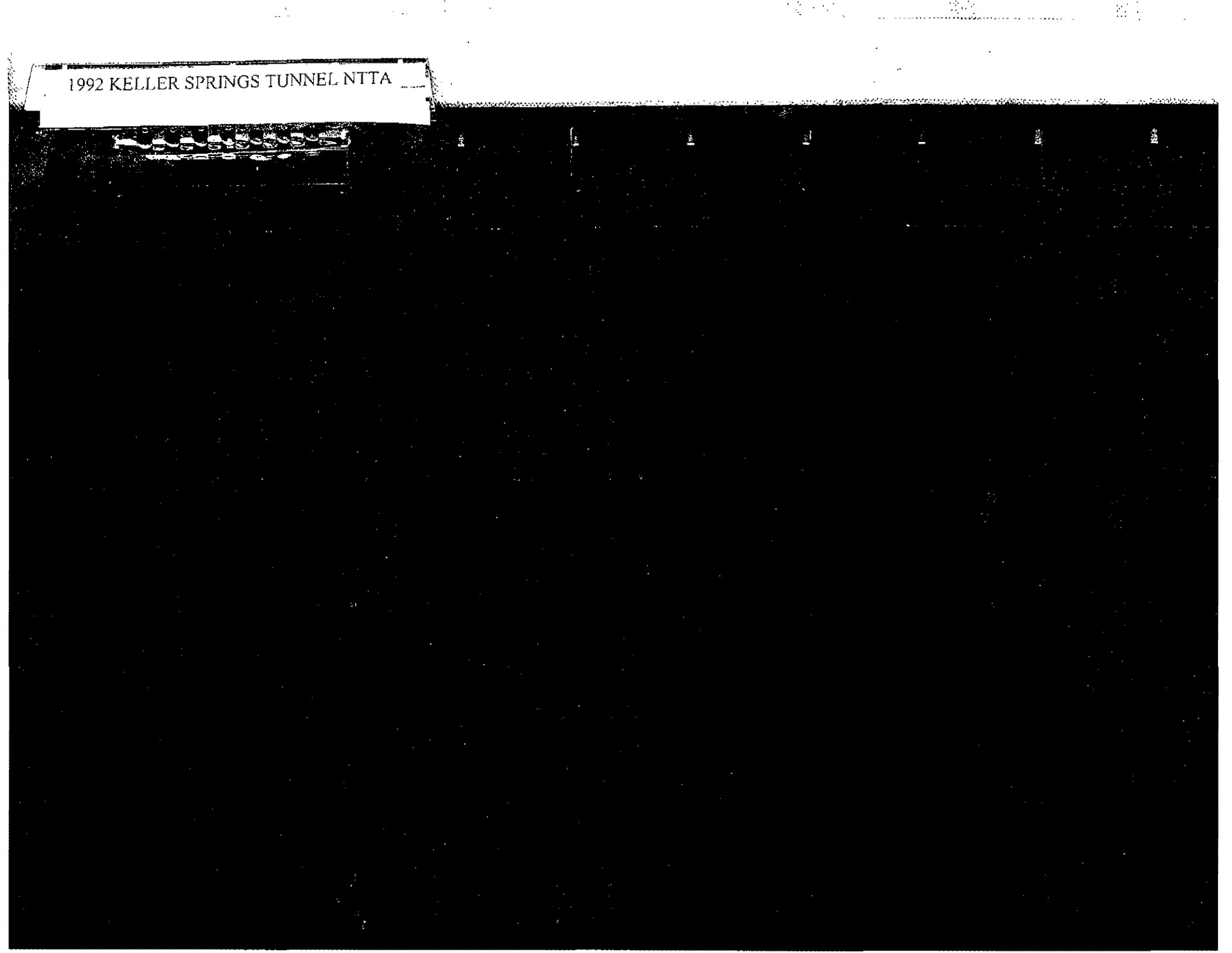
1992 KELLER SPRINGS TUNNEL NTTA

ENGINEERING REPORT

TEXAS TURNPIKE AUTHORITY

ADDISON AIRPORT TUNNEL

Prepared By
The Ginn Corporation
Consulting Engineers
In Association With
Howard Needles Tammen & Bergendoff
Dallas, Texas

September 1992

THE GINN CORPORATION

Consulting Engineers

September 2, 1992

Texas Turnpike Authority
3015 Raleigh Street
P.O. Box 190369
Dallas, Texas 75219

Attn: Mr. John B. Ramming
Executive Director

RE: Addison Airport Tunnel
Engineering Report

Dear Mr. Ramming:

The Ginn Corporation in association with Howard Needles Tammen & Bergendoff is pleased to present this Engineering Report for a two-lane tunnel for the Keller Springs Underpass which would be located on the Addison Airport, Addison, Texas. Technical assistance has been provided by Dr. G. Sauer Company, Southwestern Laboratories, and Bolanz & Miller.

The report presents the design criteria, environmental considerations, and the estimated probable costs for construction, right-of-way, and operation and maintenance for the chosen alignment. The findings are summarized in the Executive Summary.

We appreciate the opportunity to provide these services to the Texas Turnpike Authority and look forward to working with the Authority to implement the project.

Yours truly,

H. Wayne Ginn, P.E.

HWG:sb

cc: File

17103 Preston Road • Suite 205 • Dallas, Texas 75248 • Phone 214/248-4900
P.O. Box 796577 • Dallas, Texas 75379-6577 • FAX 214/931-1452

ADDISON AIRPORT TUNNEL

EXECUTIVE SUMMARY

HISTORY: - Preliminary studies were performed in 1985 and 1991 to investigate the feasibility of constructing a tunnel under Addison Airport to connect Keller Springs from Addison Road to Midway Road. On July 12, 1991, the Board of Directors of the Texas Turnpike Authority authorized an Investment Grade Civil Engineering study for the Addison Airport Tunnel. The results of this study are presented herein.

COORDINATION: - The continuation of these studies has included coordination with the Federal Aviation Administration, the Town of Addison, Dallas County, the Addison Airport of Texas, Inc. (AATI) and the Texas Turnpike Authority.

DESCRIPTION: - The project is a two-lane roadway and a two-lane tunnel crossing under Addison Airport with sufficient right-of-way for two future lanes. The project length is approximately 3,660 feet from Addison Road to Midway Road. The two-lane tunnel between portals is 1,650 feet. Approach roadways at the ends of the tunnel total 2,010 feet.

TOLL COLLECTION: - A barrier system for the collection of tolls, similar to the Dallas North Tollway, is planned with the toll plaza located on the west end. There will six toll collection lanes, three in each direction. It is anticipated that Automatic Vehicle Identification (AVI) equipment will be utilized.

OPERATION AND MAINTENANCE: - The cost of operation and maintenance for the first year is estimated at $450,000. The cost increases to $949,000/year in the year 2002.

PROJECT COST ESTIMATES: - Based on the preliminary designs developed in this report, the estimated probable cost of construction is $18.8 million.

RIGHT-OF-WAY: - The estimated allowance for right-of-way purchases associated with this project is $3 million.

ENVIRONMENTAL CONSIDERATIONS: - Based on the preliminary review of the environmental impact of the Addison Airport Tunnel, it is concluded that the project will not have any significant effect on the environment. The Addison Airport Tunnel would result in positive overall social and economic impacts to the area.

LUTHER G. JONES, JR. . . . . Chairman
Corpus Christi

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Dallas

JOHN B. RAMMING . . . . . Executive Director

HARRY KABLER . . . . . Secretary-Treasurer

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ADDISON AIRPORT TUNNEL
ENGINEERING REPORT

I. INTRODUCTION

Over the past several years, the area between north of Interstate Highway (I.H). 635 and Farm-to-Market (F.M.) 544 has experienced growth in both population and traffic. In particular, the completion of the Dallas North Tollway through Dallas and northward into the City of Plano has generated increased vehicular traffic and land development. Not only has the north-south traffic increased, but east-west movements have been increasing also.

Local city and county agencies have been interested in providing another east-west route to relieve traffic congestion on other arterials between Belt Line Road and the Dallas County Line. Keller Springs Road is a major east-west traffic artery serving the City of Dallas, the Town of Addison, and the developing urban area of northern Dallas County.

Keller Springs Road begins at Campbell Road in the City of Dallas about four tenths of a mile southeasterly from the intersection of Campbell Road and Preston Road. From this intersection, it generally traverses in a southwesterly direction and passes under Preston Road. At this point, it turns west with its western terminus at Addison Road. Keller Springs Road is interrupted by the Addison Airport, and is discontinuous.

West of the airport, Keller Springs Road continues from its intersection at Midway Road through the City of Carrollton to Old Denton Road. At this point, it becomes Whitlock Lane to Interstate Highway (I.H.) 35E. From I.H. 35E, it continues west as Sandy Lake Road through Carrollton and Coppell and terminates at Coppell Road. This roadway covers a length of about eleven and one-half miles and varies from four traffic lanes to two traffic lanes along the route.

In order to provide the continuation of Keller Springs Road through the airport property, tunneling is considered the only alternative for maintaining the normal operations of the airport during construction. With the construction of the tunnel being accomplished below ground, flight operations on the single runway, aircraft circulation on the taxiways and service facilities will not be impaired.

In June 1991, an "Initial Engineering Assessment" was published which investigated the feasibility of constructing a tunnel across the airport property under the runway and taxiways. It was concluded in this report that, based on traffic projections, a two-lane tunnel would provide adequate capacity for many years into the future.

The project was discussed with the Federal Aviation Administration (FAA) following the initial assessment. The FAA, in a letter dated July 2, 1991, indicated they had no objection to the construction of the tunnel under the airport. However, as the project develops, the FAA has requested the opportunity to review and comment on the details of the construction with relationship to the operations at Addison Airport.

The purpose of this report is to present the location, preliminary engineering design features, construction cost estimates, and estimates of operation and maintenance expenses for the construction of a two-lane tunnel.

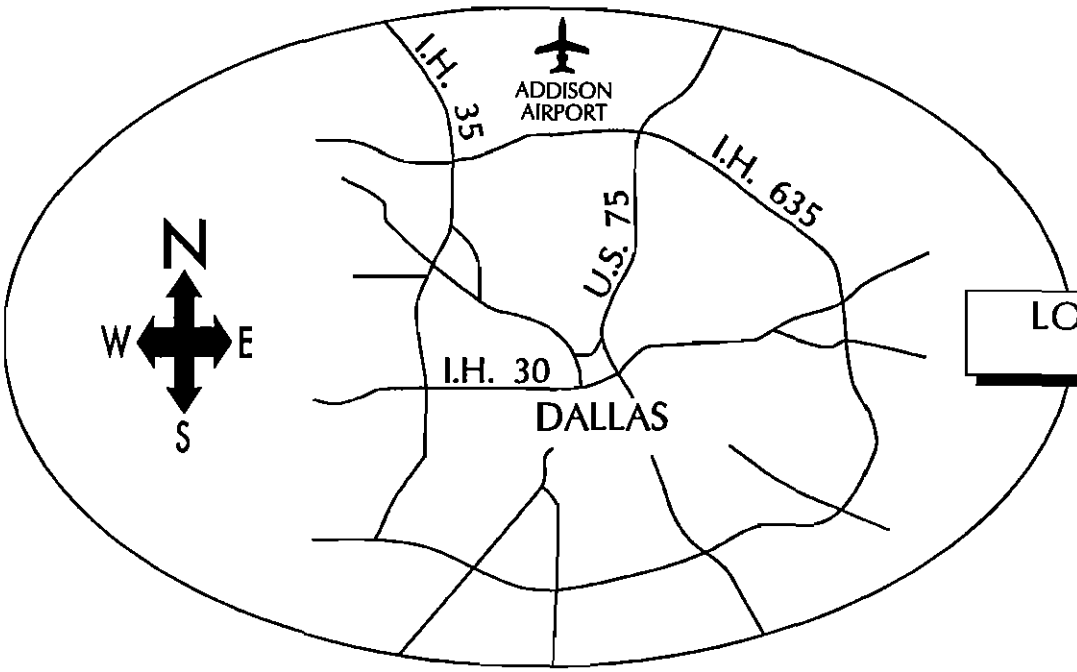
II. DESCRIPTION OF THE PROJECT

The Addison Airport is located in the center of the Town of Addison and just north of the City of Dallas, as shown in Figure 1. The airport is bounded on the south by the St. Louis-Southwestern Railroad tracks, Dooley Road on the west, Sojourn Drive on the north and Addison Road on the east. The topography is open, rolling plain with a maximum elevation differential of 15 feet. The airport facilities include the 7,000-foot long runway, several taxiways and numerous hangar buildings. Airport usage is general aviation and corporate type aircraft.

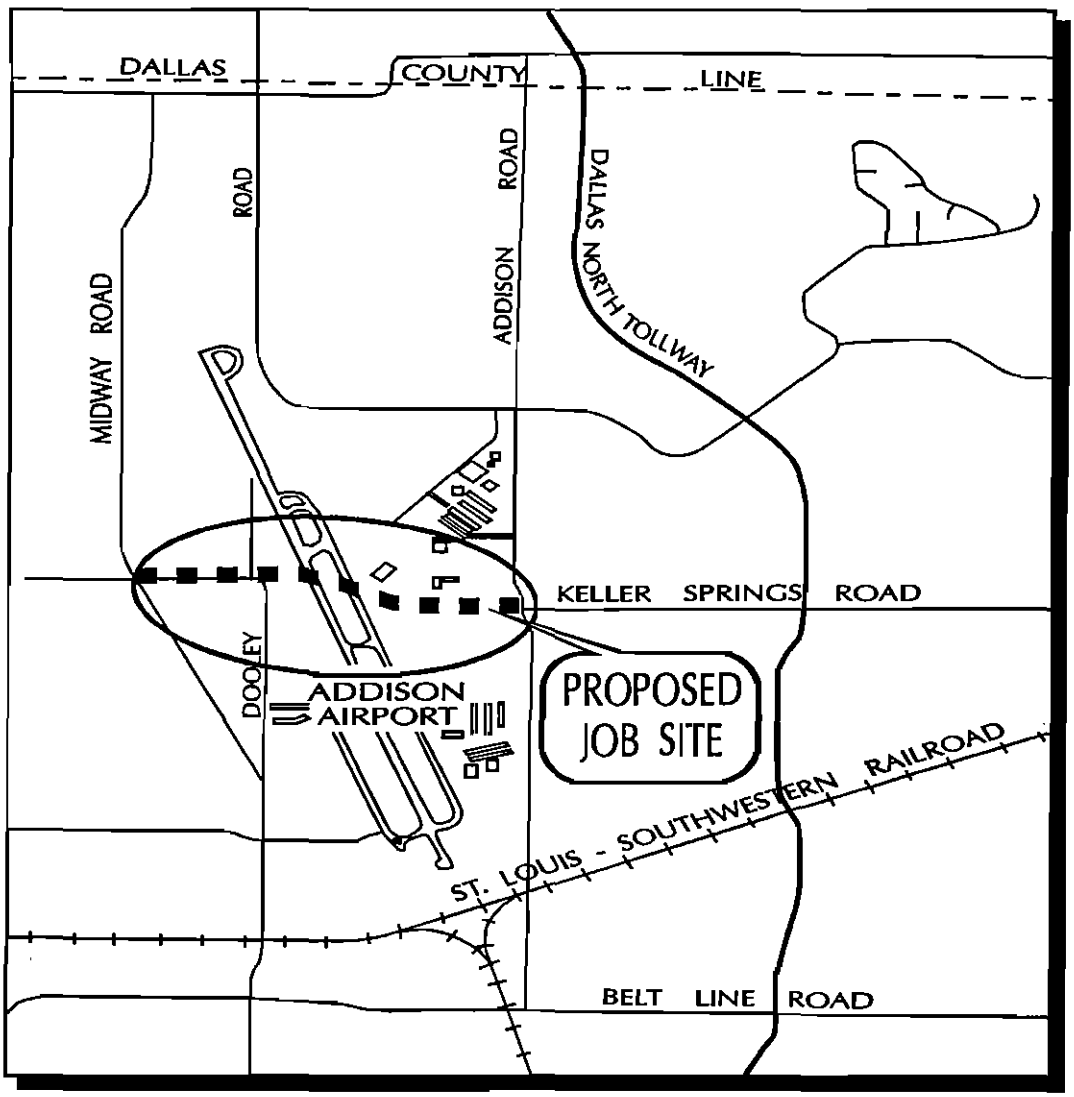
Design parameters were established to provide the most economical facility that would serve the public demand. The following basic criteria were used in the engineering study:

Design Speed	35 MPH
Minimum Horizontal Curve	500 Feet
Maximum Grade	6 Percent
Runway Clearances	150 Feet from ℄ Runway 50 Feet from ℄ Taxiways

Other design features, such as right-of-way requirements, lane widths, etc., are consistent with thoroughfare design standards in the Town of Addison. It is planned that the approach roadways on either end of the tunnel will be two 12-foot wide lanes to serve two-way traffic. The pavement will be eight-inch thick reinforced Portland cement concrete with 6-inch high curbs. Typical roadway sections approaching the tunnel are shown in Figure 2. At the terminals at Midway Road and Addison Road, the roadways will be widened to match the existing width of Keller Springs Road. The right-of-way width will be 100 feet except at the toll plaza. The general alignment and profile grade are shown in Figure 3.



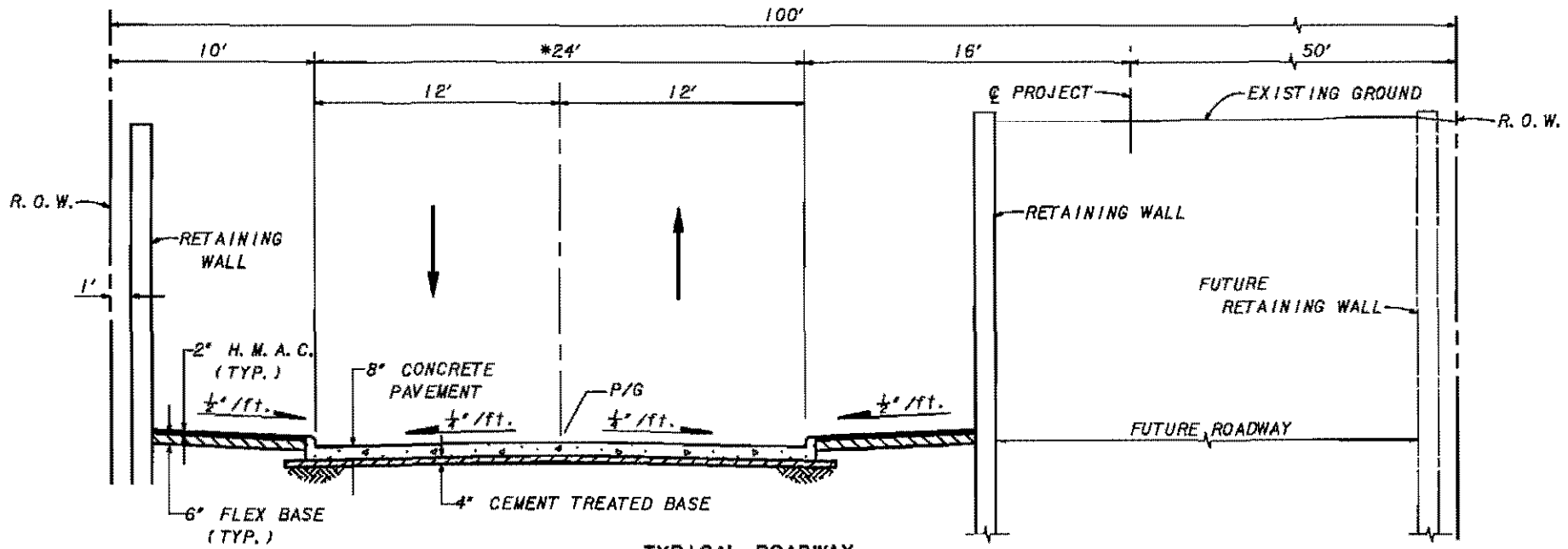
LOCATION MAP



SITE PLAN

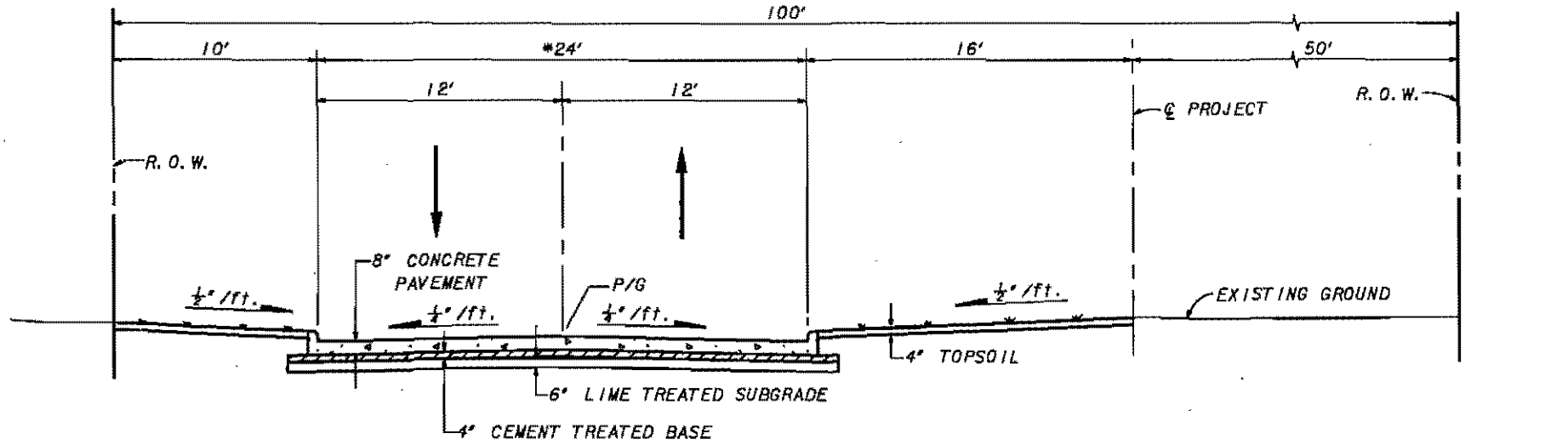
HNTB HOWARD NEEDLES TAMMEN & BERGENDOFF
ARCHITECTS ENGINEERS PLANNERS

FIGURE 1



TYPICAL ROADWAY
ROCK CUT

*28' AT TUNNEL PORTALS



TYPICAL ROADWAY

TYPICAL CROSS SECTIONS

FIGURE 2

The tunnel under the runway for the two-lane facility will be a combination of construction methods proposed by Dr. G. Sauer Company, the special tunnel consultants. The tunnel will have arched sidewalls and top with a flat bottom to accommodate the two-lane roadway. A typical section of the two-lane tunnel is shown on Figure 4.

In order to retain access to the T-hangars east of the runway and to restore parking areas, a construction method known as the Doorframe Slab Method will be used. This method consists of open cut for a length along the tunnel to a point where the concrete doorframe slab ties into a depth of rock to a depth of approximately two feet. When necessary to anchor the doorframe into rock, steel beams or reinforcing bars are driven into the rock at appropriate intervals to reinforce the sidewalls. The open cut is filled with concrete to a predetermined depth which forms the crown shape of the tunnel and then is backfilled with earth cover. This is shown in typical section on Figure 5. The taxiways and parking areas can then be restored to existing conditions in a short period of time. Under the restored surface over the doorframe slab, the bulk of the tunnel construction can be completed underground. With a total overburden exceeding 16 feet, and a minimum unweathered rock depth of two feet, the mined portion of the tunnel can be driven without the protective slab cover in the crown. The doorframe slab will be 250 feet in length at the west end and 100 feet long in the east. The length of mined tunnel is proposed to be 1,300 feet for a total tunnel length of 1,650 feet between portals. Figure 2 shows these features and the project profile.

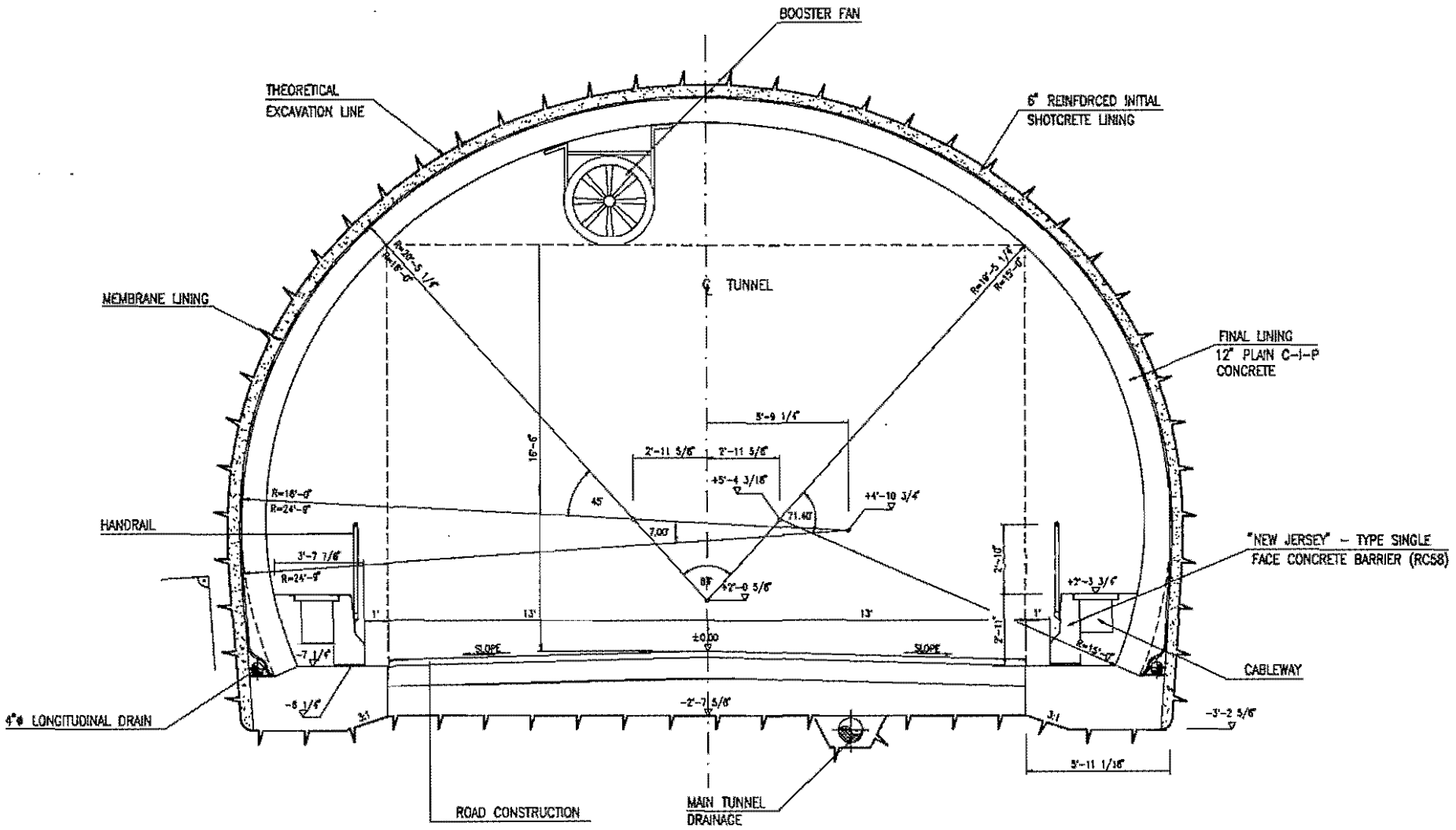
Beyond the tunnel portals, the project will be constructed in open cut with retaining walls on each side of the roadway. Near the west portal, Dooley Road will be relocated across the tunnel to maintain access to the properties north of Keller Springs Road.

The project length from the centerline of Midway Road to the centerline of Addison Road is 3,660 feet or about 0.7 of a mile. The two-lane tunnel between the east and west portals is 1,650 feet in length. Approach roadways on either side of the tunnel total 2,010 feet.

III. GEOLOGY

The proposed tunnel project lies within the Black Prairie portion of the Gulf Coastal Plain physiographic province. This area is characterized as open rolling plain which dips slightly, but gradually, to the southeast. The thin veneer of residual clay soils overlying this area was derived from the weathering of the underlying Upper Cretaceous Age Austin Chalk Formation.

The Austin Chalk Formation, the uppermost bedrock unit in the area, can be found outcropping at the surface and in shallow drainage channels. The Austin Chalk consists of alternating beds of massive chalk, shaley limestone, and marks which have a blue color when saturated with underground water.



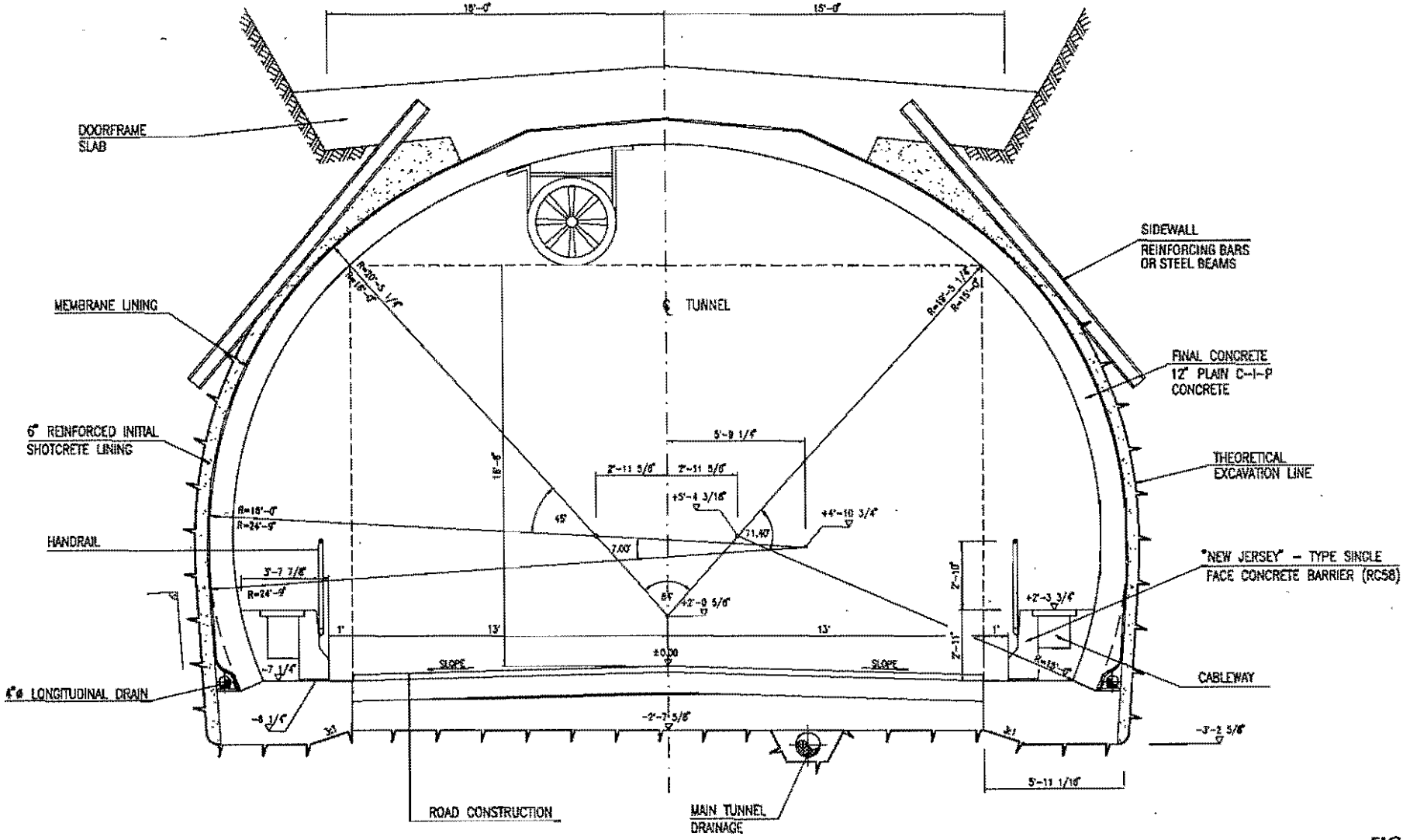
REGULAR CROSS SECTION – TUNNEL

FIGURE 4

BR. G. SAUER CORP.

KELLER SPRINGS UNDERPASS
PRELIMINARY DESIGN
REGULAR CROSS SECTION - TUNNEL

SCALE:



REGULAR CROSS SECTION – TUNNEL UNDER DOORFRAME SLAB

SCALE:

FIGURE 5

DR. G. SAUER CORP.

KELLER SPRINGS UNDERPASS
PRELIMINARY DESIGN
R.C.S. - TUNNEL UNDER DOORFRAME SLAB

In a previous report dated 1991, one subsurface boring was made on the east side of the subsurface to determine the airport strata to be encountered for the tunnel. For this report, three additional borings were made, one near the west right-of-way of the airport property and two near the runway. The data obtained from these borings and the laboratory tests will be used to develop the parameters for the tunnel design. A separate report, prepared by Southwestern Laboratories, details the field and laboratory data obtained from the three additional borings.

