JAMES A. GRAASKAMP COLLECTION OF TEACHING MATERIALS
V.   INDUSTRY SEMINARS AND SPEECHES - SHORT TERM
     A.   Appraisal Organizations
          4.   1972
               a.   "The Role of the Computer in Cash Flow
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                     Estate Appraisers, August 7-8, 1972

THE ROLE OF THE COMPUTER

IN

CASH FLOW ANALYSIS

presented at

SREA

International Appraisal Conference

San Francisco, California

August 7-8, 1972

MODERATOR: Dan Swango, SRA
Tucson, Arizona

SPEAKERS:

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Ronald S. Graybeal, Ph.D.
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Value of Arbitrary Cash Flows

Program Name: RATES

Given a schedule of outlays and receipts this program will calculate
the period covered by these receipts the starting and ending date of
the schedule which was associated with the values entered. The total
outlays, the total receipts and the internal rate of return. After
requesting a cost of capital rate the program will calculate the
net present value of the outlays and receipts at that cost of capital
and an adjusted rate of return based on the cost of capital rate. The
adjusted internal rate of return is calculated by: (1) taking all outlays
and discounting them to their present value at the cost of capital
rate, (2) taking all receipts and calculating their future value at
the cost of capital rate at the end of the scheduled period. The
adjusted internal rate of return is then calculate to be that rate
which will compound the present value of all outlays to equal the
future value of all receipts.

The entries required are:

ENTER OUTLAYS

ENTER RECIEPTS

Optional entry formats 1) MM,DD,YY,AMT
                       2) MM,DD,YY,NUM,MINTV,AMT
                       3) MM,DD,YY,NUM,MINTV,AMT1,AMT2,AMT3,---,AMTN

    Entry formats provide for specifying either one or more cash
    flows at stated dates. The format codes above signify the
    following:

MM	Enter the number of the month
DD	Enter the date of the month
YY	Enter the last two digits of the year
NUM	Enter the number of consecutive payments
MINTV	Enter the interval between these consecutive payments in months
AMT	The amount of the single or periodic payment.

Options two and three provide for scheduling multiple payments which
occur periodically (not necessarily monthly) in an abbreviated format.
If all periodic payments are equal format 2 may be used. If periodic
payments occur at regular intervals but are unequal in amount format
3 is used. The amounts are stated explicitly separated by commas.
In format 3, if fewer amounts are stated than NUM calls for, the
last amount will be repeated to complete the list (format 2 is merely
a special case of format 3). In the above description payments may
be understood to apply to either outlays or reciepts. The program
will then proceed to ask for a cost of capital rate which may be
specified either as a decimal fraction or as a percentage. If a value
larger than 1 (as percentage) is entered it will be divided by 100
in order to obtain the equivalent decimal fraction.

RATES-2

Rates Sample Problem

A lender offers a real estate trust loan of $100,000 with a 2% dis-
count for closing charges. The payment schedule calls for 5 annual
payments of interest only at 9%. The borrower however, elects to
prepay the original loan balance (before the discount) with a 5%
penalty at the end of the 3rd year.

1. What is the effective earned interest rate for the lender?
2. The lender's alternatives investments usually offer him
   the return of 8%. What is the present value of this invest-
   ment at 8% and what is the net rate of this investment of 8%.
3. Compare this to a similar loan where half of the balance is
   paid off with a 5% penalty after 3 years. The remaining
   payments covering interest only run for two additional years
   whereupon the remaining half of the balance if paid off.
   What are the effective and net rates of return?

- Solution -

The sample output on the following page shows that the first alter-
native provides for the lender an effective yield (internal rate)
11.33%. Considering an 8% cost of capital the net return which
then accounts for the reinvestment of funds recovered from the loan
is then 11.06%. The present value of this set of outlays and re-
ceipts is in excess of $8,000.

Under the second alternative the investor finds that his effective
rate has been reduced to 10.2% and his net rate has been reduced to
slightly more than 9.5%. This reduction is due primarily to the
reduction of the prepayment penalty.

```
OLD RATES
READY
RUN


RATES          17:35CST      02/17/72

NUMBER OF COMPOUNDING PERIODS PER YEAR? 1
FORMAT FOR NUMERIC ENTRIES IS:
MO,DA,YR,NUM,MINTV,AMT1,AMT2, ... AMTN
    OR
MO,DA,YR,AMT




ENTER OUTLAYS
? 1,1,71,98000
?
ENTER RECEIPTS
? 12,31,71,3,12,9000
? 12,31,73,105000
?
PERIOD OF 2 YEARS, 11 MONTHS, 30 DAYS
FROM 1   1   71 TO 12   30   73
TOTAL OUTLAYS 98000
TOTAL RECEIPTS 132000
INTERNAL RATE IS 11.3264
ENTER COST OF CAP RATE? .08
NET PRESENT VALUE AT   8.00% IS 8569.038
ADJUSTED RATE IS 11.06%
ENTER COST OF CAP RATE?.




ENTER OUTLAYS
? 1,1,71,98000
?
ENTER RECEIPTS
? 12,31,71,3,12,9000
? 12,31,73,52500
? 12,31,74,2,12,4500
? 12,31,75,50000
?
PERIOD OF 4 YEARS, 11 MONTHS, 30 DAYS
FROM 1   1   71 TO 12   30   75
TOTAL OUTLAYS 98000
TOTAL RECEIPTS 138500
INTERNAL RATE IS 10.2469
ENTER COST OF CAP RATE? .08
NET PRESENT VALUE AT   8.00% IS 7291.991
ADJUSTED RATE IS   7.96%
ENTER COST OF CAP RATE?   (BREAK)@

USED     .85 UNITS
```

RATES 4

UNIVERSITY OF WISCONSIN
Real Estate Investment Teaching Model
Demonstration Case Study #2

ANALYSIS FOR PURCHASE OF APARTMENT HOUSE INVESTMENT

1. Assume you wish to analyze the investment value at alternative purchase prices of a 24 unit apartment building, located at 2575 University Avenue, Madison, Wisconsin. The building has twelve two-bedroom apartments that each rent furnished for $140 per month and twelve one-bedroom apartments that rent each for $125 per month. The building is five years old, unfurnished, in need of maintenance and available as is for about $225,000.

2. The building is well located and vacant land in the area is selling for about $1700 per unit. This means that $40,000 of the purchase price could be designated as land value. In addition to the land and building, the purchase price could be allocated to include $12,500 for the elevator and $7,200 to the parking stalls.

3. Market analysis indicates that the building would rent very well if all the units were carpeted and furnished. For this work it is estimated that it would cost $600 per two-bedroom unit and $500 for each one-bedroom unit or a total investment of $13,200 by the prospective buyer.

4. The total capital expenditures could be allocated for depreciation purposes as follows, keeping in mind that the prospect would be a second user and therefore only entitled to a maximum of 125% declining balance except for his new investment in furnishing. The percent depreciable and the number of years of remaining useful life are reasonable estimates given some knowledge of the practices of the Internal Revenue Service and the condition of the building:

Land	$40,000	no depreciation allowed		
Parking	7,200·	50%	10 yrs.	125%
Elevator	12,500	90%	12 yrs.	125%
Building	165,300	100%	35 yrs.	125%
Furnishings	13,200·	100%	7 yrs.	sum of digits
Transaction costs	1,800	100%	35 yrs.	125%

5. After completion of repairs and refurbishing it is anticipated that the two-bedroom apartments will rent for $170 a month and the one-bedrooms $150 per month. The gross rent roll of the building would then be:

$170 x 12 x 12 = 24,480

$150 x 12 x 12 = 21,600
$ 46,080

6. During the first year of changeover in ownership, refurbishing and re-leasing you estimate that each unit will be vacant about two months, that is about one-sixth of the time, (i.e. a vacancy of 17%) so that your average occupancy will

APARTMENT CASE STUDY #2

be 83% of potential for the first year. Thereafter you anticipate a normal vacancy rate of 5%, or an occupancy of 95%. Thus first year extra expenses include an additional 12% of future gross for rental losses.

7. The current real estate and personal property taxes to be paid in the first year following purchase are estimated to be $9,000. The normal current operating expenses, excluding real estate taxes but including management fees, are determined to be $8,400.

8. The property has been poorly maintained and will require additional expenditures of $2100 in the first year to justify the new rent schedule. This deferred maintenance charge will be added to the extra operating expenses of the first year washing it out as a tax deductible expense.

9. The buyer is considering this property because his accountant suggested that with his 30% tax bracket, including state and federal taxes, he should look for some tax shelter to offset some of his other current income. Using the accelerated method of depreciation, this real estate project should satisfy this requirement.

10. The investor feels that while the normal ratio of market value to income in his community ranges between 8% and 11%, proper financing should raise the pre-tax yield on his cash equity to at least 18%. The accountant suggests that if the investor considers the cash saved on deferred income taxes due to depreciation, the investor should seek at least 18% to 22% on his investment annually on an after-tax basis. His opportunity cost is 12% as that is his common stock return including capital gains.

11. The financing available to the investor would initially combine the assumption of a first mortgage with a balance of $180,000 with 240 months to run and a second mortgage taken back by the seller to be repaid in ten years, in monthly payments. The investor would plan to refinance both loans at the end of the sixth year of ownership when the prepayment penalty would lapse on the first mortgage. The seller feels he should receive $1000 as points on the second mortgage since that is the discount he will take when he sells the note.

1st Mortgage	180,000	20 year	7 3/4%	
	5 year balloon			
Private loan	15,000	10 year	8 1/2%	$1000 discount
	5 year balloon			

12. While the seller will pay for title insurance, a survey, and related items the buyer expects to pay about $800 in professional appraisal and legal fees related to this transaction. These fees plus points in #11 equal transaction costs of $1800 which increase original cash required and must be amortized over life of structure.

13. Temporary cash deficits at the end of any month can be covered with bank notes at a rate of 9% per annum and repaid out of positive cash flows when available.

APARTMENT CASE STUDY #2

14. The financial plan is to maintain a highly leveraged position and therefore payoff the original loans at the end of the fifth year by obtaining a new mortgage. To discover some measure of influence of such refinancing on yield to equity and cash flows, the investor will assume that in five years the best loan he could obtain would equal $190,000 for 20 year term at 8$ interest. The age of the building at that time would require granting a bonus interest feature equal to 4% of gross rent as of the beginning of sixth year when the loan begins.

EDUCARE has made available a versatile computer program which can be used to provide a thorough and accurate financial analysis of any income producing property.

This program is useful to:

Appraisers	Mortgage Companies
Real Estate Brokers	Savings & Loans Companies
Real Estate Developers	Banks
Estate Planners	Investors
Property Managers	Accounting Firms
Financial Advisors	Market Research Firms

The EDUCARE AIP Income Property Analysis program has easy-to-use options which allow the customer to select the information that he needs for a specific purpose. These options are:

1) CASH FLOW ANALYSIS
Projections of fixed or variable incomes, expenses, cash flows and returns on equity.

2) LOAN SUMMARY
Annual loan status analysis. Provides Beginning Balance, Principal and interest amounts paid and annual payment amounts for various loan types. Allows you to begin the Loan Summary at any time in the loan life.

3) DEPRECIATION SUMMARY
Annual depreciation analysis. Provides the Straight Line Depreciation amount, accelerated depreciation amount and the excess depreciation amount for each depreciable item for each year.

