

A white silhouette of a city skyline is set against a solid red background. The skyline features several buildings of varying heights and shapes, with the most prominent one being a tall, slender skyscraper with a pointed top, resembling the Empire State Building. Other buildings are more rectangular and blocky. The overall effect is a clean, graphic representation of an urban landscape.

# LANDMARK RESEARCH

Real Estate - Quick Reference

## PROPERTY DESCRIPTION

### Ownership

- Bundle of Rights**--Tax, police, eminent domain, escheat.
- Fee Simple**--Unencumbered ownership.
- Leased Fee**--Lessor's (Landlord's) interest.
- Leasehold--Lessee's** (Tenant's) interest.
- Sandwich Interest**--Interest of one who has leased property and subsequently subleases the property.

### Land

- Access**--E.g., from street or highways.
- Accessor's Parcel**--Number and map to define parcels for property tax.
- Adjoining Uses**--(Un)complementary uses.
- Area--1 Acre = 43,560 SqFt.**
- Assemblage**--Combining 2 or more parcels of land.
- Corner/Mid-Street**--Location in block.
- Drainage**--Water flow, direction and adequacy.
- Easements**--E.g., utilities, roads, railroads.
- Elevation**--Feet above sea level.
- Entitlements**--Actual rights granted by local governments to build.
- Encroachments**--Improvements of an adjoining property encroaching on the site, e.g., fences, walls.
- Front Feet**--Frontage on street in terms of feet.
- General Plan**--Local government's overall land use.
- Gross Area**--The total land area. (See Net Area).
- Hazardous Conditions**--E.g., flood zone, waste site, earthquake zone, subsidence, intractability.
- Legal Description**--E.g., metes/bounds, parcel/tract.
- Net Area**--The buildable area. (See Gross Area).
- Offsite Utilities**--Utilities to the site.
- Onsite Utilities**--Utilities on the site.
- Plottage**--Incremental value from assemblage of land.
- Private Restrictions**--Deed restrictions of land use.
- Riparian Rights**--Water rights, e.g., lake, river.
- Shape**--E.g., square, rectangular, irregular.
- Site Improvements**--E.g., roads, gutters, sidewalks.
- Soil Type**--E.g., silty, sandy, clayey.
- Special Assessments**--E.g., school/utility bonds.
- Surrounding Influences**--E.g., demographics, infrastructure, climate.
- Topography**--Land surface, e.g., rolling, flat, rough.
- Utilities**--Water, electricity, natural gas, telephone, sewer, storm sewer, cable television, Internet.
- Vested**--Foundation in place.
- View**--E.g., city, ocean, mountain, valley.
- Zoning**--Local government regulation of land use.

### Improvements

- Age**--Actual and effective.
- Asbestos**--Highly suspect if built prior to 1979.
- Ceilings**--E.g., acoustical tile, sprayed, t-bar.
- Deferred Maintenance**--Overdue repairs.
- Density**--Number of units allowed, e.g., 5 per acre.
- Depreciation**--E.g., physical, economic, external.
- Doors**--Interior, exterior, overhead.
- Equipment**--E.g., elevators, fire sprinklers, HVAC, security, irrigation, escalators.
- Excess Land**--Excess of building/parking needs.
- Fenestration**--Design, location of windows.
- Flooring**--E.g., marble, carpet, tile, vinyl.
- Hazards**--E.g., structural, termites, asbestos.
- HVAC**--Heating, ventilation, air conditioning.
- Lighting**--E.g., florescent, incandescent.
- Parking Ratio**--Spaces/1,000=spaces/(bld.sq.ft./1,000).
- Restrooms**--Count of sinks, water closets, etc.
- Roof**--E.g., flat, gable, gambrel, hip, mansard.
- Signs**--E.g., monument, mounted, posted.
- Stories**--Low rise 1-2, mid rise 3-6, high rise 7+.
- Substructure**--Entire foundational structure.
- Superstructure**--Portion above grade.
- Wall**--Bearing (supports building) or demising.
- Yard Improvements**--E.g., paving, landscaping.

## TYPE

The previous terms apply to commercial properties in general. The following are terms related to property types.

### Office\*

- Add on (Load) Factor** =  $\frac{\text{Rentable Area} - \text{Usable Area}}{\text{Usable Area}}$
- Coverage Ratio** =  $\frac{\text{Ground Floor Area}}{\text{Land Area}}$
- Effective Ratio** =  $\frac{\text{Net Rentable Area}}{\text{Gross Building Area}}$
- Floor Area Ratio (FAR)** =  $\frac{\text{Gross Building Area}}{\text{Land Area}}$
- Vacancy Factor** =  $\frac{\text{Vacant Area}}{\text{Rentable Area}}$

\*These ratios may also apply to other property types.

