

2000

Morphological measurements of "edge cities" in Dallas County, Texas

Todd Anderson
San Jose State University

Follow this and additional works at: https://scholarworks.sjsu.edu/etd_theses

Recommended Citation

Anderson, Todd, "Morphological measurements of "edge cities" in Dallas County, Texas" (2000). *Master's Theses*. 2035.

DOI: <https://doi.org/10.31979/etd.tep9-pmrc>
https://scholarworks.sjsu.edu/etd_theses/2035

This Thesis is brought to you for free and open access by the Master's Theses and Graduate Research at SJSU ScholarWorks. It has been accepted for inclusion in Master's Theses by an authorized administrator of SJSU ScholarWorks. For more information, please contact scholarworks@sjsu.edu.

INFORMATION TO USERS

This manuscript has been reproduced from the microfilm master. UMI films the text directly from the original or copy submitted. Thus, some thesis and dissertation copies are in typewriter face, while others may be from any type of computer printer.

The quality of this reproduction is dependent upon the quality of the copy submitted. Broken or indistinct print, colored or poor quality illustrations and photographs, print bleedthrough, substandard margins, and improper alignment can adversely affect reproduction.

In the unlikely event that the author did not send UMI a complete manuscript and there are missing pages, these will be noted. Also, if unauthorized copyright material had to be removed, a note will indicate the deletion.

Oversize materials (e.g., maps, drawings, charts) are reproduced by sectioning the original, beginning at the upper left-hand corner and continuing from left to right in equal sections with small overlaps.

Photographs included in the original manuscript have been reproduced xerographically in this copy. Higher quality 6" x 9" black and white photographic prints are available for any photographs or illustrations appearing in this copy for an additional charge. Contact UMI directly to order.

Bell & Howell Information and Learning
300 North Zeeb Road, Ann Arbor, MI 48106-1346 USA

UMI[®]
800-521-0600

MORPHOLOGICAL MEASUREMENTS OF "EDGE CITIES" IN DALLAS COUNTY, TEXAS

**A THESIS PRESENTED TO
THE FACULTY OF THE DEPARTMENT OF GEOGRAPHY
SAN JOSE STATE UNIVERSITY**

**IN PARTIAL FULFILLMENT
OF THE REQUIREMENTS FOR THE DEGREE
MASTER OF ARTS**

**BY
TODD ANDERSON
AUGUST 2000**

UMI Number: 1400648

Copyright 2000 by
Anderson, Todd F.

All rights reserved.

UMI[®]

UMI Microform 1400648

Copyright 2000 by Bell & Howell Information and Learning Company.

All rights reserved. This microform edition is protected against
unauthorized copying under Title 17, United States Code.

Bell & Howell Information and Learning Company
300 North Zeeb Road
P.O. Box 1346
Ann Arbor, MI 48106-1346

Copyright 2000 – by Todd Anderson


All rights reserved

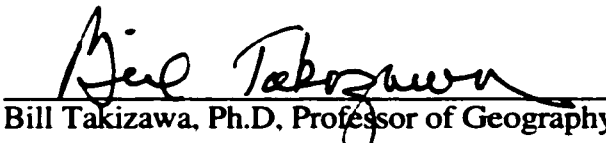
To Kristina, Jordan, and Colton

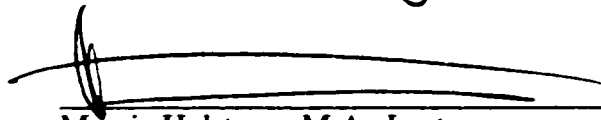
Your help and patience have been invaluable

I love you very much

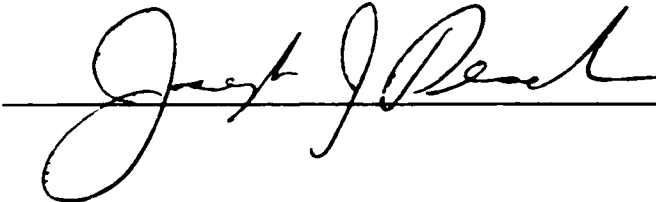
APPROVED FOR THE DEPARTMENT OF GEOGRAPHY


Richard Ellefsen, Ph.D., Professor of Geography


Bill Takizawa, Ph.D., Professor of Geography


Marcia Holstrom, M.A., Lecturer

APPROVED FOR THE UNIVERSITY



CONTENTS

LIST OF FIGURES	vii
CHAPTER	PAGE
1. INTRODUCTION	1
“Edge Cities,” An Urban Phenomenon	1
Human Interest and Need to Expand Vertically	7
2. BACKGROUND	19
Garreau’s Study	19
3. DATA COLLECTION	23
Source Collection	23
“Edge City” Specifications	24
List of Qualifying “Edge Cities”	26
Naming the “Edge Cities”	27
Measuring “Edge City” Characteristics	29
Calculating Total Floor Space	31
Bounding the “Edge Cities”	34
Measuring Distance from the Dallas City Center	37
4. DATA COMPILATION	49
Raw Data for Each “Edge City”	49
Category Rankings	49
5. DATA ANALYSIS	83
Northpark	83
Preston Center	86
Galleria	90
Park Central	93

CONTENTS (Continued)

CHAPTER	PAGE
Las Colinas.....	97
Central Corridor.....	102
Oak Lawn.....	105
Tollway Corridor	108
Mockingbird Plaza.....	112
Las Colinas North.....	115
6. OVERALL STATISTICAL RANKINGS.....	120
Definition of Overall Statistical Ranking	120
Point System for Overall Statistical Rankings.....	121
Results of the Overall Statistical Rankings	121
Location of “Edge Cities” in Relation to the Dallas City Center	124
Future Work in Related Areas	126

FIGURES

Figure	Page
1. Concentric Circle Model of the Changing American Metropolis, Peter Muller	2
2. Tysons Corner, Virginia Circa World War II	4
3. Tysons Corner, Virginia 1988	5
4. Washington D.C Area Map, Joel Garreau	8
5. New York City Area Map, Joel Garreau	9
6. Boston Area Map, Joel Garreau	10
7. Detroit Area Map, Joel Garreau	11
8. Atlanta Area Map, Joel Garreau	12
9. Los Angeles Area Map, Joel Garreau	13
10. San Francisco Area Map, Joel Garreau	14
11. Houston Area Map, Joel Garreau	15
12. Dallas Area Map, Joel Garreau	16
13. Downtown Dallas Skyline Photos	22
14. The Ten "Edge Cities" in Relation to the Dallas City Center	28
15. Universal Urban Building Classification System	30
16. Framed, Light Clad, Glass Exterior Building	32
17. Stair Step Building	33
18. L-Shaped Building	35
19. Preston Center Boundary	38
20. Galleria Boundary	39
21. Central Corridor Boundary	40
22. Las Colinas North Boundary	41
23. Northpark Boundary	42

FIGURES (continued)

Figure	Page
24. Oaklawn Boundary	43
25. Tollway Corridor Boundary	44
26. Mockingbird Plaza Boundary	45
27. Park Central Boundary	46
28. Las Colinas Boundary	47
29. Distance from Dallas City Center to "Edge Cities" Graph	48
30. Central Corridor Raw Data	51
31. Galleria Raw Data	52
32. Las Colinas Raw Data	53
33. Las Colinas North Raw Data	54
34. Mockingbird Plaza Raw Data	55
35. Northpark Raw Data	56
36. Oaklawn Raw Data	57
37. Park Central Raw Data	58
38. Preston Center Raw Data	59
39. Tollway Corridor Raw Data	60
40. Category Rankings Table 1	61
41. Category Rankings Table 2	62
42. Category Rankings Table 3	63
43. Category Rankings Table 4	64
44. Density (Total Floor Space / Total Area) Graph	65
45. Area (In Square Feet) Graph	66

FIGURES (continued)

Figure	Page
46. Area (In Square Feet) Pie Chart	67
47. Number of Buildings (Five Stories or More) Graph.....	68
48. Total Floor Space (Square Feet) Graph	69
49. Total Floor Space (Square Feet) Pie Chart	70
50. Average Building Size (Floor Space) Graph	71
51. Average Height (In Stories) Graph.....	72
52. Total Height (In Stories) Graph	73
53. Total Height (In Stories) Pie Chart	74
54. Tallest Building (In Stories) Graph	75
55. Tallest Buildings (Average of Top Three) Graph	76
56. Largest Building (Floor Space) Graph	77
57. Largest Buildings (Average of Top Three in Floor Space) Graph.....	78
58. Average Building Size (Footprint) Graph	79
59. Total Building Size (Footprint) Graph.....	80
60. Total Building Size (Footprint) Pie Chart.....	81
61. Largest Building (Footprint) Graph.....	82
62. Northpark Photos	84
63. Northpark Aerial Photo.....	85
64. Preston Center Photos.....	88
65. Preston Center Aerial Photo	89
66. Galleria Photos.....	91
67. Galleria Aerial Photo	92

FIGURES (continued)

Figure	Page
68. Park Central Photos	95
69. Park Central Aerial Photo.....	96
70. Las Colinas Photo	98
71. Las Colinas Photos	99
72. Las Colinas Aerial Photo.....	100
73. Central Corridor Photos	103
74. Central Corridor Aerial Photo.....	104
75. Oak Lawn Photo.....	106
76. Oak Lawn Aerial Photo	107
77. Tollway Corridor Photo.....	110
78. Tollway Corridor Aerial Photo	111
79. Mockingbird Plaza Photo	113
80. Mockingbird Plaza Aerial Photo	114
81. Las Colinas North Photo	118
82. Las Colinas North Aerial Photo	119
83. Overall Statistical Rankings Table	122
84. Overall Statistical Rankings Graph	123
85. Distance to Density Comparison Graph.....	125

CHAPTER 1

INTRODUCTION

"Edge Cities," An Urban Phenomenon

An urban phenomenon is sweeping across the United States and the rest of the world. It is large, consistent, and widespread, yet little noticed. "We Americans are going through the most radical change in a century in how we build our world, and most of us don't even know it. From coast to coast, every metropolis that is growing is doing so by sprouting strange new kinds of places" (Garreau 1991, foreword). These places are new, modern, and provide economic opportunities unavailable just forty years ago. These places encompass the area where Americans work, shop, eat, and play and are locales of a high level of activity, but so far, no agreed title has appeared. The names "Edge Cities," "Outer Cities," "Business Parks," and many others are all in use today.

Peter Muller (geography professor at the University of Miami), in his book titled *The Outer City: Geographical Consequences of the Urbanization of Suburbs*, details this urban phenomenon. Muller's findings are based on population statistics, showing that in the latter half of the 20th Century substantial growth occurred in the suburbs and urban fringe of metropolitan areas. "As the functional city turns inside out, a fundamental reorganization in metropolitan structure has occurred. This metamorphosis is embodied in the shift from the tightly focused single-core urban regions of the past to the widely dispersed multi-centered metropolis of the present" (Muller 1976, 6). Figure 1 displays Muller's concentric circle model of the changing form and structure of the 20th Century American Metropolis. The bottom of the diagram displays the Polycentric City of the 1970's that includes the emergence of these "Outer Cities" located in the suburbs of a metropolis. "Most prominent are the new multiple-purpose centers or mini-cities that

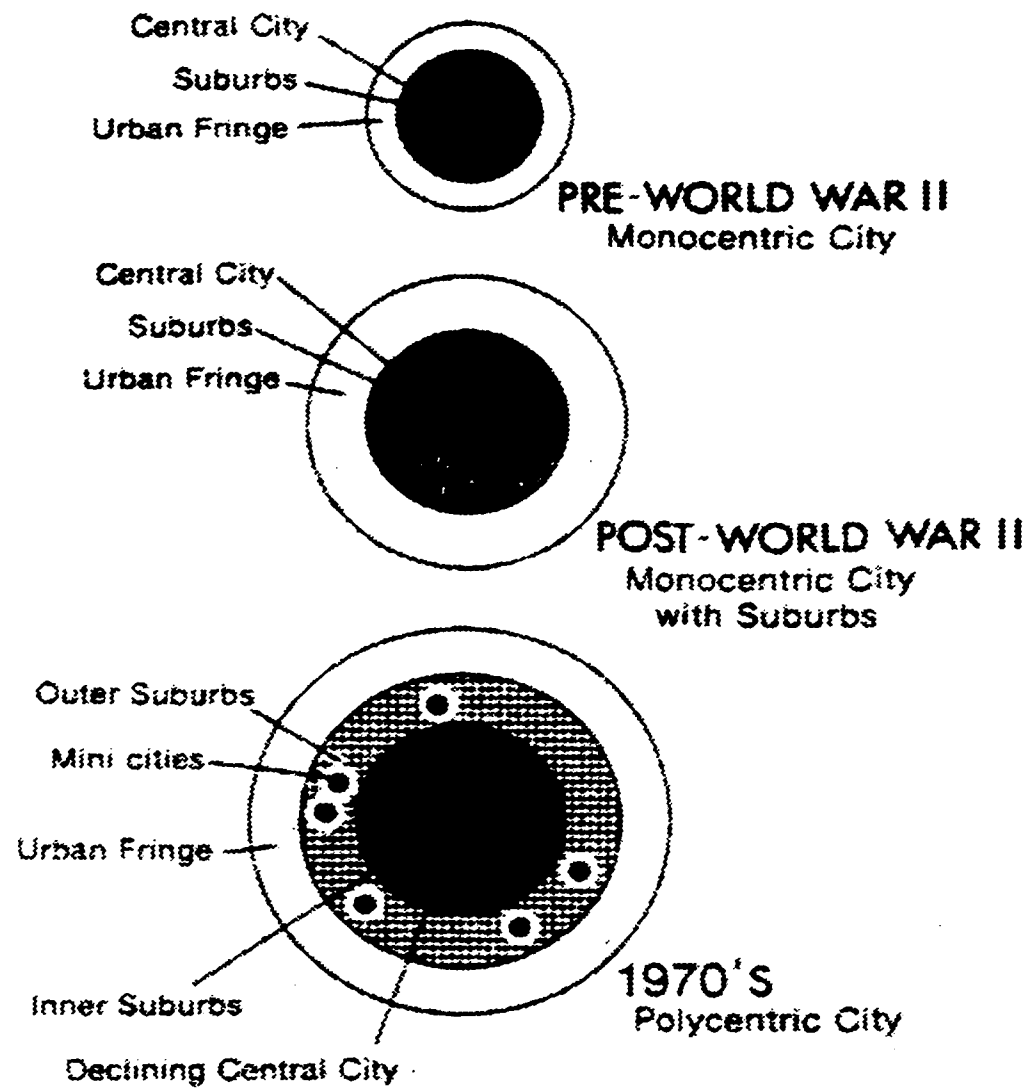


FIGURE 1: Peter Muller's Concentric Circle Model of the Changing American Metropolis

have emerged in the suburban ring since 1970. These major outlying concentrations of retailing, employment, entertainment, and other activities, formerly found only downtown, increasingly rival the central city's central business district" (Muller 1976, 7).

"Most of us spend our entire lives in and around these 'Edge Cities', yet we barely recognize them for what they are. That's because they look nothing like the old downtowns; they meet none of our preconceptions of what constitutes a city" (Garreau 1991, foreword). Corporations of all sizes are now choosing to expand or re-locate their facilities within these "Outer Cities" because they offer more than the old downtowns in terms of location, convenience, aesthetics, and other amenities. "Our new Edge Cities are tied together not by locomotives and subways, but by freeways, jetways, and jogging paths. Their characteristic monument is not a horse-mounted hero in the square, but an atrium shielding trees perpetually in leaf at the cores of our corporate headquarters, fitness centers, and shopping piazas" (Garreau 1991, foreword). These modern "Urban Centers" are not surrounded by attached high-rise apartment and condominium complexes found in the inner-city areas, but are found in areas of detached, single-family homes, and other suburban land uses. Rural terrain, trees, flowers, and grassland that make up the residential sector surrounding the "Outer City" replace the concrete, congested alleyways of the old downtown. "For the rise of the 'Edge City' reflects us moving our jobs, our means of creating wealth, the very essence of urbanism, out to where we've been living and shopping for two generations" (Garreau 1991, foreword).

These "Outer Cities" are an urban phenomenon of recent time, the vast majority built in the past thirty years. Where there was once desolate, flat, prairie land, there is now a fully functioning urban center, complete with high-rise office buildings, new freeways, mass-transportation networks, shopping malls, etc. Figure 2 is a photo of an intersection known as Tysons Corner near Washington D.C., taken during World War II (1939-1945). Figure 3 shows Tysons Corner in 1988, an area transformed from rural farmland to an urban metropolis. The

Tyson's Corner, Virginia, circa World War II

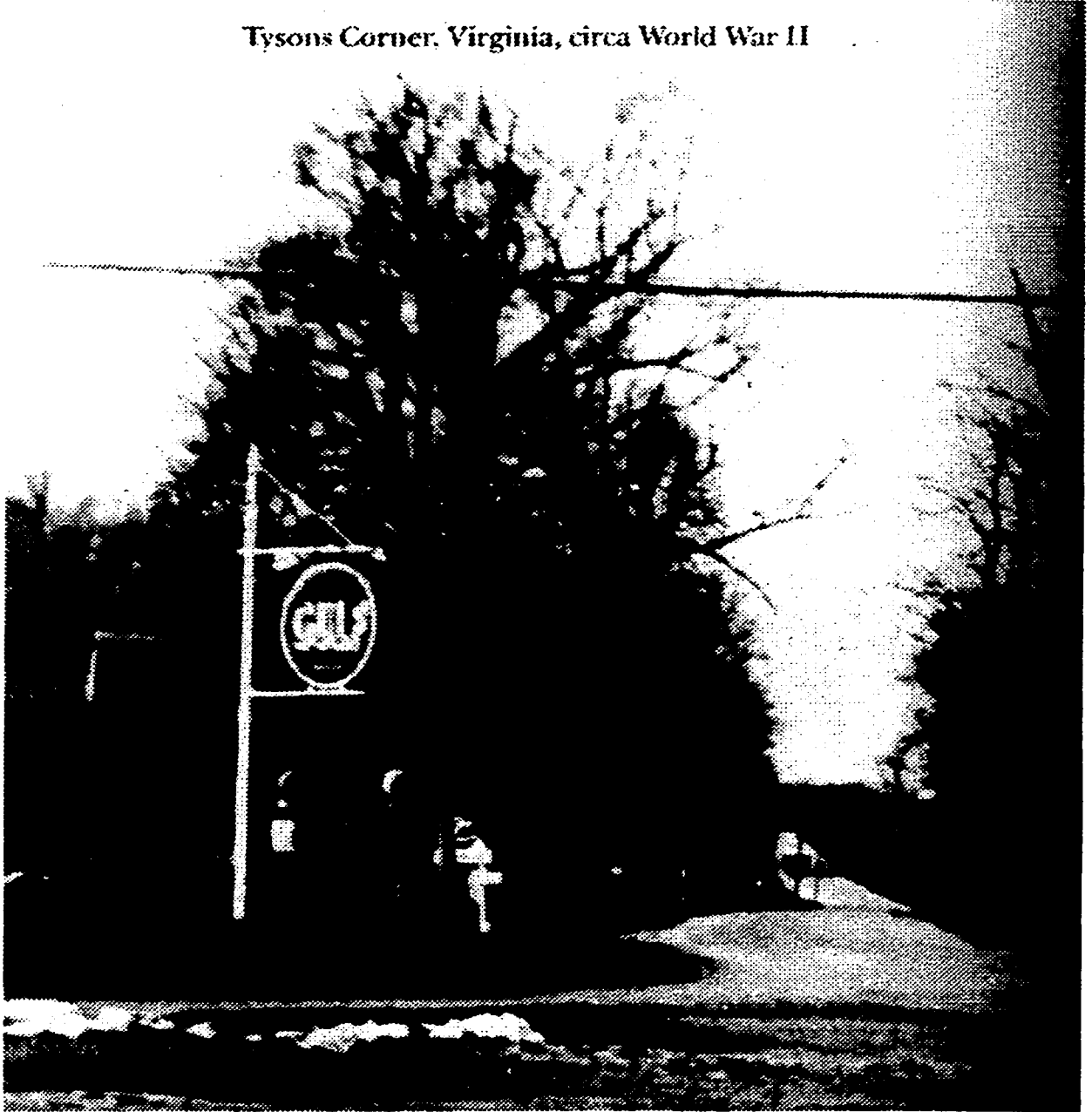


FIGURE 2: Tyson's Corner, Virginia Circa World War II

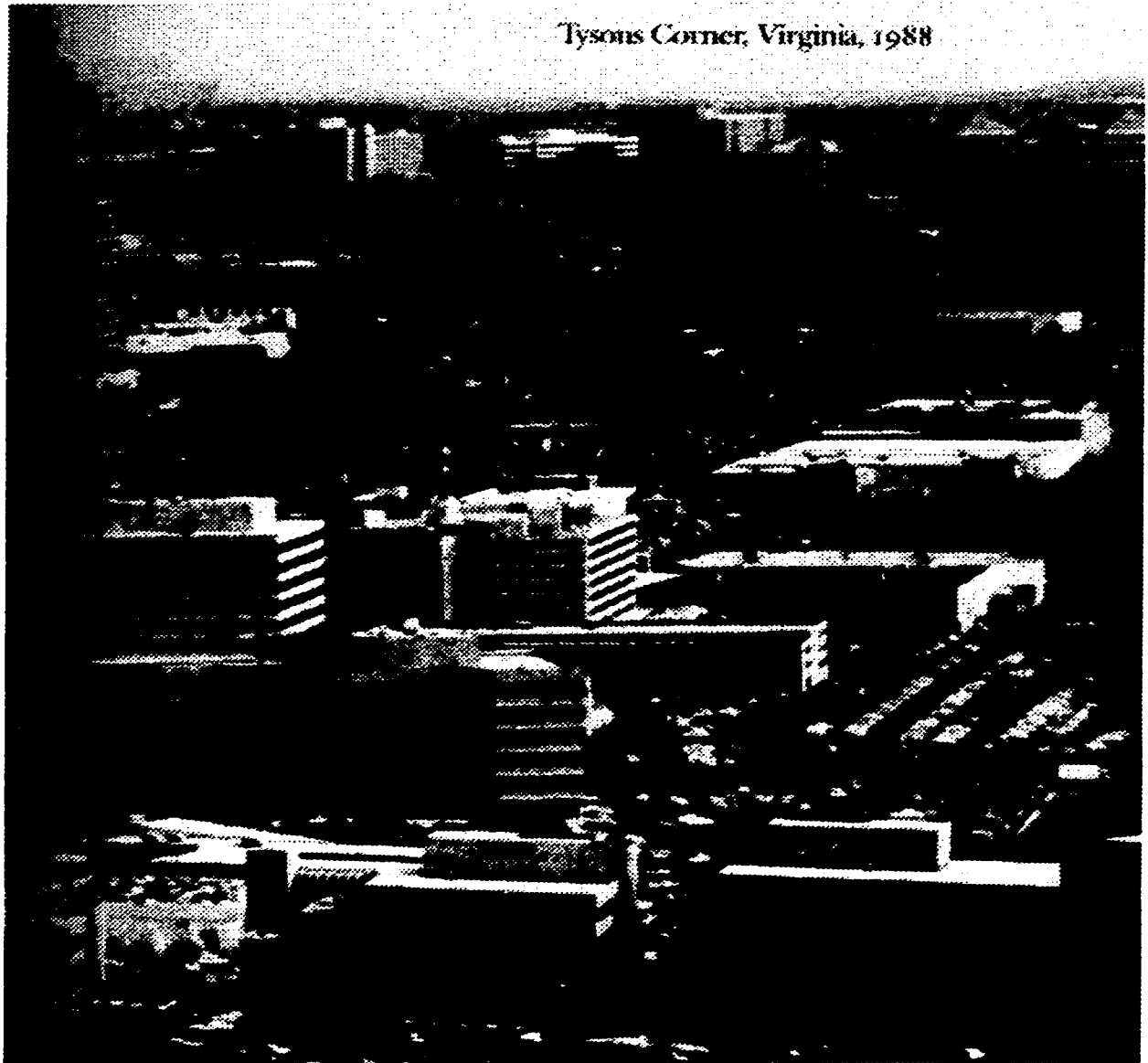


FIGURE 3: Tysons Corner, Virginia 1988

"Tysons Corner" scenario is taking place all over the United States and around the world. Figure 4 exhibits that Tysons Corner is just one of sixteen fully functional "Edge Cities" Garreau identified in the Washington D.C. area.

The emergence of the "Edge City" does not receive the amount of attention it deserves. In fact, "these new urban agglomerations are such mavericks that everyone who wrestles them to the ground tries to brand them. Their list of titles by now has become marvelous, rich, diverse, and sometimes unpronounceable" (Garreau 1991, 5). The list of names includes Joel Garreau's term of "Edge City" and Peter Muller's term of "Outer City." Mark Baldassare, a professor at the University of California, Irvine, coined the acronym "DISURB," which stands for dense, industrial, and self-contained suburban region. The Minnesota Press refers to them as "Galactic Cities." Philadelphia magazine refers to them as "Superburbs." The litany of terminology also includes such things as "urban villages," "technoburbs," "suburban activity centers," and "suburban cores." "The profusion of vaguely ominous names is only one sign of our deep uncertainty about what this new thing is. Is it merely the old suburb swollen beyond all proportion? Or are we seeing the distinction between city and suburb gradually being erased?" (Fishman 1990, 25). Robert Fishman, a history professor at Rutgers University, believes it imperative that a full understanding of these newly arising "Edge Cities" be gained so that they can be utilized to their fullest potential. "If its opportunities are recognized, America's long quest to combine the amenities of technological civilization with the pleasures of natural surroundings may at last be rewarded. If they are not, the failure will blight the landscape of America--and the lives of Americans--for generations to come" (Fishman 1990, 25).

These "Outer Cities" are a prevalent force in the study of modern day urban morphology of the city and have an influence on the economic success of America. So why is there not a universal term for them, and why is the general public under-informed about their existence and importance? One reason is that the "Edge City" is rarely an incorporated city and, as such, is not identified by mayor, city council, or city limits. Boundaries of "Edge Cities" rarely match

administrative boundaries, such as city, or zip code boundaries. Statistical measurements, such as population, are used to define and describe incorporated cities, having static boundaries. Gathering statistical measurements for "Edge Cities," having undefined boundaries, is a much tougher task. Garreau sums up the aforementioned problem nicely by stating, "The reason there are no 'Welcome To' signs at an 'Edge City' is that it is a judgment call where it begins and ends" (Garreau 1991, 6).

Joel Garreau conducted a study attempting to map "Edge Cities" in the United States. He published the most complete listing of "Edge Cities" to date in his book titled, *Edge City: Life on the New Frontier*. He successfully identified "Edge Cities" in and around metropolitan areas such as Washington D.C., Los Angeles, Atlanta, New York, Detroit, San Francisco, Boston, Houston, and Dallas (fig. 4-12). Garreau's list encompasses 197 "Edge Cities" in thirty-five United States metropolitan areas. Other literature identifies and discusses "Edge Cities" in many renowned worldwide metropolitan areas. David Kostin and David Shulman write about the rise of "Edge Cities" in Sydney, London, and Paris. If the urban phenomenon of the "Edge City" is occurring in those places, then it is certainly also occurring in large metropolitan areas such as Frankfurt, Hong Kong, Sao Paulo, etc. The "Edge City" is truly a worldwide phenomenon.

Human Interest and Need to Expand Verticality

The "Edge City" affects where people choose to live, work, shop, and eat. Above and beyond their economic and functionality importance, "Edge Cities" relate to the urban geographical concept of verticality, or the multiplication of surface space.

Humans have always been fascinated by natural vertical features such as escarpments, cliffs, canyons, waterfalls, mountain ranges, and trees. High points offer panoramic views of the landscape below. Not only are these natural edifices imposing; they offer economic advantages by multiplying surface space several times. The urban geographical equivalents of these naturally formed physical vertical features are high-rise buildings. High-rise buildings also provide

