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RESEARCH RESULTS DIGEST

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Trial Strategy and Techniques Using the Income Approach to Valuation

A report submitted under ongoing NCHRP Project 20-6, "Right-of-Way and Legal Problems Arising Out of Highway Programs," for which the Highway Research Board is the agency conducting the research. The report was prepared by Joseph M. Montano, Chief Highway Counsel, Assistant Attorney General, State of Colorado, and Marlin D. Opperman, Assistant Attorney General, State of Colorado, for John C. Vance, HRB Counsel for Legal Research, principal investigator, serving under the Special Projects Area of the Board.

THE PROBLEM AND ITS SOLUTION

State highway departments and transportation agencies have a continuing need to keep abreast of operating practices and legal elements of special problems involving right-of-way acquisition and control, as well as highway law in general. The duty of counsel for the condemnor is to protect the taxpayer from having to pay more than is just for a taking. This report deals specifically with the income approach to valuation. It includes ideas and suggestions of strategy and trial techniques--together with legal authorities in support thereof--for use by legal counsel in the discharge of his duty.

RESEARCH FINDINGS

Research findings are not to be confused with findings of the law. The monograph that follows constitutes the research findings from this study. *Because it is also the full text of the agency report, the statement above concerning loans of uncorrected draft copies of agency reports does not apply.*

I. INTRODUCTION

Courts have generally recognized three approaches to value in eminent domain cases. These are (1) the comparable sales or market data approach, (2) the cost less depreciation approach, and (3) the capitalization of the actual or potential income of the property, often referred to as the income approach.

Most courts have ruled that the comparable sales or market data approach is the best evidence of value. Lataille v. Housing Authority of City of Woonsocket, 280 A.2d 98 (Supreme Court of R.I. - 1971); U. S. v. 3,698.63 Acres of Land, 416 F.2d 65 (U. S. Circuit Ct. of Appeals, Eighth Circuit

- 1969); State v. O'Neal, 150 So.2d 608 (Court of Appeals of La. - 1963). They also have ruled that the income approach can only be used where no market data exist or where there are no comparable sales that are similar to the property being valued. U. S. v. Certain Interest in Property in Cumberland County, State of North Carolina, 185 F.Supp. 555 (U. S. Dist. Court, E. D. North Carolina - aff. 296 F.2d 264, 1960); In Re Site for School of Industrial Arts, 154 N.Y.S.2d 402 (1956); State v. O'Neal, 150 So.2d 608 (Court of Appeals of La. - 1963); Orleans Parish School Board v. Paternostro, 107 So.2d 451 (Supreme Court of La. - 1958); Private Property For Municipal Courts FAC. v. Kordes, 431 S.W.2d 124 (Supreme Court of Missouri - 1968); State v. Sauls, 99 So.2d 97 (Supreme Court of La. - 1958).

Other courts have held that the three approaches are not to be used in isolation from each other, but are to be considered and compared together. Salt Lake County v. Kazura, 452 P.2d 869 (Supreme Court of Utah - 1969); U. S. v. 1.16 Acres, More or Less in City of Stamford, County of Fairfield, State of Connecticut, 300 F.Supp. 1021 (U. S. Dist. Ct., D. Conn. - 1969); City of Baltimore v. Concord Baptist Church, Inc., 262 A.2d 755 (Court of Appeals of Maryland - 1970).

In any given set of factual circumstances, one approach may be deemed to be more appropriate than another. City of Baltimore v. Concord Baptist Church, Inc., 262 A.2d 755 (Court of Appeals of Maryland - 1970).

Although of necessity it is essential to discuss the appropriateness of the income approach, the bulk of this paper is devoted to the use of the income approach, its ramifications, strengths, and weaknesses. Unless otherwise stated herein, it is assumed that the use of the income approach has been deemed proper.

Before an analysis of the income approach is undertaken, a brief discussion follows as to the propriety of its admissibility and some distinctions between allowable income and improper income. The latter is often referred to as "business profits."

For broad general authority on the use of income, see Nichols on Eminent Domain, Vol. 4, Sec. 12.312-12.3122, and Vol. 5, Sec. 19.1-19.31, Rev 3rd ed.

II. ADMISSIBILITY OF THE INCOME APPROACH

A. Approved

The income approach is applicable to properties that have as their main purpose the production of income. This is income from the property (land and buildings), mainly in the form of rentals, and is to be distinguished from profits derived from the business conducted on the land. Business profits, with rare exception, are not proper to be considered for the use of the income approach.

Courts have generally held that income derived from business ventures or operations depends to a great extent on the managerial capabilities of the individual operating the business; thus, valuation predicated thereon is too speculative and conjectural to be of any probative value. See Nichols on Eminent Domain, Section 19.3, pages 19-48, Vol. 5, 3rd Edition, (publication date 1969). There are several exceptions to this general rule, notably income from farm and mineral lands.

Many jurisdictions have recognized that the income approach is acceptable. This is illustrated by the following cases: U. S. v. 1.16 Acres, More or Less in City of Stamford, County of Fairfield, State of Connecticut, 300 F.Supp. 1021 (U. S. Dist. Ct., D. Connecticut - 1969); Salt Lake County v. Kazura, 452 P.2d 869 (Supreme Court of Utah - 1969) (income from a hotel); City of Bonner Springs v. Coleman, 481 P.2d 950 (Supreme Court of Kansas - 1971); Boring v. Metropolitan Edison Co., 257 A.2d 565 (Supreme Court of Penn. - 1969); U.S. v. 3,698.63 Acres of Land, 416 F.2d 65 (U. S. Circuit Ct. of Appeals, Eighth Circuit - 1969) (income from farm land); Demetria Sifuentes v. U. S., 168 F.2d 264 (U. S. Court of Appeals, First Circuit); Ventura County Flood Control District v. Security First National Bank, 93 Calif. Rptr. 653 (Court of Appeals, Second District - 1971) (income from a lemon orchard); Samuelson v. Salamanca Urban Renewal Agency, 311 N.Y.S.2d 558 (1970); Motsiff v. State, 301 N.Y.S.2d 786 (1969); Onondaga County Water Authority v. New York Water Service Corp., 139 N.Y.S.2d 755 (1955) (income from intangibles of a public utility); State Department of Highways v. Holmes, 221 So.2d 811 (Supreme Court of La. - 1969); Housing Authority of New Orleans v. Boudwine, 71 So.2d 541 (Supreme Court of La. - 1954); U. S. v. Certain Interest in Property in Champaign County, 271 F.2d 379 (U. S. Court of Appeals, Seventh Circuit - 1959); Pomeroy v. State, 191 N.Y.S.2d 84 (1959); Sunnybrook Realty Co. v. State, 203 N.Y.S.2d 286 (1960) (income from a gasoline station); In Re Public Parking Area - Albee Square, 200 N.Y.S.2d 772 (1960); Marjal Realty Corp. v. State of N. Y., 259 N.Y.S.2d 915 (1965); In Re Site For School of Industrial Arts, 154 N.Y.S.2d 402 (1956);

State v. Ellis, 382 S.W.2d 225 (Springfield Ct. of Appeals - Missouri - 1964)(income from a gasoline station); Orleans Parish School Board v. Paternostro, 107 So.2d 451 (Supreme Court of La. - 1958); State v. Sauls, 99 So.2d 97 (Supreme Court of La. - 1958); State v. Heltborg, 369 P.2d 521 (Supreme Court of Montana - 1962) (income from sale of hay); Private Property For Municipal Courts FAC. v. Kordes, 431 S.W.2d 124 (Supreme Court of Missouri - 1968) (income from a parking lot); Department of Public Works and Bldgs. v. Brockmeier, 262 N.E.2d 345 (Appellate Court of Illinois - 1970) (income from a sod-producing farm); City of Thibodaux v. Louisiana Power & Light Company, 373 F.2d 870 (U. S. Court of Appeals, Fifth Circuit - 1967) (income from a franchise of a power plant); Killip Laundering Co. v. State, 32 A.D. 579, 299 N.Y.S.2d 33 (1969) (The court held that where income producing property is held for income, the net income is ordinarily the surest index. The burden of proof is on the party wishing to show that net income is an unrealiable index.)

B. Disapproved

Even though a jurisdiction may, in general, approve the income approach, it will often reject it in certain situations. For example, in Latille v. Housing Authority of City of Woonsocket, 280 A.2d 98 (Supreme Court of R.I. - 1971), the income approach was rejected because there were ample comparable sales. This reason is the best one offered by the Court when the approach is rejected. In the preceding portion of this discussion, many of the cases cited as approving the approach did so on the basis that comparable sales were lacking.

Other examples disapproving of the approach are illustrated by these situations: special-use properties, such as churches, City of Baltimore v. Concord Baptist Church, Inc., 262 A.2d 755 (Court of Appeals of Maryland - 1970); and a hotel also deemed a special-use property, Chicago Land Clearance Commission v. Darrow, 146 N.E.2d 1 (Supreme Court of Illinois - 1957); where the income was not capitalized but a discount factor was merely applied to it, Boring v. Metropolitan Edison Co., 257 A.2d 565 (Supreme Court of Penn. - 1969); where the actual income from the property could not be ascertained because of a lack of records and the constructed income was arbitrary, U. S. v. Corbin, 423 F.2d 821 (Court of Appeals, Tenth Circuit - 1970); where the income was deemed to be unstable, Saunders v. State, 273 P.2d 970 (Supreme Court of Nevada - 1954); where there has been no history of rents for a lengthy period of time and no basis could be given for rental income other than by hypothesizing the rent, as well as the operating expenses and capitalization ratio, City of New Orleans v. Lew, 227 So.2d 785 (Court of Appeals of La. - 1969).

Revenue from dilapidated structures has also been disapproved. Kaperonis v. Iowa State Highway Comm., 99 N.W.2d 284 (Supreme Court of Iowa - 1959). In Commonwealth of Kentucky v. Eubank, 369 S.W.2d 15 (Court of Appeals of Kentucky - 1963) and in Robinette v. Commonwealth of Kentucky, 380 S.W.2d 78 (Court of Appeals of Kentucky - 1964), income from farm products such as tobacco, calves, and dairy products was deemed improper to be considered.

C. Business Profits

As previously stated, business profits are not usually the type of income that is capitalized in the use of the income approach. The basic reason is set forth in Vol. 5, Nichols on Eminent Domain, 3rd Edition, Section 19.3.

The following are cases illustrative of court rulings where business profits have been approved:

In State Highway Commission v. Lee, 485 P.2d 310 (Supreme Court of Kansas - 1971), the Court of Kansas adopted what is deemed to be the minority view. The Court there used the income approach by taking into account the income to be derived from the future sale of sites to be carved out of presently existing raw ground. This case, and a more complete analysis of the principles involved, is covered subsequently in the section entitled "Developmental Approach."

In Sunnybrook Realty Co. v. State, 203 N.Y.S.2d 286 (1960), the court based a rental value on the basis of the profits derived from a tire and gasoline business. The rationale was that the income capitalized was not the business profits but a rental value arrived at by an analysis of the business income. In State v. Ellis, 382 S.W.2d 225 (Springfield Court of Appeals - Missouri - 1964), the gallonage figure derived from sales of gasoline was also deemed proper. St. Louis Housing Authority v. Bainter, 297 S.W.2d 529 (Supreme Court of Missouri - 1957) states the view of law on the issue of gasoline sales as well as any other court. The Missouri Court, in essence, said that where there is a customary standard or formula, in the oil business, by which the fair market value and reasonable rental value of a station is determined, by use of a gallonage figure, such evidence is proper to determine fair market value. Again, in State Road Commission v. Novosel, 102 A.2d 563

(Court of Appeals of Maryland - 1954), the court recognized that where a lease rental is based on a percentage of the volume of business, it is proper to consider the volume of business to arrive at the rental value. In this case, a restaurant and a package liquor store were involved. In a case involving income from the business of operating a parking lot, the income was deemed to be proper. Private Property for Municipal Courts FAC. v. Kordes, 431 S.W.2d 124 (Supreme Court of Missouri - 1968). The rationale behind this case may be much more acceptable because although the income was from a parking lot, it can be argued that this is indeed income from the land.

