

CM Member of Bank of America Merrill Lynch Challenge

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This interdisciplinary project consisted of a team of 9 members: 4 ARCH majors, 2 CRP majors, 2 Finance majors, and 1 CM Major. The goal of this project was to complete an entire construction plan within a city on an empty lot from start to finish. The project entailed finding an empty site, building out a building model with renderings, floor plans, and elevations, understanding the market and our target residents, the geographical condition of the site and current ownership, a construction schedule and complete breakdown of construction costs. With all this information, the team put together an initial proposal to be admitted into the competition. With this admission, the team further put in research to build out all the aspects required by the competition and compiled all the files into a final proposal. The competition was to consist of 10 different Universities all hoping to be crowned the winner of the 2020 Bank of America Merrill Lynch Challenge but unfortunately, the competition was halted due to the current situation of the world with the coronavirus pandemic that was in occurrence. With the competition called off, no team was crowned the winner.

Key Words: Bank of America, Competition, Interdisciplinary, Team, Final Proposal

Introduction

For over 25 years, the Bank of America Merrill Lynch Low-Income Housing Challenge has been around to help drive student's innovation and commitment to building out a project and empower new generations of affordable housing leaders. This competition is made for a team of undergraduate and graduate students to build out a business plan and provide a proposal for the development of housing for low-to-moderate income residents. The banks purpose for having this challenge specifically low-to-moderate income residents is to first challenge the competitors in building out an affordable-housing development and demonstrate their excellence in design and sustainability, but also to inform the next generation of affordable housing professionals and attract them to this new idea of affordable housing.

The teams for each competition are comprised of only undergraduate and graduate students but each team is recommended by the bank to include students with finance, architecture, planning, and policy backgrounds to be able to fulfill the requirements for the project. Each team is also allowed an academic advisor as well as a developer sponsor, which in this case was Andrew Goodwin Designs for our Cal Poly challenge team.

The goal of this project was mainly to gain experience in putting to the test all of the skills that this entire team has learned throughout the courses studied at Cal Poly, and obtain experience learning to develop projects for affordable housing, including: access development, finance, planning, and architecture. With the milestone goal of being recognized as a challenge participant and the final end goal of potentially winning the competition and building out the project on the chosen site, this team was admitted to the competition but unfortunately, due to the current pandemic across the globe, the in-person final competition was cancelled.

Background

For this challenge, there was a multi-step process to gathering information, submitting to the competition for approval of the team, finalizing the research gathered into a final proposal, and again a final submission to the competition to compete against other Universities throughout the country.

Initial Proposal

For our team's initial proposal, a 10-page document was compiled to give a brief description of what the project was to entail. This included a Project Mission, a Design Concept, an Area of Description, a Site Analysis, Zoning, Accessibility, local Transportation Services, Public Education in the area, the Climate of the area, Demographics of that area, Local Employment percentages and wages, the Housing Market, Comparable Developments, and Rent Structure.

Project Mission

Bridges at Carrillo (Bridges) is an affordable housing project specifically designed to serve low-income and very low-income demographics including veterans and transitional adults from the Santa Barbara region. By integrating environmental sustainability, multi-modal transit solutions, and site amenities, the project bridges the gap between the target population and their needs. Combining innovative architecture, planning, construction, and financing skills, the project team, and development partners, will set greater standards for affordable housing in the city of Santa Barbara for years to come.

Design Concept

The design embraces a central courtyard where the Bridges community can gather and socialize. With branches going out to the north and skywalks connecting each smaller community cluster together, the design emphasizes social sustainability.

The complex is to be constructed in two phases. Because there is an existing residential structure on one of the four parcels, the three vacant lots will be developed first. The residents of the fourth lot will be offered a unit on the neighboring lot once phase one is complete. Demolition and development of the last lot will occur in Phase 2. Bridges is divided into 3 clusters with bridges connecting each section together. Phase 1 is comprised of 16 two-bedroom units, 4 three-bedroom units, 18 one-bedroom units, and a common flexible space on each of the 5 floors. Phase 2 contains 16 one-bedroom units within four floors. The ground floor is dedicated to parking and community spaces such as a community café/lounge, a childcare facility, bike storage, and an administrative office.