IV. TOLL COLLECTION

A barrier system for the collection of tolls, similar to the Dallas North Tollway, is planned with the toll plaza located on the western approach roadway just east of Midway Road. Equipment has been assumed to be similar to that used on the Tollway. The plaza will be wide enough to accommodate six toll collection lanes, three in each direction. All lanes will be equipped with automatic coin machines and two lanes will have the flexibility of being operated automatically or being attended. To take advantage of the new technology in toll collection, it is assumed that all lanes will contain the Automatic Vehicle Identification (AVI) equipment to help increase traffic flow through the toll plaza. The toll collection machines will be monitored by use of an electronic mini-computer system to ensure a highly accurate toll audit. The two automatic lanes will be designed to process two-axle vehicles only.

V. OPERATION AND MAINTENANCE EXPENSE

Estimates of the costs for operating and maintaining the tunnel project have been prepared and are based on experience gained by the Texas Turnpike Authority (TTA) through its years of operating the Dallas North Tollway and other projects. Costs of administration, maintenance, toll collection, and other costs associated with the project are included in the estimates. The cost of traffic patrol has not been included due to the length of the project and the availability of patrols from the Dallas North Tollway. Traffic patrol and policing services might also be provided by the Town of Addison at no cost to the project. These estimates are consistent with the level of service desired by the TTA for its patrons.

The cost of operation and maintenance for the first full year of operation is estimated to be $450,000. A summary of the first full year of operation for the project is shown in Table I.

TABLE I
ESTIMATE OF FIRST YEAR OPERATION AND MAINTENANCE EXPENSE
1996

Administration	$ 36,000
Accounting, Data Processing and Insurance	19,800
Toll Collection	374,400
Engineering and Maintenance	9,900
Utilities	9,900
TOTAL	$450,000

Table II lists the estimated annual expenses for operation and maintenance for a 14-year period. From the 14th year onward, it is assumed that these expenses will remain level for the duration of the bond term.

TABLE II
ESTIMATED ANNUAL OPERATION AND MAINTENANCE EXPENSE

Calendar Year	O&M Expense	Calendar Year	O&M Expense
1996	$450,000	2003	$733,000
1997	$472,500	2004	$765,000
1998	$496,000	2005	$798,000
1999	$521,000	2006	$833,000
2000	$647,000	2007	$870,000
2001	$674,000	2008	$908,000
2002	$703,000	2009	$949,000
Next 12 Years Annually			$949,000

Beginning in the sixth year, a nominal amount of $100,000 has been included in these expenses for deposits to the Reserve Maintenance Fund.

VI. PROJECT COST ESTIMATES

Based on the preliminary designs developed for this report, quantities were estimated for all major construction items. These quantities include grading, drainage, paving, bridges, retaining walls, and major items associated with tunnel construction. Unit prices for these estimates were determined from a review of cost trends for construction in the Dallas area. Unit prices have been adjusted to reflect inflation of costs anticipated to occur between the printing of this report and the midpoint of construction.

A detailed tabulation of our opinion of estimated cost of the project is shown in Table III. For convenience, the cost of underground tunnel construction is shown separately from other major items of construction.

Unforeseen escalation of prices or wages, shortages of labor or materials, and changes in economic conditions are factors which affect construction costs and, therefore, could materially escalate or reduce the estimated project costs. However, the estimated project costs represent our judgment as professionals familiar with the construction industry. We cannot and do not guarantee that the actual project costs will not vary from these estimates.

VII. RIGHT-OF-WAY

The project will require a right-of-way width of 100 feet, except in the vicinity of the barrier toll plaza. This width will be adequate for the possible construction of another tunnel in the future. The majority of the required right-of-way is owned by Addison Airport of Texas, Inc. (AATI). AATI manages the airport property and gains its revenues either from management fees or a square foot cost of actual ground rent on the east side of the airport. The required right-of-way on the west side of the airport is owned by the Town of Addison. One office building on the west side will lose access to Keller Springs Road since the project roadway is below existing grade at this location.

An independent real estate appraiser performed an analysis for the estimated right-of-way cost. The analysis shows that seven leaseholds on the airport on the east side of the airport will be affected, and that the one property on the west side would have restricted access to Keller Springs Road. It is estimated that the cost will be approximately $3,000,000, based on the final quarter 1991 North Dallas Real Property market.

TABLE III
ESTIMATED PROJECT COST
ADDISON AIRPORT TUNNEL
TWO-LANE PROJECT

ROADWAY	
Preparation of ROW & Removals	$78,000
Concrete Paving	306,000
Taxiways	50,000
Retaining Walls	2,296,000
Excavation (Non-Tunnel)	624,000
Drainage	164,000
Subtotal Roadway	**$3,518,000**
TUNNEL CONSTRUCTION	
Excavation & Support	$3,583,800
Excavation & Support under Doorframe Slab	847,000
Doorframe Slab & Related Excavation	507,500
Final Lining/Complete Tunnel	2,687,600
Roadway/Complete Tunnel	907,900
Drainage/CompleteTunnel	497,200
Tunnel Mechanical and Electrical	916,000
Sunscreens	200,000
Subtotal Tunnel	**10,147,000**
Signing, Striping & Lighting	20,000
Toll Plaza	500,000
Utility Relocations	50,000
Mobilization	336,000
Contingencies	2,200,000
Total Construction Cost	**16,771,000**
Engineering & Administration	943,000.00
Tunnel Construction Site Supervision	850,000.00
Materials Testing	250,000.00
Right-of-Way	$3,000,000.00
TOTAL ESTIMATED PROJECT COST	**$21,814,000.00**

VIII. ENVIRONMENTAL CONSIDERATIONS

The Addison Airport Tunnel is a new construction facility and, therefore, an important aspect of this engineering study is the environmental review. A preliminary environmental assessment has been performed and is described below. The preliminary assessment clearly indicates that there are no significant environmental effects of the proposed tunnel project.

The proposed project will involve a two-lane tunnel under Addison Airport to connect Keller Springs Road from Addison Road to Midway Road with a six-lane barrier toll plaza located just east of Midway Road. The length of the proposed project is 3,660 feet or approximately 0.7 miles. Approximately seven acres of new right-of-way will be required. The right-of-way width will be 100 feet except at the toll plaza. The tunnel will be 1,650 feet long between the east and west portals. Beyond the portals, the project will be constructed below existing ground with the roadway between retaining walls for a combined length of 1,615 feet. The at-grade portion of the roadways will be 395 feet to match the existing roadways at Midway Road and Addison Road. The estimated probable cost for the project, including right-of-way acquisition, is $21,814,000.00.

Currently, Belt Line Road is the only continuous east-west thoroughfare between Preston Road (S.H. 289) and I.H. 35E in the six-mile wide corridor from I.H. 635 to the northern Dallas County Line. Keller Springs Road, including the proposed tunnel, would be another continuous thoroughfare through the Town of Addison and the rest of northern Dallas County. Traffic projections have been developed by the Texas Turnpike Authority's traffic engineers for the 2010 design year using both a $1.00 toll and a $0.75 toll. For the $1.00 toll scenario, 2010 average daily traffic is projected to be 15,700 vehicles. The $0.75 toll scenario resulted in an average daily traffic projection of 19,800 vehicles.

The only available alternative to the proposed project is the "no-build" alternative. Keller Springs Road would remain discontinuous due to the presence of Addison Airport. This assumes that the possible future extension of Arapaho Road from Spectrum Drive to Marsh Lane will not be constructed for several years.

The Town of Addison and northern Dallas County have been one of the region's fastest growing suburban areas in the 1980s. Growth is expected to remain strong in the future. Keller Springs Road, on either side of Addison Airport, has many acres of developable land. Based on a field inspection of the area, there also appears to be a high number of vacancies in commercial buildings. It is quite likely that the development problems or the lack of development has been caused, at least in part, by the access problems resulting from the discontinuity of Keller Springs Road.

Social and Economic Impacts

No adverse impacts on health, public utilities, police and fire protection, or other municipal services are anticipated. The proposed tunnel should result in a benefit to the area by increasing mobility for motorists in the area and allowing shorter response times by emergency vehicles.

The proposed tunnel will not disrupt any neighborhoods or proposed developments. On the contrary, the tunnel will serve as a unifying link to the areas now separated by Addison Airport.

The Addison Airport Tunnel would result in positive overall social and economic impacts on the area. Continuing Keller Springs Road through the airport will allow developments on either side to more easily attract new customers from the opposite side. Improved mobility will allow building owners to attract more tenants and encourage new development on the vacant land in the area. The required right-of-way will remove some properties from the tax rolls; however, the improved mobility will lead to a long-term growth in the area's tax base. The $21,814,000.00 required to construct the tunnel will, at least in part, be paid to contractors, using local labor forces, thus further benefiting the area.

The project will require seven areas of new right-of-way. The majority of this right-of-way will come from the east end of the project, from land currently owned by Addison Airport of Texas, Inc. (AATI). The required right-of-way on the west side of the airport is owned by the Town of Addison. One commercial building to the west of the airport will lose access to Keller Springs Road due to the below grade alignment at this point. However, access will continue to this development from Midway Road.

The Addison Airport Tunnel is being built in a highly commercial area consisting of airport property and Town of Addison property in a commercial area. This fact is very important when studying environmental impacts because of the lack of natural environment that can be impacted. Aesthetically speaking, the proposed project would fit harmoniously with the commercial nature of the area. There are no natural areas in the project area so there is no need for concern involving conservation or preservation. All efforts will be made to minimize soil erosion and any other undesired effects of construction. After construction, runoff will flow into drainage channels and the area's existing stormwater sewer system. There are no prime and unique farmlands in the project area.

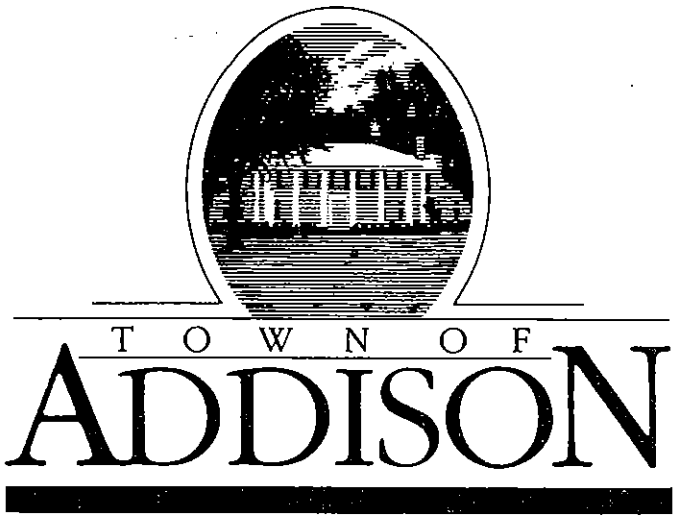
This project will have no significant adverse effect on air quality. In fact, the local area should benefit from slightly improved air quality. Vehicles using the proposed project will, to a great extent, be diverted from Belt Line Road and Sojourn Road. The decreased traffic on these two roads, and the resulting decreased congestion, can only help to improve

the air quality in the area. In terms of the immediate vicinity of the project, there are no sensitive receivers such as residences, schools, or hospitals. The tunnel ventilation will ensure maximum dispersion of pollutants.

The location of the project, on airport property and extending only a short distance beyond it, allows for a simplified noise impact analysis. It is clear that no noise sensitive development would occur in the vicinity of an airport. It is also important to note that the project is located almost entirely below grade in either the tunnel or depressed sections. The retaining walls in the depressed section will mitigate any traffic noise and the tunnel section should have virtually no impact on the noise level in the area. Based on these observations, it is appropriate to conclude that the proposed project will not have any significant noise impacts.

Based on the preliminary review of the environmental impacts of the Addison Airport Tunnel, it can be concluded that the project will not have any significant effect on the environment. The commercial nature of the area and the short length of the project are two factors which minimize the possibility of any environmental impacts. A full environmental assessment, normally completed for new construction, should not be required for this project. However, should a more formal assessment be required, it is believed that finding of no significant environmental impacts would be found.

ADDISON AIRPORT
KELLER SPRINGS
UNDERPASS STUDY



Prepared By

GINN, INC., Consulting Engineers

In Association With
Barton - Aschman, Inc.
And
Howard, Needles, Tamnen and Bergendoff

Dallas, Texas
1985

GINN, INC. CONSULTING ENGINEERS

December 9, 1985

Honorable Mayor Jerry Redding & Council
Post Office Box 144
Addison, Texas 75001

Dear Mayor Redding:

Ginn, Inc., in association with Barton-Aschman Associates, Inc. and Howard Needles Tammen & Bergendoff is pleased to present our report for the Addison Airport-Keller Springs Underpass.

The report addresses two major elements: a traffic analysis of future traffic volumes surrounding the Addison Airport; and a feasibility study which evaluates several alignments and tunnel designs. The findings and recommendations are summarized in the Executive Summary.

We appreciate the opportunity to be of continued service to the Town of Addison and look forward to working with the City staff on this important project.

Sincerely,

H. Wayne Ginn, P.E.

RH/HWG/sr

Enclosure

16135 Preston Road • Suite 106 • Dallas, Texas 75248 • Phone 214/386-6611

ADDISON AIRPORT - KELLER SPRINGS UNDERPASS STUDY

Table of Contents

EXECUTIVE SUMMARY

The Executive Summary presents a synopsis of the preliminary feasibility studies for the Keller Springs Underpass prepared for the Town of Addison by Ginn, Inc., in association with Barton-Aschman Associates, Inc. and Howard Needles Tammen & Bergendoff. The studies investigated future traffic volumes, design schemes and associates preliminary costs to determine if the Keller Springs Underpass warranted further study.

A traffic study was conducted to determine the volume of traffic which would use the proposed Keller Springs Underpass upon build-out of Addison, Farmers Branch, Carrollton, Plano, and the North Dallas area. The Cities of Dallas and Carrollton plan for Keller Springs Road to be a major thoroughfare consisting of six-lane divided roadway. According to the projected traffic volumes along Keller Springs, the underpass needs to carry 40,000 vehicles per day. This volume of traffic requires a six-lane divided roadway. Consequently, without the underpass to provide continuity to the North Dallas area thoroughfare plan, east/west roads such as Trinity Mills and Belt Line Road will have to carry the additional east/west traffic.

The second part of study investigated various alignments for the Keller Springs Underpass and developed preliminary project costs for the alignment. These alignments are

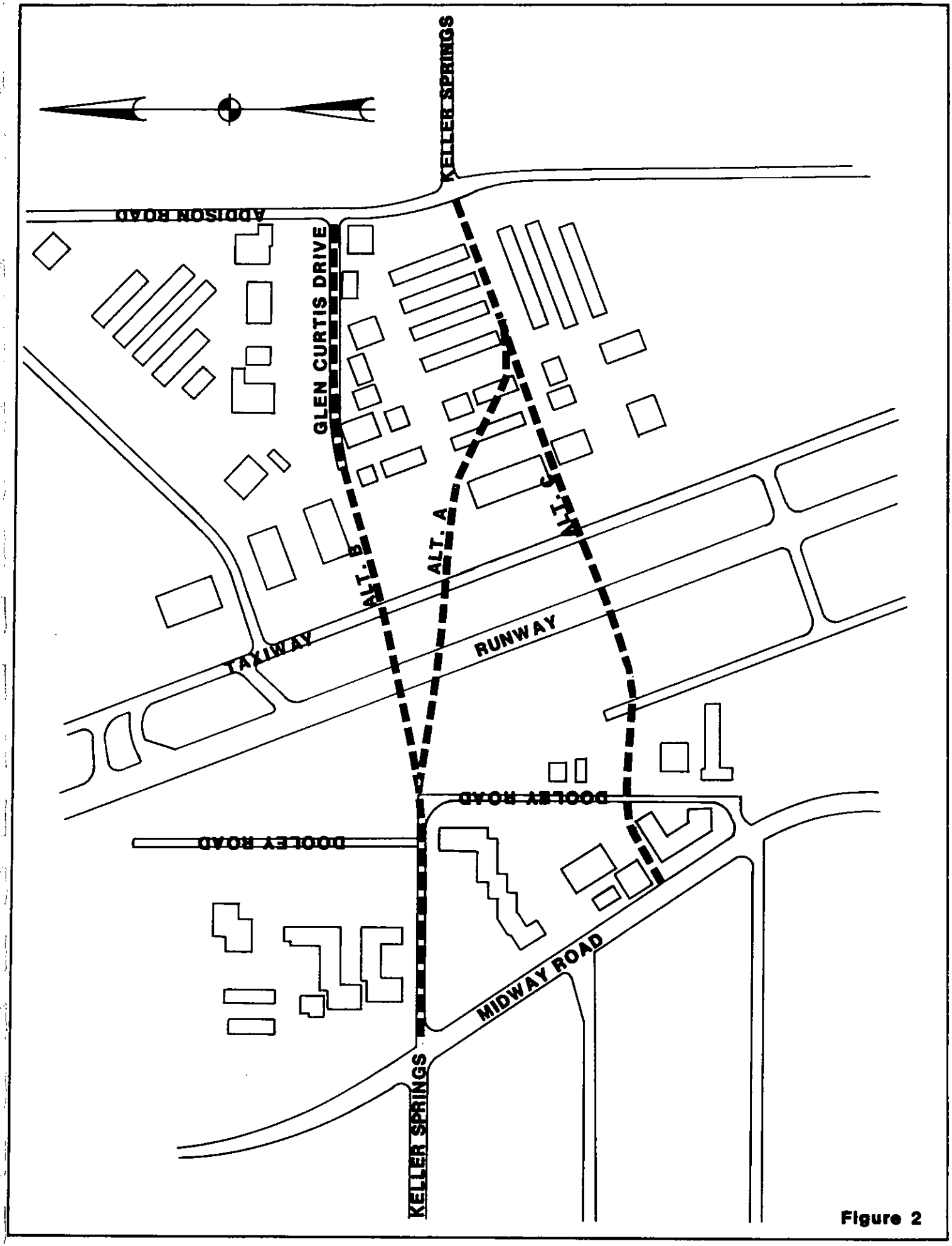
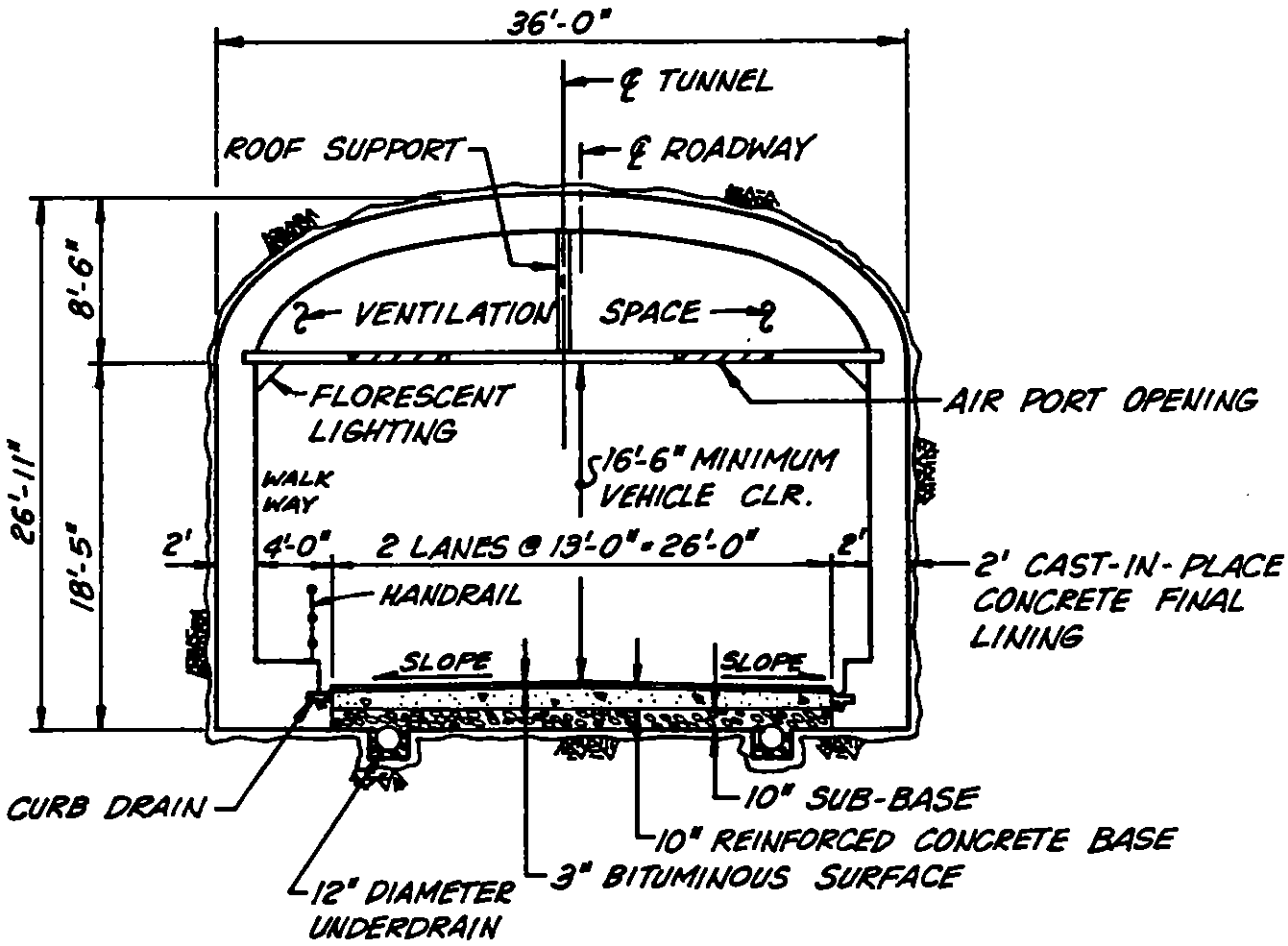

KELLER SPRINGS
ADDISON ROAD
GLEN CURTIS DRIVE
ALT. B
ALT. A
ALT. C
TAXIWAY
RUNWAY
DOOLEY ROAD
DOOLEY ROAD
MIDWAY ROAD
KELLER SPRINGS

Figure 2

presented in Figure 2. Items such as airport runway clearance, access to adjacent properties, and tunnel construction were considered in evaluating the various alternatives. Based on these items, Alignment A was recommended for the underpass.

Upon establishment of an alignment, several tunnel methods were evaluated. The tunnel methods considered for traversing the airport were cut-and-cover, shallow tunneling, and deep tunneling. A cut-and-cover method of construction would suspend airport operations for extended periods of time. Therefore, this method was not given further consideration. A shallow tunnel with approximately 10 feet of cover has less approach roadway and retaining walls. However, this asset is offset by the added structural costs associated with a shallow tunnel system. The deep tunnel method with approximately 30 feet of cover would provide natural structural support and thus decrease the cost of tunnel construction. The deep tunnel approach allows for the construction of 2 - two lane tunnels with the possibility of 2 - three lane tunnels. The shallow tunnel would only allow for tunnels to be constructed in multiples of two lanes. Figures 4 and 5 present typical tunnel sections for the two-lane and three-lane roadways.

Tunnel construction would require a ventilation system to exhaust CO and CO2 emitted from the vehicles; a drainage system to handle unexpected spills of water or fluids from tank trucks, rainwater and washdown water; a lighting system



Note!
APPLICABLE TO BOTH SHALLOW AND DEEP TUNNEL ALTERNATIVES

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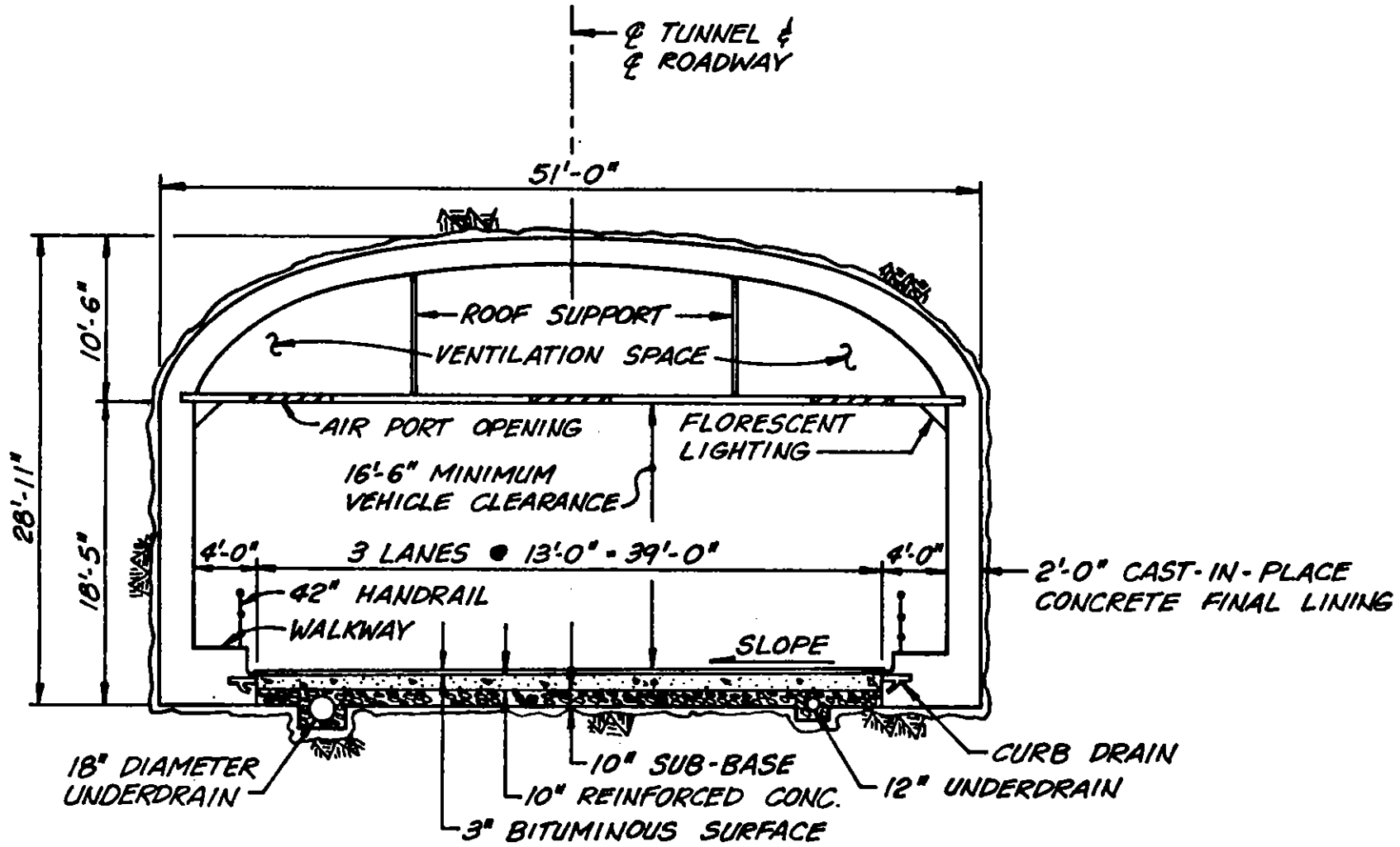
Figure 4

TYPICAL 2 - LANE TUNNEL SECTION



Note!
APPLICABLE TO THE DEEP TUNNEL ALTERNATIVE ONLY

Figure 5

TYPICAL 3 - LANE TUNNEL SECTION

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to provide adequate light for driving and fire hose connections every 200 feet along the tunnel. These systems would be investigated further during the design phase of the project.

Preliminary construction costs were prepared for the various tunneling alternatives for Alignment A. Estimates were prepared for 2 - two lane tunnels and for 2 - three lane tunnels for the deep tunnel alternative under the Addison Airport. Estimates were prepared only for 2 - two lane tunnels for the shallow tunnel alternative. The costs of these are as follows:

Item	Preliminary Construction Cost
Shallow tunnel 2 - two lane	$30,000,000
Deep tunnel 2 - two lane	$28,800,000
Deep tunnel 2 - three lane	$40,200,000

Recommendations: It is recommended that more extensive studies be conducted in the following major areas:

* Subsurface Explorations - It is recommended that at least six (6) soil borings and their associated soil analyses be developed in an effort to more accurately develop soil/rock characteristics and profiles. These soils analyses are also intended to provide data to further assess the feasibility and costs associated with shallow tunneling.
* Obtain Updated Mapping - The recent construction of an FBO abutting the taxiway in the vicinity of the

project and also recent construction near the terminals of the project necessitate the requirement for updated mapping.

* Refinement of Geometry and Capital Costs - Whereas the initial study considered several alignments, the selected alignment will be further refined to confirm its viability.
* Develop Operations and Maintenance (O&M) Costs - O&M costs will be developed relying on experience from tunnel projects in other parts of the country as they relate to the subject project.
* Develop Right-of-Way Costs - It is recommended that development of right-of-way costs through the services of an independent appraiser be obtained. This would include costs of lease buy-outs and relocation.
* Develop Preliminary Cost Estimates - Preliminary construction cost estimates will be prepared based on estimates of the quantities of major construction items and application of the approximate current unit prices to the preliminary quantities.
* Develop Operational Plan - An operational plan illustrating procedures during emergencies will be developed.
* Coordinate these findings with FAA and other appropriate governmental agencies.
* Develop a source of potential funding.

DRAFT REPORT

KELLER SPRINGS UNDERPASS AT ADDISON AIRPORT

FEASIBILITY STUDY - TRAFFIC PROJECTION

ADDISON, TEXAS

BARTON-ASCHMAN ASSOCIATES, INC.

August, 1985

INTRODUCTION

The purpose of this report is to present the results of a study conducted for the City of Addison and Ginn, Inc. concerning the potential extension of Keller Springs Road under Addison Airport. Projected traffic volumes for the proposed extension are presented in this report together with an evaluation of the impact of the extension on traffic volumes along Belt Line Road and Trinity Mills.

KELLER SPRINGS ROAD

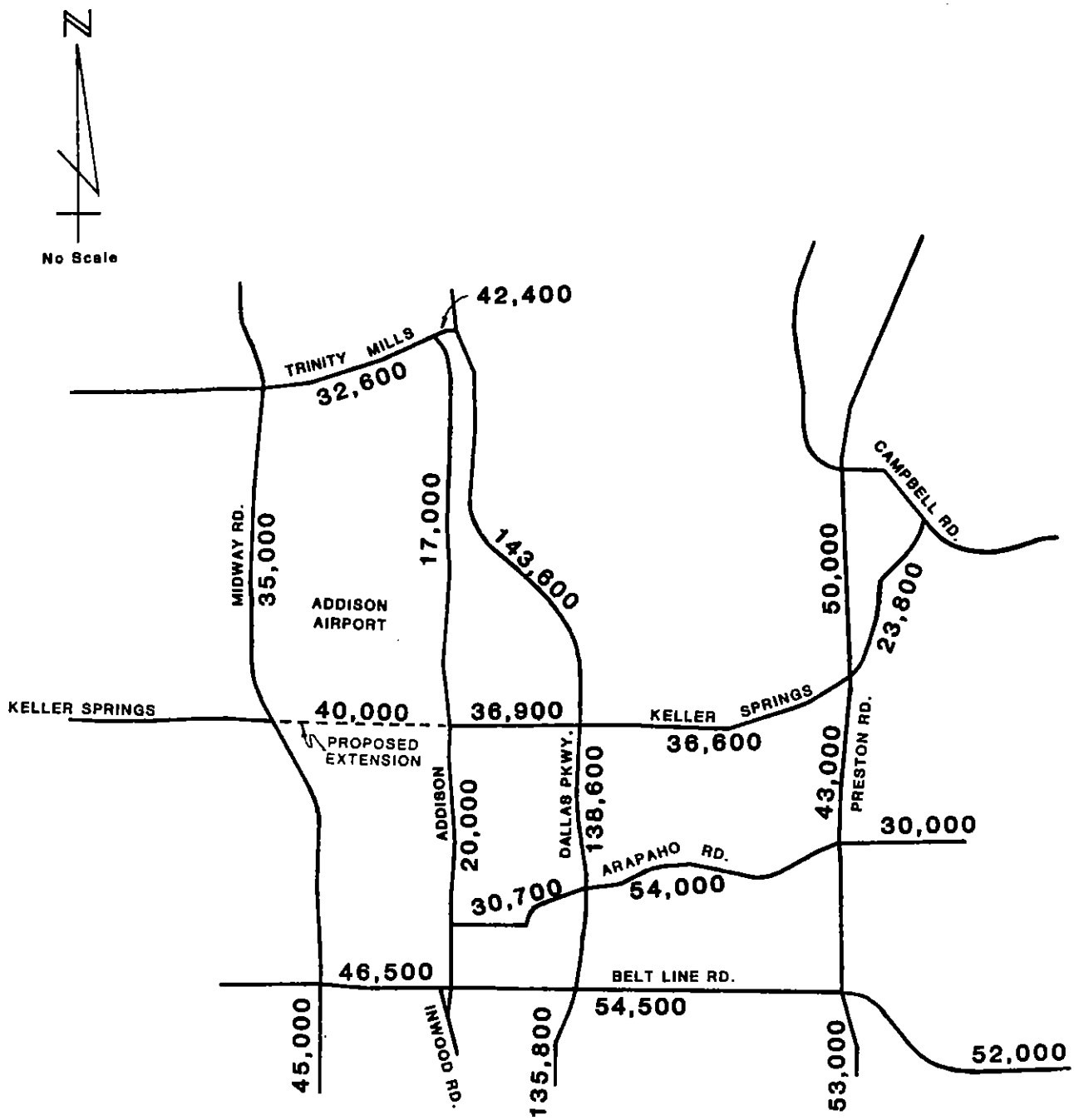
Keller Springs Road is an east/west thoroughfare street that currently is constructed from Campbell Road to Addison Road on the eastside of Addison Airport. West of Addison Airport, Keller Springs Road will eventually connect with Whitlock Road to provide a direct link with Interstate Highway 35E (IH 35E). West of IH 35E, Whitlock becomes Sandy Lake Road and extends into the City of Coppell.

