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Abstract

Analysis of on-campus housing at PSU.

Engineering Economic Analysis Term Project

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EMGT 535
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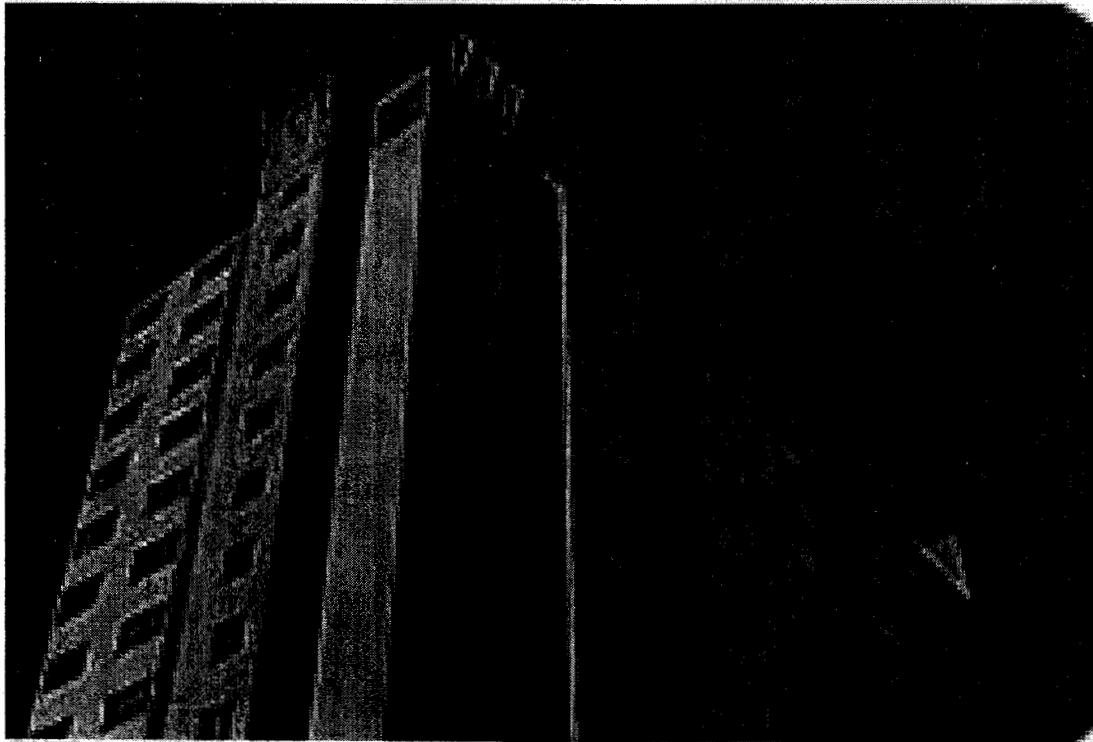
Engineering Economic Analysis Term Project

Submitted to

Prof. Tim Anderson

by

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Spring 2001

**ENGINEERING & TECHNOLOGY MANAGEMENT
PORTLAND STATE UNIVERSITY**

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Introduction

The increasing demand for the on-campus housing in Portland State University (PSU) is becoming a critical issue. PSU expects more students to come in following years and plans to have more on-campus housing units available. To meet the demand, PSU together with College Housing Northwest (CHNW), has to build more housing units. This issue becomes challenging both for PSU and CHNW when there are two major constraints, one being the lack of space for constructing new buildings, and the other one being the lack of funds to invest a construction that enables the PSU to satisfy the demand.

On the other side, the non-profit company, CHNW is planning to demolish two on-campus buildings, Maryanne and Birmingham, due to new earthquake legislation in Oregon. They also plan to construct a new, wooden, 5-story apartment block, having either 75 or 100 studio units, replacing Birmingham while PSU keeps Maryanne's space for another plan, probably another college building for classes and offices. The team Chester, with a team consensus, decided to analyze the case to give recommendations to CHNW regarding how many apartments should the new building have, which replaces old Birmingham.

Definition of Economic Analysis

An economic analysis provides a systematic method for studying problems of choice. Alternative ways to satisfy a requirement are studied by evaluating the quantifiable costs and benefits of each alternative course of action. These costs are assessed objectively using economic techniques so that alternatives can be compared through a numerical ranking [1].

Purpose

The purpose of the team is to help CHNW in decision-making process about the new building, applying the tools and methods learned in Engineering and Economic Analysis class.

Project Title

College Housing Northwest Decision: 75 or 100 apartments?

Project Objective

To provide a detailed analysis of the CHNW's decision alternatives with the help of Excel spreadsheet

Period of Analysis

Start year: 2001.

Period of analysis: 10 years. (Also 100-year future analysis)

Base year: NPV calculations are based on this year, which is 2001.

Lead-time: The period between initial funding and commencement of the economic life, which is 2 years in this project,

Economic Life: In this case the economic life of the building is assumed to be over 100 years that is from 2003.

