REDEFINING Sustainability

Developing a New Model of Greater Significance

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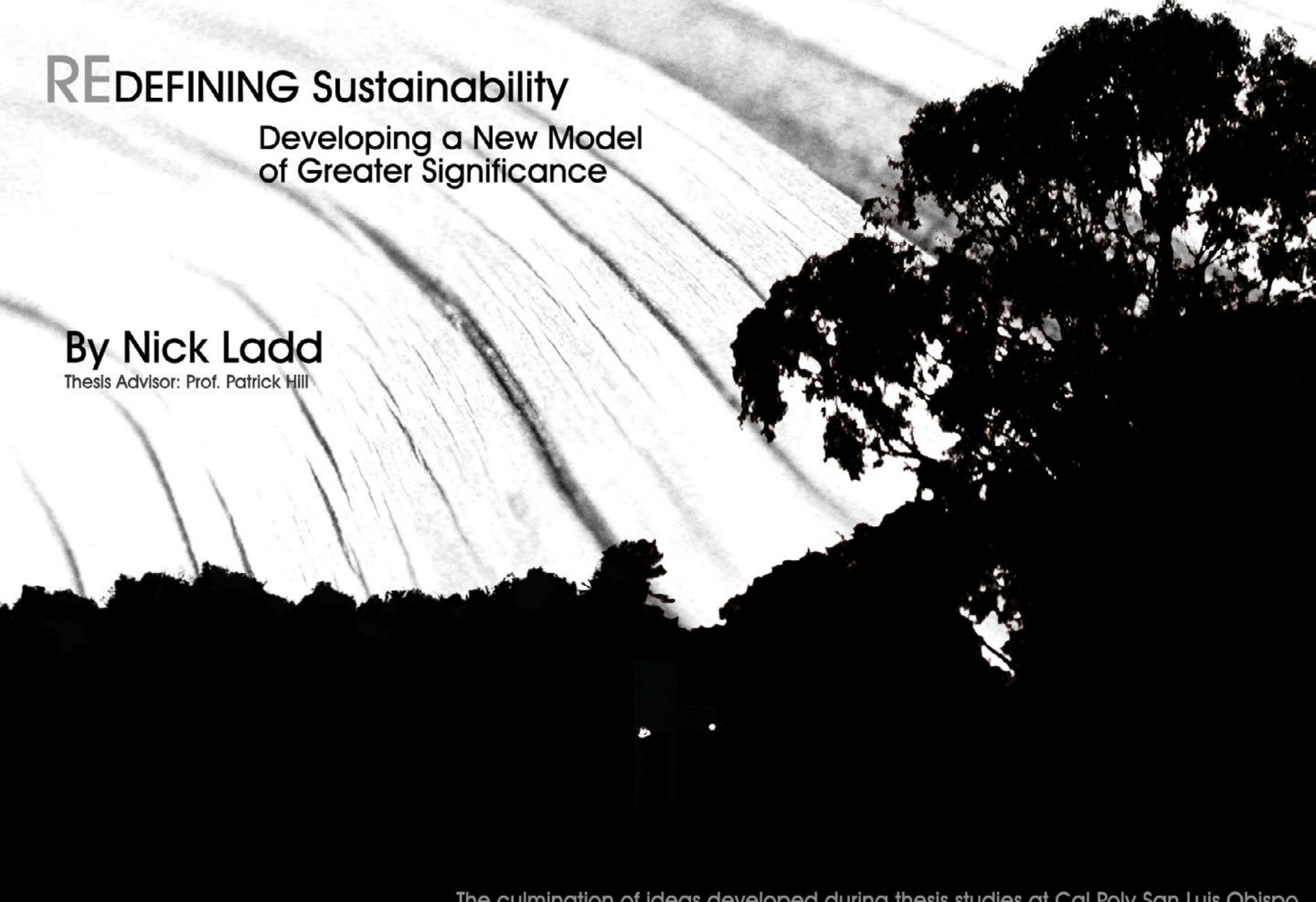

The culmination of ideas developed during thesis studies at Cal Poly San Luis Obispo.

To Jessie, the ideas contained in this book could never have come to fruition without her to discuss them with.

Preface

This book has been written with the intention that it becomes a physical artifact representing the thesis ideas that came to fruition during my final year of architecture studies at California Polytechnic State University, San Luis Obispo. These thesis ideas are not just those that have been derived during the course of my thesis studies but are a culmination of ideas presented and developed during my entire architectural education. While not intended nor expected to be an end-all solution to the problems that plague the state of architecture today, it is meant to inspire and at the very minimum encourage further thought and questions about the status quo built environment we create.