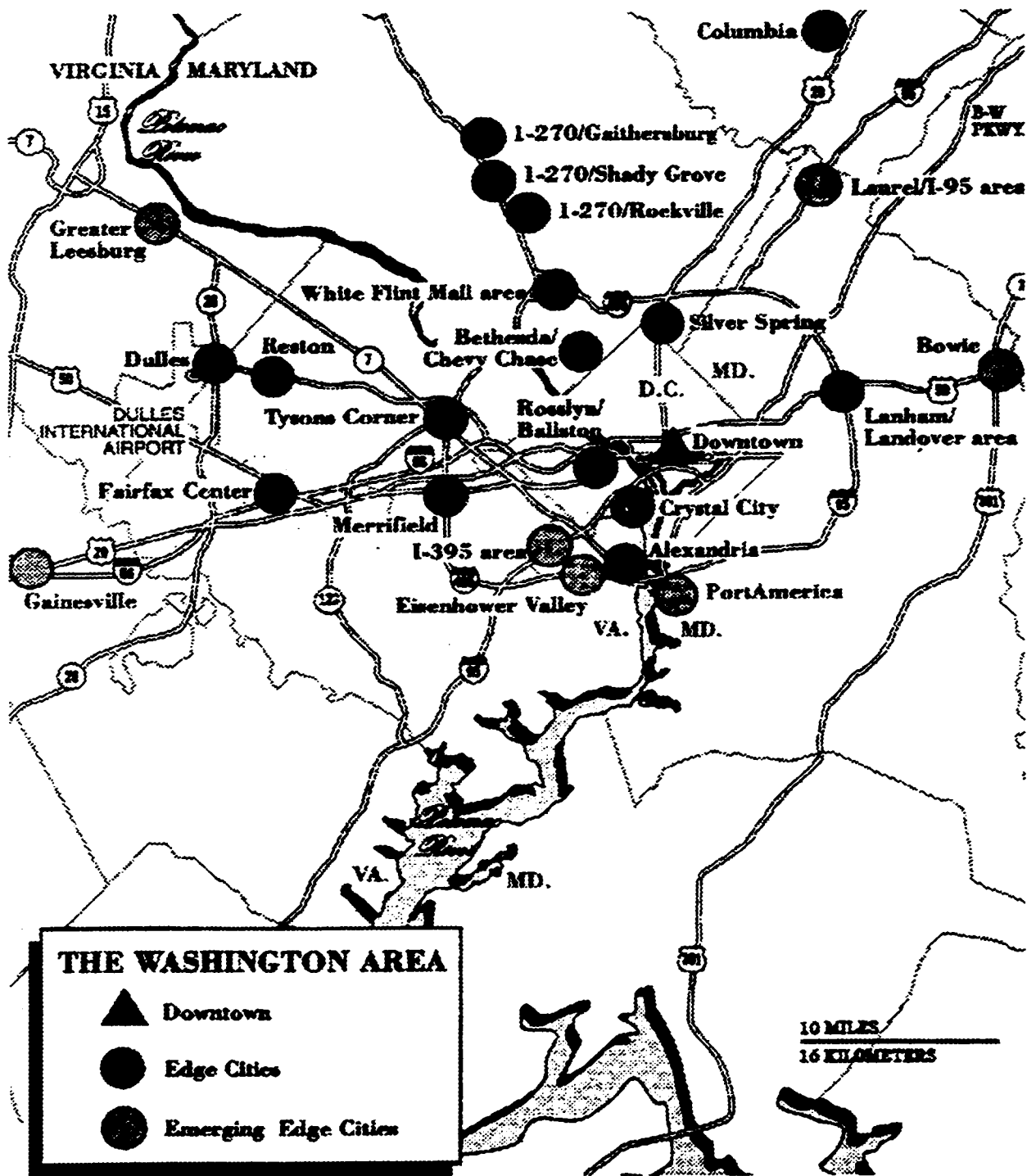


FIGURE 4: Washington D.C Area Map, Joel Garreau



FIGURE 5: New York City Area Map, Joel Garreau

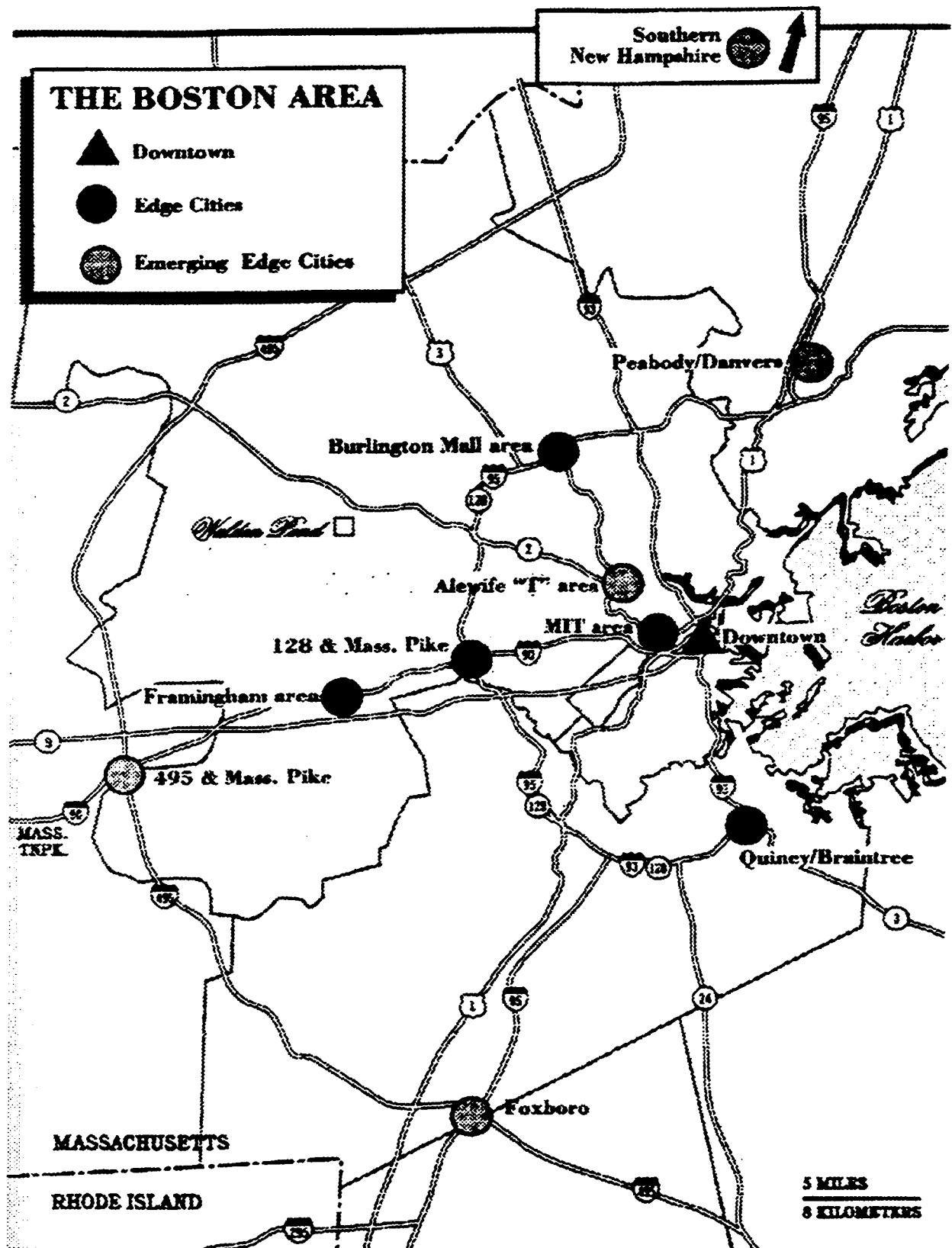


FIGURE 6: Boston Area Map, Joel Garreau



FIGURE 7: Detroit Area Map, Joel Garreau

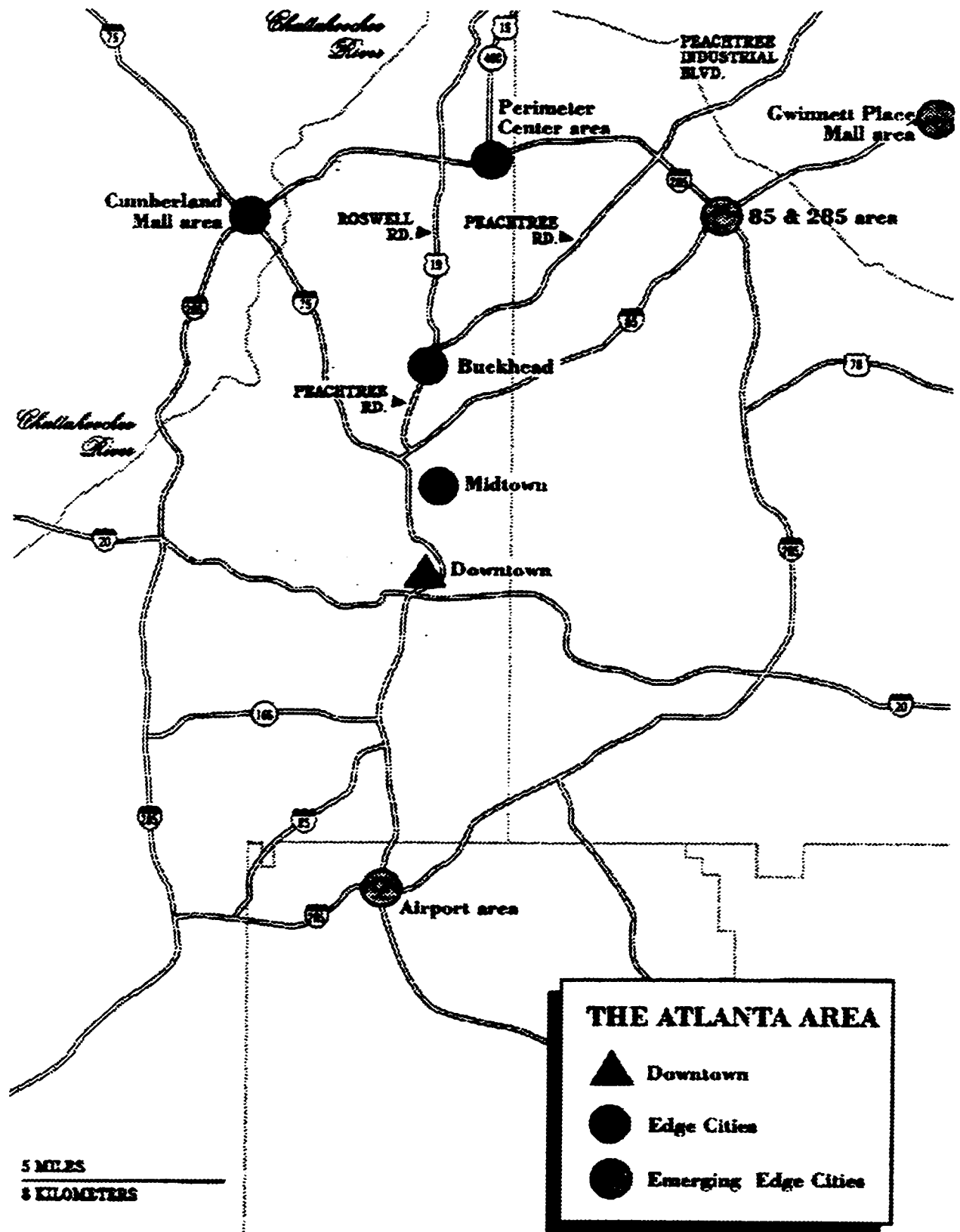


FIGURE 8: Atlanta Area Map, Joel Garreau



FIGURE 10: San Francisco Area Map, Joel Garreau

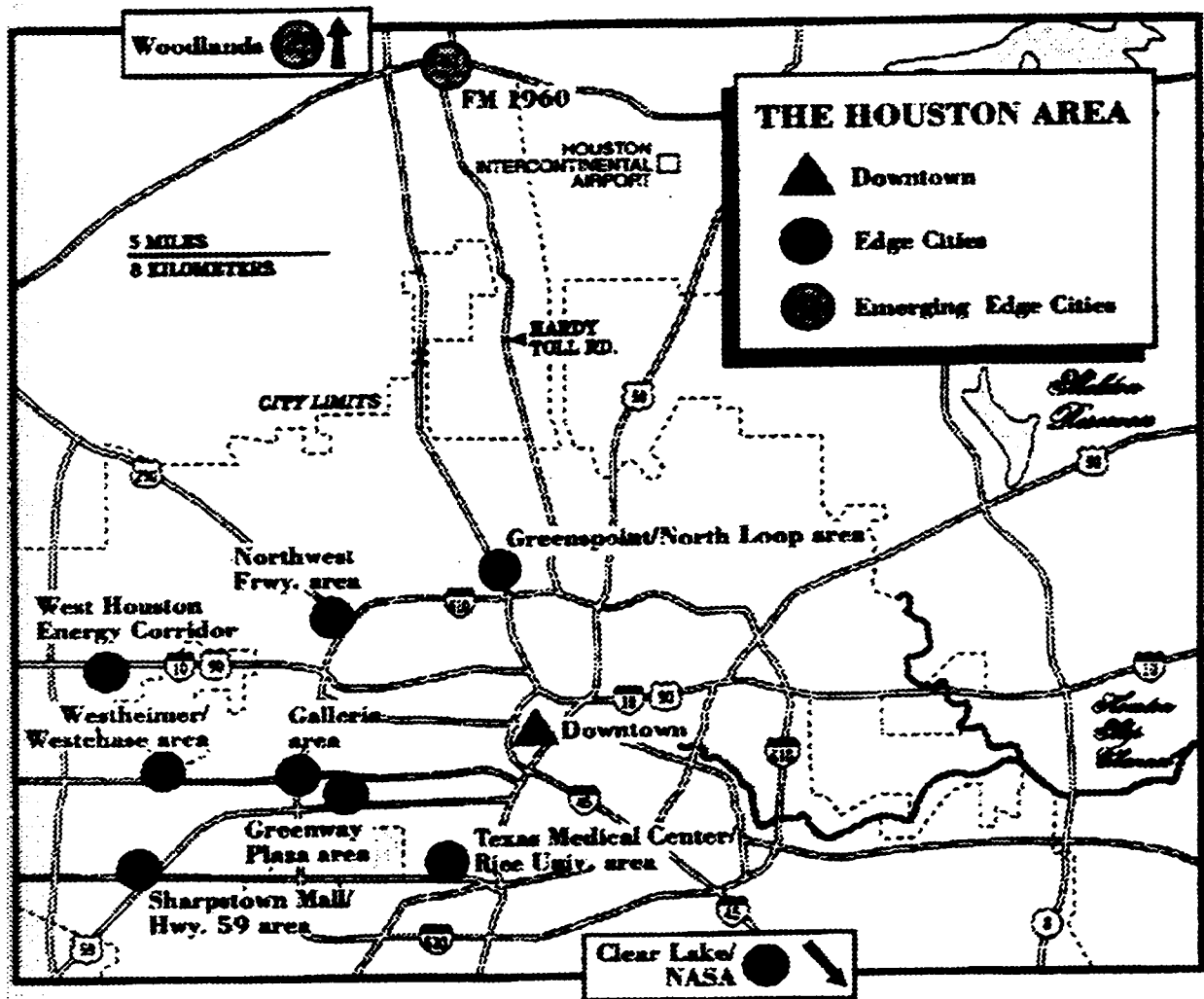


FIGURE 11: Houston Area Map. Joel Garreau

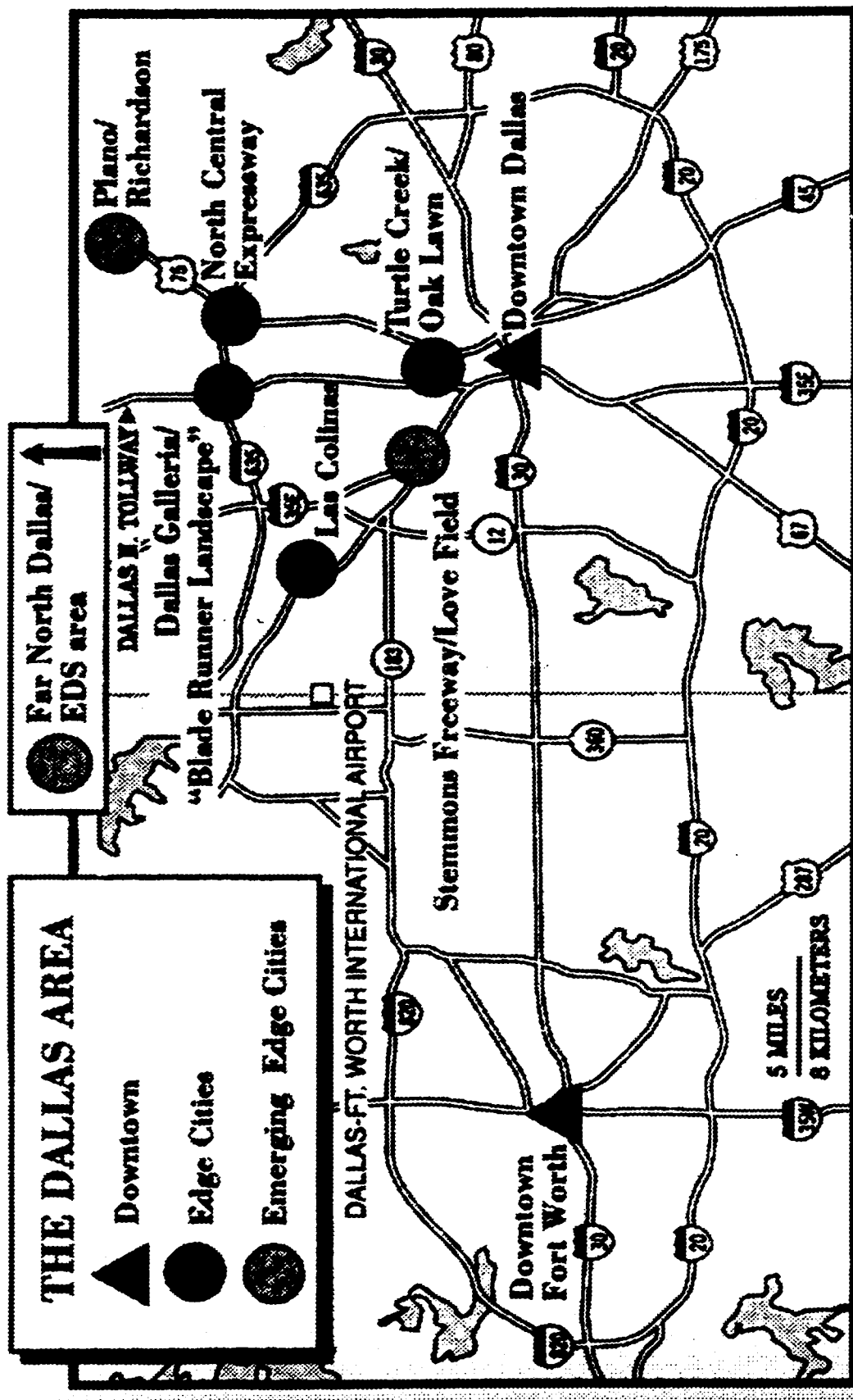


FIGURE 12: Dallas Area Map, Joel Garreau

panoramic views of the urban landscape. Some vertical features have been erected solely for viewing a city from above. The Space Needle in Seattle and the Tower of Americas in San Antonio are two examples of millions of dollars being spent to achieve the coveted "view from above."

The multiplication of surface space is a concept that has been practiced in the past, predominantly in downtown areas. "The multiplication of surface space gives cities the z-factor. It creates the possibility for many different land uses on, or over, the same piece of surface space thus creating the need for a more sophisticated way of thought to appreciate this landscape" (Ellefsen 1992, 53). The "City Center," "Downtown Core," and "Central Business District" are all terms used to describe the area containing a cluster of tall buildings within a metropolitan scope. In the past, the concept of multiplying surface space was practiced solely in the downtown area because that was where the demand for floor space was the greatest and where land values were the highest. When the demand for floor space outweighs the available ground space, the solution is to build "upward," thus multiplying floor space.

In the last thirty years, as the population in the United States has increased dramatically, extensive growth has occurred in the suburbs. A large suburban population created a demand for places to work, shop, and conduct daily activities; negating the need to travel downtown. The construction of high-rise office buildings shifted from being built almost exclusively in the downtown core to the suburbs. In fact, more than half of all new industrial and commercial building in North American metropolitan areas is taking place outside of the downtown core.¹ A perfect model of this population and infrastructure shift is the Los Angeles metropolitan area. In 1988, the downtown core area of Los Angeles represented only 16% of the total occupied office space in the metro area, as opposed to 60% in 1960 (Leinberger 1988, 25). This trend has

¹ Truman Hartshorn, "Industrial Parks/Office Parks: A New Look for the City." *Journal of Geography* 62 (March 1973), 33.

continued in the 1990's. The emergence of "Edge Cities" is directly related to the population increase in the suburbs of large metropolitan areas.

The "downtown core" was no longer the only area in a large city containing a cluster of tall buildings. Downtown was also no longer the only spot where the demand for surface space outweighed the demand for ground space. Consequently, "Edge Cities" began emerging in the suburbs with high frequency. "Edge Cities" were typically constructed following a master plan combining multiple forms of infrastructure. These "fully functional" urban centers combined high-rise office facilities in which to work, large-scale shopping malls in which to shop and eat, and high-rise apartments in which to live. Muller's Polycentric City Model shown in figure 1 was now in full effect.

CHAPTER 2

BACKGROUND

Garreau's Study

The main goal of Garreau's study was to identify "Edge Cities" surrounding major metropolitan areas in the United States. Garreau wanted to demonstrate that any city with a significant downtown cluster of high-rise buildings would also have smaller high-rise clusters around the perimeter. The San Francisco Bay Area is a good example of Garreau's model. Three downtown cores anchor the Bay Area: San Francisco to the northwest, Oakland to the northeast, and San Jose to the south. The Bay Area also contains many "Edge Cities" located in the suburbs around these three "City Centers." Garreau identified eleven "Edge Cities" in the San Francisco Bay Area (fig. 10). The Bay Area satisfies Garreau's urban model on "Edge Cities" and fits Muller's Polycentric City Model (fig. 1) in having both multiple downtown cores and modern, fully functional, high-rise business parks located in the suburbs.

The Dallas/Fort Worth Metroplex is an even more apparent "Edge City" model than is the San Francisco Bay Area. When flying into Dallas/Fort Worth International Airport, "Edge Cities" can be easily spotted, as they jut up from the flat prairie land below. A number of "Edge Cities" exist beyond the two old downtown cores of Dallas and Fort Worth. No topographic features in the Dallas/Fort Worth Metroplex, such as mountains, exist to obscure these "Edge Cities." The Dallas/Fort Worth Metroplex follows Garreau's urban model precisely.

Garreau identified seven "Edge Cities" in the Dallas/Fort Worth Metropolitan Area (fig 12). However, depending on the criteria for how "large" an "Edge City" must be to qualify, there are many more candidates in Dallas County alone than the seven he identified. "Edge City"

specification criteria will be discussed in the Data Collection portion. Garreau maps out "Edge Cities" in many different metropolitan areas in the U.S. and discusses them in some detail. This study concentrates on locating "Edge Cities" in Dallas County, drawing boundaries, and recording measurements within delimited polygons. Measuring the density of the "Edge Cities" in Dallas County is the main goal of this study. Density is defined here as the total floor space divided by the total ground surface space of each "Edge City." In other words, density is the ratio of total floor space to total ground space.

Many areas of emphasis could be chosen when studying "Edge Cities" within a defined area. What explains their location? What construction types of buildings occur in each cluster? How old are the buildings? How does the center function, both individually and in relation to the entire metropolitan area? These pertinent questions are all addressed in the study.

A lesser goal is to note the bearing Central Place Theory has on "Edge City" size and location. Much like Muller's Polycentric City Model, Central Place Theory states that larger cities are always surrounded by smaller cities. Central Place Theory can best be described by using the following example given by Richard Ellefsen: "an examination of a map, on which city population size was indicated by a distinctive symbol, would quickly show the frequency of those symbols. The few symbols indicating the largest places would significantly exceed symbols representing the next size cities. At the bottom of the city size listing would be a very large number of small places. A spatial pattern would also be evident. That is, with some recognizable frequency, cities of a larger size class would have a fair number of smaller ones about them" (Ellefsen 1992, 37). Central Place Theory "is a manifestation of one of the greater contributions of the field of urban geography, namely the identification and quantification of a system of urban places ranging from small to large. In an almost organic fashion, a hierarchy of urban places has been determined to exist" (Ellefsen 1992, 37).

Central Place Theory relates to this study in the following way. The "city core" of downtown Dallas represents the "Central Place." Downtown Dallas contains the largest and most concentrated cluster of high-rise buildings in the area (fig. 13). The concentration, size, and

number of buildings in downtown Dallas greatly outweigh those in any of the "Edge Cities." Downtown Dallas is the "Central Place" or "anchor" of the metropolitan area. "Edge Cities" surround Downtown Dallas in a form similar to Muller's Polycentric City Model (fig. 1). Using Central Place Theory as a model, it is assumed that as the distance from the City Center of Dallas increases, the density of the "Edge Cities" will decrease.

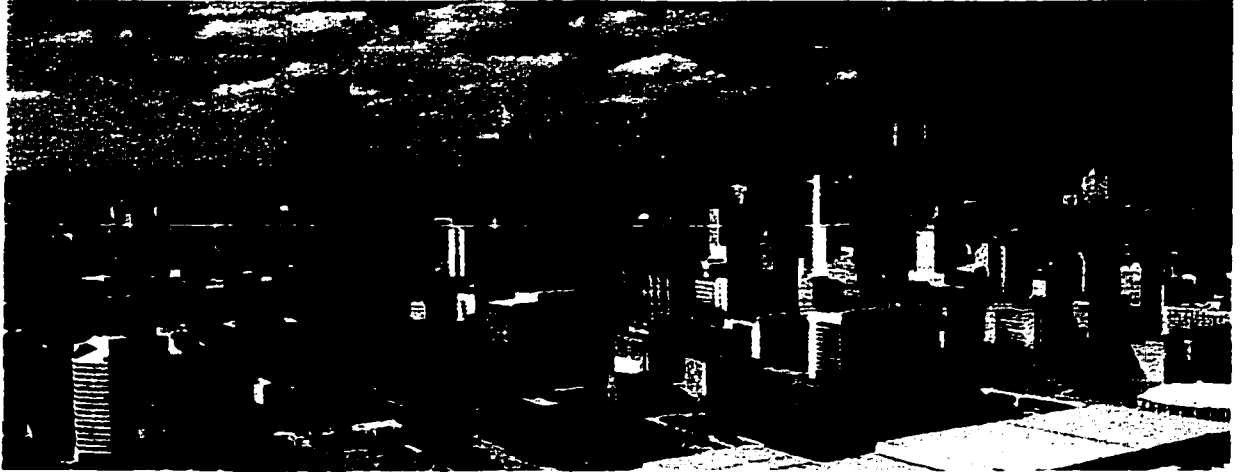


FIGURE 13: (Above) Downtown Dallas from the South. (Below) Downtown Dallas from the West.

CHAPTER 3

DATA COLLECTION

Source Collection

The initial step in the data collection process was to locate all of the "Edge Cities" in Dallas County. A field survey method was employed to fill this need and proved to be the most effective way to determine which of the potential "Edge Cities" qualified for the study. Physically visiting each one of the potential "Edge Cities" yielded a feeling for the contents of each one, as well as a preliminary understanding of how one compared to another. Prior to the fieldwork, source materials were used to aid in locating the "Edge Cities." Navigation Technologies, a digital mapping company, provided the source materials. "Navigation Technologies is a global provider of precision digital map databases and enabling technology used in a wide range of smart navigation products, including automotive navigation systems, hand held products, internet mapping, PC-based applications, and call center-based navigation services. The company's NAVTECH brand digital maps, covering North America and Western Europe, are the route guidance solution chosen by leading automotive, electronics, and software manufacturers for their unrivaled accuracy, depth, and reliability" (Fagel 2000).

Navtech's aerial photos and its GIS database were used to assist in locating all of the "Edge Cities." Two elements made the Navtech aerial photos very useful. First, the aerial photos covered 100% of Dallas County, thus leaving no "holes" or missing coverage in the project scope. The second key element of the Navtech aerial photos was their verified scale, 1:12,000. At this scale, the road network and the individual buildings are readily identified. All of the aerial photos for Dallas County were examined. Photocopies for each potential "Edge City" were then made and used in the field.

The Navtech GIS database, was used to make screen prints of all of the potential "Edge Cities." The screen prints formed the map source used to navigate in a vehicle when conducting the fieldwork.

"Edge City" Specifications

Criteria or specifications will be used for determining whether or not an "Edge City" qualifies for the study. Garreau's book contains his own specific definition for an "Edge City." Portions of these definitions were used for this study. Garreau's criteria or specifications of an "Edge City" are as follows:

1. It must contain five million square feet or more of leasable office space. To put this figure into perspective, five million square feet of office space is more than is located in downtown Memphis. "The 'Edge City' called the Galleria area west of downtown Houston--crowned by the 64-story Transco Tower, the tallest building in the world outside an old downtown--is bigger than downtown Minneapolis" (Garreau 1991, 6).
2. It must contain 600,000 square feet or more of leasable retail space. To put this figure into perspective, 600,000 square feet of space is equivalent to a huge mall with at least three anchor department stores and eighty to one hundred merchandise shops.
3. It must have a population that greatly increases during working hours. In other words, when the workday starts, people must travel toward this place, and not away from it.
4. It must be perceived by the local population as one place. In other words, an "Edge City" must have "a local perception as a single end destination for mixed use--jobs, shopping, and entertainment" (Garreau 1991, 425).
5. It must have been nothing resembling a "city" as recently as thirty years ago. In other words, the site must have been residential, or more often rural, in character just thirty years ago.

Garreau's definition definitely concentrates on the "large scale" occurrences. In order to meet his criteria, an "Edge City" must be very large and well established. This study identifies

some of the "smaller" "Edge Cities" in Dallas County that were omitted from Garreau's work. Therefore, numbers one and two of Garreau's definition pertaining to floor space and leasable office space do not apply. Garreau's specification stating that the population must increase during business hours pertains well to this study. All of the "Edge Cities" in Dallas County are business parks. As they are places where people work, the population swells during business hours. Garreau's specification stating that an "Edge City" must have existed in either a residential or rural form just thirty years ago is also useful. All of the "Edge Cities" in Dallas County house buildings built within the last thirty years. In fact, a majority of the "Edge Cities" in Dallas County were built from the ground up in the last couple of decades.

The following lists the specification criteria for "Edge Cities" used in this study. Each center:

1. Must have a population that greatly increases during working hours.
2. Must have been residential or rural in character just thirty years ago.
3. Must contain buildings that cast a significant skyline on the horizon.
4. Must contain buildings that create an "Urban Canyon Effect" from within.
5. Must contain a minimum of ten buildings over five stories tall.

The first two criteria are directly from Garreau's definition. The third criterion, a significant skyline or profile, simply means that the cluster of high-rise buildings must be configured in a way that casts a tight skyline. Two potential "Edge Cities" were eliminated because of their modest skylines, even though they contained enough buildings to qualify in both height and quantity. This was due to the wide spacing or varying heights of the buildings, a situation that produced "weak" or "diluted" skylines. The opposite case occurred where one "Edge City" qualified even though it did not meet the minimum building quantity requirement. However, the buildings here were tightly packed and similar in height, creating an obvious skyline.

The fourth criterion used to determine qualification was that the buildings must create an "Urban Canyon Effect" as viewed from within the "Edge City." "Urban Canyon" is a term used in urban geography to describe a situation created by a group of tightly packed high-rise buildings,

and can be sensed by a person standing at street level where the effect is akin to standing at the bottom of a canyon. When a person looks up from the bottom of a large canyon, most of the sky above is obstructed by the steep canyon walls. Similarly, when a person looks upward from the middle of a downtown core area, the walls of the high-rises block out much of the sky above. The buildings within an "Edge City" must exhibit an "Urban Canyon Effect" in order to qualify.

The fifth criterion states that to qualify, an "Edge City" must contain a minimum of ten buildings over five stories tall. After conducting initial fieldwork, ten buildings were chosen as the minimum number required for an "Edge City" to qualify. Individual buildings could be no lower than five stories tall. Shorter buildings do not contribute to the formation of an obvious skyline. Many of the "Edge Cities" contained other homogeneous zones, such as shopping facilities, apartment complexes, and parking garages within their boundaries. Buildings with such uses were seldom more than five stories high, thus adding no value to the skyline of the "Edge City."

List of Qualifying "Edge Cities"

Fieldwork yielded ten qualifying "Edge Cities" in Dallas County. Figure 14 displays their locations both absolute and in relation to the "City Center" of Dallas. All ten are located to the north and the west of downtown Dallas, while there are none to the east or south. The highest population growth rates are found in the northern and western suburbs of the Dallas area. Cities such as Irving, Flower Mound, Lewisville, Carrollton, Frisco, and Plano are all located in the northern and western suburbs, all have high growth rates, and all are economically prosperous. Local affluence is a major attraction for the development of "Edge Cities." The following is a listing of the ten "Edge Cities" in Dallas County in alphabetical order:

1. Central Corridor
2. Galleria
3. Las Colinas
4. Las Colinas North

5. Mockingbird Plaza
6. Northpark
7. Park Central
8. Preston Center
9. Oak Lawn
10. Tollway Corridor

Naming the "Edge Cities"

Another task accomplished during the fieldwork was to attach a name to each "Edge City." Elements contributing to determining a name are as follows:

1. Known local area name
2. Associated name
3. Vanity name
4. Text on signs

"Edge City" name origins vary. An "Edge City" that got its name from a "known local area name" is the Tollway Corridor, a north to south stretch along both sides of the Dallas North Tollway, to the north of I-635. The term "tollway corridor" is commonly mentioned in various media outlets, such as newspaper articles, radio ads, etc. Although the "tollway corridor" is extensive, it imparts the name to the "Edge City."

The Galleria is an example of an "Edge City" that got its name from association with a local feature. The "Galleria" is a locally well known, upscale shopping mall located in North Dallas. The substantial business park complex, developed around the mall, is referred to by the same name.

Park Central is an example of an "Edge City" whose name originated from a "vanity name," one used by the United States Postal Service to aid in delivering mail to an area that does not contain a traditional addressing scheme. Vanity names are often attached to strip malls or multi-building business complexes. An example of a vanity address is "125 Main Place."

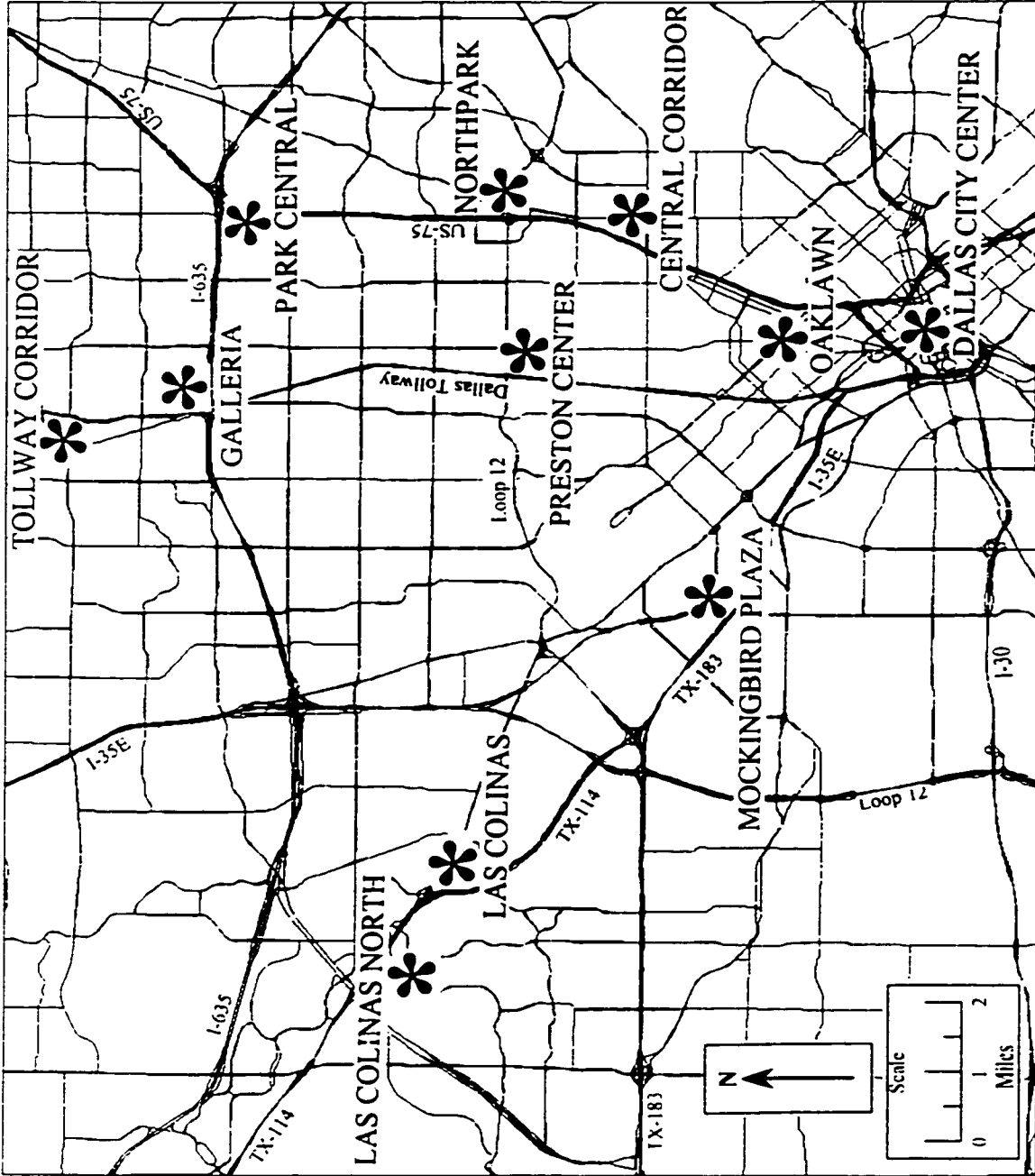


FIGURE 14: The Ten "Edge Cities" in Relation to the City Center of Dallas

Although the local addressing scheme states that the location of the facility is on the 1400 block of Jones Street, its mail is delivered to "125 Main Place." "Park Central" is a vanity name for a large multi-building business complex in North Dallas. The addresses of many of the buildings contain the "Park Central" vanity name, e.g., "10 Park Central" or "Park Central Plaza."

Las Colinas is an example of an "Edge City" whose name came directly from text on freeway signs. As one approaches the business park on TX-114 from either direction, signs say "Los Colinas Business Park Next Three Exits." Even after exiting the freeway, signs on the local streets guide the visitor to various points of interest within Las Colinas.

Measuring "Edge City" Characteristics

Density, a key variable, is defined as the total floor space as a proportion of the total ground space. The Density equation is as follows.

$$\text{Density} = \text{Total Floor Space} / \text{Total Ground Space}$$

The "Total Floor Space" portion of the equation is defined as follows:

$$\text{Total Floor Space} = \text{Footprint} \times \text{Number of Floors}$$

Footprints were measured using Navtech's Aerial Photos. The number of floors for each building was recorded in the field.

Figure 15 is a pyramid flow chart of the Universal Urban Building Classification System (Ellefsen 1992, 121). The highlighted path represents the structure of nearly all of the buildings found in the ten "Edge Cities." Almost all were built within the last thirty years. High-rise buildings, constructed since around 1950, employed the framed, light-clad, form of construction. This new architectural and construction style "came upon the world scene at the very time when national economies and international business were expanding rapidly. Very tall, light-clad structures were erected in great numbers not only in US cities, but also notably in such developing areas as Japan, Hong Kong, Singapore, Brazil, and Venezuela. Many US cities already known for their skylines, now have so many of these new, imposing structures that the

UNIVERSAL URBAN BUILDING CLASSIFICATION SYSTEM

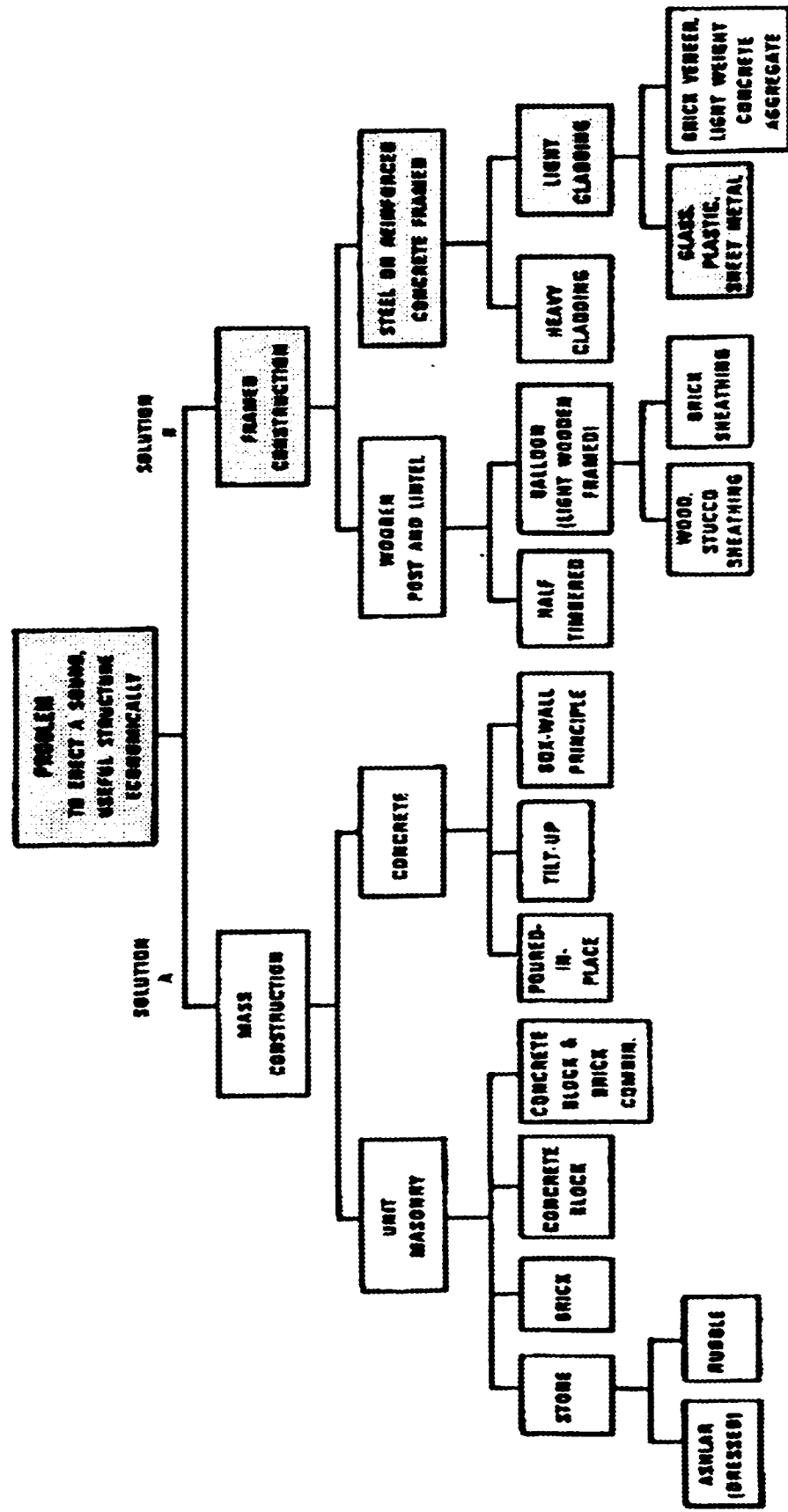


FIGURE 15: Universal Building Classification System. The Path of the Most Common Type of Building Found in the "Edge Cities" is Highlighted.

old, renowned skylines seem tawdry by comparison" (Ellefsen 1992, 126). Figure 16 displays a diagram of a typical framed, light-clad, glass exterior building (Ellefsen 1992, 126). The horizontal columns between the windows make it easy to identify where a floor starts and stops, thus facilitating the counting of floors. For example, the building in figure 16 has twelve stories.

Buildings with several rooflines, referred to as "stair-step buildings," because the roofline looks similar to a flight of stairs, present some difficulty in measuring (see example in Figure 17). This example has eight floors on the left side and four floors on the right side. The device used in the field was to record the median, i.e., six floors.

Calculating the Total Floor Space

Total Floor Space can be defined as the product of the building footprint and the number of floors. The "Footprint" of a building is defined as the length multiplied by the width, as measured using Navtech's Aerial Photos. Measurements were made using a scale to record the length and width for each building in each "Edge City." With the scale of the aerial photos at 1:12,000, every unit of measurement on the photos is equal to 12,000 units on the ground. Using inches, one inch on the photo is equal to 12,000 inches on the ground. With twelve inches to a foot, one inch on the photo is equal to 1000 feet on the ground. Using a scale graduated by 1/32-inch tic marks, 1/32 inch (or each tic mark) is equal to 31.25 feet on the ground:

$$1 : 12000$$

$$1'' = 12000''$$

$$1'' = 1000'$$

$$1/32'' = 31.25'$$

$$\text{Each Tic Mark} = 31.25'$$

The majority of the high-rise buildings in the "Edge Cities" are either square or rectangular in shape. Measuring the length and the width of these buildings yielded the

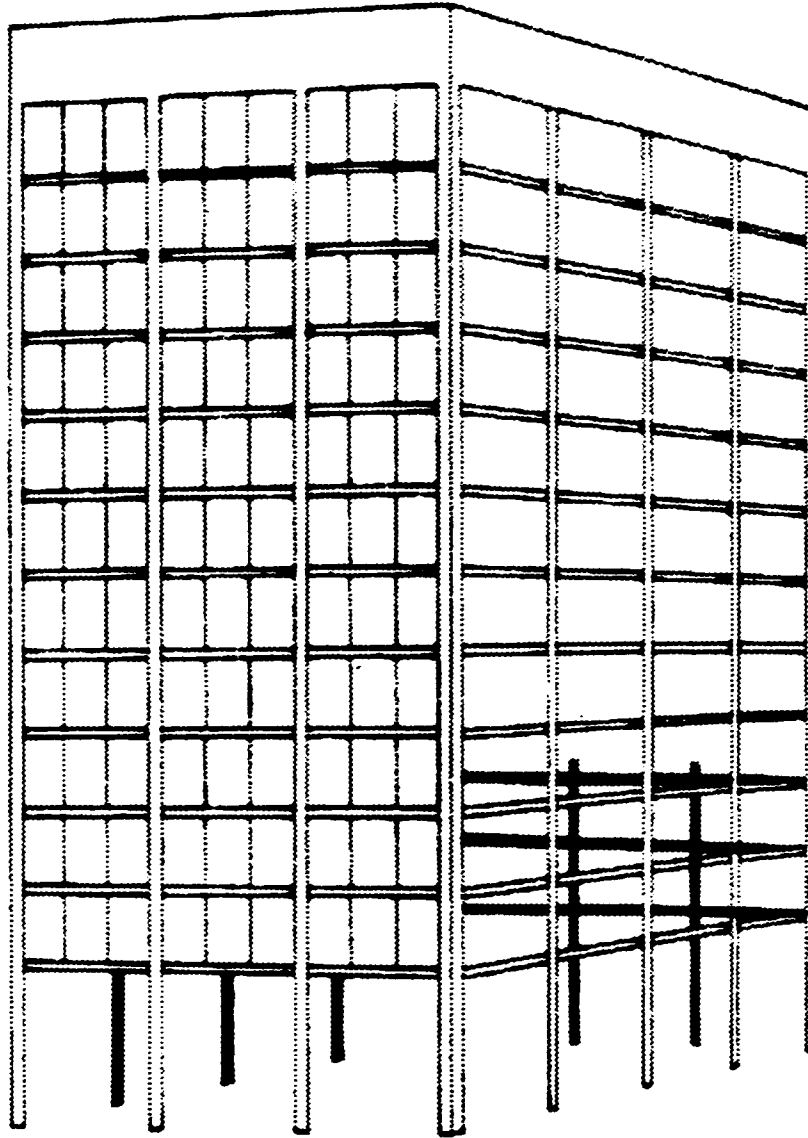


FIGURE 16: Typical Framed, Light Clad, Glass Exterior Building. In this example, the building height would be calculated at 12 stories.

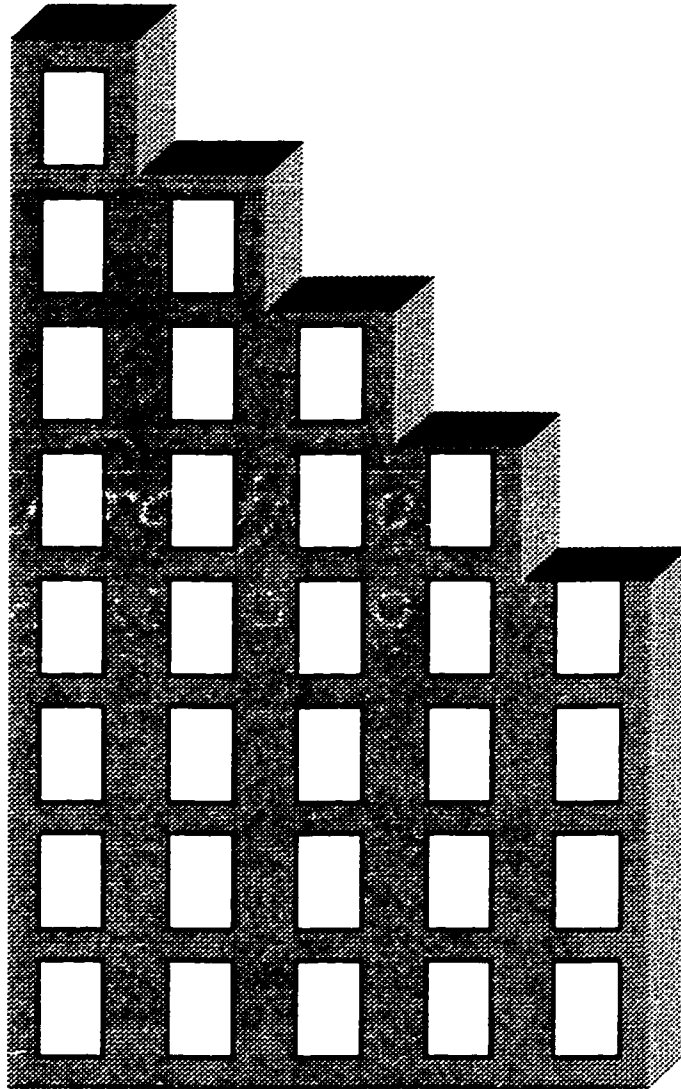


FIGURE 17: A Typical Stair Step Building. In this example, the building height would be calculated at six stories tall because there are eight stories on the left side of the building and four stories on the right side.

