JAMES A. GRAASKAMP COLLECTION OF TEACHING MATERIALS

II. CLASSES AT THE UNIVERSITY OF WISCONSIN--MADISON

F. Business 551: Real Estate Finance
(Was Income Property and Residential Finance until Fall of 1982; Graaskamp divided 551 into two separate courses--551 and 552 and renamed 551 "Income Property Finance and Group Investment")

4. Problem Sets and Case Studies

Index

UNIVERSITY OF WISCONSIN
School of Commerce

THE ADMIRABLE SIMS NATIONAL BANK

Use of a Mortgage for Bank Recapitalization

This case was prepared by James A. Graaskamp for the University of Wisconsin at Madison as a basis for class discussion. All names and places have been changed.

Spring, 1963

THE ADMIRABLE SIMS NATIONAL BANK

Introduction

The following case should be valuable to the student not because he is required to do much financial analysis but because it provides an example of the analytical procedures of a large lender dealing with a large bank as a borrower. While the loan is made to satellite corporation of the bank, the overall nature of the transaction has overtones of a sale and lease back. The subsidiary expects to transfer the proceeds of the loan to the bank in such a way as to increase the recognized capital of the bank to improve its lending capacity, etc. In exchange for this added capital the bank is committed to pay unusually high rent for its office space requirement.

The student should note the sources of information furnished the lender for analysis and the informal form of appraisal which takes the form of a letter from the regional loan officer. Of interest too is the fact that both parties pay finders fees to different correspondents. Reading should reveal how the basic tools of the land economist apply to practical financial analysis, such as the supply and demand for land and office space, linkages which may anchor a certain location, and valuation on the basis of productivity, not cost.

Questions

1. How might you criticize rent levels as paid by the bank, by the bank building tenants, and by tenants of competing structures?

2. Major stockholders of Admirable Sims National Bank are also the major stockholders of the Safe and Sulfur Deposit Company, Inc. Could the minor stockholders challenge the rent paid by the bank for its space as self dealing?

3. Why did the bank management decide to mortgage for $3 million instead of using a sale-lease-back for $5 million?

4. Are preferential rents granted to lessees of office space, who are good customers of the bank, illegal under the Robinson-Patman Act? A violation of state fair trade laws?

July 31 , 1962

Mr. K. H. Phillipson, Manager
Commercial Mortgages and Real Estate
Amsurits Mutual Life Insurance Co.
1860 Freedom Drive
Lincoln, Mississippi

Re: $3,000,000
Safe and Sulfur Deposit Company, Inc.
Mobile, Alabama

Dear Mr. Phillipson:

APPLICATION

Recommendation

We herewith enclose an application from the Safe and Sulfur Deposit Company, Inc., Mobile, Alabama, secured by a 23 story office building and a branch bank building on the following terms and conditions:

1. Amount $3,000,000

2. Term 25 years with amortization over the same period in full at $18,425 per month.

3. Rate 5½%

4. Privileges The non-cumulative privilege on interest paying dates of paying additional amounts on principal and multiples of $1,000 up to $450,000 in any one year without premium; with the further privilege on interest payment dates and upon 90 days advance written notice of paying the loan in full after the fifth year with a premium of 2% on the unpaid balance of the loan; all privilege payments are to be made from normal sources and not borrowed elsewhere.

5. Lease Assignments Assignment of that certain lease between the borrower corporation and the Admirable Sims National Bank for a term of 25 years at a gross rental of $275,000 per annum with a tax escalator limited to 50% of any increase in ad valorem taxes to be paid by the bank; and the general assignment of all other leases and rents and any future leases and rents; said leases to be satisfactory to the Amsurits.

6. Hazard Insurance Fire and extended coverage for the full insurable value of the buildings to be required.

7. Stand-by Fee none

8. Liability Safe and Sulfur Deposit Company, Inc. a Mobile, Alabama corporation. No personal liability to be required.

9. Commitment Expiration November 1, 1962

10. Title Abstract of title and survey to be furnished. If the Amsurits decides to use local counsel, the cost of said counsel is to be borne by the borrower.

City

Earlier this year we sent a very comprehensive report on Mobile to your department relative to the appointment of our new correspondent Lee, Grant, and Disraeli. I refer you to that report for more details on the industrial and maritime activities in the city of Mobile.

I also enclose, at this time, a brochure by the Chamber of Commerce giving statistical data on the business and economic growth of Mobile of the past several years. In our opinion this publication contains most of the necessary statistical data. On the cover of this brochure is an air view of downtown Mobile on which we have circled the two properties securing this loan.

It is our considered opinion that Mobile is an excellent city in which to advance funds on commercial real estate, principally because its land values have historically remained high and consistently remain stable, due to the fact that new land has to be developed at considerable expense. This makes existing land and existing facilities extremely valuable to all comers. It also has the advantage of location to participate in the continued expansion of the Gulf Coast area and in defense activities supporting the space arsenal at Huntsville. We therefore feel that the city is an excellent place in which to make investment at this time.

Location

Parcel #1 is a 23 story bank building in downtown Mobile. This property is situated in the heart of the financial and office building district of the downtown section. All of the major banks are located in close proximity to the subject property. Fort Morgan National Bank, the largest bank, is located one block to the east; the Selma State Bank, the second largest, a block to the south. A branch of the Federal Reserve Bank is directly across the street. These are the major banks in the Mobile area and all of them have spent considerable sums refurbishing their banking quarters. Thus we feel that their location is permanent and the area is well anchored as the financial district of Mobile. Indeed the Fort Morgan Bank has built a parking ramp and in addition to their office building, which should assure their future occupancy of their present location.

Three new office buildings have been constructed in Mobile since World War II. They are located on the periphery of the downtown business district and have not fared too well, experiencing a fairly low degree of occupancy. Presently a 30 story office building is being completed having no bank or other major tenant, and although almost ready for occupancy is only 20% leased.

On a visit to the subject property, we noted that all the bank buildings enjoy extremely high percentage occupancy rates, whereas the regular commercial office buildings and particularly the new building are having a little trouble. The main reason for the low occupancy rate in new buildings is the relatively high cost per square foot rental being charged, from $5 to $6 per square foot. The cost is a direct result of soil conditions for all foundations have to be on deep piers. Moreover the loan against the newest building is extremely high. To pay the cost of construction and debt, it is necessary to get the high rentals. The bank buildings, including the subject property, are leasing space anywhere from $2.25 to $4.50 per square foot. Good customers of the bank often enjoy a favorable rental rate.

In our opinion office building space has not been overbuilt and available space will be gradually filled from the expansion of off-shore drilling operations, import and export business, and government space programs.

The subject property has known almost 100% occupancy and is regarded as a prime office building. Of all the office buildings we saw in the downtown area that were built at the same time, our structure was not only better maintained but actually better designed. It showed less style obsolescence than any of the others and was the first air-conditioned building in Mobile. Air-conditioning was installed in 1934 and was redone last year at a cost of $150,000.

The security property contains no parking space, but for that matter, very few of the office buildings have parking garages. The Fort Morgan National Bank has developed a parking ramp beside its office tower, but this is the only new parking facility in the downtown area. There are a number of lots and parking garages on the periphery of the financial district. But since all land in this area is reclaimed and sometimes pumped to keep it dry, land is at a premium and parking operations are not as extensive as in other cities.

We feel that the location of Parcel #1 as an office building and banking quarters is ideal for its purpose, and there is no better location in the financial district of Mobile.

Parcel #2 is located on the bay less than one mile south of Parcel #1 and adjacent to the ramps which lead to Bankhead Tunnel leading under Mobile Bay to Bridgehead, Daphne, and Fairhope. Established as a branch bank location in anticipation that a ramp from the Tunnel would discharge passengers directly behind it, the plans were changed and now cars cannot get access from the Tunnel unto the bank parking lot without a considerable detour. This change in traffic pattern has affected the desirability of this location as a branch bank. However, the bank, our client, has taken advantage of the situation by transferring its armored car collection and import-export payroll division to this branch, thus avoiding much traffic into the more congested area of the main branch. The Southern Comfort Life Insurance Company has built a very elaborate home office building adjacent to this branch, which has helped to preserve the effectiveness of the branch banking operation. This location is also convenient to an area of older, more wealthy family residences and a number of large, high-rise apartment buildings to which the bank caters. While its location of the branch bank is just adequate, the tenant is putting it to good use and thereby reducing its overhead.

Land

Parcel #1 is of irregular shape, fronting 107 feet on Chickasaw Trail and 106 feet on Texas Street. Enclosed is a survey of the plat. This is only one block from Catherine Street, the prime retail district of Mobile so that it has great value.

In 1958 the Admirable Sims National Bank attempted a merger with Fort Morgan, prior to the present management of Sims National. At that time the real estate was to be put on a purchase-lease basis and the price set of this 23 story office building with land was $5,000,000. Subsequently, one of the foremost realtors in Mobile offered Sims National a purchase-lease pact deal in which he would buy this property for $5,000,000 and lease it back to the bank.

On the basis of our investigation, we feel the subject parcel has one of the highest front foot values in the financial community, being only exceeded by the downtown retail district on Market Street which is contrary to most major cities for it is still a flourishing and profitable retail area. This is due to the scarcity and high cost of land in the out-lying areas, which is limited by the Mobile River and Bay and extensive low-lying swamp districts.

Therefore, for mortgage purposes, we would value this 107 front feet at $8,000 per front foot or $856,000.

Parcel #2 was acquired and improved by Sims National Bank in 1954. Original cost was slightly less than $1,000,000, which has been reduced to $500,000 by depreciation, at which figure it is being transferred to the Safe and Sulfur Deposit Company, Inc. There are 28,050 square feet of land fronting on both Bellengrath Circle and Camptown Raceway. Those knowledgable in local real estate feel the bank overbuilt for the structure exceeded original cost estimates. Southern Comfort paid just under $9 per square foot for their land about a year ago and the new Y.M.C.A. building which adjoins this branch just built an addition for which the required land was purchased at $9.00 a square foot. Other properties on Bellengrath Circle have recently changed hands at $8.50 per square foot.

Therefore, for mortgage purposes, we would value this irregular shaped tract of 28,050 square feet at $8.50 per square foot or $240,000.

Building

Parcel #1 offers the security of a 23 story office building containing 209.137 square feet of gross area and 132,139 square feet of net rentable area. Constructed in 1928-29, it was occupied on Thanksgiving Day of 1929. The Sims National Bank occupies 29,632 square feet with options on another 10,000 square feet without any increase in rent. The remainder of the building is devoted to commercial office space.

For its day, I would imagine this was an extremely advanced, well designed building. It is rather modern in appearance at this time, and the interior is finished entirely with terrazzo tile floors, wide corridors, and other accouterments which make it modern in appearance. It does have old incandescent fixtures and needs modernization of ceilings and electric applicances, but other than that it is far better than any other building in Mobile of the same vintage.

This is a structural steel building, fireproofed with concrete, with terrazzo tile floors, plaster walls, plaster ceilings, incandescent fixtures in the hallways with some of the floors having flourescent fixtures as they are modernized for various tenants. They have six Otis passenger elevators and one freight elevator. In 1961, $150,000 was spent in the replacing of the entire air conditioning plant and cooling system. An additional $80,000 was spent in 1959 and 1960 in remodeling the banking quarters.

The building contains men's and women's restrooms on each floor. Its housekeeping is good. Not including the vault and special banking paraphernalia, we would estimate that it would be around $25 to $30 per square foot to build this structure or a similar modern structure in Mobile today. The newest downtown office building is said to have cost $28 per square foot exclusive of land.

Because it had air conditioning at an earlier date, the building is not marked with lowered ceilings and remodeled floor space such as found in other buildings of this vintage. The new air conditioning system features 600 tons of Carrier Engineered Refrigerant with Baltimore Air Cooling Coils and two Heine low pressure boilers for heating. The bank is anticipating installation of flourescent lighting and new ceilings as they replace or renew leases. The building has been well maintained, as would be expected of institutional ownership.

Taking into consideration design, modernization, depreciation factors, and competition within the city, we would value the 209,137 square feet at $14.50 per square foot or $3,032,000.

Parcel #2 is improved with a modern, two-story bank containing 8,200 square feet at a cost of $551,516 exclusive of land. It is of extremely heavy construction, with large glass areas, and with an imported slate main lobby floor. The building contains an elevator, Westinghouse heating, air conditioning, and has parking spaces for twenty cars plus a drive-in banking facility. Because it is overbuilt for its function, we have penalized it very heavily in our appraisal.

Therefore we would value for mortgage purposes this 8200 square feet gross area at $20 per square foot or $164,000.