Assumptions

- ✓ The analysis will begin from January 1, 2001.
- ✓ Birmingham will be demolished next month due to seismic legislations included in Appendix 1 [2] and the new building will be in service on February 2003.
- ✓ The cost for construction is a fixed amount and will be paid monthly for 18 months. It is assumed that the cost is not affected by interest or inflation rates. Thus, the first six months, which is in year 2001, has a cost of 0.33 times the total cost and the other portion that is going to be paid in year 2002 is going to be 0.66 percent.
- ✓ It is assumed that all apartments will be occupied from the day the new building enters the service, due to high demand for on-campus housing.
- ✓ Fees that CHNW charges to the residents are assumed to be proportional to the rental income. The proportions are derived from income sheet of CHNW in year 2001. The same assumptions apply for the expenditures of CHNW, such as services and administrative costs.
- ✓ Maintenance and repair costs are assumed to be proportional to the rental income but it is also assumed that it increases by 0.1 percent of rental income, every year because the building materials and accessories are assumed to depreciate at that rate each year.
- ✓ The economic structure in following years is assumed to be in a steady state, therefore the estimated interest rates and inflation rates are not going to change throughout the analysis period.

- ✓ Inflation rate is assumed to be 4 percent by the CHNW. The assumption is that this is going to be the same throughout the analysis period. The graph as Appendix 2, however, shows that the inflation rates are going to be around 3-4%.
- ✓ The interest rates out in the market are assumed to be steady throughout the analysis period. The calculations of a steady interest rate, according to sources [3], are shown as Appendix 3.
- ✓ The new building that is planned to be built is assumed to serve as residential rental housing unit more than 100 years.

Facts

- ✓ The non-profit company CHNW does not pay federal or state taxes [4].
- ✓ It is assumed that this building is a residential rental property. According to MACRS, the recovery period of a residential rental property is 27.5 years and the depreciation is calculated through straight-line method without any half-year convention.

Alternatives

The building that is going to be constructed will have 75 apartments or it will have 100 apartments.

These two alternatives are identified by the manager that we contacted in CHNW. The reason for the restriction of having 75 or 100-apartment option is that it is going to be a wood construction. Regulations allow up to five story buildings for wood constructions and also the architectural design restricts the number of alternatives.

Determining revenues and costs

Rental Income

According to CHNW, the rental rates for one bedroom are 80-85% lower than the market rate [5]. Supporting that, another source [6] indicates that the average market rate in Portland is around \$760-770 for one bedroom, in 1998.

The new building is planned to have studio units. The difference in the rental rate of studio units and one-bedroom units are clearly shown in the table provided by CHNW as Appendix 4.

With this information, the estimated average rent for a one-bedroom unit in CHNW comes out to be around \$615. Based on the direct proportion between average rents for one bedroom and studio type apartments in CHNW, the resulting average rent for a studio unit, based on the average market value of a one-bedroom unit that is \$615, is \$490. The Appendix 5 clearly shows the calculations for estimating the rent.

The only assumption is that all the values used in the calculation are not affected by inflation, due to sources indicating different researches in different years.

Other Revenues

Other revenues such as cleaning fees, late payment fees, tenant charges and vending fees are calculated as having direct proportion to rental income. The main reason for this assumption is that all those fees are related to number of people living in the building that makes them related with rental revenues.

The calculations of these proportions are shown in Appendix 6.

Expenditures

The expenditures are calculated as the way revenues are calculated. Using year 2001 income survey of CHNW, the proportions of expenditures to the rental income are determined. These proportions are used in calculating the yearly service and other expenditures of the new housing unit. This process is shown in Appendix 6.

None of the expenditure proportions are varying throughout the time except maintenance and repair expenditures. As it is stated in the assumptions section, it is obvious that as the building gets older the maintenance cost gets higher.

Cost of Construction

The costs for constructing the new building is estimated using the data gathered from CHNW. The cost has been estimated according to the past experience of constructing the Goose Hollow Plaza housing unit. The calculations and the spreadsheet printout are attached as Appendix 7.

Comparing the results

The revenues and costs are all incorporated into one worksheet in Excel, which calculates the net profit and finds the NPV for the length of analysis, 10 years. The results are attached as Appendix 8. (Also calculates the payback period and NPV of 100 years)
The brief results are summarized in the table below.

Alternatives	NPV in ten years	Payback Period	NPV in 100 years
75 Apartment	-2087640.307	40 Years	426630.08
100 Apartment	-2768520.409	40 Years	583840.1005

Perform Sensitivity

Price Sensitivity

To test the price sensitivity, the price is going to be altered one percent to see the differences in NPV in 10 years, NPV in 100 years and the payback period.

The attachments as Appendix 9 shows the Excel Sheet for 10 years, but the brief results of the sensitivity test is below.

Sensitivity Test for Rent (1%)	NPV in ten years	Sensitivity Rate(%)	Payback Period	Change in Payback year	NPV in 100 years	Sensitivity Rate(%)
75 Apartment	-2074217	0.647	41 Years	2	465196	9.68
100 Apartment	-2750622	0.651	40 Years	3	635262	8.81

Economic Sensitivity

Sensitivity to economic variable interest rate is tested and the results for 10 years are attached as Appendix 10.

The brief results of the Economic Sensitivity test are in the table below.