### Retail

- Anchor Tenant**--Major retail tenant.
- Balance Mix**--Complimentary retail tenants.
- Commercial Business District**--The city's business focal point.
- Co-op Ads**--Ads which benefit all tenants of a center.
- Exposure**--The exposure of center to retail traffic.
- Front Feet**--Frontage on street in terms of feet.
- Merchants Association**--Complimentary retail tenants.
- Retail Windows**--Large store windows for display.
- Rules and Regulations**--Rules of the retail center.
- Satellite Tenant**--Smaller, non-anchor tenant.
- SKU**--Stock Keeping Units.
- Traffic Count**--Street traffic in cars per day.
- Twilight Zone**--Area between city and suburbs.
- Types**--Mini mall, neighborhood, power center, regional, storefront, big box.

### Industrial

- Dock High Doors**--Overhead doors at truck height.
- Electrical**--Amps/Volts/Poles.
- Overhead Door**--Dock high or ground level.
- Percentage Office** =  $\frac{\text{Office Area}}{\text{Gross Leasable Area}}$
- Rail Served**--Direct rail spur access.
- Truss Height**--Distance from round to bottom of truss.
- Yard Area**--Fenced or unfenced open area.

### Apartments/Hotels

- Amenities**--E.g., pool, recreation room, laundry.
- Bath**--Full (toilet, sink, bathtub), 3/4 (toilet, sink, shower), 1/2 (toilet, sink).
- Laundry Facilities**--Available and adequate.
- Number of Units**--Common measurement tool.
- Proximity**--E.g., to shopping, school, freeways.
- Room Count**--Total rooms/bedrooms/baths, e.g., 6/3/2.
- Type**--E.g., low cost, mid market, luxury, senior.

### Residential

- Condominiums**--Shared ownership of common area and air space of specific unit.
- Co-ops**--Multi units with prorated share of mortgage.
- Duplex**--Two units with common wall.
- Mobile Home/Modular**--Typically improvements on leased land.
- PUD**--Planned Unit Development.
- SFR**--Single Family Residence.
- Subdivision**--Land divided into lots.
- Townhomes**--Condos in upper/lower levels.
- Tract**--Parcel of land.

**Important:** This *Quick Reference* is only a brief overview of selected real estate terms and definitions and is not intended to be comprehensive. For detailed information and definitions, contact a real estate professional or a comprehensive publication.

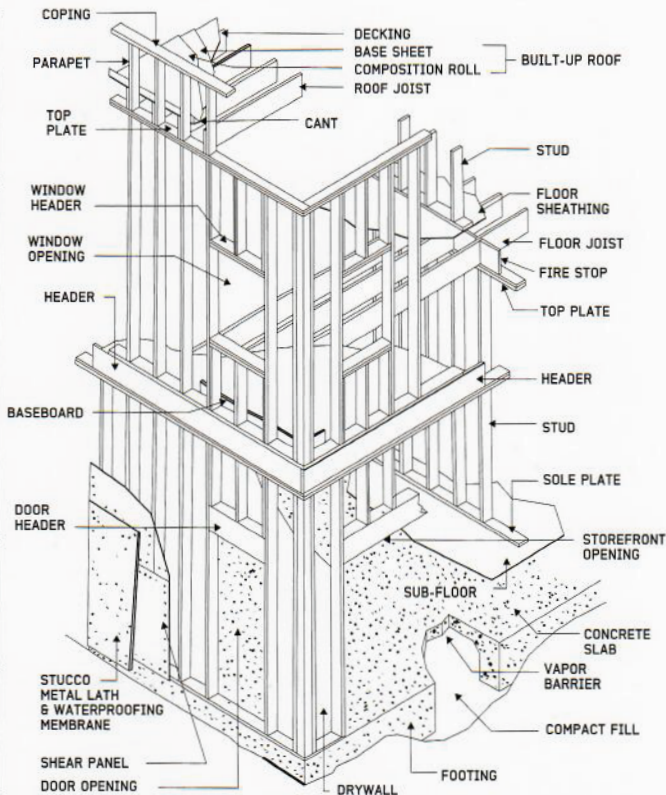
## CONSTRUCTION TERMS

**Construction Classification**  
 Class A--Steel Frame  
 Class B--Reinforced Concrete Frame  
 Class C--Concrete or Brick  
 Class D--Wood Frame  
 Class S--Steel, E.g., steel shed

