JAMES A. GRAASKAMP COLLECTION OF TEACHING MATERIALS
V.   INDUSTRY SEMINARS AND SPEECHES - SHORT TERM
     A.   Appraisal Organizations
          7.   1975
               b.   "A Guide to Real Estate Investment
                    Financial Analysis", SREA, Chap. of the
                    University of Florida Union,
                    January, 8, 1975

A GUIDE TO REAL ESTATE INVESTMENT FINANCIAL ANALYSIS

American Society of Real Estate Appraisers
University of Florida Union
Gainesville, Florida
Wednesday, January 8, 1975

Instructed by Professor James A. Graaskamp
University of Wisconsin School of Business

MORNING SESSION: 9:00 A.M.

    I.   Basic Elements of Real Estate Financial Analysis

    II.   Evolution of Real Estate Appraisal Income Analysis

    III.   The Basic Elements of After-Tax Cash Flow Analysis

COFFEE BREAK: 10:30 A.M.

    IV.   Working through a Basic Problem for an Incomr Property

    V.   Computer Analysis of an Income Property

LUNCHEON

AFTERNOON SESSION: 1:00 P.M.

    I.   What is Risk Analysis?

    II.   Risk Analysis Applied to a Mortgage Loan Application

    III.   Risk Applied to Limited Partnership Analysis

COFFEE BREAK: 2:30 P.M.

    IV.   Sensitivity Analysis for Development

    V.   Fair Market VAlue or Investment Value?

    VI.   All Purpose Cash Flow Model

Counterpoint: "There is nothing so disastrous as a rational investment
policy in an irrational world."

John Maynard Keynes

Outline to
Guide to Real Estate Investment Analysis

MORNING SESSION

I. Basic Elements of Real Estate Financial Analysis

A. The valuation process is a system of models which attempts to predict what a prudent man working for his economic betterment would do.

1. The market comparison approach is a logic model of if/then statements.
2. The cost approach is an aggregation model
3. The income approach is a simulation model

B. Simulation requires forecasting the cash cycle of an enterprise. Basic elements of a cash cycle forecast are:

1. The time-line of financial events for an enterprise
2. Schedules of outlays
3. Schedules of receipts
4. Measures of yield
5. Measures of risk

C. To make forecasting feasible it is necessary to simplify the future transaction pattern to the most important elements. Reducing a problem to basic relationships is called modeling. The basic considerations of a model as to its usefullness are:

1. What prediction or decision needs to be made?
2. What data is available to make it?
3. What theories and assumptions are available to structure the data?
4. What are the limitations of the model user?
5. What are the constraints on communicating the output?
6. What is the cost/benefit ratio of using the model?

D. The types of financial modeling decisions typically found in financial analysis are:

1. Economic allocation of all resources
2. Acceptance or rejection of a specific investment opportunity
3. Identification of the optimal combination of ingredients for a profitable opportunity
4. Sensitivity analysis of relationship of financial success to specific variables
5. Trade-off decision
6. Measuring tolerance for and probability of surprise (risk)

E. Comparison of critical assumptions for two investment valuation models or viewpoints in real estate:

1. The traditional income appraisal began with an economic model intended to best allocate the country's investment in capital improvements and land. (See Illustration 1, Col. A)

2. The Ellwood valuation model began with the need to accept or reject mortgage loan applications and a correlary question of how much to lend on acceptable properties. (Illustration 1, Col.B)

F. When the viewpoint changes from valuation of a property for a mortgage commitment to an equity commitment the assumptions from the Ellwood approach become too simple, too far removed from reality to be a useful model.

1. The question for the equity investor is which investment has the best probability of maximizing his net spendable cash in the future and his total accumulation of net worth over time with an acceptable level of risk and hassle.
2. Illustration 1, Col. C summarizes the assumptions of modern capital budget decision models.
3. Notice that it is no longer possible to have a single NOI in the numerator or in some cases, a single capitalization rate in the denominator. It will be necessary to do some accounting period by period.

G. Modern money management therefore requires the following inputs to a financial forecast and investment strategy.

1. The time line for significant financial events
2. A schedule and amount of outlays for each period

   a. Capital outlays
   b. Expense outlays
   c. Debt service outlays
   d. Tax outlays

3. A schedule and amounts of receipts for each period

   a. Operating revenues
   b. Sales proceeds
   c. Borrowed funds
   d. Derivative receipts or savings

4. Measures of yield

   a. Periodic dollars of profit
   b. Periodic return in dollars invested
   c. Average periodic return on total resources
   d. Total cumulative dollar increase in net worth

5. Measures of risk

   a. Capacity for absorbing surprise
   b. Range of variation in alternative outcomes
   c. Definition of maximum loss

COMPARISON OF CRITICAL ASSUMPTIONS FOR THREE VALUATION MODELS OR VIEWPOINTS IN REAL ESTATE

By Professor James A. Graaskamp

Col. A	Col. B	Col. C
Economic Allocation of Resources	Accept or Reject Loan Application or How Much to Lend?	Which Investment Has the Best Probability of Maximizing Net Spendable & Net Worth
1. Instant investment	1. Instant investment	1. Discontinuous series of outlays
2. Productivity limited to net income from parcel before debt and income tax	2. Productivity limited to parcel after debt but before income tax	2. Productivity is net change in spendable cash from all sources after devt and income tax traced to real estate.
3. Continuous income function	3. Continuous income function	3. Discontinuous series of tax classified receipts
4. Recapture from income	4. Recapture from income & resale	4. Payback of equity from spendable cash and debt from net revenue & resale.
5. Projected for full useful life of improvements	5. Projected for normal turnover period 5-10 years of typical investor	5. Projected for elapsed time of outlays and receipts for specific investor time line horizon.
6. Arbitrary discount factor	6. Weighted average Inwood discounting	6. Selected present value discounting based on characteristics of investor and property revenue pattern

3.

II. Basic Money Management Theory

A. A real estate purchase is a capital budgeting decision and yet real
    estate professional societies teach capitalization as if the state
    of the arts was still the same as it was in 1935. To understand
    investment analysis is only necessary to calssify an investment as
    to type and the decision to be made.

B. Investment money managers distinguish between a conventional investment
    and a non-conventional investment by the pattern of outlays and
    receipts. Investment theory presumes outlays occur at the beginning
    of a period and proceeds are earned at the end of each period. A
    period is generally one year but might be a quarter or a month.

    1. A conventional investment has one or more periods of outlays
        followed by one or more periods of positive cash proceeds.
        Negative cash proceeds (losses) are treated as outlays.

    2. A non-conventional investment has one or more periods of outlays
        interspersed with periods of positive cash flows.

C. Assuming risk to be equal investment decisions attempt to provide
    a standard for choosing between alternative investment (courses of
    action) based on yield.

    1. For an investor with relatively unlimited funds and opportunities,
        such as an insurance company, the problem is to make accept or
        reject decisions for many independent investments, generally
        accepting each if yield is greater than some minimum acceptable
        rate of discount.

        a. Substitution theory and the cost of money
        b. Ellwood theory began as device to screen loan submissions

    2. Some investors have only enough money for a single site with
        which to make one investment and they are interested in shaping
        that investment to make the best profit possible within an
        acceptable limit of risk. A plant location problem where many
        sites may be profitable but where one site would be most profitable
        and only one plant would be built. Or there are engineering
        decisions to trade off one feature for another such as central
        air conditioning with higher rents, lower annual costs but higher
        initial investment as opposed to window air conditioners with
        average rents, higher depreciation, more responsibility and cost
        shifted to the tenant and higher finance charges. Such decisions
        are mutually exclusive, its one or the other.

        a. Yield methods may give less accurate rankings for mutually
            exclusive decisions because they reflect average rather than
            incremental cash flows.
        b. Mutually exclusive investments often involve marginal revenue
            versus marginal investment issues.

D. Your appraisal training has already given you some introduction to the problem of defining what is profit and what is recapture of capital and therefore ranking of investments.

   1. Straight line allocates earnings without recognition of a reinvestment rate and produces the lowest value.

   2. Hoskold uses a sinking fund factor to recognize reinvestment at a safe rate and therefore releases more proceeds to income and produces a higher value than straight line approach.

   3. Inwood defines reinvestment to be the same as a discount rate, therefore requiring smaller sinking fund amounts and releasing more to income thereby generating the highest value for the investment.

E. The ranking of alternative investments depends on a definition of yield and works best for pairs of alternatives and disintegrates as the number of alternatives increases. It will be shown by the end of the morning that an investment will be judged by a combination of yield factors in order to correctly define the investment from the standpoint of risk, the cost of money plans for use of the profits, and the viewpoint of the investor. Consider the following alternative measures of yield relative to four investments.

Investment	Initial Cost	Net Cash Proceeds Per Year	
		Year 1	Year 2
A	$10,000	$10,000	
B	10,000	10,000	$1,100
C	10,000	3,762	7,762
D	10,000	5,762	5,762

THE PAYBACK PERIOD

Investment	Payback Period (years)	Ranking
A	1	1
B	1	1
C	1.8	4
C	1.7	3

AVERAGE INCOME ON BOOK VALUE

Invest-ment	Average Proceeds	Average Depreciation*	Average Income (Proceeds less Depreciation)	Average Book† Value	Income on Book Value,%	Ranking
A	$10,000	$10,000	$ 0	$5,000	0	4
B	5,550	5,000	550	5,000	11	3
C	5,762	5,000	762	5,000	15	1
D	5,762	5,000	762	5,000	15	1

* Assuming straight line depreciation, † investment divided by two.