Tenant

Management of the building is in the hands of the Louis Prichard Company, which has prepared a brochure which contains all the statistical facts relative to this real estate. You have a copy of this brochure and we refer you to it for facts and figures relative to occupancy, etc.

The main lease on this proerty is from the Sims National Bank for a term of 25 years at a gross rental of $275,000 with an escalator in which the bank guarantees to pay 50% of any increase in ad valorem taxes. This lease also provides that in addition to the 29,000 square feet the bank already occupies in the 23 story office building, they will have an option on 10,000 more feet at a future date with no increase in rent. This $275,000 gross rent also includes the rent on the Bellengrath Circle facility.

I am enclosing a recent comparison of banks furnished us by one of the directors of Fort Morgan National. The Admirable Sims National Bank ranks third in size in the Mobile area and until recently was more or less a depository bank. It had only 15% of its assets in loans and a large volume of state funds on deposit. They made their money from real estate in the office building operation and in the functioning of the government bond market. It was dominated by Colonel Davis Jefferson, now chairmen of the board and in his nineties. In 1959 a proxy fight developed between the Colonel and Louie Rascal in which the latter ultimately acquired about 42% of the stock. The Colonel was "elevated" to chairman of the board and a new president was brought in to convert the bank from a depository to an active bank in the Mobile area.

The first president hired under this change in so-called management was in the mortgage business in Mobile and he upped the loans from 15% to about 30% and put the Sims National Bank in the mortgage business as a correspondent servicing for

several eastern investors. He was not too familiar with the banking end of the business, however, and in 1961 had quite a drive on to reach the $200,000,000 asset figure on the financial statement. You will note they reached $197,358,733 on that call date. Rascal and the present president of the bank, Mr. Warrington, has stated that these were really inflationary calls and that they apparently got several of their stockholders and other people to borrow money from other banks and deposit it in the Sims National so that their year end statement would look higher than normal. This former president, although extremely capable in the mortgage and loan end of the business, was not too well versed in the banking end, and he left to take a better job with a small business administration corporation in Houston, where he presently administers.

At this time Mr. Rascal, the majority stockholder of the bank, became involved in a proxy fight with the Fort Morgan Bank and resigned from the Board of Directors of the Sims National. He lost the proxy fight with the Fort Morgan Bank, however, he did force them to up their dividends and sold his stock recently for a $500,000 profit and then returned as a Board member of the Sims National Bank. Mr. Rascal was one of the driving factors behind this bank. He has made most of his money in the oil business. In 1939 he was a streetcar conductor for the Public Service Company and became engaged in oil leasing and obtained oil leases from the upstate natives of Alabama for the oil company. He is a native of this section of Alabama and, therefore, could talk to them, whereas the regular oil scouts were much distrusted by what we fondly call the locals of Alabama. Rascal in making these leases left some for himself and gradually created a large oil income. He has little formal education and is not accepted by the gentry of Mobile and probably will never be; however, he is influential because of his wealth and also because he has a great deal of ambition and drive which is probably just what this bank needs.

During the Fort Morgan proxy battle, Mr. Rascal borrowed money to fight the battle using his Sims National stock as collateral placed with a bank in Memphis. When the former president left, a capable president was needed to take over the bank, and Mr. Warrington was sent down from Memphis to fill the job. He has a good reputation as an administrator and long banking experience.

There are several members of the Board appointed after the change in management, which in general most people in Mobile feel has made an improvement in this bank. They are not under Mr. Rascal's thumb and are quite independent, and because this is a national bank with the customary examinations, we have an independent president in Mr. Warrington and also independent Board members. I do not think there is any danger of Mr. Rascal deluding the assets of this bank with his personal ventures. To the contrary, he seems to have gone to considerable trouble not to do personal business with his own bank. Therefore, after much discussion of the subject and sounding it out rather thoroughly in Mobile, I feel the bank is solid and expanding under capable management with a well established and esteemed Board of Directors, and it should show a considerable and steady progress in future years.

Income and Expenses

We have prepared a more conservative statement of income and expense than is indicated by the present experience reported by the Louis Prichard Company.

Income	
Admirable Sims National Bank and Bellengrath Circle lease	$275,000
(1) 92,507 sq. ft. net rentable @ $3.90 per sq. ft.	- 360,577
	$635,577
Less 10% vacancy allowance	- 36,057
Total gross income	$599,520
Expenses	
Louis Prichard Company. Mgrs. (RE Taxes---$60,638) Average cost of $1.60 per sq. ft. of gross area (Including Bellengrath Circle)	$321,280
Net Income	278,240
Annual Debt Service	$221,100

Net Income of $278,240 capitalized @ 6 $\frac{1}{2}$% = $4,250,000

Note (1)
Bank uses 29,632 sq. ft. in office bldg. but under terms of lease can use another 10,000 sq. ft. without increase in rent. Income projection is therefore $39,000 less than what actually might be achieved.

I feel that a 6 $\frac{1}{2}$% capitalization rate is appropriate in this instance when dealing with a major financial institutional that has been in existence since 1917 and was one of the few banks that did not close during the "bank holiday" of the 30's.

Summation of Values

Parcel 1

Land 107 front feet at $8,000 per front foot----------	$856,000
Building 209,137 gross sq. ft. at $14.50 per sq. foot---------	$3,032,000

Parcel 2

Land 28,050 sq. ft. at $8.50 per sq. foot----------	$240,000
Building 8,200 sq. feet at $20 per sq. foot----------	$164,000
Grand Total	$4,292,000

A loan of $3,000,000 is 70% of value.
A loan of $3,000,000 is $13.80 per square foot of gross area and $21.50 of net rentable area. With the lease from Admirable Sims National Bank for 25 years plus a very low per square foot rental on the remainder of the office building, there is sufficient income to handle all expenses and debt service.

Remarks

We are indebted to Abraham Lee, of Lee, Grant, and Disraeli, our correspondent in New Orleans for furnishing us the necessary biographical detail relative to this loan. He is personally acquainted with the officers and directors of this bank and is, himself, a director of Fort Morgan National Bank. Although he had nothing to do with the origination of this loan, which came from Louis Prichard Company, I think we could not accurately assess this investment without his knowledge and most helpful cooperation. Therefore, we recommend that he be paid a fee of $1,000 in addition to the finders fee of 0.75 of 1% or $22,500 paid to Louis Prichard by the borrower. Lee, Grant, and Disraeli will aid in the closing of the loan under Alabama Law and therefore, the fee is well earned in our opinion.

Although this is a high loan per square foot of net rentable area and a 70% loan of our valuation, I think it is an extremely well secured investment, being secured by the real estate and the lease from the major financial institution. Apparently the real estate is worth closer to $5,000,000 than our evaluation, however, the economics as we developed them do not support this. This is true to some extent of all income producing properties in this area due to the fact that their land costs are extremely high in relation to improvement costs. Once again this is due to the scarcity of the land and the great trouble involved in creating this land for building and improvements. I feel that this is a relatively conservative loan and extremely well secured by the real estate and the lease and the sponsorship, and it also has the additional fact of making our entrance into Mobile, Alabama a rather spectacular event, which should accrue to the benefit of our future investments in this area as well as giving stature to our correspondent Lee, Grant, and Disraeli.

Very truly yours,

Bake D. Alaska

Enclosures:

1. Application
2. 8 x 10 photograph of 23 story office building
3. 8 x 10 photograph of the Bellengrath Circle branch bank
4. Two occupancy maps
5. Chamber of Commerce data on business volume and economic growth of Mobile, Alabama
6. Picture maps and miscellaneous pictures
7. Survey of parcel 1
8. Survey of parcel 2
9. Comparative reports of condition of assets of various banks in Mobile as of the last call date.
10. Comparative analysis of Mobile Bank stocks for the past ten years by one of the largest investment brokers in the city.
11. Map of business district showing relationship of Admirable Sims National Bank to the heart of business and financial area of the city.
12. Approval from the comptroller of currency of the loan and its purpose to increase capitalization of the bank by sale of stock to Safe and Sulfur Deposit Company in exchange for loan proceeds.
13. Rent roles of tenants, square footage, and monthly rentals paid. Only existing vacancy on 19th floor is now being renovated for lease to a bank director. 1000 sq. ft. on 23rd floor is being remodeled for executive office of the president with the balance to be rented.

551 Exercise #2

You are evaluating a possible real estate investment. For this analysis you will use the Mrcap program developed at the University of Wisconsin by Michael Robbins.

The real estate investment that you are looking at is a poorly managed 100 unit apartment complex with a sales price of 1.2 million dollars. For the purposes of this assignment, you are in the 45% marginal tax bracket and you intend to hold the property for eight years.

For this analysis, you feel comfortable with the assumption that you can obtain a first mortgage with a loan to cost ratio of 75%. Present market rates are at 10%, with a 22 year amortization period. Furthermore, your lender has stated that should you have any cash shortfall in any year, he will give you a loan to fund the shortfall at 12% interest.

Furthermore, your accountant has advised you that the IRS will not likely accept an estimated land value of less than 10% of the sales price. Depreciation for the improvements should be calculated on a straight line basis using 19 years.

You assume through better management you will be able to reduce the vacancy rate in the complex from the present 10% to 7% in the second year, and 5% for each year thereafter. You anticipate that the gross income of $150,000 will grow at an annual rate of 5%. With regard to expenses, a review of the owner's books indicates that variable expenses run approximately 9% of gross while fixed expenses run approximately $10,000 per year and real estate taxes run $30,000 per year.

You desire an after-tax equity yield of 18% on the project should you decide to buy the apartment complex. For your safety you decide that you will withhold $10,000 per year to use for replacements of the furniture when it runs out. You don't anticipate replacing the furniture while you are the holder of the property but they will be transferes to the new buyer when you go to sell the investment. These reserves will be invested at the reinvestment rate of 8%. Yet, you feel that the most reserves you will need will be $90,000. Furthermore, you expect to have to make some out-of-the-ordinary expenses in the first year of operations which you estimate to be $5,000.

Given these assumptions, you need to calculate how much the property must appreciate in value over the holding period on a compound growth basis to give you a 18.5% MIRR. Other points you may want to consider are:

1. Whether or not leverage is negative or positive
2. If the required appreciation is reasonable given the net income to market ration in year 1 and in the year of sale and
3. If the loan appears reasonable to the lender's perspective.

Assumptions:

Charge new capital first to cash throw-off and then to reserves.

BUSINESS 551 PROBLEM

ELLWOOD AND LEVERAGE

Problem Due: April 24

Professor J.A. Graaskamp
LYNN N WOODWARD

Instructions: Show formula used and all work for each case. Circle and label each answer on the page.

A. Assume net income of $20,000 per year for an older apartment building. A bank is willing to make a 6%, 15 year loan for 70% of value. Assuming 15% depreciation over 10 years, what is the value of the investment property priced to yield 12% to equity?

B. Assume the same building as above. However a real estate investment trust is willing to make a 9%, 20 year loan for 80% of value. With the 10 year forecast allowing for 15% depreciation what is the maximum price the investor could pay to yield 18% on his equity?

C. Assume Charlie paid $200,000 for a building with $20,000 net income subject to $120,000 mortgage at 5 1/4% with a 15 year term. He anticipated no depreciation over a 5 year forecast. What yield did he expect on his equity? If he wanted to improve his yield to equity 4% by refinancing with a new 15 year mortgage at 6% interest, how much would he have to borrow in a new loan?

D. Assume the buyer of the building above paid $220,000 for it. How far could the price decline in 5 years and still give him a 7% return on his money if he could obtain $180,000 at 9 1/8% for 20 years?

E. On the other hand on the same deal as in C, how far must resale price increase in 5 years to give him 20% on his equity? How much in 10 years?

F. Higgins has now owned the Franklin Building 6 years. It has produced an average net income of $44,230 per year since he bought it 6 years ago. The price he paid for it at that time was $450,000, of which $312,500 was represented by an existing mortgage which Higgins assumed. He paid the difference amounting to $137,500 in cash. He has paid 72 installments of $2,500 per month including interest at 5% per annum on the mortgage since the date of purchase.

Higgins has accepted an offer for this property at a price which will give him a 13% yield on his equity investment after payment of a 5% broker's commission.

What is the selling price?

BUSINESS 551
REAL ESTATE FINANCE
CASE STUDY #4

DUE 5:00 P.M., FRIDAY, DECEMBER 14, 1984
NO LATE PAPERS ACCEPTED

The case involves a syndication of a warehouse facility in Smyrna, Tennessee and a sensitivity analysis of yields and returns for the three parties involved: 1. the lender and land lease holder; 2. the limited partners, and 3. the general partners.