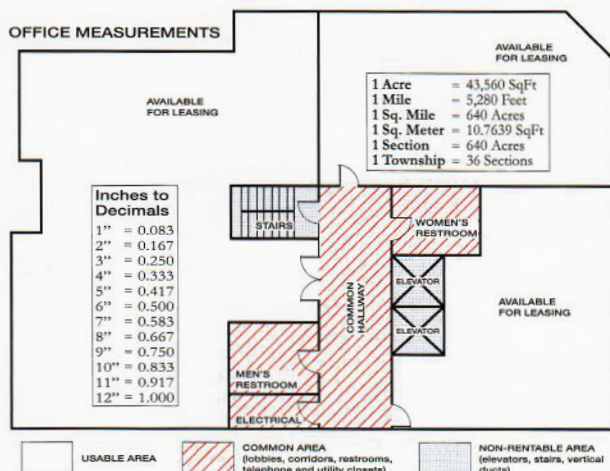
**Building Group Use Summary**  
**A** Assembly--Theaters, auditoriums, stadiums.  
**B** Business--Offices, retail, restaurants.  
**E** Educational--Schools, day care.  
**F** Factories--Mills, manufacturing plants.  
**H** Hazardous--Plants of explosive materials.  
**I** Institutional--Hospitals, nursing homes.  
**R** Residential--Homes, apartments, hotels.  
**S** Storage--Warehouse facilities.

**Fire Type Range**  
 Type I--Most strict (noncombustible)  
 to  
 Type V--Least strict (combustible)

**Quality Classification**  
 Class A--Excellent  
 Class B--Good  
 Class C--Low End  
 Class D--Near Obsolete  
 Class R--Renovated



## IMPROVED AREA MEASUREMENTS



RENTABLE AREA = USABLE AREA + COMMON AREA  
 NOTE: Measurements are made from the inside surface of exterior walls and middle line of interior partitions. Columns which support the building are not deducted.  
 CONSTRUCTION AREA = Total floor area, measured from the exterior walls. Includes the basement.

- Apartments, Total Floor Area--Measured from exterior walls\*.
  - Condominiums, Total Living Area--Measured from the inside surface of exterior walls.
  - Industrial, Gross Leasable Area (GLA)--Measured from the exterior wall\* to center of joint partition walls.
  - Residential, Gross Living Area--Total area of finished, above grade area measured from exterior walls\*.
  - Residential, Gross Building Area--Gross Living Area, plus basement area, measured from exterior walls†.
  - Retail, Gross Leasable Area (GLA)--Measured from exterior wall\* to center of joint partition walls.
- \*Outside surface. †Inside surface.

## LEASE TERMS

- Abatement**--Increases/decreases, e.g., property taxes.
- Absence**--Terms to notify lessor if absent.
- Additional Rent**--E.g., percentage rents, increases.
- Alterations/Additions**--Terms if lease is altered.
- Base Expense Year**--Lessee pays prorated expenses above the base year (year lease starts) expense.
- Base Rent**--Rent paid at start of lease.
- Commence**--Date lease starts.
- Commissions**--Payment to brokers for services.
- Common Area**--Areas used by all tenants.
- Concessions**--E.g., free rent, moving allowance.
- Condemnation**--Terms if property is condemned.
- Contract Rent**--Rent as stated in lease (see Effective Rent).
- Covenants & Conditions**--Rules of property.
- CPI**--Rents increase with the *Consumer Price Index*.
- Default**--Terms in case of default of rent payment.
- Effective Rent**--Rent adjusted for concessions.
- Escalations**--Increase in rent over initial lease terms.
- Estoppel**--Statement verifying lease terms.
- Excess Rent**--Rent paid over market.
- Expense Stop**--Tenant pays expense over stated amount.
- Fire**--Responsible party if fire occurs.
- Fixed**--Set rent increase, e.g., 5% per year.
- Free Rent**--E.g., one free month per year.
- Gross**--Lessor pays all property expenses (see Net).
- Insurance**--E.g., liability, fire.
- Industrial Gross**--Definition varies, often lessor pays all property taxes, insurance, maintenance.
- Lessee**--Tenant.
- Lessor**--Landlord.
- Location**--E.g., within office or retail center.
- Management Assessments**--A premium paid based on a percentage of building expenses.
- Modified Gross**--A mixture between net and gross.
- Moving Allowance**--Incentive to prospective tenants.
- Net**--Lessee pays all property expenses (see Gross).
- NNN**--Definition varies, often denotes a net lease.
- Operating Hours**--Rules of hours of operation.
- Option**--Extend term, e.g., at lessee's option.
- Overage Rents**--Rent paid over base amount.
- Owner's Inspection**--Right of owner to inspect.
- Parking Allowance**--Parking allotted to lessee.
- Percentage Lease**--Lessee pays a percentage of business sales, in addition to rent.
- Prime Tenant**--A large, well-known tenant.
- Purchase Option**--Lessee's option to buy.
- Quiet Title**--Lessee's right to non-interference concerning title issues.
- Radius Clause**--Lessee may not operate another business within a specified radius.
- Re-Appraisal**--Rental increase based on appraised value.
- Recording**--Recording of lease with county office.
- Rent Roll**--Summary of tenants, rates and terms.
- Rider**--Additional lease terms, addendum.
- Security Deposit**--Amount and terms.
- Signs**--Regulations governing signage.
- Size (usable v. Rentable)**--See diagram.
- Subletting**--Terms governing subleasing.
- Subordination**--Lease subordinates to future trust deeds or mortgages.
- Taxes**--Rules governing who pays property taxes.
- Tenant Improvements (TI's)**--E.g., carpet, demising walls, paint, ceiling, lighting.
- Term**--Duration of lease in months or years.
- Terminate**--Date lease ends.
- Use**--Allowed uses of property, e.g., fast food.