Whether constructed from the minds of architects or our vernacular predecessors, the built environment has always played an important role in society and our environment. Somewhere in the course of the evolution from buildings being built by vernacular craftsman and the modern day architect we adopted practices that destroy the environment and are not conducive to life. The general living conditions on this planet are being depredated at the hands of man. One of the largest purveyors of this problem is contemporary building and development practices. While this can be seen as a major problem, I rather see at as an enormous opportunity to reverse these ills and change the way we practice from methods that merely 'sustain' to ones that make better and correct bad decisions made by those that came before us.

This idea strikes at the heart of what this book is about. We must change both our perceptions of how to build and redefine it under the premises of a more holistic version of 'sustainability'. I choose to write this book chronologically, archiving the progression and process of the creation and development of my thesis. It has been organized into four different sections. The first identifies the key problems with architecture today and presents the core ideas of my thesis. The second part shows the development of these thesis ideas and their conversion into a real-world project that can be seen as an example of the thesis' application. The third part takes these ideas and shows how they can be further developed across a variety of scales. And finally the fourth part introduces the use of the internet to reach a mass audience, debate and spread ideas, and ultimately change people's perception on a broad scale.

When reading this book I hope that you look at everything that is said objectively and with an open mind. While it is my job to present these ideas in a clear and convincing manner it is ultimately the reader's task to adopt the ideals presented herein. An extensive amount of research and thought has been put into the writing of this book. It is up to you to decide which ideas are relevant to your life and which are of great enough significance to become part of your core ethic.

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Identifying the Problems

`It is impossible to acknowledge, let alone solve a problem if it has not been clearly identified and defined. Right now, there is a crisis of epic proportions hovering over our world that threatens our very existence and quality of life. This calamity involves every person on this planet and no one is immune to its wrath. The problem is complex with many facets, and is in no way a strictly environmental problem. In this section I will identify and briefly explain a few of the issues that must be corrected in order to make this planet a better place to exist.

Dependence on Automobiles

Our automobiles, led by the biggest and best American SUVs, pump out tremendous volumes of greenhouse gases that lead to global warming at a scale not seen in the history of mankind. Our appetite for the automobile has caused us to rape natural oil reserves and caused not only the destruction of natural areas in the quest for new wells, but also social unrest, war, and the massive loss of life in the name of oil (of course no one will officially admit it). The dominate force of the automobile in our lives has enabled us to expand our city limits and create vast seas of urban sprawl. The auto initially enabled us to develop these growth patterns and now these growth patterns have acted to deepen our auto dependence. If we are to hope for a better future we must lower our fossil fuel dependence.

Loss of Farmland

Irreplaceable farmland is being destroyed at catastrophic levels. We build over valuable farmland while following our quest for cheap undeveloped land and in the process destroy massive tracts of highly fertile soil. According to the American Farmland Trust, between 1980 and 2001 11 million acres of farmland has been transformed into urban sprawl. The rate of population growth is increasing at troubling levels. If this rate stays steady, the possibility of not being able to produce enough food to sustain our world's population becomes a grim possibility. This food shortage can lead to an entire host of other problems including social unrest, war, mass destruction of natural landscapes, and further exploitation of natural resources.

Bakersfield, CA is a prime example that illustrates the loss of some of the nation's best farmland to urban sprawl.

photo source: www.mapquest.com

Social Inequality
The civil rights movement of the mid twentieth century was a huge step towards the ideal of equal rights. Unfortunately however, social injustice and discrimination still exist at mammoth scales. In a country like America we pride ourselves on the ideals of equal rights and freedom for all. One may be surprised by the scale social injustice and inequality still persists within our own borders. The divides between the rich and poor are drastic and often drawn upon racial boundaries. Racial, sexual, and economic minorities are systematically discriminated against not only by bigoted people but routinely by our own government. Women are still objectified and routinely subject to sexism albeit less obvious than it has been throughout history. America touts itself as an open land of possibility, freedom, and equality. Tremendous progress has been made over the past century in achieving this ideal. It is important however, to acknowledge that we have not yet fully achieved this ideal and thus have something to strive towards.

Lose of Biodiversity
Many scientists believe that we are undergoing the largest mass extinction in the history of the planet. The phenomenal aspect of this is that it is the only mass extinction to be caused at the hands of man. No asteroid or cataclysmic volcanic eruption can be compared to the destructive power of man's appetite to exploit natural resources. We have rendered our planet incapable of producing and supporting the biodiversity we had only a century ago. If drastic measures are not taken to preserve the diversity that still exists, a biologically impoverished world will be the home we leave our children.

The outlook which I just described only covers a small sample of the problems facing our planet today. It was painted purposely in a bleak manner as to reflect the significance and vastness of the problem facing us today. The difficulty with showing it in this manner is that it leads to despair and leaves little hope for change and thus, the alteration of our behaviors. What we need to do is recognize that these problems of epic proportions do exist and that they can be fixed. It is important that everyone do their part. Only through the collective effort of society can such large scale problems be solved. Real change can only occur once people change their perceptions and analyze their own behaviors. A battle cry often heard coming from environmentalists is "think globally and act locally". This is a great catch phrase that I think can be expanded to include "look at the problem holistically and act on what you have influence over". It is in this spirit that we should look at the problems that relate specifically to the architecture and the greater building industry.