The deal structure as presented for the lender should be used but instead of holding the property PGC has decided to syndicate a portion of it in the form of a limited partnership in which they will be the general partner. This decision was brought about because of a construction cost overrun resulting in a building cost of $2,000,000. They would like to raise as much capital as possible; in fact they can end up with an ownership position and still make a profit on the syndication. PGC wants to keep at least five percent of the cashflow, the tax shelter and the residual values; any additional returns should be built into the residual values.

The limited partners are assumed to be in the 50 percent tax bracket and desire an 18 percent IRR.

For this analysis assume the property will be held for 10 years and then sold, refinancing will not be considered.

Initially use the three year leases at $3.00 per square foot with expense pass throughs as presented in the loan submission.

The residual value is to be determined by using the same relationship of purchase price to net operating income from the first year against net operating income in year ten.

Your problem is to answer the following questions:

1. How much can you syndicate the project for given the data above and in the loan submission. What is the IRR for the lender, the IRR for the limited partners and the net present value of the general partners using a 18 percent discount rate.

2. Assuming the same deal as in #1 but leases increasing by only 3 percent per year (note still three year leases) and full expense increase pass throughs what happens to the yields for the lender, limited partners and the net present value for the generals.

3. Same as #2 but a zero percent increase in rents with expense pass throughs.

4. Same as #3 but no expense increase pass throughs.

5. Rerun 2-4 but assume that the lender must get an 18 percent IRR before taxes and the limited partners must get an 18 percent IRR after taxes (hint in this part you will be adjusting how much is loaned and how much is raised in the syndication).

Do not forget that the lender is also the owner of the land and leasing to the partnership, those figures should be included in the lenders return analysis. Fixed loan payments and land lease payments are assumed to be made monthly while participation in income is assumed to occur at the end of the year and participation in the residual value at the end of year 10.

For purposes of this study assume the project is funded 1/1/85 and runs through 1994.

Your typed writeup should address the returns for each of the three involved groups and the risk that they are assuming under each scenario. In particular where are the returns sensitive to change and when are they not for each group. Include well labeled tables on the returns under each scenario for each group. Include computer input files for the initial run and a type 3 output for each of the scenarios. IRR and net present values can be done using rates or by hand but should be included in the writeup. Note presentation will be 20 points of the 100 possible points.

BUSINESS 551 PROBLEM

ELLWOOD AND LEVERAGE

Problem Due:

Professor J.A. Graaskamp
LYNN N WOODWARD

Instructions: Show formula used and all work for each case. Circle and label each answer on the page.

A. Assume net income of $20,000 per year for an older apartment building. A bank is willing to make a 6%, 15 year loan for 70% of value. Assuming 15% depreciation over 10 years, what is the value of the investment property priced to yield 12% to equity?

B. Assume the same building as above. However a real estate investment trust is willing to make a 9%, 20 year loan for 80% of value. With the 10 year forecast allowing for 15% depreciation what is the maximum price the investor could pay to yield 18% on his equity?

C. Assume Charlie paid $200,000 for a building with $20,000 net income subject to $120,000 mortgage at 5 1/4% with a 15 year term. He anticipated no depreciation over a 5 year forecast. What yield did he expect on his equity? If he wanted to improve his yield to equity 4% by refinancing with a new 15 year mortgage at 6% interest, how much would he have to borrow in a new loan?

D. Assume the buyer of the building above paid $220,000 for it. How far could the price decline in 5 years and still give him a 7% return on his money if he could obtain $180,000 at 9 1/8% for 20 years?

E. On the other hand on the same deal as in C, how far must resale price increase in 5 years to give him 20% on his equity? How much in 10 years?

F. Higgins has now owned the Franklin Building 6 years. It has produced an average net income of $44,230 per year since he bought it 6 years ago. The price he paid for it at that time was $450,000, of which $312,500 was represented by an existing mortgage which Higgins assumed. He paid the difference amounting to $137,500 in cash. He has paid 72 installments of $2,500 per month including interest at 5% per annum on the mortgage since the date of purchase.

Higgins has accepted an offer for this property at a price which will give him a 13% yield on his equity investment after payment of a 5% broker's commission.

What is the selling price?

PROBLEM SET NUMBER TWO
BUSINESS 551
DUE 11/~~22~~/82 24 LATE PAPERS UNACCEPTABLE

PART I.

Create a MRCAP data file for two runs, one front door and one back door, using the following assumptions. (Suggestion - for report use BUS PRINT, the report will take about 30 minutes to print on the terminal.):

Property:
- Land Value $375,000
- Office Building cost $1,737,000 , 44,025 Sq. Ft. GLA
- Building is 95% depreciable, 15 year SL depreciation.

Mortgage:
- First Mortgage: $1,500,000, 30 years, 8.75% interest, mo. pmts.

Income & Expense:
- Gross income $297,169 first year, increasing 5% annually.
- Vacancy 30% year 1, 15% year 2, 5% later years.
- Taxes $28,616 first year, increasing 10% annually.
- Operating Expenses $68,239 first year, increasing 8% annually.

Owner Data:
- Corporate owner, over $25,000 other income.
- Discount rate 16%.
- Marginal tax rate 46%.
- Reinvestment rate 8%.
- 100% ownership in the first year.

Misc. Data:
- No extraordinary expenses in year 1.
- Market value increases 5% annually, compounded.
- Working capital loan rate is 14%.
- Resale costs are 6% of sale price.
- 10 year holding period.

Output Data:
- Generate all reports.
- Use wide carrage option.

Sensitivity Analysis:
- 80% default ratio.
- $1,000 test amount.
- Year 4 for test year.
- Test cash flow and components at +/- 10%.
- Before tax equity return desired is 10%.
- No reserves.

Back door:
- 80% default ratio.
- 10% before tax rate of return.
- Derive investment value over the full holding period.

Part II.

Answer the following questions:

1. Are reserves adequate to carry this project in the start-up years? If not, calculate the minimum amount of equity reserves that must be initally deposited into the reserves account to offset potential future negative cash flows. Assume 6% equity reserves rate and annual compounding.

2. What do the assumptions about future revenue and expenses imply about the next buyer's expectations for this project? Are the assumptions reasonable? (Hint - Look at Line 40)

3. Why does the Default Ratio (Line 42) increase over 1.0 and then decrease over the holding period?

4. MIRR with sale (Line 48) increases and then decreases as the holding period increases. Explain why.

5. In what year(s) is this project insolvent? If minimum before tax cash-on-cash yield is 10%, in what years is this achieved?

6. In Year 3, is the default ratio higher or lower than needed (i.e. 80%)? How much would gross income have to change in the following year to so the default ratio would be what is needed in Year 4? If gross income did not change, how much would gross expenses have to change?

7. What is the justified project cost when the back door approach is used? Is this a riskier loan? Is the borrower's return better or worse (Look at both before tax cash-on-cash and MIRR with sale)?

TURN IN <u>ONLY</u>:

1. THE COMPUTER PRINTOUT OF YOUR DATA FILE THAT CONTAINS YOUR SIGN-ON BANNER ON THE SAME PAGE.

2. THE ANSWERS TO THE ABOUE QUESTIONS.

551 ~1982

Case Study #9 - FHA Multi-Family
Supplementary Notes

The Deepend Construction Company filed an initial 2013 form for the project described on pages 642-643 of your case problem for a preliminary feasibility analysis by the local FHA office. However, FHA was concerned that there were too many 3-bedroom apartments for the market and therefore suggested that the developer build 50 1-bedroom units and 50 2-bedroom units and only 10 3-bedroom 1½-bath units. Deepend went about reorganizing its plans accordingly.

Deepend Construction Company plans to sell 90% of the equity position to a private investor, Mr. Big. Private investors are willing to pay 15% of the mortgage principal balance at the beginning of the first year to be first owner and enjoy accelerated depreciation. The investor must choose between 200% declining balance on a garden apartment project with a 40 year useful life or straight line depreciation on a component basis which is the equivalent of a 25-year average useful life to determine his yield on an after tax basis. The investor is in a 70% tax bracket and wishes a modified internal rate of return of no less than 15% per annum over a ten year holding period. His next best alternative investment is a lower grade tax exempt bond yielding 8% after taxes. Bank loans to cover working capital requirements and short term losses would cost 14% per annum.

Although first year mortgage rents have a maximum limit, the FHA does permit a 3% increase in gross rents each year thereafter to cover a 5% increase in operating expenses.

1. Assuming only the project gross income will change because of the change in product mix as well as the allowable mortgage, while direct cost items which are known remain the same, reconstruct the 221(d)(4) calculations which are demonstrated on pages 850-852.

2. Then estimate the net cash, if any, Deepend will have in the project including BSPRA after sale to Mr. Big, the investor.

3. Then run MR CAP to see whether Mr. Big will make his desired rate of return on the investment if 90% of the cash after taxes, and the resale value, and all of the tax shelter are his. (Clue: Treat the 10% due Deepend from cash from operations as a reserve of 10% - without interest, and assume 10% of resale price to be Deepend's gain on sale in lieu of a real estate commission). Which depreciation method is the best for him, and by how much does his yield improve? (Clue: Assume resale price to remain equal to original cost to acquire in all calculations).

INCOME PROPERTY FINANCE AND GROUP INVESTMENT
Business 551

PROBLEM SET #2

Due by Noon on Friday September 26, 1986. Name _____
Grading will be done on the basis of the four C's again.

1. Given the following information about a proposed apartment complex, use the attached worksheets (for this part) with additional sheets for your supporting calculations to find:

   a. before-tax equity yield rate (use the DCR backdoor worksheet)

   b. after-tax equity yield rate (use the A/T DCF worksheeets)

---

50 units of 650 net square feet each; B.E.F. = 95%
160 units of 925 net square feet each; B.E.F. =92%
Construction cost per square foot = $43 which includes $440,000 of personal property.
Land cost = $32,500 per acre; Maximum alloable dwelling unit density is 7 dwelling units per acre.
Depreciation:
Building - Straight Line over 19 years.
Personal Property - Straight Line over 5 years.
Investor's marginal tax bracket = 50%
Net Income Multiplier = 9.20 (Based on upcoming year's NOI; used to estimate resale price).
Market rent level for new units of this type:
650 Sq. Ft. = $575
900 Sq. Ft. = $775
Both rental units are expected to grow at 4% compounded annually.
Vacancy rate = 5% of potential gross income.
Operating expenses = 26% of potential gross income.
Real Estate tax = 16% of potential gross income.
Cash replacement reserve = 2.5% of potential grosss income.
(assume that this amount is spent at the end of every year to replace old personal property; depreciate this cost accordingly during the subsequent years).
Debt Coverage ratio = 1.15 (based on "stabilized NOI").
Loan Information:
Fixed rate at 10%, full amoritization at 30 years, monthly payments

---

2. a. Using the traditional definition of financial leverage implicit in the backdoor approach, does this project have postitive or negative financial leverage?

   b. Using the comprehensive A/T DCF definition of financial leverage, does this project have positive or negative financial leverage? (Note: you are not required to show your work for this particular answer.)

   c. Briefly explain why this difference in results has occured. If no difference has occured, explain why a difference may occur.

   d. What limitations on the use of frontdoor/backdoor analysis does this suggest?

3. Suopose construction costs have recently decreased due to $39 per gross square foot. Using the attached frontdoor worksheet (you can put supporting calculations to the side of the worksheet) and a loan-to-cost ratio of 70%, while holding all other parameters constant as given (ie., for percentage relationships, hold the percentages constant and allow the dollar values of the entries to vary), find the new required rent per unit for feasibility. (Assume that the 925 Sq.Ft. apartments contribute 81% to the potential gross income.)

1. a.

DEBT COVER RATIO APPROACH
BACKDOOR WORKSHEET

Gross Potential Income

_____

\-

Vacancy Loss ____%

_____

=

Effective Gross Revenue

_____

\-

Operating Expenses

_____

\-

Real Estate Taxes

_____

\-

Cash Replacements

_____

=

Stabilized Net Operating Income

_____

−	÷
Annual Debt Service	Debt Cover Ratio
_____	_____
=	=
B/T Equity Cash Flow	Annual Debt Service
_____	_____
÷	÷
Required B/T Equity Yield	Mortgage Constant
_____	_____
=	=
Justified Cash Equity Investment	Justified Mortgage Loan
_____	_____

+

=

Total Justified Investment

_____

1. b.