III. INCOME APPROACH VARIATIONS

The income approach variations that may be encountered in a condemnation action include:

A. The Anticipated Use or Developmental Approach.
B. The Gross Rent Multiplier Approach.
C. The Economic Rental Approach.
D. The Leased Premises-Reversionary Interest Approach.
E. The Mortgage Equity Approach, commonly referred to as the "Ellwood" Approach. (This is both an approach and a capitalization technique.)

Embodied within the first four of these different approaches to value is one of three capitalization techniques:

1. Gross rent multiple capitalization (a factor or multiplier).
2. Over-all rate (OAR) capitalization on a direct or property residual basis (a divisor).
3. The residual techniques:
   (a) The building residual technique.
   (b) The land residual technique.

Each of these approaches and capitalization techniques is discussed in the following sections. Appraisal examples have been interspersed along with the legal citations. The weaknesses and strengths of each approach and capitalization technique are highlighted.

A. The Anticipated Use or Developmental Approach

The developmental method is actually a part of the market data approach to valuation. However, many times it is discussed with the income approaches.

This technique of valuation of a raw or undeveloped piece of ground is predicated on the assumption that the land is already improved with a specific use, less the cost to develop that use. It has been consistently ruled inadmissible by many courts due to its gross conjectural and speculative aspects. This position deemed to be the majority view is best illustrated by the following cases. Kansas City & T. Ry. Co. v. Vickroy, 26 P. 698 (Kansas - 1891); Arkansas State Highway Commission v. Watkins, 313 S.W.2d 86 (Arkansas - 1958); Monongahela West Penn Public Service Co. v. Monongahela Development Co., 132 S.E. 380 (Supreme Court of Appeals - W. Va. - 1926); Barnes v. North Carolina State Highway Commission, 109 S.E.2d 219 (N.C. - 1959); Northern Indiana Public Service Company v. McCoy, 157 N.E.2d 181 (Ind. - 1959); State v. Deal, 233 P.2d 242 (Ore. - 1951); State Road Commission of West Virginia v. Ferguson, 137 S.E.2d 206 (Sup. Ct. of Appeals - W. Va. - 1964); Department of Highways v. Schulhoff, 445 P.2d 402 (Supreme Court of Colorado - 1968). For general authority of this point, attention is directed to Vol. 4, Nichols on Eminent Domain, Section 12.3142(1), 3rd Ed., Rev. 1962, and to 29 C.J.S., Eminent Domain, Section 161, page 1027. For an extensive annotation on this subject, see "Admissibility of Evidence of Proposed or Possible Subdivision or Platting of Condemned Land on Issue of Value in Eminent Domain Proceeding," 26 ALR 2d 780.

In more recent times, at least two jurisdictions have adopted the developmental method as being proper. Iske v. Metropolitan Utilities District of Omaha, 157 N.W.2d 887 (Supreme Court of Nebraska - 1968) and State Highway Commission v. Lee, 485).2d 310 (Supreme Court of Kansas - 1971). The Lee case is contrary to and inconsistent with the former Kansas case of Kansas City & T. Ry. Co. v. Vickroy, 26 P. 698 (Kansas - 1891), and presumably overrules it.

Lee, which involved an appraiser's applying the developmental method to land by dividing it into finished home sites, stated:

> Here a developer contemplating purchase of the tracts in question would have used the development approach. Under these circumstances, where market data on recent sales of comparable property was not available, a potential purchaser would have ap-

> plied the developmental approach in endeavoring to determine the fair market value of the land taken, and the law must recognize that fact. . . Evidence on valuation of the land by the income approach was of sufficient certainty to permit the jury to ascertain the damages sustained by the landowners. . . (Emphasis added)

Use of the development method, whether called an income approach or market data approach, will, in most cases, produce a valuation greatly in excess of that produced by any other method. This is generally so because the appraiser, in applying this method, must analyze the various expenses that will be incurred at some time in the future; the selling time or development time; and the discount rate or factor that should be applied for the time delay. These estimates are extremely difficult to make and are deemed too speculative and conjectural to provide evidence of a probative nature. When used, especially with the omission of one or more factors, as is most often the case, the method can produce high figures.

An illustration of what took place in the Lee case is set forth in Table 1.

The cases that reject the Lee doctrine do so primarily on its conjectural and speculative nature. The reasons advanced by these cases can be generally classified into the following categories:

1. It allows witnesses to employ their imaginations to cover vacant ground with various enterprises and, with a little figuring, derive "value" in excess of market value.

2. It permits the so-called land experts to greatly exaggerate land values.

3. It permits the jury to conjecture upon what a speculator might be able to realize out of a resale in the future when in fact the proper test is what a present purchaser will pay for the property in its present condition considering its future potential.

4. It permits the jury to determine how the property could be divided into small parcels when in fact the jury is to value raw, undeveloped land.

5. It permits the jury to conjecture as to how fast the small parcels can be sold.

6. It permits the jury to conjecture concerning the price per parcel.

7. It permits the jury to conjecture as to the expense of clearing and preparing the parcels for development.

8. It permits the jury to conjecture concerning the expenses of improving the land, such as laying out of streets, dividing into parcels, and bringing in utilities.

9. It permits the jury to conjecture as to the expense of sale of each parcel, involving advertising, commissions, abstracts and title insurance costs, discounts, if any, and other selling costs.

10. It permits the jury to conjecture concerning how long the land would have to be held before being sold; during which time conjecture would have to be made concerning the amount of taxes to be paid, as well as interest on the investment, until all parcels are sold.

11. The method employed in conjectural and speculative because until a plat is recorded and the installation of utilities and other public ammenities is assured, there is no assurance that there will ever be a subdivision. Further, there is no assurance that there will not be any changes made in connection with items such as lot size, layout of streets, restrictions and dedications, if any, and use and purpose of the subdivision.

12. The method presupposes a present, willing buyer for each parcel when in fact valuation must be based on what one purchaser would pay for the property as a whole, not what a multitude of purchasers would pay for small parcels into which the property might be divided.

The results by the use of this method can be changed considerably (1) if the price of the finished sites in the future is altered slightly, (2) if the expense items are changed slightly, (3) if the development period forecasted is incorrect. For instance, in the Lee case if the period

had been 10 years instead of 7 years, the income would have been $14,350.00 per year, and at a discount factor of 6.7100, the value would have been $101,885.000 instead of $108,840.00. If 10 years had been used as the period to sell the property with a 10% interest rate, the factor would change to 6.1445 and this would have produced a value of $88,174.00.

B. The Gross Rent Multiplier Approach

The gross rent or income multiplier approach is by far the simplest of all income capitalization methods. By this method a multiplier is obtained from an examination of comparable properties and then dividing their gross income into the price at which they sold. This gives a gross rent multiplier (GRM). Embodied within the simplicity, however, is a greater propensity to produce a valuation result that is erroneous. For this reason, some courts have held that unless properly utilized and supported with an adequate foundation, the method is improper. Lechliter v. State, 176 N.W.2d 917 (Sup. Ct. of Neb. - 1970).

The majority of courts, however, allow the method to be used, if not as the sole income capitalization technique, at least as a secondary substitute; a guide or check. In Re James Madison Houses, Borough of Manhattan, 234 N.Y.S.2d 799 (1962) (This case draws the distinction that one may use multiples of gross income in fixing value when one cannot know what the net income is.); See 1 Orgel, Sections 177-179. Other courts have qualified the use of the gross rent multiplier, requiring that it be based on "reliable comparable property." In Re Cecil Avenue Renewal Project N.Y.R., 64 Misc. 2d 712, 317 N.Y.S.2d 423 (Sup. Ct. - 1970) (Where business damages or loss of profit are allowed by statute, the court approved the use of the gross rent multiple being applied to the average profit loss.); In Re Ford, 36 A.D.2d 352, 320 N.Y.S.2d 543 (1971).

The weaknesses or strengths of the approach lie in the selection of the comparable properties from which the gross rent multiplier is derived.

Two factors will greatly alter the final valuation developed. These are:

1. The income-expense ratio.
2. The building-land ratio.

If the property upon which the gross rent multiplier is based has either a different income-expense ratio or building-land ratio than that of the subject property, use of the gross rent multiple will produce an erroneous valuation.

Table 2 gives an example of a typical gross rent multiple analysis.

The admission of evidence of comparable sales for the sole purpose of establishing the ratio between income and sales price is entirely within the discretion of the trial court. United States v. Certain Interests in Property, 326 F.2d 109 (2d Circuit). See also: United States v. Delano Park Homes, Inc., 146 F.2d 473 (2d Circuit - 1944); United States v. Tampa Bay Garden Apartments, Inc., 294 F.2d 598 (5th Circuit - 1961); United States v. Johnson, 285 F.2d 35 (9th Circuit - 1961), United States v. Certain Interests in Property, 186 F.Supp. 167; and Likens-Foster Monterey Corp. v. United States, 308 F.2d 595 (9th Circuit - 1962).

Due to the inherent weaknesses of the gross rent multiplier approach, most courts have preferred the use of either a property residual or a building residual technique. These techniques eliminate, or at least allow full examination of, the income-expense ratio and building-land ratio of the various properties compared. They are discussed later herein.

Each of the additional capitalization techniques discussed is a further refinement of the gross rent multiplier approach. Each is attempting to eliminate the variables implicit in the capitalization process that greatly affect value; i.e., the income-expense ratio, the building-land ratio, and the selection of a proper capitalization rate. In addition, the "Ellwood" technique takes into consideration the effect of mortgage amortization and the influence of appreciation and depreciation as a separate factor.

C. The Economic Rental Approach

The first refinement of a gross rent multiplier analysis is to eliminate the income-expense ratio factor from the analysis by segregating out the "proper" expense of each comparable sale and arriving at a net income figure produced by the sale property.

1. Income and Expense Estimates

Before the appraiser or valuation witness may properly apply any capitalization

TABLE 1

APPROACH BY OWNER'S REAL ESTATE EXPERT

(a) DEVELOPMENT APPROACH "BEFORE"

80 Lots at $2,900 each		$232,000
Development costs		
Brokers and selling fee (10%)	$23,200	
Engineering and abstract fee ($100/lot)	8,000	
Clearing and surplus hauling ($85/lot)	6,800	
Taxes for 80 lots at $90 each	7,200	
Interest on investment in land at 6%	5,649	
Profit (15%)	34,800	
Total expenses		-85,650
Adjusted gross from sale of lots		$146,350
Processing of gross income		
Development period 7 yr (approx. 12 per year)		
Interest rate 8%		
Discount factor 5.206		
1/7th of income per year is $20,907		
Present value = $20,907 x 5.206 =		$108,840

(b) DEVELOPMENT APPROACH "AFTER"

The same method used to obtain the "before" value was also used to obtain the "after" value pursuant to the new values given below, which reflect the reduced size of the property in the "after" condition and the shortening of the development period.

Approx. 40 lots left after taking:
30 Lots at $2,900 each
10 Lots at $2,500 each
Development period 4 yr (approx. 11 per year) resulting in changed discount factor.
Present value $ 57,330

(c) SUMMARY

Development Approach		Market Data Approach	
Indicated "before" value	$108,840	"Before"	$106,760
Indicated "after" value	57,330	"After"	55,165
	$ 51,520		$ 51,595

techniques other than the GRM to the subject property, he must, under proper appraisal procedure, first estimate the net income that will be derived from the operation of the subject property real estate. This procedure, although appearing quite simple, is often a laborious and frustrating task. Table 3 gives an example of a typical actual operating statement. Table 4 gives a reconstructed operating statement in a form suggested by AIREA in The Appraisal of Real Estate, 5th Ed. The deletions and additions applied between Tables 3 and 4 are numerous and obvious.

