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Committee

TWO DAY WORKSHOP
REAL ESTATE FEASIBILITY ANALYSIS FOR THE APPRAISER

Prepared at Request of:

1976 Seminar Committee
American Institute of Real Estate Appraisers

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Two Day Workshop

REAL ESTATE FEASIBILITY ANALYSIS FOR THE APPRAISER

Outline of Topics

First Morning Session

1.000 Basic Concepts Defining the Feasibility Assingment

1.100 What is Real Estate

1.200 What are Decision Making Mechanisms for Real Estate Problems?

1.300 What Does Feasibility Mean?

1.400 What is Relationship of Feasibility Analysis to Appraisal?

1.500 What is the Problem as Perceived by the Client?

1.600 What is the Problem as Understood by the Consultant?

First Afternoon Session:

2.000 The Basic Case - A Site In Search of a Market

2.100 Generalist versus Specialist

2.200 Elements of Site Analysis

2.300 Static Attributes

2.400 Legal Attributes

2.500 Static and Legal Attributes Impact on Cost, Price, & Market

2.600 Linkage Attributes

2.700 Dynamic Attributes

2.800 Environmental Impact Attributes

2.900 Identification of Alternative Uses

3.000 Preliminary Test of Economic Feasibility

3.100 The Preliminary Capital Outlay Approach to Pricing

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3.300 Purpose of Capital Approach Model

3.400 Notes to Capital Approach Worksheet

3.500 Definition of Space-Time Unit as Common Denominator

- 3.600 Debt Service Impact on Required Annual Effective Gross
- 4.000 Feasibility Analysis as an Exercise in Risk Management
 - 4.100 Basic Definitions of Risk Management
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 - 4.300 Rate of Return Concepts

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- 5.000 Market Revenue Model Workshop
 - 5.100 Concept of Market Revenue Model
 - 5.200 Establishing Total Annual Revenues
 - 5.300 Establishing Total Operating Expenses
 - 5.400 Significance of a Default Ratio
 - 5.500 Establishing the Capital Structure Assumptions
 - 5.600 Determination of Total Justified Investment
 - 5.700 Indirect Capital Charges
 - 5.800 Structural Hard Dollar Budgets
 - 5.900 Testing Model Input Against Market Reality
- 6.000 Real Estate Market Analysis
 - 6.100 Three Different Functions of a Model
 - 6.200 Organizing to Exclude Secondary or Aggregate Data

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- 7.000 Selecting Market Targets or a Market Position Within a Defined Market Opportunity
 - 7.100 Monopoly - Essence of Free Enterprise Merchandise Research
 - 7.200 Constructing a Hypothetical Marketing Program
 - 7.300 Segmentation and the Essential Nature of an Enterprise
 - 7.400 Delineation of a Market Sub-Set
 - 7.500 Introduction to Prospect Survey

- 7.600 Telephone Survey to Improve Bidding Position on Turn-Key Elderly Housing Project
- 7.700 Telephone Survey Questionnaire Results
- 7.800 Generalized Format of Merchandising Report Summary
- 8.000 Structuring the Feasibility Report
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Two Day Workshop

REAL ESTATE FEASIBILITY ANALYSIS FOR THE APPRAISER

Prepared For

American Institute of Real Estate Appraisers

Prof. James A. Graaskamp

University of Wisconsin

1.000 Basic Concepts Defining the Feasibility Assignment

1.100 What is real estate? The industry is very sloppy in the use of the term real estate and real estate development so that the term no longer provides the clue to any systematic understanding of the concept. Careful definition of any term avoids misunderstanding or analysis based on false premises.

1.110 The real estate product is often thought to be a very tangible physical site with structural improvements. In essence, however, it is always an abstract intangible space-time unit.

It is always the spaces enclosed by the structure or defined by the borders of the site which are useful - not the land or the solid portion of the structure per se.

The economic unit of real estate is sq. ft./year, apartment rent/month, room per night, tennis court per hour, coliseum per event/day, wilderness park/century, and so on.

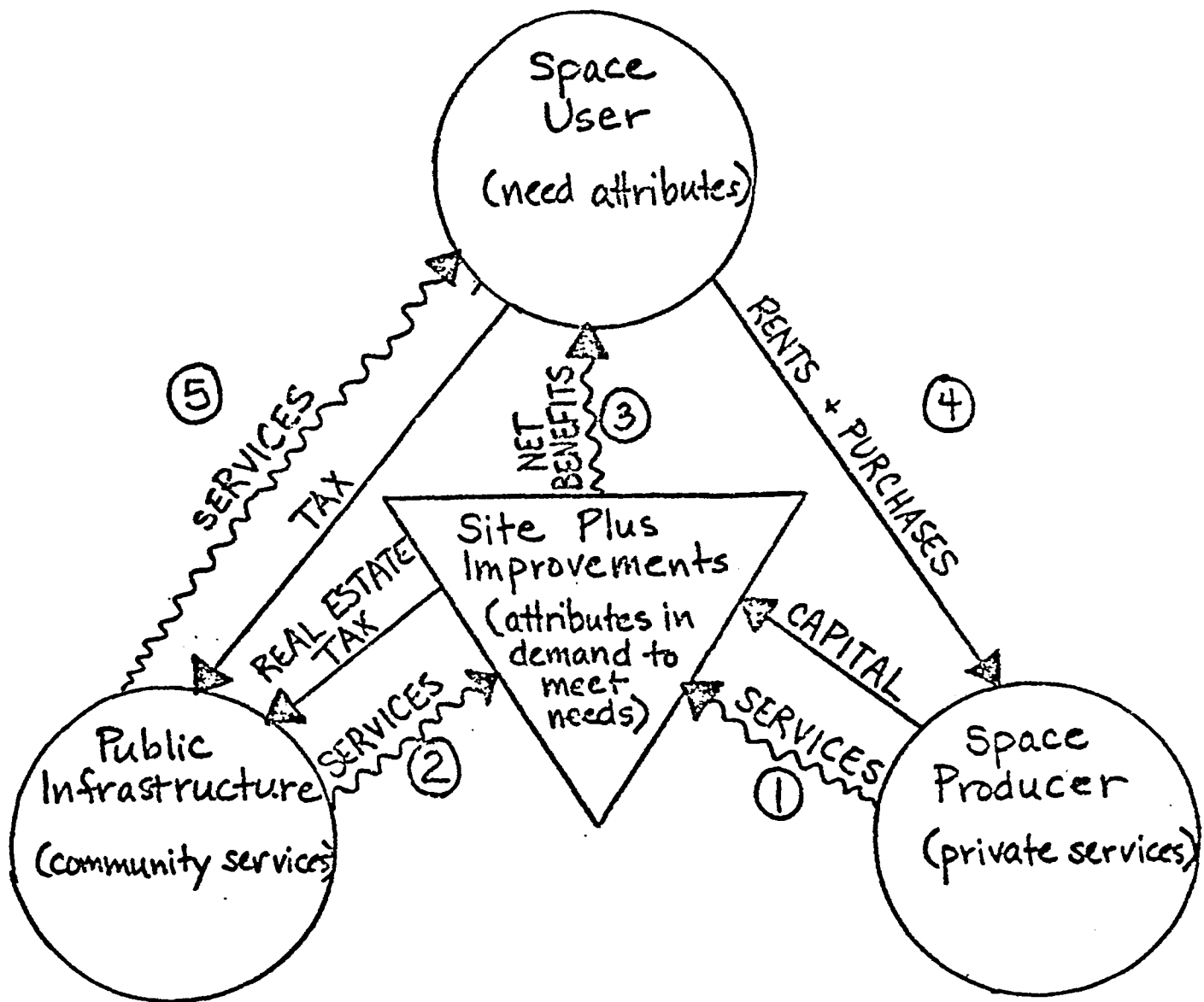
1.120 An enterprise is any organized undertaking. Many enterprises are cash cycle enterprises which use cash to acquire raw material, labor to produce an inventory of goods or provide services which generate revenue in the form of cash.

1.121 A real estate enterprise is any systematic approach to converting cash to a space-time product or conversely converting an inventory of space-time to cash.

1.122 Flexibility of the enterprise depends on duration of the time cycle.

1.123 All cash cycle enterprises must achieve cash breakeven or self destruct.

1.124 Space users (consumers), space producers in the private sector, and agencies of the public sector which provide utility and service infrastructure are all cash cycle enterprises.



- 1.125 Solvency becomes the minimum objective and absolute control on consumer, investor/supplier, and public service agencies.
- 1.126 Equilibrium in the community occurs where all enterprises involved in real estate achieve solvency.
- 1.130 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 of one hand and the power of the organization to decide for itself what its characteristics and behavior will be on the other.

The functional steps in any systematic enterprise are:

- 1.131 Goal-setting
- 1.132 Forming policies
- 1.133 Searching for opportunities which are consistent with policies
- 1.134 Selecting opportunities which are consistent with policies
- 1.135 Designing systems for capturing selected opportunities
- 1.136 Installing systems for capturing selected opportunities
- 1.137 Operating the systems that have been installed
- 1.138 Maintaining and continuously perfecting the operating systems

- 1.140 The real estate process is the dynamic interface of all three cash cycle enterprises, the space user, the space producer, and the public infrastructure who must interact to find compromise solutions which permits all three to operate at solvency. That solution will impact on the land and must be constrained by the capacities of the land.

The consumer, the producer, and the public infrastructure enterprises often appear to be in conflict but ultimately these vested interests must find a joint solution to each real estate problem which recognizes:

- 1.141 That land is a finite physical resource which must be used consistent with environmental safety and public priorities for food, shelter, safety, health, and so on.
- 1.142 Neither the consumer, producer, or public enterprise can require the others to make outlays which inevitably lead to insolvency. Cash is the ultimate property, not non-vested and speculative rights to future opportunities. Eminent domain must always make compensation in cash, not in kind. The power to force solvency on others is the power to destroy an enterprise. While free enterprise depends on that war between private enterprises, it is not an acceptable relationship between public and private enterprises.
- 1.143 Each enterprise is attempting to convert its requirements relative to the space-time real estate product to projections of its cash receipts and outlays in order to make decisions about its role in the real estate process.
- 1.144 For a given problem space-time units and money-time units are opposite sides of the reversible equation; it is possible to move from desired rent to a justified space-time unit; a specific plan for a space-time unit can be converted to a required rental income over time. A great variety of trade-offs exist among site, quantity of space, quality of space, and the life cycle of money outlays and receipts.

1.150 Risk for any enterprise is the variance that will occur between its assumptions about space-time and money-time projections and its realizations, between proforma income projections and actual receipt and expenditures realized.

1.151 Risk management controls variance due to surprise from static risks such as fire or dynamic risks of entrepreneurial skills.

1.152 The feasibility analyst is a risk manager who must first conserve the net worth of his client from loss and then stabilize future variance in expectations.

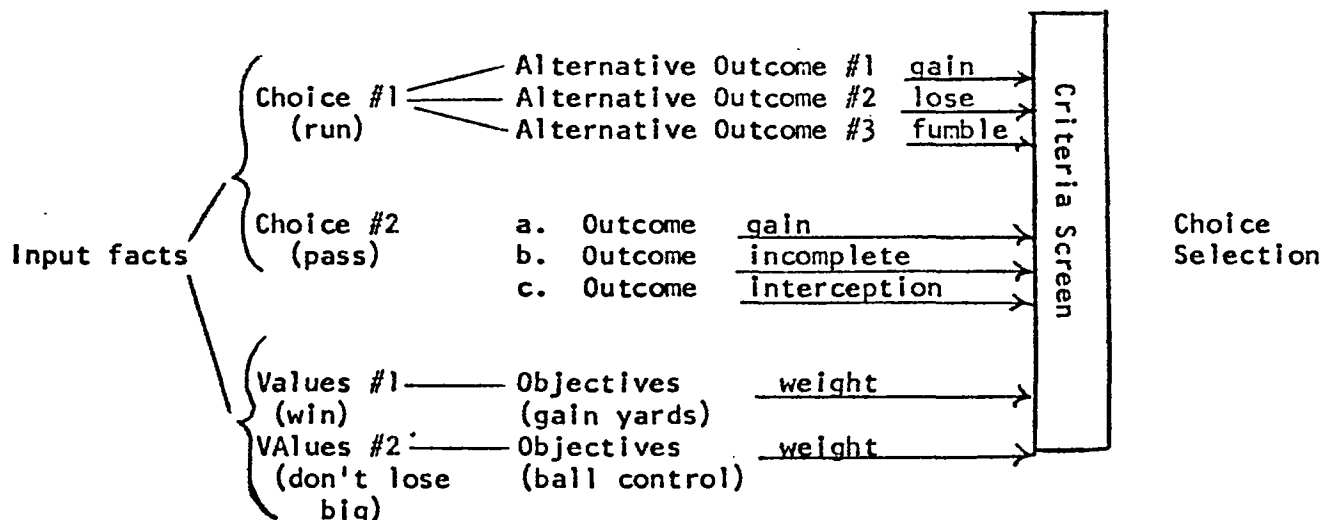
1.160 Real estate analysis is concerned with the search for the real estate product (space-time unit) which best fits the consumer cash constraints, the public infrastructure costs and revenue, and the cash requirement of the producer within the natural limitations of land, both single parcels and collectively. The failure of any segment of this process ultimately leads to the collapse of the others.

Real estate analysis is concerned with making and testing the assumptions which are the basis of real estate decisions to judge their fit to the needs and solvency limitations of all those affected by the decision.

1.200 What are Decision Making Mechanisms for Real Estate Problems?

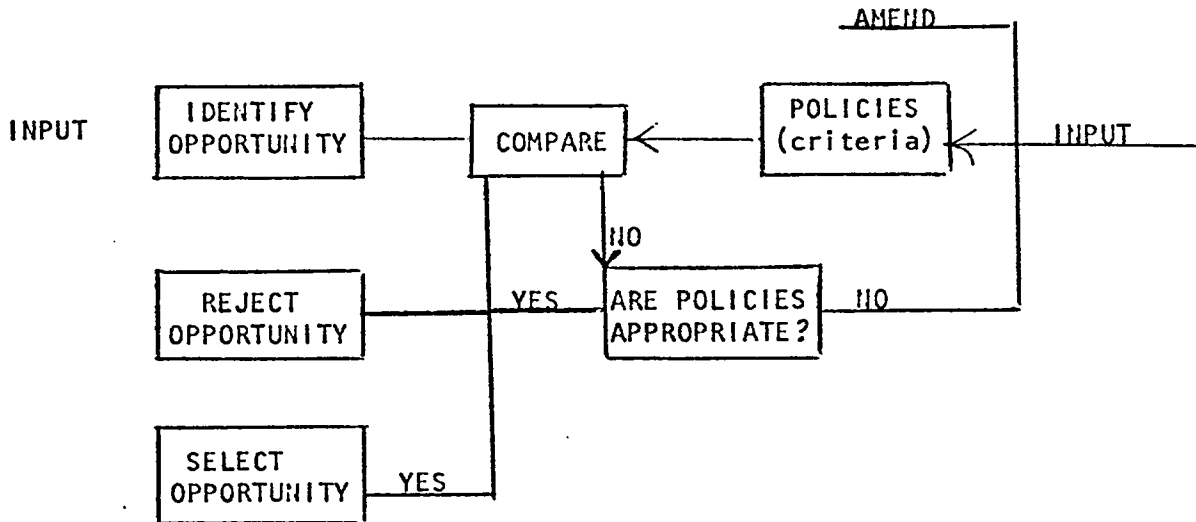
1.210 In general, a decision requires that information be systematically organized to identify choices of action and the alternative outcomes from each choice. (See Diagram #1). At the same time facts help shape general values which in turn lead to explicit objectives, and then specific selection criteria.

Diagram #1



The systems engineer might diagram a decision as a simple flow chart below. (See Diagram #2)

Diagram #2



1.220 Models of relationships permit analysis of complex decisions involving many variables which require a systematic approach to permit comprehensive analysis, a careful statement of relationships among variables, and successful communication of the answers that result. Any model has three basic inputs:

- 1.221 A careful statement of the question or decision
- 1.222 Determination of available or obtainable data
- 1.223 A statement (hypothesis) about the relationship of the data to the question.
- 1.224 Models may be physical representations of an airplane fuselage or site topography.
- 1.225 Models may also be used to communicate complex relationships in simple ways which may be more relevant to the decision maker. A report format is a model.
- 1.226 Models can be used to state mathematical relationships, so that the Ellwood formulas are representative of the relationship of financial value to net income under explicit assumptions about financing, resale, and the trend in net income.

1.230 Constraints on the use of models to answer any particular problem requirement and models should be judged in terms of how they meet these constraints:

- 1.231 What are the limitations of the analyst who intends to use the model? Does he understand the implications and can he do the analysis?
- 1.232 Communication of the results must have credibility with the decision maker. The client who has succeeded with decisions made using the net income multiplier may not accept an improved analysis as a result of cash flow projections or regression analysis.
- 1.233 In all cases the cost of executing a particular model must be appropriate to the utility value of the result. The cost-benefit ratio must favor the decision model technique selected.
- 1.240 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.
 - 1.241 Context includes those elements which are fixed, given, or objectives and to which any solution must adapt.
 - 1.242 Form giving elements are those variables within the artists control, i.e. options or alternatives at a particular time.
 - 1.243 A solution is judged for its correctness or success in terms of the degree of fit of the form proposed to the context.
 - 1.244 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.
 - 1.245 Success therefore depends on how appropriately the problem is defined; testing feasibility depends primarily upon accurate and comprehensive definition of the context.
- 1.300 What Does Feasibility Mean?

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."

- 1.310 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:

- 1.311 A check list of physical attributes
- 1.312 A check list of critical linkage attributes
- 1.313 A check list of dynamic behavioral attributes
- 1.314 A check list of attributes or services (given weighted point scores)
- 1.315 Financial ratios measuring risk, such as cash break-even, rate of capital recapture, loan ratios or sensitivity to specified contingencies
- 1.316 Probability distributions of alternative outcomes and standard error of the estimate
- 1.317 Psychological gratifications
- 1.318 Specified legal attributes
- 1.319 Measures of impact on environment

- 1.320 The definition also implies uncertainty - a reasonable likelihood of succeeding. That statement is deliberately short of a statistical probability statement. However, analytical judgments can produce some verbal probability statements (that horse is a nag while the black stallion is an odds on favorite) so that the measures of success should lend themselves to explicit recognition of the degree of uncertainty with which success might be achieved.

- 1.330 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

- 1.340 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.

1.350 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:

- 1.351 Strategy study: selection of objectives, tactics, and decision criteria.
- 1.352 Market analysis: economic base studies or other related aggregate data review.
- 1.353 Merchandising studies: consumer surveys, competitive property analysis, marketability evaluation, etc.
- 1.354 Legal studies: opinion on potential legal constraints, model contracts or forms of organization, and political briefs.
- 1.355 Computability studies of project to community planning, conservation standards, or other public policies.
- 1.356 Engineering, land planning, and architectural studies.
- 1.357 Financial studies: economic modeling, capital budgets, present value and discounted cash flow forecasts, rate of return analysis, financial packages.

1.400 What is Relationship of Feasibility Analysis to Appraisal?

An appraisal report like a feasibility report is a model of a decision process. In fact, an appraisal report is a sharply qualified (fictitious) feasibility study of a site in search of a market.

- 1.410 The key differences are what question each model attempts to answer and who asked the question.
- 1.411 The appraiser locks himself to a model when he states the purpose of the appraisal is to determine market value on a given date. The appraiser assumes the viewpoint of a prudent economic man using the traditional three economic approaches to value with the objective of maximizing economic surplus of a single parcel real estate enterprise.
- 1.412 What if value is not the central question? What if economic surplus is 0 but profit centers above the net income line are positive? What if motivations are personal, subjective, or in a broader portfolio viewpoint than offered by a single parcel?
- 1.413 The feasibility analyst sees the project from the viewpoint of a particular client with unique objectives; the appraiser works with an undefined, generalized economic man; more recently a profiled group called "most probable buyer." (See Exhibit 1)

APPRAISAL AS A FICTIONAL SET OF FEASIBILITY ASSUMPTIONS

Feasibility Analysis

Will the project really work
for a specific investor?

1. Objectives - decision standards provided by client decision process
 - a. Maximize spendable cash of total enterprise
 - b. Subjective gratification of specific individual
 - c. Adaptation to enterprise management specialties and weaknesses
2. Aggregate market potential opportunity identification
3. Merchandising analysis (Defining competitive edge) and specific user profile
4. Legal-political context
 - a. All legal constraints on site, seller, buyer, and user are considered
 - b. What is legal is qualified by what is political
5. Physical-technical constraints are examined in terms of what might be
6. Impact on environment and community specifically forecast
7. Financing from buyer viewpoint considering all profit centers
8. Income tax advantages or disadvantages affecting spendable cash
9. Actual cash revenues and expenses forecasted for each period of time horizon
10. Limiting assumptions of solution
 - a. Identification of potential variance and sensitivity of objectives to alternative futures
 - b. Responsibility allocated among sources of expertise
 - c. Budget & purpose of study edits information scope
 - d. Format of analysis determined by structuring of data to lead to desired conclusion or recommendation

Appraisal Analysis

What would the project sell for if it
did work for a typical investor?

1. Objectives - decision standards provided by theoretical framework
 - a. Maximize economic surplus of individual parcel
 - b. Prudent behavior of economic man
 - c. Average management to isolate return to land & capital
2. Aggregate market potential business climate
3. Merchandising comparison (Defining standard competitive substitute)
4. Legal-political context
 - a. Legality assumed
 - b. Limited to site use rather than regulations on probable user as alternative buyers are assumed
5. Physical-technical constraints are studied as is or in terms of conventional uses
6. Impact on environment and community assumed acceptable within existing permitted uses
7. Financing from lender viewpoint considering only net income line and below
8. Income tax not considered except implicitly recognized in market comparison
9. Revenues and expenses generally normalized and projected on linear trend for standard period
10. Limiting assumptions of solution
 - a. Average outcome without qualification as to alternative futures
 - b. Responsibility denied for other areas of expertise
 - c. Date of appraisal edits informat scope
 - d. Format of analysis defined by model of fair market value appraisal report

- 1.420 The appraiser and the feasibility analyst have recently begun to merge their analytical approaches as revealed by the striking redefinition of the fundamental concept of appraisal, specifically the concept of highest and best use.

1.421 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

- 1.422 "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 judgment 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

- 1.423 At the University of Wisconsin the term highest and best use is thought to be obsolete, reflecting a view that land is a commodity to go to the highest bidder and that the private sector gets to determine the most appropriate "or best" use. In fact, land is a natural resource and the public domain has first claim on decisions on use via the police powers and eminent domain. Modern land use decisions are concerned with the most fitting use and of those uses, for the private sector who is interested in the most profitable option for the alternative left to the private sector. Therefore, the students are taught the concept of most fitting use.

10:30 COFFEE BREAK

1.500 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.

