quiet, but rather nice and extremely successful which should definitely make one consider well doing anything which would seriously affect the conditions of the residences now thriving there.

-the attitude towards the United Nations complex as it exists- that it is very stiff and unresponsive, isolated in every way from the rest of the city, from transportation and from life-generating activity. That it is on prime land. that it could become a vital part of a larger use-complex

-the issue of the Queensboro Tunnel ventilation building; that it could be consolidated into two large elevator shafts whose main requirement would be that they would have to be taller than the building into which they were built. This we learned from Professor Sarafim of the Chemical Engineering Department, M.I.T. The fan and pump would still occupy a great deal of space underground.

-the designer's attitude that a large site was needed to study large scale relationships

of things and that plannign in cities should be a carried out on all scales simultaneously

The program used as a guideline for the design diagrams was compiled from two programs which are about to be put into effect in close proximity to the present U.N. complex. One of these was put together by the United Nations and the other by a state development corporation. Together they amount to 4,321,075 sq.ft, and I find it distressing that they have found no way to coordinate these two building programs. The combined programs:

| | |
|-----------------------|-----------|
| Hotel | 112,000 |
| Apartments | 812,000 |
| Commercial | 151,250 |
| Park | 115,000 |
| Storage | 62,250 |
| Visitors facilities | 154,000 |
| Terminal & Parking | 300,000 |
| Conference facilities | 33,750 |
| Delegates facilities | 35,000 |
| Staff facilities | 26,000 |
| U.N. Office space | 2,271,575 |
| Cafe | 4,500 |
| Lobbies | 3,700 |
| Other Offices | 240,000 |
| PLUS U.N. School | 149,390 |

Page 40

O'G 7'

44th STREET

UNITED NATIONS
BASEMENT GARAGE

43rd STREET

42nd STREET

UNITED NATIONS
STORAGE

TUNNEL
VENT.

SERVICE ROAD

41st STREET

DOCK

PASSENGER ELEVATORS

to 20'
35'
60'
108'

40th STREET

PARKING

FDR DRIVE

NORTH

SOUTH

39th STREET

SERVICE ELEVATOR

SERVICE ROAD

PASSENGER ELEVATORS

to 20'
35'
60'
108'