4) LOAN AMORTIZATION SCHEDULE
Amortization schedules. Provides Loan Balance, Principal and interest payments for any payment frequency that you desire. Any type of loan may be amortized, including FHA insured, interest-only, etc.

5) CASH FLOW AND FINANCIAL ANALYSIS
Provides an abbreviated version of option 1 and also provides an annual equity position and tax analysis. The tax analysis assumes a sale at the end of each year and computes the tax on capital gains and ordinary income.

I

EDUCARE p.o. box 631 / madison, wisconsin 53701

The EDUCARE AIP Income Property Analysis offers the following advantages:

* The printout is easily readable and designed for customer or management presentations without having to retype in a more convenient format.

* The 1969 Tax Reform Act changes are accurately computed. The program does not average or take other shortcuts which can result in sizeable inaccuracies in the tax computations.

* The customer has a choice as to the type of information he receives. You pay only for what you need.

* The printout generally follows NIREB Form B for the presentation of information.

* The Users Manual is designed for the customer's convenience. It does not assume that you are already a time-sharing specialist.

* Custom modifications can be made easily and inexpensively.

The AIP Income Property Analysis program "AIP" contains a number of subprograms that can be used to analyze a particular income property. An explanation of each option is contained in Section III of this User Manual. The user must prepare and store a data file <u>before</u> executing option 1 or option 5.

The AIP Income Property Analysis program is executed on General Electric Time-Sharing Service through the use of the following user commands (underlined) and computer responses.

<u>OLD AIP</u>
<u>READY</u>
<u>RUN</u>

The following responses will occur:

AIP   14:13 A   01/08/71

THE AIP INCOME PROPERTY ANALYSIS IS THE PROPERTY OF
EDUCARE
University of Wisconsin
School of Business
1155 Observatory Drive
Madison, Wisconsin 53706
CHOOSE ONE OF THE FOLLOWING OPTIONS:
  1 = CASH FLOW ANALYSIS
  2 = LOAN SUMMARIES
  3 = DEPRECIATION SUMMARIES
  4 = MONTHLY LOAN AMORTIZATION
  5 = CASH FLOW & FINANCIAL ANALYSIS
  ENTER 1, 2, 3, 4, OR 5   ?

The option that is chosen will determine the subsequent conversational questions. These questions and the detailed instructions for each option are explained in section III.2 through section III 6.

Options 1 and 5 in the Income Property Analysis program are supplied information from a common data file prepared before program execution and from the terminal in conversational mode at the time of execution. The data file contains basic data concerning:

1) project timing 4) expense information
2) project parameters 5) loan information
3) revenue information 6) depreciation information

The conversational questions control several options and control the form and the amount of the output.

The data file preparation generally follows two patterns. Some data is entered item-by-item corresponding to the single value required. For example, the NUMBER OF LOANS for the project might be entered as 2. The other data, which is time-oriented, may be entered for up to 15 years. Examples of this type of data are GROSS INCOME and REAL ESTATE TAXES.

All data items are input as follows: 1) the line number, 2) a blank, and 3) the data items separated by commas. If more than one input line is necessary to complete the input for the variable, a comma must be used at the end of the data line to indicate that the data is continued to the next data file line. The last value input for each annual data item is automatically duplicated in each of the following years.

All data file line numbers on FORM CF-2 that are not enclosed in parenthesis, eg. 200, are lines that must be used in the analysis. Line numbers enclosed in parenthesis, eg. (201), may be used on continued input data lines or for optional input data items.

The annual data can be entered in dollars, as a percentage of another amount or as zero. All annual values less than or equal to 100 are considered as percentages. These percentages may be positive or negative or may be zero. Thus, 16.5 is 16.5% and -4 is -4%. If a percentage is entered for the first year value of a variable, the standard rule will be that the first year value is that respective percent of GROSS INCOME. Percentage values entered in the other years are considered as a standard rule to be a percentage increase or decrease over the previous year's dollar value. To reduce a value in a year to zero, a -100% deflation of the previous year's value must be used, followed by a 0% inflation percentage.

Provision is made on Form CF-2 for entry of up to 12 years of data for many items. If you desire more than 12 years input for any of these items, simply place a comma after the 12th data item and continue entry on a new line using the next sequential line number.

Several examples of input lines and their meanings:

      #1 GROSS INCOME ($, % or 0)
      200 250000,5,270000,4
      First year: $250,000, Second year: a 5% increase to $262,500
      Third year: $270,000, Fourth and Ensuing years: 4% compounded
      increases.

      200 250000,4,0
      First year: $250,000, Second year: a 4% increase to $260,000
      Third year and Ensuing years: no increases ($260,000)

      200 100000,110000,-100,0
      First year: $100,000 Second year: $110,000
      Third year: 100% reduction to $0 Fourth and Ensuing years: $0

All annual type data is entered on an annual basis even when a project
begins in a month other than January. Any inflation percentage in the
second year will inflate the entire annual amount. The first year
data is then linearly pro-rated in the first year for the printout.

Important reminders:

      A.   Line numbers without ( ) must contain at least one data item.

      B.   Data file line numbers must be used, followed by a blank
           and then followed by the data.

      C.   The last annual data value is duplicated to the end of the
           analysis.

      D.   A comma at the end of a data line indicates that the data is
           continued onto the next data file line.

      E.   Titles must be provided when a value other than zero is input
           in any year for items 4, 7, 15, 16, 17, 18, 19, and 20.

      F.   All years are input such as 1971, not '71'.

      G.   All months are input with serial numbers such as 3, not
           MARCH.

It is suggested that the INPUT DATA WORKSHEET, FORM CF-2 be used as a
master to produce a different worksheet for each analysis.

The data file can be used for either option 1 or option 5 of the
program. Certain input lines that refer only to option
1 are marked in an appropriate manner but values must
still be input on the data file line.

100   Project Title (45 Characters Max):

The project title will be printed out under CASH FLOW ANALYSIS
or CASH FLOW AND FINANCIAL ANALYSIS on each page. To center a
title with X characters, Y spaces should be typed in front of
the title where Y-(44-X)/2. Spaces, Commas, etc. count as chara-
cters.

110   Discount Rate, Tax Bracket:

The discount rate is the percentage to be used to reduce future
income back to present worth in option 1. If this present value
concept is not desired or if Option 5 is to be used, enter a
value of zero. If the Discount Rate is zero, the PRESENT VALUE
GSI and PRESENT VALUE NSI printed lines will not appear in
Option 1.

The tax bracket for the life of the project is input as a %.
In Option 1 the printing of TAXABLE INCOME, NET SPENDABLE INCOME
and the TAX SAVINGS % item of the RETURNS IN EQUITY can be
suppressed by entering any negative number as the tax bracket.

120   Begin Mo., Begin Yr., #Yrs. in Analysis:

The first month and year of the project should be input in
numeric form. March, 1970 is input as 3,1970. The analysis
computation and the number of years in the printout will key
on '#Yrs. in Analysis'. The maximum number of years of analysis
is 15.

130   Cash-in-at-purchase:

The equity into the project in dollars at the beginning of the
project will be used in the various return on equity calcula-
tions. If there is any Pre-Paid Interest in the first year of
the analysis, a conversational option is given to consider pre-
paid interest as 1) equity (in which case it is added to cash-
in-at-purchase), or 2) debt service.

FOR
OPTION
1
ONLY
{
If there is cash-in-at-purchase or prepaid interest that is to
be considered as equity, another conversational option is given
whether or not to print the RETURNS ON EQUITY Calculations. If
the RETURNS are to be printed still another conversational
option is offered. The Return percentages may be computed from
either cash-in-at-purchase or cash-in-at-purchase plus cumulative
equity buildup. If there is no equity in the first year, the
RETURNS will not be printed.

ANNUAL DATA INPUT

Variable factors (either $, %, or 0) are used to manipulate
values in the different analysis years. The standard guideline
is that percentage factors will develop dollar values 1) in the
first year as a percentage of Gross Income, and 2) for a pro-
jected year by inflating or deflating the previous year's value
by the percentage factor. The last factor entered for an item
will be automatically extended to the end of the analysis for
that item. The user should refer to Section III.1.3 for general
information about inputing annual data.

Any income or expense item can be eliminated from the output in
Option 1 by entering a zero for the first value and by entering
no other values on that data line. In Option 5, only the total
of all the annual expenses will be output.

Income items affected by vacancy-#1 thru #4

200   #1-Gross Income ($, %, or 0):
(201) Gross Income can be input as a % of market value in the beginning
      of the initial year of the analysis by entering the percentage
      value. Note-gross income and market value may not both be zero
      in the initial year of the analysis. If market value is zero, gross
      income can not be a percentage.

210   #2-Parking Income ($, %, or 0):
(211) Follows standard guidelines set for annual data.

220   #3-Miscellaneous Income ($, %, or 0):
(221) Follows standard guidelines set for annual data.

230   #4-Optionally Titled Income ($, %, or 0):
(231) Follows standard guidelines set for annual data. If any element
(235) of this item is non-zero, a user-supplied title must be entered
      on line 235.

240   #5-Vacancy ($, %, or 0):
(241) Vacancy factors entered as percent are considered as a percent
      of the sum of the four income classes affected by vacancy
      (e.g. #1 Gross Income, #2 Parking Income, #3 Miscellaneous Income,
      and #4 Optionally Titled Income.).

Income items NOT affected by vacancy—#6 thru #7

250 #6-Miscellaneous Income ($, %, or 0):
(251) Follows standard guidelines set for annual data.

260 #7-Optionally Titled Income ($, %, or 0):
(261) Follows standard guidelines set for annual data.
(265) If any element of this item is non-zero, a user-supplied title must be entered on line 265.

Expense Items—#8 thru #20

270 #8-Utilities ($, %, or 0):
(271) Follows standard guidelines set for annual data.

280 #9-Insurance ($, %, or 0):
(281) Follows standard guidelines set for annual data.

290 #10-Real Estate Taxes ($, %, or 0):
(291) Follows standard guidelines set for annual data.

300 #11-Leasing Commissions ($, %, or 0):
(301) Follows standard guidelines set for annual data.

310 #12-Payroll and Taxes ($, %, or 0):
(311) Follows standard guidelines set for annual data.

320 #13-Management Fees ($, %, or 0):
(321) Any percentage will be taken as a percentage of the Gross Adjusted Income for that year.

330 #14-Maintenance Costs ($, %, or 0):
(331) Follows standard guidelines set for annual data.

340 #15-Optionally Titled Expense ($, %, or 0):
(341) Follows standard guidelines set for annual data.
(345) If any element of this item is non-zero, a user-supplied title must be entered on line 345.

350 #16-Optionally Titled Expense ($, %, or 0):
(351) Follows standard guidelines set for annual data.
(355) If any element of this item is non-zero, a user-supplied title must be entered on line 355.

360 #17-Optionally Titled Expense ($, %, or 0):
(361) Follows standard guidelines set for annual data.
(365) If any element of this item is non-zero, a user-supplied
title must be entered on line 365.

370 #18-Optionally Titled Expense ($, %, or 0):
(371) Follows standard guidelines set for annual data.
(375) If any element of this item is non-zero, a user-supplied
title must be entered on line 375.