AVERAGE INCOME ON COST

Investment	Cost	Average Income	Ave. Income on Cost,%	Ranking
A	$10,000	$ 0	0	4
B	10,000	550	5.5	3
C	10,000	762	7.6	1
C	10,000	762	7.6	1

PRESENT VALUE OF THE INVESTMENT Rate of Interest: 30%

Investment	Present Value of Proceeds	Present Value of Outlay	Net Present Value	Ranking
A	$ 9,450	$10,000	$ -570	4
B	10,413	10,000	+413	3
C	10,457	10,000	+457	2
D	10,564	10,000	+564	1

PRESENT VALUE OF THE INVESTMENT Rate of Interest: 30%

Investment	Present Value of Proceeds	Present Value of Outlay	Net Present Value	Ranking
A	$7,692	$10,000	$ -2,308	3
B	8,343	10,000	-1,657	1
C	7,487	10,000	-2,513	4
D	7,842	10,000	-2,158	2

SUMMARY OF RANKING

Measure of Investment Worth	A	B	C	D
Payback Period	1*	1*	4	3
Average Income on Book Value or Cost	4	3	1*	1*
Present Value: at 6%	4	3	2	1
at 30%	3	1	4	2

* Indicates tie between two investments

INCREMENTAL BENEFITS

Investment	Year	Cash Flows Outlays	Cash Flows Proceeds	Yield,%	Net Present Value at 5%
Y	0	$100.00		20	$27.89
	1		$20.00		
	2		120.00		
	0	100.00		25	23.58
	1		100.00		
	2		31.25		

Investment	0	1	2	Present-Value Index
X	$ -1,500	$1,000	$1,000	1.16
Y	-3,100	2,000	2,000	1.12

Investment	0	1	2	Present-Value Index
Y - X	$ -1,600	$1,000	$1,000	1.08

F. The real estate appraiser is generally familiar with investment decisions using a net present value method for decision making. Note that this method requires assuming a discount rate (9% in example below) and a stream of benefits and the object is to compute the maximum justified investment. Example:

An Income Property Costing $50,000 (PVO) Will Have the Following Cash Flows:

Year 1	$2,000	Income
Year 2	5,000	Income
Year 3	5,100	Income
Year 4	5,200	Income
Year 5	55,000	Income and Reversion

At 9% What is the Net Present Value (NPV) of the Property?

	Amount	P.V. Factor at 9%	P.V. Benefits (PVB)
Year 1	2,000	.9174	$ 1,834
Year 2	5,000	.8417	4,209
Year 3	5,100	.7722	3,938
Year 4	5,200	.7084	3,684
Year 5	55,000	.6499	35,745
			$49,410

PVB - PVO = NPV

$49,410 - $50,000 = -$590

CONCLUSION: Do Not Buy the Project

G. Many corporations wish to solve for yield when they know the outlay and they know the stream of benefits. The measure of yield which they use is the internal rate of return (IRR). The internal rate is that rate which makes net present value (NPV) equal to 0 or PVB equal to PVO. For example:

An Income Property Costing $20,000 Will Have the Following Cash Flows:

Year 1	2,000	Income
Year 2	3,000	Income
Year 3	3,000	Income
Year 4	3,500	Income
Year 5	20,000	Income and Reversion

Net Present Value at 11%

	Amount	P.V. Factor at 12%	P.V. Benefits (PVB)
Year 1	2,000	.8929	1,785.80
Year 2	3,000	.7972	2,391.60
Year 3	3,000	.7118	2,135.40
Year 4	3,500	.6355	2.224.25
Year 5	20,000	.5674	11,348.00
			19,885.05

PVB - PVC = NPV

$19,885.05 - 20,000 = 114.95

Net Present Value at 11.83750171151%

	Amount	P.V. Factor at 11.83750171151%	P.V. Benefits (PUB)
Year 1	2,000	.89415445	1788.3089
Year 2	3,000	.79951218	2398.5365
Year 3	3,000	.71488738	2144.6621
Year 4	3,500	.63921973	2237.2691
Year 5	20,000	.57156117	11431.2234
			20,000.0000

PVB - PVC = NPV

20,000 - 20,000 = 0

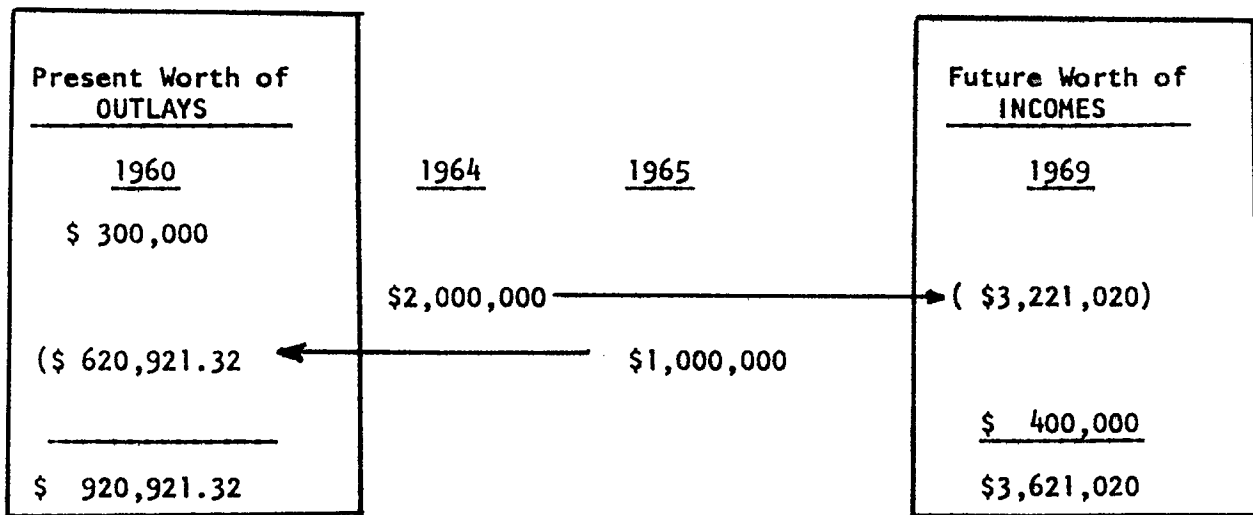Internal Rate of Return (IRR): That Rate Which Makes NPV = 0
or   PVB - PVC

IRR = 11.8375017151

H. Many institutions, however, feel that the internal rate of return
    is misleading or inappropriate for reasons particularly relevant
    to real estate.

    1. The internal rate or Inwood discounting assumes that capital
        recapture is reinvested immediately at the same rate at which
        you are discounting. (Reinvestment rate)

    2. More investments today are non-conventional - a series of outlays
        insterspersed with a series of returns and IRR cannot be computed
        by interpolation and algebraically the equation would have as
        many roots as there was a change in direction in net outlays
        per period versus net receipts.

    3. Equity investment does not occur on a continual basis but
        rather at erratic points in time and much equity money is qualified
        as limited partnership money, money raised by a public offering
        of stock, or participations as a condition of a loan with the
        result that the cost of money changes significantly over time
        and with the size of the project. Thus both the cost of capital
        and the reinvestment rate available for proceeds may differ
        from the yield on a specific investment.

I. The result that has been that development of what is called the
    modified internal rate of return (MIR). In MIR you first determine
    the present value of a series of outlays by discounting at the
    opportunity cost of capital. You then compound receipts forward
    to the end of a forecast period at the reinvestment rate. Having
    determined the present value of the outlay and the future compound
    value of the receipts, it is possible to solve for the internal
    rate of return. Consider the following example:

Suppose we have the following outlays and incomes:

OUTLAYS:	Jan. 1, 1960	$ 300,000
	Jan. 1, 1965	1,000,000
INCOMES:	Jan. 1, 1964	2,000,000
	Jan. 1, 1969	400,000

and the cost of capital rate is 10% p.a. compounded annually.

Present Worth of OUTLAYS			Future Worth of INCOMES
1960	1964	1965	1969
$ 300,000			
	$2,000,000 ─────────────────→		($3,221,020)
($ 620,921.32 ←─────		$1,000,000	
			$ 400,000
$ 920,921.32			$3,621,020

$$920,921.32 \ (1 + i)^{10} = 3,621,020.00 = 16.43\%$$

III. Basic Elements of After Tax Cash Flow Analysis

    A. There are four kinds of benefit dollars available from investment in real estate.

        1. Cash from operations at the income tax rate
        2. Cash from sales at the capital gains rate
        3. Cash from surplus due to refinancing (non-taxable)
        4. Cash from tax savings on other taxable income

    B. It is desirable to have a systematic method of classifying periodic returns and capital reversions from real estate on a pre-tax and after tax basis. (See outline)

    C. It is useful to use a sample case to see how each element of cash flow is computed and the schedules necessary to support such a presentation. (See attached sample case)

IV. Working Through a Basic Problem for an Income Property With a Simple Computer Model

    A. Busy work computations are the type of thing computers do best and Mini-Mod is an example of a central teaching model. There are many superior computer models which you can use for your client in your office by means of computer terminals. That is what EDUCARE is all about.