Problem 1: How we develop
The problem with how we develop should be blatantly obvious to anyone driving through the endless sea of tract homes and strip malls that make up the peripheral regions of nearly any American city. Unfortunately, for most it is not this obvious. While few will argue that this is the most environmentally sound way of doing things, our quest for the fictional 'American Dream' single family detached home complete with its own backyard and white picket fence has blinded us to the problem. Most American's are perfectly happy to live in their homogenized world of tract homes. The block walls that surround these homes isolate them socially from the world outside their front door, physically from the freeways and streets that take them where they need to go, and ethically from the consequences their living situation has on the environment. There is no need to interact with the world outside the wall since the machine that takes them to and from where they need to go gets parked on the protected side of their prison fence. The homes we have been conditioned to perceive as a dream are in actuality coffin walls.

If there are so many problems with this type of development, why does it still persist? As I just mentioned, one of the key causes is that we have been conditioned to accept and enjoy this type of existence. Now we must ask, why are we conditioned this way and who benefits from this? This accounts for the second half of the problem, developer mindsets and basic economics. Developers are in the business to make money. This type of development offers the least amount of risk with the quickest turnaround time on their initial investment. When these developments are built en masse with repetitive components (entire homes) they can be built cheaply and quickly. There is no incentive for them to create quality developments and thus it is impossible to expect them to do otherwise. The cost of obtaining new land to build on is less than that of building higher densities making it only good business to make sprawled out developments that eat up precious natural land and form the heart of urban sprawl.


photo source: The New Urbanism


photo source: Architectural Record, Aug. 2003

Another key factor that leads to this type of development is the system of financing new projects. Banks are quite reluctant to hand out financing for projects that do not fit into one of their prescribed building typologies. They will only finance what they understand and know that from previous experience will be viable and sound investments. There is little hope that they will invest in unknown sustainable development practices unless there is assurance that their initial investment will pay off.

Problem 2: How we construct our buildings

Many of the problems with how we build our buildings can easily be linked to our development patterns. A direct consequence of building tract homes en masse is that each home cannot be customized specifically to work with the natural topography and orientation of the site. A comfortable indoor climate could be achieved in most climates simply by designing and siteing the building with an appropriate solar orientation. Instead of doing this we simply force our buildings to work on any site, any climate, and any orientation provided we outfit it with robust enough HVAC system. In addition, these massive developments are not conducive to the fostering of a sense of individuality. If a feeling of individuality can be achieved, a sense ownership and pride will grow within homeowners.

Another problem related to this mass development is that the majority of buildings are built with a quick profit in mind and thus tend to be built very cheaply. That fact that these homes are built in this manner leads to a couple different outcomes which I can identify.

1. The home owner will be forced to constantly fight to prevent his home from falling apart. He will be forced to sink large amounts of money into repairs to keep his home habitable. This will be a constant struggle that results in tremendous amounts of money being wasted. While this seems bleak it is still better than the other two possibilities.

2. Homes are left to decay and once their lifetime has expired need to be demolished. This creates enormous amounts of trash and wasted money. These homes are demolished within the natural time period they were built to stand, making for a positive outlook only from the developer's point of view. The next people to develop the site will most likely do so in the same manner as the initial developers. This becomes a self perpetuating cycle and ensures future financial success for developers, while created tremendous waste for the rest of us. This cycle also ensures that long term investment in homes will not make fiscal sense.

3. A new trend has appeared over the past 50 years that really hasn't been present in U.S. history. New to the post World War Two baby boomer generation is the fact that we tend to be less tied to our homes and home cities. We have become a transient society with little emotional investment in the places we live. This is directly related to, and makes more likely the third possible outcome. Homes will be lived in with the original owners until they are paid off which will generally coincide with them falling apart and decaying. Once this point hits, a mass exodus from these once middle class – semi affluent neighborhoods takes place and leads to their transformation into slums and ghettos. These places are poor living environments that foster poverty and hopelessness, which leads to crime and social emptiness. This will become the natural progression, only to happen again once the original owners leave to newer developments on the outskirts of already sprawl infested areas.

The other problem with the way we build is directly tied to economics. The materials we specify to create buildings with tend to be the ones that help us achieve our more-often-than-not tight budgets. The problem with this is that the most affordable materials tend to be those that also happen to wreak the greatest cost on the environment. It is nearly impossible to convince people to expand their budget to save a few trees. Instead we need to look at why the budget was so tight to begin with.