The City of Dallas has recently upgraded Keller Springs Road to major thoroughfare status as a six-lane divided roadway between Preston Road and the Dallas North Tollway. West of Midway Road, in the City of Carrollton, Keller Springs Road is designated as a six-lane divided thoroughfare.

TRAFFIC PROJECTIONS

Projected traffic volumes for Keller Springs Road and its proposed extension under Addison Airport are shown in Figure 1. Traffic volumes for other major thoroughfares in the vicinity of the proposed Keller Springs extension are also shown in Figure 1. These traffic volume projections were developed in conjunction with the recent Parkway Center Study conducted for the City of Dallas and reflect those volumes that are projected to occur upon build-out of the Addison, Farmers Branch, Carrollton, Plano, and North Dallas area. The projected traffic volumes are projected to occur beyond the Year 2000.

Keller Springs is projected to carry approximately 40,000 vehicles per day, if it is constructed under the airport. As can be seen in Figure 1, other parallel major thoroughfares (i.e. Belt Line Road and Trinity Mills) are projected to have traffic volumes in excess of 40,000 vehicles per day along certain sections of roadway.



LEGEND

40,000 - Traffic Volume in Vehicles Per Day

FIGURE 1

PROJECTED TRAFFIC VOLUMES

The proposed extension of Keller Springs Road will have a positive impact on projected traffic along Trinity Mills and Belt Line Road as well as certain sections of Preston Road due to the fact that it will provide an additional continuous east/west thoroughfare between Central Expressway (U.S. 75) and IH 35E. With the proposed extension of Keller Springs Road, projected traffic volumes on Belt Line Road can be expected to be reduced by as much as 5,000 vehicles per day. Likewise, projected volumes along Trinity Mills can also be reduced.

ROADWAY SIZING

Roadway capacity is a measure of a roadway's ability to accommodate a volume of traffic at an acceptable level of traffic operation. The wider the street, the higher the traffic volume that can be accommodated. Listed below are the maximum traffic volumes that can be accommodated for various sizes of roadways.

Size of Roadway	Traffic Capacity (Vehicles Per Day)
4-Lane Undivided	22,000
4-Lane Divided	24,000
6-Lane Undivided	33,000
6-Lane Divided	42,000

Based on the projected traffic volume of 40,000 vehicles per day, Keller Springs Road needs to be a six-lane thoroughfare.

CONCLUSIONS

Based on the projected traffic volumes for the extension of Keller Springs Road under Addison Airport, the following conclusions can be reached.

1. Keller Springs Road needs to be extended under Addison Airport to accommodate east/west traffic flow that is projected to occur at total development of the Addison/North Dallas area.

2. Keller Springs Road needs to be constructed as a six-lane thoroughfare street.

3. The extension of Keller Springs Road under the Addison Airport will provide an additional, much needed, east/west thoroughfare and should help relieve projected traffic on Belt Line Road and Trinity Mills.

DRAFT REPORT

KELLER SPRINGS UNDERPASS AT ADDISON AIRPORT

FEASIBILITY STUDY

ADDISON, TEXAS

HOWARD NEEDLES TAMMEN & BERGENDOFF

August, 1985

KELLER SPRINGS UNDERPASS AT
ADDISON AIRPORT
FEASIBILITY STUDY

TABLE OF CONTENTS

1.0 INTRODUCTION

Keller Springs Road is a major east-west traffic artery serving the City of Addison and the rapidly developing urban area of northern Dallas County, Texas. The roadway is interrupted by the Addison Airport just south of the Dallas County line. Proposed improvements to Keller Springs Road would increase its capacity by connecting adjacent segments through the airport property. Completion of Keller Springs Road through the airport would also serve to reduce congestion on parallel arterials such as Belt Line Road and Trinity Mills Road. Tunneling is considered the only alternative to enable the proposed improvement to Keller Springs Road and maintain the airport as fully operational during construction.

2.0 PURPOSE AND SCOPE

The purpose of this study is to develop a recommended alignment for the extension of Keller Springs Road and to develop project costs for that alignment. It addresses items such as airport runway clearance, access to adjacent properties, and construction costs and considerations with specific emphasis on tunnel construction. Although a cut-and-cover method for traversing under the airport was considered and is addressed in this report, tunneling appears to be the only reasonable method of construction.

The feasibility of any tunneling project is ultimately dependent on the cost of the project. To adequately predict such costs, an assessment must be made as to the geologic conditions which may reasonably be encountered. Geotechnical engineering assumptions lead to an appraisal of ground behavior, applicable construction alternatives, and a feasibility level cost estimate.

This report identifies and isolates geologic and engineering parameters specific to the Addison, Texas area as they relate to tunnel construction. Recommendations for suitable tunnel geometries and excavation and support methods are presented along with special concerns including tunnel ventilation, drainage, lighting, and fire protection.

This report is organized as follows:

Section 1.0	Introduction
Section 2.0	Purpose and Scope
Section 3.0	Project Description
Section 4.0	Geologic Assumptions of Engineering Significance
Section 5.0	Tunnel Excavation and Initial Support
Section 6.0	Final Lining and Support
Section 7.0	Special Considerations
Section 8.0	Construction Estimate
Section 9.0	Conclusions and Recommendations
Section 10.0	References

It should be emphasized that no geotechnical exploration and testing program was conducted for this feasibility study. Conditions anticipated were inferred from generally available geotechnical data including state geologic reports, project data from the nearby Dallas North Tollway extension, and a limited number of shallow borings taken at the airport site for construction of a sewer line.

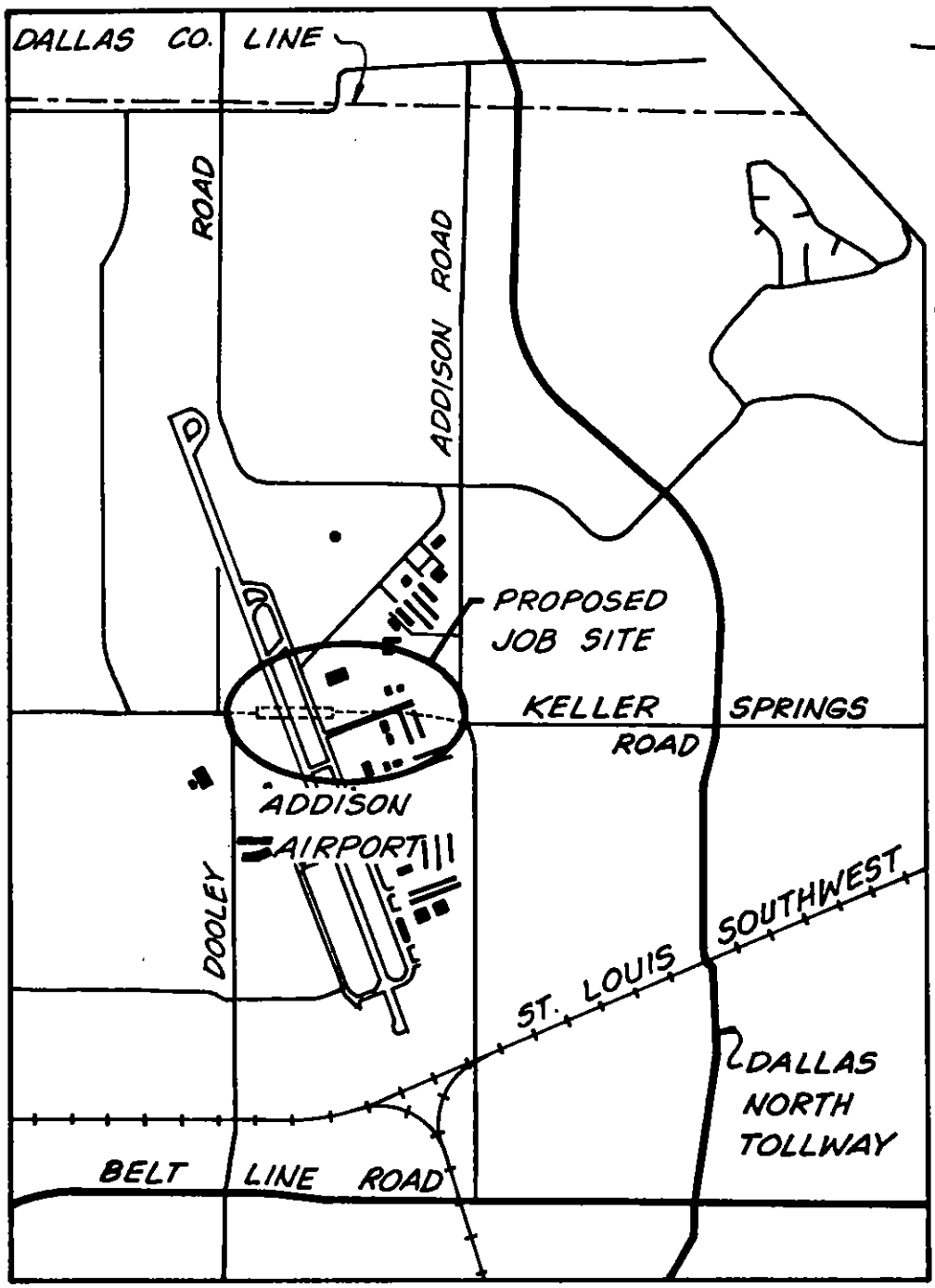
3.0 PROJECT DESCRIPTION

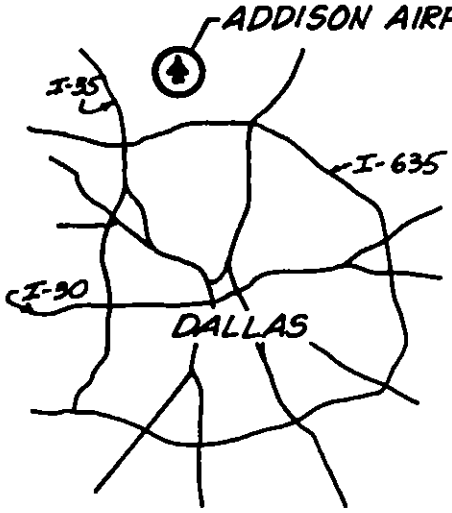
The Addison Airport is located as shown in Figure 1, in the center of the City of Addison and just north of the city of Dallas. The airport is bounded on the south by the St. Louis-Southwest Railroad tracks, Dooley Road on the west, Sojourn Drive on the north, and Addison Road on the east. The topography is an open, rolling plain with a maximum elevation different of approximately 15 feet. The airport facilities include the 7,000 foot long runway, several taxiways, and numerous hangar buildings. Airport facility usage is general aviation and corporate-type aircraft.

Design Parameters

Design parameters were established to provide the most economical facility that would still serve the traffic demand. The following basic design parameters were used in this study:

Design Speed	- 35 mph
Maximum Horizontal Curvature	- 500 feet
Maximum Grade	- 6%
Runway Clearances	- 150 feet from ℄ runway
	- 100 feet from ℄ taxiway





5 mi. SCALE

LOCATION MAP

1000' SCALE

Figure 1

SITE PLAN

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Other items such as right-of-way requirements, lane widths, turn lane widths, etc., are consistent with major thoroughfare design standards used in the City of Addison.

Alternative Alignments

Alternative alignments were investigated as shown in Figure 2. Each alignment was evaluated based upon its total project cost, length of tunnel section, impact on adjacent properties, and relative traffic service.

The recommended alignment, (Alternate A), begins at the intersection of Midway Road and Keller Springs Road, extends easterly along Keller Springs Road under the runway and taxiway, then curves to south and easterly between FBOs along the existing taxiway. The roadway would then extend ENE to Addison Road along an extension of existing Keller Springs Road. The total length of the project would be 3,600 feet, including an 800-foot tunnel section under the airport runway and taxiway. The alignment requires the relocation of some existing T-hangers. Access to existing facilities interrupted by the open cut section of the facility would be restored by bridging the open cut section through conventional methods. Costs for this bridging is included in the project cost summary presented later in this report. A 1"=100' plan depicting this alignment and its impact on existing streets and airport facilities accompanies this report.

Alternative Alignment B, (Alt. B in Figure 2), would begin at the intersection of Midway Road and Keller Springs Road, extend easterly along Keller Springs Road under the runway and taxiway to Glen Curtis Drive, then continue ENE along Glen Curtis Drive to Addison Road. This alternative offers a slightly lower tunneling cost then Alternate A due to a more normal crossing of the runway and taxiway, and it would probably have a lesser impact on existing airport facilities. However, this alignment would require Keller Springs Road through traffic to travel on Addison Road between existing Keller Springs and Glen Curtis Roads, negatively affecting the capacity of both Keller Springs and Addison Roads. For this reason, together with the minimal cost savings over Alternate A, Alternate B is not recommended.

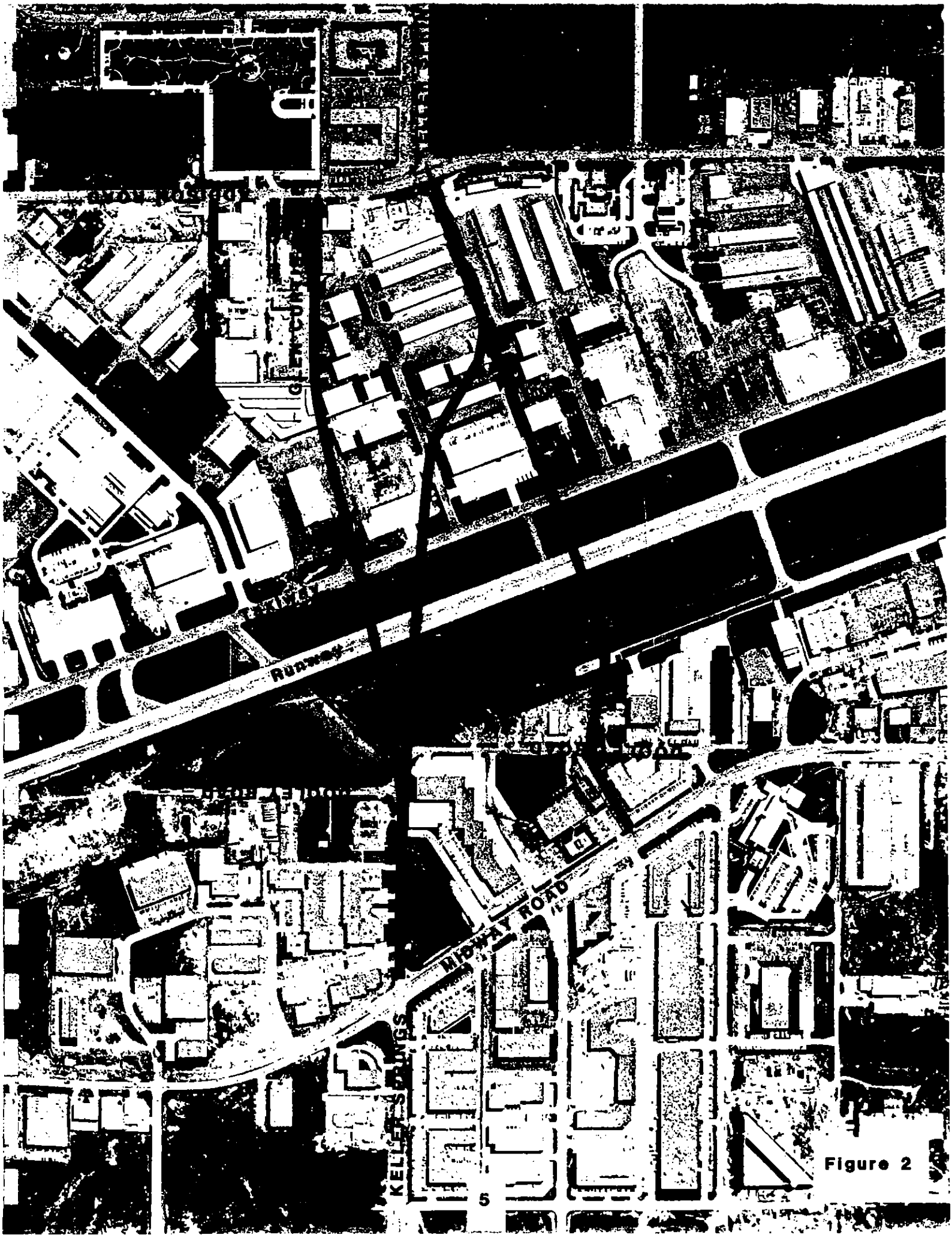


Figure 2

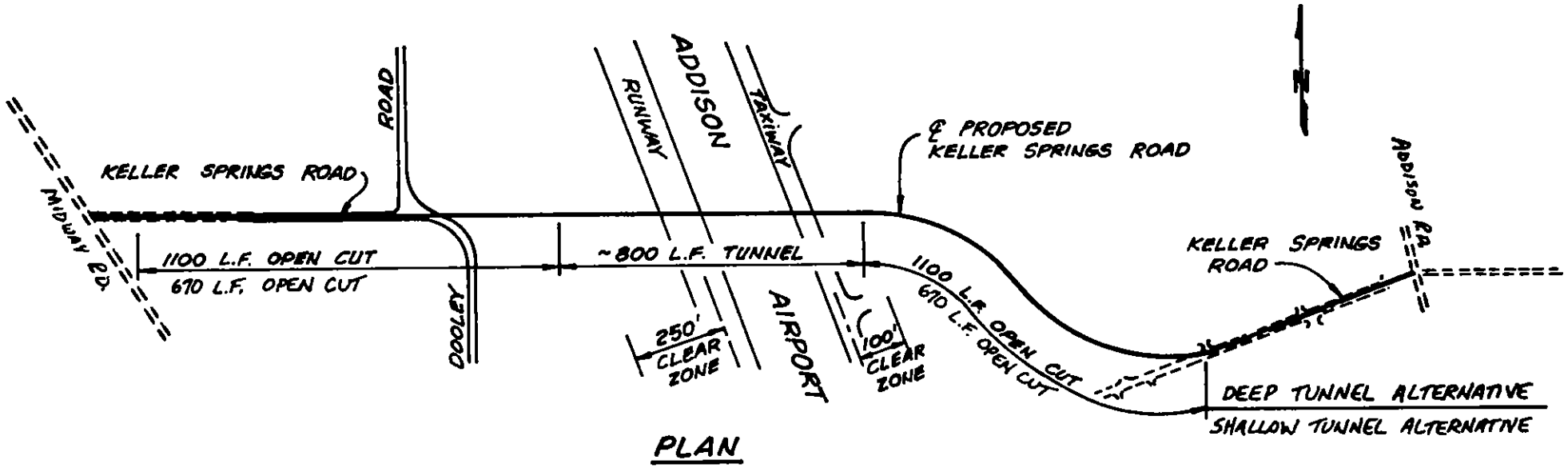
Again, in an effort to minimize tunneling costs, a third alternate (Alternate C) was developed. This alternate would begin south of the intersection of Midway Road and Keller Springs Road, extend ENE and tunnel under the taxiway and runway, and continue ENE and terminate at the intersection of Addison Road and Keller Springs Road. However, this alignment would require the acquisition of at least one business between Dooley Road and Midway Road and an FBO along the taxiway. Similarly to Alternate B but on the west side of the airport, it would offset the proposed and existing intersection of Keller Springs Road and Midway Road, negatively impacting overall traffic capacity as compared to Alternate A. For these reasons, this alternate is not recommended.

Upon selection of Alternate A as the recommended alignment, tunneling schemes were developed for two alternates differing in depth to roadway grade.

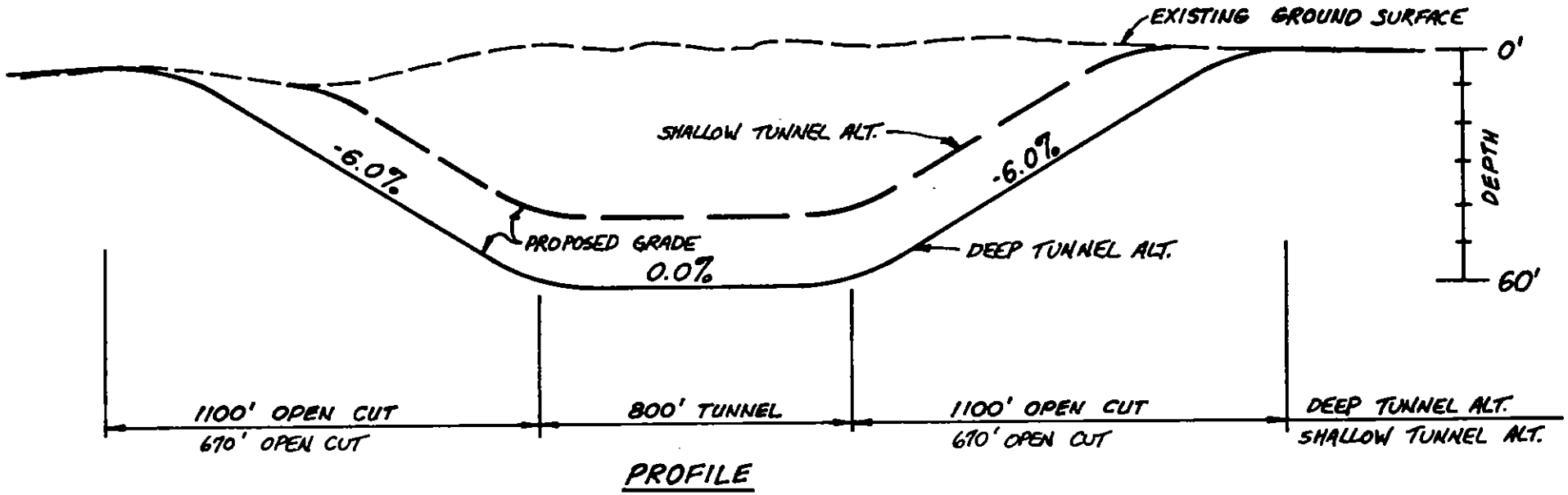
The deep tunnel alternative consists of approximately 3,000 feet of roadway of which approximately 800 feet would be in tunnel, (2 tunnels, each 800 feet long), with roadway grade approximately 60 feet below the runway, and 1,100 feet of approach roadway on each side of the tunnel in retained open cut. The second alternative is a shallow tunnel with roadway grade approximately 40 feet below the runway and 670 feet of approach roadway on each side of the tunnel in retained open cut (see Figure 3.) The approach roadways would be sloped at 6% grade.

A cut-and-cover method of constructing that portion of the project under the runway and taxiway has been explored. However, this method of construction requires the suspension of airport operations for extended periods of time. Also, due to the substantial loading requirements of the members spanning the roadway, the cost savings when compared to tunneling are expected to be minimal, if at all. For these reasons, the cut-and-cover method has been eliminated from further consideration.

Generally, highway tunnels constructed within the United States have been limited to two-lane size widths. Where more traffic capacity is required, multiple two-lane tunnels are constructed. However, for this feasibility



PLAN



PROFILE

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Figure 3
PROPOSED PLAN & PROFILE

study, both two-lane and three-lane tunnel sections are developed and are presented in Figures 4 and 5. The two-lane tunnel section is applicable to both the shallow and deep tunneling alternatives. The three-lane tunnel section is considered to be applicable only to the deep tunnel alternative for reasons related to geologic and construction considerations which are discussed later in this report.

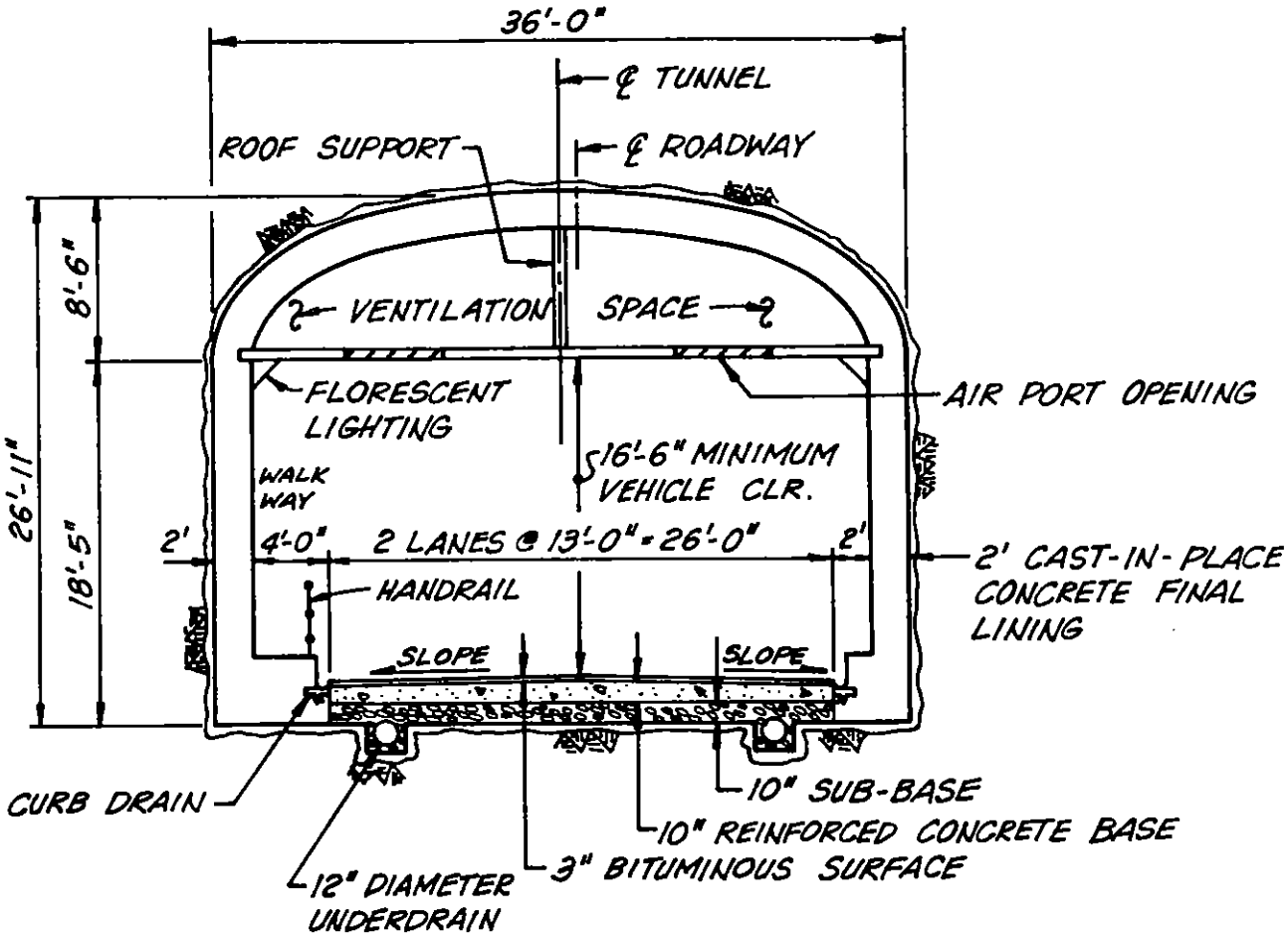
The two-lane tunnel section is wide enough to provide a clear inside opening of 32 feet, adequate for two 13-foot wide lanes of traffic, a 4-foot manway and curbs or alternately two 11-foot roadways and a 6-foot shoulder (breakdown lane) and curbs. The three-lane tunnel section provides for three 13-foot wide traffic lanes and two, 4-foot walkway or alternately three, 11-foot wide traffic roadways and a 6-foot and 3-foot wide breakdown lane plus curbs. Separation between adjacent tunnels is approximately 18 feet for two 2-lane tunnels and 28 feet for two 3-lane tunnels at the tunnel portals as depicted by Figure 6. Entering approachways are in conformance with the City of Addison's Standard four and six-lane design roadway sections.

4.0 GEOLOGIC PARAMETERS OF ENGINEERING SIGNIFICANCE

Geology

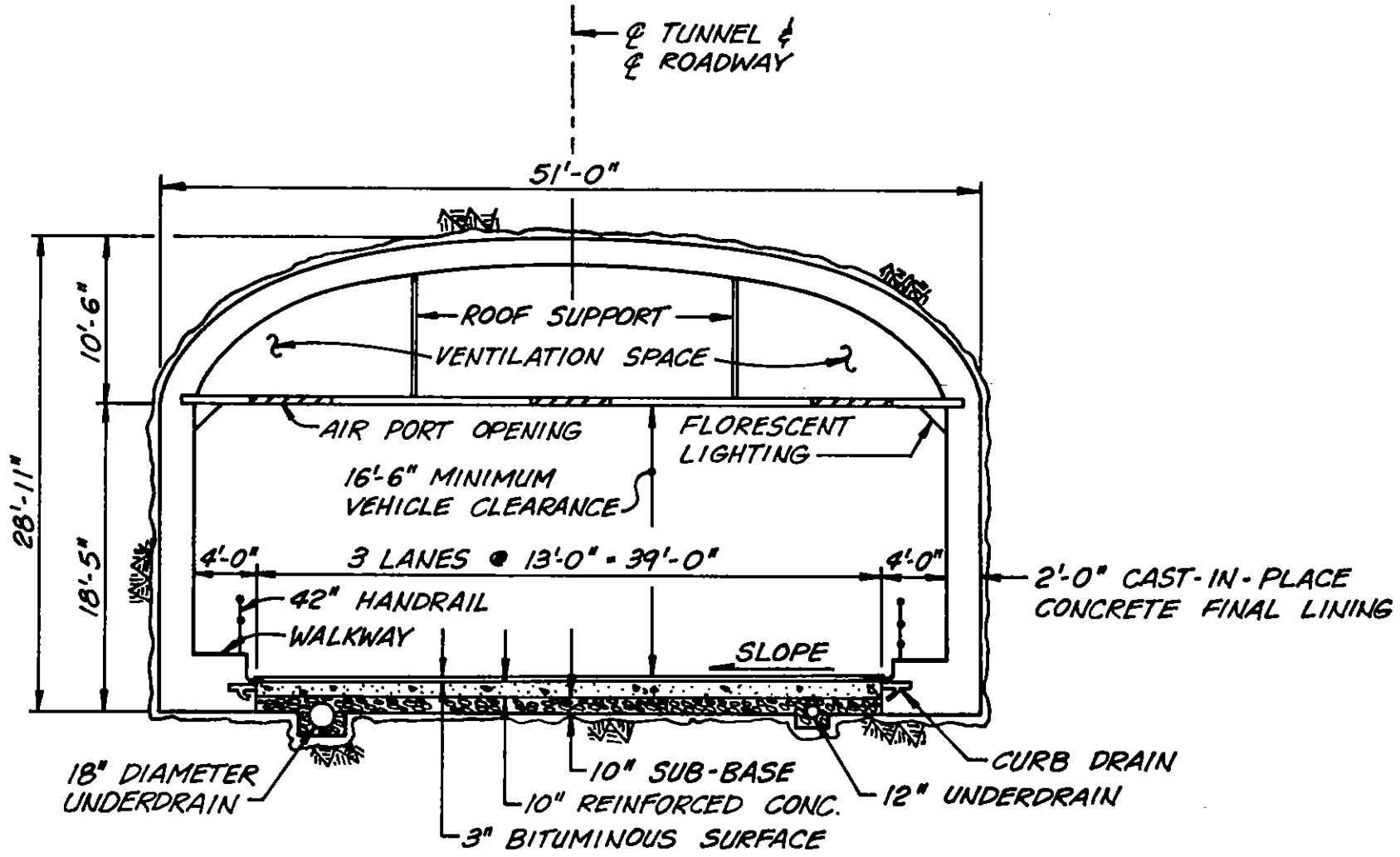
The rocks in Dallas County are Upper Cretaceous in age, underlain unconformably by Paleozoic Era strata (see Figure 7.) Around the City of Addison, the rock near the ground surface is the Austin Formation which has been described by Shuler, (1918):

> The Austin formation, or Austin chalk, consists of a thick series, about 500 feet, of alternating beds of chalk and shaly limestone and marls which have a blue color when saturated with underground water, but which are cream colored or glaring white upon exposure to weathering. Although the formation is termed the Austin chalk, in Dallas County only a few layers near the base are properly termed chalk.
>
> The lower division of the Austin formation is also characterized by an abundance of nodular, spherical, or cylindrical concretions of iron pyrites, "fool's gold", which on weathering gives rise to streaks of rust stain down the chalk wall.



