CRYSTAL A. VAN HORN

DESIGN PORTFOLIO

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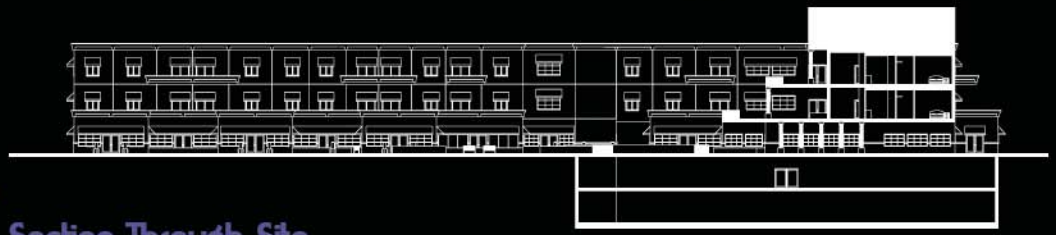
Spring 2005: Downtown Clovis Development

Class: Arch 353
Professor: Pat Hill
Project Location: Clovis, California
Project Type: High Density, Mixed Use Development
Individual Project
Individualy Selected Site

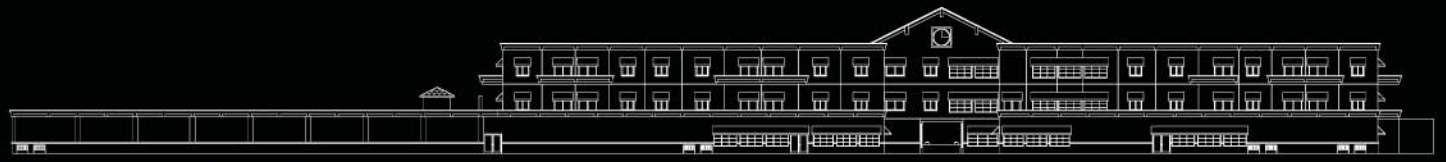
Project Description: The goal of this quarter project was to design a mixed use development with a density goal of at least 15 to 20 housing units per acre. I wanted to make this project as real as I could so I met with the Clovis head city planner Dwight Kroll to discuss Clovis's needs for mixed use housing. He had explained that Clovis had wanted to incorporate a mixed use development into the downtown for some time. This would provide a perfect opportunity for me to design a project with a specific city and client in mind. Mr. Kroll looked forward to seeing my design ideas and insisted that he present them to the city council upon seeing my final products.

The design of this project includes a partial subterranean parking tower, a central pedestrian courtyard with a low-profile stage, grass for seating or play, and water fountain at the center. The commercial design of this project accommodates thirteen small shops, one restaurant, one activity studio space (such as dance), one bowling alley, and one market for its residents and the patrons of the downtown Clovis area. Trash, fire, public seating, bike parking, ADA, and loading concerns have also been addressed in this project.

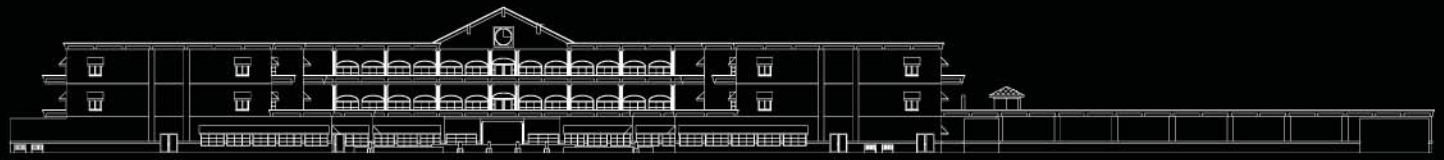
There are seventy-two housing units in all. The units have either one bedroom or two and are designed for young couples, seniors, or single adults with low to moderate income. Units are all ADA accessible with a washer dryer combo and a patio. The patio spaces of this project are designed to provide a sound and privacy barrier for the housing occupants. There are private accesses for the residents and one main entrance with mail access off of Clovis Avenue. Social spaces have also been provided for the residents within the building and with one outdoor social patio for all residents to share. The density of this project is twenty-four units per acre.