- 1.510 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.
- 1.520 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).
 - 1.521 Since everyone is an expert on real estate the client will probably presume that a certain procedure will be followed.
 - 1.522 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.
 - 1.523 Almost every client will overlook some of the basic issues because of the natural bias of his position.
 - 1.524 The consultant must begin by attempting to discover what is taken for granted and that search will continue to condition his relationship with his client.
- 1.530 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:
 - 1.531 His concept as to the "essence" of his business
 - 1.532 His preferred method of meeting entrepreneurial risk
 - 1.533 His preferred method of personnel compensation
 - 1.534 His style of value decision trade-offs between qualitative and quantitative issues.
 - 1.535 His perception of his risk position and his risk utility "curve."
 - 1.536 His personal non-business objective.
 - 1.537 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).
- 1.540 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."

- 1.541 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.
- 1.542 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.
- 1.543 This step will probably only be accomplished after the consultant has come to a better understanding of the real problems faced by the client.

1.600 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?"

- 1.610 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.
- 1.1611 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.
- 1.1612 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.
- 1.1613 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.

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)

- 1.620 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:
 - 1.621 A site or a project owned by a specific client in search of a market.
 - 1.622 An identified market segment or use in search of the site and project to be provided by a specific client.
 - 1.623 A specific client desiring to search for an opportunity in real estate enterprise.
- 1.630 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.
- 1.640 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.
 - 1.641 Analyst should be an expert on experts
 - 1.642 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.
- 1.650 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 responsibility of the real estate analyst. (See 1.360)
- 1.660 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.
- 1.670 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:
 - 1.671 There is a difference between a justified feasibility opinion about the total project and the more limited feasibility of justifying a mortgage loan from a credit source not generally known for its analytical ability.

1.672 The analyst must be careful not to be a subcontractor to an architect, engineer, or other service organization where he cannot make his own report directly to the client, critical of his professional associates as it may be. It is recommended that the feasibility analyst as a generalist have a primary contract with his client.

1.680 Correctly defining the context in all its basic dimensions requires a generalist; an appraiser is a generalist. A feasibility study produces a set of parameters, a set of predesigned or preoperational specifications within which a program proposal should work. The analyst and his client should always remember that the second stage of the feasibility study will be confirmation of the feasibility assumptions and parameters by technical analysis and planning by the specialists.

NOON - LUNCH BREAK

FIRST AFTERNOON SESSION

2.000 The Basic Case - A Site In Search of a Market

Feasibilities may begin with a site already owned for which a fitting use is sought; an appraisal always begins with a specific property in search of a most fitting use. While a consumer orientation would preferably select a site after a specific use had been defined, the more common situation is a client whose flexibility and alternative courses of action are greatly reduced to those inherent in a single site.

2.100 To begin with the familiar and to make it strange with more careful identification of attributes than is the appraisal custom does not mean that intensive specialty analysis and its inherent cost is necessary before preliminary economic tests are made; much of the analysis can essentially be defined potential uses and a priority of limiting conditions on the report.

2.200 Site analysis begins with a specific site and structures or stems from the market revenue approach as a set of site specifications which will control the search for alternatives. There is no such thing today as raw land or a vacant lot. A site suitability study recognizes every site has:

- 2.210 Static attributes - physical characteristics of size, shape, topography, soils, etc.
- 2.220 Legal attributes - public controls, private agreements and potential legislation defining use.
- 2.230 Linkage attributes - relationships to other sites which may tend to generate movements of goods and people to the subject site.
- 2.240 Dynamic attributes - characteristics which affect behavior such as visibility, prestige, or feeling of fear or anxiety.
- 2.250 Environmental impact attributes on physical, social, or economic factors off-site.

2.300 Static attributes analyzed should include the facts and the implications of the following:

- 2.310 Size, shape, and area
- 2.320 Topography, soils, slope stability, potential for subsidance
- 2.330 Water table, water resources (streams & ponds) and bulkhead lines
- 2.340 All set-back lines and building envelopes
- 2.350 Access routes (proximity is not accessibility)
- 2.360 Concealed utility easements, old foundations, etc.
- 2.370 Flood plains which have been determined by Corp. of Engineers, etc.
- 2.380 Scarce environmental elements which may mean environmental impact litigation
- 2.390 Landmarks or historical structures

- 2.400 Legal attributes inventory should include both specific controls such as zoning, and identify external public or private controls on use or potential legislation or administrative attitudes and procedures which would impact on owner alternatives for use.
 - 2.410 Legal uses under zoning alternatives and limitations on FAR, parking, signing, etc.
 - 2.420 Special zoning options such as PUD, down zoning alternatives, etc. available at owners option.
 - 2.430 Premises of community master plans still in incubation process
 - 2.440 Tax conservancy commitments
 - 2.450 Extra territorial zoning or subdivision powers
 - 2.460 Attitudes of sewer, water, and highway commissions
 - 2.470 Contractual agreements among previous buyers and sellers which may or may not run with the land
 - 2.480 Planner views of physical barriers to restrict "sprawl"
 - 2.490 Existing or impending legislation should be anticipated relative to:
 - 2.491 Septic tank installation
 - 2.492 Ground water, depth and conservation of high water recharge areas
 - 2.493 Salt water encroachment
 - 2.494 Conservation of environmental edges
 - 2.495 Conservation of prime agricultural land
 - 2.496 Water quality standards
 - 2.497 Air quality standards
- 2.500 Analysis of the static and legal attributes should be summarized in terms of competitive advantages and disadvantages for costs, pricing, and marketing.
 - 2.510 Some attributes lead to higher cost which the front door approach (See Section 3.000) may reveal as leading to excessive rents or prices.
 - 2.520 Some static or legal attributes can provide monopoly advantages because its 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.
 - 2.530 Static attributes will also help identify "best use" or the most probable buyer.

- 2.540 Lack of fit between static site attributes and merchandising data is a basic cause of unsuccessful projects.
- 2.600 Linkage attributes have to do with functional relationships or points of interaction with activity centers which may generate users or provide the infrastructure of improvements which support the site.
 - 2.610 Streets, sidewalks, rail, and transit systems serving the site.
 - 2.620 Access points
 - 2.621 Traffic department controls, present and proposed
 - 2.622 Rail switching and truck tariff zones
 - 2.623 Indirect controls imposed by factors affecting behavior. (See dynamic attributes, 5.000)
 - 2.630 Utility services are linkages, too.
 - 2.631 Sewer and storm water capacities
 - 2.632 Water, gas, and electric hook-ups, availability and capacity
 - 2.633 Community energy supplies and sources
 - 2.634 Implicit resources such as stock of wild game, labor pools, alternatives to the auto, etc.
 - 2.640 Capacity of existing transportation systems to absorb unit volume generated on site and implications for off-site improvements budgets.
 - 2.650 Relationship of subject site to generators of potential needs and uses for the subject site.
 - 2.651 Employment centers
 - 2.652 School system alternatives
 - 2.653 Retail services
 - 2.654 Complimentary existing nearby uses
 - 2.655 Recreational services
 - 2.656 Health care systems
 - 2.657 Security systems
 - 2.658 Waste disposal services
 - 2.660 Neighborhood demographics (population, age, employment, income, etc.)
 - 2.670 Relationship to competitive alternatives and projects and exposure to interception of linkages.

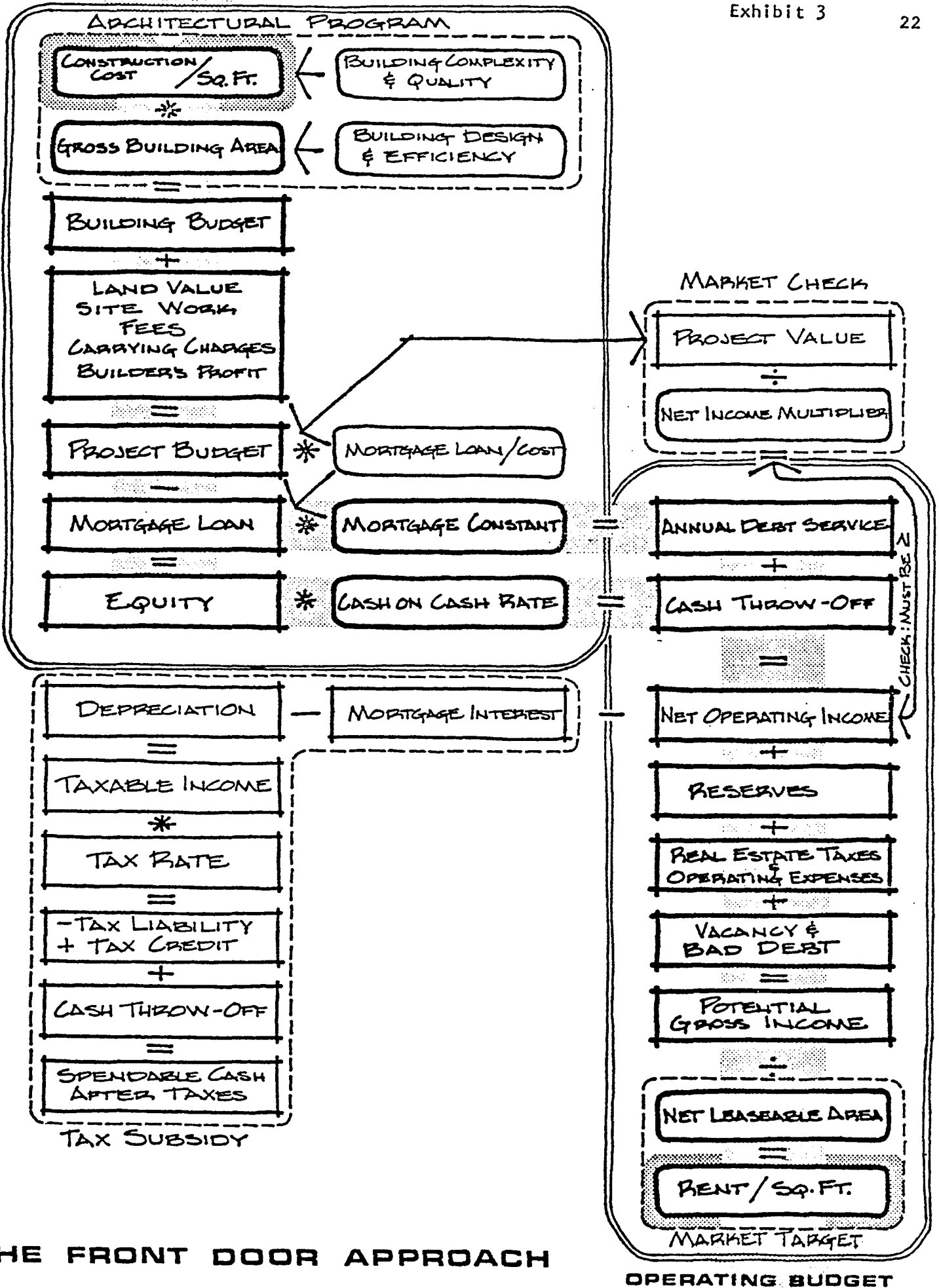
- 2.700 Dynamic attributes have to do with the mental or emotional responses which a site or project stimulates as it affects decision making behavior. These decision makers may be property buyers, regulators of site use, customers of establishments located on the site, or peer groups which set community attitudes or make decisions for others by proxy (Board of Elderly Care Organization).
- 2.710 Image conditioning of the approach zone
- 2.720 Visual factors in terms of prominence of the site, views from the site, potential for controlled sight lines, etc.
- 2.730 Anxiety factors of access and security
- 2.740 Noise as a function of traffic count (FHA noise pollution manual).
- 2.750 Prevailing air currents and airborne pollution (phosphate plants or sulphite paper mills, for example).
- 2.760 Political images established for a site by the public positions of local politicians or vested interest groups.
- 2.770 Historical community reputation and values attached to the project site and structures.
 - 2.771 Recycling of old buildings within existing urban areas is fashionable among architects and the upper class.
 - 2.772 Recycling may establish historical roots and images.
- 2.800 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 which represent the community political environment. The landscape builds like a reef, the cumulative bones of thousands of individual decisions. This decade will witness a final transition from relative laissez faire attitudes of land as a commodity to highly democratic regulation of land as a public resource and land use as a privilege granted by the public. If the proposal won't sell at City Hall there will be no opportunity to market the product to individuals. Therefore the project must consider in its feasibility procedures and in constraints imposed by pre-architectural programs the impact on the environment of?
 - 2.810 Physical factors of the environment
 - 2.811 Soil stability and water tables beyond the site boundaries
 - 2.812 Eutrophication of lakes and streams

- 2.813 Disruption of environmental edges, plant, and wildlife areas
- 2.814 Impact on energy resources
- 2.815 Contribution to social disintegration
- 2.816 Aesthetic and urban design
- 2.820 Social factors of the environment
 - 2.821 Displacement of existing residents and neighborhood units
 - 2.822 Contribution to social integration or mobility barriers
 - 2.823 Contribution to land use heterogeneity
 - 2.824 Contribution to regional and community master plans
- 2.830 Economic factors of the environment
 - 2.831 Direct impact on real estate tax revenues
 - 2.832 Direct impact on other governmental revenue
 - 2.833 Direct impact on incremental government
 - 2.834 Secondary contributions to local government revenues
 - 2.835 Secondary cost burdens created for local communities
- 2.840 Real estate business ethic environment
 - 2.841 Impact on supply equilibrium
 - 2.842 Impact on associated contractors
 - 2.843 Impact on families of project sponsor
 - 2.844 Legitimacy of financing structure
- 2.850 Silhouette of proposed project in terms of public perception of impact.
- 2.860 Relationship of impact assessment to:
 - 2.861 Scale of project
 - 2.862 Vulnerability of project sponsor to secondary consequences of political discretion
 - 2.863 Stamina of project sponsor in the face of public pressure
- 2.900 The attribute analysis will lead to a narrowing of alternative uses to a limited series of alternatives which may be identified by a number of basic questions and then given a preliminary test for the possibility of effective demand using the front door or capital to revenues approach suggested in 3.000.
- 2.910 Does any set of site attributes suggest a single space-time to money-time configuration? For example, a high floor area ratio but little parking or extensive floor space for a cheap price.

CAPITAL BUDGET

Exhibit 3

22



THE FRONT DOOR APPROACH

OPERATING BUDGET

- 2.920 What groups or individual might make best use of the potential space-time or money-time configuration seen as alternatives.
- 2.930 What attributes of the subject site provide monopoly characteristics or are inferior to alternative sites?
- 2.940 What attributes negative to possible alternative uses could be neutralized and at what cost?
- 2.950 Can potential users afford the required rent or capital budget of site development?
- 2.960 If so, how many users are there who can afford the price (have effective demand potential) are there, particularly in relation to the unit capacity of the site?
- 2.970 Proforma costs can lead to a price to the user which will identify a customer segment for market survey research - what we term the front door approach for capital-to-required revenue approach which follows.

3.000. Preliminary Test of Economic Feasibility

Given the two basic two feasibility situations --- a site and project in search of a market or a market in search of a workable site and project --- there are two basic financial approaches to feasibility analysis which provide an initial set of numbers and financial constraints which must be tested against the realities of the market-place.

- 3.100 Both these preliminary tests are related to the space-time equals money-time truism and the appraisal concept of the justified investment:
 - 3.110 The capital outlay approach permits conversion of the total cost to acquire to a required rent schedule. (See Exhibit 3 for a flow chart representation). It converts the capital cost of a space-time product to an operating revenue over time equivalent. Somehow it is called the "front door" approach.
 - 3.120 The market revenue approach permits conversion of a desired rent schedule into a detailed budget allocation for justified investment in the project, concluding with net building budget for brick and mortar of various rental components in the project. (See Exhibit 7 at the beginning of tomorrow morning's session). It is called the "back door" approach but is preferable for project design.

- 3.200 The most common assignment for the appraiser turned feasibility analyst is to test a full blown project proposal for feasibility. In these cases, the total purchase price or the site and building plans, product mix, and building cost have already been established by a developer or a designer.
- 3.210 The question is then what income will be necessary to support the project successfully given certain parameters of financing terms, equity dividends, operating expenses, vacancy rates, and breakeven levels of operation required or desired.
- 3.220 In short, a given capital budget must be converted to a first year proforma income statement.
- 3.230 It should be noted that this method is not a cash flow projection but only a first year analysis before income tax considerations.
- 3.240 If the project won't work its first full year of operation, there is little sense in projecting future years of cash flow for the initial analysis.
- 3.250 When one set of numbers can be made to work, it is then possible to test the specific proposal for its fit to the risk management considerations of the investor, to the public impact constraints in the community, and to the self interest of the space user.
- 3.300 Both the capital and the market approaches are models which serve several functions at the outset of any feasibility study, for purchase of an existing project or design specification of a proposed one. Like all models they oversimplify the case and ignore income tax considerations and non-quantitative objectives of the client. Nevertheless at the start they perform several useful functions for the analyst:
- 3.310 The formulas edit the data necessary to specify the space-time product and to convert that product to money-time assumptions.
- 3.320 The process immediately focuses analysis on the testing of the critical assumptions for success, namely availability of the required rent or possibility of construction within the required budget. If a basic proforma statement cannot be made to work either there is a prima facie case that the project is not feasible or priorities of feasibility study are shifted to discovery of a lower cost building technique or of willingness by the ultimate consumer to pay more for certain unique features.

- 3.330 It permits the analyst to repeatedly adjust the assumptions in a search to bracket a range of workable solutions (alternative choices) and then seek the relevant market data which may rebut or support the assumption of the capital or market proforma model.
- 3.340 The capital and the market approach are the two components of a reversible equation which permits sensitivity analysis of the critical variable which are within the control, in part, of the investor-developer.
- 3.400 The capital or market approach is a concise model for communicating critical relationships to the client and the audience for whom the report is intended. Should the audience disagree with assumptions made by the analyst, the audience can then immediately test their own assumptions by the same logic as the analyst.
- The capital outlay approach to feasibility involves a series of steps to determine rents required, when risk management parameters, and total capital costs are known or can be assumed. (See Exhibit 3)
- 3.410 The capital outlay approach is best demonstrated by reference to a worksheet which provides a step by step framework for analysis. (See Exhibit 4 for demonstration case; a sample blank set of worksheets is at the back of study kit for later office use).
- 3.420 Step 1 is to complete the capital outlay budget and determine total hard dollar costs of the project (line 260, Exhibit 4).
- 3.421 If total dollar cost of acquisition is the only number known, start with line 260.
- 3.422 Otherwise begin with gross sq. ft. of building costs for residential and multiply by gross area (line 110); repeat the process for commercial or other space and rename the categories if desired.
- 3.423 The contingency reserve factor (line 200) is a risk allowance for an overrun in the cost of total structure. If you have assumed the highest cost imaginable, set it to 0; if construction costs are from an optimistic architect or contractor, the percentage of contingency reserve might be 10% plus an allowance for inflation if the building will not be built for a year or more.

CAPITAL OUTLAY MODEL WORKSHEET

26

Structures Cost

Residential

- 110 Gross sq. ft.
120 Cost/gross sq. ft.
130 Total Res. Structures

Commercial

- 140 Gross sq. ft.
150 Cost/gross sq. ft.
160 Total Comm'l Structures
170 Miscellaneous Structures

180 Total Structures

- 190 Contingency Reserve Factor

- 200 Contingency Reserve

- 210 Total Structures and Reserves

- 220 Land

- 230 Total Structures, Reserves, Land

- 240 Consultant/Developers Fee

- 250 Carrying charges (tax, ins.)

260 Total Hard Cost

- 270 Mtg. @ % Total Hard Cost

- 280 Const. Loan @ % Tot. Hard Cost

- 290 Const. Period in Months

- 300 Const. Interest Rate

- 310 Const. Interest

- 320 Financing fee @ % Mtg.

- 330 Financing Fees

340 Total Replacement Cost

- 350 Mortgage Capital Contribution

- 360 Required Equity Cash

FHA 221(d)(4) 90% MTE.

60500					
2159					
1306200				(60500x21.59)	
16000					
1835					
293600				(16000x18.35)	
0					
1600000				(1306200+293600)	
03					
48000				(1600000x.03)	
1648000				(1600000+48000)	
113500					
1761500				(1648000+113500)	
50000					
25000					
1836500				(1761500+50000+25000)	
90					
90					
15					
12					
123960				(1836500x.90x $\frac{15}{12} \times 12 \times \frac{1}{2}$)	
05					
91825				(1836500x.05)	
2052285				(1836500+123960+91825)	
1652850				(1836500x.90)	
399435				(2052285-399435)	

Specify (Sp.) sq. ft.

Sp. \$'s/sq. ft.

Lns. (110 x 120)

Sp. sq. ft.

Sp. \$'s/sq. ft.

Lns. (140 x 150)

Sp. \$'s

Sum Lns. (130, 160, 170)

Sp. %

Lns. (130 x 190)

Sum Lns. (190 + 200)

Sp. \$'s

Sum Lns. (210 + 220)

Sp. \$'s

Sp. \$'s

Sum Lns. (230 + 240 + 250)

Sp. %

Sp. %

Sp. #

Sp. %

Lns. (260x280)x($\frac{LN .290}{12}$)x(LN 300)
x (1.