38th STREET

SERVICE ELEVATOR

37th STREET

SERVICE ELEVATOR

SERVICE
ROAD

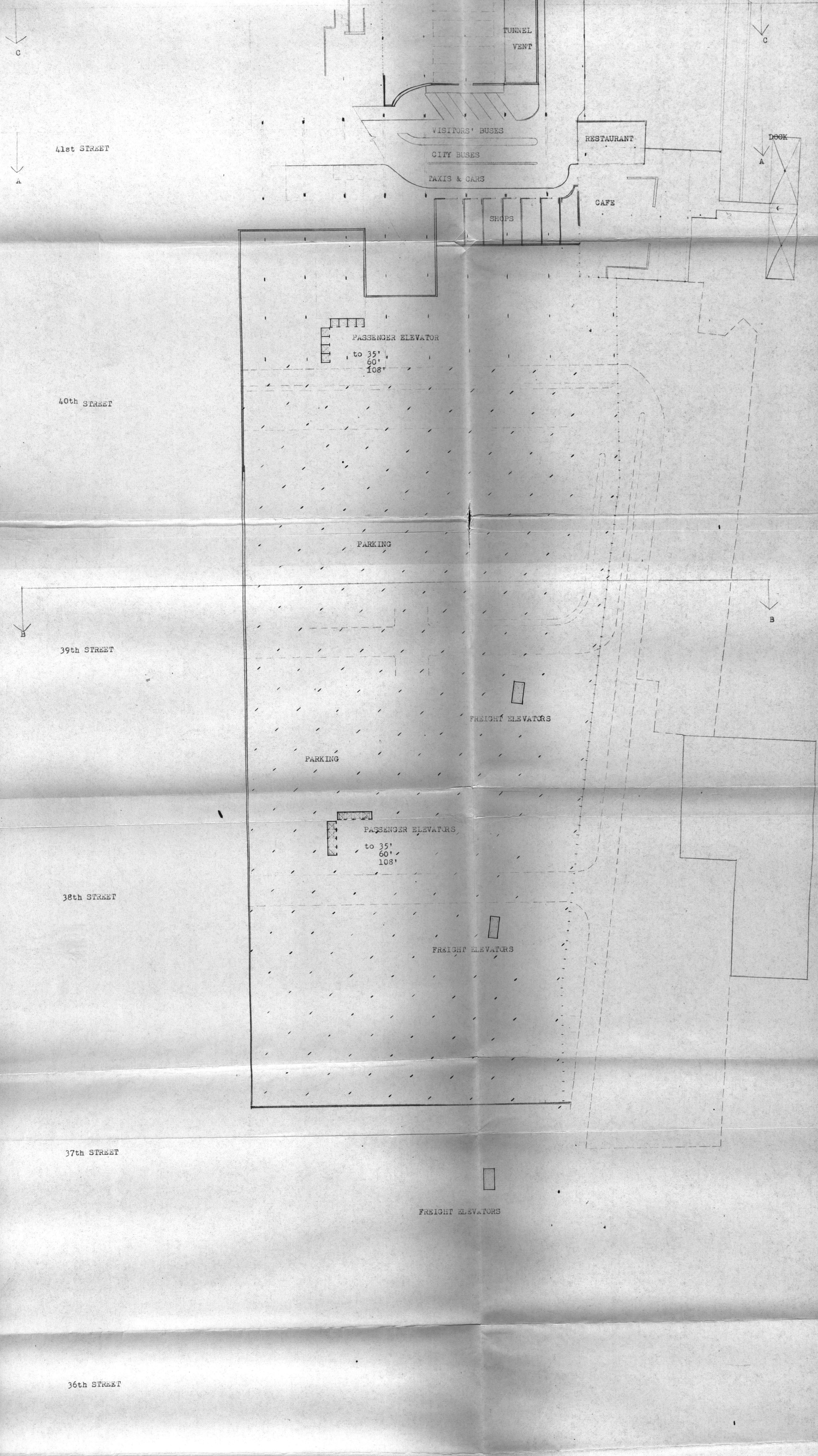
36th STREET

SCALE 1"=50'
LEVELS AT 0' & 7'
MELISSA UNDERHILL
THESIS B. ARCH., M.I.T.
MAY, 1971
DEAN ANDERSON

Page 41

20'

A faint technical drawing on a white background. It features a horizontal line extending across the width of the page. On the right side of this line, there is a vertical dimension line. The dimension line consists