UNITED FOUNDERS PLAZA

INVESTMENT ANALYSIS

PREPARED FOR

R. W. Finley

INVESTMENT ANALYSIS
OF
UNITED FOUNDERS OFFICE TOWER
5900 Mosteller Drive
Oklahoma City, Oklahoma

PREPARED BY

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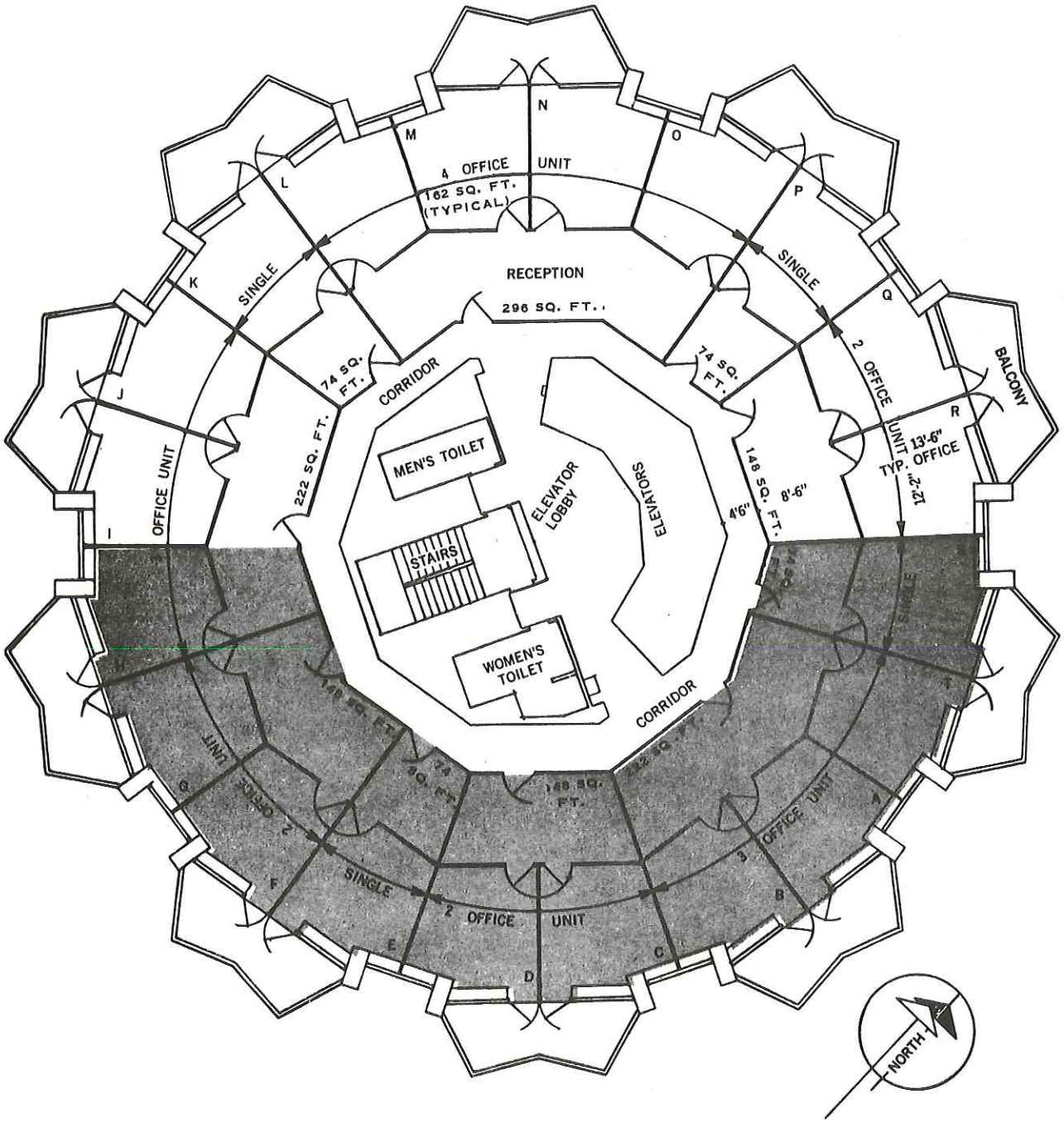
Dr. Daniel B. Kohlhepp holds a Ph. D. in Real Estate and Urban Analysis from the Ohio State University and a B.S. and M.B.A. in Real Estate from the Pennsylvania State University. He has consulted and written widely in the field of real estate investment analysis. His work has appeared in such publications as The American Real Estate and Urban Economics Journal, The Real Estate Appraiser and The Property Journal. He co-developed OUPROB, a probabilistic/deterministic discounted cash-flow model for real estate investment analysis, which is currently in use at over twenty-five universities. He is also a Director of the American Real Estate and Urban Economics Association.

UNITED FOUNDERS LIFE TOWER

TYPICAL OFFICE RENTAL PLAN

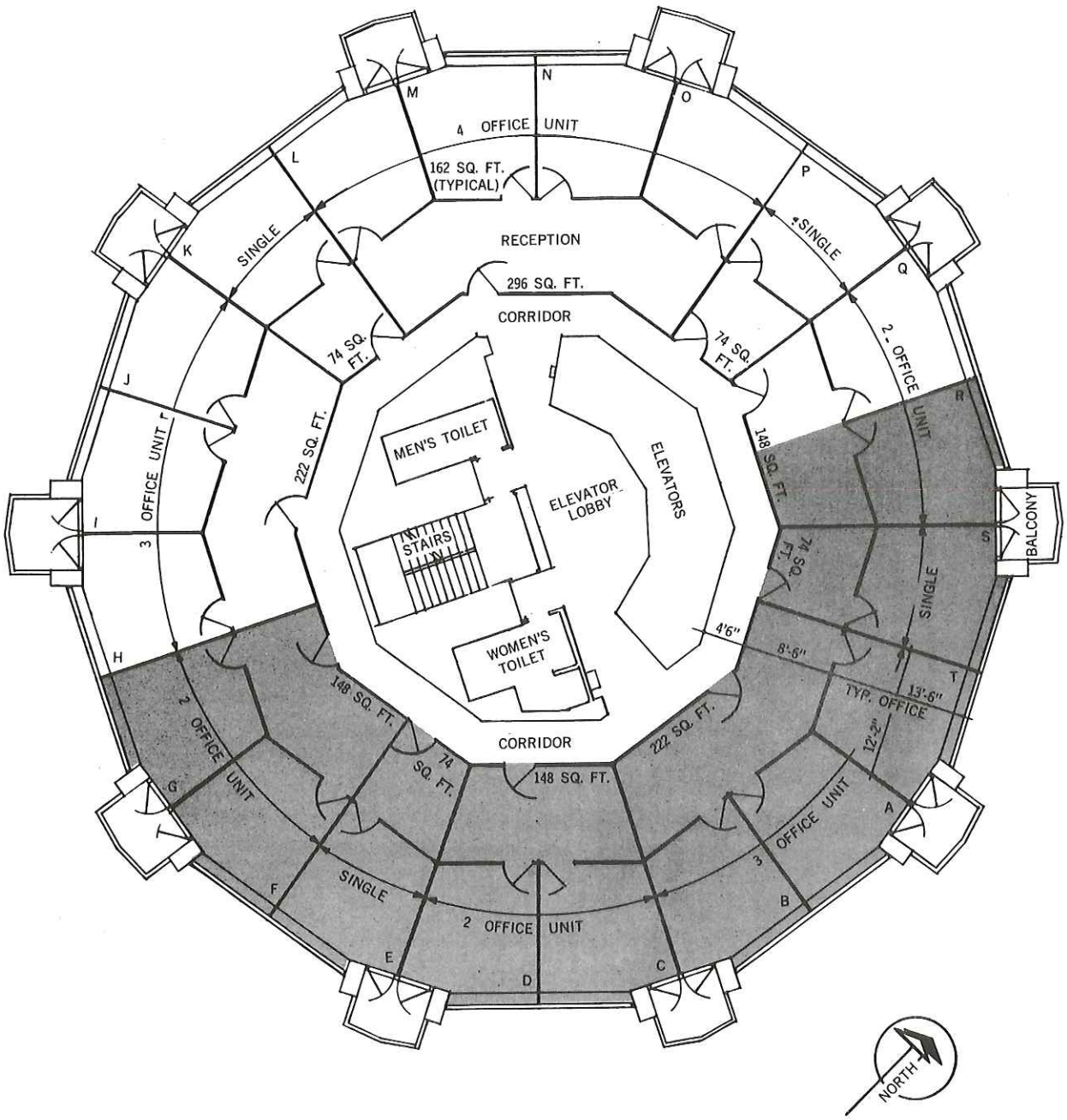
FLOORS 15 AND ABOVE



UNITED FOUNDERS LIFE TOWER

TYPICAL OFFICE RENTAL PLAN

FLOORS BELOW 15



United Founders Office Tower
5900 Mosteller Drive
Oklahoma City, Oklahoma

FACT SHEET

Property Data

Land: 312,432 square feet (7.2 acres)

Building:

Gross Area - 197,000 square feet

Leaseable Area - 153,142 square feet

Current Occupancy - 140,169 square feet (91.5%)

Terms of Purchase

Asking Price: $6,970,000. ($35.50 per square foot)

Required Equity Investment: $1,125,000 (16% of Asking Price)

Mortgage Conditions:

United Founders Life Insurance Company will take back a purchase money mortgage for the balance of the purchase price with the following terms:

Amount -	$ 5,845,000
Term -	35 years
Interest -	First Year = 5%, interest only
	Years 2-5 = 5%
	Years 6-10 = 6%
	Years 11-15= 7%
	Years 16-20= 8%
	Years 21-35= 10%

Lease-back:

United Founders to lease-back 40,000 square feet at projected market levels with full escalation provisions for increased operating expenses.

Income Projections

Rent schedule per square foot:

1979	Year 1	$7.00
1980	Year 2	7.35
1981	Year 3	7.71
1982	Year 4	8.10
1983	Year 5	8.50

Operating Expenses:

		As % of Gross Income	As % of Effective Gross
1979	Year 1	53.3	58.5
1980	Year 2	52.2	57.4
1981	Year 3	51.3	56.3
1982	Year 4	50.3	55.2
1983	Year 5	49.3	54.2

Cash Flows (After Financing, Before Tax):

1979	Year 1	$112,299
1980	Year 2	78,340
1981	Year 3	111,911
1982	Year 4	147,514
1983	Year 5	185,260

Reversion Expectations (After Five Years):

Property Reversion $7,818,336 (GIM = 6)

Equity Reversion (Before Tax) $1,794,079

Profitability Analysis

Cash-on-Cash Return:

1979	Year 1	.10
1980	Year 2	.07
1981	Year 3	.099
1982	Year 4	.131
1983	Year 5	.165

Justified Investment Price (15% Equity Yield Rate):

$7,143,897

Internal Rate of Return Analysis:

On Total Capital - 7.63%
On Equity with Reinvestment Rate Equal to IRR - 18.86%
On Equity with Reinvestment Rate Set at 10% - 17.74%

Risk Analysis:

		Debt Coverage Ratio	Break-even Occupancy Rate
1979	Year 1	1.38	.80
1980	Year 2	1.22	.84
1981	Year 3	1.31	.82
1982	Year 4	1.41	.79
1983	Year 5	1.52	.76

SYNOPSIS

The United Founders Office Tower can provide an excellent equity investment opportunity providing the following conditions are met:

1. Existing leases which are currently below market rental levels are renegotiated at the current market rental rates.

2. Utility costs are reduced to $100,000 annually by retrofitting the existing air conditioning system.

3. The liberal financing arrangements offered by the United Founders Life Insurance Company are accepted by the prospective investor.

The rental rates and operating expenses are fairly well established by the real estate market and the physical characteristics of the structure, and together they generate a relatively low net operating income. However, the financial arrangement offered by the United Founders Life Insurance Company more than compensates for the low net operating income and generates very acceptable equity cash flows. These financing terms are presented in the fact sheet as well as in the text of this report.

Based on the current and expected market conditions, this property should produce the following cash-on-cash returns:

Year 1	.10
Year 2	.07
Year 3	.099
Year 4	.131
Year 5	.165

These annual returns are very competitive in the present real estate market. Furthermore, when the equity reversion at the end of an expected five year holding period is considered, the internal rate of return on equity is 18.86%. This return is also quite competitive. Additional evidence of the profitability of this investment is provided by the property's Justified Investment Price of $7,143,877. That is, the property can be purchased for a price up to this amount, and the equity investor will still earn at least a 15% return.

The liberal financing terms available for this property also minimize the business and financial risk exposure. Both the debt coverage ratios and the break-even occupancy rates are well within the safety zone for this type of investment.

In summary, the equity investment in the United Founders Office Tower should receive a return which more than adequately compensates the equity investor for the risks incurred.

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I. INTRODUCTION

The United Founders Office Tower, a twenty story cylindrical building which serves as the home office headquarters for the United Founders Life Insurance Company, is currently being offered for sale. The asking price for the 7.2 acres of land and the building is $6,970,000. This price includes a $300,000 capital expenditure program to retrofit the existing heating and air conditioning system and thereby increase its efficiency. The financial terms of the sale include a required equity investment of $1,125,000 with the United Founders Life Insurance Company taking back the remaining amount as a 35 year purchase money mortgage at below-market interest rates, i.e., first five years at 5%, second five years at 6%, third five years at 7%, fourth five years at 8%, and the last fifteen years at 10%.

