

# Site Development Feasibility Study

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A feasibility study in the world of construction is deemed as a preliminary due diligence process in which key components of a project are addressed to determine if the project is viable or not. These components are related to time and money, and the end goal of a feasibility study is to determine if the initial investment of time and money is worth the amount of future financial return. What deems a project successful in the preliminary stage is up for interpretation. Each developer and investor have their own return on investment threshold in a multi-family project like the one proposed, that rate is determined by total project cost compared to the monthly rental income. This paper will go in-depth into the process required to find this rate as accurately as possible. This process is based on ample research and accurate assumptions. The stages of the process include a site plan, regulatory evaluation, sales and marketing research, a construction management plan, and a financial & risk analysis. Difficulties were met during the regulatory evaluation phase as finding information about planning and building requirements were hard to come by as each jurisdiction has separate requirements. During the analysis of building plans for quantity take-offs, some components dictated by the city requirements were overlooked and caught in the plans which ultimately added to the overall estimated budget. Research of comparable projects was helpful when calculating projected rental income. The process is extensive but crucial to any successful property development project.

**Key Words:** Feasibility, Construction, Development, Multi-Family, Investment

## How Project Came About

The preliminary stages of a construction project have always been of high interest. This part of the industry is not heavily focused on in the construction management curriculum. Nevertheless, many of the core skills that are taught are essential when composing a thorough feasibility study. Through elective courses taken which taught real property development principles, a firm understanding of the concept was grasped and curiosity was peaked. Acquired knowledge of development regulations, market demands, and urban economics, as well as financial and risk analysis has assisted in executing this feasibility process. These skillsets paired with the ability to comprehend the construction management necessities of an estimated budget based on material take-offs and a construction schedule work in harmony to create a fully developed feasibility study. It is imperative that every project passes through the conceptual feasibility stage as it truly sets the stage for the work to proceed.

## **Steps**

The deliverables for this project were executed in stages as some were predecessors to others. Starting with the site plan and regulatory evaluation; this stage is all about specifying the site and deeming it suitable for construction. This phase includes the site location, site configuration, existing and surrounding uses, site features, current zoning, parking, and building requirements, and any special entitlements. This is the first and crucial step as the results will show whether the site and surroundings are able to accommodate the proposed building. Following this phase comes the sales and marketing research which identifies the general market, demographics, and economic analysis, and provides a renting or selling plan. It is best to find comparable buildings and seek out the monthly revenue, expenses, and tenant vacancy rate. This is a crucial step as investors are primarily focused on the key numerical values. Next comes the construction management plan which provides the estimated budget, schedule, and site logistics plan. This stage requires deep diving into the construction documents where quantity take-offs were completed which allow for the budget and schedule to be executed. The estimated value of the project taken from the budget is plugged directly into the financial and risk analysis plan which is the final stage of the feasibility study. This stage shows absorption, cash flow projection, and a financing plan. Completion of this stage will provide plenty of information for investors to decide if the numbers meet their investment threshold.

## **Deliverables**

The high-density residential zoning of the site paved the way for this development. A 4-story podium-style structure with Type-5 over Type-1 full sprinklered. Along with its conditional density bonus entitlement which allowed for additional units to be built and is in the bustling city of Glendale, this development was already looking like a golden ticket to investors. Research findings from comparable developments showed an average unit revenue of \$3,250, with a total of 18 units which comes out to be an average total monthly revenue of \$58,504. The estimated budget, which is based on quantified material take-offs from construction documents, shows the value to be \$4.26 Million. A fast-tracked schedule shows a total duration of 12 months as site work, excavation, and the foundation will take four months to complete. When pulling the estimated budget value and plugging it into a Pro Forma the internal rate of return at the end of year six comes out to be 37.4% assuming a 2.5% vacancy loss. Each phase of the feasibility study will be explained in depth below.

This fully entitled and permit-issue-ready 0.28-acre lot is located in the heart of downtown Glendale, CA. The proposed is a four-story structure with a total of 18 units, of which 2 are below-market-rate units. The total floor area is 20,241 Sq Ft with a unit mix from one to three bedrooms. The structure offers a subterranean parking garage with twenty designated auto stalls and a bicycle storage area. Amenities include a 730 Sq Ft recreational room and outdoor patio and barbeque areas. With the city's approval of a density bonus housing agreement, an additional five units are permitted to be built conditionally, given that two out of the total eighteen units are designated for low-income housing. Refer to figure 1 below for the unit mix.