Sp. %

Lns. (270 x 320)

Sum Lns. (260 + 310 + 330)

Lns (260 x 270)

Lns (340 - 350)

Required Revenue Budget

Unit Mix; # & code

(Code: Residential = 1, Commercial = 2)

(If Code 1, give # rooms; Code 2 sq. ft. GLA)

370 RU - 1
380 # Rooms (iff. residential)
390 RU - 2
400 # Rooms
410 RU - 3
420 # Rooms
430 RU - 4
440 # Rooms
450 RU - 5
460 # Rooms
470 Total # Rooms, Res. RU's

Expenses & Taxes

Residential

480 Expenses/room/year
490 Taxes/room/year

Commercial

500 Expenses/sq. ft. GLA/year
510 Taxes/sq. ft. GLA/year
520 Total Res. Exp. & Taxes
530 Total Comm'l Exp. & Taxes
540 **Total Exp. & Taxes**
550 Mtg. Constant
560 Mtg. Debt Service Required
570 Equity Cash Dividend Constant
580 Equity Dividend Required

585 **Cash Income required for Exp. & Tax, Mtg. & Equity**

1	46	1					
		3.5					
	10	1					
		4.5					
15000		2					
	206						
		140					
		160					
		50					
		100					
	61800						
	22500						
	84300						
		0926					
	153050						
		08					
	31950						
	269300						

Sp., # units & code

Sp. # Rooms

Sp., # & Code

Sp. # Rooms

Sp., # & Code

Sp. # Rooms

Sp., # & Code

Sp. # Rooms

Sp. # & Code

Sp. # Rooms

Sum Lns [(370x380)+(390x400)+
(410x420)+(430x440)+(450x460)]

Sp. \$'s

Sp. \$'s

Sp. \$'s

Sp. \$'s

Ln (470) x Sum Lns (430+490)

Ln (370-460 Code 2 #s) (Sum Lns 501
511)

Sum Lns. (520+530)

Sp. %

Lns. (350 x 550)

Sp. %

Lns. 360 x 570)

Sum Lns. (540+560+580)

590 Non-Distributable cash & variance factor
 600 Non-Dist. cash & Var. Revenue
 610 Required Annual Effective Gross Revenue
 615 Vacancy Factor
 620 Required Annual Gross Revenue
 625 Required Monthly Gross Rev.
 630 # Non-allocated Price RU's
 640 Mo. Income/RU's
 650 Total Non-allocated RU Revenue
 655 Allocatable Revenue

			02				
		5385			(269300 - 269300) x .98		
		274690					
			05				
		289140			(274690 ÷ .95)		
		24095			(289140 ÷ 12)		
		45					
		15					
		675			(45 x 15)		
		23420					

Sp. %
 $\text{Ln}(585) - (\text{Ln}[585]) (1 - \text{Ln}[590])$
 Sum Lns (585 + 600)
 Sp. %
 $\text{Ln}(610) / (1 - \text{Ln} 615)$
 $\text{Ln}(620) / 12 \text{ months}$
 Sp. #
 Sp. \$'s
 Lns. (630 x 640)
 Lns. (620 - 650)

(Note Factor Calculations: Refer to Unit Mix
 Section Lns. (370-470)

If Type 1, (res) multiply # units by rent @ BRU

If Type 2, (comm'l); (Read sq. ft. RU and / by sq. ft. BRU (Ln 665)
 x (rent @ % BRU)

660 Base Revenue Unit Type
 665 Base Revenue Unit (BRU) sq. ft.
 670 RU - 1 rent @ % BRU
 680 Factors
 690 RU - 2 rent @ % BRU
 700 Factors
 710 RU - 3 rent @ % BRU
 720 Factors
 730 RU - 4 rent @ % BRU
 740 Factors
 750 RU - 5 rent @ % BRU
 760 Factors
 770 Total Factors

RU-1							
		576					
		100					
		46			(46 x 100)		
		140					
		14			(10 x 1.40)		
		160					
		4167			(15000 ÷ 376 x 1.6)		
		10167			(46 + 14 + 41.67)		

Sp. Type
 Sp. sq. ft.
 Sp. %
 (See: Note Factor Code)
 Sp %
 Sp %
 Sp %
 Sp %
 Sum Lns. (680+700+720+740+760)

Rental Structure

* If type 2 (or Comm'l), divide by Ln (665)

780	BRU rent/mo.
790	RU - 1 rent/mo
800	RU - 2 rent/mo
810	RU - 3 rent/mo
820	RU - 4 rent/mo
830	RU - 5 rent/mo
840	Total Annual Rev. from RU - 1's
850	Total Annual Rev. from RU - 2's
860	Total Annual Rev. from RU - 3's
870	Total Annual Rev. from RU - 4's
880	Total Annual Rev. from RU - 5's
890	Total Annual Allocated Rev.
	(Compare to Ln. 655) x 12

900	Default Ratio
910	Default Ratio, upset point

	23035	
	23035	(1.00 x 230.35)
	322	(1.40 x 230.35)
	64	(1.60 x 230) ÷ 576
	126960	(230 x 46 x 12)
	38640	(322 x 10 x 12)
	115200	(64 x 15000 x 12)
	280800	
	82	(84300 + 153050 + 289140)

Lns. (655 / 770)
 Lns. (670 x 780) *
 Lns. (690 x 780) *
 Lns. (710 x 780) *
 Lns. (730 x 780) *
 Lns. (750 x 780) *
 Lns. (370 x 790)
 Lns. (390 x 800)
 Lns. (410 x 810)
 Lns. (430 x 820)
 Lns. (440 x 830)
 Sum Lns. (840+850+860+870+880)
 Lns. (890-655)
 Lns. (540+560) / Ln (620)
 Sp. %

- 3.424 Consultant and developers fees and carrying charges (line 240, 250) can each be computed separately and summarized as a single number on the form to provide a check list for all of the elements which might be accounted for in a final detailed analysis. Note that construction loan costs are computed separately beginning with line 270.
- 3.430 To allocate hard dollar costs between mortgage dollars and equity dollars the analyst must assume either a specific number of mortgage dollars or a percent of hard dollar costs which will be available from debt money. (line 270). Note there may be a combination of mortgages so that the percentage factor is not a traditional loan ratio but the ratio of debt dollars to total hard dollar requirements.
- 3.431 Lines 280 to 330 provide an initial estimate of soft dollar costs for construction loan costs and other financing fees for registration, marketing research and points. These costs added to hard costs provide the total replacement costs, the same term used on line 73 of the FHA 2013 form.
- 3.432 The total replacement cost minus the mortgage amount from permanent financing (line 350) establishes the equity cash (line 360) that will be required once the project goes on stream as operational. Note that total replacement costs less the construction loan in line 280 will reveal the equity cash required during construction if all subcontractors are to be paid before the end of the construction phase. However, cash budgeting of the construction phase at that level of detail is premature at this point in the analysis.
- 3.500 It is then necessary to define space-time units by some common denominator appropriate to expense accounting as well. If there were only identical one-bedroom apartments in the structure, then the one bedroom apartment is an appropriate avenue unit (RU) as on line 370. However, if the project has a mix of apartment type, it is useful to redefine each type of rental unit in terms of some common denominator such as number of rooms or number of sq. ft. or in terms of one bedroom units so that average expenses per room or per sq. ft. may be used.
- 3.510 The total number of common denominator units (line 470) in rooms, sq. ft., dormitory bed or whatever represents the residential units in order to simplify expense calculations on line 480 and 490.

- 3.520 In most communities it is possible to know the median real estate tax per room, sq. ft., or apartment, etc. and the expenses of roughly similar projects and these appropriate costs on lines 480, 490, 500 and 510, provide a total expense and tax cost for line 520.
- 3.530 The same process is repeated for commercial or non-residential rental units in the same project, (lines 500 and 510) on a sq. ft. leasable basis to arrive at total cash outlays for expenses and taxes attributable to those commercial areas in line 530.
- 3.540 Line 540 represents the total cash required annually for cash expenses and real estate taxes attributable to the rental units contemplated by the plan on which the capital budget was estimated.
- 3.600 The other major cash outlay is the dollar amount required for debt servicing. This dollar amount can be determined by assuming specific terms of interest, term of repayment, or annual mortgage constant which would be appropriate to the permanent financing assumed as a basis for mortgage amount in line 350, and is entered as a dollar amount in line 560.
- 3.610 Required equity cash on line 360 - if any, may also require an annual cash return (much like the Ellwood cash dividend); even if equity cash was equal to 0 or negative, the owners may require some cash return each year as one of the benefits of ownership so these annual dividend dollars should be included in line 580.
- 3.620 Cash income required annually for expenses and taxes, mortgages and equity owners is then summarized on line 585.
- 3.621 The cash income required is subject to some error in estimating and there may be certain cash sinking fund programs which are desirable, such as for replacement of furnishings in a motel or store fronts in a retail project which wise developers actually fund in hard dollars from annual operations.
- 3.622 These non-distributable cash and allowance for variance (line 590) when added to line 585 provide an estimate of required annual effective gross revenues in line 610.
- 3.630 Effective gross revenue is revenue which must be collected, after certain vacancy and collection losses. A percentage vacancy allowance must be subtracted from 100% and the remainder divided in effective gross to determine the required potential annual gross revenue in line 620.

Structures Cost

Residential

- 110 Gross sq. ft.
120 Cost/gross sq. ft.
130 Total Res. Structures

Commercial

- 140 Gross sq. ft.
150 Cost/gross sq. ft.
160 Total Comm'l Structures
170 Miscellaneous Structures

180 Total Structures

- 190 Contingency Reserve Factor

- 200 Contingency Reserve

- 210 Total Structures and Reserves

- 220 Land

- 230 Total Structures, Reserves, Land

- 240 Consultant/Developers Fee

- 250 Carrying charges (tax, ins.)

260 Total Hard Cost

- 270 Mtg. @ % Total Hard Cost

- 280 Const. Loan @ % Tot. Hard Cost

- 290 Const. Period in Months

- 300 Const. Interest Rate

- 310 Const. Interest

- 320 Financing fee @ % Mtg.

- 330 Financing Fees

340 Total Replacement Cost

- 350 Mortgage Capital Contribution

- 360 Required Equity Cash

All Equity, No Mtg.

60500					
2159					
1306200				(60500 x 2159)	
16000					
1835					
293660				(16000 x 1835)	
0					
1600000				(= 1306200 + 293660)	
03					
48000				(1600000 x .03)	
1648000				(1600000 + 48000)	
113500					
1761500				(1648000 + 113500)	
50000					
25000					
1836500				(1761500 + 50000 + 25000)	
0					
0					
1836500					
0					
1836500					

Specify (Sp.) sq. ft.

Sp. \$'s/sq. ft.

Lns. (110 x 120)

Sp. sq. ft.

Sp. \$'s/sq. ft.

Lns. (140 x 150)

Sp. \$'s

Sum Lns. (130, 160, 170)

Sp. %

Lns. (130 x 190)

Sum Lns. (190 + 200)

Sp. \$'s

Sum Lns. (210 + 220)

Sp. \$'s

Sp. \$'s

Sum Lns. (230 + 240 + 250)

Sp. %

Sp. %

Sp. #

Sp. %

Lns. (260x280) x $\frac{(\text{LN } .290)}{12}$ x (LN 300)

Sp. %

Lns. (270 x 320)

Sum Lns. (260 + 310 + 330)

Lns (260 x 270)

Lns (340 - 350)

Required Revenue Budget

Unit Mix; # & code

(Code: Residential = 1, Commercial = 2)

(If Code 1, give # rooms; Code 2 sq. ft. GLA)

370 RU - 1
 380 # Rooms (iff. residential)
 390 RU - 2
 400 # Rooms
 410 RU - 3
 420 # Rooms
 430 RU - 4
 440 # Rooms
 450 RU - 5
 460 # Rooms
 470 Total # Rooms, Res. RU's

Expenses & Taxes

Residential

480 Expenses/room/year
 490 Taxes/room/year

Commercial

500 Expenses/sq. ft. GLA/year
 510 Taxes/sq. ft. GLA/year
 520 Total Res. Exp. & Taxes
 530 Total Comm'l Exp. & Taxes

Total Exp. & Taxes

550 Mtg. Constant
 560 Mtg. Debt Service Required
 570 Equity Cash Dividend Constant
 580 Equity Dividend Required

585 Cash income required for Exp. & Tax, Mtg.
 & Equity

	46	1					
		35					
	10	1					
		45					
	15000	2					
	206						
		140					
		160					
		50					
		100					
	61800						
	22500						
	84300						
		0					
		08					
	146920						
	230220						

Sp., # units & code

Sp. # Rooms

Sp., # & Code

Sp. # Rooms

Sp., # & Code

Sp. # Rooms

Sp., # & Code

Sp. # Rooms

Sp. # & Code

Sp. # Rooms

Sum Lns [(370x380)+(390x400)+
 (410x420)+(430x440)+(450x460)]

Sp. \$'s

Sp. \$'s

Sp. \$'s

Sp. \$'s

Ln (470) x Sum Lns (430+490)

Ln (370-460 Code 2 #s) (Sum Lns 50
 51)

Sum Lns. (520+530)

Sp. %

Lns. (350 x 550)

Sp. %

Lns. 360 x 570)

Sum Lns. (540+560+580)

590 Non-Distributable cash & variance factor
 600 Non-Dist. cash & Var. Revenue
 610 Required Annual Effective Gross Revenue
 615 Vacancy Factor
 620 Required Annual Gross Revenue
 625 Required Monthly Gross Rev.
 630 # Non-allocated Price RU's
 640 Mo. Income/RU's
 650 Total Non-allocated RU Revenue
 655 Allocatable Revenue

			02				
		4600		(230220 - (230220 X .95))			
		234820		(230220 + 4600)			
			05				
		247180		(234820 ÷ .95)			
		20600		(247180 ÷ 12)			
		45					
		15					
		675		(45 X 15)			
		19925		(20600 - 675)			

Sp. %
 $\text{Ln}(585) - (\text{Ln}[585]) (1 - \text{Ln}[590])$
 Sum Lns (585 + 600)
 Sp. %
 $\text{Ln}(610) / (1 - \text{Ln} 615)$
 $\text{Ln}(620) / 12 \text{ months}$
 Sp. #
 Sp. \$'s
 Lns. (630 x 640)
 Lns. (620 - 650)

(Note Factor Calculations: Refer to Unit Mix
 Section Lns. (370-470))

If Type 1, (res) multiply # units by rent @ BRU

If Type 2, (comm'l); (Read sq. ft. RU and / by sq. ft. BRU (Ln 665)
 x (rent @ % BRU)

660 Base Revenue Unit Type
 665 Base Revenue Unit (BRU) sq. ft.
 670 RU - 1 rent @ % BRU
 680 Factors
 690 RU - 2 rent @ % BRU
 700 Factors
 710 RU - 3 rent @ % BRU
 720 Factors
 730 RU - 4 rent @ % BRU
 740 Factors
 750 RU - 5 rent @ % BRU
 760 Factors
 770 Total Factors

RU-1			
	576		
	100		
	46	(46 X 1.00)	
	140		
	14	(10 X 1.40)	
	160		
	4167	(15000 X 1.6) ÷ 576	
	10167	(46 + 14 + 41.67)	

Sp. Type
 Sp. sq. ft.
 Sp. %
 (See: Note Factor Code)
 Sp %
 Sp %
 Sp %
 Sp %
 Sum Lns. (680+700+720+740+760)

Rental Structure

* If type 2 (or Comm'l), divide by Ln (665)

780 ERU rent/mo.

790 RU - 1 rent/mo

800 RU - 2 rent/mo

810 RU - 3 rent/mo

820 RU - 4 rent/mo

830 RU - 5 rent/mo

840 Total Annual Rev. from RU - 1's

850 Total Annual Rev. from RU - 2's

860 Total Annual Rev. from RU - 3's

870 Total Annual Rev. from RU - 4's

880 Total Annual Rev. from RU - 5's

890 Total Annual Allocated Rev.

(Compare to Ln. 655) x 12

900 Default Ratio

910 Default Ratio, upset point

196	(19925-101.67)
196	(196 x 1.00)
274	(196 x 1.40)
54	(196 x 1.40) ÷ 576
108192	(46 x 196) x 12
32880	(10 x 274) x 12
97200	(15000 x 54) x 12
238270	(108192 + 32880 + 97200)
34	(84300 ÷ 247180)

Lns. (655 / 770)

Lns. (670 x 780) *

Lns. (690 x 780) *

Lns. (710 x 780) *

Lns. (730 x 780) *

Lns. (750 x 780) *

Lns. (370 x 790)

Lns (390 x 800)

Lns. (410 x 810)

Lns. (430 x 820)

Lns. (440 x 830)

Sum Lns. (840+850+860+870+880)

Lns. (890-655)

Lns. (540+560) / Ln (620)

Sp. %

- 3.631 To reduce the potential annual gross revenue to a period more appropriate to the type of space unit contemplated and market rents, it is then necessary to divide annual gross by some factors such as numbered months to determine monthly rents, number of days for motel prices, or hours during which the business is open for the year for a tennis court or ice arena. (see line 625).
- 3.632 Required period income should be reduced by revenues which are fixed or should not be allocated to the various revenue units previously identified on page 2 (line 630-650). The analyst then has the allocatable revenue per unit in line 655 from which rents can be determined for each of the remaining mix of rentable units.
- 3.640 For the example given the base revenue type was the one-bedroom apartment with 576 sq. ft. of space and all other rental units were expressed in terms of this common denominator. It is therefore necessary to determine the equivalent of common denominator units represented by the product mix being tested.
- 3.641 For example, the two bedroom apartments were expected to rent for 140% of the one-bedroom apartment price and the commercial area was expected to rent at 160% of what was expected of the one-bedroom apartment. (The sq. footage in the one-bedroom provided an arbitrary base for conversion of GLA). If commercial were not a significant part of a project, revenue expected from such miscellaneous sources can be deducted from revenue to be generated from basic revenue units in line 650.
- 3.642 Given the sum of equivalent revenue unit factors (on line 770) it is then possible to divide the total into total allocatable revenue (line 655) to determine minimum monthly rent required for one-bedroom units. The minimum monthly rent multiplied by the previous common denominator factor in (lines 680, 700, 720, 740, and 760) then provides the monthly rents for each of the other rental unit mix components.

4.000 Feasibility Analysis as an Exercise in Risk Management

At this point the analyst has a set of numbers which are only useful to the degree that they provide a base for a series of "if" statements or "if, then it follows" measurements of fit of the key assumptions to the realities of the physical project and a potential market.

4.100 Since a primary function of the analyst is to provide risk management input to a proposal, it is useful to describe the risk management function in more detail before continuing to test the capital structure approach further. Risk in the business situation is the variance between assumptions about the fact in the planning process and realizations in the execution of the program. The game of 'what if' and the consequences of surprise is cheaper to play on paper while designing the project program.

4.110 There are two types of risk for concern:

4.111 Static risks are those contingencies or events which can only cause a loss and which are highly unpredictable in terms of frequency of occurrence and severity of loss. In large part they are beyond control of the risk taker such as fire, death, accident, or world political events. Often these risks can be shifted by insurance devices.

4.112 Dynamic risks are those contingencies or events which can cause a profit or a loss, such as drilling for oil, or selecting a stock of style apparel for a retailing outlet. In these cases success or failure is in a large part dependent on the amount of information, skills, and judgment of the risk taker, who is motivated in varying degrees by the pain of loss or the gains of success.

4.120 The primary objective of risk management is to conserve existing net worth and asset values, and the secondary objective is to realize future expectations of net income. The functions of risk management include:

4.121 Identification of significant exposures to loss.

4.122 Estimation of potential loss frequency and severity.

4.123 Identification of alternative methods to avoid loss.

4.124 Selection of a risk management method.

4.125 Monitoring execution of risk management plan.

4.130 The loss potential of each contingency must be examined in terms of three elements:

- 4.131 The direct loss is the result of physical destruction of property or cash necessary to correct the damage.
- 4.132 The consequential loss is the loss of income or opportunity as a result of the direct loss.
- 4.133 The extra expense loss which includes all additional costs necessary to bring the contingency under control of satisfy claims of third parties adversely affected.
- 4.133 For example, a fire in a retail store causes direct damage to the property, consequential loss of rental income, and the extra expense of managing the recovery and meeting third party suits for damages.
- 4.140 The methods available to the risk manager to reduce financial surprises of risk include:
 - 4.141 Avoiding risk (exterior storage of inflammable liquids, no FHA projects, no spec building).
 - 4.142 Reducing frequency of loss (fireproof construction, underwriting selection of mortgagor or tenant).
 - 4.143 Reducing severity of loss (sprinkler system, low ratio mortgage, exculpatory clause for borrower).
 - 4.144 Shifting the risk of future variance by contract (fire insurance, real estate tax escalator clause, fixed price subcontract).
 - 4.145 Limiting liability (corporate shell, limited partnership law, joint venture agreement).
 - 4.146 Hedging (sale and lease-back with option to buy, the mortgage as a straddle position in the real estate futures market).
 - 4.147 Creating compensation incentives for performance (deductibles and experience rating for insurance, graduated commissions or equity participation for management).
- 4.200 Risk management analysis begins with several basic indices of tolerance for variation in financial assumptions of either the capital structure or market structure approach. These in turn lead to sensitivity analysis of variables within the control of the decision maker.

- 4.210 The default point is the critical cash break-even point to which operations must adapt expressed as a ratio to potential gross rent.

$$\frac{\text{cash expenses} + \text{real estate taxes} + \text{debt service} + \text{short term loans}}{\text{potential gross rent}}$$

- 4.211 A default point of 80% means that vacancy could be 20% or rents might be cut by 20% to achieve 100% occupancy or some combination.
- 4.212 Expressing expenses and real estate taxes as a percent of gross potential allows analysis of variance which might occur in these cash outlays before exceeding cushion provided by default point less normal vacancy.
- 4.213 A statement of debt service as a percent of gross rent provides a meaningful measure of the amount of debt which may be carried safely by the project or the terms of the loans necessary to maintain solvency in any particular period.
- 4.214 Default points may be relatively high for an FHA apartment project with subsidized rents, say 85%, or low for a luxury resort - say 55%, but these are judgments which must be made by the analyst or the client.
- 4.220 The maximum potential loss facing a developer-investor is his net cash investment plus extent of direct liability on project liabilities. This exposure can hopefully be reduced by cash taken out of the project operations, and tax savings through other income. The time it takes to reduce the peak cash exposure to zero is known as the payback period.
- 4.221 For example, many investors would insist in a payback period of five years or less since they regard the future beyond that point completely unforeseeable and the possible events adverse to their investment almost infinite.
- 4.222 Payback can be altered by changing the debt ratio, reducing the cost of the project, retaining more pre-operating profit centers, or modification of partner shares and timing of distribution.

- 4.223 It is important to note that even if the capital structure approach suggests a rent structure which may be acceptable in the market, the default point (line 900) or the payback ratio (line 910) of the capital structure may be unacceptable so that it will be necessary to rework the assumptions about loan ratio or equity dividend rate or cost or variance in operating expenses in order to achieve desired results.
- 4.230 Not all risks can be given financial parameters and then neatly laid off through one financial device or another but it is useful to make underlying assumptions about the status quo explicit so that the decision maker has some idea about the alternative outcomes which could adversely affect the desired result or possibly, if fully understood, lead to a rejection of present profits because unpredictable future losses:
- 4.231 Private college dormitories depended on a college administrative rule that students live in supervised housing. If the rule is removed by administrative fiat, what then?
- 4.231 A key industrial park tenant may require a five year lease with renewal options. If the option is not taken, what then?
- 4.232 A recent financial forecast about availability of real estate financing in 1976 made the following explicit assumptions:
- "Assuming no renewal of Middle East hostilities and a resulting oil embargo."
- "Assuming a reduction of the inflation rate to 5% through effective federal government fiscal and monetary programs."
- "Assuming only moderate increases for construction labor contracts in the summer of 1975."
- 4.300 The concept of rate of return has as many variations as there are investors, but essentially it attempts to measure the relationship of cash outlays to cash receipts over time. Essentially it is a corollary of buy low and sell high with an adjustment for elapsed time between the two transactions.
- 4.310 Perceived risk eventually influences the desired rate of return but risk and investment yield are not directly integrated. A high rate of return may be possible because there is little equity cash and therefore a very small maximum potential loss and short payback period.