The purpose of this report is to analyze the investment potential of the equity position in the United Founders Office Tower. This analysis is based on the most likely economic and financial conditions expected to occur in the near future. In the next section of the paper, these competitive conditions are discussed. Following this is a brief description of the analytical technique used in the study. In Section IV the investment analysis is presented on a before-tax basis, and both profitability and risk measures are discussed. Section V includes the federal income tax consideration of an investment of this nature, and the property is evaluated on an after-tax basis assuming first a five year and then a ten year holding period. Finally, the findings of the study are summarized in the last section.

II. COMPETITIVE CONDITIONS

This section presents the current and expected future competitive conditions which affect the profitability of the United Founders Office Tower (U.F.T.).

Rental Market

The rental market in the Oklahoma City area has been very strong for the past year. This is evidenced by high occupancy rates (90-95%) in all major office buildings and increasing rental rates. Office rents in downtown Oklahoma City are currently ranging from $7.00 to $9.00 per square foot per year while office space in the vicinity of the United Founder Tower rents between $6.00 and $8.00 per square foot at this time. The demand for space in the Oklahoma City area is expected to remain strong due to the rapid commercial and industrial growth it is now experiencing. The demand for office space in and around the U.F.T. is expected to be very strong as this area continues to develop as the major business district outside of downtown Oklahoma City and as the trend of office space users to seek space outside of the Central Business District progresses.

The U.F.T. has 153,147 square feet of leasable area. Presently 140,169 square feet are leased (91% occupancy) at an average rental rate of $5.50 per square foot. Thus an annual effective gross income of $780,000 is generated. This rent schedule appears to be under the market rents for this area and type of building, and it appears that the U.F.T. can support an average rental rate of $7.00 per square foot at this time. Also, given the economic trends in this area this average rental rate

should increase by at least 5% per year for the next five years. Therefore, as 96% of the existing leases are renegotiated over the next two years, the rents will be raised to the projected market rental rates with the provision that leases reflect full escalation of operation expenses. The United Founders Company has already agreed to lease back 40,000 square feet of space under these conditions. On this basis, the rent schedule for the U.F.T. is projected to be:

Year	Average Rental Rate
1979	$7.00
1980	7.35
1981	7.71
1982	8.10
1983	8.50

Operating Expenses

The original design and construction of the U.F.T. was energy-inefficient. For example, during the past year operating expenses for this property were $671,000 which included approximately $310,000 gas and electricity. These expenses are rather high especially when they are compared to average operating expense ratios of 45-50% for efficiently built and operated office buildings. To rectify this functional obsolescence the existing heating and air conditioning system is currently being retro-fitted. This $300,000 capital expenditure is expected to reduce the annual energy expenses by at least $100,000 per year, and it should be completed during this year. It is therefore assumed that the operating expenses for the U.F.T. should be $571,000 next year and these expenses are expected to increase by 3% annually for the next five years. Consequently, the following operating expense ratios are projected:

Year	Operating Expenses as a Percent of Gross Income	Operating Expenses as a Percent of Effective Gross Income
1979	53.3	58.5
1980	52.2	57.4
1981	51.3	56.3
1982	50.3	55.2
1983	49.3	54.2

Financial Conditions

Probably the most exciting aspect of the U.F.T. investment is the favorable financing terms under which the property can be purchased. The United Founder Life Insurance Company has agreed to finance 84% of the asking price. This $5,845,000 mortgage is to be fully amortized over 35 years. The interest rate on the mortgage is 5% for the first five years. The interest rate is to increase to 6% for the second five year period, to 7% for the years 11-15, to 8% for years 16-20, and finally to 10% for the last 15 years of the mortgage. As an additional bonus the first year of the mortgage is interest only. The full amortization schedule of this mortgage is presented in Table 1.

The extremely favorable conditions of this mortgage become quite obvious when they are compared to the current financing terms generally available in the current mortgage market. Typically for this type of property, a mortgage for 80% of the value is available and the interest rate is 9 3/4% plus 1-1½ points. Usually these mortgages are amortized over a 25 year period with a lender's option to call the mortgage due at the end of 15 years.

Property Appreciation Expectations

Equity investors in real estate are aware that in addition to the annual returns afforded by the real estate investment, the

TABLE 1

MORTGAGE AMORTIZATION SCHEDULE

Amount : $ 5,845,000
Term : 35 years
Interest: Year 1 = 5 %, Interest Only
Years 2 - 5 = 5 %
Years 6 - 10 = 6 %
Years 11 - 15 = 7 %
Years 16 - 20 = 8 %
Years 21 - 35 = 10 %

YEAR	ANNUAL DEBT PAYMENT	INTEREST EXPENSE	AMORTIZATION OF PRINCIPAL	REMAINING PRINCIPAL	EFFECTIVE MORTGAGE CONSTANT
1	292250.	292250.	0.	5845000.	0.05000
2	357856.	290725.	67131.	5777869.	0.06194
3	357856.	287291.	70565.	5707304.	0.06270
4	357856.	283680.	74175.	5633128.	0.06353
5	357856.	279885.	77970.	5555157.	0.06442
6	399671.	331453.	68218.	5486938.	0.06442
7	399671.	327246.	72446.	5414512.	0.07381
8	399671.	322779.	76893.	5337619.	0.07488
9	399671.	318036.	81635.	5255983.	0.07604
10	399671.	313001.	86671.	5169312.	0.07732
11	438427.	359346.	79081.	5090230.	0.08613
12	438427.	353629.	84798.	5005432.	0.08759
13	438427.	347499.	90928.	4914503.	0.08921
14	438427.	340926.	97501.	4817001.	0.09102
15	438427.	333878.	104550.	4712451.	0.09304
16	473002.	373396.	99606.	4612845.	0.10254
17	473002.	365129.	107873.	4504971.	0.10500
18	473002.	356175.	116827.	4388144.	0.10779
19	473002.	346479.	126523.	4261620.	0.11099
20	473002.	335977.	137025.	4124595.	0.11468
21	531877.	406830.	125047.	3999548.	0.13298
22	531877.	393737.	138141.	3861407.	0.13774
23	531877.	379271.	152606.	3708801.	0.14341
24	531877.	363292.	168586.	3540215.	0.15024
25	531877.	345639.	186239.	3353976.	0.15858
26	531877.	326137.	205740.	3148235.	0.16894
27	531877.	304593.	227284.	2920951.	0.18209
28	531877.	280793.	251084.	2669867.	0.19921
29	531877.	254502.	277375.	2392491.	0.22231
30	531877.	225457.	306420.	2086070.	0.25497
31	531877.	193370.	338507.	1747563.	0.30435
32	531877.	157924.	373953.	1373610.	0.38721
33	531877.	118767.	413110.	960500.	0.55375
34	531877.	75509.	456368.	504132.	1.05504
35	531853.	27721.	504132.	0.	0.0

property's appreciation in value should be considered. In the analysis of the U.F.T., the property's value is conservatively estimated to increase from $6,970,000 to $7,818,000 over five years. This projection is based on the gross income in the fifth year which is capitalized with a Gross Income Multiplier of 6. At this time, office buildings in Oklahoma City appear to be selling at a price which is approximately equal to six times their gross income. For the purposes of this analysis it is assumed that this relationship between selling price (property value) and gross income will remain relatively constant over the next five years.

Return Requirements

In any potential prospective investment the risk-return trade-offs are critically important to the equity investor. The total risks of a real estate investment include not only the risks due to general economic conditions (business risk) but also the additional risks caused by debt financing (financial risk), and the risks inherent with investments in non-liquid assets (liquidity risks). An investor must be adequately compensated for incurring these risks in the form of a "risk premium" which is a return that is required in addition to the return available from risk-free investments, i.e. treasury bills, savings accounts, etc. Figure 1 graphically depicts the risk-return trade-off faced by equity investors.

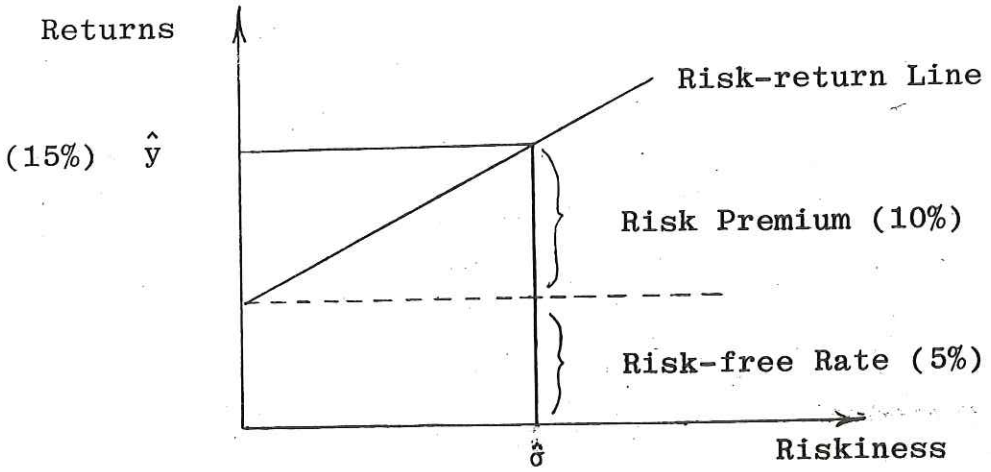

FIGURE 1.

The risks involved in real estate investments are usually subjectively evaluated in relation to alternative investments with similar risk. On this basis the rate of return required by equity investors to invest in the U.F.T. is estimated to be 15%. This provides for an annual risk premium of 10%. The required rate of return is usually called the equity yield rate by real estate appraisers and includes returns from annual cash flows as well as the return realized at the disposition of the property.

The next section of the paper describes the general framework in which the above conditions and assumptions are evaluated.

III. DESCRIPTION OF THE INVESTMENT ANALYSIS PROCEDURE

The methodology employed in the analysis of the United Founders Office Tower is a computer-based, market simulation analysis. In this methodology the market conditions are simulated in the sense that a prospective investor first purchases the subject property. He then rents the property, suffers vacancy losses, and pays the operating expenses and mortgage for each year that he owns the property. The investor is permitted to sell the property at the end of the specified ownership period and to realize his capital gains after the selling commission and outstanding mortgage balance are paid. In this manner the equity cash flows for each year are produced as well as the equity reversion amount at the end of the holding period.

In actuality, the market behavior of the equity investor is described mathematically and then a computer program is designed to allow the simulation of the real estate investor under a variety of assumptions. The program used in this study was developed at the University of Oklahoma and is called OUPROB.

The annual cash flows and equity reversion generated by the computer simulation are evaluated with three different types of profitability measures: annual cash-on-cash returns, Justified Investment Price, and internal rate of return; and two kinds of risk measures: debt coverage ratios and break-even occupancy rates.

Annual Cash-on-Cash Return

The annual rate of return on an equity investment is most commonly evaluated by dividing the before-tax, after-financing

cash flow by the required equity investment. This rate is alternatively called the equity dividend rate or the "cash-on-cash return". The major limitation of this profitability measure is that only annual cash flows are considered and the equity reversion at the end of the holding period is ignored.

Justified Investment Price

The Justified Investment Price (J.I.P.) is the price at which a property can be bought or sold to yield a given required rate of return on equity. The J.I.P. represents the present value of the annual cash flows and equity reversion discounted at the required rate of return on equity plus the amount of the mortgage loan at the time of the sale, i.e.,

(1A) J.I.P. = Present Worth of Equity Cash Flows + Present Worth of Equity Reversion + Mortgage Amount

or algebraically,

$$\text{(1B)}\quad \text{J.I.P.} = \sum_{t=1}^{n} \frac{\text{Cash Flow}_t}{(1+y)^t} + \frac{\text{Equity Reversion}_n}{(1+y)^n} + \text{Mortgage Amount}$$

where y = required rate of return on equity

Theoretically, the J.I.P. is simply a complex application of the traditional mortgage-equity appraisal technique. The J.I.P. is compared to the asking price of the property to determine if the property meets the return requirements of the equity investor. This is called net present value analysis (NPV) and the following decision rules are used:

If NPV $\geq$ 0, Buy

If NPV $<$ 0, Don't buy

Where NPV = J.I.P. - Asking Price.

Internal Rate of Return on Equity

The internal rate of return on equity is the best overall measure of the profitability of the equity investment because it considers both the timing and amount of annual cash flows to equity as well as the timing and amount of the equity reversion. It is the actual rate of return which the equity investor can expect if he purchases the property at the stated asking price and the forecasted equity benefits are experienced. The internal rate of return is technically defined as that rate of return which equates the present worth of the future equity cash flows and equity reversion to the required equity investment. Technically, the internal rate of return on equity (IRR_e), is defined as follows:

$$\text{(2)}\quad \text{Required Equity Investment} = \sum_{t=1}^{n} \frac{\text{Cash Flow}_t}{(1+IRR_e)^t} + \frac{\text{Equity Reversion}_n}{(1+IRR_e)^n}$$

The following decision rules are usually used with this profitability measure:

If $IRR_e \geq y$, Buy
If $IRR_e < y$, Don't buy

where y = required rate of return on equity

Risk Analysis

In conjunction with the profitability analysis of the property, a risk analysis is usually performed. In the procedure used in this study two measures of risk are employed: the annual debt coverage ratio and the break-even occupancy rate. They are defined as follows:

(3) Debt Coverage Ratio = $\frac{\text{Net Operating Income}}{\text{Debt Payment}}$

(4) Break-Even Occupancy Rate = $\frac{\text{Operating Expenses + Debt Payment}}{\text{Gross Income}}$

The debt coverage ratio indicates the property's ability to meet the mortgage obligations while the break-even occupancy rate indicates the minimum occupancy that can be experienced before negative cash flows are experienced.