380 #19-Optionally Titled Expense ($, %, or 0):
(381) Follows standard guidelines set for annual data.
(385) If any element of this item is non-zero, a user-supplied
title must be entered on line 385.

390 #20-Optionally Titled Expense ($, %, or 0):
(391) Any percentage will be taken as a percentage of the Gross
(395) Adjusted Income for that year. If any element of this item
is non-zero, a user-supplied title must be entered on line 395.

400 Beginning of Year Market Values ($, %, or 0):
(401) The Market Value may be entered in one of two ways-
  1) A dollar amount must be entered as the beginning of
     the analysis market value, followed by any combination of
     dollars and/or percentages. The dollar values are used
     as absolute values for those years and the percentages
     act as inflation/deflation factors of the previous year.
     A factor in the second year will inflate/deflate the entire
     first year value.
  2) A dollar amount must be entered as the beginning of the
     analysis market value. If it is desired to compute all other
     market values from the Capitalization Rate and Net Operating
     Income for the previous year, a zero for the second year
     value should be entered.
     The last value entered is automatically extended to the end
     of the analysis.
     NOTE: A year end Market Value is equal to the next year
     beginning Market Value. Therefore there will always be one
     more Market Value required than there are years of analysis.
410 Capitalization Rates (%):
(411) The capitalization rates may be entered in one of two ways-
  1) Positive capitalization rates for the first and succeeding
     years may be entered. These rates divided into Net Operating
     Income will determine year-end market values. The last value
     entered is automatically extended to the end of the analysis.
  2) A zero is entered if capitalization rates are
     not to be used in determining year-end
     Market Value.

420 Participation-in-Gross ($, %, or 0):
(421) Dollar amounts or percentages can be entered for each year. Any percentage will be taken as a percentage of Gross Adjusted Income.

430 Replacement Reserve ($,%, or 0):
(431) Follows standard guidelines set for annual data. Note that the reserves for replacements are not considered expense items and are not tax deductible. If reserves are to be tax deductible, enter a zero on this line and input reserves as an optionally titled expense item.

450 Percentage Basis (Code or Sq. footage):

OPTION 1 ONLY

At output time, all income and expense items and related totals print out as both dollar amounts and as a percent of the variable amount or as dollars per square foot per year. If the user desires a percentage of an income amount (printed as a %), he must enter a code to determine that percentage basis.

CODE	BASE ITEM
1	Gross Income
2	Gross Effective Income
3	Gross Adjusted Income.

If the user desires dollars per sq. ft. (printed as $/SF), the sq. footage to be used as the basis must be entered. For option 5, enter any one of the codes since the values are not used.

LOAN INFORMATION

500 Number of Loans (Up to 6):
Enter the number of loans in the analysis during the analysis period. Up to 6 loans may be used. The information in lines 510-513 applies to each loan and must be provided for each loan. It is permitted to have zero (0) loans outstanding.

(510) Type, Month Started, Year Started:
A type "1" loan is a constant payment loan. A type "2" loan is a constant principal payment loan. The serial number for the month (e.g. January-1) should be used for the month in which the loan started. The year 1971 is input as 1971.

(511) Loan Balance ($, %), Interest Rate, Payment per period:
The loan balance may be set as a percent of the market value in the year the loan begins by entering the percent less than 100. Otherwise, enter the dollar loan balance on the date on line 510. Interest Rate is the annual interest rate of the loan, e.g. 7.75. Payment is the dollar payment per period during the amortization periods. If the exact payment is unknown, the payment will be computed by entering zero for the payment.

(512) Term, Periods per Year, Months Interest Only, Months Prepaid
Interest:
Term is the length of the loan in years including the period
of interest only. A 9 month loan should be input as .75 years.
The number of payments per year can be any number from 1 to 12.
A "2" indicates a semi-annual amortization. The months of
interest only must be stated in whole months. The number of
months of prepaid interest can be any number of months less
than the life of the loan.

(513) Pay off Loan #'s:
If this loan pays off the balance of other loans, enter the
loan numbers. The first loan input is loan #1, etc. If none
are paid off, enter 0,0,0. If loan #2 pays off loan #1, the
amortization of loan #1 will end without the principal balance
being paid, i.e. the loan will be refinanced.

DEPRECIATION INFORMATION
The instructions for lines 610-612 apply to each depreciable
item.
600 Number of Depreciable Items (Up to 10):
The number of depreciable classes may be 0 through 10.

(610) Month acquired, Year acquired:
The month and the year that the depreciable class or item was
purchased is input here. The serial number for month should
be used. If the item or class of items was purchased earlier
than five years prior to the analysis, use the depreciated
basis at the project start date and make line 610 the
project start date.

(611) Value, Life (Years):
The amount of the depreciable item can be dollars or a % of
the market value in the year the item or class is purchased.
Any amount less than 100 is considered to be a percent of
market value. The life of the item or class is input in years.

(612) Method, Salvage Value:
The depreciation method to be used is input by using the code:
1) Straight line, 2) Sum-of-years-digits, or 125-200) 125%-200%
declining. If the method selected is accelerated, the program
will automatically switch to the straight line method in the
appropriate year to capture 100% of the depreciable basis.
The salvage value of the item is input in dollars.

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DATA FILE
LINE NO.

- 100   Project Title (45 Char. Max.) ⑪⑤ *NORTH TOWN APARTMENTS*
- 110   Discount Rate (% or 0), Tax Bracket (%) ___*0*___ , ___*50*___
- 120   Begin Mo., Begin Yr., # Yrs. in Analysis ___*1*___ , ___*1970*___ , ___*6*___
- 130   Cash-in-at-Purchase ($ or 0) ___*500000*___

INCOME ITEMS AFFECTED BY VACANCY-#1 thru #4
#1 Gross Income ($, %, or 0):

200
(201)   *280000* , *4* , ____ , ____ , ____ , ____ ,
____ , ____ , ____ , ____ , ____ , ____ ,

#2 Parking Income ($, %, or 0):

210
(211)   *1000* , ____ , ____ , ____ , ____ , ____ ,
____ , ____ , ____ , ____ , ____ , ____ ,

#3 Miscellaneous Income ($, %, or 0):

220
(221)   *0* , ____ , ____ , ____ , ____ , ____ ,
____ , ____ , ____ , ____ , ____ , ____ ,

#4 Optionally Titled Income ($, %, or 0):

230
(231)   *15000* , *4* , ____ , ____ , ____ , ____ ,
(235)   *FURNITURE* Title for #4 (18 Char. Max)

#5 Vacancy ($, %, or 0):

240
(241)   *8* , ____ , ____ , ____ , ____ , ____ ,
____ , ____ , ____ , ____ , ____ , ____ ,

INCOME ITEMS NOT AFFECTED BY VACANCY-#6 thru #7
#6 Miscellaneous Income ($, %, or 0)

250
(251)   *2000* , ____ , ____ , ____ , ____ , ____ ,
____ , ____ , ____ , ____ , ____ , ____ ,

#7 Optionally Titled Income ($, %, or 0):

260
(261)   *0* , ____ , ____ , ____ , ____ , ____ ,
(265)   _____ Title for #7 (18 Char. Max.)

EXPENSE ITEMS
#8 Utilities ($, %, or 0):

270
(271)   *25000* , *3* , ____ , ____ , ____ , ____ ,
____ , ____ , ____ , ____ , ____ , ____ ,

#9 Insurance ($, %, or 0):

280
(281)   *2050* , *4* , ____ , ____ , ____ , ____ ,
____ , ____ , ____ , ____ , ____ , ____ ,

#10 Real Estate Taxes ($, %, or 0):

290
(291)   *22500* , *6* , ____ , ____ , ____ , ____ ,
____ , ____ , ____ , ____ , ____ , ____ ,

12

#11 Leasing Commissions ($, %, or 0):

300 ___0___, _____, _____, _____, _____, _____,
(301) _____, _____, _____, _____, _____, _____,

#12 Payroll and Taxes ($, %, or 0):

.310 __10500__, ___4___, _____, _____, _____, _____,
(311) _____, _____, _____, _____, _____, _____,

#13 Management Fees ($, 0, or % of Gross Adj):

320 ___3___, _____, _____, _____, _____, _____,
(321) _____, _____, _____, _____, _____, _____,

#14 Maintenance Costs ($, %, or 0):

330 __5000__, ___6___, _____, _____, _____, _____,
(331) _____, _____, _____, _____, _____, _____,

#15 Optionally Titled Expense ($, %, or 0):

340 __2050__, ___10___, _____, _____, _____, _____,
(341) _____, _____, _____, _____, _____,
(345) _TRASH COLLECTION_____ Title for #15 (18 Char. Max.)

#16 Optionally Titled Expense ($, %, or 0):

350 __3000__, ___4___, _____, _____, _____, _____,
(351) _____, _____, _____, _____, _____,
(355) __ADVERTISING_____ Title for #16 (18 Char. Max.)

#17 Optionally Titled Expense ($, %, or 0):

360 ___0___, _____, _____, _____, _____, _____,
(361) _____, _____, _____, _____, _____,
(365) _____ Title for #17 (18 Char. Max.)

#18 Optionally Titled Expense ($, %, or 0):

370 ___0___, _____, _____, _____, _____, _____,
(371) _____, _____, _____, _____, _____,
(375) _____ Title for #18 (18 Char. Max.)

#19 Optionally Titled Expense ($, %, or 0):

380 ___0___, _____, _____, _____, _____, _____,
(381) _____, _____, _____, _____, _____,
(385) _____ Title for #19 (18 Char. Max.)

#20 Optionally Titled Expense ($, 0, or % of Gross Adj):

390 ___0___, _____, _____, _____, _____, _____,
(391) _____, _____, _____, _____, _____,
(395) _____ Title for #20 (18 Char. Max.)

Beginning of the year Market Values ($, %, or 0):

400 __1800000__, ___2___, _____, _____, _____, _____,
(401) _____, _____, _____, _____, _____, _____,
(402) _____, _____, _____,

Capitalization Rates (%)

410 ___0___, _____, _____, _____, _____, _____,
(411) _____, _____, _____, _____, _____, _____,

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Participation-in-Gross ($, 0, or % of Gross Adjusted Income)

420 ___3___, _____, _____, _____, _____, _____,
(421) _____, _____, _____, _____, _____, _____

Replacement Reserve ($, %, or 0)

430 __16000__, ___3___, _____, _____, _____, _____,
(431) _____, _____, _____, _____, _____, _____

450 ___95000___ Percentage Basis (Code or Sq. Ft.)

LOAN INFORMATION

500 ___1___ Number of Loans (Up to 6)

FIRST LOAN:

(510) ___1___, ___1___, __1970__ Type, Month Start, Year Start

Loan Bal($or%), Int. Rate(%), Payment/Period($or0)

(511) _1300000_, __7.5__, ___0___

Term, Pds/Yr., Mos. Int. Only, Mos. Prepaid Int.

(512) ___25___, ___12___, ___0___, ___0___

(513) ___0___, ___0___, ___0___ Pay off Loan #'s (0,0,0 if none)

	SECOND LOAN			THIRD LOAN	
(520) ___, ___, ___			(530) ___, ___, ___		
(521) ___, ___, ___			(531) ___, ___, ___		
(522) ___, ___, ___, ___			(532) ___, ___, ___, ___		
(523) ___, ___, ___			(533) ___, ___, ___		

For more than 3 loans, complete a supplemental input data form.