    B. A purchase and remodel problem (See "Analysis for Purchase of Apartment House Investment").

SYSTEMATIC ESTIMATION OF FORECAST ANNUAL INCOME FOR AN INCOME-PRODUCING PROPERTY

PART I. ANNUAL RETURNS TO INVESTOR

BASIC APPRAISAL A LA SRA 201

A. ESTIMATE POTENTIAL GROSS CASH INCOME: CASH INCOME FROM SPACE SALES

B. DEDUCTIONS FROM POTENTIAL GROSS
1. NORMAL VACANCY
2. SEASONAL INCOME LOSS
3. COLLECTION LOSSES
4. FRANCHISE FEES, DEPOSITS RETURNED, ETC.

C. ADD "OTHER" INCOME FROM SERVICE SALES

D. DERIVE EFFECTIVE GROSS INCOME

E. DEDUCT OPERATING EXPENSES (ON EXPECTED CASH OUTLAY WITHOUT ACCRUAL RESERVES)
1. FIXED EXPENSES
2. VARIABLE EXPENSES
3. REPAIRS AND MAINTENANCE
4. REPLACEMENTS

F. DERIVE NET OPERATING INCOME

MORTGAGE EQUITY APPROACH

G. DEDUCT ANNUAL DEBT SERVICE
1. CONTRACT INTEREST
2. SUPPLEMENTARY VARIABLE INTEREST
3. PRINCIPAL AMORTIZATION

H. DERIVE CASH THROW--OFF

PART I OF IMV INVESTMENT VALUE APPROACH

I. ADD BACK PRINCIPAL PAYMENTS AND REPLACEMENTS

J. DEDUCT TAX DEPRECIATION ALLOWANCE

K. DERIVE TAXABLE INCOME

L. DETERMINE MARGINAL INCOME TAX ON REAL ESTATE INCOME

M. DEDUCT INCOME TAX FROM CASH-THROW OFF (H)

N. DERIVE AFTER-TAX CASH FLOW

O. ADD TAX SAVINGS ON OTHER INCOME (IF K IS NEGATIVE)

P. ADD SURPLUS FROM REFINANCING

Q. DERIVE SPENDABLE AFTER-TAX CASH

PART II. RESALE RETURNS TO INVESTOR (OVER)

J. Graaskamp

GUIDE TO REAL ESTATE INVESTMENT ANALYSIS
Professor James A. Graaskamp
Wednesday, January 8, 1975

AFTERNOON SESSION

I. Rates of return or investment yield from financial models first depend
on qualification of the risks implicit in the investment. Rate of
return is just a financial ratio which implies nothing. What is important
is the stability or potential variance in the assumption which led to
the ratio. Remember - when you buy an investment all you really purchase
is a set of assumptions about the future - you are working and forecasting
under conditions of uncertainty.

A. Modern management defines risk as the potential variance between
expectations and realizations, i.e., between proforma prospects
and balance sheet and P & L statements.

B. Dyanmic risks can produce profit or loss and are best controlled
by the finesse of management execution of a plan.

C. Static risks are those which can only cause a loss due to surprise
upset of a plan.

D. Risk management has two objectives:
1. Identification of significant exposures to loss
2. Estimation of potential loss frequency and severity
3. Identification of alternative methods to avoid loss
4. Selection of a risk management method
5. Monitoring execution of risk management plan

E. Alternative methods for surviving potential risk losses:
1. Avoid uncertainty (confirm the facts, research the variance or
don't do it)
2. Reduce frequency of loss (reducing errors or fire proof construction)
3. Reduce severity of loss (loss limit or sprinkler systems)
4. Combine risks to improve prediction of variance (reserves for
expenses or pooling of investment)
5. Achieve pooling by purchase of insurance
6. Shift the risk of variance by contract (escalator, escape, or
sub-contract clauses)
7. Limit maximum loss (corporate shell of limited partnership)
8. Hedge (a mortgage is a straddle)

F. A mortgage closing is an exercise in risk management:
1. Title is confirmed by abstract or insured
2. Siting is confirmed by survey
3. Contingent claim are eliminated by waiver of lien, affadavit,
or recording time
4. Casualty loss to collateral is shifted by property insurance
5. Error in appraisal shifted by mortgage guaranty insurance
6. Discomfort as loan collection control

G   A graphic representation of real estate cash flows will serve to
    review the nature of yield and risk control in real estate financing
    and investment and provide a method for analyzing loan opportunities
    or limited partnerships.
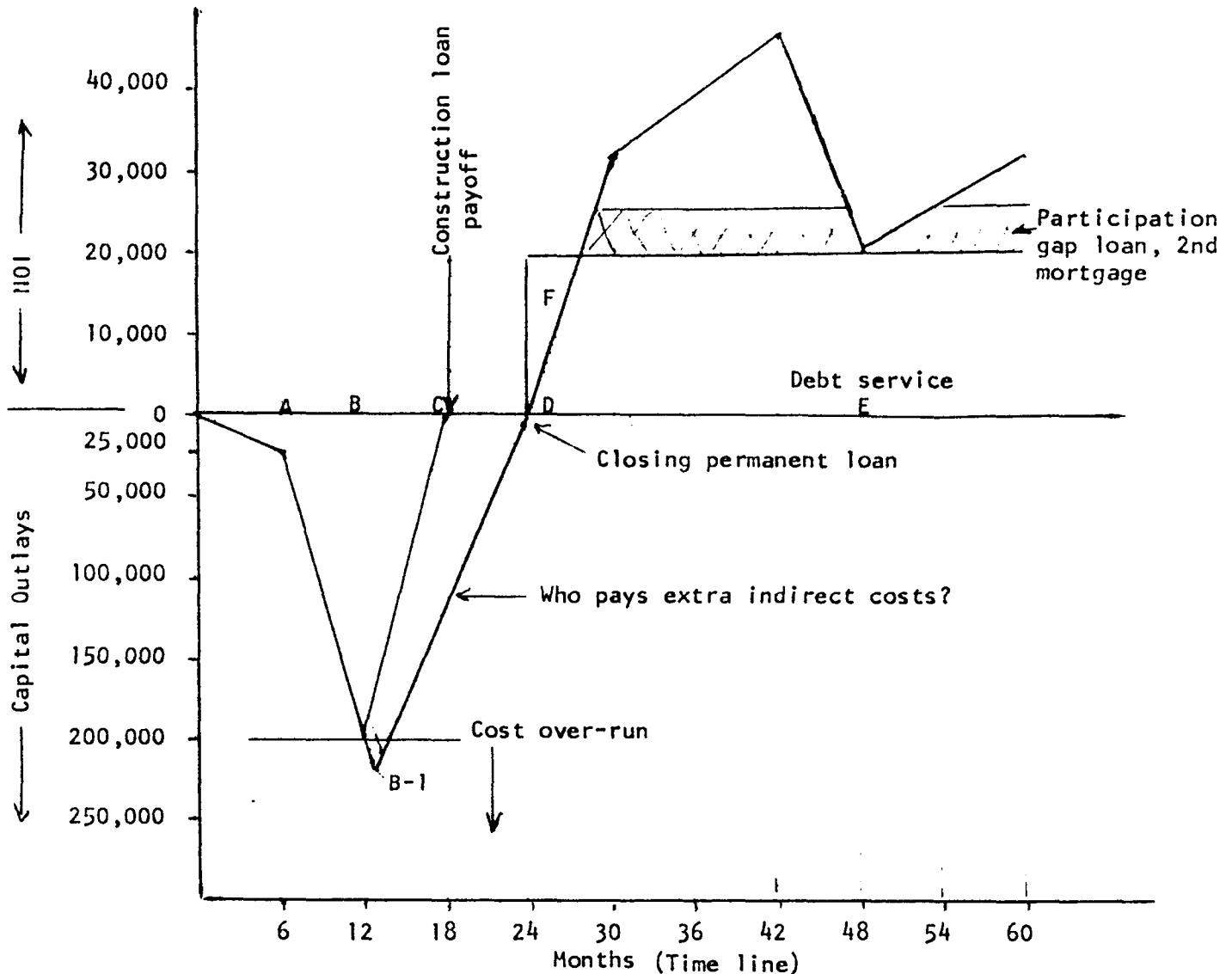
A = Start of construction
B = Estimated completion date
B-1 = Actual completion date
C = Construction loan payoff
C-D = Gap financing period
D-E = Positive cash flow and gap loan participation
F = Negative cash throw-off

II. Risk management analysis combined with cash flow projections can be first shown to be critical in a mortgage loan analysis for an income property. The strategy of a mortgage loan if very simple. The lender wants absolute safety, the best yield available, and carefully rescheduled repayment. The borrower find real estate too risky for his own money, yielding a better return than the mortgage lender requires as interest, and his rate of return steadily declines if he repays the loan.

A. The fact that the borrower needs the money and the lender doesn't know what to do for an investment makes it possible to bargain with the lender controlling his risk exposure through the management devices of incentive, pain, and an escape or bailout mechanism.

B. The incentives for the borrower was primarily a vested interest in cash dividends now and in the future. Thus the lender should:
   1. Identify profit centers for the borrower along the time line of the project. Only those occuring after the closing of the loan secure the lenders position. Those occurring before or at the closing increase payback of borrower capital and reduce the borrowers risk.
   2. Relate duration of cash dividends to duration of mortgage loan.

   3. Cushion in cash flow variance indicated by default ratio, expense ratio and positive change in after-tax spendable cash attributable to real estate.
   4. Capacity of borrower to absorb cash flow variances from standby commitments or existing capital.
   5. Evaluate incentive (positive or negative) created by ancillary contracts such as limited partnerships, management contract, earnout contracts, or profit sharing formulas.(See III)

C. Pain factor
   1. Damages for breach of contract
   2. Suit for a specific performance
   3. Exercise of assignment of rents, licenses, endorsements, etc.
   4. Offsetting cash claims, etc.   .

