Skyhigh Office Building Case Study

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Skyhigh Office Building

Case Study Name/Grading Sheet

Finance 5770/6770/6780

Student Name(s)

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Points Possible _____50_____

Points Missed _____

Score Received _____

The Cost Approach					
Replacement/Reproduction Cost				100.01	10,000	$1,000,100
Plus:	Site Improvements			$5	29,848	$149,240
Plus:	Entrepreneurial Profit			10%		$114,934
Equals:	Total Cost					$1,264,274
Less:	Deferred Maintenance					$25,000
Equals:						$1,239,274
Effective Age		5				
Economic Life		50				
Depreciation Rate			5/50 =	10%		
Less:	Depreciation					$123,927
Equals:	Depreciated Value of Improvements					$1,115,347
Plus:	Land Value			$12.25	34,848	$426,888
Equals:	Total Value by the Cost Approach					**$1,542,235**

Calculations:

$Replacement\ or\ Reproduction\ Cost$: $100.01 * 10{,}000 = 1{,}000{,}100$

$Site\ Improvements$: $5 * \big((.8 * 43{,}560) - 5{,}000\big) = 149{,}240$

$Entrepreneurial\ Profit$: $.1 * (1{,}000{,}100 + 149{,}240) = 114{,}934$

$Improvements$: $1{,}000{,}100 + 149{,}240 + 114{,}934 - 25{,}000 = 1{,}239{,}274$

$Depreciation$: $.1 * 1{,}239{,}274 = 123{,}927$

$Depreciated\ Value\ of\ Improvements$: $1{,}239{,}274 - 123{,}927 = 1{,}115{,}347$

$Total\ Value\ by\ the\ Cost\ Approach$: $1{,}115{,}347 + (12.25 * 34{,}848) = 1{,}542{,}235$

SKYHIGH OFFICE BUILDING SALES COMPARISON SUMMARY					
Sale No.	1	2	3	4	Subject
Project	Low Point	Crossbow	Riddler	Charger	Skyhigh
Sale Date	18 Months Ago	Current	Current	Current	Current
Sale Price	$1,000,125	$1,484,657	$1,438,102	$945,900	$1,466,000
Rentable Sq.Ft.	7,500	9,480	9,510	7,500	9,600
Price/Rentable Sq.Ft.	$133.35	$156.61	$151.22	$126.12	$152.71
Potential Gross Income***	$129,132	$181,950	$180,260	$124,885	$177,600
Effective Gross Income	$117,510	$165,574	$164,036	$113,645	$161,616
Vacancy %	-9.0%	-9.0%	-9.0%	-9.0%	-9.0%
Operating Expenses	$37,500	$47,400	$47,550	$37,500	$49,550
OE/PGI	29.0%	26.1%	26.4%	30.0%	27.9%
OE/Sales Price	3.75%	3.19%	3.31%	3.96%	3.38%
NOI	$80,010	$118,174	$116,486	$76,145	$112,066
Capitalization Rates	8.00%	7.96%	8.10%	8.05%	7.64%
OAR	8.00%	7.25%	8.10%	8.05%	8.02%
GIM	7.74	8.16	7.98	7.57	8.25
Property Rights Conveyed	Fee simple	Fee simple	Fee simple	Fee simple	Fee simple
Financing Terms	Cash	Cash	Cash	Cash	Cash
Location	Average	Good	Average	Average	Good
Physical Characteristics					
Effective Age (Years)	5	5	5	5	5
Quality	Average	Average	Average	Average	Average
Rentable Sq.Ft.	7,500	9,480	9,510	7.500	9,600
Economic Characteristics	Average	Average	Average	Average	Average
Use	Office	Office	Office	Office	Office
Non-Realty Components	None	None	None	None	None

Calculations:

1. $Vacancy\ and\ Collecion\ Loss$: $\frac{129{,}132 - 117{,}510}{117{,}510} = 9\%$

2. $Vacancy\ and\ Collecion\ Loss$: $\frac{181{,}950 - 165{,}574}{165{,}574} = 9\%$

3. $Vacancy\ and\ Collecion\ Loss$: $\frac{180{,}260 - 164{,}036}{164{,}036} = 9\%$

4. $Vacancy\ and\ Collecion\ Loss$: $\frac{124{,}885 - 113{,}645}{113{,}645} = 9\%$

$Sky\ High\ Vacancy\ and\ Collecion\ Loss$: $\frac{177{,}600 - 161{,}616}{161{,}616} = 9\%$