The next section of the paper presents the investment analyses of the United Founders Office Tower using the techniques discussed in this section.

IV. INVESTMENT ANALYSIS

The investment analysis presented in this section is based upon the expected market conditions discussed in Section II of the paper. These conditions are then analyzed using the framework outlined in the previous section. All of the calculations in this section are done on a before-tax basis. This section is divided into four parts, as the after-financing, before-tax cash flows and equity reversion are first presented followed by the annual cash-on-cash returns the Justified Investment Price, the internal rate of return on equity, and finally the risk analysis.

Cash Flows and Equity Reversion

The annual after-financing, before-tax cash flows and equity reversion amount are summarized in Table 2. As this table indicates the property produces positive cash flows each year and a substantial equity reversion after five years. The high first year cash flow reflects the first year interest-only mortgage provision. The lower second year cash flow is caused by the increased debt payment while the cash flows from years three to five show a steady increase as the leases are renegotiated and brought up to the market levels. These positive annual cash flows for each year should make this property attractive to equity investors.

Annual Cash-on-Cash Returns

The annual cash on cash returns are based on the cash flows shown in Table 2 and an initial equity investment of $1,125,000.

TABLE 2

CASH FLOW and EQUITY REVERSION SUMMARY (Before Income Taxes)

ANNUAL CASH FLOWS

Year	Gross Income	-	Vac & Coll Allowance	=	Effective Gross Income	-	Operating Expenses	=	Net Operating Income	-	Annual Debt Payment	=	Equity Cash Flow (Before Taxes)
1	1072032.		96483.		975549.		571000.		404549.		292250.		112299.
2	1125632.		101307.		1024325.		588130.		436195.		357856.		78340.
3	1181913.		106372.		1075540.		605774.		469767.		357856.		111911.
4	1241007.		111691.		1129316.		623947.		505370.		357856.		147514.
5	1303056.		117275.		1185780.		642665.		543115.		357856.		185260.

Equity Reversion After Five Years

Sales Price (End of Holding Period)	=	7818336.
Sales Commision Espense	-	469100.
Remaining Debt Principal	-	5555157.
Net Proceeds From Sale (Before Tax)	=	1794079.

These returns are:

Year	Cash-on-Cash Return
1	.10
2	.07
3	.099
4	.131
5	.165

Justified Investment Price

Based on the equity benefits shown in Table 2, a mortgage loan of $5,845,000, and a required rate of return on equity of 15%, the Justified Investment Price for this property is $7,144,000. The J.I.P. is determined as follows:

Present Worth of Equity Cash Flow (BT)	$ 406,920
Present Worth of Equity Reversion (BT)	891,977
Original Mortgage Amount	5,945,000
Justified Investment Price	$7,143,897

Since the J.I.P. is greater than the asking price, an equity investor requiring a 15% annual rate of return is "justified" in purchasing the property at the asking price because his expected rate of return on equity is greater than 15%.

Internal Rate of Return Analysis

From the above analysis it is obvious that the expected rate of return on equity is greater than 15%. Indeed, the internal rate of return calculations indicate that expected return on equity is 18.86%. As mentioned earlier, this rate of return considers both annual cash flows and the equity reversion and is the best measure of profitability. Again, an equity investor

desiring at least 15% would be justified in purchasing this property because the expected return is 18.86%.

Risk Analysis

The debt coverage ratio and break-even occupancy rates for each year are shown below.

Year	Debt Coverage Rates	Break-Even Occupancy Rates
1	1.384	.805
2	1.219	.84
3	1.313	.815
4	1.412	.791
5	1.518	.761

The debt coverage ratio shows that the earning power of the property is quite adequate to cover the mortgage payment. Therefore, the risk of default is very small for this property. Also, when the break-even occupancy rates are compared to the existing occupancy rates of 91%, the risk of negative cash flows should be minimal.

Overall, the analysis of the investment potential of United Founders Office Tower is very favorable. The next section considers the income tax implication of this property.

V. INCOME TAX CONSIDERATIONS

The profitability of equity investments in real estate is often enhanced by federal income tax savings that are produced when a property shows a negative taxable income. Since the United Founders Office Tower is non-residential and has been previously depreciated, it can only be depreciated at straight line rates. The depreciable basis of this property is considered to be 85% of the selling price, and the expected depreciable life of the improvements is 20 years. Thus, the depreciable basis of $5,797,000 produces an annual depreciation deduction of $2,898,500. Table 3 shows the expected depreciation for the property. These depreciation deductions together with the annual mortgage interest expense are subtracted from the Net Operating Income to determine the taxable income or tax loss each year. This amount is multiplied times the ordinary income tax rate to obtain the annual tax liability or tax savings which, when added to the before-tax cash flow, gives the after-tax cash flow for each year. Table 4 shows these calculations as well as the determination of the after-tax equity reversion.

The tax savings and liabilities used in this analysis are based on an assumed 50% ordinary income tax rate and a 25% capital gain tax rate. Different tax rate assumptions would alter the results of this study.

After-Tax Return on Equity

The after-tax return on equity is similar to the "cash-on-cash" return except that the annual after-tax cash-flows are divided by the initial required equity. These annual returns are:

TABLE 3

BUILDING DEPRECIATION SCHEDULE

BASIS	LIFE	METHOD	SALVAGE VALUE	PROPERTY TYPE
57970000.	20.0	STRAIGHT LINE	0.0 %	Non Residential Previously Depreciated

YEAR	ANNUAL DEPRECIATION	ADJUSTED BASIS	TOTAL DEPRECIATION	TOTAL EXCESS DEPRECIATION SUBJECT TO RECAPTURE
1	2898500.	55071488.	2898500.	0.
2	2898500.	52172976.	5797000.	0.
3	2898500.	49274464.	8695500.	0.
4	2898500.	46375952.	11594000.	0.
5	2898500.	43477440.	14492500.	0.
6	2898500.	40578928.	17390992.	0.
7	2898500.	37680416.	20289488.	0.
8	2898500.	34781904.	23187984.	0.
9	2898500.	31883392.	26086480.	0.
10	2898500.	28984880.	28984976.	0.
11	2898500.	26086368.	31883472.	0.
12	2898500.	23187856.	34781968.	0.
13	2898500.	20289344.	37680464.	0.
14	2898500.	17390832.	40578960.	0.
15	2898500.	14492332.	43477456.	0.
16	2898500.	11593832.	46375952.	0.
17	2898500.	8695332.	49274448.	0.
18	2898500.	5796832.	52172944.	0.
19	2898500.	2898332.	55071440.	0.
20	2898500.	0.	57969936.	0.

TABLE 4

AFTER-TAX CASH FLOWS and EQUITY REVERSION

ANNUAL AFTER-TAX CASH FLOWS

Year	Net Operating Income	- Interest Expense	- Depreciation Expense	= Taxable Income	x Tax Rate	= Income Tax Liab. (Credit)	+ Cash Flow Before Taxes	= Cash Flow After Tax
1	404549.	292250.	298500.	-186201.	-.50	+93100.	112299.	205400.
2	436195.	290725.	298500.	-153030.	-.50	+76515.	78340.	154855.
3	469767.	287291.	298500.	-116024.	-.50	+58012.	111911.	169923.
4	505370.	283680.	298500.	-76811.	-.50	+38405.	147514.	185919.
5	543115.	279885.	298500.	-35270.	-.50	+17635.	185260.	202890.
6	583125.	331453.	298500.	-46829.	-.50	+23414.	183453.	206867.
7	625518.	327246.	298500.	-227.	-.50	+114.	225847.	225961.
8	670428.	322779.	298500.	49149.	-.50	-24574.	270756.	246182
9	717994.	318036.	298500.	101458.	-.50	-50729.	318323.	267594.
10	768359.	313001.	298500.	156858.	-.50	-78429.	368687.	290258.

After-Tax Equity Reversion
After Five Years:

Sales Price (End of Holding Period)	=	7818336.
Sales Commision Expense	-	469100.
Remaining Debt Principal	-	5555157.
Net Proceeds From Sale (Before Tax)	=	1794079.
Tax On Sale At End of Period	-	467934.
Net Proceeds (After Tax)	=	1326145.

After Ten Years:

Sales Price (End of Holding Period)	=	9978348.
Sales Commision Expense	-	598701.
Remaining Debt Principal	-	5169312.
Net Proceeds From Sale (Before Tax)	=	4210335.
Tax On Sale At End of Period	-	1348661.
Net Proceeds (After Tax)	=	2861674.

Year	After-Tax Return on Equity
1	.183
2	.138
3	.151
4	.165
5	.180
6	.189
7	.201
8	.219
9	.238
10	.258

As these returns indicate there are substantial annual tax savings afforded by an equity investment in the U.F.T.

Justified Investment Price - After Tax and Internal Rate of Return Analysis - After Tax

The annual tax savings available are partially offset by the capital gains tax at the end of the holding period. Hence, the length of the holding period is of critical importance when the tax aspects of the investment are considered. A five year holding period does not fully exploit the tax advantages of the property, so the expected holding period was increased to ten years. The effects of income and capital gain taxes are shown below in the After-Tax Justified Investment Price and the After-Tax Internal Rate of Return:

	5 Years	10 Years
After-Tax J.I.P.	$7,119,000	$7,447,000
After-Tax IRR_e	18.76%	21.21%

VI. SUMMARY AND LIMITING ASSUMPTIONS

This investment analysis of the equity investment in the United Founders Office Tower suggests that the expected returns more than compensate the investor for the risks incurred. Annual cash-on-cash returns ranging from 9.9% to 16.5% are very competitive in the current real estate market as is the internal rate of return on equity of 18.86% which compares quite favorably to the 15% internal rate of return which is usually required for equity investments of this nature.

The investment analysis presented here is based on the economic and financial information provided to this writer by R. W. Finley, David Bradshaw C.P.A., and Charles Ming. The investment calculations were made using OUPROB, a real estate investment model. The inferences drawn from this information and these calculations are made by the writer with the recognition that, if the assumed future conditions do not materialize, the actual cash flows and rates of return could be substantially different (higher or lower) from the ones presented in this report.

PREPARED FOR

R. W. Finley

INVESTMENT ANALYSIS
OF
THE HILTON INN NORTHWEST
2945 NORTHWEST EXPRESSWAY
OKLAHOMA CITY, OKLAHOMA

PREPARED BY

Daniel B. Kohlhepp, Ph.D.
Assistant Professor of Business Administration
The University of Oklahoma

June 13, 1978

Dr. Daniel B. Kohlhepp holds a Ph.D. in Real Estate and Urban Analysis from the Ohio State University and a B.S. and M.B.A. in Real Estate from the Pennsylvania State University. He has consulted and written widely in the field of real estate investment analysis. His work has appeared in such publications as The American Real Estate and Urban Economics Journal, The Real Estate Appraiser, and The Property Journal. He co-developed OUPROB, a probabilistic/deterministic discounted cash-flow model for real estate investment analysis, which is currently in use at over twenty-five universities. He is also a Director of the American Real Estate and Urban Economics Association.

HILTON INN NORTHWEST
2945 Northwest Expressway
Okalhoma City, Oklahoma

FACT SHEET

Property Data

Land: 4.87 acres (212,311 square feet)

Buildings:

- Cabanas - 23
- Hotel Rooms - 195
- Dining Areas - 3 (total seating capacity - 278)
- Banquet Rooms - 4 (total seating capacity - 1020)
- Private Club - seats 115

Terms of Purchase

Asking Price: $4,670,000
Required Equity Investment: $1,700,000 (36.4%)
Mortgage Terms:
Purchase money mortgage to be given by the Founders Life Insurance Company with the following terms -

Amount: $2,970,000 (63.6%)
Term: 30 years
Interest: 8%
Mortgage Constant: 8.805%

Income Projections

Annual Income:

	%	1979 Year 1	1980 Year 2	1981 Year 3	1982 Year 4	1983 Year 5
Room Rents	56	$1,363,327	1,417,860	1,474,574	1,533,556	1,594,897
Food	30.8	749,830	779,823	811,015	843,456	877,193
Beverage	8.8	214,237	222,807	231,716	240,987	250,627
Telephone	3.4	82,773	86,094	89,528	93,109	96,833
Miscellaneous	1.0	24,345	25,319	26,331	27,384	28,480
Total	100%	$2,434,513	2,531,893	2,633,167	2,738,492	2,848,030

Room Rents are based on an average annual occupancy of 75%.