"Footprint." The most commonly occurring irregularly shaped building types found were (1) triangular shaped buildings and (2) L-shaped buildings.

Triangular shaped footprint area was derived from measuring the length and width of the two ninety degree sides of the building. Those two figures multiplied together yielded the footprint. As a triangle makes up half of the square or rectangle, the footprint was divided by a factor of two, to measure footprint area. Calculating the footprint of a typical L-shaped building (fig. 18) required separating the building into two square, or rectangular shaped pieces, and measuring each segment. Summing the two resulting figures yielded the "Footprint."

Once the footprint of a given building was calculated, the resulting figure was multiplied by the number of floors, yielding the "Total Floor Space" for a given building. The "Total Floor Space" for all of the qualifying buildings in an "Edge City" was aggregated to obtain the "Total Floor Space" for each "Edge City."

Bounding the "Edge Cities"

Delineating discrete boundaries for each of the "Edge Cities" was required to calculate the "Total Area" portion of the "Density" equation. These boundaries were drawn, on Navtech aerial photos, at a consistent distance 100 feet out from the edge of the buildings. Ideally, a single boundary for contiguously built up areas could be drawn, thus yielding a single homogeneous polygon for each "Edge City." The Navtech GIS database was then used to calculate the "Total Area" of each of the polygonized "Edge Cities." Its GIS software calculated the area in square feet of all polygons.

Preston Center, shown in Figure 19, forms an uncomplicated example of an "Edge City" boundary. Its buildings are uniformly arranged in a single grouping, as shown by the Preston Center aerial photo (fig. 65). However, with some "Edge Cities," creating a single polygon distorted the area data because excessive ground surface area would be recorded. An example

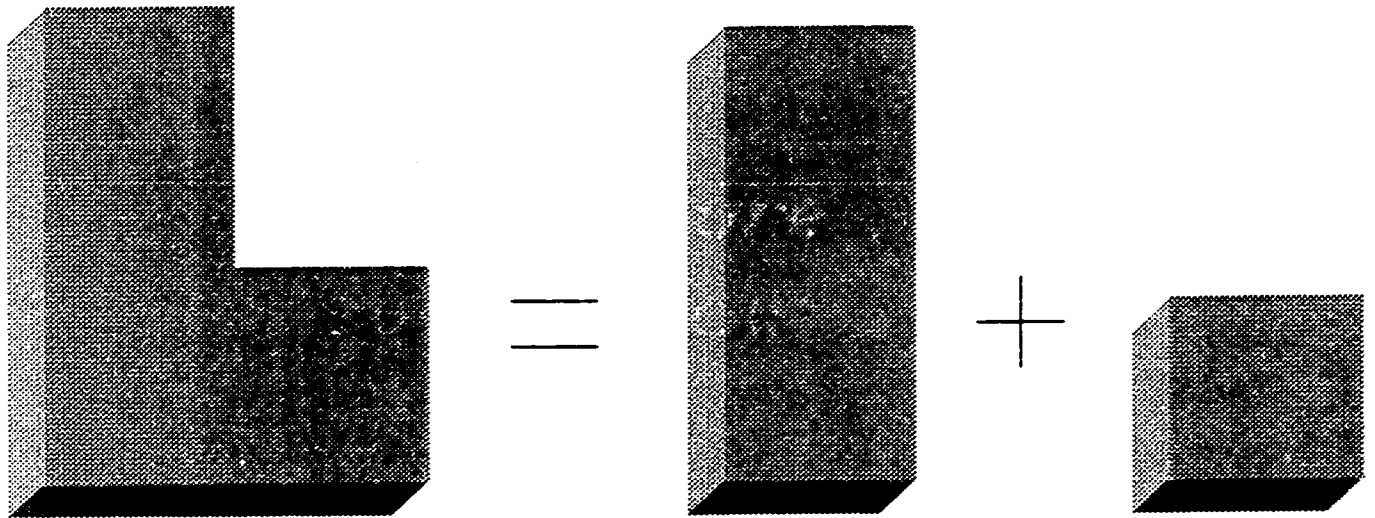


FIGURE 18: A typical footprint of an L-shaped Building. This figure demonstrates the method for calculating the total floor space for an L-shaped building. The method is to break the L-shaped building up into two rectangular parts, calculate the total floor space for each of the parts, then add the two parts together, yielding the total floor space for the L-shaped building.

is the Galleria, whose aerial photo is shown in Figure 67. Two large freeways separate the high-rise buildings of the Galleria; I-635 / LBJ Freeway runs east-west right through the middle of the Galleria. A distinct grouping of high-rise buildings exists on both the north and south sides of the freeway. The Dallas North Tollway dissects the Galleria in a north-south direction. A third cluster of high-rise buildings is located on the west side of the Dallas North Tollway and is separated from the other parts of the center. A single boundary encompassing the three clusters of buildings would significantly exaggerate the area data, as the total area would include the ground space taken up by the two large freeways dissecting the Galleria. Density figures would thus be unrealistically low. This issue was avoided by separating the Galleria into three separate clusters of high-rise buildings (fig. 20). A polygonal boundary was drawn around each of the clusters. The total area was then calculated by aggregating the three separate polygonal area figures.

Freeways were not the only culprits separating "Edge Cities" into multiple sections. The Central Corridor "Edge City," for example, was broken up into two sections by a small residential zone (fig. 74). One section is a cluster of high-rise buildings to the north and another lies to the south of this residential zone. Including the residential area in the polygonal boundary would have distorted the resulting area data. Therefore, the Central Corridor boundary was divided into two sections (fig. 21).

Five "Edge Cities" fit within a single polygon:

1. Las Colinas North (fig. 22)
2. Northpark (fig. 23)
3. Oak Lawn (fig. 24)
4. Preston Center (fig. 19)
5. Tollway Corridor (fig. 25)

Three "Edge Cities" formed two polygons:

1. Central Corridor (fig. 21)
2. Mockingbird Plaza (fig. 26)

3. Park Central (fig. 27)

Two "Edge Cities" formed three polygons:

1. Galleria (fig. 20)
2. Las Colinas (fig. 28)

Measuring Distance from the Dallas City Center

An additional variable, the distance from the City Center of Dallas to each "Edge City," was measured. These distances were required to help determine whether or not the assumption was supported that, as the distance from the City Center of Dallas increases, the density of the "Edge Cities" will decrease. The Navtech GIS database was the source used to calculate the distance from the City Center of Dallas to each "Edge City." The GIS database has a distance-calculation tool that measures the distance in miles from any two geographical locations. This tool made calculating the distance from the City Center of Dallas to each of the ten "Edge Cities" simple and accurate. Figure 29 displays the distance in miles from the City Center of Dallas to each of the ten "Edge Cities."

