JAMES A. GRAASKAMP COLLECTION OF TEACHING MATERIALS

V. INDUSTRY SEMINARS AND SPEECHES - SHORT TERM

A. Appraisal Organizations

11. 1981

a. "Real Estate Feasibility Analysis", sponsored by Duluth-Superior Chapter 183, SREA, April 10-11, 1981

Index

REAL ESTATE PROJECT
FEASIBILITY ANALYSIS

INSTRUCTOR
PROFESSOR JAMES A. GRAASKAMP, PH.D.

RADISSON-DULUTH HOTEL
5TH AVENUE WEST & SUPERIOR STREET

A TWO DAY SEMINAR

APRIL 10-11, 1981

VOLUME 4, JANUARY 19

SONJA CEKALLA, EXECUTIVE SECRETARY
DULUTH-SUPERIOR CHAPTER No. 183, SREA
216 FIRST FEDERAL SAVINGS BUILDING
DULUTH, MINNESOTA 55802

REAL ESTATE PROJECT FEASIBILITY ANALYSIS

This two-day seminar is intended to provide an understanding of the concept and the process of feasibility analysis as it is related to Real Estate projects. Various components that go into establishing the framework of feasibility studies will be discussed.

Career persons in finance, land development, construction, appraisal, architecture, engineering, real estate marketing, mortgaging, planning and other real estate related professionals will find the material presented in this seminar helpful in analyzing their land use planning objectives against various constraints and in developing courses of action for effective achievement of the established goals.

Conference Location:
Radisson-Duluth Hotel
5th Avenue West & Superior Street, Duluth, Mn.

This course is approved by the Commissioner of Securities pursuant to the Minnesota Statutes, Section 82.22 Subdivision 13, relating to continuing real estate education and is also approved by the Wisconsin Department of Regulation & Licensing, Real Estate Examining Board, and pending approval by Minnesota State Board of Assessors.

Accommodation:
Registrants requiring accommodation are requested to make their own arrangements at the hotel of their choice.

SCOTT A. LINDQUIST
EDUCATION COMMITTEE CHAIRMAN

PROGRAM

FRIDAY, APRIL 10

8:00 Registration, Distribution of Materials and Coffee
8:30 *Welcome and Introductory Remarks*
8:30 **Basic Concepts and Definitions**
—Real Estate Defined
—Real Estate Project
—Real Estate Process
—Highest and Best Use
—Real Estate Feasibility Defined
Financial Management
—An Investment Defined
—Risk Defined
—Kinds of Risks
—Risk Evaluation
—Significant Exposures to Loss
—Significant Loss
—Methods of Avoiding Loss
—Feasibility as Risk Management
10:15 Coffee
10:30 **Real Estate Decision Models**
—Alternative Outcomes
—Flow Chart
—Real Estate Models
—Model Requirements
—Model Constraints
—Models for Alternative Outcomes
—Context and Form
—Concept of Feasibility
—Defining Objectives
—Analytical Judgments
—General Theory
—Define Limited Resources
—Basic Elements and Definitions
What is the Problem as Perceived by the Client?
—Function of Appraisal vs. Feasibility
—Needs of Client
—Client Preferences and Assumptions
—Client Objectives
What as Understood by the Consultant?
—Feasibility Analyst Techniques
—Basic Classifications
—Audience Viewpoint
—Review of Elements
—Definition of Report
—Defining the Assignment
—Estimating Fees
12:00 Luncheon
1:00 **Establishing Project Financial Constraints**
—Advanced Front Door Approach
—Advanced Back Door Approach
—Backdoor Approach Format for Ranking Most Probable Use
—Cash Flow Pro Forma Using Parameter Norms
3:00 Coffee
3:15 **Testing Financial Flows**
—Pro Forma Cash Flow Table
—Sensitivity Table
—Pro Forma Investment Analysis of MR CAP Demo
—Partnership Investment Summary for Lean-2 *Homes*
—Partnership Investment Summary for Jack Jones

IGHLIGHTS

—Partnership Investment Summary for Real Estate Dynamics
—MR CAP Backdoor Demo
5:30 Adjourn

SATURDAY, APRIL 11

8:00 **The Basic Case:**
A Site in Search of a Market
—Identification of Attributes
—Site Analysis
—Static Attributes
—Legal Attributes
—Analysis of Static and Legal Attributes
—Linkage Attributes
—Dynamic Attributes
—The Real Estate Product
10:15 Coffee
10:30 **Selecting Market Targets or a Market Position Within a Defined Market Opportunity**
—Free Enterprise
—Marketing Program
—Marketing Hypothesis—Secondary Data
—Merchandising Target—Primary Consumer Data
—Competitive Standard
—Competitive Edge—Market Gap
12:00 Luncheon
1:00 **Introduction to Prospect Survey**
—Preliminary Hypothesis
—Housing Market Ratios
—Ratios
—Ratio Calculation
—Anxieties or Preferences
—Analyst Systems
—Preparation of Questionnaire
—Processing of Surveys
3:00 Coffee
3:15 **Telephone Survey to Improve Bidding Position on Turnkey Elderly Housing Project**
—Packet of Bid Instructions
—Joint Venture Proposal
—Basic Research Questions
—Survey Measurement Devices
—Sampling Criteria
—Response to Criteria
—Interview Sampling Plan
—Survey Results
—Sample Questionnaire
—Questionnaire as Consumer Profile
Generalized Format of Merchandising Report Summary
—Definition of Geographic and Demographic Market
—Definition of Principal Competitors
—Establishment of Merchandising Strategy Logic
—Definition of Prospect Target
Structuring the Feasibility Report
—Format of the Report
—Executive Summary
The Appraisal Report as an Agenda to Feasibility Analysis
—Suggested Appraisal Concepts
—Suggested Appraisal Report Outline
5:00 Adjourn

RETURN TO:

SONJA CEKALLA, Executive Secretary
Duluth-Superior Chapter No. 183, SREA
216 First Federal Savings Building
Duluth, Minnesota 55802

Enclosed is my check for ($100.00). Please reserve a space for me at the REAL ESTATE PROJECT FEASIBILITY ANALYSIS Seminar. Any registration later than April 3 will be subject to a $10 late surcharge.

Name _____ Telephone _____

Address _____

Note: Space is limited. Reservations accepted in order of receipt.

BUYER'S RIGHT TO CANCEL

Duluth-Superior Chapter No. 183, SREA, in compliance with Minnesota state law, declares the following as the refund policy of the organization:

1. Duluth-Superior Chapter No. 183, SREA will notify each registrant in writing of his or her acceptance or rejection, and if rejected a complete refund will be given.
2. Notwithstanding anything to the contrary, if the registrant gives written notice of cancellation within 5 business days of the date of the notice of acceptance, Duluth-Superior Chapter No. 183, SREA will refund all tuition paid by the registrant regardless of whether the seminar has started. Cancellation shall take effect on the date of delivery of the written notice of cancellation, or if delivered by mail, the postmark date of the written notice of cancellation.
3. If the registrant gives written notice of cancellation after 5 business days of the date of acceptance, but before the start of the seminar, Duluth-Superior Chapter No. 183, SREA will refund all charges, except fifteen percent (15%) of the total tuition charge, but not to exceed $50.00.
4. Duluth-Superior Chapter No. 183, SREA will acknowledge in writing any valid cancellation within 10 business days of receipt, and will make the refund due the registrant within 30 days of receipt of valid notice of cancellation.
5. If the registrant gives written notice of cancellation after 5 business days of the date of the notice of acceptance, and after the start of the seminar, but before the seminar is seventy-five percent (75%) completed, Duluth-Superior Chapter 183, SREA will retain the pro rata portion of all tuition charges that the length of the completed portion of the seminar bears to its total length, plus twenty-five percent (25%) of the total cost of the course of instruction, but not to exceed $100.00, and will refund the remainder of such tuition charges to the registrant. There will be no refund of tuition after seventy-five percent (75%) of the seminar has been completed.
6. The refund policy shall apply for whatever reason the cancellation is made.
7. The word "student" shall be construed to mean the student himself or herself, if he or she is the party to the contract, or his or her parents or guardian or another person, if the parent, guardian or other person is the party to the contract on behalf of the student.

Entrance Requirements
This seminar is open to anyone who is interested.

Attendance
No grades are issued.
Registrants must attend the entire seminar in order to receive credit.
Registrants are expected to comport themselves as professionals.
No credit is granted for previous training.

SEMINAR INSTRUCTOR

Dr. James A. Graaskamp is a Professor of Real Estate at the University of Wisconsin in the School of Business, Madison, Wisconsin, and current Chairman of the Department of Real Estate and Urban Land Economics.

He holds a Ph.D. in Urban Land Economics and Risk Management from the University of Wisconsin, Madison, Wisconsin.

Dr. Graaskamp's university teaching specialties include: Urban Land Economics, Undergraduate and Graduate Appraisal Theory and Method courses, Real Estate Investment and Finance, Real Estate Marketing Research, Residential and Commercial Property Development and Principles of Risk Management.

His research interests include: development of a variety of after-tax flow investment simulation models for real estate, research of innovative tax assessment techniques, recreational real estate development and techniques of feasibility analysis.

Dr. Graaskamp is a co-founder of a general contracting firm in Madison, a land development firm in Madison, and a farm investment corporation. He is a member of the Board of Directors of the Wisconsin Housing Finance Agency. His consulting work includes investment counseling in insurance companies and banks in Wisconsin, court testimony as expert witness, and projects for various Wisconsin municipalities as well as private investors. He is a co-designer and instructor of EDUCARE teaching program for computer terminal applications in real estate.

Dr. Graaskamp's professional designations include: Senior Real Estate Analyst—SREA, American Society of Real Estate Counsellors—CRE, College of Property Underwriters—CPCU.

Dr. Graaskamp has also published a number of monographs, reports and articles on the topics of real estate, land economics, housing, appraisal, real estate investment and development, including "A Guide to Feasibility Analysis" published by the Society of Real Estate Appraisers.

Sponsored by:

DULUTH-SUPERIOR CHAPTER No. 183
SOCIETY OF REAL ESTATE APPRAISERS
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SEMINAR
REAL ESTATE FEASIBILITY ANALYSIS

Duluth-Superior Chapter No. 183, SREA
216 First Federal Savings Building
Duluth, Minnesota 55802

Radisson-Duluth Hotel
5th Avenue West & Superior Street

April 10-11, 1981

SEMINAR OBJECTIVE

Real estate appraisers and mortgage lenders require a basic understanding of the relationship among appraisal reports, feasibility reports, and real estate counseling. The appraiser can find many opportunities to expand his services and justify more adequate professional fees if he can distinguish between assignments which require standard appraisal and those which require custom research and focus. There is often a wide gap between the probable price at which a property will sell and the price which a specific user should pay or the type of property a specific user should consider. This seminar will distinguish among the various functions and customer relationships which give rise to feasibility work and a systematic approach to inquiry on a feasibility type of assignment. It will also teach the mortgage lender, developer, or investor how to best contract for analytical real estate services.

COURSE SCHEDULE

First Day

8:00-9:00	Registration
9:00-10:15	Basic Concepts and Definitions -Concepts of the Real Estate Process -Concepts of Risk Management -Concepts of Feasibility Analysis
10:15-10:30	Coffee Break
10:30-12:00	Relationship With the Client -Defining the Problem to be Studied -Assigning Responsibility for Various Facts and Assumptions -Focusing the Report Product
12:00-1:00	Lunch
1:00-2:30	Site in Search of a Use -Systematic Site Analysis -Preliminary Definition of Market Alternatives
2:30-2:45	Coke Break
2:45-4:45	Preliminary Financial Analysis -Capital Budget Justified by Rent -Rents Required by Capital Budget -Financial Planning Around Cash Breakeven Point -Sensitivity Analysis

Second Day

9:00-10:30	Market and Merchandising Analysis -Definitions -Description of Alternative Methods Of Market Analysis -Limitations of Market Analysis
10:30-10:45	Coffee Break
10:45-12:00	Merchandising Research -Concepts -Basic Applications -Pitfalls
12:00-1:00	Lunch
1:00-3:00	Case Study Examples -Apartment House and Single Family Area -Mini Warehouse -Elderly Housing
3:00-3:15	Coke Break
3:15-4:00	Preparation of the Feasibility Report -Definition of the Feasibility Parameters -Limitations on Use, Etc. -Liability of the Appraiser -Responsibility for the Client
4:00-5:00	Question and Answer Session

LECTURER

JAMES A. GRAASKAMP is Professor of Real Estate, University of Wisconsin School of Business, and Chairman of the Department of Real Estate and Urban Land Economics. He received his Ph.D. in Urban Land Economics and Risk Management from the University of Wisconsin in 1964. He specializes in Undergraduate and Graduate Appraisal Theory and method courses, Real Estate Investment and Finance, Real Estate Marketing Research, Residential and Commercial Property Development and Principles of Risk Management. He holds professional designations of Senior Real Estate Analyst - SREA; American Society of Real Estate Counselors - CRE; and College of Property Underwriters - CPCU.

REAL ESTATE FEASIBILITY SEMINAR

Presented by Professor James A. Graaskamp, SREA, CRE
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 inclues 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.

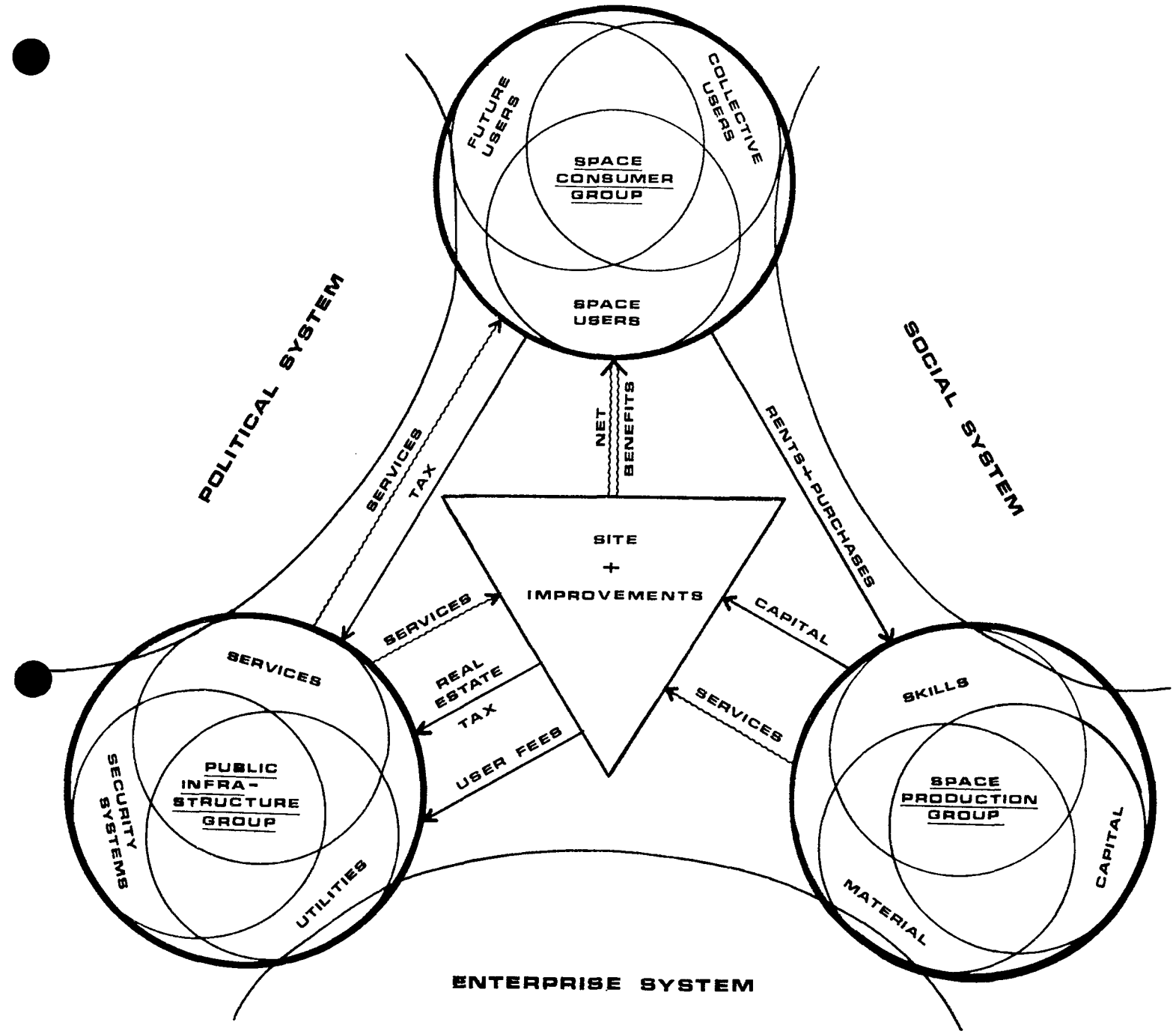
D. Land is the point where demand and supply forces find cash solvency. Location is a manufactured attribute. Site attributes are exploited to reduce outlays and to increase receipts and include:

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 N. 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 be 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 predicatable 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 subconsciously 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. Pshychological 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, analystical 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. Compatability 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 paramters, 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. Anticiaption 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 tne 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?

	Establish Goals	Select, Organize, Analyze, Facts	Understand and Test Concepts	Determine Needs	State Implications and Criteria
Physical (site) Location/Surroundings Landform Ecology Physical Characteristics	Physical Site Characteristics Landform Ecology Physical Impact Location/Surroundings	Roads Slopes Views Vegetation Geology/Soils Climate	"Holding Capacity" Ecological Stability Micro-Climate Food Chains Ecological Succession	Buildable Area Physical Limitations Ecological Analysis	Physical "Fit"
Functional (use) Areas Proximities Utilities/Services Catchments Circulation	Floor Area Utilities/Services Activities Proximity to Other Uses User Population	Area Parameters Catchment Statistics Time-Distance Parameters Traffic Parameters Utility/Service Parameters Vehicular Traffic Pedestrian Traffic	"Connectivity" Catchments Landuse Prototypes: linear superblock star/radial	Area Requirements Traffic Capacity Requirements Parking Requirements Catchment Requirements Utility and Service Capacities Proximity Requirements Access Requirements	Functional "Fit"
Social, Psychological Perception Human Sociology Historic Meaning Symbolic Meaning	Symbolic Image Psychological Effects Sociological Impact	Social Statistics Social Structure Behaviorial Data Perceptual Data Historical Data	"Life-Style" "Behavior-Setting" Sociopetal-Sociofugal "Paths, Nodes, Edges" "Barriers, Linkages"	Required "Behavior-Settings" Sociological Needs Psychological Needs Perceptual Needs	Social/Psychological "Fit"
Legal, Political Real Property Law Codes and Zoning Jurisdictions Power Groups	Ownership Forms Jurisdictions Political Associations Zoning and Covenants Political Strategies & Goals	Surveys Platting Requirements Code Restrictions Zoning Restrictions Deed Restrictions Easements Jurisdictions Power Groups	Co-ops Condominiums Air-Rights Advocacy Leasehold Joint-Venture Eminent Domain	Political Feasibility Legal Feasibility Required Building Envelope Ownership Requirements Required Rulings and Variances	Legal Political "Fit"
Economic Real Estate Economics Markets Funding/Financing Locational Economics	Profit Return Equity Market Characteristics Rents or Sales Volumes Funding and Financing Budget Economic Impact	Interest Rates Capitalization Rates Taxes and Land Costs Rents and Sales PSF Transportation Costs Economic Statistics Financing Ratios Utility Rates	Economic "Return" "Leverage" "Highest-Best Use" "Cost Sensitivity" Absorption Rates	Market Analysis Population Projection Investment Return Analysis Industrial Location Analysis Economic Impact Analysis Traffic Projections Cash Flow Analysis	Economic "Fit"

IV. What is the Problem as Perceived by the Client?

The original problem as perceived by the client is seldom the real issue of feasibility analysis that will need to be examined by the analyst.

A. The appraiser is conditioned to having the client specify the function of the appraisal, such as for fire insurance or eminent domain and then having the client's attorney or the court jurisdiction define the definition of fair market value, the question which the appraiser then begins to answer.

B. However, the client may ask for an appraisal when he needs a feasibility study. He may ask what he should pay for a piece of property before he has determined that his strategic needs are best met by purchase rather than by leasing by avoiding ownership of additional space altogether (by sub-contracting certain functions of others by the way in which he purchases services and supplies).

1. Since everyone is an expert on real estate the client will probably presume that a certain procedure will be followed.
2. The architect will presume that the real estate expert will show the financial implications of a final design, when in fact the real estate expert should first assist in the pre architectural program of design objectives.
3. Almost every client will overlook some of the basic issues because of the natural bias of his position.
4. The consultant must begin by attempting to discover what is taken for granted and that search will continue to condition his relationship ith his client.

C. When the client first contacts the consultant the question provided by the client will conceal some implicit client preferences and assumptions. The consultant will need to interview his client by asking him explicitly about:

1. His concept as to the "essence" of his business
2. His preferred method of meeting entrepreneurial risk
3. His preferred method of personnel compensation
4. His style of value decision trade-offs between qualitative and quantitative issues.
5. His perception of his risk position and his risk utility "curve."
6. His personal non-business objective.
7. His reasons for being involved with real estate (a simple question revealing in most cases tremendous naivete and lack of indepth preparation by the client).

D. The client is often skeptical of the ability of the consultant to contribute anything new since he may regard the consultant as one "who tells him the time by reading the client's own watch."

1. Moreover, he may be using the consultant to double check another source of information and therefore expects a consultant to begin from scratch as a way of confirming the original source.
2. Nevertheless, the feasibility analyst must eventually extract from the client, preferably in writing, an agreement as to what the stated objectives of the study are and the input which will be provided by others than the analyst.
3. This step will probably only be accomplished after the consultant has come to a better understanding of the real problems faced by the client.

V. What is the Problem as Understood by the Consultant?

The problem as perceived by the client almost always must be converted into a sequence of problems as understood by the consultant. The perceived question of "How much should I pay for the land," may come to be understood as "Why do I need to invest in land"?

A. The feasibility analyst should be the devil's disciple for in order to define what needs doing, he must first discover what has been done, what assumptions have been made, and whether those who made the assumptions knew what they were doing.

1. A useful technique is to reverse the question or the alternative in order to have better perspective on the assumed area of solution. If asked to organize a non-profit partnership to create a counseling facility, approach the problem as how to dissolve a partnership of non-profit contributors. If asked the feasibility of restaurant expansion, investigate the possibility of reducing the size of the kitchen instead.

2. To gain perspective, one creative think system (Synectics) recommends conversion of the familiar to the strange and the strange to the familiar by analogy. Thus any multi-user real estate becomes analagous to a retailing model while any single user real estate decision becomes an industrial location model.

3. Statement of the problem as a "compressed conflict" by describing it in two words which appear to be mutually exclusive or contradictory may be useful in understanding a problem. For example, customer control as "channeled freedom" or land use control has "fixed state of flux" can then lead to discovery of more remote analogies. Analogies serve as reiliminary models suggesting opportunity areas for a solution.

B. In search of the real problem as opposed to the initial problem perceived by the client, the analyst should retreat to some basic classification and task identification checklists. First there are only three alternative feasibility situations:

1. A site or a project owned by a specific client in search of a market.
2. An identified market segment or use in search of the site and project to be provided by a specific client.
3. A specific client desiring to search for an opportunity in real estate enterprise.

C. Next the analyst must know the viewpoint of the audience for his report, written or oral, because the elements considered important by a mortgage lender may be significantly different than those of a general partner or those of a limited partner or those of a large tenant.

D. Since there are so many facets to the context of a real estate project and measurement of its success, not to mention the assumptions on which the determination of feasibility depends, it is important to have the client agree on what elements of feasibility are to be provided by which expert or analyst.

1. Analyst should be an expert on experts
2. It is useful to include a standard checklist of components with a letter or proposal as that checklist later becomes the really significant portion of the statement of limiting conditions (hold harmless agreements) which are part of the final report. A sample of one such checklist is provided in Exhibit 2.

E. With a review of which elements are to be provided by which experts it then becomes possible to assist the client in choosing which report title or titles are properly the responsbility of the real estate analyst. (See 1.360)

F. With definition of the report expected and the information to be provided by others, the analyst can prepare a budget and a schedule for staging the report so that he and the client can begin to establish priorities both in time and money available for research to define the feasibility assignment on which the analyst is to proceed.

G. Despite the necessity of defining the assignment in light of the clients problem, it is necessary for the analyst to recall that he is to remain an independent analyst an advocate of his own opinion:

EXHIBIT 2 Feasibility Assignment and Accountability Worksheet
XYZ Appraisal Company
xxx Street Anywhere U.S.A.

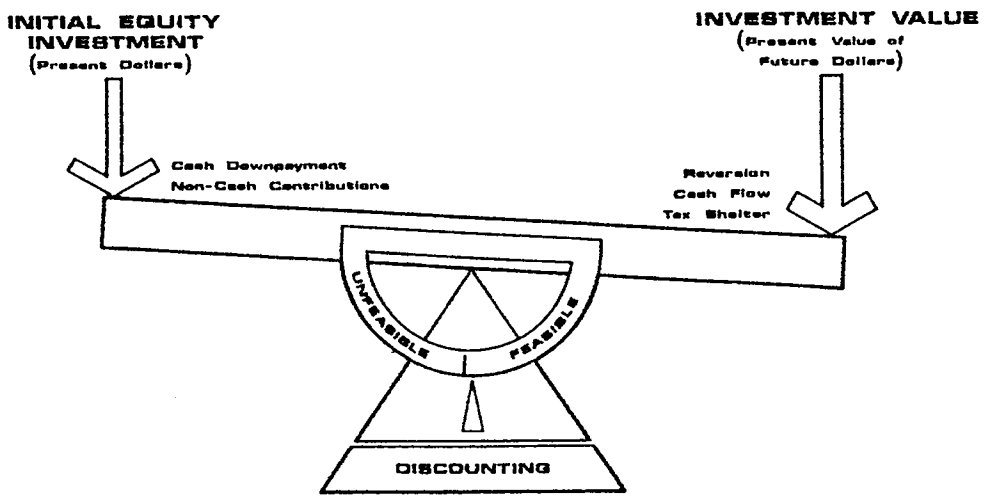
Name of Client _____ Date _____

Assignment Description _____

Feasibility Input	Provided by	Approved by	Sequence and date available
1. Definition of questions and strategic objectives			
2. Definition of success criterion			
3. Ranking of criteria by priority			
4. Definition of specific site			
5. Definition of market opportunity			
6. Space user profile			
7. Space consumer preference survey			
8. Space product definition			
9. Aggregate and market forecast and absorption rate			
10. Merchandising capture rate by product mix			
11. Legal and political constraints assumed for user and investor			
12. Site constraints and site development plan			
13. Architectural constraints and plans			
14. Environmental impact assumptions			
15. School district impact assumption			
16. Municipal infrastructure and revenue impact			
17. Aesthetic and social impact			
18. Land cost assumptions			
19. Improvement cost assumptions			
20. Indirect cost assumptions			
21. Operational cash-flow budget assumptions			
22. Income tax liability assumptions			
23. Financing and refinancing assumption			
24. Other			

Accepted by Client _____
(Date)

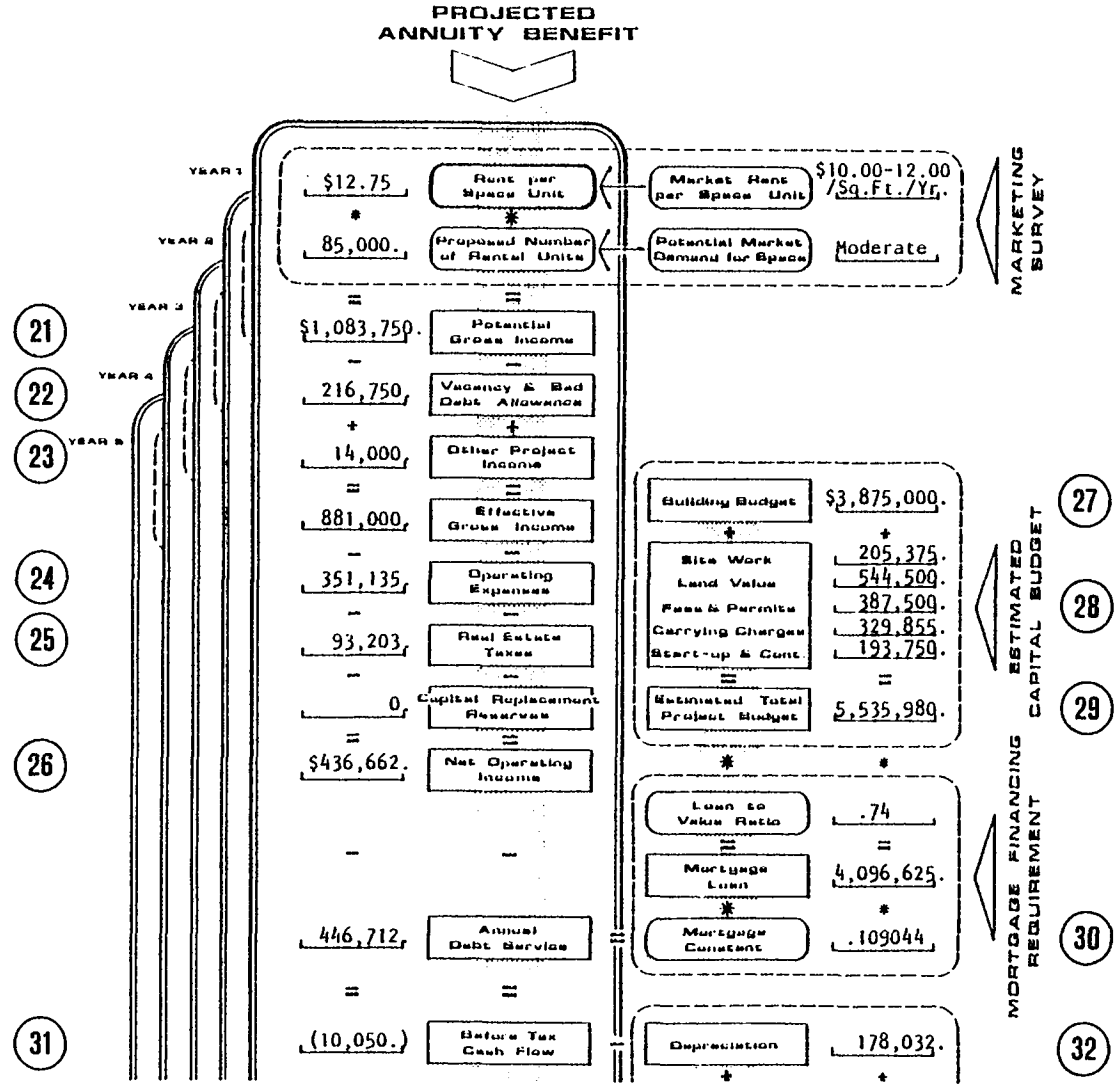
Worksheet suggested in part by John Rasmussen, Feasibility Research Group, 210 Michigan Theater Building, Ann Arbor, Michigan 48108.

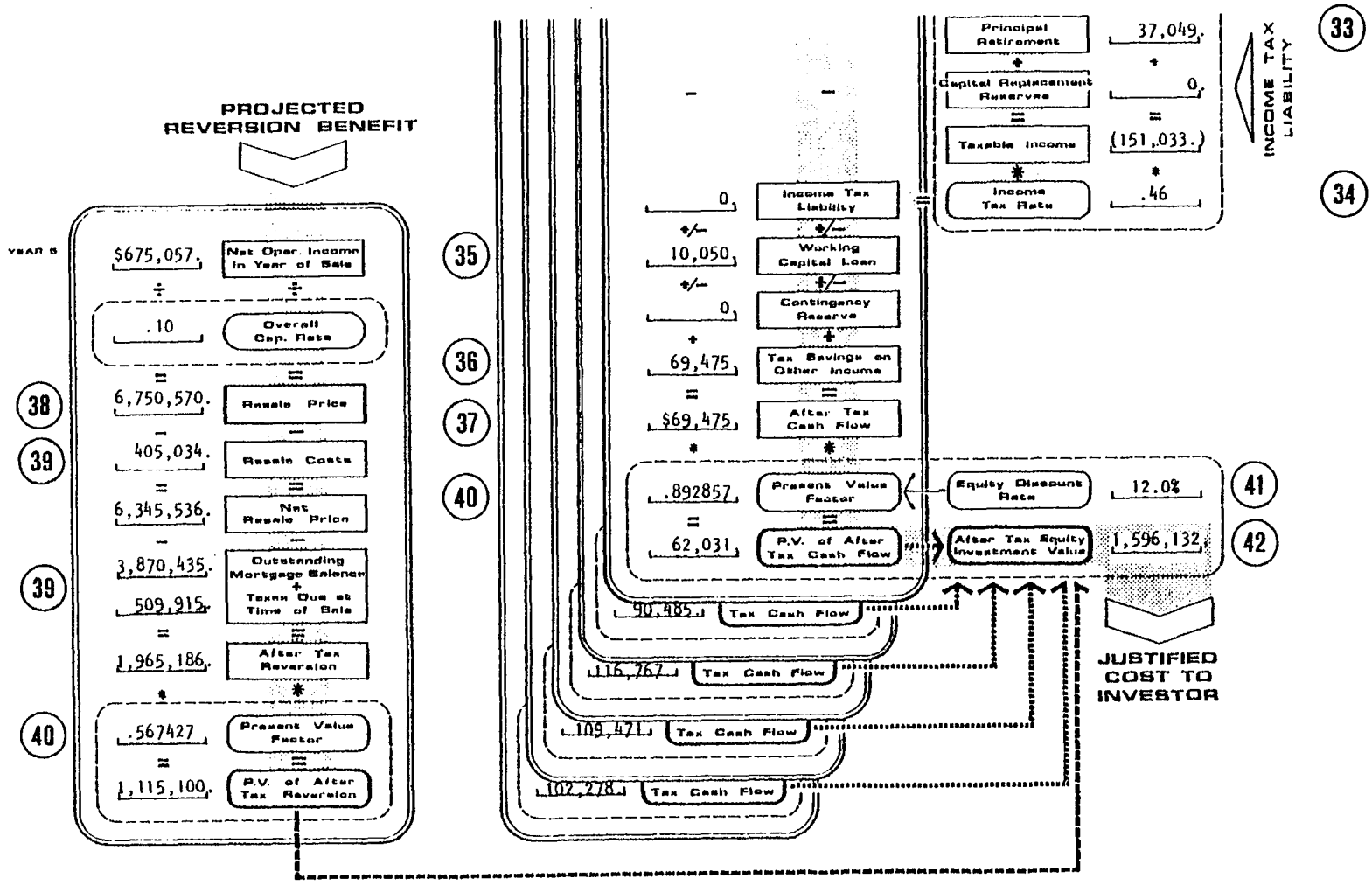


PROJECT INVESTMENT ANALYSIS

PROJECT INVESTMENT ANALYSIS

Flow Chart of the "INVESTMENT VALUE" Approach
Case Study





PROJECT INVESTMENT ANALYSIS:

Flow Chart of the "INVESTMENT VALUE" Approach
Case Study

FOOTNOTES

* Introduction: The initial, intermediate, and advanced project analysis models have proven very useful as a quick and effective data screening technique. The answers generated by these three sets of "static" analysis models should not be considered the final answer in the search for a feasible project solution, since they all suffer from a series of short comings, such as:

1. the inability to calculate project annuity benefits over a finite investment holding period.
2. the lack of an estimate of reversion resulting from the sale of the property at the end of the holding period.
3. the lack of any consideration for the influence of income or capital gains taxation on the investment benefits generated by the property.
4. the inability to vary or increase any of the revenue, vacancy, or expense items to account for changing market, management, or inflationary influences.
5. the lack of any credit in the calculations for equity build-up through principal retirement and property appreciation.
6. the limitation of stating the value of the project only in terms of the first year's returns to the investor, rather than by more accurately determining the sum of the present value of all annuity benefits and the present value of the reversion.

The data identified by the "static" project analysis models can now be used as the basis for the project investment analysis, which is capable of over coming all the short comings of the series of previous project analyses.

The Investment Holding Period for this calculation will be five complete calendar years.

Rounding of the calculations will be to the closest dollar figure.

(21) Potential Gross Income: is generated by a series of gross leases signed with a variety of tenants, each with average gross leaseable area allocation of 2,600 square feet. The lease terms are renewable on 3 to 5 year intervals. The average rental rate of $12.75 was established by refering to the results of advanced "front door" calculations.

$12.75/ sq. ft./ year average space rental
x 85,000. sq. ft. of gross leasable area
= $1,083,750. Potential Gross Income in the first year

Revenue Growth Rate: is assumed to be appreciating at a compound annual rate of 5% as a function of lease contract conditions.

FOOTNOTES

(22) Vacancy Allowance: for the project must take into consideration the rate of absorption for 85,000 square feet of project rental space in to the office space market. It is pessimistically assumed that the pre-leasing efforts of the developer will not result in total occupancy of the building by the time of project completion.

	Vacant Gross Leasable Area	Annual Vacancy Rate
Year 1	17,000 square feet	20%
Year 2	8,500 square feet	10%
Year 3 - 5	4,250 square feet	5%

(23) Other Income: may result from extra space rental charges, special fees, or billed building services. Income is expected to be received from the rental of storage space in one half (5,000 sq. ft.) of the unfinished basement of the office building. The 1978 national average of $2.80/sq. ft./year, has been identified in the BOMA 1978 Downtown and Suburban Experience Exchange Report. The growth rate in this space rental income will be 5% compounded annually.

(24) Operating Expenses: have been Indentified from the 1978 national data included in Tables #10,11,and 12. It is assumed that this data has been verified by reference to comparable projects in the local market as well as by recommendations of local property managers.