Sensitivity Test for Interest (1%)	NPV in ten years	Sensitivity Rate(%)	Payback Period	Change in Payback year	NPV in 100 years	Sensitivity Rate(%)
75 Apartment	-2121877	-1.614	65 Years	22	78026	-81.60
100 Apartment	-2814170	-1.622	64 Years	21	119035	-79.61

Conclusions

The results show that the first alternative, which is constructing a building with 75 apartments, is better in 10 years of NPV analysis. However, when the NPVs in 100 years are compared, the second alternative exceeds the first one.

The sensitivity analysis might give some clues about which alternative is sensitive to which change however, it doesn't make changes in the decision process. One thing to note down would be the change of interest rates effecting the NPVs and payback periods extremely, in long-term analysis.

Recommendations

The CHNW is concerned more about how to fund this kind of a project whereas PSU is only thinking in terms of on-campus student housing availability. In addition, PSU offers the CHNW to reconsider the below-market-rates policy in order to fund the construction of new buildings.

In this situation, with the results of the NPV analysis, the best alternative is to have 75 apartments. This satisfies PSU's needs to some point and helps the CHNW to keep the rates relatively same. This option is also a better alternative to all on-campus residents. On the long run, it seems that both PSU and CHNW benefits from 100-apartment alternative.

As a conclusion, in short term 75 apartment option is superior to 100 apartment option and on the long run, the benefits of having 100 apartment is better compared to the other alternative both in terms of NPV and payback period.

References

1. Department of the Army Economic Analysis Manual U.S Army Cost and Economic Analysis Center February 2001
2. <http://sarvis.dogami.state.or.us/SeRTaF/EQlegislation.htm>
3. <http://www.epinet.org/Issuebriefs/ib148.html>
4. http://www3.gov.ab.ca/gs/information/clctc/incorporating_nonprofit.cfm
5. Charles Heying, Ph.D. "The Future of student Housing at PSU" Urban Studies and Planning June 1, 2001
6. http://www.signalgroup.com/Pages/art_1.html

Appendix

Appendix 1

Seismic Threat to Birmingham

As realization of Oregon's seismic risk has grown in recent years, building codes and practices in the state since 1974 have addressed earthquakes in some form. It should be noted, however, that even before that time some structural engineers in this area utilized the seismic design requirements of the Uniform Building Code (UBC). More recently, concern for public safety has led to revisions of building codes and passage of new laws related to earthquake mitigation.

In 1988 the entire state was classed Uniform Building Code Seismic Zone 2B. In 1989, the Legislature passed Senate Bill 955, which instructed the Oregon Department of Geology and Mineral Industries (DOGAMI) to improve the State's understanding of earthquake and other geologic hazards and to use this knowledge to reduce the loss of life and property due to these hazards.

After Senate Bill 96 was passed in 1991, schools were required to hold "duck and cover" earthquake drills, and developers of new essential and special occupancy structures were required to investigate their building sites and to file their investigation reports with DOGAMI. This same bill also created the Oregon Seismic Safety Policy Advisory Commission (OSSPAC), which was charged with reducing exposure to earthquake hazards in Oregon by developing and influencing seismic-related policy at federal, state, and local levels; facilitating improved public understanding and encouraging identification of risk from earthquakes; supporting research and special studies about earthquakes; implementing appropriate earthquake hazard mitigation; and preparing for response and recovery from earthquakes.

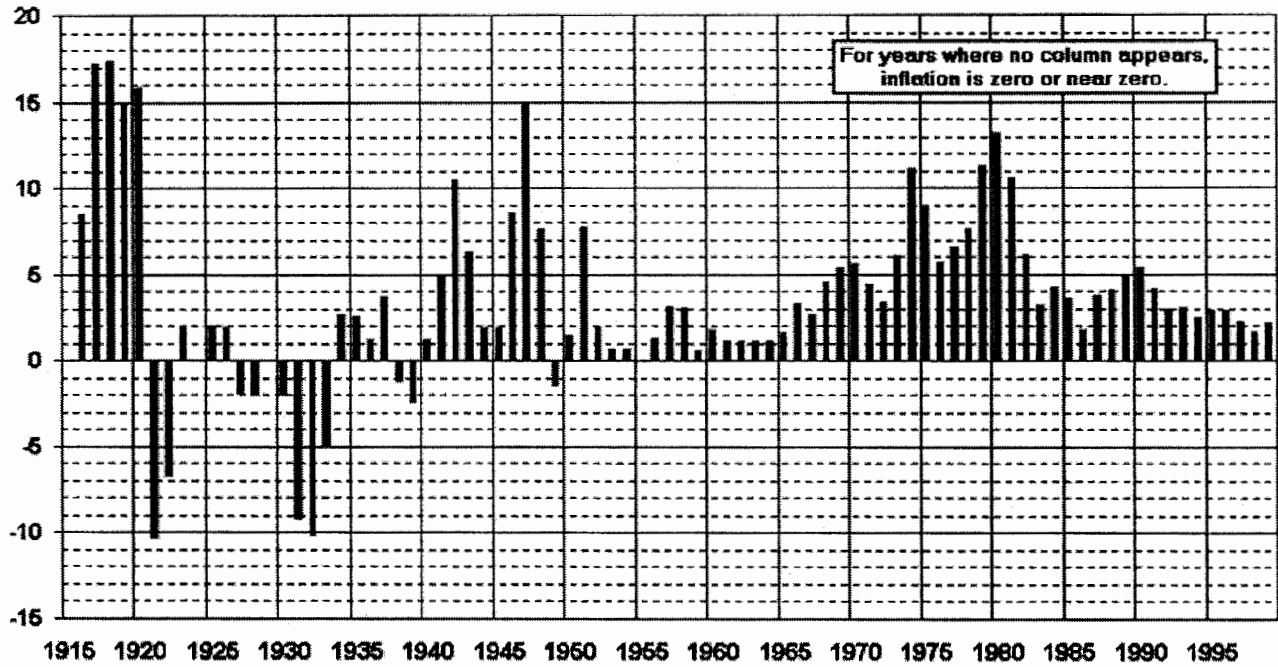
In 1993, the Oregon Building Codes agency upgraded the Oregon Structural Specialty Code Seismic Zone 2B to Seismic Zone 3 in western Oregon including Hood River and Klamath counties