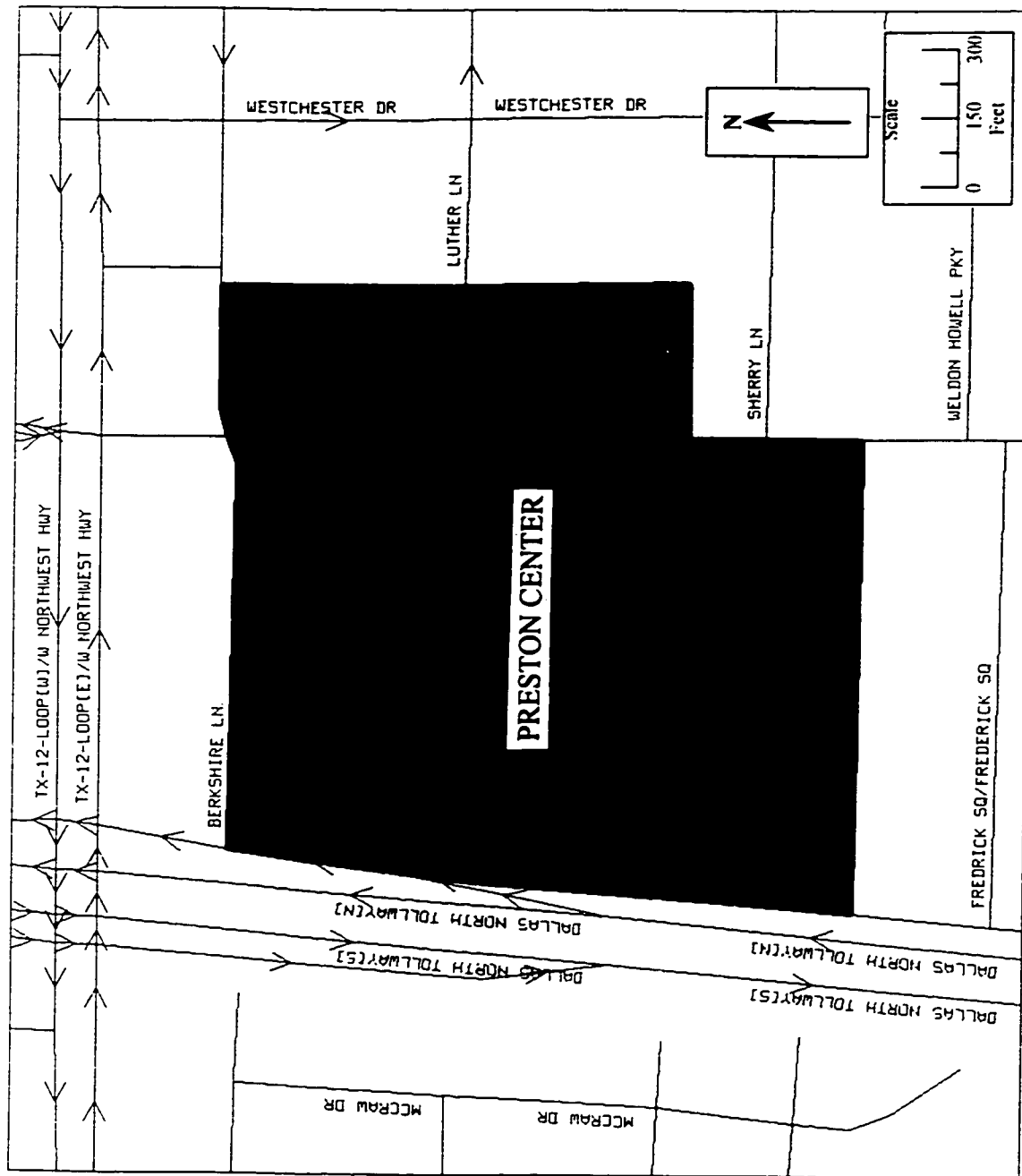


FIGURE 19: Preston Center Boundary

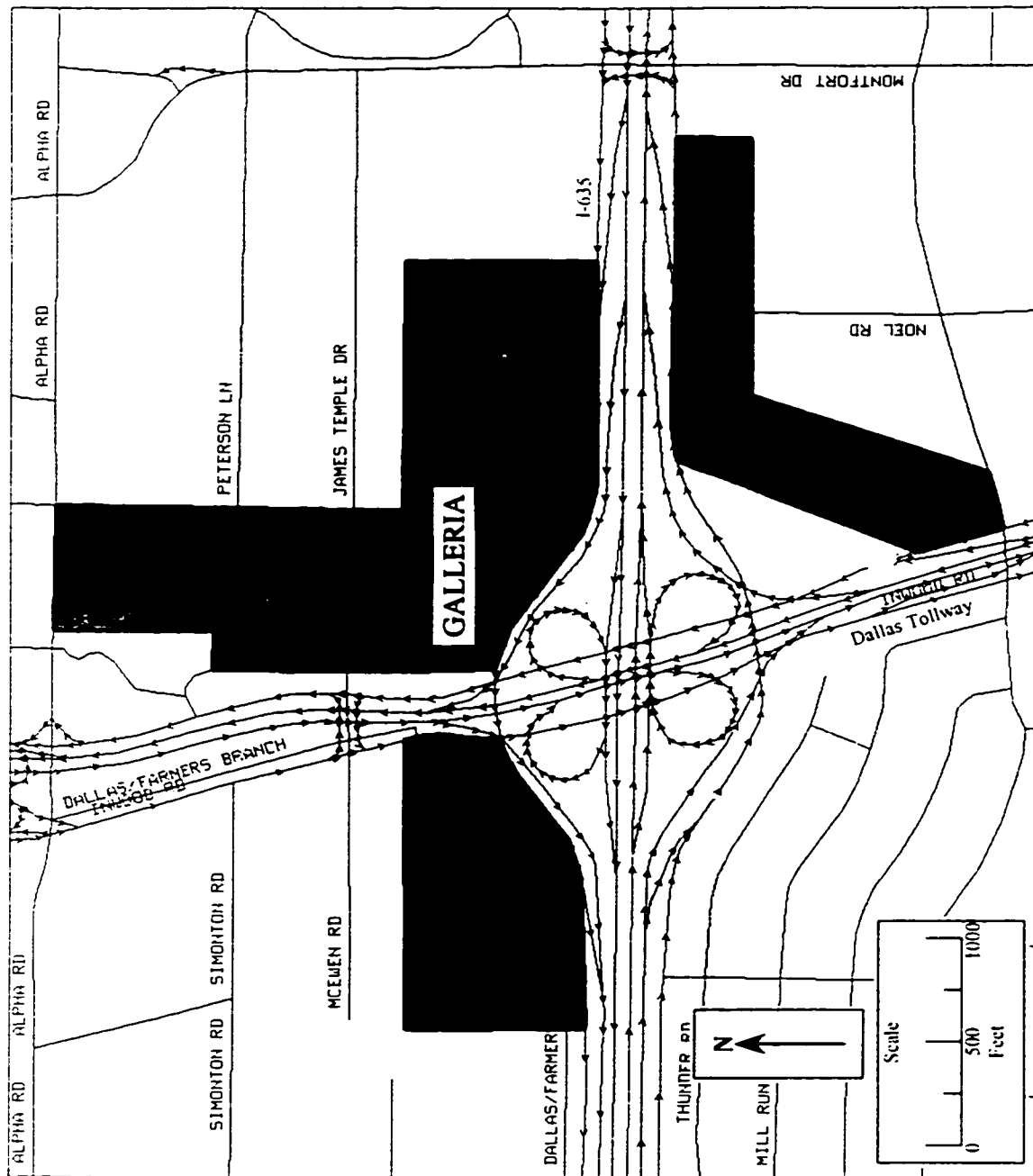


FIGURE 20: Galleria Boundary

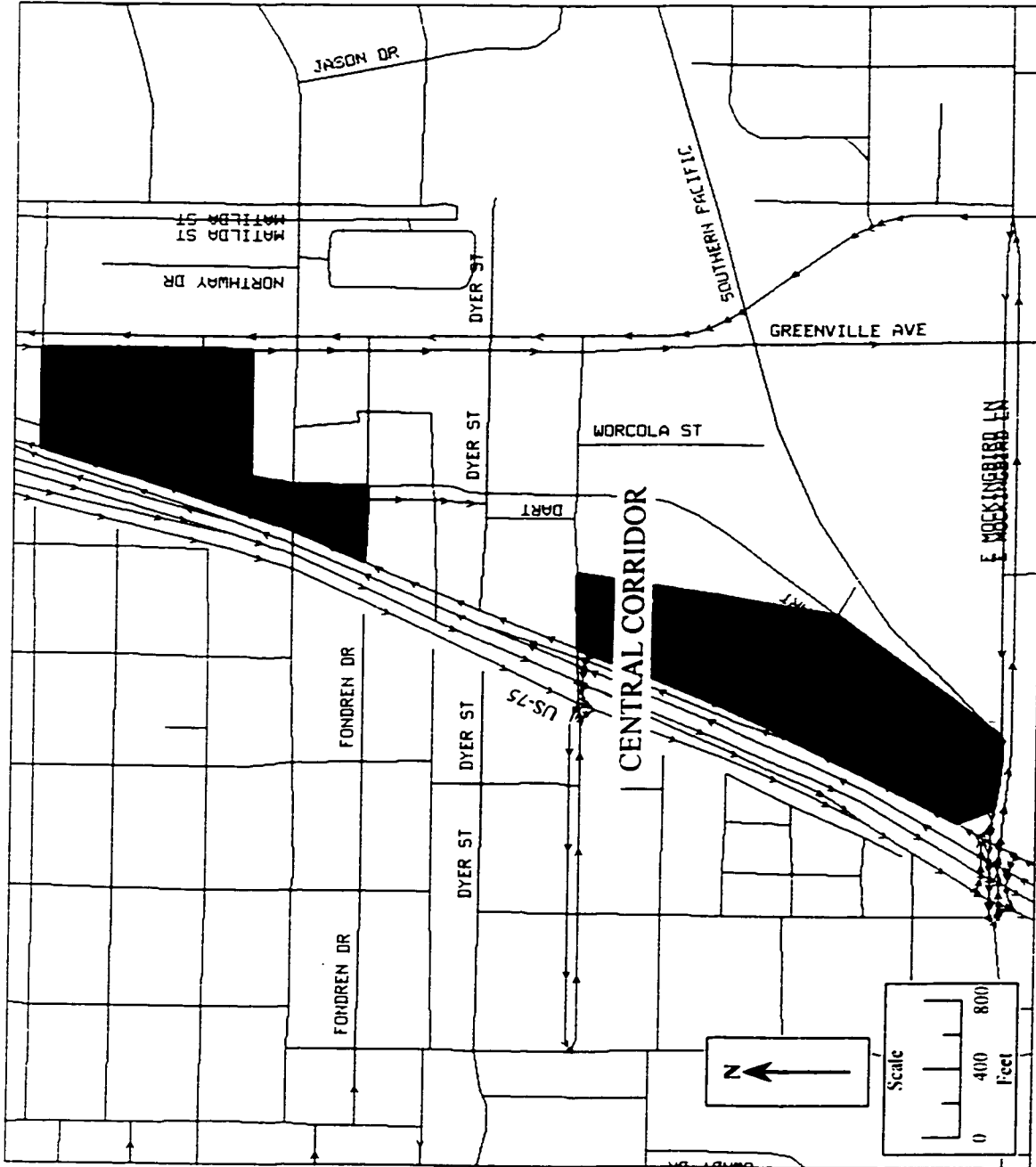


FIGURE 21: Central Corridor Boundary

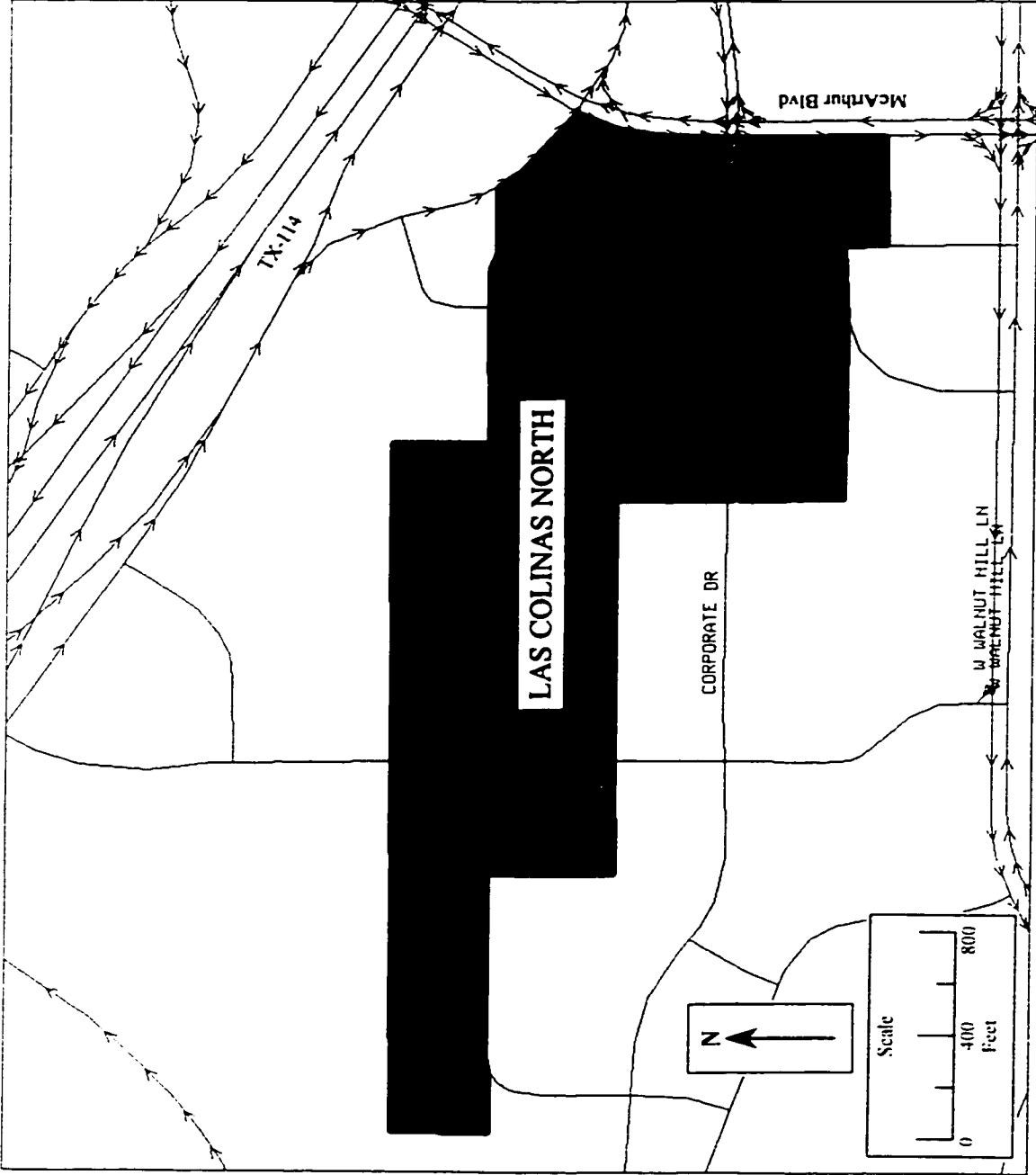


FIGURE 22: Las Colinas North Boundary

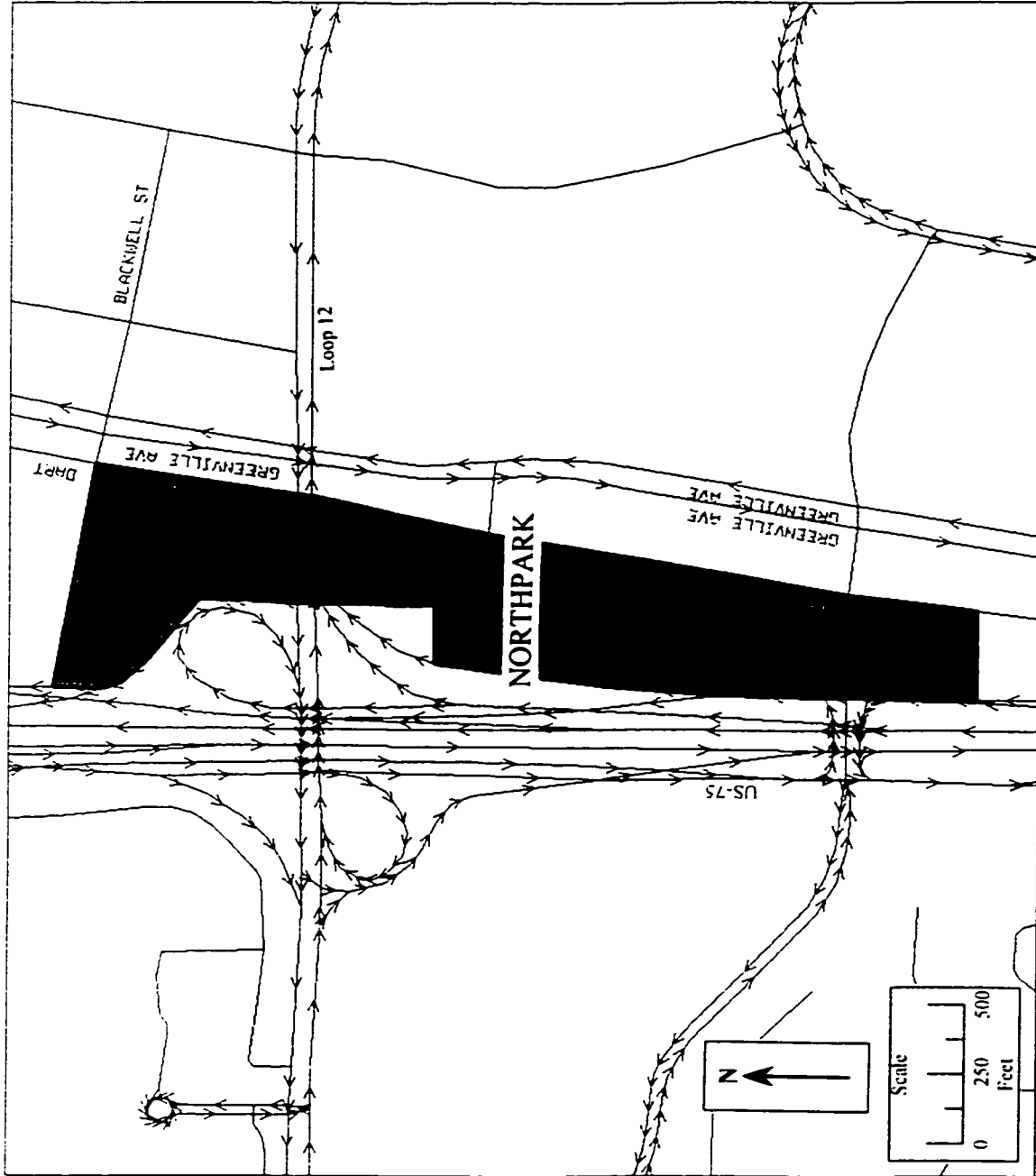


FIGURE 23: Northpark Boundary

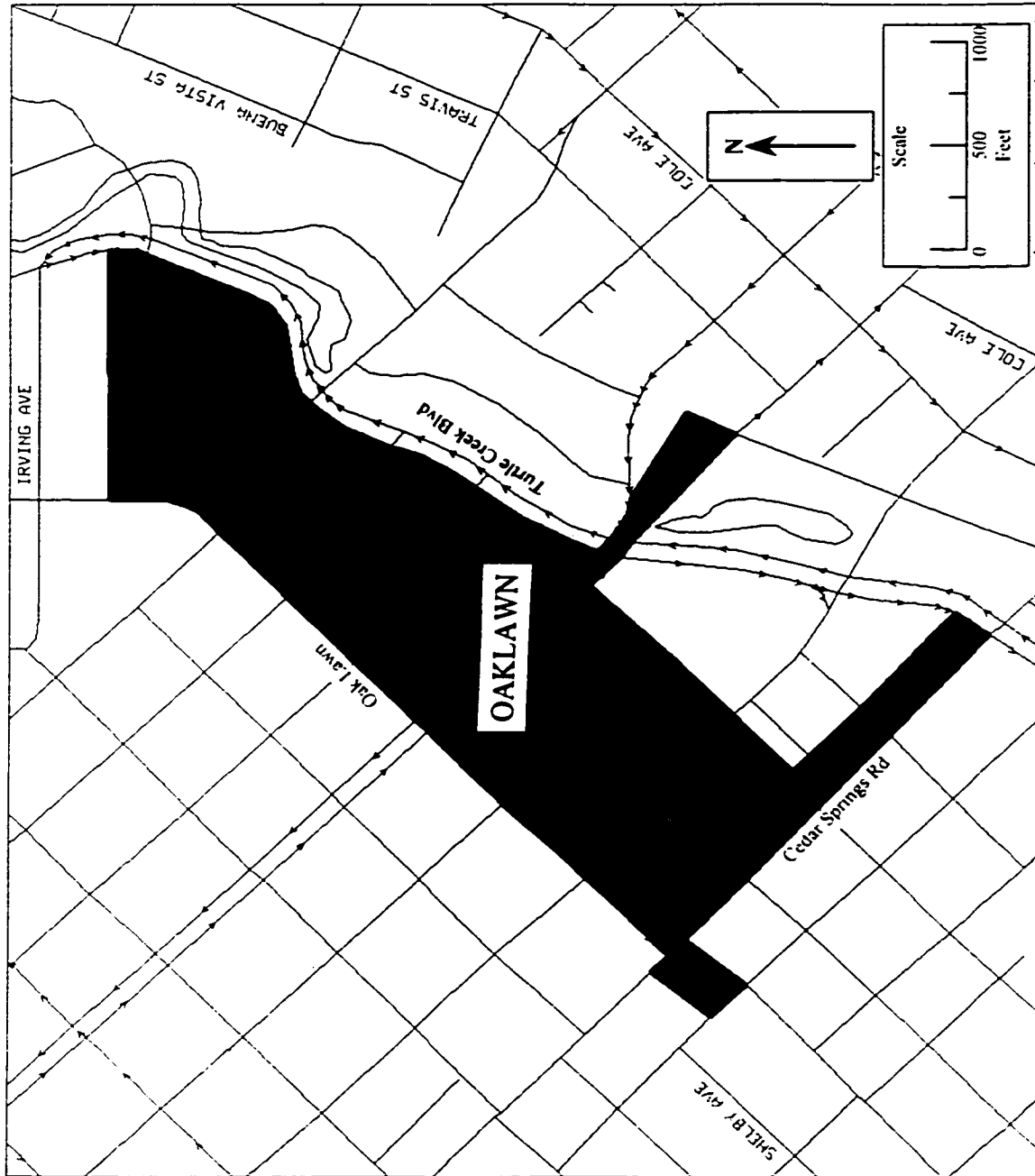


FIGURE 24: Oak Lawn Boundary

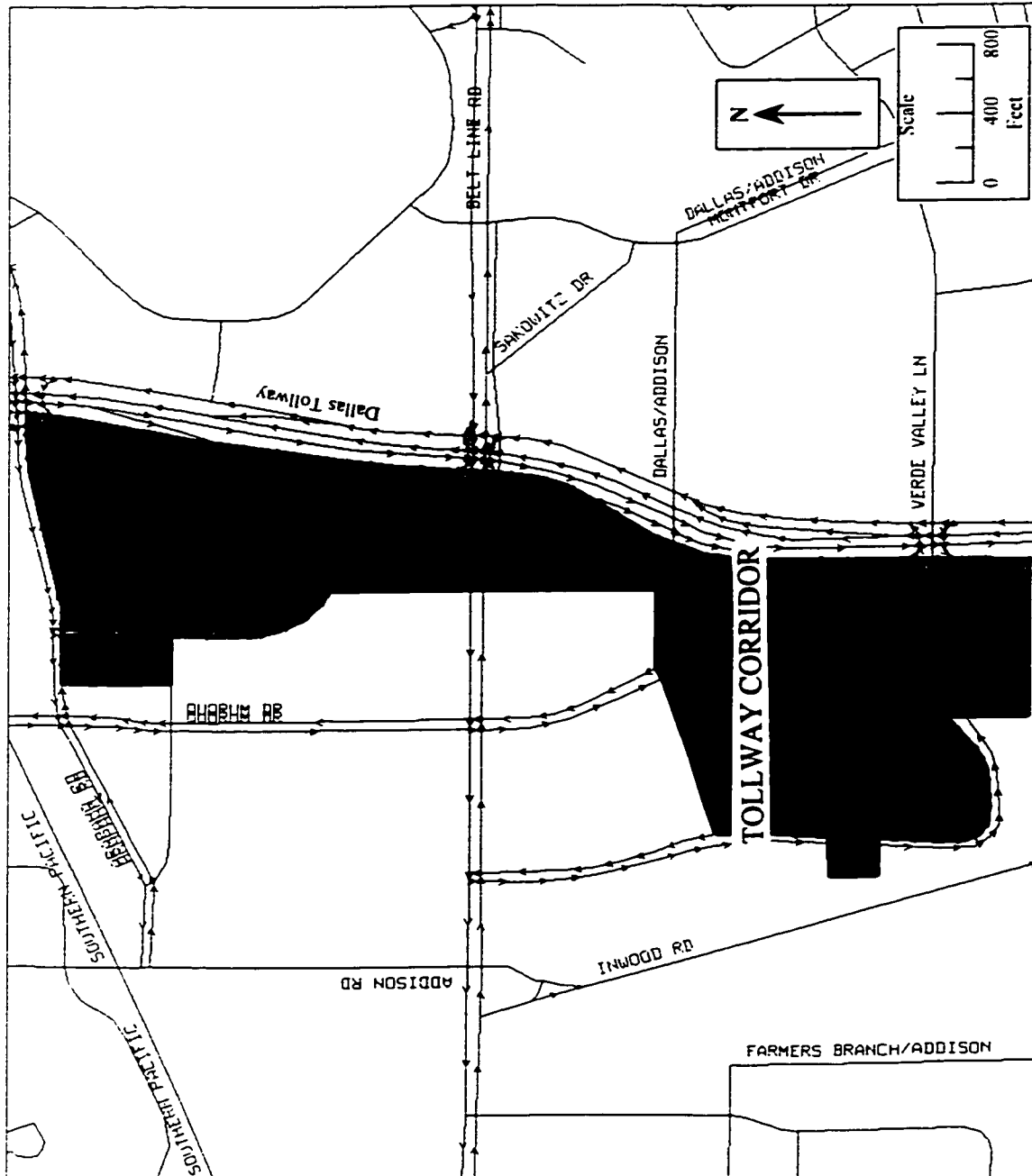


FIGURE 25: Tollway Corridor Boundary

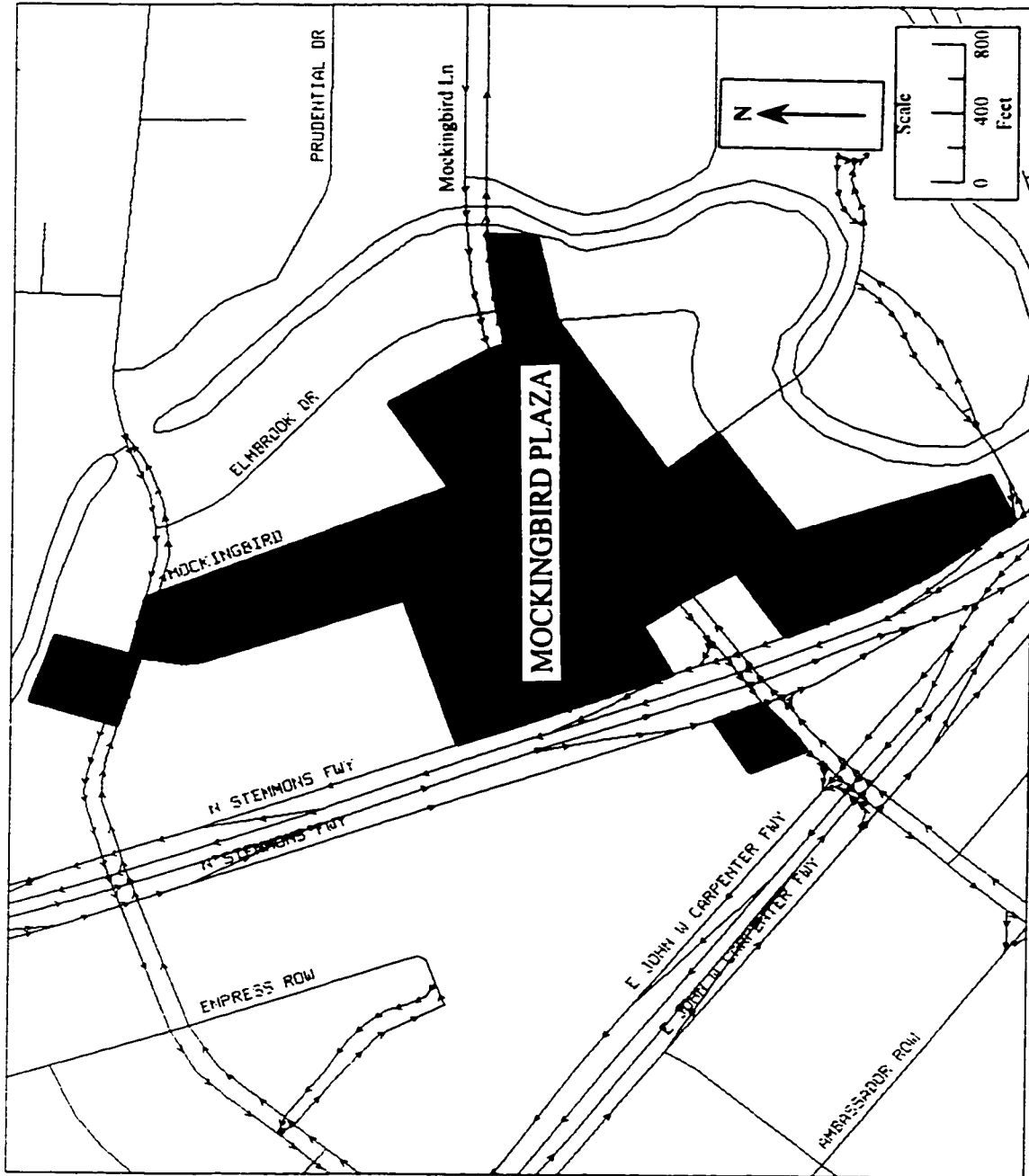


FIGURE 26: Mockingbird Plaza Boundary

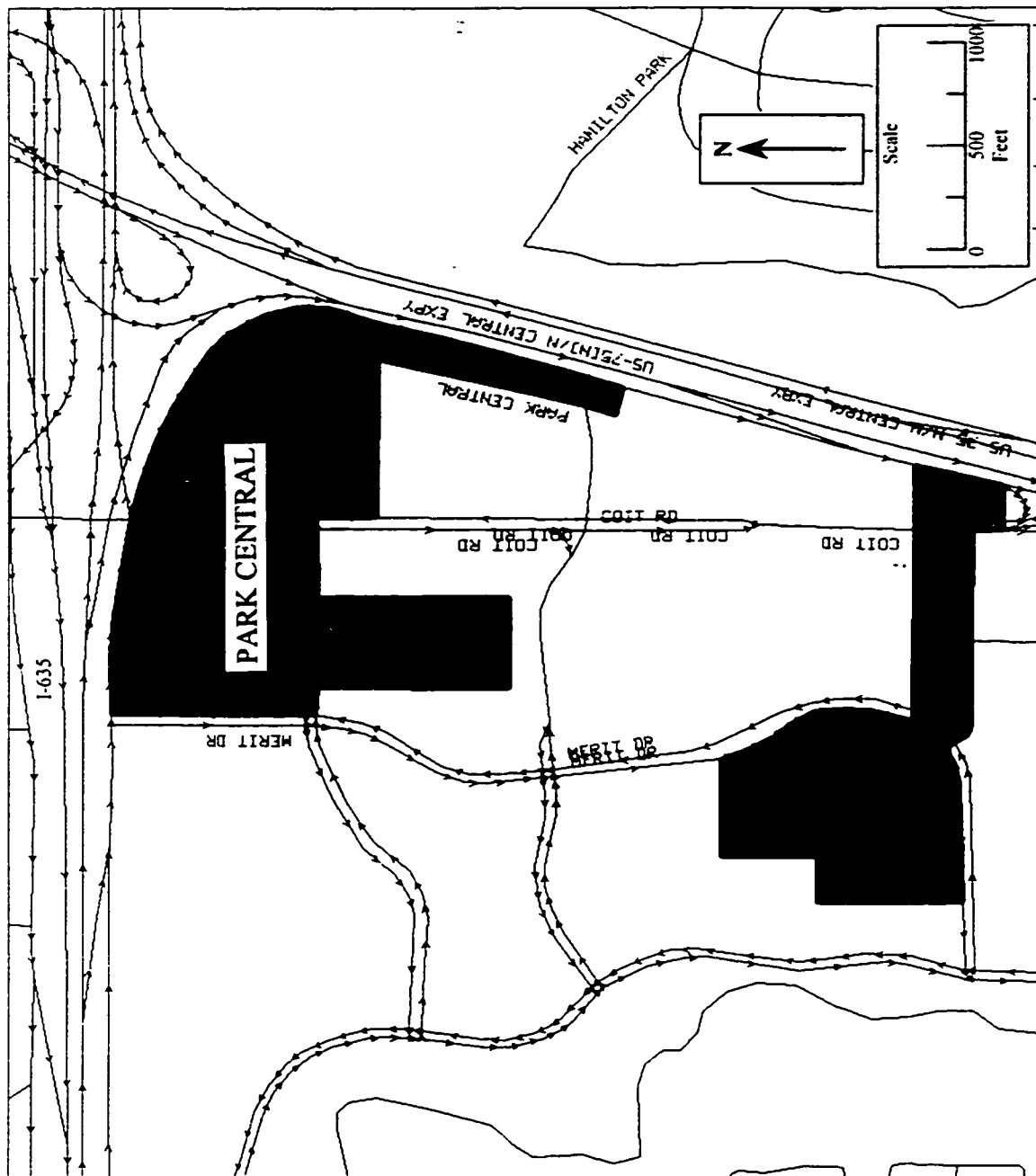


FIGURE 27: Park Central Boundary

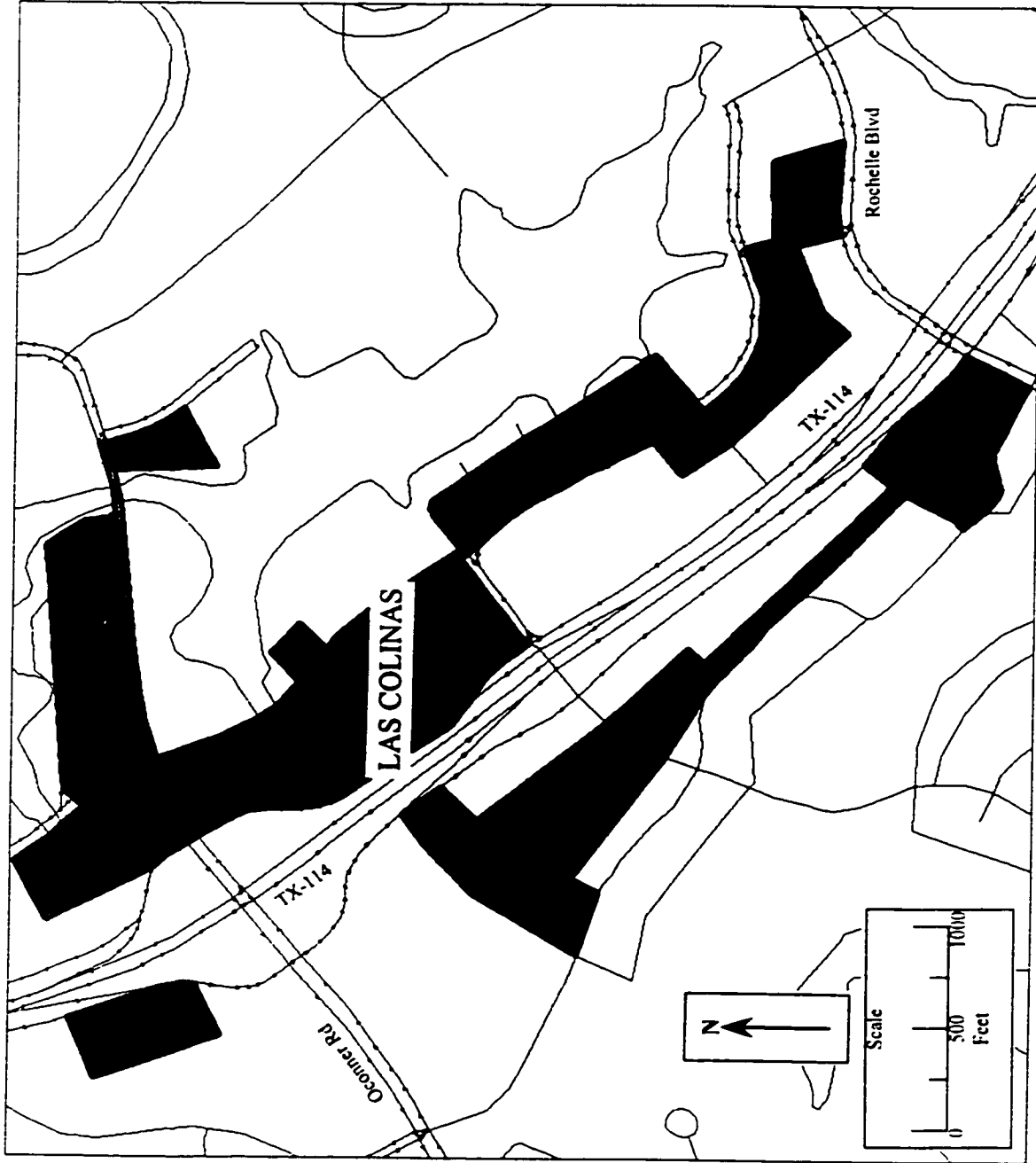


FIGURE 28: Las Colinas Boundary

Distance From Dallas City Center

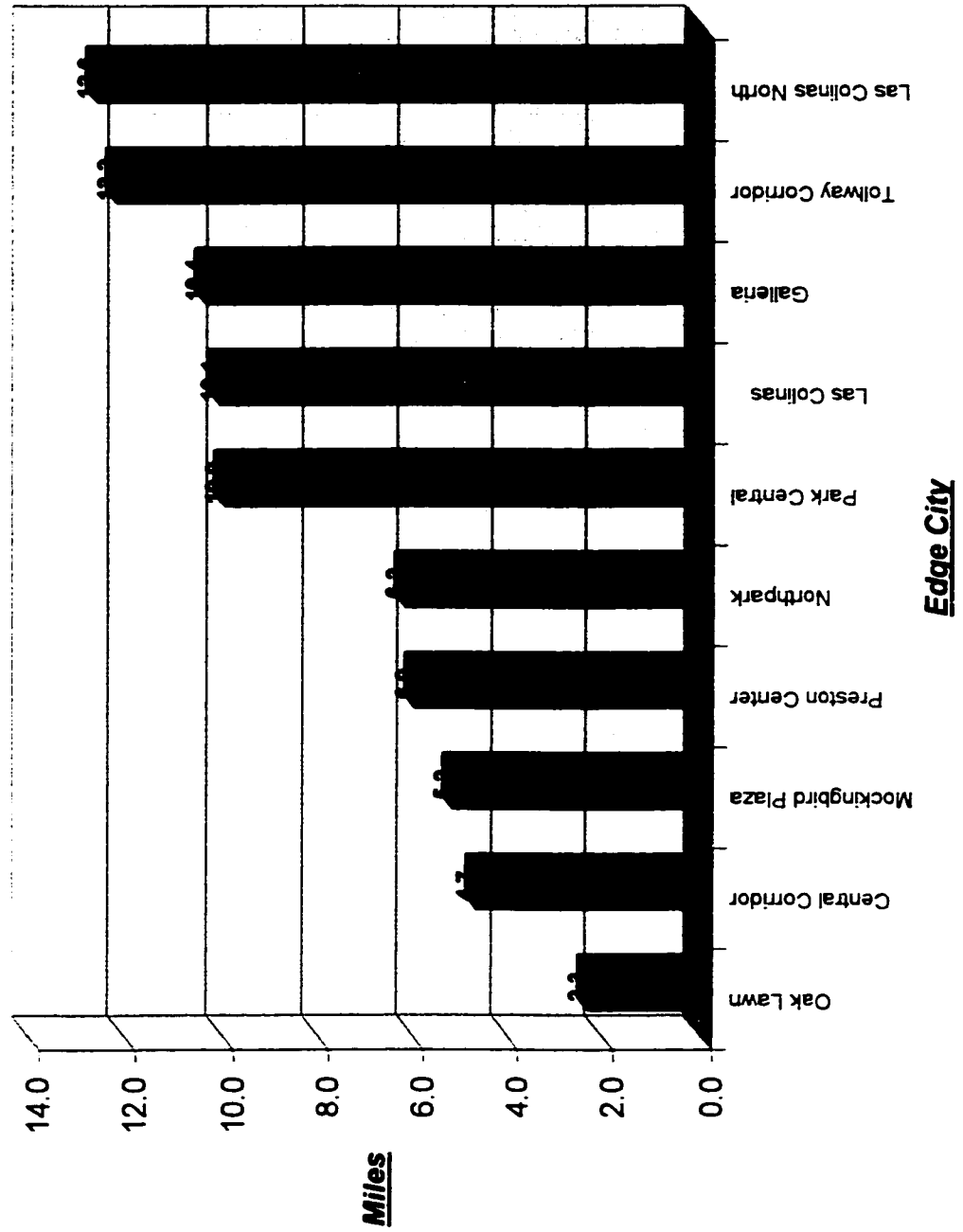


FIGURE 29: Distance from Dallas City Center to the 10 Edge Cities

CHAPTER 4

DATA COMPILATION

Raw Data for Each "Edge City"

The raw data were compiled into Microsoft Excel spreadsheet tables. They were divided into two main data sets, as follows:

- 1. Raw Data for each "Edge City"**
- 2. Category Rankings**

The first data set contains the raw data for each of the ten individual "Edge Cities." Each raw data table is headed by the name of the "Edge City," and total area is recorded in square miles. The columns contain the raw data on the number of buildings, length, width, footprints, stories, and total floor space of the "Edge City." At the bottom of the table are totals and averages for all of the categories mentioned above. These were used to compare the data from all "Edge Cities." Figures 30-39 display the raw data for each of the ten "Edge Cities" in alphabetical order.

Category Rankings

The second data set contained the "Category Rankings." The first and most important "Category Ranking" is density, defined as the total floor space divided by the total area. The density ratio was the most important single statistic extracted from the data. However, numerous other meaningful data items were extracted. These were organized into relevant categories used to compare and contrast the "Edge Cities." The "Edge Cities" were ranked from one to ten in each of these categories, thus the term "Category Rankings." The Category Ranking Data Sets are displayed in tabular form in figures 40-43 and in graphical form in figures 44-61. The data

extracted from the "Category Rankings" are discussed in the Data Analysis portion. The category rankings are as follows:

1. Density – Total Floor Space / Total Area
2. Area – in Square Feet
3. Total Floor Space – in Square Feet
4. Number of Buildings – Five Stories or More
5. Average Building Size – Floor Space
6. Average Height – in Stories
7. Total Height – in Stories
8. Tallest Building – in Stories
9. Tallest Buildings – Average of Top Three in Stories
10. Largest Building – Floor Space
11. Largest Buildings – Average of Top Three in Floor Space
12. Average Building Size – Footprint
13. Total Building Size – Footprint
14. Largest Building – Footprint

Central Corridor

Area: 1,880,192.4 square feet

<u>Building</u>	<u>Length</u>	<u>Width</u>	<u>Footprint</u>	<u>Stories</u>	<u>Total Floor Space</u>
1	109	109	11,963	10	119,629
2	203	94	19,043	22	418,945
3	250	125	31,250	8	250,000
4	219	172	37,598	8	300,781
5	250	78	19,531	9	175,781
6	219	63	13,672	15	205,078
7	188	63	11,719	12	140,625
8	219	109	23,926	17	406,738
9	203	78	15,869	14	222,168
10	203	109	22,217	19	422,119
11	281	78	21,973	9	197,754
Total	2344	1078	228,760	143	2,859,619
Average	213.1	98.0	20,796	13.0	259,965

FIGURE 30: Raw Data for Central Corridor. Length, Width, Footprint, and Total Floor Space Measurements are in Square Feet.

Galleria

Area: 4,384,235.9 square feet

Building	Length	Width	Footprint	Stories	Total Floor Space
1	219	203	44,434	17	755,371
2	219	203	44,434	18	799,805
3	266	63	16,602	23	381,836
4	219	203	44,434	15	666,504
5	172	94	16,113	6	96,680
6	203	94	19,043	10	190,430
7	172	94	16,113	6	96,680
8	188	188	35,156	6	210,938
9	250	109	27,344	10	273,438
10	250	219	54,688	12	656,250
11	219	94	20,508	23	471,680
12	219	109	23,926	23	550,293
13	219	94	20,508	23	471,680
14	250	250	62,500	5	312,500
15	250	94	23,438	20	468,750
16	250	109	27,344	24	656,250
17	158	78	12,305	12	147,656
18	250	63	15,625	14	218,750
19	188	94	17,578	11	193,359
20	203	94	19,043	10	190,430
Total	4361	2547	561,133	288	7,809,277
Average	218.0	127.3	28,057	14.4	390,464

FIGURE 31: Raw Data for the Galleria. Length, Width, Footprint, and Total Floor Space Measurements are in Square Feet.

<u>Las Colinas</u>					
<u>Area: 5,795,737.4 square feet</u>					
<u>Building</u>	<u>Length</u>	<u>Width</u>	<u>Footprint</u>	<u>Stories</u>	<u>Total Floor Space</u>
1	406	94	38,086	6	228,516
2	250	94	23,438	11	257,813
3	375	250	93,750	7	656,250
4	219	94	20,508	18	369,141
5	172	109	18,799	5	93,994
6	158	94	14,766	8	118,125
7	141	94	13,184	17	224,121
8	250	78	19,531	23	449,219
9	266	141	37,354	10	373,535
10	250	94	23,438	7	164,063
11	172	94	16,113	14	225,586
12	188	188	35,156	10	351,563
13	158	158	24,806	5	124,031
14	158	158	24,806	5	124,031
15	158	158	24,806	5	124,031
16	406	158	63,984	5	319,922
17	219	94	20,508	12	246,094
18	250	94	23,438	14	328,125
19	375	172	64,453	7	451,172
20	219	125	27,344	18	492,188
21	203	78	15,869	8	126,953
22	158	78	12,305	6	73,828
23	344	188	64,453	22	1,417,969
24	78	63	4,883	5	24,414
25	219	94	20,508	14	287,109
26	219	94	20,508	14	287,109
27	313	94	29,297	28	820,313
28	141	94	13,184	14	184,570
29	158	158	24,806	19	471,319
30	266	188	49,805	6	298,828
Total	6883	3663	883,883	343	9,713,930
Average	229.4	122.1	29,463	11.4	323,798

FIGURE 32: Raw Data for Las Colinas. Length, Width, Footprint, and Total Floor Space Measurements are in Square Feet.

<u>Las Colinas North</u>					
<u>Area: 2,892,568.2 square feet</u>					
<u>Building</u>	<u>Length</u>	<u>Width</u>	<u>Footprint</u>	<u>Stories</u>	<u>Total Floor Space</u>
1	219	109	23,926	10	239,258
2	266	125	33,203	5	166,016
3	250	109	27,344	6	164,063
4	250	94	23,438	9	210,938
5	219	94	20,508	10	205,078
6	266	78	20,752	5	103,760
7	219	125	27,344	10	273,438
8	219	125	27,344	10	273,438
9	219	94	20,508	6	123,047
10	219	94	20,508	10	205,078
11	234	94	21,973	14	307,617
12	234	109	25,635	5	128,174
Total	2813	1250	292,480	100	2,399,902
Average	234.4	104.2	24,373	8.3	199,992

FIGURE 33: Raw Data for Las Colinas North. Length, Width, Footprint, and Total Floor Space Measurements are in Square Feet.

<u>Mockingbird Plaza</u>					
<u>Area: 3,259,728.4 square feet</u>					
<u>Building</u>	<u>Length</u>	<u>Width</u>	<u>Footprint</u>	<u>Stories</u>	<u>Total Floor Space</u>
1	94	94	8,789	20	175,781
2	172	63	10,742	17	182,617
3	234	94	21,973	7	153,809
4	266	94	24,902	7	174,316
5	219	125	27,344	5	136,719
6	188	188	35,156	8	281,250
7	203	109	22,217	6	133,301
8	188	94	17,578	11	193,359
9	188	94	17,578	11	193,359
10	78	78	6,104	12	73,242
11	203	94	19,043	16	304,688
12	266	94	24,902	6	149,414
13	266	94	24,902	11	273,926
14	158	109	17,227	14	241,172
15	250	125	31,250	7	218,750
16	250	125	31,250	7	218,750
Total	3220	1672	340,957	165	3,104,453
Average	201.3	104.5	21,310	10.3	194,028

FIGURE 34: Raw Data for Mockingbird Plaza. Length, Width, Footprint, and Total Floor Space Measurements are in Square Feet.

<u>Northpark</u>					
<u>Area: 1,116,174.6 square feet</u>					
<u>Building</u>	<u>Length</u>	<u>Width</u>	<u>Footprint</u>	<u>Stories</u>	<u>Total Floor Space</u>
1	172	125	21,484	20	429,688
2	172	109	18,799	11	206,787
3	141	141	19,775	20	395,508
4	125	63	7,813	20	156,250
5	141	141	19,775	20	395,508
6	234	109	25,635	20	512,695
7	94	94	8,789	7	61,523
8	250	234	58,600	5	293,000
Total	1328	1016	180,670	123	2,450,959
Average	166.0	127.0	22,584	15.4	306,370

FIGURE 35: Raw Data for Northpark. Length, Width, Footprint, and Total Floor Space Measurements are in Square Feet.

<u>Oak Lawn</u>					
<u>Area: 3,454,557.2 square feet</u>					
<u>Building</u>	<u>Length</u>	<u>Width</u>	<u>Footprint</u>	<u>Stories</u>	<u>Total Floor Space</u>
1	281	109	30,762	19	584,473
2	172	94	16,113	14	225,586
3	141	94	13,184	9	118,652
4	125	78	9,766	5	48,828
5	203	109	22,217	13	288,818
6	219	94	20,508	16	328,125
7	141	94	13,184	23	303,223
8	158	125	19,688	13	255,938
9	141	94	13,184	9	118,652
10	219	78	17,090	11	187,988
11	158	94	14,766	20	295,313
12	125	125	15,625	21	328,125
13	234	63	14,648	23	336,914
14	250	63	15,625	22	343,750
15	188	78	14,648	6	87,891
16	125	125	15,625	7	109,375
17	158	94	14,766	6	88,594
18	203	94	19,043	7	133,301
19	219	141	30,762	8	246,094
20	188	63	11,719	13	152,344
21	219	94	20,508	20	410,156
Total	3863	2000	363,428	285	4,992,139
Average	184.0	95.2	17,306	13.6	237,721

FIGURE 36: Raw Data for Oak Lawn. Length, Width, Footprint, and Total Floor Space Measurements are in Square Feet.

<u>Park Central</u>					
<u>Area: 3,247,688.9 square feet</u>					
<u>Building</u>	<u>Length</u>	<u>Width</u>	<u>Footprint</u>	<u>Stories</u>	<u>Total Floor Space</u>
1	359	188	67,383	5	336,914
2	219	94	20,508	18	369,141
3	219	94	20,508	18	369,141
4	219	94	20,508	18	369,141
5	313	158	49,219	5	246,094
6	277	78	21,611	18	389,004
7	234	172	40,283	5	201,416
8	234	172	40,283	5	201,416
9	250	141	35,156	20	703,125
10	188	188	35,156	10	351,563
11	188	188	35,156	12	421,875
12	188	188	35,156	12	421,875
13	250	78	19,531	13	253,906
14	250	158	39,375	6	236,250
15	250	78	19,531	16	312,500
16	219	94	20,508	10	205,078
17	158	63	9,844	6	59,063
18	219	94	20,508	13	266,602
Total	4231	2315	550,225	210	5,714,102
Average	235.1	128.6	30,568	11.7	317,450

FIGURE 37: Raw Data for Park Central. Length, Width, Footprint, and Total Floor Space Measurements are in Square Feet.

<u>Preston Center</u>					
<u>Area: 1,240,987.7 square feet</u>					
<u>Building</u>	<u>Length</u>	<u>Width</u>	<u>Footprint</u>	<u>Stories</u>	<u>Total Floor Space</u>
1	158	94	14,766	18	265,781
2	141	94	13,184	17	224,121
3	172	109	18,799	22	413,574
4	109	78	8,545	10	85,449
5	125	109	13,672	14	191,406
6	219	94	20,508	18	369,141
7	203	109	22,217	20	444,336
8	250	94	23,438	9	210,938
9	94	63	5,859	10	58,594
10	125	94	11,719	8	93,750
11	125	63	7,813	6	46,875
12	203	141	28,564	8	228,516
Total	1923	1141	189,082	160	2,632,480
Average	160.3	95.1	15,757	13.3	219,373

FIGURE 38: Raw Data for Preston Center. Length, Width, Footprint, and Total Floor Space Measurements are in Square Feet.

<u>Tollway Corridor</u>					
Area: 3,941,529.4 square feet					
<u>Building</u>	<u>Length</u>	<u>Width</u>	<u>Footprint</u>	<u>Stories</u>	<u>Total Floor Space</u>
1	281	63	17,578	8	140,625
2	344	63	21,484	8	171,875
3	219	109	23,926	5	119,629
4	250	94	23,438	8	187,500
5	219	94	20,508	5	102,539
6	141	94	13,184	7	92,285
7	234	78	18,311	6	109,863
8	172	172	29,541	9	265,869
9	406	63	25,391	11	279,297
10	172	109	18,799	10	187,988
11	188	109	20,508	5	102,539
12	141	125	17,578	6	105,469
13	250	125	31,250	6	187,500
14	250	234	58,594	6	351,563
15	266	94	24,902	16	398,438
16	266	94	24,902	16	398,438
17	203	94	19,043	16	304,688
18	344	47	16,113	14	225,586
19	172	172	29,541	13	384,033
20	172	172	29,541	13	384,033
21	188	188	35,156	16	562,500
22	406	78	31,738	10	317,383
Total	5281	2469	551,025	214	5,379,639
Average	240.1	112.2	25,047	9.7	244,529

FIGURE 39: Raw Data for Tollway Corridor. Length, Width, Footprint, and Total Floor Space Measurements are in Square Feet.

<u>Density</u>			<u>Area</u>		
Total Floor Space / Total Area			In Square Feet		
Rank			Rank		
1	Northpark	2.20	1	Las Colinas	5,795,737
2	Preston Center	2.12	2	Galleria	4,384,236
3	Galleria	1.78	3	Tollway Corridor	3,941,529
4	Park Central	1.76	4	Oak Lawn	3,454,557
5	Las Colinas	1.68	5	Mockingbird Plaza	3,259,728
6	Central Corridor	1.52	6	Park Central	3,247,689
7	Oak Lawn	1.45	7	Las Colinas North	2,892,568
8	Tollway Corridor	1.36	8	Central Corridor	1,880,192
9	Mockingbird Plaza	0.95	9	Preston Center	1,315,165
10	Las Colinas North	0.83	10	Northpark	1,116,175
Average		1.57	Total		31,287,577
			Average		3,128,758

<u>Number of Buildings</u>			<u>Total Floor Space</u>		
5 Stories or More			Square Feet		
Rank			Rank		
1	Las Colinas	30	1	Las Colinas	9,713,930
2	Tollway Corridor	22	2	Galleria	7,809,277
3	Oak Lawn	21	3	Park Central	5,714,102
4	Galleria	20	4	Tollway Corridor	5,379,639
5	Park Central	18	5	Oak Lawn	4,992,139
6	Mockingbird Plaza	16	6	Mockingbird Plaza	3,104,453
7	Las Colinas North	12	7	Central Corridor	2,859,619
7	Preston Center	12	8	Preston Center	2,632,480
9	Central Corridor	11	9	Northpark	2,450,959
10	Northpark	8	10	Las Colinas North	2,399,902
Total		170	Total		47,056,500
Average		17	Average		4,705,650

FIGURE 40: Category Rankings for Density, Area, Number of Buildings, and Total Floor Space

<u>Average Building Size</u>			<u>Average Height</u>		
Floor Space in Square Feet			In Stories		
Rank			Rank		
1	Galleria	390,464	1	Northpark	15.4
2	Las Colinas	323,798	2	Galleria	14.4
3	Park Central	317,450	3	Oak Lawn	13.6
4	Northpark	306,370	4	Preston Center	13.3
5	Central Corridor	259,965	5	Central Corridor	13.0
6	Tollway Corridor	244,529	6	Park Central	11.7
7	Oak Lawn	237,721	7	Las Colinas	11.4
8	Preston Center	219,373	8	Mockingbird Plaza	10.3
9	Las Colinas North	199,992	9	Tollway Corridor	9.7
10	Mockingbird Plaza	194,028	10	Las Colinas North	8.3
Average		269,369	Average		12.1
<u>Total Height</u>			<u>Tallest Building</u>		
In Stories			In Stories		
Rank			Rank		
1	Las Colinas	343	1	Las Colinas	28
2	Galleria	288	2	Galleria	24
3	Oak Lawn	285	3	Oak Lawn	23
4	Tollway Corridor	214	4	Central Corridor	22
5	Park Central	210	4	Preston Center	22
6	Mockingbird Plaza	165	6	Mockingbird Plaza	20
7	Preston Center	160	6	Park Central	20
8	Central Corridor	143	6	Northpark	20
9	Northpark	123	9	Tollway Corridor	16
10	Las Colinas North	100	10	Las Colinas North	14
Total		2031	Average		20.9
Average		203.1			

FIGURE 41: Category Rankings for Average Building Size, Average Height, Total Height, and Tallest Building

<u>Tallest Buildings</u>			<u>Largest Building</u>		
Average of Top 3 in Stories			Floor Space		
Rank			Rank		
1	Las Colinas	24.3	1	Las Colinas	1,417,969
2	Galleria	23.3	2	Galleria	799,805
3	Oak Lawn	22.7	3	Park Central	703,125
4	Preston Center	20	4	Oak Lawn	584,473
4	Northpark	20	5	Tollway Corridor	562,500
6	Central Corridor	19.3	6	Northpark	512,695
7	Park Central	18.7	7	Preston Center	444,336
8	Mockingbird Plaza	17.7	8	Central Corridor	422,119
9	Tollway Corridor	16	9	Las Colinas North	307,617
10	Las Colinas North	11.3	10	Mockingbird Plaza	304,688
Average		19.3	Average		605,933

<u>Largest Buildings</u>			<u>Average Building Size</u>		
Average of Top 3 in Floor Space			Footprint		
Rank			Rank		
1	Las Colinas	964,844	1	Park Central	30,568
2	Galleria	740,560	2	Las Colinas	29,463
3	Park Central	515,625	3	Galleria	28,057
4	Tollway Corridor	453,125	4	Tollway Corridor	25,047
5	Oak Lawn	446,126	5	Las Colinas North	24,373
6	Northpark	445,964	6	Northpark	22,584
7	Central Corridor	415,934	7	Mockingbird Plaza	21,310
8	Preston Center	409,017	8	Central Corridor	20,796
9	Mockingbird Plaza	286,621	9	Oak Lawn	17,306
10	Las Colinas North	284,831	10	Preston Center	15,757
Average		496,265	Average		23,526

FIGURE 42: Category Rankings for Tallest Buildings, Largest Building, Largest Buildings, and Average Building Footprint Size

<u>Total Building Size</u>			<u>Largest Building</u>		
Footprint			Footprint		
Rank			Rank		
1	Las Colinas	883,883	1	Las Colinas	93,750
2	Galleria	561,133	2	Park Central	67,383
3	Tollway Corridor	551,025	3	Galleria	62,500
4	Park Central	550,225	4	Northpark	58,600
5	Oak Lawn	363,428	5	Tollway Corridor	58,594
6	Mockingbird Plaza	340,957	6	Mockingbird Plaza	35,156
7	Las Colinas North	292,480	7	Las Colinas North	33,203
8	Central Corridor	228,760	8	Central Corridor	30,925
9	Preston Center	189,082	9	Oak Lawn	30,762
10	Northpark	180,670	10	Preston Center	28,564
Total		4,141,643	Average		49,944
Average		414,164			
<u>Building Shape</u>			<u>Distance from Dallas City Center</u>		
Variance Between Length and Width - How Many Times as Long as Wide			In Miles		
Rank			Rank		
1	Las Colinas North	2.25	1	Oak Lawn	2.3
2	Central Corridor	2.17	2	Central Corridor	4.7
3	Tollway Corridor	2.14	3	Mockingbird Plaza	5.2
4	Oak Lawn	1.93	4	Preston Center	6.0
4	Mockingbird Plaza	1.93	5	Northpark	6.2
6	Las Colinas	1.88	6	Park Central	10.0
7	Park Central	1.83	7	Las Colinas	10.1
8	Galleria	1.82	8	Galleria	10.4
9	Preston Center	1.69	9	Tollway Corridor	12.2
10	Northpark	1.31	10	Las Colinas North	12.6
Average		1.90	Average		8.0

FIGURE 43: Category Rankings for Total Building Size, Largest Building Footprint, Building Shape, and Distance from Dallas City Center