Some courts have not, however, been willing to allow the appraiser to reconstruct an

TABLE 2

GROSS RENT MULTIPLE ANALYSIS

Sale No.	Sale Price	÷	Gross Income	=	GRM
1	$190,000		$32,363		5.87
2	$182,000		$30,909		5.89
3	$148,500		$23,116		6.42

Adopt GRM of 5.9

Subject property valuation:

Subject property gross income	=	$34,000	
x GRM		5.9	
		$200,600	Fair market value

operating statement unless some foundation for the figures used is presented. U. S. v. Corbin, 423 F.2d 821 (10th Circuit - 1970) (This case involved the value of a fish-farm operation.); City of Chicago v. Giedraitis, 150 N.E.2d 577 (Sup. Ct. of Ill. - 1958) (This case dealt with speculative or future anticipated rentals.); Hicks Realty Associates v. State, 34 A.D.2d 866, 310 N.Y.S.2d 825 (1970) (The value of the building was based on sheer speculation, using gross rents in excess of actual rents. The Appellate Court remitted and required that the actual rents be divided by the capitalization rate in order to arrive at value.)

(a) Actual Rents vs. Economic Projections

The majority of courts approve the use and introduction of actual rents earned by the real estate either as a sale criterion for estimating value or as a factor to be considered in arriving at the appraiser's reconstructed operating statement income. Marjal Realty Corp. v. State, 259 N.Y.S.2d 915 (The approach was not erroneous because actual rents were used instead of economic rents or comparable rents.); U. S. v. Corbin, 423 F.2d 821 (10th Circuit - 1970) (No actual income was available because owner lacked adequate book and records--both sides used arbitrary elements in constructing income. The court concluded that since both sides used the same approach the method used was not an improper standard.); Kozecke v. State, 34 A.D.2d 599, 308 N.Y.S.2d 488 (1970) (Gas station gallonage rental income figures were approved, provided there was other evidence to sustain them); Winepol v. State Roads Commission of Maryland, 151 A.2d 723 (Ct. of Appeals - Md. - 1959) (Here it was found that income currently and recently produced was relevant to future earning capacity and the court held it was error not to show actual rents.); Hicks Realty Associates v. State, 34 A.D.2d 866, 310 N.Y.S.2d 825 (1970) (The court disapproved the formula of dividing the economic rent by the capitalization rate to arrive at value. It, instead, required the use of actual rents in place of economic rents.); State v. Hollis, 379 P.2d 750 (Sup. Ct. of Ariz. - 1963) (A 99-year lease which lapsed after 1 year was admissible as a factor in arriving at value. The court found the lease was entered into in good faith and that actual rents capitalized formed one of the best tests of value.)

(b) Other Considerations

Some courts have allowed evidence of actual rental income even though it contains income derived from items normally classified as personalty. Regents of University of Minnesota v. Irvin, 57 N.W.2d 625 (Sup. Ct. of Minn. - 1953) (The rents introduced included income from linens, bedding, etc.); Wolfe v. Redevelopment Authority of City of Johnstown, 273 A.2d 923 (Commonwealth Court - Penn. - 1971) (Involving sixteen furnished apartments; here the appraiser discounted capitalization rate to adjust for income from personalty. The court said it was improper to capitalize income from personal property. However, if the business gives the property a special use, it is proper to include this factor in the valuation. Here the income approach was not the sole basis for the opinion and, therefore, the motion to strike the testimony was denied.)

Several courts have held that actual rents, when introduced by the landowner, are assumed to be what he contends is the best available use for the property. State v. Hollis, 379 P.2d 750 (Sup. Ct. of Ariz. - 1963), citing numerous cases.

Other courts have treated the introduction of actual rents with more skepticism, especially upon a showing that adverse factors may be affecting rental income. Application of Port Authority

TABLE 3

TYPICAL ACTUAL OPERATING STATEMENT

Gross income, rental	$
Gross income, service	
Total gross income	$
Expenses:	
Taxes:	
Real estate	
Income (federal and state) reserve	
Sales reserve	
Withholding	
Insurance	
Salaries:	
Management	
Employees	
Heat, utilities	
Supplies	
Telephone	
Insurance	
Car expense	
Roof repair	
Carpets replaced in five units	
Trash removal	
Miscellaneous	
Total expenses	$
Net income	$

Trans-Hudson Corp., 265 N.Y.S.2d 925 (1965) (The owner had recently taken bankruptcy and the threat of condemnation existed.); City of Chicago v. Giedraitis, 150 N.E.2d 577 (Supp. Ct. of Ill. - 1958) (This case did not allow future anticipated rentals.); State v. Lewis, 142 So.2d 652 (Ct. of Appeals of La. - 1962) (The rental value was proper, but not the average computation of owners' income tax returns.); In Re Lincoln Square Slum Clearance Project, 222 N.Y.S.2d 786 (1961) (Actual rents of apartments and stores were not deemed to be an absolute criterion.)

(c) Expense Estimates

In most situations the real estate appraisal expert will contend that it

TABLE 4

APPRAISER'S RECONSTRUCTED OPERATING STATEMENT[a/]

Gross income estimate, economic rent income (100% occupancy)		$
Vacancy and loss of rent (____%)		
Effective gross rental		
Service income		
Effective gross income		
Expenses:		
Fixed expense:		
Taxes (Rl.est.only)	$	
Insurance		$
Operating expense:		
Administration (mgt.)	$	
Salaries, employees		
Heat		
Utilities		
Custodian		
Cleaning		
Supplies		
Trash, etc.		
Miscellaneous		
Repairs		
Exterior, structural		
Decorating		
Alterations		
Ground maintenance		$
Reserves for replacements:		
Replacement of stoves and refrigerators	$	
Replacement of furniture		
Replacement of other chattels		
Replacement of building parts		$
Total expenses		$
Net income before capital recapture (NIBCR)		$

a/ Form suggested in "The Appraisal of Real Estate," A.I.R.E.A., 5th ed.

is necessary for him to reconstruct the operating statement of the property, as shown previously. The rationale behind the reconstructed operating statement is that the actual statement many times contains improper items of expense not related solely to the real estate valuation problem, such as debt service; or fails to consider proper elements of expense that will ultimately be incurred during the life of the property, such as reserves for replacements. While allowing actual expense of operation in evidence, the courts have held that careful scrutiny of such figures is necessary. In Re Cross-Bronx Expressway, 82 N.Y.S.2d 55 (1948) (The court held that actual operating expenses are apt to include disbursements more properly spread over a number of years, depending on the life of the particular improvement.); In Re Urban Renewal Project, City of Rochester, 32 A.D.2d 884, 302 N.Y.S.2d 224 (1969) (Economic life of the building is controlling and sets the limit, regardless of the life of a component fixture.).

Probably the most discussed items of expense in a reconstructed operating statement are reserves for replacements and vacancy reserves or allowances. Appraisal theory dictates that a reserve must be maintained for component items of a building that have a projected life of less years than the building itself. This approach has been approved numerous times by the courts, even though in actual practice such a reserve is rarely, if ever, established. A prudent investor will provide a safety margin for such expenses in his calculation to arrive at value of the property. In Re Cross-Bronx Expressway, 82 N.Y.S.2d 55 (1948) (This case dealt with reserves for vacancies.); Buena Vista Homes, Inc. v. U. S., 281 F.2d 476 (U. S. Ct. of Appeals, 10th Cir. - 1960) (Here the reserves for replacements of building components were paid to mortgagee by the owner. The reserve fund was then returned to the owner. The court held the income approach assumes the building to be in good condition and when a reserve account is returned to the owner, it should not be considered as income or as a credit against expenses projected for reserves.); Sill Corporation v. U. S. A., 343 F.2d 411 (U. S. Ct. of Appeals, 10th Cir., 1965). At least one case has held that no allowance for vacancies need be included in the expense statement if the property is on a long-term lease to a responsible tenant. Wolnstein v. State, 33 A.D.2d 990, 307 N.Y.S.2d 402 (1970).

Since no component part of a building may have an economic life longer than that of the building itself, a question arises on the proper method of arriving at a reserve for replacement expense. Tables 5, 6, and 7 give appraisal examples considering reserves in different manners. Table 5 gives a valuation derived with no allowance made for replacement reserves. Table 6 utilizes a straight line replacement provision; Table 7, a modified straight line approach.

The valuations produced, keeping everything constant but the reserve requirement, differ by $118,000, or 7% of value based on the lowest indication. Although most appraisers use the straight line approach (Table 6), it can be argued that this approach penalizes the property by the recapture rate applicable to the building. (The recapture rate is arrived at by estimating the economic life of the improvement in years and then expressing it as a percentage per year. Example: A building with a 50-year economic life must be recaptured at the rate of 2% per year - 100% ÷ 50 years = 2% per year). The modified straight line approach is favored, although no court decisions could be found discussing how the reserve was to be determined.

It would appear that condemnation trial attorneys either have not considered this aspect crucial to their case, or they were unable to place in evidence sufficient facts for the basis of an appeal; otherwise, courts would have discussed it.

(d) Debt Service as an Expense

In general, the classical real estate valuation approaches treat the subject property as being free and clear of all liens and encumbrances, and only in an indirect way take into consideration any influence upon value by a mortgage. The "Ellwood" capitalization technique takes directly into account in the valuation process the influence of mortgage amortization. However, some courts have treated the mortgage payment (debt service) as a proper expense item when reconstructing an operating statement. In Sill Corporation v. U. S. A., 343 F.2d 411 (U. S. Ct. of Appeals, 10th Cir. - 1965), a Wherry housing project case where the owner only has a possessory interest, the court approved capitalization of net income after debt service.

The court stated:

> The Government contends that debt service must be subtracted from income before capitalization because this is the only manner in which equity income would be considered by prudent buyers and sellers of equity investments. See: Kaffenberger, "Market Data in the Appraisal of Income Property," The Appraisal Journal, 57-62 (1960). And, that a buyer would only be interested in what income he would receive on his investment after all expenses, including debt service, had been deducted. It argues that in the final analysis this technique is a closer approximation of what investors would consider the value of the sponsor's interest, than the formula relied upon by the Owner where debt service has little or nothing to do with determining value. The Owner contends that capitalization of income after deduction of debt service is wholly inadmissible because it allows the amount of the mortgage to control the value of the property. In other words, the payment of the mortgage has been a use of net income rather than an element which determines net income; thus, the over-all value of the Wherry project should be computed before deduction of the mortgage debt, the amount of the outstanding mortgage then being subtracted in determining the sum due to the owner as just compensation.

> There are statements in text on appraising income property to the effect that "when determining net income for the purpose of appraisal amortization of mortgage or any interest paid are to be disregarded. This becomes clear if one can conceive of a property whose entire earnings are being paid out in interest and amortization of a mortgage." Real Estate Principles and Practice by Maurice A. Unger (South Western Publishing Co., 1954). The fallacy of this argument may lie in the fact that the only interest taken here is a possessory right in a lease. This reasoning would be applicable if the owner in this case acquired an equity through the amortization of the mortgage. The mortgage payments, although commensurate with the income, would nevertheless operate to enhance his equity in the property. But, in our case, the owner can acquire no equity in the mortgaged property. The nature of his estate therein is purely possessory--the right to the income or the benefits, after discharge of all of the burdens. When the mortgage indebtedness is finally satisfied, the Owner does have a residual right in the leasehold with a right to remove the improvements, but if they are not removed, they become the property of the Government and no one here contends that this was considered as a factor in determining wehther the debt service should be deducted before or after capitalization.

Capitalization after deduction of debt service was approved in Likens-Foster Monterey Corporation v. United States, 308 F.2d 595 (9th Cir. - 1962). It was apparently used and approved in United States v. Tampa Bay Garden Apartments, Inc., 294 F.2d 598 (5th Cir. - 1961). Courts approving capitalization of net income before debt service include: United States v. Certain Interests in Property, D. C., 205 F.Supp. 745 (1962); and United States v. Certain Interest in Property, 271 F.2d 379 (7th Cir. - 1959).

One court declared that it does not make any difference if debt service is subtracted as an expense. U. S. v. Certain Interests in Property Situate in Adams Co., Colo., 239 F.Supp. 822 (10th Cir. - 1965).

