

JAMES A. GRAASKAMP COLLECTION OF TEACHING MATERIALS

V. INDUSTRY SEMINARS AND SPEECHES - SHORT TERM

I. Other Presentations In Which Either The Date And /
Or Sponsoring Organization Is Missing

5. Market Analysis/Urban Economics/Real Estate
Process

k. "Market and Merchandising Feasibility",
for MBA Income Property Financing
Conference, no date

MARKET AND MERCHANDISING FEASIBILITY

MBA Income Property Financing Conference

Instructor: Professor James A. Graaskamp, CRE, SREA
University of Wisconsin School of Business

I. Basic Concepts and Definitions

- A. Real estate is a tangible product - defined as artificially delineated space with a fourth dimension of time referenced to a fixed point on the face of the earth.
1. Real estate is a space-time unit, room per night, apartment per month, square foot per year, tennis court hours, or a condominium for two weeks in January at a ski slope.
 2. To the space-time abstraction can be added special attributes to house some form of activity.
 3. Improvements from survey market to city layouts to structures define space.
 4. Legal contracts and precedents define time.
 5. Rights of use are defined by public values, court opinions.
 6. Private rights to use are those which remain after the public has exercised its rights to control, to tax, or to condemn.
- B. A real estate project is cash cycle business enterprise which combines a space-time product with certain types of management services to meet the needs of a specific user. It is the process of converting space-time needs to money-time dimensions in a cash economy.
1. A real estate business is any business which provides expertise necessary to relate space-time need to money-time requirements and includes architects, brokers, city planners, mortgage bankers, and all other special skills.
 2. The true profit centers in real estate are in the delivery of services and cash capital. Money is an energy transfer system.
 3. Equity ownership is the degree to which one enterprise controls or diverts cash from another real estate enterprise.
 4. Public has direct ownership to the degree real estate taxes take a percentage of tenant income in excess of service cost.
 5. Consumer must view space as a total consumption system involving direct cost, surface cost, transportation cost and negative income of risk.
 6. The best real estate project is the one which has the lowest net present value of cost as the sum of cost to the consumer production sector and public sector.

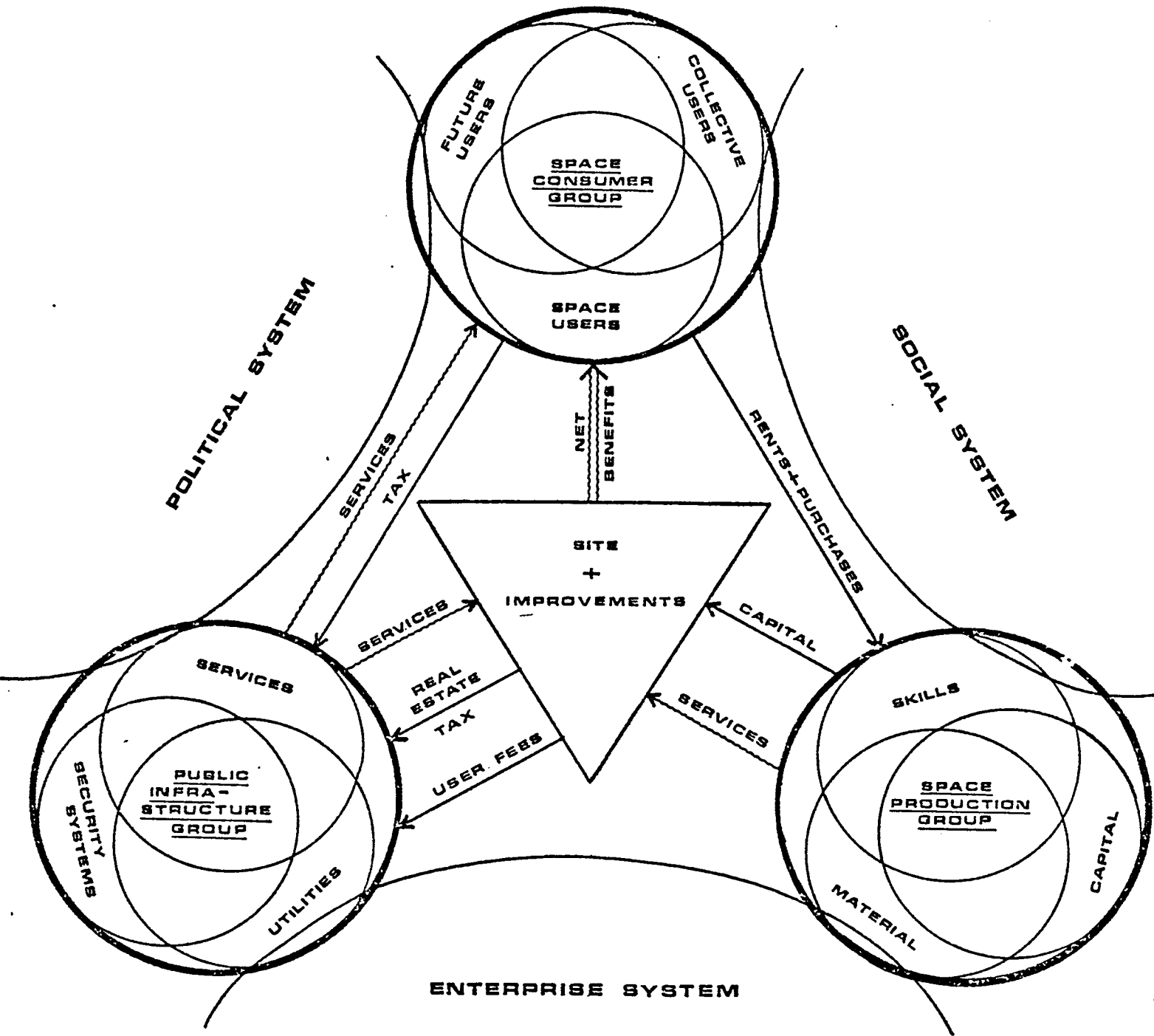
- C. The real estate process is the dynamic interaction of three groups, space users (consumers), space producers, and the various public agencies (infrastructures) which provide services and capital to support the consumer needs. (See Exhibit 1)
1. Each of these three decision groups represent an enterprise, an organized undertaking. All are cash cycle enterprises constrained by a need for cash solvency, both short and long term.
 2. A desirable real estate solution occurs when the process permits maximum satisfaction to the consumer at a price that he can afford within the environmental limits of land while permitting the consumer, producer, and the government cash cycle to achieve solvency - cash break even at a minimum, after full payment for services rendered.
 3. Solvency of the total process, not value, is the critical issue.
 4. Land is an environmental constraint and not a profit center.
 5. Land provides access to a real estate business opportunity and is not the opportunity itself. Real estate business wants to control land to create a captive market for services.
- D. Land is the point where demand and supply forces find cash solvency. Location is a manufactured attribute. Site attributes are exploited to reduce outlays and to increase receipts and include:
1. Physical attributes
 2. Legal-political attributes
 3. Linkage attributes
 4. Dynamic attributes
 5. Environmental attributes
- E. Recognition of the fact that profit maximization must be limited by concerns for physical environment and community priorities for land use has resulted in redefinition of the most basic concept in appraisal; i.e. highest and best use, in the authorized terminology handbook sponsored by the American Institute of Real Estate Appraisers and the Society of Real Estate Appraisers. Compare the 1971 definition with that for 1975:

Highest and best use concept-

"A valuation concept that can be applied to either the land or improvements. It normally is used to mean that use of a parcel of land (without regard to any improvements upon it) that will maximize the owner's wealth by being the most profitable use of the land. The concept of highest and best use can also be applied to a property which has some improvements upon it that have a remaining economic life. In this context, highest and best use can refer to that use of the existing improvements which is most profitable to the owner. It is possible to have two different highest and best uses for the same property: one for the land ignoring the improvements; and another that recognizes the presence of the improvements.:

p. 57, Real Estate Appraisal Principles and Terminology, Second Edition, Society of Real Estate Appraisers 1971.

Exhibit 1



THE REAL ESTATE PROCESS

"Highest and Best Use: That reasonable and probable use that will support the highest present value, as defined, as of the effective date of the appraisal. Alternatively, that use, from among reasonably probable and legal alternative uses, found to be physically possible, appropriately supported, financially feasible, and which results in highest land value. The definition immediately above applies specifically to the highest and best use of land. It is to be recognized that in cases where a site has existing improvements on it, the highest and best use may very well be determined to be different from the existing use. The existing use will continue, however, unless and until land value in its highest and best use exceeds the total value of the property in its existing use. Implied within these definitions is recognition of the contribution of that specific use to community environment or to community development goals in addition to wealth maximization of individual property owners. Also implied is that the determination of highest and best use results from the appraisers judgement and analytical skill, i.e., that the determined from analysis represents an opinion, not a fact to be found. 'In appraisal practice, the concept of highest and best use represents the premise upon which value is based. In the context of most probable selling price (market value) another appropriate term to reflect highest and best use would be most probable use. In the context of investment value an alternative term would be most profitable use.'"

Real Estate Appraisal Terminology, Edited by Byrl H. Boyce, Ph.D. SRPA, Ballinger Publishing Co., Cambridge, Mass. 1975

- F. The purchase of a piece of real estate today involves the acceptance of a great many assumptions about the future. Those who take care to validate these assumptions in a period of transition as to public land use control tend to have the most successful investment.
1. Business decisions today make explicit recognition of their assumptions and the need to act under conditions of uncertainty.
 2. Business risk is the difference between assumptions about the future and realizations, the proforma budget and the end of the year income statement.
 3. Risk management is the control of variance between key assumptions and realizations.
 4. An appraisal is a set of assumptions about the future productivity of a property under conditions of uncertainty.
- G. The concept of highest and best use of land was a commodity concept which did not consider externalities adequately. It is being replaced by concepts of most fitting use and the concept of most probable use.
1. The most fitting use is that use which is the optimal reconciliation of effective consumer demand, the cost of production, and the fiscal and environmental impact on third parties.
 2. Reconciliation involves financial impact analysis on 'who pays' and 'who benefits' - thus the rash of debate on how to do impact studies.

3. The most probable use will be something less than the most fitting use depending on topical constraints imposed by current political factors, the state of real estate technology, and short term solvency pressures on consumer, producer, or public agency.
 4. Most probable use means that an appraisal is first a feasibility study of alternative uses for a site in search of a user, an investor, and in need of public consent.
- H. In seeking the most fitting and most probable use, the inner city planner and private property appraiser must interact to determine how community objectives and consumer - production sector solvency can be achieved simultaneously.
1. A real estate decision has only two basic forms. Either a site is in search of a use and consumer with the ability to pay, or a consumer, need or use with a defined ability to pay is seeking some combination of space-time attributes he can afford.
 2. The individual consumer with needs and a budget is the drive wheel.
 3. The public sector represents the community owned consumer service delivery system, seeking to minimize marginal cost to the consumer and average cost to the community at large.
 4. The production sector responds to a derivative demand for engineering and management expertise.
- I. Critiquing the form and adequacy of a real estate solution is analogous to the artistic concept of judging the success of an art object by relating form of the solution to the context to which it was created.
1. Context includes those elements which are fixed, given, or objectives and to which any solution must adapt.
 2. Form giving elements are those variables within the artists control, i.e. options or alternatives at a particular time.
 3. A solution is judged for its correctness or success in terms of the degree of fit of the form proposed to the context.
 4. Feasibility analysis is concerned with the degree of fit or the extent of misfit between a proposed course of action and the context within which it must operate or fit.
 5. Success therefore depends on how appropriately the problem is defined; testing feasibility depends primarily upon accurate and comprehensive definition of the context.
- J. An enterprise is any organized undertaking, and a real estate problem or project always begins from the viewpoint of some enterprise relative to its environment.
1. The systems engineer sees the eventual form of an enterprise, in terms of both its configuration and behavior, as representing a negotiated consensus between two general sources of power--the power of the environment to dictate form and behavior of the organization on one hand and the power of the organization to decide for itself what its characteristics and behavior will be on the other.
 2. The system engineer uses "power of the environment" as a dynamic alternative to the static implications of context and adds dynamic element of behavior to the elective responses of the form giver.

II. Financial Management and Risk Management

Investment is a real estate enterprise as mortgage lender or equity investor is simply buying a set of financial assumptions about the interaction of the project to its context, of the firm to its environment. Real estate analysis is to control the variance between expectations and realizations, between proforma prospects and historical balance sheets and profit and loss statements.