Area Description

The City of Santa Barbara is located on the central coast of California conveniently between the San Francisco and Los Angeles metropolitan areas. The City is the second-largest incorporated jurisdiction in the county, with a population of 91,000. Thanks to its Mediterranean climate and ample natural amenities, Santa Barbara is an extremely desirable place to live. The region is well known for its striking coastline and the Santa Ynez Mountain Range which serve as natural growth boundaries. With a median home price of \$935,000 and more than 45% of renters paying 35% or more of their household income towards rent, the City has a large need for affordable housing development projects.

Site Analysis

The project site consists of four adjacent parcels between US Highway 101 and Downtown Santa Barbara. The parcels are owned by one property owner who is looking to sell to a developer who can build housing for low-income members of the community. The net area of the four lots is 0.71 acres, each with dual street access on Carrillo and Placido Avenues. Three of the lots each measure 50 feet in frontage by 180 feet deep and the fourth is 50 feet by 66 feet. The smaller parcel is separated from the other three by a narrow access alley and currently serves as an informal surface parking lot. Two of the three congruent parcels are vacant while the third is host to an existing apartment building.

Zoning

All four parcels have a base zone of Commercial General (C-2) where, under the Santa Barbara Municipal Code (SBMC) Title 30.25.020, most residential and commercial uses are allowed. The sites also fall within the Priority Housing Overlay which increases the allowed density for residential units to maximize housing near transit, jobs, and amenities. To promote affordable housing, the City of Santa Barbara has piloted an innovative development incentive program called the Average Unit-size Density (AUD) program. All subject parcels qualify for this program which further increases the allowed density as well as instituting variable development standards. Finally, the California State Affordable Housing Density Bonus Program rewards projects serving very low and low-income demographics with a 25% increase to the allowable unit thresholds of the local jurisdiction. After all three zoning overlays are applied to the base zone, the site is allowed to host up to 55 units.

Accessibility

The project site is conveniently located in the heart of Santa Barbara. Just under a 10-minute walk to the downtown transit center which serves the entirety of the City. Bike lanes and pedestrian ways provide safe travel to downtown. Small retailers share property lines with the project parcels and larger commercial centers with everyday necessities are located only a 5-minute walk away. A 10-minute walk south will take any resident to the center of the Central Business District where there are a multitude of workforce jobs. Vehicular access is also good as the site is a tenth of a mile from the nearest U.S. Route 101 on-ramp. The residents would also have easy access to multiple medical centers and educational campuses which are within a 1-mile radius.

Transportation Services

According to WalkScore.com, a widely used website that measures walkability and bike ability from specific addresses to everyday necessities, the subject sites are highly accessible. The site's walk score of 94/100 indicates walkability is optimal from the site to nearby dining and drinking locations, grocery stores, culture and entertainment, shopping areas, schools, and parks. Additionally, based on bike lanes and trails, hills, road connectivity, and destinations, the project site is very bikeable. The site's bike score of 98/100 indicates daily errands can be accomplished on a bike and asserts biking is convenient for most trips. These walkability and bike ability scores are well above the City of Santa Barbara's average scores. Santa Barbara is somewhat walkable and somewhat bikeable with relative scores 61/100 and 66/100.

Primary Education

The site is located within the Santa Barbara Unified School District, which is a highly rated public-school district in the state of California. Santa Barbara Unified School District spans from grades K-12 and the 2018-2019 school year had 14,801 students enrolled across 23 different schools. Santa Barbara is also host to charter schools in addition to its wide range of public and K-12 options. Though we anticipate the majority of our target demographic (Nich.com) to no longer be school-aged youth, the Santa Barbara Unified School District offers a strong education for family members with a student-to-teacher-ratio that is consistent with the state average, as well as on-average proficient State test scores in Math and Reading. Furthermore, popular colleges graduated students attend include the University of California - Los Angeles, the University of California - Santa Barbara and the University of California - Berkeley.