1. $Capitalization\ Rate$: $\frac{80{,}010}{1{,}000{,}125} = 8.0\%$

2. $Capitalization\ Rate$: $\frac{118{,}174}{1{,}484{,}657} = 7.96\%$

3. $Capitalization\ Rate$: $\frac{116{,}486}{1{,}438{,}102} = 8.10\%$

4. $Capitalization\ Rate$: $\frac{76{,}145}{945{,}900} = 8.05\%$

$Sky\ High\ Capitalization\ Rate$: $\frac{112{,}066}{1{,}466{,}000} = 8.0\%$

1. $Gross\ Income\ Multiplier\ (GIM)$: $\frac{1{,}000{,}125}{129{,}132} = 7.74$

2. $Gross\ Income\ Multiplier\ (GIM)$: $\frac{1{,}484{,}657}{181{,}950} = 8.16$

3. $Gross\ Income\ Multiplier\ (GIM)$: $\frac{1{,}438{,}102}{116{,}486} = 7.98$

4. $Gross\ Income\ Multiplier\ (GIM)$: $\frac{945{,}900}{76{,}145} = 7.57$

$Sky\ High\ Gross\ Income\ Multiplier\ (GIM)$: $\frac{1{,}466{,}000}{112{,}066} = 8.25$

Sales Comparables Summary Trend Analysis						
	1	2	3	4	Sky High	Trend
Sale Price	$1,000,125	1484657	$1,438,102	$945,900	$1,466,000	
Rentable Sq.Ft.	7,500	9,480	9,510	7,500	9,600	
Price/Rentable Sq.Ft.	133.35	156.61	151.22	126.12	152.71	
Potential Gross Income***	$129,132	$181,950	$180,260	$124,885	$177,600	
Effective Gross Income	$117,510	$165,574	$164,036	$113,645	$161,616	
Vacancy %	-9%	-9%	-9%	-9%	-9%	
Operating Expenses	$37,500	$47,400	$47,550	$37,500	$49,550	
OE/PGI	0.290	0.261	0.264	0.300	0.279	
OE/Sales Price	0.037	0.032	0.033	0.040	0.034	
NOI	$80,010	$118,174	$116,486	$76,145	$112,066	
Capitalization Rates	0.080	0.080	0.081	0.081	0.076	
OAR	8.00%	7.25%	8.10%	8.05%	8.02%	
GIM	7.74	8.16	7.98	7.57	8.25	

IMPROVED SALES ADJUSTMENT GRID				
	Sale #1	Sale #2	Sale #3	Sale #4
Unadjusted Price/Rentable Sq.Ft.	133.35	171.94	151.22	126.12
Property Rights	0%	0%	0%	0%
Sub Total	133.35	171.94	151.22	126.12
Financing Terms	0%	**-8.9%**	0%	0%
Sub Total	133.4	156.6	151.2	126.1
Conditions of Sale	0%	0%	0%	0%
Sub Total	133.4	156.6	151.2	126.1
Expenditures Made After Sale	0.00	0.00	0.00	0
Sub Total	133.4	156.6	151.2	126.1
Market Conditions (Date)	**-5.4%**	0%	0%	0%
Sub Total	126.1	156.6	151.2	126.1
OTHER ADJUSTMENTS				
Location	**3.2%**	0.0%	**3.2%**	**3.2%**
Sub Total	130.2	156.6	156.1	130.2
Physical Characteristics (sq ft premium)	**20.1%**	0.0%	0.0%	**20.1%**
Sub Total	156.4	156.6	156.1	156.4
Use	0%	0%	0%	0%
Economic Characteristics	0%	0%	0%	0%
Non-realty Components	0%	0%	0%	0%
Total Other Adjustments	0%	0%	0%	0%
Value Indication for Subject	156.4	156.6	156.1	156.4
AVERAGE	**156.36**			
Indication of Value	**$ 1,501,078.75**			

Calculations:

$$Sale\ \#2\ Financing\ Terms\ Adjustment: \frac{(1{,}484{,}657.34 - 1{,}629{,}991)}{1{,}629{,}991} = -.089$$

$$Sale\ \#1\ Market\ Conditions\ (Date)\ Adjustment: \frac{(945{,}900 - 1{,}000{,}125)}{1{,}000{,}125} = -.054$$

$$Sale\#1{,}3{,}4\ Location\ Adjustment: \frac{(1{,}484{,}657 - 1{,}438{,}102)}{1{,}438{,}102} = .032$$

$$Sale\#\ 1{,}4\ Physical\ Size\ Premium: \frac{\big((156.6 + 156.1) - (130.2 + 130.2)\big)}{(130.2 + 130.2)} = .201$$

$$Average\ Value\ Per\ Square\ Foot: \frac{(156.4 + 156.6 + 156.1 + 156.4)}{4} = 156.36$$