AFTER-TAX DISCOUNTED CASH FLOW WORKSHEET

	Year 1	Year 2	Year 3
Gross Potential Income			
Less Vacancy Loss			
Effective Gross Revenue			
Less Real Estate Taxes			
Less Operating Expenses			
Net Operating Income			
Less Depreciation			
Less Interest			
Taxable Income			
Plus Depreciation			
Less Principal Payments			
Less Cash Replacements			
Cash Throwoff			
Less Taxes (Plus Tax Savings)			
Spendable Cash After Taxes			

Sale Price (@ end of Yr. 3)		
Less Taxes Due on Sale of Property:		
Capital Gain Tax		
Ordinary Income Tax		
Total Taxes Due		
Less Mortgage Balance		
Cash Received at Time of Sale		
Original Cash Equity Investment		
After-Tax Equity Yield (IRR)		

3.

LOAN-TO-COST RATIO APPROACH
FRONTDOOR WORKSHEET

Site Acquisition Cost

_____

\+

Construction Budget

_____

=

Total Capital Budget

_____

x

1 - Loan-to-Cost Ratio

_____

=

Cash Equity Required

_____

x

Required B/T Equity Yield

_____

=

Cash Throwoff to Equity

_____

x

Loan-to-Cost Ratio

_____

=

Mortgage Loan

_____

x

Mortgage Constant

_____

=

Annual Debt Service

_____

+

=

Stabilized
Net Operating Income

_____

\+

Cash Replacements

_____

\+

Real Estate Taxes

_____

\+

Operating Expenses

_____

=

Effective Gross Revenue

_____

\+

Vacancy Loss ____%

_____

=

Gross Potential Income

_____

÷

Net Leasable Units = Rent Required Per Unit

_____ _____

CASE STUDY #3

Due Wednesday, December 9, at Noon (NO EXCEPTIONS)

As underwriter for a institution/investment group, you are asked to prepare an investment submission containing the following:

(1) Deal summary page
(2) Project analysis (maximum of three pages, single or double spaced)
(3) Computer analysis assumption page (include in appendix with MRCAP computer output)

Your grade will depend on how clear and convincing your presentation is--be terse yet complete. What is stated in the case study need not be restated in the analysis. Address the case study risks from the lenders perspective. For the proposed loan, a single base case analysis should be included in the appendix. The appropriate handling of the cash flows using the MRCAP program and the integration of the MRCAP output in the write up will be heavily weighted.

The solution for this case study will be in two parts.

1. Determine if the loan proposal submitted is an acceptable deal using the following parameters:

(a) a 1.20 debt cover ratio (analyst may use creative techniques to reach the minimum DCR)
(b) minimum borrower MIRR of 12.4% using a 6% reinvestment rate
(c) <u>all</u> below line adjustments are included in the following costs:
- 50% of tenants stay at a cost of $2.00 s.f. per roll
- 50% of tenants leave at a cost of $5.00 s.f. per roll
- five year leases
- each year has an equal share rolling

(d) a 3.5% growth factor on all income, expenses, below line adjustments, and market value increases
(e) vacancy of 30% in year one, 20% in year two, 10% in year three, and a 5% vacancy thereafter

Whether or not you deem this to be an acceptable deal, indicate what type of financial institution/investment group would most likely lend on this deal and why. Be specific!

2. (Separate from part 1) How could the borrower structure the financing agreement in order to obtain 100% financing on the subject property? What are the risk/rewards in your structure to each of the parties, and what type of lender/investment group would participate in such a transaction? Additional computer modeling will be necessary to properly analyze this portion of your write up.

Due Noon on Friday, September 12, 1986 Name_____

General Directions: Solutions will be graded on the basis of the four C's (Clarity, Completeness, Conciseness, and Correctness); hence, the solution set you submit should be free of errors; well organized--showing all steps of the solution and the numerical value of each interest factor used; logically concise; and of course, correct.

1. Given a mortgage loan with the following terms, find the portion of the debt service that is principal for the fith and sixth months during the 15th year of the loan and for the 15th year as a whole.

   Type of Loan: Full amoritization, monthly payments, fixed rate
   Interest Rate: 93/8%
   Term of Loan: 25 Years
   Loan Amount: $175,000

2. If the borrower pays off the loan described below as scheduled over the 30-year term, what will be the effective yield to the lender?
   Type of Loan: Full amoritization, monthly payments, fixed rate
   Interest Rate: 10.5%
   Term of Loan: 30 Years
   Points Charged: 3 1/2 points
   Prepayment Penalty: 1 1/2% of the outstanding loan balance
   Loan amount: $130,000

3. If the borrower pays off the outstanding balance of the above loan (problem 2) after seven years of timely debt service payments, what will be the lender's effective yield?

4. Suppose instead that the borrower desires a loan with the following terms. Assuming that the borrower will pay off this 10-year loan as scheduled, how many points should the lender charge to achieve a 11.25% effective yield?
   Type of Loan: Full amoritization, monthly payments, fixed rate
   Interest Rate: 9.75%
   Term of Loan: 10 Years
   Prepayment Penalty: 1 1/2% of outstanding loan balance
   Loan Amount: $130,000

5. If the following interest rate changes occur on a variable rate mortgage loan and the loan is paid off early at the end of five years, what will be the lender's effective yield?
   Type of Loan: full amoritization, monthly payments, variable rate
   Interest Rate: Initially 9.5%
   Year 2: 10.0%
   Years 3&4: 10.25%
   Year 5: 11.0%
   Loan Amount: $135,000
   Points Charged: None
   Term of Loan (fixed): 27 Years
   Prepayment Penalty: 2 1/2% of outstanding loan balance

Eight Years ago the seller of the sunject property took out an assumable loan from another financial institution. The new buyer would like to take advantage of the low, fixed interest rate on the assumable loan by obtaining a wraparound mortgage loan from his bank. If the buyer makes the payments on the wraparound loan as scheduled, what will be the new lender's effective yield on the wraparound loan?

<u>Assumable Loan</u>:
Type of loan: Full Amoritization,
Monthly Payments
Fixed rate
Interest Rate: 6.0%
Term of Loan: 30 Years
Loan Amount: $250,000 (Originally)

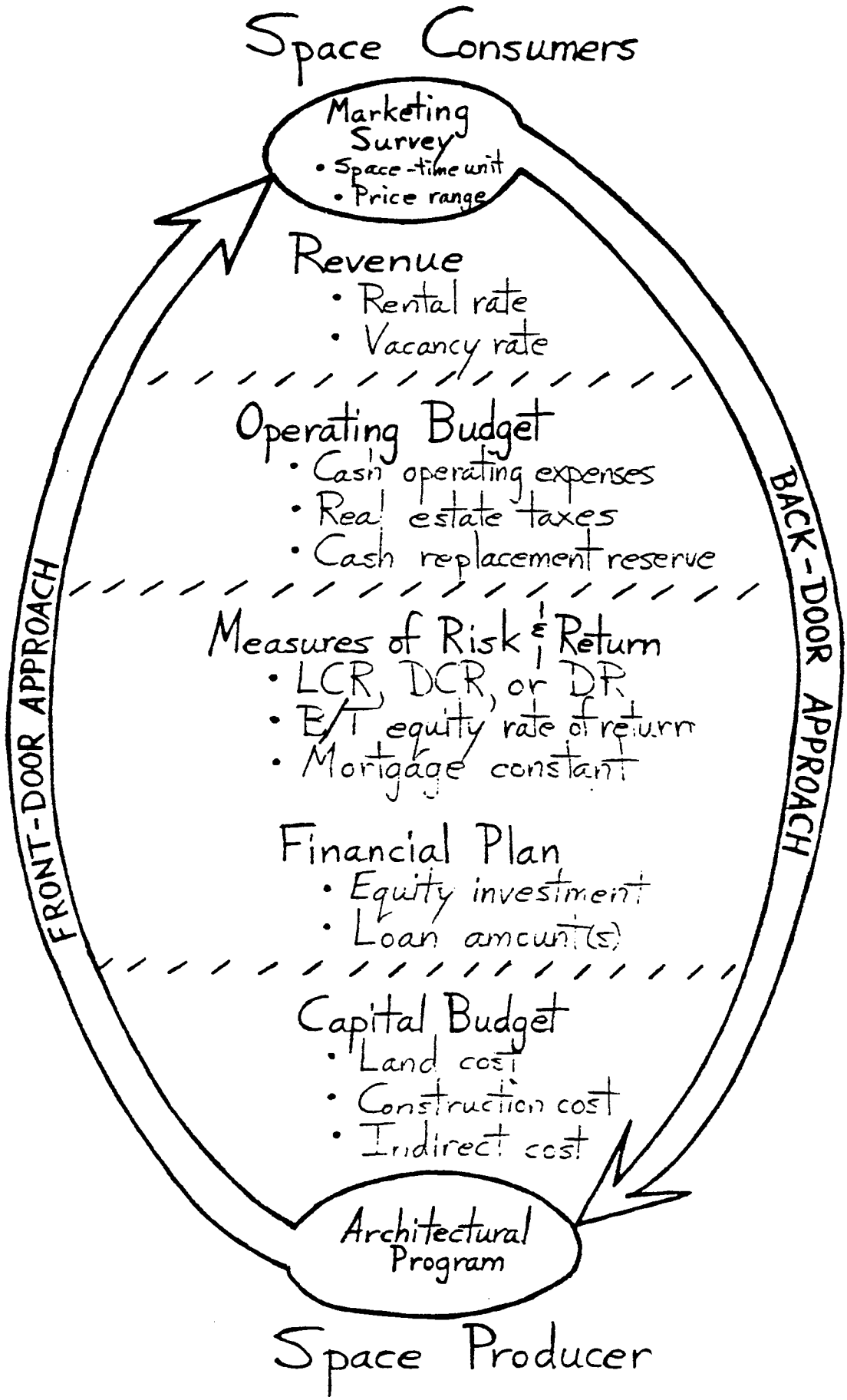
<u>Wraparound Mortgage Loan</u>:
Type of Loan: Full Amoritization,
Monthly payments,
Fixed rate
Interest Rate: 10.0%
Term of Loan: 22 Years
Loan Amount: $325,000 (Note: this is the face amount of the new loan)

. The Seller is asking $2,725,000 for the subject property. Stabilized NOI is $255,000. By the end of the anticipated nine year holding period, the property value is expected to have increased by 41%. The buyer requires a 9% before-tax equity yield. Available loan terms are 11% over 28 years (fixed rate, full amoritization, monthly payments). Using your knowledge of acceptable levels of financial ratios that concern mortgage lenders*; evaluate whether or not the lender would make a loan for the amount derived from the basic Ellwood equation. Provide support for your answer (i.e., show your supporting calculations).

The Basic Ellwood Equation:

$$R_o = Y_e - M[Y_e + P(A/F,Y_e,h) - f] - app(A/F,Y_e,h)$$

* If your knowledge is limited in this area, consult your textbook.


Space Consumers
Marketing Survey
• Space-time unit
• Price range
Revenue
• Rental rate
• Vacancy rate
Operating Budget
• Cash operating expenses
• Real estate taxes
• Cash replacement reserve
Measures of Risk & Return
• LCR, DCR, or DR
• E/T equity rate of return
• Mortgage constant
Financial Plan
• Equity investment
• Loan amount(s)
Capital Budget
• Land cost
• Construction cost
• Indirect cost
Architectural Program
Space Producer
FRONT-DOOR APPROACH
BACK-DOOR APPROACH

Given Information

Site size: 8 acres at $50,000/acre
Building size: 100,000 gross sq. ft. @ $38/sq.ft.
Soft costs: 15% of construction budget
LCR: 80%; B/T equity ROR: 14%; Loan terms: 12%, 30 years, monthly
Operating expenses: $3 per gross sq. ft. per year

LOAN TO COST RATIO APPROACH

Also given

Real estate taxes:
assume cost equals market value initially;
equalization rate=.60;
mill rate = $0.044
Cash replacement reserve = $20,000 per year
Vacancy rate: 5%
Building efficiency factor = .90

SITE ACQUISTION COST $400,000
+
CONSTRUCTION BUDGET $3,800,000
+
INDIRECT COST AND DEVELOPMENT FEES $570,000
=
TOTAL CAPITAL BUDGET $4,770,000

×
1- LOAN TO COST RATIO .20
=
CASH EQUITY REQUIRED $954,000
×
REQUIRED PRE-TAX CASH DISTRIBUTION RATE 14%
=
CASH THROW OFF REQUIRED FOR EQUITY $133,560

LOAN TO COST RATIO .80
=
MORTGAGE LOAN $3,816,000
×
DEBT SERVICE CONSTANT .12343
=
CASH REQUIRED FOR MORTGAGE LENDER $471,009

$604,569

NET OPERATING INCOME
+
OPERATING EXPENSES $300,000
+
REAL ESTATE TAXES $125,928
+
CASH REPLACEMENTS $20,000
=
EFFECTIVE GROSS REVENUE REQUIRED $1,050,497 — $1,050,497
+
VACANCY LOSS 5 % = $55,289
=
GROSS POTENTIAL REVENUE = $1,105,786
÷
NET LEASABLE UNITS = 90,000 sq. ft.
=
RENT REQUIRED PER UNIT = $12.29 per net sq. ft.