Density - Total Floor Space / Total Area

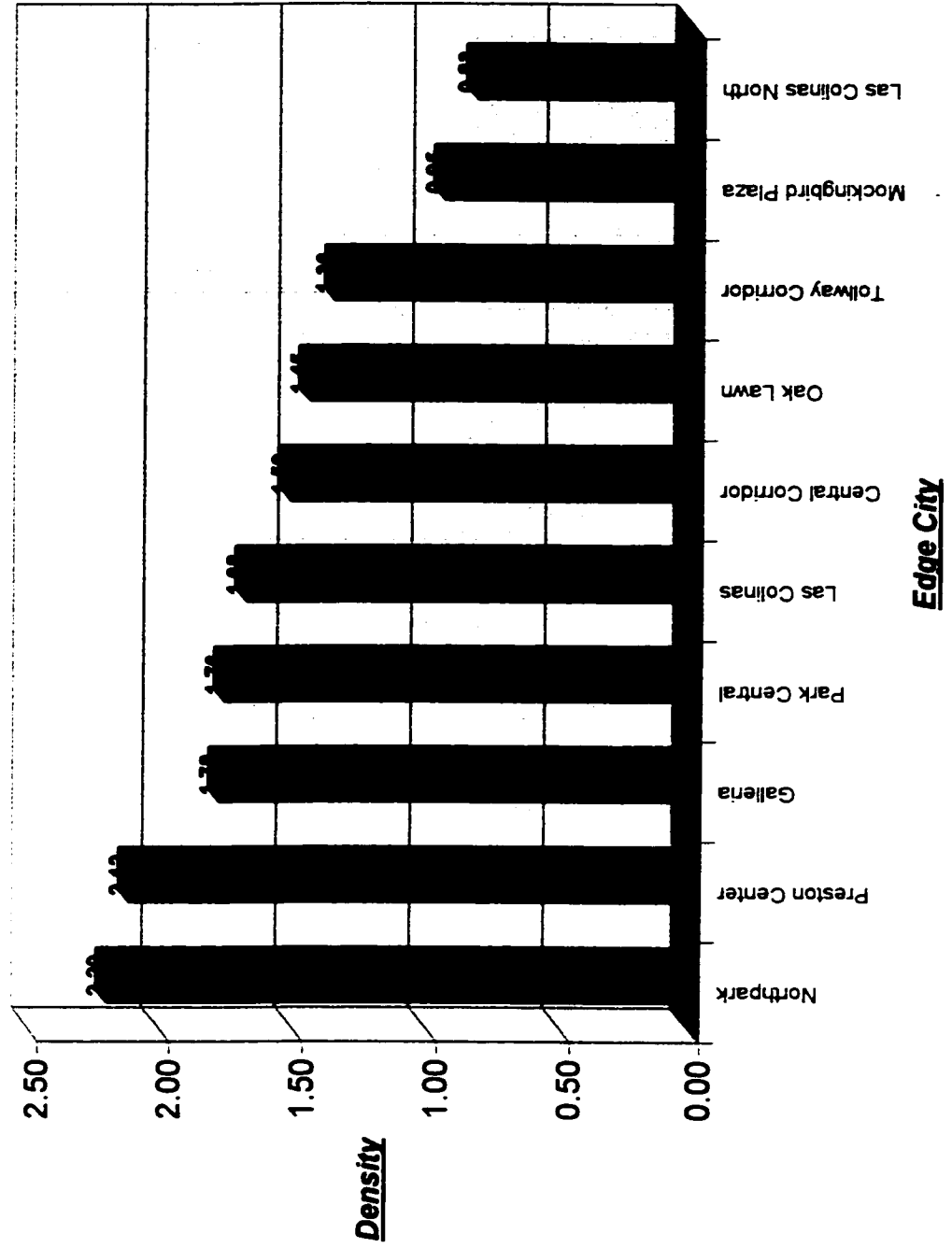


FIGURE 44: Density - Total Floor Space / Total Area

Area - In Square Feet

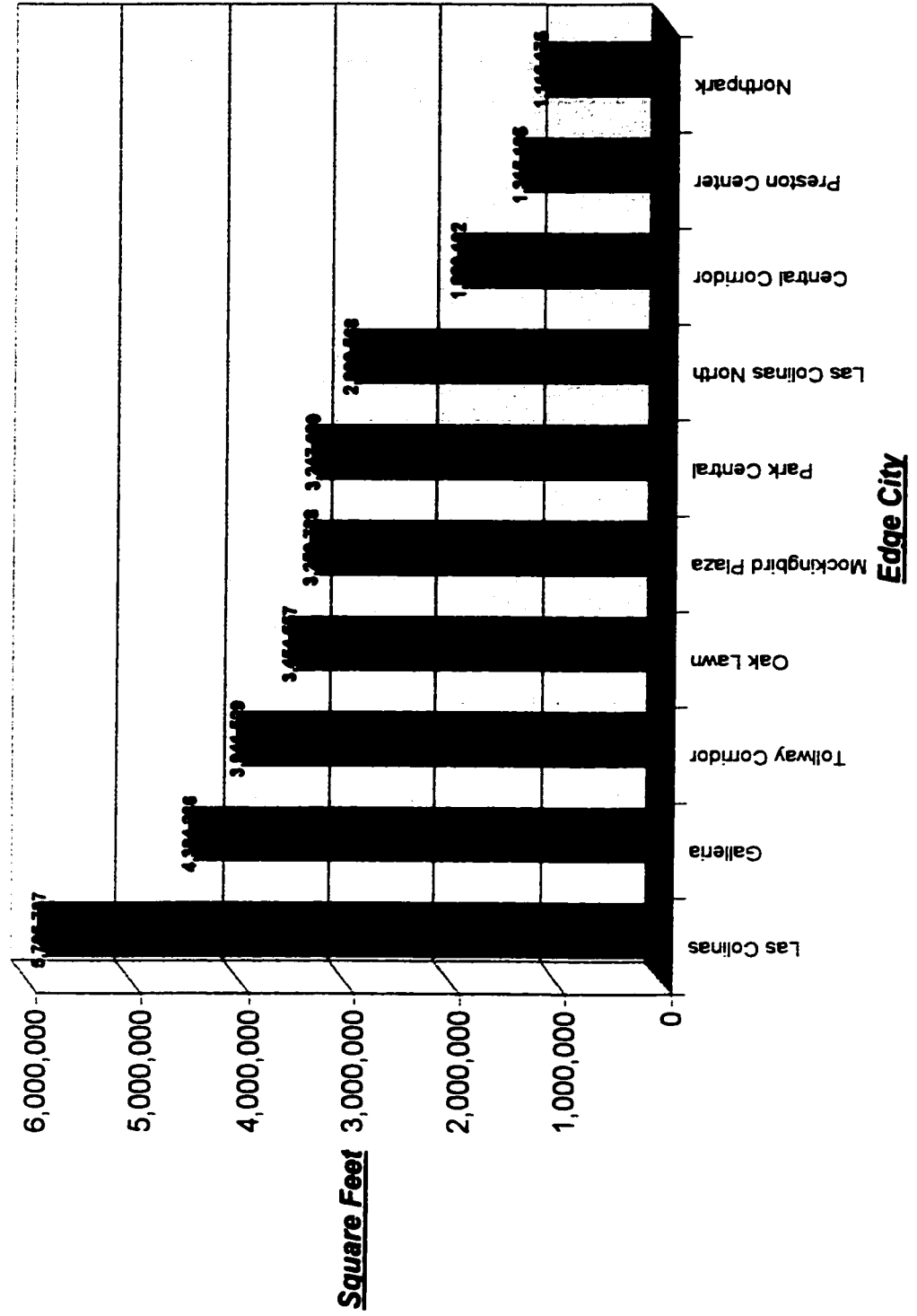


FIGURE 45: Area in Square Feet

Area - In Square Feet

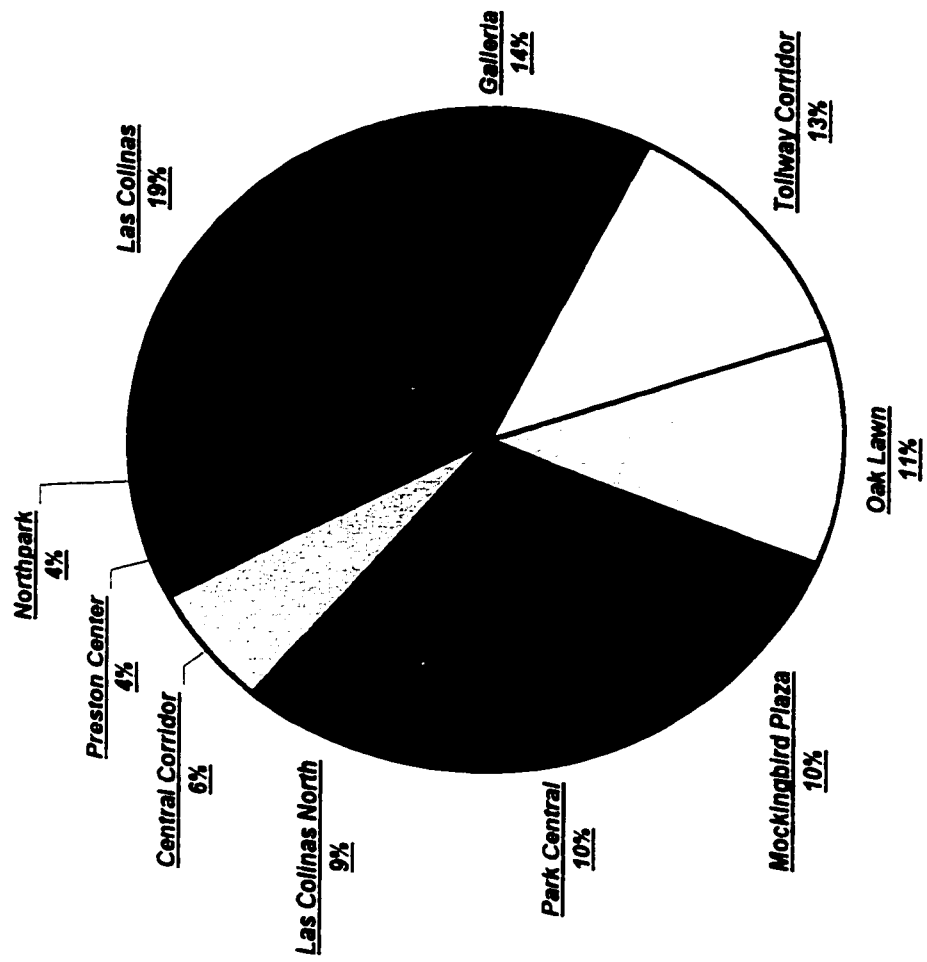


FIGURE 46: Area in Square Feet

Number of Buildings - 5 Stories or More

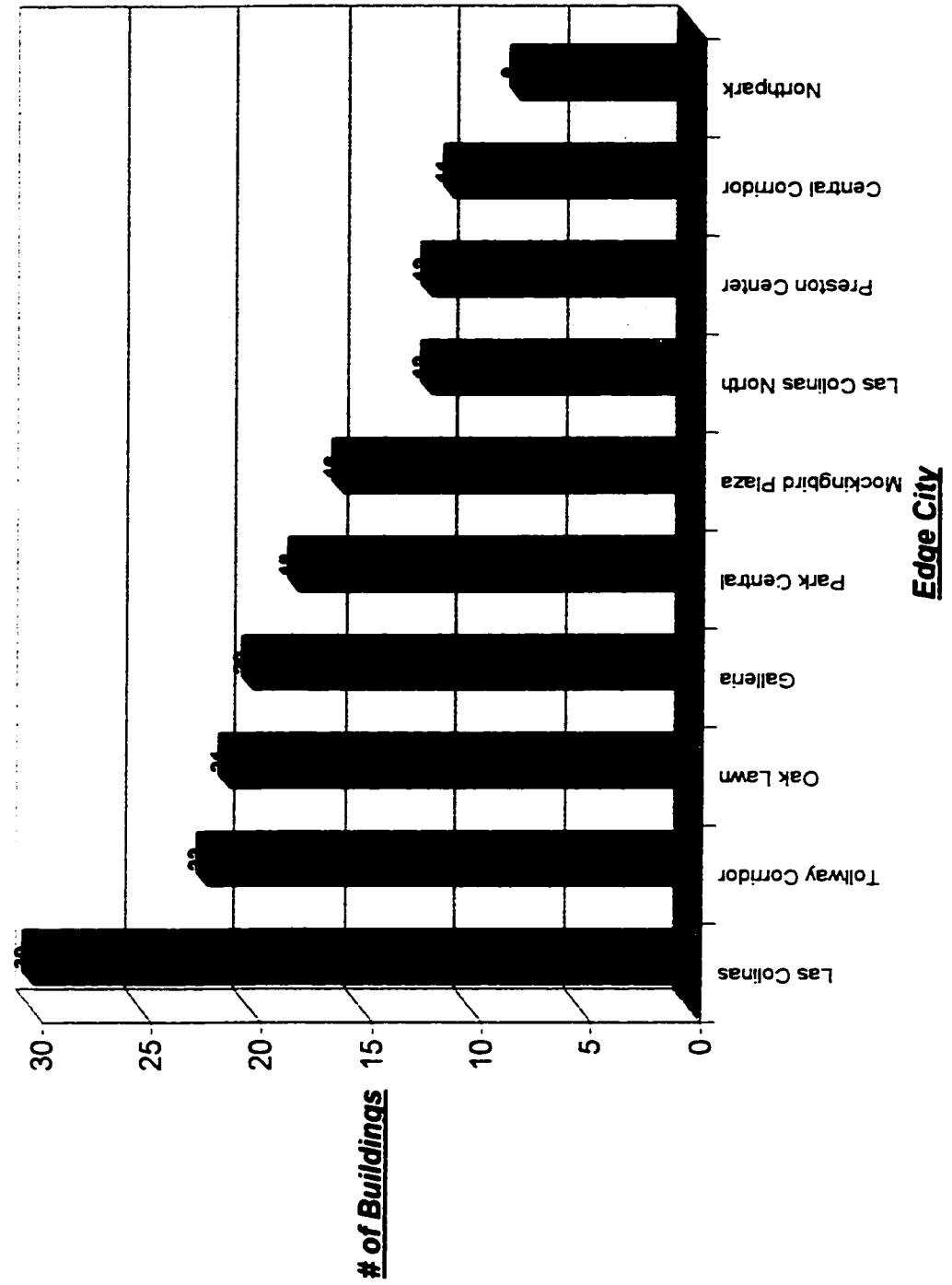


FIGURE 47: Number of Buildings 5 Stories or More

Total Floor Space - Square Feet

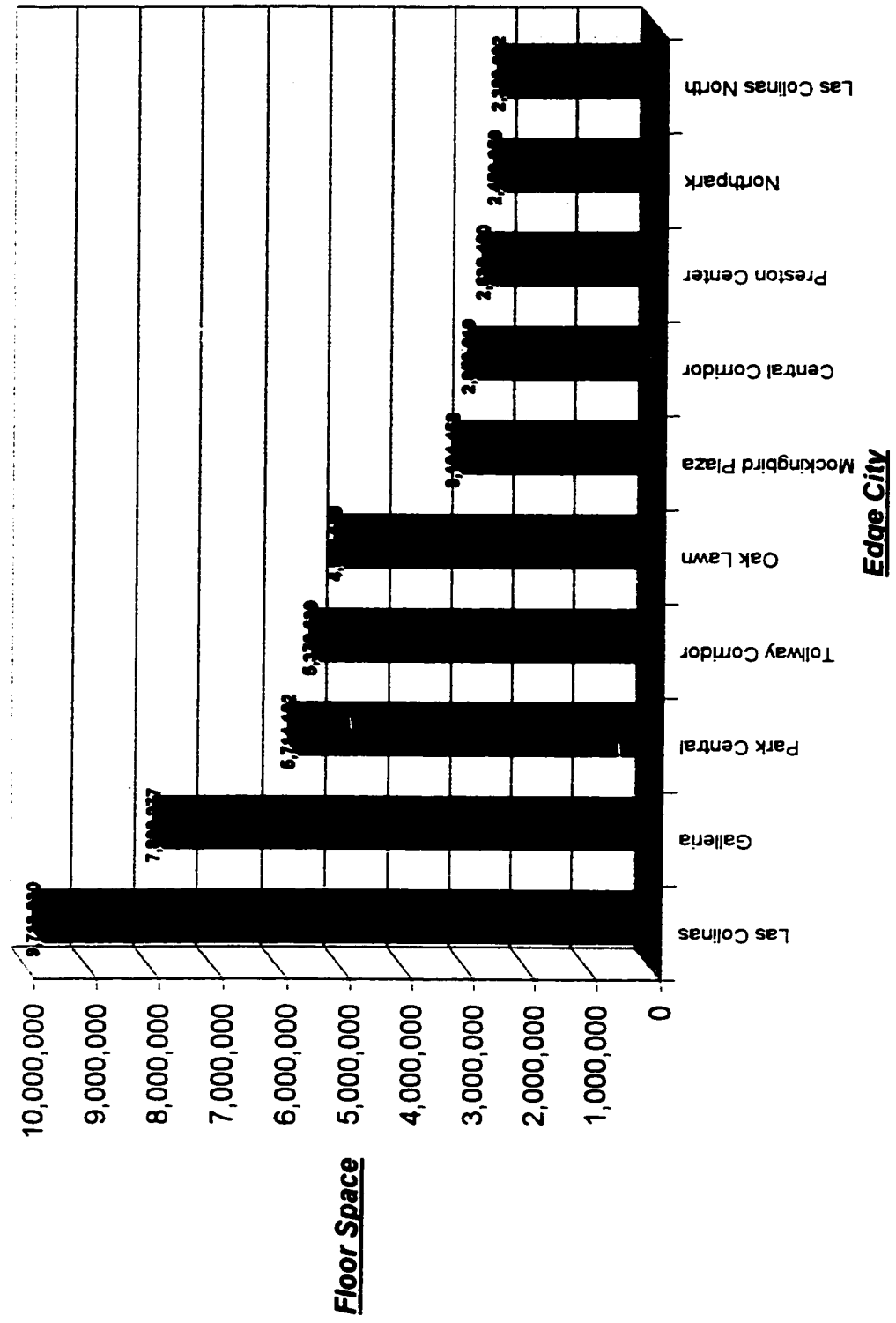


FIGURE 48: Total Floor Space in Square Feet

Total Floor Space - Square Feet

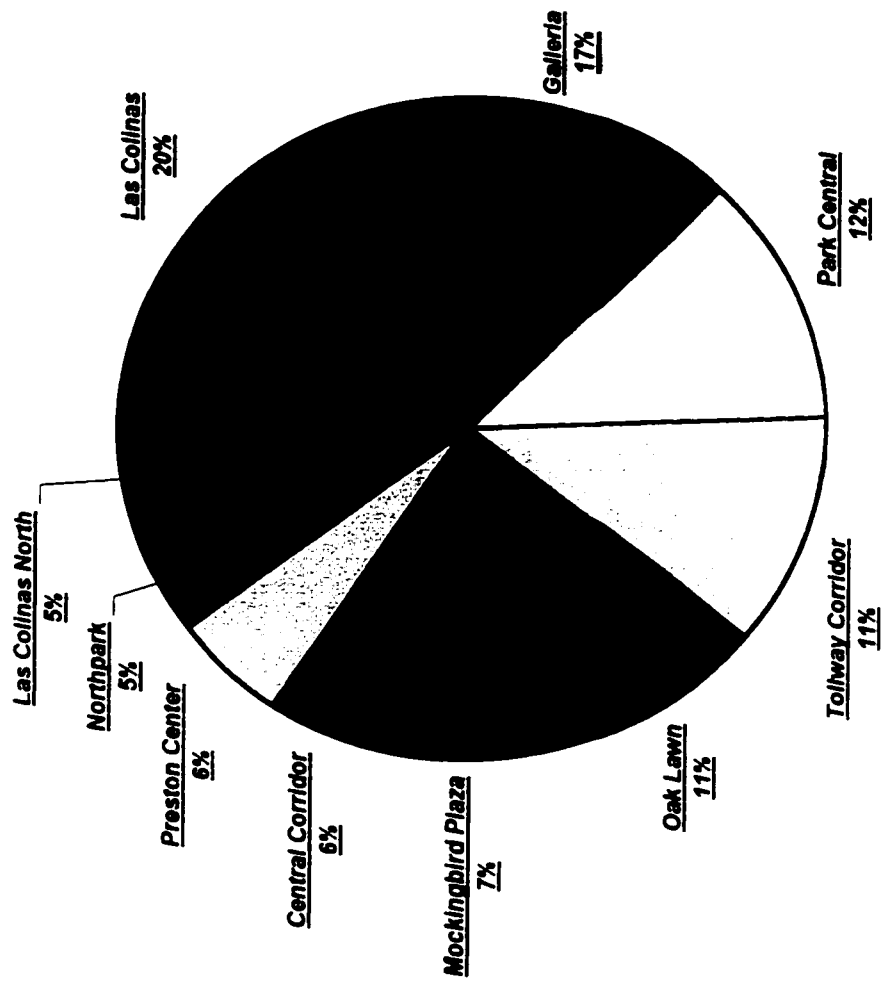


FIGURE 49: Total Floor Space in Square Feet

Average Building Size - Floor Space

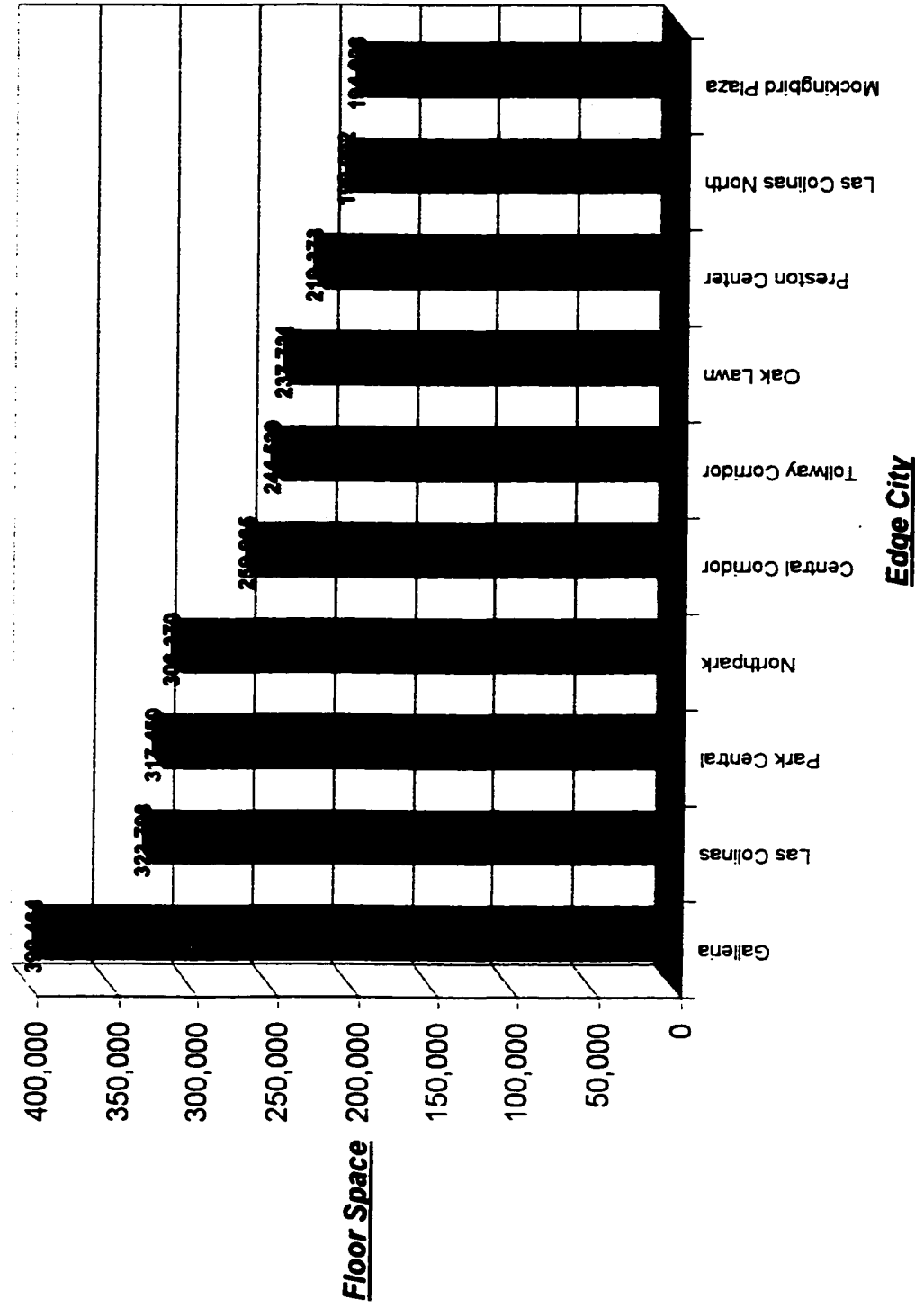


FIGURE 50: Average Building Size in Floor Space

Average Height - In Stories

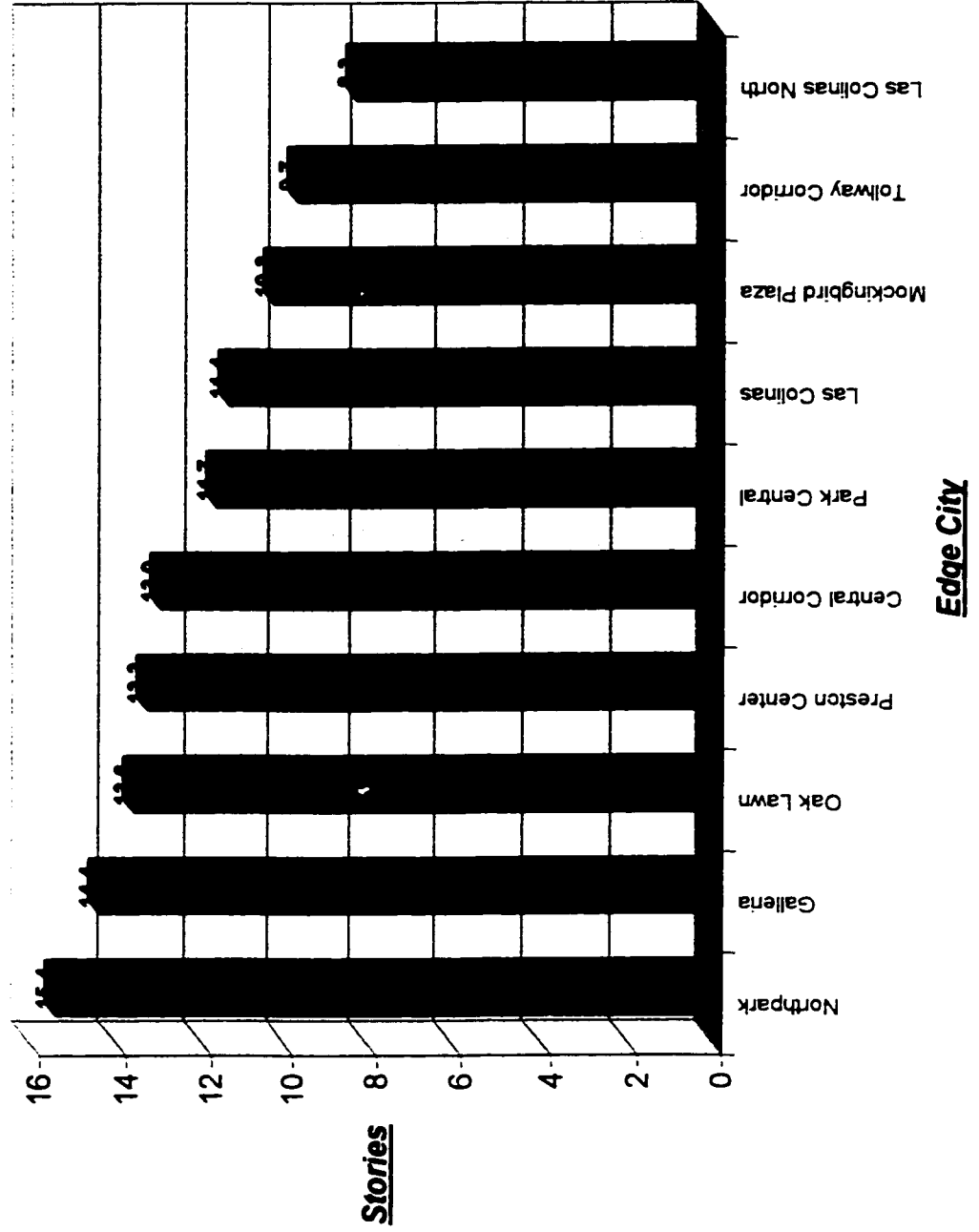


FIGURE 51: Average Height in Stories

Total Height - In Stories

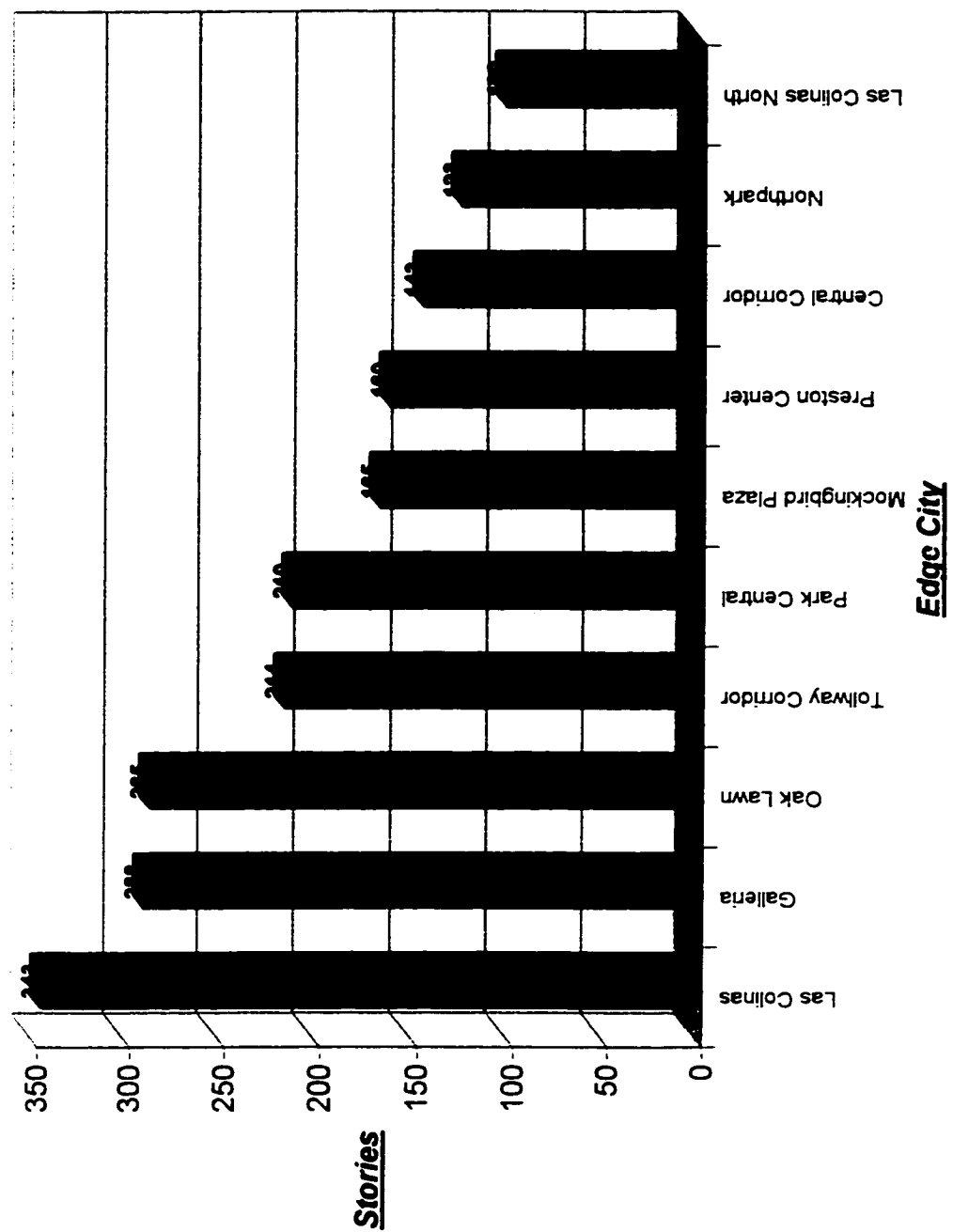


FIGURE 52: Total Height in Stories

Total Height - Stories

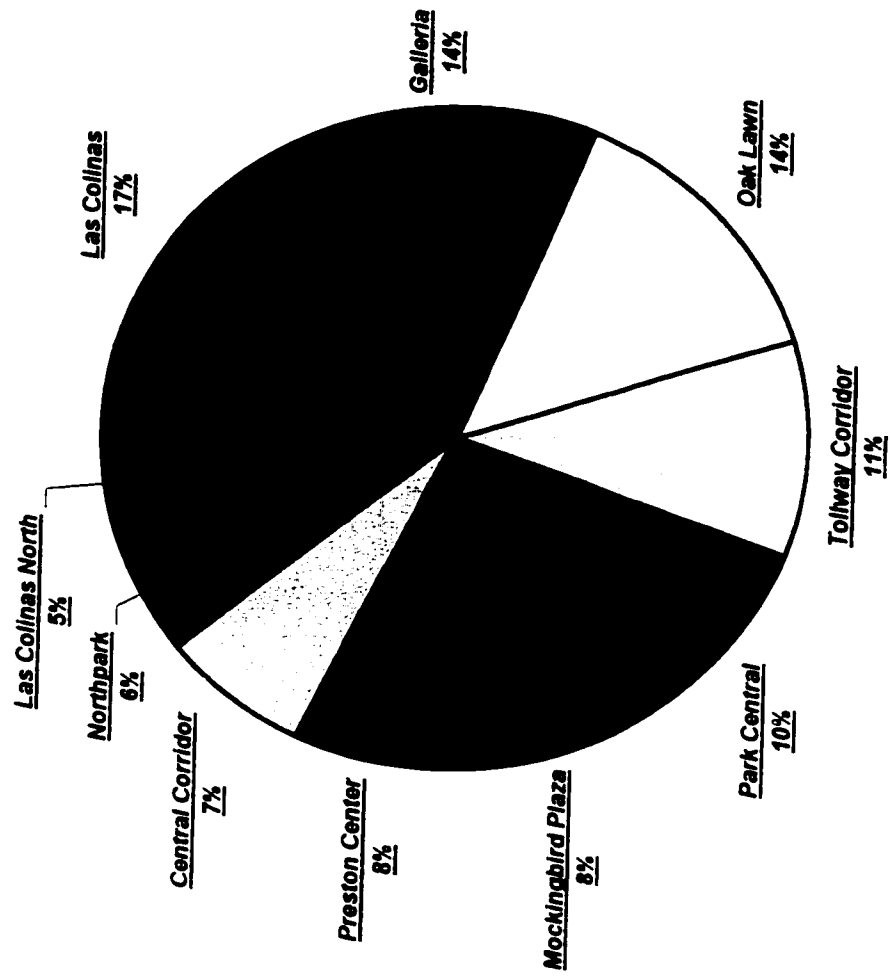


FIGURE 53: Total Height in Stories

Tallest Building - In Stories

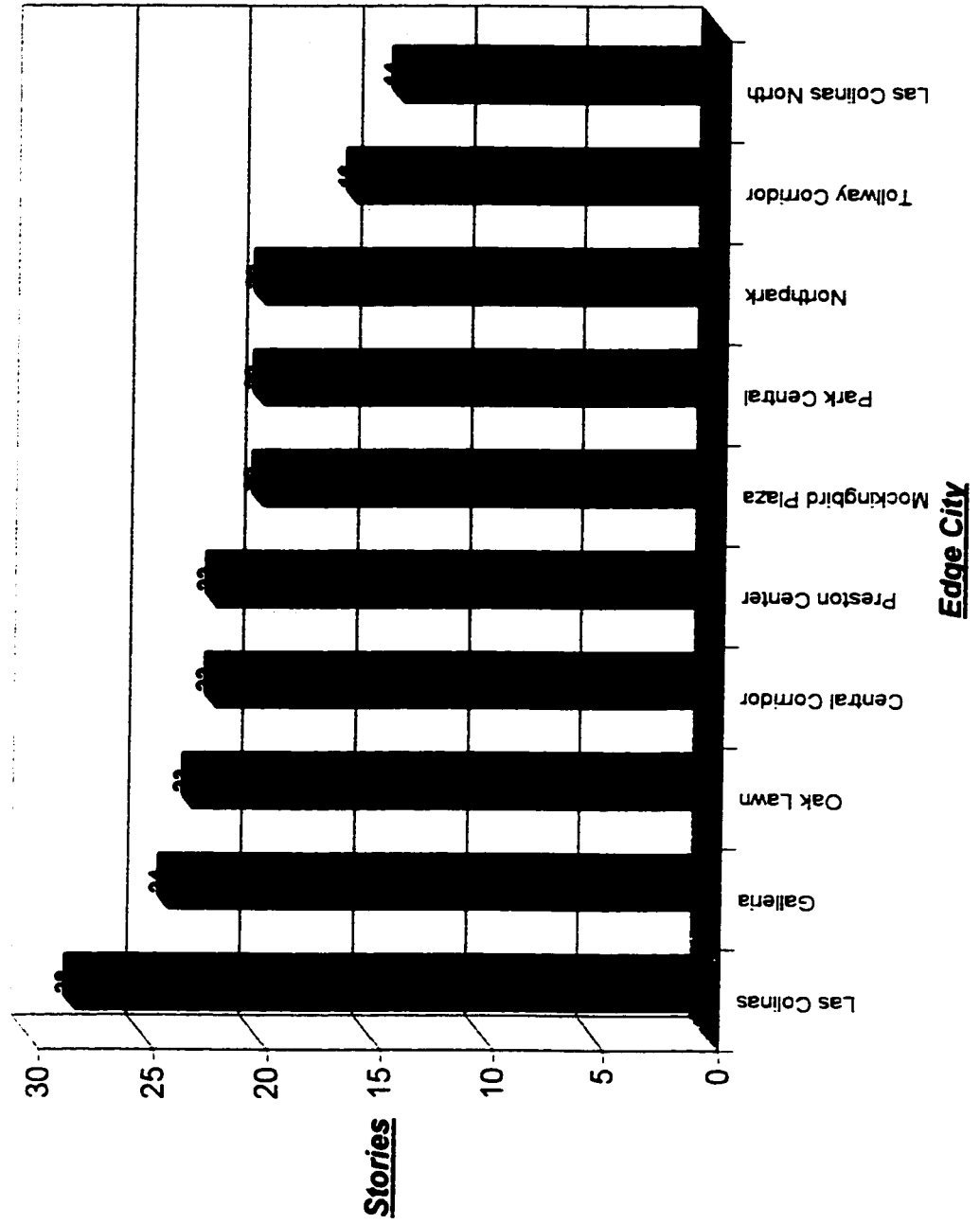


FIGURE 54: Tallest Building in Stories

Tallest Buildings - Average of Top 3

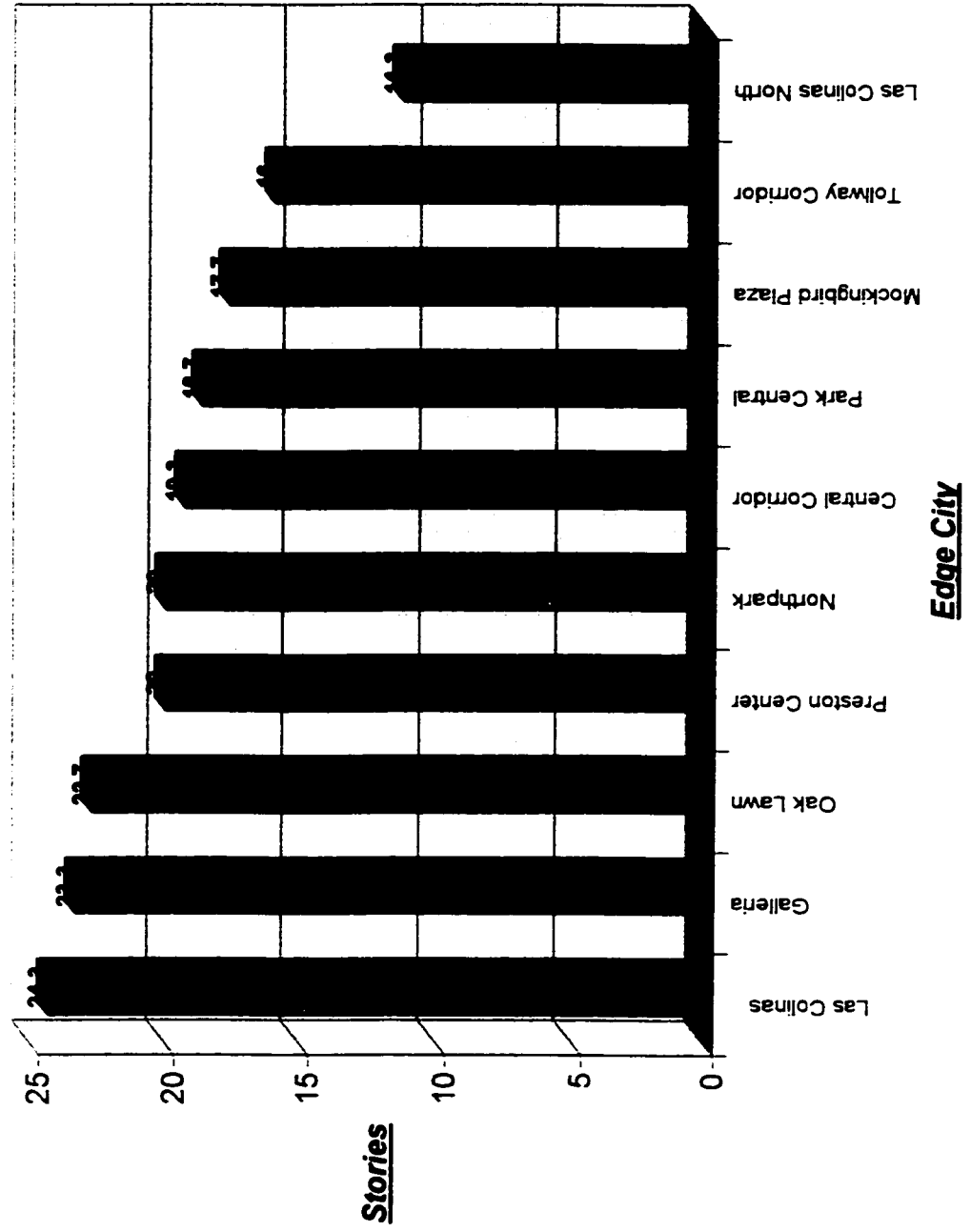


FIGURE 55: Tallest Buildings - Average of Top 3

Largest Building - Floor Space

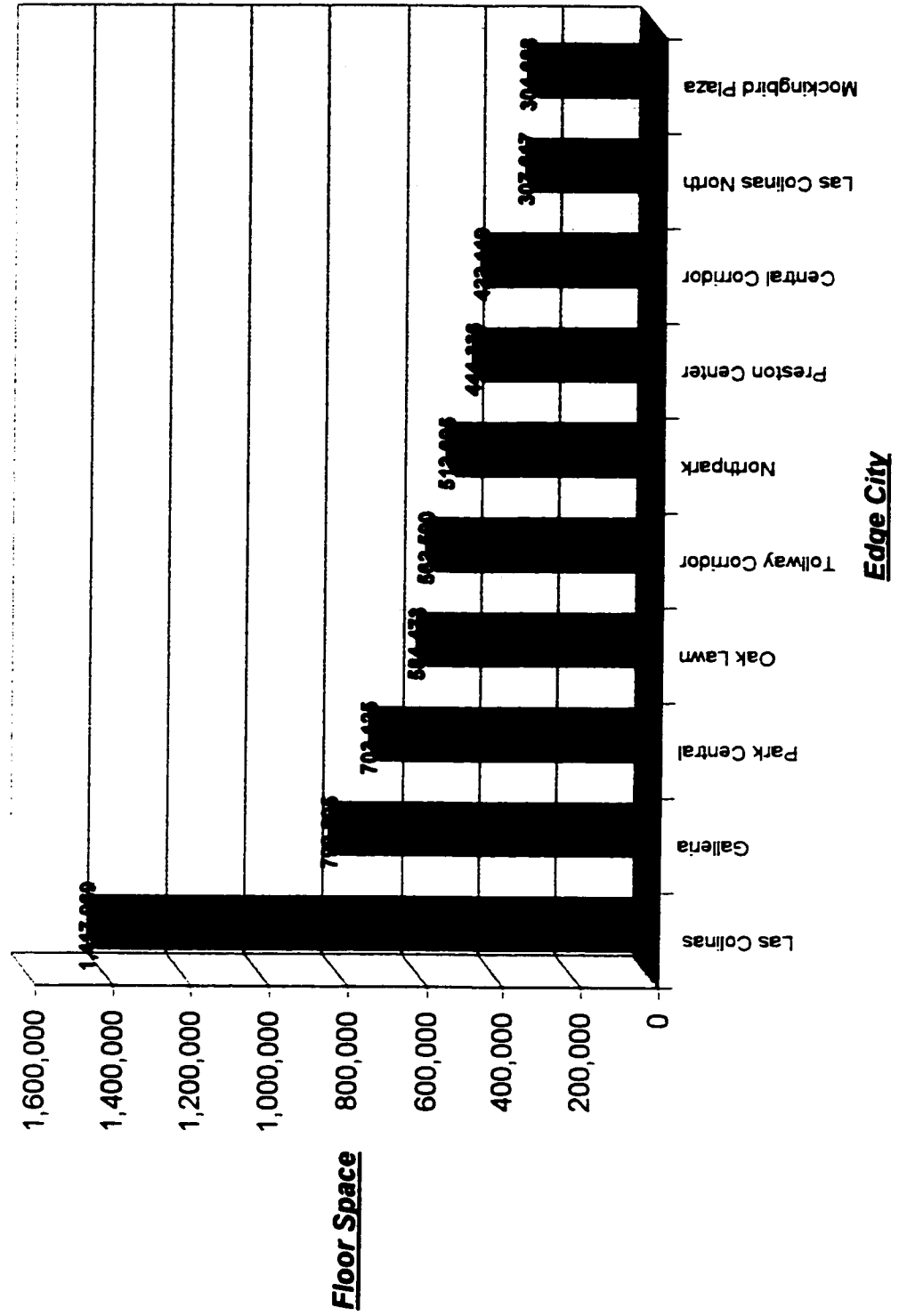


FIGURE 56: Largest Building in Floor Space

Largest Buildings - Average of Top 3

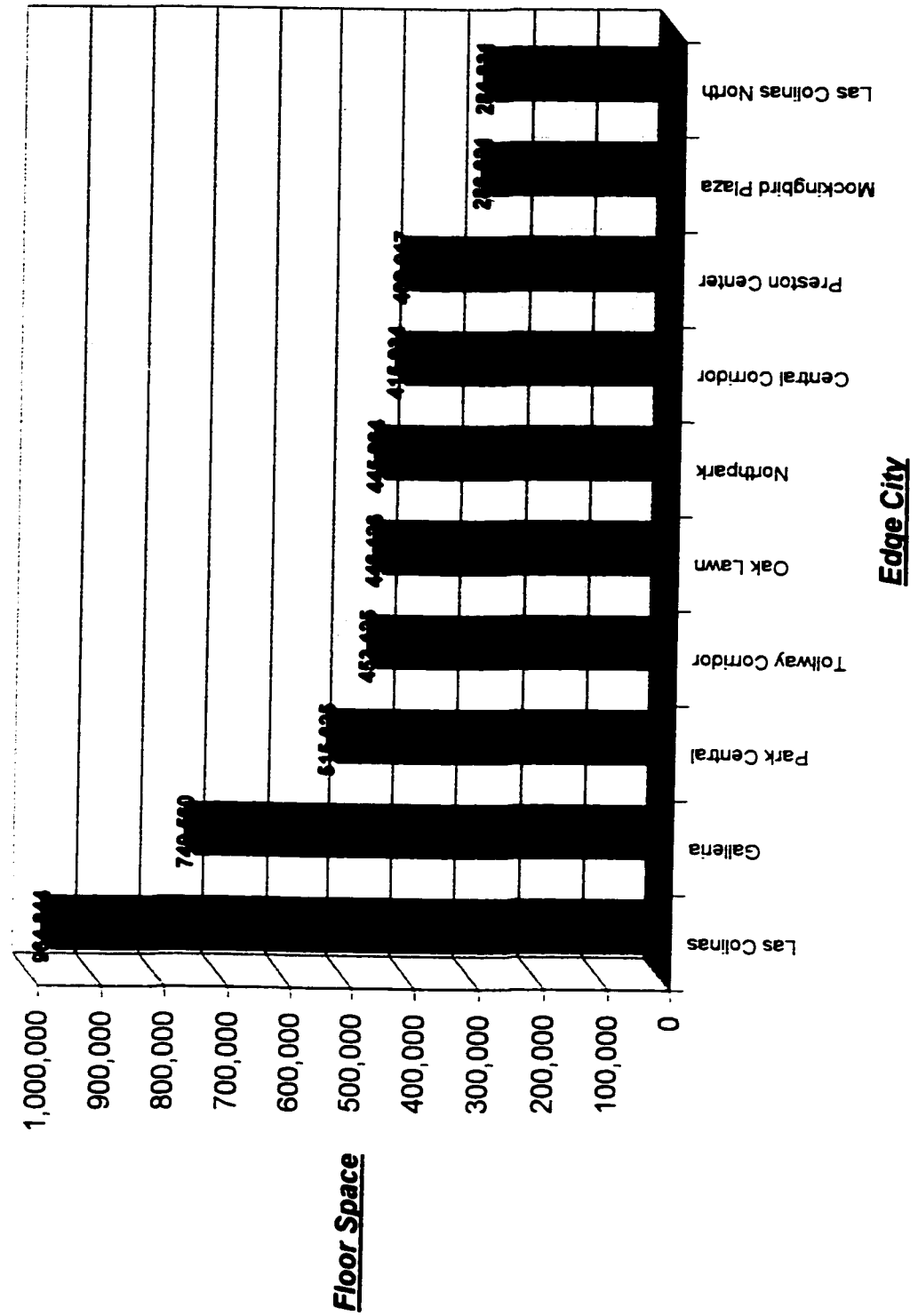


FIGURE 57: Largest Buildings - Average of Top 3 in Floor Space

Average Building Size - Footprint

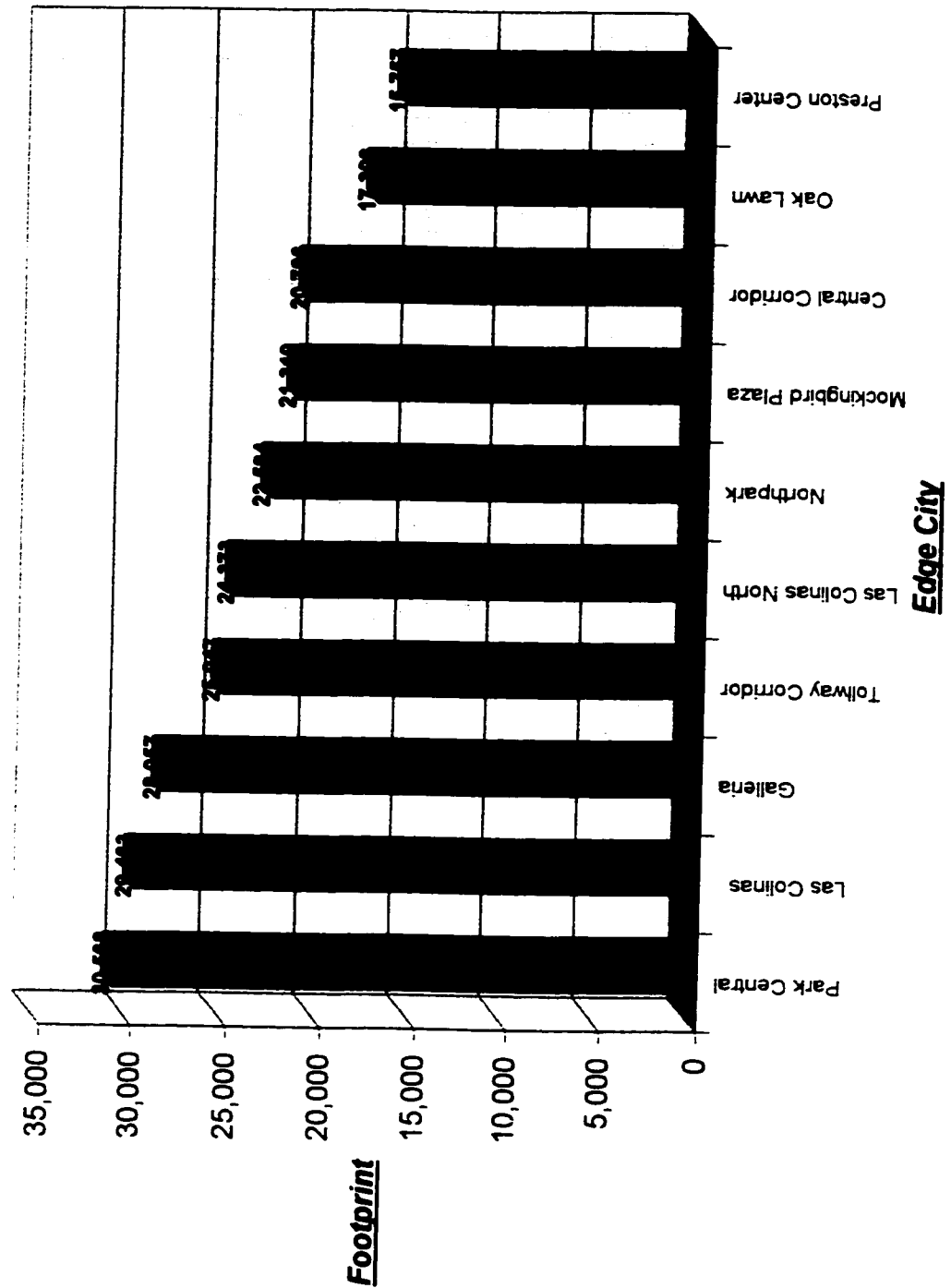


FIGURE 58: Average Building Footprint Size

Total Building Size - Footprint

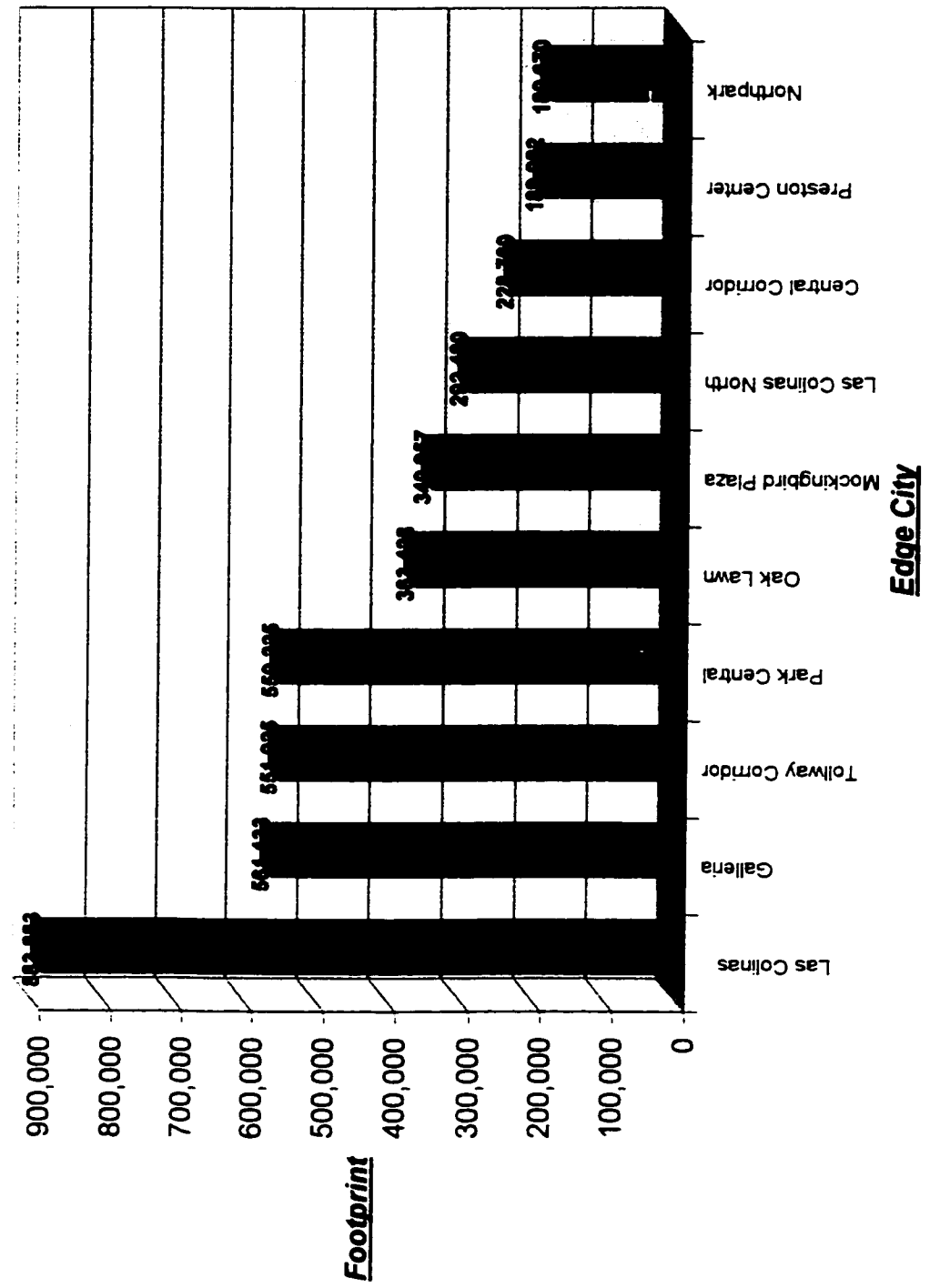


FIGURE 59: Total Building Footprint Size

Total Building Size - Footprint

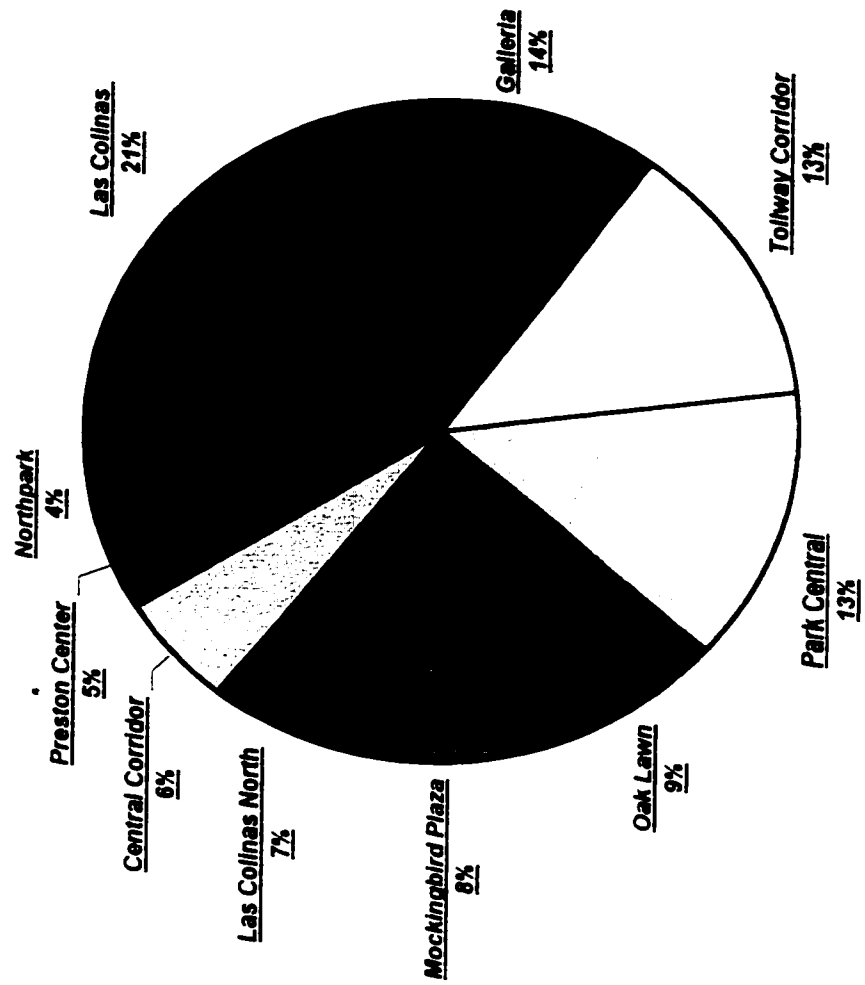


FIGURE 60: Total Building Footprint Size

Largest Building - Footprint

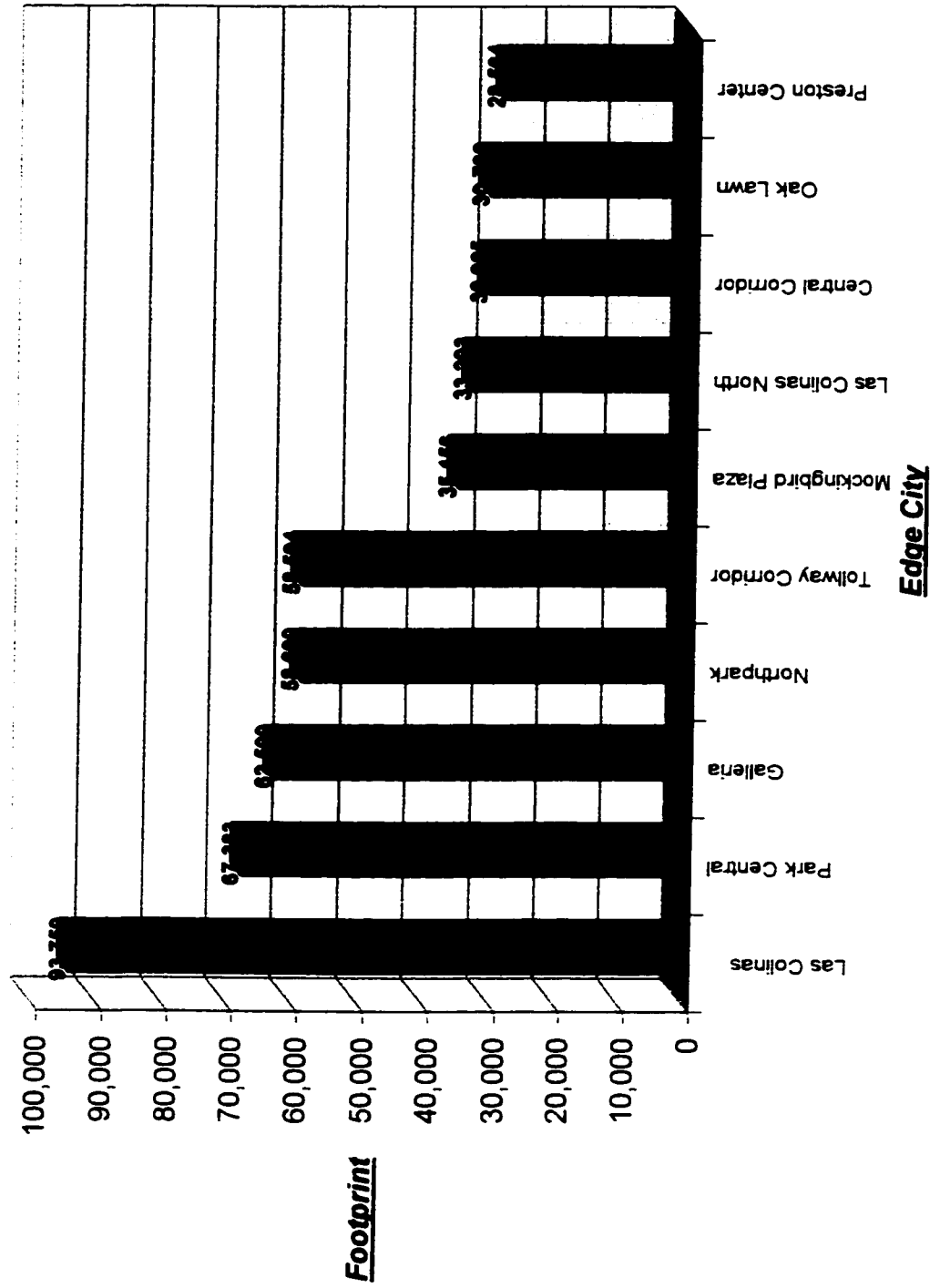


FIGURE 61: Largest Building - Footprint

CHAPTER 5

DATA ANALYSIS

The study's "Edge Cities" are discussed under the following topics:

1. **Geographic Location – Explanation of "Edge City" Location**
2. **Origin of Name**
3. **Building Construction Types – Style and Age**
4. **Visual Elements – Skyline from Afar and "Urban Canyon Effect" from Within**
5. **Statistical Analysis**

Northpark

Northpark is located 6.2 miles due north of downtown Dallas on the southeast corner of US-75 and Northwest Highway (fig. 14). It is a new business park, whose buildings were constructed primarily in the 1980's. Northpark's name comes from the locally well known, upscale shopping mall, located on the west side of US-75 at Northwest Highway, which attracts affluent shoppers from the Highland Park area. The name was readily transferred to the Northpark Business Park.

Northpark contains only eight qualifying buildings and is the only "Edge City" that does not meet the "ten buildings or more" criterion. The exception, made to include Northpark, involved several factors of consideration. One was that the buildings within the Northpark boundary formed a noticeable visual skyline from both the north and the south (fig. 62). Another reason is that its eight buildings combine to yield the tallest average building height, at 15.4 stories, of any "Edge City." The eight buildings also house an average floor space of 306,370

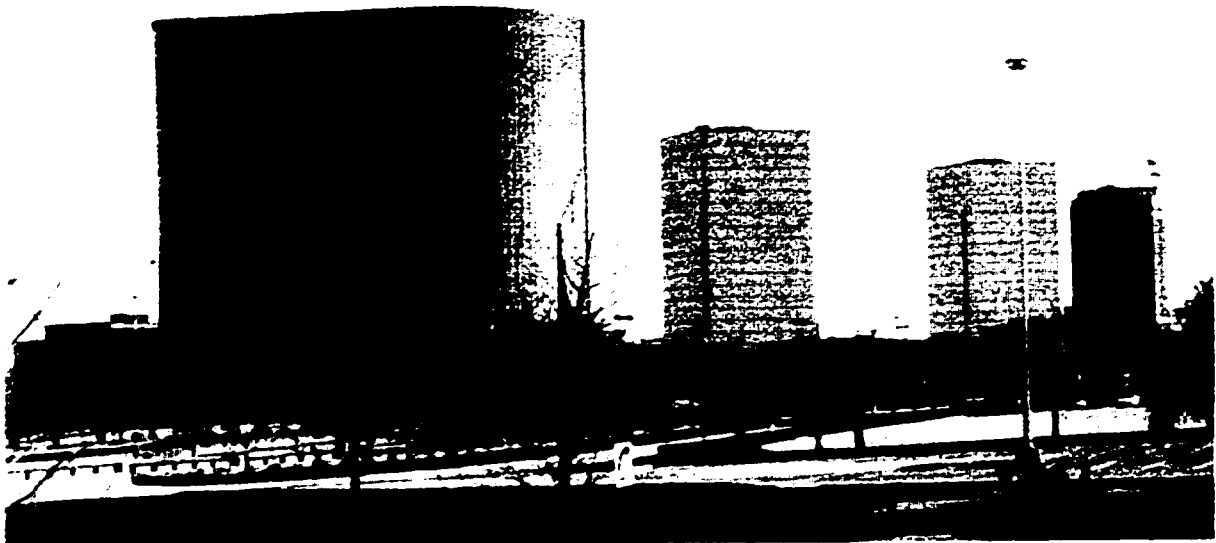
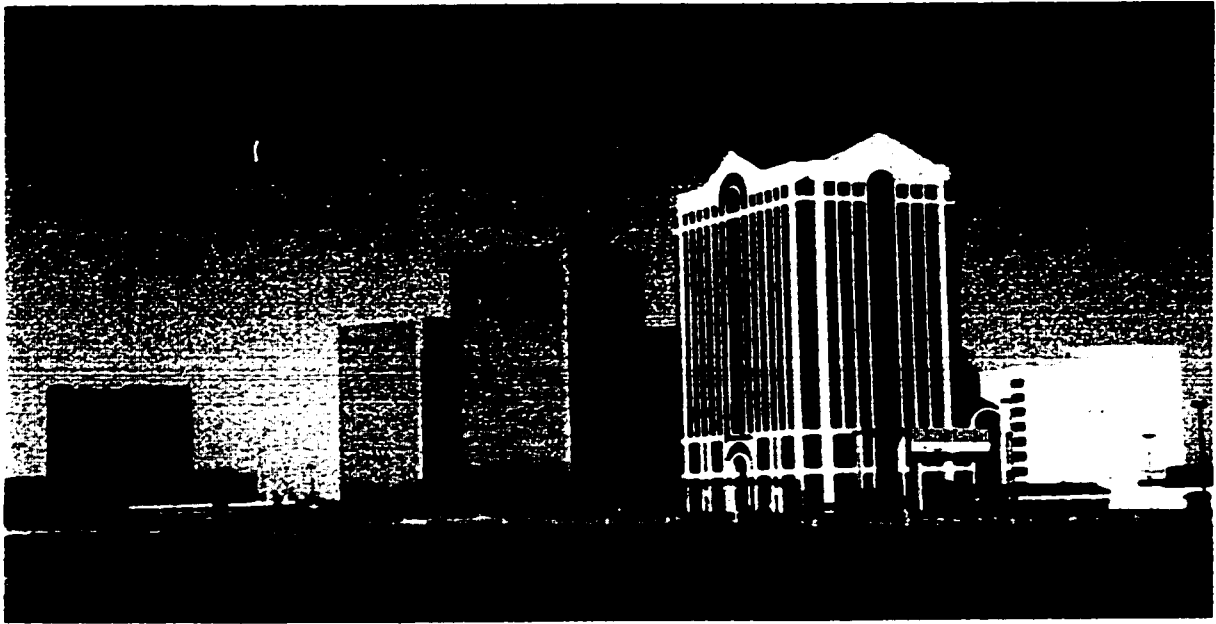


FIGURE 62: (Above) Northpark skyline from the South. (Below) Northpark skyline from the North.

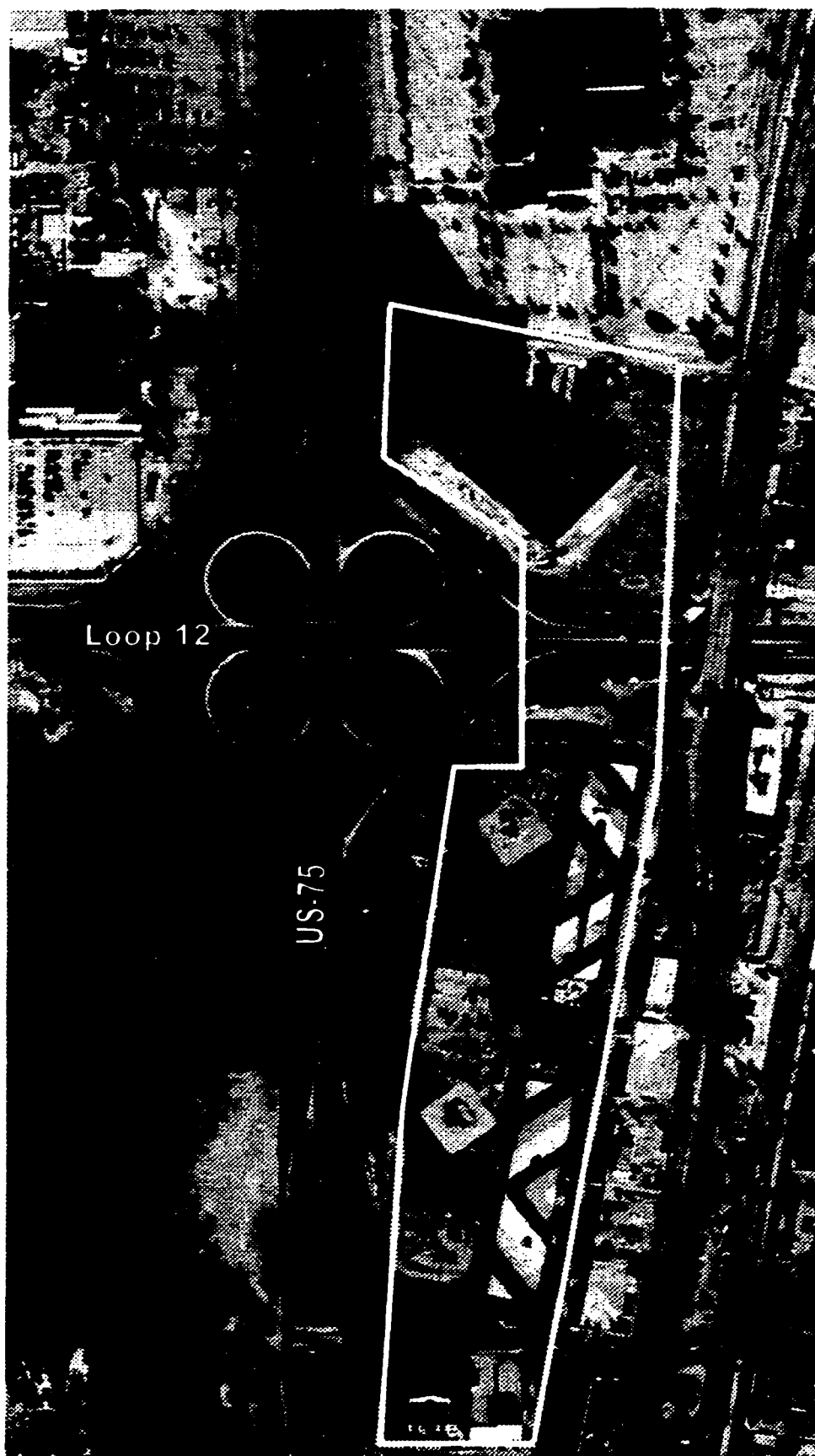


FIGURE 63: Northpark Aerial Photo With Boundary Shown in White

square feet, ranking fourth amongst the ten "Edge Cities." Also, Northpark boasts the largest density ratio of any "Edge City," at 2.20. This means that for every square foot of ground space within the boundaries of Northpark, there are 2.20 floors of building floor space. The small area of this "Edge City" contributes to the high density, at just over one million square feet (fig. 45). The total area of an "Edge City" weighs heavily in determining density. A slight change in the total area can make a significant difference in the density ratio.

Northpark is a new, modern-style business park. Its buildings are mostly framed, light-clad, and have glass exteriors (fig 62). Five of its eight buildings are twenty stories tall, and have glass exteriors on all four sides, thus following the typical architectural style of the modern high-rise building. There are, however, two buildings located on the north side of the "Edge City" that are older, framed, heavy-clad buildings. All of its buildings house corporate businesses.

The shape of Northpark's polygonal boundary is long and slender from north to south (fig. 23, 63). The Northpark skyline is evident when viewed from the north or south (fig. 62), but not imposing when viewed from the east or west due to the long and narrow configuration of the buildings. The relatively large buildings are spaced just closely enough together to yield a high-density ratio, but far enough apart to prevent much of an "Urban Canyon" feel from within.