To further address Oregon's vulnerability to earthquakes, in 1995, 14 bills dealing with earthquakes and earthquake-generated tsunamis were introduced in the Legislature. One bill that became law was concerned with tsunami drills and education, another affected construction of essential and special occupancy buildings in the tsunami inundation zone, another added four new members to OSSPAC, another provided tax credits for seismic rehabilitation expenditures in historic properties, and finally, Senate Bill 1057. That bill was designed to provide recommendations and guidance to the 1997 Legislature as it would consider seismic rehabilitation of existing buildings--a new, complex, and potentially costly issue.

<http://sarvis.dogami.state.or.us/SeRTaF/EQlegislation.htm>

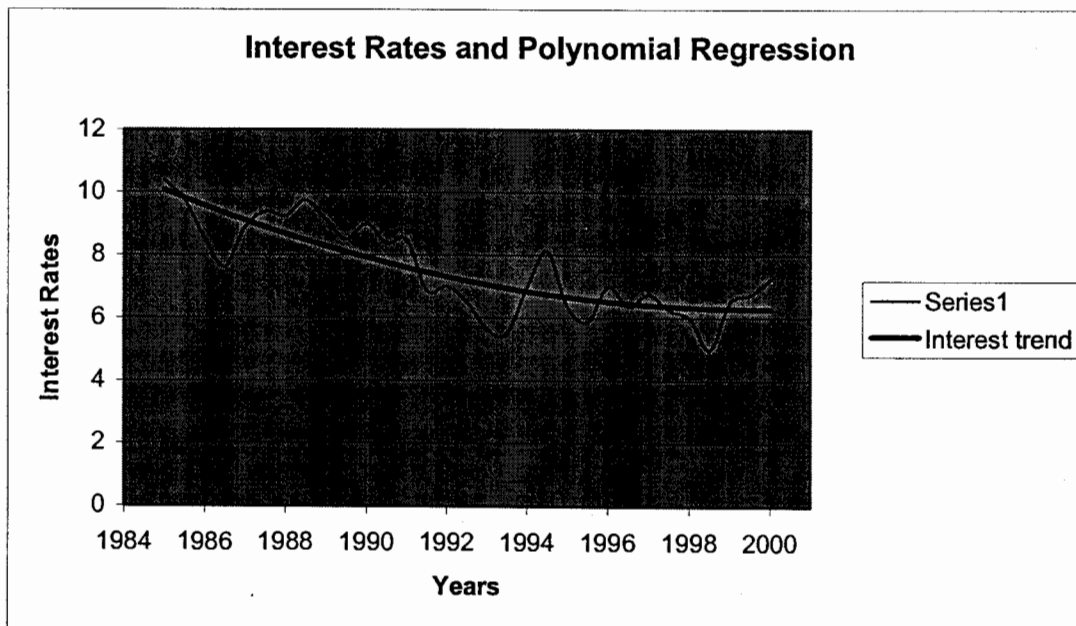
Appendix 2

U.S. Annual Inflation Rate 1915 to 1999, in Percent



Appendix 3

Years	Int. Rate	Years	Int. Rate
1979.5	12.25	1990	9
1980	10.5	1990.5	8.375
1980.5	14.625	1991	8.5
1981	14.875	1991.5	6.875
1981.5	14.75	1992	7
1982	15.5	1992.5	6.5
1982.5	11.25	1993	5.625
1983	11.5	1993.5	5.5
1983.5	12.375	1994	7
1984	14.375	1994.5	8.125
1984.5	12.125	1995	6.375
1985	10.375	1995.5	5.875
1985.5	9.75	1996	7
1986	8.5	1996.5	6.375
1986.5	7.625	1997	6.75
1987	8.875	1997.5	6.25
1987.5	9.375	1998	6
1988	9.25	1998.5	5
1988.5	9.75	1999	6.5
1989	9.125	1999.5	6.75
1989.5	8.5	2000	7.25