of two short vertical segments, one at the top and one at the bottom, connected by a longer vertical segment in the middle. The number '20'' is written in a handwritten style to the right of the top segment of the dimension line. The drawing is very light and appears to be a scan of a document.



SCALE 1":50'
 LEVEL AT 20'
 MELISSA UNDERHILL
 THESIS, B. ARCH., M.I.T.
 MAY, 1971
 DEAN ANDERSON

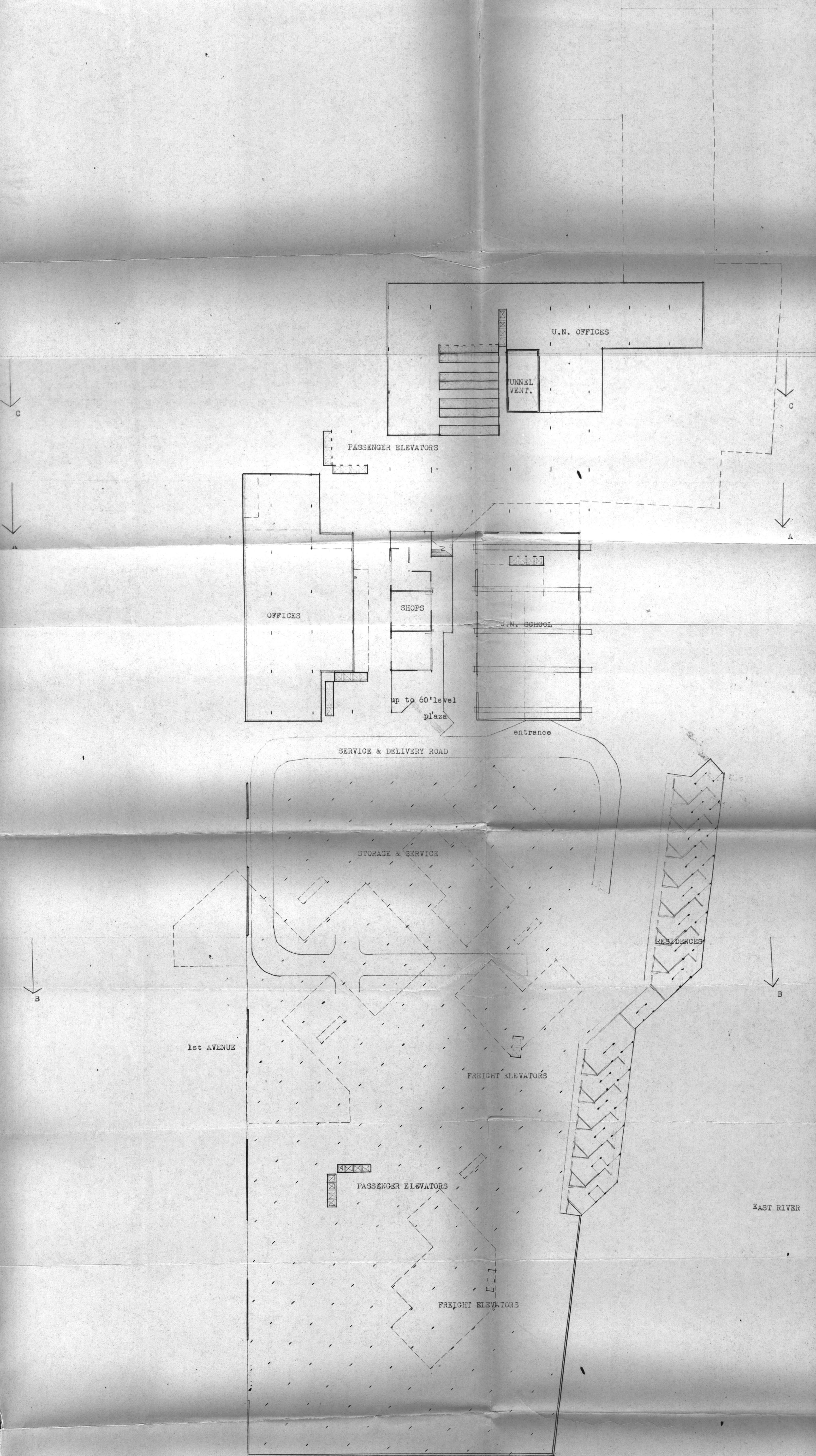
Page 42

35'