D. The bailout is either mortgage guaranty insurance or acquisition of property for operation or sale.
   1. Pain of equity loss in foreclosure is fictitious--consider pay-back ratio--thus, poor motivation
   2. Threat of foreclosure implies lender has alternative use for property.
      a. Rents restructured to lender's cost to acquire
      b. Conversion of property
      c. Consideration of payback to be realized by drastic surgery such as charitable donation, demolition, financial reorganization, or joint venture resale to reshape management incentives.

E. A good loan has forecast the cash flows to the borrowers as the primary collateral and retained either a set of paying incentives or a bailout option. If there is both an exculpatory clause and no existing plan for bailout, a bad loan is inevitable.
   1. Many lenders now require a cash flow statement

    2. Appraisals made for mortgage lending should provide at least an Ellwood proof with cash dividend and graph of alternative yields given alternative resale prices. After tax cash flow with adjustment for borrower profit centers would be preferable.

F. Supplementary loan interest contracts are totally concerned with who bears the risk of variance in future receipts and outlays.
    1. Does the lender share in all gross rents or only inflationary increases in gross?
    2. Does he share in net income after all expenses or only after non-discretionary items for management, vacancy, etc. are given a flat amount to control expenditures by borrowers?
    3. What is the accounting definition of the number in which the lender participates?

III. Control of incentive and the issue of who bears the risk of variance is the critical issue in the fine print of the limited partnership contract. Consider some of the alternative definitions of annual returns or sales proceeds which might appear in a limited partnership agreement. Note carefully how these definitions shift variance or incentive between the general and the limited partner.

A. "Annual Returns"

    1. Taxable income,
    2. Net profit only (i.e. not net loss),
    3. Taxable income calculated on the basis of straight line depreciation
    4. Net profit calculated on the basis of straight line depreciation,
    5. Cash available for distribution before allowance for reserves,
    6. Cash available for distribution after allowance for reserves,
    7. Cash actually distributed,
    8. Cash available for distribution before allowance for reserves plus the amount of that year's principal payment on the mortgage debt.
    9. Cash available for distribution after allowance for reserves plus the amount of that year's principal payment on the mortgage debt.
  10. Cash actually distributed plus the amount of that year's principal payment on the mortgage debt,
  11. Cash available for distribution before allowance for reserves plus the tax liability or the tax shelter benefits of the taxable income calculated for a specified tax bracket,
  12. Cash available for distribution after allowance for reserves plus the tax liability or the tax shelter benefits of the taxable income calculated for a specified tax bracket,
  13. Cash actually distributed plus the tax liability or the tax shelter benefits of the taxable income calculated for a specified tax bracket,
  14. Cash available for distribution before allowance for reserves plus the tax liability or the tax shelter benefits of the taxable income calculated for a specified tax bracket plus the amount of that year's principal payment on the mortgage debt,
  15. Cash available for distribution after allowance for reserves plus the tax liability or the tax shelter benefits of the taxable income calculated for a specified tax bracket plus the amount of that year's principal payment on the mortgage debt,
  16. Cash actually distributed plus the tax liability or the tax shelter benefits of the taxable income calculated for a specified tax bracket, plus the amount of that year's principal payment on the mortgage debt.

B. Definitions of "Sales Proceeds"

1. Gross sales price,
2. Gross sales price less closing costs and real estate sales commissions, also known as the net sales price,
3. Net sales price less beginning mortgage balance,
4. Net sales price less mortgage balance at time of sale,
5. Net sales price less purchase price,
6. Net sales price less the mortgage balance at time of sale less the initial equity investment.
7. Net sales price less the mortgage balance at the time of sale less the initial equity investment plus the sum of returns, however defined, distributed to the limited partners,
8. Net sales price less the partners' basis for tax purposes (the purchase price less accumulated depreciation),
9. Net sales price less the partners' basis for tax purposes less the amount necessary to pay taxes at some specified rate,
10. All cash, after payment of mortgage balance at time of sale, including refund of working capital, unused reserves, and unallocated reserves.

IV. The relationship between a change in one financial variable and another can be explored by testing the sensitivity of the dependent output to the independent assumption which has been altered. Recently EDUCARE added a program designed by John Nabors which permits the application of cash flow analysis to the design process.

A. To simplify analysis the short form of the program looks only at the first year cash flow projections given a change in various features or prices for the project.

B. What is unique about this program is that it permits each division of responsibility in a real estate development team to see their specific contribution to improving the cash flow situation of a project.

C. See Exhibit 6

V. An excellent after tax Ellwood approach is available for appraisers called TA after its principle author Thomas A. Prince.

A. Refer to Exhibit 7

B. This program can be used to challenge a tax assessment or measure economic obsolescense in the cost approach to an income property.

C. The Los Angeles Superior Court recently accepted the investment market value approach as the correct way to appraise a property for purposes of partition, in this case a series of limited partnerships.

D. A Michigan court recently defined economic income to be after tax cash income.

E. The Dane County Court in Madison, Wisconsin recently indicated that a cash income approach was the correct assessment approach even for a partially constructed income property building. The cost approach

JOHN H. NABORS, JR.

EXHIBIT SIX
PROGRAM SUMMARY
DESIGN ANALYSIS PROGRAM

The Design Analysis Program is basically a method of determining
a number of possible annual cash flows from a proposed income
property based upon up to five different values of six different
cash flow parameters:

```
1 = Rental Rates   e.g. $6.50/sq ft/yr
2 = Vacancy Rates   e.g. 10% of potential rental revenue
3 = Expense Rates   e.g. $2.50/sq ft/yr
4 = Financing Conditions   e.g. 9½% 30 yrs paid monthly
5 = Building Efficiency   e.g. 85% of gross space
6 = Loan Ratios   e.g. 90% of construction and land costs.
```

The basic format used is that of a planning format of an annual
cash flow proforma: Rental Revenue adjusted for a Vacancy Allowance
less Operating Expenses and Debt Service, yielding Annual Cash
Flow.

This basic format reflects a single set of conditions that
result in a single cash flow quantity. Actual practice reveals
that parameter 1, 2, and 3 will constantly vary between years and
within the year. Parameters 4 and 6 will be negotiated prior to
construction by the developer, while parameter 5 will be estab-
lished in the design phase and adjusted somewhat with the initial
leasing strategy.

During the planning phase of an income property, best estimates
of the values of these six parameters are utilized to prepare a
cash flow pro forma. The DESIGN ANALYSIS PROGRAM allows the
financial analyst to vary each parameter throughout a range of
values to study the effect upon the pro forma annual cash flow.
With five different values for six parameters, there are exactly
361 different annual cash flows.

The program allows the analyst to produce a 5 by 5 table of
annual cash flows by varying one or two of the parameters over a
range of values while using a primary or basic value for each of
the other parameters. In addition, the breakeven rental rates
or the rates of return on initial equity are given for the
corresponding cash flows.

The total cost of construction and land can be input to the
program or can be calculated through the use of the Construction
Cost Estimate subprogram. The total cost of the structure can be
computed from per square foot costs, component structure costs,
professional fees, and land costs. Interim interest costs for
land and construction are both computed.

Date_____

Run #_____

RJE DATA FORM

Line # in DESPJE	Answer	Question by the Program
350	$_____	IS THERE A CONSTRUCTION DATA FILE? (If Answer is NO, delete lines 360,370,380)
360	$_____	CONSTRUCTION DATA FILE NAME?
370	$_____	LIST THE CONSTRUCTION DATA?
380	$_____	OUTPUT THE CONSTRUCTION COST SCHEDULE?
390	$_____	IS THERE A CASH FLOW DATA FILE? (If answer is NO, no more data is needed.)
400	$_____	NAME OF CASH FLOW DATA FILE?
410	$_____	LIST CASH FLOW DATA?
420	$_____	OUTPUT LOAN AND DEBT SERVICE CALCULATIONS?
430	$_____	OUTPUT ALL CASH FLOW TABLES?
440	$_____	OUTPUT SENSITIVITY TABLE?

EXAMPLES

Example 1: No construction file, do not list data file or debt service data; output all tables.

350	$NO
390	$YES
400	$ (file name)
410	$NO
420	$NO
430	$YES
440	$YES

Example 2: Construction and cash flow data files exist, output all data lists and tables.