Northpark is located amidst a previously established, gridded street network. The majority of the area surrounding Northpark is devoted to shopping districts of various types. The large, upscale Northpark Mall borders the "Edge City" to the west and strip malls border on the other three sides. Everything surrounding Northpark was built prior to the business park. Accordingly, the land available to build the business park was limited, hence the small total area figure.

Preston Center

Preston Center is a new business park located six miles north of downtown Dallas on the southeast corner of the Dallas North Tollway and Northwest Highway (fig. 14) in the middle of a densely populated upscale residential area. It is the only "Edge City" that is nearly completely

surrounded by residential dwellings. The residential district surrounding Preston Center is located just west of the city of Highland Park, an "old" money area, consisting of Victorian houses dating from the early part of the twentieth century. Preston Center got its name from a nearby, small shopping district named Preston Village, built in the 1920's.

The buildings in Preston Center are tightly spaced, as they occupy blocks in a gridded street network (fig. 19, 65). The area of the "Edge City" is only one block wide and three blocks long. Thus, it has the second smallest total area of any "Edge City," at 1,315,165 square feet (fig. 45), and ranks second among the ten "Edge Cities" with a density ratio of 2.12 (fig. 44). The aerial photo of Preston Center (Fig. 65) displays a tightly spaced building configuration, thus yielding a relatively high-density ratio. Northpark and Preston Center are the only two "Edge Cities" that have over twice as much floor space as ground space (fig. 44).

Preston Center houses twelve qualifying buildings. The majority of these buildings are framed, light-clad, with a combination of glass and lightweight concrete aggregate exteriors (fig. 65). Most were built in the 1980's, making Preston Center one of the youngest of the "Edge Cities." Its high-rise profile forms a tightly packed skyline (fig. 64). The skyline is distinctive among all "Edge Cities" in having a similar appearance when viewed from any vantage point. This is due to a combination of evenly spaced buildings and small area. The "Urban Canyon Effect" created by the high-rise buildings is the most imposing of any "Edge City."

Preston Center's buildings average 13.3 stories, ranking fourth among the ten "Edge Cities." The tallest is twenty-two stories, and the average of the three tallest is twenty stories. Both of these statistics also rank fourth among the ten "Edge Cities." Preston Center is also distinctive in having the smallest building footprints of the "Edge Cities." The center ranks last or next to last in all three statistical categories dealing with building footprint size (fig. 58, 59, 61). A suggested reason is that not much land was available to build the Preston Center Business Park due to it being the product of in-filling.

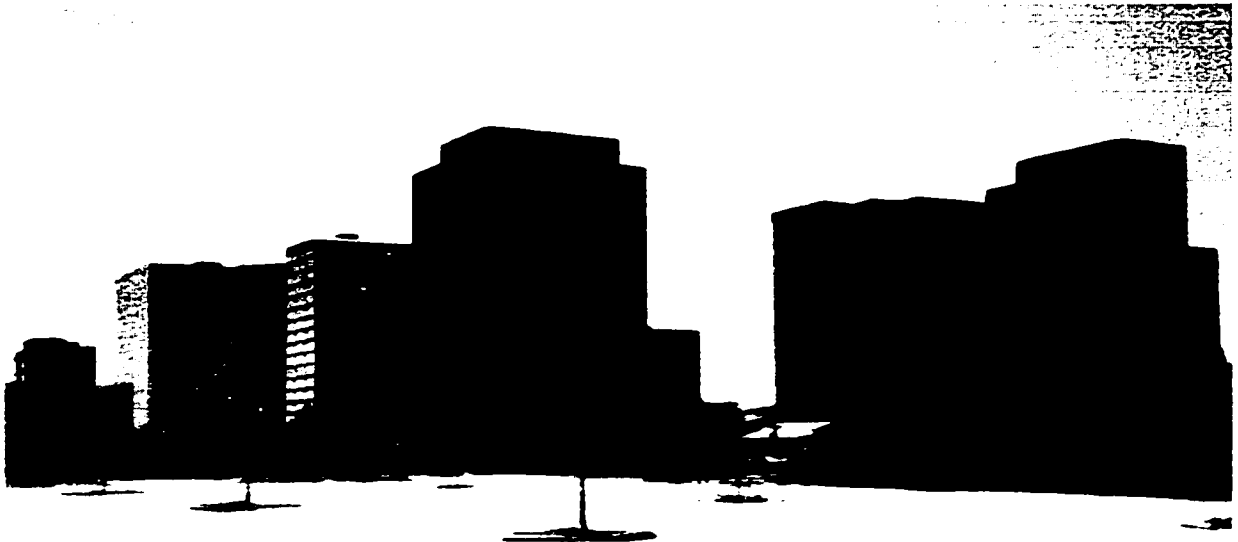


FIGURE 64: (Above) Preston Center skyline from the North. (Below) Preston Center skyline from the South.



FIGURE 65: Preston Center Aerial Photo With Boundary Shown in White

Galleria

Preston Center and Northpark are both located in what may be described as an "urban" environment. The Galleria "Edge City," however, is located in the sprawling suburban territory of Dallas County. It is situated at the intersection of two large Dallas freeways 10.4 miles north of the City Center of Dallas (fig. 14). The Dallas North Tollway and I-635 (LBJ Freeway) intersect in the middle of a large suburban area known as "North Dallas," a term well known by both locals and business travelers. The "North Dallas" area consists of economically booming residential and commercial property with the Galleria "Edge City" as its focal point.

The Galleria received its name in a similar fashion to what occurred with Northpark. The Galleria Mall is a large upscale shopping district, built in conjunction with the cluster of high-rises as part of a master-planned business and shopping district. Accordingly, the logical name was the Galleria.

Boundaries were drawn around three separate sections of the Galleria (fig. 20, 67). The cluster on the north side of I-635 follows the art deco style common to the 1930's. The buildings are mauve in color, contain equally spaced windows between wide columns, and have decorated art deco tops. The Empire State and Chrysler buildings in New York City are good examples of famous buildings that employed art deco streamlining. One of the buildings in this northern grouping is a high-rise hotel. Others house corporate businesses.

The southern grouping of buildings of the Galleria is located on the south side of I-635. All buildings in this group have glass exteriors. One high-rise hotel is found in this group, surrounded by corporate business high-rises. The third cluster, situated on the western side of the Dallas North Tollway, has both hotels and office facilities. The majority of the Galleria's buildings were built in the 1970's, making it one of the first "Edge Cities" in the Dallas metropolitan area.

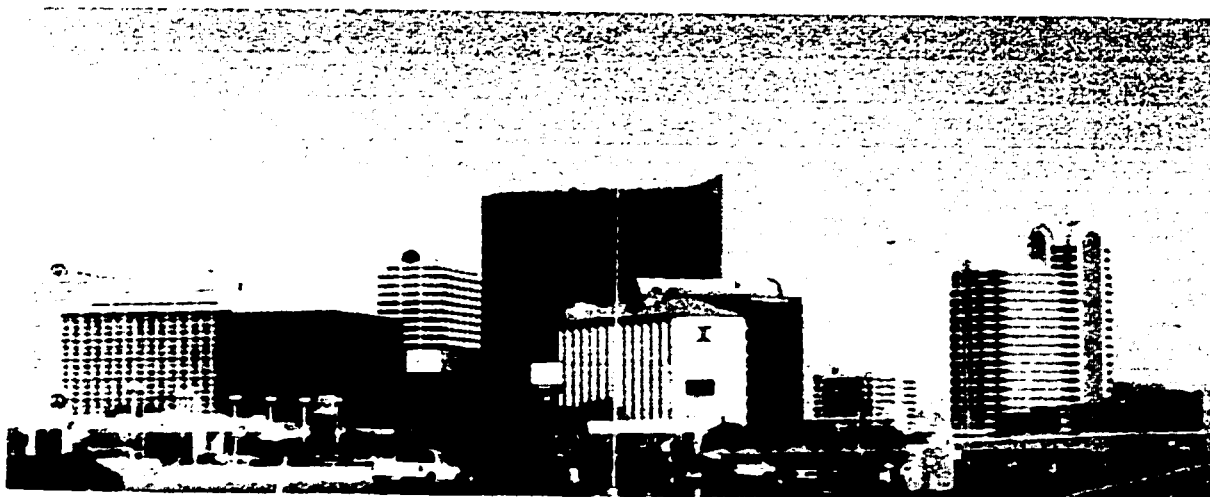
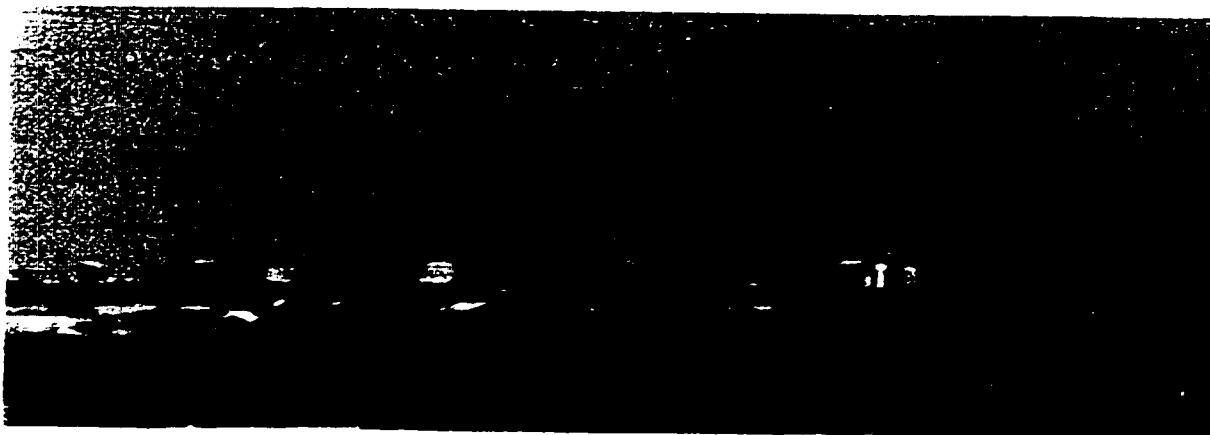


FIGURE 66: (Above) Galleria and Tollway Corridor skylines from 10 miles West. (Below) Galleria skyline from the West.