Default ratio:

$$\frac{\$471,009 + \$300,000 + \$125,928}{\$1,105,786} = .81$$

Debt cover ratio:

$$\frac{\$604,569}{\$471,009} = 1.28$$

Given Information
Default ratio = .70
Market rent: $11 per net sq. ft.
Other info: same as before as far as is applicable

DEFAULT RATIO APPROACH

GROSS RENT POTENTIAL $990,000

×	×
.30 1 - DEFAULT RATIO	DEFAULT RATIO .70
=	=
$297,000 RISK VARIABLES AND EQUITY CASH	CASH BUDGET OUTLAYS $693,000
-	-
5 % $49,500 VACANCY LOSS	OPERATING EXPENSES $300,000
-	-
0 RISK RESERVE	REAL ESTATE TAXES $125,928
=	-
$247,500 CASH AVAILABLE FOR INVESTORS	CASH REPLACEMENTS $20,000
+	=
14 % REQUIRED PRE-TAX CASH DISTRIBUTION RATE	CASH AVAILABLE FOR DEBT SERVICE $247,072
=	÷
$1,767,857 JUSTIFIED CASH EQUITY INVESTMENTS	DEBT SERVICE CONSTANT .12343
	=
	JUSTIFIED MORTGAGE LOAN $2,001,718

$3,769,575

TOTAL JUSTIFIED INVESTMENT

-

Land + Soft Costs — EXISTING CLAIMS OR PLANNED IMPROVEMENT BUDGET $970,000

=

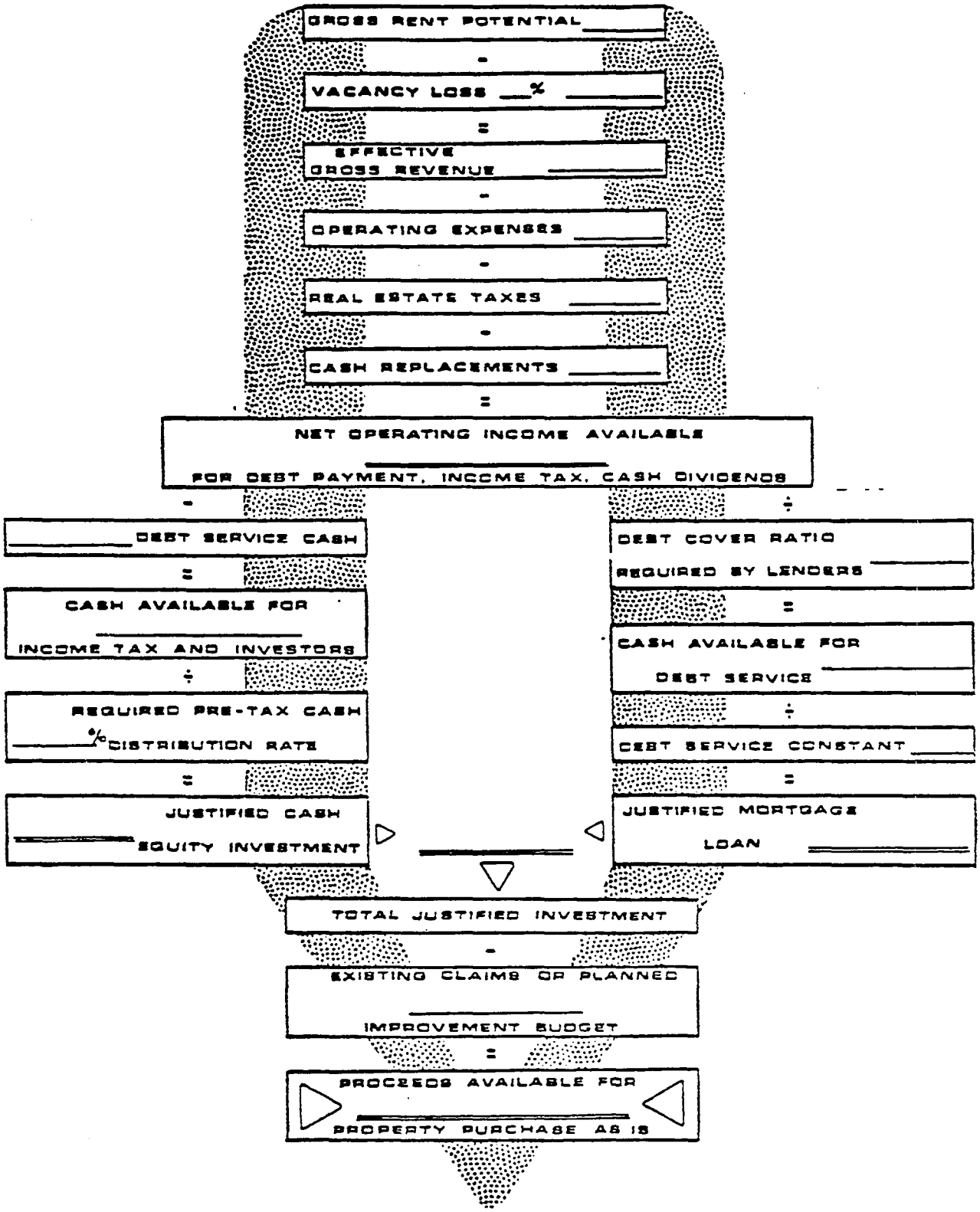
Construction Budget — PROCEEDS AVAILABLE FOR PROPERTY PURCHASE "AS IS" $2,799,575

Building size: ÷ 100,000 gross sq. ft.

=

Construction cost: $28.00 per gross sq. ft.

DEBT COVER RATIO APPROACH



Case of a Fixed-Rate Loan -- Example Problem and Solution

If the borrower pays off the loan described below after ten years of timely debt service payments, what will be the lender's effective yield?

type of loan: full amortization, monthly payments, fixed-rate
interest rate: 11.0%
term of loan: 25 years
points charged: 6 points
prepayment penalty: 2% of outstanding loan balance
loan amount: $100,000

Solution:

M.D.S. = Loan Amount (A/P, 11.0%, 25 yrs.; m)
" = $100,000 (0.009801)
" = $980.10

Loan Balance at end of Yr. 10 = M.D.S. (P/A, 11.0%, 15 yrs.; m)
" = $980.10 (87.98194)
" = $86,232

Present Value Equation:

Loan Amount (1 - Points Charged) = M.D.S. (P/A, i_e, 10 yrs.; m)
+ Loan Balance at end of Yr. 10 (1 + Prepayment Penalty) (P/F, i_e, 10yrs

$100,000 (1 - .06) = $980.10 (P/A, i_e, 10 yrs.; m)
+ $86,232 (1 + .02) (P/F, i_e, 10 yrs.; m)

$94,000 = $980.10 (P/A, i_e, 10yrs.; m) + $87,957 (P/F, i_e, 10yrs.; m)

Try i_e = 12.0%:

$94,000 $\overset{?}{\gtreqless}$ $980.10 (69.70052) + $87,957 (0.30299)
$94,000 < $94,964

Try i_e = 12.25%:

$94,000 $\overset{?}{\gtreqless}$ $980.10 (69.00365) + $87,957 (0.29559)
$94,000 > $93,630

Interpolation:

$$i_e = 12.0\% + \left(\frac{\$94,964 - \$94,000}{\$94,964 - \$93,630}\right) (12.25\% - 12.0\%)$$

i_e = 12.18% or <u>12.2%</u>

Case of a Variable-Rate Loan -- Example Problem and Solution

If the following interest rate changes occur on a VRM and the loan is paid off early at the end of three years, what will be the lender's effective yield?

type of loan: full amortization, monthly payments, variable rate
interest rate: initially 10.0%
year 2: 11.0%
year 3: 13.0%
term of loan (fixed): 25 years
points charged: 3 points
prepayment penalty: 2% of outstanding loan balance
loan amount: $60,000

Solution:

Initial M.D.S. = Loan Amount (A/P,10.0%,25yrs.; m)
" = $60,000 (0.009087)
" = $545.22

Beginning of Yr. 2 Loan Balance = M.D.S. (P/A,10.0%,24yrs.; m)
" = $545.22 (109.00505)
" = $59,432

Year 2 M.D.S. = Beg. of Yr. 2 Loan Bal. (A/P,11.0%,24yrs.; m)
" = $59,432 (0.009880)
" = $587.19

Beginning of Yr. 3 Loan Balance = M.D.S. (P/A,11.0%,23yrs.; m)
" = $587.19 (100.30010)
" = $58,895

Year 3 M.D.S. = Beg. of Yr. 3 Loan Bal. (A/P,13.0%, 23yrs.; m)
" = $58,895 (0.01142)
" = $672.58

Loan Balance at the End of Yr. 3 = M.D.S. (P/A,13.0%,22yrs.; m)
" = $672.58 (86.93941)
" = $58,474

Present Value Equation:

Loan Amount (1 - Points Charged) = M.D.S.Yr.1 (P/A,i_e,1yr.; m)
+ M.D.S.Yr.2 (P/A,i_e,1yr.; m)(P/F,i_e,1yr.; m)
+ M.D.S.Yr.3 (P/A,i_e,1yr.; m)(P/F,i_e,2yrs.; m)
+ Loan Bal. at End of Yr. 3 (1 + Prepayment Penalty)(P/F,i_e,3yrs.; m)

$60,000 (1 - .03) = $545.22 (P/A,$i_e$,1yr.; m)
+ $587.19 (P/A,$i_e$,1yr.; m)(P/F,$i_e$,1yr.; m)
+ $672.58 (P/A,$i_e$,1yr.; m)(P/F,$i_e$,2yrs.; m)
+ $58,474 (1 + .02)(P/F,$i_e$,3yrs.; m)

$58,200 = $545.22 (P/A,$i_e$,1yr.; m)
+ $587.19 (P/A,$i_e$,1yr.; m)(P/F,$i_e$,1yr.; m)
+ $672.58 (P/A,$i_e$,1yr.; m)(P/F,$i_e$,2yrs.; m)
+ $59,643 (P/F,$i_e$,3yrs.; m)

Continued...

Try $i_e = 12.5\%$:

$$\$58,200 \overset{?}{\gtrless} \$545.22\ (11.22550) + \$587.19\ (11.22550)(0.88307) + \$672.58\ (11.22550)(0.77981) + \$59,643\ (0.68862)$$

$$\$58,200 < \$58,900$$

Try $i_e = 13.0\%$:

$$\$58,200 \overset{?}{\gtrless} \$545.22\ (11.19604) + \$587.19\ (11.19604)(0.87871) + \$672.58\ (11.19604)(0.77213) + \$59.643(0.67848)$$

$$\$58,200 > \$58,162$$

Interpolation:

$$i_e = 12.5\% + \left(\frac{\$58,900 - \$58,200}{\$58,900 - \$58,162}\right)(13.0\% - 12.5\%)$$

$$i_e = 12.97\% \text{ or } \underline{\underline{13.0\%}}$$

Case of a Wraparound Loan -- Example Problem and Solution

Fourteen years ago the seller of the subject property took out an assumable loan from another bank. The new buyer would like to take advantage of the low, fixed interest rate on the assumable loan by obtaining a wraparound mortgage loan from her bank. If her bank desires to achieve an effective yield of 13.0% and anticipates that she will pay off the wraparound loan as scheduled, what nominal annual interest rate should her bank charge?

Assumable Loan:

type of loan: full amortization, monthly payments, fixed-rate
interest rate: 7.0%
term of loan (originally): 30 years
loan amount (originally): $80,000

Wraparound Loan:

type of loan: full amortization, monthly payments, fixed-rate
interest rate: ?
term of loan: 25 years
loan amount: $90,000 (Note: This is the face amount of the new loan.

Solution:

M.D.S. on Original Loan = Loan Amount (A/P,7.0%,30yrs.; m)
" = $80,000 (0.00665)
" = $532.00

Outstanding Balance on Original Loan = M.D.S. (P/A, 7.0%,16yrs.; m)
" = $532.00 (115.31259)
" = $61,346

Continued...