Climate

Like many western cities, the average yearly sunny days are higher than the national average. Santa Barbara experiences 283 sunny days on average per year, while the US average is 205 according to BestPlaces Comfort Index. Additionally, with Santa Barbara being classified as a desert climate it has virtually no rainfall during a given year.

Precipitation rates are lower than the national average in Santa Barbara as rainfall is approximately 19 inches per year, while the US average is 38 inches of rain per year. The hot season lasts for 3.5 months, from early June to mid-September, with an average daily high temperature above 74°F and low of 58°F along the coast.

Temperatures rarely exceed 90°F or drop below 32°F. The cold season lasts for 3.1 months, from mid-November to mid-late February, with an average daily high temperature of 64°F. The coldest time of the year is generally in early January, with average daily high temperatures rarely falling below 57°F or exceeding 72°F and average daily low temperatures rarely falling below 35°F or exceeding 52°F.

Demographics

Santa Barbara's estimated total population was 91,350 in 2018 according to the United States Census Bureau population estimate, July 1, 2018. The city is 43.1 square miles with about 4,683 people per square mile. The proportion of males and females living in the city is approximately half and half. The average age as of 2010 was 36.8 years old which rose to 38 in 2018. The city has a large number of military veterans making up 3,776 people and the majority of veterans served in the Vietnam conflict. Foreign-born people make up 22.2% of the population and the most common birthplace for foreign-born residents is Mexico.

The city's makeup is predominantly white (56.2%) and Hispanic or Latino (36.5%). English is the main primary language spoken, however there is a very prevalent Spanish speaking community within Santa Barbara. 54% of children 5-17 speak Spanish at home and 30% of adults speak Spanish.

Low-Income Housing Needs:

In the city of Santa Barbara, over 40% of households make under \$50,000 per year. It's estimated that 12% of the population lives below the poverty threshold. The Santa Barbara housing element identifies various special housing needs groups. These groups are the elderly, persons with disabilities, persons with developmental disabilities, large households, female-headed households, farmworkers, homeless, and transitional and supportive housing. For households that are in the very low-income range, approximately 90% are overpaying for rent. 83% of households in the low-income range are overpaying for rent. 82.4% of moderate-income level households are overpaying for rent.

Local Employment

The City of Santa Barbara is home to a typical coastal-town economic base and serves as the county retail and jobs capitol. According to the US Census, the median household income in 2017 is estimated at approximately \$72,000 with approximately 36% of households making over \$100,000. The region's economy is strong with a current unemployment rate hovering between 3.2% and 3.6% in 2019, according to the California Department of Employment Development Department. In 2017, the US Census Bureau reported 20% of 16-24-year old's in the City were unemployed.

Housing Market

Housing in the City of Santa Barbara is in high demand. Over the past years Santa Barbara has suffered a severe housing shortage as employment conditions and housing prices in California's major metropolitan areas have influenced growth and as new students have migrated to UCSB. There is a high demand for multi-family workforce housing, especially in the Central Business District, as it is increasingly difficult for many moderate-income workers such as office professionals, teachers, and police to both live and work within the city of Santa Barbara.

Comparable Developments

When designing a product for a particular demographic, it is not only imperative to ensure that the building meets the users' needs, but it is also essential that the project is competitive in the local market and satisfies the policy enforcers at city hall. The first comparable project to the Bridges at Carrillo is 618 Castillo Street. This project was finished in 2016 with a site area of 7,500 square-feet containing 4 units. The second comparable project to the Bridges at Carrillo is Arlington Village. This project, finished in 2016 is a 45,000 square-foot project with 33 units, ranging from 409-1,107 square feet.