	Expenses expressed as a % of Potential Gross income in the first year	Actual dollar operating expenses in the first yr.
Insurance	.7%	$ 7,586.
Administrative	4.2%	45,518.
Operating expenses	14.3%	154,976.
Maintenance	11.5%	124,631.
Other expenses	1.7%	18,424.
	32.4%	$351,135.

Operating Expense Growth Rate: has been proven, by past trends, to be increasing at a rate greater than the revenue growth rate. It is estimated that the operating expense growth rate is seven and one half percent compounded annually. The type and conditions of the lease agreements, signed with the tenants, will have a strong influence on the project's sensitivity to this inflationary increase in expenses.

(25) Real Estate Tax: is still estimated to be 8.6% of potential gross income. The property taxes of $93,203. will increase at a compound annual rate of 7.5%.

(26) Net Operating Income:

Year 1	$436,662.
Year 2	561,181.
Year 3	637,039.
Year 4	656,054.
Year 5	675,057.

(27) Building Budget: is based on a structure with the following specifications:

Gross building area	100,000 square feet
Unfinished basement	10,000 square feet
Building height	10 stories (120 feet)
Building dimensions	50' x 200'

Reinforced concrete structure
Glass curtain wall w/ 25% aluminum pivot windows

The building construction cost per square foot of $38.75 was estimated by referring to the results of the advanced "Back Door" calculations.

Building Component	Component Cost Expressed as a % of Building budget	Actual Dollar allocation of component costs
Foundations	5.9%	$ 228,625.
Superstructure	16.1%	623,875.
Exterior walls	15.5%	600,625.
Interior partitions	8.0%	310,000.
Roofing	2.2%	85,250.
Interior wall finishes	3.5%	135,625.
Floor finishes	3.2%	124,000.
Suspended ceilings	2.6%	100,750.
Specialities	1.0%	38,750.
Conveying systems & equipment	3.3%	127,875.
Plumbing & fire protection	6.3%	244,125.
HVAC	16.3%	631,625.
Electrical	10.4%	403,000.
General conditions	5.7%	220,875.
	100.0%	$3,875,000.

(28) Non-Building Capital Costs: have been refined from previous estimates used to develop the project to building ratio.

Site Work:

	Site Work Cost Expressed as a % of building budget	Actual dollar allocation of component costs
Excavation	1.2%	$ 46,500.
Parking & Drives	3.1%	120,125.
Landscaping & Exterior Lighting	1.0%	38,750.
	5.3%	$ 205,375.

Land Value: (5 acres: expressed as 14.1% of building budget)

Building ground cover area	10,000 sq. ft.
Parking Area & drives (283 stalls @ 400 sq. ft. each)	113,333 sq. ft.
Landscaped Open Space (2/3 acre)	29,127 sq. ft.
Undeveloped land (1½ acres)	65,340 sq. ft.
Total Site Area	217,800 sq. ft.
Raw land cost/ sq. ft.	x $2.50/sq. ft.
Land Value	$544,500.

Fees & Permits: (expressed as a percent of building budget)

Architect's fees	6.0%	$ 232,500.
Accounting fees	1.0%	38,750.
Legal fees	1.0%	38,750.
Building permits & misc. fees	2.0%	77,500.
	10.0%	$ 387,500.

Carrying Charges: (on interim construction financing)

Project Construction Cost (Building Budget & Site Work)	$ 4,061,000.
Construction Loan Interest Rate	13.0% annually/ 1.083% monthly
Construction Period	15 months
Construction Cost	$ 4,061,000.
x 50% average balance outstanding	x .5
= average construction loan balance	2,030,500.
x construction interest rate for total construction period	x .16245
= construction loan carrying charges	$ 329,855.

Start-up & Contingency:
Start-up: handled by internal financing through the working capital loan.
Contingency: 5% of Building Budget = $ 193,750.

(29) Estimated Total Project Budget:

Capital Cost Items	Project/Building Ratio	Actual $ Cost
Building Budget	1.000	$ 3,875,000.
Site Work	.053	205,375.
Land Value	.141	544,500.
Fees & Permits	.100	387,500.
Carrying Charges	.085	329,855.
Start-up & Contingency	.050	193,750.
TOTAL	1.429	$ 5,535,980.

(30) Mortgage Constant: was determined by reference to Table #17, page C.8, Annual Mortgage Constant Trends. The mortgage interest rate was then identified for a 100,000 sq. ft. office building in Table #14, page C.6. The average mortgage constant, (.109) was then cross referenced against the mortgage interest rate (.098 rounded to .10) on Table #19, page C.9, Annual Mortgage Constants. This analysis resulted in the mortgage loan parameters:

Mortgage interest rate:	10%
Mortgage amortization term:	25 years
Mortgage constant:	.109044
Annual debt service:	$ 446,712.

(31) Before Tax Cash Flow:

Year 1	$(10,050.)	Year 4	$ 209,342.
Year 2	114,469.	Year 5	228,345.
Year 3	190,327.		
Year 4	209,342.		
Year 5	228,345.		

FOOTNOTES

(32) Depreciation: can be calculated on a composite basis with an accelerated (150%) rate or on a component basis using the straight-line (100%) rate. A comparison of both approaches indicates that the accelerated rate, with its troublesome capital gains recapture provision does not offer benefits equal to a well structured component depreciation schedule for the $4,991,480. in depreciable assets.

	Composite 150% rate	Component 100% rate
Year 1	$ 187,181.	$ 178,032.
Year 2	180,161.	178,032.
Year 3	173,405.	178,032.
Year 4	166,902.	178,032.
Year 5	160,643.	178,032.
TOTAL	$ 868,292.	$ 890,160.

Component Depreciation: breaks down the total depreciable basis into a series of distinct physical building component systems, each with its own basis, useful life, and depreciation rate. This approach may be used only where there is adequate documentation of the cost new and useful life of each of the separate component systems.

Component System	Useful life	% of Building Cost	Component Depreciable Basis
Building Sub & Superstructure			
Exterior & Interior walls	60 yrs.	45.5%	$1,763,125.
Roofing	20 yrs.	2.2%	85,250.
Interior Wall Finishes	15 yrs.	3.5%	135,625.
Floor Finishes	15 yrs.	3.2%	124,000.
Suspended Ceilings	15 yrs.	2.6%	100,750.
Specialities	25 yrs.	1.0%	38,750.
Conveying Systems & Equipment	25 yrs.	3.3%	127,875.
Plumbing & Fireproofing	30 yrs.	6.3%	244,125.
HVAC	25 yrs.	16.3%	631,625.
Electrical	20 yrs.	10.4%	403,000.
Site Work	15 yrs.	5.3%	205,375.
Other Related Capital Costs	60 yrs.	20.7%	802,125.
Construction Interest Costs	10 yrs.	8.5%	329,855.
TOTAL		128.8%	$4,991,480.

Depreciation Rate and Deductions: are the direct result of the previously stated depreciation data. The salvage value on tne component system will set the limit on how much depreciation may be claimed on a component. For example, the salvage value on site work is 50% of initial cost, although the annual depreciation deduction (.0667) may be calculated over 15 years, as if there is depreciation on the full value of the component. Once depreciation claims (50% over 7½ years) and salvage value (50%) equal the initial cost basis of the component system, no further depreciation can be taken on that item.

FOOTNOTES

Component System	Depreciation Rate	Component Depreciable Basis	Depreciation Deduction
Building Sub & Superstructure, Exterior & Interior Walls	.0167	$1,763,125.	$ 29,444.
Roofing	.0500	85,250.	4,263.
Interior Wall Finishes	.0667	135,625.	9,046.
Floor Finishes	.0667	124,000.	8,270.
Suspended Ceilings	.0667	100,750.	6,720.
Specialities	.0400	38,750.	1,550.
Conveying Systems & Equipment	.0400	127,875.	5,115.
Plumbing & Fireproofing	.0333	244,125.	8,129.
HVAC	.0400	631,625.	25,265.
Electrical	.0500	403,000.	20,150.
Site Work	.0667	205,375.	13,699.
Other Related Capital Costs	.0167	802,125.	13,395.
Construction Interest Costs	.1000	329,855.	32,986.
TOTAL		$4,991,480.	$178,032.

(33) Principal Retirement: may be calculated on an annual basis using the Mortgage Amortization Worksheet, page D.10; or by referring to Tables #21 - 24, pages D.16 -19. These tables have been constructed by determining the monthly amortization and then summing to an annual figure. As a result, the two approaches, which may be used to determine principal amortization, will yield slightly different answers.

(34) Income Tax Rate: for a corporate investor is determined by the following schedule:

Taxable Income	Income Tax Rate
Up to $25,000.	17.0%
$25,000. up to $50,000.	20.0%
$50,000. up to $75,000.	30.0%
$75,000. up to $100,000.	40.0%
Greater than $100,000.	46.0%

It is assumed that the corporate owner is generating taxable income, on these investments, of more than $100,000. This will mandate the use of the 46% tax rate for the analysis of tax liability on this project.

(35) Working Capital Loan: calculations are explained fully on pages 6.9 - 10 of the Handbook. The working capital loan will cover an operating deficit of $10,050. in the first year and will then require repayment of $11,457. in loan balance and interest out of the second year's Cash from Operations of $114,469.

(36) Tax Savings on Other Income: results from the tax credit created by the negative taxable income in years one and two. The amount of this

tax credit will be 46.0% of the negative taxable income.

	Taxable Income	Tax Savings on Other Income
Year 1	$(151,033.)	$69,475.
Year 2	(22,809.)	10,492.
Year 3	57,125.	0.
Year 4	80,623.	0.
Year 5	104,557.	0.

(37) After Tax Cash Flow:

Year 1	$ 69,475.
Year 2	113,504.
Year 3	164,049.
Year 4	172,255.
Year 5	180,249.

(38) Resale Price: estimation is very much a "crystal ball" operation if undertaken on an arbitrary basis. The most logical and consistent method of establishing the resale price of a property is to assume the potential purchaser will capitalize the income stream, to determine the market value (in the same manner as the intermediate project analysis models). The same overall cap rate has been used to estimate the future sale price as was used to determine the justified building cost/square foot, earlier in the analysis process.

(39) Liabilities Incurred at the Time of Sale:
Resale Costs: 6% of Resale Price
Outstanding Mortgage Balance: may be calculated on an annual basis using the Mortgage Amortization Worksheet, page D.10; or by referring to Tables #21 - 24, pages D.16 - 19. These tables have been constructed by determining the monthly amortization and then summing to an annual figure. As a result, the two approaches, which may be used to determine Outstanding Mortgage Balance, will yield slightly different answers.
Taxes Due at Time of Sale: can be calculated with the use of the Worksheet on page D.13. A more complete explanation of the calculation process can be found on pages 7.5 - 6 of the Handbook.
The problems of determining the capital gains tax have been greatly simplified by the use of the component straight-line depreciation method. For the purposes of simplicity, a 30.0% capital gains tax rate has been assumed for the corporate owner of the project.

(40) Discounting: of the annuity benefits (years 1 - 5) and the reversion (year 5) are accomplished through the use of the Present Value of a Reversion of One compound interest factors. These present value factors are found in column #4 of the Compound Interest Tables on pages 9.27 - 36 of the Handbook. A complete presentation of the derivation and application presentation of these factors is included in Chapter

3: "Income Capitalization" of the Handbook.

(41) Equity Discount Rate: Is the annual rate of return on equity (down payment) desired by the investor , and justified by yields on other comparable investment opportunities. A 12% equity discount rate has been selected since many major corporations use this figure as the "hurdle rate" for reviewing the investment feasibility of real estate investment properties.
The Internal Rate of Return will be later compared against the equity discount rate ot determine if the actual yield on the equity investment has met or exceeded the equity discount rate requirement.

(42) After Tax Equity Investment Value:

	P.V. of After Tax Cash Flow	P.V. of After Tax Reversion
Year 1	$ 62,031.	
Year 2	90,485.	
Year 3	116,767.	
Year 4	109,471.	
Year 5	102,278.	$1,115,100.
After Tax Equity Investment Value		$1,596,132.
- Initial Equity Contribution		- 1,439,355.
= Net Present Value		$ 156,777.

(2.8% of Total Project Cost, 4.0% of Building Budget)

This long and elaborate project investment analysis has determined that investment will generate at least a 12% return on equity benefits (annuity & reversion) slightly in excess of the original equity contribution of $1,439,355. This marginal value may be considered as an additional contingency against unknown risks, or it may be credited as additional return (beyond the desired 12%) to the investor.

* Internal Rate of Return: Is the equity discount rate which will generate an after tax equity investment value exactly equal to the equity contribution. The process for calculating IRR is presented on pages 8.8 -9 of the Handbook. A 14.6% equity discount rate will create this "exact" balance between the initial cost to the investor and present value of all equity benefits received during the holding period. The project will prove to be slightly more profitable than originally required in the analysis, if all project data input variables remain unchanged during project procurement, operation, and disposition stages. A breakdown of the 14.6% internal rate of return indicates that project relies heavily on profits from resale to guarantee the stated yield on the investment.

	Present Value	% of After Tax Equity Investment Value	Portion of IRR
Cash Flows	$378,082.	26.3%	3.8%
Tax Shelter	68,589.	4.8%	.7%
Reversion	992,684.	68.9%	10.1%
TOTAL	$1,439,355.	100.0%	14.6%

NET OPERATING INCOME STATEMENT

YEAR	1	2	3	4	5
POTENTIAL GROSS INCOME (w/ _____% growth rate/year)					
- VACANCY AND BAD DEBT ALLOWANCE (w/ _____% of P.G.I.)					
+ OTHER PROJECT INCOME					
= EFFECTIVE GROSS INCOME					
- OPERATING EXPENSES (w/ _____% growth rate/year)					
- REAL ESTATE TAXES (w/ _____% growth rate/year)					
- CAPITAL REPLACEMENT RESERVE					
= NET OPERATING INCOME					

Mortgage Amortization Calculations

YEAR	1	2	3	4	5
ESTIMATED PROJECT BUDGET OR TOTAL PROJECT VALUE					
* LOAN TO VALUE RATIO					
= MORTGAGE LOAN					
OUTSTANDING MORTGAGE BALANCE - THIS YR.					
* INTEREST RATE					
= INTEREST PAYMENT					
ORIGINAL MORTGAGE PRINCIPAL					
* MORTGAGE CONSTANT (_____% Interest, _____Year Term)					
= ANNUAL DEBT SERVICE					
- INTEREST PAYMENT					
= PRINCIPAL RETIREMENT					
OUTSTANDING MORTGAGE BALANCE - THIS YR.					
- PRINCIPAL RETIREMENT					
= OUTSTANDING MORTGAGE BALANCE - NEXT YR.					

DEPRECIATION CALCULATIONS

YEAR	1	2	3	4	5
COMPOSITE STRAIGHT-LINE DEPRECIATION:					
DEPRECIABLE ASSETS	_____				
* DEPRECIATION RATE+	_____				
= ANNUAL DEPRECIATION DEDUCTION	_____	_____	_____	_____	_____
CUMMULATIVE STRAIGHT-LINE DEPRECIATION					_____
DECLINING BALANCE DEPRECIATION:					
DEPRECIABLE ASSET - THIS YEAR	_____	_____	_____	_____	_____
* ACCELERATED DEPRECIATION RATE++	_____	_____	_____	_____	_____
= DEPRECIATION DEDUCTION	_____	_____	_____	_____	_____
CUMULATIVE DECLINING BALANCE DEPRECIATION					_____
DEPRECIABLE ASSETS - THIS YEAR	_____	_____	_____	_____	_____
- DEPRECIATION DEDUCTION	_____	_____	_____	_____	_____
= DEPRECIABLE ASSETS - NEXT YEAR	_____	_____	_____	_____	_____

+ STRAIGHT - LINE DEPRECIATION RATE = $\frac{1 - \%\ \text{SALVAGE VALUE}}{\text{USEFUL LIFE}}$

++ DECLINING BALANCE DEPRECIATION RATE = $\frac{1 \times \text{ACCELERATED RATE}}{\text{USEFUL LIFE}}$

Income Tax Liability and After Tax Cash Flow

YEAR	1	2	3	4	5
NET OPERATING INCOME					
- ANNUAL DEBT SERVICE					
= BEFORE TAX CASH FLOW					
- DEPRECIATION					
+ PRINCIPAL RETIREMENT					
+ CAPITAL REPLACEMENT RESERVE					
= TAXABLE INCOME					
* TAX RATE @ ____%					
= INCOME TAX LIABILITY					
BEFORE TAX CASH FLOW					
- INCOME TAX LIABILITY					
= CASH FROM OPERATIONS					
+/- WORKING CAPITAL LOAN					
+/- CONTINGENCY RESERVE					
= DISTRIBUTABLE CASH AFTER TAXES					
+ TAX SAVINGS ON OTHER INCOME					
+ REFINANCING SURPLUS					
= AFTER TAX CASH FLOW					

WORKING CAPITAL LOAN CALCULATIONS

YEAR	1	2	3	4	5
CASH FROM OPERATIONS					
BEGINNING YEAR BALANCE					
* WORKING CAPITAL LOAN INTEREST RATE					
= INTEREST DUE					
BEGINNING YEAR BALANCE AND INTEREST					
+ ADDITIONAL LOAN OR (-REPAYMENT)					
= END OF YEAR BALANCE					
DISTRIBUTABLE CASH AFTER TAXES					

TAXES AT THE TIME OF SALE

YEAR 5

PORTION SUBJECT TO CAPITAL GAINS TAX RATE:

	NET RESALE PRICE	_____
-	INITIAL COST	_____
=	INCREASED PROPERTY VALUE	_____
+	CUMULATIVE STRAIGHT-LINE DEPRECIATION	_____
=	TOTAL GAIN TAXED AT THE CAPITAL GAINS RATE	_____

PORTION SUBJECT TO ORDINARY INCOME TAX RATE:

	TOTAL DEPRECIATION TAKEN	_____
-	CUMULATIVE STRAIGHT-LINE DEPRECIATION	_____
=	ALLOWABLE EXCESS DEPRECIATION	_____

COMPUTATION OF TAXES DUE:

	GAINS SUBJECT TO CAPITAL GAINS TAX	_____
*	CAPITAL GAINS TAX RATE	_____
=	CAPITAL GAINS TAX DUE	_____
	ALLOWABLE EXCESS DEPRECIATION	_____
*	ORDINARY INCOME TAX RATE	_____
=	ORDINARY INCOME TAX DUE	_____
	CAPITAL GAINS TAX DUE	_____
+	ORDINARY INCOME TAX DUE	_____
=	TOTAL TAXES DUE AT THE TIME OF SALE	_____

AFTER TAX EQUITY INVESTMENT VALUE

YEAR	1	2	3	4	5
AFTER TAX CASH FLOW					
* PRESENT VALUE FACTOR @ ____%					
= P.V. OF AFTER TAX CASH FLOW					
CUMULATIVE P.V. OF AFTER TAX CASH FLOW					
NET OPERATING INCOME IN YEAR OF SALE					
÷ OVERALL CAP RATE					
= PROPERTY RESALE PRICE					
- RESALE COSTS					
= NET RESALE PRICE					
- OUTSTANDING MORTGAGE BALANCE					
- TAXES DUE AT TIME OF SALE					
= AFTER TAX REVERSION					
* PRESENT VALUE FACTOR @ ____%					
= P.V. OF AFTER TAX REVERSION					
CUMULATIVE P.V. OF AFTER TAX CASH FLOW					
+ P.V. OF AFTER TAX REVERSION					
= AFTER TAX EQUITY INVESTMENT VALUE					

Total Investment Value & Net Present Value

YEAR	1	2	3	4	5
AFTER TAX EQUITY INVESTMENT VALUE					_____
+ MORTGAGE LOAN					_____
= TOTAL INVESTMENT VALUE					_____
TOTAL INVESTMENT VALUE					_____
- INITIAL PROJECT CAPITAL COSTS					_____
= NET PRESENT VALUE					_____

Rate of Return Analysis

YEAR	1	2	3	4	5
RATE OF RETURN ON TOTAL CAPITAL	_____	_____	_____	_____	_____
BEFORE TAX CASH RATE OF RETURN	_____	_____	_____	_____	_____
AFTER TAX CASH RATE OF RETURN	_____	_____	_____	_____	_____
INTERNAL RATE OF RETURN					_____

TABLE #21a: ANNUAL INTEREST PAYMENTS & OUTSTANDING MORTGAGE BALANCE (8½% interest)

Mortgage Term:	15 Yrs.		20 Yrs.		25 Yrs.		30 Yrs.	
	Annual Interest Payment	Outstand'g Mortgage Balance	Annual Interest Payment	Outstand'g Mortgage Balance	Annual Interest Payment	Outstand'g Mortgage Balance	Annual Interest Payment	Outstand'g Mortgage Balance
Year: 1	.083676	.965512	.084238	.980102	.084536	.987912	.084710	.992442
2	.080629	.927977	.082477	.958443	.083469	.974757	.084042	.984216
3	.077311	.887124	.080563	.934870	.082305	.960438	.083314	.975262
4	.073701	.842661	.078480	.909214	.081038	.944852	.082524	.965518
5	.069771	.794266	.076210	.881288	.079663	.927891	.081662	.954912
6	.065490	.741594	.073743	.850895	.078164	.909431	.080723	.943367
7	.060836	.684266	.071054	.817813	.076530	.889337	.079705	.930804
8	.055769	.621871	.068133	.781810	.074756	.867469	.078595	.917131
9	.050253	.553960	.064951	.742625	.072822	.843667	.077384	.902247
10	.044252	.480048	.061485	.699974	.070717	.817760	.076070	.886049
Monthly Constant:	.009847		.008678		.008052		.007689	
Annual Constant:	.118169		.104139		.096627		.092270	

TABLE #21b: ANNUAL INTEREST PAYMENTS & OUTSTANDING MORTGAGE BALANCE (9% interest)

Mortgage Term:	15 yrs.		20 yrs.		25 yrs.		30 yrs.	
	Annual Interest Payment	Outstand'g Mortgage Balance	Annual Interest Payment	Outstand'g Mortgage Balance	Annual Interest Payment	Outstand'g Mortgage Balance	Annual Interest Payment	Outstand'g Mortgage Balance
Year: 1	.088658	.966942	.089241	.981277	.089548	.988844	.089723	.993171
2	.085558	.930784	.087484	.960797	.088501	.976641	.089082	.985701
3	.082166	.891234	.085564	.938397	.087357	.963294	.088383	.977532
4	.078456	.847974	.083461	.913894	.086104	.948694	.087614	.968594
5	.074398	.800656	.081163	.887093	.084735	.932725	.086779	.958821
6	.069958	.748898	.078648	.857777	.083234	.915255	.085861	.948130
7	.065104	.692286	.075899	.825712	.081596	.896147	.084857	.936435
8	.059793	.630363	.072891	.790639	.079803	.875246	.083759	.923642
9	.053984	.562631	.069601	.572276	.077846	.852388	.082558	.909648
10	.047630	.488545	.066002	.710314	.075702	.827386	.081247	.894343
Monthly Constant	.010143		.008997		.008392		.008046	
Annual Constant:	.121712		.107964		.100704		.0965515	

TABLE #22a: ANNUAL INTEREST PAYMENTS & OUTSTANDING MORTGAGE BALANCE (9½% interest)

Mortgage Term:	15 yrs.		20 yrs.		25 yrs.		30 yrs.	
	Annual Interest Payment	Outstand'g Mortgage Balance	Annual Interest Payment	Outstand'g Mortgage Balance	Annual Interest Payment	Outstand'g Mortgage Balance	Annual Interest Payment	Outstand'g Mortgage Balance
Year: 1	.093645	.968341	.094246	.982394	.094559	.989715	.094737	.993829
2	.090502	.933539	.092499	.963041	.093540	.978411	.094124	.987045
3	.087049	.895284	.090579	.941768	.092418	.965985	.093448	.979585
4	.083251	.853231	.088468	.918384	.091184	.952325	.092709	.971386
5	.079079	.807006	.086146	.892678	.089828	.937309	.091894	.962372
6	.074492	.756194	.083594	.864420	.088338	.920803	.091001	.952465
7	.069449	.700339	.080791	.833359	.086700	.902659	.090018	.941575
8	.063902	.638937	.077707	.799214	.084899	.882714	.088939	.929606
9	.057811	.571444	.074318	.761680	.082919	.860789	.087749	.916447
10	.051112	.497252	.070596	.720424	.080742	.836687	.086444	.901983
Monthly Constant:	.010442		.009321		.008737		.008409	
Annual Constant:	.1253017		.1118516		.104844		.1009013	

TABLE #22b: ANNUAL INTEREST PAYMENTS & OUTSTANDING MORTGAGE BALANCE (10% interest)

Mortgage Term:	15 yrs.		20 yrs.		25 yrs.		30 yrs.	
	Annual Interest Payment	Outstand'g Mortgage Balance	Annual Interest Payment	Outstand'g Mortgage Balance	Annual Interest Payment	Outstand'g Mortgage Balance	Annual Interest Payment	Outstand'g Mortgage Balance
Year: 1	.098636	.969684	.099254	.983454	.099573	.990529	.099750	.994438
2	.095462	.936194	.097522	.965176	.098580	.980065	.099167	.988293
3	.091954	.899196	.095610	.944986	.097486	.968507	.098524	.981505
4	.088079	.858323	.093494	.922680	.096276	.955739	.097813	.974006
5	.083800	.813171	.091160	.898040	.094937	.941632	.097028	.965722
6	.079071	.763290	.088580	.870820	.093463	.926051	.096162	.956572
7	.073849	.708187	.085730	.840750	.091831	.908838	.095201	.946461
8	.068078	.647313	.082579	.807529	.090029	.889823	.094143	.935292
9	.061705	.580066	.079102	.770831	.088036	.868815	.092974	.922954
10	.054662	.505776	.075259	.730290	.085838	.845609	.091681	.909323
Monthly Constant:	.010746		.009650		.009087		.008776	
Annual Constant:	.1289513		.1158013		.109044		.105309	

TABLE #23a: ANNUAL INTEREST PAYMENTS & OUTSTANDING MORTGAGE BALANCE (10½% interest)

Mortgage Term:	15 yrs.		20 yrs.		25 yrs.		30 yrs.	
	Annual Interest Payment	Outstand'g Mortgage Balance	Annual Interest Payment	Outstand'g Mortgage Balance	Annual Interest Payment	Outstand'g Mortgage Balance	Annual Interest Payment	Outstand'g Mortgage Balance
Year: 1	.103629	.970981	.104265	.984457	.104588	.991284	.104764	.995000
2	.100430	.938763	.102552	.967201	.103627	.981607	.104213	.989449
3	.096882	.902997	.100651	.948044	.102559	.970862	.103600	.983285
4	.092940	.863289	.098543	.926779	.101377	.958935	.102922	.976443
5	.088564	.819205	.096197	.903168	.100063	.945694	.102168	.968847
6	.083706	.770263	.093596	.876956	.098604	.930994	.101331	.960414
7	.078313	.715928	.090705	.847853	.096985	.914675	.100403	.951053
8	.072324	.655604	.087500	.815545	.095184	.896555	.099369	.940658
9	.065676	.588634	.083939	.779676	.093189	.876440	.098226	.929120
10	.058296	.514282	.079983	.739851	.090972	.854108	.096954	.916310
Monthly Constant:	.011054		.009984		.009442		.009147	
Annual Constant:	.132648		.119816		.1133012		.1097619	

TABLE #23b: ANNUAL INTEREST PAYMENTS & OUTSTANDING MORTGAGE BALANCE (11% interest)

Mortgage Term:	15 yrs.		20 yrs.		25 yrs.		30 yrs.	
	Annual Interest Payment	Outstand'g Mortgage Balance	Annual Interest Payment	Outstand'g Mortgage Balance	Annual Interest Payment	Outstand'g Mortgage Balance	Annual Interest Payment	Outstand'g Mortgage Balance
Year: 1	.108629	.972237	.109280	.985416	.109605	.991993	.109778	.995502
2	.105415	.941260	.107591	.969143	.108679	.983060	.109255	.990481
3	.101830	.906698	.105709	.950988	.107644	.973092	.108675	.984880
4	.097831	.868137	.103608	.930732	.106491	.961971	.108029	.978633
5	.093368	.825113	.101264	.908132	.105204	.949563	.107306	.971663
6	.088392	.777113	.098649	.882917	.103768	.935719	.106498	.963885
7	.082836	.723557	.095730	.854783	.102166	.920273	.105600	.955209
8	.076637	.663802	.092477	.823396	.100378	.903039	.104595	.945528
9	.069724	.597134	.088844	.788376	.098384	.883811	.103475	.934727
10	.062010	.522752	.084791	.749303	.096158	.862357	.102226	.922677
Monthly Constant:	.011366		.010322		.009801		.009523	
Annual Constant:	.136392		.1238613		.1176114		.1142719	

TABLE # 24a: ANNUAL INTEREST PAYMENTS & OUTSTANDING MORTGAGE BALANCE (11½% interest)

Mortgage Term:		15 Yrs.		20 Yrs.		25 Yrs.		30 Yrs.	
		Annual Interest Payment	Outstand'g Mortgage Balance	Annual Interest Payment	Outstand'g Mortgage Balance	Annual Interest Payment	Outstand'g Mortgage Balance	Annual Interest Payment	Outstand'g Mortgage Balance
Year:	1	.113628	.973444	.114295	.986327	.114619	.992639	.114791	.995955
	2	.110409	.943669	.112636	.970995	.113728	.984387	.114301	.991420
	3	.106798	.910293	.110777	.953804	.112728	.975135	.113748	.986332
	4	.102750	.872849	.108691	.934527	.111604	.964759	.113133	.980623
	5	.098212	.830877	.106354	.912913	.110348	.953127	.112443	.974236
	6	.093123	.783816	.103734	.888679	.108935	.940082	.111668	.967068
	7	.087416	.731048	.100796	.861507	.107354	.925456	.110798	.959030
	8	.081016	.671880	.097499	.831038	.105582	.909058	.109824	.950018
	9	.073843	.605539	.093805	.796875	.103593	.908671	.108729	.939911
	10	.065797	.531152	.089664	.758571	.101363	.870054	.107504	.928579
Monthly Constant		.011682		.010664		.010165		.009903	
Annual Constant:		.140183		.127972		..121976		.118835	

TABLE # 24b: ANNUAL INTEREST PAYMENTS & OUTSTANDING MORTGAGE BALANCE (12% interest)

Mortgage Terms:		15 Yrs.		20 Yrs.		25 Yrs.		30 Yrs.	
		Annual Interest Payment	Outstand'g Mortgage Balance	Annual Interest Payment	Outstand'g Mortgage Balance	Annual Interest Payment	Outstand'g Mortgage Balance	Annual Interest Payment	Outstand'g Mortgage Balance
Year	1	.118634	. 974610	.119309	.987177	.119636	.993252	.119802	.996370
	2	.115414	. 946000	.117685	.972730	.118781	.985649	.119344	.99282
	3	.111786	. 913672	.115850	.956448	.117817	.977082	.118827	.987677
	4	.107696	. 877434	.113786	.938102	.116732	.967430	.118242	.982487
	5	.103090	. 836500	.111459	.917429	.115506	.956552	.117586	.876641
	6	.097897	. 790373	.108838	.894135	.114126	.944294	.116841	.970050
	7	.092043	. 738398	.105884	.867887	.112572	.930482	.116009	.962627
	8	.085455	. 679829	.102555	.838310	.110820	.914918	.114054	.954260
	9	.078028	. 613833	.098802	.804980	.108846	.897380	.114005	.944833
	10	.069657	. 539466	.094576	.767424	.106623	.877619	.112808	.934209
Monthly Constant:		.012002		.011011		.010532		.010286	
Annual Constant:		.144020		.132130		.126387		.123434	

LEGEND: EVALUATION OF PROJECT COST & OPERATIONS DATA MANUAL SUITABILITY

	RECOMMENDED:	COMPLETE DATA CONTENT WHICH HAS A STRONG FIT TO THE FORMAT OF THE MODELS. The data manual provides comprehensive information which can be utilized to best advantage in the format of the decision models under consideration.
	RECOMMENDED WITH RESERVATIONS:	COMPLETE DATA CONTENT WHICH HAS A WEAK FIT TO THE FORMAT OF THE MODELS. The data manual provides comprehensive information organized into categories which can not be successfully intergrated into the format of the decision models under consideration.
	RECOMMENDED WITH RESERVATIONS:	INCOMPLETE DATA CONTENT WHICH HAS A STRONG FIT TO THE FORMAT OF THE MODELS. The data manual does not include all the necessary information required by the decision models; but the data categories included can be satisfactorily utilized in the format of the decision models under consideration.
	NOT RECOMMENDED:	INCOMPLETE DATA CONTENT WHICH HAS A WEAK FIT TO THE FORMAT OF THE MODELS. The data manual does not include all the necessary information required by the decision models; and the data categories included can not be successfully intergrated into the format of the decision models under consideration.

APPENDIX TABLE OF CONTENTS

SOURCES				CONTENT ORGANIZATION							
				DESCRIPTION OF COST DATA							
				Method				Uses			
NAME OF DATA SOURCE	Publisher's Address	Initial Cost 1st Year 1978-9	Frequency of Publication	Comparative Unit Sq. Ft. + Cu.Ft.	Unit (Component System)-in-Place	Quantity Survey	Valuation	Initial Estimate	Intermediate Estimate	Detailed Estimate	Calculation of Component Depreciation
BOECKH BUILDING COST GUIDE: COMMERCIAL	Boeckh Publication American Appraisal Associates, Inc. 525 E.Michigan St. Milwaukee, Wisc. 53201	$18.00	New Edition Published Annually	Yes	No	No	Yes	Yes	No	No	Yes (1a)
BOECKH BUILDING COST GUIDE: LIGHT INDUSTRIAL	Boeckh Publication American Appraisal Associates, Inc. 525 E.Michigan St. Milwaukee, Wisc. 53201	$15.00	New Edition Published Annually	Yes	No	No	Yes	Yes	No	No	No (2a)
BOECKH BUILDING VALUATION MANUAL	Boeckh Publication American Appraisal Associates, Inc. 525 E.Michigan St. Milwaukee, Wisc. 53201	$88.00 Includes monthly up dating of time-location multipliers	$52.00 Also includes monthly Up-dating	Yes	Yes (3a)	No	Yes	Yes	Yes	No	Yes
DODGE BUILDING COST CALCULATOR AND VALUATION GUIDE	Dodge Building Cost Services McGraw-Hill Information Systems Company 1221 Avenue of the Americas New York, N.Y. 10020	$74.00 Includes three quarterly supplements	$56.00 Also includes quarterly materials	Yes	No (4a)	No	Yes	Yes	No (4a)	No	Yes (4b)
DODGE DIGEST OF BUILDING COSTS AND SPECIFICATIONS	Dodge Building Cost Services McGraw-Hill Information Systems Company 1221 Avenue of the Americas New York, N.Y. 10020	$122.00 Includes semi-annual supplement	$92.00 Also includes supplement	Yes	No	No	No	Yes	No	No	Yes (5a)
DODGE CONSTRUCTION SYSTEMS COSTS	Dodge Building Cost Services McGraw-Hill Information Systems Company 1221 Avenue of the Americas New York, N.Y. 10020	$38.80	New Edition Published Annually	Yes	Yes (6a)	No	No	Yes	Yes	Yes (6b)	Yes
DODGE MANUAL FOR BUILDING CONSTRUCTION PRICING AND SCHEDULING	Dodge Building Cost Services McGraw-Hill Information Systems Company 1221 Avenue of the Americans New York, N.Y. 10020	$24.80	New Edition Published Annually	No	No	Yes	No	No	No	Yes	Yes (7a)

CONTENT ORGANIZATION								
PROJECT ITEMS INCLUDED IN COST DATA						ADJUSTMENTS		SELECTED SPECIAL FEATURES
Land Costs	Sitework	General Contractor Overhead & Profit	Architect/Engineer Fee	Construction Financing Costs	Labor Cost Segregated From Material Costs	Location Modifier	Time Modifier	
No	No	Yes (1b)	Yes	No	No	Yes	No	1a. Comparative unit costs are segregated for air-conditioning, fire protection, & elevators only. 1b. A 5% cost for contingencies is included.
No	No	Yes (2b)	Yes	No	No	Yes	No	2a. Comparative unit (sq.ft.) costs are given for air conditioning, fire protection, and elevators only. 2b. A 5% cost for contingencies is included.
No (3b)	No (3c)	Yes (3d)	No (3e)	No	No	Yes	Yes	3a. Unit-in-place costs are given for walls, foundations, framing, floors, floor finish, roof, ceiling finish, partitions, plumbing, HVAC, electrical, fire protection & a large number of miscellaneous equipment and improvements. 3b. Criteria for land valuation is given, but no cost figures are included. 3c. Sitework costs are given for some site improvements. 3d. A 5% cost for contingencies is included. 3e. A separate schedule of architect fees based upon project cost is given.
No	No (4c)	Yes/ No (4d)	Yes	No	No	Yes	Yes	4a. Unit-in-place costs are given for a few selected miscellaneous items only. 4b. Component depreciation can be calculated from building systems costs given in case histories. 4c. Sitework costs are included in case histories only. 4d. Builder's profit is not included in cost figures; only builder's administrative overhead & supervision.
No	No (5b)	Yes	No	No	No	Yes	Yes	5a. Comparative unit costs (sq.ft.) are given for structure, plumbing, HVAC, electrical and miscellaneous categories only. Comparative unit costs (sq.ft.) are also given by building sytems in 12 case histories 5b. Segregated sitework costs are included in the case histories only.
No	No (6c)	Yes	No	No	Yes (6d)	Yes	No	6a. Unit-in-Place (systems) costs are given for foundations, superstructures, exterior walls, roofing, partitions, interior wall finish, floor finish, ceilings only; other improvement costs taken from average costs table. 6b. An estimate based on detailed assembly costs would be less detailed than a complete quantity survey based estimate. 6c. Sitework costs are included in average cost section through 1978 edition. 6d. Labor/materials are segregated for unit-in-place (systems) costs only.
No	No (7b)	No	No	No	Yes	Yes	No	7a. Component depreciation could be calculated from a detailed quantity survey. 7b. Quantity survey sitework costs are included for drainage, utilities, paving & surfacing, landscaping, and site improvements.