<b>Unit Type</b>	<b>Units</b>	<b>Average Sf</b>
One Bed, One Bath	7	767
Two Bed, Two Bath	3	1,120
Three Bed, Two Bath	8	1,262
Total	18	18,830

*Figure 1. Unit Mix*

### Site Plan and Regulatory Evaluation

The site is in the center of downtown Glendale, CA. The proposed lot area is 100' X 125' with a front setback of 23', a rear setback of 15', and side setbacks of 11' as shown in Figure 2 below. Currently, two single-family home structures sit on the lots, which will require demolition. The subsurface conditions of the site were found to be very good. The site is underlain by localized fill overlying natural deposits of silty sand and gravel sand layers. The upper native soils where our basement level will be excavated were found to consist of silty sand and clean sand soils. The results of laboratory testing were found to be of low expansion potential, therefore, requiring no special design for the slab on grade. Additionally, no water was found in any of the boring samples. The temporary shoring plan calls for cantilever soldier piles along the north, west, and east property lines. The foundation plan calls for conventional spread footings along with 10' high concrete retaining walls at the basement level.

The zoning is dubbed "R-1250" which is high-density residential development. A minimum of 1,250 square feet of lot area per dwelling unit is needed. This zoning is granted based on convenient locations, adequacy of services, amount of present open space, recreation areas, and adequacy of services that support the surrounding population. The jurisdiction clearly states that the residential dwelling areas shall be made pleasant and inviting, and amenity spaces should be considered. Each unit shall have a minimum private outdoor space of forty square feet in the form of a patio, deck, or balcony. A minimum common outdoor space of two hundred square feet shall be provided per dwelling unit for the first 25 units, as well as the integration of landscaping and seating. Laundry facilities shall be provided on-site. Additionally, a minimum of ninety cubic feet of private storage space shall be provided for each dwelling.

The original plan was to build a 3-story multi-family structure with 13 dwelling units. This site has been granted a density bonus housing agreement. This conditional agreement allows for five additional units to be built, which increases the FAR (Floor Area Ratio) from 1.2 to 1.6, which adds an additional story to the building. On top of this, the parking requirements have been reduced to 0.5 stalls/unit since the building is located half a mile away from a major transit stop. These grants are conditional based upon the owner reserving two of the total eighteen units to be for very low-income households. These two below-market rate units shall be built and maintained in the exact same manner as the market rate units.