Operating Expenses (as a percent of total income):

1979	Year 1	79.6
1980	Year 2	79.6
1981	Year 3	79.6
1982	Year 4	79.6
1983	Year 5	79.6

Cash Flows (after-financing, before taxes):

1979	Year 1	236,044.
1980	Year 2	255,946.
1981	Year 3	276,643.
1982	Year 4	298,168.
1983	Year 5	320,554.

Reversion (at end of five years):

Property Reversion $5,413,800
Equity Reversion $2,265,402

Profitability Measures

Cash-on-Cash Returns:

1979	Year 1	13.9%
1980	Year 2	15.1%
1981	Year 3	16.3%
1982	Year 4	17.5%
1983	Year 5	18.9%

Justified Investment Price: $5,006,844.
for required rate on return on equity of 15%

Internal Rate of Return Analysis (Before tax):

Return on Total Capital: 12.82%
Return on Equity with reinvestment rate equal to the internal rate: 20.31%
Return on Equity with reinvestment rate equal to 10%: 18.28%

Risk Analysis

		Debt Coverage Ratio	Break-Even Occupancy Rate
1979	Year 1	1.90	.69
1980	Year 2	1.98	.69
1981	Year 3	2.06	.69
1982	Year 4	2.14	.68
1983	Year 5	2.23	.68

SYNOPSIS

This investment analysis of the Hilton Inn Northwest indicates that the overall internal rate of return on the equity investment should be 18% to 21% and the annual cash-on-cash returns should range between 13.9% in year 1 and 18.9% in year 5. Two measures of financial risk, the debt coverage ratio and the break-even occupancy rate, show that the financial risks on this property are minimal. Given the low level of risk and the relatively high equity returns, the equity investment potential of this property is substantial.

The investment analysis is based on the assumptions that the property is purchased for $4,670,000. with an equity investment of $1,700,000. and a mortgage of $2,970,000. (30 year term, 8% interest). It further assumes that the total income from the property increases by 4% annually and that the operating expenses continue to be 79.6% of the total income. Finally, this analysis assumes that the property appreciates in value at a 3% annual rate over the next five years.

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I. INTRODUCTION

The purpose of this report is to analyze the investment potential of the equity position in the Hilton Inn Northwest (hereafter abbreviated H.I.N.). The H.I.N. is currently being offered for sale by the United Founders Life Insurance Company at a price of $4,670,000. The United Founders Life Insurance Company will take back a purchase money mortgage for $2,970,000 at 8% interest and 30 years. Thus, an equity investment of $1,700,000 is required.

The next section of this report discusses the current and future economic conditions which are expected to affect the property. The following section presents the analysis of these conditions in terms of the profitability of the equity investment. The final section summarizes the findings of this study.

II. CURRENT AND FUTURE MARKET CONDITIONS

The current and future market conditions affecting the Hilton Inn Northweat appear to be quite good. The H.I.N. is located nearly adjacent to the United Founders Office Tower, and it is located in the center of the fastest growing business district in Oklahoma City. The accounting records of the H.I.N. indicate that the past three years (1975, 1976, and 1977) have been very profitable. The returns for the first three months of 1978 suggest that this will also be a very good year. The income projections estimated in this report are based on H.I.N.'s 1977 figures since this is the last complete year of information available. As such, these projections may be on the conservative side.

Expected Incomes

There are four primary sources of income for the H.I.N.: (1) room rentals, (2) food sales, (3) beverage sales, and (4) telephone charges. The largest of these, room rentals, represents 56% of the total income. The average room rental rate increased 8% in 1977 over the 1976 level, and the average occupancy rate increased from 71.4% in 1976 to 75.7% in 1977. These two factors combined to produce a 15% increase in income from room rentals in 1977. As a conservative estimate of room rents,

this analysis assumes that the rate of growth will be only 4% annually. Further assuming that the historical relationship between room rents and food, beverage, and telephone incomes remains constant over the next five years, these are also projected to increase at an annual rate of 4%. Table 1 presents these income projections as well as the expected operating expenses, debt payments, and equity reversion.

Operating Expenses and Debt Payments

In 1977 the actual operating expenses of the H.I.N. were $1,936,956. These expenses represent 79.6% of the total annual income, and this ratio appears to be rather stable over time. On this basis, the operating expenses were projected to remain at 79.6% of annual income over the next five years.

The United Founders Life Insurance Company will take back a 30 year mortgage at 8% for $2,970,000. These terms require a monthly payment of $21,793. or an annual debt payment of $261,513. Table 2 is an approximate amortization schedule of this mortgage.

TABLE 1

SUMMARY OF ANNUAL CASH FLOWS AND EQUITY REVERSION

	1979 Year 1	1980 Year 2	1981 Year 3	1982 Year 4	1983 Year 5
Room Rents	$1,363,327.	$1,417,860.	$1,474,574.	$1,533,556.	$1,594,897.
Food	749,830.	779,823.	811,015.	843,356.	877,193.
Beverage	214,237.	222,804.	231,716.	231,716.	250,627.
Telephone	82,773.	86,084.	89,528.	93,109.	96,833.
Miscellaneous	24,345.	25,319.	26,331.	27,834.	28,840.
Total Income	2,434,513.	2,531,893.	2,633,167.	2,738,492.	2,848,030.
- Operating Expenses	1,936,956.	2,014,434.	2,095,011.	2,178,811.	2,265,963.
Net Operating Income	497,557.	517,459.	538,156.	559,681.	582,067.
- Debt Payment	261,513.	261,513.	261,513.	261,513.	261,513.
Cash Flow (Before Taxes)	236,044.	255,946.	276,643.	298,168.	320,554.

EQUITY REVERSION AT END OF FIVE YEARS

Selling Price	$5,413,800.
-Selling Commission	324,828.
-Remaining Debt Principal	2,823,570.
Equity Reversion (Before Tax)	$2,265,402.

TABLE 2

MORTGAGE AMORTIZATION SCHEDULE

Loan Amount	Interest Rate	Term	Mortgage Constant	Payments Per Year
297,000.00	8.00%	30.00	0.08805	12

Year	Annual Debt Payment	Interest Expense	Amortization of Principal	Remaining Principal	Effective Mortgage Constant
1	261513.	236703.	24811.	2945189.	0.08879
2	261513.	234644.	26870.	2918319.	0.08961
3	261513.	232413.	29100.	2889218.	0.09051
4	261513.	229998.	31516.	2857702.	0.09151
5	261513.	227382.	34131.	2823579.	0.09262
6	261513.	224549.	36964.	2786605.	0.09385
7	261513.	221481.	40032.	2746572.	0.09521
8	261513	218159.	43355.	2703217.	0.09674
9	261513.	214560.	46953.	2656263.	0.09845
10	261513.	210663.	50851.	2605412.	0.10037
11	261513.	206442.	55071.	2550340.	0.10254
12	261513.	201871.	59642.	2490697.	0.10500
13	261513.	196921.	64593.	2426104.	0.10779
14	261513.	191560.	69954.	2356150.	0.11099
15	261513.	185754.	75760.	2280390.	0.11468
16	261513.	179466.	82048.	2198342.	0.11896
17	261513.	172656.	88858.	2109484.	0.12397
18	261513.	165281.	96233.	2013251.	0.12990
19	261513.	157293.	104220.	1909030.	0.13699
20	261513.	148643.	112870.	1796159.	0.14560
21	261513.	139275.	122239.	1673920.	0.15623
22	261513.	129129.	132384.	1541535.	0.16964
23	261513.	118141.	143372.	1398162.	0.18704.
24	261513.	106241.	155272.	1242889.	0.21041
25	261513.	93354.	168160.	1074729.	0.24333
26	261513.	79397.	182102.	892627.	0.29295
27	261513.	64283.	197217.	695410.	0.37604
28	261513.	47914.	213585.	481825.	0.54273
29	261513.	30187.	231313.	250512.	1.04386
30	261513.	10988.	250512.	0.	0.0

Expected Future Selling Price

The investment analysis presented in the next section of this report considers both the annual cash flows and the capital gain available at the time of property disposition. The property is projected to appreciate in value at an annual rate of 3% which represents a total increase in value of 16%. On this basis, the expected selling price of the H.I.N. at the end of a projected five year holding period is $5,413,800. Hotels are commonly valued at three to three and one-half times the annual room rental income, and the projected sales price of the H.I.N. is 3.39 times the annual room rental income in year five. Therefore, this projected sales price is considered realistic to somewhat conservative.

Required Rate of Return

The rate of return which is required to adequately compensate equity investors for the risk exposure inherent in the H.I.N. property is estimated to be 15%. That is, the H.I.N. property must produce a return on equity of at least 15% before it can be considered competitive in the present real estate investment market.

III. INVESTMENT ANALYSIS

The investment analysis presented in this section is based on the present and expected future market conditions which were discussed in the previous section of this repoert.

Cash Flows and Equity Reversion

The annual before tax, after-financing cash flows for each year of the projected five-year holding period are calculated in Table 1 and are summarized below:

1979	Year 1	$236,044.
1980	Year 2	255,946.
1981	Year 3	276,643.
1982	Year 4	298,168.
1983	Year 5	320,554.

These cash flows are substantial and show a positive trend over the holding period.

The derivation of the equity reversion is also shown in Table 1, and it is estimated to be $2,265,402 at the end of five years. This 33% increase in the equity investment value is due to the property's appreciation as well as the partial amortization of the mortgage loan.

Annual Cash-on-Cash Returns

The annual cash-on-cash return, sometimes called the equity dividend rate, is calculated by dividing the annual cash flows by the initial equity investment. The annual cash-on-cash returns for the H.I.N. are quite high and are as follows:

1978	Year 1	13.9%
1979	Year 2	15.1%
1980	Year 3	16.1%
1981	Year 4	17.5%
1982	Year 5	18.9%

These increasing annual returns reflect the increasing cash flows.

Justified Investment Price

The Justified Investment Price for H.I.N. is the most that an equity investor can pay for the property and still achieve the 15% required rate of return on equity. The Justified Investment Price for the H.I.N. is estimated to be $5,006,844. and is calculated as follows:

Present Worth of Cash Flows (discounted @ 15%)	$ 910,535.
Present Worth of Equity Reversion (discounted @ 15%)	1,126,309.
Original Mortgage Balance	2,970,000.
Justified Investment Price	$5,006,844.

Since the equity investor is "justified" in paying up to $5,006,844 for the H.I.N. and the asking price is only $4,670,000, net present value of the property is positive. This indicates that the actual rate of return on equity is greater than 15%, and an equity investor desiring at least a 15% return should purchase the property.

Internal Rate of Return Analysis

The internal rate of return on equity, IRR_e, is the best overall measure of the profitability of the equity investment because it considers both the timing and amount of the cash flows and equity reversion. The internal rate of return on equity for the H.I.N. is estimated to be 20.31%. It is calculated by determining what rate of discount equates the present value of the cash flows and equity reversion to the required equity investment, i.e.,

$$\text{Required Equity Investment} = \sum_{t=1}^{n} \frac{\text{Cash Flow}_t}{(1+IRR_e)^t} + \frac{\text{Equity Reversion}_n}{(1+IRR_e)^n}$$

or substituting,

$$1{,}700{,}000 = \frac{236044}{(1+IRR_e)^1} + \frac{255946}{(1+IRR_e)^2} + \frac{276643}{(1+IRR_e)^3} + \frac{298168}{(1+IRR_e)^4} + \frac{320554}{(1+IRR_e)^5} + \frac{2265402}{(1+IRR_e)^5}$$

so that $IRR_e = 20.31\%$

An assumption indigenous in the above calculation of the internal rate of return is that the annual cash flows are reinvested at a 20.31% per year. This may be an unrealistically high investment rate.

If the reinvestment rate is assumed to be 10% instead of 20.23%, the internal rate of return on equity for this property would be 18.27%. This lower internal rate of return on equity, IRR_e', is calculated as follows:

$$\text{Required Equity} = \sum_{t=1}^{n} \frac{\text{Cash Flow } (1+r)^{n-t}}{(1+IRR_e')^n} + \frac{\text{Equity Reversion}_n}{(1+IRR_e')^n}$$

where r = assumed reinvestment rate.

Substituting

$$1{,}700{,}000 = \frac{236044\ (1+.10)^4}{(1+IRR_{e'})} + \frac{255946\ (1+.10)^3}{(1+IRR_{e'})} + \frac{276643\ (1+.10)^2}{(1+IRR_{e'})}$$

$$+ \frac{298168\ (1+.10)^1}{(1+IRR_{e'})} + \frac{320554}{(1+IRR_{e'})} + \frac{2{,}265{,}402}{(1+IRR_{e'})}$$

so that $IRR_{e'} = 18.27\%$

The above internal rate of return analysis suggests that the H.I.N. is very profitable. Since this property produces an internal rate of return on equity that is well in excess of 15%, it should be considered quite favorably by equity investors in the present real estate market.

Risk Analysis

Two measures of the financial risks of the H.I.N. are the debt coverage ratios and the break-even occupancy rates. The very high debt coverage ratios and the very low break-even occupancy rates indicate that the financial risks in this investment are minimal. These measures are shown below:

		Debt Coverage Ratio	Break-Even Occupancy Rate
1979	Year 1	1.90%	69.2%
1980	Year 2	1.98	68.9
1981	Year 3	2.06	68.6
1982	Year 4	2.14	68.3
1983	Year 5	2.23	68.0

IV. SUMMARY AND LIMITING ASSUMPTIONS

This investment analysis of the Hilton Inn Northwest indicates that the equity investment should be quite profitable. The annual cash-on-cash returns and the internal rate of return on equity are more than adequate returns for the risks involved in this investment.