DEPRECIATION INFORMATION

Methods: 1-St. line, 2-Sum-of-Years, 125-200 accelerated.

600 ___3___ Number of Depreciable Classes (Up to 10):

FIRST DEPRECIABLE ITEM:

(610) ___1___, ___1970___ Month Acquired, Year Acquired
(611) _1600000_, ___30___ Value, Life (Years)
(612) ___1___, ___0___ Method, Salvage Value

	SECOND ITEM			THIRD ITEM	
(620) ___1___, ___1970___		(630) ___1___, ___1970___			
(621) _150000_, ___10___		(631) _225000_, ___5___			
(622) ___125___, ___0___		(632) ___1___, ___0___			

For more than 3 items, complete a supplemental input data form.

RUN TIME QUESTIONS

__APT1__ File Name   __1970__ Start Printing
_____ Prepaid Int./Eq.   _____ Project Classification
__Yes__ Print Returns   _____ Cost Basis
___3___ Returns Basis   _____ Type Owner
__Yes__ Tax Shelter

14

This cash flow option in the Income Property Analysis program allows the user to develop a detailed revenue and expense analysis of an income property over a period of up through 15 years. The analysis may include tax computations based upon one tax bracket. The analysis can be begun in any month of the year.

Up to 6 income classes can be used, four affected by a vacancy percentage and two unaffected by vacancy. These incomes can be held constant, be increased or decreased by varying percentages and/or dollars, or can be any combination of percentages or dollars. Two income titles can be named by the user. Up to 13 expense classes can be used, 6 of which can be titled by the user. Any income or expense class that is not used will not be printed out.

The cash flow analysis will handle up to 6 loans and up to 10 depreciable classes. The analysis will compute participation-in-gross, management fees and one optionally titled expense as a percentage of the gross adjusted income.

The present value concept can be used for discounting the future gross spendable incomes and net spendable incomes back to present value at any discount rate at the user's option. If this option is not desired, no output references will be made to discounted values.

The market values can be input and modified each year or can be computed from the Capitalization Rate and Net Operating Income.

If an initial equity is defined for the program, the % returns on equity for Gross Spendable, Principal Payments, and Tax Savings can be computed and printed. The returns can be computed on 1) initial equity, 2) initial equity plus equity buildup through principal payments, or 3) the above, plus market value appreciation.

Each revenue and expense item is first expressed in dollars for the period and can also be expressed as dollars per square foot or as a percent of one of three gross income amounts.

A multitude of user options make this program applicable to almost any type of income property. Modifications to this cash flow analysis to suit unusual situations can be requested directly from Land Value Dynamics, Inc.

WHAT IS THE NAME OF THE DATA FILE (6 CHAR MAX) ?

The user must enter the name of the data file previously pre-
pared and stored. Demonstration files named "APT1", "APT2",
and "BLDG1" are available.

Q-1   IS PREPAID INTEREST TO BE CONSIDERED AS:
       1 = EQUITY,   OR
       2 = DEBT SERVICE
       ENTER 1 OR 2 ?

This question is asked only if the user has indicated prepaid
interest for a loan in the first year of the analysis. If the
user chooses to consider this prepaid interest as equity, it
will be added to CASH-IN-AT-PURCHASE to form the INITIAL EQUITY.
Prepaid interest in any other years will be treated as debt service.
Choosing the second option will cause all prepaid interest to be
treated as debt service.

Q-2   DO YOU DESIRE TO PRINT THE "RETURNS ON EQUITY" PERCENTAGES?
       YES OR NO ?

This question is asked only if there was a positive CASH-IN-AT-
PURCHASE entered on line 130 in the data file, or if there is
prepaid interest that is to be treated as equity. These returns
are percentages of return on GROSS SPENDABLE, LOAN REDUCTION,
TAX SAVINGS, AND a total.

Q-3   ARE THE "RETURNS ON EQUITY" PERCENTAGES TO BE COMPUTED FROM:
       1 = INITIAL EQUITY
       2 = INITIAL EQUITY PLUS CUM. PRIN. PAYMENTS
       3 = ABOVE PLUS MKT. VALUE APPRECIATION
       ENTER 1, 2, OR 3   ?

This question is asked only if there was a positive answer to
Q-2. INITIAL EQUITY is considered to be CASH-IN-AT-PURCHASE
from line 130 in the data file plus any prepaid interest that
is to be treated as equity. (See Q-1) The RETURNS ON EQUITY
can be computed from the most appropriate definition of equity
as defined by the user.

16

Q-4 IF THE PROJECT INDICATES A TAX SHELTER, IS IT TO BE CONSIDERED AS SPENDABLE INCOME? (YES OR NO) ?

An answer of YES will cause any negative income **tax** to be used to increase the Gross Spendable Income. An answer of NO will cause the Net Spendable Income to be the same as the Gross Spendable Income.

Q-5 WITH WHICH ANALYSIS YEAR IS PRINTING TO START? (EX. 1971) ?

The user may choose to start printing the Cash Flow Analysis at any year during the analysis period. This answer has no effect on the calculations.

Q-6 WIDE CARRIAGE? (YES OR NO) ?

If the user is operating a wide carriage terminal, this option will allow an extra 2 years of analysis to be printed on each page.

Q-7 DO YOU WISH TO LIST THE DATA? (YES OR NO) ?

An answer of YES will cause the program to list the complete data storage area. (see the sample in Section III.2.3) This listing allows the user to inspect the values of the variables that were input from the data file for which the program computed the dollar values and/or extended the values. (see Section III.1.3) For example, if GROSS INCOME is input as 100000,10 for a 5 year analysis, the listing would yield:

#1 100000,110000,121000,133100,146410

This listing option allows the user to verify his input data as it is stored in the program.

Q-8 A ROYALTY CHARGE WILL BE MADE DURING EXECUTION OF THIS PROGRAM. NO ROYALTY CHARGE WILL BE MADE IF THE EXECUTION IS STOPPED NOW. ENTER GO OR STOP ? GO

Any command other than GO will cause the program to halt. If an error in the data file is discovered in the previous step, the program can be halted to correct the file. No royalty charge that will be paid to Land Value Dynamics, Inc. will be incurred unless the user specifically states that the output phase is to be entered. Output will begin immediately after GO is entered.

SAMPLE DATA FILE LISTING

APT1

```
100                    NØRTH TØWN APARTMENTS
110  0,50 ──────────── No discounting to present value, 50% Tax Bracket
120  1,1970,6            .
130  500000
200  280000,4 ──────── Gross Income increased 4% per year
210  1000 ──────────── Parking Income remains constant
220  0
230  15000,4
235  FURNITURE
240  8 ───────────────── 8% vacancy each year
250  2000
260  0
270  25000,3
280  2050,4
290  22500,6
300  0
310  10500,4
320  3
330  5000,6
340  2050,10
345  TRASH CØLLECTIØN
350  3000,4 ──────────┐
355  ADVERTISING ─────┘── 4% increase in Advertising
360  0
370  0
380  0
390  0
400  1800000,2 ─────── Market Value Appreciates 2% per year
410  0 ──────────────── Cap rates not used in determining Market Value
420  3 ──────────────── 3% Participation-in-Gross Adjusted Income
430  16000,3 ────────── Reserves increased at 3%
450  95000 ──────────── 95,000 Sq. Ft. in Apartment complex
500  1
510  1,1,1970 ──────┐
511  1300000,7.5,0  │
512  25,12,0,0      ├── loan information: 7½% monthly for 25 yrs,
513  0,0,0 ─────────┘        $1,300,000 starting Jan. 1, 1970
600  3
610  1,1970 ────────┐
611  1600000,30      │
612  1,0             │
620  1,1970          │
621  150000,10       ├── Depreciation Information
622  125,0           │
630  1,1970          │
631  225000,5        │
632  1,0 ────────────┘
```

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```
MARK II    A-600    14:11 PST    08 JAN 71
USER NØ.--AEA49???,
█████████
PRØJECT ID--TRUN1
SYSTEM--FIV
NEW ØR ØLD--ØLD AIP
READY
RUN


AIP           14:13 A       01/08/71


THE  AIP INCØME PRØPERTY ANALYSIS IS THE PRØPERTY OF
        EDUCARE
        University of Wisconsin
        School of Business
        1155 Observatory Drive
        Madison, Wisconsin 53706
CHØØSE ØNE ØF THE FØLLØWING ØPTIØNS:
   1 = CASH FLØW ANALYSIS
   2 = LØAN SUMMARIES
   3 = DEPRECIATIØN SUMMARIES
   4 = MØNTHLY LØAN AMØRTIZATIØN
   5 = CASH FLØW & FINANCIAL ANALYSIS
   ENTER 1, 2, 3, 4, ØR 5  ? 1

WHAT IS THE NAME ØF THE DATA FILE (6 CHAR MAX) ? APT1

DØ YØU DESIRE TØ PRINT THE "RETURNS ØN EQUITY" PERCENTAGES?
YES ØR NØ ? YES

ARE THE "RETURNS ØN EQUITY" PERCENTAGES TØ BE CØMPUTED FRØM:
   1 = INITIAL EQUITY
   2 = INITIAL EQUITY PLUS CUM. PRIN. PAYMENTS
   3 = ABØVE PLUS MKT. VALUE APPRECIATIØN
   ENTER 1, 2, ØR 3  ? 3

IF THE PRØJECT INDICATES A TAX SHELTER, IS IT TØ BE CØNSIDERED AS
SPENDABLE INCØME? (YES ØR NØ)  ? YES

WITH WHICH ANALYSIS YEAR IS PRINTING TØ START? (EX. 1971)  ? 1970

WIDE CARRIAGE? (YES ØR NØ)  ? NØ

DØ YØU WISH TØ LIST THE DATA? (YES ØR NØ)  ? YES
```

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```
TITLE                NØRTH TØWN APARTMENTS
DISCØUNT RATE, TAX BRACKET        0. , 50.0
BEGIN MØ, BEGIN YR, # YRS      1,1970, 6
CASH-IN                500000.00
#  1          280000,    291200,    302848,    314962,    327560,    340663,
#  2            1000,      1000,      1000,      1000,      1000,      1000,
#  3               0,         0,         0,         0,         0,         0,
#  4           15000,     15600,     16224,     16873,     17548,     18250,
ØPT TITLE        FURNITURE
#  5           23680,     24624,     25606,     26627,     27689,     28793,
#  6            2000,      2000,      2000,      2000,      2000,      2000,
#  7               0,         0,         0,         0,         0,         0,
#  8           25000,     25750,     26522,     27318,     28138,     28982,
#  9            2050,      2132,      2217,      2306,      2398,      2494,
# 10           22500,     23850,     25281,     26798,     28406,     30110,
# 11               0,         0,         0,         0,         0,         0,
# 12           10500,     10920,     11357,     11811,     12284,     12775,
# 13            8230,      8555,      8894,      9246,      9613,      9994,
# 14            5000,      5300,      5618,      5955,      6312,      6691,
# 15            2050,      2255,      2480,      2729,      3001,      3302,
ØPT TITLE        TRASH CØLLECTIØN
# 16            3000,      3120,      3245,      3375,      3510,      3650,
ØPT TITLE        ADVERTISING
# 17               0,         0,         0,         0,         0,         0,
# 18               0,         0,         0,         0,         0,         0,
# 19               0,         0,         0,         0,         0,         0,
# 20               0,         0,         0,         0,         0,         0,
MKT VALUE     1800000,         2,         2,         2,         2,         2,
                    2,
CAP RATE          0. ,        0. ,        0. ,        0. ,        0. ,        0. ,
PARTICIPAT'N     8230,      8555,      8894,      9246,      9613,      9994,
REPL RESERVE    16000,     16480,     16974,     17484,     18008,     18548,
PCT BASIS        95000

LØAN INFØRMATIØN
# LØANS       1
TYPE, MØ START, YR START      1,      1, 1970,
BAL,RATE,PAY/PD        1300000.00, 7.500,        0.
TERM, PD/YR, MØS INT, MØS PRE-PD    25.00,  12,    0,        0
P-B-N       0, 0, 0,

DEPRECIATIØN INFØRMATIØN
# CLASSES     3

MØ ACQ, YR ACQ          1, 1970,
AMT,LIFE     1600000.00,30.000
METH,SALVAGE        1,        0.

MØ ACQ, YR ACQ          1, 1970,
AMT,LIFE      150000.00,10.000
METH,SALVAGE      125,        0.

MØ ACQ, YR ACQ          1, 1970,
AMT,LIFE      225000.00, 5.000
METH,SALVAGE        1,        0.

A RØYALTY CHARGE WILL BE MADE DURING EXECUTIØN ØF THIS PRØGRAM.
NØ RØYALTY CHARGE WILL BE MADE IF THE EXECUTIØN IS STØPPED NØW.
ENTER GØ ØR STØP ? GØ
```