SOURCES				CONTENT ORGANIZATION								
				DESCRIPTION OF COST DATA								
				Method			Uses					
NAME OF DATA SOURCE	Publisher's Address	Initial Cost 1st Year 1978-9	Frequency of Publication	Comparative Unit Sq. ft. + Cu.Ft.	Unit (Component System)-in-Place	Quantity Survey	Valuation	Initial Estimate	Intermediate Estimate	Detailed Estimate	Calculation of Component Depreciation
MARSHALL VALUATION SERVICE	Marshall & Swift Publication Co. 1617 Beverly Blvd. Los Angeles, California 90026	$62.00 (1979) Includes monthly supplement	$55.00 Also includes monthly supplement	Yes	Yes (8a)	No	Yes	Yes	Yes	No	Yes
RESIDENTIAL COST HANDBOOK	Marshall & Swift Publication Co. 1617 Beverly Blvd. Los Angeles, California 90026	$28.00 (1979) Includes quarterly supplement & up-date services	$25.00 Includes quarterly suppliment & up-date services	Yes	Yes (9a)	No	Yes	Yes	Yes	No	Yes
BUILDING CONSTRUCTION COST DATA	Robert Snow Means Company, Inc. Construction Consultants and Publishers 100 Construction Plaza Duxbury, Mass. 02332	$19.50	New Edition Annually	Yes	No (10a)	Yes	No	Yes (10b)	No	Yes	Yes (10c)
BUILDING SYSTEMS COST GUIDE	Robert Snow Means Company, Inc. Construction Consultants and Publishers 100 Construction Plaza Duxbury, Mass. 02332	$27.50	New Edition Annually	Yes	Yes	No	No	Yes	Yes	Yes (11a)	Yes (11b)
CURRENT CONSTRUCTION COSTS	Lee Saylor, Inc. Consulting Cost Engineers 1855 Olympic Blvd., Suite 110 Walnut Creek, California 94596	$21.95	New Edition Annually	No	No	Yes	No	No	No	Yes (12a)	Yes (12b)

CONTENT ORGANIZATION								SELECTED SPECIAL FEATURES
PROJECT ITEMS INCLUDED IN COST DATA						ADJUSTMENTS		
Land Costs	Sitework	General Contractor Overhead & Profit	Architect/Engineer Fee	Construction Financing Costs	Labor Cost Segregated From Material Costs	Location Modifier	Time Modifier	
No	No (8b)	Yes	Yes (8c)	Yes (8d)	No	Yes	Yes	8a. Unit-in-place costs are given for foundations, framing, floors, interior construction, HVAC, electrical, plumbing, fire protection, roofs, walls, refrigeration, conveyances and miscellaneous equipment. 8b. Sitework costs are given for some site improvements. 8c. Architect's fees are included in compartive units costs (calculator method), but are not included in unit-in-place (segregated cost method) costs. A schedule of architect's fees based upon project cost is given. 8d. Included in construction costs are construction financing costs except for discounts & bonuses paid for financing.
No	No (9b)	Yes	Yes (9c)	Yes (9d)	No	Yes	Yes	9a. Unit-in-place (components) costs are given for roofs, walls, HVAC, ceilings, floors, electrical, plumbing, & fireplaces. 9b. Sitework costs are given for some street, utility, and yard improvements. 9c. Architect's fees are included in comparative unit costs, but are not included in component or unit-in-place costs. A schedule of architect's fees based upon project quality is given. 9d. Included in construction costs are construction financing costs except for discounts and bonuses paid for financing.
No	No (10d)	Yes (10e)	No (10f)	No	Yes (10g)	Yes	Yes (10h)	10a. Selected building components are categorized by trades, with costs given in comparative unit cost section. 10b. Use comparative unit cost section (sq.ft. and cubic ft. building costs) for quick estimates. 10c. Component depreciation could be calculated from a detailed quantity survey. 10d. Quantity survey sitework costs are included for drainage, utilities, roads, walks, fences, playgrounds, fountains, athletic facilites, and landscaping. Segregated sitework costs are given for some building types in comparative unit cost section. 10e. Builder's (general contractor) overhead & profit must be added to quantity survey costs; comparative unit costs include builder's overhead & profit. A schedule is included for builder's overhead & profit as % of project cost. 10f. A schedule of architect's & engineer's fees as % of project cost is given in the manual. 10g. Labor/material costs are segregated in the quantity survey section only. 10h. Historical cost indexes are included to determine quarterly construction cost changes.
No	No (11c)	No	No (11d)	No	No (11e)	Yes	Yes (11f)	11a. An estimate based on detailed assembly cost would be less detailed than a complete quantity survey based estimate. 11b. Component depreciation figures can be compiled from costs given in systems section. In comparative unit cost section, selected building component costs are segregated. 11c. Sitework systems costs are given for roads, parking lots, utilities. Segregated sitework costs are given for some building types in comparative unit cost section. 11d. A schedule of architect's fees is given as a % of project cost by building type in manual. 11e. Installation costs are segregated from material costs for some systems, ie. walls, doors & windows. 11f. Historical cost indexes are included to determine quarterly construction cost changes.
No	No (12c)	No	No (12d)	No	Yes	Yes	Yes	12a. Where a trade requires several types of materials to make a final item (ie. paving) in-place costs as well as detailed breakdown of costs are included. 12b. Component depreciation could be calculated from a detailed quantity survey. 12c. Quantity survey sitework costs are included for utilities, drainage, paving, sidewalks, landscaping, fencing, and athletic facilities. 12d. On-site construction permits are included in a separate section titled General Conditions.

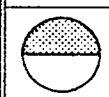
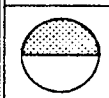
SOURCES				CONTENT ORGANIZATION							
				DESCRIPTION OF COST DATA							
				Method					Uses		
NAME OF DATA SOURCE	Publisher's Address	Initial Cost 1st Year 1978-9	Frequency of Publication	Comparative Unit Sq.Ft. + Cu.Ft.	Unit (Component System)-in-Place	Quantity Survey	Valuation	Initial Estimate	Intermediate Estimate	Detailed Estimate	Calculation of Component Depreciation
DOLLAR AND CENTS OF SHOPPING CENTERS	Urban Land Institute 1200 18th St, N.W. Washington, D.C. 20036	$49.25	New Edition Published Every Three Years	Yes	No	No	No	Yes	No	No	No
BUILDING COST FILE UNIT PRICES 4 editions available: Eastern, Central Southern, Western	Van Nostrand Reinhold Company 135 West 50th St. New York, N.Y. 10020 To order: 7625 Empire Drive Florence, Kentucky 41042	$25.95	New Edition Published Annually	No	No	Yes	No	No	No	Yes	Yes (14a)
DESIGN COST FILE	Van Nostrand Reinhold Company 135 West 50th St. New York, N.Y. 10020 To order: 7625 Empire Drive Florence, Kentucky 41042	$29.95	New Edition Published Annually	No	Yes	No	No	No (15a)	Yes	Yes (15b)	Yes (15c)
ENGELSMAN'S GENERAL CONSTRUCTION COST GUIDE	Van Nostrand Reinhold Company 135 West 50th St. New York, N.Y. 10020 To order: 7625 Empire Drive Florence, Kentucky 41042	$27.50	New Edition Published Annually	No	No	Yes	No	No	No	Yes	Yes (16a)
REAL ESTATE VALUATION COST FILE	Van Nostrand Reinhold Company 135 West 50th St. New York, N.Y. 10020 To order: 7625 Empire Drive Florence, Kentucky 41042	$29.95	New Edition Published Annually	Yes	No	No	Yes	Yes	No	No	No
RESIDENTIAL COST MANUAL	Van Nostrand Reinhold Company 135 West 50th St. New York, N.Y. 10020 To order: 7625 Empire Drive Florence, Kentucky 41042	$28.95	New Edition Published Annually	Yes (18a)	No	Yes	Yes (18a)	No	No	Yes	Yes (18b)

CONTENT ORGANIZATION								
PROJECT ITEMS INCLUDED IN COST DATA						ADJUSTMENTS		SELECTED SPECIAL FEATURES
Land Costs	Sitework	General Contractor Overhead & Profit	Architect/Engineer Fee	Construction Financing Costs	Labor Cost Segregated From Material Costs	Location Modifier	Time Modifier	
Yes	Yes (13a)	Yes	Yes	Yes	No	No	No	13a. The site improvement cost includes both on-site and off-site improvements.
No	No (14b)	No	No	No	Yes	Yes	No	14a. Component depreciation could be calculated from a detailed quantity survey. 14b. Quantity survey sitework costs are given for drainage, utilities, paving, surfacing, fencing, athletic facilities, retaining walls, and landscaping.
No	No	No	No	No	No	Yes	No	15a. An initial estimate can be made by summing system costs if the building design & systems are well defined. 15b. An estimate based on detailed assembly costs would be less detailed than a complete quantity survey based estimate. 15c. Component depreciation could be calculated from detailed building system costs.
No	No (16b)	No	No	No	Yes	Yes	Yes	16a. Component depreciation could be calculated from a detailed quantity survey. 16b. Quantity survey sitework costs are given for drainage, utilities, paving, athelitic facilities, paving, fencing, and landscaping.
No	No (17a)	Yes	Yes	No	No	Yes	No	17a. In Miscellaneous Cost Items section, comparative unit sitework costs are given for athelic facilities, parking, fencing, landscaping, incinerators, paving, and retaining walls.
No	Yes	No (18c)	No (18d)	No	Yes	Yes	No	18a. Part 3: Valuation Section includes comparative unit costs for houses and apartments which are adjusted by shape, height, and size factors. 18b. Component depreciation could be calculated from a detailed quantity survey. 18c. General overhead items are included in a seperate schedule for reference. 18d. Architect's and engineer's fees are included as part of general overhead.

SOURCES				CONTENT ORGANIZATION		
NAME OF DATA SOURCE	Publishers' Address	Initial Cost 1st Year 1978-9	Frequency of Publication	Income Categories	Expense Categories	Statistics Used: Median, Range, Average
1978 DOWNTOWN AND SUBURBAN OFFICE BUILDING EXPERIENCE EXCHANGE REPORT	Building Owners and Managers Association International 1221 Massachusetts Avenue, N.W. Washington, D.C. 20005	$95.00	New Edition Published Annually	Office Store Storage Special	Variable Operating Fixed Operating Tenant Improvement Allowance Leasing Expense Depreciation	Average
INCOME/EXPENSE ANALYSIS APARTMENTS	Institute of Real Estate Management 430 North Michigan Chicago, Illinois 60611	$45.00	New Edition Published Annually	Apartments Garage/Parking Store/Office	Administrative Utilities Building Services Maintenance R.E. Taxes Insurance Amenities	Median & Range
EXPENSE ANALYSIS CONDOMINIUMS, COOPERATIVES, AND PLANNED UNIT DEVELOPMENT	Institute of Real Estate Management 430 North Michigan Chicago, Illinois 60611	$20.00	New Edition Published Annually	None	Administrative Utilities Building Services Maintenance R.E. Taxes Insurance Leased Recrational Facilities	Median & Range
INCOME/EXPENSE ANALYSIS SUBURBAN OFFICE BUILDINGS	Institute of Real Estate Management 430 North Michigan Chicago, Illinois 60611	$20.00	New Edition Published Annually	Office Storage Retail Parking Escalator Clauses	Administrative Maintenance Utilities R.E. Taxes Insurance	Median & Range
THE DOLLAR AND CENTS OF SHOPPING CENTERS	Urban Land Institute 1200 18th, N.W. Washington, D.C. 20036	$49.25	New Edition Published Every Three Years	Base Rent Overage Common Area Charges	Maintenance Central Utility System Advertising & Promotion R.E. Taxes Insurance Administrative Depreciation Debt Service	Median & Deciles

CONTENT ORGANIZATION									SELECTED SPECIAL FEATURES
Vacancy & Occupancy Data	Trend Analysis	Type of Development	Size in Square Feet	Location Categories	Age of Building	Rental or Price Range	Number of Stories	City Size	
Yes	Detailed 1973-77 compared by several attributes ..... National Values	Offices Downtown Suburban including Government & Medical	Yes	City Region Nation	Yes	None	Yes	Yes	1. Economic analysis of office building industry. 2. Operating cost breakdown by region, size, age & height for suburban & downtown offices. 3. Energy analysis for downtown, suburban, & government offices by size, age, region, age, and height. 4. Data summary & operating ratios by organizational category.
Yes	Detailed 1974-77 by building type ..... National Values	Apartments Lo-Rise 12-24 units Lo-Rise 25+ units Elevator Garden Unfurnished Furnished	No	City Metropolitan Area Region Nation	Yes	Rental Range	No	No	1. Graphic summary of income & expenses by development type. 2. Tenant turnover rates by development type. 3. Summary of distribution of income & expenses by building type expressed in dollars per room & percentage of gross income.
No	No	Condominiums Cooperatives Planned Unit Developments	No	Metropolitan Area Region	Yes	Price Range	No	No	1. Kinds of amenities furnished by owners association. 2. Breakdown of utility expenses between unit and owners' association by unit price range and building age.
Yes	1976 & 1977 by regions ..... Regional Values	Offices Suburban	Yes	Metropolitan Area Region Nation	Yes	Rental Range	Yes	No	1. Energy analysis for suburban offices by region and age. 2. Data summary & operating ratios by organizational category. 3. National & regional graphic summary of income, expenses, & total actual collections.
No	1975 & 1978 by shopping center type ..... National Values	Shopping Centers Super regional Regional Community Neighborhood	Yes	Region Nation	Yes	None	No	No	1. Tenant space needs, base rent, sales, & common area charges for 120 types of tenants in each center type. 2. Center operating receipts, expenses, & net operating income as a % of capital costs. 3. Energy sales & distribution methods by center type. 4. Analysis of Operations of enclosed & non-enclosed malls. 5. Analysis of capital costs by center type.

APPENDIX: Evaluation of PROJECT COST DATA MANUAL Suitability
Legend: Refer to Page X.1

NAME OF DATA SOURCE	PROJECT DEVELOPMENT CATEGORY	A - DECISION MODELS: INITIAL PROJECT ANALYSIS SUITABILITY FOR USE IN ANALYSIS Content/Fit	COMPARATIVE COSTS - analyzed on the basis of: BUILDING TYPE & SIZE
BOECKH BUILDING VALUATION MANUAL	Apartmt. Office Retail		The data is presented in a form which includes building component descriptions and costs for specific designs. The comprehensive design and cost data is best applied in advanced project analysis.
BOECKH COMMERCIAL BUILDING COST GUIDE	Apartmt. Office Retail		The data requires design decisions on building exterior and ground floor area to select appropriate cost figures. The data applies to intermediate project analysis.
DODGE BUILDING COST CALCULATOR AND VALUATION GUIDE	Apartmt. Office Retail		A limited selection of hisorical case studies are included for each building category which could prove helpful in identifying initial project costs. The data requires design decision on building exterior and quality class to select appropriate cost figures. The data applies to intermediate project analysis.
DODGE CONSTRUCTION SYSTEMS COST GUIDE	Apartmt. Office Retail		The average building cost section provides a range of construction costs for various project types.
DODGE DIGEST OF BUILDING COSTS AND SPECIFICATIONS	Apartmt. Office Retail Shop.Cntr.		Data requires initial design decisions before comparison with specific case study references. The data applies to intermediate project analysis.
RESIDENTIAL COST HANDBOOK	Apartmt.		The data requires design decisions on building type, size, and quality to select appropriate cost figures. The data applies to intermediate project analysis.
MARSHALL VALUATION SERVICE	Apartmt. Office Retail		The Cost Calculator Method data requires design decisions on building type and quality to select appropriate cost figures.
MEANS BUILDING CONSTRUCTION COST DATA	Apartmt. Office Retail		Section 17 can be very useful for developing initial cost estimates for particular property types.
MEANS BUILDING SYSTEM COST GUIDE	Apartmt. Office Retail		Section 14 can be very useful for developing initial cost estimates for particular property types
DOLLARS AND CENTS OF SHOPPING CENTERS	Shop.Cntr.		A range of average building and project cost data, for different shopping center size categories, appropriate only for the initial project analysis. This manual provides complete project cost data which can be directly used in the Project-to-Building Ratio.
REAL ESTATE VALUATION COST FILE	Apartmt. Office Retail		The data applies to intermediate project analysis. The data requires design decisions on building types, size, and quality to select appropriate cost figures.

B - DECISION MODELS: INTERMEDIATE PROJECT ANALYSIS	
SUITABILITY FOR USE IN ANALYSIS Content/Fit	COMPONENT DESCRIPTION AND QUALITY FACTORS - analyzed on the basis of: BUILDING TYPE, SIZE, AND QUALITY
	The data is presented in a form which includes building component descriptions and costs for specific designs. The comprehensive design and cost data is best applied in advanced project analysis.
	The data scope is limited because building quality is indicated only by exterior facade and ground floor area. The building cost/sq.ft. of ground floor area must be converted to cost/sq.ft. of gross building area when a multi-story building is being analyzed.
	The data allows strong quality typing by exterior facade and quality class description.
	In the Average Building Cost Section, the data includes construction cost ranges that are not related to quality distinctions. The data is most suitable for use in project analysis.
	Data is presented from actual construction contracts for quick reference to similar jobs and specific locations. No definition of building quality is included with case study costs.
	The data allows strong quality typing by floor area and quality class description.
	The cost calculator method data is categorized by structural type and quality characteristics which makes it very appropriate for the intermediate analysis. The segregated cost method requires too many detailed design decisions to be appropriate for the intermediate project analysis models.
	The cost ranges identified in section 17 are not related to quality distinctions. The quantity survey data is so design specific in sections 1-16 that it exceeds the scope of the intermediate and advanced project analysis models.
	The unit-in-place data is so design specific in section 1-12 that it exceeds the scope of the intermediate and advanced project analysis models.
	A range of average building and project cost data, for different shopping center size categories, appropriate only for the initial project analysis. This operations data manual provides only introductory cost data.
	The data allows strong quality typing by component description and quality classification. The data applies to intermediate project analysis.

C - DECISION MODELS: ADVANCED PROJECT ANALYSIS	
SUITABILITY FOR USE IN ANALYSIS Content/Fit	INTER CHANGEABLE COMPONENTS & DESIGN FACTORS - analyzed on the basis of: BUILDING TYPE, SIZE, QUALITY, & ALTERNATIVE COMPONENTS/SYSTEMS
	The segregated cost data allows estimates to be made with a consideration of specific design and cost trade offs. This comprehensive design and cost data best meets the needs of the advanced project analysis models.
	No alternative building components other than building facades are included. The building cost/sq.ft. of ground floor area must be converted to cost/sq.ft. of gross building area when a multi-story building is being analyzed.
	The data includes limited alternative component adjustments for selected items. The data applies to intermediate project analysis.
	The systems data is appropriate for estimating alternative components with the exception of HVAC. The data is most suitable for use in initial project analysis.
	Alternative building component decisions are difficult to establish from comparable based case studies. The data applies to intermediate project analysis.
	The segregated cost data allows estimates to be made with a consideration of specific design and cost trade offs. The data applies to intermediate project analysis.
	The segregated cost data allows estimates to be made with a consideration of specific design and cost trade offs. This data best meets the needs of the advanced project analysis models.
	The quantity survey data is so design specific in sections 1-16 that it exceeds the scope of the intermediate and advanced project analysis models.
	The unit-in-place data is so design specific in sections 1-12 that it exceeds the scope of the intermediate and advanced project analysis models.
	A range of average building and project cost data, for different shopping center size categories, appropriate only for the initial project analysis. This operations data manual provides only introductory cost data.
	The components are arranged into building quality classes and are not individually estimated. This makes the data inappropriate for advanced project analysis.

NAME OF DATA SOURCE	PROJECT DEVELOPMENT CATEGORY	A - DECISION MODELS: INITIAL PROJECT ANALYSIS	
		SUITABILITY FOR USE IN ANALYSIS *Content/Fit*	MARKET REVENUE AND SPACE ALLOCATION
BOMA DOWNTOWN AND SUBURBAN OFFICE BUILDING EXPERIENCE EXCHANGE REPORT	Office Limited Retail		Average Revenue Data (collected during previous calendar year) is provided for selected downtown and suburban metropolitan areas. Revenue data, in the Downtown and Suburban statistical tables, is organized by building size, age, story height, and city size. All data is presented in cents per square foot of total rentable area(office and retail space), total rentable office area, and actually rented office area. If the proposed project is exclusively rental office space, then select appropriate rental data from the "Office Total" (total rentable office area) column. The total number of buildings and their cumulative square feet of rentable area, included in the statistical tables, are important items to note in determining the usefulness of the data for a particular metropolitan area. Revenue data should be considered only as an advisory number useful in initiating the first project analysis.
IREM INCOME/EXPENSE ANALYSIS APARTMENTS	Apartmt.		Median revenue data (as well as low and high quartile ranges for large sample sizes) are provided for selected metropolitan areas, regions and age group; as well as organized by furnished and unfurnished apartment buildings. Data is presented for elevator, low rise 12-24 units, low rise 25 or more units, and garden type buildings. The total number of apartment buildings and their cummulative square feet of rentable area included in the statistical tables are important items to note in determining the usefulness of the data for particular metropolitan areas. Revenue data should be considered only as an advisory number useful in inetating the first project analysis.

B - DECISION MODELS: INTERMEDIATE PROJECT ANALYSIS	
SUITABILITY FOR USE IN ANALYSIS Content/Fit	MARKET VACANCY AND OPERATING EXPENSE ESTIMATES
	The vacancy data included in the "Survey of Office Space Occupancy" is collected from a larger sample of buildings than the downtown and suburban statistical tables. The "Office Space Occupancy" survey provides more reliable indications of vacancy than those found in the data charts organized by city, city size, building size, age, and story height. The expense line items are averages that should be analyzed individually and adjusted for local market conditions. The summing of all average expense items without adjustment will generate an inflated project operating expense statement. Expense data, in the Downtown and Suburban Statistical Tables, is organized by building size, age, story height, and city size. All data is presented in cents per square foot of total rentable area (office and retail space), total rentable office area, and actually rented office area. If the proposed project is exclusively rental office space, then select appropriate operating expense data from the "Office Total" (total rentable office area) column. The total number of buildings and their cumulative square feet of rentable area, included in the statistical tables, are important items to note in determining the usefulness of the data for a particular metropolitan area. This manual of historical operating expense data can be used to verify estimates of up-to-date local operating expense data. The size and character of the manual survey sample may give incomplete indications of local market supply /demand forces, current lease terms, or particular project management strategies.
	The vacancy data included in the "Trend Analysis" section provides an indication of vacancy nationwide by building type. The vacancy data found in the metropolitan statistical tables are samples from selected metropolitan areas. Careful attention should be given to sample size and the number of apartment buildings, apartment units, and rentable square feet before making a judgement about apartment vacancy in a specific metropolitan area. Current, locally collected data for competitive rental space should be used in the intermediate models when possible. The expense line items are medians, (with low and high quartile ranges for large sample sizes) atated as a percentage of Gross Possible Income and in dollars per square foot of rentable area. This data should be adjusted for lacal market conditions. The summing of all expense items vertically without adjustment will generate an inflated project operating expense statement. Be aware that expenses are listed as a percentage of Gross Possible Income. This income includes miscellaneous revenue from garage/parking and store/offices rental. If the proposed project is exclusively rental apartment space, then expenses as a percentage of Gross Possible Income must be adjusted to a Rent-Apartments. This manual of historical operating expense data can be used to verify estimates of up-to-date local operating expense data. The size and character of the manual survey sample may give incomplete indications of local market supply/demand forces, current lease terms, or particular project management strategies.

C - DECISION MODELS: ADVANCED PROJECT ANALYSIS	
SUITABILITY FOR USE IN ANALYSIS Content/Fit	MARKET VACANCY AND OPERATION EXPENSE VERIFICATION
	This manual of historical operating expense data can be used to verify estimates of up-to-date local operating expense data. The size and character of the manual survey sample may give incomplete indications of local market supply/ demand forces, current lease terms, or particular project management strategies.
	This manual of historical operating expense data can be used to verify estimates of up-to-date local operating expense data. The size and character of the manual survey sample may give incomplete indication of local market supply/ demand forces, current lease terms, or particular project management strategies.

NAME OF DATA SOURCE	PROJECT DEVELOPMENT CATEGORY	A - DECISION MODELS: INITIAL PROJECT ANALYSIS	
		SUITABILITY FOR USE IN ANALYSIS Content/Fit	MARKET REVENUE AND SPACE ALLOCATION
IREM INCOME/EXPENSE ANALYSIS SUBURBAN OFFICE BUILDINGS	Office		Revenue is presented in dollars per square feet of Gross Area of Building, Gross Rentable Office Area, and Net Rentable Office Area. The appropriate revenue data used in the initial models depends on whether floor areas are to be leased by single or multiple tenants. Median revenue data (and low and high quartile ranges for large sample sizes) is provided for selected suburban metropolitan areas and regions according to building size, age group, rental range, and building type. Revenue data appropriate for the initial project analysis is found under the heading "Income" for the "Offices" line item. Miscellaneous income would be excluded when project design calls for exclusive office rental space. Revenue data should be considered only as an advisory number useful as a starting point for the initial project analysis.
ULI DOLLARS & CENTS OF SHOPPING CENTERS	Shopping Centers		Revenue data (collected every third year) is provided for neighborhood, community, regional, and super regional shopping centers. The revenue data is presented by dollars per square foot of "Gross Leaseable Area" and as a "Percentage of Total Receipts." The revenue data is reported as medians with lower and upper deciles. All data is presented in dollars per square foot of Gross Leasable Area which includes all areas leased by the center owner. (including department stores owned by the center) "Total Operating Receipts" is the appropriate revenue data to use in the initial project analysis model. It is found in the statistical tables by shopping center type, age, and region. Revenue data from the "Operating Results" table should be considered only as an advisory number useful as a starting point for the initial project analysis. In more advanced analysis models, particular tenant composition and the resulting rent structure will give a more accurate indication of possible revenues for the proposed project.

B - DECISION MODELS: INTERMEDIATE PROJECT ANALYSIS	
SUITABILITY FOR USE IN ANALYSIS Content/Fit	MARKET VACANCY AND OPERATING EXPENSE ESTIMATES
	The vacancy data included in the "Trend Analysis" section provides an indication of suburban office building vacancy nationwide for the year. The vacancy data found in the suburban metropolitan statistical tables is reported as of December 31, of preceeding year. Careful attention should be given to sample size and the number of office buildings and their cumulative square feet of rentable area before making a judgement about office building vacancy in the particular suburban metropolitan area. Current local collected vacancy data for competitive rentable space should be used in the intermediate models when possible. If the proposed project is exclusively rental office space, then select appropriate operating expense data from the Gross Rentable Office Area or Net Rentable Office area The total number of buildings and their cumulative square feet of rentable area included in the statistical tables are important items to note in determining the usefulness of the data for a particular suburban metropolitan area.
	Operating expense data (collected every third year) is provided for neighborhood, community, regional, and super regional shopping centers. The expense data is presented by dollars per square foot of "Gross Leasable Area" and as a 'Percentage of Total Receipts." The expense data is reported as medians, with lower and higher deciles. Vacancy data is not included as a segregated item. Tenant information is given for low and high total rent charges to facilitate estimation of tenant composition and the resulting rent structure for the proposed project in the intermediate analysis. The specific revenue and expense data for the four shopping center categories is summarized in the "Operating Results" tables. Data is analyzed by region and shopping center age groups.

C - DECISION MODELS: ADVANCED PROJECT ANALYSIS	
SUITABILITY FOR USE IN ANALYSIS Content/Fit	MARKET VACANCY AND OPERATING EXPENSE VERIFICATION
	This manual of historical operating expense data can be used to verify estimates of up-to-date local operating expense data for suburban office buildings. The size and character of the manual survey sample may not give adequate indications of local market supply/demand forces, current lease terms, or particular project management strategies.
	Debt service is included in the "Operating Results" tables. This data is inappropiate for the advance project analysis models which generate their own annual debt service estimates for the project. "Detailed Tenant Information Tables", for different center categories, indicate the base rental rate, percentage (overage) rent, and common area charges that equal the total revenue expected per square foot of Gross Leaseable Area for each type of possible tenant. The frequency of occupancy and the median size of leased area for different tenants can be found in the "Summary of Tenant Information Tables". This manual of historical operating revenue and expense data can be used to verify estimates of up-to-date local shopping center revenue and expense data. The size and character of the manual may not give adequate indications of local market supply/demand forces, current lease terms, or particular project management strategies. (These factors are considered in the advanced project analysis process when tenant composition for the center has been tentatively identified.)