Rent Structure

The California Department of Housing and Urban Development defines the various groupings of affordable housing determined by annualized income. Income levels are used to determine eligibility, based on the area median income (AMI); 30% or less is considered extremely low income, while 50% or less is deemed very low income. Since we are transitional housing, we are targeting the 30% or Extremely Low-Income level.

Government programs, like the ones listed above, support low income households by incentivizing the developer with financial tools such as tax benefits and reduced rate loans. For our rents, we referred to Novogradac's Rent and Income Limit Calculator for Santa Barbara County.

Final Proposal

For the final proposal of this project, all the initial proposal information stayed the same. The team went deeper into building off the design concept, creating building model renderings and floor plans as well as building out a construction schedule timeline for that model. The team also created a proforma for the construction costs of the entire project and looked at the way greenhouse gases would affect the city because of the project being built in the area.

Building Renderings & Floor Plans

The ARCH team came together to build out beautiful building renderings and floor plans for the Bridges at Carrillo (Figures 1-3). The building includes 55 units throughout 5 different floors with 3 different options for unit types: 1 Bed 1 Bath Units, 2 Bed 1 Bath Units, & 3 Bed 2 Bath Units. The building also includes community space friendly areas such as a café, meeting rooms, and a fitness center. There is outdoor landscaping on every floor to be able to enjoy a walk around the complex or casual outdoor conversations as well as easy access elevators for those who live at the highest floors.



Figure 1. Outside Rendering of The Bridges @ Carrillo

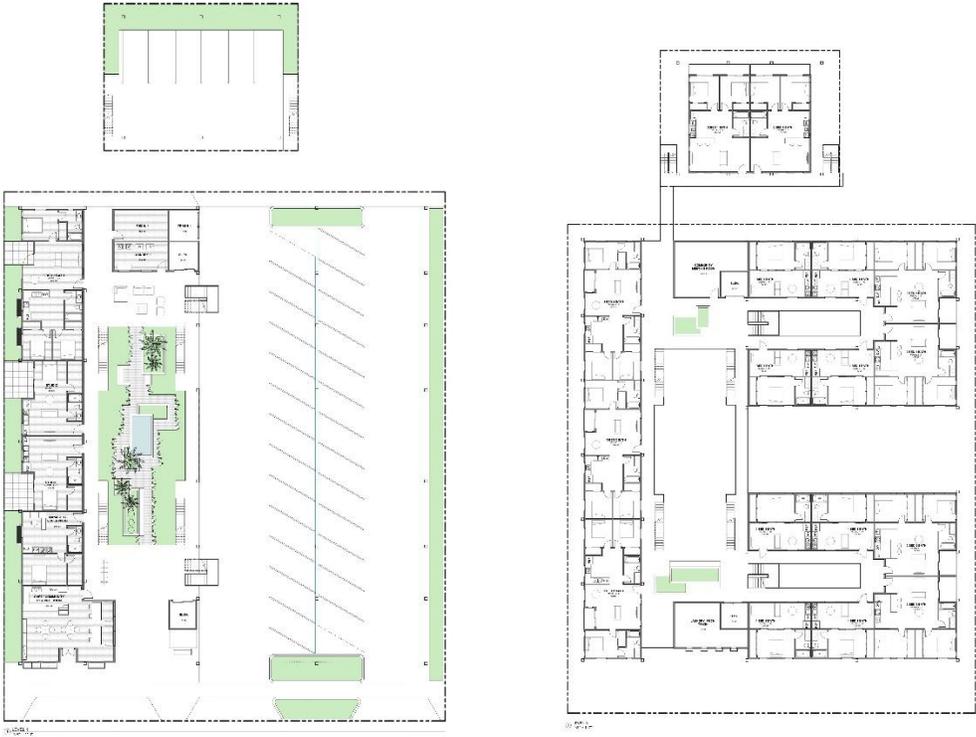


Figure 2. Floor Plan: 1st Floor

Figure 3. Floor Plan: 2nd-4th Floor

Construction Schedule

The Construction team utilized P6 Professional to build out a schedule based off the building floor plans. The team first completed full building takeoffs of all materials needed to build out the building. For all the materials, labor, and equipment, the construction team cross-referenced RSMMeans and inserted appropriate costs to P6 Professional. Using the resources tab in P6 Professional, the team was able to assign the materials, labor, and equipment to each activity provided in the construction schedule. After linking the schedule together, the duration of the project came out to be 619 working days with a start date of July 20, 2020 and a finish date of December 1, 2022 (Figure 4).