350	$YES
360	$(file name)
370	$YES
380	$YES
390	$YES
400	$(file name)
410	$YES
420	$YES
430	$YES
440	$YES

LOAN DATA FOR EACH SET OF FINANCIAL CONDITIONS

AMOUNT FINANCED $ 5612930   EQUITY $ 1403232

LOAN RATIO 80.00 PCT

INTEREST	TERM	CONSTANT	DEBT SERVICE
9.50	30.0	10.0903	566359
8.50	30.0	9.2270	517903
9.00	30.0	9.6555	541955
9.75	30.0	10.3099	578685
10.00	30.0	10.5309	591090

AMOUNT FINANCED $ 4911313   EQUITY $ 2104849

LOAN RATIO 70.00 PCT

INTEREST	TERM	CONSTANT	DEBT SERVICE
9.50	30.0	10.0903	495564
8.50	30.0	9.2270	453165
9.00	30.0	9.6555	474210
9.75	30.0	10.3099	506349
10.00	30.0	10.5309	517203

AMOUNT FINANCED $ 6314546   EQUITY $ 701616

LOAN RATIO 90.00 PCT

INTEREST	TERM	CONSTANT	DEBT SERVICE
9.50	30.0	10.0903	637153
8.50	30.0	9.2270	582641
9.00	30.0	9.6555	609699
9.75	30.0	10.3099	651020
10.00	30.0	10.5309	664976

AMOUNT FINANCED $ 7016162   EQUITY $ 0

LOAN RATIO100.00 PCT

INTEREST	TERM	CONSTANT	DEBT SERVICE
9.50	30.0	10.0903	707948
8.50	30.0	9.2270	647379
9.00	30.0	9.6555	677444
9.75	30.0	10.3099	723356
10.00	30.0	10.5309	738862

CONSTRUCTION COST ESTIMATE

150,000 SQ FT BUILDING - 6.333 AC SITE

CONSTRUCTION COST OF $ 30 PER SQ FT

```
DATE:  8/28/1974
BLDG:     6001
RUN :        1
```

CONSTRUCTION COSTS		DOLLARS
CONSTRUCTION-SHELL	150000 SQ FT AT $ 26.00	$ 3900000
CONSTRUCTION-INTERIOR	150000 SQ FT AT $ 4.00	$ 600000
GRADE PARKING	500 SPACES AT $ 525	262500
LANDSCAPING/LIGHTING		100000
SUBTOTAL CONSTRUCTION		4862500
ARCHITECTURE FEES	AT 4.0 PCT	194500
ENGINEERING FEES	AT 1.0 PCT	48625
LOAN ORIGINATION FEES	AT 1.0 PCT	48625
TAXES AND INSURANCE	AT 1.0 PCT	48625
CUMULATIVE SUBTOTAL		5202875

```
INTERIM INTEREST-CONSTRUCTION
     $    5202875 AT 12.0 PCT FOR 13 MO X .5          338187
DEVELOPER"S PROFIT          AT 2.0 PCT OF $  5202875   104057
CONTINGENCY                 AT 2.0 PCT OF $  5202875   104057
                                                      --------
     TOTAL CONSTRUCTION COSTS                          5749177
```

LAND COSTS

```
     275865 SQ FT AT $  3.95                          1089669
INTERIM INTEREST-LAND
100.00 PCT OF $   1089669 AT 12.00 PCT FOR 13.00 MO    141657
   5.00 MONTHS AT $        7132 PER MONTH               35660
                                                      --------
     TOTAL LAND COST                                   1266986


     TOTAL LAND AND CONSTRUCTION COST                  7016162
                                                      --------
                                                      --------
```

CASH FLOW PRO FORMA USING PARAMETER NORMS

150,000 SQ FT OFFICE BUILDING

6.333 ACRE TRACT — RICHARDSON, TEXAS

DATE: 9/ 5/1974
BLDG: 4444
RUN :   1

GROSS SQUARE FEET IN BUILDING: 150000
BUILDING EFFICIENCY   :   85 PCT
NET LEASEABLE SQUARE FOOTAGE :   127500

LAND AND CONSTRUCTION COST : $ 7016162
LOAN TO COST RATIO   :   80.0 PCT
ORIGINAL LOAN AMOUNT   : $ 5612930

EQUITY REQUIREMENT   : $ 1403232

PERMANENT INTEREST RATE   :   9.50 PCT
TERM OF LOAN   30 YEARS

ANNUAL DEBT SERVICE   : $ 566359

		ANNUAL DOLLARS
GROSS INCOME : 127500 SQ FT AT $ 8.50		1083750
LESS: VACANCY ALLOWANCE OF 10.00 PCT		108375
GROSS EFFECTIVE INCOME		975375
OPERATING EXPENSES: 127500 SQ FT AT $ 2.50		318750
NET OPERATING INCOME		656625
DEBT SERVICE (10.09 PCT CONSTANT)		566359
PRO FORMA CASH FLOW		90266

RETURN ON EQUITY   6.43 PERCENT

JOHN H. NABORS, JR.

SENSITIVITY TABLE

150,000 SQ FT OFFICE BUILDING

6.333 ACRE TRACT - RICHARDSON, TEXAS

FIXED PARAMETERS   PAGE   3 OF 4

```
SITE     :      275865 SQUARE FEET       DATE   9- 5-1974
BUILDING :      150000 SQUARE FEET       BLDG      4444
EFFICIENCY:     85.00 PCT OF GROSS
LOAN RATIO:     80.00 PCT OF $   7016162
EQUITY    :     $   1403232
FINANCING :      30 YEARS   9.50 PCT
REVENUE   :     $  8.50 PER SQ FT
VACANCY   :     10.00 PCT OF LEASEABLE
OTR INCOME:     $        0 ANNUALLY       RUN       1
EXPENSES  :     $  2.50 PER SQ FT
CONSTRUCTION AND LAND COST   7016162
CONSTRUCTION INTERIM RATE    12.000 PCT
CONSTRUCTION PERIOD    13 MONTHS
LAND INTERIM RATE IS 12.00 PCT
```

EFFECT OF UNIT CHANGES IN FIXED PARAMETERS

PARAMETER CHANGE	INCREASE IN CASH FLOW	EFFECT ON CONSTRUCTION
DECREASE CONSTRUCTION COST $ 100,000	11930	-118235
DECREASE CONSTRUCTION $ 1.00 PER SQ FT	17695	-177352
DECREASE CONSTRUCTION PERIOD 1 MONTH	3724	-36911
DECREASE CONST AND LAND INTERIM 1 PCT	4035	-39937
INCREASE BUILDING EFFICIENCY 1 PCT	7725	
DECREASE RENTAL RATE $ .10 PER SQ FT	11475	
DECREASE VACANCY RATE 1PCT	10838	
DECREASE OPERATING RATE $ .10 PER SQ FT	12750	
DECREASE PERMANENT RATE .25PCT	12244	
DECREASE PERMANENT LOAN TERM BY 1 YEAR	-3514	
DECREASE PERMANENT LOAN TERM BY 5 YEARS	-22121	
DECREASE THE LOAN RATIO BY 5 PERCENT	35397	

EQUIVALENT EFFECTS TO YIELD
A $ 10000 INCREASE IN ANNUAL CASH FLOW

```
DECREASE CONSTRUCTION COST BY $     .56 PER SQ FT
DECREASE CONSTRUCTION PERIOD BY   2.7 MONTHS
DECREASE INTERIM INTEREST BY   2.48 PCT
INCREASE BUILDING EFFICIENCY BY  1.29 PCT
INCREASE RENT RATE BY $    .09 PER SQ FT
DECREASE VACANCY BY      .92 PCT
DECREASE EXPENSE RATE BY $   .08 PER SQ FT
DECREASE PERMANENT RATE BY    .20 PCT
INCREASE PERMANENT LOAN TERM BY  2.3 YEARS
DECREASE LOAN RATIO BY  1.4 PERCENT
```

CONSTRUCTION COST SCHEDULE
DATA INPUT - SHORT FORM

100 _____, _____, _____, ____ Bldg ID#, Mo, Day, Yr
101 _____ 60 character title(ctrd)
102 _____ 60 character title(ctrd)
103 _____ Gross sq ft or Acreage in Tract
104 _____ Run Number

CONSTRUCTION COSTS: (use 201 and 202 or 203)

201 _____, _____ Shell - sq ft, $/sq ft.
202 _____, _____ Interior - sq ft, $/sq ft.
203 _____, _____ Building - sq ft, $/sq ft
204 _____, _____, _____ Grade Parking-sq ft/space, spaces,
                                                          $/sq ft.
205 _____, _____, _____ Structured Parking "   "   "   "
206 _____ Landscaping/Lighting Costs -$ or $/sq ft.
207 _____ Furniture, Fixture & Equipment "   "   "
208 _____, _____ Sq ft, $/sq ft or 0,0
(209) _____ Title
210 _____, _____ Sq ft, $/sq ft or 0,0
(211) _____ Title
212 _____, _____ Sq ft, $/sq ft or 0,0
(213) _____ Title
214 _____, _____, _____ 0, $, or % of Shell & Interiors
(215) _____Title
(216) _____Title
(217) _____Title
218 _____ Constr.Contingency-0, $, or % of Shell & Interior

301 _____ Architecture Fees   Enter 0, $
302 _____ Engineering Fees   or % of Subtotal
303 _____ Loan Origination Fees   of lines
304 _____ Legal & Closing Fees   201 - 218
305 _____ Taxes & Insurance

309 _____, _____, _____ Optionally titled fees and
310 _____ Title costs: 0, $ or % of Subtotal
311 _____ Title of line 201-218
312 _____ Title

401 _____, _____ Constr Interim Int Rt, Constr.Period-Months
402 _____, _____ Other expenses 0, $ or % of Subtotal
(403) _____ Title
(404) _____ Title

500 _____ Zero or $ Cost of Land (or use line 501)
501 _____, _____ Cost of Land -sq ft or Acres, cost/unit
502 _____, _____, _____ Interim Land Cost-% of Land cost
                                                          Interest rt, months.
503 _____, _____, _____ Interim Land Cost "   "   "   "   "   "
504 _____, _____ Interim Land Cost - $/month, months
505 _____Other land costs-$ or % of Land Cost

Complete lines with ( ) only if corresponding data is non-zero.