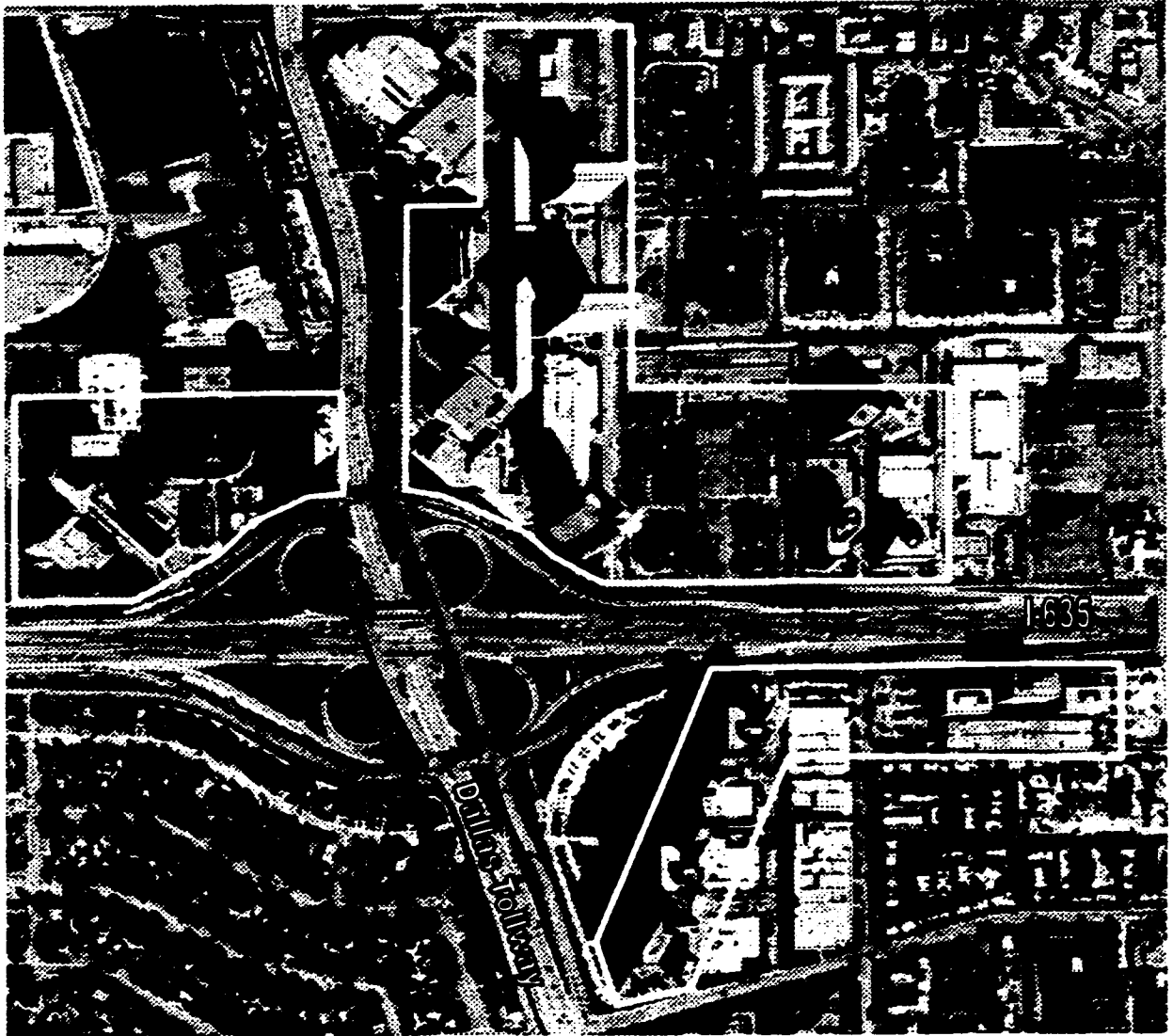


FIGURE 67: Galleria Aerial Photo With Boundary Shown in White

The imposing skyline of the Galleria's high-rise buildings is visible for miles in any direction; figure 68 displays the center's skyline from approximately ten miles westward. Each of the three high-rise clusters of the Galleria produces an apparent "Urban Canyon Effect."

The Galleria ranks high in all measurements. Its twenty high-rise buildings are among the largest and tallest in any "Edge City." The Galleria ranks third in density with a figure of 1.26 (fig. 44). It ranks second in total floor space, first in average building floor space, and second in average building height (fig. 48, 50, 51). The Galleria has the second largest area of the ten "Edge Cities," at nearly 4.4 million square feet (fig. 45). It boasts an area that is well over three

times as large as Preston Center, yet ranks only .34 less on the density scale (fig. 44). The tallest five buildings in the Galleria are 24, 23, 23, 23, and 23 stories tall respectively (fig. 31), figures unmatched by any other "Edge City." The Galleria contains the second tallest single building in any "Edge City," at 24 stories, and the second largest single building, at 799,805 square feet of floor space. The buildings within its boundaries also have large footprints, ranking third in average building footprint, third in largest single building footprint, and second in total building footprint size (fig. 58, 59, 61).

Park Central

Park Central is a master-planned business park located ten miles directly north of downtown Dallas. As is the case with most of the "Edge Cities," Park Central is located at the intersection of two large freeways, on the southwest corner of I-635 (LBJ Freeway) and US-75 (North Central Expressway) (fig. 14). The Park Central name originates from a vanity name, one posted all over the business park. Many of the buildings carry the vanity name of "Park Central" and have vanity addresses such as "One Park Central," "Two Park Central," etc. Residential areas and strip-mall shopping zones surround Park Central. The origin of its location is probably due to a spillover of large high-rise business buildings from the favored Galleria, located just five

off ramps west on I-635. Park Central is located on the eastern outskirts of "North Dallas" and is perceived to be a less desirable or secondary corporate location.

Park Central consists of eighteen high-rise buildings, a majority of which are framed, light-clad, with glass exteriors. A few high-rise hotels are found within the boundaries of Park Central as well, although corporate business buildings dominate. Park Central is an "Edge City" that has grown over a period from the 1970's to the 1980's. The street network is not gridded, as in an urban area, but are curved and widely spaced, as in a suburban area (fig. 27). The majority of the streets are multi-lane with wide grass dividers (fig. 69). The street pattern is typical of master-planned business parks.

The boundary of Park Central was drawn around two clusters of high-rise buildings (fig. 27), excluding the large open space situated between the two groupings in order to achieve a more accurate "Total Area" figure. The aerial photo of Park Central displays the "open" or "void" space in the middle section of the "Edge City" (fig. 69).

Park Central has a moderately imposing skyline. It houses eighteen high-rise buildings, five of which are eighteen stories tall or more. However, the two separate groups of buildings are spaced widely enough to cause a fractured skyline (fig. 68). Both the northern and southern high-rise clusters create "Urban Canyon Effects."

Statistically, Park Central ranks in the middle tier positions of third through seventh in twelve of the fourteen category rankings. The only categories in which it does not rank in the middle tier are in two of the building footprint categories. Park Central has relatively large building footprints, ranking first in average footprint size and second in largest single building footprint (fig. 58, 61). Park Central ranks fourth in density with a ratio of 1.76 (fig. 44). However, this figure will probably grow in the future due to two reasons: (1) the business park has ample space to house many more high-rises in the future; and (2) it has a well-conceived street network favorable to high-rise building construction.

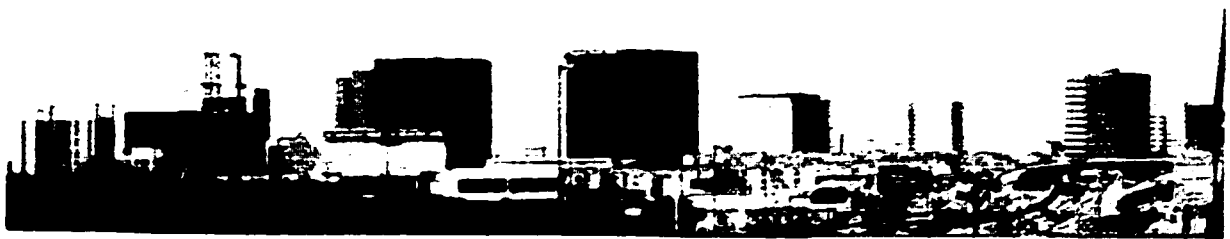
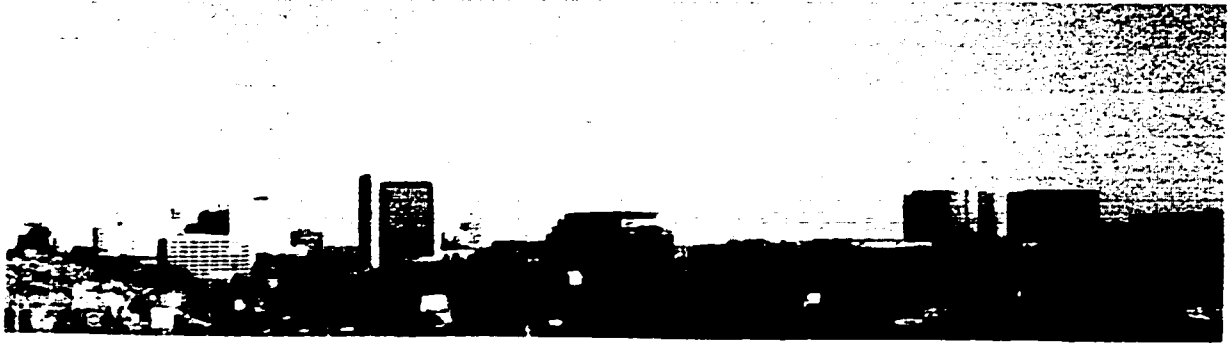


FIGURE 68: (Above) Park Central skyline from the West. (Below) Park Central skyline from the South.

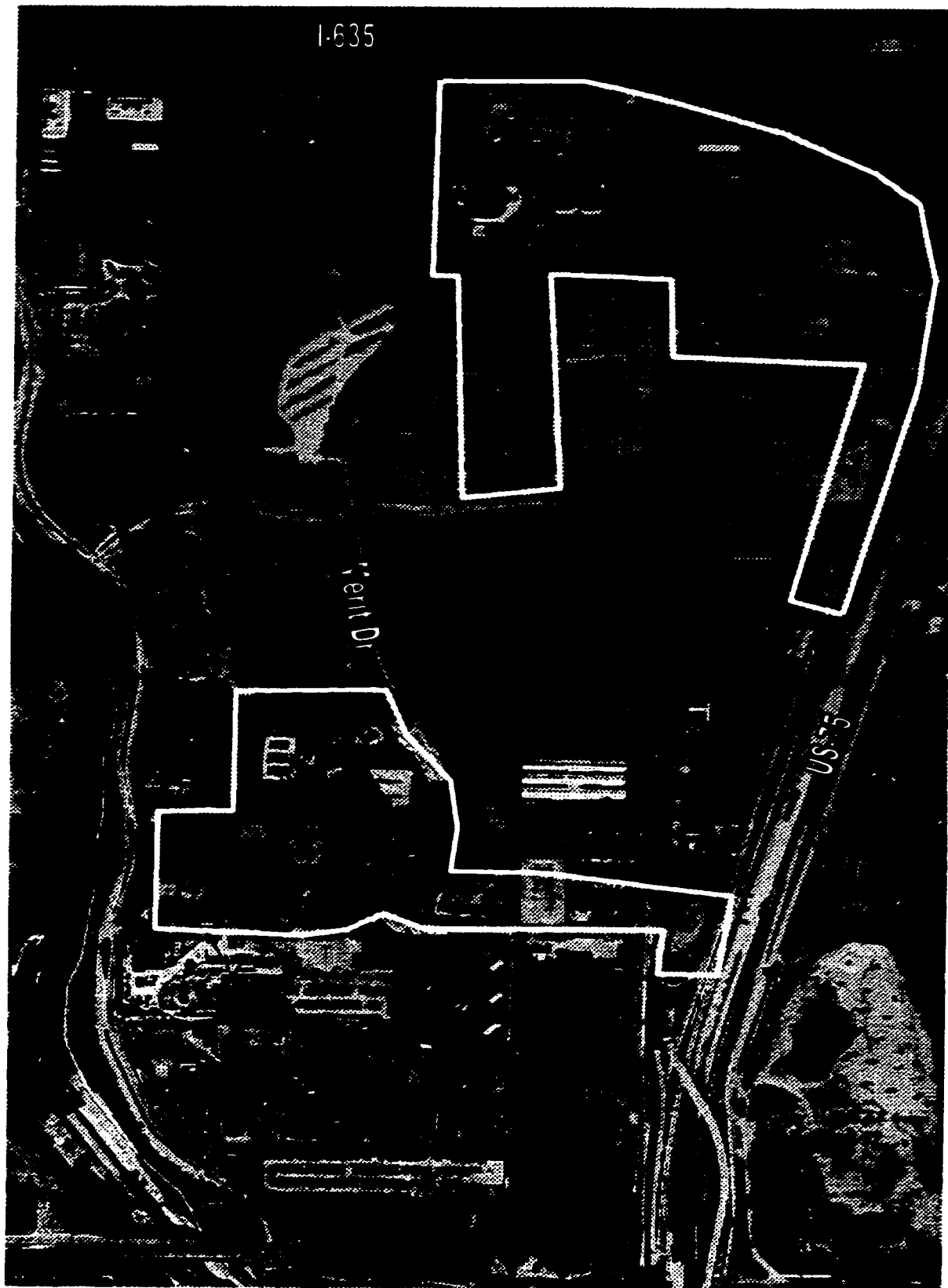


FIGURE 69: Park Central Aerial Photo With Boundary Shown in White

Las Colinas

Las Colinas is the largest, most significant, and most fully functional "Edge City" in Dallas County. Las Colinas could easily function as a "downtown" for a large metropolis. Its skyline rivals that of some large US cities (fig. 70). However, Las Colinas is not even an incorporated city, but just a business park located within the city of Irving. However, business travelers and even locals often mistake Las Colinas for being an incorporated city. It appears in the classified ads in the paper as its own category, as if it were incorporated. Therefore, the name for this "Edge City" was a foregone conclusion. Las Colinas is larger, better known, and more economically significant than any other "Edge City" in Dallas County.

Las Colinas is located 10.1 miles northwest of the City Center of Dallas (fig. 14). It stretches for full three off-ramps along both sides of TX-114 in the city of Irving. Las Colinas casts the most imposing skyline of any of the ten "Edge Cities" (fig. 70) from all angles and can be seen from a great distance. The "Urban Canyon Effect" from within the high-rise buildings is also imposing, despite being dissected by a freeway.

The location of Las Colinas is due to one significant factor, DFW International Airport. Located twenty miles northwest of the City Center of Dallas, DFW is one of the largest airports in the United States both in geographic area and air traffic. Las Colinas is situated in a direct path half way between DFW International Airport and downtown Dallas. This creates a perfect situation for the business traveler to fly into DFW, conduct business in Las Colinas, and partake of personal and social activities in downtown Dallas.

Las Colinas is a master-planned business park built on sprawling prairie land. Therefore, the master-planned street network and the building styles are very modern; most were built in the 1970's and 1980's. The street network is winding and widespread (fig. 28). Nearly all of the internal streets have multiple lanes and wide grass dividers (fig. 72). It is not uncommon for these dividers to be professionally landscaped with a combination of flower beds, rocks, and

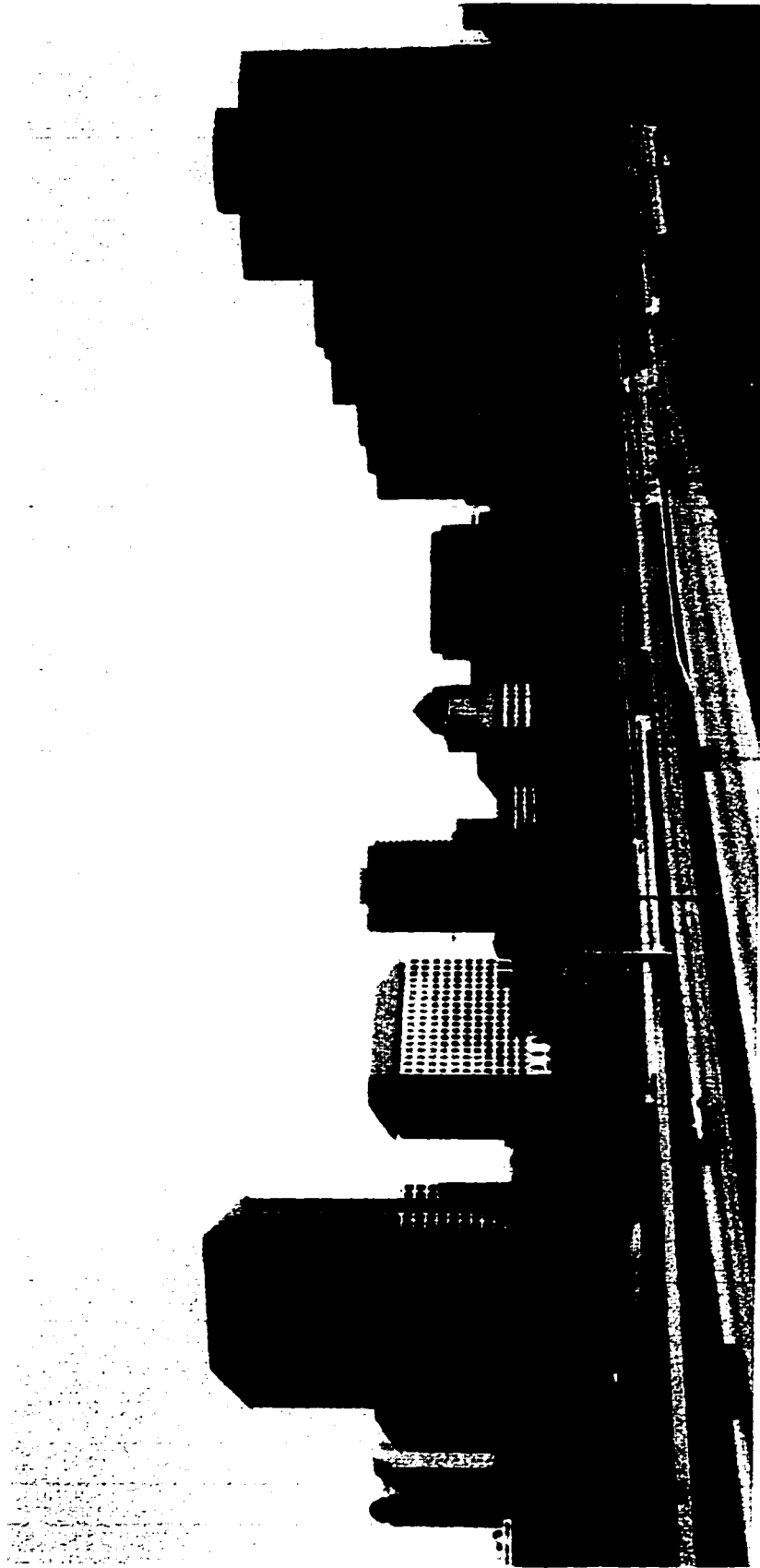


FIGURE 70: Las Colinas skyline from the West



FIGURE 71: (Above) Las Colinas skyline from the North. (Below) Las Colinas skyline from the East.



FIGURE 72: Las Colinas Aerial Photo With Boundary Shown in White

trees. The buildings are all framed, light-clad construction, with glass or lightweight concrete aggregate exteriors. The majority of the buildings serve the corporate business world. Xerox and GTE are two examples of large corporations whose worldwide headquarters are located in Las Colinas. Sprinkled amongst the corporate buildings are high-rise hotels and condominiums. This "Edge City" is also filled with retail and restaurant facilities typically found in "fully functional" urban centers. Las Colinas has an abundance of room to grow. The aerial photo displays that the buildings within the boundaries of the business park are not tightly clustered (fig. 72). Plenty of space exists for more high-rises among the current buildings. Los Colinas should continue to grow due to its naturally attractive location and a high economic growth rate.

Las Colinas has a density ratio of 1.68, ranking fifth among the "Edge Cities" (fig. 44), a surprisingly low ranking for an "Edge City" containing so much high-rise infrastructure. The mediocre density ratio is due to the number of buildings relative to the large surface area of 5,795,737 square feet (fig. 45). This figure is over 1.4 million square feet greater than any other "Edge City." The center was divided into three polygons (fig. 28). Despite this division, Las Colinas still boasts the largest area among the ten "Edge Cities."

Las Colinas ranks first in ten of the fourteen statistical categories. Its thirty high-rise buildings amount to eight more any other "Edge City" (fig. 47). Las Colinas ranks first in total floor space with a figure of over 9.7 million square feet, nearly two million square feet more than any other "Edge City" (fig. 48). Las Colinas and the Galleria combine to house well over one-third of the total floor space of all "Edge Cities" (fig. 49). The tallest building in Los Colinas is twenty-eight stories tall. This building, seen on the left side of figure 74, stands four stories taller than any other building among all "Edge Cities." The center also houses the largest single building in terms of floor space. This building, shown on the right side of figure 74, has a total floor space of 1,417,969 square feet, over 800,000 square feet larger than its nearest competitor (fig. 56). The footprints of the buildings within Las Colinas are also relatively large. Las Colinas ranks first in total building footprint size, first in largest single building footprint size, and second in average

building footprint size (fig. 58, 59, 61). In summary, Las Colinas contains larger, taller, and more numerous high-rise infrastructure than any other "Edge City" in Dallas County.

Central Corridor

Central Corridor is located just 4.7 miles north of the City Center of Dallas along the east side of US-75 (North Central Expressway) (fig. 14). It is the only "Edge City" whose name does not derive from a specific, existing element, such as an associated area name, vanity name, signed name, or shopping facility name. Rather, the name was based simply on the location. The "Central" portion of the name came from being located along the North Central Expressway. Locals often shorten the name of this freeway and refer to it as "Central." The "Corridor" portion of the name mimics the convention used in referring to the Tollway Corridor "Edge City."

Central Corridor is separated into two polygons, based on the presence of an old residential area situated between the two clusters of buildings (fig. 74). The majority of the buildings are of framed, light-clad, glass exterior construction, and were built in the 1970's and 1980's. However, two old, framed heavy-clad hotels with their stone-veneer or stucco exteriors are found within the "Edge City."

Central Corridor is anchored on the south by a twenty-two-story building housing a total floor space of over 418,000 square feet, and on the north by a nineteen-story building containing over 422,000 square feet. Those two buildings, along with the other nine high-rises, cast a credible skyline (fig. 73). The Central Corridor skyline looks solid only from certain angles due to the separation of the two groups of buildings by the intervening residential zone. The "Urban Canyon Effect" created by the high-rise buildings within the center is relatively slight. The segmented building configuration and the relatively small number of buildings weaken the "Urban Canyon Effect."

Central Corridor contains the third smallest area of the ten "Edge Cities," at just fewer than 1.9 million square feet (fig. 45). Its relatively small area helps push the density up to a ratio of 1.52, ranking sixth among the "Edge Cities" (fig. 44). Central Corridor ranks relatively low in



FIGURE 73: (Above) Central Corridor skyline from the South. (Below) Central Corridor skyline from the North.



FIGURE 74: Central Corridor Aerial Photo With Boundary Shown in White

the three "Floor Space Categories" (fig. 48, 50, 56). It ranks seventh in total floor space (2,859,619 sq ft), fifth in average building floor space (259,965 sq ft), and eighth in largest building floor space (422,119 sq ft). Central Corridor also ranks a relatively low eighth in all three "Building Footprint Categories." The buildings are relatively tall, however, boasting an average height of thirteen stories, ranking fifth among the "Edge Cities" (fig. 51). Overall, Central Corridor lacks both the building size and quantity found in the larger "Edge Cities."

Oak Lawn

Oak Lawn is the "Edge City" closest to downtown Dallas, situated just 2.3 miles to the northwest (fig. 14). Its tightly gridded street network is an extension of the platted, rectilinear pattern of central Dallas (fig. 24). The only way an "Edge City" located near downtown Dallas would not have a gridded street network would be if all of the old, existing infrastructure, including the streets, were completely erased before the "Edge City" was built, and this did not happen with the "Edge Cities" in Dallas County.

Oak Lawn's high-rise buildings vary more than any other "Edge City" in both age and style. Oak Lawn is not only a business park, but also contains some old mass-constructed brick hotel buildings, probably dating from the 1920's, and some framed heavy-clad high-rise apartment buildings, probably erected in the 1950's. Finally, Oak Lawn contains some modern, framed, light-clad office high-rises, built in the 1980's. The various building types sprinkled throughout Oak Lawn make its architectural make-up unusual among the "Edge Cities."

Oak Lawn received its name from a well-known shopping district in Dallas. The Oak Lawn Shopping District is located along Lemmon, Cedar Springs, and Oak Lawn Avenues immediately to the northwest of the "Edge City" boundary (fig. 24). Oak Lawn is situated just south of the city of Highland Park. Highland Park plays a role in the location of the three "Edge Cities" in Dallas County partially because of its local affluence. The city of Highland Park is

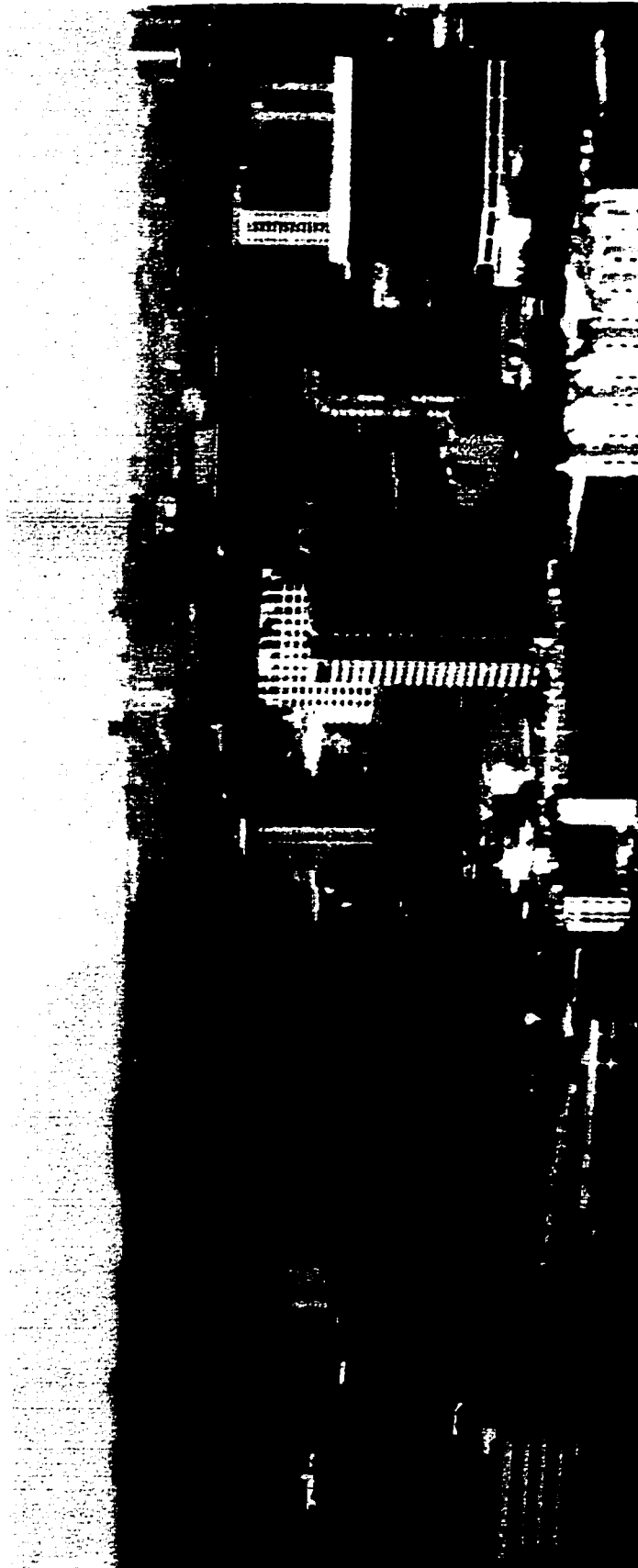


FIGURE 75: Oak Lawn skyline from the South

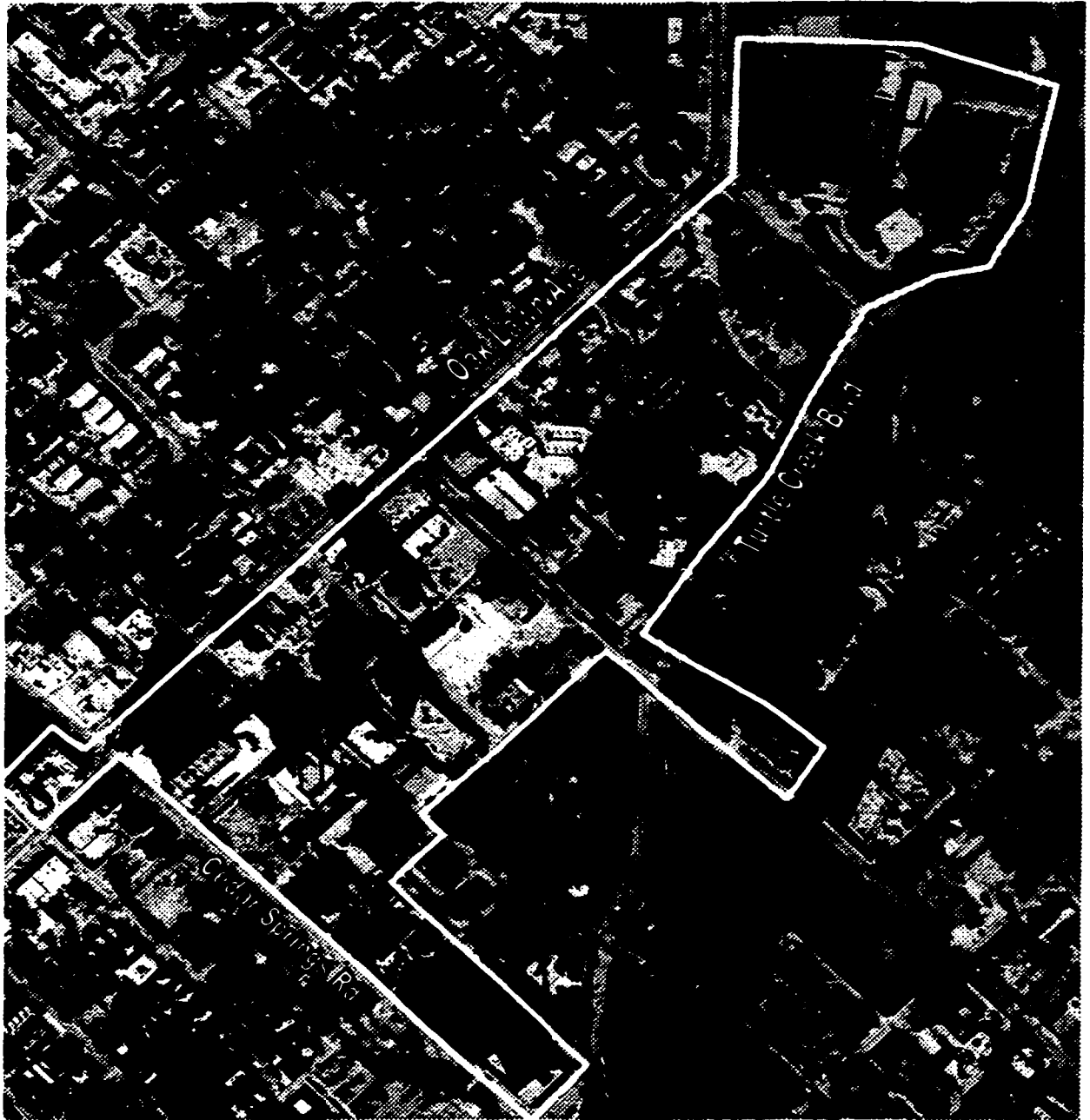


FIGURE 76: Oak Lawn Aerial Photo With Boundary Shown in White

surrounded on three sides by Preston Center to the west, Northpark to the east, and Oak Lawn to the south.

Figure 75 displays a view of the Oak Lawn skyline taken from a skyscraper in downtown Dallas. The Oak Lawn skyline looks imposing from high above. However, from ground level, the skyline appears modest and obscured from every angle. Most of the high-rise office buildings were constructed in a topographic depression, located near the low-lying creek bed of Turtle Creek. Another reason for the "hidden" skyline is that Oak Lawn is located so close to downtown Dallas that it gets lost in the high-rise infrastructural sprawl surrounding the downtown core.

The "Urban Canyon Effect" created by Oak Lawn's buildings is but average. This is partially due to the relatively large variance in building height, ranging from five to twenty-three stories. Eight buildings are lower than ten stories. Oak Law's high-rise buildings are not tightly clustered, but rather are evenly spread throughout the area (fig. 75, 76). All of these factors contribute to Oak Lawn's density ratio of 1.45, which ranks seventh among the ten "Edge Cities" (fig. 44).

Oak Lawn does yield some strong statistical measurements. It ranks third in number of buildings, with twenty-one, third in average building height (13.6 stories), and third in total building height (285 stories) (fig. 47, 51, 52). Oak Lawn's three tallest buildings average 22.7 stories, ranking third behind Las Colinas and the Galleria (fig. 55). While Oak Lawn's buildings are relatively tall, they are quite small in terms of footprint size. The center ranks next to last in both average building footprint size and single building footprint size; its buildings are tall and narrow.

Tollway Corridor

Tollway Corridor is the youngest of any of the "Edge Cities." Most of its buildings were erected in the late 1980's and early 1990's; twenty years ago, this entire area was flat, rural, prairie land. Tollway Corridor is located 12.2 miles north of downtown Dallas along the west side of the North Dallas Tollway (fig. 14). Only Las Colinas North is farther away from downtown

Dallas. Tollway Corridor, well known locally, got its name from the booming corporate sector of North Dallas along both sides of the Dallas North Tollway to the north of I-635 (LBJ Freeway). The Galleria, located just south of the Tollway Corridor, was such a popular area for corporate business that when it filled up, the corporations just moved north along the newly built stretch of the Dallas North Tollway. The Tollway Corridor serves as the work place for thousands of people living in fast growing, northern Dallas suburbs.

The Tollway Corridor is a master-planned business park built on the base of a modern, suburban street pattern. The streets are widely spread and winding; the majority having multiple lanes in each direction of travel, dissected by wide grass dividers (fig. 25, 78). All of the buildings are situated on the west side of the freeway and are grouped tightly enough together to warrant a single polygonal boundary (fig. 25, 78). Nearly all of the buildings of the Tollway Corridor are framed, light-clad, and have glass exteriors. No older buildings co-exist with the modern buildings, as all of the growth in and around the Tollway Corridor has occurred over the last twenty years.

The skyline cast by the center's high-rise buildings is relatively impressive (fig. 77). The shape of the "Edge City" is a long, north-south running rectangle. Therefore, when viewed from the east or west, the skyline is long and extensive, holding its form for miles. The top photograph in figure 66 shows the skyline of the Tollway Corridor on the left and the Galleria on the right can be seen from approximately ten miles away. This photo exemplifies the close proximity of these two "Edge Cities." Given the high infrastructural growth rate in this area, the Tollway Corridor and the Galleria may eventually merge, forming one "Mega Edge City."

The "Urban Canyon Effect" within the boundaries of the Tollway Corridor is quite imposing. An observer feels the effects of being in an "Urban Canyon" when driving along Quorum Drive, which runs through the southern portion of the "Edge City" (fig. 25).

Tollway Corridor ranks seventh amongst the ten "Edge Cities," with a density ratio of 1.36 (fig. 44). It contains the third largest total area, with nearly four million square feet of ground space. The relatively large area helps keep the density ratio comparably low. Tollway Corridor

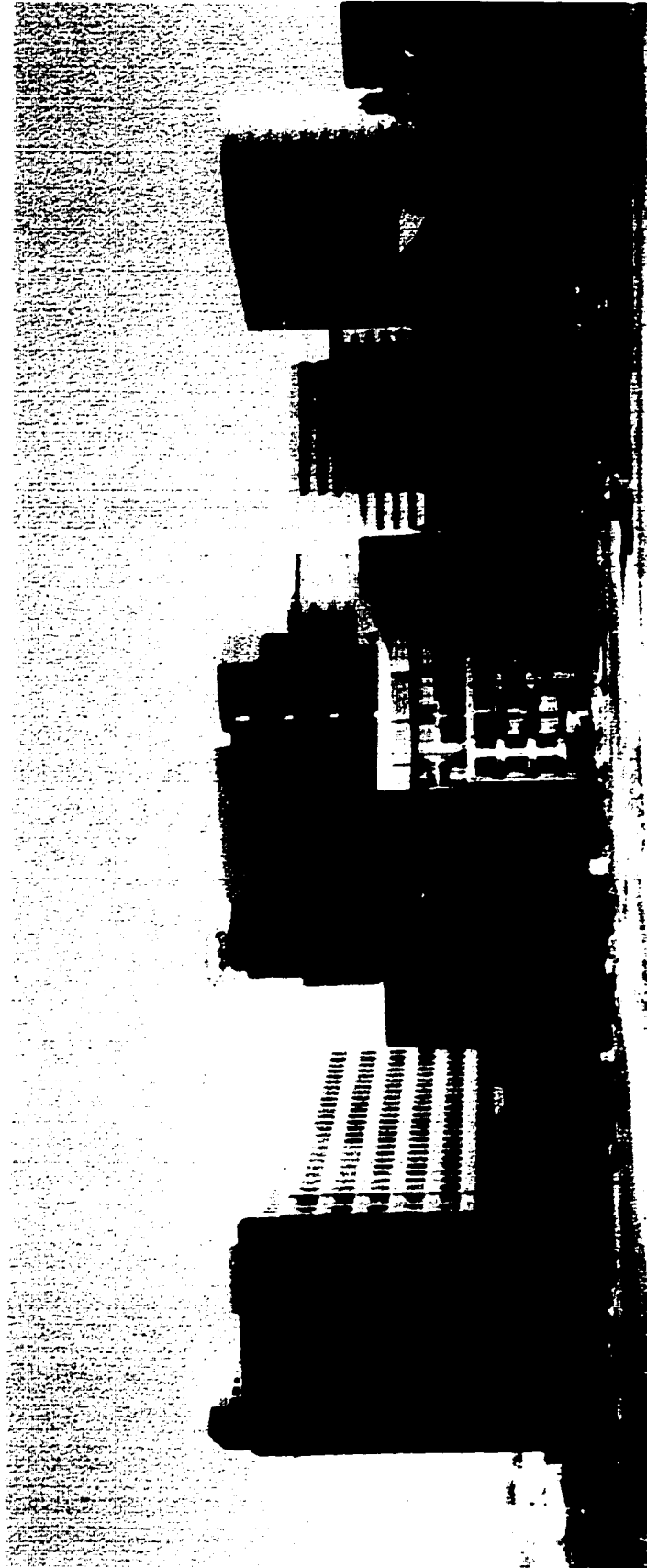


FIGURE 77: Tollway Corridor skyline from the North

ranks second in number of qualifying buildings with twenty-two (fig. 47). However, only ten of the buildings are over nine stories, and the tallest is only sixteen stories. Tollway Corridor ranks next to last in average building height, with a figure of 9.7 stories (fig. 51). Though the buildings are short, they do have rather large footprints. The Tollway Corridor ranks fourth in average building footprint size (25,947 sq ft), third in total building footprint size (551,925 sq ft), and fifth in largest single building footprint (58,594 sq ft.) (fig. 58, 59, 61). Architecturally, this short, squatty building shape is typical of the modern, corporate high-rise building style found in outer suburban "Edge Cities." The Tollway Corridor's contents are dominated by the "medium range" corporate facilities, typically eight to sixteen stories tall. A need to multiply surface space is not as high in the suburbs today as it was when the skyscrapers were constructed in the downtown cores years ago.

