

PROFESSIONAL PRACTICE 544

THE ECONOMICS OF CONSTRUCTION

April 4, 2025 | Presented by:

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CONSTRUCTION ECONOMICS

Construction Economics – Components

The Study of Construction Economics Includes:

- Economic decisions related to construction
- Economic decisions related to the type of project
- Economic decisions related to the project outcome
- Economic review over the life of the project/building

Critical Elements:

- Cost estimation
- Financial analysis
- Risk management
- Contract management

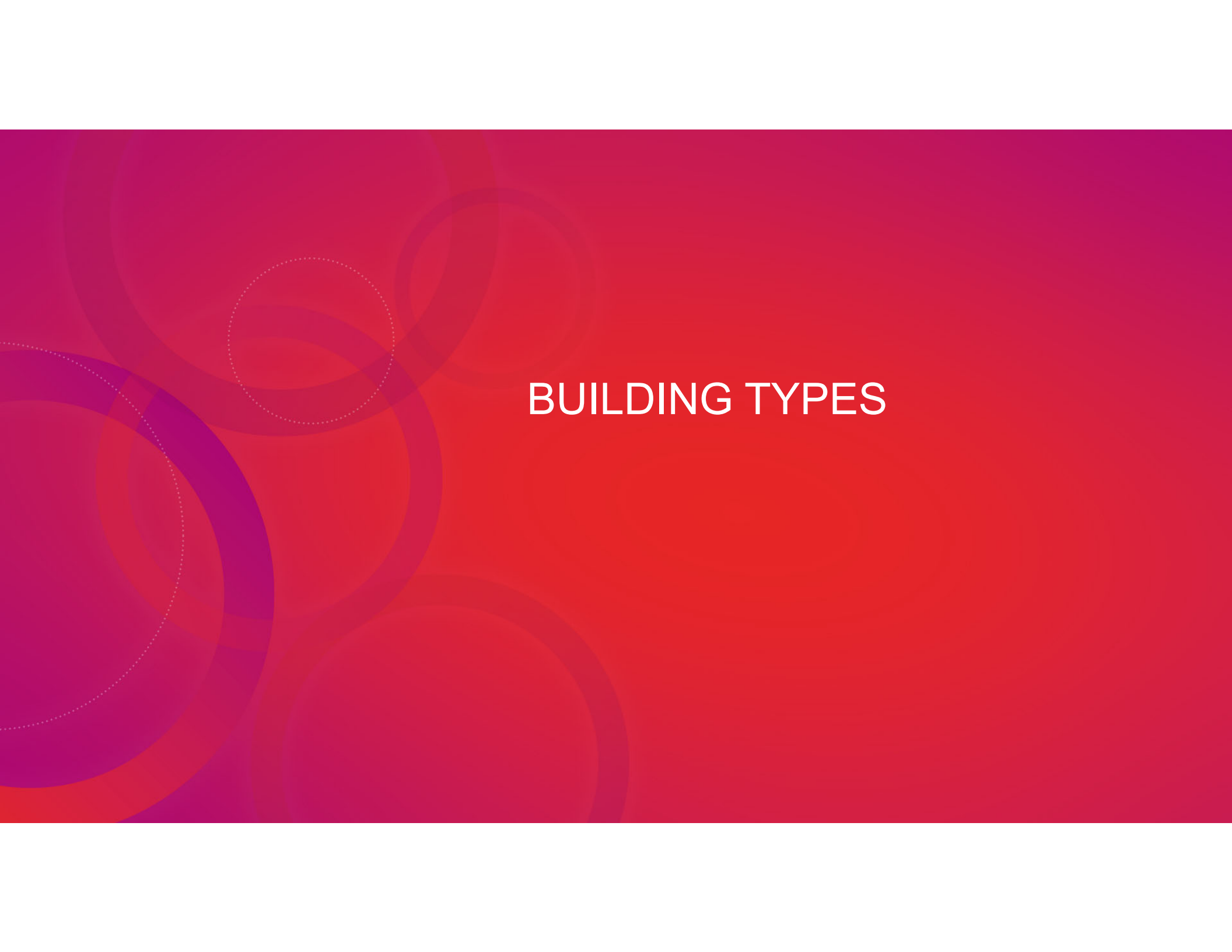
Construction Economics – Value Analysis

A Key Element of Construction Economics is Value Analysis

- Determining how much money a project will cost
- Determining how long the project will take to complete
- Determining which options are the best deal for the client