## VALUATION

- Absorption**--Rate of sales/leasing, e.g., 4 units/month.
- Adjustments**--Accounting for differences between the subject property and comparables.
- Agents of Production**--Land, labor, capital and coordination.
- Arms-Length**--Sale between two disinterested parties.
- "As Is" Value**--Value as property currently stands.
- Assumptions and Limiting Conditions**--Stipulations upon which the appraisal is based.
- Certification**--Statement attesting to an unbiased analysis.
- Comparable**--Similar property for comparative use, e.g., price/square foot, cap rates, lease rates.
- Creation of Value**--Utility, scarcity, desire and effective purchasing power.
- Diminution of Value**--Loss in value.
- Highest and Best Use**--Physical, legal, economical and maximally productive use.
- Influences on Value**--Physical, economic, government and social.
- Market Value**--Value as if sold in informed, open market.
- Rights Appraised**--E.g., fee simple, leased fee.
- Stabilized Value**--Value as if property is fully leased.
- Unit of Comparison**--E.g., price per square foot, acre, room, front foot, unit.

### Cost Approach

Replacement Cost New	(E.g., Cost Manual, Contractor's Estimate)
+ Indirect Costs	(E.g., fees, landscape)
+ Developer's Profit	
- Depreciation	(Effective Age/Total Life)
= Depreciated Value of Improvements	
+ Land Value	(From Land Sales Comparables)
= Indicated Value	

### Income Capitalization Approach

Potential Gross Income	(Actual, Market Rents)
+ Other Income	(Parking, Laundry)
+ Tenant Reimbursements	
- Vacancy, Collection Losses	
= Effective Gross Income	
- Expenses	(TIMMUR)
- Taxes, Insurance, Management, Maintenance, Utilities, Reserves	
= Net Income	
+ Capitalization Rate	
= Indicated Value	

### Sales Comparison Approach

#### Price per Unit Method:

Building Size/Configuration	
x Price Per Unit (E.g., Square Foot, Room)	
= Indicated Value	

#### Gross Annual Income Multiplier (GAIM) Method:

Gross Income	
x GAIM	
= Indicated Value	

### Reconciliation

Consideration of pros and cons of each approach, with more weight given to the most applicable approach.

**FINANCE & TAXES****Ratios**

Break Even	=	$\frac{\text{Operating Expense} + \text{Debt Service}}{\text{Effective Gross Income}}$
Debt Coverage	=	$\frac{\text{Net Operating Income}}{\text{Debt Service}}$
Equity Dividend Rate (Cash on Cash)	=	$\frac{\text{Net Income} - \text{Mortgage Payments}}{\text{Value} - \text{Loan Balance}}$
Gross Annual Income Multiplier	=	$\frac{\text{Sales Price}}{\text{Gross Annual Income}}$
Loan per Square Foot	=	$\frac{\text{Loan Amount}}{\text{Square Feet of Improvements}}$
Loan to Value	=	$\frac{\text{Mortgage Debt}}{\text{Value of Property}}$
Operating Expense Ratio	=	$\frac{\text{Operating Expense}}{\text{Effective Gross Income}}$
Overall Capitalization Rate (Cap Rate)	=	$\frac{\text{Net Operating Income}}{\text{Sales Price}}$

**Capital Gains Tax Calculation**

- Sales Price  
- Sales Expense  
= Adjusted Sales Price
- Cost Basis (Original Cost)  
+ Capital Improvements  
- Depreciation  
= Adjusted Cost Basis
- Adjusted Sales Price  
- Adjusted Cost Basis  
= Capital Gain or Loss