- 4.320 There are two ways of measuring returns, prospectively one year at a time, or retrospectively over the full span of the investment cycle. A cash-on-cash return is a common example of the former while the internal rate of return, discounted cash flow, or the Ellwood approach are examples of the latter.
- 4.330 A cash dividend or equity cash throw-off approach before adjustment for income tax influence is the most useful approach in the early stages of feasibility analysis. Most people should have learned by now the fallacy of "tax loss only" deals which are not viable on their own.
- 4.331 An equity dividend constant was built into the rent structure (line 580). This is a cash-on-cash prospective return and is also a measure of the strength of the vested interest of the borrower continuing to make mortgage payments on time.
- 4.332 Cash-on-cash is also the reciprocal of pre-tax payback of equity capital investment. For example, an 8% cash dividend is a 12 1/2 year payback before adjustment for tax savings, future refinancing surplus, profit centers retained, or "funny money" strategies to remove equity cash dollars.
- 4.340 Sensitivity analysis explores the change in one assumption on the relationships of the capital structure approach to various key assumptions about costs to acquire or operating revenues and expenses. It should be apparent that the repetitive nature of these types of automated computation and sensitivity analysis is best demonstrated by reference to one of the models which are commercially available.
- 4.341 Exhibit 6 contains a descriptive manual of a computer terminal service call Design Analysis Program, authored by John Nabors of Dallas, Texas. Special variations are available for hotel type or land development type formats.
- 4.342 Similar types of program are available on high memory capacity electronic calculators. For example, the Monroe Calculator Company offers a series of feasibility programs developed by a real estate consultant-appraiser McCloud B. Hodges, Jr., MAI, of McLean, Virginia.

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PROGRAM SUMMARY
DESIGN ANALYSIS PROGRAM

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

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

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

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

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

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

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

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Date _____
Run # _____

RJE DATA FORM

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

EXAMPLES

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

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

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

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

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CONSTRUCTION COST SCHEDULE

DATA INPUT - SHORT FORM

100	_____	_____	_____	_____	Bldg ID#, Mo, Day, Yr
101	_____	_____	_____	_____	60 character title(ctrd)
102	_____	_____	_____	_____	60 character title(ctrd)
103	_____	_____	_____	_____	Gross sq ft or Acreage in Tract
104	_____	_____	_____	_____	Run Number
CONSTRUCTION COSTS: (use 201 and 202 or 203)					
201	_____	_____	_____	_____	Shell - sq ft, \$/sq ft.
202	_____	_____	_____	_____	Interior - sq ft, \$/sq ft.
203	_____	_____	_____	_____	Building - sq ft, \$/sq ft
204	_____	_____	_____	_____	Grade Parking-sq ft/space, spaces, \$/sq ft.
205	_____	_____	_____	_____	Structured Parking " " " "
206	_____	_____	_____	_____	Landscaping/Lighting Costs -\$ or \$/sq ft.
207	_____	_____	_____	_____	Furniture, Fixture & Equipment " " "
208	_____	_____	_____	_____	Sq ft, \$/sq ft or 0,0
(209)	_____	_____	_____	_____	Title
210	_____	_____	_____	_____	Sq ft, \$/sq ft or 0,0
(211)	_____	_____	_____	_____	Title
212	_____	_____	_____	_____	Sq ft, \$/sq ft or 0,0
(213)	_____	_____	_____	_____	Title
214	_____	_____	_____	_____	0, \$, or % of Shell & Interiors
(215)	_____	_____	_____	_____	Title
(216)	_____	_____	_____	_____	Title
(217)	_____	_____	_____	_____	Title
218	_____	_____	_____	_____	Constr.Contingency-0, \$, or % of Shell & Interior
301	_____	_____	_____	_____	Architecture Fees Enter 0, \$
302	_____	_____	_____	_____	Engineering Fees or % of Subtotal
303	_____	_____	_____	_____	Loan Origination Fees of lines
304	_____	_____	_____	_____	Legal & Closing Fees 201 - 218
305	_____	_____	_____	_____	Taxes & Insurance
309	_____	_____	_____	_____	Optionally titled fees and
310	_____	_____	_____	_____	Title costs: 0, \$ or % of Subtotal
311	_____	_____	_____	_____	Title of line 201-218
312	_____	_____	_____	_____	Title
401	_____	_____	_____	_____	Constr Interim Int Rt, Constr.Period-Months
402	_____	_____	_____	_____	Other expenses 0, \$ or % of Subtotal
(403)	_____	_____	_____	_____	Title
(404)	_____	_____	_____	_____	Title
500	_____	_____	_____	_____	Zero or \$ Cost of Land (or use line 501)
501	_____	_____	_____	_____	Cost of Land -sq ft or Acres, cost/unit
502	_____	_____	_____	_____	Interim Land Cost-% of Land cost
					Interest rt, months.
503	_____	_____	_____	_____	Interim Land Cost " " " " " "
504	_____	_____	_____	_____	Interim Land Cost - \$/month, months
505	_____	_____	_____	_____	Other land costs-\$ or % of Land Cost

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

INPUT FORM
CASH FLOW ANALYSIS

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

*Items are entered only if value is 0 on Line 100

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

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

230 _____ Number of Loan to Cost Ratios (1 to 5)
 231 _____, _____, _____, _____, _____ Loan Ratios in %
 240 _____ 01 or 2 1 = Break-even Rental Rates 2 = Rates of Return
 250 _____ 10000

JOHN H. NABORS, JR.

CONSTRUCTION COST ESTIMATE

150,000 SQ FT BUILDING - 6.333 AC SITE

CONSTRUCTION COST OF \$ 30 PER SQ FT

DATE: 8/28/1974

BLDG: 6001

RUN : 1

CONSTRUCTION COSTS

DOLLARS

CONSTRUCTION-SHELL	150000 SQ FT AT \$ 26.00	\$	3900000
CONSTRUCTION-INTERIOR	150000 SQ FT AT \$ 4.00	\$	600000
GRADE PARKING	500 SPACES AT \$ 525		262500
LANDSCAPING/LIGHTING			100000

SUBTOTAL CONSTRUCTION

4862500

ARCHITECTURE FEES	AT 4.0 PCT	194500
ENGINEERING FEES	AT 1.0 PCT	48625
LOAN ORIGATION FEES	AT 1.0 PCT	48625
TAXES AND INSURANCE	AT 1.0 PCT	48625

CUMULATIVE SUBTOTAL

5202875

INTERIM INTEREST-CONSTRUCTION

\$ 5202875 AT 12.0 PCT FOR 13 MO X .5	338187
DEVELOPER'S PROFIT AT 2.0 PCT OF \$ 5202875	104057
CONTINGENCY AT 2.0 PCT OF \$ 5202875	104057

TOTAL CONSTRUCTION COSTS

5749177

LAND COSTS

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

TOTAL LAND COST

1266986

TOTAL LAND AND CONSTRUCTION COST

7016162

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LOAN DATA FOR EACH SET OF FINANCIAL CONDITIONS

AMOUNT FINANCED \$ 5612930 EQUITY \$ 1403232

LOAN RATIO 80.00 PCT

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

AMOUNT FINANCED \$ 4911313 EQUITY \$ 2104849

LOAN RATIO 70.00 PCT

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

AMOUNT FINANCED \$ 6314546 EQUITY \$ 701616

LOAN RATIO 90.00 PCT

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

AMOUNT FINANCED \$ 7016162 EQUITY \$ 0

LOAN RATIO 100.00 PCT

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

JOHN H. NABORS, JR.

PRO FORMA CASH FLOW TABLE

150,000 SQ FT OFFICE BUILDING

6.333 ACRE TRACT - RICHARDSON, TEXAS

FIXED PARAMETERS		PAGE	2 OF 5
SITE	275865 SQUARE FEET	DATE	9- 5-1974
BUILDING	150000 SQUARE FEET	BLDG	4444
EFFICIENCY	85.00 PCT OF GROSS		
REVENUE	\$ 8.50 PER SQ FT		
VACANCY	10.00 PCT OF LEASEABLE		
ØTR INCOME	\$ 0 ANNUALLY	RUN	1
EXPENSES	\$ 2.50 PER SQ FT		

ANNUAL CASH FLOWS

		LOAN TO COST RATIO			
		70.0PCT	80.0PCT	90.0PCT	100.0PCT
FINANCING					
30YR	9.50PCF	161061	90266	19472	-51323
30YR	8.50PCF	203460	138722	73984	9246
30YR	9.00PCF	182415	114670	46926	-20819
30YR	9.75PCF	150276	77940	5605	-66731
30YR	10.00PCF	139422	65535	-8351	-82237

BREAKEVEN RENTAL RATES

		LOAN TO COST RATIO			
		70.0PCT	80.0PCT	90.0PCT	100.0PCT
FINANCING					
30YR	9.50 PCT	7.10	7.71	8.33	8.95
30YR	8.50 PCT	6.73	7.29	7.86	8.42
30YR	9.00 PCT	6.91	7.50	8.09	8.68
30YR	9.75 PCT	7.19	7.82	8.45	9.08
30YR	10.00 PCT	7.28	7.93	8.57	9.22

JOHN H. NABORS, JR.

PRO FORMA CASH FLOW TABLE

150,000 SQ FT OFFICE BUILDING

6.333 ACRE TRACT - RICHARDSON, TEXAS

FIXED PARAMETERS

PAGE 1 OF 12

SITE :	275865 SQUARE FEET	DATE	9- 5-1974
BUILDING :	150000 SQUARE FEET	BLDG	4444
EFFICIENCY:	85.00 PCT OF GROSS		
LOAN RATIO:	80.00 PCT OF \$ 7016162		
EQUITY :	\$ 1403232		
FINANCING :	30 YEARS 9.50 PCT		
OTR INCOME:	\$ 0 ANNUALLY	RUN	1
EXPENSES :	\$ 2.50 PER SQ FT		

ANNUAL CASH FLOWS

VACANCY ALLOWANCE

RENTAL RATES ANNUAL \$/SQ FT	0. PCT	5.0PCT	10.0PCT	15.0PCT
\$ 7.50	71141	23329	-24484	-72296
\$ 8.00	134891	83891	32891	-18109
\$ 8.50	198641	144454	90266	36079
\$ 9.00	262391	205016	147641	90266
\$ 9.50	326141	265579	205016	144454

PERCENTAGE CASH FLOW RETURN ON EQUITY

VACANCY ALLOWANCE

RENTAL RATES ANNUAL \$/SQ FT	0. PCT	5.0PCT	10.0PCT	15.0PCT
\$ 7.50	5.07	1.66	-1.74	-5.15
\$ 8.00	9.61	5.98	2.34	-1.29
\$ 8.50	14.16	10.29	6.43	2.57
\$ 9.00	18.70	14.61	10.52	6.43
\$ 9.50	23.24	18.93	14.61	10.29

JOHN H. NABORS, JR.

PRO FORMA CASH FLOW TABLE

150,000 SQ FT OFFICE BUILDING

6.333 ACRE TRACT - RICHARDSON, TEXAS

FIXED PARAMETERS

PAGE 4 OF 12

SITE :	275865 SQUARE FEET	DATE	9- 5-1974
BUILDING :	150000 SQUARE FEET	BLDG	4444
EFFICIENCY:	85.00 PCT OF GROSS		
LOAN RATIO:	80.00 PCT OF \$ 7016162		
EQUITY :	\$ 1403232		
VACANCY :	10.00 PCT OF LEASEABLE		
OTR INCOME:	\$ 0 ANNUALLY	RUN	1
EXPENSES :	\$ 2.50 PER SQ FT		

ANNUAL CASH FLOWS

FINANCING PARAMETERS

30 YEARS 9.50 PCT	30 YEARS 8.50 PCT	30 YEARS 9.00 PCT	25 YEARS 9.50 PCT	30 YEARS 10.00 PCT
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RENTAL RATES
ANNUAL \$/SQ FT

\$ 7.50	-24484	23972	-80	-46605	-49215
\$ 8.00	32891	81347	57295	10770	8160
\$ 8.50	90266	138722	114670	68145	65535
\$ 9.00	147641	196097	172045	125520	122910
\$ 9.50	205016	253472	229420	182895	180285

PERCENTAGE CASH FLOW RETURN ON EQUITY

FINANCING PARAMETERS

30 YEARS 9.50 PCT	30 YEARS 8.50 PCT	30 YEARS 9.00 PCT	25 YEARS 9.50 PCT	30 YEARS 10.00 PCT
----------------------	----------------------	----------------------	----------------------	-----------------------

RENTAL RATES
ANNUAL \$/SQ FT

\$ 7.50	-1.74	1.71	-.01	-3.32	-3.51
\$ 8.00	2.34	5.80	4.08	.77	.58
\$ 8.50	6.43	9.89	8.17	4.86	4.67
\$ 9.00	10.52	13.97	12.26	8.95	8.76
\$ 9.50	14.61	18.06	16.35	13.03	12.85

SENSITIVITY ANALYSIS
DESIGN ANALYSIS PROGRAM

Sensitivity testing is generally considered to be the study of the changes in a dependent variable resulting from unit changes in an independent variable. In the case of an income property, the dependent variable will be the annual cash flows from the property and the independent variables could be any one of the many variables that have an effect on the cash flow. If the values of all the variables but one are held constant, the effect of unit changes in the one variable can be reflected in a change in annual cash flow.

The table CASH FLOW PRO FORMA USING PARAMETER NORMS reflects the basic data and assumptions concerning the income property and the resulting Annual Cash Flow and Rate of Return on Equity.

The table entitled SENSITIVITY TABLE reflects three basic sets of information:

1. Basic Parameter Values
2. Effects on Annual Cash Flows of Unit Changes in Fixed Parameters
3. Equivalent Effects to Yield a \$10,000 Increase in Annual Cash Flow.

The first set of information lists the values of each parameter as reflected in the CASH FLOW PRO FORMA USING PARAMETER NORMS table.

The second set reflects the effect upon annual cash flow and upon the construction cost total from reasonable unit changes of all of the Basic Parameter Values. This table then can be used to analyze the effect on the annual cash flow by the changes in one or more variables. More detailed uses of this data are discussed on following pages.

The third set of data relates each of the parameters to the arbitrary dollar increase in annual cash flow in order to better equate functions that are not often related in the planning process. Hence, the engineer can relate increases in capital expenditures for building equipment to decreases in operating expenses. The leasing agent can relate rental rates to building efficiency or operating expenses. The developer can relate permanent interest rates to loan terms or to percentage rentals to lenders. Examples of these comparisons are discussed on the following pages.

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CASH FLOW PLANNING
DURING THE DESIGN STAGE USING THE
SENSITIVITY TABLE

The data contained in the table entitled CASH FLOW PRO FORMA USING PARAMETER NORMS and in the table entitled SENSITIVITY TABLE can be used to estimate cash flows under conditions not studied during the computer program analysis.

Using the basic data on the attached example, several problems of the following nature can be solved:

Problem 1

What will be the effect on annual cash flow of decreasing the permanent interest rate by 1/2%?

ANS: Increase annual cash flow by approximately \$24,488* to \$114,754.

$0.25\% = \$12,244$. Therefore, $0.50\% = 2(\$12,244) = \$24,488$.

Problem 2

What will be the effect of increasing the operating expense by 10%?

ANS: Decrease annual cash flow by \$31,875 to \$58,391.

10% of \$2.50 = 25¢, which is $2.5 \times 10¢$.

So, $2.5 \times \$12,750 = \$31,875$.

Problem 3

What will be the revised annual cash flow resulting from a reduction of the vacancy rate to 5% and a reduction of annual rental rates by 50¢ per square foot?

ANS: Vacancy reduction increases cash flow by \$54,190

Rental reduction decreases cash flow by -\$57,375.

Pro Forma Cash Flow	\$90,266
Vacancy Reduction	54,190
Rental Reduction	<u>-57,375</u>
Estimated New Cash Flow:	\$87,081**

* Actual amount taken from other output data is \$24,404.

** Actual amount taken from other output data is \$83,891.

Problem 4

What will be the net effect on annual cash flow of an increase of \$75,000 in construction cost and a reduction of \$6000 per year in operating expenses?

ANS:	Increase construction cost	\$ -8,948
	Decrease operating expense	<u>6,000</u>
	Net Increase in Annual Cash Flw	\$ 2,948

Problem 5

What will be the adjusted annual cash flow after a reduction in rental efficiency from 85% to 83% with a decrease in annual rental rates of \$1.00 per square foot for half the building and no change for the balance of the building?

ANS:	Pro Forma Cash Flow	\$ 90,266
	Decrease in Rental Rates by 50¢	-57,375
	Reduction in Efficiency by 2%	<u>-15,450</u>
	Estimated Net Cash Flow	\$ 17,441*

Problem 6

What will be the net effect of increasing the loan ratio from 80% to 85%, increasing vacancy by 5%, and increasing building efficiency by 2%?

ANS:	Loan Ratio increases by 5%	\$ -35,397
	Vacancy Rate increase by 5%	-54,190
	Building Efficiency increased	<u>15,450</u>
	Net Effect on Cash Flow	\$ -74,137

Problem 7

What will be the net effect on the total construction cost and on the resulting cash flow from an increase in the construction period by two months?

ANS:	Total Construction Cost increases by	\$ 73,822
	Annual Cash Flow decreases by	\$ 7,448

* Actual Cash Flow taken from other tables is \$18,791.

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CASH FLOW PRO FORMA USING PARAMETER NORMS

150,000 SQ FT OFFICE BUILDING

6.333 ACRE TRACT - RICHARDSON, TEXAS

DATE: 9/ 5/1974

BLDG: 4444

RUN : 1

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

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

EQUITY REQUIREMENT : \$ 1403232

PERMANENT INTEREST RATE : 9.50 PCT
 TERM OF LOAN 30 YEARS

ANNUAL DEBT SERVICE : \$ 566359

ANNUAL DOLLARS

GROSS INCOME : 127500 SQ FT AT \$ 8.50	1083750
LESS: VACANCY ALLOWANCE OF 10.00 PCT	108375

GROSS EFFECTIVE INCOME	975375
OPERATING EXPENSES: 127500 SQ FT AT \$ 2.50	318750

NET OPERATING INCOME	656625
DEBT SERVICE (10.09 PCT CONSTANT)	566359

PRO FORMA CASH FLOW	90266

RETURN ON EQUITY 6.43 PERCENT

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SENSITIVITY TABLE

150,000 SQ FT OFFICE BUILDING

6.333 ACRE TRACT - RICHARDSON, TEXAS

FIXED PARAMETERS

PAGE 3 OF 4

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

EFFECT OF UNIT CHANGES IN FIXED PARAMETERS

PARAMETER CHANGE	INCREASE IN CASH FLOW	EFFECT ON CONSTRUCTION
DECREASE CONSTRUCTION COST \$ 100,000	11930	-118235
DECREASE CONSTRUCTION \$ 1.00 PER SQ FT	17895	-177352
DECREASE CONSTRUCTION PERIOD 1 MONTH	3724	-36911
DECREASE CONST AND LAND INTERIM 1 PCT	4035	-39987
INCREASE BUILDING EFFICIENCY 1 PCT	7725	
DECREASE RENTAL RATE \$.10 PER SQ FT	11475	
DECREASE VACANCY RATE 1PCT	10838	
DECREASE OPERATING RATE \$.10 PER SQ FT	12750	
DECREASE PERMANENT RATE .25PCT	12244	
DECREASE PERMANENT LOAN TERM BY 1 YEAR	-3514	
DECREASE PERMANENT LOAN TERM BY 5 YEARS	-22121	
DECREASE THE LOAN RATIO BY 5 PERCENT	35397	

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

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

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COMMENTS ON THE USE OF THE UNIT CHANGE FACTORS

This technique is often very useful for quick assistance in estimating cash flows without numerous recalculations. Several problems cannot be satisfactorily solved by this method when unit changes of more than one interdependent variable are calculated. The following variables are interdependent:

Rental Rates.....	Vacancy Rates
Rental Rates.....	Building Efficiency
Expense Rates.....	Building Efficiency

There are 15 different pairs of two parameters, three of which are interdependent; thus, 12 sets are independent. As long as the above three parameters are not varied together, the sums of effects on cash flow are correctly additive as in Problem 4 and 6. When these variables are varied together, their interdependency results in an error as in Problems 3 and 5. This error will usually be fairly small unless the parameter is varied by a large multiple of the unit change.

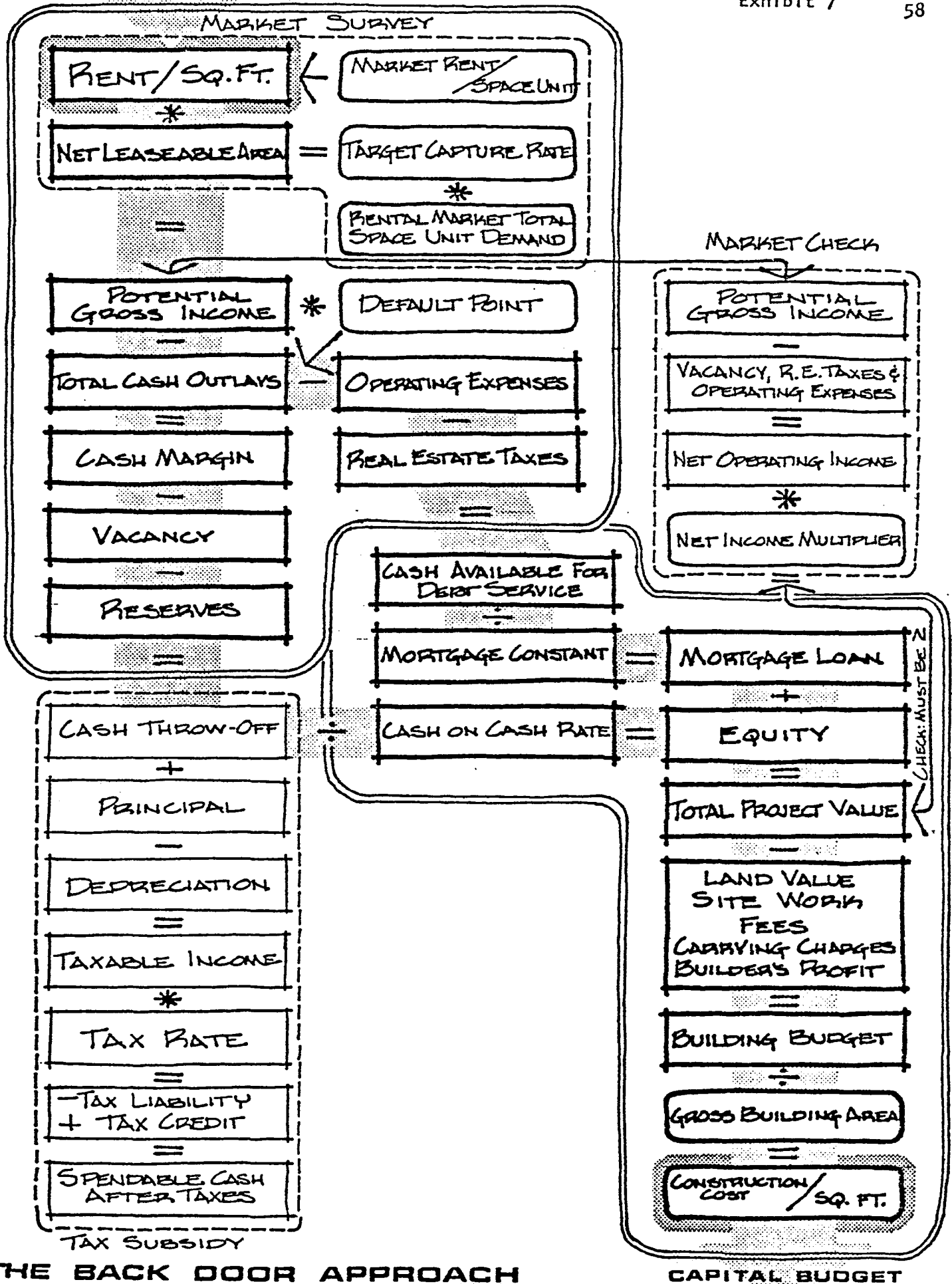
There are 20 sets of three parameters, 10 of which contain interdependent parameters. Therefore, many of the combinations of parameters will yield errors in calculating cash flow in this manner.