Note!
APPLICABLE TO BOTH SHALLOW AND DEEP TUNNEL ALTERNATIVES

Figure 4
TYPICAL 2-LANE TUNNEL SECTION



Note!
APPLICABLE TO THE DEEP TUNNEL ALTERNATIVE ONLY

Figure 5

TYPICAL 3-LANE TUNNEL SECTION

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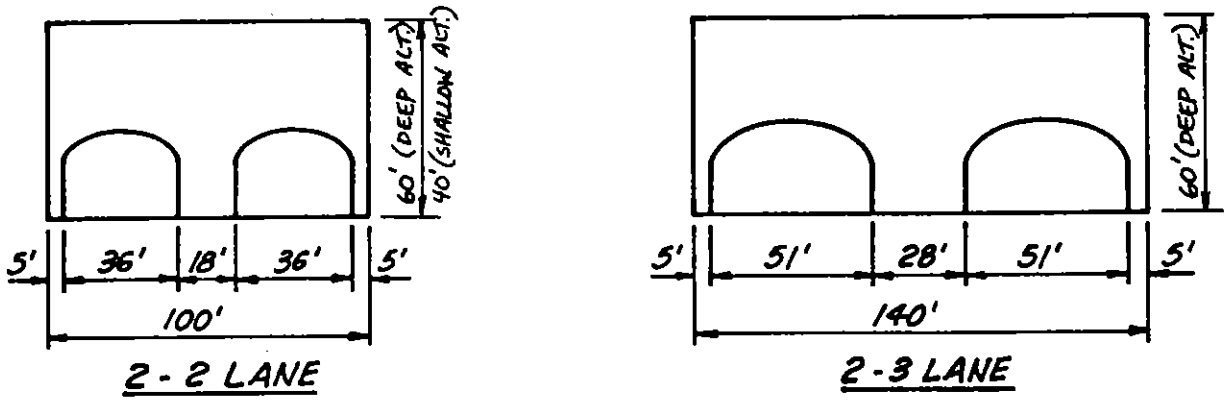
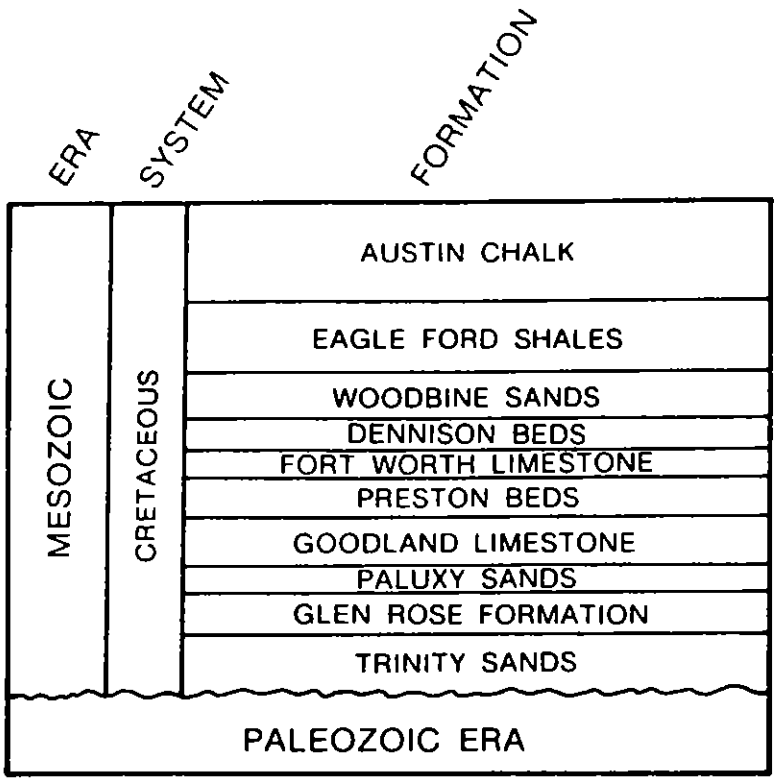


Figure 6
TYPICAL TUNNEL PORTAL SECTION



After Shuler, 1918

FIGURE 7
GENERAL GEOLOGIC COLUMN FOR DALLAS COUNTY

The middle division of about 250 feet has fewer massive layers and is characterized by thick, and often indurated shaly layers which show remarkable lamination, many layers to the inch.

In the uppermost division of the Austin formation, the proportion of shaly limestone is larger and the chalk layers are rare. The top of the rock is weathered to depths ranging from 0 to approximately 10 feet. the colors are predominantly blue and yellow. Occasionally sandy layers are found.

The dip of the Austin chalk is gentle, varying from 40 to 100 feet per mile, with an average dip of 50 to 60 feet. One of the most characteristic features of the chalk as it occurs in Dallas County is the small scaled faulting. The chalk has been broken into innumerable irregular blocks by fissure planes along which most often slight movements have taken place. The faulting may be barely perceptible, or as much as 2 or 3 feet at a maximum. The faulting is normal. Horst and graben structures alternate in rapid succession. The blocks vary in size from 50 to 100 and more feet in length. The plane of faulting varies from 40° to 80°, the larger number varying from 45° to 60°. The strike of the fault planes is extremely variable and has no preferred orientation. Two types of jointing are found in the chalk: ordinary joint planes at right angles to the bedding planes, and particularly in the more massive beds, curved joint surfaces which look as if they were made by localized pressure on small surfaces--such surfaces as would be made by a punch in a uniform mass.

Previous Geotechnical Exploration

Previous geotechnical exploration programs conducted for projects near the airport site suggest a typical geologic profile for the area as detailed in Figure 8. At the surface, residual soils of inorganic to organic silts and clays are found in layers ranging from 0 to 10 feet thick underlain by a zone of highly weathered Austin chalk of thickness ranging from 0 to 10 feet. Under the weathered zone lies a more competent Austin chalk.

Previous exploration programs characterize the overlying soils near the project site as residual soils which are derived from the disintegration of the rock below by the agents of weathering and erosion. These residual soils consist mostly of stiff clays, CL to CH material with some zones of MH, ML, and OH materials as defined by the Unified Classification System. Water contents range from approximately 10% to 40% with liquid limits of between 20% and 85% and plasticity indices ranging from 5% to 60%. The overburden soil exhibits swelling characteristics when subjected to changes in moisture content. The unit weight is approximately 100 to 110 pcf and

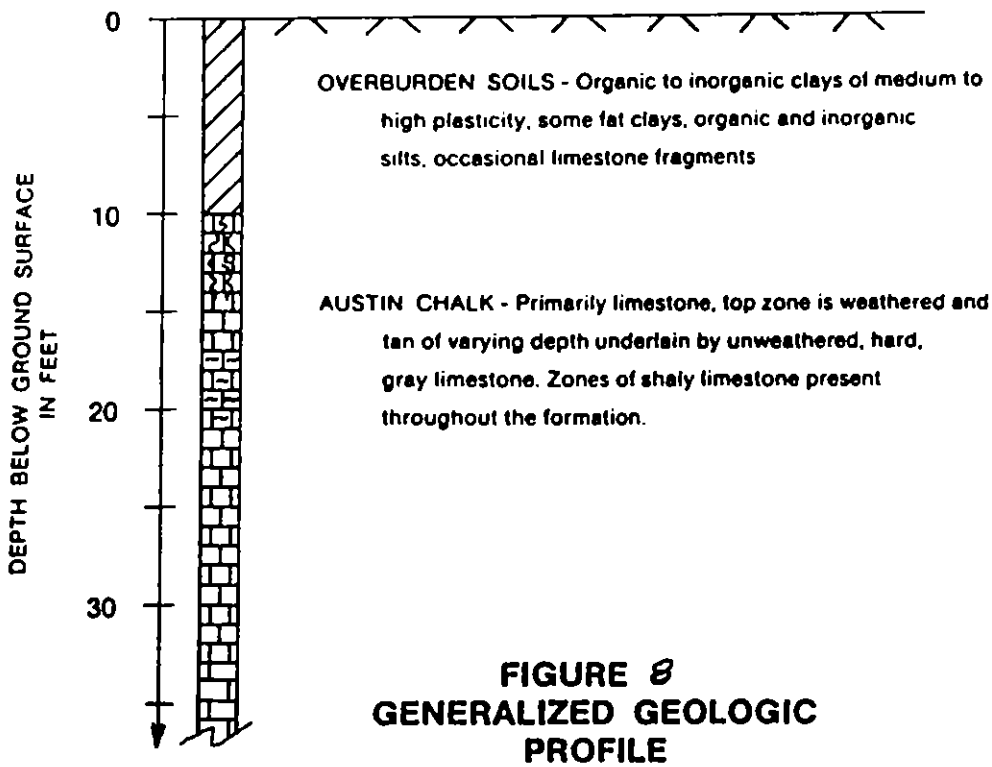


FIGURE 8
GENERALIZED GEOLOGIC PROFILE

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the unconfined compressive strength ranges from 0.8 to 8.8 TSF with most samples between 1 to 3 TSF. The internal angle of friction Ø, ranges from 10 to 18 degrees with a cohesion intercept, c, varying between 0.4 to 3.0 TSF.

The engineering properties of the Austin chalk vary with the degree of weathering and the presence or absence of shaly zones within the sample. Table A presents mechanical properties of weathered, tan, shaly gray, and hard gray limestone samples of the Austin formation as obtained from the exploration program for the Dallas North Tollway project.

Expected Ground Behavior

Tunnel Excavation

The Austin chalk is a rock of relatively constant composition with relatively low strength and varied bedding conditions and should be easily excavated. "When freshly quarried the rock is soft and easily cut with a knife or saw, but on exposure to air many layers develop considerable hardness." (Shuler, 1918).

Variations in the intact rock mass and its discontinuities may affect the rate and cost of excavation but are not expected to affect the feasibility of tunneling.

Ground Stability

In general, underground excavations may be affected by several conditions that lead to a requirement for support or protection of the excavated surface, such as:

- o Stress redistribution resulting in plastic yielding, creep, or formation of fractures.
- o Loosening and movement along discontinuities.
- o Swelling of the ground due to a reaction with water producing a volume increase of the material surrounding the excavation and inducing movement into the excavation.
- o Surface deterioration or decomposition of the material of the excavated perimeter due to such mechanisms as air drying, slaking, or softening due to the presence of water.
- o Piping or washing by flowing water.

TABLE A
ROCK PROPERTIES OF
THE AUSTIN FORMATION

ALL VALUES ARE IN PSI		WEATHERED TAN LIMESTONE	SHALY GRAY LIMESTONE	HARD GRAY LIMESTONE
TANGENT MODULUS OF ELASTICITY*	MEAN	7.8×10^4	1.2×10^5	2.8×10^5
	ST. DEVIATION	7.1×10^4	2.6×10^4	1.3×10^5
	HIGH	1.4×10^5	1.5×10^5	4.9×10^5
	LOW	2.2×10^3	9.4×10^4	1.2×10^5
	NO. OF SAMPLES	3	4	11
UNCONFINED COMPRESSIVE STRENGTH	MEAN	503	1085	2040
	ST. DEVIATION	503	250	584
	HIGH	1250	1389	3653
	LOW	42	597	667
	NO. OF SAMPLES	5	7	92

*Measured tangent at 50% of peak stress

NOTE: ALL VALUES OBTAINED FROM DALLAS NORTH TOLLWAY PROJECT - CONTRACT NO. DNT101- December 1, 1982

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A literature search of available geotechnical information indicates that the tunnels will be in good to excellent quality rock (RQD $\geq$ 75%) when sited below the weathered zones within the Austin chalk. Thus, tunnel excavation is not expected to result in significant stress redistribution or accompanying elastic or plastic rock movements.

The rock mass consists of blocks formed by faulting or bounded by intersecting inclined joints or a combination of intersecting joints, bedding planes, and other discontinuities or planes of weakness. Loosening and movement of these rock blocks are expected to occur during excavation. The mechanisms that can cause loosening and movement include:

- o Blast Damage - Gases under pressure may penetrate joints and loosen rock wedges. Wedges may also be loosened by ground vibration.
- o Gravity - Gravity forces acting on wedges may cause separation or shearing movements along joints or bedding planes.
- o Strain Around the Opening - Creation of an opening in a stressed mass causes strain and deformation in the mass. Such strains tend to concentrate along natural planes of weakness (such as joints and bedding planes) and may loosen wedges, allowing gravity to move them.
- o Shear Failure - Failure in shear may occur along joints oriented at a critical angle in the redistributed stress field about the opening.
- o Loss of Strength - The strength and tightness of the joint system may decrease because of absorption of water by, or air drying of, joint filling materials.
- o Hydrostatic Pressure - The hydrostatic pressure due to groundwater in joints may induce loosening and movement of wedges.

Loosening and movement of rock wedges, slabs, and blocks may occur at any location in the tunnel excavations. The dip of joints or other planes of weakness and their strike with respect to the tunnel axis determine the size and stability of a wedge, its position on the tunnel perimeter, and its potential for loosening or falling.

If supports are not installed, rock movement and the loosening process may continue until a stable opening is formed. Most typically, the arch may break upward, across one or several bedding planes, until a competent roof or corbelled arch is formed. For tunnels mechanically excavated, the excavation perimeter should generally require less support than that required for a drill and blast excavation of similar size.

Swelling of the ground is not expected if alternate wetting and drying of the rock surface can be avoided. Slaking of some areas may occur in shaly zones of rock when exposed to the air by excavation. Surface protection and scaling of the exposed rock surface will be required. Piping or washing-out of ground may occur in heavily weathered rock or in fault zones at tunnel elevation but should not occur within competent rock.

Groundwater Infiltration

Infiltration into the unlined tunnels may be considerable as the fractured and broken nature of the rock mass and observed high porosity would indicate. Further investigation is needed to quantify the infiltration. For the concrete lined tunnel sections, water infiltration is not considered a major problem. The use of a permanent, impermeable membrane may be considered to minimize nuisance drips and seeps within the tunneled roadway.

5.0 TUNNEL EXCAVATION AND INITIAL SUPPORT

Excavation Alternatives

The Keller Springs Road tunnel may be excavated using either drill and blast techniques or mechanically by means of a roadheader type of machine. The approaches to the tunnel may be excavated using conventional surficial earthmoving techniques near the ground surface and drill and blast or a roadheader type machine at depth. Final determination of the method or methods to be used should properly lie with the contractor. The short length of tunnel generally prohibits the use of a roadheader or similar equipment purchased exclusively for this job; however, appropriately sized existing machines could be used. Drill and blast tunnels may require additional support because of weakening and fracturing induced by blasting. Concrete quantities may also increase due to overbreak.

The required size and shape of the tunnels generally dictate that the tunnels, whether constructed using drill and blast or mechanical means, be constructed with a top heading and bench excavation sequence. Such an excavation sequence allows the support and stabilization of the rock arch before the removal of the lower tunnel sections in a quarry-type removal operation. In areas of faulted or weathered rock, in which at least some

of the tunnel length should be expected, the heading and bench method is adaptable to conditions as they are exposed allowing variation in length of round, size of opening, and support technique. Normally, the tunnel top heading would be excavated and supported from one end (portal) to the other followed by the benching down to invert. This sequence of excavation is directly applicable to the deep tunnel alternative, located below weathered rock zones, but requires some modification for use in the construction of the shallow tunnel alternative. Because the shallow excavation alternative is sited within mixed face zones of soil, weathered rock and good quality rock, excavation must be performed in more stages of smaller size than would be required in tunnels constructed in better ground conditions. A typical excavation sequence for the shallow tunnel alternative is shown in Figure 9.

Following the excavation the final cast-in-place lining would be placed; ceiling panels, wall tiles, and the required utilities and finished roadway would then be installed.

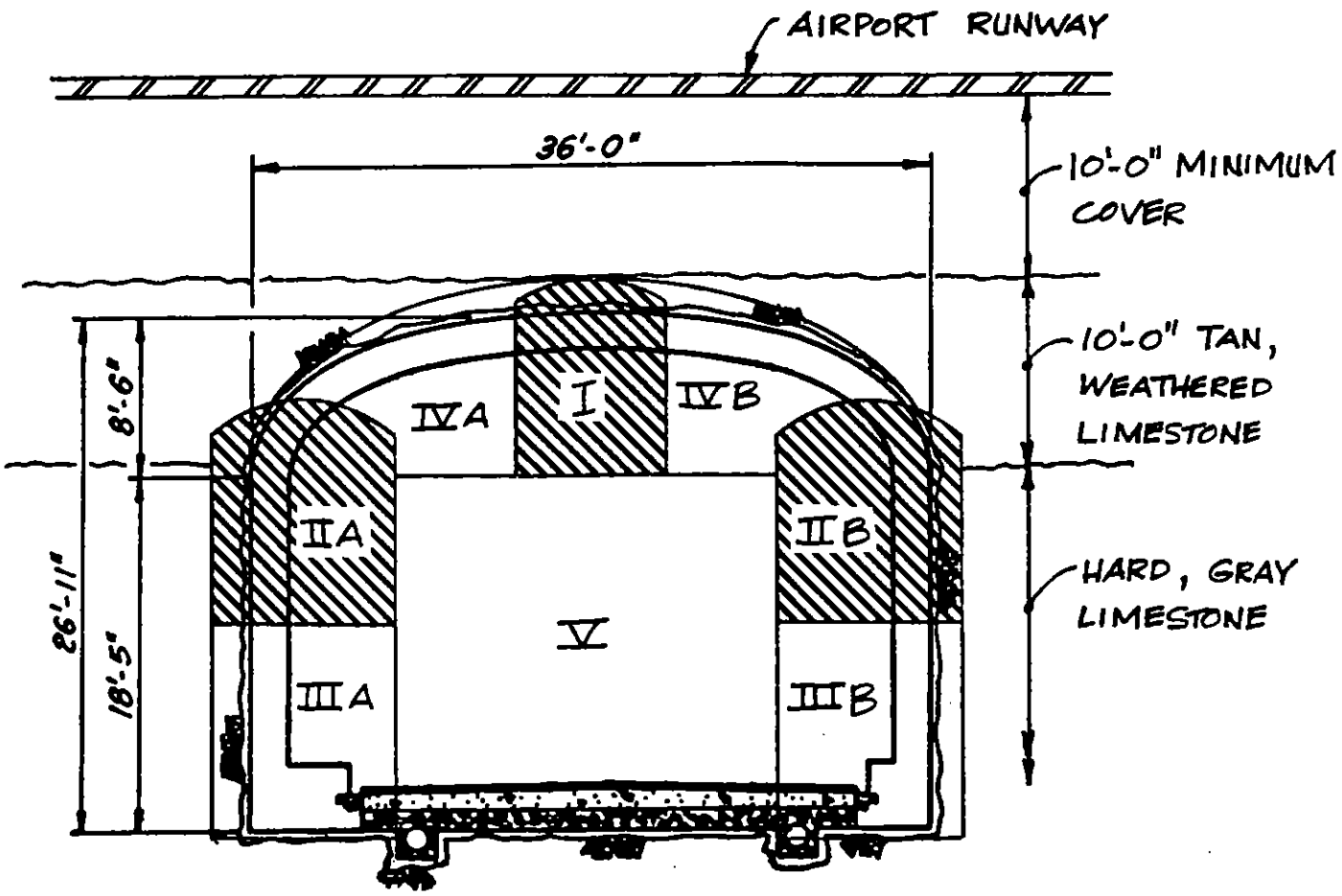
Initial Support and Surface Protection

The initial support systems used must be adaptable and capable of supporting the range of loads anticipated. The following alternative initial support systems may be used:

- o Structural steel supports
- o Rock reinforcement
  - Rock bolts (tensioned, fully grouted, or encapsulated)
  - Rock anchors or dowels (untensioned, fully grouted, or encapsulated)
- o Shotcrete

Any of these support systems or combinations of them may be used within the limitations of compatibility with the ground behavior encountered. The choice and design of the initial support system for all excavations should be made by the contractor and should be compatible with the final support and lining requirements.

To minimize loosening loads and degradation of the rock mass around the excavation, the initial support system should be installed closely behind the newly exposed working face. Ground control in typical tunnel reaches



SEQUENCE OF EXCAVATION:

I. PILOT TUNNEL
IIA & IIB. TOP SIDE DRIFTS
IIIA & IIIB. BOTTOM SIDE DRIFTS
IVA & IVB. CROWN DRIFTS
V. BENCH EXCAVATION

Figure 9
EXCAVATION SEQUENCE FOR SHALLOW TWO-LANE TUNNEL

may be limited to removal of loosened wedges or the installation of spot rock reinforcement. The number and location of loosened wedges will vary with discontinuity and bedding patterns and the other factors described above. Wedge loosening may be generally less frequent in small openings and in openings excavated by mechanical means. Close-spaced joints, faults, shear zones, and weathered rock may affect initial support requirements.

Minimizing ground control problems may be accomplished by an extensive program of pre-grouting the tunnel interval from the ground surface prior to construction. Such a program is considered to be essential to the success of the shallow tunnel alternative because of the extensive weathered rock zone known to exist within Dallas County.

Based upon the anticipated geologic conditions, the construction cost estimate of Section 8.0 assumes the use of structural steel rib support for the tunnel excavations of both shallow and deep tunnel alternatives. These ribs would be cast integrally within the concrete final lining forming the tunnel final support. While both shotcrete and rock reinforcement either singularly or in combination generally appear more economical than using steel ribs, they require greater technical proficiency and skilled workmanship to install and are not easily adapted to ground conditions which may be exposed if weathered or faulted zones of major extent reach tunnel level.

Groundwater Control

Groundwater inflows will be encountered during tunnel construction and the contractor should have a plan to deal with inflows that will affect construction operations.

Most of the large groundwater inflows are expected to be in the form of flows from rock discontinuities which must be controlled in the completed tunnel. Infiltration should be controlled by grouting as the excavation progresses to prevent loss of ground from piping or washing by water and the development of waterways outside the tunnel.

6.0 FINAL SUPPORT AND LINING

At some time following the erection of the initial support system consisting of rock reinforcement and/or shotcrete or structural steel ribs, a final lining will be erected within the tunnel opening similar to that shown in Figures 4 and 5. The final lining is designed to withstand all loads that may be imposed during the tunnel's service life. The beneficial effects of any initial support system are generally neglected in the design of the final lining; however, structural steel ribs used as initial support may be included as a composite design for tunnel final support. The loading considered in the design of the final lining are:

1. Ground Loading - Due to the shallow cover present at the airport site and the weathered rock profile, the tunnel should be designed to sustain a uniform ground load of full overburden of approximately 30 feet of ground measured to tunnel crown for the deep tunnel alternative and 10 feet of ground plus impact loadings for the shallow tunnel alternative.
2. External Hydrostatic Pressure - Tunnels should be designed to sustain external hydrostatic pressures.

7.0 SPECIAL CONSIDERATIONS

Tunnel Ventilation

Ventilation of roadway tunnels is normally provided to ensure dilution of exhaust fumes to acceptable concentrations. At present, for gasoline powered engines, the dominant constituents for which dilution is required are CO and CO_2. Provided these constituents of the exhaust gases are adequately diluted, there will be no harmful effects from other substances such as SO_2 and lead. Determination of ventilation air volumes for design purposes, the length, inclination of the roadway, the number of lanes, vehicle capacity, and traffic composition are taken into account. The tunnel user will normally be exposed to the atmosphere of the tunnel for a period of only one minute for which a maximum level of 125 ppm CO for a normally congested urban expressway is considered acceptable.

The proposed tunnel lengths are generally within the range at which artificial ventilation should be considered, especially since traffic flow within these tunnels may be subject to congestion during peak flow periods.

This traffic flow will be controlled by the traffic signal timing at the nearby intersection of Keller Springs Road and Addison Road on the east and Midway Road on the west. While detailed analysis may, during final design, conclude that only exhaust ventilation will be required, provision is made in this study for a semi-transverse ventilation system for both shallow and deep tunnel alternatives.

In this system, air is delivered along the entire length of the tunnel at a uniform rate and the noxious fumes and smoke emitted are diluted and removed via the portals. The size of the supply air duct is a function of air flow requirements, allowable air duct velocities and the tunnel internal geometry. Generally, air flows are maintained to a maximum air duct speed less than 5,000 feet per minute for optimal operation.

Providing for semi-transverse ventilation ensures that the tunnel size is large enough to provide the required ducting above the traveled roadway. If an automatically activated exhaust only system or a longitudinal type system is later determined the most efficacious, sufficient airway and headroom capacity is provided without enlargement of the tunnel excavation requiring a simpler and less costly mechanical system.

Assumed characteristics for ventilation design

Geometry:	Length: 1,000 feet each Altitude: 640 feet above MSL Grade: Level
Traffic:	Heavy from date of first service, particularly during A.M. and P.M. rush hours. Approaches normally uncongested except at peak periods. Heavy truck traffic less than 150/lane-hour.
Pollution Levels:	(CO) Nature of Tunnel: City street; one way traffic each tunnel; normally congested Uncongested: 30 ppm Threshold of Congestion: 125 ppm
Maximum Traffic Volume:	Congested Roadway - 900 vehicles/lane at 5 mph Free Moving Roadway - 2,000 vehicles/lane at 35 mph

Required Ventilation per Lane:	860 cubic feet/second/lane for CO dilution 1,640 cubic feet/second/lane for fire protection (controls) 2 lane tunnel = 196,800 cubic feet/min 3 lane tunnel = 295,200 cubic feet/min
Installed Horsepower per Tunnel (2 tunnels required):	200 horsepower (268 KW) (2 lane tunnel) 300 horsepower (402 KW) (3 lane tunnel)

To ensure tunnel ambient atmosphere conditions are adequate at all times a carbon monoxide monitoring system should be provided in the tunnel. These self-contained systems monitor concentration in air of CO at a number of remote sample points with up to three levels of alarm indication and ventilation control. These systems are now fabricated in modular construction and solid state circuitry to enhance reliability and simplify maintenance.

Tunnel Drainage

Within the tunnels, major concerns for drainage are:

1. handling the unexpected spills of water or fluids from tank trucks or inflows of water through the tunnel walls,
2. handling of rainwater intercepted at portals and runoff from traveling vehicles, and
3. handling of washdown water.

Trench drains may be provided at tunnel portals to intercept water from approach roadways. Each trench drain at tunnel portals should be equipped with individual sumps to prevent the introduction into the tunneled sections of flammable or hazardous materials spilled near portals.

At tunnel low points, approximately mid-length, a common sump built into a cross passage between tunneled roadways may be constructed. Here a trench-type drain may collect runoff or fluids spilled inside the tunnels.

The approach roadway and portal trench drains are generally handled by a single pump station and conveyed to local storm drainage systems. The pump

station at the tunnel midpoint may be packaged units with outfall conveyance outside the tunnel by a drainage force main constructed within the tunnel walls.

Tunnel Lighting

The amount and type of tunnel lighting depend on the tunnel geometry, the materials comprising the inside finished surface, and the size of the excavation. The lighting provided should be adequate to provide time and brightness for the eyes of drivers entering the tunnels to adapt to the change of lighting intensity, from a working daylight (8,000 footcandles (fc)) to approximately 5-10 fc, the level maintained for general tunnel artificial lighting.

To minimize the length of transition zones from the exterior brightness to interior levels of brightness requires transition, generally taken at such levels so no reduction of level of brightness exceeds a ratio of 10:1 for brightness of adjacent zones of tunnel.

To eliminate threshold lighting at portals and intermediate brightness transition required, sunscreens should be used. These sunscreens are interposed between the open depressed roadway and tunnel portals. The sunscreen cut the brightness level from the 8,000 fc to 800 fc followed by a threshold zone requiring 80 fc and interior tunnel zone at 8 fc, with no transition zone required.

Interior tunnel lighting may be provided by fluorescent lamps. (Two fluorescent lamps in opposite corners of the tunnels will yield sufficient levels of average interior illumination of the running tunnel section.) Where lighting requirements require larger intensity, such as the transition zone at portals, combinations of fluorescent lamps and the more efficient low pressure sodium lamps may be used.

Wall and Ceiling Treatment

The interior of a vehicular tunnel is a harsh environment. The lining must be capable of withstanding the punishment of road grime, exhaust fumes,

hose cleaning, as well as impact from vehicles, and in emergencies, the temperatures from fire. Such linings must not be capable of sustaining combustion nor give off toxic or hazardous combustion by-products.

Structural glazed facing tile appears to be the one element which best fulfills these requirements for tunnel sidewalls and has been successfully used in other tunnels of similar type throughout the United States. Mineral wool sprayed to a depth of approximately one inch has been used for a ceiling coating. Mineral wool, besides providing lightweight fireproof material has an excellent noise reduction coefficient.

Fire Fighting

No special fire prevention and protection methods are proposed for the tunnels.

Fire hose connections will be made via Siamese connection located every 200 feet along the tunnels. Siamese connections should be located at each tunnel portal. This will allow fire fighters to gain access from either end of the tunnels and connect their hoses to standpipes without having to lay lines along the entire length of tunnels. The stand pipes should be dry until needed.

Fire detectors may be deployed within the tunnel to detect heat generated by fire. These alarms may be directly wired to the central alarm station for immediate fire department response. Tunnel ventilation systems should be reversible and capable of exhausting fumes and smoke from the tunnels. In such cases, air will enter tunnel portals and be exhausted from the ventilation system ensuring dilution of smoke and a respirable environment.

8.0 CONSTRUCTION COSTS AND ESTIMATES

Feasibility level construction estimates were made for comparison of alternatives and are given in Tables B and C. Estimates were prepared for two 2-lane tunnels and for two 3-lane tunnels for the deep tunnel alternative under the Addison City Airport. Estimates were prepared only for two, 2-lane tunnels for the shallow tunnel alternative.

TABLE B

DEEP TUNNEL ALTERNATIVE
PRELIMINARY CONSTRUCTION COST ESTIMATE

Item	Four-Lane Option	Six-Lane Option
Preparation of R/W & Removals	$ 130,000	$ 160,000
Concrete Paving	425,000	600,000
Bridges, Retaining Walls	6,500,000	7,500,000
Excavation (Non-Tunnel)	3,500,000	5,200,000
Drainage	600,000	800,000
Tunnel (Complete)	11,400,000	17,100,000
Signing, Striping, Lighting	40,000	45,000
Utility Relocations	50,000	60,000
Mobilization	450,000	600,000
Contingencies	3,455,000	4,835,000
Engineering, Administration, Materials Testing	2,250,000	3,300,000
Total	$28,800,000	$40,200,000

TABLE C

SHALLOW TUNNEL ALTERNATIVE
PRELIMINARY CONSTRUCTION COST ESTIMATE
(4-Lane Facility Only)

Item	Amount
Preparation of R/W & Removals	$ 130,000
Concrete Paving	425,000
Bridges, Retaining Walls	3,500,000
Excavation (Non-Tunnel)	1,375,000
Drainage	450,000
Tunnel (Complete)	17,600,000
Signing, Striping, Lighting	40,000
Utility Relocations	50,000
Mobilization	500,000
Contingencies	3,530,000
Engineering, Administration, Materials Testing	2,400,000
Total	$30,000,000

The estimated construction cost for the deep two, 2-lane option is $28.8 million, and $40.2 million for the deep two, 3-lane option. The cost for the shallow two, 2-lane option is estimated to be $30.0 million.

The estimates are based upon:

1. Prevailing prices as of July, 1985.
2. Tunnels are excavated by drill and blast methods.
3. The excavation sequence shown in Figure 9 is used for the shallow tunnel alternative.
4. Structural steel ribs are used for tunnel initial support.
5. Tunnel final lining and geometry are as shown in Figures 4, 5, and 6.
6. Tunnel plan and profiles are as shown in Figure 3.
7. Open cut roadway approach sections are included.
8. Costs do not include right-of-way acquisition costs.

9.0 CONCLUSIONS AND RECOMMENDATIONS

Based upon a review of the subsurface conditions applicable construction techniques and support methods, it is generally concluded:

Tunneling

1. Tunneling is a feasible construction technique.
2. Subsurface conditions are generally similar throughout the study area.
3. (a) The deep tunnel alternative will be constructed within the Austin chalk with approximately 30 feet of cover.
   (b) The shallow tunnel alternative will be constructed in soils or weathered rock with approximately 10 feet of cover.
4. Tunnels will be constructed using conventional drill and blast techniques although a roadheader-type excavation is feasible.
5. In weathered rock and soils, multiple small drifts are required to allow safe tunneling.
6. Applicable alternative initial support systems are:
   (a) Structural steel ribs
   (b) Rock reinforcement and shotcrete
7. Final lining will consist of reinforced cast-in-place concrete.
8. Tunnels will be provided with semi-transverse ventilation systems.

9. Tunnels will be provided with lighting systems to obtain a minimum of 5 to 10 footcandles illumination.

10. Tunnels will be provided with a drainage system to collect portal inflow and internal collected water.

Recommendations

1. Unless traffic flow predictions justify otherwise, the 2-lane alternative appears significantly less costly.

2. While the depth of approach roadway open cut should be minimized to reduce the cost of approach roadway the increased cost of shallow tunneling generally negates such savings.

3. The possibility of increased surface subsidence and unpredictable catastrophic losses of ground increase with shallow tunneling in weathered rock and soil generally dictating deeper tunneling as the preferred alternative.

4. An open cut alternative with cut-and-cover (decked) portion at within the runway/taxiway area would not appear feasible. Construction of such sections would greatly impact airport operations and construction cost savings are not apparent.

5. If further studies indicate feasibility, a geotechnical investigation should be undertaken within the study area to confirm the cover and rock quality assumptions made herein.

10.0 REFERENCES

American Society of Heating, Refrigeration and Air Conditioning Engineers (ASHRAE) Application Handbook, 1982, Chapter 13.

Bickel, J.O., and T.R. Kuesel, editors, 1982 "Tunnel Engineering Handbook," Van Nostrand Reinhold Company, Inc., New York.