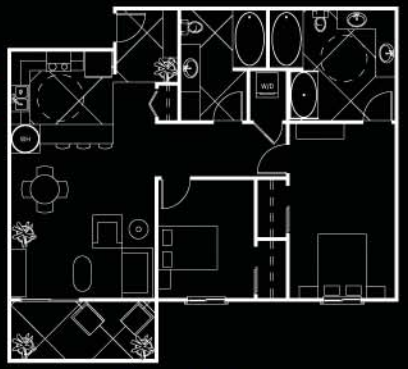
Section Through Site



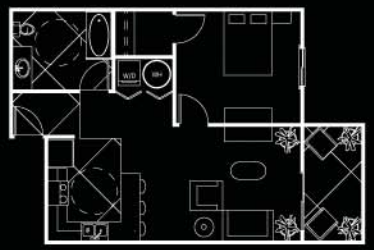
Clovis Avenue Elevation



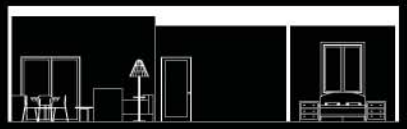
Pollasky Avenue Elevation



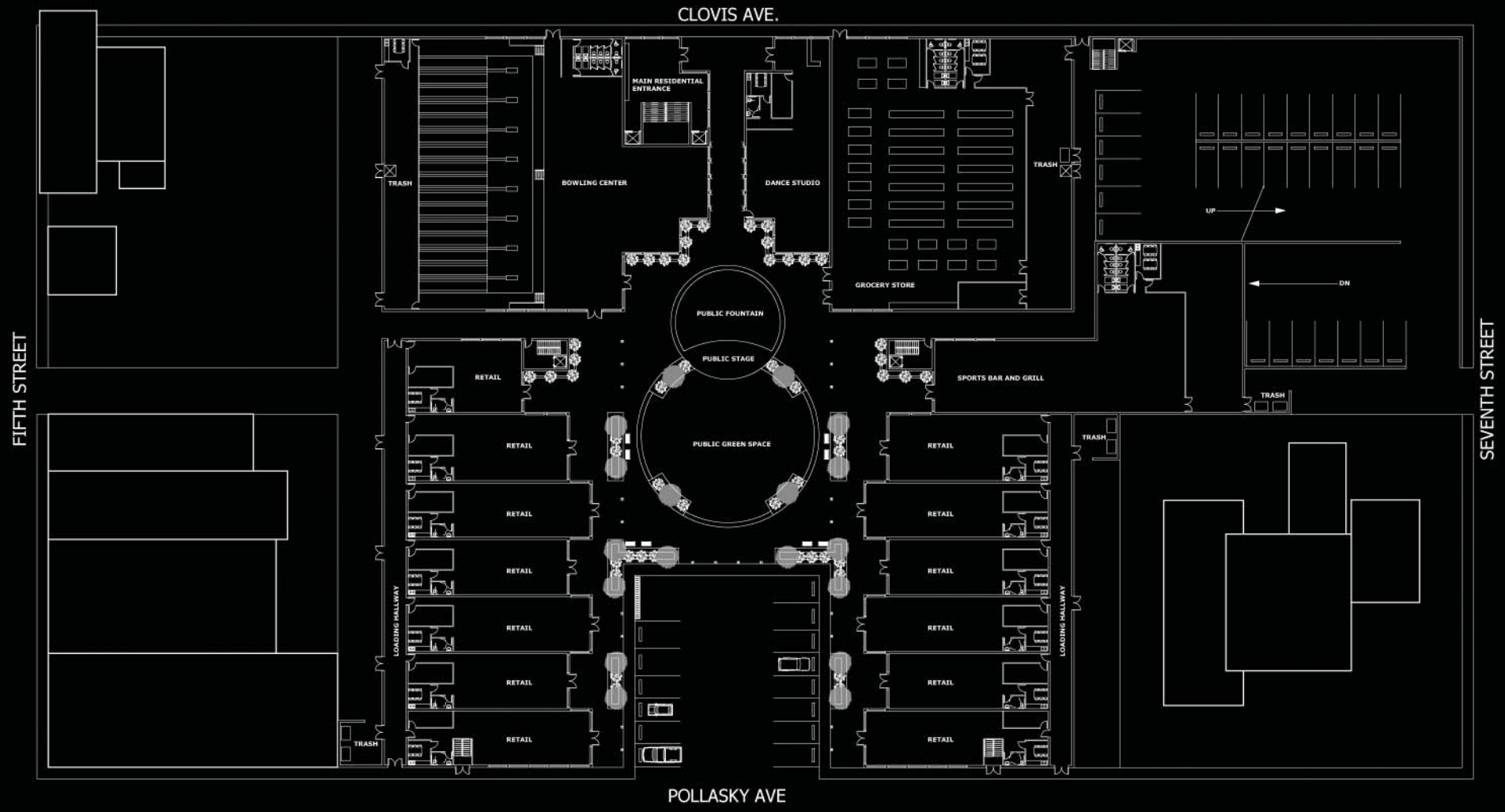
Typical Two Bedroom Unit



Typical One Bedroom Unit

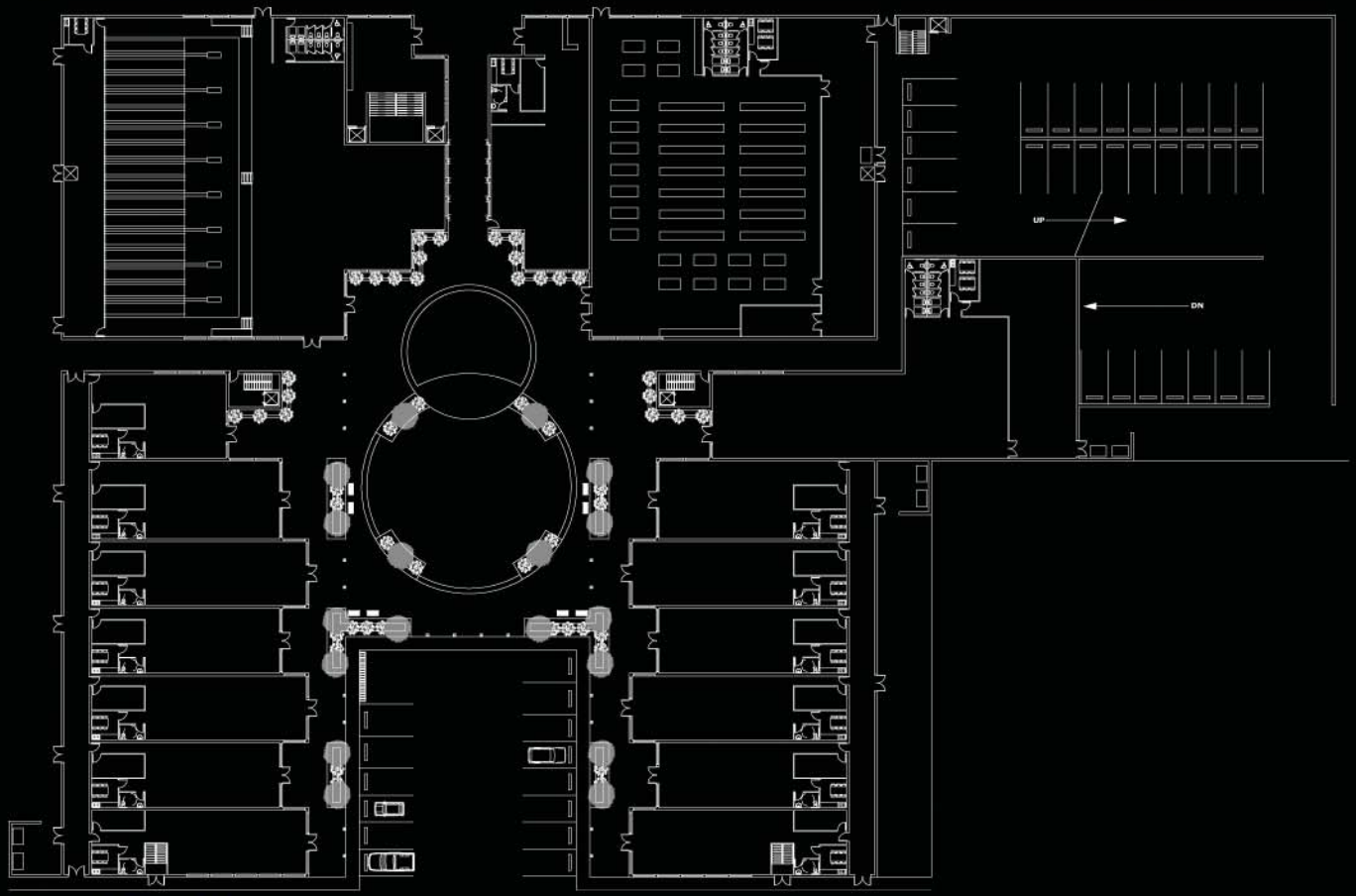


Typical Unit Section Cut

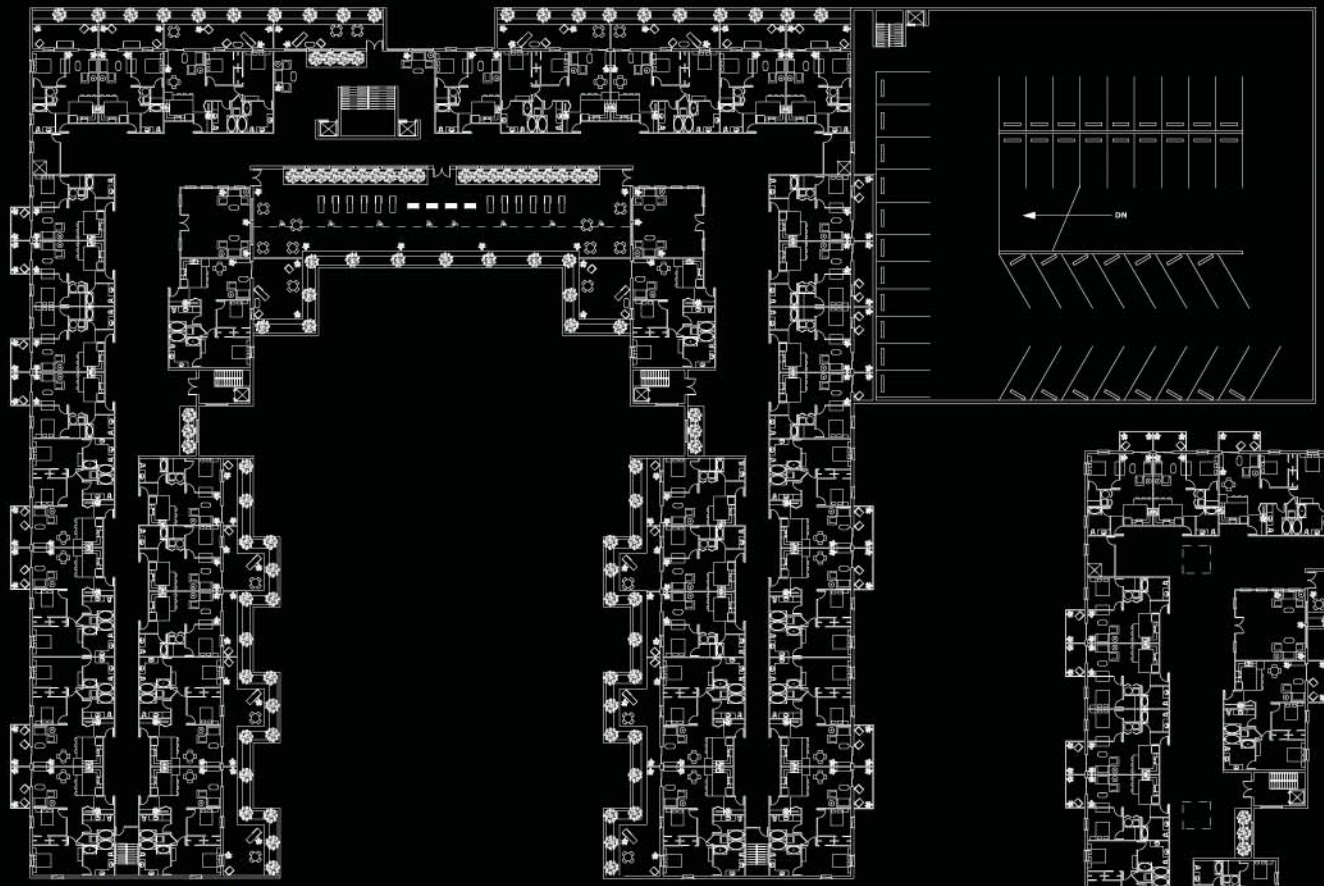


Master Site Plan

Spring 2005: Downtown Clovis Development

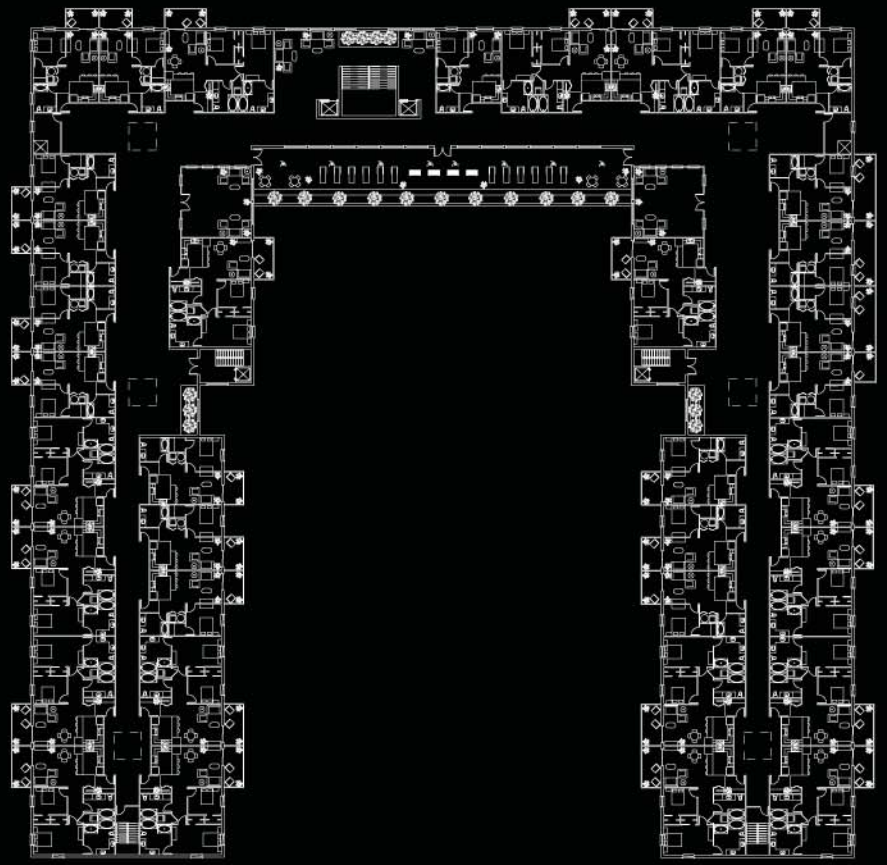


Ground Floor Plan



Second Floor Plan

Third Floor Plan



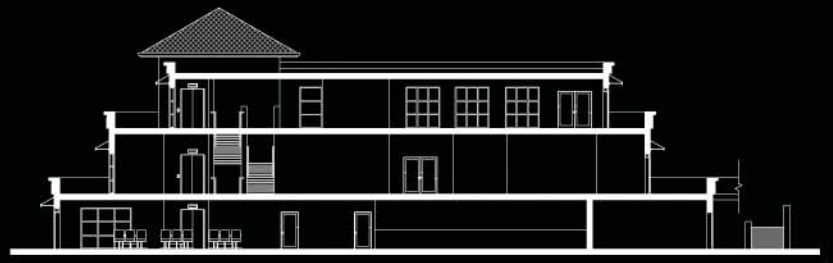
Fall 2005: Poly Culture

Class: Arch 451
Professor: Brian Kesner
Project Location: San Luis Obispo, California
Project Type: High Density, Mixed Use Development
Group Project: Crystal, Lisa, Marc, & Nick
Class Selected Site

Project Description: Poly Culture was a quarter-long group project. The group consisted of myself, Lisa, Nick, and Marc (a foreign exchange student from France). The site is 215ft x 280 ft and is located between Monterey, Palm and Nippomo within San Luis Obispo, California. It is important to note that I will only be showing my contributions to the project for this portfolio since this is how our instructor wanted the project to be displayed. This was a group project with individual presentations.

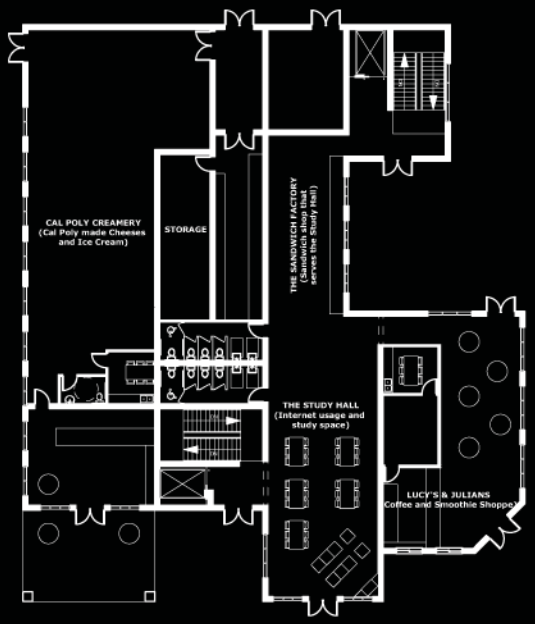
The overall project is a mixed use project that celebrates and expands the productions of Cal Poly State University. This project is to serve as a link between the University and the San Luis Obispo community; promoting community development and awareness of the various college activities. It will also provide the different colleges of Cal Poly and their students an opportunity to display their works downtown for public interaction and to apply their skills to real world dynamics. This project emphasizes sustainability, double skin design, innovative technology, community compost and wise waste management, downtown parking solutions, and planning ideas for the future.

My contribution to the project included the following facilities: The Cal Poly Creamery which gives students, children, families, tourists and the community an educational glimpse into the world of Cal Poly's Dairy Sciences Department. The Study Hall provides a cozy space for students and others to study, use the internet, and socialize. The Sandwich Factory which serves up custom made sandwiches and snacks for hungry patrons and students just as its parent shop does at Cal Poly is located adjacent to The Study Hall to provide the people there with convenient food service without having to move far from their work. Lucy's and Julian's is a marriage of coffee and smoothies; Lucy's and Julian's provides a warm and social atmosphere likened to Starbucks and Jamba Juice. Open from early morning to night, Lucy's and Julian's serves as an inviting social center. The Gym is open to residents, Cal Poly students, and offers memberships to the community. The Gym will be run by ASI Sports in coordination with the Kinesiology Department.