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CASH FLØW ANALYSIS

NØRTH TØWN APARTMENTS

	1970		1971		1972	
	AMØUNT	$/SF	AMØUNT	$/SF	AMØUNT	$/SF
GRØSS INCØME	280000.	2.95	291200.	3.07	302848.	3.19
PARKING INCØME	1000.	0.01	1000.	0.01	1000.	0.01
FURNITURE	15000.	0.16	15600.	0.16	16224.	0.17
LESS VACANCY	23680.	0.25	24624.	0.26	25606.	0.27
GRØSS EFF INCØME	272320.	2.87	283176.	2.98	294466.	3.10
MISC INCØME	2000.	0.02	2000.	0.02	2000.	0.02
GRØSS ADJ INCØME	274320.	2.89	285176.	3.00	296466.	3.12
ØPERATING EXPENSES						
UTILITIES	25000.	0.26	25750.	0.27	26523.	0.28
INSURANCE	2050.	0.02	2132.	0.02	2217.	0.02
REAL ESTATE TAXES	22500.	0.24	23850.	0.25	25281.	0.27
PAYRØLL & TAXES	10500.	0.11	10920.	0.11	11357.	0.12
MANAGEMENT FEES	8230.	0.09	8555.	0.09	8894.	0.09
MAINTENANCE CØSTS	5000.	0.05	5300.	0.06	5618.	0.06
TRASH CØLLECTIØN	2050.	0.02	2255.	0.02	2481.	0.03
ADVERTISING	3000.	0.03	3120.	0.03	3245.	0.03
TØTAL EXPENSES	78330.	0.82	81882.	0.86	85615.	0.90
NET INVEST INC	195990.		203294.		210851.	
REPLACE RESERVE	16000.		16480.		16974.	
NET ØPERATING INC	179990.		186814.		193877.	
CAP RATE MKT VAL %	9.8		10.0		10.1	
LESS PRINCIPAL PD	18407.		19836.		21376.	
LESS INTEREST PD	96876.		95447.		93907.	
TØTAL DEBT SERVICE	115283.		115283.		115283.	
PART IN GRØSS	8230.		8555.		8894.	
GRØSS SPEND INC	56478.		62976.		69700.	
PLUS PRIN PAY	18407.		19836.		21376.	
GRØSS EO INC	90885.		99292.		108050.	
LESS DEPREC	117083.		114740.		112689.	
TAXABLE INCØME	-26198.		-15448.		-4638.	
TAXES	-13099.		-7724.		-2319.	
NET SPEND INC	69577.		70700.		72020.	
CUM EQUITY BUILDUP	54407.		110963.		169793.	
MARKET VALUE	1836000.		1872720.		1910174.	
RETURNS ØN EQUITY						
GRØSS SPENDABLE	11.3 %		11.4 %		11.4 %	
LØAN REDUCTIØN	3.7 %		3.6 %		3.5 %	
TAX SAVINGS	2.6 %		1.4 %		0.4 %	
TØTAL RETURN	17.6 %		16.3 %		15.3 %	

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CASH FLOW ANALYSIS

NORTH TOWN APARTMENTS

	1973 AMOUNT	1973 $/SF	1974 AMOUNT	1974 $/SF	1975 AMOUNT	1975 $/SF
GROSS INCOME	314962.	3.32	327560.	3.45	340663.	3.59
PARKING INCOME	1000.	0.01	1000.	0.01	1000.	0.01
FURNITURE	16873.	0.18	17548.	0.18	18250.	0.19
LESS VACANCY	26627.	0.28	27689.	0.29	28793.	0.30
GROSS EFF INCOME	306208.	3.22	318420.	3.35	331120.	3.49
MISC INCOME	2000.	0.02	2000.	0.02	2000.	0.02
GROSS ADJ INCOME	308208.	3.24	320420.	3.37	333120.	3.51
OPERATING EXPENSES						
UTILITIES	27318.	0.29	28138.	0.30	28982.	0.31
INSURANCE	2306.	0.02	2398.	0.03	2494.	0.03
REAL ESTATE TAXES	26798.	0.28	28406.	0.30	30110.	0.32
PAYROLL & TAXES	11811.	0.12	12284.	0.13	12775.	0.13
MANAGEMENT FEES	9246.	0.10	9613.	0.10	9994.	0.11
MAINTENANCE COSTS	5955.	0.06	6312.	0.07	6691.	0.07
TRASH COLLECTION	2729.	0.03	3001.	0.03	3302.	0.03
ADVERTISING	3375.	0.04	3510.	0.04	3650.	0.04
TOTAL EXPENSES	89538.	0.94	93661.	0.99	97997.	1.03
NET INVEST INC	218671.		226758.		235122.	
REPLACE RESERVE	17484.		18008.		18548.	
NET OPERATING INC	201187.		208750.		216574.	
CAP RATE MKT VAL %	10.3		10.5		10.7	
LESS PRINCIPAL PD	23035.		24823.		26751.	
LESS INTEREST PD	92247.		90459.		88532.	
TOTAL DEBT SERVICE	115283.		115283.		115283.	
PART IN GROSS	9246.		9613.		9994.	
GROSS SPEND INC	76658.		83855.		91298.	
PLUS PRIN PAY	23035.		24823.		26751.	
GROSS EQ INC	117177.		126687.		136597.	
LESS DEPREC	112689.		112689.		67689.	
TAXABLE INCOME	4488.		13998.		68908.	
TAXES	2244.		6999.		34454.	
NET SPEND INC	74414.		76856.		56844.	
CUM EQUITY BUILDUP	231031.		294823.		361320.	
MARKET VALUE	1948378.		1987345.		2027092.	
RETURNS ON EQUITY						
GROSS SPENDABLE	11.4 %		11.5 %		11.5 %	
LOAN REDUCTION	3.4 %		3.4 %		3.4 %	
TAX SAVINGS	-0.3 %		-1.0 %		-4.3 %	
TOTAL RETURN	14.5 %		13.9 %		10.5 %	

22

		1	2	3	4	5	6	7	8	9	10	11	12
		PRICE											
100	110												
120	130												
140	150												
160	170												
180	190												
200	210												
220	230												
240	250												
260	270												
280	290												
300	310												
320	330												
340	350												
360	370												
380	390												
400	410												
420	430												
440	450												

MKTCOMP WORKSHEET

LINE	NAME	TYPE	RATE
100	P R I C E	0	1
110			
120			
130			
140			
150			
160			
170			
180			
190			
200			
210			
220			
230			
240			

FACTOR FILE

NAME

NAME OF FACTOR, E.G. PRICE
DATE SOLD, SQFT.
NAME SHOULD BE LESS THAN
10 CHARACTERS.

TYPE

0 - USED FOR PRICE ONLY

1 - ADJUSTMENT MADE ON THE BASIS
OF:
    RATE X (SUBJ - COMP)

2 - ADJUSTMENT MADE ON THE BASIS
OF:
    PRICE X RATE X (SUBJ-COMP)

RATE

FOR TYPE 1
    $ PER UNIT OF DIFFERENCE
    IN THE FACTORS

FOR TYPE 2
    FRACTION OF PRICE OF COMP.
    PER UNIT OF DIFFERENCE
    IN THE FACTORS

Market Comparison Program

The market comparison approach to real estate evaluation permits the appraiser to combine his insight, experience, and judgment with a mathematical technique in order to arrive at market value from a set of comparable sales. The purpose of MKTCOMP is to implement this mathematical procedure without placing any constraints upon the manner in which the appraiser wishes to express his judgment.

The MKTCOMP user must prepare three separate data files. The factor file allows the user to express the basis for his market comparison. The comparable file is the data base from which the value of the subject is derived and subject file provides for the description of one or more subject properties. The formats of each of these three files are described using examples.

The factor file, in this case named FAC, has the following structure

```
FAC                 02/15/72          20:15CST



100 PRICE, 0, 1
110 SALE DATE, 2, .04
120 LOCATION, 1, 500
130 ADJ. AGE, 2, -.02
140 CONST QUAL, 2, .03
150 CURB APPL, 2, .05
160 LOT SQFT, 1, .50
170 BLDG SQFT, 1, 11
180 #PK STALLS, 1, 1200
190 MISC., 1, 1
```

Each factor or item on which the adjustments for the comparables are to be made appears in this file as a separate line. Each of these lines contains three entries. The first entry is the name of the factor, the second is a type code which is either a one or two. The third entry specifies the rate at which adjustments on the market comparison method are to be made. The first factor in the file is always price and its type code is unique and always zero. The third entry for the price line is always one. The remaining lines are devised by the user to describe the factors which form the basis for comparison. The user may select up to twenty-five different factors.

Following the name of each factor is a type code. Type code 1 designates factors for which the adjustment to be made is specified in number of dollars. In the example, each additional parking stall is assumed to be worth an additional $1,200 and each additional square foot of building is assumed to be worth $11.00. Type two factors are those which are based

on a fraction of the sales price. In the example adjusted age provides
for adjustments on the basis of the age of the property where each addi-
tional year of age is associated with a 2% decline in price. This rate,
.02, is the proportion measured in relation to price of the comparable
being considered. Similarly each increment in construction quality is
associated with a 3% increase in value. In this case the factor, con-
struction quality, is subjectively determined and assigned to each com-
parable by the user. The last entry in the file, MISC, allows the user
to specify arbitrary adjustments for unique factors associated with
particular comparables. The format of this entry is consistent with all
previous entries in that a type code of one indicates a direct adjustment
(one not dependent upon the price of a comparable) and it is made at the
rate of $1.00 per unit described in the comparable file. The order of the
factors in the factor file must correspond to the order of the factors
described in the comparable and subject files.