Developers seek to minimize construction costs in order to achieve the greatest possible profit. There is no way to change the fact that developers are in the business to make money. It is possible however to change how they calculate their profit be adopting a more holistic approach to evaluating the cost of a building. This new approach must include things like operating costs of the building over a longer life-cycle and the benefits to occupant/employee productivity and health. If this approach is taken when developing the budget for a building, I believe that choosing healthy and renewable materials will be an easy choice that makes strong economic sense.

For home owners, we can encourage them to use better materials if we convince them that the resale value of the home will be much greater if they choose to do so. While potentially sounding a bit classist, I believe it is important to encourage people to purchase and build residences within their financial means. If a family's financial capabilities are stretched to purchase a larger home they often run short of money, making it impossible to fix the many small things that can go wrong on a home. This soon leads to the home deteriorating and becoming a liability and not an asset. It is much better for a family to live in a smaller home that they can afford, upkeep, and build equity with rather than a larger home that is out of their means to own and upkeep and becomes a liability.

Problem 3: Energy Consumption
The buildings that we construct are one of our greatest energy consumers. To me, this great thirst for energy means that they should be obligated to produce a portion of the energy that they consume. Technology and innovation has made efficient energy production processes available on a small enough scale to make this possible. The largest barrier right now is the mindset of the building owners and architects who don't completely understand all of the energy options available. The difficulty in convincing a building owner to put up the initial investment that will be paid off over a relatively long period makes this a tough sell. Architects are in the unique position to help change this mindset of their clients and encourage the integration of renewable energy generators.

Problem 4: The Scope of Sustainability and its Limitations
If you are reading this book then you probably have a pretty good idea of what the traditional idea of 'sustainability' is. In many ways, I believe the 'sustainability' that most people think about is good but also believe it has many shortcomings. These shortcomings mean that 'sustainability' needs to be changed in order to bring it greater significance. It is important to identify these shortcomings in order for us to recognize the issues.

The Bastardization of Sustainability
My education at Cal Poly has shown me first hand exactly how big a role 'sustainability' has started to play in educating future architects. Nearly every teacher has pushed sustainability as a major factor in our designs. It has become the catch phrase and mantra for this generation of architecture students. While I see a ton of students proclaiming their projects as 'sustainable' in actuality I see very few that really are. I don't believe that these students, who are the next generation of architects, really know what it means to be 'sustainable'. The word has been diluted and applied to almost any project without thought to what it really means. People are proclaiming their work as being 'sustainable' as more of a selling point without having a genuine 'sustainable' project. This has led to the word 'sustainability' losing much of its potency. In addition I fear that once these students enter the 'real world' they are going to lose the small amount of sustainable ideas they have picked up in academia and contribute to the 'status quo' type architecture which is at the very heart of what 'sustainability' is against.

The Definition of Sustainability
'Sustainability' has been popularly defined as 'meeting the needs of the present without compromising the ability of future generations to meet their own needs'. This definition is inherently vague because of the complexity and difficulty in defining such a broadly encompassing idea. Since it is such a broad word that can be applied to nearly

anything, it leads to the dilution of the ideal and its homogenization.

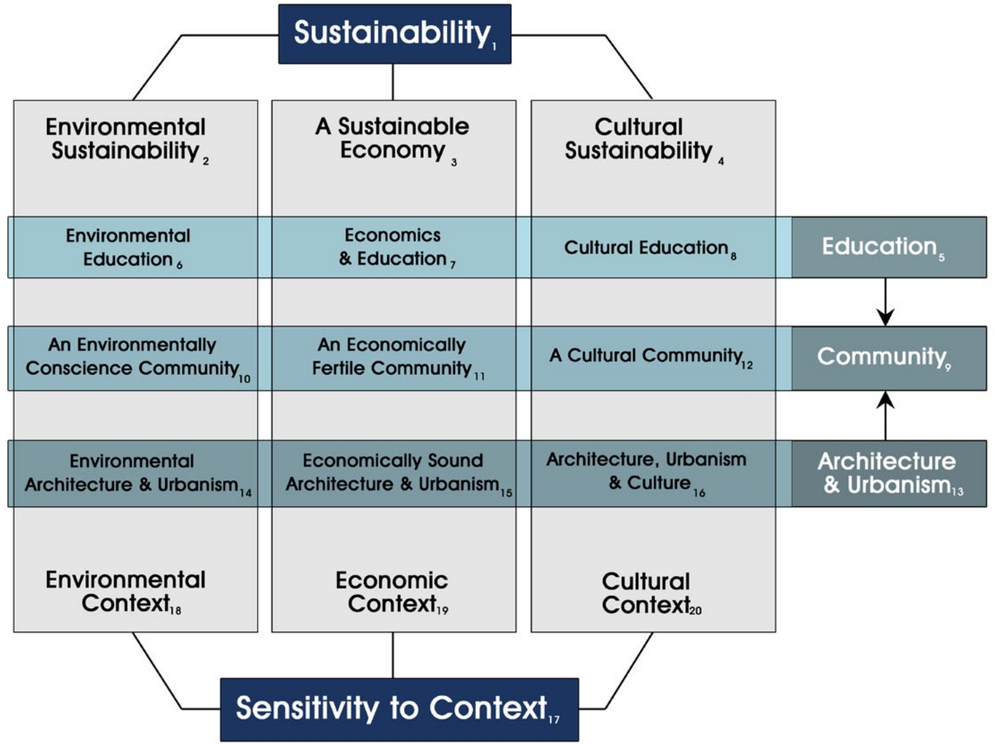
The second problem lies in the actual root of the word 'sustainability'. To me it implies that we should merely sustain what we have today and preserve it for future generations. While this is a key component of what I believe sustainability is, I think it is only half of the core ideal. Not only should we sustain what we have for the future but, also correct and make better past mis-deeds. This means not only handing off to future generations what we have now, but giving them something better than what we have right now.