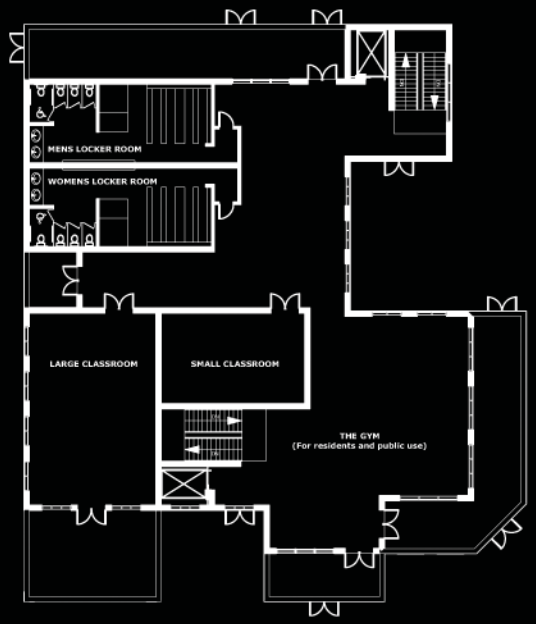


Right Section and Elevation

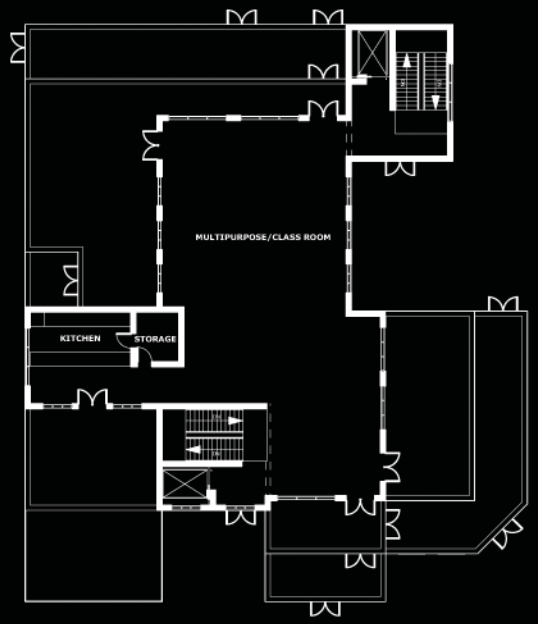
Front Section and Elevation



Ground Floor



Second Floor



Third Floor

Winter 2006: DoRight Design Build

Class: Arch 452, Integrated Design Build Studio
Professor: Barb Jackson & Nick Watry
Project Location: Cal Poly, San Luis Obispo, California
Project Type: Hotel, Conference Center, Continuing Education, and Faculty Lounge
Group Project: Crystal, Joe, Johnny, Nica & Nick
Class Selected Site

Project Description: "The Poly Center: Bridging the Gap". The Arch 452 studio that I decided to take was the integrated Architecture+Construction Management Studio otherwise known as the Design Build Studio. There were fifteen Architecture students and thirty-five Construction Management students. The students took personality profile tests and were then sorted into ten groups of five students. Within my group, Joe, Johnny and Nick were the CM students and Nica and I were Architecture students. The project goal was to compete against the other nine groups and produce an outstanding design solution to the presented problem.

The design problem was to design a conference center, a two-hundred room hotel (with ADA rooms included), a continuing education center, and a faculty club on the Cal Poly Campus off of Slack St. and Grand Ave. As groups we surveyed the site, met with Marriot Hotel spokesmen, toured the local Marriot hotel, and began to put together a design from the information we gathered. Not only was a design solution required but so was a built model, construction schedule, cost estimate, feasibility study, a budget study of borrowers and repayment schedule, and a LEED analysis to name a few requirements. Lastly we were to present as a professional Design Build team to our instructors and Marriot spokesmen at the end of the quarter.

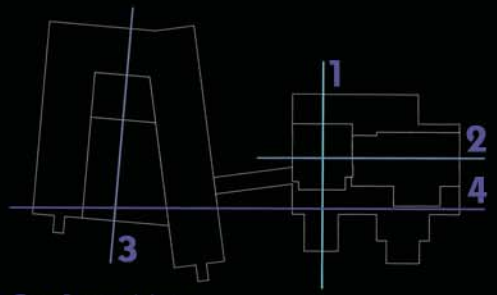
Our group name was DoRight Design Build and out of the ten groups in our class we came in first. Not only did we "Do it Right" we even brought our instructors to tears during our presentation. Barb Jackson said "I am just speechless and blown away, that was one of the best presentations I have ever seen in my years of teaching and even better than some of the professional Design Build Bids that I have seen in my professional career". That was the greatest compliment we could have received since it came from Barb Jackson who is a pioneer in the Design Build world.

In this design portfolio is included only a fraction of the work that was produced for this project. The plans alone had forty-three pages, the analysis and design book was about seventy pages with all of the project statistics, calculations, schedules, and design images.