The comparable file describes the "data base" which is being used in order
to obtain a valuation for the subject properties being processed. A
sample file called COMP is illustrated below:

```
COMP              02/15/72         20:15CST


100 111 1ST ST
110 31000, 71.00, 3, 5, 5, 3, 11160, 1500, 2, 0
120 222 2ND ST
130 24000, 71.25, 3, 8, 1, 4, 15000, 1150, 0, 0
140 333 3RD ST
150 26000, 71.75, 4, 6, 3, 2, 10060, 1200, 1, 0
160 444 4TH ST
170 35000, 72.00, 5, 3, 4, 3,  8800, 1800, 2, -750
180 555 5TH ST
190 29000, 71.50, 3, 8, 3, 3, 17640, 1300, 1, 0
200 666 6TH ST
210 26000, 71.00, 2, 5, 3, 2, 14380, 1300, 1, 0
220 777 7TH ST
230 23000, 69.50, 4, 5, 2, 2, 14480, 1100, 0, 0
240 888 8TH ST
250 32000, 70.75, 2, 2, 4, 4, 10340, 1600, 0, 0
260 999 9TH ST
270 26000, 71.75, 4, 6, 2, 3, 20820, 1300, 1, 0
```

This file contains nine fictitious comparables and each comparable contains
data items which correspond in order with those described in the factor
file. The first entry for each comparable must be an identifier. This
can be any series of alphabetic and numeric characters. Since the comma
character is used as punctuation, a comma is not permitted as part of the
identifier unless that identifier is also enclosed in "(the upper case of
the digit 2). The numeric variables describing the comparable follow the
identifier. The first of the numeric variables must be price; subsequent
variables are values for the factors named in the factor file. In the

sample shown above, the second factor is sale date measured by years.
(A quantity 71.75 is associated with September of 1971.) The fourth
comparable shows -750 as the entry for miscellaneous. This deduction of
$750.00 in value from this property was one determined by the user as
being associated with some factor not specifically described in the
factor file. For the sake of this example, we shall assume that it was
associated with a wet basement at 444 4th Street and this unique char-
acteristic is typical of the general purpose use.of the miscellaneous
factor.

It is not necessary that the identifier and numeric data appear on se-
parate lines. They may appear on one line provided that the identifier
is followed by a comma. The user will probably find that it is far
easier to check the validity of his data after it is prepared if some
relatively uniform format is followed for the entire comparable file.
Any departure from the required sequence of values, in this case one
identifier followed by ten numeric entries, will produce file reading
problems.

The third file required is subject file. A sample subject file is
shown below:

```
      SUBJ             02/15/72          20:17CST



   100 1234 E. MAIN ST
   110 00000, 72.50, 4, 6, 3, 4, 10000, 1350, 1, 0
```

The format of this file is identical to the format of the comparable
file. The subject file must contain an identifier, a price entry and
sufficient additional variables to complete the list specified in the
factor file. In this case ten numeric entries follow the identifier.
Since the price is almost never known for subjects which are being
analyzed using the market comparison method it will normally be entered
as zero. It may NOT be omitted.

Multiple subjects may be processed by including them in sequence in
the same subject file. They must each conform to the required format
and each will be processed in turn using the market comparison program.
Sample output is shown on the following pages. In running the program
the user is required to enter the names for the factor, comparable and
subject files.

The second entry required of the user is the selection of report items.
These are as follows:

1 - a list of the factors by name only

2 - a list of the comparable identifiers

3 - a detailed presentation of the adjustments made for each comparable

4 - a summary report showing the average and standard deviation of the price before and after adjustment together with the averages and standard deviations of the adjustments made for each of the factors.

5 - a list of each of the numeric items read from the comparable file. This list will be printed following the associated comparable identifier.

Output report items one, two, and five are included primarily to assist in detecting file construction errors for the factor and comparable files. File errors such as the omission of any entry, or the inclusion of an extra comma, will cause the program to fail. Unless additional information is provided the user is only told of the file which was being read at the time of failure. Report items one, two, and five show the results of the file reading operation as it progresses. Each item is printed after it has been successfully obtained from the file and any failure that occurs can be assumed to follow the most recent item printed. Report item four is printed whether it is selected or not.

Most of the output produced by this program should be reasonably self explanatory with the following exceptions; report section three which shows the individual adjustments made on each comparable will include the adjusted price for each comparable and also an item designated "T-RATIO" for this price. The T-RATIO designation is a statistical term and is used reluctantly and only because the real extate profession has no more familiar equivalent. The quantity measures the departure of each indivual prive from the average price in "normalized" terms. The magnitude of the value shown designates the number of standard deviations that the price shown is above (or below if it is negative) the adjusted average price for all the comparables. This measure is also used to eliminate certain comparables on the basis that they part too far from the standard established by the entire set of comparables.

Each comparable which has a T-RATIO larger than two (positive or negative) has an adjusted price which is greater than two standard deviations away from the main. After showing the average adjusted price and its standard deviation the program eliminates comparables with prices too far (T-RATIO>2) from the average and recalculates the average and standard deviation. The range between highest and lowest comparable for this reduced set of comparables is also printed.

The sample shown here is of course synthetic. It was created specifically to illustrate computations. The user may find that his adjustment process, when applied against real data, does not show the very desirable reduction of variation around the adjusted price created within this sample data set. The degree to which standard deviation of the r price is reduced by the adjustment process is a measure of the effectiveness of the market comparison method.

INSTRUCTIONS FOR USE OF EDUCARE MINI MOD
A Basic Real Estate Investment Model
February 1972

GENERAL INSTRUCTIONS

1. Mini Mod is designed to operate from an input file created by tape feed although the file can be teletyped directly by simply providing the line number and the required inputs as organized in the Mini Mod Work Sheet.

   MINI MOD IS INTENDED PRIMARILY AS A LOW COST TEACHING MODEL TO DEMONSTRATE PRINCIPLES OF CASH SIMULATION AND DOES NOT OFFER THE FLEXIBILITY, ACCOUNTING ACCURACY, OR SOPHISTICATED VARIATIONS WHICH MAY CHARACTERIZE COMMERCIAL SERVICES AVAILABLE ON GE TIME SHARING FOR REAL ESTATE ANALYSTS.

2. After standard log-in procedure, as illustrated below, type in NEW YOUR FILE NAME.

3. When terminal responds READY, push carriage return and type TAPE.

4. When terminal responds READY again, feed in tape file created according instructions on the following pages. When tape procedure is completed, remember to type SAVE (for reference on use of tape, see instructions titled "Paper Tape").

5. When the terminal types back READY, you now have two options; you may proceed directly to running OLD MINI MOD or you may first check the new file for errors by running a sub-routine called OLD MEDIT.

   A. For further instructions on MEDIT, see next page.
   B. If you choose to use OLD MINI MOD directly, type it in and when terminal responds READY, type RUN. The terminal will then ask for YOUR FILE NAME.

EXPLANATION OF DATA FILE WORK SHEET

1. To prepare case information before typing an input file for the tape, it is useful to follow the Mini Mod Work Sheet to assemble the basic financial assumptions. Once the file has been created in the computer, there is an opportunity after each run to change an assumption by calling out the file and changing any selected line of input. Note that to change one variable, it will be necessary to retype the line number and all variables in that line, as the computer will replace the entire statement in the old file.

2. The Work Sheet has been cut into small pieces below for explanation of each line of input and demonstration of where it may appear in the output of Mini Mod. Once the file has been created the user has the option of choosing any four years cash flow output from 1 to 40 years and of selecting from 1 to 7 different sections of analysis. These options are chosen after file is created as part of Old Mini Mod procedure and will therefore be treated after the explanation of file data. The user may Xerox copies of Mini-Mod input forms from the master copy provided with these instructions.

3. Output titles and project descriptions:

Project Description (Limit 28 characters)

01 | TEST- MOD - 24- UNIT - APT- CASE - 01 |

Name of User, date, etc. (Limit 28 characters)

02 | GREG - BRUHN- EDUCARE - JULY 13 - 71 |

Project Description can be an address, firm name, or building name or description of variable tested for a specific project such as "24-unit apartment - one loan." The label is automatically preceded on the output by the title words INVESTMENT ANALYSIS OF as this is programmed into the model. In the same way the name of the user, his account name and/or date are always preceded by a blank line containing the word FOR. An example of the title lines output is:

P R O   F O R M A
INVESTMENT ANALYSIS OF
TEST-MOD-24-UNIT-APT-CASE-01
FOR
GREG-BRUHN-EDUCARE-JULY13-71

Equity Discount Rate
| Opp. Cost of Equity Capital (rate)
| :   Marginal Income Tax Rate
| i

03   [.18] ,   [.12] ,   [.30]

      (1)   (2)   (3)

ENTER ALL RATES AND PERCENTAGES WITH A DECIMAL POINT!

1. The Equity Discount Rate is the yield (the Ellwood Y) rate at which the investor wishes
    to determine the present value of the equity returns, discounting all cash returns to the
    beginning of the first period. The rate is applied to determine two values - the net
    present value of before tax returns and of all after tax returns.

2. The cost of capital factor is the opportunity cost or reinvestment yield on cash recovered.
    Simple discounting for present value as represented by Equity Discount Rate does not assume
    reinvestment. The cost of capital permits a separate reinvestment assumption and produces
    an internal rate of return analysis. If opportunity cost is equal to equity rate, yield is
    a simple internal rate of return on the same basis as Inwood.

3. The Income Tax Rate is the marginal rate assumed by the investor.

Number of Assets
  Number of Mortgages
    Staging Factor
      Staging Year
        Extraordinary Expenses
          Vacancy Rate
            Working Capital Loan Rate

04   $\boxed{7}$, $\boxed{4}$, $\boxed{0}$, $\boxed{0}$, $\boxed{7625}$, $\boxed{.05}$, $\boxed{.03}$

  (1)   (1)   (2)   (2)   (3)   (4)   (5)

1. Number of Assets and the Number of Mortgages must agree with the number of each given a name and inputted on the subsequent pages of the input form.

2. The Staging Factor permits an optional increase in gross rent, expenses, and real estate taxes due to an increase in rentable area provided for in the Component Description and Mortgage Description cards Starting Year column. Indicate year increase is to take effect in column marked "Staging Year" (1-9) DO NOT STAGE AFTER YEAR NINE! Both year and multiplier must be coded but if staging option is used leave both coding spaces blank. Staging factor can produce misleading results as it is a linear increase which does not recognize fixed costs may fall when spread over a larger number of rental units.

3. Extraordinary Expenses can be used to deduct for high vacancies in first year, to eliminate excess rents in the first year, to recognize commissions for leasing space, to permit higher operating costs during a "shake down" year, etc. A negative extraordinary expense can recognize hidden profit centers in the first year such as contractors profit or profits taken on land but these profits will be taxed as ordinary income.

4. The Vacancy Rate is the percent of rent lost due to vacancy and turnover. For example, if an apartment has 10 units it has 120 monthly rental units. If 6 units turn over and are vacant one month the vacancy rate is 6/120 or 5%.

5. The Working Capital Loan Rate is either the 90 day note rate at the bank or the equity discount rate reflecting the yield required on short-term advances of equity money.