Page 43

47'

U.N.
SECRETARIAT



GREEN

Page 44

60'



100
100
100
100

UNITED NATIONS
GENERAL ASSEMBLY

UNITED NATIONS
CONFERENCE BUILDING

U.N.
SECRETARIAT

OFFICES

VISITORS' ELEVATORS

U.N. ELEVATORS

FUNNEL
VENT.

EXHIBITION & INSTRUCTION

PASSENGER ELEVATORS

enclosed

FOOTBRIDGE TO TUDOR CITY

TUDOR CITY
APARTMENT
HOUSE

SHOPS

SHOPS

U.N. SCHOOL

SHOPS

OFFICE LOBBY

PASSENGER
ELEVATORS

enclosed

SHOPS

SHOPS

PASSENGER ELEVATORS
to 72'8 1/2" 96'108'

MISSIONS

TAXI
ACCESS

RESIDENCES

SHOPS

SHOPS

SHOPS

SHOPS

SHOPS

SHOPS

SHOPS

residential entrances

TAXI ACCESS

PASSENGER ELEVATORS
to 108'

PASSENGER ELEVATORS
to 72'8 1/2" 96'108'

RESIDENCES

OFFICE
HOTEL

SHOPS

OFFICE

TAXI ACCESS

GREEN

other possible taxi accesses

SCALE 1"=50'
LEVEL AT 60'