In the writers' opinion, the better view is to not treat debt service as an expense, but the appraiser should be fully aware of the effect of a mortgage on the over-all capitalization rate applicable to the subject property; i.e., the effect of a mortgage is reflected not in the net income figure, but rather in the selection and application of the over-all capitalization rate. The "Ellwood" technique, discussed later, properly reflects the available mortgage terms in the selection of the over-all rate.

2. Over-all Rate Capitalization by Application of a Property Residual Technique

The net income figure as derived by the economic rental approach in an over-all rate capitalization technique is divided by the sales price to arrive at on over-all rate of capitalization (NI/SP = OAR). This over-all rate is then applied to the net income of the subject property to produce an indication of value (NI/OAR = V).

The courts, while again approving the method, have been conscious of the weaknesses still embodied within this approach. In Re James Madison Houses, Borough of Manhattan, 234 N.Y.S.2d 799 (1962), the court states:

> While, for convenience, it is useful to use an over-all rate of capitalization, it is true that an over-all rate may be vulnerable unless it is based upon separate capitalization rates computed by one or another residual method on land and building. Thus, one makes sure that an improper distortion is not introduced because of disproportionate values assignable to land and building.

Other courts, while approaching the inherent difficulties in the method from a different viewpoint, have approved the method. Boring v. Metropolitan Edison Co., 257 A.2d 565 (Sup. Ct. of Penn. - 1969); U. S. v. Corbin, 423 F.2d 821 (10th Cir. - 1970).

Table 8 presents a conversion of a gross rent multiplier approach to a property residual approach utilizing net income. The effect of this conversion is to eliminate from the valuation problem the income-expense ratio differences between the comparable properties utilized and the subject property. Note the difference in valuation produced by the two methods utilizing the same comparable sales. (Compare Tables 2 and 8.) The conclusion must be that the GRM adopted was not valid due to the differences in the income-expense ratios of the sales used and those of the subject property.

TABLE 5

RESERVES FOR REPLACEMENT - NO RESERVE USED - VALUATION

Fair market value:		
Deleting reserves for replacements from deductions from income.		
Effective gross income		$ 230,000
Expenses, excluding reserves	$78,035	
Reserves for replacement	--	
	$78,035	78,035
Net income before depreciation		$ 151,965
Land requirements (7% of $200,000)		14,000
Residual to building		$ 137,965
Building value ($137,965 capitalized @ 9%[a])		1,533,000
Add land		200,000
Indicated fair market value		$1,733,000

[a] 7 percent + 2 percent recapture

TABLE 6

RESERVES FOR REPLACEMENTS [a], STRAIGHT LINE RECAPTURE METHOD

A.	Annual Recapture
Refrigerators (15-yr life)	
100 @ $150 = $15,000	$1,000
Stoves (15-yr life)	
100 @ $180 = $18,000	$1,200
Dishwashers (15-yr life)	
100 @ $180 = $18,000	$1,200
Air-conditioning units (15-yr life)	
100@ $200 = $20,000	$1,300
Disposals (10-yr life)	
100 @ $35 = $3,500	$ 350
Carpeting (10-yr life)	
8,000 yd @ $6.50 = $52,000	$5,200
Exhaust blowers (15-yr life)	
100 @ $25 = $2,500	$ 165
Boiler (25-yr life) $5,000	$ 200
Total reserves, straight line recapture method	$10,615

B. Valuation -- straight line reserve recapture -- straight line capitalization with straight line recapture		
Effective gross income		$ 230,000
Expenses, excluding reserves	$78,035	
Reserves for replacement [b]	10,615	
Total Expenses	$88,650	$ 88,650
Net income before depreciation		141,350
Land requirements (7% of $200,000)		14,000
Residual to building		$ 127,350
Building value ($127,350 Capitalized @9%[c])		$1,415,000
Add land		200,000
Indicated fair market value		$1,615,000

[a] For items that will be replaced within the economic life of the building.

[b] Straight line recapture method.

[c] 7 percent + 2 percent recapture.

3. The Residual Techniques

Use of the over-all rate and property residual does not eliminate the erroneous valuation produced if the comparable sales utilized and the subject property have differing land-building ratios. In Re James Madison Houses, Borough of Manhattan, 234 N.Y.S.2d 799 (1962). To properly eliminate the effect of divergent land-building ratios, the appraiser must refine the capitalization process one more step by utilizing a building or land residual technique. These techniques allow the appraiser to adjust for any difference between the comparable sales land-building ratios and that of the subject property.

TABLE 7

RESERVE FOR REPLACEMENTS,[a] MODIFIED STRAIGHT LINE RECAPTURE METHOD

A. Straight line recapture less estimated annual building recapture of 2 percent.[b]

	Total Recapture Rate Per Annum	Building Recapture Rate	Net Recapture Rate Per Annum Applicable to Reserves	Total Amount
Refrigerators (15-yr Life) 100 @ $150 = $15,000	6.65%	2%	4.65%	$ 700
Stoves (15-yr life) 100 @ $180 = $18,000	6.65%	2%	4.65%	$ 840
Dishwashers (15-yr life) 100 @ $180 = $18,000	6.65%	2%	4.65%	$ 840
Air-conditioning units 100 @ $200 = $20,000	6.65%	2%	4.65%	$ 930
Disposals (10-yr life) 100 @ $35 = $3,500	10%	2%	8%	$ 280
Carpeting (10-yr life) 8,000 yd @ $6.50 = $52,000	10%	2%	8%	$4,160
Exhaust blowers (15-yr life) 100 @ $25 = $2,500	6.65%	2%	4.65%	$ 115
Boiler (25-yr life) $5,000	4%	2%	2%	$ 100
Total reserves, modified straight line recapture method				$7,965

B. Valuation - modified straight line reserve recapture
- straight line capitalization with recapture

Effective gross income		$ 230,000
Expenses, excluding reserves	$78,035	
Reserves for replacement [c]	7,965	86,000
Net income before depreciation		$ 144,000
Land requirements (7% of $200,000)		14,000
Residual to building		$ 130,000
Building value ($130,000 Capitalized @ 9% [d])		1,445,000
Add land		200,000
Indicated value by income capitalization		$1,645,000

a/ For items that will be replaced within the economic life of the building.
b/ Consideration is given the fact that total building recapture is included in the capitalization rate in processing income residual to the building.
c/ Modified straight line recapture method.
d/ 7 percent + 2 percent recapture.

TABLE 8

GROSS RENT MULTIPLE ANALYSIS CONVERTED TO AN OVER-ALL RATE ANALYSIS

SALE NO.	SALE PRICE	GROSS INCOME	EXPENSE RATIO	NET INCOME	OVER-ALL RATE INDICATED
1.	$190,000	$32,363	45%	$17,800	9.37
2.	$182,000	$30,909	45%	$17,000	9.34
3.	$148,500	$23,116	40%	$13,870	9.34
				Adopt	9.35

Subject property value:

Subject property gross income	=	$34,000
Less subject property expense ratio (50%)	=	17,000
Net income	=	$17,000

Capitalization:[a/]

$$\frac{\text{Net Income}}{\text{Over-all Rate}} = \text{Value} \qquad \text{Therefore, } \frac{\$17,000}{9.35} = \$182,000 \text{ Fair market value}$$

[a/] Property residual.

It is necessary to consider two additional factors or decisions required for the application of the residual techniques. They are:

(1) The selection or development of a proper interest rate applicable to the subject's degree of risk, and
(2) The selection of a method of recapture for the building investment over the economic life of the building.

Because it is necessary to understand the development of an interest rate and the selection of a method of building recapture before one can apply a residual technique, other than the property residual, these aspects of the valuation process are discussed in the following:

(a) Selection of an Interest Rate

There are normally considered to be five ways to select or derive an interest rate, as follows:

1. The summation method.
2. The band of investment method.
3. Camparison of quality attributes method.
4. Direct comparison method.
5. Gross rent multiple reduction method.

All but the direct comparison method and the gross rent multiple reduction method are based on somewhat arbitrary decisions by the appraiser. The last two are derived directly from the market place through an analysis of comparable sales.

The courts, although talking about the selection of an interest rate, either clearly do not understand the various techniques available or they have not been given the information, through the evidence presented, to allow close scrutiny of the method used by the appraisers. If the latter situation is true, it would be incumbent upon the condemnation attorneys to pay more attention to this vital aspect of the income approach and give the court sufficient evidence on which to examine an alleged error. As most condemnation attorneys know, a small change in interest rate selected by the court or trier of fact will make a substantial difference in the final valuation produced.

Although the courts are not always consistent, the term "capitalization rate" is defined and used as a rate that includes a provision for both interest on and recapture of at least a portion of the investment, over the economic life of the investment (improvement). Interest rate, on the other hand, only provides for a return on the amount invested. Under the classical

valuation theories, except Ellwood, land is said not to depreciate or appreciate over the economic life of the improvement and, therefore, requires from the income stream only a provision for return on the investment in land. Boring v. Metropolitan Edison Co., 257 A.2d 565 (Sup. Ct. of Penn. - 1969) This case defines capitalization rate, actually referring to an over-all rate of capitalization.); Arlen of Nanuet, Inc. v. State, 31 A.D.2d 221, 296 N.Y.S.2d 117 (1968) (Here the interest rate was referred to as an "investment rate" utilizing either the summation or comparison of quality attributes approach to derive the rate. Factors considered were: (1) terms of lease, (2) topography of land, (3) history of area, (4) anticipated growth, (5) study of rates for U. S. Government bonds.); In Re Massapequa in Town of Oyster Bay, Nassau County, 50 Misc.2d 91, 269 N.Y.S.2d 830 (1966) (Here a gas station was involved, where an appraiser added 1 to 1 1/2% to "base" rate for risk factor for probability of obtaining a lease. The court would not allow it with an arbitrary choice of rate selection.); U. S. v. Certain Interests in Property Situate in Adams Co., Colo., 239 F.Supp. 822 (1965) (The court recognized that capitalization rate is most vital factor in income approach and that the market provides the underlying basis for the capitalization rate.); U. S. v. Leavell and Ponder, Inc., et al., 286 F.2d 398 (1961) (Commission adopted capitalization rate of 4 1/2% based on FHA rate of 4%, plus 1/2% for mortgage insurance. The court held that the rate was not supported and that the use of 4 1/2% for equity ownership position bordered on the ridiculous.); U. S. v. Certain Interests in Property in Cumberland County, North Carolina, 296 F.2d 264 (4th Cir. - 1961) (A 6% capitalization rate was used, but there was no support for it in the record.); In Re Lincoln Square Slum Clearance Project, 222 N.Y.S.2d 786 (1962) (The court stated that the rate of capitalization should be a reflection of the market rate. That is what the investment market requires in return from a property of the same age, kind, condition, and location as the subject property. "At best, there is no precision, although precise-sounding mathematical formulas are used. At worst, there is no mystery, although there are pragmatic efforts at prognostication."); Sill Corporation v. U. S. A., 343 F.2d 411 (U. S. Ct. of Appeals, 10th Cir. - 1965) (Approving the direct comparison method or gross rent multiple reduction method, the court affirmed the lower court's instruction:

> To the extent that other properties or investments are actually similar or comparable to the property involved in this action from the viewpoint of the quantity and quality of the income stream and the limitations and risks attendant thereto, the capitalization rates, multipliers and income-price ratios resulting from these transactions are the highest and best evidence of the proper capitalization rate, multiplier or income-price ratio to be applied in the capitalization of the projected income of this project.)

Table 9 gives the interest rate development by the gross rent multiple reduction technique. Although this approach still has embodied within it a number of assumptions, it is certainly a better indication of what is actually happening in the market place than a rate developed by building percentages for various factors, such as risk, liquidity, managements, etc.

Table 10 is provided as an easy reference for attorneys wishing to find a net interest rate under varying income-expense and land-building ratios.