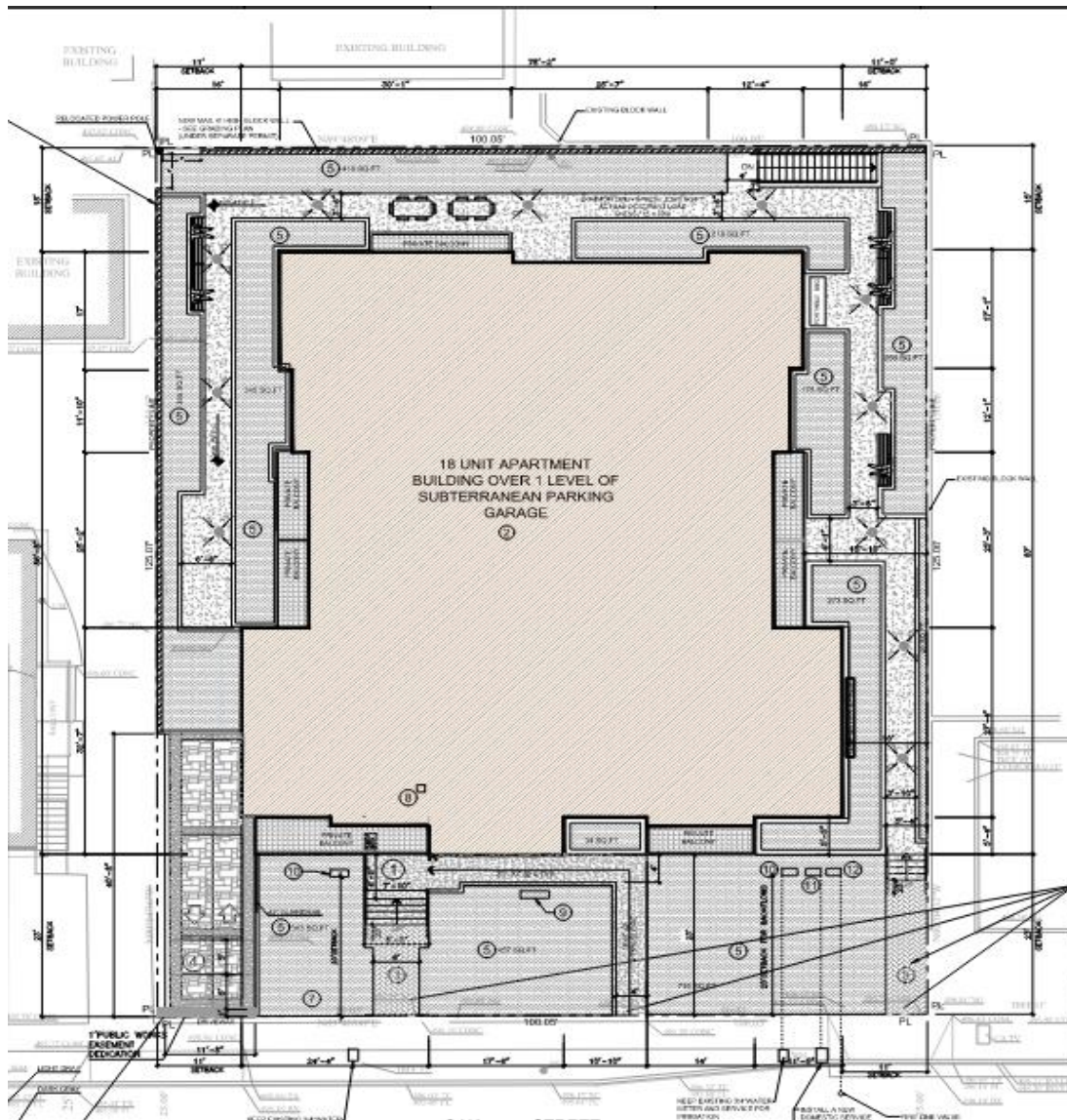


Figure 2. Site Plan

### Sales and Marketing

With a population of close to 210,000, Glendale is the third-largest city in Los Angeles County. Nearby freeways provide rapid access to corporate, leisure, and other sites all around Southern California. It is situated about nine miles north of downtown Los Angeles. The best in urban-suburban living can be found in Glendale, a forward-thinking neighborhood that is also a great place to locate both big and small prosperous enterprises. Glendale is one of Southern California's top destinations for retail shopping, along with hubs for banking/investment, entertainment, well-managed municipal administration, police, and fire protection, great schools, and medical facilities.

Apartment vacancy in the city of Glendale is currently averaging 2.5%, which is significantly lower compared to the greater Los Angeles area vacancy rate of 4%. As shown in Figure 3, the population growth has been stagnant and average household income is above the median. Glendale has been home to many Multi-family construction projects in the last decade, and demand is still overshadowing the supply. Currently, there are about 300 units under construction in the city, which isn't much considering a total population of over 200,000 people in a 31-square-mile city.

Population	1 Mile	3 Mile	5 Mile
2022 Population	53,302	231,685	624,933
2027 Population	53,818	229,442	618,226
Pop Growth 2022-2027	1%	(1%)	(1.1%)
Average HH Income	\$57,468	\$72,873	\$70,715
2022 Average Age	42	42	41

*Figure 3. Demographics*

Constructability in the city of Glendale is not as difficult as it is in other jurisdictions. The Bureaucratic entities have progressed in the efficiency of plan checking and permit issuing, which cultivates a direct approval process. The city has established a town center-specific plan in which the purpose is “to facilitate and encourage development and improvements that help realize the community’s vision for continued revitalization of the Glendale Central Business District. The Specific Plan is intended to facilitate the creation of a high-quality, comprehensive, and functionally integrated open-air commercial, retail, entertainment, and distinctive housing district, creates a “sense of place,” and contributes to the creation of an integrated downtown residential base.” The proposed site sits one block East of the town center-specific plan, which is sure to boost commerce and activity.