MELISSA UNDERHILL
THESIS, B. ARCH., M.I.T.
MAY, 1971
DEAN ANDERSON

TUDOR
CITY
BRIDGE
ACROSS
42nd
STREET

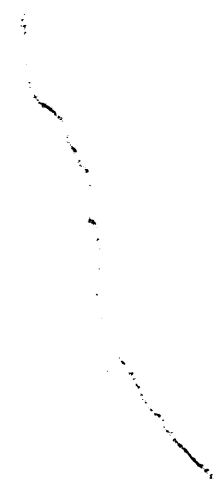
enclosed

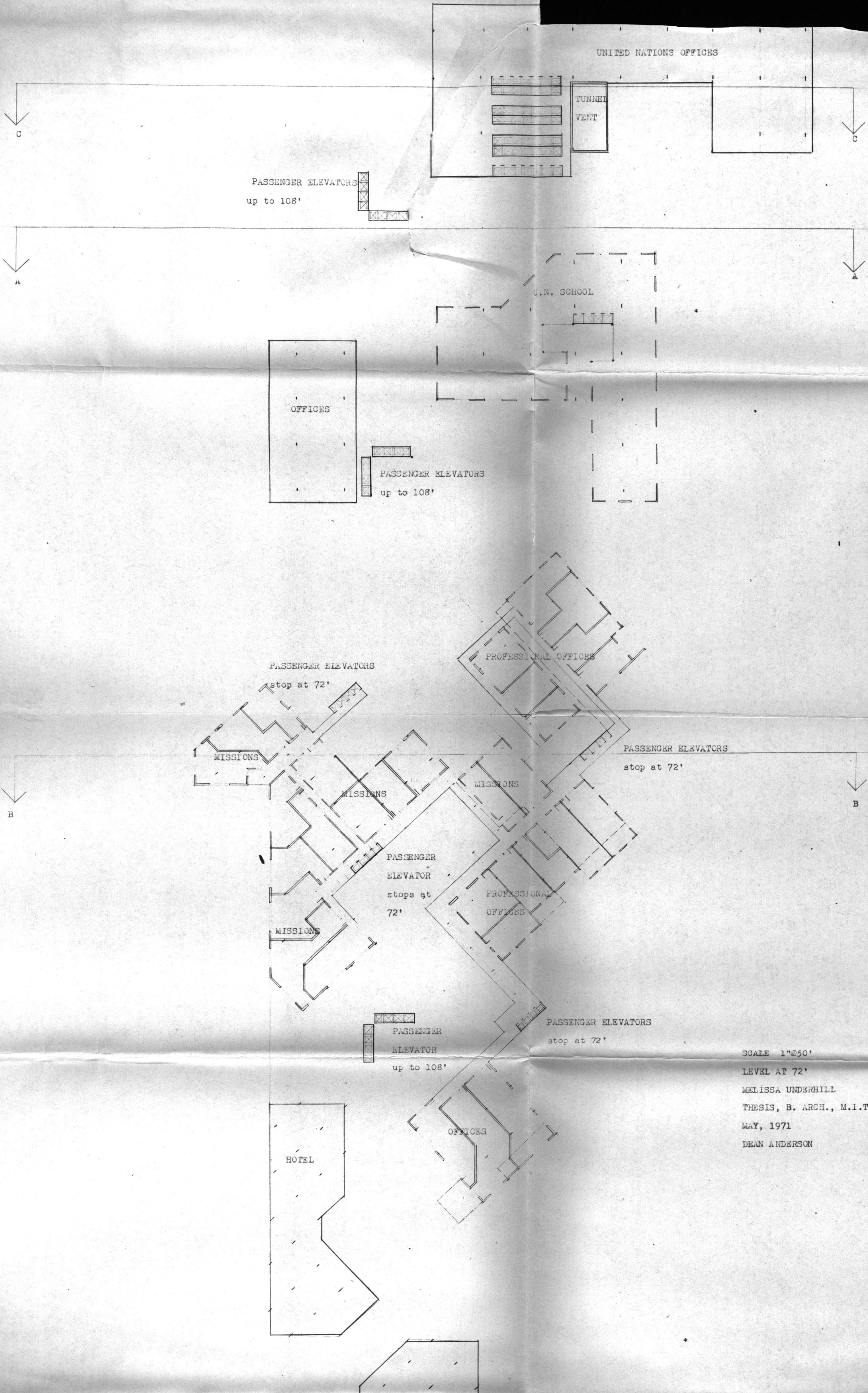
A

B

Page 45

72'

