

JAMES A. GRAASKAMP COLLECTION OF TEACHING MATERIALS

VII. INDUSTRY EDUCATIONAL COURSES - LONG TERM

- F. U.W. Extension And Executive Development
 - 10. Miscellaneous Undated Lectures Sponsored by U.W. Extension
 - c. "Elements of Feasibility Analysis", Real Estate Development for Architects, Engineers, and Planners Seminar, The Wisconsin Center, Madison

REAL ESTATE DEVELOPMENT FOR ARCHITECTS, ENGINEERS, & PLANNERS
A Seminar Sponsored by University of Wisconsin-Extension
Department of Engineering
THE WISCONSIN CENTER

Elements of Feasibility Analysis
Instructor: Prof. James A. Graaskamp

I. Basic Concepts and Definitions for Land Use Decisions

- A. Real estate is defined as artificially delineated space with a fourth dimension of time referenced to a fixed point on the face of the earth. To this space-time abstraction one can add any type of attribute required to house some form of activity.
- B. The real estate process is the dynamic interface of people (cultural preference expressed through the body politic or individual transactions), upon land, a finite natural resource and public stewardship, as modified by artifacts and services in a money system to produce units of space-time with a required set of attributes.
- C. These abstract forces are specific vested interests--space users (society and consumer), a space producer (developer-investor), and public suppliers of service infrastructure.
- D. Each of these three decision actors represent an enterprise, i.e., an organized undertaking. Most of these enterprises are cash-cycle enterprises constrained by a need for solvency, both short and long term.
- E. Real estate enterprise (public or private) is the process of converting space-time needs to money-time, matching receipts and outlays to remain solvent.
- F. A socially desirable equilibrium occurs when the real estate process serves the needs of cultural preference within the constraint of land as a resource in a manner which permits the consumer, producer, and governmental cash cycle to achieve solvency including the cash costs of money.
- G. Implicit in all of the above are:
 1. Solvency of the total process, not value, is the critical issue.
 2. A community real estate need is a captive market of services and the business of real estate is a service industry which has some big hardware in its tool kit.
 3. Land is a trust, only some of which is a commodity, so that equity to property owners is freedom from bankruptcy. Cash is the only ultimate private property.

- H. The artist concept of context, form, fit, and the ensemble is useful because in the planning stages the feasibility analyst is attempting to define the context to which the project must fit; when confronted with the completed project design, the analyst is searching for the critical misfit which would lead to failure.
- I. The general theory of enterprise management is appropriate to and can be converted to real estate semantics:

Enterprise values, objectives, standards, screens, or criteria	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

- J. The systems engineer sees the eventual form of an enterprise, in terms of both its configuration and behavior, as representing a negotiated consensus between two general sources of power--the power of the environment to dictate form and behavior of the organization on one hand and the power of the organization to decide for itself what its characteristics and behavior will be on the other.
- K. Combining the concept of enterprise and the concept of fit leads to this definition of the elusive concept "feasibility":

"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."---

II. Elements of a Total Feasibility Analysis

The basic forces or elements of context which make a feasibility problem manageable also lead to understanding of the proper report titles as it is seldom that one does a complete feasibility study as a single report.

- A. The subject matter can be classified as:
1. Strategic objectives and tactics (policies)
 2. Market trends and opportunity areas
 3. Merchandising targets with monopoly characteristics
 4. Legal-political constraints
 5. Ethical-aesthetic constraints
 6. Physical-technical constraints
 7. Financial constraints

B. These elements also name the report type:

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

III. Elements of Financial Feasibility

- A. Identification of selected profit centers
- B. Specification of the common denominator - a time line - schedule of outlays and receipts
- C. The capital budget (source & application)
 1. Construction costs
 2. Carrying costs
- D. Operating budgets (source & application)
 1. Pattern of sales revenues
 2. Fixed management costs
 3. General sales costs and investment
- E. Financing plan
 1. Credit amounts and terms
 2. Equity amounts and terms
 3. Holding power
- F. Profits classified as to type and tax
 1. Cash from operations
 2. Cash from capital gains
 3. Cash surplus from financing
 4. Cash from tax savings on other income
 5. Cash from reduction or shift of fixed outlays
 6. Indirect non-cash benefits
- G. Selected measures of profitability
 1. Definition of investment
 2. Definition of profit

H. Selected measures of risk

1. Payback periods
2. Capacity for variance
3. Variance control methods

I. The process of risk management involves methodical analysis of enterprise assumptions and establishment of priorities relative to various possible contingencies.

1. The functions of risk management include:

- a. Identification of significant exposures to loss
- b. Estimation of potential loss frequency and severity
- c. Identification of alternative methods to avoid loss
- d. Selection of a risk management method
- e. Monitoring execution of risk management plan

2. Risk management methods available include:

- a. Risk avoidance (Don't deal with FHA or build projects for which there is no proven demand)
- b. Reduce frequency of loss (mortgage underwriting)
- c. Reduce severity of loss (contingent contracts, options, liquidated damages)
- d. Shift the risk of variance by contract
- e. Limit liability (corporate shell, limited partnership)
- f. Hedge (sale and lease back, the mortgage as a spread position - a put and call)

3. The mortgage closing is a systematic risk management stabilization of assumptions about title, location, damage to improvements, unknown liens, default due to appraisal error, or underwriting bias, etc.

J. Finance assumptions provide both constraints and tests of alternative solutions (see Exhibit 1).

1. Front door approach converts total cost to annual requirements for equity dividends, debt service, operating expenses, and vacancy cushion. Annual requirement divided by rental unit equals rent.
2. The back door approach to feasibility converts the ability to pay of the user to maximum project cost acceptable - the major design constraint.

K. Customer acceptance is the primary cause of unfavorable financial results since the cash cycle begins with a sale at a price higher than cost.