Appendix 4

CHNW OPERATED HOUSING AUTHORITY OWNED													
Rentable Units	CHNW Owned				CHNW Owned				CHNW Owned				CHNW OPERATED HOUSING AUTHORITY OWNED
	PSU	Goose Hollow	King	PSU	PSU	Goose Hollow	King	PSU	PSU	Goose Hollow	King	PSU	
Total	PSU	Blackstone	Tower	Plaza	King	Albert	MaryAnne	Montgomery	Online	Paladian	Parkway	St Helens	Stratford
Special	72												
Sleeper	198	16	14	112	64	1	143	24	13	1	1	35	21
Bachelor	535	7	20	78	21	16	1	192	10	2	10	15	189
One-bedroom	431	5	6	31	94	1	1	1	7				11
Two bedroom	140												34
Three-bedroom	1	1											1
Total	1377	38	40	224	189	189	144	285	3822	301	16	54	22
CHNW OPERATED HOUSING AUTHORITY OWNED													
Market Gross	CHNW Owned				CHNW Owned				CHNW Owned				CHNW OPERATED HOUSING AUTHORITY OWNED
	PSU	Goose Hollow	King	PSU	PSU	Goose Hollow	King	PSU	PSU	Goose Hollow	King	PSU	
Total	PSU	Blackstone	Tower	Plaza	King	Albert	MaryAnne	Montgomery	Online	Paladian	Parkway	St Helens	Stratford
Possible Rent	58812	4704											
Sleeper	147999	5964	48944	27136	8040	0	7344	4270	14840	9555	884	9240	8240
Bachelor	243301	10860	44538	13125	518	518	1222	13296	8085	4640	110754	16796	1054
One-bedroom	109484	4278	22413	76516	653			4977					647
Two bedroom	718												
Three-bedroom													
Total	554556	15852	71532	23534	8553	518	1222	13296	8085	4640	110754	16796	1054
CHNW OPERATED HOUSING AUTHORITY OWNED													
Rent for Unit Type	CHNW Owned				CHNW Owned				CHNW Owned				CHNW OPERATED HOUSING AUTHORITY OWNED
	PSU	Goose Hollow	King	PSU	PSU	Goose Hollow	King	PSU	PSU	Goose Hollow	King	PSU	
Total	PSU	Blackstone	Tower	Plaza	King	Albert	MaryAnne	Montgomery	Online	Paladian	Parkway	St Helens	Stratford
Sleeper	284.17	294.00	437.00	625.00	424.00	189.00	292.00	335.00	294.00	301.00	294.00	424.00	455.00
Studio (bachelor)	432.00	426.00	571.00	814.00	424.00	534.00	518.00	653.00	459.00	424.00	427.00	538.00	464.00
One-bedroom	542.47	535.00	522.00	718.00	522.00	534.00	518.00	653.00	459.00	424.00	427.00	538.00	464.00
Two bedroom	710.17	713.00	723.00	814.00	713.00	723.00	711.00	711.00	459.00	424.00	427.00	538.00	464.00
Three-bedroom	718.00								459.00	424.00	427.00	538.00	464.00
Total	1063	455.57	524.31	719.43	424.00	513.71	293.07	330.03	476.80	438.24	455.41	455.41	455.41

Appendix 5

Market rate range in Portland for one-bedroom		
380	1100	
79%	228%	
Fair market rent for one-bedroom	Ave. market rent fairly new one-bedroom	CHNW estimated rent for fairly new apartment
100%	160%	80%
481.0126582	769.6202532	615.6962025
Ave. rent for one-bedroom in CHNW	Ave. rent for studio in CHNW	
542.4666667	432	
Ave. rent for fairly new one-bedroom in CHNW	Ave. rent for fairly new studio in CHNW	
615.6962025	490.3172413	

Appendix 6

ACCOUNT		BUDGET FOR 2001	
REVENUES			
RENTAL INCOME	1672053		
CLEANING FEES	30905	0.018483266	
LATE PAYMENT FEES	10452	0.006250998	
TENANT CHARGES	8360	0.004999842	
VENDING INCOME	21120	0.012631179	
TOTAL REVENUES	1742890		
HOUSING SERVICES			
SALARIES -HOUSING SERVICES	70674		
PAYROLL TAXES & BENEFITS	7368		
PEST CONTROL	7946		
SITE MANAGER SUPPLIES-CARPET	11442		
ELECTRICITY	51643		
NATURAL GAS	126970		
WATER & SEWER	87663		
GARBAGE	31506		
TELEPHONE	7284		
RESIDENCE LIFE PROGRAM	900		
RESIDENTS COUNCIL STIPEND	1920		
LEASING OFFICE CHARGE	174581		
TOTAL HOUSING SERVICES EXP.	579897	0.346817356	
MAINTENANCE & REPAIR			
SALARIES - CARPENTRY	20322	<i>Initial Maintenance Exp.</i>	
SALARIES - MECHANICAL	87030	0	
SALARIES - PAINTING	61788	0	
SALARIES - CLEANING	67218	67218	
PAYROLL TAX - BENEFIT	61506	0	
M&R SUPPLIES - CARPENTRY	5910	0	
M&R SUPPLIES - PAINTING	4680	0	
M&R SUPPLIES - MECHANICAL	13800	0	
M&R - OTHER CONTRACTED SERVICE	13896	0	
CLEANING SUPPLIES	5700	5700	
CLEANING - OTHER CONTRACTED SERVICE	624	624	
BUILDING PERMITS & FEES	2349	2349	
TOTAL MAINT. & REPAIRS EXP.	344823	75891	0.045387915
ADMINISTRATION			
BAD DEBT EXPENSE	21589		
GENERAL INSURANCE	1020		
EMPLOYEE PROMOTIONS	400		
TRAINING - IN HOUSE FUNCTIONS	430		
TRAINING - REGISTRATION FEES	280		
TRAINING - LODGING & FOOD	200		
MANAGEMENT FEE DISTRUBUTION	176464		
TOTAL ADMIN. EXPENDITURES	208922	0.124949389	
TOTAL OPERATING EXPENDITURES	1133642		
NET OPERATING INCOME	609248		
NET INCOME (LOSS)	157859		
NON CASH LINE ITEMS	93018		
CASH GENERATED	250877		
CAPITAL BUDGET	187868		
NET CASH FROM OPERATIONS	63009		