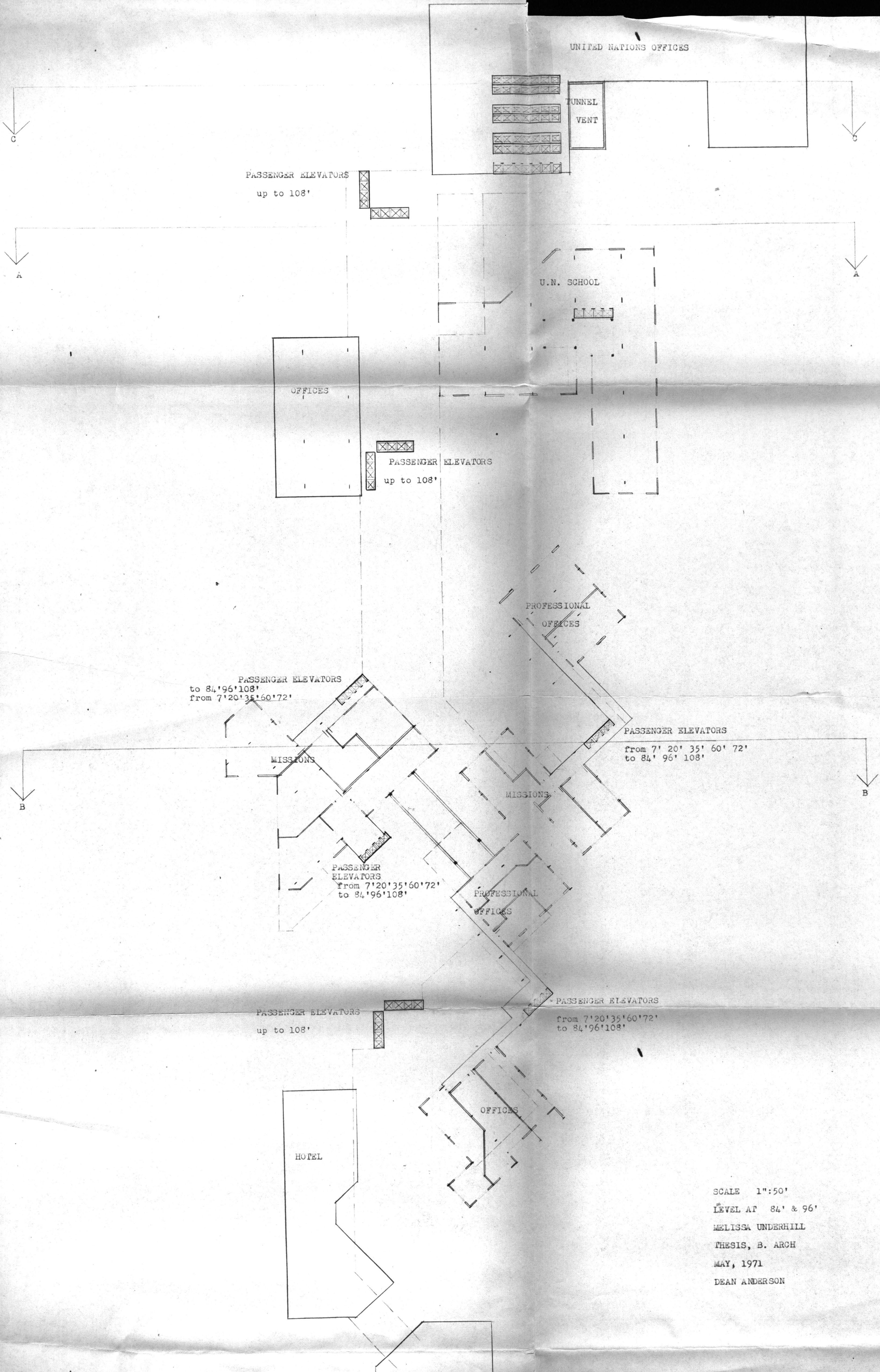




SCALE 1"=50'
 LEVEL AT 72'
 MELISSA UNDERHILL
 THESIS, B. ARCH., M.I.T.
 MAY, 1971
 DEAN ANDERSON

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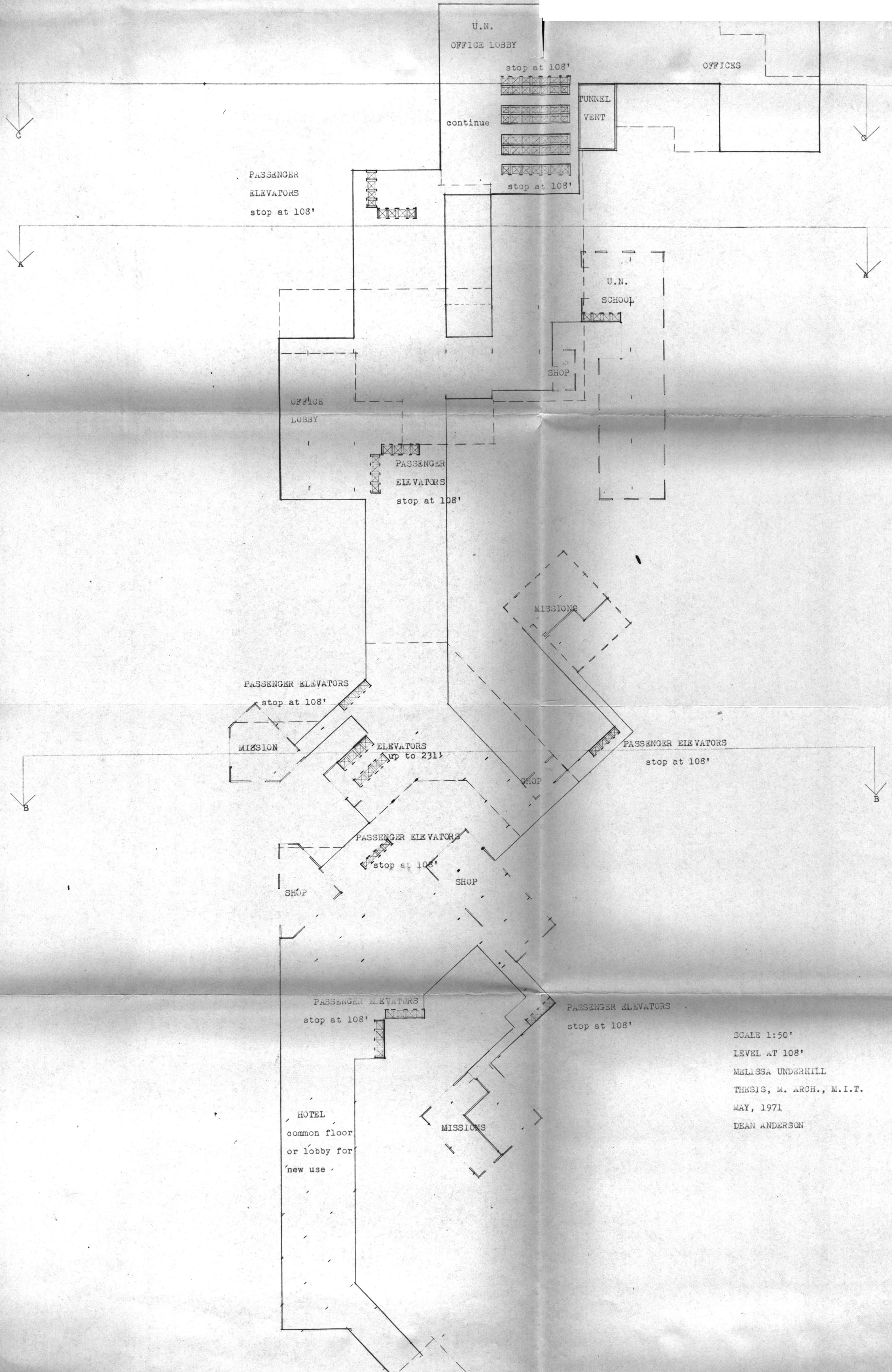
84' & 96'