**TITLE & FINANCING TERMS**

- AITD--All Inclusive Trust Deed or "wrap loan."
- ALTA--Title insurance policy which expands risk.
- Basis Point--1/100th of 1% annually.
- Beneficiary--The lender, utilizing a trust deed.
- Fixed Rate Mortgage--Interest rate set for term.
- Graduated Mortgage--Increased payments over time.
- Grant Deed--Deed which transfers property.
- Grantee--One who receives a deed, the buyer.
- Grantor--One who gives a deed, the seller.
- Joint Tenancy--Undivided, equal interest, survivorship to other tenant(s), may not be willed.
- Loan Type--E.g., construction, bridge, take-out, re-finance.
- Mortgage--Creates lien as security for debt.
- Mortgagee--The lender, utilizing a mortgage.
- Mortgagor--The borrower, utilizing a mortgage.
- Optionee--One who purchases/receives an option.
- Optionor--One who sells/gives an option.
- Points--1 point = 1% of loan, effectively increases the interest rate.
- Prepayment--Right to prepay loan.
- Recording--Filing of deed with county office.
- Sale Leaseback--Owner sells property and then leases from new owner.
- Seller Financing--Seller takes note rather than cash.
- Stocker Exchange--Tax-deferred exchange.
- Straight Note--Interest only, principal paid at term.
- Teaser Rate--Low initial rate to entice borrowers.
- Tenant in Severalty--One who owns property alone.
- Tenants in Common--Undivided ownership, may be unequal interests, no survivorship, may be willed.
- Title Insurance--Protection from defects in title.
- Trust Deed--Security for a loan.
- Trustee--Neutral party who holds *naked legal title*.
- Trustor--The borrower, utilizing a trust deed.
- Variable Rate Mortgage--Rate "floats" with index.
- Yield Maintenance--Prepayment penalty on fixed loan.

**REAL ESTATE & RELATED ORGANIZATIONS**

- American Bar Association  
[www.americanbar.org](http://www.americanbar.org)
- American Economic Association  
[www.aacaweb.org](http://www.aacaweb.org)
- American Fact Finder  
[www.factfinder.census.gov](http://www.factfinder.census.gov)
- American Hotel and Lodging Association  
[www.ahla.com](http://www.ahla.com)
- American Institute of Architects  
[www.aia.org](http://www.aia.org)
- American Institute of Certified Public Accountants  
[www.aicpa.org](http://www.aicpa.org)
- American Planning Association  
[www.planning.org](http://www.planning.org)
- American Real Estate Society  
[www.aresnet.org](http://www.aresnet.org)
- American Society of Appraisers  
[www.appraisers.org](http://www.appraisers.org)
- Appraisal Institute  
[www.appraisalinstitute.org](http://www.appraisalinstitute.org)
- Appraisal Institute of Canada  
[www.aicanada.ca](http://www.aicanada.ca)
- Building Owners and Managers Association (BOMA) Int.  
[www.boma.org](http://www.boma.org)
- Core Logic  
[www.corelogic.com](http://www.corelogic.com)
- CoStar  
[www.costar.com](http://www.costar.com)
- The Counselors of Real Estate  
[www.cre.org](http://www.cre.org)
- Esri: GIS Mapping  
[www.esri.com](http://www.esri.com)
- Institute of Real Estate Management  
[www.irem.org](http://www.irem.org)
- International Council of Shopping Centers  
[www.icsc.com](http://www.icsc.com)
- International Right of Way Association  
[www.irwaonline.org](http://www.irwaonline.org)
- International Valuation Standards Council  
[www.ivsc.org](http://www.ivsc.org)
- Marshall and Swift  
[www.marshallswift.com](http://www.marshallswift.com)
- Mortgage Bankers Association  
[www.mba.org](http://www.mba.org)
- National Apartment Association  
[www.naahq.org](http://www.naahq.org)
- National Association of Industrial and Office Parks  
[www.naiop.org](http://www.naiop.org)
- National Association of Realtors  
[www.nar.realtor](http://www.nar.realtor)
- National Retail Merchants Association, Inc.  
[www.retailmerchants.com](http://www.retailmerchants.com)
- Realty Rates  
[www.reatytrates.com](http://www.reatytrates.com)
- Royal Institution of Chartered Surveyors  
[www.rics.org](http://www.rics.org)
- Urban Land Institute  
[www.uli.org](http://www.uli.org)

*The organizations listed are for informational purposes only. No endorsement of any organization or their services is given or implied.*

## REAL ESTATE DAMAGES

Detrimental Conditions (DC's) are issues that *potentially* have a financial impact. DCs may fall along a continuum ranging from no economic impact to a complete loss of value, or even a liability. If a question of value arises, a Detrimental Condition (DC) analysis is required. The starting point for such an analysis is the DC Matrix, which illustrates the array of potentially relevant issues. All nine elements of the DC Matrix should be considered. This can yield a variety of valuation patterns based upon the inclusion, exclusion and timing of each element, as reflected in the DC Model. Damages are benchmarked against the *Baseline Value*. In determining the impact on value, it is critical that a distinction be made between the DC and unrelated issues. For example, market conditions may be responsible for a change in value that is unrelated to the condition being studied.

The impact of DCs on property values is ultimately an empirical question that requires the application of one or more of the three traditional approaches to value:

1. The Sales Comparison Approach utilizing market data with and without the DC.
2. The Income Capitalization Approach utilizing income and risk factors with and without the DC.
3. The Cost Approach utilizing data with and without the losses associated with a DC.