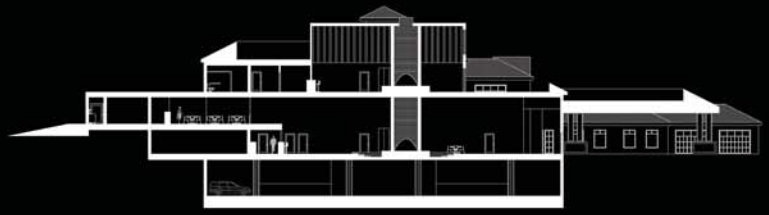
DO RIGHT DESIGN BUILD

Group Logo and Group Picture

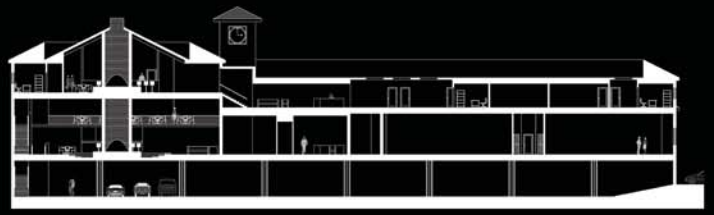
Project Model



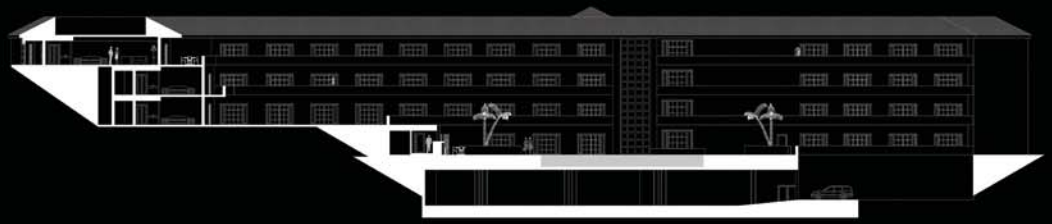
Section Map



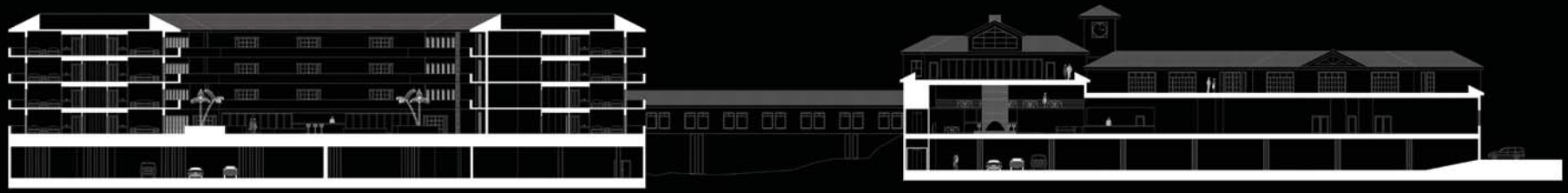
Section 1



Section 2

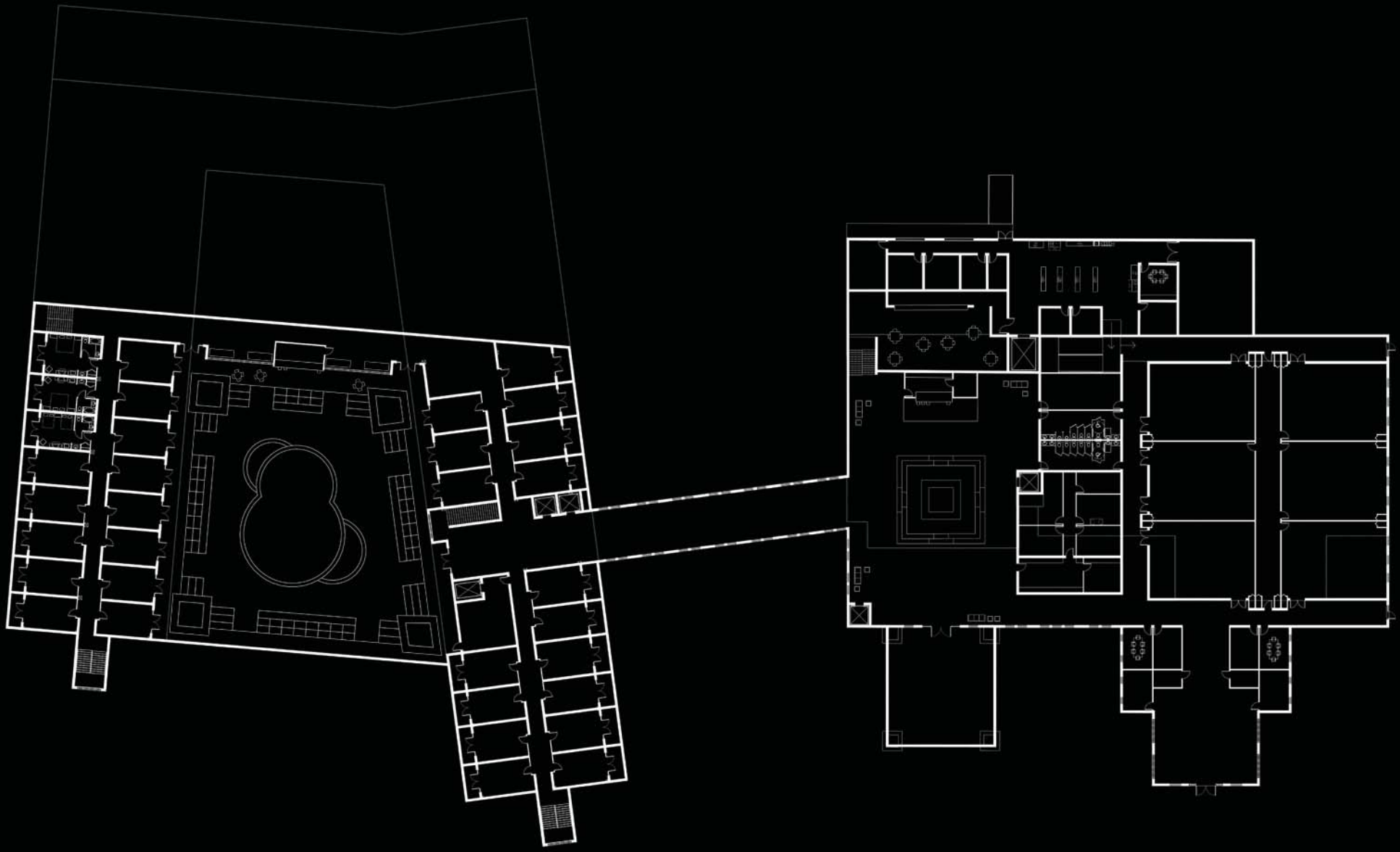


Section 3

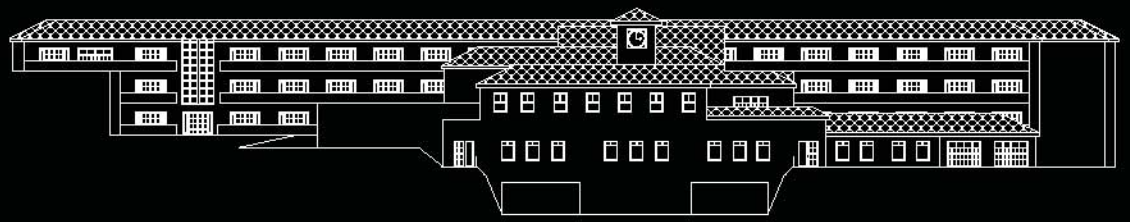


Section 4

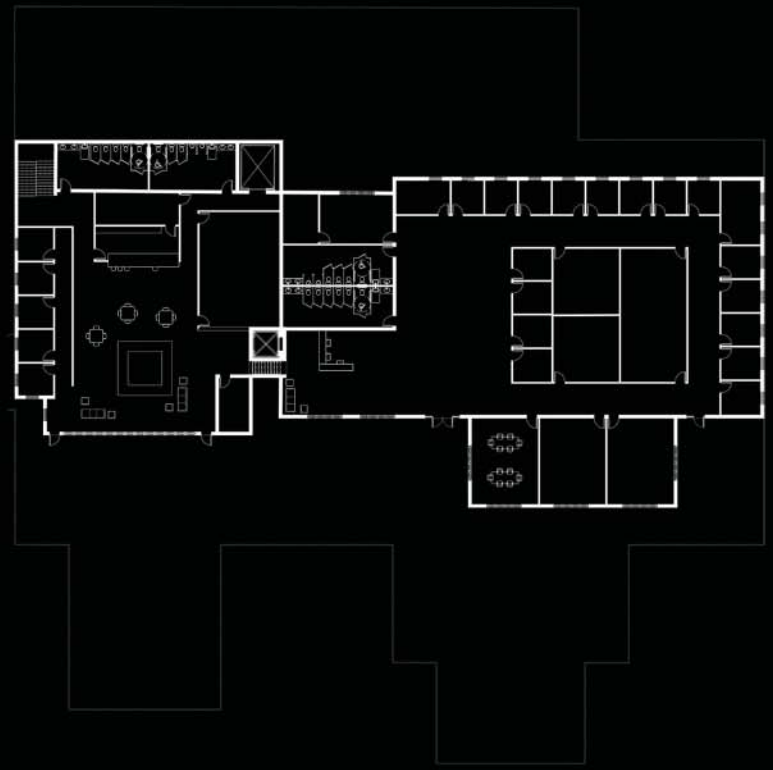
Winter 2006: DoRight Design Build



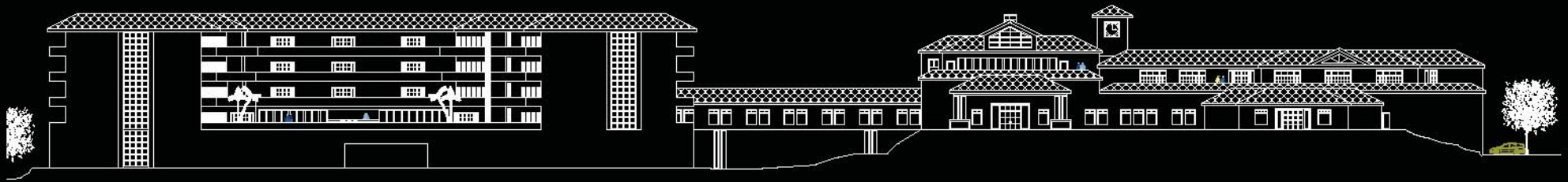
First Floor (Hotel, Pool, Foyer, Check-In, Grand Fireplace, Bar, Restaurant, Kitchen & Loading, Administration, Conference Center)