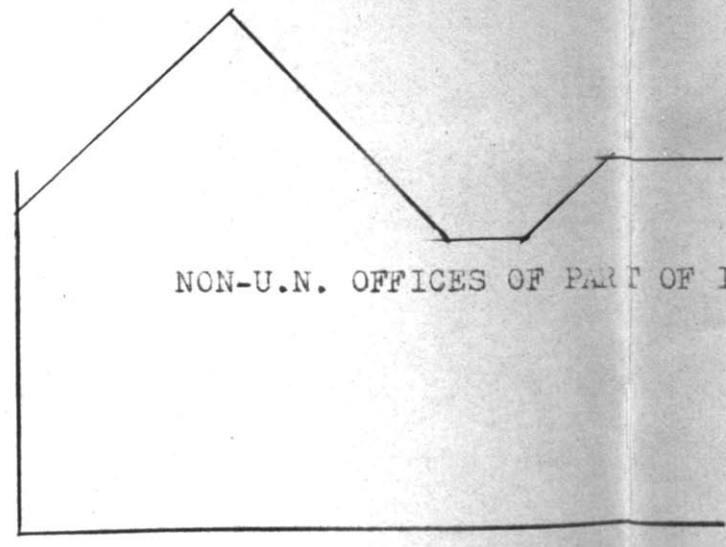
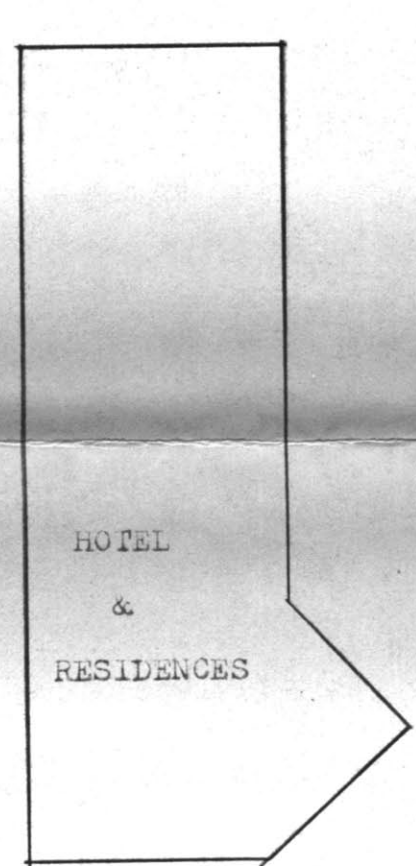
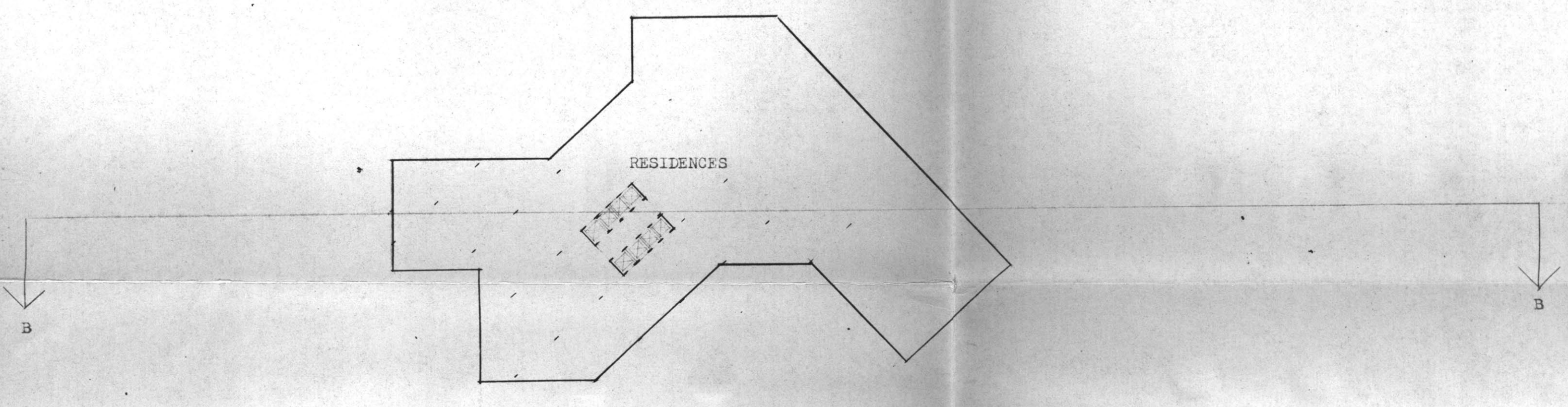
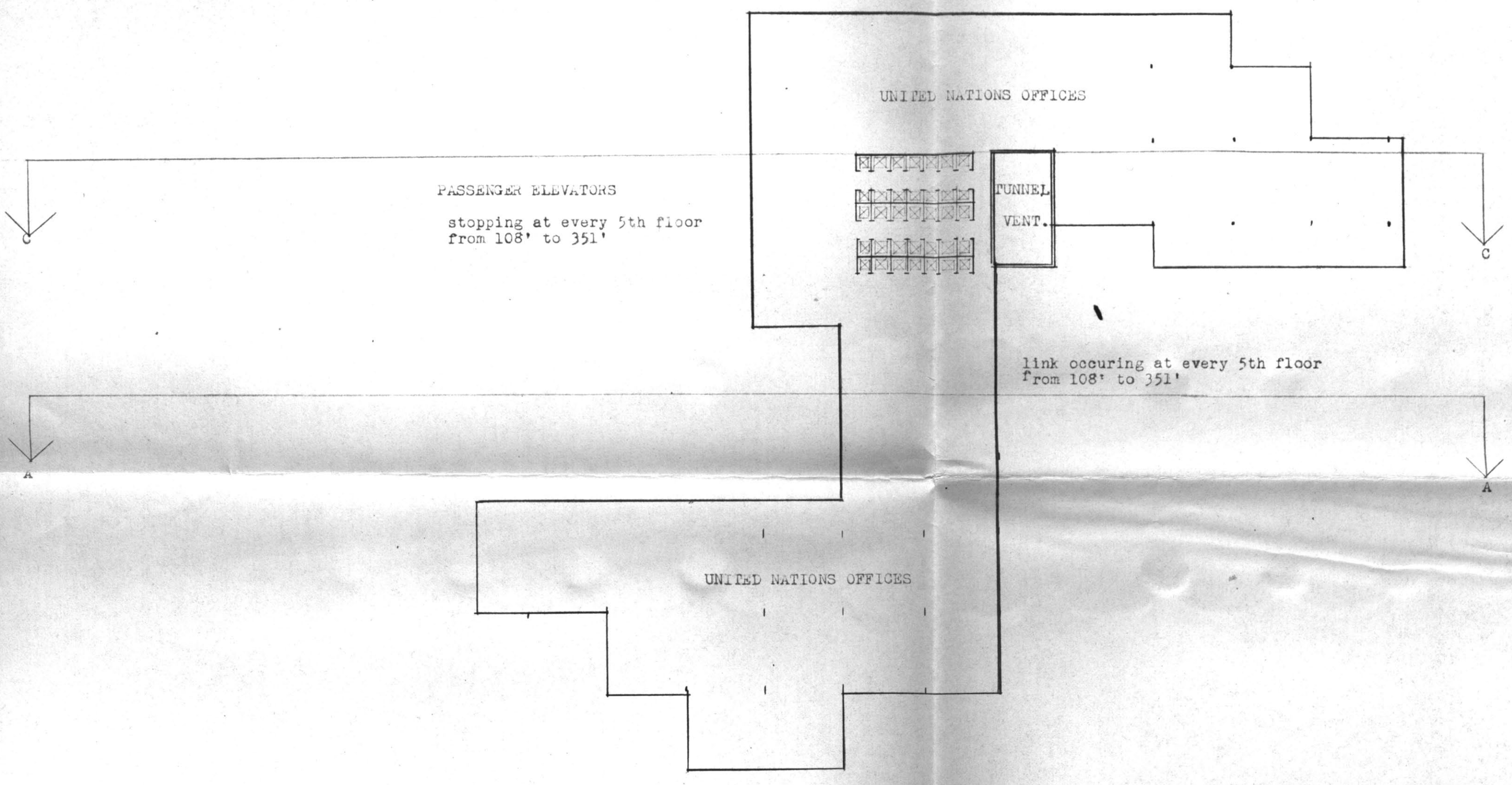
SCALE 1":50'
 LEVEL AT 84' & 96'
 MELISSA UNDERHILL
 THESIS, B. ARCH
 MAY, 1971
 DEAN ANDERSON