The MEP's on the project had to be calculated separately since the plans did not configure any mechanical, electrical, plumbing or fire suppression. Using DCD.com the construction team was able to input the square footage of the structure which then calculated typical costs of a building for mechanical, electrical, plumbing, and fire suppression based on other projects and correlating the square footages to costs.

The final construction costs of the project came out to \$11,986,620.00.

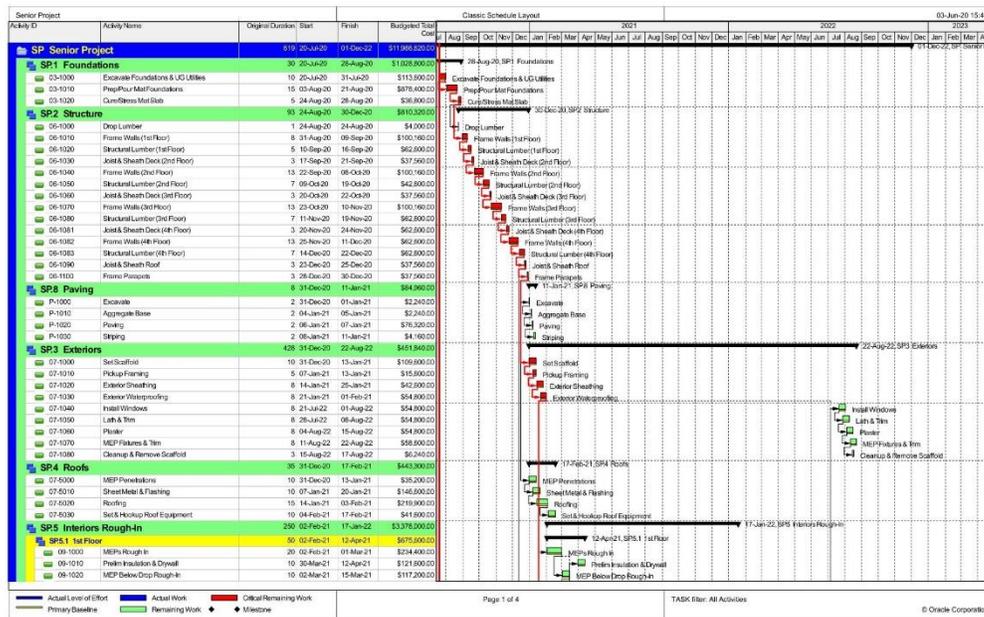


Figure 4. Construction Schedule with Construction Costs

Proforma

Using a 15-year cash flow analysis, the Finance team was able to figure out the potential annual gross income using a 2% annual increase for the next 15 years (Figure 5). The Finance team was also able to contact the Santa Barbara Housing Trust Fund and raise money for the project for a Loan

Commitment Fee, Loan Origination Fee, Load Documentation Fee and more fees that this housing trust fund specializes in for affordable housing in the area.