Assets such as land and building, etc. must be defined on two separate Work Sheets due to the length of a line of input and the limitations of a standard teletype. For example the label in line 06 should match the financial information in line 07 on Work Sheet. It is important to match the labels (28 characters of asset description) with the dollar amounts and tax information on the second part of the Work Sheet. REMEMBER THE NUMBER OF ASSETS DESCRIBED (1-8) MUST AGREE WITH THE FIRST ENTRY ON LINE 04.

Asset Cost is the original basis for depreciation for the new owner. The total assets listed represent all capital outlays scheduled for the investment so it is important to indicate the year in which the outlay has been completed and thereby qualifies as a depreciable asset. The difference between the total assets in year 1 and total amount of mortgages at the beginning of year 1 represents cash equity required at the beginning of year 1.

If an additional investment is made without provision for adequate additional financing, equity cash is assumed to increase. All other cash shortages are covered by automatic working capital loans. Refinancing surpluses are treated as after tax spendable cash and original cash equity is unchanged in yield calculations.

It is possible that purchase price may exceed depreciable basis. For example...if the owner is acquiring stock of a corporation which has depreciated its assets for several years prior to the new owner, asset cost should be the undepreciated balance and "useful life" will be the remaining useful life of the asset. The difference between depreciated value and purchase price should be indicated as an additional asset called "good will" which is 0% depreciable, just like land. The value of land which has been leased for the project should also be included as an asset so that it may appear as part of the mortgage components without creating finance ratios greater than 100%.

Asset Description

06 | LAND | Asset 1

08 | BUILDING | Asset 2

10 | PARKING | Asset 3

12 | FURNISHINGS | Asset 4

14 | ELEVATOR | Asset 5

16 | TRANSACTION COST | Asset 6

18 | 7TH YR REFURBISHING | Asset 7

Annual Gross Rent
　Rent Growth Rate
　　Annual Expenses
　　　Expense Growth Rate
　　　　Annual Real Estate Taxes
　　　　　Real Estate Tax Growth Rate
　　　　　Project Value Growth Rate

05 | 46 080 |, | .02 |, | 8400 |, | .02 |, | 9 000 |, | .05 |, | .01 |

　(1)　　(2)　　　(3)　　　(4)　　　(5)　　　(6)　　(7)

1. Annual Gross Rent is the base rent for the project after first year modifications and leasing (if any) are complete. Since this base rent may overstate rents for first year, the dollar value of overstatement should be included as part of extraordinary expenses in line 04.

2. Rent Growth Rate is a simple linear adjustment as a percent of the base gross rent above. It continues to increase rents for the entire forecast period. At present Mini-Mod does not permit trend to be modified once it is set.

3. Annual Expenses do not include real estate taxes. Expenses may include only cash outlay items or may include reserves for replacement and redecorating. In the first case you may with to include several incremental cost component outlays for remodeling and refurnishing as capital components (Asset) which start in some year other than year 1 as an alternative to regular maintenance and reserve allocation.

4. Expense Growth Rate, like the adjustment to gross rent, is linear and constant for full term of projection. Patterns of growth rates should be consistent; if rents are constant and expenses are expected to increase, project value rate of growth should probably decline.

5. Annual Real Estate Taxes are for the 1st year ownership or the base of an escalator clause, i.e., the point above which tenants pay the increase. In that case real estate growth rate would be 0.

6. Real Estate Tax Growth Rate reflects dollar tax increase average over several years to reflect both changes in the local mill rate and the pattern of updating assessments. In Madison the average annual growth in real estate taxes is exceeding 6% and an average increase of 5% a year is the typical minimum rate of tax increase in cities throughout Wisconsin.

7. Project Value Growth Rate is a constant annual rate. It reflects net change in sale value but since model does not show sales transaction costs, growth rate should be conservative and assumed net of selling costs.

1. Percent Assets Depreciable is limited by internal guidelines and choice of depreciation method. Depreciation methods which are straight line, or sum of the digits, or otherwise finite all require allowance for some salvage value. Declining balance methods never quite reach 0 and therefore may be based on 100% of asset cost. Nevertheless, consult IRS code for proper treatment.

2. Depreciation Method is indicated by the code indicated below which appears on each Work Sheet. At present Mini-Mod does not convert automatically to straight line at the optimal point as do commercial models and depreciation methods cannot be changed for any one run.

   Depreciation Method Codes

0 = no depreciation	4 = 150% declining balance
1 = sum of the digits	5 = 200% declining balance
2 = straight line depreciation	
3 = 125% declining balance	3

3. First Year Asset Is Used assumes asset is eligible for full 12 month depreciation as Mini-Mod assumes all capital outlays occur on the first of the year and all income and expenses flow through the books on the last day of the year. Only debt service is computed monthly and aggregated for annual total of interest and principal. 4. Useful Life is the IRS definition.

	Asset Cost	Percent Asset is Depreciable (1)	Depreciation Method (2)	1st Year Asset is Used (3)	Useful Life (4)	
07	40 000	O	0	1	0	Asset 1
09	165 300	1.00	3	1	35	Asset 2
11	7 200	.50	3	1	10	Asset 3
13	13 200	1.00	1	1	7	Asset 4
15	12 500	.80	3	1	12	Asset 5
17	1 800	1.00	3	1	35	Asset 6
19	10 000	1.00	1	8	7	Asset 7

PROJECT MORTGAGE INPUTS

1. Financing details of a real estate project, like assets, must be defined on two
    separate Work Sheets. For example, the label in line 22 should match the financial
    information in line 23 of the Work Sheet. REMEMBER THE NUMBER OF MORTGAGES
    DESCRIBED (1-6) MUST AGREE WITH THE SECOND ENTRY ON LINE 04.

2. Mortgage description items should include all means of financing the project
    except equity cash and may start at any time an asset is added, a loan is refinanced,
    or a project is staged. All loans are repaid on the last day of the year and new
    loans begin on the last day of the previous year in order to "wash out" cash flows
    on a refinancing.

3. There is capacity for six financing devices which may be described by the nature of
    the document (land contract, land lease, chattel, etc.), or by name of lendor, or
    any other title with not more than twenty eight characters, including spaces
    between words.

Mortgage Description (Limit - 28 characters)

22 | *FIRST ASSUMED MTG* | Mortgage 1

24 | *SELLERS 2ND MTG* | Mortgage 2

26 | *REFINANCED FIRST* | Mortgage 3

28 | *REFURBISH CHATTEL* | Mortgage 4

30 | | Mortgage 5

32 | | Mortgage 6

	Principal Amount	Monthly Payment	Interest Rate	Bonus Interest Rate	1st Year Mortgage is in Force	Last Year Mortgage is in Force	Term	Refinanced by Mortgage Number	
23	180000	0	.0775	0.	1	5	20	3	Mortgage 1
25	15000	0	.0850	0	1	5	10	3	Mortgage 2
27	170000	0	.0800	.04	6	10	20	0	Mortgage 3
29	10000	150	.09	0	8	10	0	0	Mortgage 4
31									Mortgage 5
33									Mortgage 6

The number of mortages described must agree with the second entry on line 4
page 1.

MORTGAGE FINANCE DETAIL SHEET (see example next page)

1. Principal Amount is the balance due on mortgages assumed, the original balance of a new mortgage, of the capital contribution of a leased asset. The latter might be the market value of a site ($100,000.00), the monthly payment $500.00, and the interest rate 6% so that nothing would ever be paid on principal.

2. Monthly Payment (1/12 annual debt service constant) is an optional input required where term of the mortgage (COL.7) is not known. By indicating a $1 monthly payment the program will treat the loan as a note and only interest will be paid annually (no principal payments).

3. Interest Rates are nominal constant annual decimal rates. 8.5% interest=.0850. Program assumes all financing is on a monthly basis. Points paid for financing should be handled as an extra expense with an asset specified for financing costs having no depreciation to correctly compute required cash equity and deductible expense in first year.

4. Bonus Interest should be stated as a percent of effective gross rents which must be paid to the lender. Bonus interest paid only if cash throw-off remains greater than zero and is included as an interest expense output item.

5. First Year Mortgage Is-In-Force and Last Year Mortgage Is-In-Force assume payments are made beginning with the first month of the year and ending with the last month of the year the loan is in force. If mortgage will exceed maximum forty year projection capacity, place a 40 for last year mortgage is in force.

6. Indicate full mortgage amortization term in years if there is no entry for "MONTHLY PAYMENT". Notice a balloon mortgage is possible by holding the last year mortgage is in force to the maturity date of the balloon while the "term" mathematically controls the rate of amortization.

7. When refinancing is to occur, indicate which new mortgage will replace a previous specific old mortgage. Otherwise if a loan matures during a projection period, final balance will apear in cash flow statement as "Principal Payment" and if it exceeds available cash, there will be an automatic working capital loan. If loan for staging is less than cost of capital asset component for that stage required, cash is changed to the equity cash account.

This program is designed to detect some fo the errors commonly made
in creating the numeric lines for "minimod" data files.

If your file contains no errors, the printout of the program will
appear as below:

    MEDIT   14:24CST , 02/17/72

    TYPE THF MINIMOD DATA FILE NAME? TEST2

    CHECKING NUMFRIC LINES:

    L 3

    L 4

    L 5

    L 7

    L 23

    CHECKING COMPLETED, DO YOU WISH TO RUN MINIMOD, Y OR N?? N
    PROGRAM COMPLETED.

    ,USED   2.20 UNITS

Note: Data file "Test2" contains only one asset and one mortgage
        therefore only lines 7 & 23 are shown.

If your file contains one or more errors, the printout will specify the
line number and all errors found within it.

The program checks for two classes of errors, first; those which would
always result in a failure of the minimod program and second; those which
might result in a failure and will probably result in incorrect analyses.
If no errors of the first type are found, the message "checking numeric
line:" will be printed followed by the successive line numbers as each
is checked for the second class of errors.

The following section is a listing of the errors in the order the
program detects them.

PROGRAM MESSAGES & DIAGNOSTIC PROCEDURES

Message   **Explanation**

"Type the minimod data file name?"

> This is the initial message received when running
> "minimod". Reply by typing your file name followed
> by a carriage return.

"Alpha in Num field"

> An alphabetic character was found in a field which was
> to be numeric. This program will however allow signs,
> punctuation, and the letter "E" which has a special
> use in some cases.
>
> Example:03.15, .15, .15
>
> In this example the second number contains an "I"
> where a "1" was intended.
>
> Carefully examine the specified data line for alpha-
> betic characters. Correct and replace. If none can be
> found, recreate the line taking particular care to enter
> "zero's" not "O's". An error that cannot be detected
> visually as the same character is printed for each.

"Blank-comma at Ch. #"

> This error results from following a number with a
> blank space and then a comma.
>
> Example: 03   .15,.15 , .15
>
> Carefully examine the line, locate the error, recreate
> the line, and replace it in your data file.

"Edit Program Terminated -- Correct Errors & Rerun"

> This message printed when either or both of the above
> error conditions exist in any line.

"Checking Numeric Line:"

> This message is received after checking for the first
> type of error is completed. No action is required.

"Range Exceeded - Var No #"

> The probable range for that variable, in that line, as
> defined in the program, has been exceeded. In most cases
> these ranges are not mandatory and your program will run
> as created. (See a list of the ranges in the next section.)

MEDIT 2

"Integer Expected - Var No #"

A decimal number has been detected where a whole number is required.