Right Elevation



Faculty Club & Continuing Education Center (Floor 2 Above Foyer)



Front Elevation

Spring 2006: Parkside Village

Class: Arch 453, Integrated City and Regional Planning Studio
Professor: Margarita Hill & Ivor Samuels
Project Location: Tracy, California
Project Type: Community Planning
Group Project: Crystal, Andrew & Noelle
Class Selected Site

Project Description: The Integrated City and Regional Planning Studio was a design studio that paired City and Regional Planning students, Landscape Architecture Students, and Architecture students together in groups of three or four to work on a sixty acre community planning design problem located in Tracy, California. The class worked with a real client who owned the property and who wanted to present some community design ideas to the city of Tracy in hopes that they would take an exception to their "No Growth" policy. The design specifications included market rate housing (single detached homes and condominium/townhomes), senior housing, low income housing, live+work housing, a theatre, a community center, pedestrian accesses, a bus transit stop for future bus lines, retail, and food services. Much of the surrounding sites are undeveloped but future city plans called for anew elementary school nearby and a bus transit line. We were also asked to present a feasibility study outlining construction costs and income on property sales and retail sales.

In my group was myself, an Architecture student, Andrew, a Landscape Architecture student, and Noelle, a foreign exchange student from Brazil. Since the site was so large we planned the overall site, its land uses, and the pedestrian circulation and street access together. We then divided the site into three sections for each of us to design in detail all the while working with each other to make sure the parts fit with one another. I designed the market rate housing, Andrew designed the front retail section and community center, and Noelle designed the low income and senior housing. We accounted for the planned elementary school and incorporated pedestrian paths through the north and south of the development which connect this project to neighboring developments and to the planned school. We strived to make this development pedestrian friendly for all of the inhabitants of the community as well as for the neighboring people's and those who may be visiting the site for its retail. We included ample shared green space, pedestrian (permeable) pathways, dense housing units (apartments, duplexes and quadplexes) as well as the other project requirements.

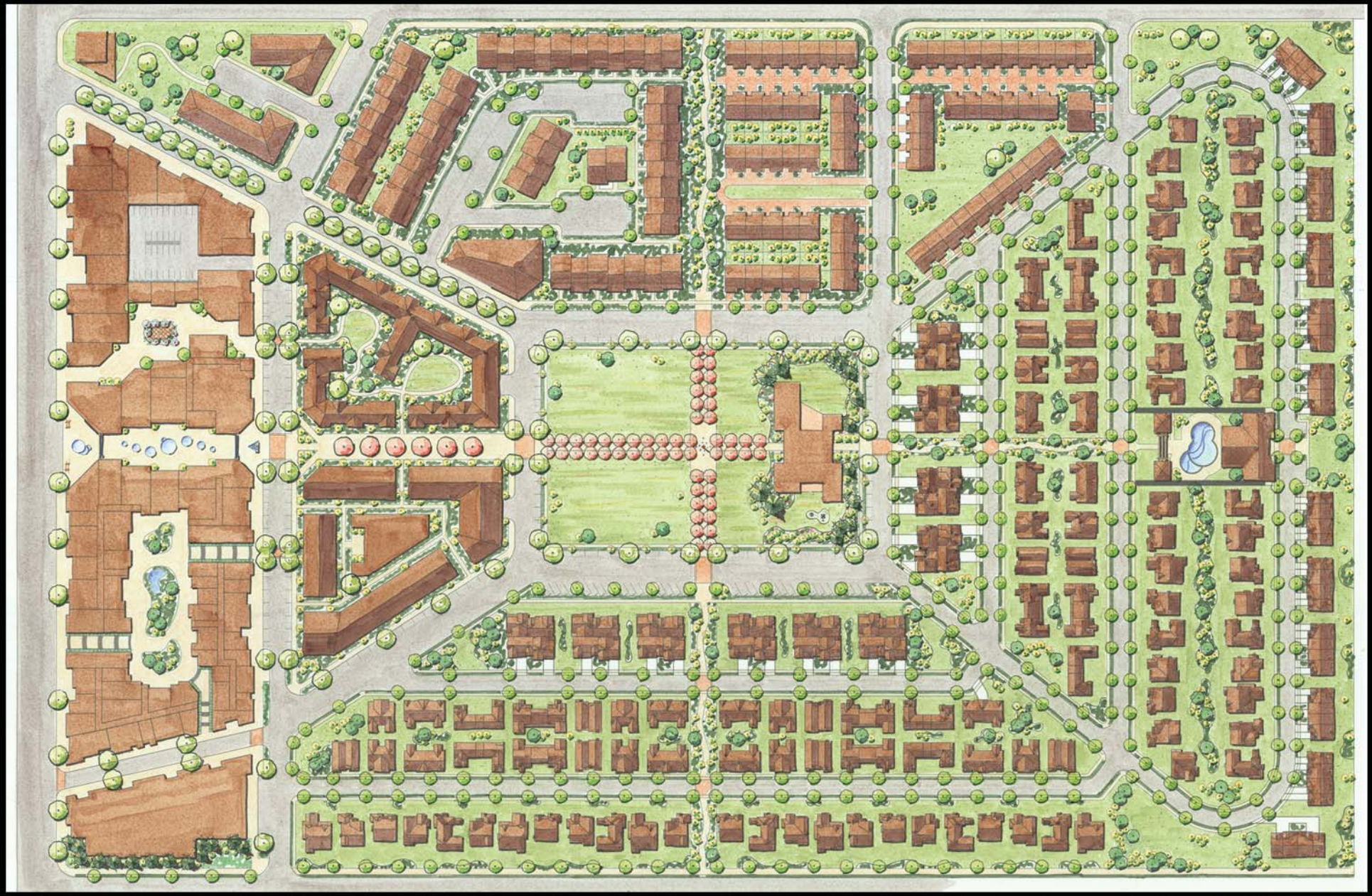
Park Plaza and Community Center

Elevated Oasis Courtyard

Section Through Retail and Apartments

Streetfront of Main Shipping Promenade

Main Shopping Promenade



Master Community Plan (60 Acre Site)

Fall 2006: Autumn Lights

5.0 Fall 2006: Autumn Lights

Class: Arch 481, Senior Design Thesis
Professor: Ralph Roesling
Project Location: NA
Project Type: Furniture Design
Individual Project

Project Description: This project (the Vellum 1:1 Competition) was a side assignment to our Senior Design Thesis. We were to design any piece of furniture or tectonic study of our choosing with any materials of our choosing. The only design constraints were that the projects must be no larger than 3'x3'x7' (i.e. it must fit through a standard door).

With this project I wanted to bring together both man-made and natural elements to create a design which I will call illuminated nature. I wanted to illuminate the beauty of the natural elements through the man-made elements. The man-made elements are the acrylics, glues, sandblaster, and candles used in the project; the natural elements used are the Chinese maple leaves and the flame from the candles. The red color of the acrylic mimics the warm flame of the candle, the color of autumn; the color of the leaves in the fall. The Chinese maple leaves were glued to the acrylic and the acrylic was then sandblasted to leave the lasting impression of the delicate autumn leaves behind. When illuminated by candle, the leaves come to life as the flame dances behind them. Each leaf is different and unique from another and this is expressed when the candle light illuminates the leaves and they come to life as the flame dances and sways within from within. The back side of the red acrylic was left smooth so that the flames reflect off its surface, giving the illusion of a forest of fire and light within the box.

This design should inspire the viewer to think of nature, the flame, the leaves, and the seasons. Viewers may consider the diversity of nature and humanity by contemplating the variety of leaves and how each leaf is singular and miraculous. Just as no one leaf is the exact same color and shape as another, we can all see and contrast how we are each unique and extraordinary just like nature itself. We all may have different coloration and shapes; but just like the leaves in autumn, on the inside we all have the same things that make us live and thrive.