When one parameter is varied by unit amounts, the correct annual cash flow can be calculated for all unit changes for all parameters except the financial parameters--rate and term. For this reason, the SENSITIVITY TABLE lists the effect of five-year and one-year reductions in the loan term.

5.000 Market Revenue Model Workshop

The market revenue approach to feasibility involves a series of steps to determine the maximum allowable replacement costs of a project when risk management parameters and gross potential gross rents are known or can be assumed (See Exhibit 7 flow chart).

- 5.100 The market revenue approach is best demonstrated by reference to a worksheet which provides a step-by-step framework for analysis (see Exhibit 8) for demonstration; a sample blank set of worksheets is at the back of the study kit for later office use).
- 5.200 Step 1 is to generate total annual revenues from a separate rent schedule, allocating these revenues if necessary between residential units, commercial space, and other revenue not directly related to rental space the capital budget elements to be measured.
 - 5.210 If no allocation is required, provide total potential revenue in line 130 before deduction for vacancy.
 - 5.220 A more elaborate breakdown of residential units and restatement of commercial income in terms of the same common denominator can be useful in allocating budgets among different types of apartment units or alternative spacing in a mixed use project. Exhibit 8 is a more simplified worksheet.
- 5.300 Step 2 is to determine the total operating expenses and real estate taxes which might be expected for the rental mix in question. The proper unit is whatever the analyst wishes to use that relates to his expense data information and provides some sensitivity to different possible product mixes in various projects.
 - 5.310 Fixed expenses in line 140 and special expenses in line 150 provide opportunity to distinguish between basic expenses and special services which the developer might like to include (say maid service or special guest rooms) which may not be affordable and would be dropped in subsequent calculations on the worksheet.
 - 5.320 At a preliminary stage it may be possible to assume total expenses and taxes (line 190) to be a specific percentage of line 130 and omit calculations from lines 140-180.
- 5.400 A default ratio must then be specified (line 220) appropriate to the volatility of revenue or risk capacity desired for the project.



Rental Structures

100	Total annual revenue from residential	151200					Sp. \$.s
110	Total annual revenue from commercial	104400					Sp. \$'s
120	Potential annual allocated revenue	8100					Sp. \$'s
130	Total Potential Revenue from all sources	263700					Sum lns. (100 + 110 + 120)
	Residential Expenses and Taxes						
140	Fixed Expenses/unit/year	130					Sp. \$'s
150	Special Expenses/unit/year	10					Sp. \$'s
160	Taxes/unit/year	160					Sp. \$'s
	Commercial Expenses & taxes						
170	Expenses/sq.ft.GLA/year	.50					Sp. \$'s
180	Taxes/sq.ft.GLA/year	1.00					Sp. \$'s
190	Total residential exp. & taxes	61800	(130+10+160)(56)				Sum lns (140+150+160) [No. of units]
200	Total commercial exp. & taxes	22500	(.50+1.00)(15000)				Sum lns (170+180) [No. of Sq.ft.GLA] 65
210	Total expenses & taxes	84300	(61800)+22500				Sum lns. (190+200)
220	Default ratio desired	.80					Sp. %
230	Cash available for debt service	126660	[263700(.80)] - 84300				[Ln 130 x ln.(220)] - Ln 210
240	Land lease payment						Sp. \$'s
250	Cash available for mortgage	126660					Ln 230 - 240
	Mortgage Determination						
260	Mtg. constant/\$1000	9260					Sp. \$'s
270	Mtg. capital contribution	1367820					Lns (250/260) x 1000
280	Rent available for vacancy, variance & profit	52740	(263,700)(.20)				Ln 130 x (1-220)
290	Vacancy factor	.05					Sp. %
300	Vacancy cash loss	13185	(263,700)(.05)				(ln 290) (130)
310	Non-Distributable cash & variance factor	.10					Sp. %
320	Non-Distributable cash reserve	5274	(52,740)(.10)				Ln 280-300(310)
330	Cash available for equity dividend	34081	(52,740) - [13185+5274]				Ln 280 - (300+320)
340	Equity cash dividend rate	.08					Sp. %

350	Equity cash investment	426010	$(3408) \div (.08)$	Ln 330/340
360	Total replacement cost (TRC) budget	1793830	$(1,367,829) + (426,010)$	Lum lns (270+350)
370	Construction period (in months)	15		Sp. #
380	Construction interest rate	12		Sp. %
390	Construction interest	102590		$[\text{Ln}(270)] \left[\left(\frac{1}{2} \right) \frac{(\text{Ln } 370) \text{Ln } 380)}{12 \text{ mo.}} \right]$
400	Financing fees @ % mtg.		$05 (1367829) \left[\left(\frac{1}{3} \right) \left(\frac{15}{12} \right) (12) \right]$	Sp. %
410	Financing fees	68390		Lns (270 x 400)
420	Carrying charges	25000		Sp. \$'s
430	Consultant/developers fees	50000		Sp. \$'s
440	Total hard dollar budget	1547850	$(1793830) - \left[\begin{array}{l} (102590) + \\ (68390) + \\ (25000) + \\ (50000) \end{array} \right]$	Lns (360 - (390+410+420+430))
450	Land	113500		Sp. \$'s
460	Off-site improvements			Sp. \$'s
470	Total structures & reserves	1434350	$(1547850) - (113500)$	Lns 440 - (450+460)
480	Contingency reserve			Sp. \$'s
490	Architect-engineering fees			Lns (470 x (Sp. % of structure cost))
500	Total hard dollar structures budget	1312600	$(1434350) - (114750)$	Lns 470 - (480+490)
510	Non-allocated budget	0		Sp. \$'s
520	Total allocated structures budget	1312600		Lns (500-510)
530	Gross residential sq. ft./unit			Sp. #
540	Gross residential sq. ft.	60500		Ln 530 x Sp. # residential units
550	Gross commercial sq. ft.	15000		Sp. #
560	Cost/commercial sq. ft. @ %/residential, cost/sq.ft.		85	Sp. %
570	Gross adjusted commercial sq. ft.	12700	$(15000)(.85)$	Ln 550 x 560
580	Total adjusted sq. ft.	73200	$(60500) + (12700)$	Ln (540) + 570
590	\$'s/residential sq. ft.	18.03	$(1312600) \div (73200)$	Lns (520/580)
600	\$'s/commercial sq. ft.	15.32	$(18.03)(.85)$	Ln (590 x 560)
610	Total residential structure budget	1090815	$(18.03)(60500)$	Lns (540 x 590)
620	Total commercial structure budget	238785	$(1312600) - (1090815)$	Lns (520-610)

- 5.410 The default ratio times total potential revenue (line 130) then reveals the total cash normally available for expenses, real estate taxes and debt service. Subtracting total expenses in line 210 yields the total cash available for debt service in line 230.
- 5.420 The total potential revenue minus expenses and debt service indicates cash available for allocation to vacancy losses, potential increases in expenses and taxes, and cash dividends to equity.
- 5.500 Step 3 of the worksheet is intended to estimate the debt and equity structure which might be supported by the forecasted revenue stream.
 - 5.510 The key is to determine the amount of mortgage money available for permanent financing (line 250).
 - 5.520 Land lease payments (specified in line 240) have priority and are a form of debt service.
 - 5.530 For pre-tax cash flow analysis all that is needed is the annual mortgage debt service constant (line 260) appropriate to financing terms to be sought or available. This constant is 12 times the monthly payment per \$1000 divided by 1000 for fixed term loans, as stated by the lender for constant payments loans, as stated by FHA for available insured loans, or can be calculated as a weighted average of the terms for several mortgages combined.
 - 5.540 Dividing the constant (line 260) into cash available for debt service (line 250) will determine the total face amount of mortgage capital which can be supported by the project at an acceptable break-even point.
- 5.600 Rent available for vacancy and profit is determined as $1 - \text{the default point} \times \text{the gross rent in line 130}$.
 - 5.610 A vacancy factor has a % of total potential revenue in line 130 is specified in line 290 and used to compute the vacancy cash loss in line 300. If the analyst has completed a rent roll for a mixed residential and commercial project, it would be preferable to compute cash loss to vacancy by determining the space vacancies for each type of unit and then converting space-time unit vacancy to cash loss.
 - 5.620 A factor for non-distributable cash and an allowance for variance in estimates of potential income or vacancy can be introduced in line 310 to compute a non-distributable cash item in line 320. It is stated as a percentage of available cash after vacancy but could be given a specific dollar amount.

- 5.630 Potential cash in line 280 is thus reduced to cash available for equity dividends (often called cash on cash return) in line 330.
- 5.640 Cash available divided by the minimum acceptable cash dividend rate or constant specified in line 340 then determines the maximum equity cash investment justified under the conditions outlined.
- 5.650 Total replacement costs for total justified investment value (line 360) is the sum of the supportable mortgage capital position in line 270 and the equity cash investment in line 350.
- 5.700 To reduce the total investment budget to the total hard cost budget, it is necessary to remove indirect costs for construction financing, carrying charges and consultant development fees.
- 5.710 Construction loan interest requires an estimate of the construction period in months (line 370), the construction loan interest rate (line 380) per year and the assumption that one half of the construction loan would be outstanding on the average during the construction phase. The worksheet further assumes that the construction loan is equal to the permanent mortgage amount determined in line 270 but the analyst could reduce this assumption as appropriate.
- 5.720 In addition to the construction interest calculated in line 390, financing fees as a percent of the loan amount (or points) can be specified in line 400 and the dollar amount entered on line 410.
- 5.730 Miscellaneous carrying charges including real estate taxes and insurance can be specified as a dollar amount in line 420.
- 5.740 Consultant and developer fee can be specified in line 430.
- 5.750 When these indirect charges are subtracted from total justified replacement cost (line 360) it is possible to state the total hard cash dollar budget available for land, construction, and contingency reserves in line 440.

- 5.760 Given a specification for a land cost in dollars (line 450) and off site improvements (line 460) it is then possible to determine total budget for structures and contingency reserves in line 470.
- 5.770 Specification of a contingency reserve percentage for construction costs or a dollar amount in line 480 and specification of architect-engineering commission rate or dollar amount in line 490 then makes it possible to isolate the total hard dollar budget for structural improvements (line 500).
- 5.800 Structural hard dollar budgets are more meaningful if distributed among various types of space uses for mixed use projects. The worksheet demonstrates one possible allocation between residential and commercial space but the analyst may choose to make his allocations on some other basis such as between site improvements, structure and furnishing - whatever is appropriate to the problem. Remember models must change as the questions requiring answers change.
- 5.810 Total hard dollar structure budgets should first be reduced by non-allocated costs appropriate for common items such as site improvements or special off-site improvement costs or for spaces producing income that were unallocated in line 510.
- 5.820 The remaining allocated structures budgets in line 500 can then be distributed by allocating among gross sq. ft. of space of different uses. On the worksheet commercial sq. ft. is adjusted by a factor to make it equivalent to residential sq. ft. For example, unfinished commercial space might cost only 80% of residential space so that in effect one could build 1.25 sq. ft. of commercial area for the same number of dollars required to build one sq. ft. of finished residential. The total adjusted sq. ft. is entered in line 570.
- 5.830 The dollars per sq. ft. determined in 590 and 600 or the total budgets in 610 and 620 become part of the pre-architectural constraint on the design. If these numbers are obviously unattainable based on the experience of the analyst or other professional advice, there is immediately a problem of examining the assumptions, the rental structure and the product size. Or a return to the capital structure approach could determine what rents might work for the costs in question.
- 5.900 The input for the market revenue approach and the test of the capital structure approach both depend on a thorough analysis of the market and motivations of the consumer relative to the client. (See 6.000).

- 5.910 Detailed analysis of a market will permit the analyst to make "if/than" statements based on the result of the market revenue worksheet above.
- 5.920 Where no site has been selected and general construction costs are known, it would be possible to modify the worksheet slightly to solve for the allowable land cost which would then become a guide for site selection and purchase, a process not unlike the land residual approach in appraisal.
- 5.930 For existing buildings where market rents are known the market revenue approach produces a justified capital investment which can be subtracted from cost to replace new to determine economic obsolescence of project. It provides a useful support to a tax assessment challenge where the assessor has rightly or wrongly used the cost approach.

6.000 Real Estate Market Analysis

Marketing research provides the key input for the market revenue worksheet and the key tests as to the acceptability of the conclusions based on the capital outlay worksheet. Since there is more plausible but overly general data in most cases than one can use, market and merchandising analysis both require a systematic approach which will discard most of the data as irrelevant at any particular time and focus the remaining information on a specific problem.

- 6.100 Most feasibility cases require the analyst to create his own models with which to structure the data available and the data which must be researched.
 - 6.110 Remember, models organize the analyst, the report, and the client.
 - 4.411 Models explain what you are going to do
 - 4.412 Models make relationships and key assumptions explicit
 - 4.413 Models permit clients to understand logic of conclusion and to test his own set of assumptions.
 - 6.120 A market research model should be careful to recognize:
 - 6.121 What are the questions?
 - 6.122 What data is available which is relevant?
 - 6.123 What theory is available to focus data on the questions?
 - 6.124 How will the results be communicated?
 - 6.125 What are the abilities of the analyst?
 - 6.126 What is the cost benefit ratio between the model method and the question?
 - 6.130 Market data refers to aggregate data, secondary information, the easy to acquire data from census tracts, traffic counts, building permits, and so on.

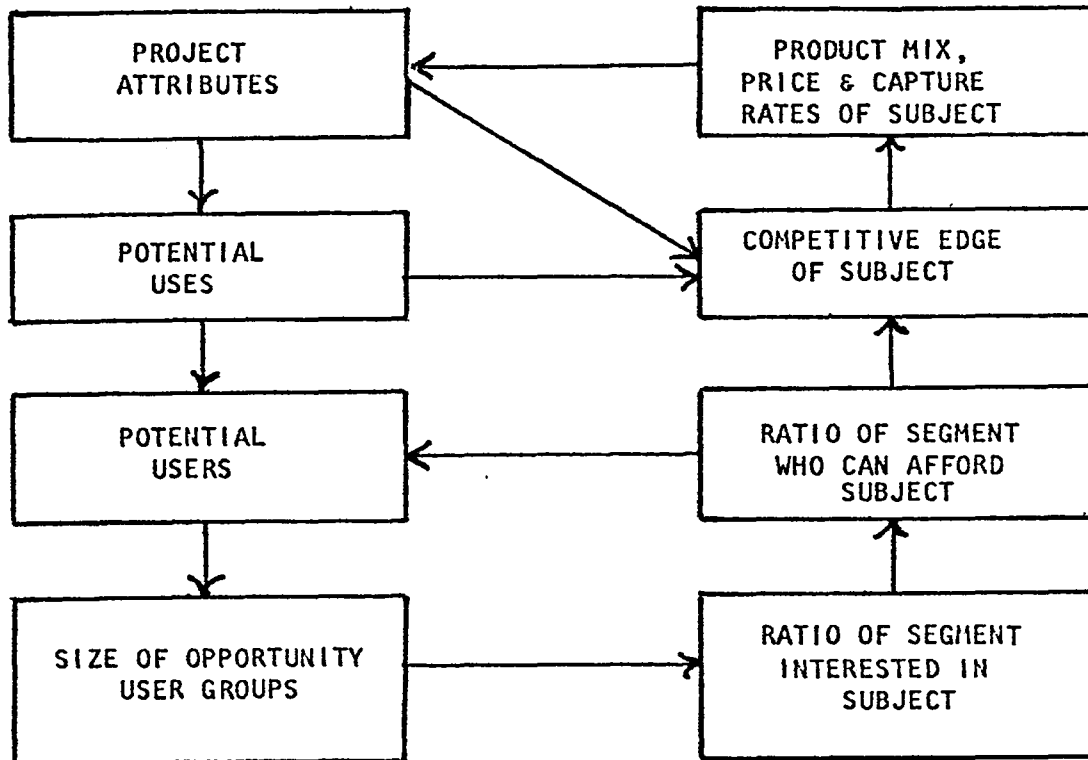
It is useful to scale the size of the market potential, of the opportunity area but by itself aggregate market data is relatively unimportant to the success of most projects.

- 6.140 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.
- 6.141 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 sq. ft. of leased office space were occupied.
- 6.142 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.
- 6.150 Unlike appraisals the feasibility analyst generally begins with a particular users group in mind and then relates this target to the larger economic scene. As Exhibit #9 suggests, site analysis identifies one or more probable user types or client preference or intuition as focused on a rental range and therefore market segment he may wish to serve.
- 6.151 The relationships between the determinance the project attributes and market requirements as to product mix, amenities, and price are reversible procedures depending on whether we have a physical property in search of a user group or a user group for which a physical property is sought or is to be designed.
- 6.152 A more complex flow chart of the market research process is provided in Exhibit 10.
- 6.160 Before analyzing the relationship between the physical attributes of the site or project and merchandising requirements to reach the potential users of that site, some of the basic market research techniques appropriate to either case will be examined.

COFFEE BREAK

EXHIBIT #9

SEGMENTATION LOGIC TREE



- 6.200 Either site characteristics or required rent levels begin to suggest editing devices which will permit discarding of much aggregate data. The analyst must begin with a broadly defined scenario or model of the research problem in order to reduce aggregate data to a measure of market opportunities.
- 6.210 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:
- 6.211 Primary market area to be served
 - 6.212 Secondary market area to be served
 - 6.213 Principal competitors
- 6.220 Consider Exhibit 10 as a simple market model to define the size of an opportunity area in a selected county for elderly persons requiring residential care units.
- 6.221 For lines with asterisks the key ratios for reduction were derived from a survey of the elderly generating primary data for this county.
 - 6.222 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 conventional housing market - hence the reduction from 19,700 to only 4,200. This chart should have showed the ratios from the survey.
 - 6.223 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.
- 6.230 Consider Exhibits 11-12, extended tabular models to project household growth and bank deposits for a branch bank in a planning district where population and building permit data is integrated with low-level air survey photography on a quarter-quarter section basis.
- 6.240 Consider Exhibit 13, a flow chart to diagram the relationships by which market data is eventually converted to gross revenue. This chart is placed near the beginning of the report to communicate where the analyst is going and how he proposes to get there. The answer is given and then the assumptions are documented like footnotes to an accounting statement.

EXHIBIT 10
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	<u>245</u>
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	<u>638</u>
	<u>2,430</u>
Persons age 65+ in the conventional housing market in County in 1974	19,729
* Estimated number of persons financially qualified for and seriously interested in moving into the proposed residential care development	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)	<u>76</u>
	<u>263</u>
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%)	<u>127</u>
Elderly households qualified for and seriously interested in moving into the proposed development	1,269
* Share of market opportunity area who stated 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
	<u>77.1%</u>
	978
Less estimated numbers of households who might move into competitive developments available supply of units	<u>270</u>
Households that can be considered candidates for the proposed development	708
That share of households who said they would be willing to move:	
Within 1 year from now	15.6% - 110 households
Within 2 years	31.2% - 220 "
Within 5 years	53.4% - 378 "
	<u>708</u>
A project of 100 units requires a capture rate of:	
91% for a 1 - year absorption rate	
90% for a 2 year	" "
14% for a 5 year	" "

HOUSEHOLD GROWTH RATE - PRIMARY TRADE AREA 1970-1972
(Basis for household projection, 1974-1980)

Section	Quarter Section	Households 1970	Increase Households 1970-1972	Households 1972	Increase(%) Household 1970-1972
23	3	13	0	13	0
	4	44	0	45	0
24	1 .25	16	3	19	9 *
	2 .25	10	0	10	0
	3	4	0	4	0
	4	2	0	2	0
25	1	130	50	180	19 *
	2	134	8	142	3 *
	3	36	12	48	17 *
	4	323	104	427	16 * (NG)
26	1	145	4	149	1 *
	2	3	0	3	0
	3	8	0	8	0
	4	1	0	1	0
27	1 .50	0	-	-	-
	4 .67	125	52	177	21 *
34	1	1	0	1	0
	4	5	0	5	0
35	1	28	0	28	0
	2	8	0	8	0
	3	0	0	0	0
	4	25	0	25	0
36	1	23	3	26	7 *
	2	51	5	56	5 *
	3	9	0	9	0
	4	10	0	10	0
19	1 .50	317	4	321	1 * (NG)
	2 .50	240	10	250	2 * (NG)
	3	529	7	536	1 * (NG)
	4	511	1	512	0 (NG)
30	1	273	0	273	0 (NG)
	2	285	40	325	7 *
	3	113	11	124	5 *
	4	19	0	19	0
31	1	20	0	20	0
	2	142	19	161	7 *
	3	10	0	10	0
	4	7	0	7	0
TOTALS		3620	334	3954	4.6%
HGA ('70-'72) *		2609	334	2943	6.4% = G '70-'72
HNG '72 (NG)				2319	
HGA '72				1635	

HOUSEHOLD PROJECTION - CALCULATIONS
1974 - 1980

GIVEN: H = Number of Households

HGA ('72) = Total # Households in Growth Areas (*) 1972

HGA ('74) = Total # Households in Growth Areas (*) 1974

HNG ('72) = Total # Households No Growth Areas NG - 1972

HI ('72-'74) = Increase # Households (1972-1974)

HI ('74-'80) = Increase # Households (1974-1980)

G ('70-'72) = Annual Projected Increase (%) # Households

Na = Number of Years/'72-'74 Projection Period = 2

Nb = Number of Years/'74-'80 Projection Period = 6

THEN: H 1974 = HNG ('72) + HGA ('72) + HI ('72-'74)

WHERE: HI ('72-'74) = [HGA ('72)] [G ('70-'72)] Na

AND: H 1980 = HNG ('72) + HGA ('74) + HI ('74-'80)

WHERE: HI ('74-'80) = [HGA ('74)] [G ('70-'72)] Nb

EXHIBIT 12b

I. 1974 - HOUSEHOLD PROJECTIONS

A. Primary Trade Area (PTA)

$$\begin{aligned}
 \text{Given: } G ('70-'72) &= 6.4\% \\
 HNG ('72) &= 2319 \\
 HGA ('72) &= 1635 \\
 HI ('72-'74) &= [HGA ('72)] [G ('70-'72)] Na \\
 &= (1635) (.064) (2) \\
 &= 209
 \end{aligned}$$

$$\begin{aligned}
 \text{Therefore: PTA - H 1974} &= HNG ('72) + HGA ('72) + HI ('72-'74) \\
 &= 2319 + 1635 + 209 \\
 &= \underline{\underline{4163}}
 \end{aligned}$$