- A. Analysis is risk management, control of variance.
- B. There are essentially two types of risk exposures:
 - 1. Static risks (uncontrollable, or external events) are those which can only cause a loss due to surprise upset of a plan.
 - 2. Dynamic risks (partially controllable internal events) can produce profit or loss and are best controlled by the finesse of management execution of a plan.
- C. Risk evaluation or comparison grows out of the function of risk management for an enterprise.
 - 1. Risk management has two objectives:
 - a. First priority - conservation of existing enterprise assets despite surprise events.
 - b. Second priority - realization of budgeted expectations despite surprise events.
 - 2. The process of risk management involves systematic and continuous:
 - a. Identification of significant exposures to loss
 - b. Estimation of potential loss frequency and severity
 - c. Identification of alternative methods to avoid loss
 - d. Selection of a risk management method
 - e. Monitoring execution of risk management plan
 - 3. The risk management process is both a philosophy of inquiry or analysis and a checklist of management concern, which is attempting to answer systematically 'WHAT IF...?' questions, to anticipate surprise and to provide for a response or adjustment in advance of the contingency.
- D. Identification of significant exposures to loss can begin by using standard business documents as reminders, such as:
 - 1. Review of balance sheet accounts
 - 2. Review of profit and loss statement accounts
 - 3. Review of business organization or function chart
 - 4. Review of elements of financial feasibility analysis
- E. Significant has to do with potential loss frequency, loss severity, and degree of uncertainty.
 - 1. Very frequent and minor become expense accounts
 - 2. Less frequent but predictable and major become reserves or budget allowances.

3. Infrequent, uncertain but very severe become issues of risk management.
 4. A 50/50 probability is the most uncertain outcome.
- F. The alternative methods of avoiding loss which everyone sub-consciously uses include:
1. Eliminate risk exposure
 2. Reduce frequency or severity of loss (diversification or mortgage loan closing process)
 3. Combine risks to increase predictability (reserves for expense)
 4. Shift risk by contract (subcontracts or escalator clauses)
 5. Shift risk by combination (diversification) by contract (insurance)
 6. Limit maximum loss (corporate shell or limited partnership)
 7. Hedging (sale and leaseback, options, contingent sales)
- G. Risk management concepts leads to understanding of the true essence of a mortgage contract and an equity commitment
1. A mortgage is a classic straddle in two markets for the borrower; it is a call on a space-time commodity in a rising market and a put to the lender in a falling market. It is also a straddle in the money market. The mortgage contract is a risk management agreement to provide coverage of static risks and an imperfect straddle on the dynamic risks. Protection for the lender is revenue to the borrower, negative incentives, and salvage.
 2. Equity ownership is the degree to which you can divert cash flow and maintain control within an acceptable level of risk avoidance.

III. Feasibility Analysis

- A. The concept of feasibility is elusive and much abused. Combining the systems concept of enterprise under conditions of uncertainty and the physical design concept of fit leads to the following definition:
- "A real estate project is 'feasible' when the real estate analyst determines that there is a reasonable likelihood of satisfying explicit objectives when a selected course of action is tested for fit to a context of specific constraints and limited resources.
- B. The problem of defining objectives and measuring success depends almost entirely on correctly defining the problem and values of the client.

The majority of enterprises are not solely interested in rate of return on investment or lowest cost.

Most decisions must fit a combination of success "measures" with each decision maker weighting the overall importance of each item differently. Examples of such measures would be:

1. A check list of physical attributes
2. A check list of critical linkage attributes
3. A check list of dynamic behavioral attributes

4. A check list of attributes or services (given weighted point scores)
 5. Financial ratios measuring risk, such as cash break-even, rate of capital recapture, loan ratios or sensitivity to specified contingencies
 6. Probability distributions of alternative outcomes and standard error of the estimate
 7. Psychological gratifications
 8. Specified legal attributes
 9. Measures of impact on environment
- C. The definition also implies uncertainty - a reasonable likelihood of succeeding. That statement is deliberately short of a statistical probability statement. However, analytical judgments can produce some verbal probability statements (that horse is a nag while the black stallion is an odds on favorite) so that the measures of success should lend themselves to explicit recognition of the degree of uncertainty with which success might be achieved.
- D. The general theory of the management process for any enterprise can be converted to real estate semantics for feasibility:
- | | |
|-------------------------------------|--|
| Values, objectives, policy | Strategic format |
| Search for opportunity alternatives | Market trend analysis |
| Selection of an opportunity | Merchandising target with monopoly character |
| Program to capture opportunity | Legal-political constraints |
| | Ethical-aesthetic constraints |
| | Physical-technical constraints |
| | Financial constraints |
| Construction of program | Project development |
| Operation of program | Property management |
| Monitoring and feedback | Real estate research |
- E. The analyst must also identify and measure or define the limited resources of the client in terms of personnel, expertise, available cash resources, and the time line of expectations and commitment since time available to achieve the solution is often a critical resource and constraint relative to alternative choices.
- F. These basic elements and definitions then lead to a correct title for the report required. Most feasibility reports go wrong on the title page because the analyst did not clearly understand to which elements of context and form his report was to be addressed. Seldom does the analyst do a complete feasibility study as a single report on his own. Components may be provided by others and the sequence of sets may differ in each case depending on how the consultant understands the client. Therefore, a report should be entitled as one of the following:
1. Strategy study: selection of objectives, tactics, and decision criteria.
 2. Market analysis: economic base studies or other related aggregate data review.
 3. Merchandising studies: consumer surveys, competitive property analysis, marketability evaluation, etc.
 4. Legal studies: opinion on potential legal constraints, model contracts or forms of organization, and political briefs.

5. Computability studies of project to community planning, conservation standards, or other public policies.
 6. Engineering, land planning, and architectural studies.
 7. Financial studies: economic modeling, capital budgets, present value and discounted cash flow forecasts, rate of return analysis, financial packages.
- G. Correctly defining the context in all its basic dimensions requires a generalist; an appraiser is a generalist. A feasibility study produces a set of parameters, a set of predesigned or preoperational specifications within which a program proposal should work. The analyst and his client should always remember that the second stage of the feasibility study will be confirmation of the feasibility assumptions and parameters by technical analysis and planning by the specialists.
- H. An appraisal is a forecast of productivity of a property relative to the needs of a certain buyer group and a prediction of the price at which it would sell to the most probable buyer.
1. Anticipation of an economic behavior by the buyer leads to the highest price he would be willing to pay.
 2. Anticipation of the behavior of the seller leads to an estimate of the least he would be willing to accept.
 3. Analysis of the influence of outside factors affecting price supply and demand leads to an estimate control tendency between buyer and seller maximum.
 4. The upper and lower ranges specify a transaction zone within which a most probable price will occur. The most probable sales price does not need to be at the center of the zone nor do the alternatives need to follow a normal distribution curve. The zone and the distribution most typically are statements of verbal probability.
- I. An appraisal is therefore a feasibility study of alternative courses of action and these alternatives are matched to the most probable user/investment group to be seeking such a property opportunity at that time.