Examine the data line, locate the error, recreate the line, and replace it in your data file.

"Checking completed, do you wish to run minimod, Y or N?? N"

"Program completed"

Medit program terminated - minimod not run.

'Enter the Input file name? Your file name   Y"

Medit program terminated - minimod running.

III

RANGES OF VALUES
Value Number

Line No.	1	2	3	4	5	6	7	8
3	>-1.0	>-1.0	>0	-	-	-	-	-
	<+1.0	<+1.0	<+1.0	-	-	-	-	-
4	>0	0	0	0	-	0	0	-
	<+9	<+7	<+41	<+41	-	<=+1.0	<+1.0	-
5	-	>-1.0	-	>-1.0	-	>-1.0	>-1.0	-
	-	<+1.0	-	<+1.0	-	<+1.0	<+1.0	-
Asset Lines	-	>=0	>=0	>=1	>=1			
	-	<=+1.0	<+6	<=40	<=40			
Mortgage Lines	-	>=0	>=0	>=0	>=0	>=0	>0	>=0
	-	-	<=+1.0	<=+1.0	<=+40	<=+40	-	<=+6

> Greater than
< Less than
= Equal to
> = Greater than or equal to
< = Less than or equal to
< > Not equal to

```
OLD MINIMOD
READY
RUN


MINIMOD      16:03CST      02/23/72


ENTER INPUT FILE NAME?TDATA

ENTER 4 YEARS-SEPARATED BY COMMAS?1,2,5,10

ENTER "1"OR"0" FOR EACH OF 7 OUTPUT SECTIONS
"1"=PRINT,"0"=NO PRINT?1,1,1,1,1,1,1
```

P R O   F O R M A
INVESTMENT ANALYSIS OF
TEST-MOD-24-UNIT-APT-CASE-01
FOR
GREG-BRUHN-EDUCARE-JULY13-71

GROSS RENT	$ 46080.	RATE OF GROWTH OF GROSS RENT .0200
EXPENSES	$ 8400.	RATE OF GROWTH OF EXPENSES .0200
R E TAXES	$ 9000.	RATE OF GROWTH OF R E TAXES .0500
INCOME TAX RATE	.3000	RATE OF GROWTH OF PROJECT VALUE .0100
VACANCY RATE	.0500	WORKING CAPITAL LOAN RATE .0900
EQUITY DISCOUNT RATE0.1800		EXTRAORDINARY EXPENSES $ 7625.
STAGING YR(0),FACTOR 0.		COST OF EQUITY CAPITAL .1800
INITIAL COST $ 250000.		INITIAL EQUITY REQUIRED $ 45000.


```
MORTGAGE AMORTIZATION SCHEDULE FOR ---FIRST-ASSUMED-MORTGAGE---
MORTGAGE AMOUNT    180000.
INTEREST RATE      0.0775
MONTHLY PAYMENT    1478.
```

	INTEREST	PRINCIPAL		BONUS INT
YR	PAYMENT	PAYMENT	BALANCE	PAYMENT
1	13813.	3920.	176080.	0.
2	13498.	4235.	171846.	0.
3	13158.	4575.	167271.	0.
4	12790.	4942.	162329.	0.
5	12393.	5339.	156990.	0.

MORTGAGE AMORTIZATION SCHEDULE FOR ----SELLER-2ND-MORTGAGE----
MORTGAGE AMOUNT   15000.
INTEREST RATE   0.0850
MONTHLY PAYMENT   186.

	INTEREST PAYMENT	PRINCIPAL PAYMENT	BALANCE	BONUS INT PAYMENT
YR				
1	1237.	925.	14005.	0.
2	1149.	1083.	12922.	0.
3	1053.	1179.	11744.	0.
4	949.	1283.	10461.	0.
5	836.	1396.	9065.	0.

MORTGAGE AMORTIZATION SCHEDULE FOR ------REFINANCED-FIRST------
MORTGAGE AMOUNT   190000.
INTEREST RATE   0.0800
MONTHLY PAYMENT   1589.

	INTEREST PAYMENT	PRINCIPAL PAYMENT	BALANCE	BONUS INT PAYMENT
YR				
6	15055.	4016.	185984.	2028.
7	14722.	4349.	181635.	2064.
8	14361.	4710.	176924.	2101.
9	13970.	5101.	171823.	2138.
10	13546.	171823.	0.	2175.

MORTGAGE AMORTIZATION SCHEDULE FOR ------REFURBISH-CHATTEL-----
MORTGAGE AMOUNT   10000.
INTEREST RATE   0.0900
MONTHLY PAYMENT   150.

	INTEREST PAYMENT	PRINCIPAL PAYMENT	BALANCE	BONUS INT PAYMENT
YR				
8	862.	938.	9062.	0.
9	774.	1026.	8036.	0.
10	678.	8036.	0.	0.

DEPRECIATION SCHEDULE FOR -----------LAND------------
INITIAL COST   40000.
DEPRECIABLE COST   0.
DEPRECIATION METHOD   0
USEFUL LIFE   0

DEPRECIATION SCHEDULE FOR ----------BUILDING----------
INITIAL COST   177500.
DEPRECIABLE COST   177500.
DEPRECIATION METHOD   5
USEFUL LIFE   35

YR	DEPR TAKEN	UNDEPR BALANCE
1	10143.	167357.
2	9563.	157794.
3	9017.	148777.
4	8502.	140276.
5	8016.	132260.
6	7558.	124702.
7	7126.	117576.
8	6719.	110858.
9	6335.	104523.
10	5973.	98550.
11	5631.	92919.
12	5310.	87609.
13	5006.	82603.
14	4720.	77883.
15	4450.	73432.
16	4196.	69236.
17	3956.	65280.
18	3730.	61549.
19	3517.	58032.
20	3316.	54716.
21	3127.	51590.
22	2948.	48642.
23	2780.	45862.
24	2621.	43241.
25	2471.	40770.
26	2330:	38441.
27	2197.	36244.
28	2071.	34173.
29	1953.	32220.
30	1841.	30379.
31	1736.	28643.
32	1637.	27006.
33	1543.	25463.
34	1455.	24008.
35	1372.	22636.

DEPRECIATION SCHEDULE FOR ----------PARKING----------
INITIAL COST   7500.
DEPRECIABLE COST   3750.
DEPRECIATION METHOD   3
USEFUL LIFE   10

YR	DEPR TAKEN	UNDEPR BALANCE
1	938.	6563.
2	820.	5742.
3	718.	5024.
4	628.	4396.
5	550.	3847.
6	97.	0.

```
DEPRECIATION SCHEDULE FOR --------FURNISHINGS---------
INITIAL COST          13200.
DEPRECIABLE COST      13200.
DEPRECIATION METHOD        1
USEFUL LIFE                7
```

	DEPR	UNDEPR
YR	TAKEN	BALANCE
1	3300.	9900.
2	2829.	7071.
3	2357.	4714.
4	1886.	2829.
5	1414.	1414.
6	943.	471.
7	471.	0.

```
DEPRECIATION SCHEDULE FOR ------TRANSACTION-COST------
INITIAL COST          1800.
DEPRECIABLE COST      1800.
DEPRECIATION METHOD       4
USEFUL LIFE              35
```

	DEPR	UNDEPR
YR	TAKEN	BALANCE
1	77.	1723.
2	74.	1649.
3	71.	1578.
4	68.	1511.
5	65.	1446.
6	62.	1384.
7	59.	1325.
8	57.	1268.
9	54.	1214.
10	52.	1162.
11	50.	1112.
12	48.	1064.
13	46.	1019.
14	44.	975.
15	42.	933.
16	40.	893.
17	38.	855.
18	37.	818.
19	35.	783.
20	34.	750.
21	32.	717.
22	31.	687.
23	29.	657.
24	28.	629.
25	27.	602.
26	26.	576.
27	25.	552.
28	24.	528.
29	23.	505.
30	22.	484.
31	21.	463.
32	20.	443.
33	19.	424.
34	18.	406.
35	17.	389.

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```
DEPRECIATION SCHEDULE FOR ----7TH-YEAR-REFURBISHING---
INITIAL COST            10000.
DEPRECIABLE COST        10000.
DEPRECIATION METHOD         2
USEFUL LIFE                 7

        DEPR      UNDEPR
YR      TAKEN     BALANCE
 8      1429.      8571.
 9      1429.      7143.
10      1429.      5714.
11      1429.      4286.
12      1429.      2857.
13      1429.      1429.
14      1429.         0.
```

CASH FLOW ANALYSIS

	1	2	5	10
GROSS RENT	46080.	47002.	49766.	54374.
LESS VACANCY ALLOWANCE	2304.	2350.	2488.	2719.
EFFECTIVE GROSS INCOME	43776.	44652.	47278.	51656.
LESS REAL ESTATE TAXES	9000.	9450.	10800.	13050.
LESS EXPENSES	16025.	8568.	9072.	9912.
NET INCOME	18751.	26634.	27406.	28694.
LESS DEPRECIATION	14458.	13286.	10044.	7453.
LESS INTEREST	15050.	14647.	13229.	14224.
TAXABLE INCOME	-10756.	-1299.	4133.	7016.
PLUS DEPRECIATION	14458.	13286.	10044.	7453.
LESS PRINCIPAL PAYMENTS	4915.	5317.	6735.	179859.
CASH THROW-OFF	-1213.	6669.	7442.	-165389.
LESS TAXES	0.	0.	1240.	2105.
CASH FROM OPERATIONS	-1213.	6669.	6202.	-167494.
WORKING CAPITAL LOAN(CUM BAL)	1213.	0.	0.	167494.
SPENDABLE CASH AFTER TAXES	0.	5347.	6202.	0.
TAX SAVINGS ON OTHER INCOME	3227.	390.	0.	0.

	1	2	5	10
MARKET VALUE	240000.	242400.	249600.	271600.
BALANCE OF LOANS	191299.	184768.	166055.	167494.
NET WORTH OF PROPERTY	48701.	57632.	83545.	104106.
CAPITAL GAIN	7384.	17167.	46518.	99479.
CAPITAL GAINS TAX	1108.	2575.	6978.	14922.
INCOME TAX ON EXCESS DEPR	2122.	3893.	7235.	6884.

	1	2	5	10
PERCENT EQUITY PAYBACK AFT TAX	0.0717	0.1992	0.6316	1.4563
NET INCOME-MARKET VALUE RATIO	0.0781	0.1099	0.1098	0.1056
RETURN ON NET WORTH BEF TAXES	0.0553	0.3203	0.2228	-1.6860
RETURN ON NET WORTH AFT TAXES	0.0822	0.2513	0.2093	0.1956
CASH RETURN/CASH EQUITY BEF TAX	-0.0270	0.1482	0.1654	-3.3078
CASH RETURN/CASH EQUITY AFT TAX	0.0717	0.1275	0.1378	0.
DEFAULT RATIO	0.9763	0.8339	0.8005	3.9917
LENDER BONUS INTEREST RATE	0.	0.	0.	0.

	1	2	5	10
PRES VAL OF PROJ BEF TAXES	236272.	241180.	247483.	254557.
PRES VAL OF PROJ AFT TAXES	236270.	238600.	242339.	247793.
RETURN ON EQUITY AT .1800 0/0	0.0822	0.1615	0.1920	0.1871

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