B. Secondary Trade Area - A

$$\begin{aligned}
 \text{Given: } G ('70-'72) &= 4.8\% \\
 HNG ('72) &= 590 \\
 HGA ('72) &= 390 \\
 HI ('72-'84) &= [HGA ('72)] [G ('70-'72)] Na \\
 &= (390) (.048) (2) \\
 &= 37
 \end{aligned}$$

$$\begin{aligned}
 \text{Therefore: STA (A) - H 1974} &= HNG ('72) + HGA ('72) + HI ('72-'74) \\
 &= 590 + 390 + 37 \\
 &= \underline{\underline{1017}}
 \end{aligned}$$

C. Secondary Trade Area - B

$$\begin{aligned}
 \text{Given: } G ('70-'72) &= 2.5\% \\
 HNG ('72) &= 2297 \\
 HGA ('72) &= 535 \\
 HI ('72-'74) &= [HGA ('72)] [G ('70-'72)] Na \\
 &= (535) (.025) (2) \\
 &= 27
 \end{aligned}$$

$$\begin{aligned}
 \text{Therefore: STA (B) - H 1974} &= HNG ('72) + HGA ('72) + HI ('72-'74) \\
 &= 2297 + 535 + 27 \\
 &= \underline{\underline{2858}}
 \end{aligned}$$

D. Secondary Trade Area - C

$$\begin{aligned}
 G ('70-'72) &= 8.5\% \\
 HNG ('72) &= 3574 \\
 HGA ('72) &= 1326 \\
 HI ('72-'74) &= [HGA ('72)] [G ('70-'72)] Na \\
 &= (1326) (.085) (2) \\
 &= 225
 \end{aligned}$$

$$\begin{aligned}
 \text{Therefore: STA (C) - H 1974} &= HNG ('72) + HGA ('72) + HI ('72-'74) \\
 &= 3574 + 1326 + 225 \\
 &= \underline{\underline{5125}}
 \end{aligned}$$

EXHIBIT 12c

II. 1980 - HOUSEHOLD PROJECTIONS

A. Primary Trade Area (PTA)

$$\begin{aligned}
 \text{Given: } G ('70-'72) &= 6.4\% \\
 \text{HNG ('72)} &= 2319 \\
 \text{HGA ('74)} &= 1844 \\
 \text{HI ('74-'80)} &= [\text{HGA ('74)}] [\text{G ('70-'72)}] \text{ Nb} \\
 &= (1844) (.064) (6) \\
 &= 708
 \end{aligned}$$

$$\begin{aligned}
 \text{Therefore: PTA H 1980} &= \text{HNG ('72)} + \text{HGA ('74)} + \text{HI ('74-'80)} \\
 &= 2319 + 1844 + 708 \\
 &= \underline{\underline{4871}}
 \end{aligned}$$

B. Secondary Trade Area - A

$$\begin{aligned}
 \text{Given: } G ('70-'72) &= .048 \\
 \text{HNG ('70)} &= 590 \\
 \text{HGA ('74)} &= 427 \\
 \text{HI ('74-'80)} &= [\text{HGA ('74)}] [\text{G ('70-'72)}] \text{ Nb} \\
 &= (427) (.048) (6) \\
 &= 123
 \end{aligned}$$

$$\begin{aligned}
 \text{Therefore: STA (A) - H 1980} &= \text{HNG ('72)} + \text{HGA ('74)} + \text{HI ('74-'80)} \\
 &= 590 + 427 + 123 \\
 &= \underline{\underline{1140}}
 \end{aligned}$$

C. Secondary Trade Area - B

$$\begin{aligned}
 \text{Given: } G ('70-'72) &= 2.5\% \\
 \text{HNG ('72)} &= 2296 \\
 \text{HGA ('74)} &= 562 \\
 \text{HI ('74-'80)} &= [\text{HGA ('74)}] [\text{G ('70-'72)}] \text{ Nb} \\
 &= (562) (.025) (6)
 \end{aligned}$$

$$\begin{aligned}
 \text{Therefore: STA (B) - H 1980} &= \text{HNG ('72)} + \text{HGA ('74)} + \text{HI ('74-'80)} \\
 &= 2296 + 562 + 84 \\
 &= \underline{\underline{2942}}
 \end{aligned}$$

D. Secondary Trade Area (C)

$$\begin{aligned}
 \text{Given: } G ('70-'72) &= .085 \\
 \text{HNG ('72)} &= 3574 \\
 \text{HGA ('74)} &= 1551 \\
 \text{HI ('74-'80)} &= [\text{HGA ('74)}] [\text{G ('70-'72)}] \text{ Nb} \\
 &= (1551) (.085) (6) \\
 &= 791
 \end{aligned}$$

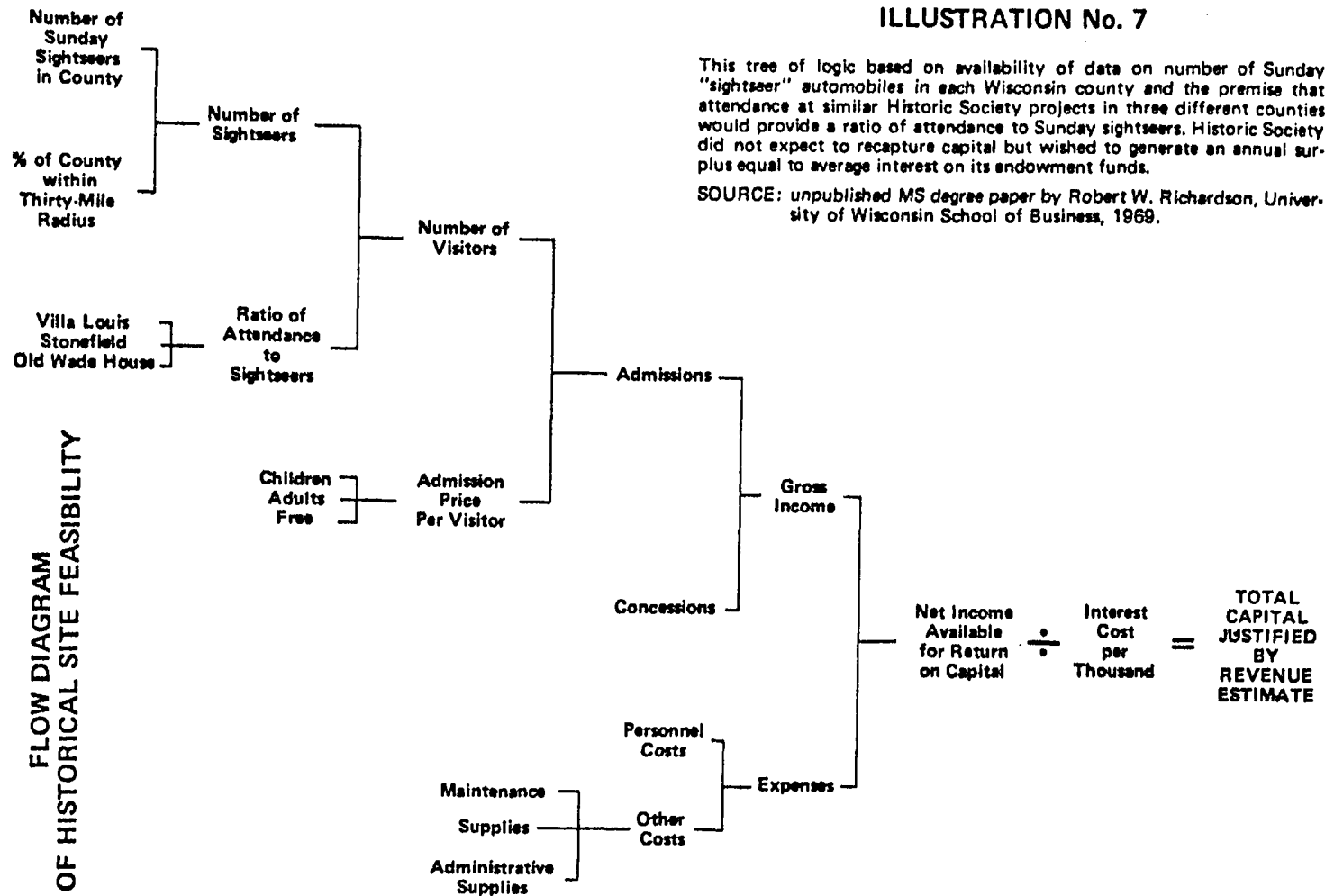
$$\begin{aligned}
 \text{Therefore: STA (C) - H 1980} &= \text{HNG ('72)} + \text{HGA ('74)} + \text{HI ('74-'80)} \\
 &= 3574 + 1551 + 791 \\
 &= \underline{\underline{5916}}
 \end{aligned}$$

EXHIBIT 13

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.

This approach is just the opposite of many studies which catalog data ad nauseum and then arrive at a conclusion out of the wilderness, leaving no trail to follow.

6.250 Many projects require several different aggregate data models to scale the size of the opportunity or the absorption rate. A building with four types of apartment units implies four different groups of prospect; the same space may be suitable for different prospects; price differentiation may reach different groups; and the seasons may segment different customer groups. Each group requires consideration of a different aggregate demand model and capture rate model.

6.251 For apartments the analyst may need to consider family situation:

Singles:

- . unmarried
- . divorced
- . widowed

Couples:

- . roommates
- . newly married
- . married couples without children
- . empty nesters
- . retired

Families:

- . pre-school age children
- . grammar school age children
- . high school age children
- . children of varied ages
- . divorcee with children

6.252 The primary trade area for an apartment building might be defined by the prospects type of current residents, location, husband's occupation, or wife's occupation, not to mention income.

6.253 An office building may appeal to lawyers, accountants, trade associations, and lobbyists but the absorption rate potential will be modified by the average length of their existing lease no matter how superior the proposed new building.

6.254 To construct a market demand base for a northern Wisconsin resort center, there were nine different aggregate demand models and capture rate models required:

Summer Season:

- . Vacationers by the week
- . Summer travelers by the night
- . In-house summer seminars

Off-Season: (Fall & Spring)

- . Business seminars
- . Weekend mini-vacations for fall color
- . Miscellaneous travelers

Winter Season:

- . Weekend skiers on ski hill
- . Cross-country skiers
- . Snowmobilers
- . Mini-vacationers
- . Business meetings - Monday through Thursday

- 6.260 The analyst must learn to make the best use of secondary data wherever he can find it by creating his own models and these models must show the client the logical, systematic progression from aggregate data to edited information. True, many of the initial assumptions are common sense and convenience but the error in those may not be significant as further reductions of data are made.
- 6.261 Those assumptions which are crucial become visibly apparent and become the target of more exacting research expense.
- 6.262 Those assumptions when shown to be relevant remind the client of data in his own record system which he had not realized would be relevant.
- 6.263 The initial models become a device for further dialogue with the client.
- 6.264 Remember that the model should relate to the question, namely delineation of the general group of consumers and not a nose-counting census.
- 6.265 Remember there is a difference between precision and accuracy and one can have no more accuracy than is implicit in the assumptions. Precision is simply doing the mathematics correctly.

LUNCH

AFTERNOON - SECOND DAY

7.000 Selecting Market Targets or a Market Position Within a Defined Market Opportunity

Notwithstanding the feasibility analyst is a generalist, whose conclusions must be confirmed at a later stage of planning, the analyst is expected to place his major effort on development of a merchandising strategy designed to secure a competitive market position for the project proposal.

- 7.100 Free enterprise is the art of creating one's own monopoly, if only for a moment, in the mind of the buyer, monopoly characteristics depend on careful market segmentation.
 - 7.110 Site and building characteristics of an existing building already provide a product profile which suggests the market segments.
 - 7.120 Preferably careful identification of the prospect will permit development of a customer profile who will be the source of a product profile that would provide the most satisfaction.
- 7.200 As a result of merchandising research the analyst should be able to construct a hypothetical marketing program which defines:
 - 7.210 The most probable user groups and their effective demand constraints.
 - 7.220 The timing of their effective demand in the market.
 - 7.230 The competitive standard product minimum.
 - 7.240 The competitive product edge necessary for monopoly advantage
 - 7.250 Basic elements of a required promotion program
- 7.300 To build these assumptions or marketing hypothesis the first clue to segmentation may be found in correctly understanding the essence of buyer motivation or of the activity to be housed.
 - 7.310 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.
 - 7.320 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.

- 7.330 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."
- 7.340 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 hour, or per hour of ice time.
- 7.350 Sometimes the prospect is identified by who really signs the check for a particular type of real estate.
 - 7.351 The salesman or the management paying his travel costs
 - 7.352 The doctor or the clinic
 - 7.353 The district manager or the corporate real estate manager
 - 7.354 The ticket buyer or the promoter
 - 7.355 The bowling league, team business manager, travel agency tour guide
- 7.360 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.
 - 7.361 A reverse directory or criss-cross telephone book
 - 7.362 Building directories of comparables
 - 7.363 Mailing lists of specialty publications
 - 7.364 License number spotting
 - 7.365 Guest registers
 - 7.366 Charge account mailing addresses
- 7.400 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.
- 7.410 Unlike most consumer markets, the number of prospects is always low; think small!
 - 7.411 Real estate is a series of micro-markets. A 24-unit building with one, two, three bedroom units has at least three sub-markets.
 - 7.412 A 24-unit building is a \$500,000 enterprise with a \$75,000 gross sales potential from only 24 customers!

- 7.420 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.
- 7.421 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.
- 7.422 Comparison shopping should not only identify the physical characteristics of the product and price but the nature of the promotion effort as well.
- 7.423 Promotion comparison should consider pedestrian and vehicle approaches, model location, furnishings, and sales people.
- 7.424 Review of the promotion campaign should reveal whom the competitors believe to be their prospect.
- 7.430 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.
- 7.431 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.
- 7.432 Survey questions to create ratios require previous construction of a market model hypothesis.

7.500 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.

- 7.510 With a preliminary hypothesis as to the prospect, survey questions may be intended to provide:
 - 7.511 Key ratios necessary for segmentation of market data already broken down by trade area, demographics, employment, etc.
 - 7.512 Key indicators of anxieties or preferences or tradeoffs of the prospect.

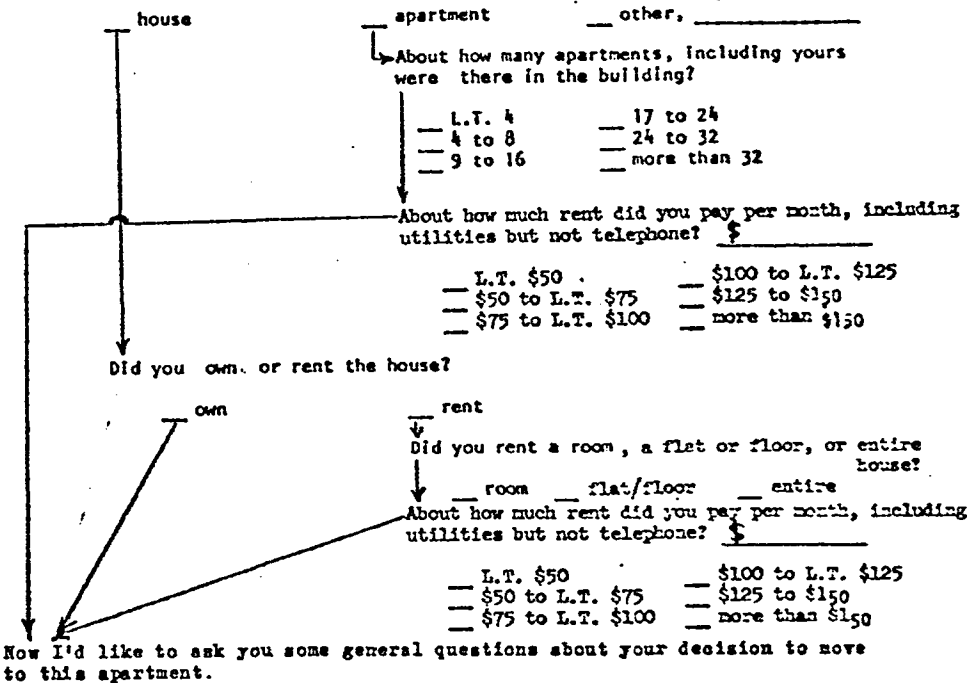
Simple Survey Formats for Classification of Subsets & Measurement of Preference

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

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



7. How did you first find out about them?

- ☐ family ☐ newspaper
☐ friends ☐ radio
☐ church ☐ television
☐ Housing Authority ☐ 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

- 7.513 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).
- 7.520 Consider the elderly housing market chart in Exhibit 11. 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.
- 7.530 The ratio sought by the survey follow a precise reduction pattern:
- 7.531 How many will consider moving?
 - 7.532 Of those, how many would consider staying in town?
 - 7.533 Of those, how many would consider an apartment?
 - 7.534 Of those remaining who would consider an apartment in town, how many would consider a specific location?
 - 7.535 Notice the reduction process defines a subset of the elderly market - a micro-market.
- 7.540 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.
- 7.541 Confine vocabulary to basic 1000 words; avoid lingo.
 - 7.542 Structure questions to permit check-off, or branching to set up subsets. (See Exhibit 16)
 - 7.543 Always test the questionnaire on half a dozen prospects or friends to reveal misunderstandings before using on the market.
 - 7.544 Questions may take different formats. (See Exhibit #14)

- 7.550 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.
- 7.551 Probe for dissatisfaction with existing space or life style.
- 7.552 Probe for anxieties about uncontrollable trends and events.
- 7.553 Probe for desired social structure ties, real or imagined.
- 7.560 The real estate analyst can choose between systematic telephone interviews, direct mail questionnaires, and personal interviews in depth.
- 7.561 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, 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 15)
- 7.562 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.
- 7.563 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:
- 7.564 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?

EXHIBIT #15

Telephone Survey Script - Elderly Housing

Prepared and executed by
James R. DeLisle, June, 1974

PRE-SURVEY INFO.

Survey
Turnkey Elderly Housing
Triangle Project
Madison, Wis.

Code of Interviewer ☒ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5

PROJECT CODE Code of Project

☒ Braxton
☐ Romnes
☐ Tenney Park

Sex of Respondent ☐ Male ☒ Female

INTRO.

Hello, my name is _____. We are conducting a survey of residents of elderly housing apartments so that we may identify those features of apartment design and planning that are satisfying to residents, as well as those that are irritations.

The purpose of seeking your responses to these questions, is to provide a base of information from you --the real experts on housing for the elderly-- upon which we can make specific recommendations to developers of the proposed elderly housing project on the Triangle Urban Renewal Area, here in Madison. This information will result in an improved living environment in the proposed housing project. Your responses are confidential and you will not be identified as an individual.

Would you mind answering a few questions ? Thank you.

PRIOR LIVING EXPERIENCE

1. When did you move into your present home ?

Note:
Lead options
only when arrow
is shown as in
question # 2)

☐ 1960 to 1965
☐ 1966 to 1968
☒ 1969 to 1970

☐ 1971 to 1972
☐ 1973 to 1974

2. What type of home did you live in before moving to your present home ?

↓ ☒ one family house
☐ two family house
☐ other _____

↓ ☐ 1 to 4 unit apartment bldg.
☐ 5 or more unit apt. bldg.
☐ other _____

3. How long did you live in your former home ?

☐ less than 6 month
☐ 6 mo. to 1 year
☐ 1 - 2 years

☒ 2 - 5 years
☐ 5 -10 years
☐ Over 10 years

4. Was your previous home:

☐ owned by you (or you and your spouse)
☐ owned by your family (or your spouses' family)
☒ occupied without cash rent
☐ rented by you (or you and your spouse)

-----> How much was your rent each month ?

<input type="radio"/> less than \$50	<input type="radio"/> \$100 to 125
<input type="radio"/> \$50 to 75	<input checked="" type="radio"/> \$125 to 175
<input type="radio"/> \$75 to 100	<input type="radio"/> \$175 or more

Did your rent include:

Electricity	<input type="radio"/> yes	<input checked="" type="radio"/> no
Heat	<input type="radio"/>	<input type="radio"/>
Water	<input checked="" type="radio"/>	<input type="radio"/>
Gas	<input type="radio"/>	<input type="radio"/>

☒ DNA

Present Living Experience | YOUR RESPONSES TO THE FOLLOWING QUESTIONS WILL TELL US WHAT YOU FEEL IS IMPORTANT IN AN APARTMENT SPECIFICALLY DESIGNED FOR THE ELDERLY

5. Which of the rooms in the apartment should be the largest, second largest, and third largest ?

	Largest	Second Largest	Third Largest
<input type="radio"/> Kitchen-Dining area	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
<input type="radio"/> Living Room	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/> Bedroom	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>

6. Is your present home:

☐ too large for your needs
☒ too small for your needs
☐ just right for your needs

7. How many people live with you in your apartment ?

<input checked="" type="radio"/> none	<input type="radio"/> three
<input type="radio"/> one	<input type="radio"/> four
<input type="radio"/> two	<input type="radio"/> five or more

If you could change your present apartment by making one room larger and one room smaller;

8. Would you make your:

- ↓ ☒ LR larger; BR smaller or/
☐ BR larger; LR smaller or/
☐ leave them like they are

9. Would you make your:

- ↓ ☒ LR larger; K-D area smaller or/
☐ K-D area larger; LR smaller or/
☐ leave them like they are

OPTIONAL UNIT FEATURES

If you had to select one of the following:

10. Would you prefer:

- ↓ ☒ A dining area in the kitchen or/
☐ A dining area next to the kitchen

11. Would you prefer:

- ↓ ☒ A bathroom door opening to bedroom only or/
☐ A bathroom door opening to living room area only

12. Would you prefer:

- ↓ ☒ A large closet area in the bedroom or/
☐ A large closet area in the living-dining-kitchen area

13. Would you prefer:

- ↓ ☒ A balcony or
☐ Slightly larger apartment size

14. Would you prefer:

- ↓ ☒ Larger closet space or
☐ More open space in your apartment

OPTIONAL PROJECT FEATURES

15. If you had the choice, would you want:

- ↓ ☐ A larger apartment and less community space or/
☒ A smaller apartment and more community space or/
☐ make no change

If you had to select one of the following:

16. Would you prefer:

- ↓ ☒ One large room with a music area, T.V. area, conversation area, and a small library or/
☐ Several smaller separate rooms for each of these activities, in addition to a central lounge

17. Would you prefer:

- ↓ ☐ A special lounge area for children of guests or/
☒ A larger main lounge

18. Should there be a separate lounge for women only ☒ (yes) and a separate lounge for men only ☒ (yes) No

19. Is there a craft or hobby room in the building you live in now ?

☒ yes
☐ no

20. Would you like ☐ (do you like) a crafts room ?

☐ no
☒ yes

21. For what crafts would you ☐ (do you) use the craft room ?

☐ Pottery
☐ knitting and crocheting
☐ painting
☒ weaving
☐ photography

☐ woodworking
☐ sewing
☐ copper enameling
☐ other _____
☐ other _____

22. How many times a week would you ☐ (do you) use the room ?

☐ less than once a week
☐ once
☐ twice
☒ three

☐ More than 3 times
☐ Never

23. Should the crafts room be:

- ↓ ☒ one large room for all crafts or/
☐ several smaller rooms for each craft

PROJECT MASS / SCALE Misc.