(b) The Selection of a Proper Recapture Method

When dealing with an improved property, the selection of a method of recapturing the investment in the building is vital to the final value produced. Embodied within the selection process is also a characteristic of the income stream as an annuity or a declining income stream. Excluding the Ellwood method of capitalization, three methods of recapture are available to the appraiser. They are:

(1) Straight line capitalization with straight line recapture.
(2) Straight line capitalization with sinking fund recapture; i.e., Hoskold.
(3) Inwood.

The selection of the method depends on the characteristic of the property being appraised. Table 11 gives the comparative features of each approach.

Tables 12, 13, and 14 show the application of income and recapture in each method. The data are also presented graphically in Figures A, B, and C.

TABLE 9

INTERMEDIATE RATE DERIVATION BY GROSS RENT MULTIPLE REDUCTION METHOD

$\frac{\text{Sale price}}{\text{Gross income}}$ = Gross rent multiplier (assumes 100% equity)

Arithmetic mean net interest rate = $\frac{\text{Total net interest}}{\text{No. of properties}}$

	Property I	Property II	Property III	Property IV	Property V
Gross Rent Multiple:	6.68	6.68	6.68	6.68	6.68
Properties sold within reasonable time at fair market value: Selling price=	$100,000	$100,000	$100,000	$100,000	$100,000
Gross rent: (Sale price ÷ GRM)	$ 15,000	$ 15,000	$ 15,000	$ 15,000	$ 15,000
Gross Cap. Rate;					
Gross income ÷ Sales price=	15%	15%	15%	15%	15%
or 1.0 ÷ GRM	15%	15%	15%	15%	15%
Operating Ratios					
Expenses: Includes reserves but no depreciation					
Expenses - Gross income=	50%	50%	45%	45%	45%
Therefore, expenses make up a proportion of the gross cap. rate; i.e.,	7.5% = (0.50 x 0.15)	7.5% = (0.50 x 0.15)	6.75 = (0.45 x 0.15)	6.75 = (0.45 x 0.15)	6% = (0.40 x 0.15)
Over-all Rate:					
Hence, percent (rate) available to land and bldg. is the complement of that portion of the gross cap. rate going to expenses.	7.5% = (0.50 x 0.15)	7.5% = (0.50 x 0.15)	8.25% = (0.55 x 0.15)	8.25% = (0.55 x 0.15)	9% = (0.60 x 0.15)
This is equal to over-all rate (O.A.R.) after site analysis; value of sites are found to be $8,000 each. Hence, bldg. values are $100,000 - 8,000 = $92,000, or 92%.					
Recapture Provision:					
Estimated economic life of each bldg. is	30-35 yr	25 yr	30-35 yr	25 yr	30-35 yr
Then cap. recap. rate is:	3% = (1 ÷ 35)	4% = (1 ÷ 25)	3% = (1 ÷ 35)	4% = (1 ÷ 25)	3% = (1 ÷ 35)
Adjust for percent of bldg. value to total property value:	2.76% = (.03 x .92)	3.68% = (.04 x .92)	2.76% = (.03 x .92)	3.68% = (.04 x .92)	2.76% = (.030 x .92)
Net Interest Rate:= (O.A.R. less adjusted recapture rate)	4.74% = (0.075 - 0.0276)	3.82% = (0.075 - 0.0368)	5.49% = (0.0825 - 0.0276)	4.57% = (0.0825 - 0.0368)	6.24%= (0.09 - 0.0278)
Arithmetic mean average interest rate = $\frac{24.86}{5}$ = 4.97%					
Proof: Add (1) Adj. recap. rate	2.76%	3.68%	2.76%	3.68%	2.76%
(2) % gross cap. rate for operating exp.	7.5%	7.5%	6.75%	6.75%	6. %
(3) Net interest rate	4.74%	3.82%	5.49%	4.57%	6.24%
Gross Cap. Rate =	15.00%	15.00%	15.00%	15.00%	15.00%

TABLE 10

SELECTED INTEREST RATES DEVELOPED BY GROSS RENT MULTIPLE REDUCTION TECHNIQUE

Gross Rent Multiplier	Gross Cap. Rate (%)	Operating Expense, Vacancy (%)	Over-all Cap. Rate (%)	Total Property Value Distributed As: 85% Bldg. Value & 15% Land Value Net Interest Rate (%) With Recapture Period of: 25 Yr	33 Yr	40 Yr	90% Bldg. Value & 10% Land Value Net Interest Rate (%) With Recapture Period of: 25 Yr	33 Yr	40 Yr
5	20.00	35	13.00	9.60	10.45	10.87	9.40	10.30	10.75
		40	12.00	8.60	9.45	9.87	8.40	9.30	9.75
		45	11.00	7.60	8.45	8.87	7.40	8.30	8.75
5-1/2	18.18	35	11.82	8.42	9.27	9.69	8.22	9.12	9.57
		40	10.91	7.51	8.36	8.78	7.31	8.21	8.66
		45	10.00	6.60	7.45	7.87	6.40	7.30	7.75
6	16.67	35	10.84	7.44	8.29	8.71	7.24	8.14	8.59
		40	10.00	6.60	7.45	7.87	6.40	7.30	7.75
		45	9.17	5.77	6.65	7.04	5.57	6.47	6.92
6-1/2	15.38	35	10.00	6.60	7.45	7.87	6.40	7.30	7.75
		40	9.23	5.83	6.68	7.10	5.63	6.53	6.98
		45	8.46	5.06	5.91	6.33	4.86	5.76	6.21
7	14.29	35	9.29	5.89	6.74	7.16	5.69	6.59	7.04
		40	8.57	5.17	6.02	6.44	4.97	5.87	6.32
		45	7.86	4.46	5.31	5.73	4.26	5.16	5.61
7-1/2	13.33	35	8.66	5.26	6.11	6.53	5.06	5.96	6.41
		40	8.00	4.60	5.45	5.87	4.40	5.30	5.75
		45	7.33	3.93	4.78	5.20	3.73	4.63	5.08
8	12.50	35	8.12	4.72	5.57	5.99	4.52	5.42	5.87
		40	7.50	4.10	4.95	5.37	3.90	4.80	5.25
		45	6.87	3.47	4.32	4.74	3.27	4.17	4.62
8-1/2	11.76	35	7.64	4.24	5.09	5.51	4.04	4.94	5.39
		40	7.06	3.66	4.51	4.93	3.46	4.36	4.81
		45	6.47	3.07	3.92	4.34	2.67	3.77	4.22
9	11.11	35	7.22	3.82	4.67	5.09	3.62	4.52	4.97
		40	6.66	3.26	4.11	4.53	3.06	3.96	4.41
		45	6.11	2.70	3.56	3.98	2.51	3.41	3.86
10	10.00	35	6.5	3.10	3.95	4.37	2.90	3.80	4.25
		40	6.0	2.60	3.45	3.87	2.40	3.30	3.75
		45	5.5	2.10	2.95	3.37	1.90	2.80	3.25
10-1/2	9.52	35	6.18	2.78	3.63	4.05	2.58	3.48	3.93
		40	5.71	2.31	3.16	3.58	2.11	3.01	3.46
		45	5.23	1.83	2.68	3.10	1.63	2.53	2.98

TABLE 11

COMPARISON OF FACTORS IN VARIOUS RECAPTURE METHODS

FACTOR	STRAIGHT LINE	INWOOD	STRAIGHT LINE W/SINKING FUND or HOSKOLD	MORTGAGE EQUITY
Income	Declining	Level annuity	Level annuity	Appraiser's choice; i.e., average, level, declining, or increasing
Projection term	Estimated economic life	Lease term or estimated economic life	Estimated economic life	Short-term or lease term
Investment yield	Speculative rate	Speculative rate	Speculative rate	Band of investment, mortgage interest, and equity speculative rate
Amount recaptured	Building investment	Building investment	Building investment	Amount of mortgage plus equity reversion
Recapture term	Estimated economic life	Estimated economic life	Estimated economic life	(Mortgage contract term) (or projection priced)
Recapture rate	Reciprocal of estimated economic life	Sinking fund at investment yield rate	Sinking fund at estimated "safe" rate	Sinking fund at mortgage interest rate (on mortgage amount) (Equity yield rate on equity fund)

SOURCE: The Appraisal of Real Estate, AIREA, 5Ed.
Note: Items in ( ) added by present author.

TABLE 12

STRAIGHT LINE CAPITALIZATION WITH STRAIGHT LINE RECAPTURE
(INTEREST RATE 5 PERCENT, 4-YEAR PROJECTION)

A. Valuation
Building income first year=$10,000
Capitalization rate applicable to building:

Interest on	0.05
Recapture	0.25
Total rate	0.30

Then: $\frac{\text{Inc.}}{\text{Rate}} = V = \frac{10{,}000}{0.30} = \$33{,}334$ Building value

B. Annual End of Year Income and Capital Distribution:

Time of Payment	Declining Annual Payment ($)	Interest on Outstanding Capital ($)	Annual Partial Return of Capital ($)	Outstanding Capital Investment ($)
Begin 1st yr				33,334.00
End 1st yr	10,000	1,666.50	8,333.50	- 8,333.50
Begin 2nd yr				25,000.50
End 2nd yr	9,583.50	1,250.00	8,333.50	- 8,333.50
Begin 3rd yr				16,667.00
End 3rd yr	9,166.85	833.35	8,333.50	- 8,333.50
Begin 4th yr				8,333.50
End 4th yr	8,750.17	416.67	8,333.50	- 8,333.50
Begin 5th yr	-0-	-0-	-0-	-0-
Total	37,500.52	4,166.52	33,334.00	

TABLE 13

STRAIGHT LINE CAPITALIZATION WITH SINKING FUND RECAPTURE OR HOSKOLD VALUATION PREMISE
(5 Percent Interest Rate and 3 Percent Sinking Fund Rate, 4-year Projection)

A. Valuation:
Bldg. income $10,000 annual E.O.Y.
Capitalization rate applicable to building:

Interest on	0.0500
Recapture (3% S.F.)	0.2390
Total rate	0.2890

Then: $\frac{\text{Inc.}}{\text{Rate}} = \frac{\$10,000}{0.2890}$ = $34,600 Building value

OR $\frac{1.0}{\text{Cap Rate}} = \frac{1.0}{0.2890}$ = 3.460 Hoskold factor X 10,000 = $34,600 Building value

B. Annual E.O.Y. income and capital distribution:

Time of Payment	Annual Payment ($)	5% Interest on Outstanding Capital, $34,600 ($)	Annual Return of Capital for Reinvestment ($)	Interest Earned in Sinking Fund ($)	Sinking Fund Balance ($)
Begin 1st yr					000.00
End 1st yr	10,000	1,730	8,270		8,270.00
During 2nd yr				248.10	+ 248.10
End of 2nd yr					8,518.10
End of 2nd yr	10,000	1,730	8,270		+ 8,270.00
					16,788.10
During 3rd yr				503.60	+ 503.60
End of 3rd yr					17,291.70
End of 3rd yr	10,000	1,730	8,270		+ 8,270.00
					25,561.70
During 4th yr				766.90	+ 766.90
End of 4th yr					26,328.60
End of 4th yr	10,000	1,730	8,270		+ 8,270.00
Total	40,000	6,920	33,080	1,518.60	34,598.60
			Correction for rounding		+ 1.40
					34,600.00

TABLE 14

INWOOD CAPITALIZATION (INTEREST RATE 5 PERCENT, 4-YEAR PROJECTION)

A. Valuation:
Inwood factor (5%, 4 yr) = 3.546 Income X Factor = Value

Building income = $10,000 Annual, End of Year $10,000 X 3.546 = $35,460 Building
$10,000 X 3.546 = $35,460 Building value

B. Annual End of Year income and capital distribution:

Time of Payment	Annual Payment ($)	Interest on Outstanding Capital ($)	Annual Partial Return of Principal ($)	Outstanding Capital Investment ($)
Begin 1st yr				35,460.00
End of 1st yr	10,000	1,773.00	8,227.00	- 8,227.00
Begin 2nd yr				27,233.00
End of 2nd yr	10,000	1,361.60	8,638.40	- 8,638.40
Begin 3rd yr				18,594.60
End of 3rd yr	10,000	929.70	9,070.30	- 9,070.30
Begin 4th yr				9,524.30
End of 4th yr	10,000	476.20	9,523.80	- 9,523.80
TOTAL	40,000	4,540.50	35,459.50	0.50