File Name_____

INPUT FORM
CASH FLOW ANALYSIS

100 _____ 0 or 1   0= lines 101-107 required   1= use constr. data
101 *_____, _____, _____, _____ Building ID#, Mo., Day, Year
102 *_____ Title Line 1
Description Line 1 up to 60 characteristics
103 *_____ Title Line 2
104 *_____ Gross Square Footage in Tract
105 *_____ Gross Square Footage in Building
106 *_____ Total Construction Cost
107 *_____ Run Number
*Items are entered only if value is 0   on Line 100

200 _____ Number of Rental Rates (1 to 5)
201 _____, _____, _____, _____, _____ Rental Rates in$/sq ft
202 _____ Number of Vacancy Rates (1 to 5)
203 _____, _____, _____, _____, _____ Vacancy Rates in %
204 _____ Annual Parking Income $ or 0
205 _____ Other Income $ or 0
206 _____ Number of Operating Expenses (1 to 5)
207 _____, _____, _____, _____, _____ Operating Expenses in$/sq ft
208 _____ Number of Financing Conditions (1 to 5)
209 _____, _____, _____, _____, _____ Interest Rates (Annual %)
210 _____, _____, _____, _____, _____ Term in Years
212 _____ Number of Building Efficiency Rates (1 to 5)
213 _____, _____, _____, _____, _____ Efficiency Rates (% of Gross)
214 _____ Number of Cash Flow Tables (0 to 10)

215 _____, _____   Enter Parameters to be output
216 _____, _____   1 Rental Rate
217 _____, _____   2 Vacancy Rate
218 _____, _____   3 Operating Expense Rate
219 _____, _____   4 Financing Conditions
220 _____, _____   5 Building Efficiency
221 _____, _____   6 Loan to Cost Ratios
222 _____, _____
223 _____, _____   2XX ____ROW____, ____COLUMN____
224 _____, _____

230 _____ Number of Loan to Cost Ratios (1 to 5)
231 _____, _____, _____, _____, _____ Loan Ratios in %
240 _____ 0 or 2   1 = Breakeven Rental Rates   2 = Rates of Return
250 _____   10000

6.

2nd Edition

"MARKET VALUE" NOT ALWAYS APPLICABLE TO INVESTMENT PROPERTY OWNERS

"Market value", under its hundreds of state and federal court definitions, has been acceptable to the real estate appraiser as the fair measurement of just compensation (for all but special use properties) under eminent domain, estate and gift tax, property tax assessment and other situations. It is also applied as one of the two standards for assessment by assessment appraisers. Most definitions of market value mention a "price" and a "willing seller" and a "willing buyer". Even those which do not name or refer to a "seller" have been interpreted to carry the inference that the seller would be willing to sell at the price the buyer could afford to pay.

It is believed, however, the "market value" premise has been erroneous and thus inapplicable to numerous investment properties in the price range which attracts long term mortgagees and high tax bracket equity investors, ever since the investment market began to exploit the capital depreciation methods of the 1954 Internal Revenue Code. That code provided the first uses of the 200% of straight-line-declining-balance and the sum-of-the-years-digits methods; and the code has not been sufficiently modified by the 1962 and 1969 revisions to discourage but a small portion of investors in creating new properties or buying operating properties primarily - and often exclusively - for sheltering taxable income derived both from the newly acquired properties and from other investments and earnings.

This 7-page handout demonstrates the three major reasons for the obsolescence in the age-old definitions of market value: site cost basis, capital depreciation method, and secondary mortgage financing often provided by the seller of the land, on a non-transferable basis.

In this example the first owner of a one-year old, 250-unit apartment property has constructed the building on a site he acquired at a price of $720,000, $511,000 of which price was taken back as a deferred, long term purchase money trust to be subordinated to the mortgage loan on the completed property. The terms of the purchase money trust note call for full prepayment in event the property is resold.

Through his superlative mortgage financing and his use of the most accelerated depreciation method on the new building, the first owner and user of the property could not now afford to sell at the price which another investor in the same federal and state income tax brackets could afford to pay for the property, as the second user. Reasons: the second user could employ only 125% SL/DB depreciation, would not be allowed to claim that the non-depreciable asset, the land, is of less than $720,000 in value, and would not enjoy the long term second mortgage loan as would the first owner. The major assumptions in this example follow:

McCloud B. Hodges, Jr., 6819 Elm St., McLean, Va. (15 Nov. 1972)

1. No monetary inflation or deflation considered; future net income and resale value forecast on basis of constant dollars. Equity yield employed matches the extrapolated yields from recently sold, similarly priced investment properties, all on the constant dollar premise.

2. Future resale value of the property, if held by the first owner for an optimum term of 12 years, is calculated to be the capitalized worth of the next average annual net income stream ($335,650 at OA rate of .10) less $250 per apartment unit for major capital replacements at date of future reversion; and, for the second owner, under his optimum ownership term of 10 years, to be the capitalized worth of the next average annual net income stream ($358,000 at OA rate of .10) less $200 per apartment unit.

3. The new first mortgage loan, closed two months ago when the building reached 85% occupancy, is more than the laughable "75% of value" to the second owner and user, but is quite typical and realistic. It is based upon a required 125%-of-debt-service (25% coverage ratio) against the "stablized" net annual income projected at 95% occupancy. The terms of this mortgage note do not preclude its assumption by another owner of the property, if approved by the mortgage lender.

4. First owner, for tax reasons, has capitalized some of his entreprenural expenses (mortgage and construction loan application fees, architectural and legal fees) as part of his capital costs, totalling $3,700,000; while today's hypothetical buyer and second user will be allowed to depreciate only that portion of his purchase price which excludes the $720,000 site value.

See next the two IMV computer printouts (*) showing,

    Investment market value to the first owner = $4,419,676

    Investment market value to the second owner = 3,980,860

                       Difference = 438,816 (11.02%)

Although the entreprenural builder-owner has not invested nearly as much cash as is indicated in the first computer printout, the equity cash figure shown represents the present worth of his entreprenural profit, his actual cash investment and the after-tax losses incurred in his expenses of construction loan interest, advertising and building operation during the rent-up period - all as of the date of valuation.

This real estate valuation analysis is written to invite attention to the need of some of the older professions and occupations to modernize their practises in dealing with this branch of land economics. It should also encourage the mortgage lenders, who are facing some increase in loan defaults in certain regions, to specify to the responsible appraisers which of the two values - first or second owner - is to be estimated.

(*) The Thomas A. Prince computer model treats after-tax cash flow in each year (except the reversion from resale) as being received, in 1/12th instalments, each at the beginning of the month.

ALL INPUTS INVOLVING A % MUST BE ENTERED AS A DECIMAL EQUIVALENT [11.75%=.1175]

PROJECT ID (Maximum 30 characters per line)

100 _I YR OLD APT PROP 95% OCCUPIED_

101 _INVESTMENT VALUE TO 1ST OWNER_

USED FOR ELLWOOD'S VALUATION

AVG. ANNUAL NET INCOME	BEFORE TAX YIELD	AFTER TAX YIELD
102 _390000_	_.11_	_.085_

OPERATION CODE:
→ 1—Produces IMV for a given after tax equity yield rate
2—Produces four after tax equity yield rates for four given IMVs

NET INCOME CODE:
1—Constant net income value for each year
→ 2—Different net income value for each year (If the last year of the projection term does not fall in the last position of a line fill the remaining years of that line with zeros)

OPERATION CODE	PROJECTION TERM (yrs)	NET INCOME CODE
103 _1_	_12_	_2_

NET INCOME [If net income is constant enter the value in position (1) only]

(1)	(2)	(3)	(4)	(5)
104 _400000_	_400000_	_400000_	_396000_	_392000_

(6)	(7)	(8)	(9)	(10)
105 _388000_	_384000_	_380000_	_376000_	_372000_

(11)	(12)	(13)	(14)	(15)
106 _368000_	_364000_	_0_	_0_	_0_

(16)	(17)	(18)	(19)	(20)
107				

OWNERSHIP FORM CODE:
1—Corporation (Operating losses applied to other investments)
2—Corporation (Operating losses carried back/carried over)
3—Corporation (Taxable income offset by losses from other investments)
4—Corporation (Set-up solely for this investment)
→ 5—Non-corporation (Operating losses applied to other investments)
6—Non-corporation (Operating losses carried back/carried over)
7—Non-corporation (Taxable income offset by losses from other investments)

EXCESS DEPRECIATION RECAPTURE CODE:
1—No recapture
2—FHA 221 (d) (3), 236 before 1975 (After 20 months-declines 1% per month)
→ 3—All other residential rentals (After 100 months-declines 1% per month)
4—All non-residential—100% recapture

OWNERSHIP FORM CODE	FEDERAL TAX RATE	STATE TAX RATE	STATE CAPITAL GAINS RATE	EXCESS DEPRECIATION RECAPTURE CODE
108 _5_	_.60_	_.09_	_.09_	_3_

APPRECIATION/DEPRECIATION AT RESALE:
APP/DEP CODE:
1—% of IMV (Enter the % in the APP/DEP AT RESALE column)
2—$ amount (Enter the $ amount in the APP/DEP AT RESALE column)
3—Reversionary $ amount(Enter the $ amount in the APP/DEP AT RESALE column)

APP/DEP CODE	APP/DEP AT RESALE ($ OR %)	SALES COMMISSION RATE (0 if none)
109 _3_	_3419000_	_.02_

DEPRECIABLE CAPITAL ASSETS:

ASSET CODE: Asset value as a:

➡ 1—$ amount (Enter the $ amount in the ASSET VALUE column)
2—% of IMV (Enter the % in the ASSET VALUE column)
3—% of the difference between IMV and land value(Enter $ amount for land value in LAND VALUE column and the % in the ASSET VALUE column)

METHOD CODE:

1—Straight line
2—125%
3—150%
4—200%
➡ 5—Sum-of-years-digits

	NUMBER OF ASSETS (0 to 6)		LAND VALUE (0 if ASSET CODE 3 is not used)
110	3	,	0

[Assets MUST be entered in order of ASCENDING ASSET CODES]

	ASSET CODE	ASSET VALUE ($ or %)	METHOD CODE	LIFE	SALVAGE (0 if none)
111	1	2590000	5	40	0
112	1	629000	5	22	0
113	1	481000	5	10	0
114					
115					
116					

MORTGAGES:

MORTGAGE CODE:

➡ 1—Existing mortgage or mortgage of known $ amount (Enter the $ amount in the KEY FIGURE column)
2—New mortgage amount which is a % of IMV (Enter the ratio (%) in the KEY FIGURE column)

THE FOLLOWING TWO OPTIONS CANNOT BE USED SIMULTANEOUSLY

3—Secondary mortgage amount which is the difference between IMV and sum of known amounts for equity cash and the other mortgages (Enter the $ amount for cash equity in the KEY FIGURE column)
4—Secondary mortgage amount which is the difference between a total mortgage ratio and the sum of other mortgages of known amounts (Enter the total mortgage ratio (%) in the KEY FIGURE column)

TERM AND ANNUAL CONSTANT:

For each mortgage either the TERM or the ANNUAL CONSTANT must be provided except in the case of a balloon for which both must be provided. Enter a zero for the TERM or the ANNUAL CONSTANT, whichever is unknown. The annual constant must be at least 8 decimal places.

NUMBER OF MORTGAGES (0 to 6)

117	2

[Mortgages MUST be entered in order of ASCENDING MORTGAGE CODES]

	MORTGAGE CODE	KEY FIGURES ($ or %)	INTEREST RATE	TERM (Months)	ANNUAL CONSTANT
118	1	3267000	.09	336	0
119	1	511000	.10	300	0
120					
121					
122					
123					

BEFORE TAX IMV(11.00%) $ 3957929
AFTER TAX IMV(8.50%) $ 4419676
DO YOU WANT DETAIL (0=NO,1=YES)?1

INVESTMENT MARKET VALUE ANALYSIS
1-YR OLD APT PROP 95% OCCUPIED
INVESTMENT VALUE TO 1ST OWNER

PREPARED BY A COMPUTER IN
CONSULTATION WITH M.B. HODGES,JR
6819 ELM ST.   MCLEAN, VA. 22101   14:44EST 11/15/72

****
INVESTMENT MARKET VALUE:

          AFTER TAX YIELD OF   8.50%: $ 4419676
****
                DETAIL FOR AFTER TAX IMV

FINANCING:

        MORTGAGES:
            1.   9.000% 28 YRS   0 MONS $ 3267000
            2.   10.000% 25 YRS   0 MONS $ 511000

        EQUITY CASH: $ 641676

RESALE OF INVESTMENT IN 12 YEARS:

        ESTIMATED RESALE PRICE $ 3419000

            LESS: MORTGAGE BAL.   3113321
                  SALES COMMISSION   68380

        CASH REVERSION BEFORE TAXES $ 237299

            LESS: CAPITAL GAINS TAX(STD.)   286047
                  TAX ON RECAPTURED DEPR.   228415
                  TAX PREFERENCE TAX   0

        CASH REVERSION AFTER TAXES $ -277163

YR	NET INCOME	MORTGAGE INTEREST	BOOK DEPR.	TAXABLE INCOME	INCOME TAX	CASH FLOW BEFORE TAX	CASH FLOW AFTER TAX
1	400000	343813	268491	-212304	-125319	24256	149575
2	400000	340764	254101	-194865	-115667	24256	139923
3	400000	337425	239711	-177136	-105830	24256	130086
4	396000	333766	225321	-163087	-98334	20256	118590
5	392000	329757	210931	-148688	-90615	16256	106871
6	388000	325365	196540	-133905	-82653	12256	94909
7	384000	320552	182150	-118702	-74423	8256	82679
8	380000	315278	167760	-103038	-65532	4256	69788
9	376000	309500	153370	-86870	-55249	256	55505
10	372000	303169	138980	-70149	-44614	-3744	40870
11	368000	296231	124590	-52821	-33469	-7744	25725
12	364000	288629	118945	-43574	-27713	-11744	15969

```
BEFORE TAX IMV(11.00%)  $  3919359
AFTER TAX IMV( 8.50%)  $  3980860
DO YOU WANT DETAIL (0=NO,1=YES)?1
```

INVESTMENT MARKET VALUE ANALYSIS
1-YR OLD APT PROP 95% OCCUPIED
INVESTMENT VALUE TO 2ND OWNER

PREPARED BY A COMPUTER IN
CONSULTATION WITH M.B. HODGES, JR
6819 ELM ST.   MCLEAN, VA. 22101   14:49EST 11/15/72

```
*******************************************************
INVESTMENT MARKET VALUE:

        AFTER TAX YIELD OF    8.50%:        $  3980860
*******************************************************
                DETAIL FOR AFTER TAX IMV
```

FINANCING:

         MORTGAGES:
                 1.   9.000% 28 YRS   0 MONS $ 3267000

         EQUITY CASH: $ 713860

RESALE OF INVESTMENT IN 10 YEARS:

         ESTIMATED RESALE PRICE $ 3530000

             LESS: MORTGAGE BAL.   2847849
                   SALES COMMISSION   70600

         CASH REVERSION BEFORE TAXES $ 611551

             LESS: CAPITAL GAINS TAX(STD.)   256985
                   TAX ON RECAPTURED DEPR.   29904
                   TAX PREFERENCE TAX   12354

         CASH REVERSION AFTER TAXES $ 312308

YR	NET INCOME	MORTGAGE INTEREST	BOOK DEPR.	TAXABLE INCOME	INCOME TAX	CASH FLOW BEFORE TAX	CASH FLOW AFTER TAX
1	400000	292931	155817	-48748	-30886	79978	110864
2	400000	290389	145174	-35563	-22618	79978	102596
3	400000	287609	135531	-23140	-14717	79978	94695
4	396000	284569	131847	-20416	-12984	75978	88962
5	392000	281243	128319	-17562	-11169	71978	83147
6	388000	277606	125770	-15376	-9779	67978	77757
7	384000	273627	123868	-13495	-8582	63978	72560
8	380000	269274	122025	-11299	-7186	59978	67164
9	376000	264514	120240	-8754	-5567	55978	61545
10	372000	259307	120240	-7547	-4799	51978	56777

is not acceptable in Wisconsin if the market approach or income approach can be applied.

VI. A variety of cash flow programs on computer terminal are available to the architect to present continuing analysis of projects under design. One of the most flexible is a program called REAP and it demonstrates how the basic cash flow elements we talked about this morning can be used to produce any cash flow forecast;

A. First it classifies each financial transaction by an account number which not only identifies it as an outlay or a receipt but organizes it for income tax accounting as well.

B. Secondly it requires a date as to the transaction but allows you to distribute that transaction over a curved time line for completion - such as draws on a construction loan.

C. It allows you to create your own labels for each transaction.

D. If it is expensively programmed to allow the amateur to put the data in the machine with a minimum of controls and format errors. It is more expensive to operate but involves very little cost to learn. Indeed it could be typed in by a secretary.

E. Thus we end where we began. There is much data about cash flow characteristics of many types of property and many models to organize that data to answer a variety of questions. Many professions including accountants, architects, and banks already have the capability of serving the customer at very favorable cost benefit ratios.

WHAT QUESTIONS ARE PRESENT APPRAISAL MODELS APPROPRIATE TO ANSWER?

Introduction

REAP provides developers, investors, and financers an unusually powerful set of capabilities for proposing and analyzing real estate development and investment projects. Although it is impossible in a single example to illustrate all of the REAP features, the following typical investment situation serves as a vehicle to display some of the more important REAP capabilities. Throughout the example, the description of the situation is followed by the actual REAP English language commands used to describe the situation.

The General Project Concept

The HSF Investment Trust is an investment vehicle for one of the wealthy families in Atlanta. HSF has been approached by the Central Development Company (CDC) to become a limited partner in a joint venture to build a medium sized office building in downtown Atlanta. In return for an initial equity input and low interest loan, HSF will receive a substantial portion of the tax losses and cash flows until the original equity has been returned; thereafter, HSF will continue to receive the tax losses plus one-half the cash flow. Project ownership will be equal.

The immediate CDC problem is to make a proposal to HSF that will be attractive in terms of overall cash flow, return on investment, and payout, with detailed schedules showing cash requirements, financing arrangements, depreciation, project income and expense, tax losses, cash flows, returns, etc. To determine just what mixture of tax loss, interest, and cash flow can best meet the overall HSF investment portfolio objectives, and to test various project alternatives for the most beneficial arrangements on costs, financing, timing, required income levels, sensitivity to vacancy rates, etc., CDC has turned to the powerful set of capabilities offered by REAP.

CDC first identifies itself to the REAP system by the command

REAP ID 'CDC' DATE 11 15 71

The project, to be called the "One Peach Tree Plaza" will be given the code name 'PTP' and the project number 7112.