Value analysis also involves analyzing the tradeoffs between different options

- If two options have the same cost but one takes longer to complete, choosing the option that takes less time would be more valuable
- What is the ultimate use of the building and where might tradeoffs apply between a public and private project



BUILDING TYPES

Building Types – Intent and Function

Buildings may be categorized on the basis of their economic equation. Compare the relation of profit to the building's function. Begin with the original intent of the building's function.

1. Intent: **Purely to function, not to earn:**
 - single family home
 - courthouse
 - library
2. Intent: **Primarily to function, but also needs to make economic sense:**
 - hospital
 - museum
 - nursing home
3. Intent: **It must function and earn though its functionality:**
 - factory
 - stadium
4. Intent: **Earns by way of an investment, but needs to function to be marketable:**
 - housing (multi-unit v single family)
 - office building
 - commercial building - retail

Building Types – Key Concepts and Terms

- Motives:** Profit (free market) versus Social Good (controlled economy)
- The economic equation – regardless of the motive – must still work to make economic sense.
 - If losing money, i.e., the economics do not work:
 - the “owner” will not continue to maintain building
 - the building will not operate as intended (or fail)

Key

Players: Developer – Often initially considered the “owner” for purposes of contracts and construction. But, then will turn over the building to a new “owner.”

Market Analyst – Will assess the when, what, & where regarding the development of a building or project by looking at the market related factors.

Mortgage Lender – Necessary for funding – handles prime mortgage, construction loans, bridge loans, etc. Lifeblood of development..

Building Types – Overall Costs/Value

PRO FORMA A Latin term meaning “for the same of form.” For financial considerations, it describes a method of calculating financial results in order to emphasize either current or projected figures.

The three main factors in a developer’s pro forma are:

- **Costs**
- **Expenses**
- **Income**

The following is a typical list of items that will be found in a developer’s pro forma for a given project.

Building Types

COSTS – Development of Apartment Building

Land Acquisition

Local Costs (utility extension, fee, etc.)

Construction Cost

Fixtures, Furnishings & Equipment (FF&E)

Architect/Engineer Fee

Owner's Representative Fee

Legal Expenses/Accounting Expenses

Misc. Costs (survey, borings, printing, etc.)

Marketing (personal, advertising, etc.)

Project Cost

+ Interest on construction loan

Total Cost _____ (Total Cost - Mortgage Value = Equity)

Building Types

EXPENSES – After Construction

Utilities (gas oil, water, electric, etc.)

Operations (engineer, doorman, etc.)

Repair and maintenance

Management office

Continued marketing

Insurance

Real estate taxes

Miscellaneous

Operating expense

+ mortgage retirement

Total Expense

Building Types

INCOME – After Construction

Rental income - apartment

Leases - office or commercial leases

Garage rental income

Gross income

- Vacancies (. . . %)

Net Income (or cash flow)

NET INCOME – TOTAL EXPENSE = PROFIT (= % OF EQUITY) – growth is the hidden quantity here.

Calculate your RETURN ON INVESTMENT (“ROI”)

- If you have a \$50K investment and growth is \$1M = 20X ROI.
- If you have \$100K invested in a project and the growth is \$1M = 10X ROI.



THE “ECONOMIC EQUATION”

The “Economic Equation”

Assume a 12-14 story apartment building containing 100 two-bedroom apartments of 1200 square feet, 100 parking spaces and 5,000 square feet commercial.

Hard Costs

Land:

\$25,000/Units at 100 \$ 2,500,000

Building:

Net Units: 100 at 1200 s.f. 120,000 s.f.
Circulation – add 20% 24,000 s.f.
144,000 s.f.

Common areas – add 7% 10,000 s.f.
(Corridors, elevators, etc. garbage shaft, stairs,
exterior walls, lobby, garbage, janitorial lockers)

Commercial 5,000 s.f.