Mockingbird Plaza

Mockingbird Plaza was the last "Edge City" to qualify for the study, due to its modest visual skyline. The Mockingbird Plaza skyline, shown in figure 79, is hidden from nearly all angles due to its being situated in a low-lying area just west of the Old Trinity River Channel. It is similar to Oaklawn in this respect. Once within the boundaries of Mockingbird Plaza, however, one does feel an "Urban Canyon Effect" especially when traversing through the middle of the "Edge City" along Mockingbird Lane.

Mockingbird Plaza is located 5.2 miles northwest of the City Center of Dallas at the nexus of large Dallas freeways (fig. 14); Mockingbird Lane intersects TX-183 and I-35E. Mockingbird Lane is a significant arterial road, which runs east from the freeway convergence to Dallas Love Field Airport. Mockingbird Plaza exists due to its location in conjunction with the Dallas Love Field Airport. Before DFW International Airport was built in 1970, Dallas Love Field Airport was the largest and most widely used airport in the Dallas/Fort Worth Metroplex. Though less significant now, Love Field is the hub for Southwest Airlines and serves hundreds of smaller

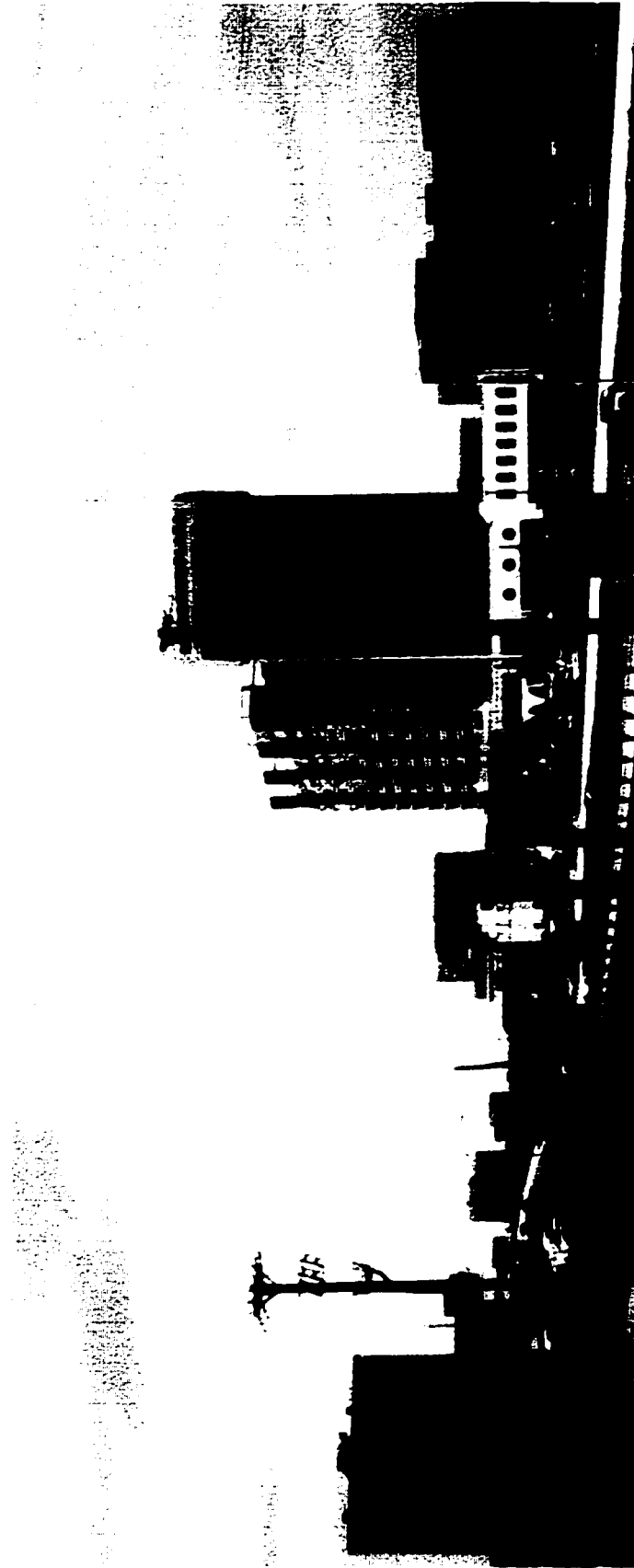


FIGURE 79: Mockingbird Plaza skyline from the South

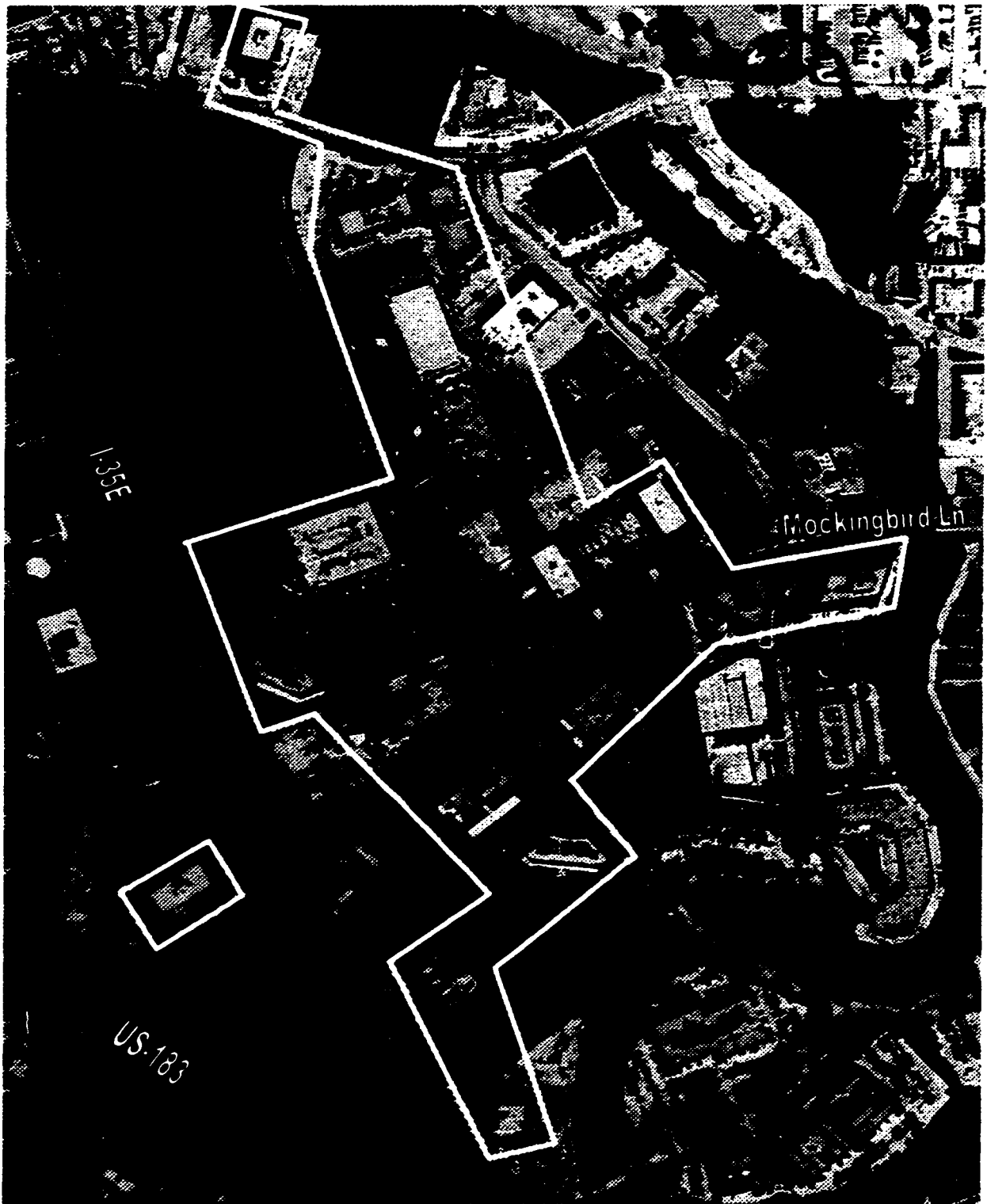


FIGURE 80: Mockingbird Plaza Aerial Photo With Boundary Shown in White

commuter flights to nearby cities. Mockingbird Lane links Love Field to its two closest freeways, TX-183 and I-35E. Mockingbird Plaza is a business park located on the airport side of this junction (fig. 26). It received its name from the vanity name carried by the majority of local businesses. Many of the businesses carry vanity addresses.

Mockingbird Plaza contains many building types built in different eras. Some are framed buildings built after World War II in the 1940's and 1950's and have either stone-veneer or stucco exteriors. Later light-clad, glass exterior buildings are mixed in as well. Interestingly, the older buildings are taller than the modern, light-clad, glass ones.

Mockingbird Plaza ranks ninth in density with a ratio of .95 (fig. 44), containing less floor space than ground space. This is partially due to its relatively large area of 3,259,728 square feet, which ranks fifth among "Edge Cities" (fig. 45). It is also attributed to Mockingbird Plaza housing only eight buildings more than ten stories tall (fig. 34). The sixteen qualifying buildings combine for an average building height of just 10.3 stories, ranking eighth out of the ten "Edge Cities" (fig. 51). The total building floor space is also fairly small, at just over 3.1 million square feet, ranking sixth; and the average building floor space ranks dead last at 194,028 square feet (fig. 48, 50). The building footprint sizes are also comparably small. Mockingbird Plaza ranks seventh in average building footprint, sixth in total building footprint, and sixth in largest building footprint (fig. 58, 59, 61). In the aggregate, Mockingbird Plaza's statistical measurements are very low in comparison to the other "Edge Cities."

Las Colinas North

Las Colinas is such a large and economically booming area for corporate business that there are two separate "Edge Cities" within it. The "Edge City" of Las Colinas North is the offspring of the larger, parenting Las Colinas "Edge City." Las Colinas North is located two freeway exits northwest on TX-114 from Los Colinas, situated 12.6 miles from the City Center of Dallas, making it the farthest "Edge City" away from the downtown (fig. 29). Las Colinas North is

located on the southwest corner of TX-114 and MacArthur Boulevard (fig. 22). Its being situated along TX-114 gives Las Colinas North direct access to DFW International Airport. The close proximity to the airport and the abundance of available land are two reasons why the Las Colinas area is such a desirable location for corporations looking to re-locate or expand their facilities.

The architectural building style found in Las Colinas North is similar to that found in the Tollway Corridor. The buildings are typically eight to sixteen stories tall with large building footprints. These "sprawling" modern, corporate facilities typify the architectural style found in the far-reaching suburban "Edge Cities." Las Colinas North and the Tollway Corridor are the two "Edge Cities" farthest from downtown Dallas.

The tallest building in Las Colinas North is only fourteen stories tall; no other buildings are more than ten stories tall (fig. 33). Las Colinas North contains the shortest average building height of any "Edge City" by a good margin, at just 8.3 stories tall (fig. 51). These buildings were constructed in the 1980's and 1990's, making the Las Colinas North one of the youngest "Edge Cities." The modern high-rises are all light-clad, steel or reinforced concrete framed constructions (fig. 15). The only difference is the exterior, where the buildings can be either predominantly glass or lightweight concrete aggregate. The majority of the buildings in Las Colinas North have lightweight concrete aggregate exteriors (fig. 81).

Due to the lack of tall buildings, Las Colinas North does not present a very imposing skyline. The building configuration is fairly widespread, but evenly spaced, creating a short, but level skyline (fig. 81). There is a slight bluff situated just southwest of the "Edge City" that largely blocks out the skyline from the south. It does not take much of a topographical change in the relatively flat Dallas area to change the visual skyline of an "Edge City." The buildings of Las Colinas North create little "Urban Canyon Effect." The twelve qualifying buildings are relatively short and widespread. These two ingredients detract from any sense of an "Urban Canyon Feel" within.

The street network of Las Colinas North is laid out in the typical, amorphous suburban fashion. Las Colinas North is a single polygonal entity with evenly spaced buildings (fig. 82).

Las Colinas North contains the smallest total floor space of any "Edge City," at just fewer than 2.4 million square feet (fig. 48). It houses an area of nearly 2.9 million square feet, which ranks seventh (fig. 45). Therefore, the density equates to .83, the lowest density of the ten "Edge Cities." Las Colinas North and Mockingbird Plaza were the only two "Edge Cities" containing more ground space than floor space (fig. 44). Las Colinas North's buildings are relatively small in every respect. It ranks last in all four building height categories (fig. 51, 52, 54, 55), and also ranks very low in the floor space categories. It ranks tenth in total floor space, ninth in average floor space, and ninth in largest single building floor space (fig. 48, 50, 56). The only category in which Las Colinas North ranks high is average building footprint size. The buildings combine to yield an average footprint size of 24,372 square feet, ranking fifth among the ten "Edge Cities." Shorter buildings with relatively large footprints exemplify the architectural style found in the far-reaching suburban "Edge Cities."

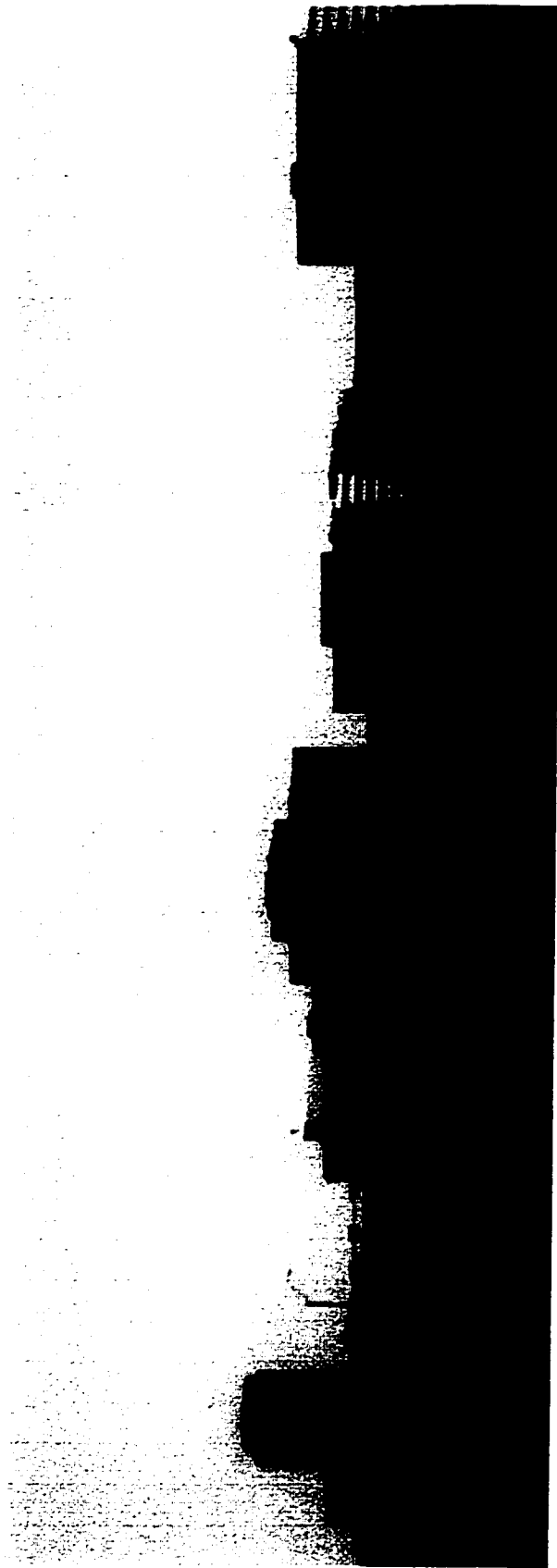


FIGURE 81: Las Colinas North skyline from the North

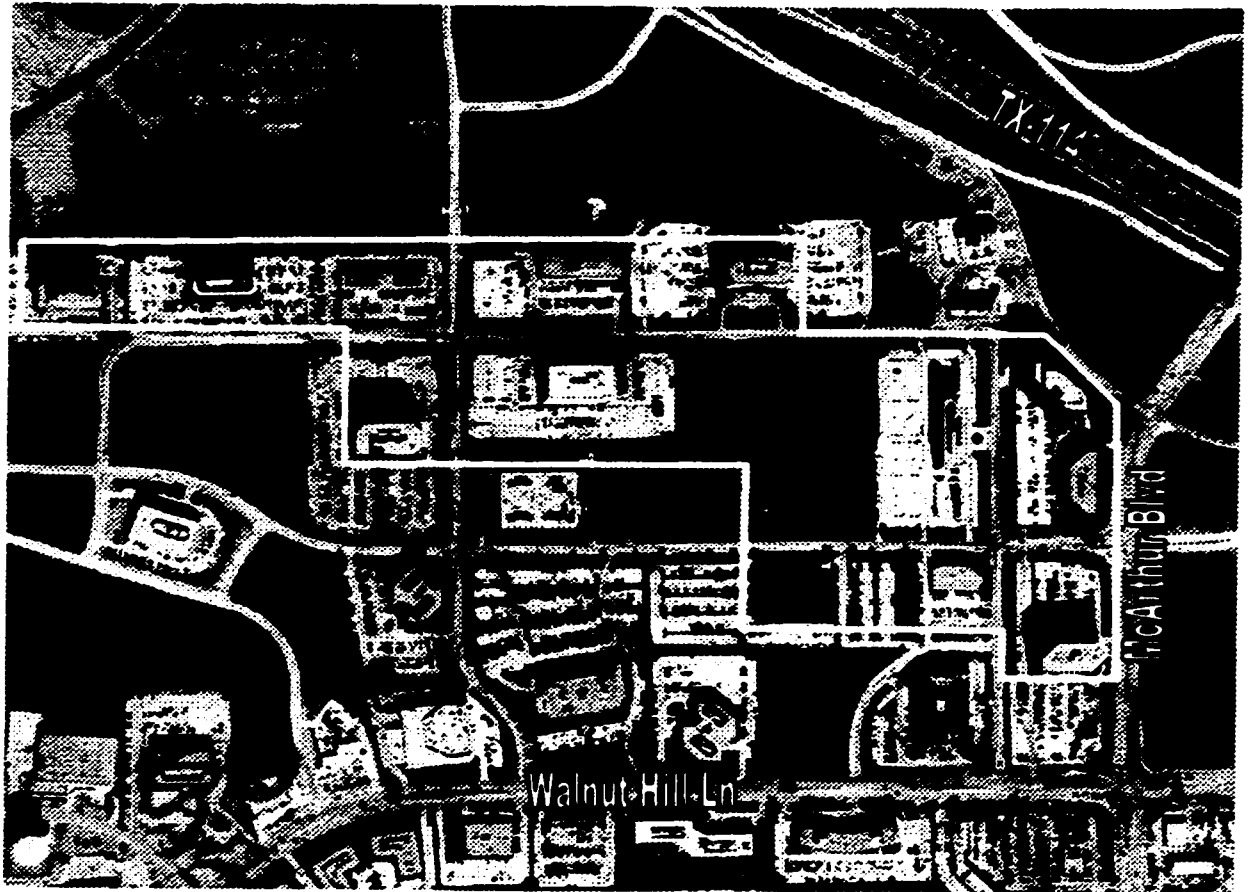


FIGURE 82: Las Colinas North Aerial Photo With Boundary Shown in White

CHAPTER 6

OVERALL STATISTICAL RANKINGS

Definition of Overall Statistical Ranking

The density ratio (floor space as a proportion of ground surface space) was the most important single statistic extracted from the data. In addition, the measurements recorded for each "Edge City" produced collaborative data items. All were analyzed and incorporated into an "Overall Statistical Ranking" of the ten "Edge Cities." The "Overall Statistical Ranking" represents a more complete, comparative view of all the "Edge Cities." The "Overall Statistical Rankings" are a comprehensive, all-inclusive ranking of the "Edge Cities," based on six of the category rankings:

1. Density – Total Floor Space / Total Area
2. Area – in Square Feet
3. Number of Buildings – Five Stories or More
4. Total Floor Space – in Square Feet
5. Average Building Height – in Stories
6. Average Building Footprint Size

These are the statistical categories that best exemplify the relative significance of the "Edge Cities." "Density" deals with the degree of clustering of the high-rises. "Area" deals with how much ground space the buildings occupy. The "Number of Buildings" represents how many high-rises exist in the cluster. "Floor Space" deals with the surface space being multiplied. "Building Height" is measured in number of stories. "Footprint Size" deals with how large the buildings are at the base.

Point System for Overall Statistical Ranking

The "Overall Statistical Ranking" is generated by how the "Edge Cities" rank in the six categories listed above. Point totals were assigned based on ranking. For example, a first place ranking yields one point for that particular category. A second place ranking yields two points, a third place ranking yields three points, etc. The fewest points possible is six. A score of six would indicate that an "Edge City" ranked first in all six of the categories. The most points possible is sixty. A score of sixty indicates that the "Edge City" ranked tenth, or last, in all six categories. The ten "Edge Cities" were ranked, from least number of points, to the highest number of points. The "Overall Statistical Rankings" are displayed in tabular form in figure 83 and in graphical form in figure 84.

Results of the Overall Statistical Rankings

Prior to data analysis, the Galleria and Las Colinas were the two "Edge Cities" that intuitively stood out from the rest as being the largest and most significant. Intuition is confirmed by the measurements: The Galleria and Las Colinas finish a very close first and second place in the "Overall Statistical Rankings" (fig. 83, 84). These two "Edge Cities" statistically dominate the majority of the category rankings. The Galleria and Las Colinas rank in the top two spots in nine of the fourteen category rankings. They combine for over 10.1 million square feet of area and over 17.6 million feet of floor space (fig. 45, 48). The Galleria and Las Colinas represent 33% of the total area and 37% of the total floor space found in all "Edge Cities" (fig. 46, 49). They also house the largest single buildings in terms of height, floor space, and footprint found in any "Edge City." They serve as the workplace to thousands of Metroplex inhabitants and are situated in two premium locations relative to the Dallas City Center.

The Galleria edges out Las Colinas by a single point in the "Overall Statistical Rankings" (fig. 83, 84). This is due to Las Colinas ranking seventh in the category of "Average Building Height." The close finish in the "Overall Statistical Rankings" is an accurate representation of

Overall Statistical Rankings							
Rank	Edge City	Density	Area	# of Buildings	Total Floor Space	Average Height	Average Building Footprint
1	Galleria	3	2	4	2	2	3
2	Las Colinas	5	1	1	1	7	2
3	Park Central	4	6	5	3	6	1
4	Tollway Corridor	8	3	2	4	9	4
5	Oak Lawn	7	4	3	5	3	9
6	Northpark	1	10	10	9	1	6
7	Preston Center	2	9	7	8	4	10
8	Mockingbird Plaza	9	5	6	6	8	7
9	Central Corridor	6	8	9	7	5	8
10	Las Colinas North	10	7	7	10	10	5
							Total
							16
							17
							25
							30
							31
							37
							40
							41
							43
							49

FIGURE 83: Overall Statistical Rankings for the Ten "Edge Cities"

Overall Statistical Rankings

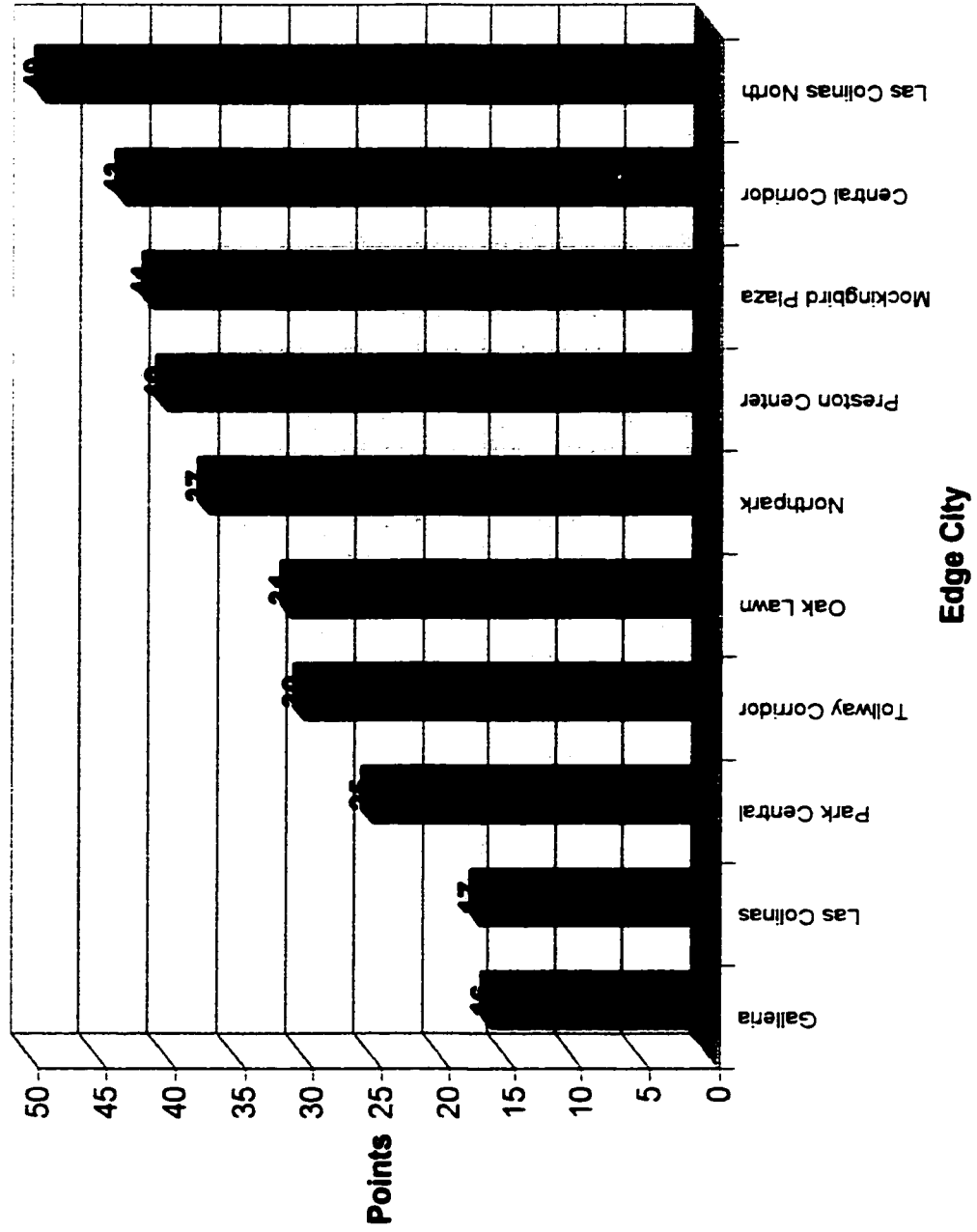


FIGURE 84: Overall Statistical Rankings for the Ten "Edge Cities." Based on Density, Area, Number of Buildings, Total Floor Space, Average Height, and Average Building Footprint

how similar these two "Edge Cities" are in terms of "total size." The Galleria and Las Colinas far outweigh the other "Edge Cities."

Park Central, the Tollway Corridor, and Oaklawn finish third, fourth, and fifth, respectively in the "Overall Statistical Rankings" (fig. 83, 84). Park Central, the Tollway Corridor, and Oaklawn combine to house 34% of the total area and 34% of the total floor space found in all "Edge Cities" (fig. 46, 49). These three "Edge Cities" rank in the top five spots in seven of the fourteen statistical categories. The "Overall Statistical Rankings" support how these three "Edge Cities" are comparatively perceived.

Northpark and Preston Center rank sixth and seventh in the "Overall Statistical Rankings" (fig. 83, 84), but rank first and second in density, owing to having the two smallest areas in the study. Northpark and Preston Center also have attained very low rankings in the "Number of Buildings" and "Total Floor Space" categories (fig. 83). The "Overall Statistical Rankings" prove that in the case of Northpark and Preston Center, it takes more than just a high density ratio to be measured as a comparatively large "Edge City."

Location of "Edge Cities" in Relation to the Dallas City Center

The assumption regarding the relationship of the location of "Edge Cities" to the City Center of Dallas is as follows: as the distance from the City Center of Dallas increases, the density of the "Edge Cities" will decrease. This assumption was based on Central Place Theory and relates to the study in the following manner. Downtown Dallas contains the largest, most concentrated high-rise building cluster in the area. The concentration, size, and number of buildings in downtown Dallas greatly outweigh those in any "Edge City." Therefore, an assumption would state that, as one moves farther away from the central core, indicators of "Edge City" size will decrease.

Figure 95 displays that the assumption was generally supported, if the three "Edge Cities" closest to Dallas are excluded. Eliminating these three produces a graph whose overall slope

Distance to Density Comparison

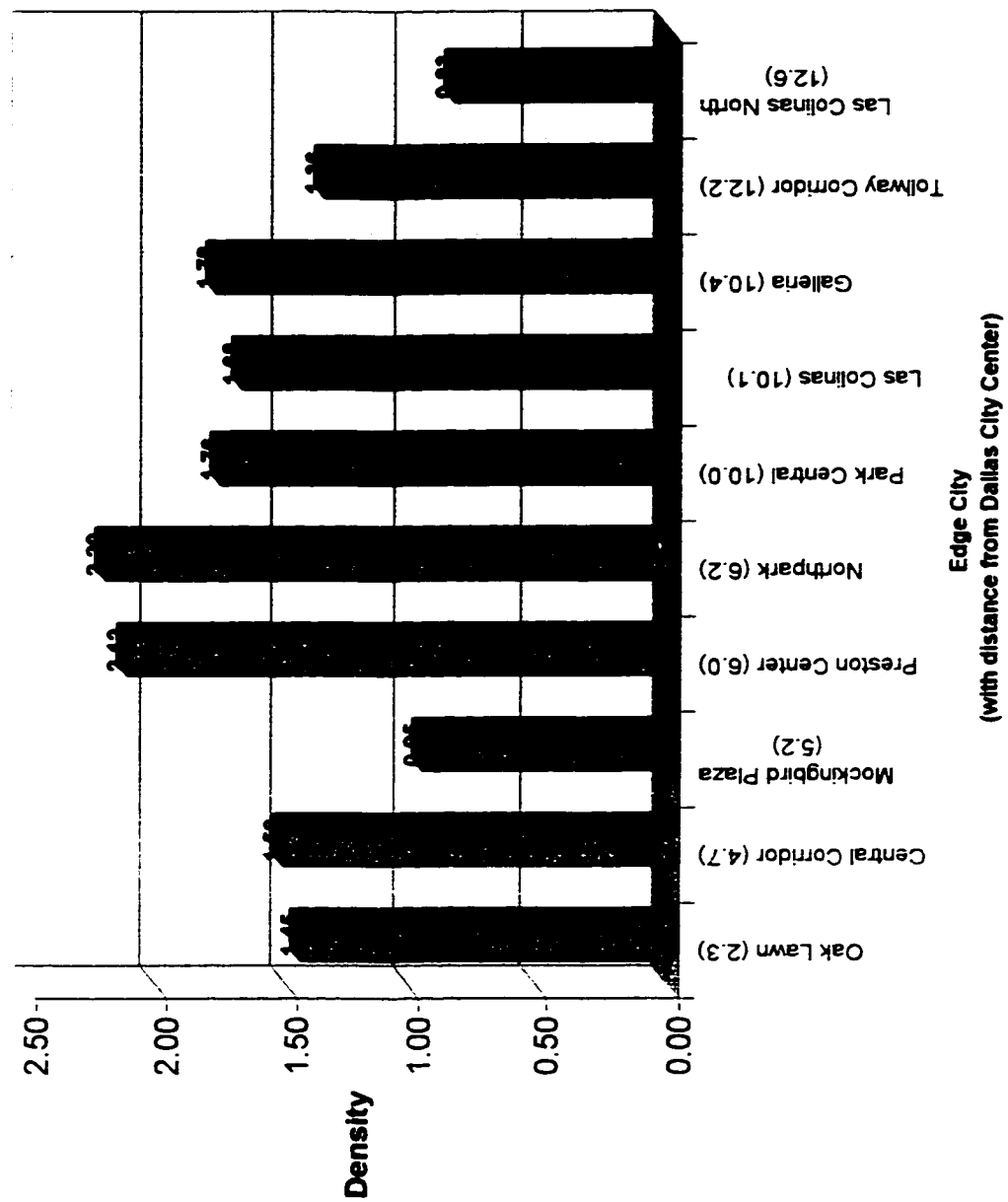


FIGURE 85: Comparison Between the Distance from the City Center of Dallas and the Density of the "Edge City"

supports the assumption (fig. 85). Oak Lawn, Central Corridor, and Mockingbird Plaza are the three closest "Edge Cities" to downtown Dallas, yet rank sixth, seventh, and ninth in density.

Apparently, the large population growth-rate in the outer suburbs serves as an attraction for the construction of large, fully functional "Edge Cities." The Galleria and Las Colinas are located over ten miles from downtown Dallas, in the outer suburban area. These two "Edge Cities" contain a much larger volume of infrastructure than the others do. Population concentration is more important than distance from downtown, in that the threshold is reached in these areas to support large "Edge Cities." The large numbers of people moving to the suburbs need centralized places to work, shop, eat, and play. "Edge Cities" fill all four of these needs.

The main goal of this study, measurements of all of the "Edge Cities" in Dallas County, was accomplished, and the remaining pertinent data were used to establish an "Overall Statistical Ranking" for each "Edge City." The nucleus of the study revolved around collecting the data needed to make accurate measurements of the infrastructure in each "Edge City." The data collection consisted of a combination of fieldwork and measurements from the aerial photos. The measurements were then compiled and analyzed, yielding viable results.

Future Work in Related Areas

How does this particular study fit into the larger picture? How does it relate to the work of Joel Garreau, Peter Muller, and others? Garreau's work focused on identifying both the mature and emerging "Edge Cities" in the United States. "Joel Garreau has spent four years exploring America's 'Edge Cities,' from the Washington area (which encompasses sixteen 'Edge Cities') to Los Angeles, Atlanta, New York, Phoenix, Detroit, San Francisco, Boston, Houston, and Dallas" (Garreau 1991, foreword). Muller's work focused on the role that these "Edge Cities" play in the shifting, transforming, modern urban metropolis. "Because changing sociospatial forces continue to modify the suburban residential mosaic, we must examine processes which are dispersing economic activity in order to understand the locational dynamics of the contemporary

restructuring of intrametropolitan space and the growing dominance of the outer city" (Muller 1976, 29). This study concentrated on one particular county containing many "Edge Cities." It focused on drawing boundaries to delineate the area of "Edge Cities" and then measured the contents within the boundaries.

No matter where a person's area of interest regarding "Edge Cities" may lie, a great deal of future work remains to be done. "Edge Cities" are a difficult specimen to define; no agreement on title exists. Garreau refers to them as "Edge Cities"; Muller terms them as "Outer Cities"; Leinberger coins the phrase of "Urban Village Cores." They all are referring to a substantial urban phenomenon, receiving relatively little attention. Garreau acknowledges that even after spending four years putting together a list of "Edge Cities" in the United States, the "nature of the beast" makes his list both incomplete and debatable" (Garreau 1991, 426). "Edge Cities" are a function of growth, and therefore change over time. Garreau admits that his definition "requires some judgement calls on the part of the observer" (Garreau 1991, 426). Some of the "Edge Cities" on Garreau's list are so varied from the rest of the group in the metropolitan area that they stretch his definition to meet inclusion. Others are so packed together that where one "Edge City" ends and the next one begins is highly debatable. "Some other centers cry out for consideration because of their history or the overwhelming size of their office population, even though they may not meet all of the other elements of the definition" (Garreau 1991, 426). In other words, a great deal of effort is needed simply to track and maintain this morphing amoeba deemed the "Edge City."

The methodologies used in this study could be applied to other metropolitan areas in the United States and elsewhere in the world. Studies similar to this, conducted on other "Edge Cities," would result in data suitable for broad and universal comparison analysis. "Edge Cities" surrounding other major metropolitan areas could be compared to Dallas for location, density, floor space, area, height, etc. Conducting studies using a similar methodology in other areas would yield a substantial amount of statistical groundwork, helping to draw more sophisticated and educated conclusions pertaining to the urban phenomenon known as the "Edge City."

WORKS CITED

- Ellefsen, Richard. *Fundamentals of Urban Geography*. San Jose, California: privately printed, 1992.
- Fagel Appointed Director of Telematics/Traffic. Chicago, Illinois: news release, February 18, 2000.
- Fishman, Robert. "Megopolis Unbound." *Wilson Quarterly* (Winter 1990): 25-45.
- Garreau, Joel. *Edge City: Life on the New Frontier*. New York, New York: Doubleday, 1991.
- Guerra, Arthur. *Dallas and Vicinity*. Dallas, Texas: Crystal Image Graphics, 1981.
- Hartshorn, Truman A. "Industrial Parks/Office Parks: A New Look for the City." *Journal of Geography* 62 (March 1973): 33-45.
- Kostin, David J. *Sydney Real Estate Market*. New York, New York: Salomon Brothers, September 1988.
- Leinberger, Christopher B. "The Six Types of Urban Village Cores." *Urban Land* 47 (May 1988): 24-33.
- Muller, Peter O. *Contemporary Suburban America*. Englewood Cliffs, New Jersey: Prentice-Hall, 1981.
- _____. *The Outer City: Geographical Consequences of the Urbanization of Suburbs*. Washington D.C.: Association of American Geographers, 1976.
- Shulman, David, and David J. Kostin. *London Office Market*. New York, New York: Salomon Brothers, September 1988.
- _____, David J. Kostin, Danielle Kadeyan, and Alison Howe. *Paris Real Estate Market*. New York, New York: Salomon Brothers, August 1989.
- Turabian, Kate L. *A Manual for Writers of Term Papers, Theses, and Dissertations*. Chicago, Illinois: University of Chicago Press, 1996.