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Ready

RUN MRCAX
```

* GROSS RENT	$ 133365.	* RATE OF GROWTH OF GROSS RENT	0.0000
* EXPENSES	$ 13419.	* RATE OF GROWTH OF EXPENSES	0.0000
* R E TAXES	$ 16619.	* RATE OF GROWTH OF R E TAXES	0.0000
* INCOME TAX RATE	0.5000	PROJECT VALUE GROWTH OF	6.0000
* VACANCY RATE	0.0229	WORKING CAPITAL LOAN RATE	0.1400
EQUITY DISCOUNT	0.1200	EXTRAORDINARY EXPENSES	$ 0.
RESALE COST	0.0600	REINVESTMENT RATE	0.0700
WKG CAPITAL RS	$ 0.	CAPITAL RESER INTEREST RATE	0.0700
INITIAL COST	$ 972654.	INITIAL EQUITY REQUIRED	$ 133572.

A ALL '*' VALUES ARE AVERAGE AMOUNTS FOR HOLDING PERIOD. OF 5 YRS.
INITIAL COST DERIVED THROUGH BACKDOOR TYPE -1 USING 1 MORTGAGES

A COMPONENT SUMMARY

TITLE	PCT. DEPR	BEGIN USE	USEFUL LIFE	DEPR METHOD		COST	SCH
LAND	0.00	1	0.	0	$	215814.	0
IMPROVEMENTS	0.90	1	33.	2	$	756840.	0

MORTGAGE SUMMARY

TITLE	INTR RATE	BEGIN YR.	END YR.	TERM		ORIG BALC	PCT VALUE
FIRST MORTGAGE	0.0962	1	27	27	$	839082.	0.863

A

CASH FLOW ANALYSIS

		1979	1980	1981	1983
1	GROSS RENT	133365.	133365.	133365.	133365.
2	LESS VACANCY	3054.	3054.	3054.	3054.
3	LESS REAL ESTATE TAXES	16619.	16619.	16619.	16619.
4	LESS EXPENSES	13419.	13419.	13419.	13419.
5	NET INCOME	100273.	100273.	100273.	100273.
6	LESS DEPRECIATION	20641.	20641.	20641.	20641.
7	LESS INTEREST	80464.	79774.	79015.	77259.
8	TAXABLE INCOME	-832.	-142.	617.	2373.
9	PLUS DEPRECIATION	20641.	20641.	20641.	20641.
10	LESS PRINCIPAL PAYMENTS	6859.	7549.	8308.	10064.
11	CASH THROW-OFF	12950.	12950.	12950.	12950.
12	LESS TAXES	0.	0.	309.	1187.
13	LESS RESERVES AT 2070.000	2070.	2070.	2070.	2070.
14	CASH FROM OPERATIONS	10880.	10880.	10571.	9693.
15	WORKING CAPITAL LOAN(CUM B)	0.	0.	0.	0.
16	DISTRIBUTABLE CASH AFR TAX	10880.	10880.	10571.	9693.
17	TAX SAVING ON OTHER INCOME	416.	71.	0.	0.
18	SPENDABLE CASH AFTER TAXES	11296.	10951.	10571.	9693.

REPORT SECTION NUMBER 6 PAGE 1

YEAR OF ANALYSIS

		1979	1980	1981	1983
A	AFTER TAX RATIO ANALYSIS				
35	RETURN ON NEW WORTH AFT TAX	-0.1649	0.3005	0.2380	0.1919
36	CHANGE IN NET WORTH AFT TAX	-33316.	19172.	17853.	20294.
37	CASH RTN ON ORIG CASH EQUIY	0.0846	0.0820	0.0791	0.0726
38	PERCENT ORIG EQUITY PAYBACK	0.0846	0.1666	0.2457	0.3943
39	PRESENT VALUE OF PROJECT	938682.	953106.	963137.	977583.
40	NET INCOME-MARKET VALUE RTO	0.1016	0.1001	0.0986	0.0957
41	LENDER BONUS INTEREST RATE	0.0000	0.0000	0.0000	0.0000
42	DEFAULT RATIO	0.8800	0.8800	0.8800	0.8800

REPORT SECTION NUMBER 7 PAGE 1

YEAR OF ANALYSIS

		1979	1980	1981	1983
A	MODIFIED INTERNAL RATE OF RETURN ANALYSIS				
	RETURN ANALYSIS WITHOUT SALE				
41	CUM. AFT TAX SPENDABLE CASH	11296.	23038.	35222.	60883.
44	MOD. I.R.R. ON ORIG EQUITY	-0.9154	-0.5847	-0.3587	-0.1454
45	MOD. I.R.R. ON CUM. EQUITY	-0.9154	-0.5847	-0.3587	-0.1454
	RETURN ANALYSIS WITH SALE				
46	CUM. CASH LESS ORIG EQUITY	-24420.	8894.	38932.	103911.
47	CUM. CASH LESS CUM. EQUITY	-24420.	8894.	38932.	103911.
48	MOD I.R.R. ON ORIG EQUITY	-0.1828	0.0328	0.0890	0.1220
49	MOD I.R.R. ON CUM. EQUITY	-0.1828	0.0328	0.0890	0.1220

VI. Property analysis to determine alternative uses

A. Elements of analysis are approached as an inductive research problem moving progressively from on-site facts to external conditions. The appraiser needs to examine the following elements in sequence: (See Exhibit 3)

1. Physical attributes of site and improvement.

2. Legal-political constraints on alternative uses.

3. Basic financial parameters of alternative uses.

4. Existence of effective market demand for remaining alternatives.

5. Comparative risk and return evaluation of alternatives for which there may be demand.

B. A physical analysis of inventory of site and improvement attributes should include the five following subsets:

1. Physical attributes (static) include site dimensions, soils, geology, topography, site improvements and capacity, and on-site flora and fauna.

2. Legal-political attributes include not only zoning and subdividing codes at the local level but also relevent federal, state, or private controls which might direct or restrict site use. As appropriate, the appraiser should note administrative patterns relevant to application of law to use of subject site.

3. Linkage attributes identify relationships of site to networks, populations or activities centers that might generate potential demand for the subject property.

4. Dynamic attributes are those attributes which exist in the mind of others in terms of status, anxiety, beauty, imagery, sentimentality or other perceptions which attach to the subject property to the degree that these are economically significant.

5. Environmental attributes of the site concern with off-site natural systems of which the subject property may be a part such as riparian rights, pollution down wind, storm water runoff, etc. Even the shadow cast by the structure off-site may become significant in the era of solar energy. Impacts on others may be perceptual (i.e. dynamic) or fiscal (legal-political) as well.

C. Static site attributes which begin to narrow the potential market to alternative uses should include both the facts and their implications for productive use in such topic areas as:

1. Size, shape, and lot area

2. Topography, soils, geology, slope stability, bearing capacity, septic suitability, potential for subsidance, etc.

3. Water table, wells, streams, ponds, storm water swales, shoreland edges, and bulkhead lines, flood plain designations, etc.

4. Flora and fauna which enhance marketability or which might cause environmental impact litigation

5. Concealed utility easements, old foundations, etc.

6. Existing on-site utility services and capacity

7. Access points to public thoroughfares or private right-of-ways

8. Site improvements such as paving, retaining walls, pedestrian paths, culverts, etc.

9. Landmark attributes or historical site features

D. An inventory of legal attributes should move from specific site controls imposed by local zoning ordinances to state and federal regulations as well as private controls which may intervene. The appraiser has an obligation to report foreseeable attitues or future legislation which will affect administration of these ordinances relative to future uses of the site.

1. All alternative setback lines and building envelope interpretations relative to site

2. Legal uses under applicable zoning and critical limitations of each relative to FAR, bulk, parking requirements, DU count, etc.

3. Special zoning options which may be available at owners option such as rezoning, downzoning, PUD zoning, etc.

4. Special controls imposed by extra-territorial zoning, tax conservancy commitments, subdivision process, urban renewal districts, tax increment districts, etc.

5. Special state or federal constraints under airport approach zone districts, harbor commissions, coastal zones, Office of Environmental Protection Agency, etc.

6. Public attitudes of public commissions for sewer, water, highway, planning, or building administration

7. Public and planning premises of community master plans relative to sprawl, restoration, redevelopment, and other land use priorities as these attitudes will affect administraion of the law

8. Existing or impending legislation relative to such matters as:

   a. Septic tank installation
   b. Water quality for ground water, water recharge areas, storm water runoff, salt water encroachment, etc.
   c. Air quality standards relative to use, HVAC performance, micro-climate interference, etc.
   d. Conservation of envrionmental edges, prime agricultural land, wet lands

9. Define physical system sub-systems

   a. Foundation system
   b. Structural system
   c. Floor system
   d. Ceiling system
   e. Roof system
   f. Exterior wall system
   g. Interior wall system
   h. Horizontal circulation sytsem (provacy, interaction, congestion, confusion)
   i. Vertical circulation system (handicapped code, cost, economy of scale and height)

10. Delineation of functional systems

   a. Bay spaces
   b. Module unit
   c. Ceiling heights
   d. Visual codes - such as mass, entrance, claustrophobic signals

11. Public controls on possible alternative special uses such as restaurants, places of public assembly, schools, etc.

EXHIBIT 3

SITE IN SEARCH OF A USE

Static Attributes

- Physical
- Legal
- Linkage
- Environmental

Building Envelope & Orientation of Technical Alternatives

Market Attributes

General Market Patterns

- Micro Markets
- Neighborhood Expectations
- Future Markets

* Consumer profiles, price range, and product description

Possible Alternative Use Scenarios

* Alternative revenue justified capital budgets and source and application financing structure

Solvency Tests

Justified Private Capital
- Required Capital Investment
+ Public Capital Subsidy
= Net Private Capital Exposure

* Preliminary environmental, political, and fiscal constraints

Acceptable Alternative Uses

Infrastructure Tests

- Environmental Tolerance
- Public Service Capacity
- Fiscal Impact
- Public Priorities and Subsidy

* After-tax cash flows, financial ratios, and qualitative screens

Financially Solvent Most Fitting Use

Investment Tests

- Investor Limitations & Objectives
- Acceptable Risk Sensitivity Parameters

Most Probable Use of Site In Search of Use

12/1/78

F. Analysis of the static and legal/political attributes of site and structure should be summarized in terms of competitive advantages and disadvantages of plausible alternative uses for costs, pricing, marketing, and political administration of compatibility.

1. Some static attributes may help identify most probable user types (Ex. special display window sizes may be suitable for antique or art display) while attributes will make certain uses unlikely (Ex. floor load limitations of fire proofing weights required of places of public assembly).

2. Some static or legal attributes can provide monopoly advantages because suitability is unique relative to lands all around it, because of exemption from certain regulations, or existing approvals of development plans, including licenses for dredging, building code variances, etc.

3. Some attributes lead to higher cost which the front door approach may reveal as leading to excessive rents or prices.

G. Linkage attributes relate to subject property to both networks of supporting infra-structure which contributes toward effective demand for the property as economic space time or the supply and demand impact of related activity centers which may interact with the subject property.

1. Analysis moves best from the borders of the subject property outward to expanding zones of potential demand or competitive supply.

2. Utility services are network linkages in terms of:

   a. Limitations on sewage processing, storm water retention or runoff constraints
   b. Community energy supplies, priorities, and capacity
   c. Water processing and chemistry as applicable
   d. Possible dependency on resources such as wild game and fish, underutilized labor pools, fire department coverage zones, etc.

3. Street, sidewalk, rail, and public transit systems including access points, traffic department controls, etc.

4. Relationship of subject site to contiguous properties, balance of city block, and neighborhood layout pattern.

5. Relationship of subject site to generators of potential needs and uses for the subject site, such as:

   a. Employment centers
   b. School system alternatives
   c. Retail services
   d. Complimentary existing nearby uses
   e. Recreational services
   f. Health care systems
   g. Security systems
   h. Waste disposal services

6. Neighborhood demographics (population, age, employment, income, etc.)

7. Relationship to competitive alternative and estimate of supply of available space, competitive ranking, and exposure of subject site to competitive interception of potential demand.

H. Dynamic attributes are those characteristics which exist in the minds of the beholder, which are mental or emotional responses which a site or project stimulates and which affect decision making behavior.

1. Image conditioning of the approach zone

2. Visual factors in terms of prominence of the site, views from the site, potential for controlled sight lines, etc.

3. Prestige and status

4. Anxiety factors of access and security

5. Noise as a function of traffic count (FHA noise pollution manual)

6. Prevailing air currents and airborne pollution (phosphate plants or sulphite paper mills, for example).

7. Political images established for a site by the public positions of local politicians or vested interest groups.

8. Historical community reputation and values attached to the project site and structures.

I. Environmental attributes of the site recognize that the real estate product today must respond not only to the needs of the individual consumer in the marketplace but to the collective community of consumers represented by the community political administrators. Land use must be sold to both "markets." If the proposal won't sell at City Hall, there will be little opportunity to market the product individually. Pre-architectural programs must not only consider physical factors of environmental impact off-site, but in addition:

1. Silhouette of social impact in terms of public perceptions of:

   a. Displacement of existing residents and neighborhood units
   b. Contribution to social integration or mobility barriers
   c. Contribution to land use heterogeneity
   d. Contribution to regional and community master plans

2. Fiscal impact on the community where appropriate:

   a. Direct impact on real estate tax revenues
   b. Direct impact on other governmental revenue
   c. Direct impact on incremental government
   d. Secondary contributions to local government revenues
   e. Secondary cost burdens created for local communities

3. Social factors in the ethical environment:

FIGURE 1

TEN-YEAR ESTIMATE OF DIRECT EMPLOYMENT, INCOME, AND TAX REVENUE GENERATED FROM PROPOSED OFFICE DEVELOPMENT

	Employment[a]			Income[b] (in millions)			Tax Revenue[c]		
	Construction	Operation	Total FTE	Construction Costs	Operational Payroll	Total	Construction[d]	Operation	Total
1981	300	--	300	$8.7	--	$8.7	52,500	--	52,500
1982	400	779	1,179	8.7	$3.1	11.8	70,000	101,454	171,474
1983	400	779	1,179	5.0	12.4	17.4	70,000	405,812	475,812
1984	400	1,329	1,729	6.9	14.6	21.5	70,000	481,178	544,178
1985	400	1,642	2,042	4.0	26.1	30.1	70,000	692,210	762,210
1986	--	1,642	1,642	--	26.1	26.1	--	855,185	855,185
1987	--	1,642	1,642	--	26.1	26.1	--	855,185	855,185
1988	--	1,642	1,642	--	26.1	26.1	--	855,185	855,185
1989	--	1,642	1,642	--	26.1	26.1	--	855,185	855,185
1990	--	1,642	1,642	--	26.1	26.1	--	855,185	855,185
Ten-Year Total				$33.3	186.7	$220.0	$350,000	$5,956,579	$6,289,099

Source: Midwest Research Institute.

[a] Annual full-time equivalent employment (FTE).
[b] In constant 1980 dollars.
[c] Presumes constant tax rates over the 1980 decade.
[d] Includes earnings tax only; based on an average annual construction salary of $17,680 (U.S. Department of Labor, May 1980).

FIGURE 2

ESTIMATE OF TAX REVENUES GENERATED BY OFFICE DEVELOPMENT, BY TAXING DISTRICT

Taxing District	Average Tax Rate per leasable sq. foot[a]	Estimated Tax Revenue[b]
CITY.		
Employee Earnings Tax	0.53	$ 261,389
Corporate Net Profit and Earnings Tax	0.12	59,182
Merchants Tangible Personal Property Tax	0.029	14,302
Utility Tax	0.31	152,888
Real Estate Property Tax	0.135	66,580
		$ 554,341
COUNTY		
Merchants Tangible Personal Property Tax	0.125	$ 61,648
Gross Real Estate Property Tax	0.119	58,689
		$ 120,337
SCHOOL DISTRICT		
School Levy	0.324	$ 159,793
LIBRARY DISTRICT		
Library Levy	0.015	$ 7,398
JUNIOR COLLEGE		
Junior College Levy	0.02	$ 9,864
OTHER DISTRICTS		
Sheltered Workshop	0.007	$ 3,452
Total Tax Revenues		$855,185

Source: City Finance Department, and County Property Tax Division.

[a] Based on actual taxes paid by comparable office complexes in immediate area.

[b] Estimate of revenue generated from 519,144 leasable square feet at 95 percent occupancy; 493,187 net leasable square feet.

FIGURE 3

INDIRECT IMPACTS OF CONSTRUCTION AND EMPLOYMENT GENERATED BY THE PROPOSED OFFICE DEVELOPMENT

A. IMPACT OF CONSTRUCTION ON AREA INCOME

1.	Construction Cost	= $36 Million
2.	Construction Dollars Spent Within The Local Economy	= $33.3 Million
3.	Construction Multiplier	= .91
4.	Indirect Impact Of Construction = 33.3 x .91	= $30.3 Million
5.	Total Direct And Indirect Impact = 33.3 + 30.3	= $63.6 Million

B. IMPACT OF BUILDING EMPLOYMENT ON AREA INCOME

1.	Payroll Of Building Employment	= $26.1 Million/Yr.
2.	Payroll Multiplier	= 1.31
3.	Indirect Impact Of Building Employment = 26.1 x 1.31	= $34.2 Million/Yr.
4.	Total Direct And Indirect Impact = 26.1 + 34.2	= $60.3 Million/Yr.

FIGURE 13

THE HUD URBAN DEVELOPMENT ACTION GRANT (UDAG) PROGRAM

The HUD Urban Development Action Grant (UDAG) Program provides grants to local governments for development projects which help revitalize a community's economic base, provide jobs, or assist in improving a deteriorating area. Before an action grant is approved, private developers and investors must make commitments to undertake the private elements of the project. Also, local governments have a great deal of discretion in how the Federal funds are used. They can be used to finance public facilities (parking garages, streets and plazas); to acquire and prepare sites; to assist in relocation of households and businesses; or to provide a part of the equity financing for private facilities.

PROJECT NAME AND CITY	TYPES OF USES	TOTAL DEVELOPMENT COSTS	UDAG	TYPE OF PUBLIC ASSISTANCE
1. LINCOLN PARK PROJECT, DENVER, COLORADO	NEW HOUSING AND HOUSING REHABILITATION	$62.4 MILLION	$13.5 MILLION	LAND ACQUISITION, RELOCATION, CLEARANCE, HOUSING REHABILITATION, STREET IMPROVEMENTS
2. SEVENTH PLACE TOWN SQUARE ST. PAUL, MN.	MIXED USE WITH CONVENTION CENTER	$100 MILLION	$4.8 MILLION	PARKING GARAGE, MALL, PEDESTRIAN WALKWAYS, LAND ACQUISITION
3. SYBRON PROJECT, ROCHESTER, NEW YORK	MANUFACTURING CORPORATION	$27.9 MILLION	$5.15 MILLION	LOAN FOR PLANT RENOVATION AND EXPANSION

SOURCE: URBAN LAND INSTITUTE, UDAG PARTNERSHIPS, NINE CASE STUDIES, 1980.

FIGURE 14

THE UDAG EVALUATION FORMAT

- Sources and Uses of Funds for Project identifies the sources of funds (such as UDAG funds, private mortgage commitments, and local fund monies). It also shows how these funds are to be used (i.e., for site acquisition, streets, parking, capital equipment, etc.).

- Estimated Leverage Ratio identifies the ratio between public and private funds. This ranges from 3 private/ 1 public for neighborhood projects to around 10/1 for downtown commercial projects.

- Other Public Financial Assistance describes other commitments to the project. These usually include CDBG funding, State funds for development or other Federal funds (such as Urban Mass Transit Administration (UMTA), Economic Development Administration (EDA), or Small Business Administration (SBA) funds).

- Alleviation of Physical Distress describes the impact the project will have upon population, dwelling units and/or commercial/industrial projects in the area.

- Alleviation of Economic Distress identifies the project's impact upon economic activity within the municipality in terms of permanent and temporary jobs; and income.

- Fiscal Improvement identifies the net impact of the project on local revenue and provides a ratio comparing dollar net increase in tax collections with dollars injected by the UDAG commitment. This is a basic indicator of return on investment to the municipality as a result of the Federal commitment of funds.

- Relocation Impacts identifies the potential costs created by a project due to relocation of jobs, businesses and residents. Included in this analysis is its effect on minority populations and businesses.

- Provision of Housing describes the mix of housing provided by income levels, in projects which are residential in character.

These eight steps, which each HUD-UDAG applicant must complete, make up a concise impact analysis which identifies both costs and benefits of a potential project.

a. Impact on supply/demand equilibrium
b. Stamina of project sponsor in the face of public pressure
c. Vulnerability of potential project buyers to secondary political pressures and counter attack
d. Potential uses requiring unique political resources or private/public consortiums

J. For the experienced real estate analyst systamatic narrowing of alternative uses from study of the attributes leads to a limited series of alternatives which can then be given a final screening in terms of preliminary financial analysis and effective demand. The analyst may review these attributes to identify alternative uses by emphasizing one or more of the following angles of inquiry.

1. Does any site of site attributes suggest a special space/time - to money/time configuration? For example, a high floor area ratio but little parking may suggest a building with a low person occupancy, such as a switchboard building or luxury apartment with minimum number of dwelling units.

2. What attributes of the subject site provide monopoly characteristics or are inferior to alternative sites?

3. What patterns in adjacent or competitive structure represent a trend to which the subject property should adapt?

4. What patterns of use is revealed by transactions in similar properties on nearby locations?

K. A program of use or reuse can be called a scenario and may be suggested by physical characteristics of the property, contiguous property trends and conditions, or known supply shortages with which the appraiser is familiar.

L. Ranking of these scenarios for economic power is accomplished by means of the Back Door approach, i.e., the revenue justified investment for the property, as is alternative whrksheets for this approach using the default point and the debt cover ratio as the critical conversion of income to capital are provided in Exhibits 4-10.

M. Economic power has to be qualified in terms of marketing risks and capital budgeting risks of each of the alternative uses before alternative uses can be ranked in summary fashion as in Exhibit 6.

1. Note that Exhibit 6 integrates the basic elements of preliminary feasibility analysis.

2. Remaining disucssion will emphasize market risk which is the primary cause of misleading appraisal conclusions

Exhibit 4

REVENUE REQUIRED BY CAPITAL BUDGET
LOAN TO COST RATIO APPROACH

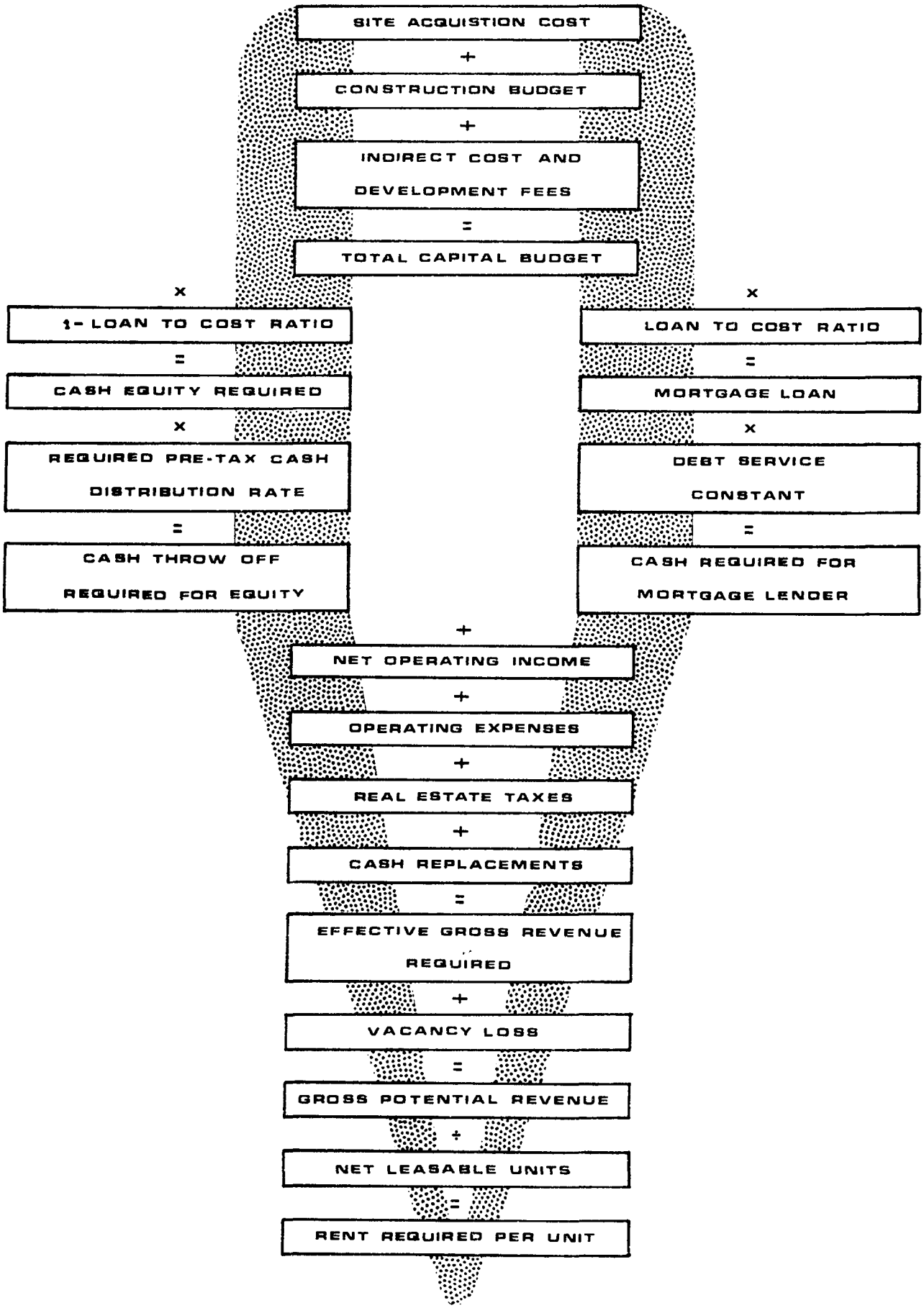


Exhibit 5

REVENUE JUSTIFIED CAPITAL BUDGET
DEFAULT RATIO APPROACH

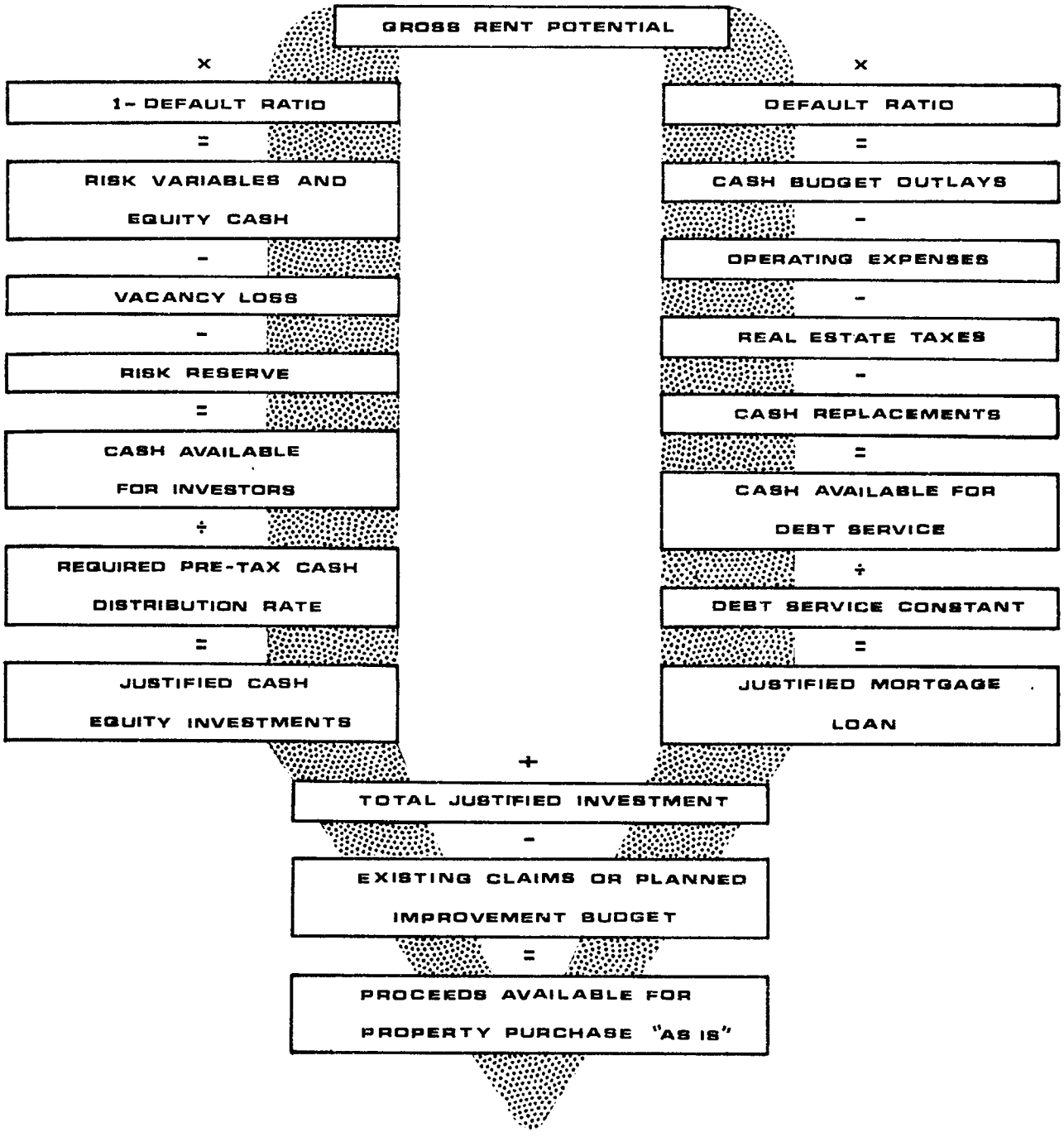
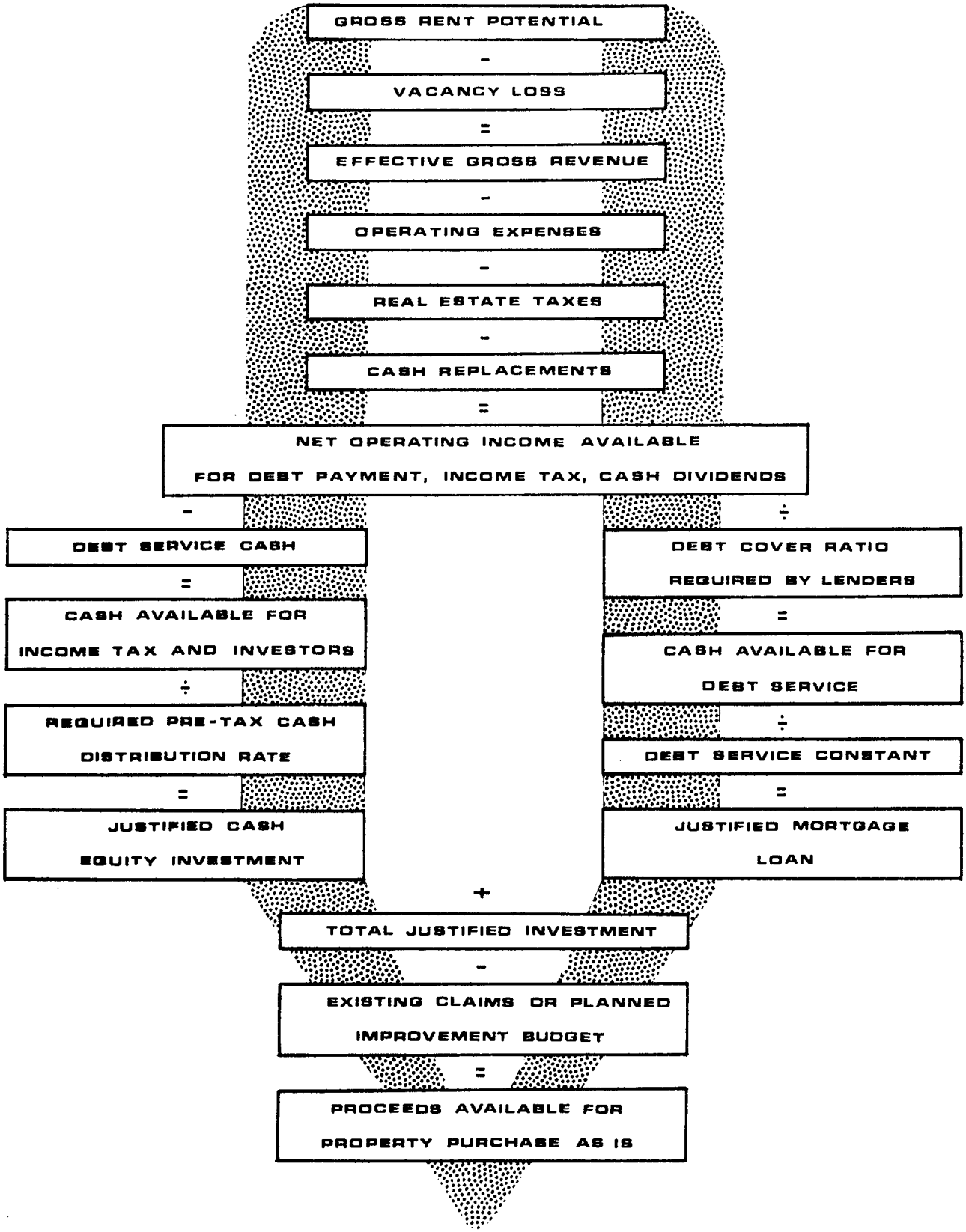


Exhibit 6

REVENUE JUSTIFIED CAPITAL BUDGET
DEBT COVER RATIO APPROACH



REAL ESTATE FEASIBILITY SEMINAR

Presented by Professor James A. Graaskamp, SREA, CRE
University of Wisconsin School of Business

2nd Day

I. Consumers - The Drive Wheel of the Urban Development Process

A. The real estate process described yesterday morning is driven by discretionary consumer expenditures for real estate and services but that consumer is not an aggregate group; rather it is a very large number of very small segments in a price system designed to give the consumer democratic choice.

1. Jaquelin Robertson, former director of master planning for the City of New York under Lindsay and now a private planner with Llewelyn-Davies International states that one must build to the strength to the system, and not its weaknesses. "What carries a system forward - build around that."

2. Viable development is carried forward when its product is what certain consumer groups want and are willing to pay for and that is different from what planners want and think people should pay for it.

3. Development begins with hard headed micro-market consumer research in order to profile what motivates the consumer, what turns him off, and what he can afford to pay.

a. With a revenue forecast, it is possible to back down on what the private sector can invest.
b. The amount of the investment converts to real estate tax income which can be backed down to public investment at local level.
c. Balance of cost must be subsidized by grants or shifted to secondary beneficiaries.

4. Redevelopment design must begin with a merchandising strategy designed to secure a competitive market position for the project proposal and then approach physical design with a pre-architectural program defined by consumer research and not be the conceits of the planning school. Where that is done the project succeeds because the cash flows are there and the financial structure has been driven by parameters controlled by rent rather than cost, i.e., the back door approach.

B. The objective today will be to define the general structuring and surveys of consumer research and in the process to provide three examples.

C. Free enterprise is the art of creating ones own monopoly, if only for a moment, in the mind of the buyer. Monopoly characteristics depend on careful market setmentation and catering to the segment.

1. Site and building characteristics of an existing building already provide a product profile which suggests the market segments.

2. Definition of the prospect may reflect family size, business functions and specialties, tax status, life style, an infinite number of subsets of our society. Nevertheless Americans are programable and predictable to a degree that permits product specification.