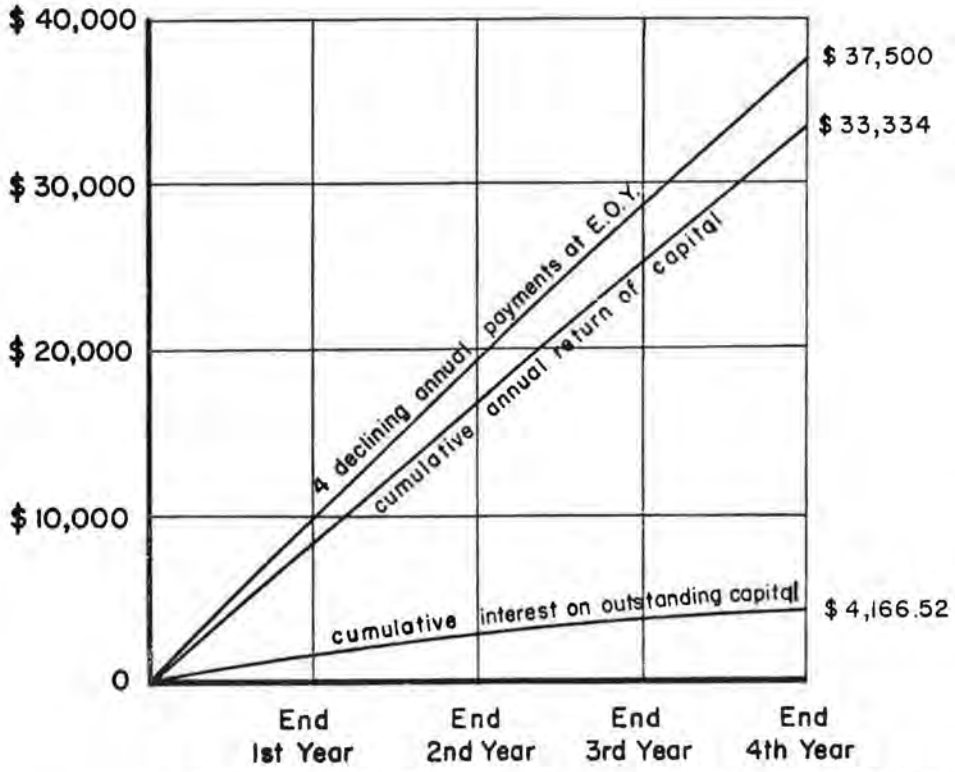


Figure A. Comparative features, graphic analysis by straight-line method.

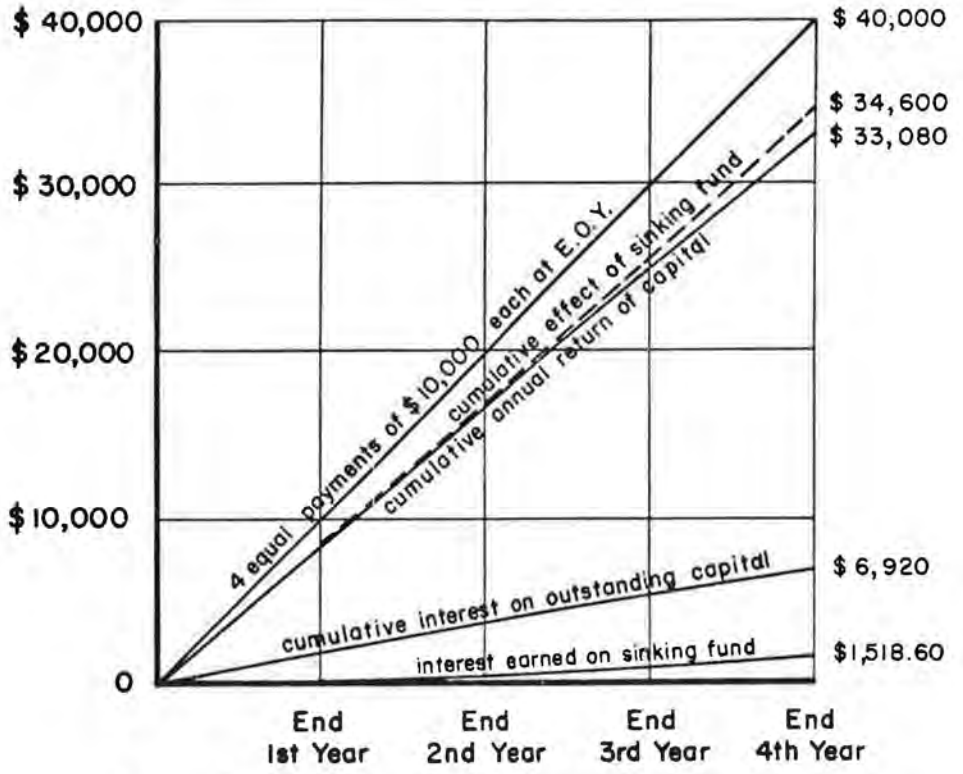


Figure B. Comparative features, graphic analysis by Hoskold method.

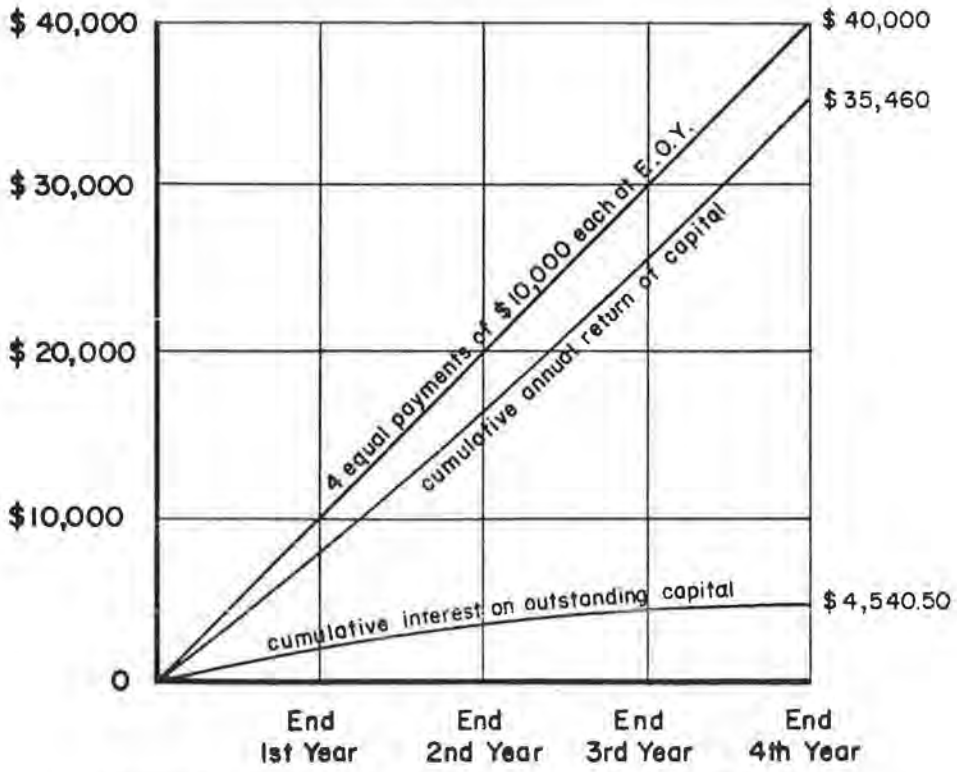


Figure C. Comparative features, graphic analysis by Inwood method.

As indicated in Table 12, the straight line recapture method contemplates a declining income stream, whereas Tables 13 and 14 project a level annuity income over the economic life of the building. There has been confusion on the part of appraisers and courts alike that an annuity is a level payment received at equal periods and that without such an income stream, the use of Hoskold or Inwood would be improper. Such a statement is not true. As the court in U. S. v. Certain Interests in Property Situate in Adams Co., Colo., 239 F.Supp. 822 (U. S. Dist. Ct. - Colo. - 1965) stated:

> Plaintiff has objected heatedly to even the admission of Inwood evidence. One of the most serious of these objections is that the Inwood factor can be applied only to a level income stream. The Court believes that the income figures to which it is applied need only be capable of being averaged to a level. In adopting the five year income average of $112,982, the Court has presumed this to be the product of a reasonable and continuing balance between obsolescence and depreciation on the one hand and appreciation and stable tenancy on the other hand. (Emphasis added)

As stated in Ellwoods Tables AIREA, 1970, at page 4:

> In short, each type of periodic income stream may be considered as an annuity of one kind or another (level, decreasing, increasing or fluctuating). Equal time intervals between payments is the only required characteristic. They can all be stabilized by formula to an equivalent "ordinary annuity."

Any of the three methods of capitalization discussed can be applied in the residual approaches to determine value.

(c) Building Residual Technique

Tables 15, 16, and 17 give applications of the building residual technique by each of the three capitalization methods. In addition, Table 15 gives a derivation of the interest rate by the gross rent multiple technique. The valuations produced increase substantially between Table 15 and Table 17 for the following reasons:

TABLE 15

OVER-ALL RATE ANALYSIS CONVERTED TO STRAIGHT LINE CAPITALIZATION WITH STRAIGHT LINE RECAPTURE, BUILDING RESIDUAL TECHNIQUE

Step 1: Establish appraiser's opinion of subject land value = $40,000

Step 2: Establish appraiser's opinion of remaining economic life of subject building: 40 yr

Step 3: Establish appraiser's opinion of building-to-land-value ratio of each sale and the remaining economic life of each sale property:

SALE NO.	SALE PRICE ($)	ADOPTED BLDG. VALUE ($)	ADOPTED LAND VALUE ($)	REMAINING ECONOMIC LIFE OF SALE BUILDING (YR)
1	190,000	130,000	60,000	40
2	182,000	136,000	46,000	40
3	148,000	123,000	25,000	40

Step 4: Derive net interest rate applicable to the subject property from sales data.

Formula: $\left(\frac{1.0}{\text{GRM}} - \text{Operating Expense Ratio}\right) - \left(\frac{\text{Bldg. value}}{\text{Sales price}} \times \text{Bldg. recapture annual percent}\right) = \text{Net interest rate}$

Application:

Sale No.1 Net int. rate $= \left(\frac{1.0}{5.87} - 45\%\right) - \frac{130,000}{190,000}\ (2.5\%) = 9.37\% - 1.71\% = 7.66\%$

Sale No.2 Net int. rate $= \left(\frac{1.0}{5.89} - 45\%\right) - \frac{136,000}{182,000}\ (2.5\%) = 9.34\% - 1.87\% = 7.47\%$

Sale No.3 Net int. rate $= \left(\frac{1.0}{6.42} - 40\%\right) - \frac{123,500}{148,500}\ (2.5\%) = 9.34\% - 2.08\% = 7.26\%$

Adopt net interest rate = 7.5%

Step 5: Apply building residual technique to the subject property.

A. Net income before capital recapture=	$17,000
B. Subject land value = $40,000	
C. Income required as return on investment in land $40,000 x 7.5%=	3,000
Net income imputable to building=	$14,000

D. Derive capitalization rate applicable to building income:

1. Interest on=	7.5%
2. Recapture return $\left(\frac{1.0}{40\text{ yr}}\right)$ =	2.5%
Total recapture rate=	10%

E. Capitalize net income to building into indication of building value:

1. Formula: $\frac{\text{NI}}{\text{Rate}} = \text{V}$
2. Application: $\frac{14,000}{0.10} = \$140,000$ Building value (78% of total value)

F. Add land value (known) = 40,000

Total property value= $180,000

Note: Answer is $2,000 less than OAR analysis because provision for recapture in OAR is not sufficient for the subject property; i.e., sales are not comparable.