The appraisal process as a feasibility study lends itself to the following logical process:

1. What is the problem for which the appraisal is to serve as a benchmark?
2. Which definition of value would best serve the decision process?
3. What does an inventory of site attributes reveal as to the positive and negative contributions of the site to alternative uses?
4. What does an inventory of improvement attributes existing on the site reveal as to the positive and negative contributions of the improvements to alternative uses?

5. What basic alternative use programs or scenarios may be considered as plausible alternatives motivating buyers as of the date of the appraisal?
6. Which alternative use appears to be the most probable use when screened by external factors including effective market demand, political controls, forecasting risk, and potential profitability as perceived by investor/buyers.
7. What is the profile of the most probable buyer/investor for the most probable use to the degree that the profile can define the search for comparable transactions?
8. Could the appraiser simulate the purchase guidelines of a most probable buyer group if there were no sales which were thought to be comparable and appropriate to the subject situation?
9. What is the value to be justified by the appraiser using normative, traditional measures of what a buyer should do, such as the cost approach or conventional income approach?

X. Introduction to Financial Analysis

Review of property attributes and identification of alternative uses which have potential for effective demand typically narrows the alternative for further consideration to those where potential revenue can support reasonable capital budget parameters. Initial financial analysis does not involve present value theory but rather progressive refinement of ratios and risk characteristics for consumers, producers, and the public infrastructure. Analysis which follows is concerned with only the private production and finance side of the equation.

A. There are two points of departure for analysis:

1. Given the capital budget, it is necessary to convert to the required rents necessary to support the project and cash return objectives. Specified budgets converted to required rents is often called the front door approach.
2. Given market rent per unit, it is necessary to establish the maximum justified capital budget. Targeted market rents converted to justified investment can be allocated to various development budgets and is called the back door approach.

B. Refer to the front door approach exhibit and example, oversimplified for purposes of illustration. (Exhibits 2-6)

C. Refer to the back door approach exhibit and example (Exhibits 7 & 8)

1. The back door approach is the preferred response to the market although lenders typically enter the scene after the capital budget is set.
2. Note that the back door approach can be driven by a default ratio or a debt cover ratio which are dynamic risk concepts rather than loan to value ratio which is a static regulatory concept.

C. The back door approach is the essence of the FHA 2013 form, state housing finance approach to projects where revenue is defined by the FMR rules, or even purchase of an existing property subject to long term rents, renovation, etc.

1. It is possible to detail the back door approach for any type of project by simply setting up tabs in a flow chart fashion as suggested by the example for a 236 project.
2. Another way to view the flow charts is in the nature of two basic programmable formulas:

$$\text{Gross rent} = \frac{\text{TRC} * \text{LTV} * \text{MC} + (1 - \text{LTV} * \text{CC})}{1 - (\text{ER} + \text{RET} + \text{VR} + \text{RR})}$$

$$\text{Justified project budget} = \frac{\text{GR}}{\frac{\text{LTV} * \text{MC} + (1 - \text{LTV} * \text{CC})}{1 - (\text{ER} + \text{RET} + \text{VR} + \text{RR})}}$$

Where:

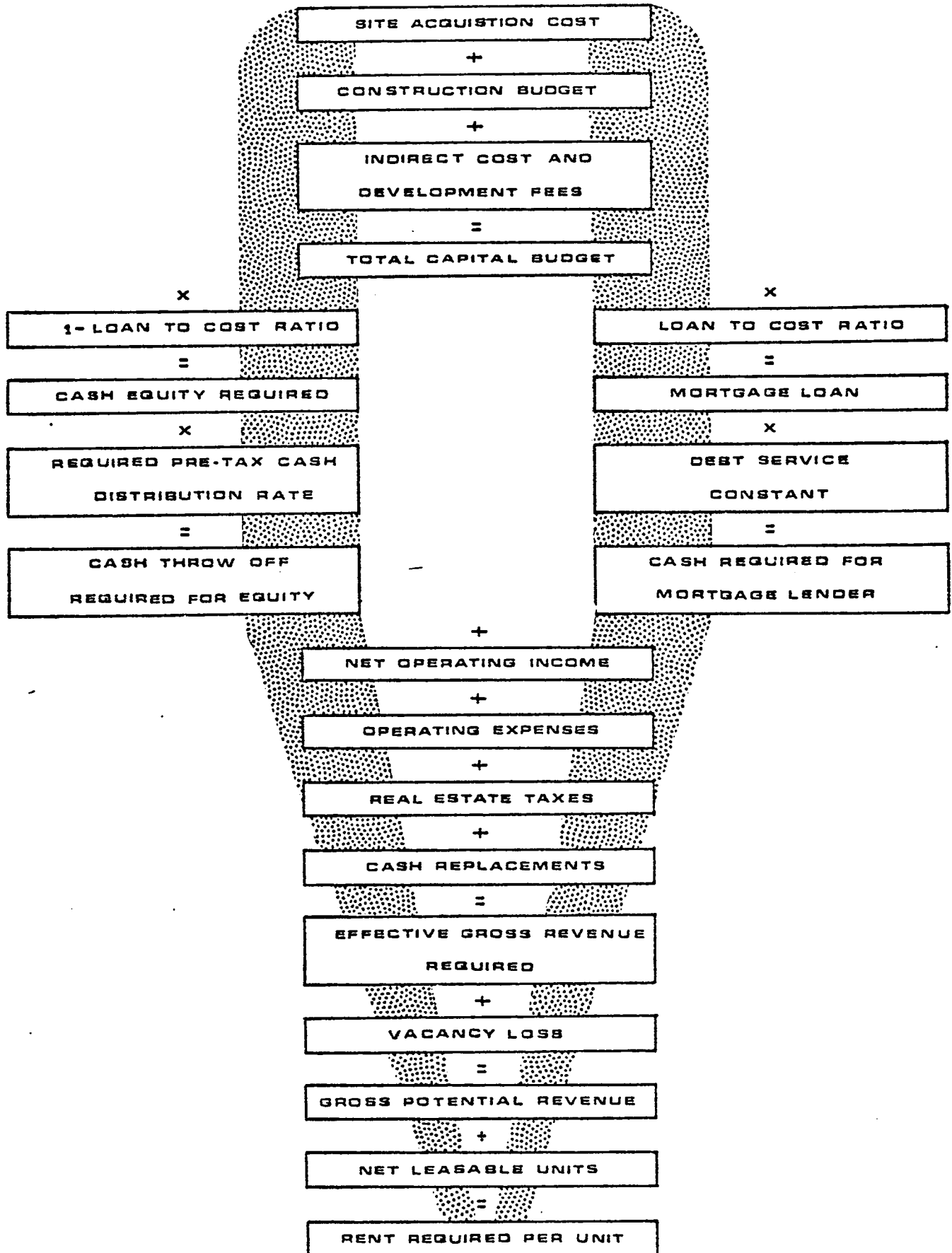
TRC = Total replacement cost; LTV = loan to value ratio