The Availability of Examples
While there is a plethora of genuine 'sustainable' projects out there for architects to look at and strive towards, there is very little architecture that the average person can interact with on a normal basis. Sustainable projects tend to be a thing of rural areas and/or civic projects. In order to change people's perceptions about sustainability they must be able to interact with these projects intimately. If we can get people living, shopping, and working in these types of projects, not only will they recognize the health benefits of them but they will also recognize the normality of it. Sustainability doesn't have to be this far out avant-garde idea, it can become the norm. Once it reaches this normality, it will be much easier to convince clients to build in this way. The only way for sustainability to become more common place is through showing that it can be done, it is impossible to learn without easily accessible examples to guide us.

Why Use the Word 'Sustainability'?
Even with all of the problems that exist with 'sustainability' I still believe it is a strong that can represent an even more holistic and encompassing idea. It has reached an almost universal recognition within the building industry. It is this universal recognition that gives it the momentum needed to become the norm. Since the idea is not completely understand by people outside of the building community it is possible to alter the definition of the word to fit what I believe is a more holistic and appropriate meaning.

The Thesis

I have identified several key issues that I see as being core problems that stand in the way of 'sustainability' becoming the norm. These problems make it essential to redefine sustainability in the hope of bringing it greater significance. I have established a clear diagrammatical representation of what I believe is a more holistic and encompassing approach to 'sustainability'. We need to break out of the mindset that it is only an environmental issue. Sustainability needs to be applied to all aspects of our lives. It is not simply an architectural issue yet, an architect's unique position allows him to create a positive and significant impact on our environment.



Environmental Sustainability *(2)*
The most common perception of sustainability deals with the environment. It is the most discussed aspect of sustainability and probably the best understood. It involves among many other things, minimizing energy use, creating less polluting and more efficient transportation systems, preservation of resources, stopping the creation, use, and spread of toxic materials, and limiting the release of other pollutants. All of this can be essentially boiled down to minimizing the impact of man on our world. This is key in assuring a healthy existence on this planet for ourselves and especially for our future generations.

A Sustainable Economy *(3)*
We must create an economic model that sustains itself and builds upon its own success without sacrificing the well being of our environment or our society. There is a problem when 90% of the world's wealth is controlled by 10% of the population. A class system exists, and always will. Many people live in frivolous luxury while people starve everyday. Another way needs to be sought that will help those less fortunate and create opportunity for personal success. The poor are not poor because they choose to be. They are poor because there is a point of no return where personal economic success is impossible to achieve. Only through education and a deeper analysis of the sociological and economic issues can we achieve something better. In addition, the only way sustainable projects will get built is if they make good economic sense. No builder will create a building unless it will be economically lucrative.

Cultural Sustainability *(4)*
We live in this great melting pot called America yet we hardly embrace this fact. When we do embrace it our attempts are often weak and superficial. People of all cultures are thrown under this vast equalizing term 'American' without bothering to look at the culture that lies beneath it. We are a nation of immigrants, it's about time we acknowledge this and embrace it. We should not hide where we are from because this is a key part of who we are. We need not be ashamed of this but should embrace it and share it.

Education *(5)*
Education is our prime investment in the future. The success of our planet after we are dead depends on how well and what kind of legacy we have left our posterity. Money cannot solve all of our educational problems. These problems need to be approached from a wider perspective. We need to create more infrastructure while reevaluating how this infrastructure is applied and how we educate our people. We need to look at what can be

done to make this situation better. Only though education is it possible for everyone to completely understand what sustainability is and means.

Community *(9)*
Community creates a sense of belonging and comfort which is a key part of the human experience. We need to develop communities that help to nurture and encourage healthy growth. Strong communities tend to create places that are enjoyable and safe to experience and live in.