THE FOLLOWING QUESTIONS WILL PROVIDE US WITH INFORMATION AS TO WHAT YOU FEEL IS ESSENTIAL IN A HIGH RISE BUILDING FOR THE ELDERLY. WHILE WE REALIZE THAT SOME PEOPLE DO NOT LIKE HIGH RISE STRUCTURES IT IS ESSENTIAL THAT WE FIND OUT HOW WE CAN BEST DESIGN SUCH A BUILDING TO MINIMIZE THE IRRITATIONS AND MAXIMIZE THE BENEFITS TO THE RESIDENTS.

If you had to live in a high rise building:

24. Would you prefer:

- ☒ A six story building with 16 apartments and neighbors on each floor or/
☐ A ten story building with 10 apartments and neighbors on each floor

25. Would you prefer:

- ☒ A six story building with less open space outside or/
☐ A ten story building with more open space outdoors

26. Would you prefer:

- ↓ ☒ a large laundry room with adjacent bathrooms on one floor or/
☐ smaller laundry facilities (one washer and dryer) on each floor

27. Would you prefer:

- ↓ ☐ small lounges on each floor or/
☒ a larger main lounge

28. Would you prefer:

- ☐ An enclosed roof top sun deck or/
☒ a larger patio area outdoors

ADDITIONAL
COMMENTS

ARE THERE ANY ADDITIONAL SUGGESTIONS YOU WOULD LIKE TO MAKE ?

more exits in case of fire

THANK YOU FOR YOUR HELP. GOODBYE.

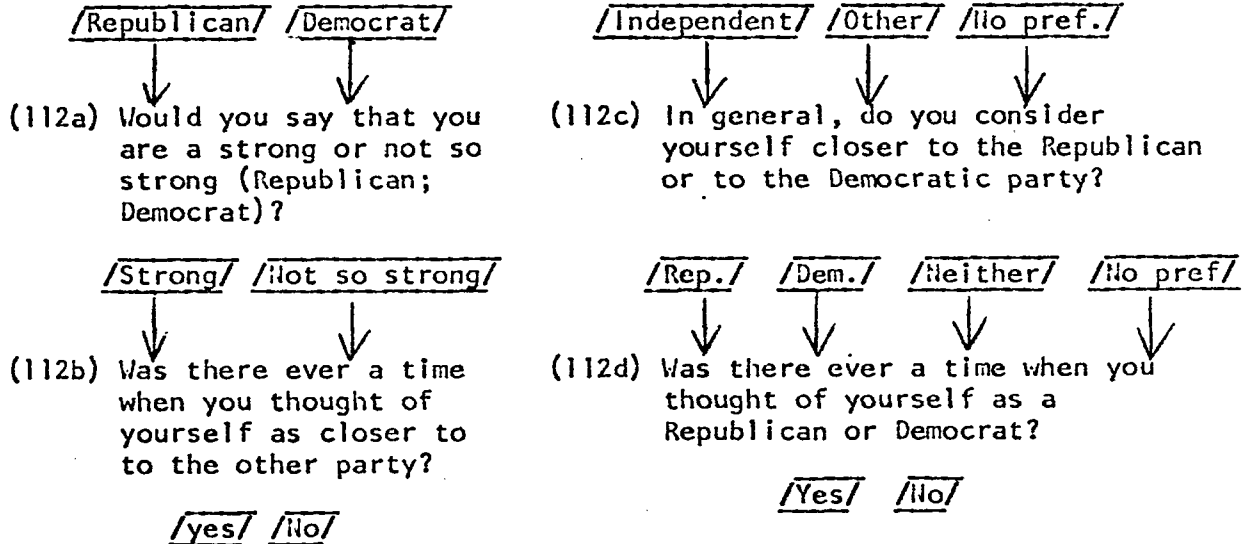
7.565 Sensitive questions on family income should be asked at the end of the interview while the opening questions should be of more general interest. When a question about income is asked the response should permit some degree of obliqueness by the respondent.

- 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.

7.566 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 #16

(112) Generally speaking, in politics do you usually think of yourself as a Republican, a Democrat, an Independent, or what?



7.568 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.

7.570 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:

7.571 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 source, etc. Careful organization before mailing solves most processing problems.

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

7.573 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.

7.600 Telephone Survey to Improve Bidding Position on Turn-Key Elderly Housing Project

As a simple illustration of the relationship of consumer need to pre-architectural programs, consider the survey approach for a turnkey, 160-unit elderly housing project, solicited by the City of Madison Housing and Redevelopment Authority for a specific urban renewal site. Developers were to compete on both cost and sensitivity of design with an oral presentation to the Board in addition to submission of bid materials.

7.610 The packet of bid instructions included:

7.611 Identification of the 116,549 sq. ft. site (with views of lake, park, and hospital)

7.612 Restriction of access to one side of site, and inclusion of 53 parking stalls, and a drive through portachere.

- 7.613 A statement that the proposed structure be in harmony with existing buildings.
 - 7.614 Limit of 160 units in three distinct structures inter-connected by an enclosed weatherized corridor system for elderly housing.
 - 7.615 Specification of three structures consist of a one-story building housing 10-15% of total units; a three-story with 25-35% of total units; and a high rise with the remaining 60-70% of the total units.
 - 7.616 Provision of extensive community, recreation, management and maintenance spaces with explicit instructions as to the location and relationship of the latter two space groups.
 - 7.617 Design in accord with HUD Minimum Property Standards.
 - 7.618 Time between solicitation and presentation was four weeks.
- 7.620 Joint venture proposal was to include experienced design/construction firm from out-of-town, the local broker/developer for financing and community relations, and a team of two graduate students in real estate. After organization of their joint venture three and one half weeks remained; designer required two weeks to prepare materials; estimator two days, etc. and specification and development of a pre-architectural program had to be completed in eight days.
- 7.621 Four days allocated to data collection and survey design; four days allocated to analysis and development of design program.
 - 7.622 Market researchers read relevant secondary literature (such as Housing the Elderly, Central Mortgage and Housing Corporation of Canada, Second Edition, July 1972, Printed in Canada; or Design of Housing for the Elderly: A checklist, by Marie C. McGuire, NAHRO 1972; Items found in The Built Environment For the Elderly and the Handicapped, a bibliography, U. D. Department of Housing & Urban Development, Library and Information Division, June 1971).
 - 7.623 Researchers visited several Madison projects, obtained floor plans, and visited with managers to make a subjective analysis of the relative success or misfit design elements in existing housing.
- 7.630 During same two day period architect/engineers reviewed information packet and site constraints; then met with market researchers to generate the following basic research questions.

- 7.631 What are the physical limitations of the prospective residents requiring special features?
 - 7.632 What is the prior living experience of the resident, to minimize disruption of life style through design sensitivity?
 - 7.633 What unit mix would be appropriate?
 - 7.634 How is unit mix allocated between three required structures?
 - 7.635 What should be basic unit size?
 - 7.636 How should space within each unit be allocated?
 - 7.637 What functions and design features should be included in community spaces?
 - 7.638 Are there other wants, needs and anxieties of users unmet by existing Madison elderly housing projects?
- 7.640 To answer these questions the survey design required specification of survey measurement devices and identification of a respondent group.
- 7.641 Given the experience of the researchers, their preliminary research to brief themselves, and a two-day time limit, they chose to do a non-probability judgment sample.
 - 7.642 Time schedule required a telephone survey technique with a random sample of residents in elderly housing units in Madison.
- 7.650 Sampling criteria required:
- 7.651 Sample be representative of the population of interest
 - 7.652 Persons selected must be able to respond with relevance and validity to the survey
 - 7.653 Population from which sample would be drawn had to be experienced in type of unit to be researched
- 7.660 In response to these criteria:
- 7.661 It was reasoned that most likely there would be homogeneity of demand characteristics between present occupants of public elderly housing in Madison and prospective occupants on Housing Authority waiting lists.
 - 7.662 Literature search indicated that continuity theory (habit, pattern, life style) control elderly so that occupant of present comparable units would best be able to relate to design questions and project their future needs and desires relative to their own units and experience.

- 7.663 A need survey could have been made of Housing Authority management, building managers, or HUD underwriters but developer felt that the best responding group would be the elderly themselves.
- 7.670 The interview sampling plan consisted of:
 - 7.671 Identification of Madison public housing units for the elderly by street address
 - 7.672 Identification of present occupants by name in existing units from current reverse telephone directory.
 - 7.673 Random sample of residents named and available by phone (potential bias)
- 7.680 Survey results were to be keypunched and analyzed on a cross tabulation program at the UW School of Business Computer Center to reveal how different persons in different types of units might have differed in their responses.
 - 7.681 For speed, keypunching was to be done directly from completed questionnaire form
 - 7.682 Usable forms were required to have answers to all relevant questions
 - 7.683 Ultimately there were 99 usable responses from a total population of 268 apartment units in the Madison elderly housing program.
 - 7.684 Two persons completed these responses in two twelve hour working days; computer analysis took one day.
- 7.690 Sample questionnaire provided in Exhibit 15
 - 7.691 Telephone survey very poor technique for measuring attitudes of elderly
 - 7.692 More valid than group meetings conducted by Housing Authority where residents are intimidated by landlord, size of group, or dominant extroverts
 - 7.693 Personal interview more time consuming and more valuable
 - 7.694 Interviews should be conducted in respondent own unit to position questions against current experience and to permit demonstration with more ease than verbal articulation.
 - 7.695 Exhibit 15 should be viewed as demonstrating how standardization is imposed on telephone survey techniques
 - 7.696 Interviewers were women

7.700 The questionnaire was intended to generate a brief consumer profile, identify possible significant and subtle dissatisfactions with unit design, and permit some open-end questions to explore areas not anticipated by researchers.

7.710 The consumer profile of the typical occupant:

7.711 Was female (83%)

7.712 Had previously rented a housing unit (82%) with 91% having paid less than \$175 per month and 60% had paid less than \$100, indicating most found the public housing unit better in quality and lower in price (\$50-\$60 per month)

7.713 Long waiting periods before admittance to public housing generally made them most grateful and non-critical.

7.714 Almost all had known low density low rise residential environments over their lifetimes.

7.720 For space allocation and features the survey revealed:

7.721 Satisfaction of present site with living room larger than bedroom, etc.

7.722 99% preferred bathroom to open into bedroom

7.723 Open-end question revealed majority wanted outside window from kitchen

7.724 Desire for indoor walking-exercise area without steps

7.725 Desire for lounges tied to indoor passages and with views of action centers

7.726 Desire for outside space defended from intrusion by strangers, kids, etc.

7.727 Desire for community craft and recreation facilities which were not isolated by stairs, windowless walls, or outside walkways (as was the case in Madison projects).

7.728 Anxiety about high rise among many due to fire hazard dependence on elevators or lifetime unfamiliarity with high rises.

7.729 Preferred more units per floor in low rise to exclusiveness of high rise floor but would take anything they could get.

7.730 The theory on aging elderly behavior patterns also contributed to design constraints, for example, the disengagement theory indicates the elderly gradually lose the energy to maintain a great variety of social contacts, etc., a tendency which leads to isolation and increased depression due to loneliness.

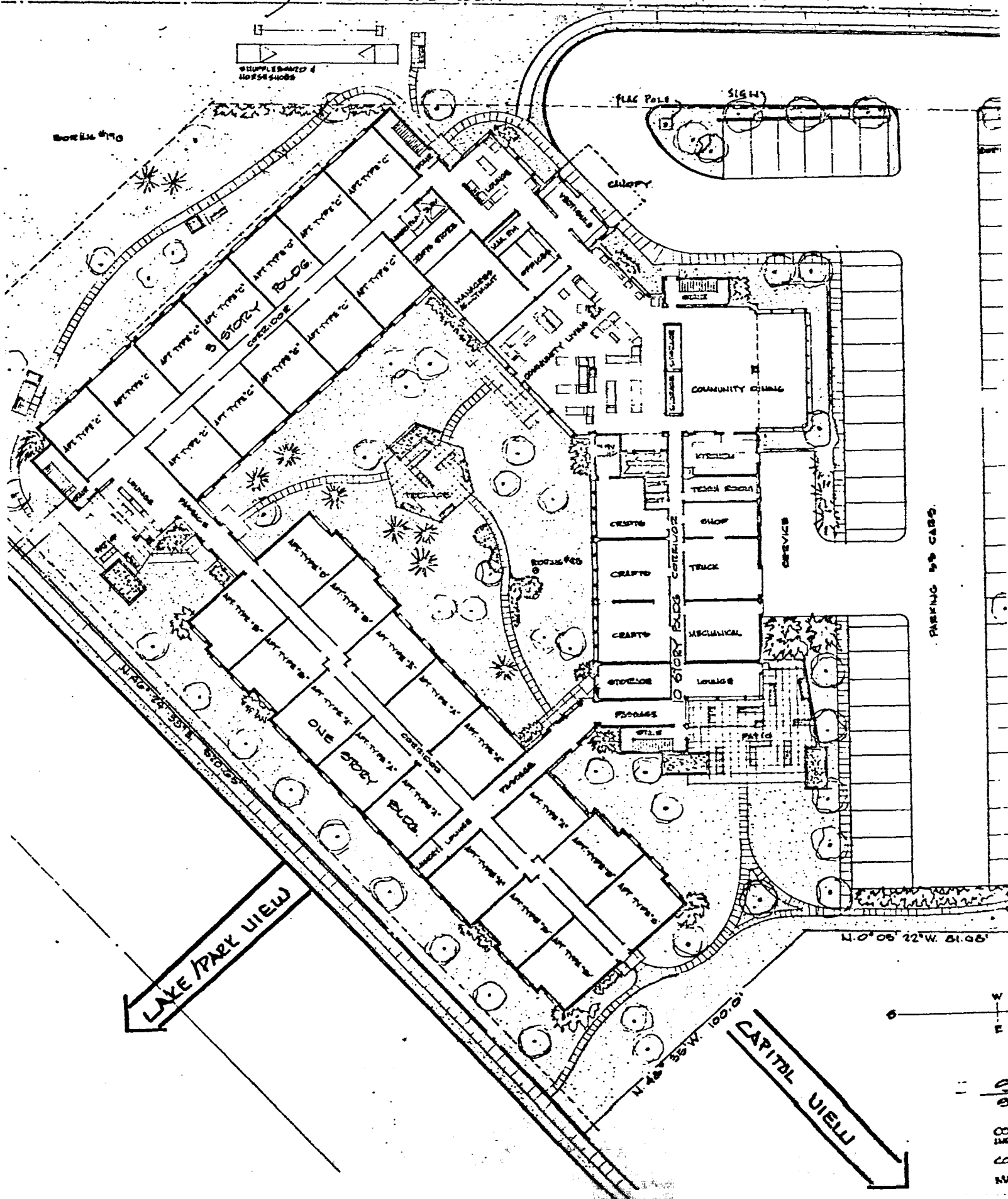
7.731 Physical design must provide a variety of choices as to their withdrawal from the street, the total project, a small group of neighbors, or their own room.

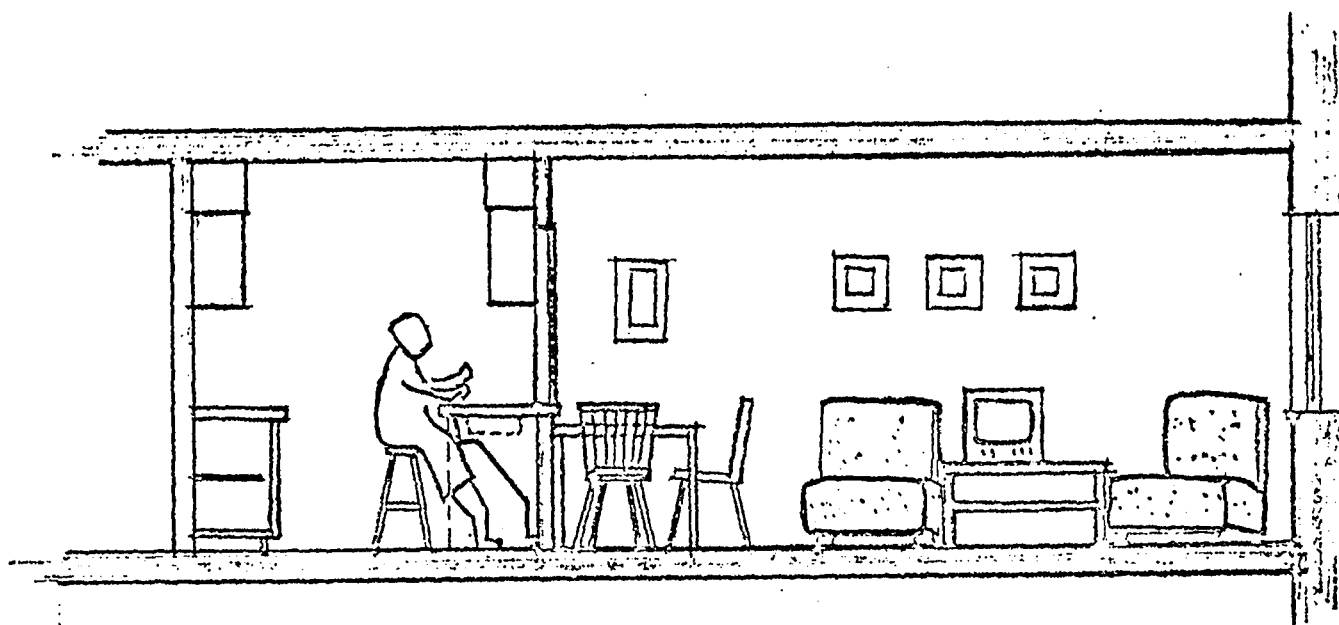
- 7.732 At the same time heterogeneity of unit mix avoids clustering all handicapped, all married, etc. in one particular zone to give everyone a variety of social contacts.
 - 7.733 Circulation patterns can be designed to encourage random meetings without forcing social involvement.
 - 7.734 Visual elements which are depressants such as views of cemeteries, hospitals, nursing homes, etc. should be avoided.
- 7.740 With the initial design constraint inputs, the designers worked up a tentative plan which proved to exceed the desired cost estimate at which point estimators, market analysts, and designers met in an all-day session to hammer out final trade-offs. A 165-unit project was the result as described in Exhibits 17, 18, 19 and 20.
- 7.741 Project had second lowest total cost (\$3,397,380 or \$26,000 per unit) of the ten proposals submitted.
 - 7.742 Project was turned down by renewal board because they did not like contractors reputation for economy and thought the exterior was less attractive than conventional tower.
 - 7.743 Experience is typical of real estate that is designed to please the investor rather than the ultimate user, particularly when the investor has not properly defined the context in sufficient detail to judge the fit of any proposal submitted.

UNIT CHARACTERISTICS AND DISTRIBUTION

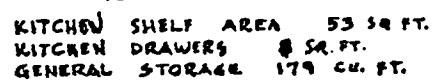
BUILDING	UNIT TYPE	DESCRIPTION	NUMBER	FLOOR	NET SQUARE FOOTAGE	TYPICAL VIEW
One-Story	A	Handicapped 1 Bed	8	1	505	(4) Courtyard (4) Brittingham Park
	B	Handicapped 2 Beds	8	1	524	(2) Courtyard (2) Neighborhood Terrace (4) Brittingham Park
Mid-Rise	C	Handicapped 1 Bed	12	1	504	(7) Brittingham Park West (5) Courtyard
	C	1 Bed	18	2,3	504	(6) Brittingham Park West (12) Brittingham Park East
	D	2 Beds	8	2,3	536	(8) Brittingham Park West
	E	1 Bed	2	2,3	504	(2) Brittingham Park East
High Rise	C	1 Bed	84	2-8	504	(42) Capitol (42) Lake Monona
	D	2 Beds	24	9,10	536	(12) Capitol (12) Lake Monona
Manager's Apartment	F	2 Bedroom	1	1	660	Courtyard

6.0°.01'.51" E 305.44'





ELEVATION - KITCHEN & LIVING ROOM TYPES C & D
SCALE $\frac{1}{4}" = 1'-0"$ TOTAL 146 UNITS



7.800 Generalized Format of Merchandising Report Summary

Cash flows ultimately depend on sales or rental revenues and further refinements of the frontdoor-backdoor approaches depend on establishing an explicit set of assumptions about the geographical market area, the user segment within that market area, and so on. All you buy in a real estate investment is a set of assumptions about the market. Therefore, the analyst should provide and identify a marketing assumption checklist for the reader:

7.810 Definition of geographic and demographic market.

7.811 Primary trade area to be served.

7.812 Profile of prospects by current location, status, income, etc. in primary carefully segmented area.

7.813 Secondary trade area to be served.

7.814 Profile of prospects by current location, status, income, etc. in secondary carefully segmented area.

7.820 Definition of principal competitors

7.821 Existing supply.

7.822 Prospective supply with timeline advantage.

7.823 Competitive standard package of project features.

7.824 Unique features of successful competitors.

7.825 Probable cause of unsuccessful competitors.

7.826 Merchandising appeals of competitors.

7.827 Definition of market penetration and competitive gap.

7.830 Establishment of merchandising strategy logic

7.831 Competition

- . Standard product
- . Price and quality
- . Competitive edge opportunity

7.832 Positioning strategy

- . Sales themes
- . Name and byline
- . Site and unit features
- . Strong sales points

7.833 Construction and architecture

- . Sales area
- . Models
- . Entrance and signs
- . Project amenities
- . Roads and paving
- . Site plan
- . Construction schedule

7.840 Definition of prospect target for subject property

7.841 Recommendations on site location

7.842 Recommendations on site linkages and dynamics

7.843 Recommendations on building types and numbers

7.844 Recommendations on basic unit features

7.845 Recommendations on basic unit options

7.846 Recommendations on level of quality

7.847 Recommendations on basic price targets

8.000 Structuring the Feasibility Report

Ultimately the budget established for analysis and the need to communicate the findings represent a severe constraint on the feasibility process. Priorities and critical assumptions necessary to achieve the desired outcome must be separated from the great mass of detail and presented tersely.

8.100 Format of the report should rely on three elements:

8.110 An executive summary which tersely identifies alternative courses of action and recommendations as to how client can make the choice.