MC = mortgage constant; CC = Cash on cash for equity cash

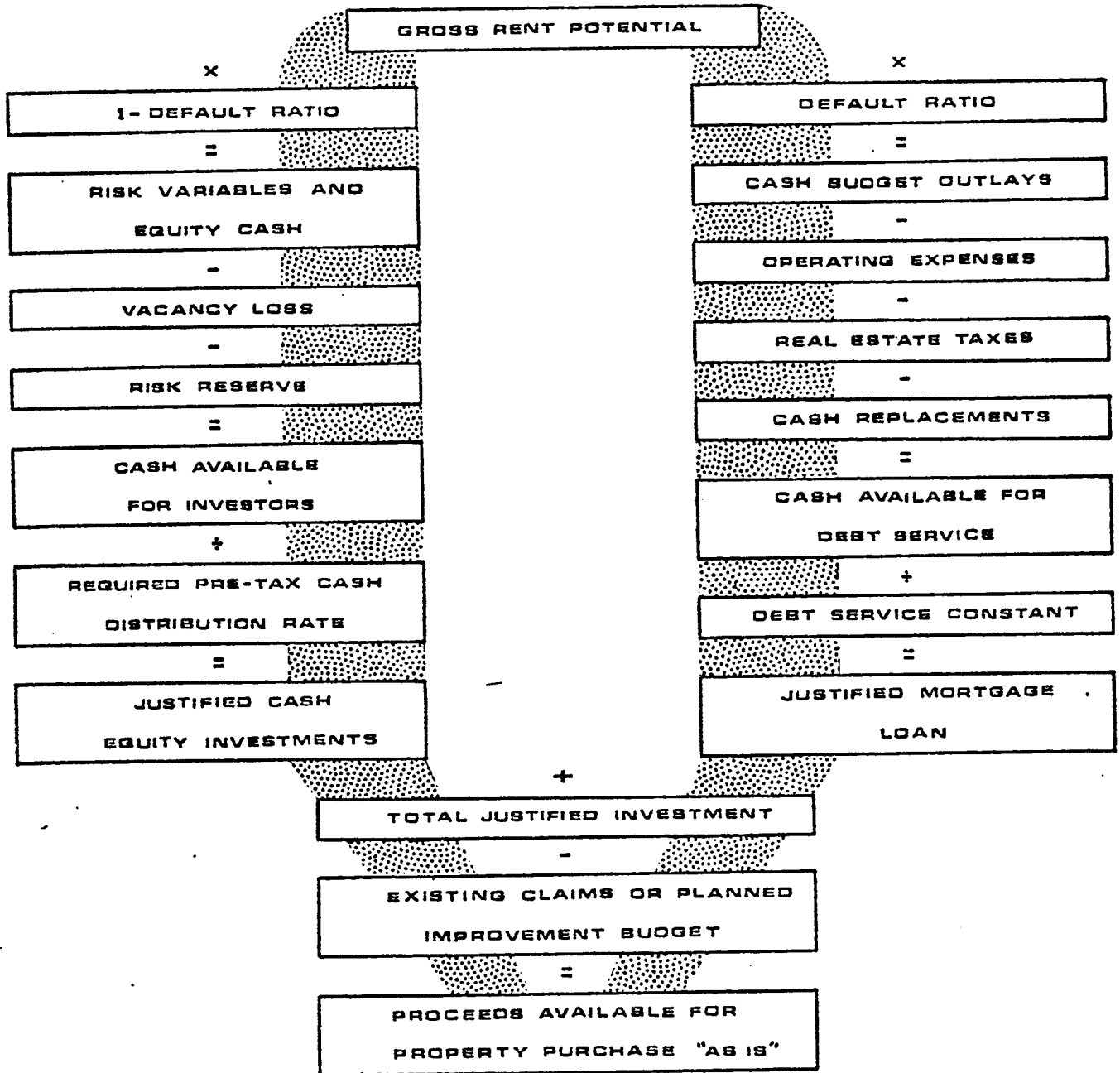
ER = expense ratio; RET = real estate tax ratio