15 YEAR CASH FLOW ANALYSIS																
YEAR		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
RENTAL INCOME																
Potential Gross Income	2%	\$312,258	\$318,503	\$324,873	\$331,371	\$337,998	\$344,758	\$351,653	\$358,686	\$365,860	\$373,177	\$380,641	\$388,254	\$396,019	\$403,939	\$412,018
Project Based Section 8	2%	\$509,828	\$520,127	\$530,529	\$541,140	\$551,962	\$563,002	\$574,262	\$585,747	\$597,462	\$609,411	\$621,599	\$634,031	\$646,712	\$659,646	\$672,839
Total Rental Income		\$822,186	\$838,630	\$855,402	\$872,510	\$889,961	\$907,760	\$925,915	\$944,433	\$963,322	\$982,588	\$1,002,240	\$1,022,285	\$1,042,731	\$1,063,585	\$1,084,857
OTHER INCOME																
Other Income (Laundry & Misc)	2%	\$3,600	\$3,672	\$3,745	\$3,820	\$3,897	\$3,975	\$4,054	\$4,135	\$4,218	\$4,302	\$4,388	\$4,476	\$4,566	\$4,657	\$4,750
TOTAL INCOME																
Less Vacancy Allowance	10%	\$82,218	\$83,863	\$85,540	\$87,251	\$88,996	\$90,776	\$92,591	\$94,443	\$96,332	\$98,258	\$100,240	\$102,276	\$104,363	\$106,503	\$108,697
Gross Income		\$740,000	\$754,767	\$769,862	\$785,259	\$801,065	\$817,284	\$833,924	\$851,090	\$868,790	\$886,930	\$905,500	\$924,509	\$944,068	\$964,182	\$984,860
OPERATING EXPENSES																
Management Fee	3%	\$30,416	\$31,329	\$32,268	\$33,234	\$34,234	\$35,261	\$36,318	\$37,408	\$38,530	\$39,686	\$40,877	\$42,103	\$43,366	\$44,667	\$46,007
Administration	3%	\$22,009	\$22,669	\$23,349	\$24,050	\$24,771	\$25,514	\$26,280	\$27,068	\$27,880	\$28,717	\$29,578	\$30,466	\$31,380	\$32,321	\$33,291
Payroll	3%	\$83,266	\$85,764	\$88,337	\$90,987	\$93,717	\$96,528	\$99,424	\$102,407	\$105,479	\$108,643	\$111,902	\$115,260	\$118,717	\$122,279	\$125,947
Repairs & Maintenance	3%	\$12,878	\$13,164	\$13,462	\$13,772	\$14,094	\$14,429	\$14,777	\$15,138	\$15,514	\$15,903	\$16,307	\$16,726	\$17,161	\$17,611	\$18,077
Utilities	3%	\$17,280	\$17,798	\$18,332	\$18,882	\$19,449	\$20,032	\$20,633	\$21,252	\$21,890	\$22,546	\$23,223	\$23,920	\$24,637	\$25,376	\$26,138
Insurance	3%	\$17,345	\$17,865	\$18,401	\$18,953	\$19,522	\$20,108	\$20,711	\$21,332	\$21,972	\$22,631	\$23,310	\$24,010	\$24,730	\$25,472	\$26,236
Property Taxes		-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Annual Operating Expenses		\$183,194	\$188,690	\$194,351	\$200,181	\$206,187	\$212,372	\$218,743	\$225,306	\$232,065	\$239,027	\$246,197	\$253,588	\$261,191	\$269,027	\$277,097
Replacement Reserves		\$27,500	\$27,500	\$27,500	\$27,500	\$27,500	\$27,500	\$27,500	\$27,500	\$27,500	\$27,500	\$27,500	\$27,500	\$27,500	\$27,500	\$27,500
Net Operating Expenses		\$210,694	\$216,190	\$221,851	\$227,681	\$233,687	\$239,872	\$246,243	\$252,806	\$259,565	\$266,527	\$273,697	\$281,083	\$288,691	\$296,527	\$304,597
NET OPERATING INCOME		\$529,306	\$538,577	\$548,011	\$557,578	\$567,378	\$577,412	\$587,681	\$598,184	\$608,924	\$619,803	\$630,803	\$641,922	\$653,161	\$664,515	\$676,000
Permanent Loan Principal Balance	(\$5,513,758)															
Debt Service Permanent		(\$384,276)	(\$384,450)	(\$384,650)	(\$384,850)	(\$385,050)	(\$385,250)	(\$385,450)	(\$385,650)	(\$385,850)	(\$386,050)	(\$386,250)	(\$386,450)	(\$386,650)	(\$386,850)	(\$387,050)
Debt Coverage Ratio		1.38	1.40	1.41	1.42	1.43	1.44	1.45	1.46	1.47	1.48	1.49	1.50	1.51	1.52	1.53
Cash Flow After Debt Service		\$145,030	\$154,127	\$163,361	\$172,728	\$182,328	\$192,162	\$202,231	\$212,534	\$223,074	\$233,853	\$244,803	\$255,922	\$267,211	\$278,661	\$290,270
Uses of Residual Cash Flow																
Limited Partner Asset Management Fee		\$7,500	\$7,500	\$7,500	\$7,500	\$7,500	\$7,500	\$7,500	\$7,500	\$7,500	\$7,500	\$7,500	\$7,500	\$7,500	\$7,500	\$7,500
Net Distributable Cash		\$137,530	\$146,627	\$155,861	\$165,228	\$174,828	\$184,662	\$194,731	\$205,034	\$215,574	\$226,353	\$237,303	\$248,422	\$259,711	\$271,161	\$282,770