The information concerning the current and future market conditions and income projections was obtained from R. W. Finley, James Hoyt, and the accounting reports of the United Founders Life Insurance Company. The profitability analysis is based on the stated future income projections and deviations from these projections (higher or lower) could significantly alter the results of this analysis.

PREPARED FOR

R. W. Finley

INVESTMENT ANALYSIS OF THE PROPOSED OFFICE COMPLEX LOCATED ON UNITED FOUNDERS PLAZA EAST

PREPARED BY

Daniel B. Kohlhepp, PH.D.
Assistant Professor of Business Administration
The University of Oklahoma

June 21, 1978

Dr. Daniel B. Kohlhepp holds a Ph.D. in Real Estate and Urban Analysis from the Ohio State University and a B.S. and M.B.A. in Real Estate from the Pennsylvania State University. He has consulted and written widely in the field of real estate investment analysis. His work has appeared in such publications as The American Real Estate and Urban Economics Journal, The Real Estate Appraiser, and The Property Journal. He co-developed OUPROB, a probabilistic/deterministic discounted cash-flow model for real estate investment analysis, which is currently in use at over twenty-five universities. He is also a Director of the American Real Estate and Urban Economics Association.

PROPOSED OFFICE COMPLEX
United Founders Plaza East
Oklahoma City, Oklahoma

FACT SHEET

Property Description

Land: 7.83 Acres (341,224 square feet)

Proposed Buildings:

Four Off[illegible] Each

Tota[illegible] eet (4 x 75,000)

Total[illegible] e feet (4 x 63,750)

Expect[illegible] iod: 2 years

Expecte[illegible] 00 ($38 per square foot)

United Founders Proposed Office Complex 1978

Terms of Purchase

Land Price: $[illegible]

Expected Perman[illegible] Land and Building Cost

Amount: $[illegible]

Interest Ra[illegible]%

Amortization Period: 30 years

Mortgage Constant: 10.3%

Lender's Option to call after 15 years

Income Projections

Average Annual Rental Rates (per square foot):

1981	Year 1	$8.50
1982	Year 2	8.80
1983	Year 3	9.10
1984	Year 4	9.42
1985	Year 5	9.75

Annual Occupancy Rate: 93%

Annual Operating Expenses:

		As % Gross Income	As % of Effective Gross Income
1981	Year 1	.35	.376
1982	Year 2	.355	.382
1983	Year 3	.36	.387
1984	Year 4	.365	.393
1985	Year 5	.371	.40

Cash Flows (After Financing, Before Taxes):

1981	Year 1	$263,515
1982	Year 2	296,135
1983	Year 3	329,328
1984	Year 4	363,084
1985	Year 5	397,398

Reversion Expectations (After Five Years):

Property Reversion	$14,923,428
Equity Reversion	4,736,272

Profitability Measures

Annual Cash-on-Cash Returns (Equity Dividend Rates):

1981	Year 1	8.2%
1982	Year 2	9.2
1983	Year 3	10.3
1984	Year 4	11.3
1985	Year 5	12.4

Justified Investment Price:

Total Property (After Development)	$13,487,153
Land Value (After Development)	2,087,153
Today's Land Value (Before Development) with required rate of return equal to 12%	1,663,866

Internal Rate of Return Analysis:

Return on Total Capital (Debt and Equity	11.7%
Return on Equity with reinvestment rate equal to internal rate	16.7%
Return on Equity with reinvestment rate equal to 10%	15.9%

Risk Analysis

		Debt Coverage Ratio	Break-Even Occupancy Rate
1981	Year 1	1.265	.808
1982	Year 2	1.298	.798
1983	Year 3	1.331	.788
1984	Year 4	1.365	.779
1985	Year 5	1.40	.77

SYNOPSIS

This investment analysis of the proposed office complex on the United Founders Plaza East site indicates that the proposed development supports a Justified Land Value before development of $1,663,866. The construction of the office complex should produce an internal rate of return on equity between 15% and 17%, and the annual cash-on-cash returns should range from 8.2% in year 1 of the investment period to 12.4% in year 5 of the investment period. The analysis assumes that four, five story, office buildings are constructed during a two year period at a cost of $38 per square foot of floor space. Each building is to have 75,000 square feet of floor space so that the entire project is estimated to cost $11,400,000 exclusive of land. The risk analysis suggests that the construction cost could increase to $40 per square foot, and the proposed office complex would still produce a return on equity greater than 12%, the assumed required rate of return on equity.

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TABLE OF EXHIBITS

I. INTRODUCTION

The purpose of this report is to analyze the investment potential of 7.83 acres of land located just east of the United Founders Office Tower which is known as United Founders Plaza East. The Plaza East is currently being offered for sale for $1,450,000 by the United Founders Life Insurance Company. This analysis assumes that a four building office complex is the highest and best use of this site, and that the complex can be constructed at a cost of $38 per square foot over a two year period. A discounted cash flow model is used in the analysis to evaluate the profitability of the investment and to estimate the justified investment value of the site.

The next section of this report discusses the current and future economic conditions which affect the profitability of the proposed development, and the following section presents the profitability and risk analysis of the venture. The final section summarizes the findings of the study.

II. CURRENT AND FUTURE MARKET CONDITIONS

The current and future market condition affecting the development of the United Founders Plaza East determine the highest and best use(s) of this site. Several possible and permissable uses were evaluated, and the use which produced the highest return on the equity investment and which supported the highest land value was the four building office complex. Therefore, this proposed development is considered the highest and best use for the East Plaza, and the current and future market conditions are discussed as they relate to this development.

Development Costs

The proposed office complex is to consist of four, five-story, office buildings. Each building is to have a floor area of 75,000 square feet so that the complex will have 300,000 square feet of floor space. The buildings are to be efficiently built and should produce a leaseable floor area equal to 85% of the total floor area. The total time period for construction and lease-up of these buildings is expected to be two years. At this time the development cost for this type of project is about $35 per square foot of floor area. In order to account for expected increases in development costs during the next two years, the total development cost of the office complex is estimated to be $38 per square foot of floor space or a total cost of $11,400,000 for the four buildings. This figure does not include the land cost of $1,450,200. Thus the total cost to produce this complex is estimated to be $12,850,200 at the end of the two year development period.

Expected Rental Rates

The current demand for office space in Oklahoma City is quite strong as evidenced by increasing rental rates and high occupancy rates. Relatively new, high quality office space in the vicinity of Plaza East is currently being leased from $7 to $9 per square foot. On this basis the average annual rental rate for the proposed office complex is estimated to be $8.50 per square foot in 1981, and it is expected to gradually increase to $9.75 per square foot over five years. The total leaseable area of the complex is 255,000 square feet (85% of the total floor area), so that the annual gross income in 1981 should be $2,167,488. A 93% occupancy rate is projected over the five year investment period, and this would result in an effective gross income in 1981 of $2,015,763 which would gradually increase to $2,313,131 over five years.

Operating Expenses and Debt Payments

The proposed office buildings are to be energy-efficient and the first year's operating expenses are estimated to be 35% of the gross income and 37.6% of the effective gross income. These operating expenses are projected to increase 5% per year, thus the following operating expenses ratios are used in the investment analysis:

Operating Expenses		As % of Gross	As % of Effective Gross
1981	Year 1	.35	.376
1982	Year 2	.355	.382
1983	Year 3	.36	.387
1984	Year 4	.365	.393
1985	Year 5	.371	.399

At the end of the construction period the office complex is expected to be permanently financed with a 30 year, 9.75% interest mortgage for 75% of the total cost. Currently, long term mortgages of this type include a lender's option to call the mortgage due after fifteen years. Given these terms, the office complex should have $9,637,650 mortgage and annual debt payments of $993,627.

Property Appreciation Expectations

The office complex is projected to increase 16% in value over the five year investment period. The expected selling price of $14,923,428 is based on a Gross Income Multiplier of six. This multiplier is used because recent sales of office buildings indicate that the selling price is approximately six times the annual gross income of the property. A future selling price of $14,923,428 will produce an equity reversion of $4,736,272 after the selling commission is paid and the unpaid mortgage is liquidated.

Required Rate of Return

The required rate of return to attract equity investors into an investment of this nature is estimated to be 12%. This return is expected to adequately compensate the equity investors for the risks which are incurred.

III. INVESTMENT ANALYSIS

The investment analysis presented in this section is based upon the current and future market conditions described in the previous section. The analysis assumes that the office complex is constructed for $38 per square foot during a two year period, and most of the analysis focuses on profitability of the office complex after it is constructed.

Cash Flows and Equity Reversion

The calculations of the after-financing, before tax cash flows and equity reversion are presented in Exhibit 1. The annual cash flows are based on a five year investment period which begins after the two year construction and lease-up period. They are estimated to be:

1981	Year 1	$263,515
1982	Year 2	296,135
1983	Year 3	329,328
1984	Year 4	363,084
1985	Year 5	397,398

At the end of the five year investment period the equity reversion is expected to be $4,736,272.

EXHIBIT 1

ANNUAL CASH FLOWS AND EQUITY REVERSION

CASH FLOW CALCULATIONS

	1981 Year 1	1982 Year 2	1983 Year 3	1984 Year 4	1985 Year 5
Gross Income	$2,167,488	$2,243,349	$2,321,865	$2,403,128	$2,487,238
- Vacancy Allowance	151,724	157,035	162,531	168,219	174,107
Effective Gross Income	2,015,763	2,086,314	2,159,334	2,234,908	2,313.131
- Operating Expenses	758,621	796,551	836,378	878,196	922,105
Net Operating Income	1,257,142	1,289,762	1,322,955	1,356,711	1,391,025
- Debt Payment	993,627	993,627	993,627	993,627	993,627
Cash Flow (Before Tax)	263,515	296,135	329,328	363,084	397,398

EQUITY REVERSION CALCULATIONS

(After Five Years)

Sales Price of Property	$14,923,428
- Sales Commission Expense	895,406
- Remaining Debt Principal	9,291,750
Equity Reversion (Before Taxes)	$ 4,736,272

Annual Cash-on-Cash Returns

The annual cash-on-cash returns (equity dividend rates) are based on an assumed equity investment of $3,212,550 and the after-financing, before tax cash flows presented above. These returns are as follows:

1981	Year 1	8.2%
1982	Year 2	9.2
1983	Year 3	10.3
1984	Year 4	11.3
1985	Year 5	12.4

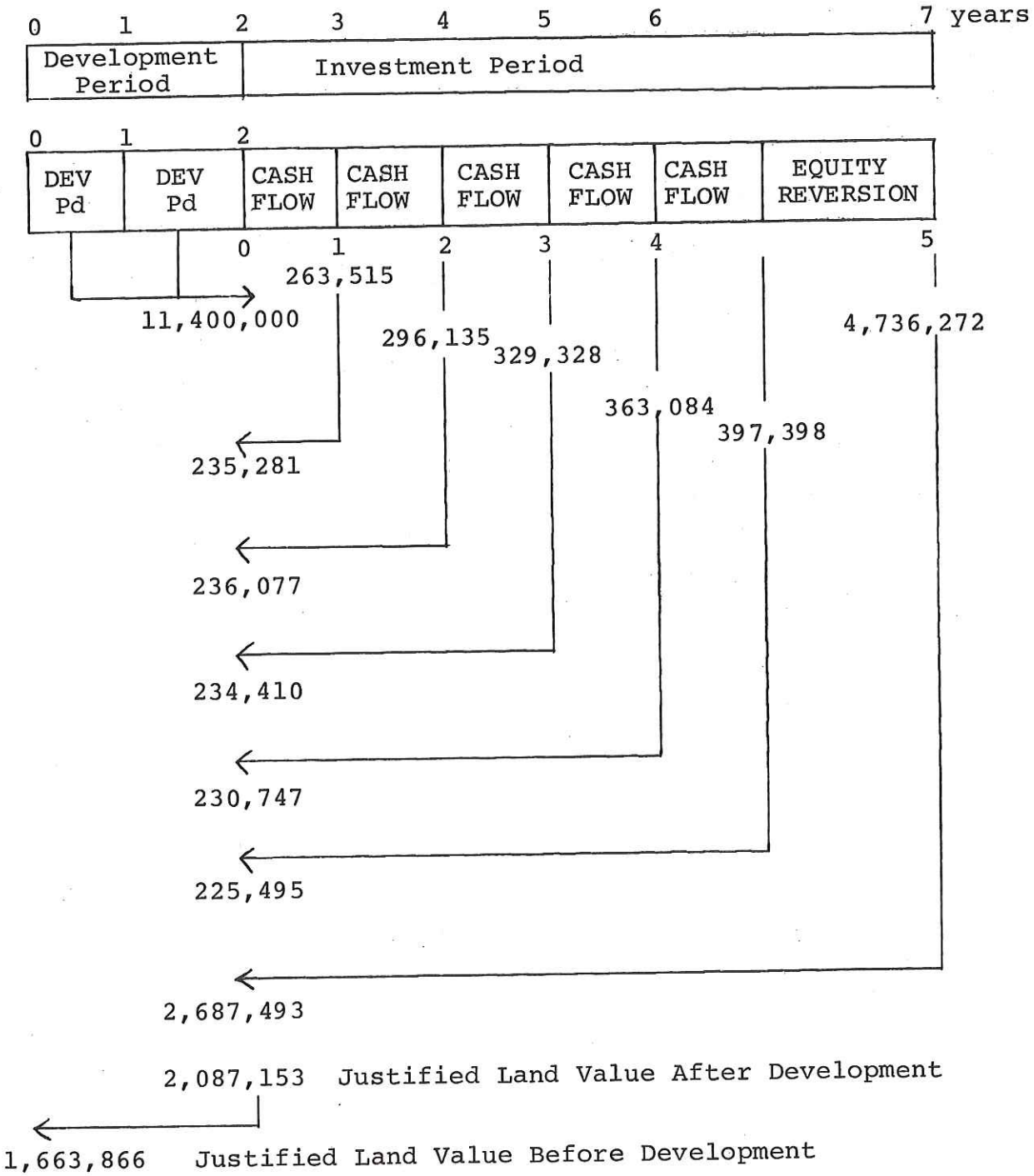
Justified Investment Price

The Justified Investment Price is the most that an investor can pay for a property and still earn his required return on equity. After the two year construction and lease-up period the Justified Investment Price for the total property is $13,487,153 based on a 12% required rate of return on equity. By deducting the cost of the improvements from this amount, the Justified Land Value after the two year construction period estimated to be $2,087,153. The value of the land today, at the beginning of the construction period, can be estimated by determining the present value of the land with a 12% rate of discount. In this manner, today's value of the Plaza East land is estimated to be $1,663,066. A schematic presentation of these calculations is presented in Exhibit 2 and the actual calculations are shown below:

Present Value of the Cash Flows (@ 12%)	$ 1,162,010
+ Present Value of the Equity Reversion (@ 12%)	2,687,493
+ Permanent Mortgage Amount	9,637,650
Justified Investment Price After Development	$13,487,153
- Cost of Improvements (@ $38/square foot)	11,400,000
Justified Land Value After Development	2,087,153
x Present Value Factor for 12% and 2 years	.797194
Today's Justified Land Value (Before Development)	$ 1,663,866

EXHIBIT 2

SCHEMATIC ANALYSIS OF CASH FLOWS



Internal Rates of Return

IRR_c = 11.7%

IRR_e = 16.7%

$IRR_{e'}$ = 15.9%

When the asking price of the land ($1,450,200) is subtracted from Today's Justified Land Value ($1,663,866) a positive net present value is produced. This indicates that an investor can purchase the East Plaza land at the asking price and earn a rate of return on equity that is greater than 12% if the proposed office complex is constructed.

Internal Rate of Return Analysis

As Exhibit 2 indicates the internal rates of return presented here are estimated for the five year investment period only. These returns are measures of the profitability of proposed office complex after construction. The internal rate of return on total capital is a measure of the productivity of the entire project disregarding the financing. It is the rate of return that would be earned if the property was owned debt free (unleveraged). The internal rate of return on total capital, IRR_c, is 11.7% and is calculated as follows:

$$\text{Debt + Equity} = \sum_{t=1}^{n} \frac{\text{Net Operating Income}_t}{(1 + IRR_c)^t} + \frac{\text{Net Selling Price}_n}{(1 + IRR_c)^n}$$

Substituting,

$$\$12{,}850{,}200 = \frac{1{,}257{,}142}{(1 + IRR_c)^1} + \frac{1{,}289{,}762}{(1 + IRR_c)^2} + \frac{1{,}322{,}955}{(1 + IRR_c)^3}$$

$$+ \frac{1{,}356{,}711}{(1 + IRR_c)^4} + \frac{1{,}391{,}025}{(1 + IRR_c)^5} + \frac{14{,}028{,}022}{(1 + IRR_c)^5}$$

so that $IRR_c = 11.7\%$

If favorable leverage is possible the internal rate of return on equity, IRR_e, is greater than the internal rate of return on total capital. Since the proposed office complex can be favorably leveraged, the internal rate of return on equity is greater than the IRR_c, and the internal rate of return on equity, IRR_e, is estimated to be 16.4%. It is calculated in the following manner:

$$\text{Equity} = \sum_{t=1}^{n} \frac{\text{Cash Flow}_t}{(1 + IRR_e)^t} + \frac{\text{Equity Reversion}_n}{(1 + IRR_e)^n}$$

Substituting,

$$3{,}212{,}550 = \frac{263{,}515}{(1 + IRR_e)^1} + \frac{296{,}135}{(1 + IRR_e)^2} + \frac{329{,}328}{(1 + IRR_e)^3} + \frac{363{,}084}{(1 + IRR_e)^4} + \frac{397{,}398}{(1 + IRR_e)^5} + \frac{4{,}736{,}272}{(1 + IRR_e)^5}$$

so that $IRR_e = 16.7\%$

An assumption made implicitly in the above calculation of the internal rate of return on equity is that the released intermediate cash flows are reinvested each year at 16.7%. This reinvestment rate assumption may be unrealistically high. If the reinvestment rate is assumed to be 10%, the internal rate of return on equity, $IRR_{e'}$, would be 15.9%. This calculation is shown below:

$$\text{Equity} = \sum_{t=1}^{n} \frac{(\text{Cash Flow}_t)(1+r)^{n-t}}{(1 + IRR_{e'})^n} + \frac{\text{Equity Reversion}_n}{(1 + IRR_{e'})^n}$$

where r = reinvestment rate

Substituting,

$$3{,}212{,}550 = \frac{(263{,}515)(1+.10)^4}{(1 + IRR_{e'})^5} + \frac{(296{,}135)(1+.10)^3}{(1 + IRR_{e'})^5} + \frac{(329{,}328)(1+.10)^2}{(1 + IRR_{e'})^5} + \frac{(363{,}084)(1+.10)}{(1 + IRR_{e'})^5} + \frac{(397{,}398)}{(1 + IRR_{e'})^5} + \frac{4{,}736{,}272}{(1 + IRR_{e'})^5}$$

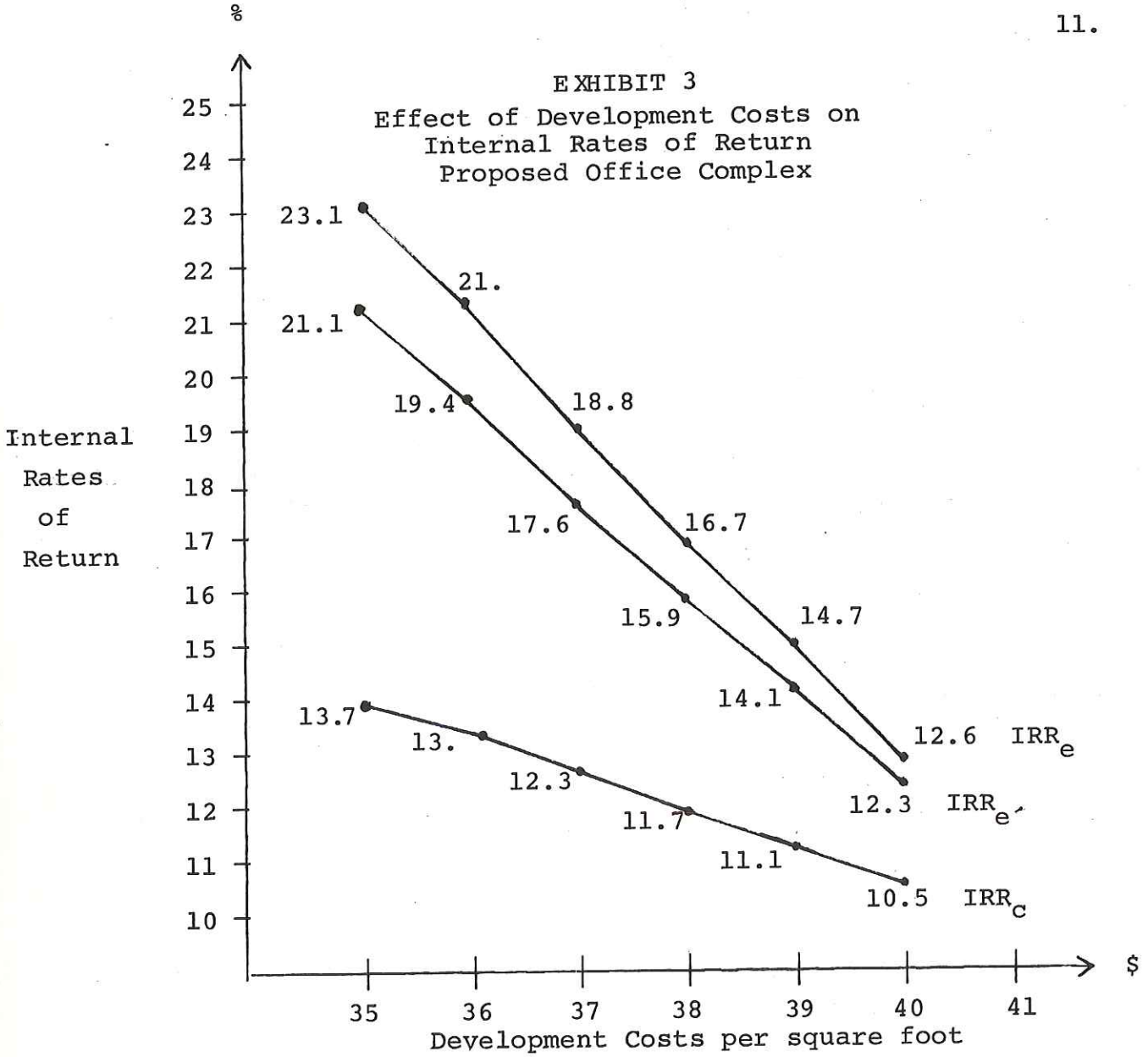
So that $IRR_{e'} = 15.9\%$

The internal rate of return on total capital of 11.7% indicates that proposed office complex is very profitable without favorable leverage, and the internal rates of return on equity ($IRR_e = 16.7\%$ and $IRR_{e'} = 15.9\%$) show that with favorable leverage the returns exceed the minimum required rate of return.

Risk Analysis

A source of risk in proposed real estate developments is the variability and uncertainty of the construction costs. To analyze this risk dimension of the proposed office complex, the sensativity of the rates of return to the construction costs was calculated. These calculations are graphically summarized in Exhibit 3. This

EXHIBIT 3
Effect of Development Costs on
Internal Rates of Return
Proposed Office Complex



Internal Rate of Return on Total Capital, IRR_c:

$$\text{Equity + Debt} = \sum_{t=1}^{n} \frac{\text{Net Operating Income}_t}{(1 + IRR_c)^t} + \frac{\text{Net Selling Price}_n}{(1 + IRR_c)^n}$$

Internal Rate of Return on Equity with reinvestment rate equal the internal rate; IRR_e:

$$\text{Equity} = \sum_{t=1}^{n} \frac{\text{Cash Flow}_t}{(1 + IRR_e)^t} + \frac{\text{Equity Reversion}_n}{(1 + IRR_e)^n}$$

Internal Rates of Return on Equity with reinvestment rate equal to 10%, $IRR_{e'}$:

$$\text{Equity} = \sum_{t=1}^{n} \frac{(\text{Cash Flow}_t)(1+.10)^{n-t}}{(1 + IRR_{e'})^n} + \frac{\text{Equity Reversion}_n}{(1 + IRR_{e'})^n}$$

analysis shows that even if the construction costs increase to $40 per square foot, the internal rate of return on equity exceeds the required rate of return on equity of 12%. Furthermore, if the office complex could be constructed at today's construction costs ($35/ square foot), the rate of return on equity would be between 21% and 23%.

The financial risks of the proposed complex are measured with the debt coverage ratio and the break-even occupancy rate. The debt coverage ratios and the break-even occupancy rates are well within the safety limits for investments of this type. They are as follows:

		Debt Coverage Ratio	Break-Even Occupancy Rate
1981	Year 1	1.265	.808
1982	Year 2	1.298	.798
1983	Year 3	1.331	.788
1984	Year 4	1.365	.779
1985	Year 5	1.40	.77

IV. SUMMARY AND LIMITING ASSUMPTIONS

This investment analysis of the proposed office complex on the United Founders Plaza East land indicates that the Justified Land Value ($1.66M) exceeds the asking price of the land ($1.45M). The analysis also shows that construction of the proposed complex would produce a return on equity between 15% and 17%. The risk analysis suggests that the development costs of the office complex can increase to $40 per square foot and the investment will still earn at least a 12% rate of return.

The information concerning development costs, required rates of return, rental rates, and operating expenses were obtained from R. W. Finley. Deviations from the conditions stated in this report can substnatially affect the profitability of the proposed project.