Architecture & Urbanism *(13)*
Good architecture and urbanism is key to all aspects of sustainability. It is an opportunity for architects and planners to create positive changes for an area on a variety of scales. Proper architecture and urbanism with a solid basis in logic, while not easy to achieve within the bureaucracy and regulation that exists in the planning world, can really help to bring life to an area.

Environmental Education *(6)*
We must educate the public at all levels to the need for, and the methods of achieving an environmentally sustainable world. To help ensure our world's future prosperity we must educate our children. We can also immediately initiate change by educating today's decision makers. New methods to achieve environmental sustainability must be researched and embraced. In addition, we must teach people environmental sustainability by giving them the opportunity to live, work, and recreate in these types of environments.

An Environmentally Conscience Community *(10)*
Environmental sustainability cannot be realized in any substantial form by one individual but must be a project for the greater whole. It is up to the key individuals within the community to foster urgency for being environmentally sustainable to other members of the community. The greater community must pursue an active role in creating an environmentally sustainable world.

Environmental Architecture & Urbanism *(14)*
The current eco-disaster that is the status-quo for city development must stop. We need to focus on densifying and redeveloping our current built areas and abolish the act of tract and leapfrog development. New developments must be sensitive of both their built and natural context. The destruction of farm and natural environment using

the alibi of 'cheap open land' needs to end. Our architecture must seek to minimize its negative impact on our environment. Architecture by its very nature destroys un-built environment. However, it is one of man's basic needs to require a built environment. The key is figuring out how we can fulfill our basic need for a built environment without compromising the natural environment. Adaptive reuse of existing buildings and infill development are some of the ways to accomplish this at the planning and urban level.

Cultural Education *(8)*
Our school system must embrace its multi-cultural student base. Diversity should not be seen as a roadblock to overcome but as an opportunity to learn from. Education within the greater community needs to exist in order for the greater whole to appreciate and not be scared of the diverse fabric that makes up their community.

A Cultural Community *(12)*
Each community is ethnically and culturally different and must be customized to not destroy the cultures and traditions that exist. A community must be open and encourage difference rather than seek to homogenize itself. The first step is to acknowledge it exists in order to validate it. From there, acceptance and embracement will be easier to achieve.

Architecture, Urbanism and Culture *(16)*
Different cultures approach architecture and urbanism differently. We need to acknowledge these differences and use them to our advantage. We can build places that will help teach people about different cultures which leads to validation, acceptance, and embracement. Our architecture and urbanism should take into account the building traditions of the population where it is being built.

Economics and Education *(7)*
It is no great epiphany that a strong educational system at all levels is key to the economic success of an area. Our youth are the future and their education needs to be treated with an appropriate level of importance. A strong educational system leads to higher wages, lower unemployment, and less crime.

An Economically Fertile Community *(11)*
A strong community will foster economic strength regardless of the economic makeup of the area. The opportunity to spend money locally within the community should be encouraged. This ensures both fiscal investment in the area

and the creation of a local job base. When people feel like they are part of a community, they are more likely to spend their money there and invest their time and energy into making the place they live better.

Economically Sound Architecture & Urbanism *(15)*
Good architecture and urbanism makes strong economic sense. Planning should spur economic growth and help to ensure the success of the businesses it creates. Solid urbanism will take into account the business landscape to help ensure the elimination of repetitive uses and balance the demands with the needs of an area. The housing market should be balanced so that developers can create new housing that will be lucrative to them without creating a shortage of affordable housing. A balance of rentable and owned housing is desirable to prevent absentee landlord problems.

Refining the Diagram
One of the largest problems with architecture today is that buildings do not always take into consideration the context of the environment it is placed. The projects that architects create must seek to become part of the greater area it is placed, not a unique entity unto itself. This will ensure a better outlook, not only for the people involved with the project but also for the greater community. The diagram I have presented shows the various aspects that I believe make up a more holistic approach to sustainability. In essence I believe that this all can be essentially refined down to respecting and embracing the context of where we build.

Environmental Context *(18)*
The buildings we create must take into account both the built and natural environment we place them in. We must not disrupt the existing urban fabric but should seek to become part of it and improve it. We need to look for ways to connect with the existing built environment. We cannot neglect the climate, topography, geology, and other natural characteristics of where we site our buildings. Our designs should be heavily influenced and guided by these characteristics.

Economic Context *(19)*
Every place has a certain economic context. The places we create must not weaken this but only improve it. However, at the same time the projects must not take over the economy and drive out the existing components of the economic fabric (businesses, housing, offices, etc.). The places we create must be economically successful

without compromising the success of others. Ideally they will not only be successful in themselves but also foster the success of others.

Cultural Context *(20)*
One of the greatest things in America is that our cities have a rich cultural context. We must acknowledge this and seek to preserve and encourage diversity. The places we create can take advantage of this and also help encourage it.