Present Value Equation:

Wraparound Loan Face Amount - Outstanding Balance on Original Loan
= (M.D.S. on Wraparound Loan - M.D.S. on Original Loan)(P/A,13.0%,16yrs.
+ M.D.S. on Wraparound Loan (P/A,13.0%,9yrs.; m)(P/F,13.0%,16yrs.; m)

$90,000 - $61,346 = (M.D.S. on Wraparound Loan - $532.00)(80.64595)
+ M.D.S. on Wraparound Loan (63.47760)(0.12634)

$28,654 = M.D.S. on Wraparound Loan (80.64595 + 8.01976)
- $42,904

$$\text{M.D.S. on Wraparound Loan} = \frac{\$71,558}{88.66571} = \$807.05$$

Next, since M.D.S. on Wraparound Loan = Face Amount of Wraparound Loa
x (A/P, i, 25 yrs.; m),

solve for (A/P,i,25yrs.; m):

$$(A/P,i,25\text{yrs.}; m) = \frac{\text{M.D.S. on Wraparound Loan}}{\text{Face Amount of Wraparound Loan}}$$

$$= \frac{\$807.05}{\$90,000} = 0.008967$$

Try i = 10.0%:

$$0.008967 \overset{?}{\gtreqless} (A/P,10.0\%,25\text{yrs.}; m)$$
$$0.008967 < 0.009087$$

Try i = 9.75%:

$$0.008967 \overset{?}{\gtreqless} (A/P,9.75\%,25\text{yrs.}; m)$$
$$0.008967 > 0.008911$$

Interpolation:

$$i = 10.0\% - \left(\frac{0.009087 - 0.008967}{0.009087 - 0.008911}\right)(10.0\% - 9.75\%)$$

$$i = 9.83\% \text{ or } \underline{\underline{9.8\%}}$$

ELLWOOD IN A NUTSHELL

Basic Ellwood Formula

$$R_o = Y_e - M\left[Y_e + P(A/F,Y_e,h) - f\right] - app(A/F,Y_e,h)$$

where: R_o = overall rate ($= \frac{\text{NOI}}{\text{Value of Property}}$)

Y_e = before-tax equity yield

M = loan-to-value ratio

P = proportion of loan paid off during the holding period, computed as follows:

$$P = 1 - \frac{(P/A,i,n-h;m)}{(P/A,i,n;m)}$$

h = holding period

i = interest rate

n = term of loan

f = mortgage constant

app = percentage by which the property value has increased by the end of the holding period

m = denotes monthly compounding (if applicable)

Example

Given: $Y_e = .12$ $M = .70$ $h = 6$ years $i = .14$

$n = 25$ years app $= .20$ NOI $= \$80,000$

Then: $f = (A/P,i,n;m) \times 12 = (0.012409) \times 12 = 0.14891$

$$P = 1 - \frac{(P/A,.14,25-6;m)}{(P/A,.14,25;m)} = 1 - \frac{(79.62570)}{(83.07297)} = 0.04150$$

$(A/F,Y_e,h) = (A/F,.12,6) = 0.12323$

$R_o = .12 - .70\left[.12 + .04150(.12323) - .14891\right] - .20(.12323$

$R_o = .11201$

$$\text{Value of Property} = \frac{\text{NOI}}{R_o} = \frac{\$80,000}{.11201} = \$714,222$$

References

Akerson, Charles B. "Ellwood Without Algebra," The Appraisal Journal, June 1970.

American Institute of Real Estate Appraisers. "Mortgage Equity and Discounted Cash Flow," Chapter 22 of The Appraisal of Real Estate, 7th Ed., 1978, pp. 432-460.

TWO APARTMENT PROJECTS -- A COMPARISON OF DESIGN AND VALUE - SUMMARY SHEET

Assume: you are making appraiser-underwriter decisions for a savings association. Market demand for housing is excellent in your area; you have a good savings flow. Your association has assets in excess of $50,000,000. Your loan portfolio contains ample room for loans on apartments. Two developers with good reputations, experience, and with whom you have done business in the past call on you to review two apartment developments. They are seeking long-term financing and want your pre-commitment opinion on the projects called "Rose Gardens" and "Green Acres" in this case study. Both apartment developments are planned to come on to the market in the near future.

The projects are on adjacent sites. All school and other taxing district areas apply to both sites. Hence, location is comparable. Construction is quite similar: brick veneer over concrete block, with wood floor and partition framing; adequate sound control considerations, and comparable equipment and finish quality.

Further information provided here describes the design, rental schedule, site plan and typical unit layout of each project. We are seeking your underwriter's view of the quality of the projects as seen in the drawing stage and your opinion of comparative desirability of the projects for mortgage financing. Register your opinions of the overall quality of "Rose Gardens" and "Green Acres."

1. Rate "Rose Gardens" and "Green Acres" on the following general points:

	ROSE GARDENS (Rate on "5 point" basis, 0 to 5)	GREEN ACRES
(PARKING, for example)	4	4
(CONSTRUCTION, for example)	4	4
OVERALL LAND PLAN		
UNIT PLANS		
EXTERIOR APPEARANCE		
(ANY OTHER ITEMS):		
TOTAL		

2. Overall opinion of general quality (Excellent, good, fair, bad)

3. a. Would you commit on? (Yes, No)
   b. If yes, what terms? (%, Term, Points)

4. a. If you could commit on only one project, which one would you pick? (Check box)

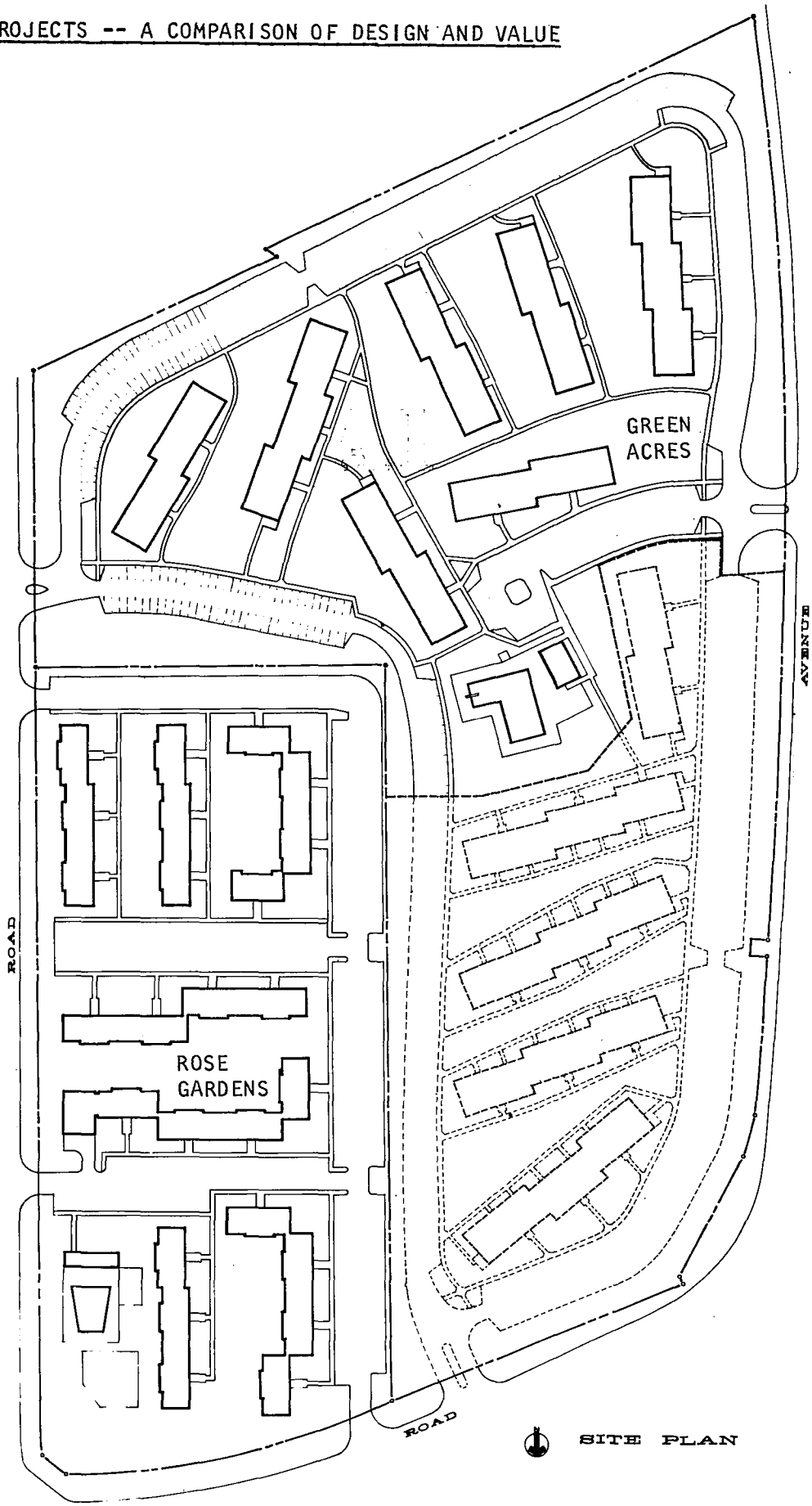
   b. Why?