8.120 A basic reference document which includes all the detail analysis.

8.130 A collection of reports by contributing professionals incorporated by reference.

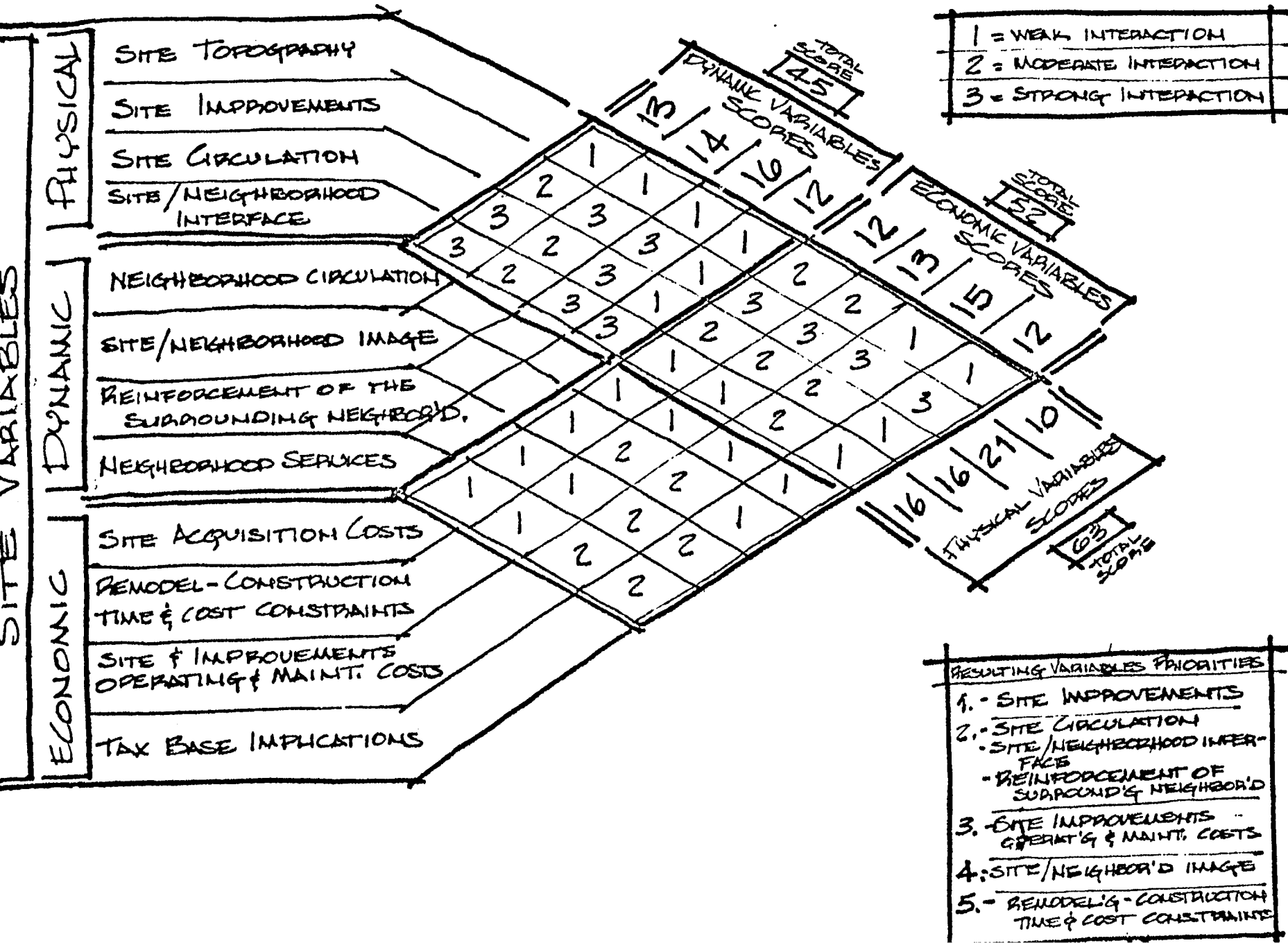
8.200 To be terse the executive summary should depend on:

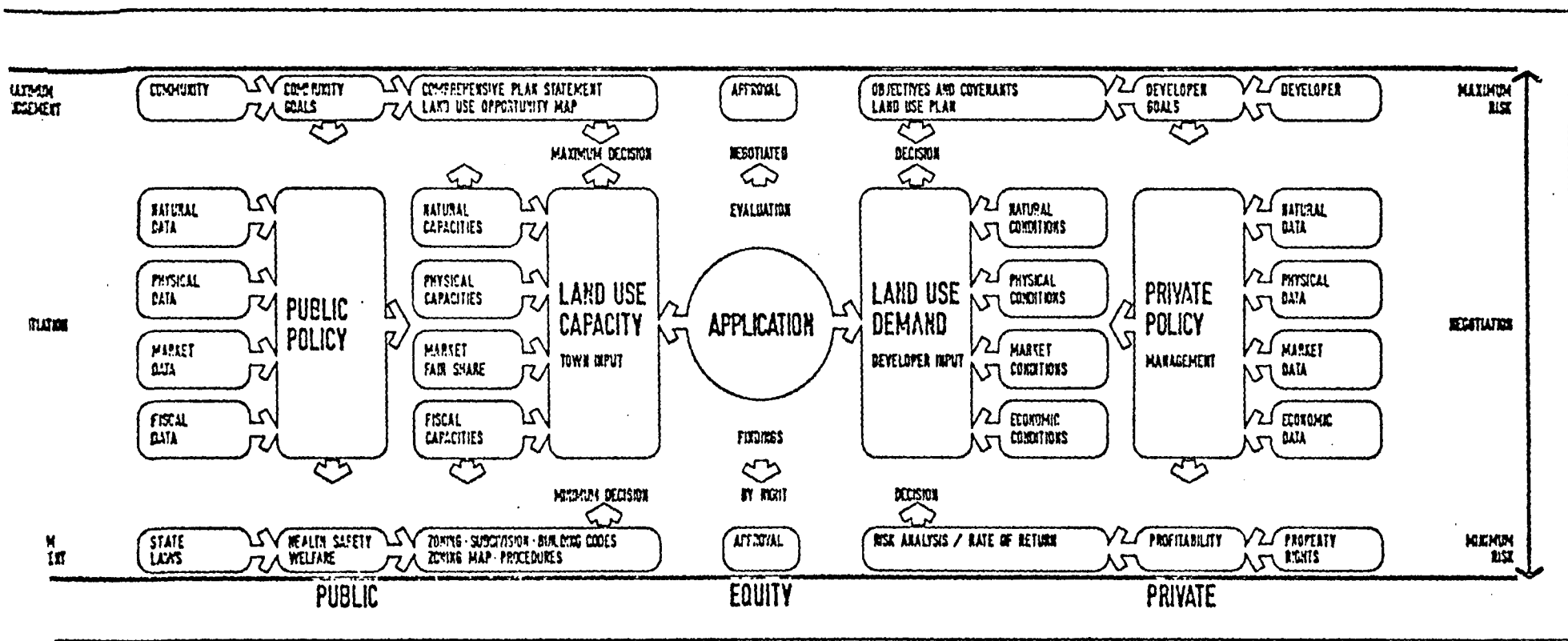
8.210 Simple charts of choices of alternative outcomes (See Exhibit 21).

8.220 Simple flow charts (Such as Exhibits 3,7,13,22).

8.230 Specific criteria used to measure "likelihood of success"

EXAMPLE OF SITE VARIABLE MATRIX (OR SEMI-LATICE)





- 8.300 Statement of limiting conditions should first begin with a definition of the word "feasible" (as per Institute of Appraisal Terminology Handbook), and then state that it was the purpose of the study to define the context of the situation and the parameters within which a solution might be found to fit the major constraints with a reasonable likelihood of success. It should carefully point out that the generalist has made a series of explicit assumptions which may nevertheless need confirmation by more detailed study best done by specialists. The statement of limiting conditions should further emphasize the constraints and objectives placed on the study by identifying who:
- 8.310 Defined the constraints
 - 8.320 Defined success
 - 8.330 Provided the data and assumptions
 - 8.340 Permitted key assumptions to remain untested for economy or speed
 - 8.350 Accepted assumptions of conditions of uncertainty
 - 8.360 Assembled proforma financial statements and projections
 - 8.370 Executed feasibility confirmation of key assumptions with aid of specialists.
 - 8.380 Placed limitations on use and confidentiality.

SELECTED BOOK LIST
ON CURRENT FEASIBILITY TOPICS

Behavior Research

The Community Builders, Edward P. Eichler and Marshall Kaplan, Berkeley: University of California Press, 1967.

Defensible Space, Crime Prevention Through Urban Design. Oscar Newman, The MacMillan Co., New York, 1972. (For analysis of residential multi-family)

The Image of the City, Kevin Lynch, The M.I.T. Press, Joint Center for Urban Studies, 1960 (12 Printing 1974). (Good on site dynamics and linkages)

The Hidden Dimension, Edward T. Hall, Doubleday and Co., New York, 1966.
(Psychology of space)

People and Buildings, Edited by Robert Gutman, Basic Books, Inc., 1972.

Studies in Social and Economic Process, D. Gordon Bafby, Lexington Books, D.C. Heath & Co., Lexington, Mass.

Finance

Control and Management of Capital Projects, John W. Hackney, John Wiley & Sons, Inc. New York 1965.

Development and Management of Investment Property, Lloyd D. Hanford, Sr., Institute of Real Estate Management of the National Assoc. of Real Estate Boards, 155 E. Superior St., Chicago, Illinois 60611, 1968.

Real Estate Investment Analysis, James R. Cooper, University of Illinois, Urbana-Champaign, Lexington Books, D.C. Heath & Co., Lexington, Mass. 1974.

Real Estate Venture Analysis 1974, Vol. 1, Stephen E. Roulac, Chairman, Real Estate Law and Practice, Course Handbook Series, #99, Practising Law Institute, New York, 1974.

Tax Shelters, Prepared for distribution at the TAX SHELTERS program May-June 1975, Practising Law Institute, New York City, 1975.

Land Planning

Cities and Geology, Robert F. Legget, McGraw-Hill Book Co., 1973.

City Planning and Aerial Information, Melville C. Branch, Harvard City Planning Studies, 17, Harvard University Press, 1971. (Good basic text)

The Community Builders Handbook, J. Ross McKeever, Editor, Washington, D.C., Urban Land Institute, 1968.

Design With Nature, Ian L. McHarg, The Natural History Press, Garden City, New York, 1969.

The Ecological Context, John McHale, George Braziller, New York, 1970.

Ecologic-Economic Analysis for Regional Development, Walter Isard, The Free Press, New York, 1972.

The Fiscal Impact of Residential and Commercial Development: A Case Study, Thomas Muller, Grace Dawson, The Urban Institute, 2100 M St., NW, Washington, D.C. 1972.

A Guide to Site and Environmental Planning, Harvey M. Rubenstein, John Wiley & Sons, Inc, 1969.

Land Development Manual, The National Assoc. of Home Builders, National Housing Center, 1625 L St. NW, Washington, D.C. 20036, 1969.

Land Investment, Maury Seldin, Dow Jones-Irwin, Inc., Homewood, Ill. 60430, 1975. (For beginners)

Manual of Color Aerial Photography (1st Edition), John T. Smith, Jr. (editor-in-chief) and Abraham Anson (assoc. editor), American Society of Photogrammetry, 105 N. Virginia Ave., Falls Church, Virginia 22046, 1968. (Comprehensive reference)

Measuring Impacts of Land Development, An Initial Approach, Philip S. Schaenman, Thomas Muller, The Urban Land Institute, 2100 M St. NW, Washington, D.C. 20037, 1974.

Soil Surveys and Land Use Planning, Edited by Bartelli, Klingebiel, Baird, and Heddleson, Soil Science Society of America, and American Society of Agronomy, 1966.

Space Adrift, Landmark Preservation and the Marketplace, John J. Costonis, University of Illinois Press, Urbana, 1974. (A good primer on transferable development rights)

The Use of Land, A Task Force Report Sponsored by the Rockefeller Brothers Fund, Edited by William K. Reilly, Thomas Y. Crowell Co., New York, 1973.

Residential

Apartment and Townhouse Salesmakers' Course, Owens/Corning Fiberglas Corp., National Bank Bldg., Toledo, Ohio 43601.

Low and Moderate Income Housing in the Suburbs, An Analysis for the Dayton, Ohio Region, Gruen & Gruen, in cooperation with the Miami Valley Regional Planning Commission, Praeger Publishers, New York, 1972. (Good example of sophisticated survey research).

Managing Low and Moderate Income Housing, Edwin D. Abrams, Edward B. Blackman, Praeger Publishers, New York, 1973.

Marketing for a Full House, A Complete Guide to Profitable Hotel/Motel Operational Planning, C. Dewitt Coffman, Edited by Helen J. Recknagel, School of Hotel Administration, Cornell University, Ithaca, New York, 1972.

A Marketing Plan for Apartment Builders, William R. Smolkin, Barrett Division, Allied Chemical Corp., 1966. (Strong on survey research and questionnaire techniques for apartment projects).

Planned Residential Environments, John B. Lansing, Robert W. Marans, and Robert B. Zehner, U.S. Dept. of Transportation, Bureau of Public Roads, 1970, Survey Research Center, Institute of Social Research, The University of Michigan, Ann Arbor, Mich. 48106.

Planning and Managing Housing for the Elderly, M. Powell Lawton, John Wiley & Sons, New York, 1975.

A Study of Apartment Residents Reaction to their Apartments - 1969, Owens/Corning Fiberglas, Home Building Products Marketing Division, 1969.

A Study of the Washington, D.C. Area Apartment Residents Reaction to Their Apartments, Owens/Corning Fiberglas, Home Building Products Marketing Division, Toledo, Ohio, 1968.

Specialty Properties

Business and Legal Problems of Shopping Centers, Real Estate Law and Practice Course Handbook Series - Volume 1, Practising Law Institute, 20 Vesey St., New York, N.Y. 10007, 1968.

Case Studies in Shopping Center Development and Operation, William Applebaum and S.O. Kaylin, International Council of Shopping Centers, 445 Park Ave., New York, N.Y. 10022, 1974.

A Guide to Selecting Bank Locations, Dept of Automation & Marketing Research, The American Banker's Assoc., 90 Park Ave., New York, N.Y., 10016 - 1965.

Guide to Store Location Research, William Applebaum et al., Curt Kornblau, Editor, Addison-Wesley Publishing Co. 1968. (The best publication available on techniques)

Handbook on Industrial Development, The American Industrial Development Council, Inc. Executive Offices and Library, 230 Boylston St., Boston, Mass. 02116, June 1969.

The Hotel and Restaurant Business, Donald E. Lundberg, Institutions/Volume Feeding Management Magazine, 5 S. Wabash, Chicago, Ill. 60603, 1970.

How to Build and Operate a Mobile Home Park, L.C. Michelson, Mobile Homes Manufacturers Assoc., Chicago, Ill. 60606, 1955 (2nd Edition).

Motels and Resorts, A Guide to Better Planning, C.A. Gunn, Cooperative Extension Service, Michigan State University, E. Lansing, Michigan 1968.

A New Life for the Abandoned Service Station, A. L. Kerth, a.i.a., 211 Charles Ave., Massapequa Park, N.Y. 11762, 1974.

Office Building and Office Layout Planning, Kenneth H. Rippen, McGraw-Hill Book Co., Inc. 1960. (Out of print but excellent).

Recreational Properties, An analysis of the markets for privately owned recreational lots and leisure homes, Richard L. Ragatz Associates, Inc., 3660 Donald St., Eugene, Oregon 97405, 1974.

The Selection of Retail Locations, Richard L. Nelson, F.W. Dodge Corp., New York, 1958. (Out of print classic)

A Systematic Guide to Supermarket Location Analysis, Bernard J. Kane, Jr., Fairchild Publications, Inc., New York, 1966. (Author a student of Applebaum, excellent how-to-do-it text)

Shopping Center Management - Principles and Practices, Horace Carpenter, Jr., International Council of Shopping Centers, 445 Park Ave., New York, N.Y. 10022, 1974.

Shopping Center Strategy - A Case Study of the Planning, Location and Development of the Del Monte Center, Monterey, Cal. William Applebaum, International Council of Shopping Centers, New York, 1970.

The Tourist Business, Donald E. Lundberg, Institutions/Volume Feeding Management Magazine, 5 S. Wabash Ave., Chicago, Ill. 60603, 1972.

Technique

Advanced Methods and Models - Vol. 1 & 2 of the Mathematics for Management Series, Clifford H. Springer, Robert E. Herlihy, Robert I. Beggs, Consultants, General Electric Co., Richard D. Irwin, Inc., Homewood, Illinois 1972.

Development Building: The Team Approach, C.W. Griffin, Halsted Press Division, John Wiley & Sons, Inc., New York, 1972 (2nd Printing 1973).

Elementary Statistics, Robert Johnson, Monroe Community College, Rochester, New York, Duxbury Press, North Scituate, Mass.

General Applied Statistics, Fadil H. Zuwaylif, San Fernando Valley State College, Addison-Wesley Publishing Co., Reading, Mass. 1972.

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CAPITAL OUTLAY MODEL WORKSHEET

Residential

110 Gross sq. ft.
120 Cost/gross sq. ft.
130 Total Res. Structures

Commercial

140 Gross sq. ft.
150 Cost/gross sq. ft.
160 Total Comm'l Structures
170 Miscellaneous Structures

180 **Total Structures**

190	Contingency Reserve Factor
200	Contingency Reserve
210	Total Structures and Reserves
220	Land
230	Total Structures, Reserves, Land
240	Consultant/Developers Fee
250	Carrying charges (tax, ins.)

260 **Total Hard Cost**

270	Mtg. in \$ or % Total Hard Cost
280	Const. Loan Amount
290	Const. Period in Months
300	Const. Interest Rate
310	Const. Interest
320	Financing fee @ % Mtg.
330	Financing Fees
340	<u>Total Replacement Cost</u>
350	Mortgage Capital Contribution
360	Required Equity Cash

Specify (Sp.) sq. ft.

Sp. \$'s/sq. ft.

Lns. (110 x 120)

Sp. sq. ft.

Sp. \$'s/sq. ft.

Lns. (140 x 150)

Sp. \$'s

Sum Lns. (130, 160, 170)

Sp. %

Lns. (130 x 190)

Sum Lns. (190 + 200)

Sp. \$'s

Sum Lns. (210 + 220)

Sp. \$'s

Sp. \$'s

Sum Lns. (230 + 240 + 250)

Sp. %

Sp. %

Sp. #

Sp. %

$$\text{Lns. } (260 \times 280) \times \frac{(\text{LN } .290)}{12} \times (\text{LN } 300) \times (1/2)$$

Sp. %

Lns. (270 x 320)

Sum Lns. (260 + 310 + 330)

Lns (260 x 270)

Lns (340 - 350)

Required Revenue Budget

Unit Mix; # & code

(Code: Residential = 1, Commercial = 2)

(If Code 1, give # rooms; Code 2 sq. ft. GLA)

370 RU - 1

380 # Rooms residential)

390 RU - 2

400 # Rooms

410 RU - 3

420 # Rooms

430 RU - 4

440 # Rooms

450 RU - 5

460 # Rooms

470 Total # Rooms, Res. RU's

Expenses & Taxes**Residential**

480 Expenses/room/year

490 Taxes/room/year

Commercial

500 Expenses/sq. ft. GLA/year

510 Taxes/sq. ft. GLA/year

520 Total Res. Exp. & Taxes

530 Total Comm'l Exp. & Taxes

540 **Total Exp. & Taxes**

550 Mtg. Constant

560 Mtg. Debt Service Required

570 Equity Cash Dividend Constant

580 Equity Dividend Required

585 **Cash income required for Exp. & Tax, Mtg.
& Equity**

Sp., # units & code

Sp. # Rooms

Sp., # & Code

Sp. # Rooms

Sp., # & Code

Sp. # Rooms

Sp., # & Code

Sp. # Rooms

Sp. # & Code

Sp. # Rooms

Sum Lns [(370x380)+(390x400)+
(410x420)+(430x440)+(450x460)]

Sp. \$'s

Sp. \$'s

Sp. \$'s

Sp. \$'s

Ln (470) x Sum Lns (430+490)

Ln (370-460 Code 2 #s) (Sum Lns 500+
Sum Lns. (520+530) 510)

Sp. %

Lns. (350 x 550)

Sp. %

Lns. 360 x 570)

Sum Lns. (540+560+580)

[illegible]

Sp. %
 $\text{Ln}(585) - (\text{Ln}[585])(1 - \text{Ln}[590])$
 Sum Lns (585 + 600)
 Sp. %
 $\text{Ln}(610) / (1 - \text{Ln} 615)$
 $\text{Ln}(620) / 12 \text{ months}$
 Sp. #
 Sp. \$'s
 Lns. (630 x 640)
 Lns. (620 - 650)

[illegible]

Sp. Type
Sp. sq. ft.
Sp. %
(See: Note Factor Code)
Sp %

Sp %

Sp %

Sum Lns. (680+700+720+740+760)

4 Capital Outlay

Rental Structure

* If type 2 (or Comm'l), divide by Ln (665)

780 BRU rent/mo.
790 RU - 1 rent/mo
800 RU - 2 rent/mo
810 RU - 3 rent/mo
820 RU - 4 rent/mo
830 RU - 5 rent/mo
840 Total Annual Rev. from RU - 1's
850 Total Annual Rev. from RU - 2's
860 Total Annual Rev. from RU - 3's
870 Total Annual Rev. from RU - 4's
880 Total Annual Rev. from RU - 5's
890 Total Annual Allocated Rev.
(Compare to Ln. 655) x 12 months

900 Default Ratio

910 Payback period

[illegible]

Lns. (655 / 770)
 Lns. (670 x 780) *
 Lns. (690 x 780) *
 Lns. (710 x 780) *
 Lns. (730 x 780) *
 Lns. (750 x 780) *
 Lns. (370 x 790)
 Lns (390 x 800)
 Lns. (410 x 810)
 Lns. (430 x 820)
 Lns. (440 x 830)
 Sum Lns. (840+850+860+870+880)
 Lns. (890-655)

 Lns. (540+560)/Ln (620)
 Divide 100% by equity constant
 line 580

2 Market Revenue

350	Equity cash investment	Ln 330/340
360	Total replacement cost (TRC) budget	Lum lns (270+350)
370	Construction period (in months)	Sp. #
380	Construction interest rate	Sp. %
390	Construction interest	$[\text{Ln}(270)] \left[\left(\frac{1}{2} \right) \frac{(\text{Ln } 370) \text{Ln}.380)}{12 \text{ mo.}} \right]$
400	Financing fees @ % mtg.	Sp. %
410	Financing fees	Lns (270 x 400)
420	Carrying charges	Sp. \$'s
430	Consultant/developers fees	Sp. \$'s
440	Total hard dollar budget	Lns (360-(390+410+420+430))
450	Land	Sp. \$'s
460	Off-site improvements	Sp. \$'s
470	Total structures & reserves	Lns 440-(450+460)
480	Contingency reserve	Sp. \$'s
490	Architect-engineering fees	Lns (470x(Sp.% of structure cost))
500	Total hard dollar structures budget	Lns 470-(480+490)
510	Non-allocated budget	Sp. \$'s
520	Total allocated structures budget	Lns (500-510)
530	Gross residential sq. ft./unit	Sp. #
540	Gross residential sq. ft.	Ln 530 x Sp. # residential units
550	Gross commercial sq. ft.	Sp. #
560	Cost/commercial sq. ft. @ %/residential, cost/sq.ft.	Sp. %
570	Gross adjusted commercial sq. ft.	Ln 550/560
580	Total adjusted sq. ft.	Ln (540) + 570
590	\$'s/residential sq. ft.	Lns (520/580)
600	\$'s/commercial sq. ft.	Ln (590x560)
610	Total residential structure budget	Lns (540x590)
620	Total commercial structure budget	Lns (520-610)