PREPARED FOR

R. W. Finley

INVESTMENT ANALYSIS OF THE PROPOSED OFFICE TOWER LOCATED AT UNITED FOUNDERS PLAZA WEST

PREPARED BY

Daniel B. Kohlhepp, Ph.D.
Assistant Professor of Business Administration
The University of Oklahoma

June 21, 1978

Dr. Daniel B. Kohlhepp holds a Ph.D. in Real Estate and Urban Analysis from the Ohio State University and a B.S. and M.B.A. in Real Estate from the Pennsylvania State University. He has consulted and written widely in the field of real estate investment analysis. His work has appeared in such publications as The American Real Estate and Urban Economics Journal, The Real Estate Appraiser, and The Property Journal. He co-developed OUPROB, a probabilistic/deterministic discounted cash-flow model for real estate investment analysis, which is currently in use at over twenty-five universities. He is also a Director of the American Real Estate and Urban Economics Association.

PROPOSED OFFICE TOWER
United Founders Plaza West
Oklahoma City, Oklahoma

FACT SHEET

Property Description

Land: 6.61 Acres (288,000 square feet)

Proposed Building:
- 20 Story Office Tower
- Total Floor Area 240,000 square feet (12,000 square feet per floor)
- Total Leaseable Area 204,000 square feet (10,200 square feet per floor)
- Expected Development and Lease-up Period 2 years
- Expected Development Cost $9,120,000 (38 per square foot)

Terms of Purchase

Land: $1,152,000 (4.00 per square foot)
Expected Permanent Mortgage: 75% of Total Land and Building Cost
- Amount: $7,704,000
- Interest Rate: 9.75%
- Amortization Term: 30 years
- Mortgage Constant: 10.3%
- Lender's option to call after 15 years

Income Projections

Average Annual Rental Rates (per square foot):

1981	Year 1	8.50
1982	Year 2	8.80
1983	Year 3	9.10
1984	Year 4	9.42
1985	Year 5	9.75

Annual Occupancy Rate: 93%

Annual Operating Expenses:

		As % Gross Income	As % of Effective Gross Income
1981	Year 1	.35	.376
1982	Year 2	.355	.382
1983	Year 3	.36	.387
1984	Year 4	.365	.393
1985	Year 5	.371	.40

Case Flows (After Financing, Before Taxes):

1981	Year 1	211,449
1982	Year 2	237,545
1983	Year 3	264,009
1984	Year 4	291,106
1985	Year 5	318,555

Reversion Expectations (After Five Years):

Property Reversion	$11,938,806
Equity Reversion	3,794,979

Profitability Measures

Annual Cash-on-Cash Return (Equity Dividend Rate):

1981	Year 1	8.2%
1982	Year 2	9.3
1983	Year 3	10.3
1984	Year 4	11.3
1985	Year 5	12.4

Justified Investment Price:

Total Property Value (After Development)	$10,789,280
Land Value (After Development)	1,669,280
Today's Land Value (Before Development) with required rate of return equal to 12%	1,330,740

Internal Rate of Return Analysis:

Return on Total Capital (Debt and Equity)	11.7%
Return on Equity with reinvestment rate equal to the internal rate	16.8%
Return on Equity with reinvestment rate equal to 10%	15.9%

Risk Analysis

		Debt Coverage Ratio	Break-Even Occupancy Rate
1981	Year 1	1.266	.808
1982	Year 2	1.299	.798
1983	Year 3	1.333	.788
1984	Year 4	1.367	.779
1985	Year 5	1.407	.77

SYNOPSIS

This investment analysis of the proposed office tower on the United Founders Plaza West site indicates that the proposed development supports a Justified Land Value before development of $1,330,740. The construction of the office tower should produce an internal rate of return on equity between 15% and 17%, and the annual cash-on-cash returns should range from 8.2% in year 1 of the investment period to 12.4% in year 5. The analysis assumes that a 20 story office tower with a total floor area of 240,000 square feet is constructed during a two year period at a cost of $38 per square foot of floor space ($9,120,000). The risk analysis suggests that the construction costs could increase to $40 per square foot, and the proposed office tower development would still produce a return on equity in excess of 12%, the assumed required rate of return on equity.

TABLE OF CONTENTS

TABLE OF EXHIBITS

I. INTRODUCTION

The purpose of this report is to analyze the investment potential of 6.61 acres of land located just west of the United Founders Office Tower which is known as United Founders Plaza West. The Plaza West contains a total of 13.36 acres and is currently being offered for sale for $2,327,846 (4.00 per square foot). The proposed office tower would be located adjacent to the existing United Founders Office Tower creating a "twin towers" office concept and would require 6.61 acres of land to meet the zoning requirements for this type of development. The cost of the land for the proposed office is therefore determined to be $1,152,000. This analysis assumes that the office tower development would be the highest and best use of this portion of Plaza West, and that the tower can be constructed over a two year period at a cost of $38 per square foot of floor space. The 20 story office tower is assumed to have 12,000 square feet of floor area per floor so the total construction cost is estimated to be $9,120,000. A discounted cash flow model is used in the analysis to evaluate the profitability of the investment and to estimate the justified investment value of the 6.61 acres.

The next section of this report discusses the current and future economic conditions which affect the profitability of the proposed development, and the following section presents the profitability and risk analysis of the venture. The final section summarizes the findings of the study.

II. CURRENT AND FUTURE MARKET CONDITIONS

The current and future market conditions affecting the development of the United Founders Plaza West determine the highest and best use(s) of the site. Several possible and permissible uses were evaluated for the 6.61 acres under study, and the use which produced the highest return on equity investment and which supported the highest land value was the 20 story office tower. Therefore, the proposed development is considered the highest and best use of this land, and the current and future market conditions are discussed as they relate to this development.

Development Costs

The proposed office tower is to be 20 stories high and to have a total floor area of 240,000 square feet (12,000 square feet per floor). The tower is to be efficiently constructed and should produce a total leasable floor area of 209,000 square feet which is 85% of the total floor area. The time period for construction and lease-up of this tower is expected to be two years. Currently, the development cost for this type of building is approximately $35 per square foot of floor area. But to account for expected increases in development costs during the next two years, the total cost of the improvements is estimated to be $38 per square foot of floor space or a total cost of $9,120,000. Thus the total cost to produce the office tower including land and buildings is estimated to be $10,272,000 at the end of the two year construction period.

Expected Rental Rates

The current demand for office space in Oklahoma City is quite strong as evidenced by increasing rental rates and high occupancy rates. Relatively new, high quality office space in the vicinity of Plaza West is currently being leased from $7 to $9 per square foot. On this basis the average annual rental rate for the proposed office tower is estimated to be $8.50 per square foot in 1981, and it is expected to gradually increase to $9.75 per square foot by 1985. The total leasable area of the tower is 204,000 square feet (85% of the total floor area) so that the annual gross income in 1981 should be $1,734,000. A 93% average occupancy rate is projected over the five year investment period, and this would result in an effective gross income of $1612,619 in 1981, which would increase to $1,850,514 over five years.

Operating Expenses and Debt Payments

The proposed office tower is to be energy efficient, and the first year's operating expenses are estimated to be 35% of the gross income and 37.6% of the effective gross income. The operating expenses are projected to increase 5% annually, and thus the following operating expense ratio are used in the investment analysis:

Operating Expense		As % of Gross	As $ of Effective Gross
1981	Year 1	.35	.376
1982	Year 2	.355	.382
1983	Year 3	.36	.387
1984	Year 4	.365	.393
1985	Year 5	.371	.40

At the end of the construction and lease-up period the proposed office tower is expected to be permanently financed with a 30 year, 9.75% interest mortgage for 75% of the total cost. Currently, long term mortgages of this type include a lender's option to call the mortgage due after 15 years. Given these terms, the office

tower should have a $7,704,000 mortgage and annual debt payments of $794,270.

Property Appreciation Expectations

The office tower is expected projected to increase 16% in value over the five year investment period. The expected selling of $11,938,806 is based on a Gross Income Multiplier of six. This multiplier is used because recent sales of office buildings indicate that the selling price is approximately six times the annual gross of the property. A future selling price of $11,938,806 would produce an equity reversion of $3,794,979 after the selling commission ($716,328) is paid and the unpaid mortgage ($7,427,499) is liquidated.

Required Rate of Return

The required rate of return to attract equity investors into an investment of this nature is estimated to be 12%. This return is expected to adequately compensate the equity investor for the risks which are present in this type of development.

III. INVESTMENT ANALYSIS

The investment analysis presented in this section is based upon the current and future market conditions described in the previous section. The analysis assumes that the office tower is constructed and leased-up during a two year period, and that the total development costs exclusive of the land are $38 per square foot of floor area. Most of the analysis in this section focuses on the profitability of the office tower after it is constructed.

Cash Flows and Equity Reversion

The calculations of the after-financing, before tax cash flows and the equity reversion are presented in Exhibit 1. The annual cash flows are based on a five year investment period which begins after the two year construction and lease-up period. They are estimated to be:

1981	Year 1	211,499
1982	Year 2	237,545
1983	Year 3	264,099
1984	Year 4	291,106
1985	Year 5	318,555

At the end of the five year investment period, the equity reversion is estimated to be $3,794,979.

EXHIBIT 1

ANNUAL CASH FLOWS AND EQUITY REVERSION

CASH FLOW CALCULATIONS

	1981 Year 1	1982 Year 2	1983 Year 3	1984 Year 4	1985 Year 5
Gross Income	$1,734,000	$1,794,689	$1,857,502	$1,922,513	$1,989,801
- Vacancy Allowance	121,380	125,628	130,025	134,576	139,286
Effective Gross Income	1,612,619	1,669,060	1,727,476	1,787,937	1,850,514
- Operating Expenses	606,900	637,244	669,106	702,561	737,688
Net Operating Income	1,005,719	1,031,816	1,058,369	1,085,376	1,112,825
- Debt Payment	794,270	794,270	794,270	794,270	794,270
Cash Flow (Before Tax)	211,449	237,545	264,099	291,106	318,555

EQUITY REVERSION

(After Five Years)

Sales Price of Property	$11,938,806
- Sales Commission Expense	716,328
- Remaining Debt Principal	7,427,499
Equity Reversion	3,794,979

Annual Cash-on-Cash Returns

The annual cash-on-cash returns (equity dividend rates) are based on an assumed equity investment of $2,568,000 and the after financing cash flows presented above. These returns are:

1981	Year 1	8.2%
1982	Year 2	9.3
1983	Year 3	10.3
1984	Year 4	11.3
1985	Year 5	12.4

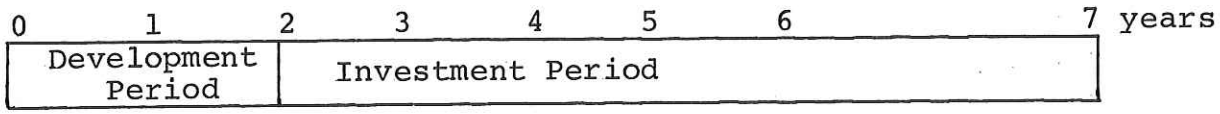
Justified Investment Price

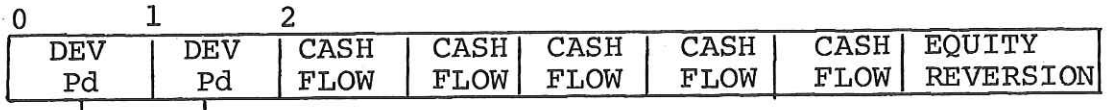
The Justified Investment Price is the most that an investor can pay for a property and still earn his required rate of return on equity. After the two year construction and lease-up period, the Justified Investment Price for the total property is $10,789,280 based on a 12% required rate of return on equity. By deducting the cost of the improvements from this amount, the Justified Land Value after the two year development period is estimated to be $1,669,280. The value of the land today, at the beginning of the development, can be estimated by determining the present value of the land with a 12% rate of discount. In this manner, the Justified Land Value today, before development, is estimated to be $1,330,740. A schematic presentation of these calculations is presented in Exhibit 2, and the actual calculations are shown below.