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108'



SCALE 1:50'
 LEVEL AT 108'
 MELISSA UNDERHILL
 THESIS, M. ARCH., M.I.T.
 MAY, 1971
 DEAN ANDERSON



SCALE 1":50'
LEVEL FROM 123' & UP
MELISSA UNDERHILL
THESIS, B. ARCH., M.I.T.
MAY, 1971
DEAN ANDERSON

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Section A-A

SCALE 1"=50'

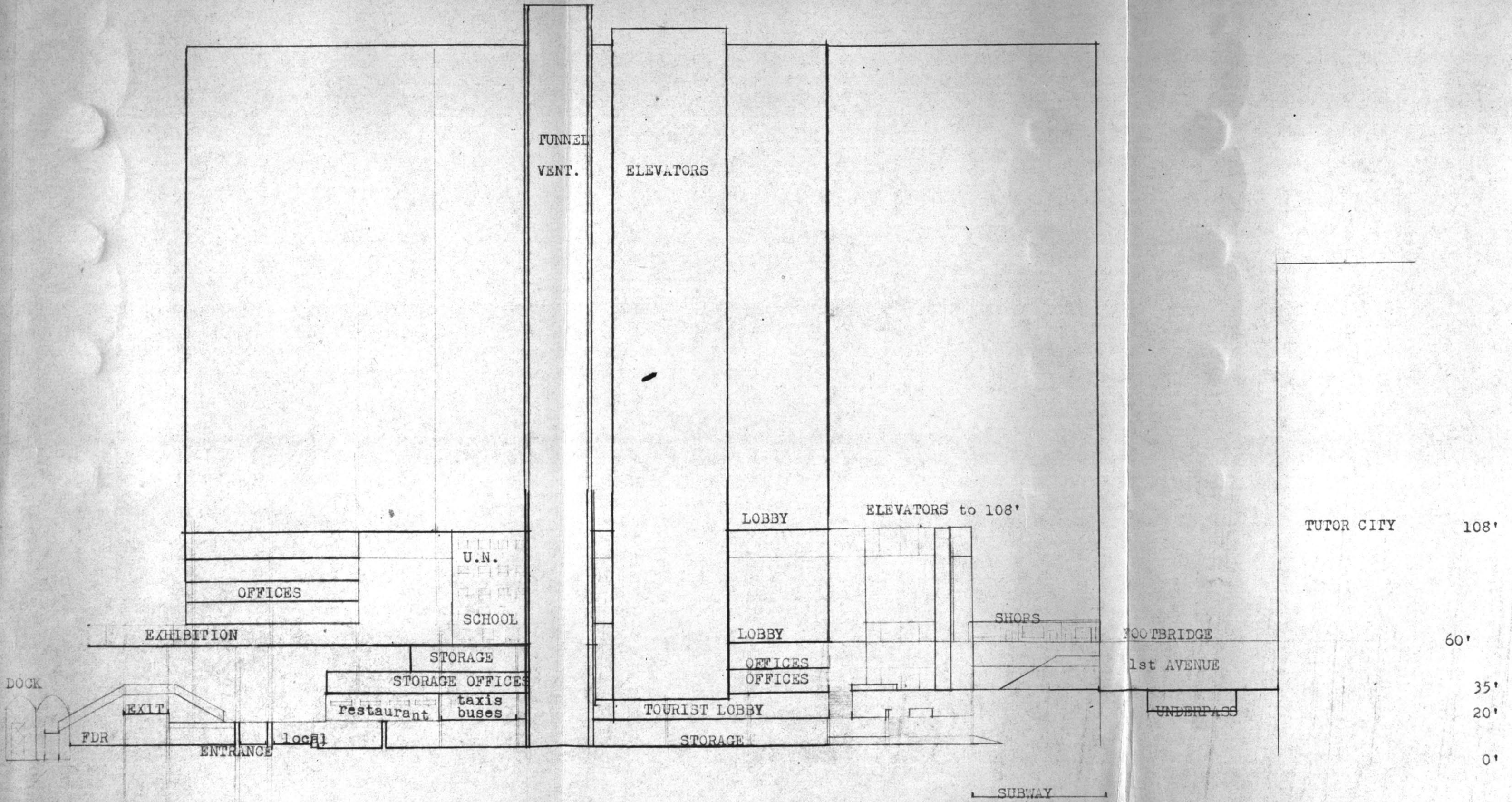
SECTION A-A

MELISSA UNDERHILL

THESIS, B. ARCH., M.I.T.

MAY, 1971

DEAN ANDERSON



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Section B-B

SCALE 1"=50'

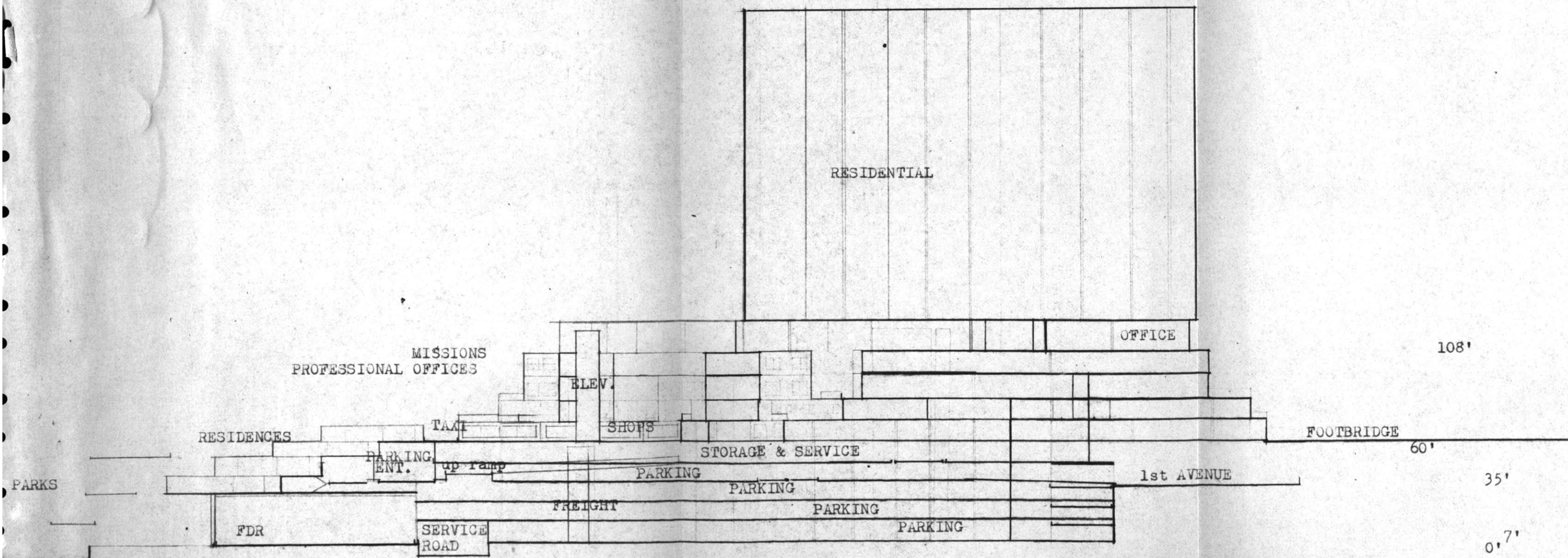
SECTION B-B

MELISSA UNDERHILL

THESIS, B. ARCH., M.I.T.

MAY, 1971

DEAN ANDERSON



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Section C-C

SCALE 1"=50'

SECTION C-C

MELISSA UNDERHILL

THESIS, B. ARCH., M.I.T.

MAY, 1971

DEAN ANDERSON