(1) The characteristics of the income stream - decreasing or level.
(2) The amount of income required for recapture of the building investment over its economic life.

The building residual technique eliminates the two major weaknesses found in the GRM method - the income-expense ratio and the building-land ratio. The difficulty of the approach lies in the method of capitalization and the development of a proper interest rate and recapture rate; i.e., remaining economic life.

It should be noted that in the building residual technique the value of the land must be known. It is usually determined by the market data method.

Building residual technique applications have been repeatedly approved by the courts. Hicks Realty Associates v. State, 34 A.D.2d 866, 310 N.Y.S.2d 825 (1970) (Trial court rejected the sales as not being comparable and the appellate court applied the income approach to actual income.); Wolnstein v. State, 33 A.D.2d 990, 307 N.Y.S.2d 402 (1970) (Appellate court made additional

TABLE 16

BUILDING RESIDUAL BY HOSKOLD SINKING FUND CAPITALIZATION (Interest Rate 7-1/2 percent, Sinking fund at 4 percent, 40 years)

A.	Net income before capital recapture =	$17,000
B.	Subject land value = $40,000	
C.	Income required as return on investment in land ($40,000 X 7.5%) =	3,000
	Net income imputable to building =	$14,000
D.	Derive capitalization factor applicable to building income:	
	1. Interest on =	0.0750
	2. Recapture return sinking fund rate (4%, 40 yr) =	0.0105
	Total recapture rate =	0.0855
	Hoskold factor $= \frac{1.0}{0.0855} = 11.696$	
E.	Capitalize net income to building into indication of building value:	
	1. Formula: Net income X Factor = Value	
	2. Application: $14,000 X 11.696 = 163,744	
F.	Add land value (known) =	40,000
	Total property value by Hoskold approach =	$203,744

TABLE 17

BUILDING RESIDUAL BY INWOOD CAPITALIZATION (Interest Rate 7-1/2 percent, 40 years)

A.	Net income before capital recapture =	$ 17,000
B.	Subject land value = $40,000 =	
C.	Income required as return on investment in land ($40,000 X 7.5%) =	3,000
	Net income attributable to building =	$ 14,000
D.	Derive capitalization factor applicable to building income:	
	Interest on and recapture of: 7-1/2%, 40 years	
	Inwood factor = 12.594	
E.	Capitalize net income to building into indication of building value:	
	1. Formula: Net income X Factor = Value	
	2. Application: $14,000 X 12.594 = 176,316	
F.	Add land value (known) =	40,000
	Total property value Inwood approach =	$216,316

findings of fact and applied building residual technique.); In Re Cross-Bronx Expressway, 82 N.Y.S.2d 55 (Sup. Ct. - Bronx County - 1948) (Court approved the use of Inwood and other tables.); City and County of Honolulu v. Bishop Trust Co., 404 P.2d 373 (Sup. Ct. of Hawaii - 1965) (Court stated, "It is well settled that improvements affixed to land have only such value as they add to the land. 4 Nichols, Eminent Domain, Sec. 13.11, P. 351 (3d Ed.); id, Sec. 13.11(1), P. 358; 2 Orgel, Valuation Under Eminent Domain, Sec. 189, p. 7 (2d Ed.)").

(d) Land Residual Technique

Table 18 presents a typical application of a land residual technique applied with straight line capitalization-straight line recapture. Of course, Hoskold and Inwood may also be applied in a land residual situation. The selection of the capitalization technique again depends on the characteristics of the income stream and the method of recapture applied to the building investment.

(1) Disapproved

Unlike the building residual technique, the courts have, with rare exception, disapproved of the land residual technique as being too speculative and hypothetical. U. S. v. 1.16 Acres, More or Less in City of Stamford, County of Fairfield, State of Connecticut, 300 F.Supp. 1021 (U. S. Dist. Ct. - 1969) (This case involved a hypothetical structure income capitalization. The court held that little weight should be put on this approach.); Levitin v. State, 12 A.D.2d 6, 207 N.Y.S.2d 798; In Re Lands of P. and M. Materials Corp., 238 N.Y.S.2d 896 (1963) (The court was required to consider various methods of appraisal used by experts; however, capitalization of earnings may not be used where there are no improvements on the subject property and development is dependent on a zoning change.); Wer Realty, Inc. v. State of New York, 26 A.D.2d 732, 271 N.Y.S.2d 714 (1969) (Residual land value may not be ascertained by capitalization of hypothetical income from non-existent businesses.); Appalachian Company v. Anderson, 187 S.E.2d 148 (Sup. Ct. of Virginia - 1972) (While approving the income approach, the court held that where land is unimproved, even though suitable for development, income from hypothetical lots was speculative and it was error to permit its use.); City of New York v. Chestnut Properties Co., 39 A.D.2d 573, 332 N.Y.S.2d 19 (1972) (An award could not be predicated on value of non-existing income stream from land as if it were improved with buildings. Here the development was interrupted by the taking.); In Re Rockaway point Blvd., Queens Co., City of N. Y., 271 N.E.2d 546 (Ct. of Appeals of N. Y. - 1971) (Here vacant land needed fill before it could be developed. The court held that capitalization of estimated income from future development was error.). For general authority that it is improper to capitalize income from a hypothetical structure, see Nichols on Eminent Domain, Section 19.22(2), Vol. 4, 3rd Edition.

(2) Approved

Most of the courts allowing the land residual technique to be used have done so

TABLE 18

LAND RESIDUAL BY STRAIGHT LINE CAPITALIZATION WITH STRAIGHT LINE RECAPTURE
(Interest Rate 7- 1/2 percent, 40 years)

A.	Net income before capital recapture	=	$17,000
B.	Subject building value (hypothetical) - $140,000		
C.	Capitalization rate applicable to building:		
	1. Interest on =	7.5%	
	2. Recapture return (100%/40 yr) =	2.5%	
	Total =	10.0%	
D.	Income required as return of and on investment in building		
	$140,000 x 10% =		$14,000
E.	Net income attributable to land =		$ 3,000
F.	Capitalize net income to land into indication of land value:		
	1. Formula: NI/IR = Value		
	2. Application: $3,000/7.5% =	$40,000	
G.	Add building value (known) =	$140,000	
	Total property value =	$180,000	

only under unique circumstances. Arlen of Nanuet, Inc. v. State, 31 A.D.2d 221, 296 N.Y.S.2d 117 (1968) (Capitalization of income was deemed proper where although the subject property was vacant, income, costs and amounts employed by the court were not presumed or hypothetical, but were actual figures of a "built-on site" on land virtually identical to the subject and were earnings clearly expected at the time of taking, if taking had not occurred.); Mattydale Shopping Center, Inc. v. State of N. Y., 303 N.Y. 974, 106 N.E.2d 59 (1952) (The award was based on hypothetical income from an unbuilt shopping center. The court drew the distinction that portions of the proposed center had already been leased.); State Highway Comm. v. Compton, 490 P.2d 743 (Ct. of App. - Oregon - 1971) (The court here held that anticipated rental from a motel chain is proper even though the land was vacent and no lease existed.); Drakes Bay Land Company v. United States, 459 F.2d 504 (U. S. Ct. of Claims - 1972) (The court stated:

> Defendant's position is rejected that the residual land approach used by plantiff's appraisers is invalid as a matter of law. Adequate authority exists for use of such approach in determining the market value of a tract of land, the highest and best use of which was for subdivision and sale in lots. See Highland Park, Inc. v. United States, 161 F.Supp. 597, 600, 142 Ct. Cl. 269, 274 (1958); United States v. Iriarte, 166 F.2d 800, 804 (1st Cir. 1948), cert. denied, 335 U. S. 816, 69 S. Ct. 36, 93 L.Ed. 371; United States v. Waterhouse, 132 F.2d 699, 702 (9th Cir. 1943), aff'd by equally divided Court, 321 U.S. 743, 64 S. Ct. 484, 88 L.Ed. 1047 (1944). Moreover, defendant's appraisers conceded that the residual land approach would be a proper method of appraisal, recognized and used in the appraisal profession, in the case of determination of the market value of a tract of land concerning which subdivision and readiness for sale of lots were accomplished facts. They considered such method inapplicable to subject land, and confined their appraisal theory to sale of a single tract of land, using comparable sales of basically agricultural lands having only a potential for subdivision, without any substantial activities having occurred with respect to subdivision.
>
> However, upon a review of the entire record in this case, giving consideration to all relevant and material evidence relating to market value, it is my ultimate conclusion that the fair market value of subject land was less than that decided by plaintiff's appraisers. Their overall residual land approach is accepted as reasonably based upon sound considerations, except that it is my opinion that they were overly optimistic as to the average sales price at which the planned 229 lots of plaintiff's subdivision could have been sold; that sufficient consideration was not given to the circumstance that there would have been a bulk sale of plaintiff's land, i.e., a sale of the entire tract to a purchaser who would undertake the accomplishment of the sale of the lots, one by one; and that a willing seller and a willing purchaser would have adjusted the subdivision value of such land downward to reflect the wholesale nature of the transaction, at the same time taking into consideration resulting adjustments of the other factors used in the residual land approach.)

D. The Leased Premises-Reversionary Interest Approach

Another income approach is available to determine value where the property is leased to a responsible tenant on a long-term basis. It is generally referred to as the leased income approach. Table 19 gives an example of the approach, assuming the leased income is equal to the economic rental of the property.

This approach has been approved by numerous courts. Some courts have considered it the only approach applicable where the building has been under lease for a long time. City of Buffalo v. Migliore, 34 A.D.2d 334, 312 N.Y.S.2d 142 (1970) (The court stated that the income capitalization is the only proper method of arriving at value where the building was under lease for a long time and at the time of taking.); State v. Hollis, 379 P.2d 750 (Sup. Ct. of Arizona - 1963) (Here the lease was a factor to be considered to arrive at value.); City and County of Honolulu v. Bishop Trust Co., 404 P.2d 373 (Sup. Ct. of Hawaii - 1965); In Re Port of New York Authority (Lincoln Tunnel), 2 N.Y.2d 296, 159 N.Y.S.2d 825, 140 N.E.2d 740 (Here the court gave an additional credit for the value of the lease--admittedly a proper procedure. A lease for a rental in excess of the reasonable rental value may be considered as an item of value when the excess is due to the availability of the property for a particular use by the tenant in occupation.); United States v. Certain Interests in Property In Champaign County, 165 F. Supp. 474 (U. S. Dist. Ct. - E. D. Illinois - 1958) (This case discusses capitalization to value lease-

hold interest.); United States v. Certain Interest in Property in Monterey County, 186 F.Supp. 167 (U. S. Dist. Ct. - N. D. Calif. S. D. - 1960) (This case discusses capitalization of leasehold valuation.); In Re Public Schools 49, Borough of Bronx, City of N. Y., 246 N.Y.S.2d 715 (1963) (Here the Inwood tables were approved.); U. S. v. Certain Interests in Property in Cumberland County, State of North Carolina, 185 F.Supp 555 (U. S. Dist. Ct. - E. D. North Carolina - 1960). Also see: Nichols on Eminent Domain, Sec. 19.3, Vol. 5, 3rd Edition.

E. The Mortgage Equity Approach, Commonly Referred to as the "Ellwood" Approach or Capitalization Technique

Although the mortgage equity, or "Ellwood" tehcnique, of income approach has been available since approximately 1940, it has only gained prominence since 1960.

This technique enables the appraiser or court to analyze an investment property by directly taking into consideration the effect on value of the mortgage amortization, and depreciation or appreciation of the component parts of the investment. No other approach discussed allows direct independent consideration of these factors.