_____

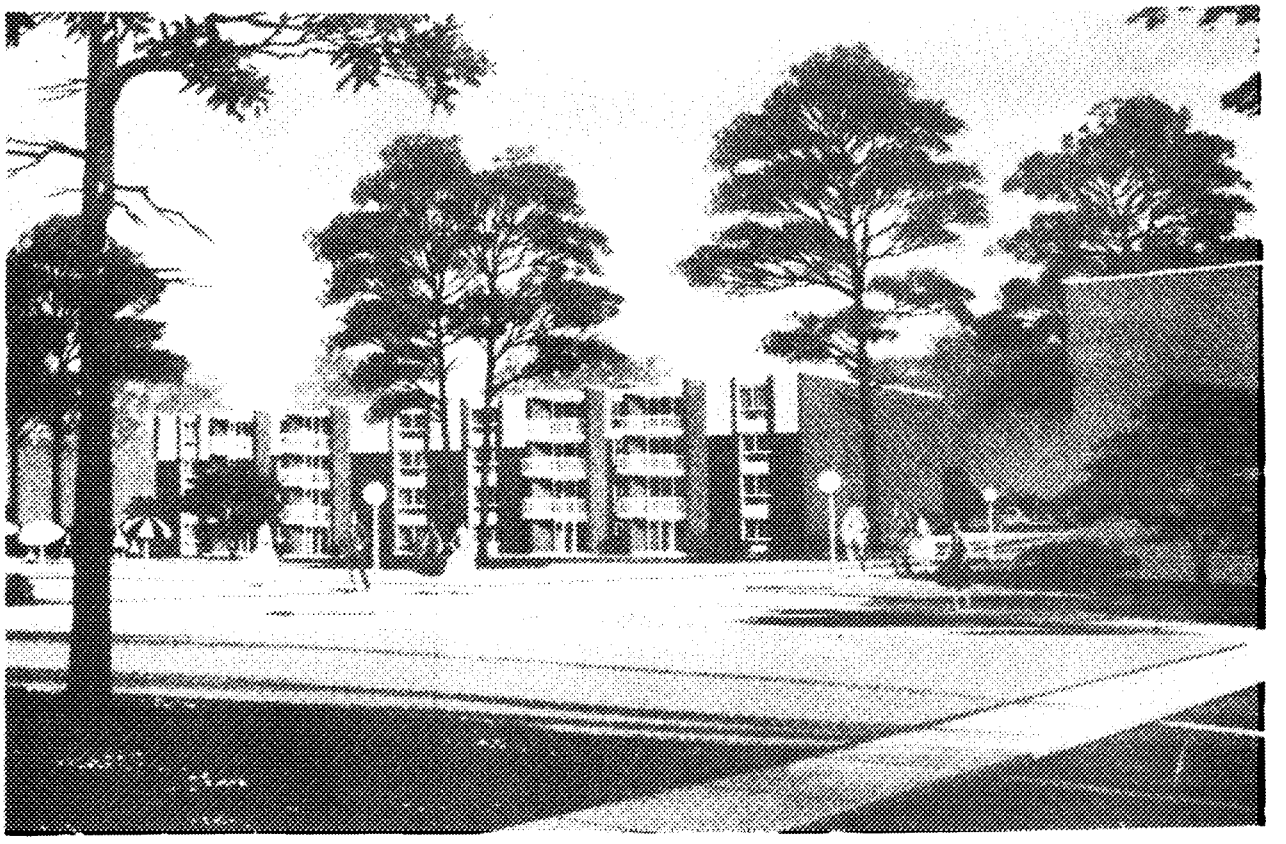
_____

_____

TWO APARTMENT PROJECTS -- A COMPARISON OF DESIGN AND VALUE
SITE PLANS



TWO APARTMENT PROJECTS -- A COMPARISON OF DESIGN AND VALUE
ROSE GARDENS

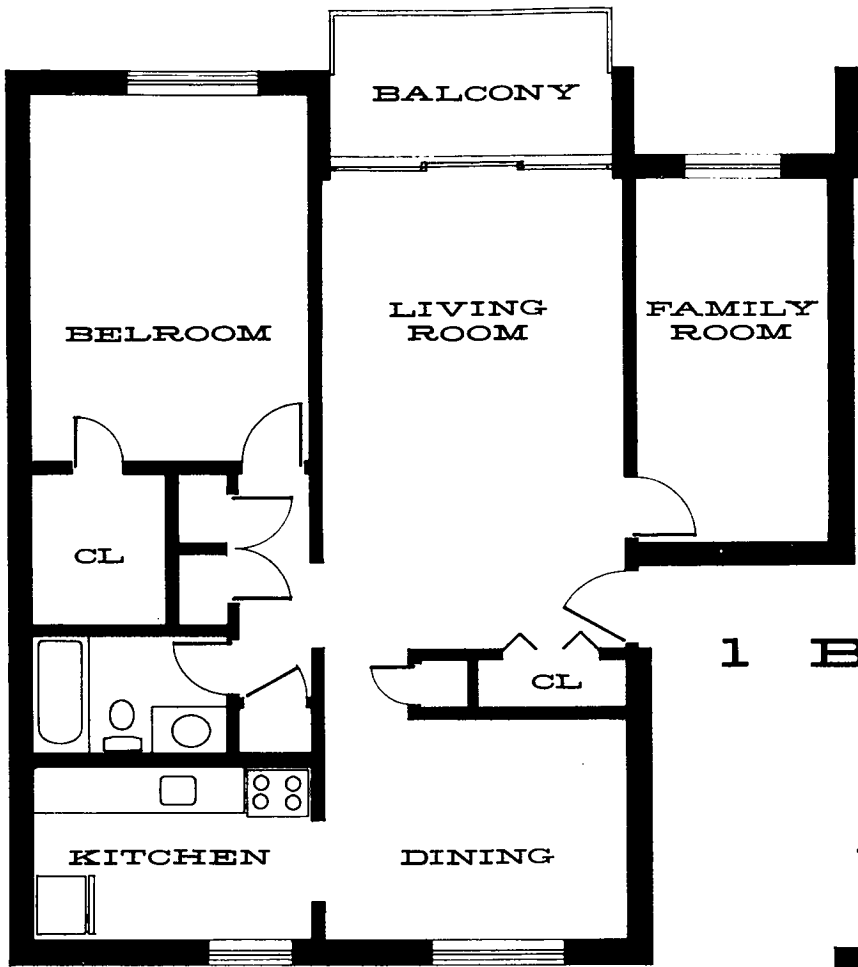


UNIT BREAKDOWN AND RENTAL SCHEDULE -- ROSE GARDENS

No.	Type Units	Square Footage	Rentals
40	1 bedroom	826	$149.50 - $155.50
	1 bedroom & den	938	$164.50 - $167.50
128	2 bedroom	1,073	$177.50 - $182.50
	2 bedroom & den	1,185	$192.50 - $194.50
28	3 bedroom	1,272	$209.50 - $219.50
4	3 bedroom & den	1,397	$239.50
200 Total			

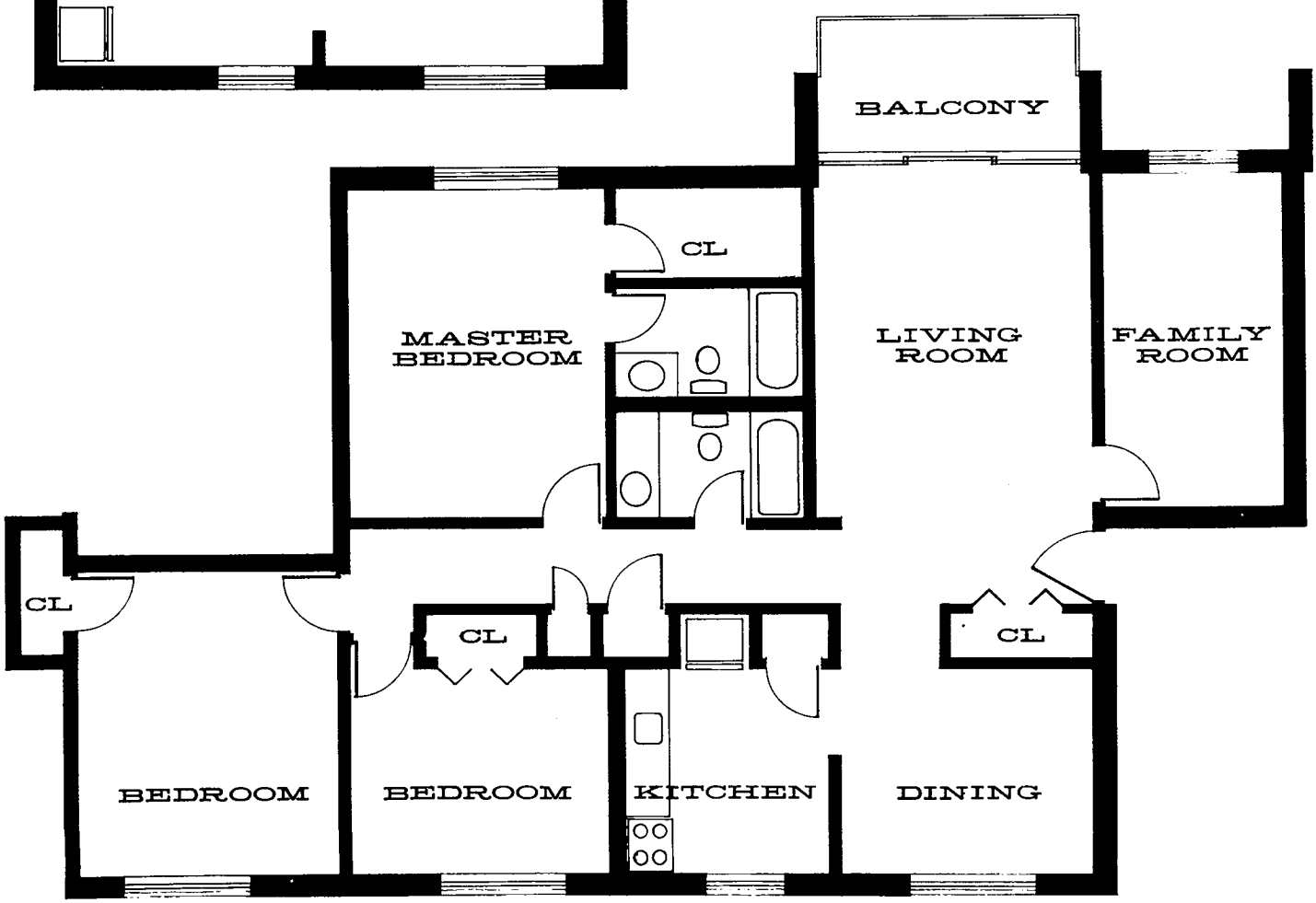
9.0 acres, density = 22 units/acres

TWO APARTMENT PROJECTS -- A COMPARISON OF DESIGN AND VALUE
TYPICAL UNIT PLANS, ROSE GARDENS



1 BEDROOM

3 BEDROOM



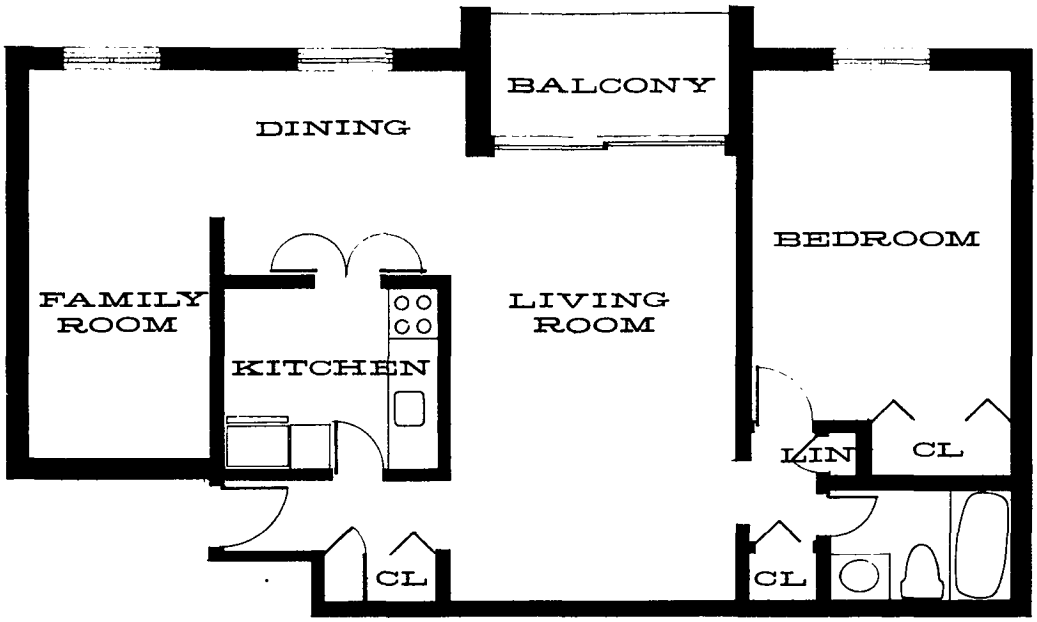
TWO APARTMENT PROJECTS -- A COMPARISON OF DESIGN AND VALUE
GREEN ACRES

UNIT BREAKDOWN AND RENTAL SCHEDULE -- GREEN ACRES

No.	Type of Units	Square Footage	Rentals
62	1 bedroom	776	$135.00
	1 bedroom & den	919	$150.00
112	2 bedroom (2 bath)	1,040	$175.00
	2 bedroom & den (2 bath)	1,183	$185.00
40	3 bedroom (2 bath)	1,216	$200.00
16	3 bedroom & den (2 bath)	1,360	$215.00
230 Total			

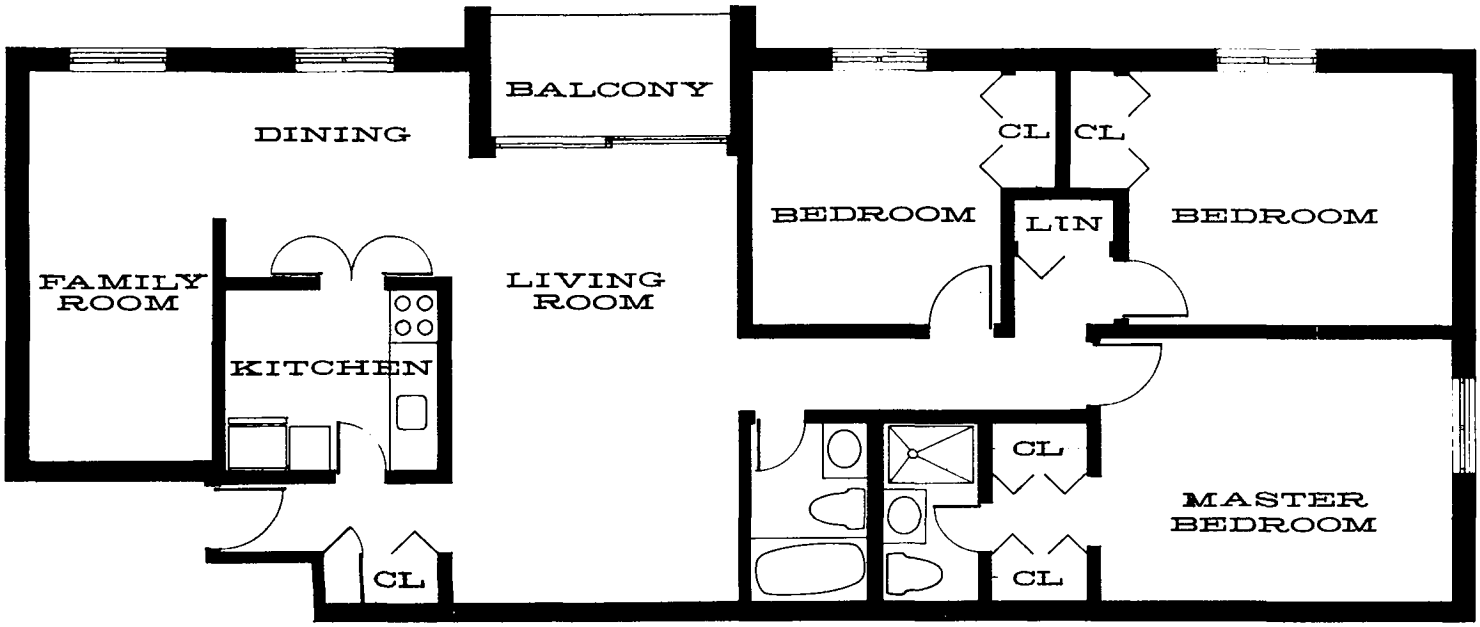
Unit I -- 230 units, approximately 10.5 acres
Unit II -- 205 units, approximately 9.5 acres
Density, 22 units/acre

TWO APARTMENT PROJECTS -- A COMPARISON OF DESIGN AND VALUE
TYPICAL UNIT PLANS, GREEN ACRES



1 BEDROOM

3 BEDROOM



FINANCING MAKES THE DIFFERENCE

CASE STUDY

44-Story Office Building
Chicago, Illinois

DESCRIPTION

The subject property consists of a 44-story first class, fully air-conditioned office building containing a gross building area of 1,645,000 square feet, which includes 1,025,000 square feet of usable office area and 37,000 square feet of usable commercial retail area, located on LaSalle Street, Chicago, Illinois.