The DC Matrix, coupled with the three approaches to value, provides the framework for the analysis of DCs.

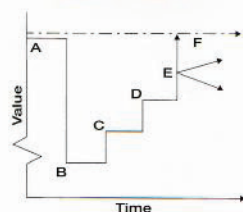
### The Bell Chart

General Conditions		Description
I	General Conditions	Baseline description and general market issues, e.g., real estate, franchise, business, FF&E, goodwill, personal property, products, services
II	Transactional Conditions	Unique sales or transfer issues, e.g., motivation, option, assemblage, distress, financing, bankruptcy, foreclosure
III	Distress Conditions	Human loss and tragedy issues, e.g., crime, war, terrorism, accident, car crash, air disaster, train derailment, shipwreck, death, disability, fire, illness, injury
IV	Legal Conditions	Legal issues, e.g., eminent domain, contract, tort, insurance claim, title, lot line, CC&R, lien, bond, lease, historic, moratorium, zoning, easement
V	External Conditions	Neighborhood issues, e.g., nuisance, proximity, noise, odor, hazard, power lines, airport, privacy, view
VI	Building Conditions	Construction, equipment and mechanical issues, e.g., defects, engineering, repairs required, design, code, architecture, infestation, regulations, permits
VII	Site Conditions	Soils, geotechnical and infrastructure issues, e.g., drainage, right of way, grading, fill, cracking, subsidence, slides, roads, corrosive soils, compaction, groundwater, utilities
VIII	Environmental Conditions	Contamination, health and toxicity issues, e.g., spills, haz-mat, asbestos (1979), lead paint (1978), mold, radioactive, metals, solvents, biological, hydrocarbons, plague, epidemic
IX	Conservation Conditions	Cultural and natural resource issues, e.g., habitat, endangered species, natural and cultural resources, archaeological, shoreland, wetland, overpopulation
X	Natural Conditions	Natural disaster and weather issues, e.g., flood, hurricane, typhoon, wildfire, seismic, volcano, tornado, climate, tsunamis, famine, drought, storms

### Detrimental Condition Matrix

	Assessment	Repair	Ongoing
Cost	Assessment Costs & Responsibility	Repair Costs & Responsibility	Ongoing Costs & Responsibility
Use	Use Impacts While Assessed	Use Impacts While Repaired	Impact on Highest & Best Use
Risk	Uncertainty Factor	Project Incentive	Market Resistance

### DC Model

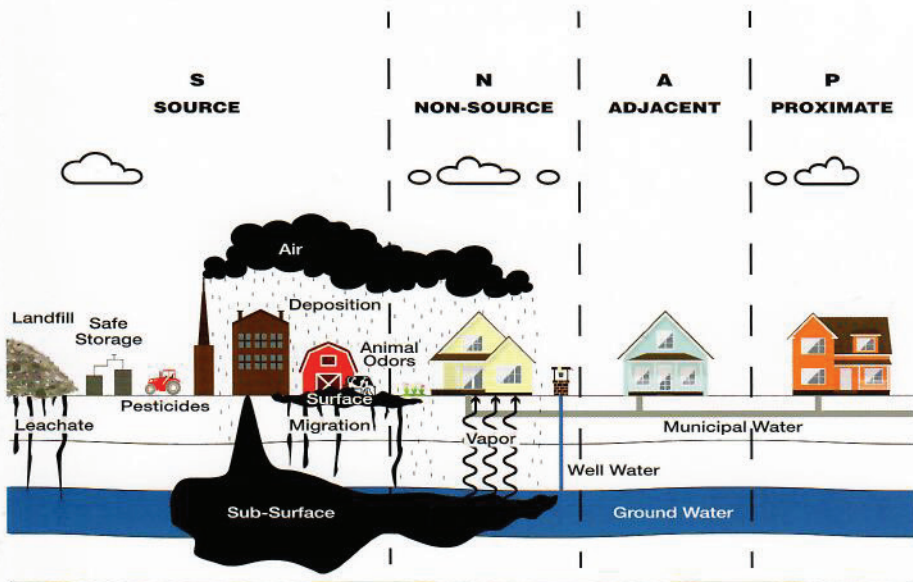


#### Key to Graphs

--- Unimpaired Value  
 — Value With DC

- A: Unimpaired Value  
 B: DC Occurs-Discovered  
 C: Assessment Stage  
 D: Repair Stage  
 E: On-Going Stage  
 F: Market Resistance