D. As a result of merchandising research the analyst should be able to construct a hypothetical marketing program which defines:

1. The most probable user groups, their total number, and their effective demand constraints.

2. The timing of their effective demand in the market.

3. The competitive standard product minimum.

4. The competitive product edge necessary for monopoly advantage

5. Basic elements of a required promotion program

II. The first step is to reduce aggregate data about user groups which is plausible but overly general information to a scale which will focus on a sub-segment with a proper rationale or hierarchy. To do that requires an analytical model and in most cases, each situation requires the analyst to create his own model with which to structure the data available and to discover the missing links in the logic diagram which must be researched.

A. Models organize the anlyst, the report, and the client

1. Models explain what you are going to do.

2. Models make relationships and key assumptions explicit.

3. Models permit clients to understand logic of conclusion and to test his own set of assumptions.

B. A market research model should be careful to recognize?

1. What are the questions

2. What data is available which is relevant?

3. What theory is available to focus data on the questions?

4. How will the results be communicated?

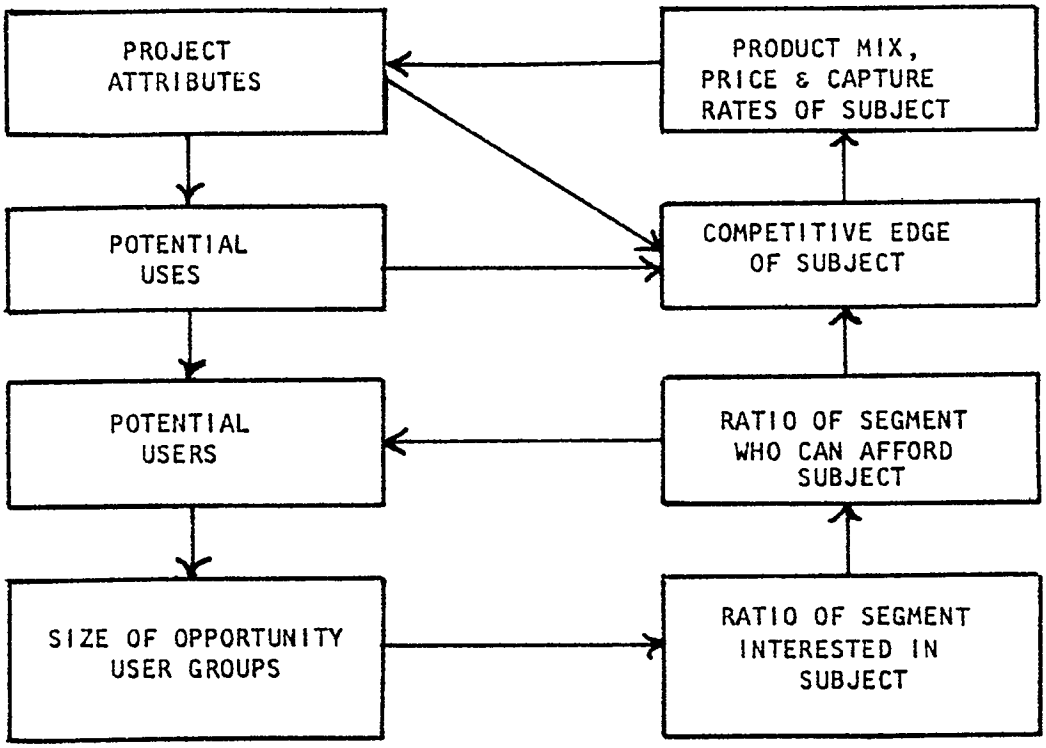
5. What are the abilities of the analyst?

6. What is the cost benefit ratio between the model method and the question?

C. Market data refers to aggregate data, secondary information, the easy to acquire data from census tracts, traffic counts, building permits, and so on. It is useful to scale the size of the market potential, of the opportunity area but by itself aggregate market data is relatively unimportant to the success of most projects.

EXHIBIT I

SEGMENTATION LOGIC TREE



D. Merchandising data is generally primary information generated by the analyst about specific competitive projects and specific user groups which will permit an estimate of what percentage of the opportunity group can be captured for a specific project.

1. Absorption rates apply to aggregate market data to determine the total size or amount of market activity in terms of how many lots were sold, how many apartments in a rental range were newly rented, or how many square feet of leased office space were occupied.

2. Capture rates are the product of merchandise research and are the ratio of the total opportunity potential which might be secured for a project or must be secured to achieve financial goals. The capture rate will reflect a careful judgment of product mix, amenities, pricing, and timing.

E. A flow chart of the market research process is provided in Exhibit 1.

F. Most multi-tenant or multi-user land uses are susceptible to a retail trade area model. A retail model is a device analogous to establishing a retail trade area perimeter for a super market to segregate households which have a reasonable probability of using the outlet from those who don't because of convenience, distance, age, or income. Thus the analyst should establish a preliminary hypothesis for:

1. Primary market area to be served.

2. Secondary market area to be served.

3. Principal competitors.

G. Consider Exhibit 2 as a simple market model to define the size of an opportunity area in a selected county for elderly persons requiring residential care units.

1. For lines with asterisks the key ratios for reduction were derived from a survey of the elderly generating primary data for this county.

2. For example, while 37% of the elderly were financially qualified, only about 60% of those were interested in considering a residential, minimal care facility or 22% of those in the convential housing market - hence the reduction from 19,700 to only 4,200. This chart should have showed the ratios from the survey.

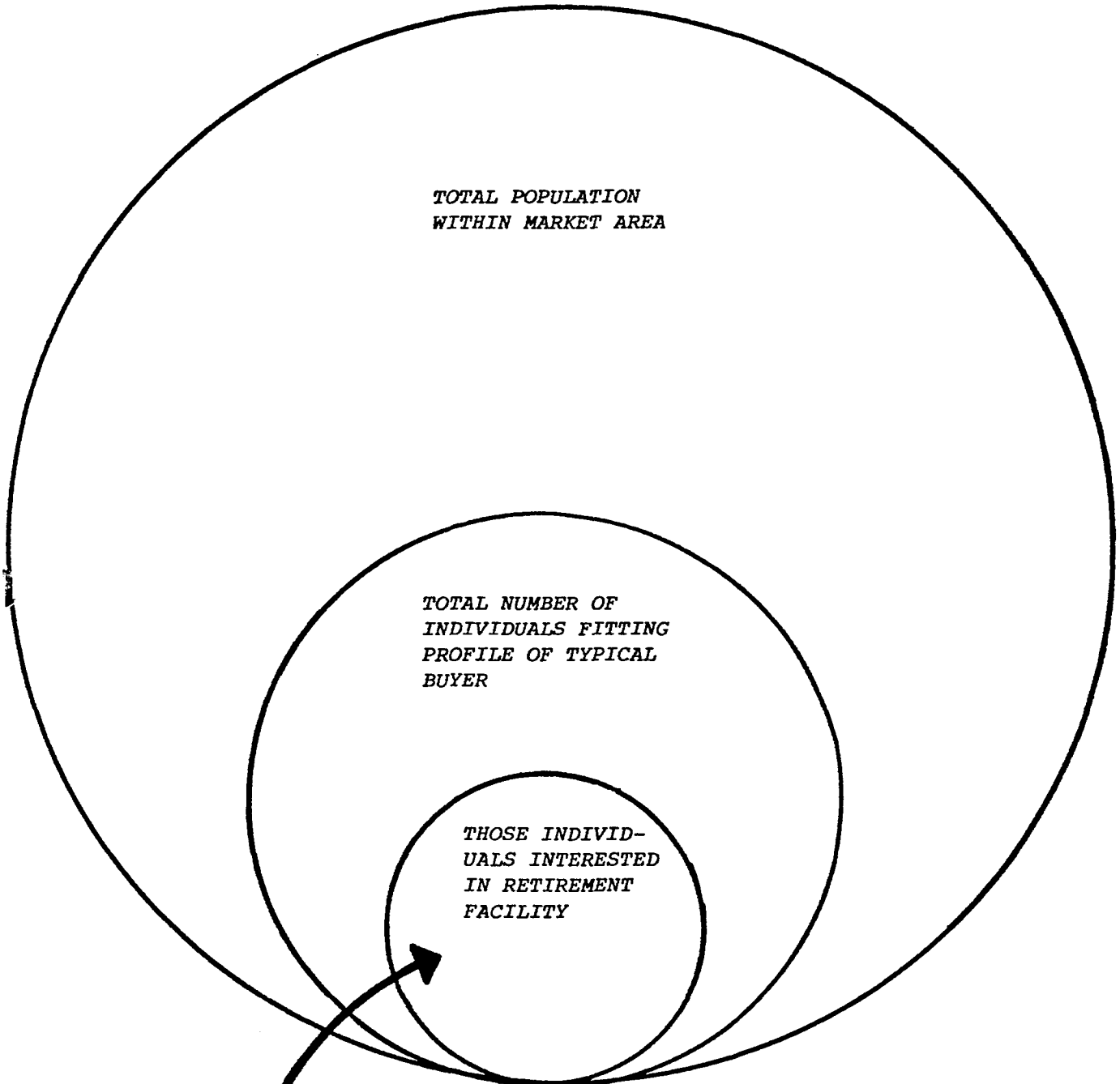
3. Failure to convert serious interest into action was a round number based on experience of those which had marketed similar developments in the past, as was an allowance for potential customers coming from outside the county to be closer to relatives, etc.

III. Market data provides a measure of potential scale of a market opportunity; the most important aspect of market analysis is forecasting the degree of market penetration or capture rate of remedial development.

A. To reduce aggregate market data to a merchandising hypothesis, the first clue to segmentation may be found in correctly understanding the essence of buyer motivation or of the activity to be housed.

EXHIBIT 2a

RETIREMENT CENTER MARKET SITUATION ANALYSIS



- WHAT ARE THEIR NEEDS?
- WHEN DO THEY WISH TO MOVE?
- WHAT ARE THEY WILLING & ABLE TO PAY?
- HOW MANY ARE THERE?

EXHIBIT 2b
DEMAND FOR ELDERLY RESIDENTIAL CARE UNITS

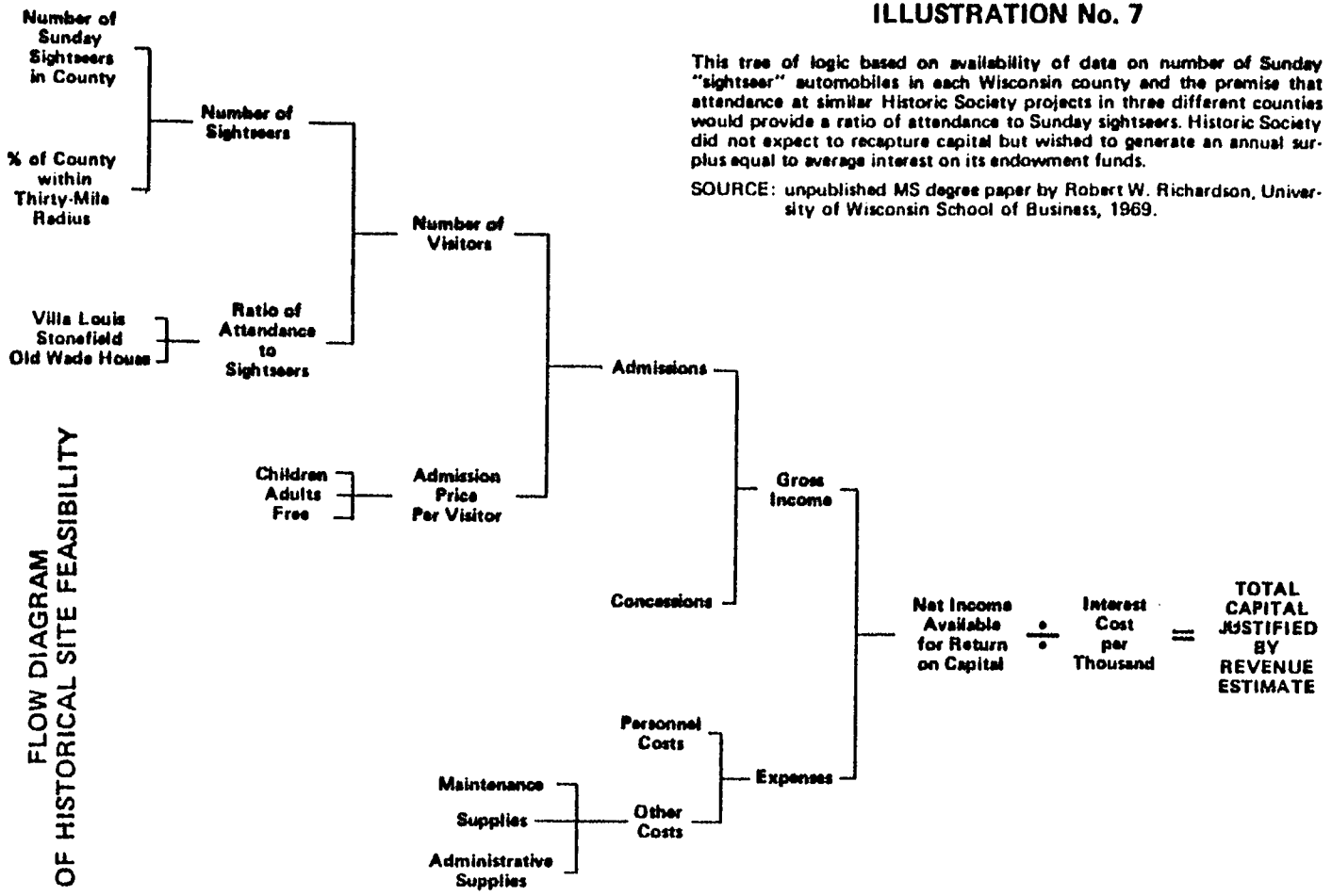
Persons in County age 65 and over in 1970		21,914
Adjustment 1970-1974 to reflect the number of persons moving into the 65+ bracket and the application of mortality rates by age and sex		245
Estimated persons in County age 65 and over in 1974		22,159
Less persons 65+ presently in nursing and residential care facilities in County	1,792	
Less persons 65+ presently in government subsidized housing for the elderly	638	2,430
Persons age 65+ in the conventional housing market in County in 1974		19,729
Survey percentage of persons financially qualified for $350 a month + $5,000 entry deposit (34%)		6,707
Survey percentage of these qualified who are seriously interested in proposed independent elderly unit (63.6%)		4,270
Household equivalent (+ 1.519 persons per household)		2,811
Less estimated number who will not convert serious interest into any form of action (50%)		1,406
Less the percentage who, while seriously interested, said (before they heard the hypothesis) that their next home would probably be outside County (13.3%) from survey questionnaire)	187	
Less those disqualified because their current health status necessitates care beyond the scope of services to be provided in the residential care units (5.4%) (from survey)	76	263
Elderly households in County qualified for and seriously interested in moving into the proposed development		1,142
Plus an allowance for those elderly households coming from outside County to enter the proposed development (10%)		127
Elderly households qualified for and seriously interested in moving into the proposed development		1,269
Share of market opportunity area who state in survey that for their next dwelling unit their first preference would be an apartment, in a highrise, midrise, or garden building:		
Highrise or midrise	28.0%	
Garden	49.1	
	77.1%	978
Less estimated numbers of households who might move into competitive developments available supply of units		270
Households that can be considered candidates for the proposed development		780

EXHIBIT 2C

ILLUSTRATION No. 7

This tree of logic based on availability of data on number of Sunday "sightseer" automobiles in each Wisconsin county and the premise that attendance at similar Historic Society projects in three different counties would provide a ratio of attendance to Sunday sightseers. Historic Society did not expect to recapture capital but wished to generate an annual surplus equal to average interest on its endowment funds.

SOURCE: unpublished MS degree paper by Robert W. Richardson, University of Wisconsin School of Business, 1969.



Source: James A. Graaskamp. A Guide to Feasibility Analysis, (Society of Real Estate Appraisers, 1972), p.40.

1. Retailing is a break point for goods (a warehouse grocery), or a service industry, or a theater using lighting, staging, and mood to reinforce a role played by the buyer.

2. A restaurant may be to provide a quick food break (high turnover, pedestrian flow, conditioned ordering), or to provide recreational entertainment and consumption of an evening, or to provide a staging for business, social, or publicity roles.

3. A motel for transients, for resorts, or for terminal traffic uses all of its facilities and location to sell a "room-night" of occupancy because that is an 80% gross margin. Anything done after that is justified by its contribution to "room-night" sales or its reduction of average cost to capture a customer per "room-night."

4. The revenue unit may be related to the method of measuring profit of the project in question such as per acre, per camper pad, per event, per front foot of shoreline, per stool or table, etc., not to mention sq. ft., per frame at a bowling alley or per tennis court hours, or per hour of ice time.

5. Sometimes the prospect is identified by who really signs the check for a particular type of real estate.

   a. The salesman or the management paying his travel costs
   b. The doctor or the clinic
   c. The district manager or the corporate real estate manager
   d. The ticket buyer or the promoter
   e. The bowling league, team business manager, travel agency tour guide

6. The market segment may be defined initially by the source for a prospective user list - people who share a common address, hobby, professional specialty or some other identifier.

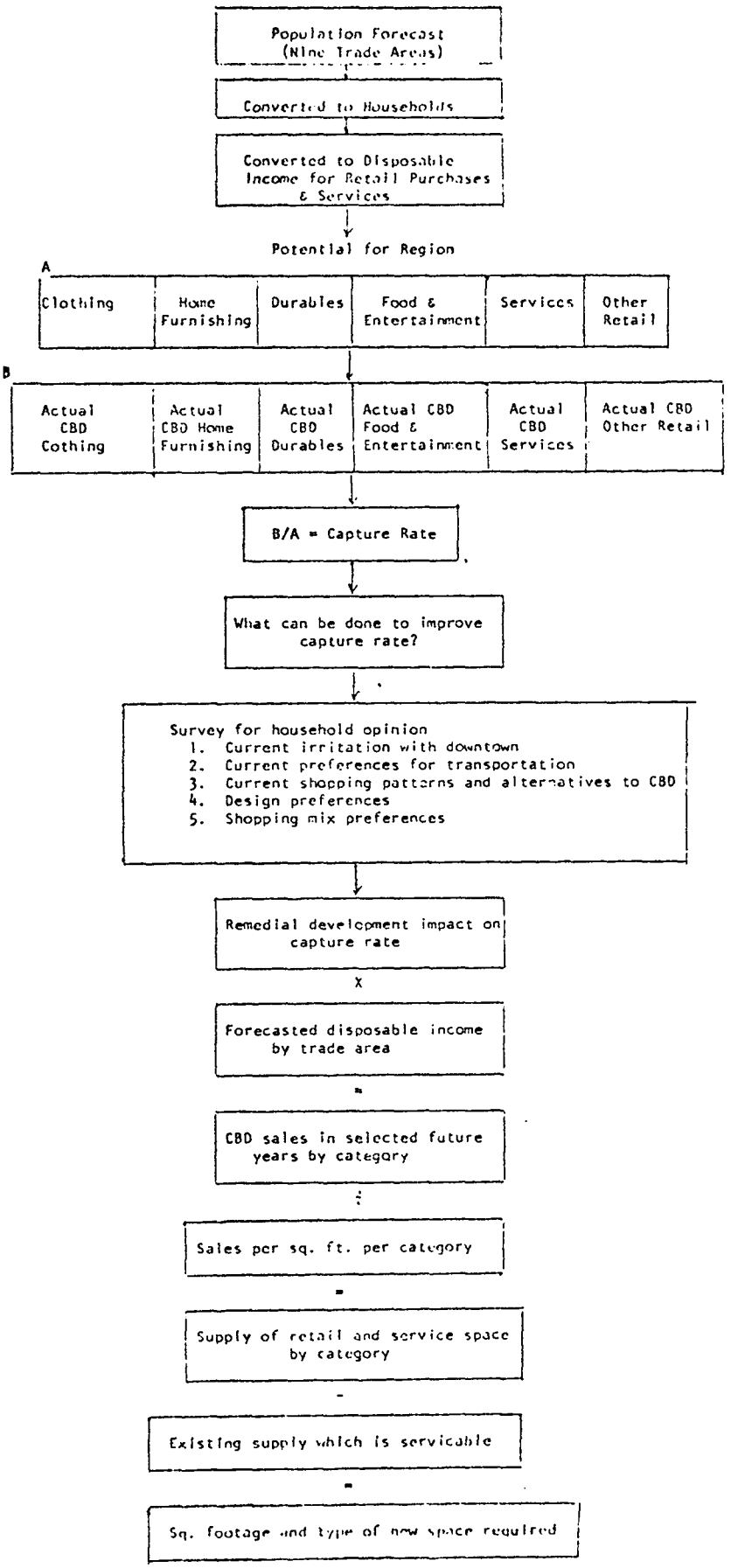
   a. A reverse directory or criss-cross telephone book
   b. Building directories of comparables
   c. Mailing lists of specialty publications
   d. License number spotting
   e. Guest registers
   f. Charge account mailing addresses

B. The objective of these approaches, revenue unit, the decision maker, the prospect list source, is to segment the user market to a specific and relatively small group of potential customers who can be surveyed to generate original and relevant information about their space needs and motivations. Unlike most consumer markets, the number of prospects is always low; think small!

1. Real estate is a series of micro-markets. A 24-unit building with one, two, three bedroom units has at least three sub-markets.

2. A 24-unit building is a $500,000 enterprise with a $75,000 gross sales potential from only 24 customers!

Exhibit 3


Population Forecast (Nine Trade Areas)
Converted to Households
Converted to Disposable Income for Retail Purchases & Services
Potential for Region
A
Clothing
Home Furnishing
Durables
Food & Entertainment
Services
Other Retail
B
Actual CBD Cothing
Actual CBD Home Furnishing
Actual CBD Durables
Actual CBD Food & Entertainment
Actual CBD Services
Actual CBD Other Retail
B/A = Capture Rate
What can be done to improve capture rate?
Survey for household opinion
1. Current irritation with downtown
2. Current preferences for transportation
3. Current shopping patterns and alternatives to CBD
4. Design preferences
5. Shopping mix preferences
Remedial development impact on capture rate
X
Forecasted disposable income by trade area
=
CBD sales in selected future years by category
÷
Sales per sq. ft. per category
=
Supply of retail and service space by category
-
Existing supply which is servicable
=
Sq. footage and type of new space required

C. A survey of existing properties and alternatives available to a selected market segment defines only the competitive standard - namely the minimum product and price necessary to be in the market.

1. Comparison shopping further identifies where there may be gaps in the supply of alternatives, a market opportunity gap, or where the oversupply is so significant as to portend the last competitive alternative before bankrupcy - namely price cutting.

2. Comparison shopping should not only identify the physical characteristics of the product and price but the nature of the promotion effort as well.

3. Promotion comparison should consider pedestrian and vehicle approaches, model location, furnishings, and sales people.

4. Review of the promotion campaign should reveal whom the competitors believe to be their prospect.

D. A survey of users, is designed to reveal or to identify the competitive differential attributes which would provide that monopoly element required of every successful project.

1. A second product of consumer survey is the ability to develop locally relevant ratios which permit disaggregation of market data into market segments and the conversion of potential numbers of people into potential dollar sales over time.

2. Survey questions to create ratios require previous construction of a market model hypothesis.

3. Survey questions can discover latent political issues or provide a calm base for citizen input from those who rightfully dislike public hearings.

4. Survey questions and execution should not be done by planners or appraisers.

IV. A good example of modeling market data through segmentation and survey for renovation in a small community is a project by Gruen Gruen + Associates for Santa Maria, California. The study was begun in 1972. Project is operating as the Santa Maria Town Center with retail sales ahead of forecasts.

A. The Gruen's were able to convince the redevelopment agency to avoid any physical planning until a detailed analysis of the demand for alternative services that could attract people back to the downtown area was done. This EMAS study (economic market analysis study) outline is in Exhibit 3 had the following outputs:

1. First, a full analysis of economic data and retail data was utilized to generate information about the type of tenancies that could realistically be expected to penetrate downtown markets. (Table of Contents Exhibit 4)

Exhibit 4

ECONOMIC AND MARKET ANALYSIS STUDY FOR DOWNTOWN SANTA MARIA

Prepared for: The City of Santa Maria
Redevelopment Agency

George S. Hobbs, Jr., Chairman
Elwin E. Mussell, Vice Chairman
Dan A. Firth
C. Clayton Kyle
Ed J. Zuchelli
Thomas P. Weldon, Jr., Executive Director

Prepared by:

GRUEN GRUEN + ASSOCIATES
Economic and Sociological Consultants

February, 1972

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2. With a lead on tenancies, the Gruen's worked with an architect to provide sketches of alternative architectural styles and concepts to show residence in survey to see what type of treatments might strike the most positive response. (See Exhibit 5)

3. The EMAS should then be able to indicate the kind of tenancies that could survive downtown, suggest their dollar sales potential, and indicate at a preliminary level a design scheme. (See Exhibit 6)

4. At the same time, back door financial studies are done from rents from capital budgets to discover what would be feasible for the private developer and what components may need to be subsidized by the public.

5. Appraisers use the EMAS and suggested tenant mix as the basis for their value estimate in the after condition.

6. Final stage was to write up a series of specifications or profiles on tenants, product design and components, and a cash flow analysis of the entire project from the viewpoint of the developer so he could see how much money there was to make tnd he would know that the city knew the financial aspects of the project. Developers were then asked to bid.

B. In the case of Santa Maria, three developers bid and the city picked Ernest Hahn to build the project. There was no demolition or site acquisition before the start of the EMAS. The entire project was done within a four year period. For the first six months of complete operation, June 1976 through December 1976, sales were approximately 15.6 million and is 70% leased. The Mall did 4.9 million, Sears - 6.9 million, and a local department store - 3.7 million.

C. Before looking at report organization and product, it is useful to observe:

1. Planners are poor market economists and merchandising survey analysts. Use specialist at the start.

2. Most appraisers are equally bad, but are reluctant to use team approach or to accept EMAS by somebody else as a legitimate set of assumptions for appraisal. Moreover, appraisal financial analysis must be on after tax cash flow in the redevelopment game, or he will miss the market completely. The financial analysis must contain extensive sensitivity analysis so that changing times due to a slow pace of such projects does not invalidate a fixed $/date conclusion.

3. The leader of the team should be oriented to empirical observation, be he planner, lawyer or architect, rather than dedicated to purist appraisal or planning dogma and esthetics. The numbers crunch or nothing will be built that should have been built.

Exhibit 5

Excerpt With Permission From
Economic & Market Analysis Study for Downtown Santa Maria

Prepared for City of Santa Maria Redevelopment Agency
by Gruen Gruen + Associates

Thus, the relationship between survey derived indications of satisfaction and current expenditure patterns were sufficiently significant to warrant the use of survey responses to suggest the change in relative preferences that would be caused by an appropriately developed new shopping agglomeration in downtown Santa Maria. However, the rapid deterioration of this relationship with distance suggested that it be used very cautiously in Trade Areas 5 through 9. Therefore, in addition to considering the percentage of respondents who made no complaints, we also analyzed into the following three categories all the comments that were made in response to the interview question concerning the reasons for not shopping in downtown Santa Maria:

1. Complaints about physical deficiencies of the existing downtown that we have assumed the redevelopment will alleviate. (Remediable complaints)

2. Complaints concerning limited selection such as requests for a department store or more stores. (Remediable complaints)

3. Complaints about prices, the lack of a supermarket or other contemporary situations that we do not think the redevelopment programs will alter. (Irremediable complaints)

Table 10 presents the percentage of respondents making remediable complaints. These complaints were used in conjunction with the information about the relationship between the indications of satisfaction discussed above to adjust the present indicators of the proportion of expenditures on various items in downtown Santa Maria (the S variables originally presented in Table 4) to reflect the increase in consumer preferences for downtown Santa Maria that would result from the completion of a sales optimizing redevelopment program. We did not think the evidence warranted using these percentages of remediable complaints (%RC) directly by adding them to the previously revealed preference percentages ($1970) to get a new percentage ($1975, 1980, 1985). Instead, we adopted the following rules to get the new estimates of this preference variable:

	Trade Areas 1 through 4	Trade Areas 5 through 9
For Clothing	$\frac{1}{2}$ RC x .964 + S_{1970}	Use $\frac{1}{2}$ RC instead of S_{1970}
For Home Furnishings	$\frac{1}{2}$ RC x .861 + S_{1970}	Use $\frac{1}{2}$ RC instead of S_{1970}
For Other Retail	$\frac{1}{2}$ RC x .017 + S_{1970}	1% + S_{1970}

Exhibit 5

Table 10

Percentage of Respondents Making Complaints
About Remediable Features of the Present Downtown
(Complaints About Physical Problems
or Inadequate Selection of Stores and Goods)

Trade Area	% Remediable Complaints
1	62.7
2	53.8
3	65.8
4	53.3
5	19.3
6	22.2
7	14.3
8	20.0
9	10.2

Source: Gruen Gruen + Associates telephone survey

Computations following these rules permitted us to develop the estimates of maximum percentage effective preference or penetration presented below in Table 11. The insertion of these percentages in the sales estimate generating equations we have been using throughout permits us to make the forecasts of potential sales summarized in Table 12. The forecast sales potential of almost $42 million in 1975 would have downtown Santa Maria capturing 26.4% of the region's sales. By 1985 potential sales climb to almost $58 million in spite of the fact that our model has downtown Santa Maria's share of the region's sales dropping slightly to 25.4%.

Table 11

Estimated Maximum Effective Preference (S)
or Percentage Penetration Possible
After Appropriate Redevelopment

Trade Area	Clothing	Home Furnishings	Other Retail
1	76.2	74.5	19.9
2	74.3	69.1	10.4
3	76.3	72.2	12.9
4	56.9	53.0	8.6
5	19.3	19.3	2.1
6	22.2	22.2	1.5
7	14.3	14.3	1.6
8	20.0	20.0	2.8
9	10.2	10.2	1.5

Source: Gruen Gruen + Associates

Table 12

Estimated Downtown Santa Maria Future Sales Potential
(In Thousands of Dollars)

Trade Area	$ Available In Region 1975	Potential $ Sales in NDP 1975	$ Available In Region 1980	Potential $ Sales in NDP 1980	$ Available In Region 1985	Potential $ Sales in NDP 1985	% of Regional Sales to NDP
1	21,347	12,520	23,950	14,047	26,764	15,693	58.6
2	9,159	4,940	10,665	5,753	12,369	6,673	53.9
3	15,852	8,916	18,705	10,521	22,956	12,912	56.2
4	6,759	2,806	7,949	3,300	9,473	3,933	41.5
5	19,676	2,756	22,963	3,217	26,613	3,728	14.0
6	18,030	2,854	20,878	3,305	24,042	3,806	15.8
7	9,065	942	10,920	1,135	13,106	1,362	10.4
8.	25,355	3,729	31,043	4,566	38,198	5,618	14.7
9	33,589	2,527	42,857	3,224	53,925	4,057	7.5
Total	158,831	41,990	189,931	49,068	227,447	57,782	

Source: Gruen Gruen + Associates

Exhibit 5

Table 30

Proportion of Expenditures in Downtown

Trade Area	% Clothing	% Home Furnishings	% Other Retail	% Service
1	15.9	20.5	18.8	33.3
2	22.6	22.8	9.5	35.9
3	13.1	15.5	11.8	23.0
4	5.7	7.0	7.7	5.3
5	5.4	4.5	1.1	4.0
6	2.9	0.9	0.5	1.8
7	2.5	1.5	0.6	0.6
8	6.6	5.0	1.3	3.5
9	2.0	0.6	0.5	0.6

Source: Gruen Gruen + Associates telephone survey

Table 31

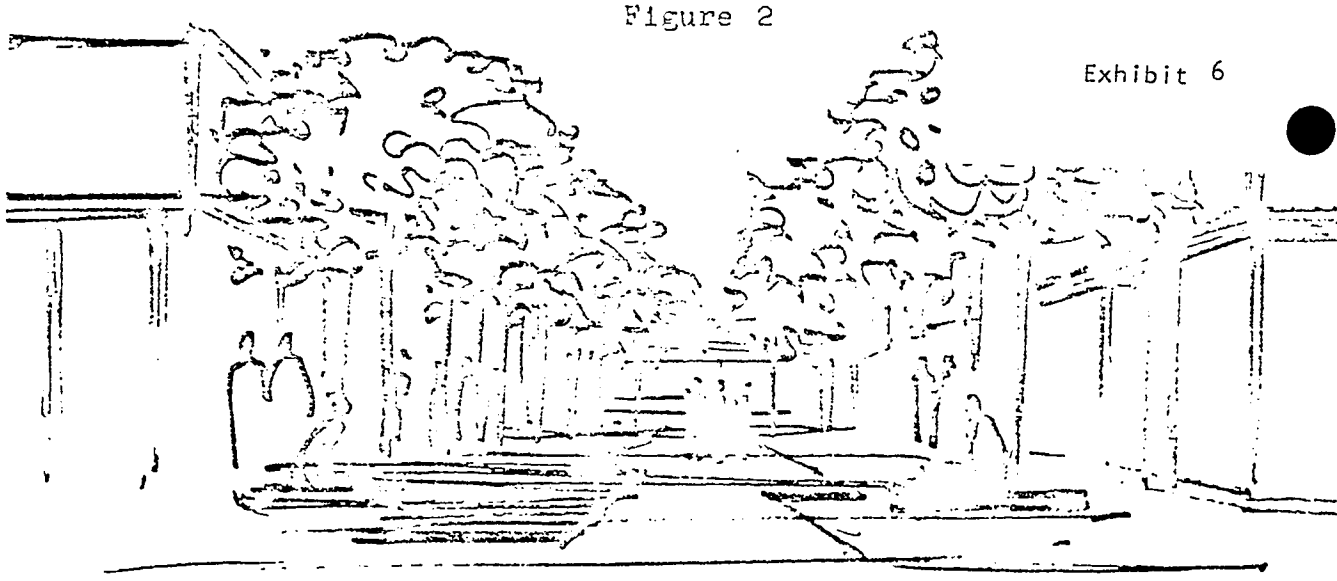
Banking, Repair, Beauty Parlor/Barber Shop and Similar Services Obtained Downtown By Consumers of Differing Incomes

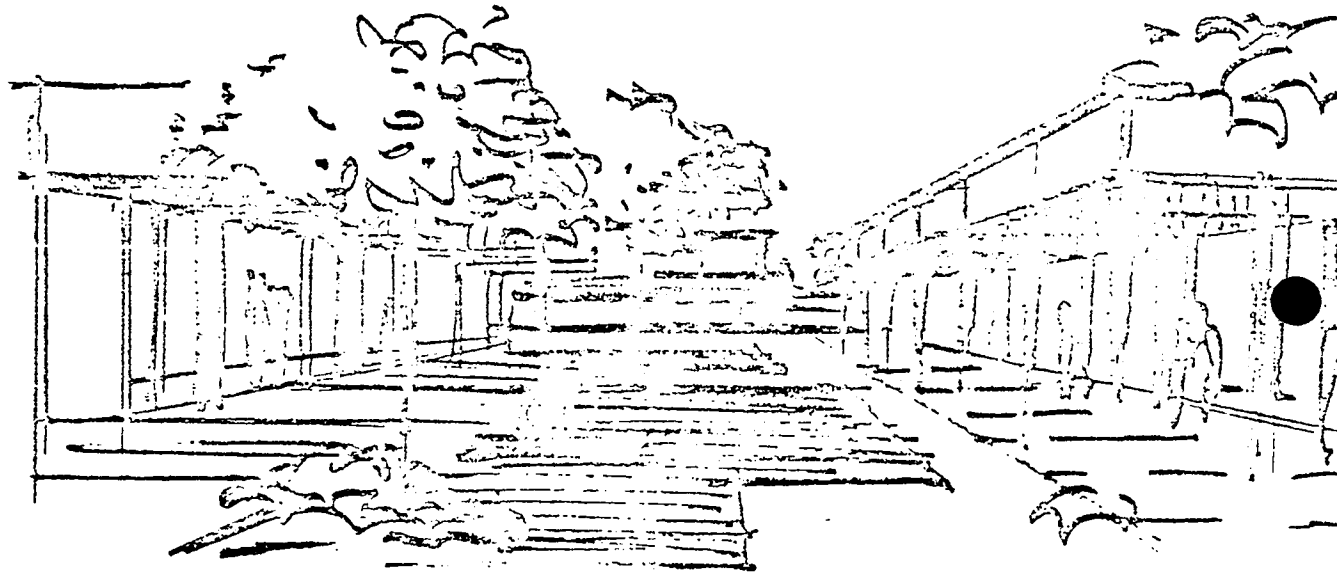
Household Income	% Generally	% Occasionally	% Seldom
Under $7,000	43.7	22.9	16.0
$7,000-10,000	43.3	20.0	36.7
$10,000-15,000	60.7	12.5	26.8
Over $15,000	61.5	21.2	17.3

Source: Gruen Gruen + Associates downtown survey

Figure 2

Exhibit 6





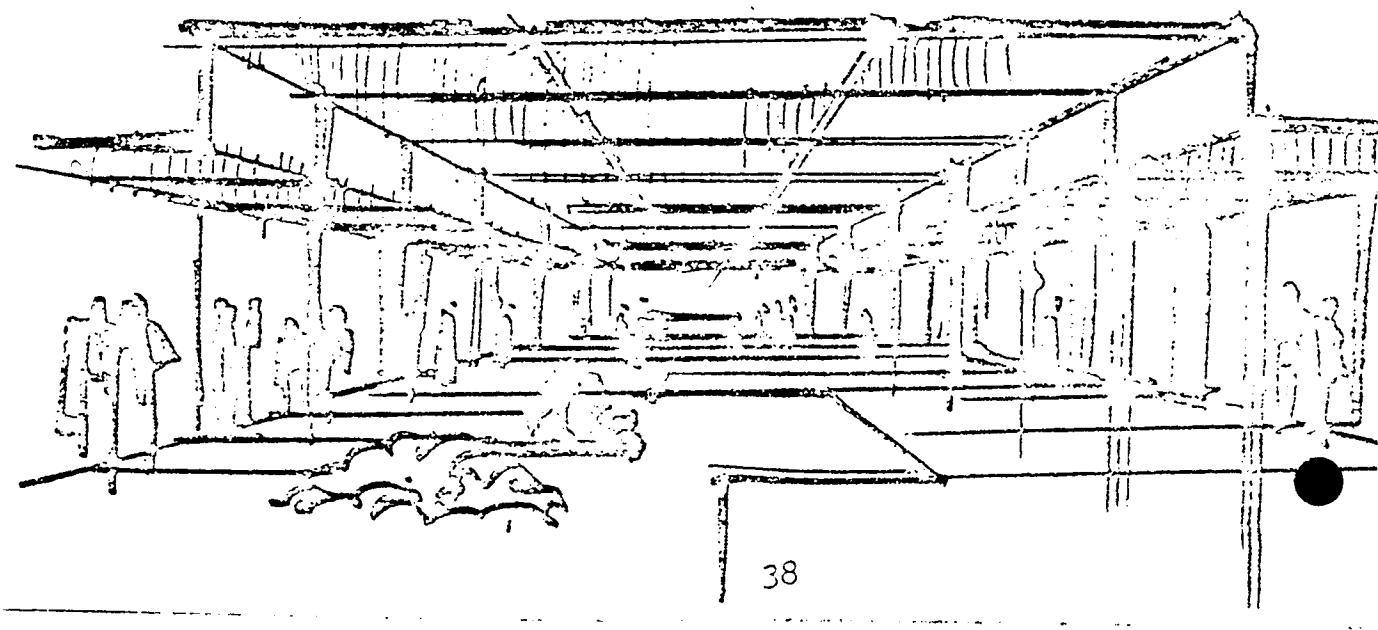
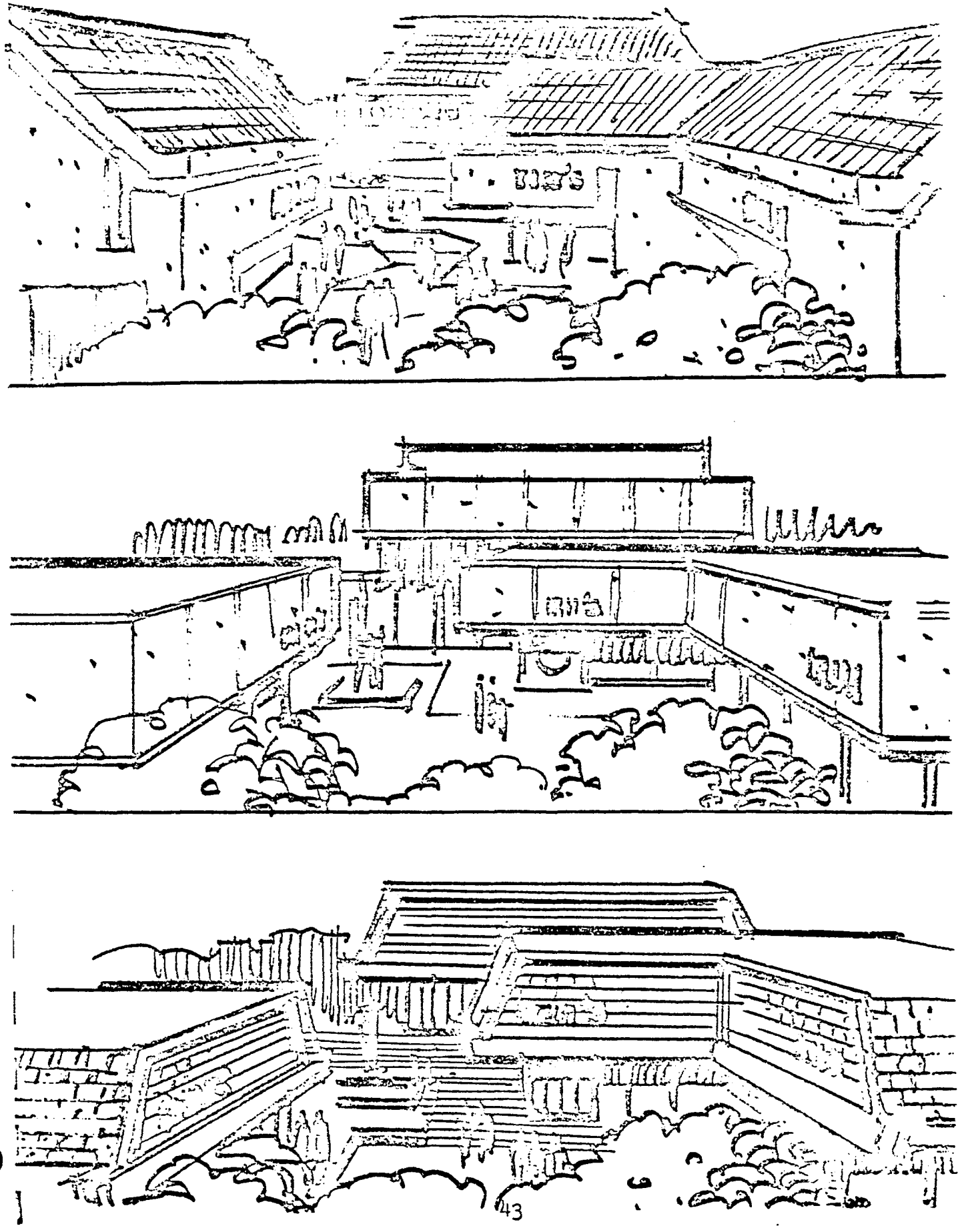


Figure 5



FOR THE RESPONDENTS ONLY

37. If a new and attractive apartment complex were to be built in Downtown Santa Maria, would you be very likely___1 likely___2, or unlikely___3 to consider this location?

38. If a one-bedroom unit were priced from $150-175 and a bedroom unit from $175-250, would you be very likely___ likely___2, or unlikely___3 to consider this location?

39. If a new residential hotel were to be built in Downtown Santa Maria, would you be very likely___1, likely___2, unlikely___3 to consider this location?

We are going to show you four sets of pictures of differing of shopping centers. We would like to get your opinion of

Picture No. 1

40. Which of the two pictures do you like the best?
A___1 B___2

a. Why?

INTERVIEWER: If respondent has not mentioned the width of the walkway ask:

41. Did the different widths of the walkway affect your choice in any way? Yes ___1 No___2

a. If yes, how?

Picture No. 2

42. Which of the three pictures do you like the best?
A___1 B___2 C___3

a. Why?

43. Which of the three pictures do you like the least?
A___1 B___2 C___3

a. Why?

INTERVIEWER: If respondent has not mentioned the openness or closedness of the shopping center ask:

44. Picture A presents an open mall center, B a partly enclosed center and Picture C a completely closed mall. Did this factor influence your choice in any way? Yes___1 No___2

a. How?

Picture No. 3

45. Which of the two pictures do you like the best?
A___1 B___2

a. Why?

46. If Picture A were to contain both apartments and stores while Picture B were to contain only stores, which would you prefer? A___1 B___2

a. Why?

Picture No. 4

47. Which of the three pictures do you like the best?
A___1 B___2 C___3

a. Why?

48. Which of the three pictures do you like the least?
A___1 B___2 C___3

a. Why?

To assist us in better planning for all residents, we would appreciate your answering a few biographical questions.

INTERVIEWER: Fill in sex and race

49. Sex: Male___1 Female___2

50. Race/Ethnic: White___1, Black___2, Spanish Surname___3, Other___4

D. Consider the elderly housing market chart in Exhibit 2a,b. Notice that the ratios required for market segmentation follow a logical reduction pattern. The analyst has made several working assumptions - namely that his market is over 65 and overwhelmingly from Dane County because these assumptions are both reasonable and conform to break-out points in the raw data.

E. The ratio sought by the survey follow a precise reduction pattern:

1. How many will consider moving?
2. Of those, how many would consider staying in town?
3. Of those, how many would consider an apartment?
4. Of those remaining who would consider an apartment in town, how many would consider a specific location?
5. Notice the reduction process defines a subset of the elderly market - a micro-market.

F. Each of these ratios suggests a specific calculation or perhaps a short table of statistics. The specific title on the table of data and its sub-columns should be written before the questions are drafted and the collection of data begun. Notice the research begins with careful definition of the questions to be answered. All answers become relevant and all unnecessary questions are avoided. These types of questions depend on knowing the precise character of secondary data available to which the ratios must be applied in the systematic model devised for the problem.