DIRECT INCOME CAPITALIZATION ANALYSIS			
GROSS INCOME	Sq.Ft.		
LARGE TENANT	4,800	$ 17.00	$ 81,600.00
SMALL TENANT	2,500	$ 20.00	$ 50,000.00
SMALL TENANT	2,300	$ 20.00	$ 46,000.00
GROSS POTENTIAL INCOME			**$ 177,600.00**
LESS: VACANCY & COLLECTION LOSS	9%		$ (15,984.00)
EFFECTIVE GROSS INCOME			**$ 161,616.00**
TENANT OPERATING EXPENSES	30.63%		$ 49,504.96
TOTAL OPERATING EXPENSES			**$ (49,504.96)**
NET OPERATING INCOME			**$ 112,111.04**
CAPITALIZATION RATE			7.98%
VALUE INDICATION			$ 1,405,379.83
LESS: DEFERRED MAINTENANCE			$ (25,000.00)
VALUE INDICATION			$ 1,380,379.83
ROUNDED TO			**$ 1,380,400.00**

Calculations:

$4{,}800 * 17 = 81{,}600$

$2{,}500 * 20 = 50{,}000$

$2{,}300 * 20 = 46{,}000$

$Gross\ Potential\ Income$: $81{,}600 + 50{,}000 + 46{,}000 = 177{,}600$

$Market\ Vacancy\ Rate$: $\frac{(.09 + .09 + .09 + .09)}{4} = .09$

$Effective\ Gross\ Income$: $177{,}600 - (.09 * 177{,}600) = 161{,}616$

$Operating\ Expense\ Percentage\ of\ EGI$: $\frac{\left(\frac{37{,}500}{117{,}510} + \frac{47{,}400}{165{,}574} + \frac{47{,}550}{164{,}036} + \frac{37{,}500}{113{,}645}\right)}{4} = .3063$

$Operating\ Expenses$: $.3063 * 161{,}616 = 49{,}504.96$

$Net\ Operating\ Income$: $161{,}616 - 49{,}504.96 = 112{,}111.04$

$Value\ Indication$: $\frac{112{,}111.04}{.0798} = 1{,}405{,}379.83$

$Net\ Value\ Indication$: $1{,}405{,}379.83 - 25{,}000 = 1{,}380{,}379.83$

Sales Comparison CAP Rate Analysis					
	1	2	3	4	Average
Sale Price	$1,000,125	$ 1,484,301.8	$1,438,102	$945,900	$ 1,217,107.2
NOI	$80,010	$118,174	$116,486	$76,145	$ 97,703.8
CAP	8.00%	7.96%	8.10%	8.05%	**8.03%**

Calculations:

$$\frac{80{,}010}{1{,}000{,}125} = .08$$

$$\frac{118{,}174}{1{,}484{,}301.8} = .0796$$

$$\frac{116{,}486}{1{,}438{,}102} = .081$$

$$\frac{76{,}145}{945{,}900} = .0805$$

$$Average\ Cap\ Rate: \frac{(80{,}010 + 118{,}174 + 116{,}486 + 76{,}145)}{(1{,}000{,}125 + 1{,}484{,}301.8 + 1{,}438{,}102 + 945{,}900)}. 0803$$

Debt Coverage CAP Rate			
LTV	DCR	Rm	Ro
0.80	1.25	0.0786	**7.86%**

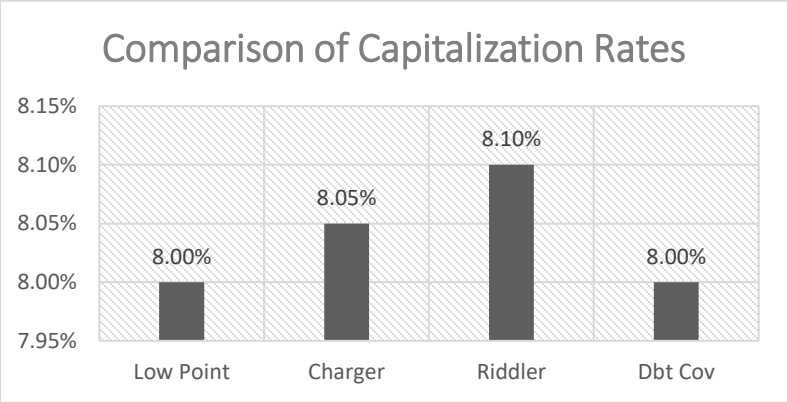
Calculations:

$$Cap\ Rate:\ .8 * 1.25 * .0786 = .0786$$

Overall CAP Rate Reconciliation			
Sales Comp CAP Rate	8.03%	0.70	5.62%
DCF CAP Rate	7.86%	0.30	2.36%
Overall CAP Rate			**7.98%**