Under this approach, instead of deriving an interest rate, as was explained in the residual techniques, the appraiser analyzes the "true equity yield" rate realized by owners of comparable properties. This equity yield rate, together with the actual mortgage available to the subject property, is then applied to the net income of the subject to arrive at valuation. The basic formula is:

$$OAR = y - m \quad [\, y + p\,(1/s_N) - f \,] \begin{matrix} + \text{ Depreciation \%} \\ - \text{ Appreciation \%} \end{matrix} \quad (1/s_N)$$

in which:

OAR = over-all rate;
y = equity yield;
m = mortgage percentage;
p = percentage of mortgage paid off during the projection period;
$1/s_N$ = sinking fund factor at equity yield rate; and
f = mortgage factor.

Then OAR is applied in the following formula to determine value:

Net Income/OAR = Value of Property.

This technique is definitely gaining prominence among real estate appraisers and investment analysts. Although no court cases have been found discussing this technique at this time, its introduction into the courtroom is imminent. It is incumbent upon the attorneys and courts to familiarize themselves with the approach and the weaknesses and strengths embodied therein.

The only underlying weakness that the writers are cognizant of in this approach is the assumption that moneys recaptured as a portion of the mortgage amortized payment will immediately be reinvested at the equity yield rate. In actual practice, it would be impossible to take the limited amount of money returned during the first few conversion periods and reinvest them at a rate commensurate with equity yield. The investor would in all likelihood have to accumulate that money at a lower rate of return until a sufficient sum was available to reinvest in another income-producing property that would return a similar equity yield rate.

The strength of the approach is its adaptability to a separate analysis of each factor that goes into the makeup of "market value" from the eyes of the investor in such property.

Tables 20 and 21 give, respectively, a derivation of a "true equity yield" from a comparable sale, and the derivation of an OAR, utilizing the "true equity yield" derived from the market place and the mortgage terms known to be available to the subject property. Figure D is a typical Ellwood graph showing the effect of changed economic conditions over the holding period on a proposed "true equity yield."

IV. CONCLUSION

An analysis of the cases would indicate that although the income approach is readily used, some courts and lawyers are not conversant with the details of the techniques or the assumptions embodied in them.

Some courts have expressed concern over the lack of evidence submitted to them in connection with the income approach. Without this evidence they have been unable to deal adequately with alleged assignments of error.

It has been the purpose of this discussion to highlight the strengths and weaknesses of the various capitalization techniques and to give more insight into their use. The examination of legal authorities and appraisal techniques contained in this discussion should enable attorneys to prepare more fully for cases involving the income approach and enable them to make a complete record on which an appeal could be based.

APPLICATIONS

The foregoing research should prove helpful to highway administrators, their legal counsels, and right-of-way engineers. Highway officials are urged to review their right-of-way acquisition programs to determine how this research can effectively be incorporated in a meaningful way. Attorneys should find this paper especially useful in their work as an easy and concise reference document in eminent domain litigation cases.

TABLE 19

LEASED PREMISES APPROACH[a] (INWOOD CAPITALIZATION)

A.	Facts: Lease income, net =			$17,000
	Interest rate applicable			7.5%
	Present land value			40,000
	Present building value			100,000
	Estimated building value 40 years in future			-0-
	Inwood factor, 40 years, 7.5%			12.594
	Reversion factor, 40 years, 7.5%			0.0554
B.	Application:			
	1. Present worth of income stream:			
	$17,000/yr x 12.594 =			$214,098
	2. Present worth of reversions:			
	(a) Land	$40,000		
	(b) Building	-0-		
	Total reversion	$40,000		
	(reversion factor)	x 0.0554	=	2,216
	Total value =			$216,314 [a]

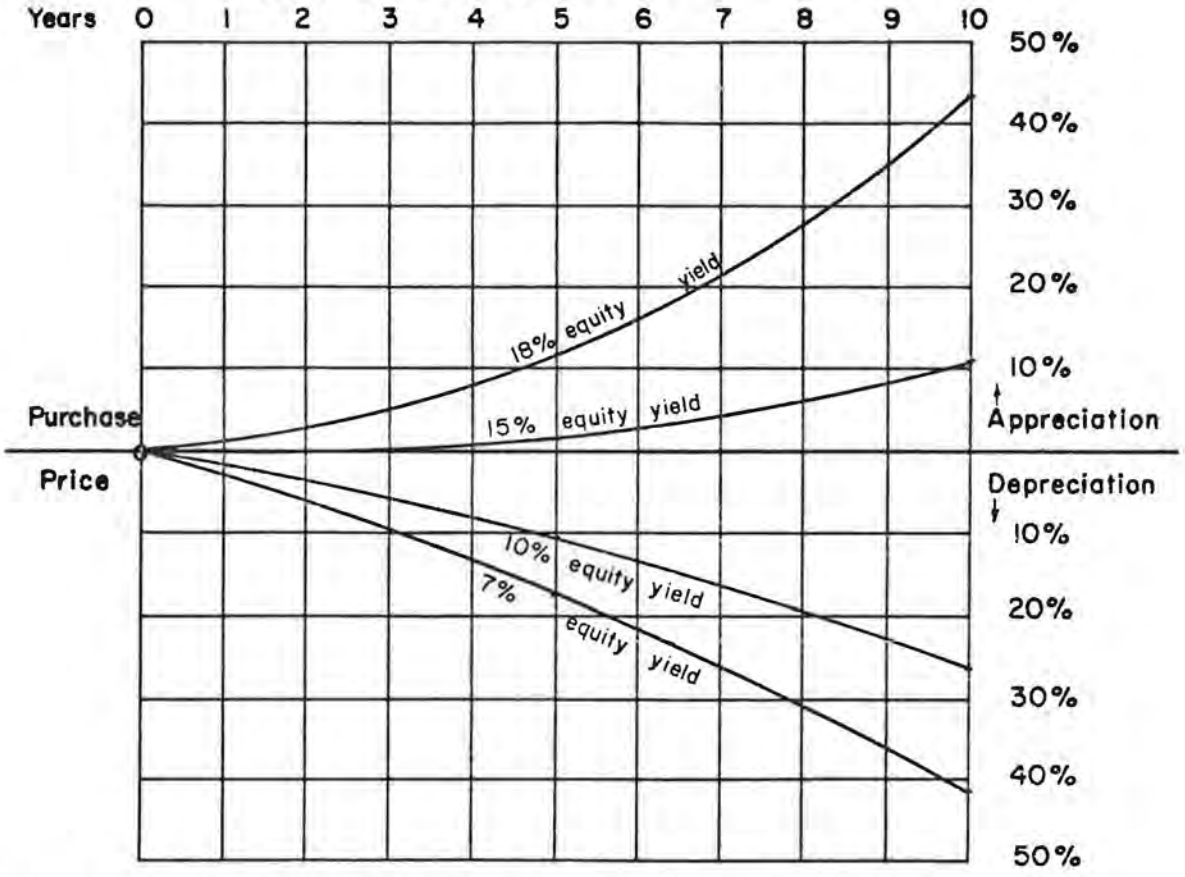
[a] Assuming lease income equals economic rental.

[b] This value is the same as that produced by the building residual technique, utilizing the Inwood factor. The results would not be identical if the economic life was different or the lease income was above or below the economic rent.

EQUITY YIELD ANALYSIS
of

WORTHMORE APARTMENTS

Assuming : Purchase Price $ 175,531
Financing Terms : 60 % Loan
6 % Interest 25 Years
Payable Monthly



Prospective Yield Calculations : (Analysis of a .094 Capitalization Rate)

5 Years	Y	C	$Y - \frac{r}{.60}C$	$\frac{dif}{.094 - r} \div I/S_n$	Change %	Appr. Depr.
	.07	.0102	.0639	.0301 ÷ .1739	.1730	Depr.
	.10	.0391	.0765	.0175 ÷ .1638	.1068	Depr.
	.15	.0876	.0974	+.0024 ÷ .1483	.0162	App.
	.18	.1167	.10998	+.01598 ÷ .1398	.1143	App.

10 Years	Y	C	$Y - \frac{r}{.60}C$	$\frac{dif}{.094 - r} \div I/S_n$	Change %	Appr. Depr.
	.07	.0098	.0641	.0299 ÷ .0724	.4129	Depr.
	.10	.0375	.0775	.0165 ÷ .0628	.2627	Depr.
	.15	.0843	.0994	+.0054 ÷ .0493	.1095	App.
	.18	.1127	.11238	+.01838 ÷ .0425	.4325	App.

Figure D. Typical example of equity yield analysis.

TABLE 20

ELLWOOD CAPITALIZATION METHOD, DERIVATION OF A TRUE EQUITY RATE FROM COMPARABLE SALE

A. Facts:
1. Current sale price = $190,000
2. Original purchase price (1 yr ago) = $200,000
3. Average annual gross income produced over 8-yr holding period = $34,000
4. Current annual net income = $17,000
5. Average annual net income over 8-yr holding period = $18,700
6. Mortgage originally placed on property: 60% of original purchase price; 25 yr; 5-1/2 percent.

B. Problem: Derive true equity yield realized by investor

C. Solution:

Step 1. Analyze purchase capital structure and net income distribution:

Purchase Capital Structure			Avg. Net Income Distribution
Mortgage (60%)	$120,000 X f	(mtg. installment 0.0738) =	$ 8,856
Equity (40%)	80,000		9,844
Total	$200,000		$18,700

Step 2. Compute percentage of mortgage paid off during holding period

(a) Formula: $P = \left(\frac{f}{F} - 1\right)\left(S_p - 1\right)$

(b) Application: $P = \left(\frac{0.0738}{0.055} - 1.0\right)(0.5511) = 0.1884 = 18.84\%$ paid off

Step 3. Compute mortgage balance at time of resale:
1.00 − P = Balance; 1.00 − 18.84 = 81.16% Balance

Step 4. Determine major investment factors:

Resale price =	$ 190,000
Less mortgage balance ($120,000 X 81.16%) =	− 97,392
(a) Equity reversion	$ 92,608
Less equity investment	− 80,000
(b) Total equity appreciation	$ 12,608
(c) Total equity appreciation = $12,608 ÷ 80,000 = 15.76%	
(d) Total equity dividends (9,844 X 8yr)	+ 78,756
(e) Total profit realized from all sources	$ 91,360

(f) Average profit per year = $91,360 ÷ 8 yr = $11,420
(g) Average rate of profit = $11,420 ÷ $80,000 = 14.27%
(h) Equity dividend rate = $9,844 ÷ $80,000 = 12.30% (target)

Step 5. Interpolate true equity yield:
Rule: When reversion is greater than capital investment, equity yield will be less than average annual profit per dollar of investment.

Trial: Y $\left(\text{Equity appreciation X } 1/S_N\right)$ Total dividend (target)

Try 0.14 − (0.1576 X 0.07557) =	0.12809	0.12300
Try 0.13 − (0.1576 X 0.07838) =	0.11765	0.11765
0.01 difference	0.01044	0.00535

Then: $Y = 0.13 + \left(\frac{0.91 \times 0.00535}{0.01044}\right)$

$= 0.13 + (0.0052145)$

$= 0.13521$, say 13.5% (True equity yield)

TABLE 21

ELLWOOD CAPITALIZATION METHOD DERIVATION OF SUBJECT PROPERTY OVER-ALL RATE AND VALUE (Based on Ellwood Analysis of Sales)

A. Facts:
   1. Mortgage available today:
      60% of value; 25 yr; 6% interest; annual constant requirement = 0.0774
   2. Projected holding period = 8 yr
   3. True equity yield developed from comparable sales = 14%
   4. Average annual income projected = $16,500

B. Problem: Develop over-all rate

   1. Formula: $OAR = Y - M \left[Y + P \left(1/S_N\right) - f \right] \begin{matrix} + \text{ Depre.} \\ - \text{ Appre.} \end{matrix} \left(1/S_N\right)$

   2. Then:

$$OAR = 0.14 - 0.60 \left[0.14 + (0.1856)(0.07557) - 0.0774\right] \pm 0$$
$$= 0.14 - 0.60 \left(0.07662\right) \pm 0$$
$$= 0.09403, \text{ say } 0.094 \text{ or } 9.4$$

   3. Value $= \frac{\text{Net income}}{OAR} = \frac{\$16,500}{0.094} = \$17,531$