Other Considerations
I believe that the diagram I have presented gives a good generalized outlook of what 'sustainability' should mean. However, it may fall short in that it is a bit simplified and doesn't take into account two other issues that I believe are key to creating a sustainable project.

Embodied Use of Place
When developing a sustainable project there is a lot of time put into the analysis of the embodied energy of a material. This is the energy that is used to produce that particular material. This concept helps broaden the scope of your sustainability and look at the building's impact on the environment in a more holistic fashion.

Another item that follows along the same line and I believe is just as important and not nearly as discussed is what I call the embodied use of place. What I mean by this is simply creating a place that can be optimally used by the greatest number of people. The greater the number of people that can use a given place means that that place is being used to its greatest efficiency and is thus inherently sustainable. It also should be added that the greater number of people spread out over the largest time should be achieved as it leads to efficient use of space in addition to the safety of the place. It is important to think about keeping your projects occupied for the greatest number of hours because this leads to a natural self-policing of the area and less crime. It adds to the number of 'eyes' on the street. By committing to the idea of embodied use of place more high-density and infill projects will be created.

The Intangible Human Factor – Making Enjoyable Places
It is impossible to achieve a high embodied use of place if the place you are trying to get people to populate is not enjoyable. The art of creating an enjoyable place is by no means an exact science. Through looking at successful

projects it is possible to see several key attributes to strive for. I've been able to identify a few of the commonalities that can lead to a successful project. It is important to remember that these are only basic guidelines and in no way an exact formula for success on every project. Each project needs to be analyzed individually to determine what can be done to make it an enjoyable place.

One of the commonalities between many thriving places is the unique human scale that they possess. Somewhere in our primordial human instincts is our desire to visit places that can relate to the scale of our body. These types of places feel comfortable to us and thus we tend to congregate at them.

The places we create should also strive to be dynamic, interesting, and customizable. The opportunity for different users to use the same places in different ways and be customized to there own personal needs creates a dynamic atmosphere. One of the enduring attributes that make people go back to a place time and again is that every time they go they have a similarly good experience where small things change, giving the place a sense of newness and interest.

Many projects flourish because of the non-official uses that take place in the voids between their official uses. Many of these things like street performers, street vendors, and sun bathers are often seen as negative attributes to a place and are thus forced to leave. The problem with this is that these types of impromptu uses add to the character of a place and can often become a draw for people in themselves. Since they are a people magnet they should be allowed to exist. Building a framework of places within your projects for these types of impromptu uses will lead to its success by fostering and legitimizing them.

Working with solar access and climatic considerations is especially difficult but equally important if your are creating a new development within a given urban context. Often in densely built urban environments there are certain constraints that may be difficult to contend with such as shadows cast by existing buildings. It is possible to work with this if you can identify when the primary times of use will be for your project. Once you've identified this key factor it is possible to create a plan for your site that will work with and around any existing constraints. With this information is mind you can create sunny places during the winter time and shade during the summer create nice comfort levels in most climatic regions. Another consideration is providing a mix of sun and shade in order to accommodate the personal preferences of different users. Some people may desire shade in the summer to escape the heat while others embrace the sun and enjoy basking in its rays.

The uses that you place into an area should be seen as a web. Each use supports and adds to the success of not only the new uses but existing uses in the surrounding area. Everything should play its own role and each role should be irreplaceable. If a use you place somewhere cannot be removed without significantly changing the quality of a place then it achieves this. Once it achieves this then it will succeed in itself and lead to the success of other surrounding uses. Before even starting to design a project you must ask yourself, does my project belong and fit within the context I am placing it in? If you are creating a redundant use then the chances of creating a successful project will be slim.

Adopting & Applying the Thesis

The ideas presented earlier in this book become richer and much more significant if I can present a means for achieving them. Without this blueprint for application these ideas wither away as ink on the page and lose their importance. I have been able to identify a loosely based three steps process for implementing these ideas.

As with many things, the first step of achieving progress lies in the education of not only architects but more importantly the general population. Most modern day architects tend to have at least an elementary and general comprehension of sustainability. The problem is that their clients generally have no understanding of it, making it much more difficult to enable them to make sustainable choices. It is because of this that education plays a leading role in a sustainable future.

When most people think of education they envision a class room setting where someone at the front of the room speaks from their own knowledge base and attempts to transfer this knowledge to the audience. In some sense this is crucial to the distribution of knowledge. Another method with a far greater potential for educating about sustainability is teaching through first hand experience. This method would achieve greater successful in portraying this vastly complex idea because of its capability to show and not just tell about complex ideas. There are very few examples where this exists. The easiest way of achieving this type of experiential education is through the creation of sustainable environments within the building typologies people interact with on a daily basis. These buildings

should be blatantly explicit in there sustainable practices and should be direct in the sense that they show how they are working. If we can enable people to live, work, and play in these types of environments then the entire idea of sustainability is demystified and becomes the norm. This is one of the vital arenas that I believe sustainability has so far failed. I also hope it is one of the places we can improve on and exploit its tremendous potential to further the sustainable cause.