Mason-Johnson & Associates, Inc., 1982, "Geotechnical Engineering Report, Phase I, Dallas North Tollway, Dallas, Texas," Contract No. DNT 101, prepared for the Texas Turnpike Authority, December 1, 1982.

Shuler, Ellis W., 1918, "The Geology of Dallas County," University of Texas Bulletin, Bureau of Economic Geology and Technology, No. 1818, March 25, 1918, Austin, Texas.

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APPRAISAL

A 10,793 SQUARE FOOT OFFICE/TECHNICAL BUILDING
LOCATED AT 16115 DOOLEY ROAD
ADDISON, DALLAS COUNTY, TEXAS

AS OF:

JULY 15, 1997

PREPARED FOR:

MR. CHRIS TERRY
ASSISTANT TO CITY MANAGER
TOWN OF ADDISON
5300 BELT LINE ROAD
ADDISON, TEXAS 75001

PREPARED BY:
DARREL G. COPELAND, MAI
KATHLEEN PRICE WILKE, MAI, CRE
PRICE•DENTON INC.
14800 QUORUM DRIVE, SUITE 330
DALLAS, TEXAS 75240

97-095

Price • Denton Inc.

August 20, 1997

Mr. Chris Terry
Assistant to City Manager
Town of Addison
5300 Belt Line Road
Addison, Texas 75001

Re: Appraisal
A 10,793 Square Foot Office/Technical Building
Located at 16115 Dooley Road
Addison, Dallas County, Texas

Dear Mr. Terry:

At your request, an inspection has been made of the above-captioned property and we have appraised the market value of the fee simple interest in the property described in this report, as of the date set forth herein. The accompanying report sets forth our methods, data, reasoning and conclusions. The subject property consists of a 10,793 square foot office/technical building on 1.003 acres of land. The site is described in greater detail in the accompanying report.

In our opinion, the value of the fee simple interest in the subject property, as of July 15, 1997, was:

SIX HUNDRED THOUSAND DOLLARS

($600,000)

14800 Quorum Drive • Suite 330
Dallas, Texas 75240-7512
(972) 960-1606 • FAX: (972) 960-8906

Our conclusions are based on Limiting Conditions and Assumptions which are found in the accompanying report. They are also based on projections of future events which may or may not actually occur, but are believed reasonable in light of available data.

We are happy to answer any questions you may have after reading the report.

PRICE•DENTON, INC.

Kathleen Price Wilke, CRE, MAI
President
Texas Certificate #: TX-1320438-G

Darrel G. Copeland, MAI
Senior Appraiser
Texas Certificate #: TX-1320988-G

TABLE OF CONTENTS

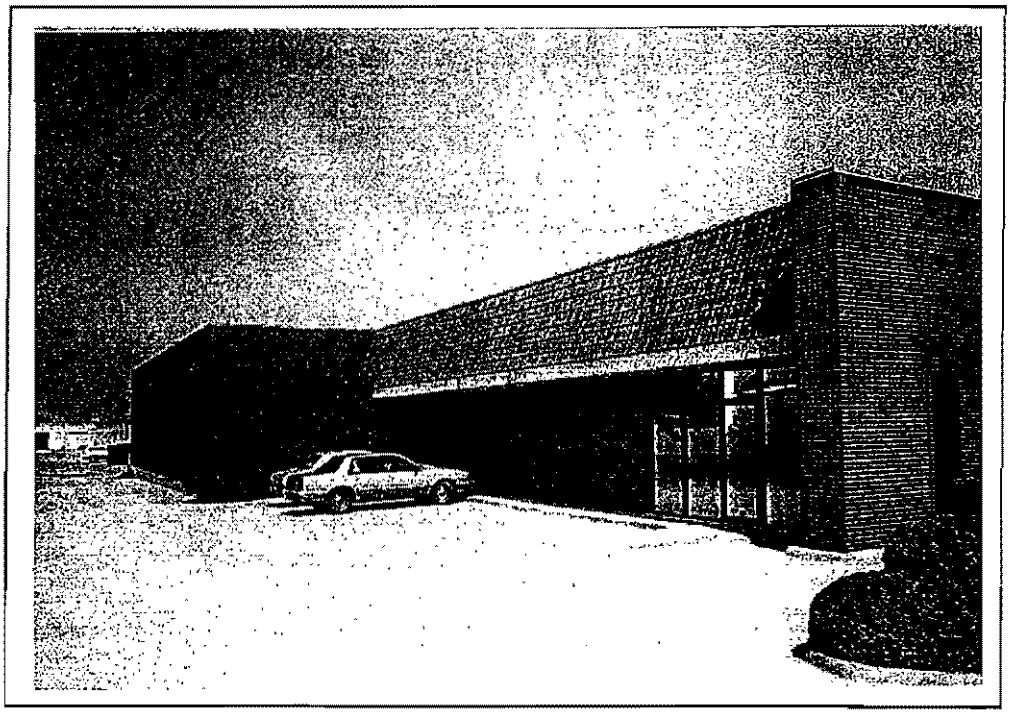
EXHIBITS

ADDENDA

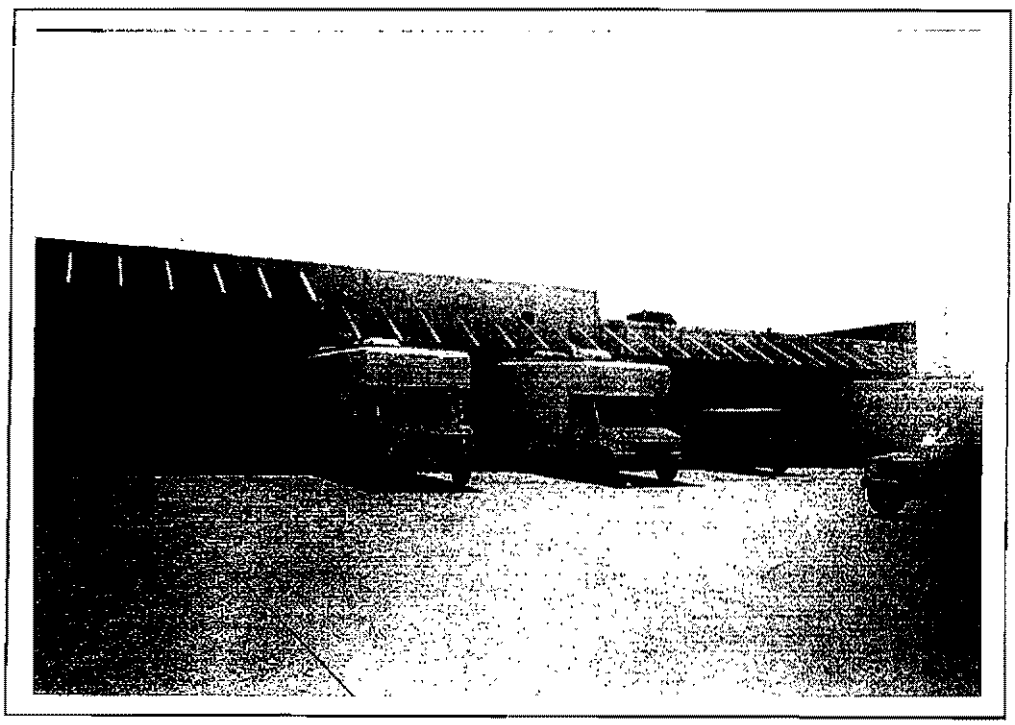
EXECUTIVE SUMMARY

Location	16115 Dooley Road, Addison, Dallas County, Texas
Legal Description	Lot 1 Block A and Lot 1, Block 1, George Syms Survey, Abstract 1344, Town of Addison, Dallas County, Texas. A metes and bounds legal description of the sites is provided in the Addenda.
Rights Appraised	Fee Simple
Zoning	I-1 (Industrial - 1)
Highest and Best Use	
As vacant	Office/tech development
As Improved	Continued use as office/tech building
Effective Date of Valuation	July 15, 1997
VALUE INDICATIONS	
Sales Comparison Approach	$570,000
Income Capitalization Approach	$615,000
Final Estimate of Value	$600,000
Unit of Comparison	$55.59 per SF of building area
EXPOSURE PERIOD	6-12 months

PHOTOGRAPHS OF THE SUBJECT PROPERTY

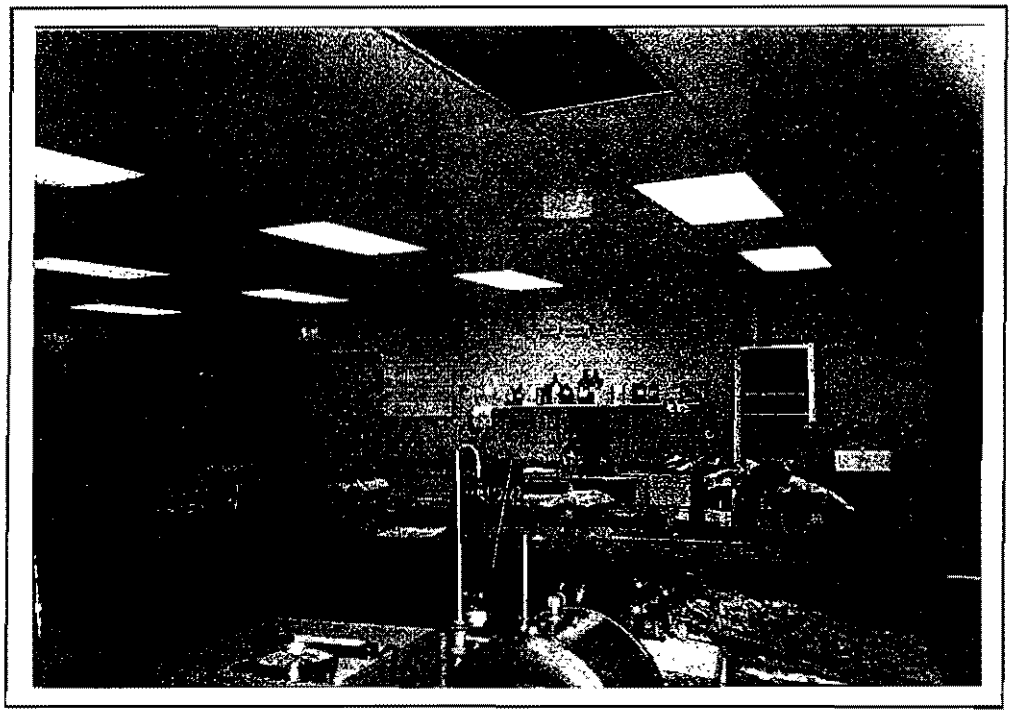


View of south side of subject

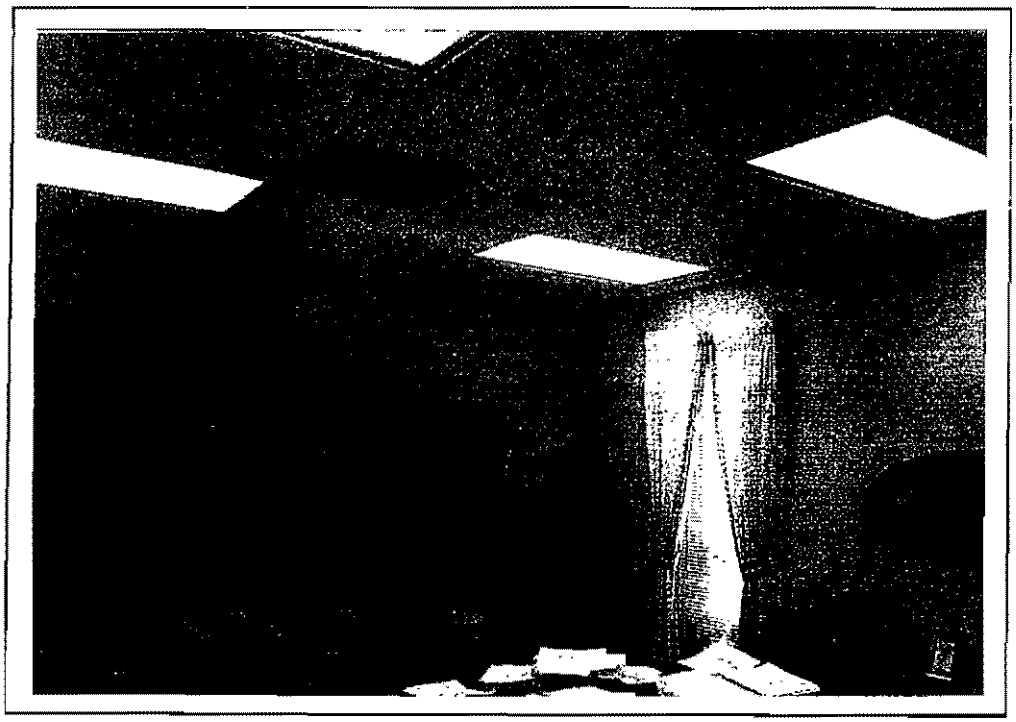


View of west side of subject

PHOTOGRAPHS OF THE SUBJECT PROPERTY (Cont'd)



View of lab area



View of office area

CERTIFICATION

We certify that, to the best of our knowledge and belief,

a) The statements of fact contained in this report are true and correct.

b) The reported analyses, opinions, and conclusions are limited only by the assumptions and limiting conditions set forth herein, and are the personal, unbiased professional analyses, opinions, and conclusions of the undersigned.

c) We have no present or prospective interest in the property that is the subject of this report, and no personal interest or bias with respect to the parties involved.

d) Our compensation for this appraisal is not contingent on any action or event resulting from the analyses, opinions, or conclusions in, or the use of, this report. More specifically, the compensation is not contingent upon the reporting of a predetermined value or direction in value that favors the cause of the client, the amount of the value estimate, the attainment of a stipulated result, or the occurrence of a subsequent event. The appraisal assignment was not based on a requested minimum valuation, a specific valuation, or the approval of a loan.

e) The analyses, opinions, and conclusions were developed, and this report has been prepared, in conformity with the requirements of the Uniform Standards of Professional Appraisal Practice and the Code of Professional Ethics and the Standards of Professional Practice of the Appraisal Institute, the Uniform Standards of Professional Appraisal Practice of the Appraisal Foundation and the Rules of the Texas Real Estate Commission.

f) The use of this report is subject to the requirements of the Appraisal Institute relating to review by its duly authorized representatives.

g) As of the date of this report, Kathleen Price Wilke, CRE, MAI, and Darrel G. Copeland, MAI have completed the requirements of the continuing education program of the Appraisal Institute.

h) The undersigned have made a personal inspection of the property that is the subject of this report.

i) No one provided significant professional assistance to the persons signing this report.

j) The comparable sales and lease data used in formulating our value estimate have been personally verified by Price•Denton, Inc. In the interest of confidentiality, the sources' identification has been retained in our files.

One or more of the signatories of this appraisal report is a Member or Candidate of the Appraisal Institute. The Bylaws and Regulations of the Institute require each Member and Candidate to control the use and distribution of each appraisal report signed by such Member or Candidate. Therefore, except as hereinafter provided, the party for whom this appraisal report was prepared may distribute copies of this appraisal report, in its entirety, to such third parties as may be selected by the party for whom this appraisal report was prepared; however, selected portions of this appraisal report shall not be given to third parties without the prior written consent of the signatories of this appraisal report. Further, neither all nor any part of this shall be disseminated to the general public by use of advertising media, public relations media, news media, sales media or other media for public communication without the prior written consent of the signatories of this appraisal report.

Respectfully Submitted,

Price•Denton, Inc.

Kathleen Price Wilke, CRE, MAI
President
Texas Certificate #: TX-1320438-G

Darrel G. Copeland, MAI
Texas Certificate #: TX-1320988-G

APPRAISAL ISSUES

PROPERTY DESCRIPTION

The subject of this appraisal is identified as being a 10,793 square foot office/technical building, on 1.003 acres located at 16115 Dooley Road, in the Town of Addison, Texas. The property is described in greater detail in subsequent sections of this report.

OWNERSHIP HISTORY

According to county tax records, title to the subject property is in the name of Billy J. Mullins. However, no title search has been made by the appraisers and no warranty is implied. Tax records indicate that the current owner acquired one-half of the site in 1986 and that other half of the site in 1990. There has not been an arm's length transaction in the last three years. However, we are not experts in such matters, and only a complete title search by a qualified title attorney or title insurance company can determine the prior transfers of title to the property. According to the client's representative, the site is currently under contract. However, this broker is unaware of the contract price.

INTEREST APPRAISED

We have appraised the "as is" market value of the fee simple interest, assuming the property to be free and clear of liens and subject to normal police powers.

SCOPE OF THE APPRAISAL

This appraisal employs the Sales Comparison Approach to value. During the course of this assignment, the appraisers researched comparable sales and market trends. The methodology employed in research and analysis is set forth in the Valuation Section of the report.

PURPOSE AND FUNCTION OF THE APPRAISAL

The purpose of the appraisal is to estimate the "as-is" value of the fee simple interest in the property. It is our understanding that the function of this appraisal is for asset evaluation.

VALUATION DATE AND INSPECTION DATE

The valuation date is July 15, 1997. Darrel G. Copeland, MAI and Kathleen Price Wilke, CRE, MAI inspected the property on July 15, 1997.

TERMINOLOGY

The following terminology is needed to understand this appraisal:

Market Value

"Market value" is defined as the most probable price which a property should bring in a competitive and open market under all conditions requisite to a fair sale, the buyer and seller each acting prudently and knowledgeably, and assuming the price is not affected by undue stimulus. Implicit in this definition is the consummation of a sale as of a specified date and the passing of title from seller to buyer under conditions whereby:

buyer and seller are typically motivated;

both parties are well informed or well advised, and each acting in what he considers his own best interest;

a reasonable time is allowed for exposure in the open market;

payment is made in terms of cash in U.S. Dollars or in terms of financial arrangements comparable thereto; and

the price represents the normal consideration for the property sold unaffected by special or creative financing or sales concessions granted by anyone associated with the sale.[1]

Cash Equivalent

A price expressed in terms of cash, as distinguished from a price which is expressed totally or partly in terms of the face amount of notes or other securities that cannot be sold at their face amounts.[2]

Fee Simple Estate

Absolute ownership unencumbered by any other interest or estate; subject only to the four powers of government[3] (eminent domain, escheat, police power, and taxation).

EXPOSURE PERIOD

There is currently an active market for development office/tech buildings in the Dallas area. Brokers report short marketing periods due to the demand for additional space and the lack of available product. Given this, we have estimated the marketing period for the subject to be six to 12 months.

---

[1]Insurance Regulation 12 CRF 563.2 (f) and Policy Statement 571.1b.

[2]*The Dictionary of Real Estate Appraisal*, Second Edition (Chicago, Illinois: American Institute of Real Estate Appraisers, 1989), p. 45.

[3]*The Dictionary of Real Estate Appraisal*, Second Edition (Chicago, Illinois: American Institute of Real Estate Appraisers, 1989), p. 120.

LIMITING CONDITIONS AND ASSUMPTIONS

Unless otherwise stated, the appraisal report is subject to the following assumptions and limiting conditions:

1. It is assumed that the title of this property is good and marketable. No title search has been made, nor have we attempted to determine the ownership of the property from data other than that furnished to us. The value estimate is given without regard to any question of title, boundaries, encumbrances or encroachments.

2. The legal description of the property which was furnished to us is assumed to be correct. It has not been verified by legal counsel and should be so verified before being used in a legal conveyance or document.

3. The valuation estimate reported herein is based on the definition of value, and where appropriate, explanations of the definition of value as stated within the body of this report consider the property to be free and clear of all liens, encumbrances, and/or other assessments or whatsoever might affect the fee simple title, unless otherwise stated, defined and considered herein.

4. Any maps, plats or other illustrations produced and included in this report are intended only for the purpose of showing spatial relationships. They are not measured surveys nor measured maps, and we are not responsible for cartographic or surveying errors. Dimensions and areas of the subject property and of the comparables were obtained by various means and are not guaranteed to be exact.

5. Information provided by informed local sources, such as governmental agencies, financial institutions, real estate dealers, buyers and/or sellers, and members of the client organization was weighed in the light in which it was supplied, and checked by secondary means where possible; however, no responsibility is assumed for possible misinformation, inaccuracies or errors regarding such information.

6. The value estimate is made under the assumption that there will be no international or domestic political, economic or military actions which would affect general real estate values.

7. It is assumed that there are no hidden or unapparent conditions of the property, subsoil, or structures which would affect the subject property's value. No responsibility is assumed for such conditions or for engineering or other reports which may be required to discover them.

   Unless otherwise stated in this report, the existence of hazardous material, which may or may not be present on the property, was not observed by the appraiser. The appraiser has no knowledge of the existence of such materials on or in the property. The appraiser, however, is not qualified to detect such substances. The presence of substances such as asbestos, urea-formaldehyde foam insulation, or other potentially hazardous materials may affect the value of the property. The value estimate is predicated on the assumption that there is no such material on or in the property that would cause a loss in value. No responsibility is assumed for any such conditions, or for any expertise or engineering knowledge required to discover them. The client is urged to retain an expert in this field, if desired.

8. The allocation of value between land and improvements if any, is based upon the highest and best use of the land as herein stated, and cannot be applied to any other use.

9. Opinions of value contained herein are estimates. There is no guarantee, written or implied, that the subject property will actually sell for such amounts.

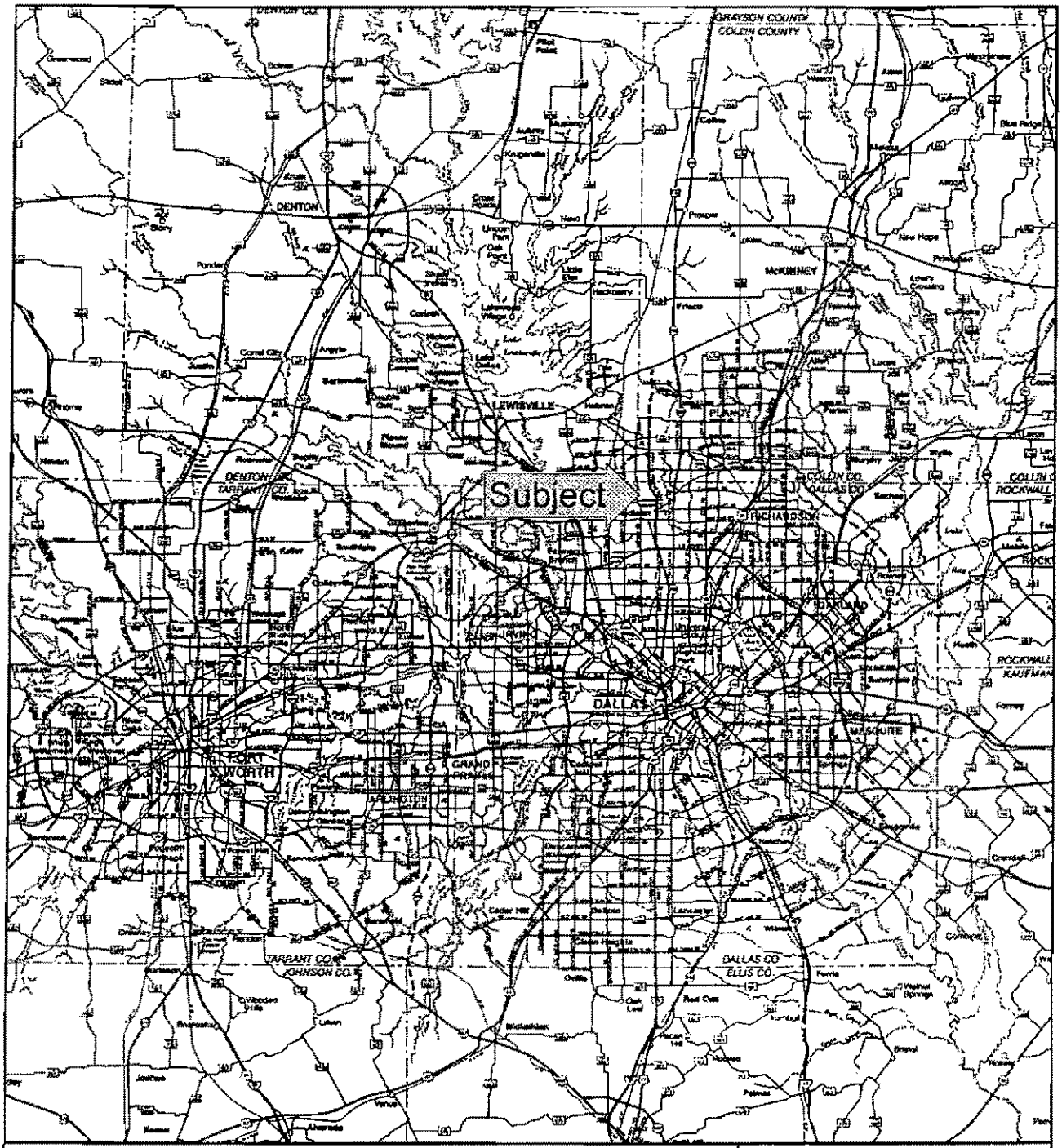
10. The appraiser(s) will not be required to give testimony or attendance in court or before other legal authority by reason of this appraisal without prior agreement and arrangement between the client and the appraiser(s).

11. Real estate values are influenced by a large number of external factors. The data contained herein comprise all the pertinent facts considered necessary to support the value estimate. We have not knowingly withheld any pertinent facts; however, we do not guarantee that we have knowledge of all factors which might influence the value of the subject property.

12. Due to rapid changes in the external factors which influence real estate values, the value estimate is considered reliable only as of the stated date of valuation.

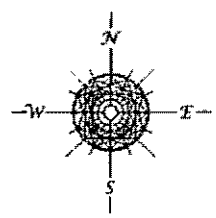
13. Possession of this report does not carry with it the right of publication. This appraisal was prepared by Price•Denton Inc. and consists of trade secrets and commercial or financial information which is privileged, confidential and exempted from disclosure under 5 U.S.C. 552(b)(4). Please notify Kathleen P. Wilke, MAI of any request for reproduction of all or any part of this appraisal.

14. The Americans with Disabilities Act (ADA) became effective January 26, 1992. Price•Denton Inc. has not made a specific compliance survey and analysis of this property to determine whether or not it is in conformity with the various detailed requirements of the ADA. It is possible that a compliance survey of the property together with a detailed analysis of the requirements of the ADA could reveal that the property is not in compliance with one or more of the requirements of the act. If so, this fact could have a negative effect upon the value of the property. Since Price•Denton Inc. has no direct evidence relating to this issue, we did not consider possible noncompliance with the requirements of ADA in estimating the value of the property.



Metro Location Map

Subject 16115 Dooley Road



1 inch = 9.84 miles

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Scale in Feet

DALLAS/FORT WORTH AREA OVERVIEW

Population

The Dallas/Fort Worth Consolidated Metropolitan Statistical Area (CMSA) encompasses nine contiguous counties in the North Central Texas area: Dallas, Collin, Denton, Rockwall, Kaufman, Ellis, Tarrant, Johnson and Parker Counties. The estimated population statistics for the Dallas/Fort Worth CMSA, Dallas and Tarrant Counties are charted below.

Population - Dallas/Fort Worth CMSA*

Year	D/FW CMSA		Dallas Co.		Tarrant Co.	
	Population	Compound Annual Increase	Population	Compound Annual Increase	Population	Compound Annual Increase
1960	1,715,905	-	951,527	-	538,495	-
1970	2,352,318	3.20%	1,327,695	3.39%	715,587	2.88%
1980	2,933,293	2.23%	1,556,385	1.60%	861,837	1.88%
1990	3,885,415	2.85%	1,852,810	1.76%	1,170,103	3.11%
1997 (est.)	4,411,275	1.80%	1,976,600	0.98%	1,308,800	1.85%
2010 (proj.)	5,136,720	1.18%	2,144,870	0.68%	1,515,900	1.22%

*SOURCE: North Central Texas Council of Governments-1997; U.S. Census

Dallas County makes up 45% of the population in the Dallas/Fort Worth CMSA, Tarrant County comprises 30% of the population, and the other seven counties in the CMSA total the remaining 25% of the population.

Population growth in the Dallas/Fort Worth CMSA accelerated. Since the 1990 census, the area has grown by 525,860 people, with over 60% of this growth occurring in the last three years (1993-1996). In 1996, the area grew by 300 residents a day according to an April 24, 1997 *Dallas Morning News* article. By 2010, the Dallas area is projected to be the fourth most populous metropolitan area in the U.S. Four counties -- Collin, Dallas, Denton, and Tarrant Counties -- represent 87% of total regional growth in the last six years.

Dallas County's percentage of the CMSA population has declined slightly since 1990 from 48% to 45% despite the addition of an estimated 45,450 people between 1995 and 1997. This change is attributed to the greater influence of the fast-growing northern suburban areas of Plano, Carrollton, Lewisville, and Flower Mound, which are located in Collin and Denton Counties. Tarrant County's percentage of the overall population remains steady at about 30%, although the growth rate of several of the suburban areas such as Arlington, Colleyville, Grapevine, and Southlake have greatly outpaced that of the City of Fort Worth. Of the counties within the CMSA, Collin County has seen the largest compound annual growth rate (6.23%) -- as well as the largest increase in absolute numbers with 133,000 new residents). Other counties with rapid growth rates during the 1990s are Rockwall County (4.52%) and Denton County (3.81%.

Employment

The Dallas/Fort Worth area has been expanding the employment base at a robust pace since 1992 through the expansion of small business and large corporate moves. Dallas has historically been one of the nation's strongest markets for new corporate facilities and expansions. Reasons cited for continued growth in the area include: 1) the diversified economy; 2) growth of small businesses; 3) a boom in new construction (especially housing); 4) the favorable cost of living compared with other cities across the nation; 5) the positive impact of the North American Free Trade Agreement, and; 6) the area's position as the transportation hub for trade in the Southwest.

According to the *January, 1997 Texas Labor Market Review*, the total employment in the Dallas area was 1,702,800 (up from the January 1996 level of 1,636,100). Total employment in Fort Worth was 805,900 (up from 782,000 one year earlier). *M/PF Research, Inc.* reports in its second quarter 1996 Market Forecast that the Dallas area added 59,000 new jobs for the year ending in 1st quarter 1996, earning the fifth position in the nation, while the Fort Worth area added 24,500 new jobs, 18th in the nation for that period. The Services and Trade sectors led the area in jobs created, while the FIRE (Financial, Insurance, and Real Estate) and Government sectors showed little or no growth. The area created 81,700 new jobs in 1996, the second highest in the country behind Los Angeles.

Unemployment has declined steadily since the early part of this decade when the Dallas area averaged 7.0% unemployment and the Fort Worth area averaged 6.9%. Solid gains in job creation result in a low unemployment rate for the Dallas/Fort Worth area. As of January, 1997, the unemployment rate stood at 3.9% in the Dallas area and 4.0% in the Fort Worth area. This compares favorably with the state and national rates as shown below.

Average Unemployment Rate

Period	Dallas	Fort Worth	Texas	U.S.
1/96	4.9%	4.8%	6.5%	6.3%
1/97	3.9%	4.0%	5.9%	5.9%

Dallas/Fort Worth serves as corporate headquarters for many of the country's largest companies. Major corporate relocations in the 1990s by JC Penney, GTE, Exxon, Transamerica Insurance Group, and most recently by Blockbuster Video, have spurred job growth and the area's prestige. Based on a survey by *Forbes Magazine*, Dallas/Fort Worth is home to 17 of the nation's 500 largest privately held companies, ranking it third in the nation after Chicago and New York.

The top five corporate employers in the Dallas/Fort Worth area, according to the *1997 Book of Lists,* published by the *Dallas Business Journal* were:

Top Five Corporate Employers-Dallas/Fort Worth

Firm	No. of D/FW Employees	Corporate Headquarters	Type of Business
1. AMR Corporation	30,000	Fort Worth	Commercial Airlines
2. Texas Instruments	19,000	Dallas	Electronics Manufacturer
3. Kroger	12,000	Cincinnati, OH	Retail (Food and Drug)
4. Baylor Health Care	11,600	Dallas	Health Care
5. Lockheed Martin	11,400	Bethesda, MD	Military Aircraft Design/Production

After personnel reductions in the early 1990s, Texas Instruments is completing a $2 billion expansion of its semiconductor manufacturing plant, which will add 1,200 new jobs to its payroll upon completion in 1997. AMR has increased in size by 6,003 persons in the last three years, despite cutbacks in some departments.

The Dallas area is presently considered one of the nation's leading areas for heavy and light manufacturing, distribution, transportation, electronics, finance, real estate, insurance, defense contracting and energy resources. The following chart illustrates the diversity of the area economy.

Dallas/Fort Worth Employment Composition

Sector of Employment	Percentage of Total
Services	29%
Trade and Commerce	25%
Manufacturing	15%
Government	12%
Finance, Insurance, Real Estate	7%
Transportation, Utilities, Communications	7%
Construction	4%
Mining	1%

*Source-Texas Labor Market Review, January, 1997

Infrastructure

Dallas/Fort Worth benefits from its key location near the exact east-west center of the country and from being within the Central time zone. Highway access to the area is excellent due to the convergence of interstate highways from all directions.