1. For dynamic risks, market intelligence is your major risk management device.
2. Marketing research reduces variance in the critical assumptions of acceptable price or rent, scale of market potential, capture rate, and payback period.
3. Financing packages are then prepared compatible with potential variance in marketing assumptions and service contracts negotiated to allocate risk to provide motivation or control.

IV. Market Segmentation and Product Definition

- A. Think small - real estate enterprise depends on very small micro-markets.
 1. A 30,000 square foot office building means \$180,000 in annual sales or more and possibly \$750,000 of investment at \$25 a square foot.
 2. A 24-unit apartment building at \$250 a month rent is almost \$72,000 gross a year and a \$360,000 investment.
 3. In each case you have higher sales and more assets per customer than almost any other business in the United States. Even large projects are simply groups of small micro-markets served by a single project.

- B. First try to name the revenue unit or method of measuring profit per sales unit -
 1. Paper company profits per acre
 2. Cash flow in dollars per apartment
 3. Office rental per floor

- C. Consider the revolution in recreational land development from selling lots, to lakeshore to water recreation access, to escape, to consumption of a weekend, to riskless adventure.

- D. Try to identify the customer unit - who signs the check?
 1. The doctor or the clinic?
 2. The salesman or the firm?
 3. The ticket buyer or the promoter?
 4. The building committee chairman or the staff member who really knows what he is doing?

- E. Correct identification of the sales unit and the customer unit leads to -
 1. Identification of competitive projects and the competitive standard
 2. Generation of a prospect list or customer spotting strategy
 3. Focus of aggregate market potentials

- F. The customer profile and consumer survey
 1. Scaling the market opportunity with a market model (see Exhibit 2)
 2. Estimating the capture rate
 3. Study of the competition to define the competitive standard and supply gaps
 4. Surveying the consumer to identify a competitive differential
 5. The objective is to define a product and price with monopoly characteristics in order to control variance in capture rates

- G. Before drafting questions for a survey:
 1. Determine what ratios are needed for aggregate data breakdown
 2. Determine precise data to be supplied and pre-architectural program

3. Eliminate questions which don't need to be asked
 4. Determine budget and time constraint to select survey technique
 5. Direct mail, telephone, and personal interview alternatives
 6. Statistical elegance can be sacrificed for primary intelligence data
- H. The key questions should probe dissatisfaction with competitive project, motivation for moving, and site dynamics.
- I. Use of survey professionals is cheap and more sophisticated than low budget in-house surveys.

EXHIBIT I

Demonstration of Back-Door, Front-Door Calculations
for an Apartment Building with some Commercial Space

(example by James R. DeLisle)

		What is Rent?	What is TIV?
		Front Door 1.4m TRC	Back Door* \$220/mo./1 bdr.
1	Total Replacement Cost (TRC) Sp \$%	1400000	
2	Mortgage @ % TRC Sp % in decimals	.90	
3	Equity @ % TRC (1 - Ln 2)	.10	
4	Mortgage Constant Sp in decimals	.0907	
5	Equity Constant Sp in decimals	.08	.08
6	Net Income Required (Ln1) [(Ln 2) (Ln4) + (Ln3) (Ln5)]	125580	115500
7	Mortgage @ % NIR Sp % in decimals	.90	.90
8	Mortgage NIR (Ln6) (Ln 7)	113000	103955
9	Mortgage Investment Value (Ln8) ÷ (Ln4)	1246000	1146135
10	Equity Net Income (Ln6) - (Ln8)	12580	11545
11	Equity Investment Value (Ln10) ÷ (Ln5)	157250	144300
12	Equity Constant-Residual (Ln1) - (Ln9) Backdoor		
13	Total Investment Value (TIV)	1403250	1290500
14	Expenses, Taxes, Reserves @ %GBR Sp % in decimals	.40	
15	Expense, Taxes & Reserves [(Ln6) ÷ (1 - Ln14)] - (Ln6)	83720	77000
16	Required Effective Gross (Ln6) + (Ln15)	209300	192500
17	Occupancy % Sp % in decimals	.93	.93
18	Required Annual Gross (Ln16) ÷ (Ln17)	225000	206980
19	Required Monthly Gross (Ln18) ÷ 12	18750	17750
20	Fixed Source Contribution to Gross		
21	Fixed Source #Reserve Units Sp #		
22	Fixed Source Revenue/Unit/Mo. Sp \$'s		
23	Fixed Source Contribution Gross (Ln21) x (Ln22)		
24	Allocated Mo. Gross (Ln19) - (Ln23)	18750	17750
25	Basic Revenue Unit, # (BRU) Sp #	45	
26	s.f./unit Sp. s.f.	560	
27	Relation to Basic Rev. Unit		
28	Type R-2 # Sp #	9	
29	Type R-2 Relation Sp % in decimals	1.3	
30	Type C-1 # s.f. Sp. s.f.	8668	
31	Type C-1 Relation Sp % in decimals	1.4	
32	Factors		
33	BRU Ln25	45	
34	R-2 (#in BRU) (Ln28) (Ln29)	11.7	
35	C-1 (#in BRU) [(Ln30) ÷ (Ln26)] (Ln31)	21.7	
36	Total Factors (Ln33) + (Ln34) + (Ln35)	78.4	
37	\$/BRU Unit/Mo. (Ln24) ÷ (Ln36)	\$239	\$220*
38	\$/R-2/Mo. (Ln37) x (Ln29)	\$311	\$286
39	\$/C-1 s.f./Mo. (Ln37) x (Ln31) ÷ (Ln26)	.60	.55

EXHIBIT 2

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	<u>49.1</u>	
	77.1%	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	" "	306 x 330 = 99
14% for a 5 year	" "	

306 →