Work In Progress

Spring 2007: St. Paul Newman Center

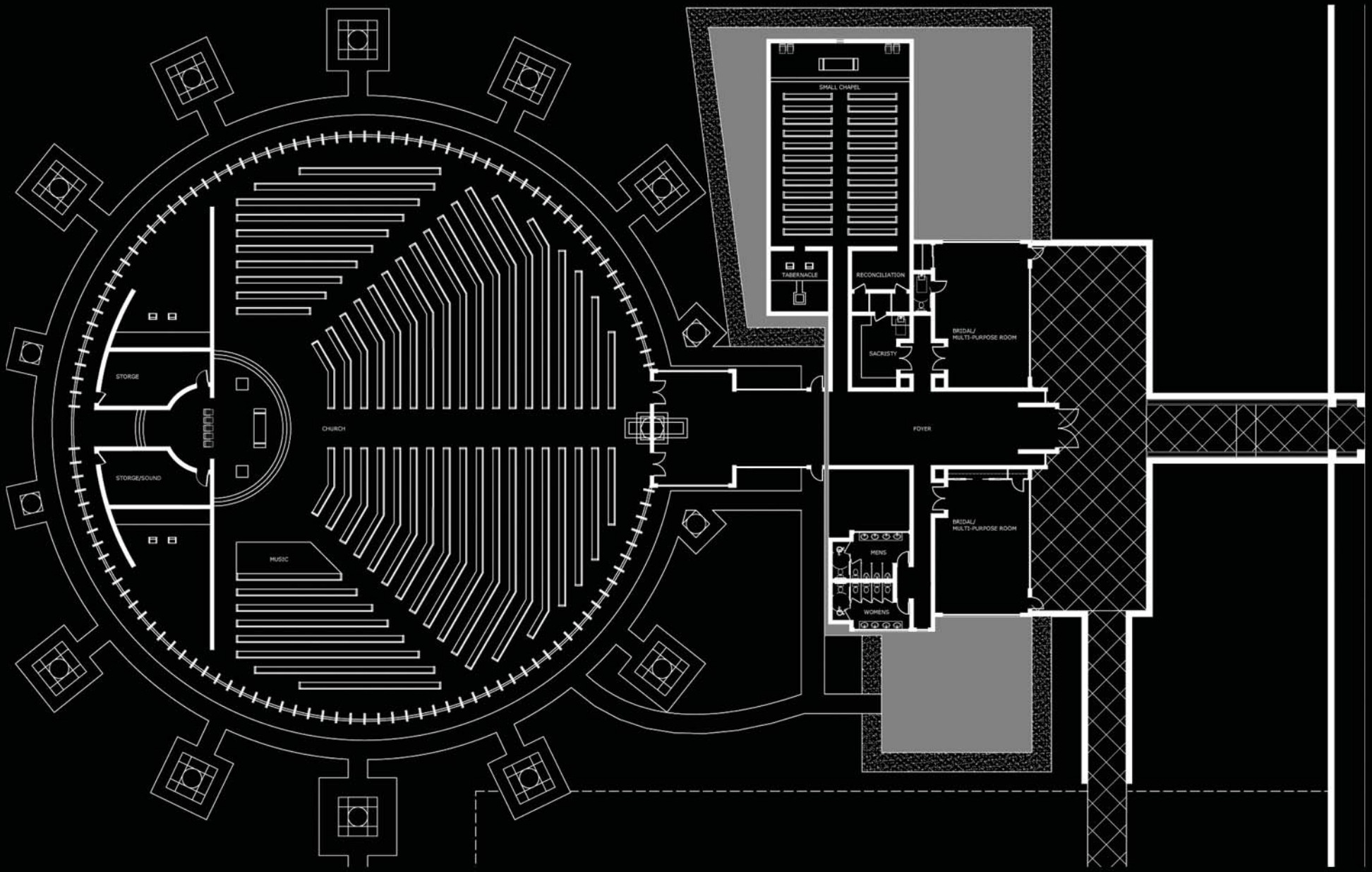
Class: Arch 481, Senior Design Thesis
Professor: Ralph Roesling
Project Location: Fresno California
Project Type: Catholic Church
Individual Project

Project Description: The summer of 2006 found me pondering what project I wanted to pursue for my fifth year thesis project. Fr. Perry Kavookjian, the head priest at St. Paul Newman Center, the Catholic Church that I and my family have attended for the last eight years or so, jested that one day when I become a "famous" architect that he would have me design a new church for him. Which gave me an idea; the thought of designing a church sounded intriguing as my fifth year thesis project.

The council of Vatican II sought for the church and the mass to be more inclusive, encompassing, and welcoming. I felt that a new worship space can be created for St. Paul Newman Center which seeks to draw in more parishioners. I wanted to create a worship space that felt more accessible and open to everyone. I proposed to do this by including nature and reconstructed nature, along with the religious symbolisms which are necessary as defined by Vatican II, to create a more spiritually welcoming worship space. It was my hope that not only would this new worship space reach out and draw in local students and non-devout Catholics, but that it would provide parishioners with a more profound connection to God.

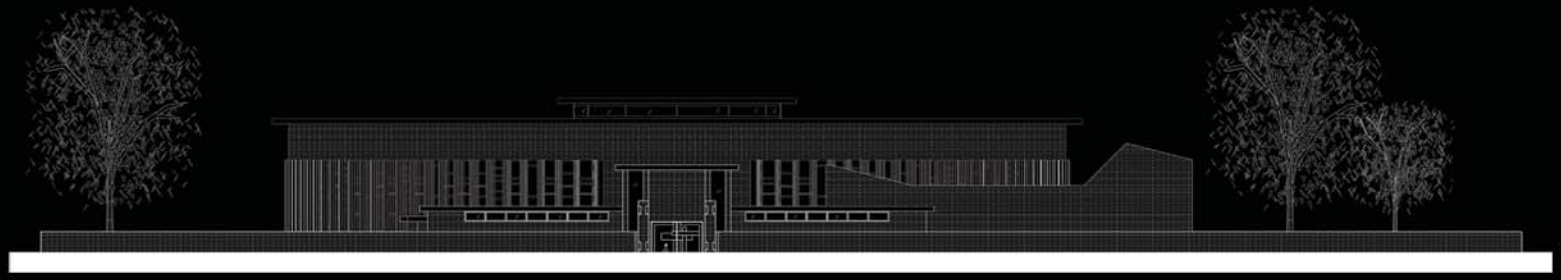
Final Model

Inside the Sanctuary

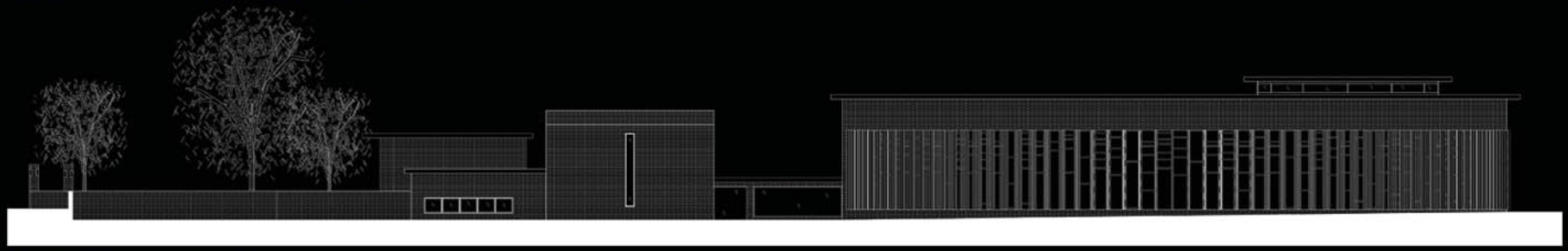

SMALL CHAPEL
TABERNACLE
RECONCILIATION
SACRISTY
BRIDAL/
MULTI-PURPOSE ROOM
FOYER
STORGE
CHURCH
STORGE/SOUND
MUSIC
MENS
WOMENS
BRIDAL/
MULTI-PURPOSE ROOM