The Dallas/Fort Worth area has a well-designed infrastructure. Both major cities have radial highway systems with the two cities being connected by three interstate highways. Dallas' first ring road was Loop 12, which was completed in the 1960s; in the 1970s a second ring road, Interstate 635 (LBJ Freeway), was completed. The completion of these ring roadways helped broaden the focus of the Dallas area business community from the Dallas Central Business District to include a larger area around its periphery, resulting in the development of areas such

as Las Colinas and the LBJ office corridor. Major north/south arteries through Dallas are U.S. 75 (Central Expressway) and Interstate 35E (Stemmons Freeway and South R.L. Thornton Freeway). U.S. 75 is currently being rebuilt in order to double the number of cars which it can accommodate daily. A single-rail transitway will also be built under the service roads. The road has been widened as far south as Walnut Hill Lane but construction continues south of Park Lane, with completion slated for 2000. Interstate 30 and Interstate 20 are the major east/west freeways across both Dallas and Fort Worth. S.H. 183/S.H. 121 is a major connector road between the northern portions of Dallas and Fort Worth. In Fort Worth, Interstate 35W provides primary north/south access and Loop 820 encircles the central part of the city.

The enormous capacity of D/FW International Airport is an important asset to the area. Located between Dallas and Fort Worth and completed in the 1970s, D/FW International Airport is no more than three and one-half hours' flight time from any major U.S. city. In 1996, the airport was ranked the second busiest in the world (behind Chicago O'Hare International Airport). Businesses at the airport employ approximately 37,000 people directly and another 40,000 people indirectly and it has an annual economic impact on the area of $6.5 billion. An ambitious $3.5 billion development plan has been approved that could double the airport's capacity over the next 20 years.

Real Estate Markets

Population and job growth have risen steadily in Dallas/Fort Worth in the 1990s, and the long-term outlook is auspicious. Key factors in the area's continued economic health include the area's low cost of living, affordable housing, well-designed infrastructure, convenient central location, and a "pro-business attitude." Texas is a "right to work" state with relatively low unionization within the work force; has a well-educated work force; there is no state property tax, no state or city personal income tax, and no unitary tax. Area municipal governments offer various incentives to encourage new businesses in the area, ranging from tax incentives to free economic planning. The North American Free Trade Agreement is also a boon to the area by virtue of the region's proximity to Mexico and its value as a centrally-located distribution hub.

Office Market: The office space market in Dallas/Fort Worth has been experiencing strong net absorption, rising lease rates, and declining vacancies since 1994. Sales transaction activity was up solidly in 1995 and 1996, and sales prices were up dramatically as well. The vigorous market prompted new multi-tenant construction for the first time in six years with Harwood Pacific's International Center II in the Uptown submarket. In 1997, five other multi-tenant office

buildings are also under construction in Dallas. This does not constitute over-building as these projects comprise only 528,200 square feet, or less than 21% of average annual absorption over the last two years. Many new office developments have been announced but virtually all are contingent upon substantial pre-leasing commitments. Lease rates are increasing at such a robust pace that some tenants have resorted to secondary locations or submarkets (such as Stemmons Freeway and the Central Business District) in order to find affordable space. Lease rates increased in the Dallas/Fort Worth area from an average $13.97 per square foot in December, 1994 to $17.28 per square foot by year end 1996, a 24% jump. The average occupancy also improved 5 percentage points to 84% during this period; 16 of the 32 submarkets across Dallas/Fort Worth are at or above 90% occupancy. Lease rates are not expected to stabilize until new development eases the current tight space conditions.

Industrial Market: The industrial space market has also been strong in the last five years. It continues to perform well although some market participants are reportedly proceeding more cautiously. In 1996, absorption lagged new construction, despite strong demand. As a result, warehouse space occupancy is now edging downward, and this trend is expected to continue through 1997. In the first half of 1997, new construction is expected to reach 8.8 million square feet, following 12.4 million square feet built in 1996 which was a ten-year high. Alliance Airport in Fort Worth and the area east of D/FW Airport are capturing the greatest share of new development. Rental rates are still climbing as overall occupancy remains at a healthy 93.0% for warehouses and 90.5% for flex space. A worrisome indicator is that the percentage of pre-leased multi-tenant, warehouse space under construction is on a downward trend, going from the 90% range in the second half of 1995 to 70% in 1996 and dropping further to about 50% for the space currently under construction. Flex space is expected to fare slightly better, with occupancy in Dallas up slightly and holding stable in Tarrant County. The flex space market has not had to contend with the volume of new construction seen in the warehouse market, and has also benefitted from some former traditional office-space users moving to more affordable flex space. In light of concerns by market participants, the industrial space market should be monitored over the near term.

Retail Market: As of the 3rd Quarter, 1996, the retail space market continued its rather lackluster performance. Tepid demand resulted in a modest 516,500 square feet being absorbed in the quarter, and 4,128,400 square feet for the year in the Dallas/Fort Worth area. Fortunately, development of new space is moderate as well and so more space was absorbed than was built in 1996. Occupancy is rising slowly but steadily to stand at 88.0% as of the third quarter 1996. Base rental rates have moved up 11% from mid-1994 to third quarter 1996 to

$11.36 per square foot. The national retail market (mirrored in Dallas/Fort Worth) has been, and continues to be, characterized by intense competition and a resulting fall-out among some retailers. Locally, K-Mart, Burlington Coat Factory, Kroger, Ambers, and Taylor's Bookstores were some of the retailers vacating large blocks of space across the area. The fact that growth in Dallas/Fort Worth retail sales continued to slow from a 10-year high set in 1994 is not propitious for the state of the retail real estate market in the next one to two years. Most of the new multi-tenant construction is in lower risk ventures such as: 1) power centers with little speculative space; 2) additions to existing centers, and; 3) existing single-tenant buildings adding speculative space.

Multi-Family Market: The multi-family real estate market was the most active of the property markets in the 1994-95 period. The greatest competition was for newly-built, upscale projects, and prices for this property type escalated. Better deals are being found for 1980's product which still has some upside potential in pricing. Because of the plethora of new product built between 1994 and into 1997, occupancy dropped in the Dallas/Fort Worth area despite strong demand. Occupancy stands at 94% in Dallas and 93% in Fort Worth (a 1.1% drop in Fort Worth from one year earlier). The strong demand was spurred in large part by job growth, and from pent-up demand from 1994-95 when supply lagged demand in certain areas. Another 12,920 units are slated for completion in 1997, but occupancy is expected to remain relatively stable. Rental rates, however, are moving up at a brisk pace, about 5% on a square-foot basis in both Dallas and Tarrant Counties in the last year.

Single-Family Market: Single-family sales increased 60% between 1991 and 1994. In 1995, sales volume dropped very slightly in Dallas and Fort Worth, suggesting the area reached its peak in 1994. Recent data suggests that single-family building is on the rise again. According to *M/PF Research, Inc.*, there have been 17,000 single-family building permits in Dallas in 1996, up 7% from 1994. Fort Worth has also seen a trend toward single-family building. Building permits in Fort Worth reached 7,500, up 12% from 1994. This surge in building permits is most likely due to low mortgage rates, which encourages ownership. The Dallas/Fort Worth area has a 6.5 months' supply of new homes, which is considered to be in relative balance. The single-family lot inventory is at 3.7 years' supply, and although it is considered over-supplied, it is at its lowest level since the late 1970's.

Summary

Steady population and employment growth in the Dallas/Fort Worth area continues. Population has been increasing at an average rate of about 1.7% annually between 1990 and 1996. The most rapidly growing submarkets are shifting north from Dallas County to select cities in Collin and Denton Counties. Dallas/Fort Worth's positive business climate, relatively low cost of living, central location, international airport, and well-designed infrastructure have contributed to the robust pace of jobs creation. Dallas/Fort Worth ranks third in the nation in the number of the country's 500 largest companies headquartered in the area. Although the expansion of the job market is not expected to continue at such a brisk pace, steady population growth and jobs creation is forecast for the near future, and the overall economic outlook is auspicious.

Aided by population growth and an expanding economy, rental rates and occupancies have increased solidly in most real estate market segments. Values, as reflected by sales activity and sales prices have increased. Class A properties, especially multi-family and office, have increased dramatically. The values of lower-quality properties with weaker locations have also to improved, but more modestly. Land values also show improvement in most markets after dropping significantly in 1991 and 1992 in certain areas. New construction is being built on the basis of solid economic demand, flowing from the strong economy, and population and jobs increases. As a result general real estate values in the area are expected to continue their upward trend.

TOWN OF ADDISON ANALYSIS

The subject property is located in the town of Addison, in Dallas County, Texas. Addison is located in north central Dallas County, surrounded by the communities of Dallas on the south, east and north, Farmers Branch on the south and west, and Carrollton on the west. The northernmost parts of Addison reach to the Dallas/Collin County line, while on the south it reaches almost to the LBJ Freeway. The city, while small in population, is a major employment center in the Dallas area with a daytime population of over 50,000 people.

Population and Demographics

Addison is primarily a business/entertainment community, with a total land area of only 4.5 square miles. There are only two areas of single-family homes in the entire city. These are the Oaks North area on Belt Line Road at the eastern edge of the city and the Midway Meadows/Les Lacs area in the quadrant formed by Midway Road, Spring Valley Road, Marsh Lane and Belt Line Road. This area contains the little amount of undeveloped single-family residential land still remaining in the city. Addison has become increasingly developed with office buildings, hotels/motels, restaurants, retail stores and nightspots.

With only 14% of the residents living in single-family homes, a large majority of Addison's residents live in multi-family housing. According to the *Second Quarter 1997 Apartment Report*, published by M/PF Research Inc., the Addison/Carrollton/Farmers Branch multi-family housing market is comparable to the Dallas area with a 95.1% occupancy rate, which M/PF Research, Inc. projects will decrease to 94.7% by the 2nd quarter of 1998. The decrease in occupancy is due to the expected addition of 969 units in the next 12 months. The average monthly rent of $634 is slightly higher than the Dallas area average monthly rent of $604.

The population of Addison has grown commensurately with the rest of the Far North Dallas area, as shown on the following chart:

Population Growth and Projections

North Dallas Area	1970	1980	1990	1996(est)	2010 (proj.)
Addison	593	5,553	8,783	10,950	14,400
Carrollton	13,855	40,590	82,169	93,000	105,600
Coppell	1,728	3,826	16,881	25,500	38,450
Farmers Branch	27,492	24,863	24,250	24,600	25,800

Source: North Central Texas Council of Governments, 1996

According to figures provided by the Metrocrest Chamber of Commerce (which serves Addison, Farmers Branch and Carrollton), the median household income is $55,049 which is higher than that of the neighboring communities of Carrollton ($47,758) or Farmers Branch ($38,037). Thus, despite the high percentage of service employment in the Addison boundaries, most residents of Addison are employed in managerial, professional or technical occupations.

Employment

The Addison economy is heavily service-oriented, although the retail and wholesale trades are also well-represented. The chart shown below reflects employment trends and projections by employment sector (in number of jobs) for Addison since 1986:

EMPLOYMENT TRENDS AND PROJECTIONS - By Sector

	1986	1990	2000 (proj.)	2010 (proj.)
Construction	2,556	2,502	2,986	2,062
Wholesale Trade Communications, Public Utilities	3,667	4,006	4,141	4,068
Retail	3,897	5,165	8,188	10,286
Service	21,895	26,814	46,251	49,824
Government	1,504	1,702	2,831	3,628
Manufacturing	4,015	4,491	4,613	4,672

Source: Donnelly Marketing Information Services

Major employers in Addison include hotels, restaurants, and financial institutions as well as high-tech manufacturing firms. The following chart lists the top ten employers in the city.

MAJOR EMPLOYERS

Company	Product	# of Employees
1. Pizza Hut/PF Services	Corporate Headquarters	1,200
2. Mary Kay	Cosmetic Manufacturing Headquarters	750
3. Grand Kempinski	Hotel	683
4. Federal Deposit Insurance Corp. (FDIC)	Real Estate	620
5. MNBA	Credit Bureau	600
6. Dallas Marriott Quorum	Hotel	310
7. Harvey Hotel	Hotel	300
8. Tuesday Morning	Corporate Headquarters	250
8. Digital Equipment	Computer Equipment	250
10. Hogan Systems	Software Marketing	200

Source: TU Electric, 1996 Community Profile

Development

Because of its sizable daytime worker population, its adjacency to large areas of affluent residents, and its "wet" liquor status, tiny Addison boasts over 120 restaurants and fourteen hotels within its boundaries. Additionally, Prestonwood Mall, Galleria and Valley View Mall, all major regional shopping malls, are located immediately adjacent to Addison in Dallas. Belt Line Road, where most of the restaurants and retail stores are located, has become a major commercial street in Addison. Belt Line Road is very heavily developed from Preston Road westward to Midway Road. West of Midway Road, there is less development along Belt Line Road in Addison. Past problems with sewer connections and the distance from the primary retail strip near Belt Line and the Tollway have hindered development of this portion of Belt Line; however, this section of Belt Line Road is also coming under development pressure as few sites are available between the Tollway and Midway Road. Among the restaurants opened recently are Rock Bottom Brewery, Joe's Crab Shack, Cafe Express, and Fresh Choice. Shopping centers have also been developed west of Midway Road at Marsh Lane.

Several major retailers have sought locations in or near Addison. Bed, Bath and Beyond recently opened a store in the former Sakowitz Department store in the Village on the Parkway shopping center at the southeast corner of Dallas Parkway and Belt Line Road. Sam's Wholesale Club also has a store on 22.5 acre site at Midway Road and Belt Line Road, while KMart opened a store at Marsh Lane and Belt Line Road. Additionally, a number of restaurant operators, including Good Eats, Primo's, Sambuca, Morton's Steakhouse, Ferrari's Villa and Olive Garden, have recently opened in Addison.

In addition to the office/service sector, retail stores, restaurants and hotels, another major impact on the Addison economy is the Addison Airport, reputed to be the third largest general aviation airport in the United States. This airport has a 100' x 7200' runway attended 24 hours daily, three fixed base operators and houses more than 800 corporate planes. The airport is located in the northern part of the city, between Midway Road and Addison Road north of Belt Line Road.

Access

The major thoroughfares through Addison are the Dallas North Tollway/Dallas Parkway, which runs north/south from downtown Dallas north to FM 544 in Collin County, and Belt Line Road, a surface street which encircles much of Dallas County and is the major east/west thoroughfare in Far North Dallas (excluding LBJ Freeway). Other major streets in Addison are Spring Valley Road, Arapaho Road and Westgrove Road (east/west) and Inwood/Addison Road, Midway Road, and Marsh Lane (north/south).

Government and City Services

Addison is governed by a council/manager form of government, with an elected mayor and six elected council members. It has a fully-staffed police department, including 50 officers, as well as two fire stations with 52 paid firefighters.

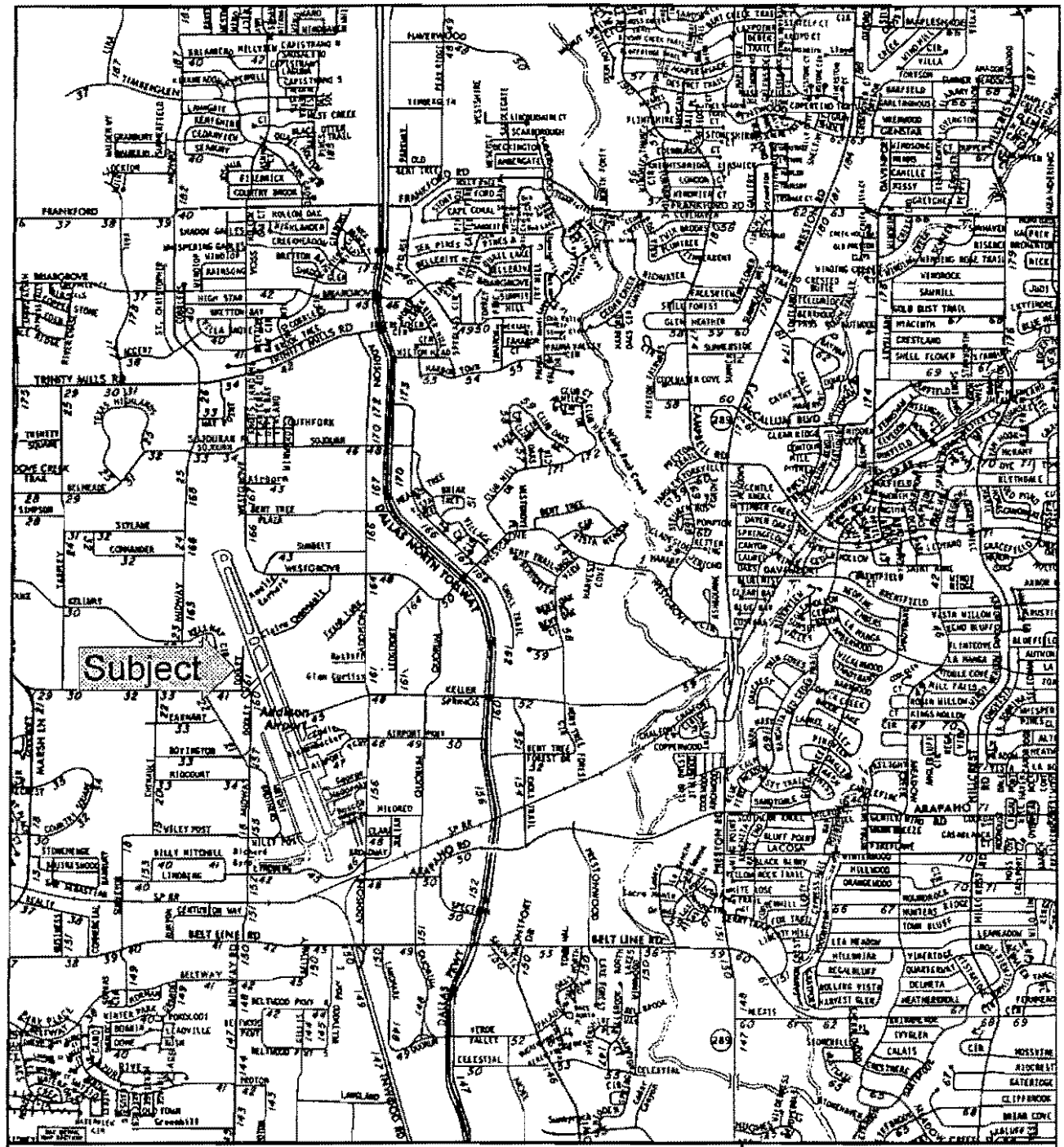
Addison is serviced by TU Electric, Lone Star Gas Company provides natural gas and telephone service is provided by Southwestern Bell Telephone. Water, sewer and refuse collection is provided by the Town of Addison.

Quality of Life

In addition to the restaurants and nightclub entertainment, the Town has a highly-acclaimed local theater and in 1992 completed a civic center/theater on Addison Road near Clara Street. Recreational needs are met by a community health center, 18 parks, a bowling center and an ice skating rink. Due to its small size, Addison does not have its own school system, but is served by the Dallas and Carrollton/Farmers Branch Independent School Districts.

Conclusion

Overall, the town is a well-located, well-planned community with a daytime population of over 50,000 persons. It is expected that Addison will continue to grow and capture a large share of the job growth in the far North Dallas area, as well as continue to expand its residential population.



Neighborhood Map

Subject 16115 Dooley Road

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W E

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1 inch = 0.64 miles

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Scale in Feet

NEIGHBORHOOD ANALYSIS

According to *The Appraisal of Real Estate,* Tenth Edition, published by the Appraisal Institute, a neighborhood is defined as a group of complementary land uses. The relative uniformity of a neighborhood is reflected in many ways, including similar building types and styles, population characteristics, economic profiles of occupants and zoning regulations that affect land use. The social, economic and governmental forces operating within a neighborhood contribute as much to its definition as the physical environment.[4]

The subject property is located in the northern part of the Town of Addison. The neighborhood is considered to be bounded by Frankford Road to the north, Addison Road to the east, Belt Line Road to the south and Midway Road to the west. The roadways which define the neighborhood boundaries are arterial streets which serve as physical barriers. North, east, and west of the neighborhood land use tends to be retail and single-family residential in character. South of the neighborhood, land use is higher-density commercial and light industrial. The neighborhood represents the immediate environs of the Addison airport.

Access to the area is excellent. The Dallas North Tollway is a six-lane limited-access tollroad which extends from the Central Business District north to SH-121. The Dallas North Tollway intersects LBJ Freeway (I-635) south of the subject neighborhood. This eight-lane limited-access highway encircles the City of Dallas approximately 10 miles from the Dallas Central Business District. This freeway intersects with all of the other limited access highways in the Dallas area (U.S. 75, Dallas North Tollway, I-35E, I-30, I-20 and U.S. 67). This freeway also provides access to the northern entrance of D/FW Airport.

Access through the neighborhood is good. The arterial streets which border the neighborhood provide good, although frequently congested, access into adjacent areas. Addison Road and Quorum Drive are secondary north-south streets; Westgrove Drive, Keller Springs Road, and Arapaho Road are secondary east-west streets. These thoroughfares provide good access through the neighborhood and to the primary thoroughfares serving the neighborhood.

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[4]*The Appraisal of Real Estate,* Tenth Edition (Chicago: The Appraisal Institute, 1992), p. 171.

A tunnel under the Addison airport has recently been started which will connect Keller Springs Road west of the airport to its extension east of the airport. According to Jeff Markowitz with the Town of Addison, the two-lane tunnel will be a toll thouroughfare, and is to be completed in December 1998. This will allow improved access to the Dallas Tollway from Midway Road.

Adjacent to the neighborhood, retail uses are found along Belt Line Road with mid-rise and high-rise office buildings along Dallas Parkway. Interior areas of the neighborhood to the west of Dallas Parkway include low-rise office buildings, light industrial facilities, and garden apartment complexes. Addison Airport is also located in the of the neighborhood and is a major private airport serving the region.

Just east of the subject in the Quorum North area is the Addison Circle development, a European-style apartment, retail, and office development of Columbus Realty Trust. This 80-acre high-density development will include 3,000 apartment units, up to 4 million square feet of office space, hotel development, and supporting retail services. The first phase of development, 460 apartment units, is under construction, and the first phase of office development of approximately 300,000 square feet has recently been announced. The addition of this amount of high-quality residential uses into an historically commercial neighborhood should contribute to the long-term stability and desirability of the neighborhood.

The area immediately surrounding the Addison Airport is primarily developed with a mixture of office/tech and office/warehouse uses. These buildings tend to be occupied by small local companies that require a significant amount of office area, with some storage. Because of the recent strength in the office market, companies are also turning to some of this space as an alternative to more traditional office space.

INDUSTRIAL MARKET ANALYSIS

The subject property is an office-technical building. It is important in its appraisal to analyze the historical performance of this property type in the market area, as well as anticipated future trends, in order to understand the driving forces behind supply and demand. This analysis includes economic and political considerations, current and projected supply of competitive space, historical and projected absorption, occupancies, and rental rates.

According to the *Industrial Report, Year-End 1996*, published by M/PF Research, Inc., there is a total of 37,464,500, square feet of flex space (defined by M/PF as office/showroom or office/tech space having over 40% finished office space) existing in the Dallas area. According to M/PF, flex space has an occupancy of 91.0% at year-end 1996, the highest level since M/PF began surveying the industrial market in 1989. Demand for flex space accelerated in the second half of 1996 to 1,975,500 square feet for an annual total of just under 2.4 million. As a result, the occupancy for flex space rose 1.7% in the last year.

The flex space market is expected to absorb 800,000 square feet in 1997, which would increase the occupancy to 91.5%. Thomas Pearson, Director of the Industrial Division at the Fults/Oncor Company, stated in the July, 1997 *Fults/Oncor Market Report*, that the growing demand for flex space is the result of the need for buildings which offer flexibility for heavy office and parking. Another contributing factor is the rapid rise of office rents in 1995 and 1996, which caused traditional office space users to seek more affordable alternatives.

Considerably more speculative development in recent years has resulted in market participants stating that new space development will have to proceed with more caution in 1997 to maintain the relatively high occupancy and modestly rising rental rates.

According to M/PF Research, Inc. the subject property is located in the Carrollton/Farmers Branch/Addison submarket. This submarket is bounded by Collin County on the north, LBJ Freeway on the south, Preston Road on the east, and Josey Lane on the west. This area includes a number of business/industrial parks. At year-end 1996 this submarket had 5,372,800 square feet of existing flex space, of which 54% was built in the 1980s/1990s.

Year/Mo.	Occupancy	Rental Rate/SF	Annual Absorption
1994/12	90.2%	$6.59	N/A
1995/12	93.3%	$6.84	+271,600
1996/12	95.1%	$7.24	+249,100

Rental rates in this market have been increasing steadily as the occupancy has increased since the end of 1994. The average occupancy in the submarket for flex space is significantly higher than for the Dallas market as a whole. M/PF does not project any space to be absorbed in this market over the next 12 months due to the lack of available space to be absorbed.

The submarket is well-located and exhibits high occupancy and slightly higher than average rental rates. As demand for industrial space continues, rental rates should continue to increase. New development in the region may have some impact on this submarket; however, the availability of land suitable for large-scale development in the immediate area is minimal and therefore any impacts of new construction will be reduced.

SITE ANALYSIS

Location

The subject property is located on the west side of Dooley Road, north of Keller Springs Road, in Addison, Dallas County, Texas. The site is in northern Dallas County, approximately fourteen miles north of the Dallas Central Business District. Information on the two parcels comprising the site was provided by the surveys prepared by Lichler/Jameson & Associates and Roland Foersterkbroker can be found on the facing pages.

Land Area

According to the surveys provided, the subject site contains 1.003 acres or 43,658 square feet of land.

Configuration

The subject is rectangular in shape. The site has 157.42 feet of frontage on the west side of Dooley Road.

Access

The subject property is considered to have adequate access within the neighborhood. Dooley Road extends southward to Keller Springs Road.

Topography, Drainage, and Soils

The subject site is generally level and at street grade. There was no soil survey available for review, but the soils are considered typical of the area, and limitations on urban uses can be overcome with proper measures.

Floodplain

According to the Federal Emergency Management Agency (FEMA) *Flood Insurance Rate Map, Community Panel 481089 0005A*, dated July 16, 1980, the subject is not located in the 100-year flood plain.

Utilities

All public utilities are available to the site in adequate capacity. Electric service is provided by TU Electric; water and sewer is provided by the Town of Addison; telephone service is provided by Southwestern Bell Telephone Company; and gas service is provided by Lone Star Gas Company.

Street Improvements

Dooley Road is a two-lane, undivided, concrete-paved thoroughfare with concrete curbs and storm sewers. Currently, Dooley intersects Keller Springs Road to the south of the subject. However, Keller Springs is to extend under the airport via a tunnel under the airport. Once completed, Keller Springs will be located beneath Dooley Road, with a bridge spanning the street.

Site Improvements

The subject property is presently improved with a 10,793 square foot office/technical building.

Nuisances and Hazards

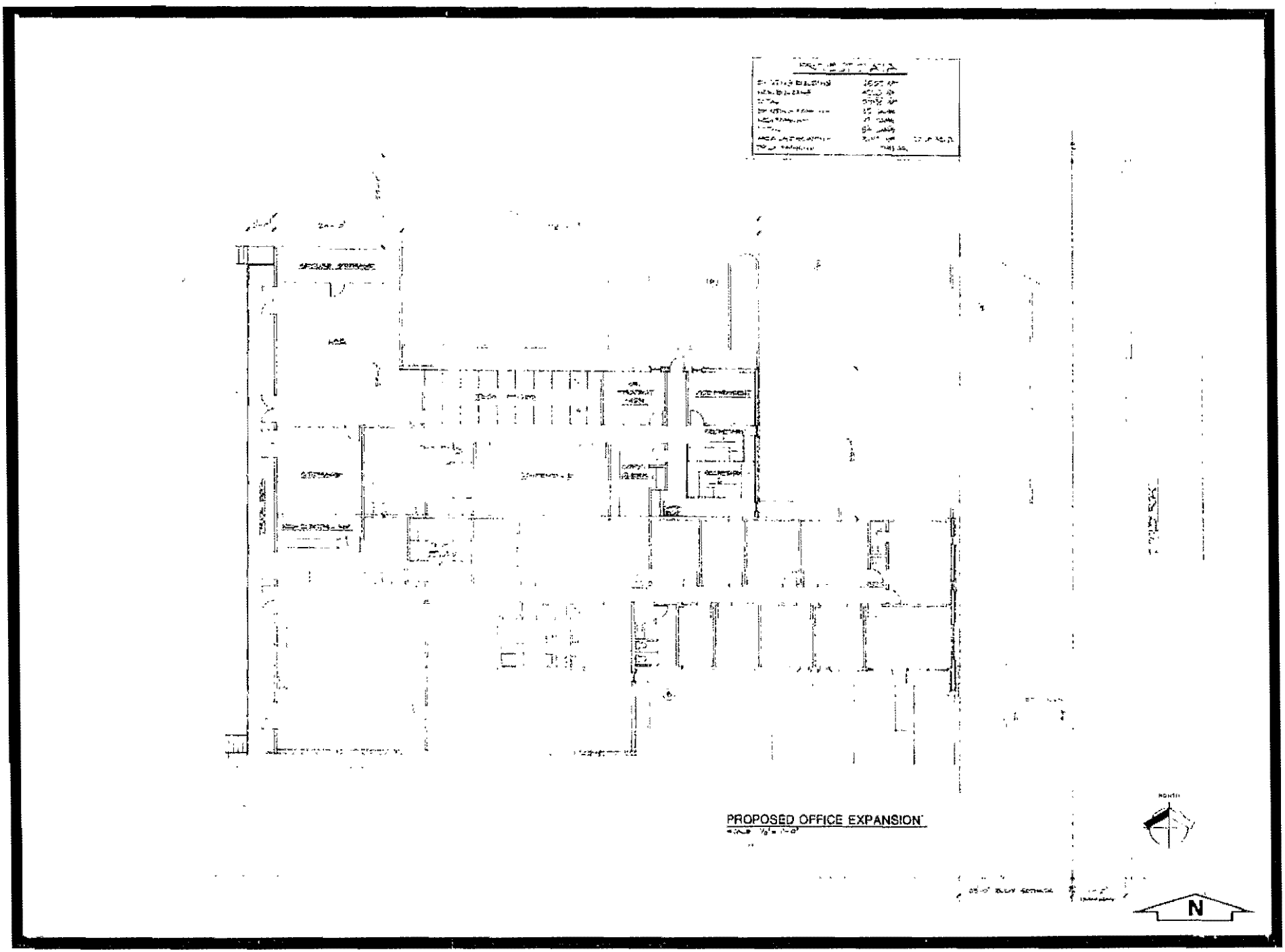
There were no nuisances or hazards noted or reported on inspection of the site inherent in the subject site itself or from adjacent properties. The property is adjacent to the flight line of Addison Airport. We have no knowledge of environmental contamination at or adjacent to the site; however, no environmental study was made available, and we are not experts in such matters.

Zoning and Public Restrictions

The subject site is zoned I-1 (Industrial District 1) by the Town of Addison. A more detailed discussion of uses and restrictions of this district may be found in the Zoning section of the report.

Conclusion

The physical characteristics of the subject site allow for a variety of development options. Overall, the subject is considered to be functional for most types of development.



FLOOR PLANS

IMPROVEMENTS ANALYSIS

The subject improvements consist of a one-story office/technical building that was constructed in two phases. The first phase of the building was completed in 1986, and contained 6,567 square feet. An additional 4,226 square feet was added in 1990. The building is designed for single-tenant occupancy, and is currently occupied by the owner. It is 100% air conditioned, and has office finish in the majority of the building with a portion in the rear of the building being used for storage and laboratory uses. The occupant also has several specialized uses in building to service its specific needs, as an air pollution testing and monitoring lab. These include venting systems in two rooms and a temperature-controlled room.

Following is a brief description of the basic construction components. This description is based on a visual inspection of the property and building plans from Pross Design Group, Inc.

Description of Basic Construction Components

Foundation	Reinforced concrete slab.
Exterior Walls	Concrete precast panels.
Roof	Metal decking on steel trusses.
Ceiling	Estimated 16 feet clear ceiling height with a dropped ceiling.
Floors	Carpet and vinyl floor covering in the office area.
Doors and Windows	Metal frames with glazed windows.
Wall Finish	Painted drywall over metal studs (office area) and unfinished concrete panels (warehouse space).

Heating and Air Conditioning	Package forced air heat/cooling system.
Electrical	Typical; assumed to meet current code requirements.
Elevators	None
Fire Protection	100% sprinklered
Loading Facilities	Three dock-high doors
Parking and Paving	Concrete surface parking with 54 car spaces and 11 truck spaces.
Sidewalk and Landscaping	Concrete sidewalks and parking, minimal landscaping.
Layout and Utility	Good layout and utility.

Condition of Building

The improvements appear to be adequately maintained, with no significant signs of deferred maintenance. The quality of construction materials and workmanship appears equal to that of similar properties constructed in the neighborhood.

Estimate of Building Life and Effective Age

The applicable terms are defined as follows:

Physical Life: The total period a building lasts or is expected to last as opposed to its economic life.[5]

[5]*The Dictionary of Real Estate Appraisal,* Second Edition(Chicago: American Institute of Real Estate Appraisers, 1989), p. 226.