1. Confine vocabulary to basic 1000 words; avoid lingo.

2. Structure questions to permit check-off, or branching to set up subsets. (See Exhibit 6)

3. Always test the quesionnaire on half a dozen prospects or friends to reveal misunderstandings before using on the market.

4. Questions may take different formats. (See Exhibit 6)

G. The second type of question is generally attempting to measure either anxieties or preferences. Both are dangerous survey areas for amateurs as well as professionals and it is often cheaper to subcontract these particular functions to consumer research specialists. Nevertheless, a little common sense can generate considerable useful information on the competitive edge.

1. Probe for dissatisfaction with existing space or life style.
2. Probe for anxieties about uncontrollable trends and events.
3. Probe for desired social structure ties, real or imagined.

H. The real estate analyst can choose between systematic telephone interviews, direct mail questionnaires, and personal interviews in depth.

1. The telephone interview may be less expensive per question and fastest but is limited in the type and amount of questions which can be asked. Rifled to a project known to the analyst,

Simple Survey Formats for Classification of Subsets & Measurement of Preference

I'd like to ask you a few questions about the place you lived just before you moved into this apartment.

5. About how many years did you live in your former home?

__ less than 1 year
__ 1 year - L.T. 2 years
__ 2 to L.T. 5 years
__ 5 to L.T. 10 years
__ 10 to 15 years
__ more than 15 years, _____

6. Did you live in a house or in an apartment building just before your move here?

__ house
__ apartment
__ other, _____

→ About how many apartments, including yours were there in the building?

__ L.T. 4
__ 4 to 8
__ 9 to 16
__ 17 to 24
__ 24 to 32
__ more than 32

About how much rent did you pay per month, including utilities but not telephone? $_____

__ L.T. $50
__ $50 to L.T. $75
__ $75 to L.T. $100
__ $100 to L.T. $125
__ $125 to $150
__ more than $150

Did you own or rent the house?

__ own
__ rent

Did you rent a room, a flat or floor, or entire house?

__ room __ flat/floor __ entire

About how much rent did you pay per month, including utilities but not telephone? $_____

__ L.T. $50
__ $50 to L.T. $75
__ $75 to L.T. $100
__ $100 to L.T. $125
__ $125 to $150
__ more than $150

Now I'd like to ask you some general questions about your decision to move to this apartment.

7. How did you first find out about them?

__ family
__ friends
__ church
__ Housing Authority
__ newspaper
__ radio
__ television
__ other, _____

26. How important are the following items to you?

	Very Important	Somewhat Important	Indifferent	Somewhat Unimportant	Not Important
Private Balconies or patios	( )	( )	( )	( )	( )
Laundry facilities in each building	( )	( )	( )	( )	( )
Washer/dryer connection in your apartment	( )	( )	( )	( )	( )
Extra storage space	( )	( )	( )	( )	( )
More than 1 bath	( )	( )	( )	( )	( )
Carpeted stairways & hallways in common areas of apt. bldg. (Areas shared by all residents)	( )	( )	( )	( )	( )
Master T.V. Antenna System	( )	( )	( )	( )	( )
Children's day care center and/or nursery school nearby	( )	( )	( )	( )	( )

14. What type of building features would you prefer in the layout of the condominium unit? (choose only one of each of the following sets of alternatives)

( ) Two bedrooms with larger living area or/
( ) Three bedrooms

( ) Three bedrooms, or/
( ) Four bedrooms, or/
( ) Large master bedroom and two 4-bed bunk rooms

( ) Two-story living room with inside balcony, or/
( ) Living room with beamed cathedral ceiling

( ) Full dining room, or
( ) Dining "L" plus family-sized kitchen

( ) Sundeck balcony for living room or/
( ) Outdoor patio at ground level

( ) Walk-in closets in each room or/
( ) Large work room plus laundry room in each unit & standard closets

( ) One car garage attached to unit or/
( ) Two car garage in group parking complex, or/
( ) Carport and lower price

( ) Central air conditioning or/
( ) Woodburning masonry fireplace or/
( ) Gas-log fireplace and window air conditioning unit

( ) Contemporary natural decor with wood and rock materials, or/
( ) Maintenance-free modern masonry and aluminum exteriors, or/
( ) Well styled colonial detailing

( ) Extensive outside landscaping, or/
( ) More floor space in each room

it tells much about the user profile for a good comparable without having to ask about the product which the analyst can inspect for himself. (See Exhibit 7)

2. A telephone survey is also useful to disaggregate census data or to estimate market penetration of a competitor (such as a retail store) into an area.

3. Direct mail questionnaires may cost from 5¢ to $3 or more for each successful question; they take at least a week to prepare and test and perhaps three weeks before cutoff of additional responses. The type of question is broader and can be graphic such as alternative site maps and simple floor plans; response depends on careful construction of the mailing list, a very time consuming process. Consider the following types of questions:

4. The double barreled question occurs when two or more questions are combined in one so that the answer is always ambiguous as to the significance of each item but often occurs in the effort to shorten an interview or a question.

   . Would you be at all uneasy if people of a different religion or race were to move in next to your home?

   . As you see it, what are some of the good points and the bad points of the present Governor of this state?

5. Sensitive questions on family income should be asked at the end of the interview while the opening questions should be of more general interest. When a question about income is asked, the response should permit some degree of obliqueness by the respondent.

   . The respondent can select a range of income or perhaps enter the answer with a letter A, B, etc. in place of a dollar amount.

   . If socio-economic questions are generally short and direct, they are a welcome contrast to the time consuming and thought provoking questions which preceded them.

6. Contingency questions are those which are asked or skipped depending on the respondent's answer to a preceding question. The survey should be as simple to follow as a well designed road map for an interviewer or a respondent. For example:

EXHIBIT 7

WE WOULD APPRECIATE YOUR COMMENTS ABOUT APARTMENT LIVING OR ABOUT THIS SURVEY.

YOUR COMMENTS:

I have considered buying a house so that I could have my own washer and dryer. I really dislike running down to the basement to do my laundry and sometimes finding the washer & dryer being used. Also I dislike having to put coins in the machines. I understand that in South Bend, Indiana, apartments have their own washers and dryers in each unit. I realize that moving to a house would bring maintenance & lawn care and snow removal concerns which I do not want. So, I'm still living in an apartments. I would move in an instant if an apartment complex would provide me with a washer & dryer.

THANK YOU FOR YOUR HELP!

Please return the survey in the postage-paid envelope as soon as possible.

FEASIBILITY RESEARCH GROUP
210 Michigan Theater Building
Ann Arbor, Michigan 48108

FEASIBILITY RESEARCH GROUP

Specialists in Consumer Market Research for Decision Makers

JOHN A. RASMUSSEN
Research Coordinator

OCTOBER, 1976

SUBJECT: LANSING APARTMENT RESIDENT SURVEY

DEAR APARTMENT RESIDENT:

YOU CAN HELP PLAN NEW APARTMENTS. YOUR OPINIONS ABOUT YOUR OWN APARTMENT AS WELL AS OTHER APARTMENTS YOU MAY HAVE LOOKED AT OR LIVED IN, CAN HELP DECISION-MAKERS IDENTIFY WHAT APARTMENT RESIDENTS PREFER. THIS WILL HELP THEM IN PLANNING FUTURE APARTMENTS ACCORDING TO THE RESIDENTS' NEEDS AND PREFERENCES.

BY FILLING OUT THE ENCLOSED QUESTIONNAIRE AND RETURNING IT IN THE POSTAGE PAID ENVELOPE PROVIDED, YOU CAN HELP IN MAKING THESE DECISIONS. THIS SURVEY IS BEING CONDUCTED BY FEASIBILITY RESEARCH GROUP, AN INDEPENDENT RESEARCH FIRM.

YOUR REPLY TO THE SURVEY IS CONFIDENTIAL. THE CODE NUMBER IS USED ONLY TO HELP US REMIND PEOPLE WHO MAY BE SLOW TO RESPOND. PLEASE RETURN YOUR SURVEY IN THE POSTAGE PAID RETURN ENVELOPE AS SOON AS POSSIBLE.

VERY TRULY YOURS,

John A. Rasmussen

JOHN A. RASMUSSEN
RESEARCH COORDINATOR

YOUR OPINION COUNTS

210 MICHIGAN THEATER BUILDING • ANN ARBOR, MICHIGAN 48108 • 313/994 4454

LANSING AREA APARTMENT RESIDENTS

WHETHER YOU ARE

* VERY SATISFIED
* NEUTRAL OR
* VERY DISSATISFIED

WITH YOUR APARTMENT,

HERE IS YOUR CHANCE TO BE HEARD!

NOTE: TO BE COUNTED, YOUR SURVEY MUST BE RECIEVED BEFORE THE TABULATION DATE.

WHO RECEIVES A SURVEY?

* SURVEY SAMPLES ARE SELECTED BY A SCIENTIFIC RANDOM NUMBER PROCESS. NOT EVERY HOUSEHOLD WILL BE SURVEYED. THEREFORE, IT IS IMPORTANT THAT SELECTED HOUSEHOLDS DO RESPOND.

IF I DON'T REPLY, WILL YOU SURVEY SOMEONE ELSE?

* NO. ONCE YOUR HOUSEHOLD IS SELECTED FOR THE SAMPLE, WE CANNOT SUBSTITUTE ANOTHER APARTMENT.

WHAT IF I DON'T WANT TO ANSWER SOME OF THE QUESTIONS?

* IF YOU COME TO ANY QUESTIONS YOU DO NOT WISH TO ANSWER, JUST SKIP THAT QUESTION AND GO ON TO THE NEXT ONE.

WILL MY APARTMENT MANAGER SEE MY SURVEY?

* NO. THIS IS AN INDEPENDENT SURVEY OF MANY APARTMENT COMMUNITIES. ONLY THE COMBINED RESPONSES OF ALL APARTMENT RESIDENTS WILL BE TABULATED.

16A. WHO LIVES WITH YOU IN YOUR PRESENT APARTMENT? (Check one)

(1) ____ My spouse
(2) ____ My spouse and children
(3) X I do not share my apartment with anyone.
(4) ____ I share my apartment with roommates
____ Other (Please explain _____)

____ 16B. IF YOU SHARE YOUR APARTMENT WITH ROOMMATES, HOW MANY SHARE YOUR APARTMENT? (INCLUDING YOURSELF) N/A

(1) ____ Two
(2) ____ Three
(3) ____ Four

____ 16C. IF YOU HAVE CHILDREN, PLEASE INDICATE HOW MANY LIVE IN YOUR HOUSEHOLD AND HOW OLD THEY ARE.
How many children? N/A Their ages? _____

____ 17. WHICH OF THE FOLLOWING AGE GROUPS DO YOU AND YOUR SPOUSE OR ROOMMATE(S) FALL INTO?

(1) ____ 18 - 24 (3) ____ 35 - 44 (5) ____ 55 - 64
(2) X 25 - 34 (4) ____ 45 - 54 (6) ____ 65 or over

____ 18. ARE YOU: (1) ____ Male (2) X Female

IN ORDER TO ASSIST FUTURE DEVELOPERS TO MEET THE NEEDS OF INDIVIDUALS LIKE YOU, IT IS IMPORTANT TO UNDERSTAND WHICH EMPLOYERS IN THE AREA ARE ATTRACTING NEW EMPLOYEES. WITH THIS INFORMATION, FUTURE HOUSING NEEDS CAN BE ANTICIPATED AND MET.

____ 19A. HOW MANY INDIVIDUALS IN YOUR HOUSEHOLD ARE NOW EMPLOYED? 1

____ 19B. WHERE DO PERSONS IN YOUR HOUSEHOLD WORK?

Name of Company	Location (City, Street)	Year Employment Began
(Law Firm)	Lansing, MI 48933	1966

____ 20. WHICH OF THE FOLLOWING CORRESPONDS WITH YOUR TOTAL HOUSEHOLD INCOME? (IF YOU SHARE WITH ROOMMATES, DO NOT INCLUDE THEIR INCOME.) [Check one]

(1) ____ Under $6,000 per year (4) X $12,000 to $14,999 per year
(2) ____ $6,000 to $8,999 per year (5) ____ $15,000 to $19,999 per year
(3) ____ $9,000 to $11,999 per year (6) ____ $20,000 or more per year

THANK YOU FOR YOUR HELP!

PLEASE RETURN YOUR SURVEY RIGHT AWAY IN THE POSTAGE PAID ENVELOPE.

____ 1. WHICH OF THE FOLLOWING BEST DESCRIBES YOUR PREVIOUS RESIDENCE? (Check one)

(1) X Apartment
(2) ____ Single family house which I/we rented
(3) ____ Single family house which I/we owned
(4) ____ Lived with parents
____ Other (Please explain _____)

0157

____ 2A. WHERE WAS YOUR PREVIOUS RESIDENCE LOCATED? (Check one)

(1) ____ Lansing
(2) X East Lansing
(3) ____ Grand Ledge
(4) ____ DeWitt
(5) ____ Outside the state of Michigan
____ Other (Where? _____)

____ 2B. WHAT WAS THE NAME OF THE STREET WHERE YOUR PREVIOUS RESIDENCE WAS LOCATED? (IF YOUR PREVIOUS RESIDENCE WAS LOCATED IN AN APARTMENT DEVELOPMENT, WHAT IS THE NAME OF THE DEVELOPMENT?)

Street Name West Saginaw Apartment Development Name Horizon House

____ 3. FOR HOW MANY YEARS DID YOU LIVE AT YOUR PREVIOUS RESIDENCE? 4 Years

____ 4. WHAT WERE YOUR MAJOR REASONS FOR DECIDING TO MOVE FROM YOUR PREVIOUS RESIDENCE?
From one-bedroom to two-bedroom
From no dishwasher to a dishwasher
For a change after 4 years

____ 5. BEFORE YOU DECIDED TO MOVE TO THE APARTMENT DEVELOPMENT IN WHICH YOU NOW LIVE, WHICH OTHER DEVELOPMENTS DID YOU CONSIDER? WHAT WERE THEIR NAMES?
Names of Other Apartment Developments Considered
Others considered from outside appearance and reputation only — also location — did not seriously look at any other

____ 6. WHY DID YOU DECIDE TO LIVE HERE RATHER THAN IN ONE OF THE OTHER DEVELOPMENTS YOU CONSIDERED? (Looked at complex 3 times before decided to move)
Decided to live here because knew owners; liked apartment; and ready for a change - especially to a 2-bedroom

____ 7A. IF THERE HAD BEEN NO VACANCY AT THE APARTMENT DEVELOPMENT IN WHICH YOU NOW LIVE, WHICH OF THE OTHERS WOULD YOU HAVE SELECTED AS YOUR SECOND CHOICE?
N/A

____ 7B. WHY WOULD YOU HAVE CONSIDERED THIS AS YOUR SECOND CHOICE OVER THE OTHERS?
N/A

8. WHAT MONTH AND YEAR DID YOU MOVE INTO THE APARTMENT DEVELOPMENT IN WHICH YOU NOW LIVE? Apr. Month 75 Year

9. WHY DID YOU SELECT THE PARTICULAR APARTMENT UNIT YOU LIVE IN?
2-bedroom unit.
Close to community building.
Gold carpeting and gold appliances

10. HOW MANY BEDROOMS DO YOU HAVE IN YOUR PRESENT APARTMENT? 2

11. HOW MANY BATHROOMS DO YOU HAVE IN YOUR PRESENT APARTMENT? 1

12A. HOW MUCH DO YOU PAY MONTHLY FOR RENT FOR YOUR APARTMENT? $ 225

12B. PLEASE CHECK THOSE UTILITIES THAT ARE INCLUDED IN YOUR MONTHLY RENTAL PAYMENT.

(1) X Water
(2) X Heat
(3) ____ Electricity

12C. PLEASE CHECK THOSE ITEMS FOR WHICH YOU PAY EXTRA IN YOUR MONTHLY RENT?

	ITEM	HOW MUCH EXTRA PER MONTH?
(1) ____	Carport	$ N/A (no carports)
(2) ____	Pet	$ N/A (no pets allowed)
X	Other (What? top floor)	$ [redacted] unsure

13. PLEASE RATE YOUR PRESENT RESIDENCE IN THE FOLLOWING AREAS BY PLACING A CHECK (√) IN THE SPACE BELOW THE PHRASE THAT BEST DESCRIBES YOUR FEELINGS ABOUT YOUR RESIDENCE.

	(1) VERY SATISFIED	(2) SOMEWHAT SATISFIED	(3) NEUTRAL	(4) SOMEWHAT DISSATISFIED	(5) VERY DISSATISFIED
A. RENTAL MANAGEMENT SERVICE	(√)	( )	( )	( )	( )
COMMENTS					
B. MAINTENANCE SERVICE	(√)	( )	( )	( )	( )
COMMENTS	Not 100% pleased at all times but cannot say only somewhat satisfied.				
C. GENERAL ATTITUDE OF MANAGEMENT	(√)	( )	( )	( )	( )
COMMENTS					
D. RENT LEVEL	(√)	( )	( )	( )	( )
COMMENTS	Naturally, I would be more satisfied if it were lower				

13. CONTINUED PLEASE RATE YOUR PRESENT RESIDENCE IN THE FOLLOWING AREAS BY PLACING A CHECK (√) IN THE SPACE BELOW THE PHRASE THAT BEST DESCRIBES YOUR FEELINGS ABOUT YOUR RESIDENCE.

	(1) VERY SATISFIED	(2) SOMEWHAT SATISFIED	(3) NEUTRAL	(4) SOMEWHAT DISSATISFIED	(5) VERY DISSATISFIED
E. GENERAL APPEARANCE OF DEVELOPMENT	(√)	( )	( )	( )	( )
COMMENTS	Good landscaping and good general upkeep				
F. SOUNDPROOFING BETWEEN UNITS	( )	(√)	( )	( )	( )
Soundproofing could be improved upon.	COMMENTS I would only be satisfied when I could not hear (muted) voices + garbage disposals + showers/plumbing, etc.				
G. APPLIANCES AND FIXTURES	( )	(√)	( )	( )	( )
Strong desire →	COMMENTS I would like an apt. size washer + dryer in the unit + would be willing to pay extra for this convenience.				
H. ADEQUACY OF RECREATIONAL FACILITIES	(√)	( )	( )	( )	( )
COMMENTS					

ABOUT YOUR HOUSEHOLD

14. HOW MANY PASSENGER VEHICLES (CARS, TRUCKS, VANS, ETC.) ARE OWNED BY MEMBERS OF YOUR HOUSEHOLD? (Check one)

(1) ____ None
(2) X One
(3) ____ Two
(4) ____ Three

15. WHAT IS YOUR MARITAL STATUS? (Check one)

(1) X Single
(2) ____ Married
(3) ____ Widowed
(4) ____ Divorced or separated
____ Other

V. Introduction to Prospect Survey

While a survey analysis appears to be a group of questions, in fact the real product is a table of data unavailable from any other source. The analyst should begin with a written mock-up of the final report logic and the specific tables which lead to a conclusion.

A. A survey of existing properties and alternatives available to a selected market segment defines only the competitive standard - namely the minimum product and price necessary to be in the market.

1. Comparison shopping further identifies where there may be gaps in the supply of alternatives, a market opportunity gap, or where the oversupply is so significant as to portend the last competitive alternative before bankruptcy - namely price cutting.

2. Comparison shopping should not only identify the physical characteristics of the product and price but the nature of the promotion effort as well.

3. Promotion comparison should consider pedestrian and vehicle approaches, model location, furnishings, and sales people.

4. Review of the promotion campaign should reveal whom the competitors believe to be their prospect.

B. A survey of users, is designed to reveal or to identify the competitive differential attributes which whould provide that monopoly element required of every successful project.

1. A second product of consumer survey is the ability to develop locally relevant ratios which permit disaggregation of market data into market segments and the conversion of potential numbers of people into potential dollar sales over time.

2. Survey questions to create ratios require previous construction of a market model hypothesis.

C. With a preliminary hypothesis as to the prospect, survey questions may be inteded to provide:

1. Key ratios necessary for segmentation of market data already broken down by trade area, demographics, employment, etc.

2. Key indicators of anxieties or preferences or tradeoffs of the prospect.

3. Key indicators of the anxieties or preferences of non-prospects who feel a vested interest in the impact or have a significant part in the purchase process. (For example - the members of the Public Housing Authority have a different set of needs than the ultimate user, but the product is "bought" by the Board).

Exhibit 8

SURVEY RESEARCH PROCESS--MAIL SURVEY

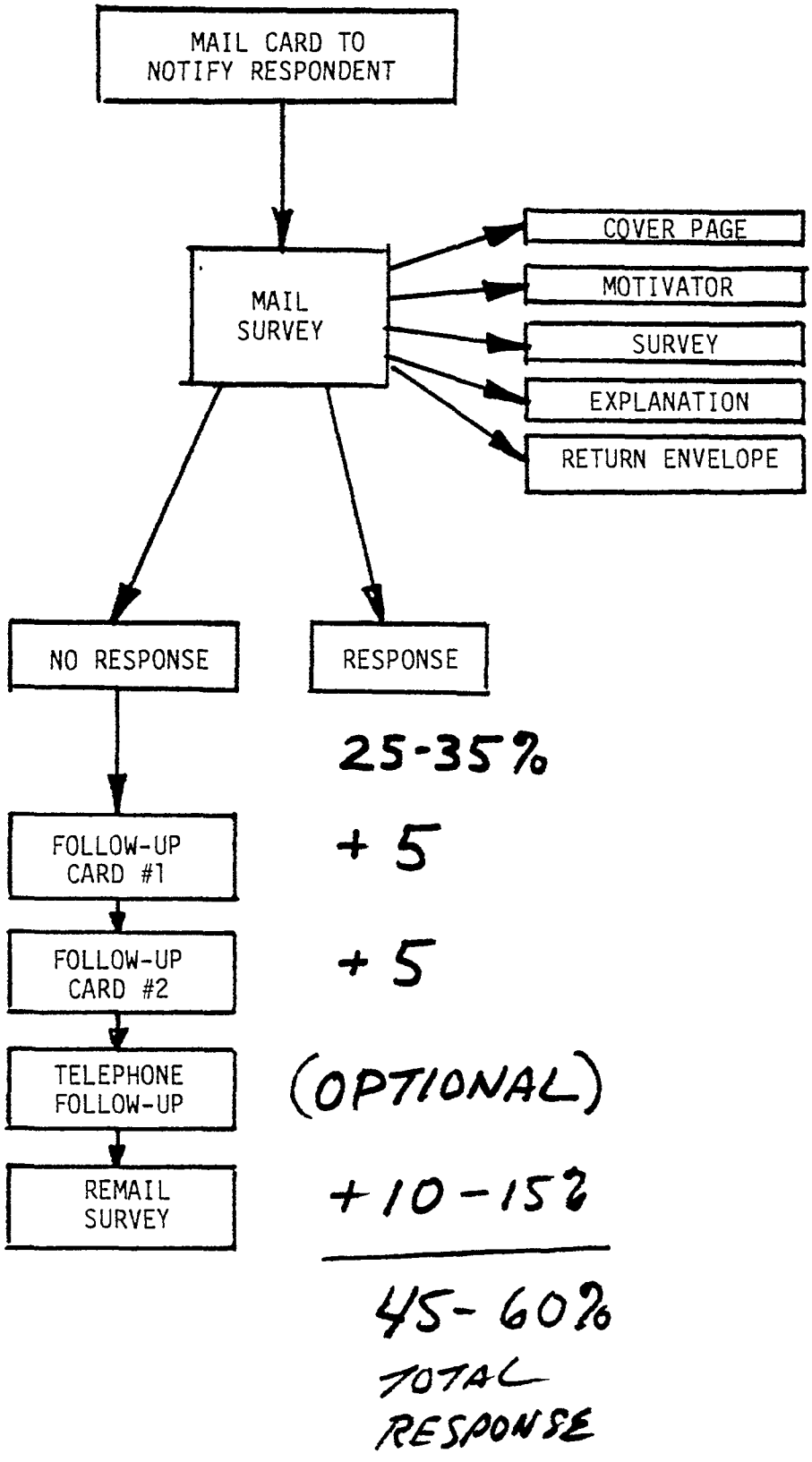


Exhibit 9

FEASIBILITY RESEARCH GROUP

SAMPLE QUALITY CONTROL

SAMPLING ERROR

DEFINITION: Sampling error occurs when sample data is not representative of the total population of households from which the sample is drawn.

HOW CONTROLLED: FRG's sample of the population reflects updated 1977 household data. Using our source of Washtenaw County Household addresses, which is updated for new apartments and homes built in 1977 and applying a computer-generated random sample, we can hold sample error to a minimum.

SAMPLE BIAS

DEFINITION: Sample bias occurs when respondents drawn in the sample refuse to be interviewed for the survey or do not reply to certain questions in the survey.

HOW CONTROLLED: At FRG the following steps are taken to reduce possible sample bias:

(1) Pretesting of the survey questions and survey format to:
   (a) enable the respondent to understand the question
   (b) reduce respondent fatigue by creating a natural flow in the question sequence

(2) Monitoring interviewer performance by Head Interviewer to:
   (a) review completed surveys for completion and editing
   (b) review respondent's perception of interviewer through calling of 5% of respondents to learn consumers' opinion of interviewer

MAIL SURVEY RESPONSE RATES

	DATE	DAILY RESPONSE	TOTAL RESPONSE	POSTAGE DUE	UNDELIVERED	POSTAGE DUE FRG
SURVEY MAILED →	7/7/75					
	7/10/75	1	1	$0.22	1	$.10
	7/11/75	7	8	$0.84		
1st FOLLOW-UP MAILED →	7/12/75					
	7/12/75	11	19	$0.82		
	7/14/75	1+41+30	91	$8.62	(1 FRG stamp used)	
	7/15/75	63	154	$7.76	1	$.10
	7/16/75	1+2, 1+90	247	$10.90	1(3 FRG stamps)	
	7/17/75	1+115	363	$11.60	1 (1 FRG stamp)	
2nd FOLLOW-UP MAILED →	7/18/75					
	7/18/75	247	610	$34.14	5	
	7/21/75	165	775	$21.10	3	
	7/22/75	233	1,008	$28.36	4	
				(+$.20 remail)		
	7/23/75	1+2, 138	1,149	$15.66	2	
				(+$.20 remail)		
	7/24/75	153	1,302	$14.02 (+$.20 remail)		
	7/25/75	114	1,416	$13.68	1	
	7/28/75	49	1,465	$ 5.88		
	7/29/75	143	1,608	$17.16 (+$.40 remail)		
	7/30/75	53	1,661	$ 6.56	2	
	7/31/75	37	1,698	$ 4.54	1	
				(+$.40 for 2-1st class)		
MAILED →	8/1/75					
FOLLOW-UP	8/1/75	11	1,709	$ 1.52	2	
(52.7%)	8/4/75	48	1,757	$ 5.86	1(25)	
response	8/5/75	31	1,788	$ 3.72 (+$.40 postage)		
rate to date	8/6/75	1+22	1,811	$ 2.64 (+$.40 postage)		
	8/7/75	25	1,836	$ 3.00?		
	8/8/75	34	1,870	$ 4.20	1	

DATE	DAILY RESPONSE	TOTAL RESPONSE	POSTAGE DUE	UNDELIVERED	POSTAGE DUE FRG
8/11/75	33+6	1,906	$ 3.96		
8/12/75	3+1	1,910	$ .36 (+$1.20 remail postage)		
8/13/75	18	1,928	$ 2.16		
8/14/75	10	1,938	$ 1.20	1(27)	
8/15/75	5	1,943	$ .60		
8/18/75	10	1,953	$ 1.20		
8/19/75	4	1,957	$ .40		
8/20/75	2	1,959	$ .34	1	
8/21/75	1	1,960	$ .12		
8/22/75	1	1,961	$ .12 (+1 mailed to MEHA = 1,962)		
8/25/75	1	1,963	$ .12 (+$.40 remail)		
8/26/75	3	1,966	$ .36		
8/27/75	2	1,968	$ .24		
8/28/75	3	1,971	$ .36		
8/29/75	1	1,972	$ .12		
9/2/75	2	1,974	$ .24 (+1 mailed to MEHA = 1,975)		
9/8/75	2	1,977	$ .24		
9/9/75	1	1,978	$ .12		
9/18/75	4	1,982	$ .55	(28)	
(3,331-28 = 1,982/3,303 = 60% response rate to date)					
9/22/75	1	1,983	$ .15		
9/30/75	1	1,984	$ .15		
10/6/75	1	1,985	$ .15		
10/22/75	1	1,986	$ .15		
11/12/75	1	1,987	$ .15		
11/24/75	1	1,988	$ .15		

Exhibit 10

7. Personal interviews in depth permit questions using photographs with colors and styles. Expensive and time consuming, it assumes precious qualification of the interviewee as a typical prospect.

I. Processing of surveys can involve simple tallies or counts, simple subdividing of responses into subcategories, or preferably organization of the questionnaire to permit key punching or cross tabbing or statistical analysis by computer processing. The problem of identification requires:

1. Coding by colored paper, colored return envelope, stamp on self-addressed stamped envelope to reflect geographic area, building address, type of respondent, original mailing list solves most processing problems.

2. Beware of code numbers if you promised anonymity; give them the option of identifying the respondent, etc.

3. Always identify yourself as an analyst (but not the project or the client), providing a phone number or an address where the interviewee can find you. It will generate both presale prospect lists and some primary unexpected political participation by others.

J. Comparative cost and comparative merits and disadvantages of alternative survey research methods for appraisers is suggested in EXHIBIT 11.

1. These were prepared in 1978 by John Rasmussen for a conference at the University of Wisconsin.

2. Many appraisers worry about the size of the sample and degree of reliability of the results. In many cases, market segmentation and correct identification of the customer group will allow survey of virtually the entire universe of 20-40 users.

3. A sample is used to infer facts about a larger universe. EXHIBIT 12 provides an indication of sample size and range of error. Note that if you are going to subdivide responses between homeowners and renters, for example, it is important to have the desired sample size in the subcategory. Hence, it is important to refine your list of names as sharply as possible.

SURVEY RESEARCH FOR APPRAISERS

Survey Format	Advantages	Disadvantages	Response Rates	Typcial Cost Per Response	Typical Time
Personal Interviews	1. Permits longer surveys 2. Opportunity to probe 3. Can use flash cards, floor plans, etc.	1. Higher cost than phone phone or mail survey 2. More time required than telephone 3. Training and field supervision required	60 - 75% Call Backs-3	$3 to $6 per response	30 - 60 days
Telephone Survey	1. Faster than personal interviews or mail surveys 2. Opportunity to probe 3. Less pretesting required	1. Shorter questionnaire required 2. High turnover results in lower completion rate 3. Unlisted and disconnected phones may bias sample	30 - 50% Call Backs-3	$2 to $2.50	15 - 30 days
Mail Questionnaires	1. Lowest cost 2. Larger survey sample	1. Longest time for turn around 2. Questions as well as layout require design	40 -60 % Follow ups 3 or 4	$.55 to $1.00	60 - 90 days

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Exhibit 11

THE RELATIONSHIP OF SAMPLE SIZE TO SURVEY ACCURACY

Sample or subsample size	With this size sample, we are X% certain the obtained percentage is within Y% of the true percentage[1].		
	95% certain	90% certain	50% certain
50	± 13.8%[2]	± 11.6%	± 4.8%
100	9.8	8.2	3.4
150	8.0	6.7	2.8
200	6.9	5.8	2.4
250	6.2	5.2	2.1
300	5.7	4.7	1.9
350	5.2	4.4	1.8
400	4.9	4.1	1.7
450	4.6	3.9	1.6
500	4.4	3.7	1.5
600	4.0	3.4	1.4
700	3.7	3.1	1.3
800	3.5	2.9	1.2
900	3.3	2.7	1.1
1000	± 3.1%	± 2.6%	± 1.1%

[1] The percentage that would be obtained if everyone in the sampling list had been sent a survey. The figures given are accurate if the true percentage is from 30% to 70%. The obtained percentage and true percentage are likely to be closer if the true percentage is less than 30% or greater than 70%.

[2] For example, if the obtained percentage is 50% the true percentage will be between 36.2% and 63.8% (±13.8%), nineteen times out of twenty (95% certain).

Exhibit 12

CHECKLIST FOR INTERVIEWERS

Exhibit 13

1. BE NEUTRAL -- DON'T ATTEMPT TO INFLUENCE RESPONDENT IN ANY WAY.
   BE INFORMAL.
   BE COURTEOUS.
   BE CONSCIENTIOUS.

2. FIRST ANSWERS ARE USUALLY THE MOST MEANINGFUL. DO NOT CHANGE ANY ANSWERS TO A PAST QUESTION.

3. DO NOT RECORD A "DON'T KNOW" ANSWER TOO QUICKLY -- GIVE RESPONDENT TIME TO THINK.