VR = Vacancy ratio; RR = reserve ratio

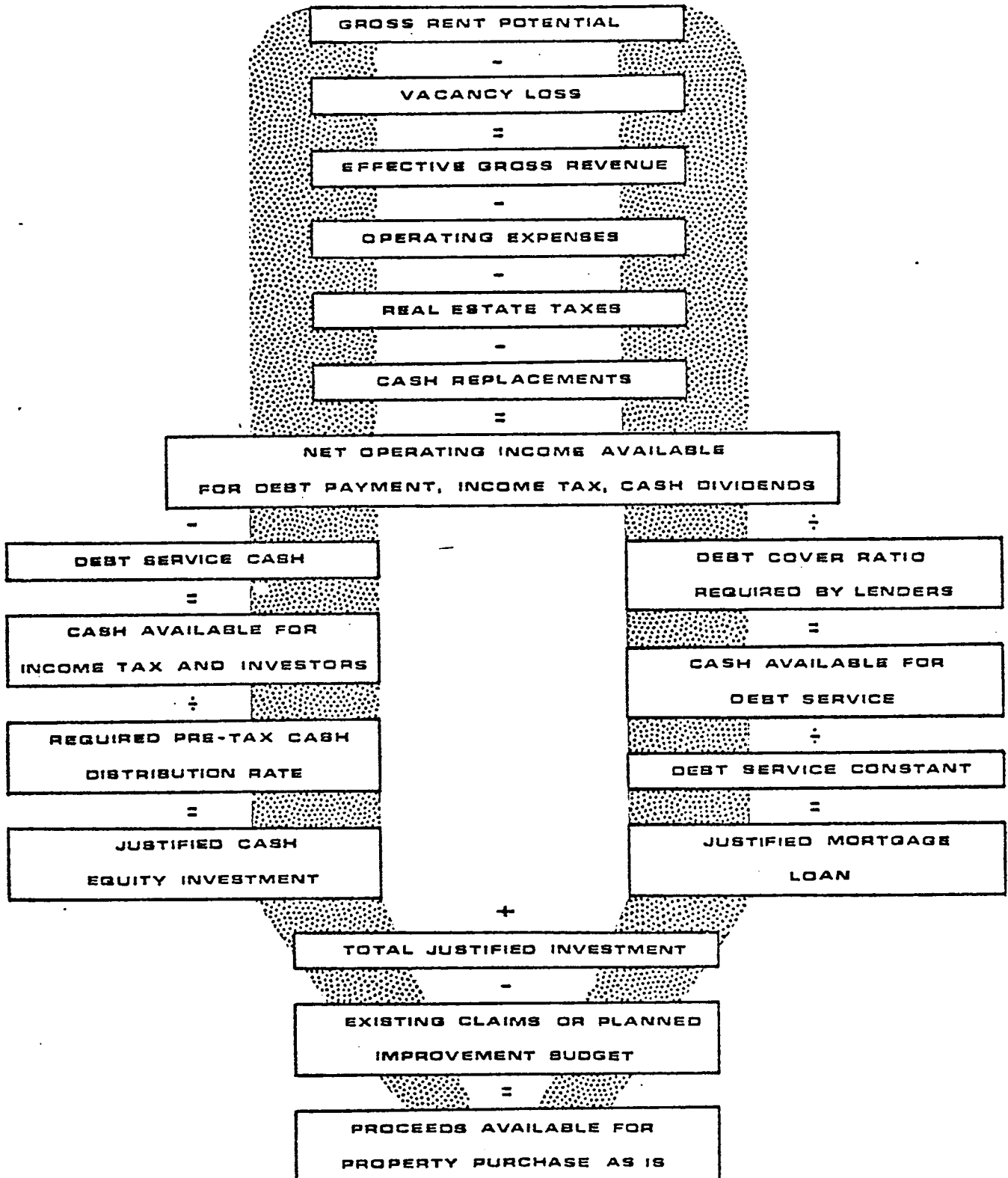
REVENUE REQUIRED BY CAPITAL BUDGET LOAN TO COST RATIO APPROACH



REVENUE JUSTIFIED CAPITAL BUDGET DEFAULT RATIO APPROACH



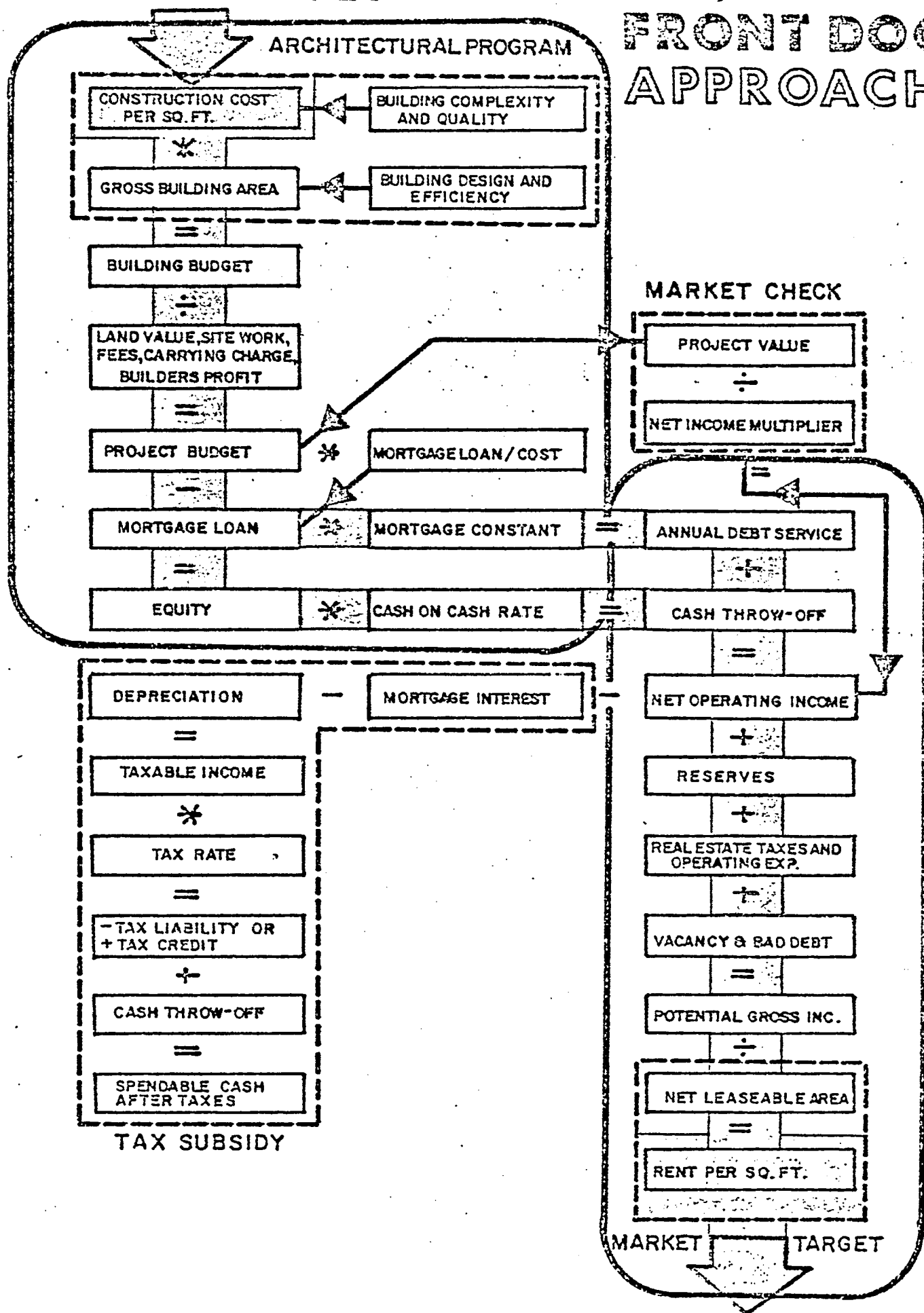
REVENUE JUSTIFIED CAPITAL BUDGET DEBT COVER RATIO APPROACH



CAPITAL BUDGET

Exhibit 5

FRONT DOOR APPROACH



OPERATING BUDGET

Exhibit 6
FRONT DOOR - MINIMUM RENT REQUIRED

\$20/sq. ft.

X

20,000 sq. ft.

=

\$400,000

÷

\$200,000

=

\$600,000

-

(80% LTV)

\$480,000	X	(.1025 constant)	=	\$49,200
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+

\$120,000	X	.07	=	\$8,400
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=

\$57,600

+

\$2,400

+

\$50,000

+

\$6,000

=

\$116,000

90%
NLA

÷

\$18,000

=

\$6.44-6.50/sq. ft.