Economic Life: The period over which improvements to real property contribute to property value.[6]

Effective Age: The age indicated by the condition and utility of a structure.[7]

Remaining Economic Life: The estimated period during which improvements will continue to contribute to property value.[8]

Remaining Physical Life: The physical life projected as of the valuation date.[9]

Effective age (and subsequently the remaining life) is influenced by both the quality of construction and the wear the building has exhibited. Economic life is influenced not only by physical factors, but also by the functional utility of the structure and factors external to the property. The subject is considered to have a similar effective age to its actual age of 8 years.

The improvements are an average-quality office/tech building. According to the *Marshall Valuation Service*, the typical life expectancy of properties similar to the subject is 50 years. Considering the quality of the improvements, it is our opinion that the subject property has an economic life of 50 years. Based on the subject's effective age of 8 years, the improvements have a remaining economic life of 42 years.

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[6]*The Dictionary of Real Estate Appraisal,* Second Edition (Chicago: American Institute of Real Estate Appraisers, 1989), p. 100.

[7]*The Dictionary of Real Estate Appraisal,* Second Edition (Chicago: American Institute of Real Estate Appraisers, 1989), p. 101.

[8]*The Dictionary of Real Estate Appraisal,* Second Edition (Chicago: American Institute of Real Estate Appraisers, 1989), p.252.

[9]Kinnard, William N. Jr., *Income Property Valuation* (Lexington, Mass: Heath Lexington Books, 1971) p. 202.

AD VALOREM TAXES

The property is subject to taxation by five taxing authorities with collection administered by three agencies. The Town of Addison collects for itself as does the Dallas Independent School District, while Dallas County collects for itself, the Community College District and the Hospital District. The Dallas Central Appraisal District has assessing responsibility for all taxing authorities in the county. In Texas, real property is required by law to be assessed at 100% of estimated market value.

Land Assessment

This assessment is considered to be similar to our estimate of market value. The following chart gives the taxing authority, 1996 assessed value for the subject site, tax rate per $100 valuation and the 1996 taxes for the subject. 1997 tax rates have not yet been set but are expect to be little changed.

Authority	Assessed Value	Rate Per $100	1996 Tax
Town of Addison	$595,400	$0.455000	$ 2,710
Dallas I.S.D.	$595,400	$1.460530	$ 8,696
Dallas County (incl. Hospital & Comm. College)	$595,400	$0.462552	$ 2,754
Total Ad Valorem Taxes		$2.378082	$14,159

ZONING AND DEED RESTRICTIONS

The subject property is zoned I-1 (Industrial District 1) by the Town of Addison. This district allows for a variety of warehouse, distribution, and light manufacturing uses. This zoning also allows most retail, office, and commercial uses. Restrictions imposed by this classification include:

Minimum Front Yard:	25 feet
Minimum Rear Yard:	10 feet if adjoining a residential district
Minimum Side Yard:	10 feet
Maximum Height:	Six stories unless set back an additional one foot for each two feet in height above six stories. Must meet FAA approval.
Type of Construction:	Masonry construction, with brick and stone veneer for front and side walls.
Parking:	Retail: One space per 200 square feet Office: One space per 300 square feet Service: One space per 1,000 square feet

To the best of our knowledge, there are no deed restrictions affecting or limiting the use of the property. However, this should not be taken as a guaranty or warranty that no such restrictions exist. Deed restrictions are a legal matter, and normally only a title search by a competent title attorney would uncover them. Thus, it is recommended that a title search be made if any question regarding the existence of deed restrictions arises. Overall, zoning is not considered to be a constraint on development of the site.

HIGHEST AND BEST USE

Highest and best use may be defined as:

The reasonably probable and legal use of vacant land or an improved property, which is physically possible, appropriately supported, financially feasible and that results in the highest value.[10]

The highest and best use of both land as though vacant and property as improved must meet four criteria. The highest and best use must be 1) physically possible, 2) legally permissible, 3) financially feasible, and 4) maximally productive.[11]

Many factors enter into a highest and best use analysis. Some of these are: current zoning in the neighborhood, economic levels or present and anticipated growth in the area, accessibility and change in use. A property is an integral part of its neighborhood and cannot be treated as an entity separate and apart from its environment. The value of real property is not intrinsic, but flows into the property from the surrounding forces and shares the future with the neighborhood in which it is located. Highest and best use is shaped by the competitive forces in the marketplace. It is not a subjective determination by the owner or the appraisers, but is based on economic forces affecting the property.

Possible Use

The first constraint imposed on the use of a property is the physical limitations of the site. The subject site contains a total of 1.003 acres and is located on the west side of Dooley Road, north of Keller Springs Road in the Town of Addison, Texas. The site is rectangular in shape. The site is generally level and contains no floodplain. The physical attributes of the site in

[10]*The Appraisal of Real Estate*, Tenth Edition (Chicago: American Institute of Real Estate Appraisers, 1987), p. 275.

[11]*The Appraisal of Real Estate*, Tenth Edition (Chicago: American Institute of Real Estate Appraisers, 1987), p. 280.

terms of shape, soils, utilities and topography would not preclude any broad class of development. The size of the site is the primary limitation on the scale of development, but is adequate for development of uses similar to the surrounding improvements which tend to be smaller office/technical buildings. The lack of frontage on a heavily traveled thoroughfare would also have a negative impact on uses that need visibility from street traffic such as retail.

Permissible Use

Legal restrictions to the use of a site include public restrictions such as zoning and private restrictions such as easements and deed restrictions. The subject site is I-1 (Industrial District 1), by the Town of Addison. This designation permits a variety of industrial uses, and also allows commercial, retail, and office uses. Residential uses are not permitted. Given the interior location of the subject, limited visibility from major traffic thoroughfares and the proximity to the airport, office/tech rather than retail uses is considered to be the most appropriate permissible use for the subject and would be consistent with nearby uses.

Feasible Use

The subject site is located in an area of several office/technical buildings with a zoning classification which allows this type of use. As noted in the Market Analysis, occupancy and rental rates for industrial properties in the market area have increased to a point in which demand is outpacing supply. Industrial leasing agents report strong demand with increasing rental rates. In addition, leasing agents are reporting that space with high amounts of office finish are in increasing demand as the rental rates in office buildings in the area have increased, making office/technical buildings an affordable alternative.

Maximally Productive Use

Based on the foregoing analysis, the maximally productive use of the subject site, as if vacant, is for office/technical building development.

Highest and Best Use As Improved

The subject is improved with a 10,793 square foot office/technical building built in two phase (1986 and 1990). These improvements are in average condition, and are functional for their use. Since they are consistent with the highest and best use "as vacant", the highest and best use of the property is for continued use as an office/technical building.

VALUATION PROCESS

In estimating the market value of real property, there are three recognized approaches or techniques that, when applicable, can be used to process the data considered significant to each separate value indicator. In all instances, our experience, coupled with objective judgment, plays a major role in arriving at the conclusions of indicated value. The quantity and quality of available data and the applicability of each approach are important factors in comparing the various indications and reconciling them into a final estimate of value.

The three approaches are commonly known as:

Cost Approach: Approach through which an appraiser derives a value indication of the fee simple interest in a property by estimating the current cost to construct a reproduction of or replacement for the existing structure, deducting for all evidence of accrued depreciation from the cost new of the reproduction or replacement structure, and adding the estimated land value plus an entrepreneurial profit. Adjustments may be made to the indicated fee simple value of the subject property to reflect the value indication of the property interest being appraised.[12]

Sales Comparison Approach: Approach through which an appraiser derives a value indication by comparing the property being appraised to similar properties that have been sold recently, applying appropriate units of comparison, and making adjustments, based on the elements of comparison, to the sale prices of the comparables.[13]

Income Capitalization Approach: Approach through which an appraiser derives a value indication for income-producing property by converting anticipated benefits, i.e., cash flows and reversions, into property value. This conversion can be accomplished in two ways: One year's

[12] *The Dictionary of Real Estate Appraisal,* Second Edition (Chicago: American Institute of Real Estate Appraisers, 1989), p. 72

[13] *The Dictionary of Real Estate Appraisal,* Second Edition (Chicago: American Institute of Real Estate Appraisers, 1989), p. 265.

income expectancy or an annual average of several years' income expectancies may be capitalized at a market-derived capitalization rate or a capitalization rate that reflects a specified income pattern, return on investment, and change in the value of the investment: secondly, the annual cash flows may be discounted for the holding period and the reversion at a specified yield rate.[14]

The Cost Approach is most applicable for newer improvements or for improvements which are unique or specialized in nature and for which there is a lack of comparable income or market sales data. Due to the difficulty in accurately measuring depreciation, this approach tends to be less reliable in older properties or in properties which have a great deal of economic obsolescence due to outside market factors.

The Sales Comparison Approach is considered very reliable when adequate sales data on properties similar to the subject are available. In a slow market where data on highly comparable properties is difficult to find, this approach is less reliable.

The Income Capitalization Approach is most applicable to properties that are bought and sold for investment purposes and is considered very reliable when adequate income and expense data are available. Information from this approach is also useful in making adjustments in the Sales Comparison Approach when differences in properties can be measured by rent differentials, and in the Cost Approach in analyzing functional and economic obsolescence when these factors cause a rent loss.

In our analysis we have relied on the Sales Comparison and Income Capitalization Approaches to value. The Cost Approach was excluded due to the age of the subject property, the lack of recent land sales in the immediate neighborhood, and the specialized nature of some of the components of the building which may not be functional for another user.

[14]*The Dictionary of Real Estate Appraisal,* Second Edition (Chicago: American Institute of Real Estate Appraisers, 1989), p. 156

SALES COMPARISON APPROACH

The Sales Comparison Approach to value is based on the principle of substitution; that is, the value of the property is governed by the prices generally obtained for similar properties. Research is conducted to obtain data on recent sales of similar properties and then each sale is compared to the subject for differences in location, physical attributes and legal and economic characteristics. The unit of comparison will be the price per square foot.

Our research covered sales activity in the north Dallas area from January 1996 to May 1997. These sales and offerings had to be adjusted for time of sale, location, and age and condition of the building. After adjustments, these sales are considered to be indicative of the market value of the subject. The following pages contain specific information as it was reported to us pertaining to these sales. Reference is made to the Improved Property Sales Map following the comparables for locations of the comparables relative to the subject.

An analysis of the subject and our comparables indicates that all of the properties are in approximately the same condition and have similar occupancies. Therefore, the subject and the comparables will be compared on an "as is" basis.

Office/Tech Sale #1

Location:	3220 Commander Drive, Carrollton, Dallas County, Texas
Mapsco:	D 4-N
Grantor:	SHUN, Joint Venture No. 2
Grantee:	Margaret B. Parkhurst Revocable Trust
Date of Sale:	May 17, 1996
Recording Data:	Volume 96098, Page 1410
Sales Price:	$1,615,000
Terms:	Cash to seller
Cash Equivalent Sales Price:	$1,615,000
Price/SF:	$53.23
Property Rights Conveyed:	Leased Fee
Improvements Description:	
Year Built:	1984
Gross Building Area:	30,339 SF

Finished Office Area:	80%
Air Conditioned Area:	100%
Sprinklered:	Yes
Clear Ceiling Height:	12'
Rail Access:	No
Dock High Doors:	Yes
Grade Level Doors:	Yes
Rail Doors:	No
Bay Sizes:	N/A
Electrical Capacity:	Standard
Condition:	Average
Special Features:	None

Site Information:

Land Area:	1.947 acres
Land to Building Ratio	2.80:1
Parking Lot:	Concrete
Parking Spaces:	N/A

Financial Data:

Gross Income:	$217,904
Less Vacancy @ 5%:	10,895
Effective Income:	$207,009
Less Expenses:	45,509
Net Operating Income:	$161,500

Investment Analysis:

Overall Rate of Return:	10.0%
Effective Gross Income Multiplier:	7.8x
Expense Ratio:	26%

Comments: One tenant expires in approximately two years and occupies approximately 23,000 square feet. The other tenant expires January 1998. Financial data is based on the broker's estimates of a $0.75/SF expense sop and $1.75/SF total expenses with a 10% overall rate.

Verification: Broker (97-072) CAC

Office/Tech Sale #2

Location:	2033 Chenault, Carrollton
Mapsco:	D 4-W
Grantor:	E M I F Texas. Ltd.
Grantee:	Chenault Business Center Ltd.
Date of Sale:	December 31, 1996
Recording Data:	Volume 96253, Page 1990
Sales Price:	$2,650,000
Terms:	Cash to seller
Cash Equivalent Price:	$2,650,000
Price/SF:	$46.23
Rights Conveyed:	Leased Fee

Physical Description:

Year of Construction:	1985
Type of Construction:	Brick veneer
Number of Buildings:	Two
Number of Stories:	One
Gross Building Area:	57,320 SF
Net Rentable Area:	57,320 SF
Percentage Office:	85%
Percentage Air-Conditioned:	85%
Clear Ceiling Height:	12 feet
Sprinklered:	Yes
Loading:	Grade level
Condition:	Average
Parking:	Adequate
Land Area:	3.932 acres
Land/Building Ratio:	2.99:1
Occupancy at Sale:	99%

Financial Data: Actuals

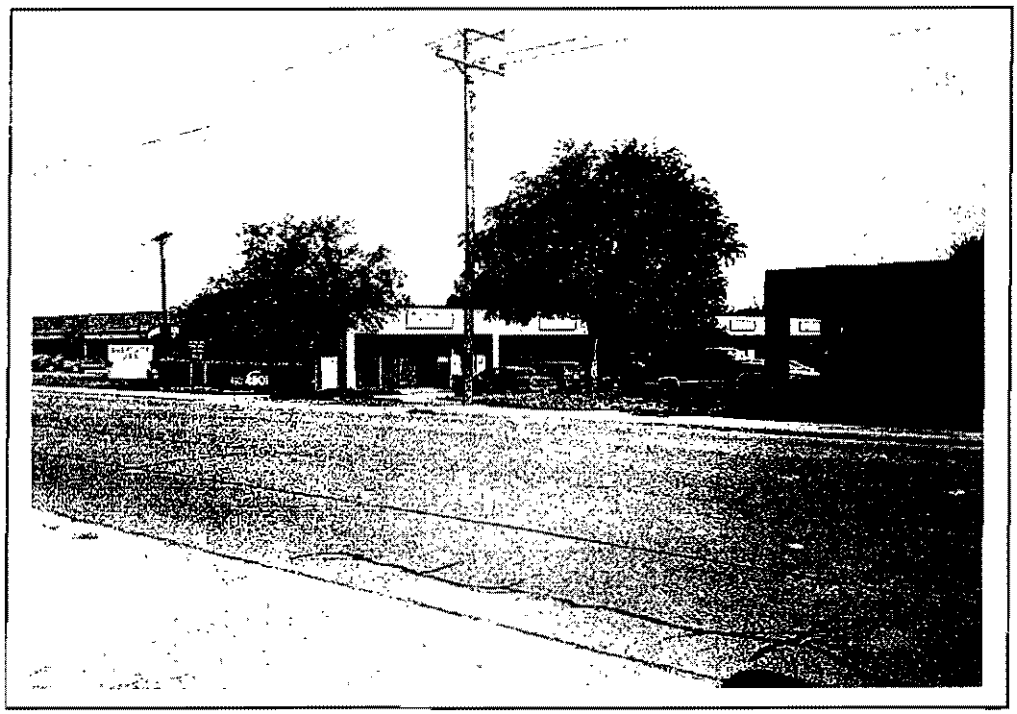
Gross Income:	$391,496
Less Vacancy @ 1%:	3,915
Effective Income:	$387,581
Less Expenses:	97,581
Net Operating Income:	$290,000

Investment Analysis:

Overall Rate of Return:	10.9%
Effective Gross Income Multiplier:	6.77x
Expense Ratio:	25.2%

Verification: Broker (97-072) CAC

Office/Tech Sale #3



Location:	4901 Keller Springs Road, Dallas, Texas
Mapsco:	D 4-U
Grantor:	WRW Profit Sharing Plan (William R. Wines, Trustee)
Grantee:	Drybern, LTD (John S. Dryden)
Date of Sale:	April 3, 1996
Recording Data:	Volume 96066, Page 3024
Sales Price:	$975,000
Terms:	$850,000 loan from seller, at reported market terms. Considered to be cash equivalent.
Cash Equivalent Price:	$975,000
Price/SF:	$39.06
Rights Conveyed:	Leased Fee

Physical Description:

Year of Construction:	1980
Type of Construction:	Tilt Wall
Number of Buildings:	Three
Number of Stories:	One
Gross Building Area:	24,961 SF
Net Rentable Area:	24,961 SF
Office %:	50%
Air-Conditioned %:	55%
Clear Ceiling Height:	12-20 feet
Sprinklered	Yes
Rail Served:	No
Dock High Doors:	One
Grade Level Doors:	12
Rail Doors:	None
Bay Sizes:	2,300 SF (Avg)
Condition:	Average
Parking	Surface
Land Area:	1.63 acres
Land/Building Ratio:	2.84:1
Occupancy at Sale:	100%

Financial Data: ProForma

Gross Income:	$149,766
Less Vacancy @ 5%:	(7,488)
Effective Income:	142,278
Less Expenses:	53,666
Net Operating Income:	$ 88,612

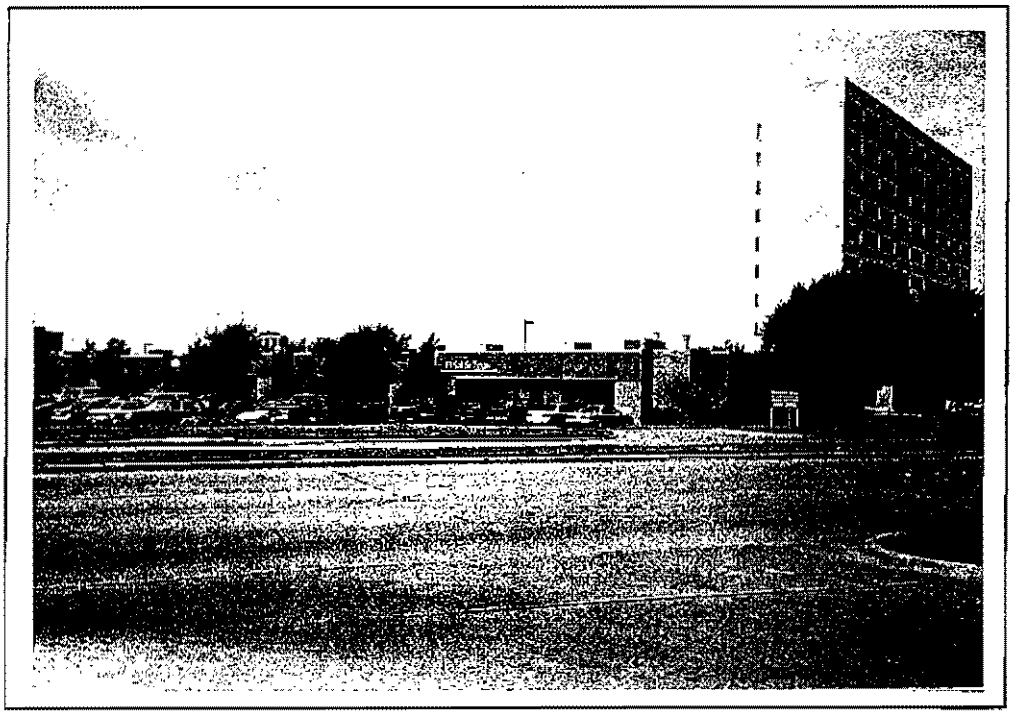
Investment Analysis:

Overall Rate of Return:	9.1%
Effective Gross Income Multiplier:	6.85 X
Expense Ratio:	23.4%

Comments: The building was 100% leased at an average lease rate of $6.00/SF on a gross basis.

Verification: Buyer (97.070) DGC

Office/Tech Sale #4



Location:	4200 Spring Valley Road, Farmers Branch, Texas
Mapsco:	D 14-K
Grantor:	NationsBank of Texas, NA, Trustee for State Street Bank and Trust Company as Trustee of the Telephone Real Estate Equity Trust (Ed Cowling)
Grantee:	Drybern II, LTD
Date of Sale:	February 12, 1997
Recording Data:	Volume 97029, Page 243
Sales Price:	$2,789,920
Terms:	Cash to seller
Cash Equivalent Price:	$2,789,920
Price/SF:	$47.00
Rights Conveyed:	Leased Fee

Physical Description:

Year of Construction:	1979
Type of Construction:	Brick
Number of Buildings:	Three
Number of Stories:	One
Gross Building Area:	59,360 SF
Net Rentable Area:	59,360 SF
Office %:	85 %
Air-Conditioned %:	92 %
Clear Ceiling Height:	12 feet
Sprinklered:	Yes
Rail Served:	No
Dock High Doors:	15
Grade Level Doors:	23
Rail Doors:	None
Bay Sizes:	4,240 SF (Avg)
Condition:	Average
Parking	Surface
Land Area:	4.29 acres
Land/Building Ratio:	3.15:1
Occupancy at Sale:	100%

Financial Data:

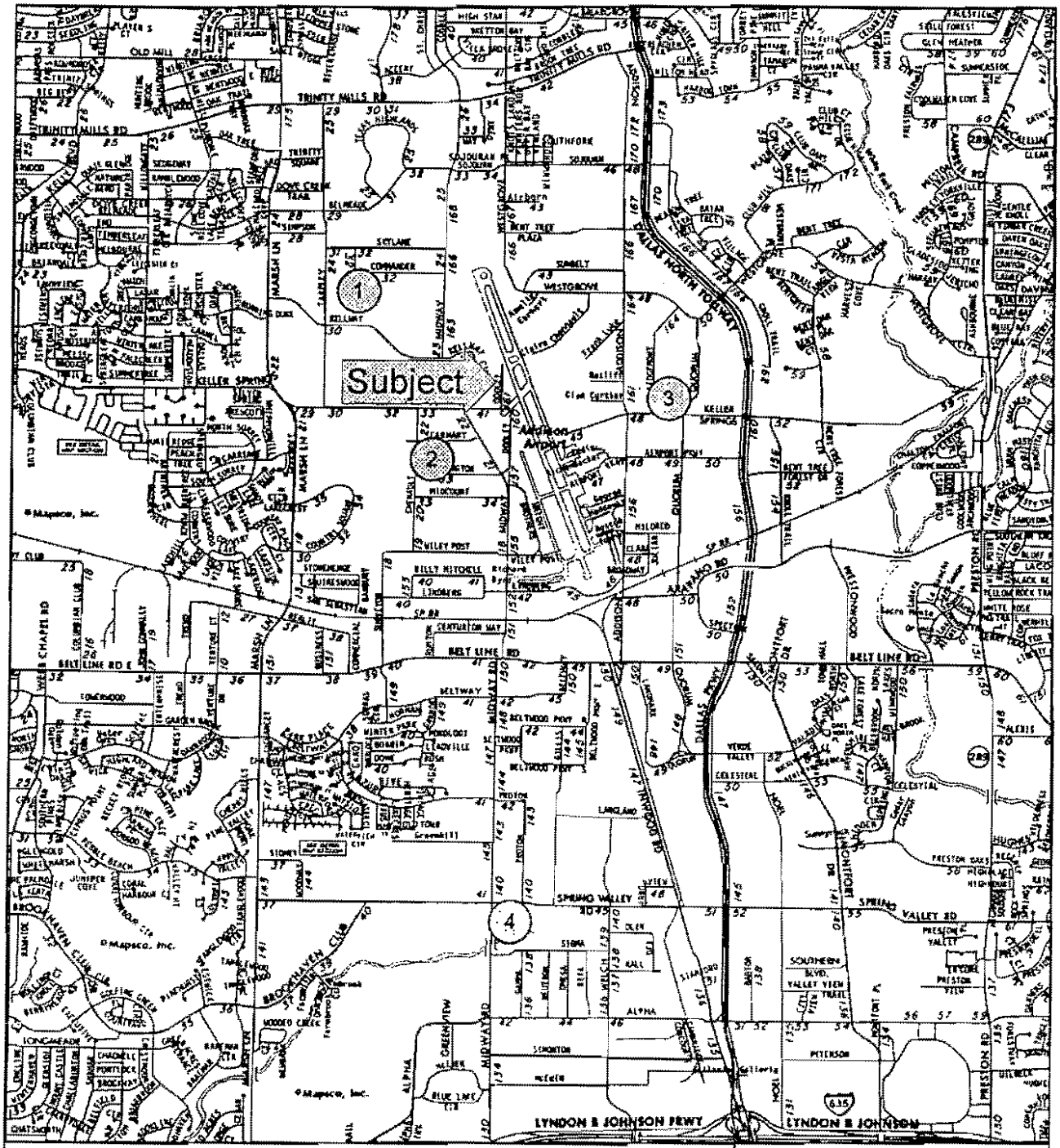
Gross Income:	$415,520
Less Vacancy @ 5%:	(20,776)
Effective Income:	$394,744
Less Expenses:	89,040
Net Operating Income:	$305,704

Investment Analysis:

Overall Rate of Return:	11.0%
Effective Gross Income Multiplier:	7.07 X
Expense Ratio:	22.6%

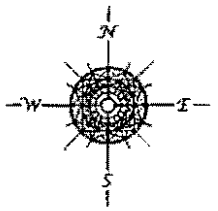
Comments: This building was 100% occupied at the time of sale with an average lease rate reported to be $7.00/SF on a gross basis.

Verification: Buyer (97.070) DGC



Improved Sales Map

Subject	16115 Dooley Road	Addison
1	3220 Commander Drive	Carrollton
2	2033 Chenault Drive	Carrollton
3	4901 Keller Springs Road	Dallas
4	4200 Spring Valley Road	Farmers Branch



1 inch = 0.84 miles

0 1700 3400 5100

Scale in Feet

SUMMARY OF IMPROVED SALES

Sale No.	Location	Sale Date	Size (SF)	% A/C	YOC	Clear Ceiling Height	OAR	Sales Price/SF
1	3220 Commander, Carrollton	5/96	30,339	100%	1984	12'	10.0%	$53.23
2	2033 Chenault, Carrollton	12/96	57,320	85%	1985	12'	10.9%	$46.23
3	4901 Keller Springs, Dallas	4/96	24,961	55%	1980	12-20'	9.1%	$39.06
4	4200 Spring Valley, Farmers Branch	2/97	59,360	92%	1979	12'	11.0%	$47.00
Subj	**16115 Dooley Rd. Addison, TX.**	---	**10,793**	**100%**	**1986/ 1990**	**16'**	---	---

Sale Price Per Square Foot Analysis

The four sales detailed on the previous pages were selected as those most comparable to the subject. Reference to these comparables, and their locations relative to the subject, can be found on the facing page.

The comparables ranged in price per square foot from $35.22 to $53.23. This range in price reflects differences in the locational, physical, legal and economic characteristics of the comparables selected. Further analysis and adjustment for the following factors narrows this range considerably.

1. Real property rights conveyed
2. Financing terms
3. Conditions of sale
4. Market conditions (time)
5. Location
6. Physical features of the building

In comparison to the subject, upward adjustments are made to the sales price per square foot of the comparables for inferior characteristics and downward adjustments for superior characteristics. A detailed analysis involving each of these factors and the final value conclusions for the subject site follows.

Real Property Rights Conveyed

The first adjustment to be considered is for any differences in the property rights being conveyed in the sale. The revenue generating potential of an income-producing property with existing leases may be significantly different than a property sold in fee simple. A building located on leased land may also exhibit a different expense structure (and net income stream) than an improved property where land and building are held in common ownership. Because these factors can have an impact on value, one of the initial steps in the valuation process is a determination of the real property interests which have been conveyed.

No adjustment to value for real property rights conveyed is warranted. Sale 4 was leased at lease rates considered to be at or near market level. No adjustment was made to Sale 3 even though many of the leases were at a below market rate. The anticipated increase in lease rates is reflected in the Market Conditions adjustment. Sales 1 and 2 were to be at least partially occupied by the purchaser, and are considered to be equivalent to fee simple.

Financing Terms

The transaction price of one property may differ from that of another due to differences in financing arrangements. An adjustment for financing terms is usually warranted if these terms differ from a cash transaction. Cash equivalency is generally defined as a cash purchase or a purchase where the seller receives cash and the buyer finances on terms (loan to value ratio, interest rate, amortization schedule and/or balloon payment) typical for third party conventional loans for the property type in the area. Atypical financing terms frequently includes seller financing, installment sales, assumable and wraparound financing. However, all financing arrangements must be analyzed in the context of 1) market evidence and 2) terms generally available through conventional sources for the property type and location.

Our research did not discover any unusual or atypical financing arrangements, and after examining the prices paid there is no market evidence of special considerations. No financing adjustment is indicated.

Conditions of Sale

Adverse conditions of sale can account for a significant discrepancy from the sales price actually paid compared to that of the market. This discrepancy in price is generally attributed to unusual motivations of the buyer or seller. Certain conditions of sale are considered to be non-market and may include: a seller acting under duress, a lack of exposure to the open market, intra-family or intra-business transactions for the sake of family or business interest, unusual tax considerations, sale at legal auction, or eminent domain proceedings. No adjustments were required for this factor.

Market Conditions (Time)

Market conditions generally change over time, but the date of the appraisal is a specific time. In an unstable economy undergoing changes in the value of the dollar, interest rates, and economic growth or decline require a monitoring of real estate's changing market conditions. Significant monthly changes in price levels can occur in several areas of a city, while prices in other areas may remain relatively stable. Although the adjustment for market conditions is often referred to as a "time adjustment," time is not the cause of the adjustment. In examining the change in market conditions between the time of a comparable sale and the effective date of the appraisal, if the market conditions have not changed, then no time adjustment is required, even though considerable time may have elapsed.

Sales 1 and 3 occurred during the first half of 1996. Since the date of these sales, lease rates have increased, which would generally translate into an increase in value for the properties. To account for this, we have adjusted the sale prices of Sales 1 and 3 upward by 10%.

Location

Location affects the eventual sales price of an improved property in much the same way as it affects the price paid for land. The properties need not be in the same neighborhood, but they should be in neighborhoods which offer the same advantages and have, in general, the same social and economic status.

All of the comparables are considered to be affected by the same general locational attributes since they are all located in the Addison/Farmers Branch industrial/technology corridor. Given this, no adjustments are required for general location. However, Sales 3 and 4 are located on

main neighborhood streets, giving them greater traffic exposure and the potential for higher rents from retail/service business who will pay more for this exposure. These two sales have been adjusted downward by 5% and 10%, respectively, for having superior visibility from street traffic.

Physical Characteristics

Differences in the physical characteristics of a property can significantly impact the sales price; thus, requiring a comparison and adjustment to the comparables if necessary. Physical characteristics that could have an effect on value include the building's age/condition and percentage office/air conditioned area.

Age/Condition

The comparables were constructed between 1978 and 1985, and have been maintained at a similar level to the subject. Given this, no adjustment is required for this factor.

Office/A/C Percentage

The subject property is predominantly finished with office space, with the rear of the building being air conditioned laboratory and storage. Overall, Sale 1 is considered to be similar to the subject. An upward adjustment of 25% was made to Sale 3 for having less air conditioned area, with Sales 2 and 4 being adjusted upward by 15% for this factor.

Summary of Adjustments

The following chart summarizes the adjustments discussed on the previous page. This chart represents our opinion of the appropriate adjustment applicable to each comparable in relation to the subject.

	Comp. #1	Comp. #2	Comp. #3	Comp. #4
Unadjusted Sale Price/SF	$53.23	$46.23	$39.06	$47.00
Rights Conveyed Adjustment	0	0	0	0
Financing Adjustment	0	0	0	0
Conditions of Sale Adj.	0	0	0	0
Market Conditions Adj.	+10%	0	+10%	0
Adjusted Sale Price (prelim)	$58.55	$46.23	$42.97	$47.00
Location Adjustment	0	0	-5%	-10%
Physical Characteristics				
Age	0	0	0	0
Office Percentage	0	+15%	+25%	+15%
Total Physical Adjustments	0	+15%	+25%	+15%
Net Adjustment	0	+15%	+20%	+5%
Final Adjusted Price	$58.55	$53.16	$51.56	$49.35

Conclusion

The adjusted prices range between $49.35 and $58.55 per square foot. The comparables considered to be most similar to the subject overall is Sale 2. This is primarily due to the similar amount of office area. Based on the foregoing, it is our opinion that the current estimated market value of the fee simple interest in the subject, on a price per square foot basis, is calculated as follows:

$ 53.00/SF x 10,793 SF = $572,029
Say, $570,000

INCOME CAPITALIZATION APPROACH

Introduction

The Income Capitalization Approach estimates value based on future benefits of income anticipated by the property owner. An analysis of the property in terms of its ability to provide a sufficient net annual return on invested capital is an important means of valuing an asset.

There are two primary methods of income capitalization -- Direct Capitalization and Discounted Cash Flow Analysis. Direct Capitalization is a technique in which a single projection of net operating income is capitalized into value through the use of an overall capitalization rate derived from an analysis of market transactions or other acceptable method of rate abstraction. This method is most appropriate for properties which are expected to have either a stable net operating income over the years or a relatively steady rate of change in the net operating income from year to year. It is also appropriate for small investment properties where the typical buyer may not use more sophisticated methods of analysis.

Discounted Cash Flow Analysis (DCF) is a method of estimating the present worth of future cash flow expectancies, by individually discounting each anticipated collection at an appropriate yield rate. A major advantage of the DCF is that any cash flow pattern may be reverted to a present value.