4. RECORD ANSWERS JUST AS THEY ARE GIVEN. IF LENGTHY, TRY TO SUMMARIZE IN RESPONDENT'S OWN WORDS, NOT YOURS.

5. TRY TO OBTAIN AS SPECIFIC INFORMATION AS POSSIBLE. IF RESPONDENT ANSWERS, "IT'S O.K.," ASK WHY. IF NECESSARY, DO A LITTLE PROBING.

6. KEEP TALKING AS YOU WRITE. ASK NEXT QUESTION WHILE WRITING FIRST ANSWER. DON'T LET RESPONDENT GET DISTRACTED OR BORED.

7. STICK TO THE SUBJECT. DON'T LET YOURSELF OR THE RESPONDENT DIGRESS.

8. BE SURE YOU'VE ASKED EVERY QUESTION AS IT IS WRITTEN IN THE ORDER THEY APPEAR ON THE QUESTIONNAIRE FORM.

9. CHECK OVER QUESTIONNAIRE BEFORE TERMINATING THE INTERVIEW TO MAKE SURE IT IS COMPLETE.

10. THANK RESPONDENT FOR PARTICIPATING!

FEASIBILITY RESEARCH GROUP LTD.
210 MICHIGAN THEATER BUILDING
ANN ARBOR, MICHIGAN 48108
(313) 994-4454

PROJECT NO: _____

PROJECT NAME: _____

Exhibit 14

INTERVIEW VALIDATION

CONTRACTOR NAME: _____ _____

INTERVIEWER NO: _____

	INTERVIEWER TO FILL IN (1) ADDRESS AND PHONE NUMBER OR (2) NAME AND ADDRESS (IF NO PHONE OR REFUSAL)									FIELD SUPERVISOR TO COMPLETE. (VALIDATE WITHIN 2-7 DAYS.)				
	ADDRESS	ZIP	NAME	MR, MRS, MS, MISS	PHONE #	INTERVIEW DATE	START TIME	FINISH TIME	TOTAL TIME	VALIDATED BY	PHONE OR IN PERSON	QUESTIONS VALIDATED	COMMENTS	
1														1
2														2
3														3
4														4
5														5
6														6
7														7
8														8
9														9
10														10
11														11
12														12
13														13
14														14
15														15
16														16
17														17
18														18
19														19
20														20

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Pink - INTERVIEWER'S COPY
Yellow - FIELD SUPERVISOR
White - OFFICE

KEY: YES = X
NO = —
DK = DON'T KNOW
NA = NOT APPROPRIATE
REF = REFUSED

I CERTIFY THE ABOVE LISTED ITEMS ARE TRUE AND CORRECT.

CONTRACTOR SIGNATURE _____ DATE _____

FIELD SUPERVISOR SIGNATURE _____ DATE _____

COMMENTS: _____

REAL ESTATE FINANCIAL FEASIBILITY ANALYSIS WORKBOOK

AN OPERATIONAL GUIDE TO PROJECT COST-BENEFIT EVALUATION

JAMES CANESTARO AIA

DEPARTMENT OF REAL ESTATE AND
URBAN LAND ECONOMICS

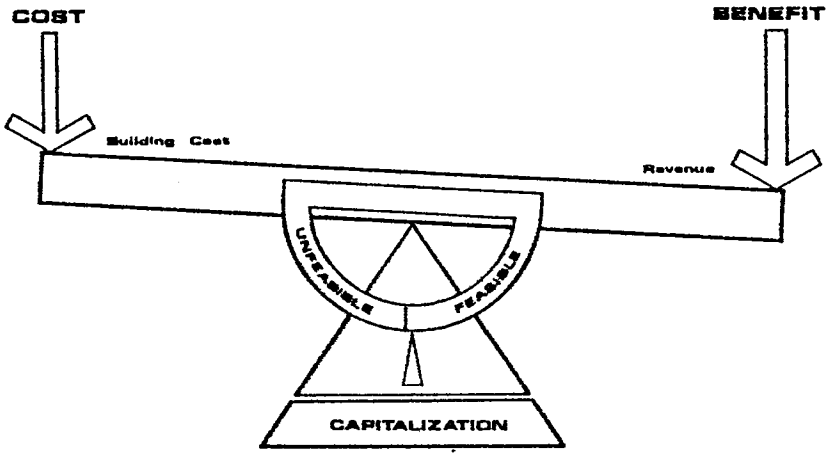
UNIVERSITY OF WISCONSIN-MADISON

Revised September 1979

FORWARD

The Real Estate Financial Feasibility Analysis Workbook has been developed to provided an operational manual for Project Cost-Benefit Analysis studies. The Workbook is not intended to stand alone, but rather to be used in conjunction with the 200 page Real Estate Financial Feasibility Analysis Handbook. Together, these two books provide a comprehensive introduction to the often confusing interaction of project cost estimation and financial feasibility studies.

The objective of these two books is to present the reader with a series of analytic techniques which can be easily applied in a staged process. This process ultimately leads to the identification and testing of all the essential physical and financial variables that make up a project proposal. The presentation of this analysis process can be best described as a balance of initial project costs against future ownership benefits. It is the measurement of this balance between the cost of the physical product, and the benefits generated by the economic utility of the project, that establishes the fundamental logic of the analysis process.



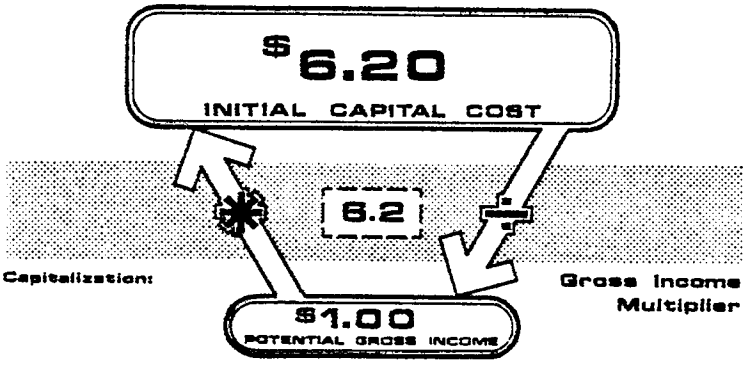
Initial, Intermediate, and Advanced Project Cost-Benefit Analysis

The Workbook provides a series of coordinated project Cost-Benefit Analysis models in both a graphic and numeric format. A representative case study, augmented by descriptive footnotes, clearly presents the sequence of steps necessary to complete each stage in the analysis process. Worksheets are also provided to aid in repetitive calculations undertaken by the reader. Reference tables and charts are included to present 1978 national data which may be helpful in completing the calculations. Finally, the appendix provides a review and evaluation of the project cost and operations data manuals useful in undertaking a Cost-Benefit Analysis.

The Handbook presents a more detailed description of the Project Cost-Benefit models and the concepts that underlie the process. The terminology used in the analysis has been clearly defined, often with illustrations or examples, to help the unindoctrinated reader. An elaborate presentation of the case

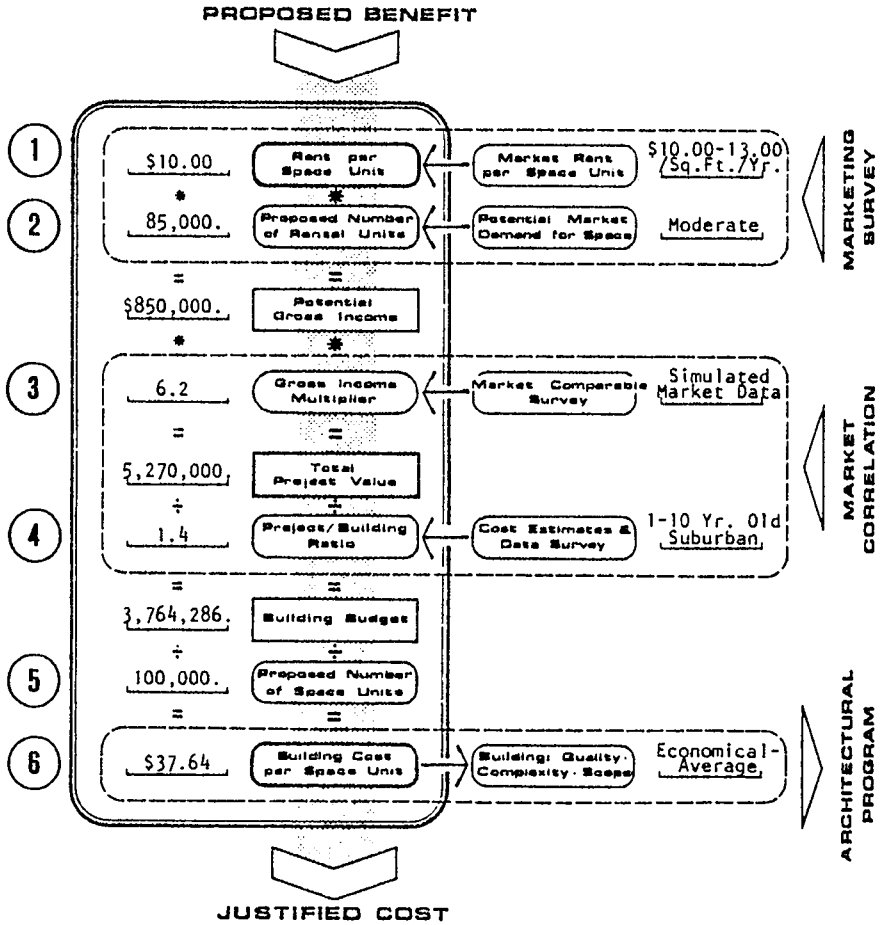
study calculation has been included to show the mechanics of each fundamental step in the analysis process. Finally, the appendix includes two project analysis problems, compound interest tables, and a complete glossary and index.

It must be noted that the reference data included in the Workbook should be used with a degree of caution when attempting a Cost-Benefit analysis in a specific market area. This 1978 national data may not be directly transferalbe into an analysis of a local market situation. The eccentricities of the local supply-demand factors, exaggerated construction costs created by local material or labor shortages, and special requirements of local lenders will all act to modify data presented in these reference tables. Where local market data may not be available or where it's validity may be challenged, these reference tables can provide an indication of "average and typical" data inputs for the calculations.



INITIAL PROJECT ANALYSIS

"BACK DOOR" APPROACH



FOOTNOTES

(1) Rent per Sapce Unit: is determined by analyzing the market rents charged by competitive income producing properties in the same real estate sub-market. This rent figure is the average of all rental rate agreements signed for the project under analysis and is usually expressed in dollars per sq. ft. per year.

The "back door" calculation of the initial project analysis was run using an average contract project rent at the bottom end of the real estate sub-market rental range. This answer will be compared to the results of the "front door" calculation to determine the rental variance.

(2) Proposed Number of Rental Units: is the gross leaseable area of a building, which is calculated by multiplying gross building area by the building efficiency ratio. (Table #2, p. A.6)

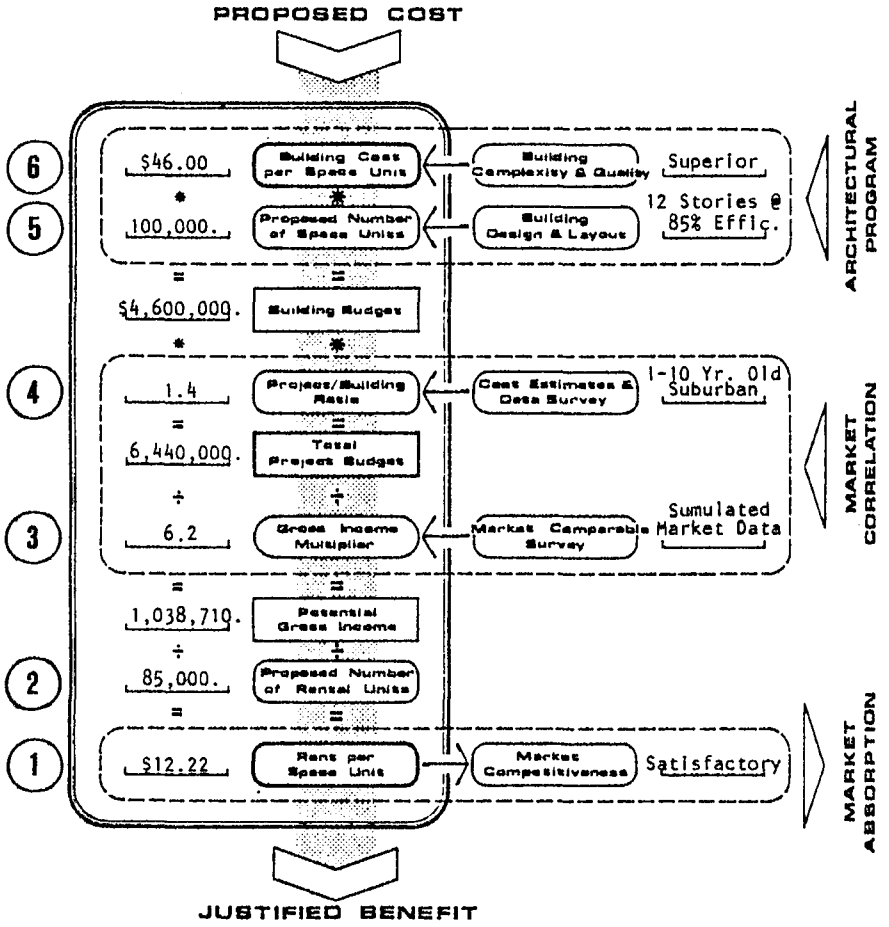
The case study is initially designed to be a high-rise general office building of 100,000 sq. ft. The building efficiency ratio of 85% is at the meager end of the space efficiency range for speculative office space.

(3) Gross Income Multiplier (GIM): is often used in appraisal to determine the value of an income property. The GIM is calculated for each of the comparable income properties in the sub-market, by dividing the potential gross income of each into its most recent sales price. The average GIM establishes the number of purchase dollars the market will spend to obtain a dollar of project revenue.

A very reliable sales price indicator can be calculated, if a sufficient number of comparable properties is available in the sub-market. Unfortunately, this data was not available for this case study,so the GIM was constructed through the use of the advanced project analysis models. These GIM figures, included in Table #4, p. A.7, should not be mistaken as market comparable data. GIM's identified from the market will always be higher since they include a consideration from return achieved on reversion, tax shelter benefits, and special financial arrangements.

(4) Project/ Building Ratio: is the multiplier which is created by dividing the Building Cost into the Total Capital Cost for the project. This factor can be a very effective tool in quickly generating an estimate of Total Project Cost. The Project/ Building Ratios, in Table #3, p. A.6, have been developed from a limited statistical survey of an wide range of income producing projects. This table should be used only during the Initial Project Analysis.

"FRONT DOOR" APPROACH



FOOTNOTES

(5) Proposed Number of Space Units: is determined by combining the conclusions of a building envelope analysis and a real estate sub-market survey. The subject site will present certain legal, physical and aesthetic limitations which are used to define the "most probable" building envelope. The "most feasible" amount of rental space that a project can successfully introduce into the sub-market will be defined by a survey of market absorption rates and vacancy rates for competing projects, and an estimate of the expected percentage of space demand captured by the subject property.

(6) Building Cost per Space Unit: is the projected construction cost per square foot of gross building area (GBA). Comparable Unit Building Construction Costs are included in Table #1, p. A.5. A complete analysis of all Project Cost Data Manuals is included in the Appendix: p. X. 2 - 7. A detailed evaluation of Project Cost Data Manual's suitability level for the initial project analysis is included in the Appendix: p. X. 10 - 11.

The "front door" calculation for the initital project analysis was completed using the building construction cost at the top end of the 1978 Dodge Construction Systems Cost estimates for general office buildings. The resulting justified rent per sq. ft. per year will be compared to the results of the "back door" calculation, to determine the project's rent and cost variance.

* Conclusions: At the completion of the initial set of "front door - back door" calculations the following results were noted:

	LOW	HIGH	VARIANCE
Rent per sq. ft. per year:	$10.00*	$12.22	$2.22
Building cost per sq. ft.:	$37.64	$46.00*	$8.36

*Data used to initiate the calculations.

"Back Door" Approach

	RENT PER SPACE UNIT	_____
*	PROPOSED NUMBER OF RENTAL UNITS	_____
=	POTENTIAL GROSS INCOME	_____
*	GROSS INCOME MULTIPLIER	_____
=	TOTAL PROJECT VALUE	_____
÷	PROJECT/ BUILDING RATIO	_____
=	BUILDING BUDGET	_____
÷	PROPOSED NUMBER OF SPACE UNITS	_____
=	BUILDING COST PER SPACE UNIT	_____

"Front Door" Approach

	BUILDING COST PER SPACE UNIT	_____
*	PROPOSED NUMBER OF SPACE UNITS	_____
=	BUILDING BUDGET	_____
*	PROJECT/ BUILDING RATIO	_____
=	TOTAL PROJECT BUDGET	_____
÷	GROSS INCOME MULTIPLIER	_____
=	POTENTIAL GROSS INCOME	_____
÷	PROPOSED NUMBER OF RENTAL UNITS	_____
=	RENT PER SPACE UNIT	_____

TABLE #1: COMPARABLE UNIT BUILDING CONSTRUCTION COSTS

SOURCE	APARTMENTS		OFFICE BUILDINGS		RETAIL BUILDINGS	
	1978	1979	1978	1979	1978	1979
MEANS BUILDING CONSTRUCTION COST DATA	17.20 - 31.50 21.75	18.35 - 33.60 23.50	28.00 - 49.05 37.75	29.45 - 52.65 40.65	stores/shops 16.15 - 29.70 22.20	17.60 - 32.00 24.25
MEANS BUILDING SYSTEMS COST GUIDE		18.35 - 33.60 23.50		29.45 - 52.65 40.65	stores/shops	17.60 - 32.00 24.25
DODGE CONSTRUCTION SYSTEMS COSTS	low rise 16.98 - 26.37 22.14	18.67 - 27.95 25.18	general office 32.81 - 45.48 38.33	37.38 - 48.20 39.98	stores/shops 22.94 - 39.59 30.76	25.23 - 41.96 33.22
	high rise 22.29 - 27.81 24.83	24.51- 30.76 27.16	corporate office 41.00 - 52.37 45.58		shopping centers 18.31 - 26.48 21.95	20.14 - 28.06 23.54
DOLLARS AND CENTS OF SHOPPING CENTERS					regional s.c. 21.75 - 56.00 29.06	
					community s.c. 9.28 - 24.29 18.05	
					neighborhood s.c. 11.18 - 26.51 16.24	
REAL ESTATE VALUATION COST FILE		walk-up (2 - 3 stories) 21.68 - 36.37 medium rise (6 stories) 35.47 - 49.20 42.10 high rise 38.54 - 61.32 49.84				

TABLE #2: BUILDING EFFICIENCY RATIOS

Common & Service Space Allocation	Space Efficiency (Gross Leasable Space)	Property & Development Type
Minimal	Above 90%	- Industrial buildings - One story Office buildings - One tenant shops/stores - Row house apartments
Meager	85% to 90%	- One tenant low rise office buildings - Strip shops/stores - Low rise walk-up apartment buildings
Moderate	80% to 85%	- Multi-tenant mid-rise office buildings - Neighborhood shopping centers - Mid rise apartment buildings
Significant	75% to 80%	- Multi tenant mid-rise office office buildings - Commercial shopping centers - High rise apartment buildings
Grand	Below 75%	- Multi tenant and corporate office buildings - Regional shopping centers - Hotels & dormitories - Hospitals & health service centers - Public buildings

TABLE #3: PROJECT TO BUILDING RATIOS*

PROPERTY TYPE	Low	Mean	High	Reliability of Estimate
Apartments: **		Mean		
36 units & less	1.02	1.60	2.18	Poor
36 - 180 units	1.20	1.31	1.42	Poor
180 units & more	1.16	1.29	1.41	Fair
Office Buildings: **		Mean		
25,000 sq. ft. & less	1.26	1.68	2.10	Fair
25,000-100,000 sq. ft.	1.11	1.29	1.48	Good
100,000 sq. ft. & more	1.12	1.41	1.71	Fair
Shopping Centers: ***		Median		
Neighborhood	1.33	1.66	1.80	Poor
Community	1.09	1.61	2.20	Good
Regional	1.14	1.36	1.43	Very Good

Notes:

* The Project/Building Ratio has been developed from a statistical sample of 130 projects. The nature of the survey does not guarantee a balanced sample size for each property sub-category. As a result, some Project/Building Ratio estimates are more reliable than others.

** Apartment Project/Building ratio ranges are established as one and a half standard deviations on either side of their respective means.

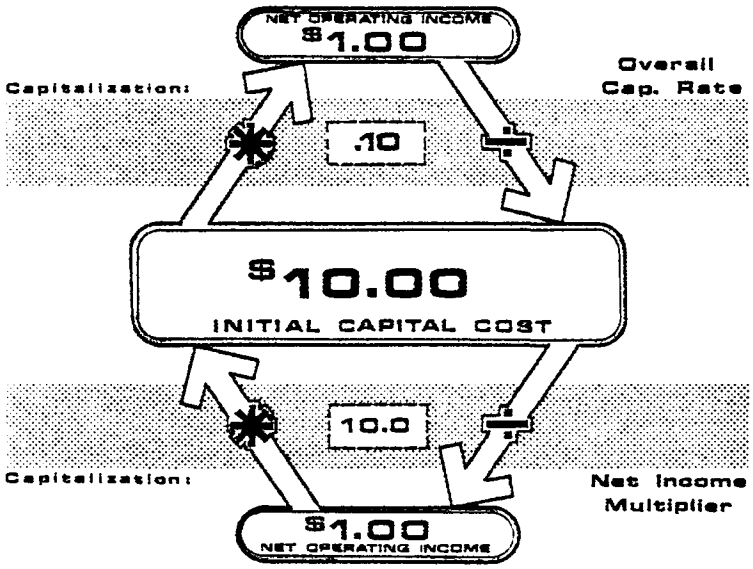
*** The Project/Building ratio for this category has been derived from Dollars and Cents of Shopping Centers. The range has been identified as the low and high ends of the center 80% of the survey sample; which is comparable to a three standard deviation range.

TABLE #4: GROSS INCOME MULTIPLIER SIMULATIONS

PROPERTY TYPE	Project Low Operating Expense Ratio		Project High Operating Expense Ratio	
	Expected Low Investor Cash Return on Equity	Expected High Investor Cash Return on Equity	Expected Low Investor Cash Return on Equity	Expected High Investor Cash Return on Equity
Apartments:				
36 units & less	6.5	6.0	5.1	4.5
36 - 180 units	6.3	5.8	5.0	4.5
180 units & more	6.4	5.9	5.1	4.6
Office Buildings:				
25,000 sq. ft. & less	6.6	6.1	5.5	5.1
25,000-100,000 sq. ft.	6.5	6.0	5.4	4.9
100,000 sq. ft. & more	6.2	5.7	4.7	4.2
Shopping Centers:				
Neighborhood	8.7	8.2	7.3	6.8
Community	8.9	8.5	7.4	6.9
Regional	8.2	7.8	6.5	6.1

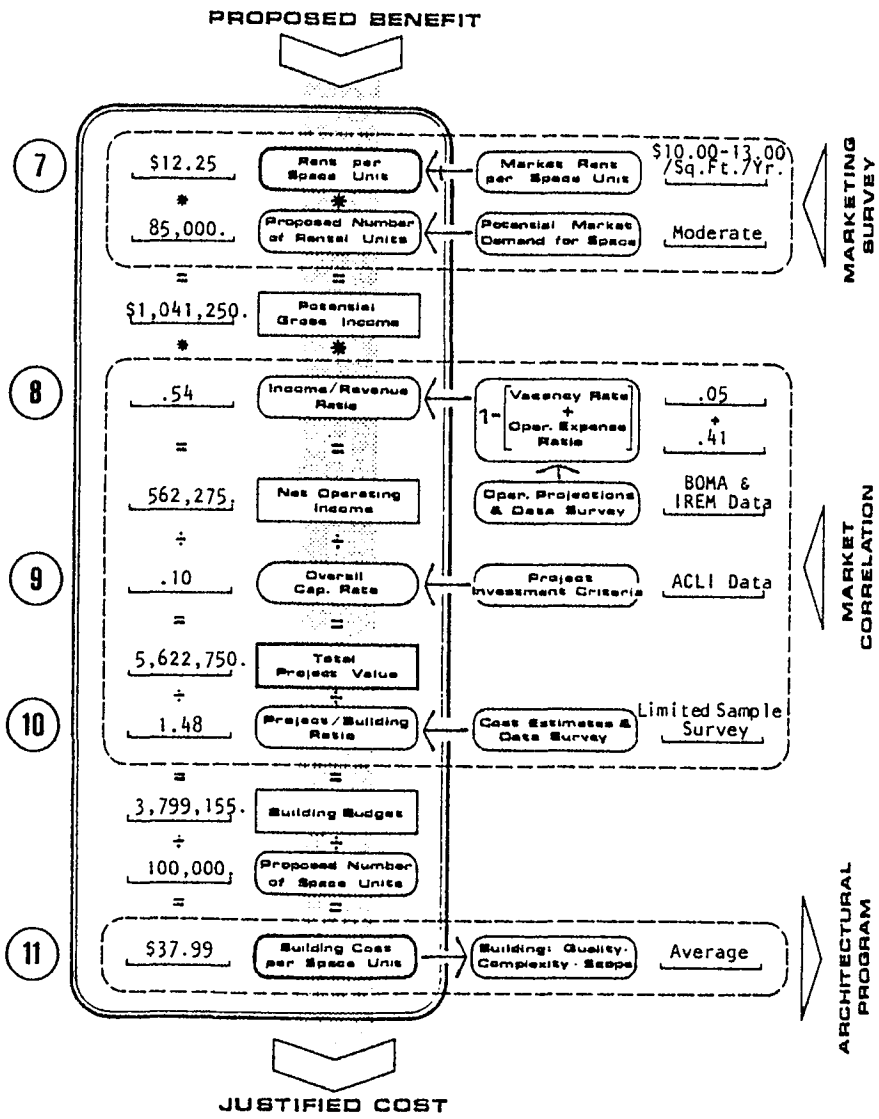
Notes:

- Gross Income Multipliers have to be constructed through the use of the advanced project analysis models. These Gross Income Multiplier's should not be mistaken as market comparable data. Gross Income Multipliers identified from the market will always be higher since they include a consideration of return achieved on reversion, tax shelter benefits, and special financing arrangements.
- Calculations are based on average 1978 data unless otherwise noted.
- The source for the low and high Operating Expense Ratios are the indicated ranges noted on the "Operating Expense Data Charts."
- Expected low (4%) and high (8%) investor cash return on equity have been arbitrarily established.



INTERMEDIATE PROJECT ANALYSIS

"BACK DOOR" APPROACH



FOOTNOTES

(7) Rent per Space Unit: for the intermediate "back door" approach has been established by referring to the conclusions of the initial "front door" calculations that generated a justified rent per sq. ft. per year of $12.22. The answer from the new intermediate "back door" calculation will be compared to the results of the intermediate "front door" analysis to determine the adjusted rental variance.

(8) Income/ Revenue Ratio: is determined by subtracting the sum of the projected Vacancy rate and operating Expense Ratio from one hundred percent.

Vacancy Rate: has been established in the initial real estate submarket survey. The vacancy rates incurred by competing income producing properties provides an indicator of market space demand for the subject property. An arbitrary five percent figure has been used for the case study. A more accurate means of identifying the vacancy rate would be by determining the amount of rental space remaining unleased and multiplying it by the contract rental rates. This would then be divided by the Potential Gross Income.

Operating Expense Ratio: is the sum of all project operations expenses, expressed as a percentage of Potential Gross Income. Operating expense breakdowns can be found in Tables #10, 11, & 12; pp. B. 8 - 9. A complete analysis of all Project Operations Data Manuals is included in the Appendix: pp. X. 8 - 9. A detailed evaluation of Project Cost Data Manual suitability for the three levels of project analysis is included in the Appendix: pp. X. 12 - 15.

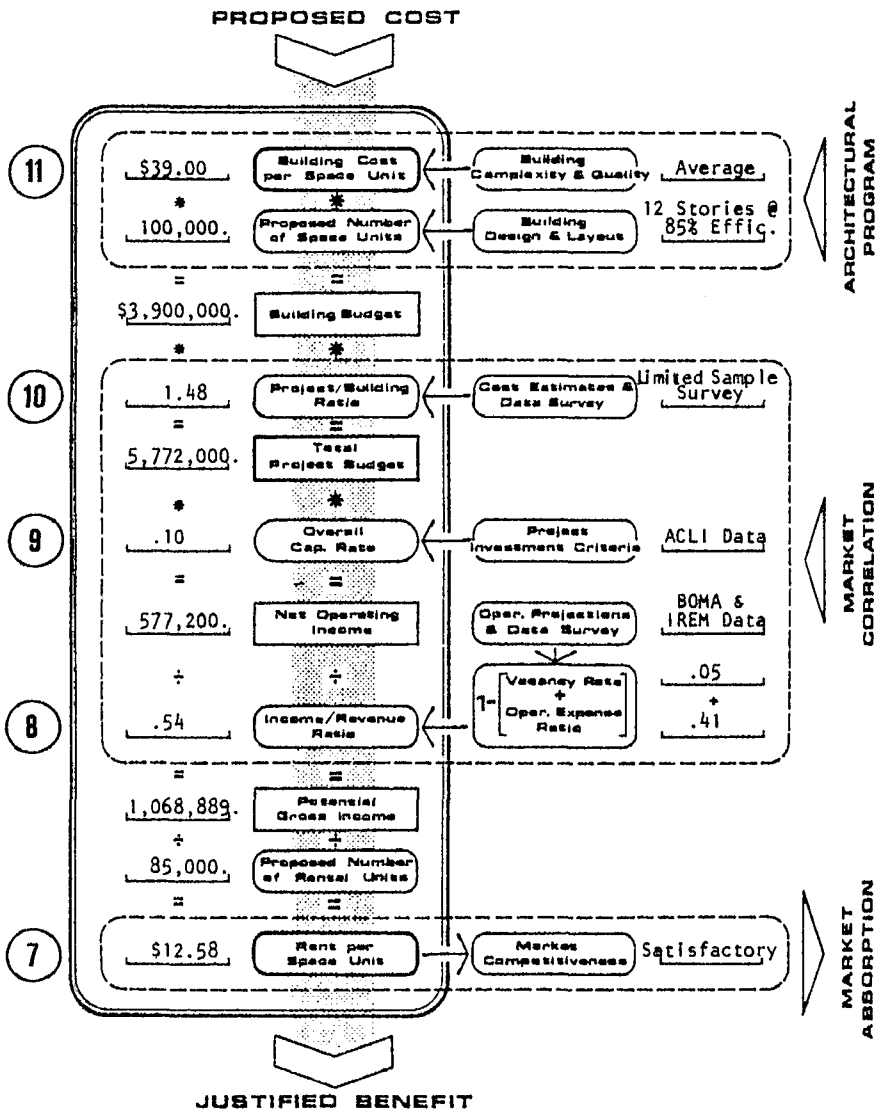
The operating expenses, expressed as a percentage of Potential Gross Income, for this 100,000 sq. ft. high rise office building are as follows:

Insurance	.7%
Real Estate Taxes	8.6%
Administrative	4.2%
Operating Expenses	14.3%
Maintenance	11.5%
Other Expenses	1.7%
Operating Expense Ratio:	41.0%

(9) Overall Capitalization Rate (OCR): is one of the most commonly used factors in income property appraisal. The OCR can be derived from market comparable sales data divided into their Net Operating Incomes at the time of sale. A variation of the historical market data approach is to divide the Net Operating Income of a newly constructed comparable project by the lender's original appraisal value of the property; as tabulated by the American Council of Life Insurance and documented in Table #9, p. B 8.

The OCR can also be constructed from a set of investor expectations by using any one of several approaches, refer to the Handbook, pp. 3.5 - 3.6.

"FRONT DOOR" APPROACH



FOOTNOTES

(10) Project/ Building Ratio: is determined by breaking down the Project's Total Capital Cost into the categories of: Building Cost, Land Value, Site Work, Fees and Permits, Carrying Charges, as well as Start-up and Contingency. The individual component costs, expressed as a percentage of Building cost, can either be collected from comparables in the local market or taken from Table #5, p. B.5. The project capital cost component percentages noted in this table have been developed from a limited statistical survey. These figures should always be checked against comparables to verify the validity of the data.

The Project/ Building Component Costs, expressed as a percentage of building cost, for this case study are as follows:

Building Cost	1.00 (100%)
Land Value	.19
Site Work	.04
Fees & Permits	.08
Carrying Charges	.10
Start-up & Contingency	.07
Project/ Building Ratio:	1.48 (148%)

(11) Building Cost per Space Unit: is the projected construction cost per square foot of gross building area (GBA). Building Component Cost Breakdowns are included in Tables # 6 - 8, p. B. 6.7. A complete analysis of all Project Cost Data Manuals is included in the Appendix: p. X. 2 - 7. A detailed evaluation of Project Cost Data Manual Suitability for intermediate project analysis is included in the Appendix: p. X. 10 - 11.

The "front door" calculations of the intermediate project analysis were completed using the building construction cost influenced strongly by the results of the initial "back door" analysis. The resulting justified rent per sq. ft. per year will also be compared to the conclusions of the intermediate "back door" calculation, to determine the project's rent and cost variance.

* Conclusions: At the completion of the intermediate set of "front door - back door" calculations the following results were noted:

	LOW	HIGH	VARIANCE
Rent per sq. ft. per year:	$12.25*	$12.58	$.33
Building cost per sq. ft.	$37.99	$39.00*	$1.01

* Data used to initiate the calcuations.

"Back Door" Approach

RENT PER SPACE UNIT	
* PROPOSED NUMBER OF RENTAL UNITS	
= POTENTIAL GROSS INCOME	
* INCOME / REVENUE RATIO	
= NET OPERATING INCOME	
÷ OVERALL CAP RATE	
= TOTAL PROJECT VALUE	
÷ PROJECT / BUILDING RATIO	
= BUILDING BUDGET	
÷ PROPOSED NUMBER OF SPACE UNITS	
= BUILDING COST PER SPACE UNIT	

"Front Door" Approach

BUILDING COST PER SPACE UNIT	
* PROPOSED NUMBER OF SPACE UNITS	
= BUILDING BUDGET	
* PROJECT / BUILDING RATIO	
= TOTAL PROJECT BUDGET	
* OVERALL CAP RATE	
= NET OPERATING INCOME	
÷ INCOME / REVENUE RATIO	
= POTENTIAL GROSS INCOME	
÷ PROPOSED NUMBER OF RENTAL UNITS	
= RENT PER SPACE UNIT	

OVERALL CAP RATE:

MORTGAGE CONSTANT		* LOAN TO VALUE RATIO		= MORTGAGE WEIGHTED RATE	
+ BEFORE TAX CASH RATE OF RETURN		* PERCENT DOWNPAYMENT		= EQUITY WEIGHTED RATE	
= OVERALL CAP RATE					

OPERATING EXPENSE RATIO:

% INSURANCE	
+ % REAL ESTATE TAXES	
+ % ADMINISTRATIVE	
+ % OPERATING EXPENSES	
+ % MAINTENANCE	
+ % OTHER	
= OPERATING EXPENSE RATIO	

PROJECT / BUILDING RATIO:

% BUILDING BUDGET	1.00
+ % SITE WORK	
+ % LAND VALUE	
+ % FEES & PERMITS	
+ % CARRYING CHARGES	
+ % START-UP & CONTINGENCY	
= PROJECT / BUILDING RATIO	

TABLE #5: CAPITAL COST BREAKDOWN

PROPERTY TYPE	Building Cost	Land Value	Site Work	Fees & Permits	Carry'g Costs	Start-up & Contingency	Reliability of Estimate
Apartments:							
36 units & less	1.00	.63*	.06	.07	.19*	.20	Poor
36 - 180 units	1.00	.14	.03	.04	.05	.32	Poor
180 units	1.00	.11	.07	.06	.08	.35	Fair
Correlation to Building Cost:		Very Good	Poor	Good	Very Good	Fair	
Office Buildings:							
25,000 sq. ft. & less	1.00	.45*	.06	.08	.08	.09	Fair
25,000-100,000 sq. ft.	1.00	.19	.04	.04	.06	.07	Good
100,000 sq. ft. & more	1.00	.19	.04	.08	.10	.07	Fair
Correlation to Building Cost:		Fair	Fair	Very Good	Very Good	Very Good	
Shopping Centers:**							
Neighborhood	1.00	.27	.20	.06	.09	.01	Poor
Community	1.00	.18	.18	.07	.08	.03	Good
Regional	1.00	.05	.13	.10	.10	.03	Very Good
Correlation to Building Cost:		N/A	N/A	N/A	N/A	N/A	

Notes:

* The Project Capital Cost Component Percent Breakdown has been developed from a statistical sample of 130 projects. The nature of the survey does not guarantee a balanced sample size for each property sub-category. In some specific cases eccentric characteristics of specific projects will adversely influence the results.

** The Component Cost Breakdown has been derived from Dollars and Cents of Shopping Centers. Specific data was not available to calculate the components correlation to building cash.

TABLE #6: APARTMENT BUILDING COMPONENT COST BREAKDOWN

1978 Building Component Cost Breakdown
(expressed as a percentage of total building cost)

	Low Rise Building	High Rise Building
Foundations	3.7	4.8
Superstructure	13.0	22.2
Exterior Walls	16.3	12.2
Roofing	1.7	0.8
Partitions	12.3	11.3
Int. Wall Finish	4.7	3.0
Floor Finishes	6.5	3.6
Ceilings	4.3	3.1
Specialties	1.2	1.6
Conveying Systems	---	3.0
Plumbing	10.5	8.5
Fire Protection	0.3	1.0
HVAC	7.2	6.5
Electrical	9.3	8.1
General Conditions	5.4	5.1
Equipment	3.6	5.2
	100. %	100. %

TABLE #7: SHOPPING CENTER COMPONENT COST BREAKDOWN

1978 Building Component Cost Breakdown
(expressed as a percentage of total building cost)

	Shopping Center	Stores/Shops	Supermarket
Foundations	5.3%	8.5%	6.0%
Superstructure	22.2	18.4	21.4
Exterior Walls	14.3	25.5	13.6
Roofing	2.6	3.2	5.0
Partitions	3.1	5.9	6.1
Int. Wall Finish	2.2	3.3	2.4
Floor Finishes	4.0	3.4	3.2
Ceilings	4.3	4.4	4.2
Specialties	1.6	0.4	1.1
Conveying Systems	0.8	0.8	0.0
Plumbing	6.6	4.6	4.1
Fire Protection	3.5	0.4	0.7
HVAC	10.7	6.1	11.5
Electrical	13.8	9.8	10.9
General Conditions	5.1	4.7	5.1
Equipment	0.0	0.6	4.7
	100.0%	100.0%	100.0%

1978 Construction Costs ($/sq.ft.)

	Low	Avg.	High	Low	Avg.	High	Low	Ave.	High	Low	Ave.	High	Low	Avg.	High
Gross Building Cost	$16.98	22.14	26.37	22.29	24.83	27.81	$18.31	$21.95	$26.48	$22.94	$30.76	$39.59	$23.17	$31.64	$34.67
Site Work	$ 0.47	0.48	0.95	0.46	0.48	0.48	1.19	1.42	1.72	1.00	1.13	1.22	1.36	2.20	2.68

Source: From 1978 Dodge Construction Systems Costs, Copyright, 1977, McGraw-Hill Incorporated.
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TABLE #8: OFFICE BUILDING
COMPONENT COST BREAKDOWN

(expressed as a percentage of total building cost)

Building System	Office Buildings	Corporate Head Office Buildings	Main Banks	Branch Banks
Foundations	5.9%	5.6%	7.0%	4.6%
Superstructure	16.1	23.8	12.4	10.1
Exterior Walls	15.5	10.9	12.9	13.6
Roofing	2.2	0.5	1.3	3.3
Partitions	8.0	8.3	5.9	5.2
Int. Wall Finish	3.5	3.0	1.8	2.7
Floor Finishes	3.2	1.6	3.1	3.5
Ceilings	2.6	1.7	1.1	2.5
Specialities	1.0	0.6	0.7	0.6
Conveying Systems	1.5	5.8	1.0	0.8
Plumbing	5.6	3.6	3.9	4.3
Fire Protection	0.7	0.9	0.3	0.2
HVAC	16.3	12.9	10.7	11.8
Electrical	10.4	11.3	7.5	7.4
General Conditions	5.7	5.0	5.1	6.3
Equipment	1.8	4.5	25.3	23.1
	100.0%	100.0%	100.0%	100.0%

1978 CONSTRUCTION COSTS ($/sq.ft.)

	Low	Avg.	High	Low	Avg.	High	Low	Avg.	High	Low	Avg.	High
Gross Building Cost	$34.30	40.33	47.65	42.99	47.81	55.04	59.69	67.00	79.76	45.50	59.99	73.23
Site Work	1.49	2.00	2.17	1.99	2.23	2.67	1.51	1.84	2.06	1.72	2.88	3.28

Source: From 1978 Dodge Construction Systems Costs, Copyright, 1977, McGraw-Hill Incorporated. With permission of McGraw-Hill Information Systems Company.

TABLE #9: CAPITALIZATION RATE TRENDS

Year as of 4th QUARTER	APARTMENTS			RETAIL BUILDINGS			OFFICE BUILDINGS		
	36 Units of Less	36 to 180	180 or more	Shopping Ceters			25,000 or Less	25,000 to 100,000	100,000 to 200,000
				Neighb.	Comm.	Regional			
1969	.099	.099	.108	.099	.105	.105	.103	.098	.098
1970	.109	1103	.100	.108	.114	.107	.105	.107	.108
1971	.098	.097	.094	.100	.098	.101	.099	.096	.095
1972	.098	.094	.093	.095	.096	.099	.095	.095	.093
1973	.098	.094	.098	.095	.092	.097	.092	.094	.094
1974	.111	.105	N/A	.112	.109	.103	.107	.106	.106
1975	N/A	.107	.105	.106	.106	.104	.106	.105	.104
1976	.105	.102	.101	.107	.101	.098	.099	.101	.098
1977	.102	.098	.098	.098	.098	.098	.097	.097	.098