Appendix 7

Type 5 - 5 story (4 wf over 1 cip)

331 sq ft / unit including common areas	330	330	
number of Units:	75	100	
Cost / Sq Ft 2001 begin construction \$	112.05	\$ 112.05	
Deconstruct Birmingham \$35,000 - 4 \$	45,000	\$ 45,000	
TOTAL HARD COSTS	2,818,238	3,742,650	100 %
SOFT COSTS			
Design Related Costs			
Architectural and Engineering	211375	280708	7.50 %
Reimburseables	8193	10881	0.29 %
Project model	589	782	0.02 %
Shoring design drawings	1938	2574	0.07 %
Various Reports/Studies/Surveys			
Level One	606	804	0.02 %
Level Two - UST	4993	6631	0.18 %
Traffic Study	569	756	0.02 %
Market Analysis	1522	2022	0.05 %
Survey	1578	2096	0.06 %
Arborist	5531	7345	0.20 %
Other (miscellaneous costs)	1211	1609	0.04 %
Geotechnical/soils Report	12841	17053	0.46 %
inspections & Testing Project Management-Borrower			
inspection testing	7268	9652	0.26 %
Inspection fees			
Roofing Consultant	727	965	0.03 %
Project Management	52090	69176	1.85 %
Permits and Fees			
Building permits & other utilities	48241	64065	1.71 %
PGE Utility fees	3213	4267	0.11 %
Design review	5001	6641	0.18 %
Traffic & Park Fees	115072	161472	
Legal Costs - Taxes and Insurance			
Legal/Construction	4526	6010	0.16 %
Closing Costs- Taxes and Insurance			
title and Recording	5631	7479	0.20 %
miscellaneous	606	804	0.02 %
Insurance	8722	11583	0.31 %
Various Project Costs			
marketing and promotion	7745	10285	0.27 %
Art	28183	37428	1.00 %
Contingency			
soft cost contingency	70458	93569	2.50 %
Landscaping	2372	3150	0.08 %
Administration and Negotiation Fees	948	1259	0.03 %
TOTAL SOFT COSTS	611749	821066	17.62 %
% of Hard Costs	21.71 %	21.94 %	
TOTAL PROJECT COSTS	3,429,987	4,563,716	

Appendix 8

Apartment:	75	Interest Rate	0.0523214								
Rent:	490	Inflation Rate	0.04								
Years	Rates	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
New Birmingham				477294	496386	516242	536891	558367	580702	603930	628087
Rent Revenue				8822	9175	9542	9924	10320	10733	11163	11609
Cleaning Fees	0.018			2984	3103	3227	3356	3490	3630	3775	3926
Late Payment Fees	0.006			2386	2482	2581	2684	2792	2903	3020	3140
Tenant Charges	0.005			6029	6270	6521	6782	7053	7335	7628	7933
Vending Income	0.013			497515	517416	538112	559637	582022	605303	629515	654696
Total Revenue											
Expenditures (Cost)											
Services Exp.	0.347			172547	179449	186627	194092	201855	209930	218327	227060
Maint & Rep. Exp.	0.045			22581	24002	25500	27080	28745	30500	32349	34298
Administrative Exp.	0.125			62164	64651	67237	69926	72723	75632	78658	81804
Depreciation				124727	124727	124727	124727	124727	124727	124727	124727
Taxable Income				115496	124588	134022	143812	153972	164515	175455	186807
Income Taxes	0.000			0	0	0	0	0	0	0	0
Net Income				115496	124588	134022	143812	153972	164515	175455	186807
Investment		1143329	2286658								
Actual Dollars				240223	249314	258749	268539	278699	289241	300181	311534
Constant Dollars				222100	221640	221180	220720	220260	219800	219340	218880
NPV	2087640			200563	190196	180365	171040	162198	153811	145858	138315
Cumulative NPV				200563	390759	571124	742164	904362	1058173	1204031	1342346
Cumulative (NPV - Initial Funding)				3229423	3039227	2858863	2687822	2525625	2371813	2225955	2087640
Depreciation/Year	124727										
331 sq ft / unit including common areas			330	Total Soft Cost for 75		611749					
Cost / Sq Ft 2001 begin construction			112	Total Cost for the Con		3429987					
Deconstruct Birmingham \$35,000 - 45,000			45000								