Default ratio:

Debt service + expenses
Gross rent

$\frac{\$49,200 + 50,000}{\$116,000} = 86\%$

Payback before taxes:

Equity cash investment
Equity dividend

$\frac{120,000}{8,400} = 14+ \text{ yrs.}$

Debt cover ratio:

Net operating income*
Debt service

$\frac{60,000}{49,200} = 1.22$

* NOI = gross rent - vacancy - expenses

OPERATING BUDGET

Exhibit 7

BACK DOOR APPROACH

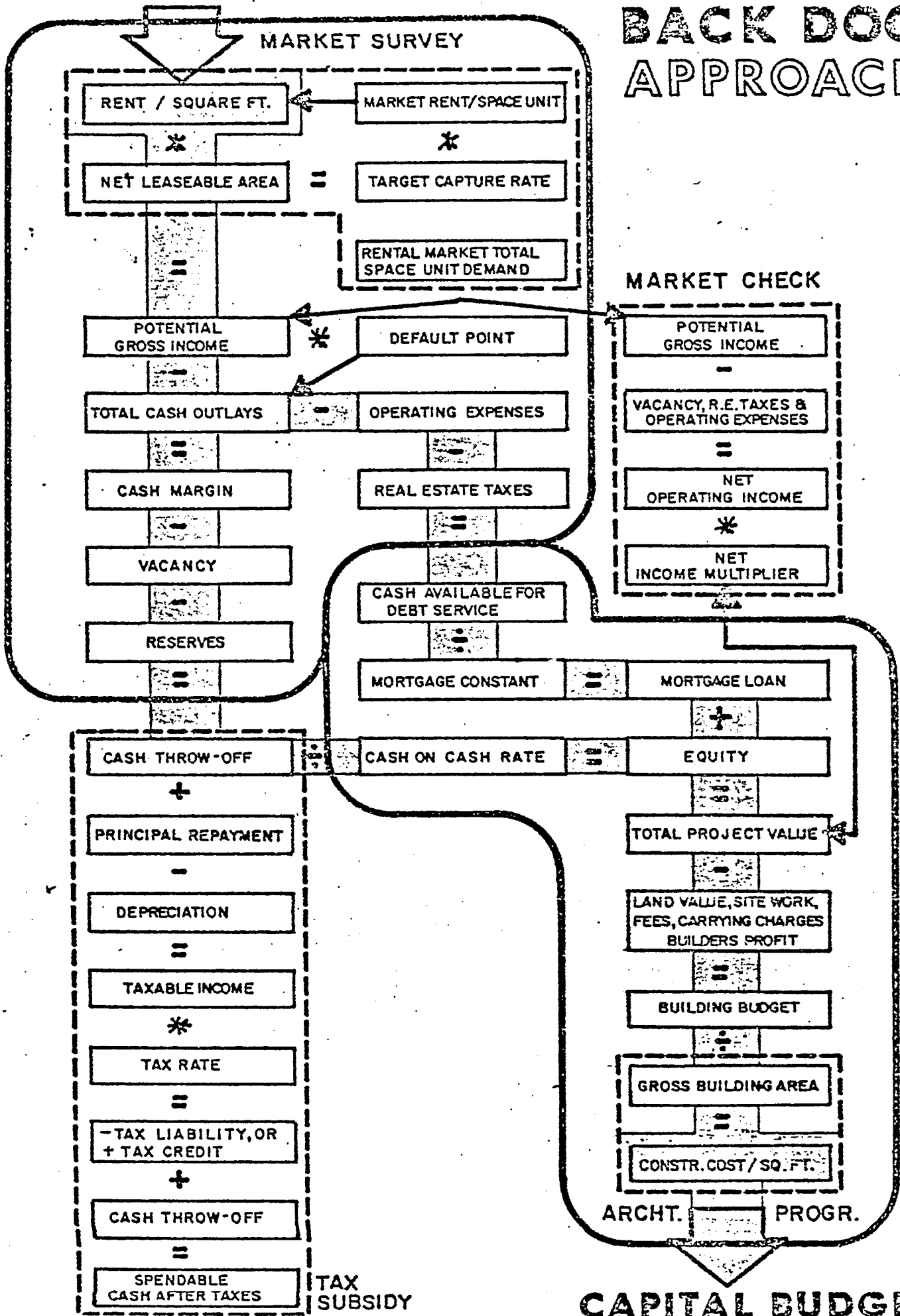


Exhibit 8

$$\frac{65,500}{47,200} = 1.39$$

- C. Preliminary financial analysis begins with a variety of ratios which are intended to reveal the tolerance of the project for variance in key assumptions, the ability absorb surprise, as well as dynamic risk. These ratios become the objective of further refinement through sensitivity analysis. Among the important ratios we have used so far are:

1. Absorption rate:

$$\frac{\text{Units sold or leased per period}}{\text{Total supply of units available for sale or lease}} = \text{Absorption rate}$$

2. Capture rate:

$$\frac{\text{Units in specific project sold or leased per period}}{\text{Total competitive units sold or leased per period}} = \text{Capture rate}$$

3. Vacancy ratio:

$$\frac{\text{Space unit} \times \# \text{ of units} \times \text{rental payment periods per year} \times \text{turnover rate} \times \text{rental payments lost} \times \text{rent}}{\# \text{ of units} \times \# \text{ of payments} \times \text{rent per period}} = (\text{gross rent})$$

$$1\text{-bedroom apartments} \times 20 \times 50\% \text{ turnover} \times 1 \text{ month lost} \times \$200/\text{mo.}$$

$$\frac{20 \times 50\% \times 1 \times 200}{20 \times 12 \times 200}$$

$$\frac{2000}{48000} = \frac{1}{24} = 4.2\%$$

4. Expense ratio:

$$\frac{\text{Expenses}}{\text{Gross rent}}$$

5. Net income ratio:

$$\frac{\text{Net income}}{\text{Purchase price} + \text{additional costs}} = \text{Overall rate or cap rate (should be = to debt service constant or higher)}$$

6. Debt cover ratio:

$$\frac{\text{Net operating income}}{\text{Debt service}}$$

7. Default ratio:

$$\frac{\text{Operating expenses} + \text{real estate taxes} + \text{short term debt} + \text{interest} + \text{principal payments}}{\text{Gross rent}}$$