1978	.105	.102	.103	.100	.101	.104	.102	.101	.100

Source: Mortgage Loan Statistics: 1969-1978, American Council of Life Insurance.

TABLE #10: APARTMENT BUILDING OPERATING EXPENSE BREAKDOWN

(expressed as a % of Potential Apartment Revenue)

	Low Rise Apartments (12 - 24 units)		Low Rise Apartments (25 or more units)		Elevator Apartments	
	Low	High	Low	High	Low	High
FIXED EXPENSES:						
Insurance	2.4%	2.6%	1.5%	1.9%	1.3%	1.9%
Real Estate Taxes	11.4%	14.6%	10.3%	12.9%	10.5%	13.2%
VARIABLE EXPENSES:						
Administrative	5.5%	6.5%	6.5%	7.9%	6.9%	7.7%
Operating	9.0%	12.6%	11.0%	12.9%	15.4%	17.5%
Maintenance	6.7%	8.7%	7.2%	9.1%	7.5%	9.6%
Other	4.7%	6.1%	3.0%	5.3%	5.0%	7.2%
INDICATED RANGE:	39.7% - 51.1%		39.5% - 50.0%		46.6% - 57.1%	

Source:
Institute of Real Estate Management

TABLE #11: OFFICE BUILDING OPERATING EXPENSE BREAKDOWN

(expressed as a % of Potential Office Revenue)

	5,000 - 20,000 sq. ft.		20,000 - 50,000 sq. ft.		50,000 - 100,000 sq. ft.	
	Low	High	Low	High	Low	High
FIXED EXPENSES:						
Insurance	1.6%	1.8%	.7%	1.0%	.7%	1.0%
Real Estate Taxes	10.5%	11.5%	7.8%	10.4%	8.6%	12.2%
VARIABLE EXPENSES:						
Administrative	4.6%	5.1%	3.5%	4.9%	4.2%	5.2%
Operating	7.8%	13.4%	14.2%	15.7%	14.3%	16.4%
Maintenance	11.1%	11.9%	10.7%	13.5%	11.5%	16.3%
Other	1.8%	2.0%	1.1%	1.6%	1.7%	2.0%
INDICATED RANGE:	37.4% - 45.7%		38.0% - 47.1%		41.0% - 53.1%	

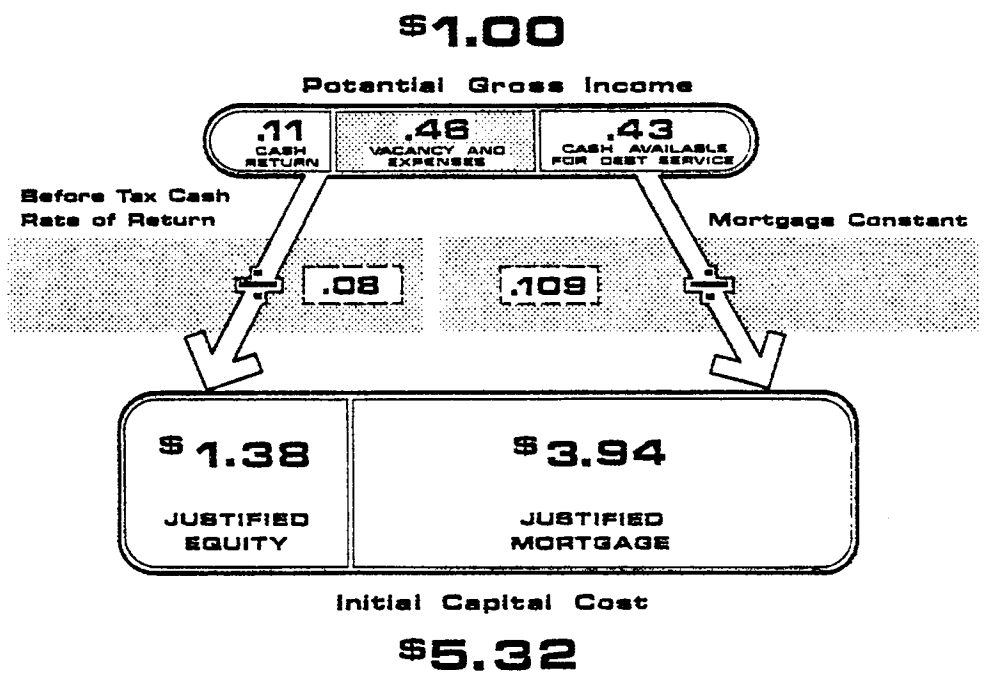
Source:
Institute of Real Estate Management, Regional Data put into National format.

TABLE #12: SHOPPING CENTER OPERATING EXPENSE BREAKDOWN

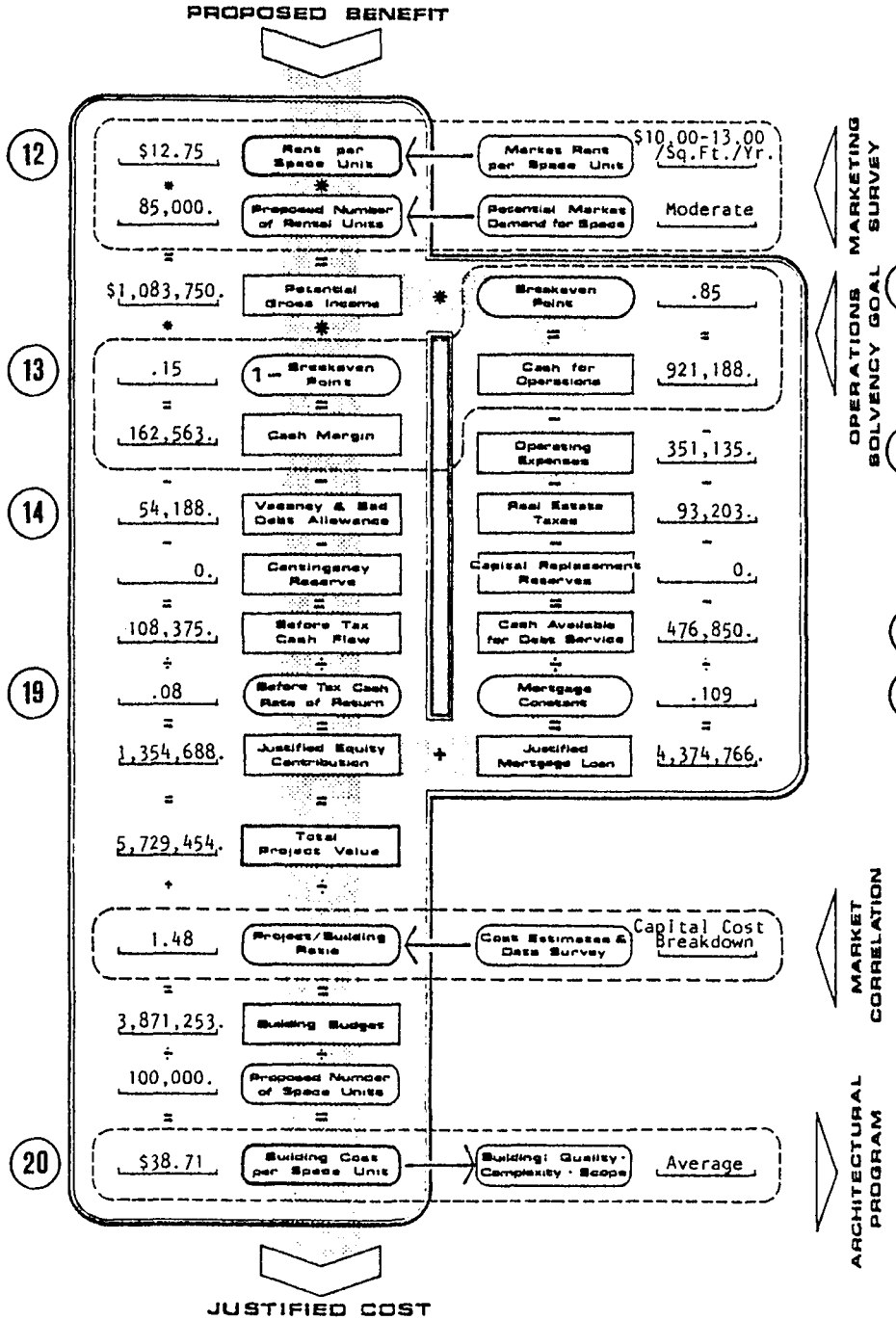
(expressed as a % of Total Operating Receipts)

	Neighborhood		Community		Regional	
	Low	High	Low	High	Low	High
FIXED EXPENSES:						
Insurance	1.2%	2.0%	1.0%	2.0%	1.2%	2.0%
Real Estate Taxes	8.9%	11.4%	7.5%	10.0%	8.9%	11.4%
VARIABLE EXPENSES:						
Administrative	2.4%	5.0%	3.2%	5.7%	2.4%	5.0%
Operating	1.2%	2.7%	1.6%	3.0%	1.2%	2.7%
Maintenance	3.6%	7.7%	4.3%	8.8%	3.6%	7.7%
Other	.6%	1.0%	.5%	1.0%	.6%	1.0%
INDICATED RANGE:	17.9% - 29.8%		18.0% - 30.5%		19.4% - 34.1%	

Source:
Dollars and Cents of Shopping Centers, Urban Land Institute, pages 53,101, and 149.



ADVANCED PROJECT ANALYSIS



FOOTNOTES

(12) Rent per Space Unit: for the advanced "back door" approach has been established by referring to the conclusions of the intermediate "front door" calculations that generated a justified rent per sq. ft. per year of $12.58. The answer from the new advanced "back door" calculation will be compared to the results of the advanced "front door" analysis to determine the final rental variance.

(13) Breakeven Point: is the percentage of potential gross income which is claimed by the liabilities of annual debt service and operating expenses. Breakeven point is customarily set no higher than 85%. The lower the breakeven point, the greater the project's ability to absorb unexpectedly high vacancies and still provide a reasonable cash return to the investor. This return would come out of the cash remaining after the annual obligations have been subtracted from potential gross income.

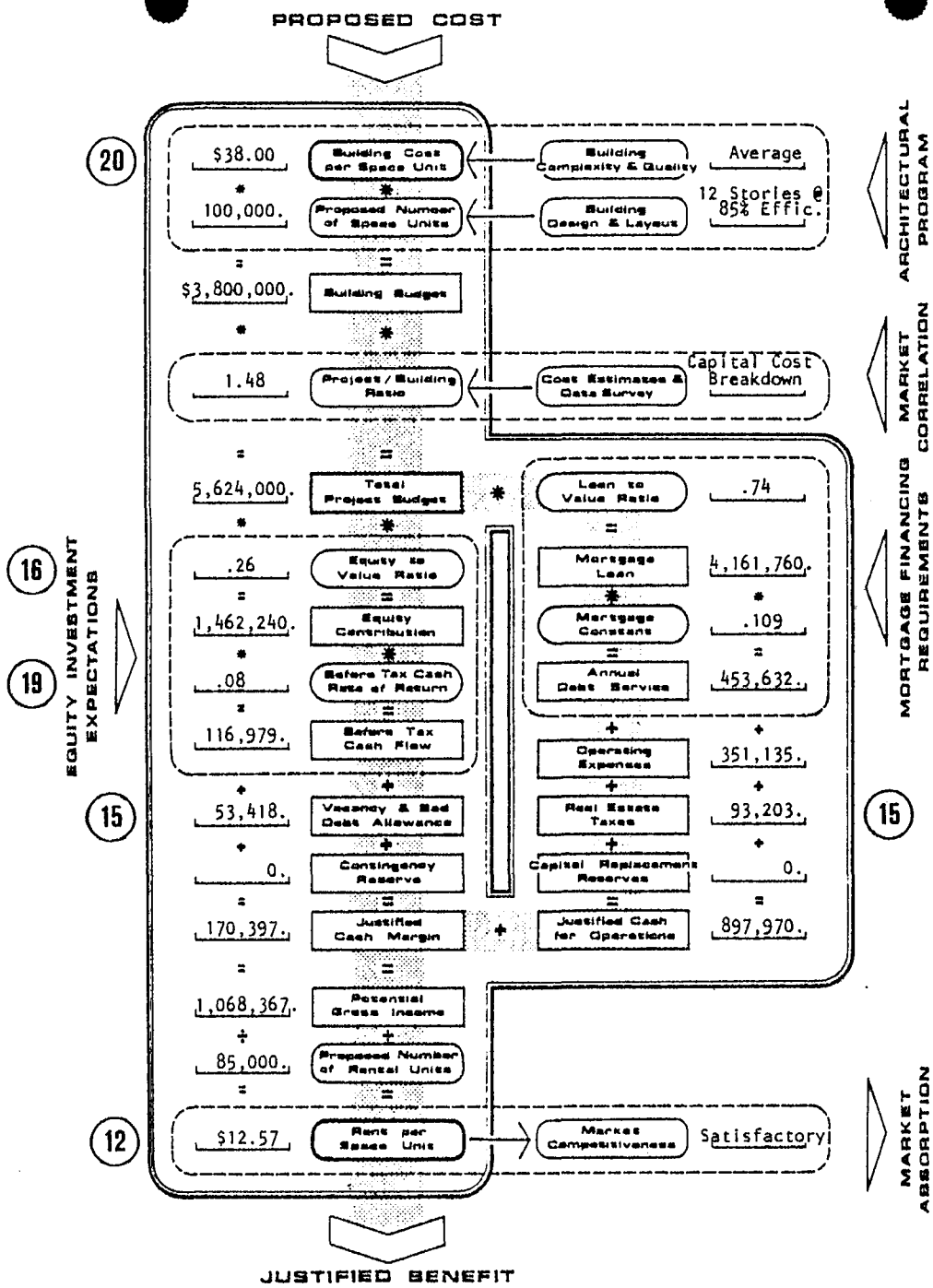
(14) Vacancy and Operating Expenses: have been determined by the use of the percentage estimates calculated in the intermediate approach. In actual practice, detailed dollar estimates would be developed from comparable operating data collected in the local market, or by referring to the B.O.M.A or I.R.E.M. Project Operations Data Manuals. These are analyzed in Appendix: pp. X. 8 - 9 & X. 12 - 15.

(15) Operating Expenses for the Advanced "Front Door" Approach: must be introduced into the calculations as actual dollar figures and not as a percentage of Potential Gross Income. The expense figures generated for the advanced "back door" case study calculation have been directly transferred into this calculation, for the sake of simplicity.

Vacancy and Bad Debt Allowance: is determined by:

Annual Debt Service
+ Operating Expenses
+ Real Estate Taxes
+ Capital Replacement reserves
+ Before Tax Cash Flow
= Effective Gross Income
÷ (1 - vacancy rate)
= Potential Gross Income
× Vacancy rate
= Vacancy and Bad Debt Allowance

(16) Loan to Value Ratio: is the factor which defines the portion of the Total Project Cost which will be financed by the mortgage. The American Council of Life Insurance tabulates this data for a variety of property types on a quarterly basis, and the results have been documented in Table #15, p. C.7.



FOOTNOTES

(17) Mortgage Constant: is the ratio of original mortgage principal to the annual debt service; refer to the Handbook, p. 5.5 - 5.9. The ACLI also tabulates this data for a variety of property types on a quarterly basis, and the results have been documented in Table #17, p. C.8.

Tables #18 - 21, pp. C. 8 - 9, have organized the mortgage constants on the basis of 1 - 30 year mortgage terms and 8½% - 12% interest rates.

(18) Debt Coverage Ratio Check: is essential to ensure that the advanced project analysis has not created a financing package which exceeds the limits of normal lending practice. The Debt Coverage Ratio is calculated by dividing Net Operating Income by Annual Debt Service. The higher the risk or uncertainty inherent for a project, the higher will be the Debt Coverage Ratio. The ACLI includes this data in its quarterly analysis, for a variety of property types, and the results have been documented in Table #16, p. C.7.

Results of Debt Coverage Ratio Check for the case study determined:

	"back door"	"front door"
Annual Debt Service: (indicated by calculation)	$476,850.	$453,632.
Justified Annual Debt Service: (using a 1.26 D.C.Ratio)	$464,463.	$452,395.
% Variance over lending limit:	+ 2.7%	+ .3%

Both of these solution are within an acceptable deviation from the "average" financing arrangements.

(19) Before Tax Cash Rate of Return: is the ratio of the project's annual cash return to the original equity contribution. This cash return does not include any cash profits from tax shelter or reversion. As a result, the annual cash return to the investor will usually be less than final project yield. Comparable before tax cash rates of return are included in Table #13, p. C.6.

(20) Building Cost per Space Unit: in the "front door" advanced project analysis is influenced by the results of the intermediate "back door" analysis. The resulting justified rent per sq. ft. per year will also be compared to the conclusions of the advanced "back door" calculations to determine the project's rent and cost variance.

* Conclusions: At the completion of the advanced set of "front door - back door" calculations, the following results were noted:

	LOW	HIGH	VARIANCE
Rent per sq. ft. per year:	$12.75*	$12.57	$.23
Building cost per sq. ft.:	$38.71	$38.00*	$.71

*Data used to initiate the calculations.

ADVANCED PROJECT ANALYSIS:

Flow Chart of the "FRONT DOOR" Approach
Case Study with Footnotes

"Back Door" Approach

RENT PER SPACE UNIT _____
* PROPOSED NUMBER OF RENTAL UNITS _____
= POTENTIAL GROSS INCOME _____

POTENTIAL GROSS INCOME _____
* 1 - BREAKEVEN POINT _____
= CASH MARGIN _____
- VACANCY & BAD DEBT ALLOWANCE _____
- CONTINGENCY RESERVE _____
= BEFORE TAX CASH FLOW _____
÷ BEFORE TAX CASH RATE OF RETURN _____
= JUSTIFIED EQUITY CONTRIBUTION _____

JUSTIFIED EQUITY CONTRIBUTION _____
+ JUSTIFIED MORTGAGE LOAN _____
= TOTAL PROJECT VALUE _____
÷ PROJECT/ BUILDING RATIO _____
= BUILDING BUDGET _____
÷ PROPOSED NUMBER OF SPACE UNITS _____
= BUILDING COST PER SPACE UNIT _____

POTENTIAL GROSS INCOME _____
* BREAKEVEN POINT _____
= CASH FOR OPERATIONS _____
- OPERATING EXPENSES _____
- REAL ESTATE TAXES _____
- CAPITAL REPLACEMENT RESERVES _____
= CASH AVAILABLE FOR DEBT SERVICE** _____
÷ MORTGAGE CONSTANT _____
= JUSTIFIED MORTGAGE LOAN _____

** DEBT COVERAGE RATIO CHECK:

POTENTIAL GROSS INCOME _____
- VACANCY & BAD DEBT ALLOWANCE _____
- OPERATING EXPENSES _____
- REAL ESTATE TAXES _____
- CAPITAL REPLACEMENT RESERVES _____
= NET OPERATING INCOME _____
÷ DEBT COVERAGE RATIO _____
= JUSTIFIED ANNUAL DEBT SERVICE _____

"Front Door" Approach

BUILDING COST PER SPACE UNIT _____
* PROPOSED NUMBER OF SPACE UNITS _____
= BUILDING BUDGET _____
* PROJECT/ BUILDING RATIO _____

TOTAL PROJECT BUDGET _____
* EQUITY TO VALUE RATIO _____
= EQUITY CONTRIBUTION _____
* BEFORE TAX CASH RATE OF RETURN _____
= BEFORE TAX CASH FLOW _____
+ VACANCY & BAD DEBT ALLOWANCE _____
+ CONTINGENCY RESERVE _____
= JUSTIFIED CASH MARGIN _____

JUSTIFIED CASH MARGIN _____
+ JUSTIFIED CASH FOR OPERATIONS _____
= POTENTIAL GROSS INCOME _____
÷ PROPOSED NUMBER OF RENTAL UNITS _____
= RENT PER SPACE UNIT _____

TOTAL PROJECT BUDGET _____
* LOAN TO VALUE RATIO _____
= MORTGAGE LOAN _____
* MORTGAGE CONSTANT _____
= ANNUAL DEBT SERVICE** _____
+ OPERATING EXPENSES _____
+ REAL ESTATE TAXES _____
+ CAPITAL REPLACEMENT RESERVES _____
= JUSTIFIED CASH FOR OPERATIONS _____

** DEBT COVERAGE RATIO CHECK:

POTENTIAL GROSS INCOME _____
- VACANCY & BAD DEBT ALLOWANCE _____
- OPERATING EXPENSES _____
- REAL ESTATE TAXES _____
- CAPITAL REPLACEMENT RESERVES _____
= NET OPERATING INCOME _____
÷ DEBT COVERAGE RATIO _____
= JUSTIFIED ANNUAL DEBT SERVICE _____

TABLE #13: COMPARABLE BEFORE TAX CASH RATES OF RETURN

Year:	1976	1977	1978	1979**
Interest Rates:				
Prime Interest Rate * (monthly average as of the 4th quarter)	6.50	7.75	10.94	11.75
Treasury Bills (1 year)	5.52	5.71	7.74	8.87
U.S. Treasury Bond Yields:				
5 years	7.18	6.99	8.32	8.90
10 years	7.61	7.42	8.41	8.95
20 years	7.86	7.67	8.48	8.92
Corporate Bond Yield:				
Aaa	8.43	8.02	8.73	9.20
Baa	9.75	8.97	9.45	10.29
Common Stock Yields:	3.77	4.56	5.28	5.5

Sources: Federal Reserve Bulletin, August, 1979 for all but Prime Interest Rate Data

* The Appraiser, June 1979 Volume 35, Number 6, published by American Institute of Real Estate Appraisers, Chicago, Illinois

** Mid year estimates based on July data.

TABLE #14: MORTGAGE INTEREST RATE TRENDS

	APARTMENTS			RETAIL BUILDINGS			OFFICE BUILDINGS		
Year as of 4th QUARTER	36 Units or Less	36 to 100	180 or more	Shopping Centers Neighb.	Comm.	Regional	25,000 or Less	25,000 to 100,000	100,000 to 200,000
1969	.0922	.0925	.0932	.0975	.0952	.0952	.0947	.0933	.0856
1970	.1006	.0983	.0980	.1025	.1020	.1016	.1010	.1008	.1016
1971	.0907	.0899	.0883	.0909	.0886	.0899	.0915	.0906	.0878
1972	.0870	.0857	.0849	.0854	.0841	.0854	.0860	.0854	.0859
1973	.0907	.0907	.0906	.0910	.0905	.0882	.0903	.0912	.0903
1974	.1034	.1010	.1010	.1035	.1038	.1042	.1029	.1029	.1015
1975	N/A	.1017	.1040	.1015	.1011	.1045	.1031	.1009	.1059
1976	.0974	.0963	.0958	.0974	.0962	.0956	.0966	.0967	.0947
1977	.0914	.0932	.0921	.0923	.0919	.0923	.0928	.0916	.0914
1978	.0990	.0990	.0995	.0980	.0990	.0984	.0982	.0982	.0981

Source: Mortgage Loan Statistics: 1969-1978, Amercian Council of Life Insurance.

TABLE #15: LOAN TO VALUE RATIO TRENDS

Year as of 4th QUARTER	APARTMENTS: 36 Units or Less	APARTMENTS: 36 to 180	APARTMENTS: 180 or more	RETAIL BUILDINGS: Shopping Centers: Neighb.	RETAIL BUILDINGS: Shopping Centers: Comm.	RETAIL BUILDINGS: Shopping Centers: Regional	OFFICE BUILDINGS: 25,000 or Less	OFFICE BUILDINGS: 25,000 to 100,000	OFFICE BUILDINGS: 100,000 to 200,000
1969	.732	.747	.747	.723	.759	.759	.713	.749	.769
1970	.735	.761	.770	.734	.743	.743	.730	.745	.757
1971	.735	.754	.762	.744	.748	.748	.744	.756	.790
1972	,734	.756	.754	.712	.756	.756	.746	.748	.773
1973	,750	.747	.745	.740	.733	.733	.747	.737	.747
1974	.739	.745	.745	.706	.770	.770	.763	.747	.744
1975	N/A	.744	.789	.743	.756	.756	.679	.749	.761
1976	.74.8	.747	.749	.726	.738	.738	.750	.748	.711
1977	.70.8	.756	.771	.743	.740	.740	.735	.737	.742
1978	.73.9	.753	.742	.738	.749	.749	.751	.745	.740

Source: Mortgage Loan Statistics: 1969-1978, American Council of Life Insurance.

TABLE #16: DEBT COVERAGE RATIO TRENDS

Year as of 4th QUARTER	APARTMENTS: 36 Units or Less	APARTMENTS: 36 to 180	APARTMENTS: 180 or more	RETAIL BUILDINGS: Shopping Centers: Neighb.	RETAIL BUILDINGS: Shopping Centers: Comm.	RETAIL BUILDINGS: Shopping Centers: Regional	OFFICE BUILDINGS: 25,000 or Less	OFFICE BUILDINGS: 25,000 to. 100,000	OFFICE BUILDINGS: 100,000 to 200,000
1969	1.31	1.29	1.50	1.19	1.29	1.29	1.33	1.28	1.30
1970	1.35	1.26	1.20	1.28	1.38	1.30	1.29	1.30	1.28
1971	1.33	1.28	12.5	1.21	1.30	1.41	1.28	1.30	1.29
1972	1.40	1.29	1.33	1.27	1.33	1.30	1.28	1.35	1.26
1973	1.32	1.26	1.34	1.18	1.21	1.17	1.20	1.29	1.18
1974	1.27	N/A	N/A	1.33	1.25	1.24	1.24	1.25	1.37
1975	N/A	1.33	1.29	1.26	1.25	1.28	1.51	1.30	1.25
1976	1.32	1.31	1.32	1.29	1.31	1.27	1.25	1.28	1.28
1977	1.34	1.27	1.27	1.28	1.32	1.37	1.29	1.33	1.34
1978	1.27	1.23	1.26	1.20	1.24	1.12	1.26	1.24	1.26

Source: Mortgage Loan Statistics: 1969-1978, American Council of Life Insurance.

TABLE #17: ANNUAL MORTGAGE CONSTANT TRENDS

Year as of 4th Quarter	APARTMENTS: 36 Units or Less	APARTMENTS: 36 to 180	APARTMENTS: 180 or more	RETAIL BUILDINGS: Shopping Centers: Neighb.	RETAIL BUILDINGS: Shopping Centers: Comm.	RETAIL BUILDINGS: Shopping Centers: Regional	OFFICE BUILDINGS: 25,000 or Less	OFFICE BUILDINGS: 25,000 to 100,000	OFFICE BUILDINGS: 100,000 to 200,000
1969	.103	.101	.101	.113	.107	.107	.108	.112	.098
1970	.109	.106	.105	.115	.112	.111	.112	.110	.113
1971	.102	.100	.098	.109	.100	.100	.106	.101	.092
1972	.100	.096	.095	.106	.097	.99	.100	.096	.092
1973	.100	.099	.098	.105	.105	.97	.101	.100	.100
1974	.118	N/A	N/A	.126	.114	.112	.113	.113	.109
1975	N/A	.109	.108	.113	.112	.114	.119	.109	.108
1976	.107	.105	.103	.113	.107	.103	.107	.105	.103
1977	.110	.102	.100	.105	.100	.101	.104	.100	.099
1978	.107	.109	.109	.114	.109	.111	.109	.109	.109

Source: Mortgage Loan Statistics: 1969-1978, American Council of Life Insurance.

TABLE #18: ANNUAL MORTGAGE CONSTANTS: 8 1/2 - 9 1/2% interest

(For monthly compounded mortgage payments)

Interest Rate:	8-1/2%	8-3/4%	9%	9-1/4%	9-1/2%	Interest Rates:
TERM						TERM
1	1.046640	1.048030	1.049410	1.050820	1.052200	1
2	.545471	.546841	.548212	.549598	.550971	2
3	.378812	.380202	.381596	.382996	.384394	3
4	.295781	.297198	.298620	.300048	.301477	4
5	.246200	.247647	.249100	.250559	.252022	5
6	.213342	.214821	.216306	.217799	.219296	6
7	.190039	.191550	.193069	.194595	.196127	7
8	.172706	.174250	.175802	.177363	.178930	8
9	.159353	.160929	.162515	.164110	.165712	9
10	.148783	.150392	.152011	.153640	.155277	10
11	.140237	.141878	.143529	.145192	.146864	11
12	.133207	.134880	.136563	.138259	.139965	12
13	.127342	.129046	.130761	.132490	.134228	13
14	.122391	.124125	.125872	.127632	.129404	14
15	.118169	.119934	.121712	.123503	.125307	15
16	.114539	.116334	.118142	.119964	.121799	16
17	.111395	.113219	.115056	.116908	.118774	17
18	.108655	.110507	.112373	.114254	.116149	18
19	.106254	.108133	.110027	.111937	.113861	19
20	.104139	.106045	.107967	.109904	.111856	20
21	.102269	.104201	.106150	.108114	.110092	21
22	.100609	.102567	.104541	.106531	.108535	22
23	.099130	.101113	.103112	.105127	.107157	23
24	.097810	.099816	.101840	.103879	.105933	24
25	.096627	.098657	.100703	.102766	.104844	25
26	.095565	.097618	.099686	.101772	.103872	26
27	.094610	.096684	.098775	.100882	.103003	27
28	.093749	.095844	.097955	.100083	.102226	28
28	.092972	.095087	.097218	.099366	.101529	29
30	.092269	.094404	.096554	.098721	.100902	30

TABLE #19: ANNUAL MORTGAGE CONSTANTS: 9 3/4 - 10 3/4% interest

(For monthly compounded mortgage payments)

Interest Rate: / TERM	9-3/4%	10%	10-1/4%	10-1/2%	10-3/4%	Interest Rate: / TERM
1	1.05360	1.054990	1.056380	1.057790	1.059180	1
2	.552358	.553737	.555123	.556515	.557903	2
3	.385802	.387206	.388616	.390030	.391445	3
4	.302914	.304351	.305793	.307241	.308691	4
5	.253492	.254964	.256443	.257927	.259415	5
6	.220801	.222310	.223826	.225348	.226875	6
7	.197669	.199214	.200768	.202328	.203895	7
8	.180507	.182090	.183681	.185280	.186887	8
9	.167325	.168944	.170573	.172210	.173856	9
10	.156925	.158581	.160247	.161922	.163606	10
11	.148547	.150238	.151941	.153654	.155376	11
12	.141682	.143409	.145148	.146897	.148656	12
13	.135980	.137742	.139515	.141300	.143096	13
14	.131189	.132984	.134792	.136612	.138443	14
15	.127124	.128953	.130794	.132648	.134514	15
16	.123647	.125508	.127382	.129269	.131168	16
17	.120653	.122545	.124451	.126370	.128301	17
18	.118059	.119981	.121918	.123867	.125830	18
19	.115799	.117751	.119717	.121697	.123690	19
20	.113822	.115803	.117797	.119806	.121827	20
21	.112086	.114094	.116116	.118152	.120201	21
22	.110555	.112589	.114638	.116701	.118777	22
23	.109202	.111262	.113336	.115424	.117526	23
24	.108003	.110087	.112185	.114298	.116424	24
25	.106937	.109044	.111166	.113302	.115451	25
26	.105987	.108117	.110261	.112420	.114591	26
27	.105140	.107292	.109457	.111646	.113829	27
28	.104383	.106555	.108741	.110940	.113153	28
29	.103706	.105897	.108102	.110321	.112552	29
30	.103099	.105309	.107532	.109769	.112018	30

TABLE #20: ANNUAL MORTGAGE CONSTANTS: 11 - 12% interest

(For monthly compounded mortgage payments)

Interest Rates: / TERM	11%	11-1/4%	11-1/2%	11-3/4%	12%	TERM
1	1.060580	1.061980	1.063380	1.064790	1.066190	1
2	.559292	.560689	.562084	.563485	.564992	2
3	.392861	.394286	.395710	.397142	.398571	3
4	.310144	.311605	.313067	.314536	.316006	4
5	.260907	.262407	.263910	.265421	.266933	5
6	.228407	.229948	.231493	.233046	.234602	6
7	.205468	.207050	.208637	.210233	.211833	7
8	.188500	.190123	.191752	.193390	.195034	8
9	.175509	.177173	.178843	.180524	.182211	9
10	.165299	.167003	.168714	.170436	.172165	10
11	.157107	.158850	.160602	.162364	.164134	11
12	.150426	.152207	.153998	.155799	.157610	12
13	.144903	.146721	.148550	.150390	.152240	13
14	.140286	.142141	.144006	.145884	.147771	14
15	.136391	.138281	.140183	.142096	.144020	15
16	.133080	.135004	.136940	.138888	.140948	16
17	.130245	.132202	.134171	.136153	.138146	17
18	.127806	.129794	.131795	.133809	.135834	18
19	.125695	.127715	.129746	.131790	.133846	19
20	.123862	.125911	.127971	.130045	.132130	20
21	.122264	.124340	.126429	.128531	.130644	21
22	.120867	.122969	.125085	.127213	.129353	22
23	.119641	.121769	.123910	.126063	.128228	23
24	.118563	.120715	.122880	.125057	.127246	24
25	.117613	.119789	.121976	.124176	.126387	25
26	.116775	.118972	.121181	.123402	.125634	26
27	.116034	.118251	.120481	.122722	.124974	27
28	.115377	.117615	.198630	.122123	.124394	28
29	.114795	.117051	.119317	.121595	.123883	29
30	.114279	.116551	.118835	.121129	.123433	30

VI. Relationship of Marketing Research to Financial Analysis

The relationship of a space-time product to financial parameters is an ongoing process which is repeated and refined as initial research justifies further feasibility analysis.

A. At the preliminary stage financial analysis does not involve present value theory or the income tax laws. Instead it begins with basic relationships (called algorythms when stated as fromulas). These relationships express a variety of ratios of land, building, revenue, expenses, and other risk constraints generated from knowledge of consumers, producers, and the public infrastructure.

B. There are three points of departure for establishing financial parameters:

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. (Exhibit 4)
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.(Exhibit 5&6)
3. Given the site, zoning and building type desired there may be a useful algorythm which converts space-time to money-time. (Exhibit 8, 9, and 10)

C. At the University of Wisconsin we try to sensitize our students to key relationships with a work book prepared by Prof. James Canestaro which involves three levels of analysis:

1. Initial project analysis
2. Intermediate project analysis
3. Advanced project analysis
4. All of the above depend on development of key ratios for given communities and building types and work book ratios included here are for demonstration purposes.

D. Refer to Exhibit 7 which includes the entire real estate financial workbook as a guide to project cost-benefit evaluation.

1. A particularly valuable portion of the workbook is the Appendix (Section X) where sources of project cost and operational data are evaluated in terms of suitability for various stages of feasibility decision modeling.
2. These basic relationships lend themselves to adaptation as an algorythm for a programable calculator. For example;

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

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

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

VII. Preliminary financial analysis can be sued to study sensitivity of investment to changing physical parameters, to define acceptable levels of risk, or to dimension the scale of any particular design program.

A. As an example of sensitivity analysis, consider output of a program called design analysis program on the EDUCARE network. It was authored by John Nabors of Anchorage, Alaska. Exhibits 8 and 9 provide output from this program, testing a proposed one-bedroom apartment proposal for downtown Madison back in 1977.

B. Definition of basic ratios for risk analysis are provided below:

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-bedroom apartments x 20 x 50% turnover x 1 month lost 1 $200/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:

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

6. Debt cover ratio:

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

7. Default ratio:

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

8. Loan to value ratio:

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

9. Cash on cash:

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

C. If a project makes sense before the income tax, it is then useful to refine analysis for projection over time on an after tax basis. Useful after-tax cash ratios include: (See the new textbook, The Real Estate Investment Decision, Gaylon E. Greer, Lexington Books, Lexington, Mass. 1979.)

1. Distributable cash from operations:

Cash throwoff
- income taxes
Cash from operations
- reserves
- repayment of working capital loans
= Distributable cash

2. Spendable cash attributable to real estate:

Distributable cash
+ tax savings to other income
+ surplus from refinancing
= Spendable cash

3. After tax sale proceeds:

+ return of working capital
+ liquidation of sinking funds
= cash reversion

4. Return on net worth B/4 tax:

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

5. Return on net worth after tax?

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

6. Payback ratio:

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

EXHIBIT 11

CASH FLØW PRØ FØRMA USING PARAMETER NØRMS

SENSITIVITY APT. DEMØ

U. W. REAL ESTATE DEPT.

DATE: 2/14/1977
BLDG: 1
RUN : 1

GRØSS SQUARE FEET IN BUILDING:		700.
BUILDING EFFICIENCY	:	85.0 PCT
NET LEASEABLE SQUARE FØØTAGE	:	595.
LAND AND CØNSTRUCTIØN CØST	: $	19500.
LØAN TØ CØST RATIØ	:	75.0 PCT
ØRIGINAL LØAN AMØUNT	: $	14625.
EQUITY REQUIREMENT	: $	4875.
PERMANENT INTEREST RATE	:	9.000 PCT
TERM ØF LØAN		30. YEARS
ANNUAL DEBT SERVICE	: $	1412.

	ANNUAL DØLLARS
GRØSS INCØME : 595. SQ FT AT $ 6.00	3570.
LESS: VACANCY ØF 5.00 PCT	179.
GRØSS ADJUSTED INCØME	3392.
PLUS: PARKING INCOME	150.
PLUS: ØTHER INCØME	24.
GRØSS EFFECTIVE INCØME	3566.
LAND LEASE EXPENSE	100.
ØPERATING EXPENSES: 595. SQ FT AT $ 2.76	1642.
NET ØPERATING INCØME	1823.
DEBT SERVICE (9.66 PCT CØNSTANT)	1412.
PRØ FØRMA CASH FLØW	411.

RETURN ØN EQUITY 8.43 PERCENT

DEBT SERVICE CØVERAGE: 1.291

DEFAULT RATIØ : 83.48 PERCENT

Exhibit 11 continued

SENSITIVITY TABLE

SENSITIVITY APT. DEMØ

U. W. REAL ESTATE DEPT.

FIXED PARAMETERS — PAGE 12 OF 12

SITE	: 2000. SQUARE FEET	DATE	2-14-1977
BUILDING	: 700. SQUARE FEET	BLDG	1
EFFICIENCY:	85.00 PCT ØF GRØSS		
LØAN RATIØ:	75.00 PCT ØF $ 19500.		
EQUITY	: $ 4875.		
FINANCING	: 30. YEARS 9.000 PCT		
REVENUE	: $ 6.00 PER SQ FT		
VACANCY	: 5.00 PCT ØF LEASEABLE		
PARK/ØTHER:	$ 174. ANNUALLY	RUN	1
EXPENSES	: $ 2.76 PER SQ FT		
LAND LEASE:	$ 100. ANNUALLY		

CØNSTRUCTIØN AND LAND CØST 19500.

EFFECT ØF SELECTED CHANGES IN PARAMETERS

PARAMETER CHANGE	INCREASE IN CASH FLØW
INCREASE BUILDING EFFICIENCY 1 PCT	21.
INCREASE RENTAL RATE $ .10 PER SQ FT	57.
DECREASE VACANCY RATE 1PCT	36.
DECREASE ØPERATING RATE $ .10 PER SQ FT	60.
DECREASE PERMANENT RATE .25PCT	31.
DECREASE PERMANENT LØAN TERM BY 1 YEAR	-10.
DECREASE PERMANENT LØAN TERM BY 5 YEARS	-61.
DECREASE THE LØAN RATIØ BY 5 PERCENT	94.
DECREASE LAND LEASE BY 10%	100.

EQUIVALENT EFFECT TØ YIELD

A $ 100. INCREASE IN ANNUAL CASH FLØW

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 LØAN TERM BY	8.2	YEARS
DECREASE LØAN RATIØ BY	5.3	PERCENT
DECREASE LAND LEASE BY $	100.	

Exhibit 11 continued

PRØ FØRMA CASH FLØW TABLE

SENSITIVITY APT. DEMØ

U. W. REAL ESTATE DEPT.

FIXED PARAMETERS — PAGE 1 OF 12

SITE	: 2000. SQUARE FEET	DATE	2-14-1977
BUILDING	: 700. SQUARE FEET	BLDG	1
EFFICIENCY:	85.00 PCT(595. SQ FT)		
LØAN RATIØ:	75.00 PCT ØF $ 19500.		
LØAN	: $ 14625.		
EQUITY	: $ 4875.		
FINANCING	: 30. YEARS 9.000 PCT		
ØTR INCØME:	$ 174. ANNUALLY	RUN	1
EXPENSES	: $ 2.76 PER SQ FT		
LAND LEASE:	$ 100.		

ANNUAL CASH FLØWS

VACANCY ALLØWANCE

RENTAL RATES ANNUAL $/SQ FT	3.00 PCT	4.00 PCT	5.00 PCT	7.00 PCT	10.00 PCT
$ 4.80	-210.	-239.	-267.	-324.	-410.
$ 5.40	136.	104.	72.	8.	-89.
$ 6.00	483.	447.	411.	340.	233.
$ 6.60	829.	790.	750.	672.	554.
$ 7.20	1175.	1132.	1089.	1004.	875.

BREAKEVEN RENTAL RATES

VACANCY ALLØWANCE

RENTAL RATES ANNUAL $/SQ FT	3.00 PCT	4.00 PCT	5.00 PCT	7.00 PCT	10.00 PCT
	5.16	5.22	5.27	5.39	5.57