Apartment:	100	Interest Rate	0.0523214								
Rent:	490	Inflation Rate	0.04								
Years	Rates	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
New Birmingham				636393	661848	688322	715855	744489	774269	805240	837449
Rent Revenue				11763	12233	12722	13231	13761	14311	14883	15479
Cleaning Fees	0.018			3978	4137	4303	4475	4654	4840	5034	5235
Late Payment Fees	0.006			3182	3309	3442	3579	3722	3871	4026	4187
Tenant Charges	0.005			8038	8360	8694	9042	9404	9780	10171	10578
Vending Income	0.013			663354	689888	717483	746182	776030	807071	839354	872928
Total Revenue											
Expenditures (Cost)											
Services Exp.	0.347			230063	239265	248836	258789	269141	279906	291102	302747
Maint & Rep. Exp.	0.045			30108	32002	34000	36106	38326	40667	43133	45731
Administrative Exp.	0.125			82886	86201	89649	93235	96964	100843	104877	109072
Depreciation				165757	165757	165757	165757	165757	165757	165757	165757
Taxable Income				154540	166662	179242	192295	205841	219898	234485	249622
Income Taxes	0.000			0	0	0	0	0	0	0	0
Net Income				154540	166662	179242	192295	205841	219898	234485	249622
Investment		1519438	3038877								
Actual Dollars				320297	332419	344998	358052	371598	385655	400242	415379
Constant Dollars				296133	295519	294906	294293	293679	293066	292453	291840
NPV	2768520			267417	253595	240486	228054	216263	205082	194477	184420
Cumulative NPV				267417	521012	761499	989552	1205816	1410898	1605375	1789795
Cumulative (NPV - Initial Funding)				4290898	4037303	3796817	3568763	3352499	3147418	2952941	2768520
Depreciation/Year	165757										
331 sq ft / unit including common areas			330	Total Soft Cost for 75		611749					
Cost / Sq Ft 2001 begin construction			112	Total Cost for the Con		4558315					
Deconstruct Birmingham \$35,000 - 45,000			45000								

Appendix 9

Apartment:	75	Interest Rate	0.0523214								
Rent:	495	Inflation Rate	0.04								
Years	Rates	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
New Birmingham											
Rent Revenue			482067	501350	521404	542260	563951	586509	609969	634368	
Cleaning Fees	0.018		8910	9267	9637	10023	10424	10841	11274	11725	
Late Payment Fees	0.006		3013	3134	3259	3390	3525	3666	3813	3965	
Tenant Charges	0.005		2410	2507	2607	2711	2820	2932	3050	3172	
Vending Income	0.013		6089	6333	6586	6849	7123	7408	7705	8013	
Total Revenue			502490	522590	543493	565233	587843	611356	635811	661243	
Expenditures (Cost)											
Services Exp.	0.347		174272	181243	188493	196033	203874	212029	220510	229331	
Maint & Rep. Exp.	0.045		22807	24242	25755	27350	29032	30805	32673	34641	
Administrative Exp.	0.125		62786	65297	67909	70626	73451	76389	79444	82622	
Depreciation			124727	124727	124727	124727	124727	124727	124727	124727	
Taxable Income			117898	127081	136610	146498	156759	167407	178456	189923	
Income Taxes	0.000		0	0	0	0	0	0	0	0	
Net Income			117898	127081	136610	146498	156759	167407	178456	189923	
Investment		1143329	2286658								
Actual Dollars			242625	251808	261336	271225	281486	292134	303183	314649	
Constant Dollars			224321	223856	223391	222927	222462	221998	221533	221068	
NPV	2074217		202569	192098	182168	172751	163820	155349	147316	139698	
Cumulative NPV			202569	394667	576835	749586	913406	1068755	1216071	1355770	
Cumulative (NPV - Initial Funding)			3227418	3035320	2853151	2680400	2516581	2361232	2213915	2074217	
Depreciation/Year	124727										
331 sq ft / unit including common areas			330 Total Soft Cost for 75			611749					
Cost / Sq Ft 2001 begin construction			112 Total Cost for the Con			3429987					
Deconstruct Birmingham \$35,000 - 45,000			45000								

Apartment:	100	Interest Rate	0.0523214								
Rent:	495	Inflation Rate	0.04								
Years	Rates	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
New Birmingham											
Rent Revenue				642756	668467	695205	723014	751934	782012	813292	845824
Cleaning Fees	0.018			11880	12355	12850	13364	13898	14454	15032	15634
Late Payment Fees	0.006			4018	4179	4346	4520	4700	4888	5084	5287
Tenant Charges	0.005			3214	3342	3476	3615	3760	3910	4066	4229
Vending Income	0.013			8119	8444	8781	9133	9498	9878	10273	10684
Total Revenue				669987	696787	724658	753644	783790	815142	847747	881657
Expenditures (Cost)											
Services Exp.	0.347			232363	241658	251324	261377	271832	282705	294013	305774
Maint & Rep. Exp.	0.045			30409	32322	34340	36467	38710	41073	43564	46188
Administrative Exp.	0.125			83714	87063	90546	94167	97934	101851	105926	110163
Depreciation				165757	165757	165757	165757	165757	165757	165757	165757
Taxable Income				157743	169986	182691	195876	209557	223755	238487	253776
Income Taxes	0.000			0	0	0	0	0	0	0	0
Net Income				157743	169986	182691	195876	209557	223755	238487	253776
Investment		1519438	3038877								
Actual Dollars				323500	335743	348448	361633	375314	389512	404244	419532
Constant Dollars				299094	298475	297855	297236	296616	295997	295377	294758
NPV	2750622			270092	256131	242891	230334	218426	207132	196422	186264
Cumulative NPV				270092	526223	769114	999448	1217874	1425007	1621428	1807693
Cumulative (NPV - Initial Funding)				4288224	4032093	3789202	3558867	3340441	3133309	2936887	2750622
Depreciation/Year	165757										
331 sq ft / unit including common areas			330	Total Soft Cost for 75		611749					
Cost / Sq Ft 2001 begin construction			112	Total Cost for the Con		4558315					
Deconstruct Birmingham \$35,000 - 45,000			45000								