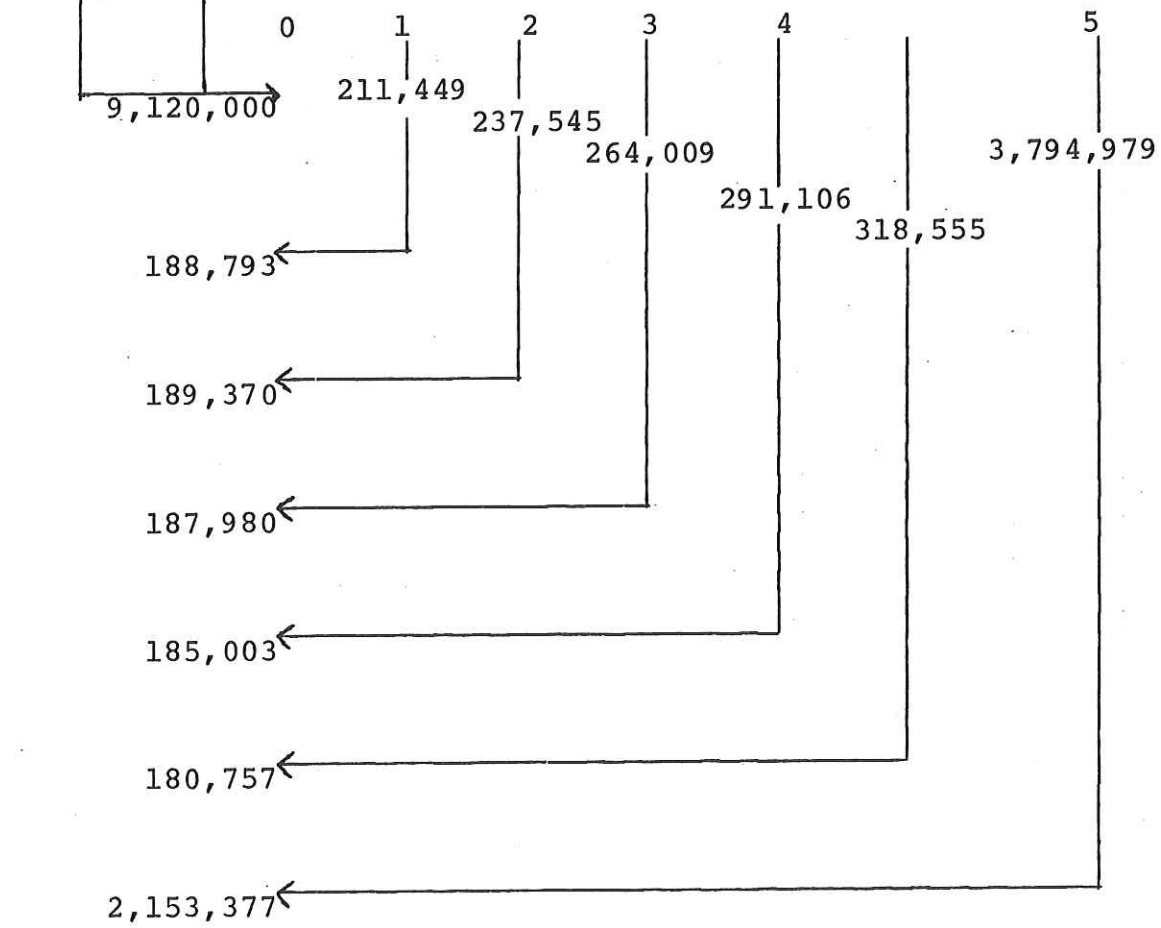
Present Value of the Cash Flows (@ 12%)	$ 931,903
+ Present Value of the Equity Reversion (@ 12%)	2,153,377
+ Permanent Mortgage Amount	7,704,000
Justified Investment Price After Development	10,789,280
- Cost of Improvements (@ $38/square foot)	9,120,000
Justified Land Value After Development	1,669,280
X Present Value Factor for 12% and 2 Years	.797194
Today's Justified Land Value (Before Development)	1,330,740

EXHIBIT 2

SCHEMATIC ANALYSIS OF CASH FLOW







1,669,280 Justified Land Value After Development

1,330,740 Justified Land Value Before Development

Internal Rates of Return

IRR_c = 11.7%

IRR_e = 16.8%

$IRR_{e'}$ = 15.9%

When the asking price of the land ($1,152,000) is subtracted from the Today's Justified Land Value ($1,330,740), a positive net present value is produced. This indicates that an investor can purchase the 6.61 acres of land at the asking price and earn a rate of return on equity which is greater than 12% if the proposed office complex is constructed.

Internal Rate of Return Analysis

As Exhibit 2 indicates the internal rates of return presented here are estimated for the five year investment period only. These returns are measures of the profitability of the proposed office tower after construction. The internal rate of return on total capital is a measure of the productivity of the entire project disregarding the financing. It is the rate of return that would be earned as the property were owned debt free (unleveraged). The internal rate of return on total capital, IRR_c, is 11.7% for the proposed office tower and is calculated as follows:

$$\text{Debt + Equity} = \sum_{t=1}^{n} \frac{\text{Net Operating Income}_t}{(1 + IRR_c)^t} + \frac{\text{Net Selling Price}_n}{(1 + IRR_c)^n}$$

Substituting,

$$7{,}740{,}000 + 2{,}568{,}000 = \frac{1{,}005{,}719}{(1 + IRR_c)^1} + \frac{1{,}031{,}816}{(1 + IRR_c)^2} + \frac{1{,}058{,}369}{(1 + IRR_c)^3}$$

$$+ \frac{1{,}085{,}376}{(1 + IRR_c)^4} + \frac{1{,}112{,}825}{(1 + IRR_c)^5} + \frac{11{,}938{,}806 - 716{,}328}{(1 + IRR_c)^5}$$

So that $IRR_c = 11.7\%$

If favorable leverage is possible the internal rate of return on equity, IRR_e, will be greater than the total rate of return on total capital. Since the proposed office tower can be favorably leveraged, the internal rate of return on equity is greater than the IRR_c. The internal rate of return on equity is estimated to be 16.8%, and it is calculated in the following manner:

$$\text{Equity} = \sum_{t=1}^{n} \frac{\text{Cash Flow}_t}{(1 + IRR_e)^t} + \frac{\text{Equity Reversion}_n}{(1 + IRR_e)^n}$$

Substituting,

$$2{,}568{,}000 = \frac{211{,}449}{(1 + IRR_e)^1} + \frac{237{,}545}{(1 + IRR_e)^2} + \frac{264{,}009}{(1 + IRR_e)^3}$$

$$+ \frac{291{,}106}{(1 + IRR_e)^4} + \frac{318{,}555}{(1 + IRR_e)^5} + \frac{3{,}794{,}979}{(1 + IRR_e)^5}$$

So that $IRR_e = 16.8\%$

An assumption implicitly made in the above calculation of the internal rate of return on equity is that the released intermediate cash flows are reinvested at 16.8%. This reinvestment rate assumption may be unrealistically high. If the reinvestment rate is assumed to be 10%, the internal rate of return on equity, $IRR_{e'}$ would be 15.9%. This calculation is shown below:

$$\text{Equity} = \sum_{t=1}^{n} \frac{\text{Cash Flow}_t (1+r)^{n-t}}{(1 + IRR_{e'})^n} + \frac{\text{Equity Reversion}_n}{(1 + IRR_{e'})^n}$$

where r = reinvestment rate

Substituting,

$$2{,}568{,}000 = \frac{(211{,}449)(1+.10)^4}{(1 + IRR_{e'})^5} + \frac{(236{,}545)(1+.10)^3}{(1 + IRR_{e'})^5} + \frac{(264{,}009)(1+.10)^2}{(1 + IRR_{e'})^5}$$

$$+ \frac{(291{,}106)(1+.10)}{(1 + IRR_{e'})^5} + \frac{318{,}555}{(1 + IRR_{e'})^5} + \frac{3{,}794{,}979}{(1 + IRR_{e'})^5}$$

So that $IRR_{e'} = 15.9\%$

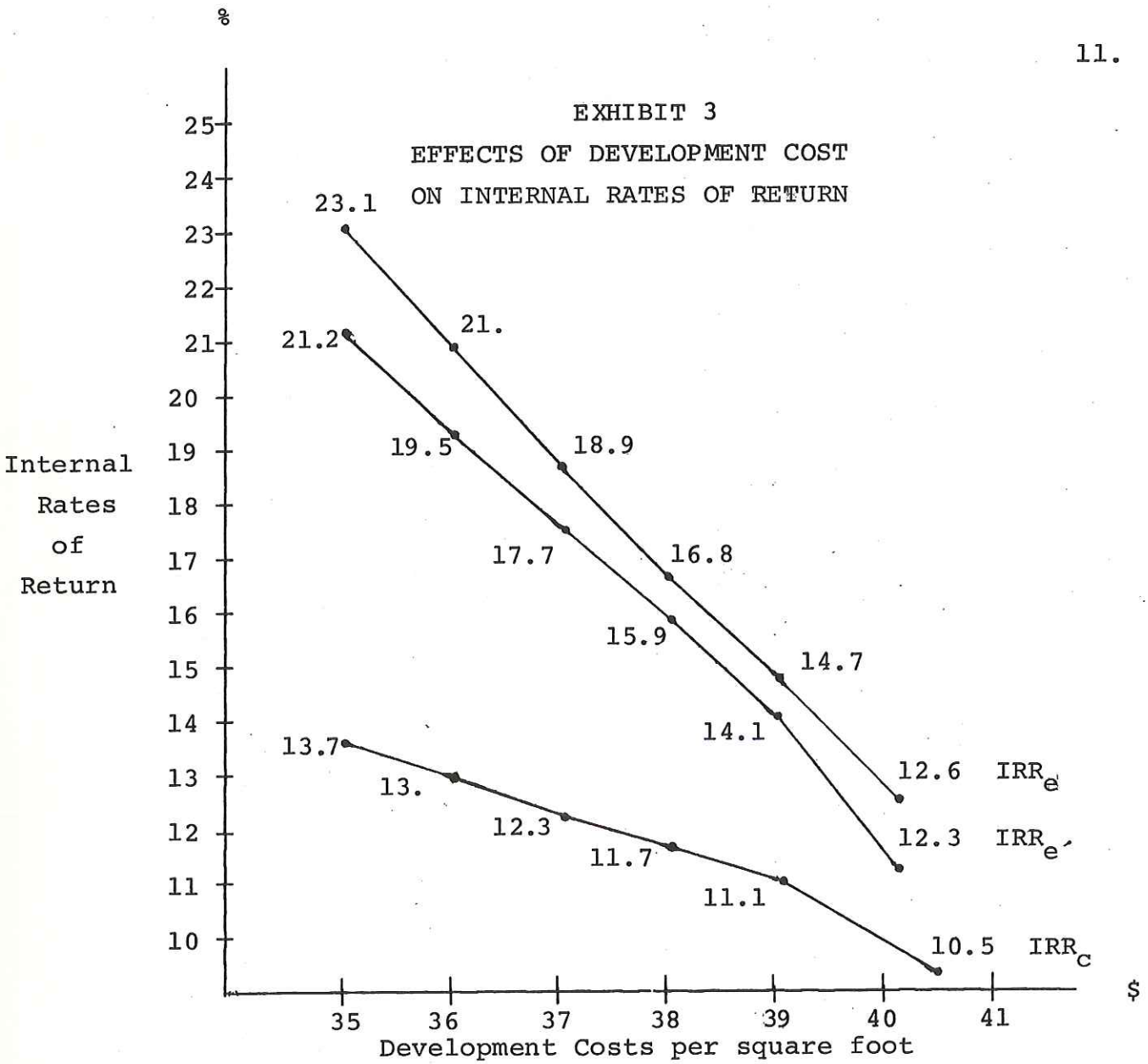
The internal rate of return on total capital of 11.7% indicates that the proposed office tower is quite profitable without faovrable leverage, and the internal rates of return on equity ($IRR_e = 16.8\%$, $IRR_{e'} = 15.9\%$) show, that with favorable leverage, the return on equity easily exceeds the required minimum rate of return.

Risk Analysis

A source of risk in proposed real estate developments is the variability and uncertainty of the construction costs. To analyze this risk dimension of the proposed office tower, the sensitivity of the rate of return to the construction costs was calculated. These calculations are graphically summarized in Exhibit 3. This

EXHIBIT 3

EFFECTS OF DEVELOPMENT COST ON INTERNAL RATES OF RETURN



Internal Rate of Return on Total Capital, IRR_c:

$$\text{Equity} + \text{Debt} = \sum_{t=1}^{n} \frac{\text{Net Operating Income}}{(1 + IRR_c)^t} + \frac{\text{Net Selling Price}_n}{(1 + IRR_c)^n}$$

Internal Rate of Return on Equity with Reinvestment rate equal to the internal rate, IRR_e:

$$\text{Equity} = \sum_{t=1}^{n} \frac{\text{Cash Flow}_t}{(1 + IRR_e)^t} + \frac{\text{Equity Reversion}_n}{(1 + IRR_e)^n}$$

Internal Rate of Return on Equity with Reinvestment rate equal to 10%, $IRR_{e'}$:

$$\text{Equity} = \sum_{t=1}^{n} \frac{(\text{Cash Flow}_t)(1+.10)^{n-t}}{(1 + IRR_{e'})^n} + \frac{\text{Equity Reversion}_n}{(1 + IRR_{e'})^n}$$

analysis shows that even if the construction costs increase to $40 per square foot, the internal rate of return on equity exceeds the required rate of return on equity of 12%. Furthermore, if the office tower could be developed at today's construction costs ($35/square foot), the rate of return on equity would be between 21% and 23%.

The financial risk of the proposed complex are measured with the debt coverage ratio and the break-even occupancy rate. The debt coverage ratio and the break-even occupancy rates are well within the safety limits for investments of this type. They are as follows:

		Debt Coverage Ratio	Break-Even Occupancy Rate
1981	Year 1	1.266	.808
1982	Year 2	1.299	.798
1983	Year 3	1.333	.788
1984	Year 4	1.367	.779
1985	Year 5	1.407	.77

IV. SUMMARY AND LIMITING ASSUMPTIONS

This investment analysis of the proposed office tower on 6.61 acres of the United Founders West Plaza land indicates that the Justified Land Value ($1.33M) exceeds the asking price of the land ($1.152M). The analysis also shows that construction of the proposed complex would produce a return on equity between 15% and 17%. The risk analysis suggests that the development costs of the office tower can increase to $40 per square foot and the investment will still earn at least a 12% rate of return.

The information concerning development costs, required rate of return, rental rates, and operating expenses were obtained from R. W. Finley. Deviations from the conditions stated in the report can substantially affect the profitability of the proposed project.