## ENVIRONMENTAL EXPOSURE PATHWAYS



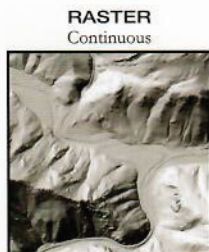
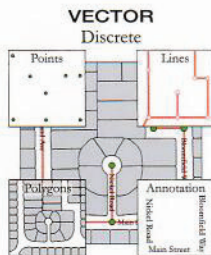
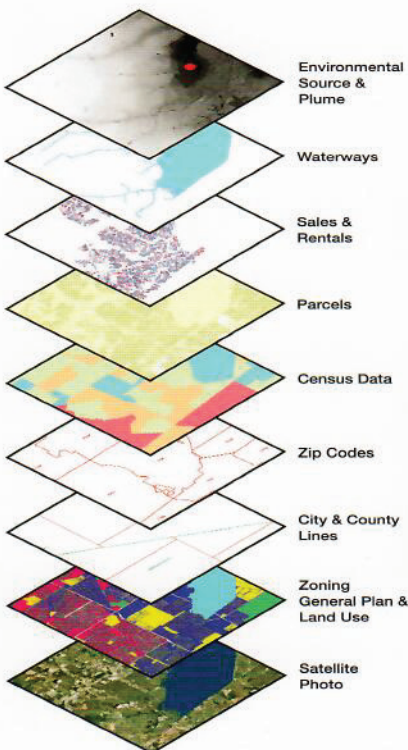
## GLOBAL INFORMATION SYSTEMS (GIS)

### Overview

Global Information Systems (GIS) refers to a technology or system used to map, manage, analyze, store, augment, and display spatial data. It can accommodate general "layers" of map data, such as zoning, roadways, census tract, waterways, building improvements, and so forth.

In complex real estate assignments, GIS is often used to map the sales data and analyze it in relation to points of interest in the case. For example, GIS is often used for mass-valuation or to identify a class of properties. Properties are generally placed into test areas (properties that are impacted and being studied) and control areas (otherwise similar properties that are un-impacted). Furthermore, studies can be conducted to determine any impacts on value from a point, such as from airport noise or a source of environmental contamination.

GIS provides a foundation to use the data for a subsequent statistical analysis.