8. Loan to value ratio:

$$\frac{\text{Mortgage loan balance}}{\text{Purchase price}}$$

9. Cash on cash:

$$\frac{\text{Net income} - \text{debt service} - \text{reserves} + \text{refinancing surplus}}{\text{Total capital budget} - \text{original mortgage balance}}$$

- D. Understanding the basic ratios leads to manual or data processing of sensitivity ratios; it is important to remember that projecting specific returns is not a forecast for the future; it is intended to be a basis for measuring the tolerance of the financial parameters for variance from the initial assumptions and identifying the thresholds of insolvency or incompatibility with competitive markets. Refer to John Nabors model in Exhibit .
- E. If project makes sense before tax, then it is useful to refine analysis for projections over time on an after tax basis.
1. Accounting tabs for after tax income (See Exhibit)
 2. Accounting tabs for after tax sale proceeds (See Exhibit)
 3. Basic pattern of after tax financial analysis requires a pattern of assumptions (See Exhibit)
- F. After tax spendable cash ratios include:
1. Distributable cash from operations:

$$\begin{aligned} &\text{Cash throwoff} \\ &\quad - \text{income taxes} \\ &\text{Cash from operations} \\ &\quad - \text{reserves} \\ &\quad - \text{repayment of working capital loans} \\ &\hline &= \text{Distributable cash} \end{aligned}$$
 2. Spendable cash attributable to real estate:

$$\begin{aligned} &\text{Distributable cash} \\ &+ \text{tax savings to other income} \\ &+ \text{surplus from refinancing} \\ &\hline &= \text{Spendable cash} \end{aligned}$$
 3. After tax sale proceeds:

$$\begin{aligned} &+ \text{return of working capital} \\ &+ \text{liquidation of sinking funds} \\ &\hline &= \text{cash reversion} \end{aligned}$$
 4. Return on net worth B/4 tax:

$$\frac{\text{Cash throwoff} + \text{change in net worth}}{\text{Net worth at end of previous period}}$$

5. Return on net worth after tax:

$$\frac{\text{Spendable cash} + (\text{change in net worth} - \text{change in taxes on sale})}{\text{Net worth at end of previous period} - \text{taxes on sale}}$$

6. Payback ratio:

$$\frac{\text{Cumulative spendable cash}}{\text{Original budget} - \text{original debt} + \text{amount of personal guarantees}}$$

- G. Precise definition of cash returns is critical in the negotiation of participating loans and partnerships

1. Defining effective gross, net income or cash throwoff with a participation loan
2. Defining base number in which general partner will share

PRO FORMA CASH FLOW TABLE

SENSITIVITY APT. DEMO

U. W. REAL ESTATE DEPT.

FIXED PARAMETERS

PAGE 11 OF 12

SITE : 2000. SQUARE FEET
 BUILDING : 700. SQUARE FEET
 EFFICIENCY: 85.00 PCT (595. SQ FT)
 LOAN RATIO: 75.00 PCT OF \$ 19500.
 LOAN : \$ 14625.
 EQUITY : \$ 4875.
 FINANCING : 30. YEARS 9.000 PCT
 REVENUE : \$ 6.00 PER SQ FT
 VACANCY : 5.00 PCT OF LEASEABLE
 GTR INCOME: \$ 174. ANNUALLY

DATE 2-14-1977
 BLDG 1

RUN 1

ANNUAL CASH FLOWS

LAND LEASE COST

\$ 100. \$ 150. \$ 200. \$ 250. \$ 300.

EXPENSE RATES
 ANNUAL \$/SQ FT

\$ 2.40	625.	575.	525.	475.	425.
\$ 2.64	483.	433.	383.	333.	283.
\$ 2.76	411.	361.	311.	261.	211.
\$ 3.00	268.	218.	168.	118.	68.
\$ 3.36	54.	4.	-46.	-96.	-146.

BREAKEVEN RENTAL RATES

LAND LEASE COST

\$ 100. \$ 150. \$ 200. \$ 250. \$ 300.

EXPENSE RATES
 ANNUAL \$/SQ FT

\$ 2.40	4.89	4.98	5.07	5.16	5.25
\$ 2.64	5.15	5.23	5.32	5.41	5.50
\$ 2.76	5.27	5.36	5.45	5.54	5.63
\$ 3.00	5.53	5.61	5.70	5.79	5.88
\$ 3.36	5.90	5.99	6.08	6.17	6.26

SENSITIVITY TABLE

SENSITIVITY APT. DEMO

U. W. REAL ESTATE DEPT.

FIXED PARAMETERS

PAGE 12 OF 12

SITE : 2000. SQUARE FEET
 BUILDING : 700. SQUARE FEET
 EFFICIENCY: 85.00 PCT OF GROSS
 LOAN RATIO: 75.00 PCT OF \$ 19500.
 EQUITY : \$ 4875.
 FINANCING : 30. YEARS 9.000 PCT
 REVENUE : \$ 6.00 PER SQ FT
 VACANCY : 5.00 PCT OF LEASEABLE
 PARK/OTHER: \$ 174. ANNUALLY
 EXPENSES : \$ 2.76 PER SQ FT
 LAND LEASE: \$ 100. ANNUALLY
 CONSTRUCTION AND LAND COST 19500.

DATE 2-14-1977
 BLDG 1

RUN 1

EFFECT OF SELECTED CHANGES IN PARAMETERS
 PARAMETER CHANGE INCREASE IN
 CASH FLOW

INCREASE BUILDING EFFICIENCY 1 PCT	21.
INCREASE RENTAL RATE \$.10 PER SQ FT	57.
DECREASE VACANCY RATE 1PCT	36.
DECREASE OPERATING RATE \$.10 PER SQ FT	60.
DECREASE PERMANENT RATE .25PCT	31.
DECREASE PERMANENT LOAN TERM BY 1 YEAR	-10.
DECREASE PERMANENT LOAN TERM BY 5 YEARS	-61.
DECREASE THE LOAN RATIO BY 5 PERCENT	94.
DECREASE LAND LEASE BY 10% 100.	

EQUIVALENT EFFECT TO YIELD
 A \$ 100. INCREASE IN ANNUAL CASH FLOW

INCREASE BUILDING EFFICIENCY BY	4.86 PCT
INCREASE RENT RATE BY \$	0.18 PER SQ FT
DECREASE VACANCY BY	2.80 PCT
DECREASE EXPENSE RATE BY \$	0.17 PER SQ FT
DECREASE PERMANENT RATE BY	0.79 PCT
INCREASE PERMANENT LOAN TERM BY	8.2 YEARS
DECREASE LOAN RATIO BY	5.3 PERCENT
DECREASE LAND LEASE BY \$	100.