PROJECT NAME 'ONE PEACH TREE PLAZA' ID 'PTP' NUMBER 7112

CDC, as a well managed development company, has a cost accounting and management system that depends on a chart of accounts breakdown of building and operation costs. This chart of accounts is entered as

CHART OF ACCOUNTS
      101.00   'LAND ACQUISITION'
      102.00   'LEGAL FEES'
      103.00   'ARCHITECTURAL & ENGINEERING FEES'
      104.00   'BASIC BUILDING'
      105.00   'TENANT IMPROVEMENTS'

These accounts are used in assigning project costs and cash requirements. Land costs for the 30,000 square feet parcel are projected at $50 per square foot, and it is expected that the current option to buy will be exercised on December 31, 1971.

In general, cash requirements are entered as a series of steps, with these land costs entered as follows:

PROJECT CASH REQUIREMENTS SCHEDULE
      STEP 1 COMMENT '30000 SF LAND AT $50/SF' AMOUNT 1500000
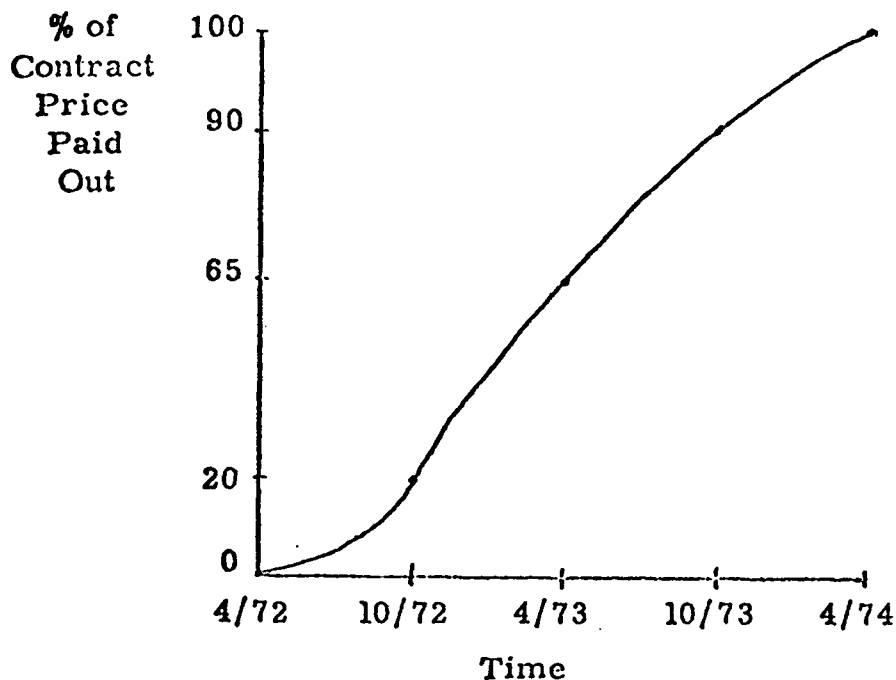   DATE 12 31 71 ACCOUNT 101.00

Certain legal fees are expected on the project, and are to be paid in two installments - 25,000 on July 1, 1972 and another 25,000 on December 31, 1973.
      STEP 2 AMOUNT 25000 DATE 7 1 72 ACCOUNT 102.00 -
            COMMENT 'LEGAL FEES'

      STEP 3 AMOUNT 25000 DATE 12 31 73 ACCOUNT 102.00 -
            COMMENT 'LEGAL FEES'

Overall, the plan calls for a twenty story tower, with 300,000 square feet

of space at a cost of approximately \$30 per square foot on the basic building. The total basic building cost will be paid out monthly to the general contractor over a two year period, beginning April 1, 1972, according to a construction requisition curve which has the following shape:

% of Contract Price Paid Out (vertical axis: 0, 20, 65, 90, 100)
Time (horizontal axis: 4/72, 10/72, 4/73, 10/73, 4/74)

This cash requirement is given as

STEP 4 COMMENT 'MAIN CONSTRUCTION CONTRACT' AMOUNT 9000000 -

    ACCOUNT 104.00 CURVE 20 65 90 PAYOUT 2 BEGINNING 4 1 72

Architectural and engineering fees, estimated at 5% of the basic building cost, amount to 450,000, and are paid over a one year period of time beginning January 1, 1972 according to the following schedule:

        March 31, 1972   15% of fee
        June 30, 1972   50
        Sept. 30, 1972   90
        December 31, 1972 100

This is entered as:

STEP 5 AMOUNT 450 000 ACCOUNT 103.00 CURVE 15 50 90 PAYOUT 1 -
BEGINNING 1 1 72 COMMENT 'ARCHITECT FEES'

Tenant improvements are reckoned at a $5/sq. ft. allowance, for a total of
1,500,000, and are to be paid out in approximately equal amounts over a
1 1/2 year period beginning October 1972.

STEP 6 AMOUNT 1500000 ACCOUNT 105.00 CURVE 25 50 75 PAYOUT 1.5 -
BEGINNING 10 1 72 COMMENT 'TENANT IMPROVEMENTS'

Although the actual project costs will be allocated in somewhat more detail
when the project is better defined by CDC, the steps outlined above outline
the gross overall costs and their expected distributions over time. By
issuing of the command

DISPLAY PROJECT COSTS ON PROJECT 7112
EVERY 12 MONTHS FOR FIRST 5 YEARS BEGINNING 12 31 71

CDC is able to obtain the project cash requirements schedule shown in
Figure 1. Note that the various project costs have indeed been spread over
differing time periods, beginning on different dates, as requested by the
initial input.

Using this project cash requirements schedule, CDC is now able to
formulate a financing program composed of several loans. The current
owner of the land has agreed to finance   1,000,000 of the land cost until
the end of the construction period (i.e., for the 2 1/4 year period 12/31/71 -
3/31/74) on an interest only basis at 10%.

FINANCING
LOAN 1 AMOUNT 1000000 RATE 10 INTEREST ONLY -
PAYOUT 2.25 BEGINNING 12 31 71

Construction financing in the amount of 10,000,000 at 12% over the two year
construction period beginning April 1, 1972 has been arranged, and will be
paid out according to the following construction requisition curve.

ONE PEACH TREE PLAZA

PROJECT ID PTP   NUMBER 7112.00   DATE 11/15/71
PROJECT COSTS

	12/31/71	12/31/72	12/31/73	12/31/74	12/31/75	12/31/76
30000 OF LAND AT $50/SF						
STEP 1	1500000.	0.0	0.0	0.0	0.0	0.0
LEGAL FEES						
STEP 2	0.0	25000.	0.0	0.0	0.0	0.0
LEGAL FEES						
STEP 3	0.0	0.0	25000.	0.0	0.0	0.0
MAIN CONSTRUCTION CONTRACT						
STEP 4	0.0	3149992.	5249994.	599996.	0.0	0.0
ARCHITECT FEES						
STEP 5	0.0	434989.	14999.	0.0	0.0	0.0
TENANT IMPROVEMENTS						
STEP 6	0.0	166666.	999999.	333332.	0.0	0.0
	-------	--------	--------	-------	-------	--------
TOTAL COSTS	1500000.	3776647.	6289992.	933328.	0.0	0.0

FIGURE 1

ONE PEACH TREE PLAZA

PROJECT ID PTP   NUMBER 7112.00   DATE 11/15/71
INTEREST TABLES

	12/31/71	12/31/72	12/31/73	12/31/74	12/31/75	12/31/76
PROJ PTP LOAN 1 AMOUNT 1000000. RATE 10.00 INTEREST ONLY BEGIN 12/31/71						
PAYOUT 2.3 DEBT CONST. 0.0						
INTEREST	0.0	100000.	100000.	25000.	0.0	0.0
AMORTIZATION	0.0	0.0	0.0	0.0	0.0	0.0
REMAINING PRINCPL	1000000.	1000000.	1000000.	0.0	0.0	0.0
LUMP SUM PAYOUTS	0.0	0.0	0.0	1000000.	0.0	0.0
PROJ PTP LOAN 2 AMOUNT 10000000. RATE 12.00 CONSTRUCTION BEGIN 4/ 1/72						
PAYOUT 2.0 DEBT CONST. 0.0						
INTEREST	0.0	214531.	904530.	290937.	0.0	0.0
AMORTIZATION	0.0	0.0	0.0	0.0	0.0	0.0
REMAINING PRINCPL	0.0	4703121.	9489575.	0.0	0.0	0.0
LUMP SUM PAYOUTS	0.0	0.0	0.0	9999991.	0.0	0.0
PROJ PTP LOAN 3 AMOUNT 13000000. RATE 9.50 AMORT. TERM 20.0 BEGIN 4/ 1/74						
PAYOUT 0.0 DEBT CONST. 11.19						
INTEREST	0.0	0.0	0.0	819220.	1210292.	1186091.
AMORTIZATION	0.0	0.0	0.0	150205.	243844.	268045.
REMAINING PRINCPL	0.0	0.0	0.0	12849792.	12605943.	12337893.
TOTALS FOR ALL LOANS						
INTEREST	0.0	314531.	1004530.	1135156.	1210292.	1186091.
AMORTIZATION	0.0	0.0	0.0	150205.	243844.	268045.
REMAINING PRINCPL	1000000.	5703121.	10489575.	12849792.	12605943.	12337893.
LUMP SUM PAYOUTS	0.0	0.0	0.0	10999991.	0.0	0.0
FINANCING PROCEEDS	1000000.	4703121.	4786454.	2510425.	- 0.0	- 0.0

FIGURE 2