Appendix 10

Apartment:	75	Interest Rate	0.0528446								
Rent:	490	Inflation Rate	0.04								
Years	Rates	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
New Birmingham											
Rent Revenue				476986	496065	515908	536544	558006	580326	603539	627681
Cleaning Fees	0.018			8816	9169	9536	9917	10314	10726	11155	11602
Late Payment Fees	0.006			2982	3101	3225	3354	3488	3628	3773	3924
Tenant Charges	0.005			2385	2480	2579	2683	2790	2902	3018	3138
Vending Income	0.013			6025	6266	6517	6777	7048	7330	7623	7928
Total Revenue				497193	517081	537764	559275	581646	604912	629108	654272
Expenditures (Cost)											
Services Exp.	0.347			172435	179333	186506	193966	201725	209794	218186	226913
Maint & Rep. Exp.	0.045			22567	23986	25484	27062	28726	30480	32329	34276
Administrative Exp.	0.125			62124	64609	67193	69881	72676	75583	78607	81751
Depreciation				124727	124727	124727	124727	124727	124727	124727	124727
Taxable Income				115341	124426	133855	143639	153792	164327	175260	186606
Income Taxes	0.000			0	0	0	0	0	0	0	0
Net Income				115341	124426	133855	143639	153792	164327	175260	186606
Investment		1143329	2286658								
Actual Dollars				240067	249153	258581	268365	278518	289054	299987	311332
Constant Dollars				221956	221496	221036	220577	220117	219657	219198	218738
NPV	2091986			200234	189790	179890	170505	161610	153178	145185	137609
Cumulative NPV				200234	390024	569914	740419	902029	1055207	1200392	1338001
Cumulative (NPV - Initial Funding)				3229752	3039962	2860073	2689567	2527957	2374779	2229594	2091986
Depreciation/Year	124727										
331 sq ft / unit including common areas			330	Total Soft Cost for 75		611749					
Cost / Sq Ft 2001 begin construction			112	Total Cost for the Con		3429987					
Deconstruct Birmingham \$35,000 - 45,000			45000								

Apartment:	100	Interest Rate	0.0528446								
Rent:	490	Inflation Rate	0.04								
Years	Rates	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
New Birmingham											
Rent Revenue				635981	661420	687877	715392	744008	773768	804719	836907
Cleaning Fees	0.018			11755	12225	12714	13223	13752	14302	14874	15469
Late Payment Fees	0.006			3976	4135	4300	4472	4651	4837	5030	5232
Tenant Charges	0.005			3180	3307	3439	3577	3720	3869	4023	4184
Vending Income	0.013			8033	8355	8689	9036	9398	9774	10165	10571
Total Revenue				662924	689441	717019	745700	775528	806549	838811	872363
Expenditures (Cost)											
Services Exp.	0.347			229914	239110	248675	258622	268966	279725	290914	302551
Maint & Rep. Exp.	0.045			30089	31982	33978	36083	38302	40640	43105	45701
Administrative Exp.	0.125			82832	86145	89591	93175	96902	100778	104809	109001
Depreciation				165757	165757	165757	165757	165757	165757	165757	165757
Taxable Income				154333	166447	179018	192064	205601	219649	234226	249353
Income Taxes	0.000			0	0	0	0	0	0	0	0
Net Income				154333	166447	179018	192064	205601	219649	234226	249353
Investment		1519438	3038877								
Actual Dollars				320090	332204	344775	357821	371358	385406	399983	415110
Constant Dollars				295941	295328	294715	294102	293489	292877	292264	291651
NPV	2774314			266979	253053	239853	227341	215480	204237	193580	183478
Cumulative NPV				266979	520032	759885	987226	1202706	1406943	1600523	1784001
Cumulative (NPV - Initial Funding)				4291337	4038283	3798430	3571089	3355609	3151372	2957792	2774314
Depreciation/Year	165757										
331 sq ft / unit including common areas			330	Total Soft Cost for 75	611749						
Cost / Sq Ft 2001 begin construction			112	Total Cost for the Con	4558315						
Deconstruct Birmingham \$35,000 - 45,000			45000								



college housing northwest

BIRMINGHAM

A 4-story structure including the lower level
which is partially built below grade level.

Built and completed in 1911

Apartment units: 7 bachelor
5 one-bedroom
1 three-bedroom
13 units

Exterior walls – brick masonry
Roof – built-up
Interior walls – wood stud with plaster
Floor/roof systems – wood

CHNW operation began in 1969

Renovation or remodel work:

1974 chapter 13 building codes renovation permitted
1982 fire alarms permitted and installation of some new electrical
1984 window replacement and rehabilitation permitted

Other information:

CHNW manages and maintains only to the exterior building line or property line.
PSU maintains all adjacent grounds.