Total 159,000 s.f.

Garage: 100 @ 350 s.f. 35,000 s.f.

159,000 s.f. @ \$135.00 \$21,465,000

35,000 s.f. @ \$70.00 \$2,450,000

TOTAL HARD COSTS \$23,915,000

Soft Costs:

Construction Loan (\$23,915,000):

7.0% Interest, and then “halved” b/c
it is drawn down progressively \$837,025

Lender’s Fee:
1.5% of full loan \$358,725

Architect’s Fee:
4.0% of Construction Costs \$956,600

Legal \$50,000

Marketing \$50,000

Miscellaneous \$120,000

TOTAL SOFT COSTS \$2,049,500

TOTAL HARD COSTS \$23,915,000

TOTAL PROJECT COST \$25,964,500

The “Economic Equation”

INCOME

Apt Rent: \$1,600/month @100 units @12months:	\$ 1,920,000
Garage: \$200/month @100 spaces @12 months:	\$ 240,000
Commercial Rent:	+ \$ <u>100,000</u>
Subtotal:	\$ 2,260,000
Less 5% vacancy:	\$ - <u>113,000</u>
<u>TOTAL INCOME:</u>	<u>\$ 2,147,000</u>

EXPENSES

Management: salaries, utilities, maintenance, taxes, etc. 40% of income: 40% of \$2,147,000:	\$ 858,800
Mortgage Retirement: 85% of \$25,964,500 = \$22,069,825 x 6%:	+ \$ <u>1,324,190</u>
<u>TOTAL EXPENSES:</u>	<u>\$ 2,182,990</u>

The “Economic Equation”

BALANCE

Income: \$ 2,147,000

Expenses: - \$ 2,182,990

Loss: (\$ 35,990)

Equity: 15% of \$25,964,500 = \$3,894,675

This is almost a 1.0% loss/year of investment

CONCLUSION

Compared to risk-free savings accounts or bonds, this is a poor investment. Can it be improved and have it still marketable?

The “Economic Equation”

INCOME

Apt Rent: \$2,000/month @100 units @12months \$ 2,400,000

Garage: \$200/month @100 spaces @12 months: \$ 240,000

Commercial Rent: + \$ 100,000

Subtotal: \$ 2,740,000

Less 5% vacancy: \$ - 137,000

TOTAL INCOME: **\$ 2,603,000**

EXPENSES

Management: salaries, utilities, maintenance,
taxes, etc. 40% of income: 40% of \$2,603,000: \$ 1,041,200

Mortgage Retirement: 85% of \$25,964,500 =
\$22,069,825 x 6%: + \$ 1,324,190

TOTAL EXPENSES: **\$ 2,365,390**

Try a higher rent this time.

The “Economic Equation”

BALANCE

Income: \$ 2,603,000

Expenses: + \$ 2,365,390

Gain: \$ 237,610

Equity: 15% of \$25,964,500 = \$3,894,675

This is almost a 6.1% gain/year of investment

CONCLUSION

This is not a **great** investment. (Average stock market rise is 10% over the last 25 years.) But if one considers the value of the real estate which increases more rapidly than money in the bank, compounded with the revenue generation, it might make sense for a long-range investment. Another rental raise will increase the annual profit margin.

The “Economic Equation”

CONDOMINIUM

Hard Cost (Same):	\$23,915,000
Soft Cost (Same with increases)	\$ 2,049,500
Increases:	
Broker: 6% of \$23,915,000	\$ 1,434,900
Legal:	\$ 40,000
Surveyor (vertical survey):	\$ <u>75,000</u>
Sub-total:	\$27,514,400
Add 15% Profit:	<u>\$ 4,127,160</u>
Total:	<u>\$31,641,560</u>

\$31,641,560 / 100 units = approximately \$316,400 per condominium. So, depending on where this building is developed, it may be a good investment for a 15% profit on the project.

Other Factors in Residential Development

Ownership → Care for building

- Apartment building landlords don't maintain
- Slumlords
- But even condo boards hesitate to spend

Condominium litigation scenario

- Developers cut corners and oversell
- Attorneys scare boards into lawsuits



QUESTIONS