- ✓ Elevation
- ✓ Rainfall
- ✓ Wind
- ✓ Topography

## CONSTANT ANNUAL PERCENT TABLE

Fully Amortized, Based on Monthly Payments

TERM RATE	5	10	15	20	25	26	27	28	29	30	35	40
1.00%	20.512	10.512	7.182	5.519	4.522	4.369	4.228	4.096	3.974	3.860	3.387	3.034
1.25%	20.642	10.643	7.315	5.654	4.660	4.507	4.366	4.235	4.113	3.999	3.529	3.178
1.50%	20.772	10.775	7.449	5.791	4.799	4.647	4.506	4.376	4.255	4.141	3.674	3.326
1.75%	20.902	10.908	7.585	5.930	4.941	4.790	4.650	4.520	4.399	4.287	3.823	3.478
2.00%	21.033	11.042	7.722	6.071	5.086	4.936	4.796	4.667	4.547	4.435	3.975	3.634
2.25%	21.165	11.176	7.861	6.214	5.234	5.084	4.945	4.817	4.698	4.587	4.131	3.794
2.50%	21.297	11.312	8.001	6.359	5.383	5.234	5.097	4.970	4.851	4.741	4.290	3.957
2.75%	21.429	11.449	8.143	6.506	5.536	5.388	5.251	5.125	5.008	4.899	4.452	4.125
3.00%	21.562	11.587	8.287	6.655	5.691	5.544	5.408	5.283	5.167	5.059	4.618	4.296
3.25%	21.696	11.726	8.432	6.806	5.848	5.702	5.568	5.444	5.329	5.222	4.787	4.470
3.50%	21.830	11.866	8.579	6.960	6.007	5.863	5.730	5.608	5.494	5.389	4.959	4.649
3.75%	21.965	12.007	8.727	7.115	6.170	6.027	5.895	5.774	5.661	5.557	5.135	4.830
4.00%	22.100	12.149	8.876	7.272	6.334	6.193	6.062	5.943	5.832	5.729	5.313	5.015
4.25%	22.235	12.293	9.027	7.431	6.501	6.361	6.232	6.114	6.005	5.903	5.495	5.203
4.50%	22.372	12.437	9.180	7.592	6.670	6.532	6.405	6.288	6.180	6.080	5.679	5.395
4.75%	22.508	12.582	9.334	7.755	6.841	6.705	6.579	6.464	6.358	6.262	5.866	5.589
5.00%	22.645	12.728	9.490	7.919	7.015	6.880	6.756	6.643	6.538	6.442	6.056	5.786
5.25%	22.783	12.875	9.647	8.086	7.191	7.058	6.936	6.824	6.721	6.626	6.249	5.986
5.50%	22.921	13.023	9.805	8.255	7.369	7.238	7.118	7.008	6.907	6.813	6.424	6.189
5.75%	23.060	13.172	9.965	8.425	7.549	7.420	7.302	7.193	7.094	7.003	6.642	6.395
6.00%	23.199	13.322	10.126	8.597	7.732	7.604	7.488	7.381	7.284	7.195	6.842	6.603
6.25%	23.339	13.474	10.289	8.771	7.916	7.791	7.676	7.572	7.476	7.389	7.045	6.813
6.50%	23.479	13.626	10.453	8.947	8.102	7.979	7.867	7.764	7.671	7.585	7.250	7.025
6.75%	23.620	13.779	10.619	9.124	8.291	8.170	8.059	7.959	7.867	7.783	7.457	7.240
7.00%	23.761	13.933	10.786	9.304	8.481	8.362	8.254	8.155	8.066	7.984	7.666	7.457
7.25%	23.903	14.088	10.954	9.485	8.674	8.557	8.450	8.354	8.266	8.186	7.878	7.676
7.50%	24.046	14.244	11.124	9.667	8.868	8.753	8.649	8.554	8.469	8.391	8.091	7.897
7.75%	24.188	14.401	11.295	9.851	9.064	8.951	8.849	8.757	8.673	8.597	8.306	8.119
8.00%	24.332	14.559	11.468	10.037	9.262	9.151	9.051	8.961	8.879	8.805	8.523	8.344
8.25%	24.476	14.718	11.642	10.225	9.461	9.353	9.255	9.167	9.087	9.015	8.742	8.570
8.50%	24.620	14.878	11.817	10.414	9.663	9.557	9.461	9.375	9.297	9.227	8.962	8.797
8.75%	24.765	15.039	11.993	10.605	9.866	9.762	9.668	9.584	9.509	9.440	9.184	9.026
9.00%	24.910	15.201	12.171	10.797	10.070	9.969	9.878	9.796	9.722	9.655	9.408	9.256
9.25%	25.056	15.364	12.350	10.990	10.277	10.177	10.088	10.008	9.937	9.872	9.633	9.488
9.50%	25.202	15.528	12.531	11.186	10.484	10.387	10.300	10.223	10.153	10.090	9.859	9.721
9.75%	25.349	15.692	12.712	11.382	10.694	10.599	10.514	10.438	10.371	10.310	10.087	9.955
10.00%	25.496	15.858	12.895	11.580	10.904	10.812	10.729	10.656	10.590	10.531	10.316	10.190
10.25%	25.644	16.025	13.079	11.781	11.117	11.026	10.946	10.874	10.810	10.753	10.546	10.426
10.50%	25.793	16.192	13.265	11.980	11.330	11.242	11.164	11.094	11.032	10.977	10.778	10.663
10.75%	25.942	16.361	13.451	12.183	11.545	11.459	11.383	11.315	11.255	11.202	11.010	10.901
11.00%	26.091	16.530	13.639	12.386	11.761	11.678	11.603	11.538	11.480	11.428	11.243	11.140

Example: A \$1,000,000 loan for 30 years at 7.50% interest. \$1,000,000 @ 8.391% = \$83,910 annual payment or \$6,992.50 monthly payment.

## TIME VALUE OF MONEY

- Amortization**--Periodic payments of interest and principal.
- Annuity**--Series of periodic payments.
- Compound Interest**--Interest paid on principal plus accumulated unpaid interest.
- Discounted Cash Flow (DCF)**--Forecasted income, expenses and reversion, with resultant net cash flow discounted by an IRR to yield a NPV.
- Discount Rate**--Compound rate to convert future income into a present value.
- Future Value (FV)**--Final compounded value of payment(s) on future date.
- Interest**--Rate required for the use of money.
- Internal Rate of Return (IRR)**--The investment's rate of return.
- Negative Amortization**--Payment insufficient to pay interest, thus increasing the loan balance.
- Net Present Value (NPV)**--Present value of discounted cash flows, discounted at a determined rate.
- Payment**--Refer to *Constant Annual Percent Table*.
- Present Value (PV)**--The sum of discounted future cash flows.
- Principal**--The sum of money invested.
- Reversion**--Net proceeds upon.
- Simple Interest**--Interest paid on principal only.
- Sinking Fund**--A series of payments, that compounded, equals a specified sum at a future date.

$$\begin{aligned}
 PV &= FV \times PVF \\
 FV &= PV/PVF \\
 NPV &= [FV \times (1/(1+IRR))^n] - CF_0 \\
 PVF &= 1/(1+i)^n \\
 PV &= Present Value \\
 FV &= Future Value \\
 PVF &= Present Value Factor \\
 NPV &= Net Present Value \\
 IRR &= Internal Rate of Return \\
 CF_0 &= Initial Cash Flow \\
 n &= Number of Years \\
 i &= Interest Rate
 \end{aligned}$$