Application of the DCF model requires research into income and expense levels and trends to estimate pre-tax income over an assumed projection period. This series of income is treated as annuities and discounted appropriately to present value.

A second component of the property's total present value in DCF Analysis is the discounted value of the property at the end of the holding period; i.e., the present value of the property's resale or reversion.

Discounted Cash Flow Analysis is most appropriate in situations where the annual cash flows are not expected to be regular. It is a method frequently used by sophisticated real estate investors, through the use of computer applications which permit numerous complicated and/or tedious calculations.

In the subject instance, we have elected to use the Direct Capitalization method. The Discounted Cash Flow technique has been excluded since the direct capitalization approach is most commonly used in the subject's potential buyers.

Subject Property Status

At the present time, the subject is a single-tenant building that is occupied by three owner. Given this, we have projected the potential income for the space based on market lease rates.

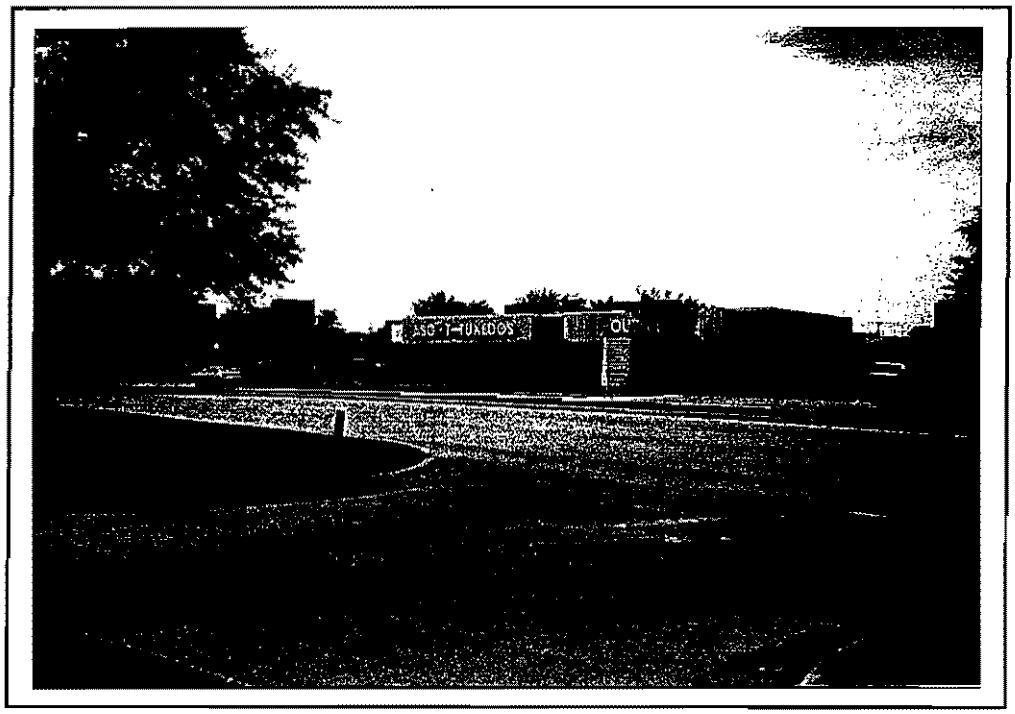
Estimated Market Rent

The following pages reflect the results of our research into properties which have similar income-generating capacity as the subject. These Rent Comparables were selected based on the following criteria:

-Location
-Age and Condition
-Size
-Year of Construction

A comparison of these Lease Comparables with one another and with the subject enables us to estimate Market Lease Rate for the subject property.

Office/Tech Comparable #1



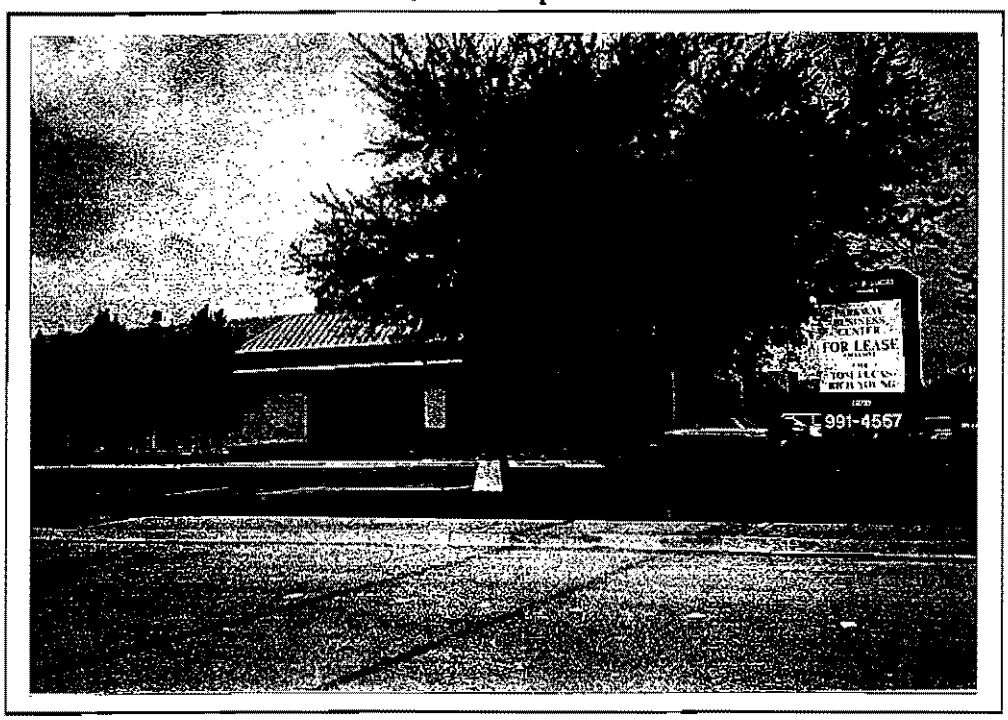
Location:	Spring Valley Business Center, 4300 Spring Valley Road, Farmers Branch
Mapsco:	D 14-L
Lessor:	N/A

Physical Description:

Year Built:	1978
Gross Leasable Building Area:	115,000 SF
Total Space Available:	None
Occupancy:	100%
Absorption over past 12 months:	N/A
Type of Construction:	Brick
Finished Office Area:	70%
Air-Conditioned Area:	70%
Clear Ceiling Height:	14'
Sprinklered:	Yes
Rail Served:	No
Dock High Doors:	3
Grade Level Doors:	10-15
Rail Doors:	None
Bay Sizes:	2,000-5,000 SF
Electrical Capacity:	Adequate
Special Features:	None

Condition:	Average
Parking:	Surface
Land Area:	N/A
Land to Building Ratio:	N/A
Asking Rent:	$8.00/SF
Expense Treatment:	Gross
Expenses Estimate:	N/A
Tenant Improvement Allowance:	None
Concessions:	None
Comments:	This is a multi-tenant complex. The most recent lease signed in the complex was for a renewal for $8.00/SF.
Verification:	Broker (97-095) DGC
Date Verified:	8/3/97

Office/Tech Comparable #2



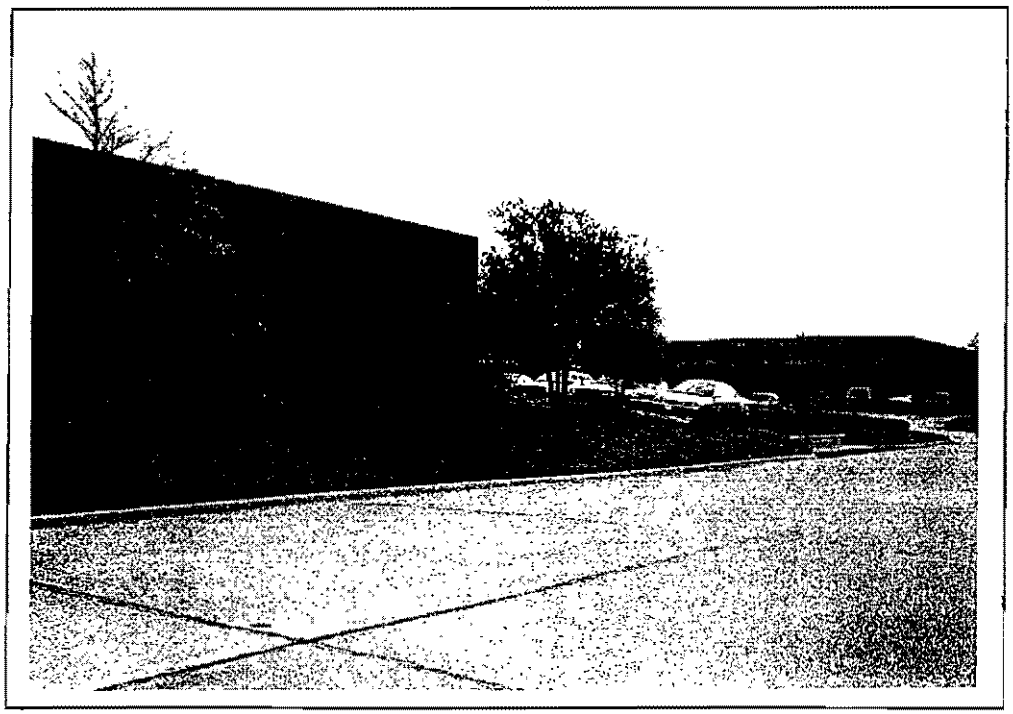
Location:	Parkway Business Center, 4950 Keller Springs, Addison
Mapsco:	D 4-Q
Lessor:	Harry B. Lucas Company

Physical Description:

Year Built:	1979
Gross Leasable Building Area:	121,200 SF
Total Space Available:	None
Occupancy:	100%
Absorption over past 12 months:	N/A
Type of Construction:	Concrete
Finished Office Area:	90%
Air-Conditioned Area:	90%
Clear Ceiling Height:	12'
Sprinklered:	Yes
Rail Served:	No
Dock High Doors:	No
Grade Level Doors:	Yes
Rail Doors:	None
Bay Sizes:	2,000-5,000 SF
Electrical Capacity:	Adequate
Special Features:	None

Condition:	Average
Parking:	Surface
Land Area:	N/A
Land to Building Ratio:	N/A
Asking Rent:	$10.00/SF
Expense Treatment:	Gross
Expenses Estimate:	N/A
Tenant Improvement Allowance:	None
Concessions:	None
Comments:	Many of the tenants in this building are office type tenants, with some needing minimal storage.
Verification:	Broker (97-095) DGC
Date Verified:	8/4/97

Office/Tech Comparable #3



Location:	Beltwood Tech Center, 4403-4405 N. Beltwood Parkway, Farmers Branch
Mapsco:	D 14-G
Lessor:	Robert Lynn Company

Physical Description:

Year Built:	1985
Gross Leasable Building Area:	N/A
Total Space Available:	None
Occupancy:	100%
Absorption over past 12 months:	N/A
Type of Construction:	Brick
Finished Office Area:	30%-100%
Air-Conditioned Area:	30%-100%
Clear Ceiling Height:	14'
Sprinklered:	Yes
Rail Served:	No
Dock High Doors:	None
Grade Level Doors:	10-12
Rail Doors:	None
Bay Sizes:	N/A
Electrical Capacity:	Adequate
Special Features:	None

Condition:	Average
Parking:	Surface
Land Area:	N/A
Land to Building Ratio:	N/A
Asking Rent:	$8.00-$9.00/SF
Expense Treatment:	Gross
Expenses Estimate:	N/A
Tenant Improvement Allowance:	None
Concessions:	None
Comments:	This complex contains three buildings. Reportedly the most recent renewals have been at the quoted lease rates.
Verification:	Broker (97-095) DGC
Date Verified:	8/4/97

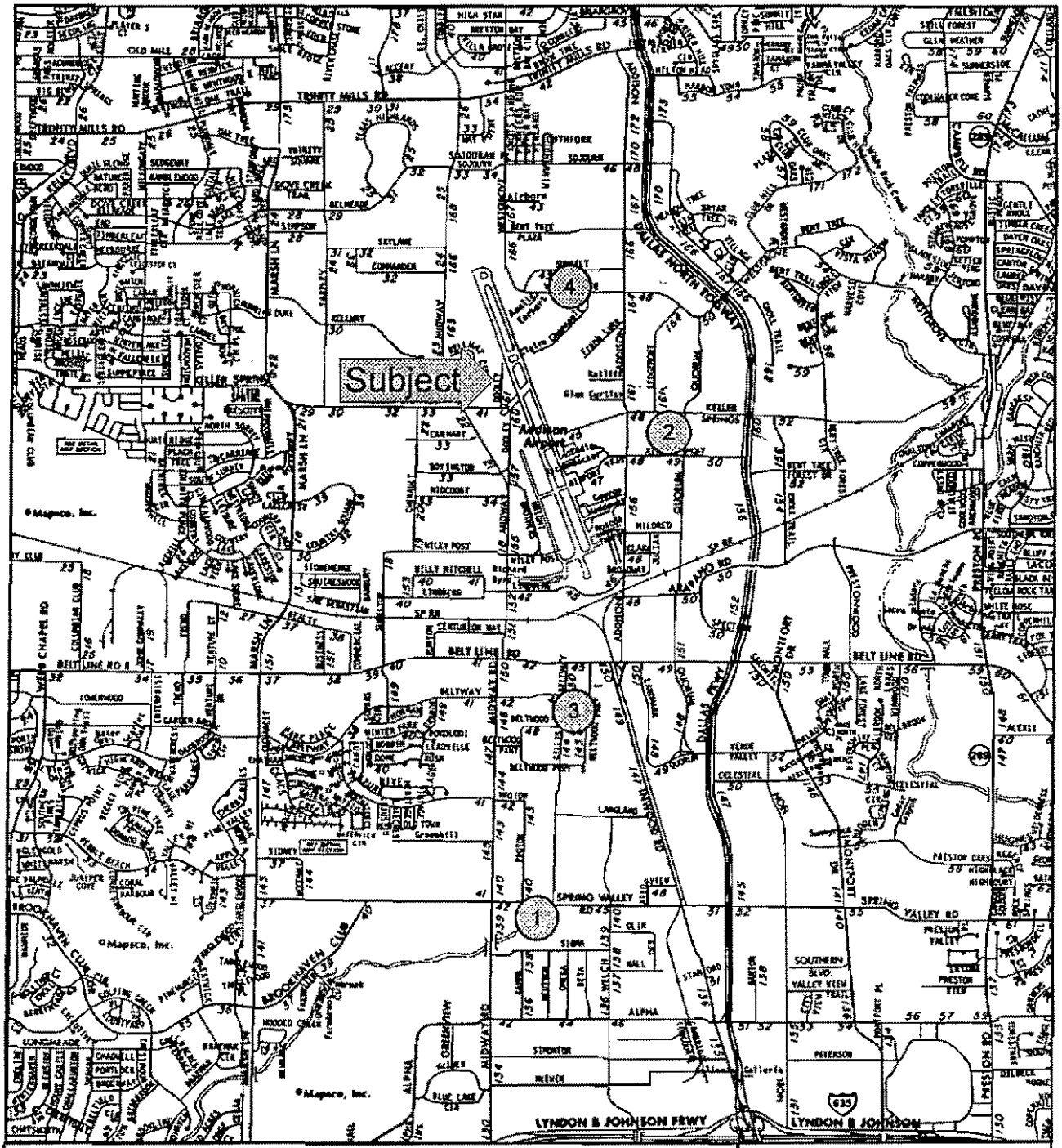
Office/Tech Comparable #4

Location:	Sunbelt Business Center, 4302-4324 Sunbelt Drive, Addison
Mapsco:	D 4-D
Lessor:	Harry B. Lucas Company

Physical Description:

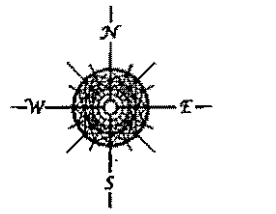
Year Built:	1980 (est.)
Gross Leasable Building Area:	25,600 SF
Total Space Available:	None
Occupancy:	100%
Absorption over past 12 months:	N/A
Type of Construction:	Concrete
Finished Office Area:	40%
Air-Conditioned Area:	40%
Clear Ceiling Height:	12'
Sprinklered:	Yes
Rail Served:	No
Dock High Doors:	None
Grade Level Doors:	13
Rail Doors:	None
Bay Sizes:	N/A
Electrical Capacity:	Adequate
Special Features:	None

Condition:	Average
Parking:	Surface
Land Area:	N/A
Land to Building Ratio:	N/A
Asking Rent:	$7.50/SF
Expense Treatment:	Gross
Expenses Estimate:	N/A
Tenant Improvement Allowance:	None
Concessions:	None
Comments:	This is a multi-tenant building, that predominantly has tenants needing a significant amount of storage.
Verification:	Broker (97-095) DGC
Date Verified:	8/97



Comparable Rentals

Subject	16115 Dooley Road
1	4300 Spring Valley Road
2	4950 Keller Springs Road & 4951 Airport Parkway
3	4403-4405 N. Beltwood Parkway
4	4302-4324 Sunbelt Drive



1 inch = 0.64 miles

0 1700 3400 5100

Scale in Feet

Following the presentation of the Lease Comparables data sheets are a location map and a summary chart.

SUMMARY OF RENT COMPARABLES							
Comp. No.	Name/Location	Size (SF)	YOC	% Air Conditioned	Clear Ceiling Height	Lease Type	Rental Rate/SF
1	Spring Valley Business Center	115,000	1978	70%	14'	Gross	$8.00
2	Parkway Business	121,200	1979	90%	12'	Gross	$10.00
3	Beltwood Tech Center	N/A	1985	30%-100%	14'	Gross	$8.00-$9.00
4	Sunbelt Business Center	25,600	1980	40%	12'	Gross	$7.50
Subject	**16115 Dooley Road**	**10,793**	**1986/90**	**100%**	**16'**		

In order to estimate current market lease rate for the subject, we have analyzed the comparables for differences in age, condition, location, quality of construction and general appearance. The preceding comparables represent a range in quoted gross lease rates from $7.50 to $10.00/SF.

All of the comparables are considered to be generally similar locationally and similar in condition to the subject. However, Lease 1 is slightly superior locationally since it has better visibility provided by Spring Valley Road. The subject is most similar with regard to office finish and air conditioned area to Leases 2 and 3. Leases 1, and 4 having a lower amount of office and area conditioned area, and are considered to be inferior to the subject in this regard.

Overall, the lease rates indicated by Lease 2 and 3 are considered to be the best indication of the potential market lease rate for the subject. Based on this it is our opinion, the current market lease rate for the subject is **$9.50 per square foot** on a gross basis. Therefore, the total potential annual rental revenue for the subject's 10,793 gross square feet of building area is $102,534.

Estimated Vacancy and Collection Loss Allowance

Investors "are primarily interested in the cash revenues that an income property is likely to produce annually over a specified period of time rather than what it could produce if it were always 100 percent occupied and all the tenants were actually paying their rent in full and on time. Except in the case of a property fully occupied by a high rated tenant or tenants under a long-term lease, some rental loss is normally expected. It may result from vacancy and turnover, or from nonpayment or slow payment of rent by tenants. Because stabilized or level income flows are forecast in most income capitalization techniques employed in income property appraising, an annual allowance or deduction from potential gross income for this loss must be made."[15]

At the present time the subject is 100% occupied by the owner. In addition, all of the lease comparables are 100% leased, indicating demand for space in the market is very strong. This strong demand is also supported by the average occupancies in the Addison/Farmers Branch market having a 94.9% occupancy according to M/PF Research. However, over a typical ownership period, investors would expect times of soft occupancy as business conditions cycle and as supply is increased with new construction. Taking these factors into account, we have projected a vacancy and collection loss of 7% of the potential gross income, which equates to $7,177.

Estimated Expenses

We have analyzed the operating performance of the subject based on a gross basis wherein the landlord is responsible for payment of insurance, taxes and common area maintenance. Expenses to the owner also include management fees and a reserves to pay for major repairs.

Real Estate Taxes: As show in the Ad Valorem Tax section of this report, the property taxes in 1996 equated to $14,159. We have projected the property taxes to be based on this assessed value. Applying the applicable tax rate to this assessed value, we have estimated the property taxes for the subject to be $14,159.

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[15]William N. Kinnard, Jr., *Income Property Valuation,* (Heath Lexington Books, Lexington, Mass.: 1971), p. 126.

Insurance: This expense item covers the expense for fire and casualty insurance for the improvements. We have estimated this expense to be $0.15/SF based on information provided by John Dryden who is a property owner/broker that owns several similar buildings in the area.

Common Area Maintenance: This expense item includes the cost to maintain the common areas of the building, maintenance of the landscaping, and utilities used in the common areas. According to information provided by John Dryden, this expense equated to $0.65/SF in 1996 for a similar building, in line with typical costs in the market. Therefore, we have projected this expense to be $0.65/SF, or $7,015.

Management and Administration: This expense item covers the fee charged by a management company for overseeing leasing, collecting rent, and coordinating and supervising maintenance. Typical management fees for properties similar to the subject are between 3% and 5% of the effective gross income. We have projected this management expense to be 4% of the effective gross income. The management expense includes administrative costs such as legal fees, accounting expenses, etc.

Reserves for Replacement: This category is not an expense that falls under the expense stop, but a fund to provide for an amount from each year's net operating income for replacement reserves for major shorter lived items. We assume that these expense reserves will be reinvested in a sinking fund at the current safe rate of interest as recovered. Even though owners frequently expense the entire cost of these items in the year in which they occur, under expenditures such as capital improvements or major structural repairs, they nonetheless represent a cost item which requires consideration on an annual pro forma basis for purposes of valuation. According to the *Korpacz Real Estate Investor Survey*, most investors use $0.05 to $0.25 per square foot, with an average reporting $0.13 per square foot as a reserve for replacement in industrial buildings. Given the size, age, and condition of the subject we have used the lower end of this range, or $0.10 per square foot.

Pro Forma Income/Expense Estimate

Potential Gross Income		
(10,793 SF at $9.00/SF)		$102,534
Vacancy & Collection Loss (7%)		(7,177)
Effective Gross Income		$ 95,357
Expenses		
R.E. Taxes	($14,159)	
Insurance	(1,619)	
CAM	(7,015)	
Management (4%)	(3,814)	
Reserves @ $0.10/SF	(1,079)	
Total Expenses		(27,686)
Net Operating Income		$ 67,671

Selection of Appropriate Capitalization Rate(s)

There are many methods of deriving a capitalization rate in order to illustrate the risk; i.e., the quantity, quality and durability of the income stream. Direct capitalization is thought to be the most reliable in this instance. Direct capitalization is simply the technique of capitalizing the subject's net operating income into an indicated value by use of an overall rate of return. The overall return is usually derived from an analysis of actual market sales data by dividing the net operating income of the property by its sale price, and from information from survey reports on investment criteria.

Three of the sales found in the Sales Comparison Approach were purchased by investors in which an overall capitalization rate could be derived. These sales had overall capitalization rates ranging from 9.1% to 11.2%, with the majority being near 11.0%. Based on this, we have projected an overall rate for the subject of 11.0%.

Direct Capitalization and Value Conclusion

The subject's potential net operating income has been estimated to be $67,671 and the appropriate overall capitalization rate selected is 11.0%. Therefore, the value conclusion via Direct Capitalization is as follows:

Estimated Net Operating Income:	$ 67,671
Overall Rate:	11.0%
Estimated Value:	$615,190
Rounded:	$615,000

RECONCILIATION AND FINAL ESTIMATE OF VALUE

In the preceding sections of this report, indications of market value of the leased interest in the subject property have been derived from two separate appraisal techniques. A summary of the value estimates by the approaches is as follows:

Sales Comparison Approach	$570,000
Income Capitalization Approach	$615,000

The information utilized in the Sales Comparison Approach and in the Income Capitalization Approach to arrive at value estimates was obtained from the marketplace and confirmed by sources deemed to be reliable.

The Sales Comparison Approach utilizes information regarding other transactions in the market to arrive at an indication of value. Its major strength is that it is based on actual market activity and allows the appraiser to arrive at a value estimate by observing what buyers are paying for similar properties in the marketplace.

The **Income Capitalization Approach** recognizes that investors purchase anticipated future income streams and is based on market research regarding rental rates, expense data, and occupancy levels. As with the Sales Comparison Approach, the accuracy of this approach depends upon the accuracy of information regarding market rent and expenses.

The subject is well-located within an established office/technical and industrial district. The building is functionally adequate as an office/technical facility and the building components are well-maintained. The neighborhood is stable and the likely hood of continued stability in the operating performance of the property is considered good.

Both techniques resulted in a narrow range in value. The Sales Comparison Approach relied on sales which primarily occurred during 1996 and 1997. Commercial property values for industrial properties have generally improved since early 1996. However, reasonable adjustments for this factor were taken into consideration. Thus, this approach is weighed heavily in our analysis.

ADDENDA

OWNER'S CERTIFICATE

WHEREAS Charles A. Barnett III and James M. Barnett are the sole owners of a tract of land situated in the George Syms Survey, Abstract No. 1344, City of Addison, Dallas County, Texas, being the tract of land conveyed by deed from Prestonwood Baptist Church, Inc., to Charles A. Barnett III and James M. Barnett as recorded in Volume 84146, Page 0757, Deed Records of Dallas County, Texas, and being more particularly described as follows:

BEGINNING at a 1/2 inch iron rod set on the west right-of-way line of Dooley Road (60' width), said rod being both North 350.78 feet of the north right-of-way line of Keller Springs Road (50' width) and the northeast corner of a tract of land conveyed by deed from Dovie E. Spears to James W.H. Tarpley as recorded in Volume 4372, Page 203, Deed Records of Dallas County, Texas;

THENCE South 89° 48' 55" West along the north line of said Tarpley tract and continuing along the north lines of both a tract of land conveyed by deed from James W.H. Tarpley to Dovie E. Spears as recorded in Volume 4372, Page 205, Deed Records of Dallas County, Texas, and a tract of land conveyed by deed from James W.H. Tarpley to Stella Spears as recorded in Volume 4372, Page 187, Deed Records of Dallas County, Texas, a distance of 278.26 feet to a 1/2 inch iron rod set for the northwest corner of said latter Spears tract, said rod being in the east line of Beltwood North Phase 2, an addition to the City of Addison, as recorded in Volume 78201, Page 0001, Deed Records of Dallas County, Texas;

THENCE North along said west line a distance of 78.31 feet to a fence corner found for the southwest corner of the Kincaid Addition, an addition to the City of Addison, as recorded in Volume 84087, Page 0048, Deed Records of Dallas County, Texas;

THENCE North 89° 48' 55" East along the south line of said Kincaid Addition a distance of 278.26 feet to a 1/2 inch iron rod set for the southeast corner of said addition, said rod being in the west right-ofway line of aforementioned Dooley Road;

THENCE South along said west right-of-way line a distance of 78.31 feet to the POINT OF BEGINNING and CONTAINING 0.5002 acres or 21,790 square feet of land.

METES AND BOUNDS DESCRIPTION

OWNER'S CERTIFICATE

STATE OF TEXAS §
COUNTY OF DALLAS §

WHEREAS, BILLY J. MULLINS, JR., is the owner of a 0.5020 acre tract of land situated in the George Syms Survey, Abstract No. 1344, in the City of Addison, Dallas County, Texas, and being more particularly described by metes and bounds as follows:

BEGINNING at an iron rod found for corner in the west line of Dooley Road (a 60-foot right-of-way) said corner being northerly 271.88-feet from the intersection of the north line of Keller Springs Road (a 50-foot right-of-way at this point) with the said west line of Dooley Road;

THENCE, S.89°45'18"W., 278.26-feet to a iron rod found for corner in the east line of Lot B, Block B of Beltwood North, JWL Addition, an addition to the City of Addison as filed for record in Volume 82073, Page 2483 of the Dallas County Deed and Map Records;

THENCE, N.00°00'17"E., 78.07-feet along the said east line of Lot B, Block B of Beltwood North, JWL Addition, to a 1/2" iron rod set for corner;

THENCE, N.89°32'27"E., 278.26-feet to a 1/2" iron rod set for corner in the west line of said Dooley Road;

THENCE, South, 79.11-feet along the said west line of Dooley Road to the Point of Beginning and Containing 21,868 square feet or 0.5020 Acres of land.

METES AND BOUNDS DESCRIPTION

Price•Denton Inc.

KATHLEEN PRICE WILKE, CRE, MAI
President, Chief Executive Officer

Price•Denton Inc.'s clients benefit from the experience and professionalism that Kathleen Price Wilke, CRE, MAI, has developed in more than twenty-seven years in the commercial real estate counseling and valuation industry. Recognized as one of the leading professionals in the business, Ms. Wilke's background includes mortgage banking, development and appraisal services. Each year, Ms. Wilke appraises virtually all types of income-producing properties, special purpose facilities, and urban land in Texas and elsewhere in the region.

As a recognized leader in the appraisal and counseling fields, Ms. Wilke testifies frequently in federal, state and municipal court proceedings as an expert witness in real estate matters.

DESIGNATIONS:
- CRE (Cert. No. 1560), The Counselors of Real Estate
- MAI (Cert. No. 5983), The Appraisal Institute
- General Real Estate Appraiser (Cert. No. TX-1320438-G), the State of Texas
- Texas Broker's License #0197328

CURRENT AND PAST INDUSTRY SERVICE:
- North Texas Commercial Assoc. of Realtors, Board of Directors (1996)
- Texas Association of Realtors, Commercial Investment Division Board of Governors (1997-1999)
- The Appraisal Institute, past Assistant Regional Member for Review and Counseling; Board of Directors, Vice President and President of North Texas Chapter #17; Former Instructor, Income Properties/Market Analysis
- Dallas CREW (Commercial Real Estate Women) Founder and Past President
- The Real Estate Council, Founding Board Member
- Executive Women of Dallas, Board of Directors

AWARDS:
- 1987 CREW Outstanding Achievement Award

Price•Denton Inc.

DARREL G. COPELAND, MAI
Senior Appraiser

Mr. Copeland joined Price•Denton Inc. from his own successful appraisal firm, Copeland Real Estate Services. Previously, he was Vice President of Travis, Wolff Consulting, Inc., formerly known as Pannell Kerr Forster, a major national hotel accounting firm.

His areas of special expertise include hotels, from luxury properties like Ritz-Carlton to budget hotels, and residential subdivisions. Mr. Copeland's broad range of real estate appraisal and consulting experience also includes single-family and multifamily residences, office buildings, shopping centers, apartment complexes, industrial properties, mixed-use developments, nursing homes and free-standing retail buildings.

Mr. Copeland earned a Bachelor of Business Administration in Finance from the University of Texas at Arlington.

DESIGNATIONS:

- MAI (Cert. No. 8392), The Appraisal Institute
- General Real Estate Appraiser (Cert. No. TX-1320988-G), the State of Texas
- Texas Real Estate Broker, License #0329773

Price•Denton Inc.

REPRESENTATIVE LIST OF CLIENTS

ATTORNEYS

- Akin, Gump, Strauss, Hauer & Feld
- Gardere & Wynne
- Locke Purnell Rain Harrell
- Haynes & Boone
- Hughes & Luce

ACCOUNTING FIRMS

- Arthur Andersen & Company
- Coopers & Lybrand
- Ernst & Young-Kenneth Leventhal
- Price Waterhouse

COMMERCIAL BANKS

- Bank One
- Compass Bank
- First Bank
- Mercantile Bank of St. Louis
- NationsBank
- North Dallas Bank
- PNC Bank Corporation
- SouthTrust Bank
- Wells Fargo Bank

CORPORATE CLIENTS

- Dallas Semiconductor
- IMO Industries
- Raytheon E-Systems
- Texas Instruments

Price•Denton Inc.

REAL ESTATE INVESTORS/DEVELOPERS

- Aetna Investment Corporation
- Alex, Brown Realty
- AT&T Investment Fund
- Commerical Net Lease Realty
- Cornerstone Private Capital
- Crescent Real Estate Equities
- Koll Real Estate Group
- Lincoln Property Company
- Principal Financial
- Prudential Life Insurance Company
- The RREEF Funds
- The Staubach Company

NON-PROFIT/GOVERNMENTAL

- City of Dallas
- Dallas County
- FDIC
- Goodwill Industries
- The Housing Authority of the City of Dallas
- Southwestern Medical Foundation
- Texas Department of Transportation
- Town of Addison
- University of Texas System

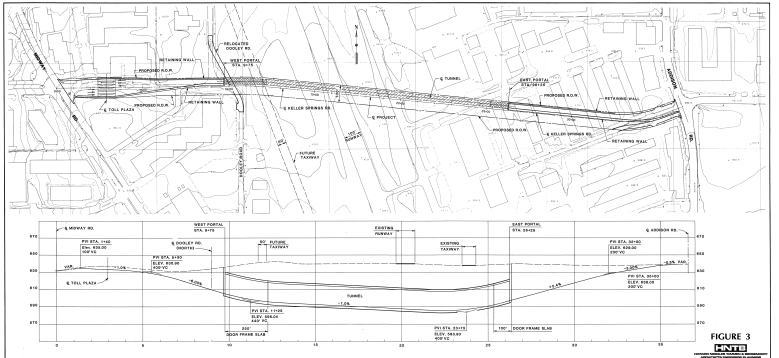

FIGURE 3

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