Figure 5. 15 Year Cash Flow Analysis

Permitting & Greenhouse Gases Report

The City and Regional Planning team contacted the city of Santa Barbara to understand the building codes in the area and regulations of this city to make sure that our construction plans would follow all necessary legal steps to carry out the project. This team was also able to build out a Greenhouse Gases Report (GHG Report) using a modeling tool created by the State called CalEEMod which is used by developers to estimate emission impacts due to construction and continued operation of the development (Figure 6). The CRP team needed it to support a financing strategy that proves that the development is a low emission project due to its proximity to jobs, retail, and public transit. This allowed the team to claim the project as a “Transit Oriented Development” or TOD.

CalEEMod Version: CalEEMod.2016.3.2		Page 1 of 33		Date: 6/8/2020 12:07 PM	
Bridges at Carillo - Santa Barbara-South of Santa Ynez Range County, Annual					
Santa Barbara-South of Santa Ynez Range County, Annual					
1.0 Project Characteristics					
1.1 Land Usage					
Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Apartments Mid Rise	55.00	Dwelling Unit	0.71	55,000.00	96
Unenclosed Parking Structure	35.00	Space	0.29	12,800.00	0
1.2 Other Project Characteristics					
Urbanization	Urban	Wind Speed (m/s)	2.7	Precipitation Freq (Days)	37
Climate Zone	8			Operational Year	2022
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	702.44	CH4 Intensity (lb/MWhr)	0.029	N2O Intensity (lb/MWhr)	0.006
1.3 User Entered Comments & Non-Default Data					
Project Characteristics -					
Land Use - Density Bonus					
Studios, 2-bdr, 350r					
Land Use Change -					
Mobile Land Use Mitigation -					
Area Mitigation - Local Requirement					
Energy Mitigation -					
Water Mitigation -					
Waste Mitigation -					

Figure 6. CalEEMod

Lessons Learned

This project utilized all the skills the team obtained throughout their courses taken at the California Polytechnic State University, San Luis Obispo and throughout four different majors offered at this University. It was able to teach them how to incorporate these skills into a project from start to finish that no one course alone can do. This project also showed the team that there are issues that arise and issues that they must push through to get the result of any one project. As much frustration that the team went through for the duration of the project, it showed that communication is the number one biggest factor in completing a top tier project on time.

Future Involvement

Throughout my career in construction management, this project will give me the insight on how much an Architect has to go through to build out an entire project, floor plans, and renderings and respect the time that it takes for them to get there. It will also help me in my future career because this project tested my cost estimate skills more than they have ever been. My scheduling skills increased because of this project and being able to utilize these skills on a jobsite will significantly help the projects run smoother as well as my understanding of what is occurring on the jobsites at a given time. Overall, this interdisciplinary Bank of America Merrill Lynch Challenge tested my knowledge and skills in construction management and will better help me understand my career in this industry.