Floor Plan

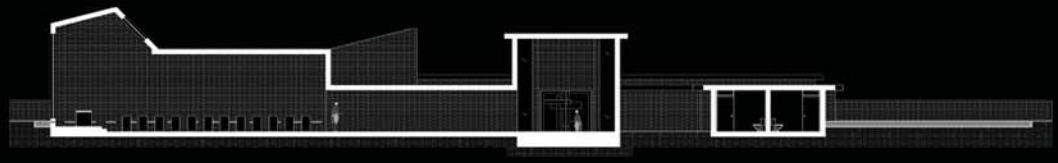
Spring 2007: St. Paul Newman Center



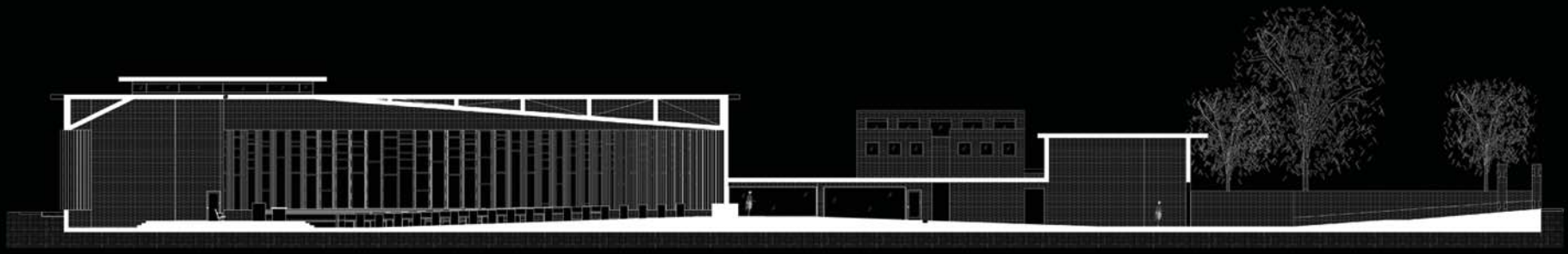
Front (East) Exterior Elevation



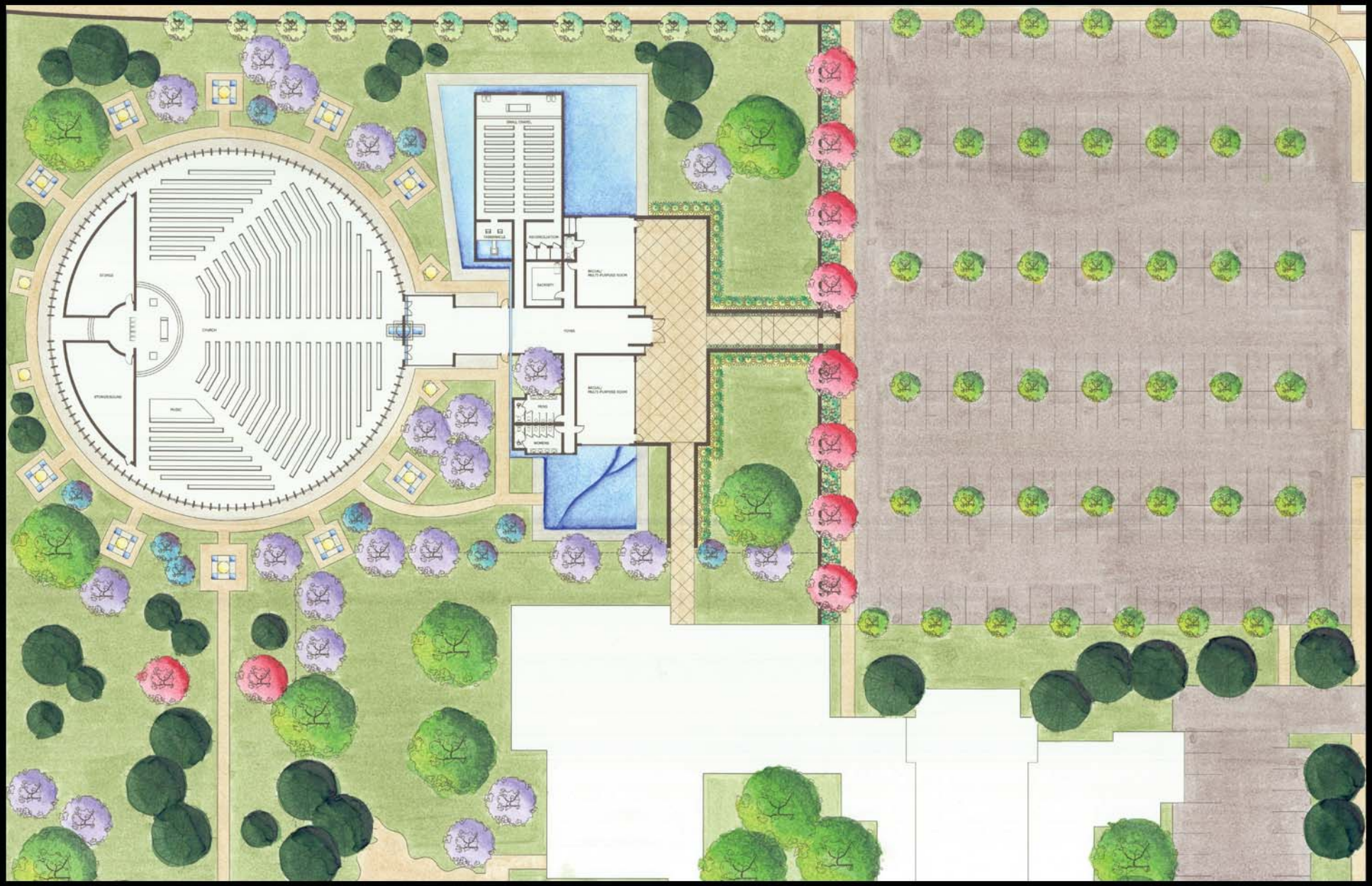
North Exterior Elevation



North-South Section

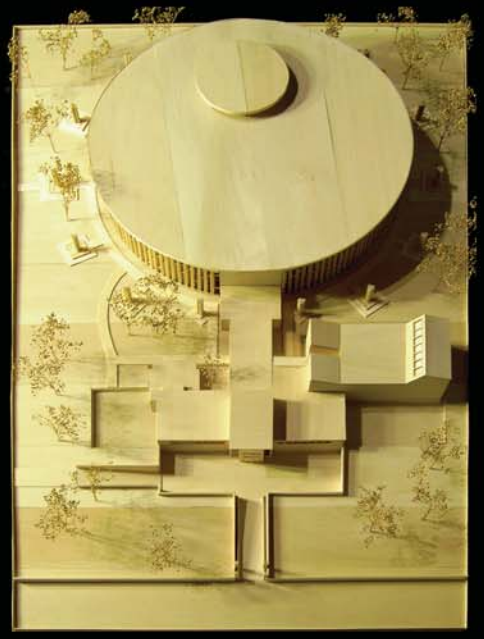


East-West Section

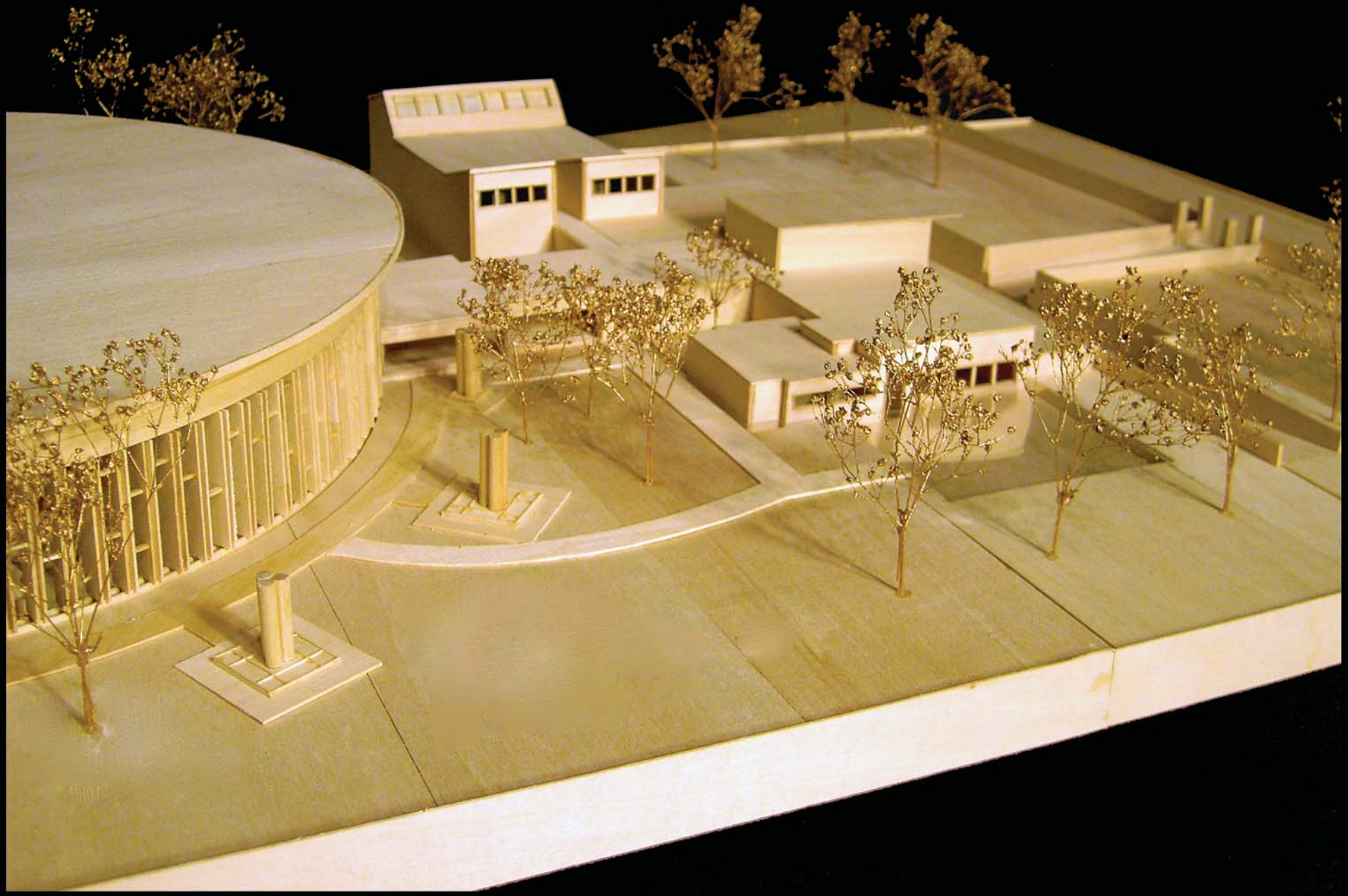


Rendered Site Plan

Spring 2007: St. Paul Newman Center



Final Model



Fall 2007-2008: Carbon Neutral Environmental Learning Center

Class: Masters of Science in Architecture Thesis
Major Professors: Bruce Haglund and Steve Hollenhorst
Project Location: McCall Idaho
Project Type: Environmental Learning Center
Individual Project

Project Description: My thesis is to serve as a research contribution to the development of the proposed Carbon Neutral Environmental Learning Center at the McCall Idaho Field Campus. It is a living document and is intended to be used as a reference for the McCall Idaho Field Campus and any other facility wishing to attain carbon neutrality and sustainable design. My thesis specifically analyzed three different building methods; straw bale, rammed earth, and cordwood in order to deduce the carbon costs of building with these construction materials. It looked at the pros and cons of building with these materials in McCall Idaho, and the thesis also looked at the potential supply sources for these three building materials. The carbon offsets from utilizing recycled and salvaged materials was also discussed. The other major focus of the thesis was the study of biomass as a main source of power generation. It looked at whether biomass is a feasible approach to power generation for this facility, what the carbon tradeoffs of using biomass power generation are as opposed to using electricity provided from propane and from the city electricity grid that the field campus currently uses, the source of the biomass, and how much biomass will be needed to supply all of the campus energy.