#### Construction Management Plan

After completing quantity take-offs from the construction documents, the estimated budget of this project is \$4.26M, including a 2.5% contingency and a 5% contractor’s fee. The concrete is estimated at 918 cubic yards, and including all reinforcement, it roughly comes out to be \$350,000. The excavation requires the removal of 3,500 cubic yards of soil along with W16x67 soldier pile reinforcement, estimated to be \$500,000. The wood framing is estimated to be \$425,000, and MEPs will be roughly \$900,000.

The construction schedule duration shows 12 months as the critical path. Site work and excavation will take two months, and the building foundation, along with below ground MEP’s will take three months. The framing and completion of units will last seven months, and the exterior construction of the building will take 2 months.

The logistics of the site shown in Figure 4 will rely on the front building setback of 23 feet. This 2,300 sq ft space will be utilized as the material lay-down area and any staging demand. Once the elevated deck is poured, the subterranean garage level could then be used as the new staging area as exterior work would be taking place. The mobile crane would be set up in front of the building and partially blocking one lane.



Figure 4. Site Logistics Plan

#### Financial and Risk Analysis:

The average cost of rent per month for the first year is \$3,250 based on market comparables. Considering the estimated total cost of the project to be \$4.26M, this comes out to be roughly \$266,303 per unit or \$210.47 per square foot. The standard loan-to-value ratio is 80% which is about \$3.8M of borrowed funds on 8% interest. Assuming a vacancy loss rate of 2.5%, the standard 3% appreciation in rent and an operating expense per unit per year of \$5,000 – the gross potential income for year 1 would be \$702,000, and the net operating income would be a conservative figure of \$594,000. The internal rate of return at the end of year 6 will be 37.4% which is depicted in Proforma shown in figure-5.

<b>Input</b>		
Number of Units:		18
Rent per month first year:	\$ 3,250.00	
Vacancy loss:	2.5%	
Operating Expenses per unit per year:	5,000	
Total development Costs per unit:	266,303	
Loan to Value ratio:	80%	3,834,763
Interest APR/CF:	8.00%	
Term in Years:	30	
Appreciation of rent:	3%	
Appreciation of operating expense:	5%	
Appreciation of property value:	4%	
Selling costs as a percent:	6%	

Pro Forma Sector

Year	0	1	2	3	4	5	6
Gross Potential Income		\$702,000	\$723,060	\$744,752	\$767,094	\$790,107	\$813,810
Vacancy		17,550	18,077	18,619	19,177	19,753	20,345
Effective Gross Income		684,450	704,984	726,133	747,917	770,355	793,465
Operating Expenses		90,000	94,500	99,225	104,186	109,396	114,865
Net Operating Income		594,450	610,484	626,908	643,731	660,959	678,600
Debt Service		337,658	337,658	337,658	337,658	337,658	337,658
Cash Flow Before Taxes		\$256,792	\$272,826	\$289,250	\$306,073	\$323,301	\$340,942
Equity	958,691						
Cash Flow/Equity		26.79%	28.46%	30.17%	31.93%	33.72%	35.56%
Market Value	4,793,454	\$4,985,192	\$5,184,600	\$5,391,984	\$5,607,663	\$5,831,970	\$6,065,249
Selling Cost							363,915
Loan Balance							3,597,978
Net Sale Proceeds							\$2,103,356
Cash Flow +Reversior	-958,691	\$256,792	\$272,826	\$289,250	\$306,073	\$323,301	\$2,444,298
IRR EOY 6							37.4%

Figure 5 - Proforma

**Lessons Learned**

A feasibility study for any sort of development project is essential to understanding if the project is viable or not. It establishes the general parameters for the capacity of planning, financing, and building. For investment purposes, the cost of the project and profits after completion are the key deciding factors. Extensive research is required and there is always information that will need to be assumed, which is part of the overall risk of a project. A quality feasibility study would benefit the project at every stage as it could foresee potential inadvertent conditions or recognize unanticipated costs. It is best to have multiple sources and open lines of communication when conducting a feasibility study, as all information is useful for analysis. Depending on the structure of a contract agreement, there could be input from a variety of players that could entirely alter the feasibility conditions.



*Figure 6. Southeast Elevation (G.A. Engineering Inc.)*



*Figure 7. East Elevation (G.A. Engineering Inc.)*





*Figure 8. West Elevation (G.A. Engineering Inc.)*



*Figure 9. North Elevation (G.A. Engineering Inc.)*

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