Calculations:

$$Overall\ CAP\ Rate: (.0803 * .7) + (.0786 * .03) = .0798$$



Rent Comparables Summary								
Rent No.	Tenant	Lease Date	Tenant Size (Rentable Sq Ft)	Annual Rent/SF (Rentable Sq. Ft.)	Rental Basis	Effective Age (Yrs.)	Avg. Mkt Rent	Adj. from Mod. Gross to Gross
1	USA Network	Current	4,900	$ 17.25	Full Service	3		
2	Job Security	Current	4,700	$ 16.75	Full Service	7	$ 17.00	
3	Lifeless	Current	4,800	$ 17.00	Full Service	5		
4	Pardon Me	Current	2,425	$ 17.75	Modified Gross	7		
5	Great Eastern	Current	2,295	$ 18.00	Modified Gross	5	$ 18.00	$ 20.00
6	Help Yourself	Current	2,520	$ 18.25	Modified Gross	3		

Calculations:

$$Avg.Mkt.Rent\ (4700 + sq.ft.): \frac{(17.25 + 16.75 + 17)}{3} = 17$$

$$Avg.Mkt.Rent\ (2400 + sq.ft.): \frac{(17.75 + 18 + 18.25)}{3} = 18$$

$$Adj.\ from\ Modified\ Gross\ to\ Gross\ Rents: 18 + .5 + 1.5 = 20$$

Mortgage Constant	
Amortization Period (Years)	30
Annual Interest Rate	6.75%
Mortgage Constant (Rm)	0.0786

Calculations:

$$Mortgage\ Constant\ (R_m) = \frac{.0675}{\left(1 - \left(\frac{1}{1.0675^{30}}\right)\right)} = .0786$$

DISCOUNTED CASH FLOW ANALYSIS		Year 1	Year 2	Year 3	Year 4
Gross Income					
Large Space	3%	$ 81,600.00	$ 84,048.00	$ 86,569.44	$ 89,166.52
Small Space	3%	$ 50,000.00	$ 51,500.00	$ 53,045.00	$ 54,636.35
Small Space	3%	$ 46,000.00	$ 47,380.00	$ 48,801.40	$ 50,265.44
Gross Potential Income		**$ 177,600.00**	**$ 182,928.00**	**$ 188,415.84**	**$ 194,068.32**
Vacancy & Collection Loss	9%	$ (15,984.00)	$ (16,463.52)	$ (16,957.43)	$ (17,466.15)
Effective Gross Income		**$ 161,616.00**	**$ 166,464.48**	**$ 171,458.41**	**$ 176,602.17**
Operating Expenses	4%	$ (49,504.96)	$ (51,485.16)	$ (53,544.56)	$ (55,686.34)
Total Operating Expenses		**$ (49,504.96)**	**$ (51,485.16)**	**$ (53,544.56)**	**$ (55,686.34)**
Net Operating Income		**$ 112,111.04**	**$ 114,979.32**	**$ 117,913.85**	**$ 120,915.82**
Terminal Capitalization Rate					8.23%
Reversion Value					$ 1,469,208.05
Less: Sales Costs	3%				$ (44,076.24)
Net Reversion Value				$ 1,425,131.81	
Net Cash Flow		**$ 112,111.04**	**$ 114,979.32**	**$ 1,543,045.66**	
Net Present Value	10%	$1,356,256.41			
Less: Deferred Maintenance		$ (25,000.00)			
Indicated Value		**$1,331,256.41**			

Calculations:

$Yr_1 Gross\ Potential\ Income$: $81{,}600 + 50{,}000 + 46{,}000 = 177{,}600$

$Yr_2 Gross\ Potential\ Income$: $177{,}600 * 1.03 = 182{,}928$

$Yr_3 Gross\ Potential\ Income$: $182{,}928 * 1.03 = 188{,}415.84$

$Yr_4 Gross\ Potential\ Income$: $188{,}415.84 * 1.03 = 194{,}068.32$

$Yr_1 Vacancy\ and\ Collection\ Loss$: $177{,}600 * -.09 = (15{,}984)$

$Yr_2 Vacancy\ and\ Collection\ Loss$: $182{,}928 * -.09 = (16{,}463.52)$

$Yr_3 Vacancy\ and\ Collection\ Loss$: $188{,}415.84 * -.09 = (16{,}957.43)$

$Yr_4 Vacancy\ and\ Collection\ Loss$: $194{,}068.32 * -.09 = (17{,}466.15)$

$Yr_1 Effective\ Gross\ Income$: $177{,}600 - 15{,}984 = 161{,}616$

$Yr_2 Effective\ Gross\ Income$: $182{,}928 - 16{,}463.52 = 166{,}464.48$

$Yr_3 Effective\ Gross\ Income$: $188{,}415.84 - 16{,}957.43 = 171{,}458.41$

$Yr_4 Effective\ Gross\ Income$: $194{,}068.32 - 17{,}466.15 = 176{,}602.17$

$Yr_1 Operating\ Expenses: .3063 * 161{,}616 = 49{,}504.96$

$Yr_2 Operating\ Expenses: 49{,}504.96 * 1.04 = 51{,}485.16$

$Yr_3 Operating\ Expenses: 51{,}485.16 * 1.04 = 53{,}544.56$

$Yr_4 Operating\ Expenses: 53{,}544.56 * 1.04 = 55{,}686.34$

$Yr_1 Net\ Operating\ Income: 161{,}616 - 49{,}504.96 = 112{,}111.04$

$Yr_2 Net\ Operating\ Income: 166{,}464.48 - 51{,}485.16 = 114{,}979.32$

$Yr_3 Net\ Operating\ Income: 171{,}458.41 - 53{,}544.56 = 117{,}913.85$

$Yr_4 Net\ Operating\ Income: 176{,}602.17 - 55{,}686.34 = 120{,}915.82$

$Terminal\ Capitalization\ Rate: .0798 + .0025 = .0823$

$Value: \frac{120{,}915.82}{.0823} = 1{,}469{,}208.05$

$Sales\ Costs: 1{,}469{,}208.05 * -.03 = (44{,}076.24)$

$Net\ Reversion\ Value: 1{,}469{,}208.05 - 44{,}076.24 = 1{,}425{,}131.81$

$Yr_3 Net\ Cash\ Flow: 1{,}425{,}131.81 + 117{,}913.85 = 1{,}543{,}045.66$

$Net\ Present\ Value: \frac{112{,}111.04}{(1.1)^1} + \frac{114{,}979.32}{(1.1)^2} + \frac{1{,}543{,}045.66}{(1.1)^3} = 1{,}356{,}256.41$

$Indicated\ Value: 1{,}356{,}256.41 - 25{,}000 = 1{,}331{,}256.41$

Reconciliation of Value		
Cost Approach		$ 1,542,235
Plus: Sales Comparison Approach		$ 1,501,078.75
Direct Capitalization Analysis	$ 1,380,400.00	
Discounted Cash Flow Analysis	$1,331,256.41	
Total:	$2,711,656.41	
Plus: The Averaged Value of the Direct Capitalization and Discounted Cash Flow Methods		$1,355,828.20
Average Reconciled Value		$ 1,466,380.52
Rounded To:		**$ 1,466,000.00**

Calculations:

$Income\ Approach\ Total: 1{,}380{,}400.00 + 1{,}331{,}256.41 = 2{,}711{,}656.41$

$$Averaged\ Value\ of\ Income\ Methodologies: \frac{2{,}711{,}656.41}{2} = 1{,}355{,}828.20$$

$$Average\ Reconciled\ Value: \frac{(1{,}542{,}234.60 + 1{,}501{,}078.75 + 1{,}355{,}828.2)}{3} = 1{,}466{,}380.52$$

Recommendation

After carefully analyzing the cost, sales comparison and income approaches to valuing the Sky High office building, we recommend you buy the building *if* you can purchase it for $1,466,000 *or less.*

Internal Rate of Return (IRR)				
	Year 0	Year 1	Year 2	Year 3
Net Cash Flow	$ (1,466,000.00)	112,065.60	114,932.06	1,543,024.88
IRR	7.0%			

We arrived at the estimate of value of $1,466,000 by applying an equal weighting to the values indicated by the cost approach, the sales comparable approach and the income approaches of real estate valuation. Additionally, if you purchase the building for $1,466,000 or less, our analysis indicates that you will realize an internal rate of return on your investment of 7.0%.

Weighted Average Cost of Capital										
	Weight of Debt		Market Interest Rate on Debt		Tax Shield		Weight of Equity		Return on Equity Capital	
WACC	0.8	x	6.75%	x	0.7	+	0.2	x	16.05%	= 6.99%

If you were able to purchase the building with an LTV of 80%, a market interest rate on your debt of 6.75%, assuming a marginal tax bracket of 30%; you could realize a return on the equity portion of your investment of more than **16%** while still hurdling your cost of capital of 6.99%. These factors add to our confidence that the Sky High Office Building will be a good investment if purchased according to the conditions specified above.