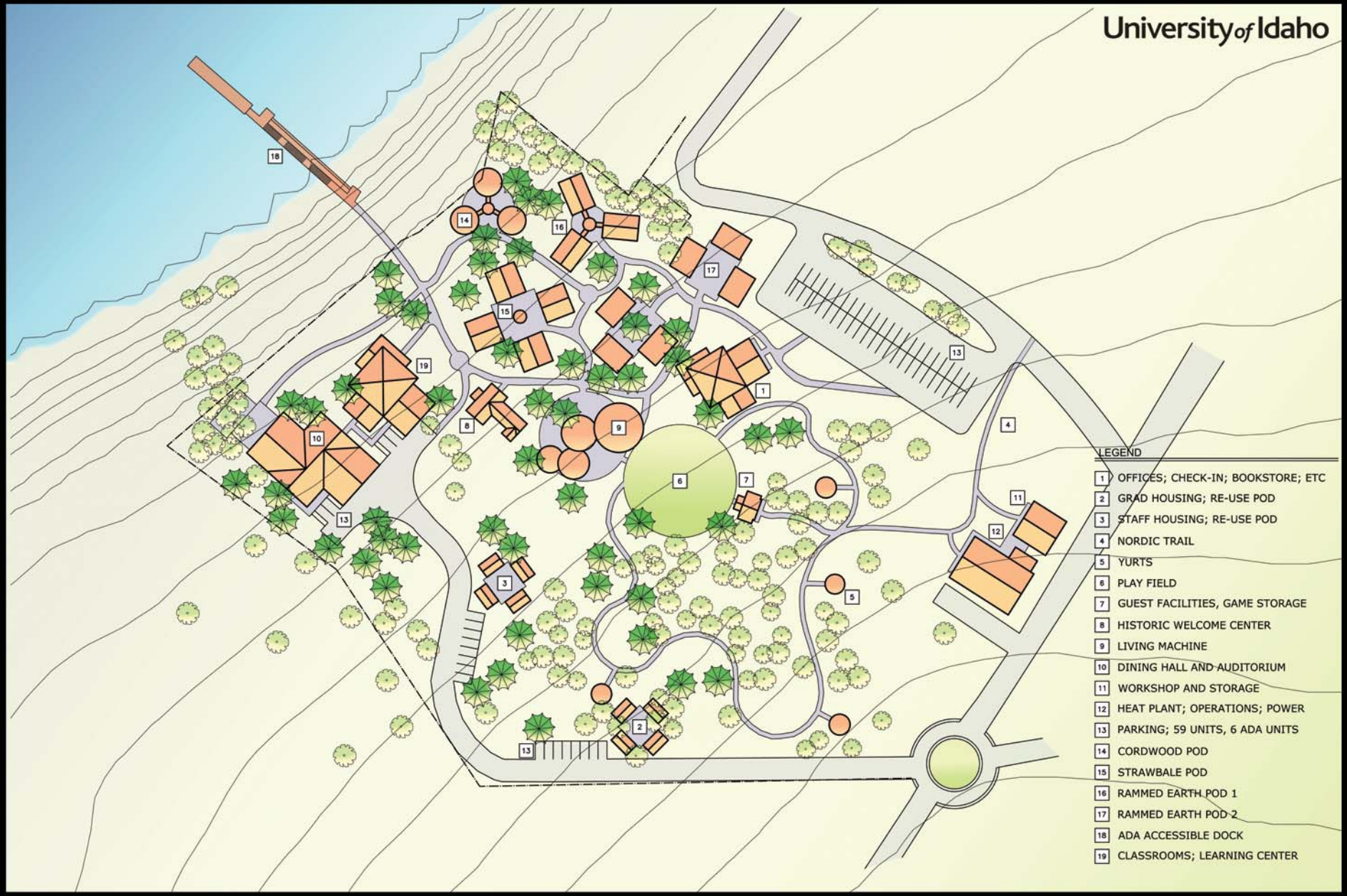
Project Involvement: Due to the complex nature of this project, the design process first began as an interdisciplinary design studio during the Fall semester of the 2006-2007 school year. This studio combined fifth-year architecture graduate students with fourth-year students from landscape architecture, and interior design. The project's initial participants included 36 students, 6 faculty, 5 community stakeholders and 3 industry partners. Represented were the academic disciples of architecture, landscape architecture, interior design, bioregional planning, and conservation social sciences. The community stakeholders initially involved were the McCall Outdoor Science School, Palouse-Clearwater Environmental Institute, McCall High School, City of McCall, and Idaho Department of Parks and Recreation, and the industry professionals who were involved in the project were Epikos Architecture and Land Planning, Sesech Engineering, and Southface Sustainable Construction. At the beginning of the Fall 2007 semester, an EPA P3 Phase I Grant was sought and received in order to help start the process of seeing this project into actuality.

My initial role in this project as a member of the EPA P3 Grant team, began in the Fall 2007 semester. I worked as a graduate research assistant mobilizing diverse resources to meet the project goals and in re-establishing a realistic timeline. My job was to bring together the project participants who were Bruce Haglund, Steve Hollenhorst, Steve Drown, Rula Awwad-Rafferty, Frank Jacobus, Hanna Persson, Jacob Dolence, Jen Kullgren, Lauriel Schuman?, Lynne Westerfield, and Gary Thompson. After arranging meetings with the project participants, I was tasked with bringing together a working master site plan that the whole team could agree on, which was accomplished through two design charettes involving all the participants and subsequent revisions of the master plan. In April 2008, Bruce Haglund, Hanna Persson, Jacob Dolence, Jen Kullgren, Lauriel Schuman?, Lynne Westerfield, and myself, participated in the in Washington D.C. at the EPA P3 Expo where we presented the project to the upper-level managers of the U.S. Army Corps of Engineers and Department of Amy as well as the EPA P3 award jurors. We came home from the expo with three awards for the project. We received the P3 Honorable Mention, the Green Building Initiative(TM) award, and the YCCOST award presented by the American Institute of Chemical Engineers for the proposal "Architecture as Pedagogy: Interdisciplinary Design and Creation of a Carbon Neutral Idaho Environmental Learning Center at the University of Idaho McCall Field Campus." In May 2008, Steve Drown, Rula Awwad-Rafferty, Frank Jacobus, and I participated in the Idaho Green Expo in Boise Idaho. Frank Jacobus spoke in a seminar regarding the project, its sustainability aspects, and what benefits the project poses for the state of Idaho.

In the 2008-2009 school year, Frank Jacobus began conducting the first building phase of the project, and he is currently leading a group of fourth-year architecture students in a design-build studio. The goal of the studio during the Fall and Spring semesters, is to design one of the guest housing units, capable of accommodating thirty overnight guests. In Summer 2009, the building is to be constructed on the McCall Field Campus site by the students who had participated in the 2008-2009 design-build studio. Two bunkhouses currently on the campus will be torn down to make room and the resulting material will be reused later for future graduate student and staff housing.major topics which the thesis explores. It is my hope that the information presented in my thesis could be used to aid the on-going design/build project and help others wishing to pioneer built environment projects focused on carbon savings and/or carbon neutrality.

Due to my involvement with the project, I wanted to delve into the feasibility of the campus' major system components, such as construction and power generation, for a "Carbon Neutral Environmental Learning Center." I wondered, what exactly does it mean to be carbon neutral? What are the different ways in which a facility can be carbon neutral or simply save carbon in general? I wanted to explore the tradeoffs of utilizing a biomass energy generation facility, and the amount of carbon this form of energy generation could save. I also felt it prudent to explore several different sustainable construction methods such as cordwood, straw bale, and rammed earth. I was curious as to how much carbon could be saved in the initial construction and over the lifetime of a structure constructed with each of these three methods. It is these major topics which the thesis explores. It is my hope that the information presented in my thesis could be used to aid the on-going design/build project and help others wishing to pioneer built environment projects focused on carbon savings and/or carbon neutrality. major topics which the thesis explores. It is my hope that the information presented in my thesis could be used to aid the on-going design/build project and help others wishing to pioneer built environment projects focused on carbon savings and/or carbon neutrality.

EPA P3 Expo Photos



Master (Proposed) Site Plan