The building serves as the headquarters for Illinois' sixth largest bank. They occupy 140,000 square feet, or 14% of the total building area. Their lease expires in 1990. The remaining space is occupied primarily by law firms, investment bankers and insurance companies.

TERMS OF PURCHASE

The property is under contract, in 1978, to be purchased for $52,500,000. The terms are all cash, at closing, above the remaining first mortgage from the Prudential Life Insurance Company which has an outstanding balance of approximately $20,000,000 with interest payable at the rate of 5-3/4%, amortizing in constant payments of principal and interest. The annual debt service requirement is $1,894,000, which is equivalent to an annual constant of 9.47% of the existing loan balance. The loan is due in 1990 (12 years hence) with a required balloon payment equal to the then outstanding balance of $6,150,000. During the period, $13,500,000 will be amortized.

LEASE INFORMATION

The National Bank occupies 140,000 square feet (14%) of the office area, including 54,000 square feet of ground space. Their lease expires in 1990 and there are no renewal options. A change in the location of an Illinois bank requires a change in its charter, and approval of various regulatory agencies.

Forty-one percent of the office space comes up for renewal in 1980, 1981 and 1982; eight tenants account for 260,000 square feet, or 26% of the total office area. Lease expiration by year for the next 10 years is as follows:

Year		
1977	13,277 sq.ft.	1.3%
1978	99,665 sq.ft.	10.1%
1979	61,492 sq.ft.	6.2%
1980	97,563 sq.ft.	9.9%
1981	163,930 sq.ft.	16.6%
1982	149,090 sq.ft.	15.1%
1983	34,233 sq.ft.	3.5%
1984	54,409 sq.ft.	5.5%
1985	70,557 sq.ft.	7.1%
1986	23,471 sq.ft.	2.4%
1987	47,229 sq.ft.	4.8%

This data indicates a well-balanced leasing pattern, with no particular year when a large number of tenants have coincident lease expirations.

Rental rates currently average:

Floors 3-12	$10.81 per sq.ft.
Floors 14-23	$11.56 per sq.ft.
Floors 24-44	$13.28 per sq.ft.

All leases contain a provision for escalation to pass increases in operating expenses and real estate taxes to the tenant as additional rental.

INCOME AND EXPENSE ANALYSIS

INCOME

Minimum Guaranteed Rentals	$ 9,292,000
Escalations	1,585,000
Retail Arcade	340,000
Storage	170,000
Service Income	330,000
Miscellaneous Income	15,000
GROSS INCOME	$11,732,000
Less: 4.2% Vacancy Factor on Minimum Guaranteed Rentals	386,000
EFFECTIVE GROSS INCOME	$11,346,000

EXPENSES

	$/sq.ft. Rentable Office	
Cleaning	$1.10	$ 1,139,000
Electricity	.05	68,000
HVAC	.28	341,000
Energy	.99	1,210,000
Plumbing	.10	123,000
Elevators	.27	325,000
General Expense-Building	.56	688,000
Special Expense-Building	.04	51,000
Management	.29	356,000
Building Repairs	.09	110,000
Tenant Alterations	.12	150,000
Tenant Decorating	.06	75,000
Insurance	.11	137,000
Real Estate Taxes	1.45	1,800,000
Total Expenses	$5.51	$ 6,573,000
NET INCOME		$ 4,773,000
Less: First Mortgage Debt Service		1,894,000
NET CASH FLOW AVAILABLE		$ 2,879,000

PROBLEM

HOW TO MAXIMIZE RETURN ON INVESTMENT

DISCUSSION

A prime reason for investing in real property in an inflationary economy is equity hedge. To analyze this investment opportunity we must make assumptions about the future income expectations. We forecast a rise in office rentals averaging 3% net, per annum. Rentals increase in accordance with current lease expirations and are renewed for five year terms. This results in the following income stream;

YEAR	GROSS EFFECTIVE INCOME	CASH EXPENSES	NET INCOME
1978	11345640	6577424	4,768,218
1979	11435730	6581929	4,853,803
1980	11470830	6583684	4,887,152
1981	11492010	6584743	4,907,278
1982	11852900	6602788	5,250,120
1983	12294720	6617760	5,676,962
1984	12579630	6629869	5,949,765
1985	12862380	6641886	6,220,495
1986	13280210	6659644	6,620,574
1987	13741250	6679238	7,062,018
1988	14322510	6726268	7,596,253
1989	14664740	6743379	7,921,369
1990	14925780	6796985	8,939,879
1991	16266390	6875902	10,439,280
1992	16719770	6898571	10,870,000
1993	17236990	6924432	11,361,350
1994	17607640	6942964	11,713,470
1995	17910270	6958096	12,000,970
1996	18747020	6999933	12,795,980
1997	19591380	7042176	13,598,500
1998	20191460	7072156	14,168,120
1999	20621180	7093641	14,576,330
2000	20972000	7111182	14,909,610
2001	21942040	7159684	15,831,160
2002	22630240	7194094	16,484,940
2003	23325340	7228649	17,145,280
2004	23823480	7253756	17,638,520
2005	24230190	7274092	18,004,680
2006	25354720	7330318	19,073,180
2007	26152520	7370208	19,831,100
2008	26958530	7410499	20,596,620
2009	27535800	7439372	21,145,210
2010	28097290	7462947	21,503,130
2011	29310920	7528128	22,831,580
2012	30235820	7574373	23,710,240

POSSIBLE SOLUTIONS

(A) The simple way to purchase this property is to invest $32,500,000 in the equity and take advantage of the accelerating amortization

of the existing first mortgage together with the below market 5-3/4% interest rate. Then, make the balloon payment of $6,150,000 in 1990 by refinancing the first mortgage at that time in the amount of $38,650,000 which is 75% of today's purchase price of $52,500,000. Under this plan, the equity purchaser would receive an initial cash on cash return of $2,879,000 on his investment of $32,500,000 or 8.86%, and a 35 year internally discounted cash flow return of 13.80% as shown on Chart 1. He would retrieve his initial investment of $32,500,000 and retire the balloon balance of the first mortgage of $6,150,000 from the proceeds of his new refinancing.

(B) The second alternative is to purchase the property with a reduced investment in the equity of $13,500,000 by refinancing the existing first mortgage at time of acquisition with a new $38,650,000 first mortgage. Current market conditions indicate favorable terms would be 9% interest with a 32-year amortization or a constant of 9.55%. This would result in an annual debt service requirement of $3,690,000. Since the net income before debt service is $4,773,000, the initial cash flow available would be $1,083,000 or an initial cash on cash yield of 8.02%. The 35 year internally discounted cash flow yield would be 18.0% as indicated on Chart 2. In addition, current mortgage terms would not allow for pre-payment of the loan in less than 15 years, and the amortization of the new first mortgage during that period of time would amount to $6,700,000. Thus, your cash investment is locked in for a long period.

(C) A third alternative is a combination of (A) and (B) above. That is, reduce your cash investment in equity to as low an amount as possible; increase your use of debt leverage without disturbing the favorable terms of the existing first mortgage; allow yourself the flexibility to refinance and recapture your investment in 12 years; and maximize your discounted cash flow return.

This is accomplished in the following magical, mystical manner: Limit your cash investment in equity to $10,000,000 by arranging a standing junior mortgage of $22,500,000. Since the combination of first and second mortgages is not much more than the usual debt to value ratio of a first mortgage, the addition of credit responsibility through a partial guarantee should result in a 9% interest rate.

The heavy amortization of the first mortgage ($13,500,000 by 1990) provides the second mortgage lender with adequate comfort to make a standing loan.

The initial net cash flow available after debt service of the present first mortgage is $2,879,000. The interest payment on a $22,500,000 second mortgage at 9% interest is $2,025,000. Therefore, the equity purchaser would receive an initial cash on cash return of $854,000 on his investment of $10,000,000 or 8.54% and a 35 year internally discounted cash flow return of 21.5% as indicated on Chart 3. In 1990, he will refinance the first mortgage for $38,650,000, repay the $6,150,000 balloon balance, repay the $22,500,000 second and retrieve his original $10,000,000 investment.

CHART 1

YEAR	CASH FLOW AFTER DEBT SERVICE	EXCESS REFINANCING PROCEEDS	NET CASH INCOME
1978	2873896		2873896
1979	2959480		2959480
1980	2992829		2992829
1981	3012956		3012956
1982	3355796		3355796
1983	3782640		3782640
1984	4055441		4055441
1985	4326172		4326172
1986	4726251		4726251
1987	5167695		5167695
1988	5701931		5701931
1989	6027046		6027046
1990	6234488	32500000	38734480
1991	5700206		5700206
1992	6130923		6130923
1993	6622274		6622274
1994	6974394		6974394
1995	7261890		7261890
1996	8056806		8056806
1997	8859422		8859422
1998	9429045		9429045
1999	9837255		9837255
2000	10170530		10170530
2001	11092070		11092070
2002	11745850		11745850
2003	12406210		12406210
2004	12879440		12879440
2005	13265800		13265800
2006	14334110		14334110
2007	15092030		15092030
2008	15857550		15857550
2009	16406140		16406140
2010	16854040		16854040
2011	18092490		18092490
2012	18971150		18971150

YIELD: 13.80%

CHART 2

YEAR	NET CASH INCOME
1978	1077929
1979	1163513
1980	1196862
1981	1216988
1982	1559830
1983	1986673
1984	2259476
1985	2530205
1986	2930283
1987	3371727
1988	3905963
1989	4231078
1990	4438520
1991	5700206
1992	6130923
1993	6622274
1994	6974394
1995	7261890
1996	8056806
1997	8859422
1998	9429045
1999	9837255
2000	10170530
2001	11092070
2002	11745850
2003	12406210
2004	12879440
2005	13265800
2006	14334110
2007	15092030
2008	15857550
2009	17081560
2010	20544330
2011	21782780
2012	22661440

YIELD: 18.00%

CHART 3

YEAR	CASH FLOW AFTER DEBT SERVICE	EXCESS REFINANCING PROCEEDS	NET CASH INCOME
1978	849050		849050
1979	934649		934649
1980	967998		967998
1981	988125		988125
1982	1330966		1330966
1983	1757809		1757809
1984	2030612		2030612
1985	2301341		2301341
1986	2701419		2701419
1987	3142863		3142863
1988	3677099		3677099
1989	4002214		4002214
1990	4209656	10000000	14209650
1991	5700206		5700206
1992	6130923		6130923
1993	6622274		6622274
1994	6974394		6974394
1995	7261890		7261890
1996	8056806		8056806
1997	8859422		8859422
1998	9429045		9429045
1999	9837255		9837255
2000	10170530		10170530
2001	11092070		11092070
2002	11745850		11745850
2003	12406210		12406210
2004	12879440		12879440
2005	13265800		13265800
2006	14334110		14334110
2007	15092030		15092030
2008	15857550		15857550
2009	16406140		16406140
2010	16854040		16854040
2011	18092490		18092490
2012	18971150		18971150

YIELD: 21.57%