Changing people's perceptions is one of the greatest roles education can play. This is of tremendous importance because once people's perceptions are altered, they become a catalyst for change and demand that these principles get applied to the building projects they fund. People will invest their hard earned money into what they believe in. Without changing perceptions on a large scale the possibilities of sustainable building holds little hope.

Once people's perceptions start to change, then so do public policies regarding building practices. These building policies are primarily dominated by simple economics and politics. Once people's perceptions change, sustainability starts to make strong economic sense and public policies are changed to reflect this. In addition, the politicians who hold influence over these building policies will seek to be elected and re-elected by those whose perceptions have changed towards a more sensitive and sustainable ideal. Politicians will seek to please their constituents and have little choice except to alter public policy to reflect sustainable goals.

Before these ideas can be adopted it is of great importance to present a theoretical example of the idea being applied to a real world site. The goal of the next two sections in this book will be to portray a project in a full and complete sense showing both the final design and the process that was used to achieve this. It is through the process that you can see how complex of a problem it is to make a sustainable project and see how the process varies from project to project in order to fit custom requirements. It is important to note that this project is not the end-all solution to our sustainable goals but is simply an example of the potential that exists.

Part 2: Creating a Project

The goal of this theoretical project would be to encompass all the ideas in my thesis and show the application of me new definition for sustainability. How I defined the project and its components is important in developing its worth as a valid example of sustainability. While these ideas can be applied to any site, any local, and any building typology, it was it important to define the project as broad and encompassing as possible so the example created could be applied to nearly any project in some degree. I wanted to start with a large urbanism project that could then be broken down and looked at in progressively smaller scales. At these smaller scales would be individual buildings of varying size and typology in addition to large outdoor urban spaces. This would enable me to apply sustainable ideals across a broad spectrum of building types and scales. Placing a large scale urban project within the context of heavily built cityscape would also enable me to show how to work with and design urban spaces to fit within the context of an existing urban site. Since this project would be large and encompassing, finding a site to apply this project became a difficult process.

Although the site selection process was long and frustrating, it proved to be vital in allowing me to establish a strong foundation for a successful project. The first step of my process was to identify several cities that already had a dense urban environment where I would have the potential to bring in a new urban redevelopment project. The cities I choose also had to be within easy travel distance of San Luis Obispo so that logistically I could easily visit them frequently in order to perform adequate site analysis, an important step in the creation of any project. I quickly drew up a short list of cities within the two major metropolitan areas north and south of San Luis Obispo, San Francisco and Los Angeles. These areas offered an overwhelming variety of potential sites.

All of the sites individually had their own positive attributes yet still lacked a significantly large enough open space within a dense urban environment for me to develop my ideas. I did not want to be forced to destroy a large swath of given built environment in order to cram in my development. Nor did I want to be forced to work on some sort of 'hypothetical' (in other words made-up) site that would have all the attributes I was looking for. Instead of settling on one of these less than perfect solutions to my site selection problem I kept searching, still holding out for my ideal site.

After much exploration of more potential sites I remembered an experience I had in Long Beach about 15 years ago. Driving through the city at this time I was left with the impression of it being another characterless suburban offspring of Los Angeles. Sparked by this curious image from the past I traveled back to Long Beach and was happily greeted with the image of a city that had undergone a massive level of redevelopment, most of which was done with great results. Within the core of the city I found a hole in the existing fabric that would serve as a perfect site to test out my thesis. In addition, the site possesses great potential to become a successful example of sustainable redevelopment.

About the Site

The site is located in the core of downtown Long Beach and as it sits now is a bleak hole in the urban fabric. Historically the site has been occupied since Long Beach's inception although very little of this original fabric still exists. There are a few existing buildings on the site, a few of which hold significant architectural and historic character which make them prime applicants for adaptive reuse (1). The other buildings are remnants from the 1970's and 80's and hold very little architectural or economic value. Several are condemned and others have been vacant for years (2). Between these few sparse buildings is a sea of parking, rarely filled to anywhere near full capacity levels (3). At the southern edge is a 'Transit Mall' where the metro blue line and several bus lines converge (4). To the west is a popular shopping/dining/entertainment district that is known as 'Pine Ave' (5). To the north is a new mixed use retail development whose prime anchor is the only Wal-Mart in the U.S. without a parking lot (6). It is a mixed blessing which, as far as the quality of Wal-Mart's is concerned, is one of the finest and most responsible examples I've seen. To the east is a mix of office buildings and housing. Running through the heart of my site is a 'Promenade' passing from the Wal-Mart to the north through my site and eventually meeting up with the harbor to the south (7). More detail regarding the existing context and site analysis will be presented in subsequent sections of this book.

photo source: California Coastal Records

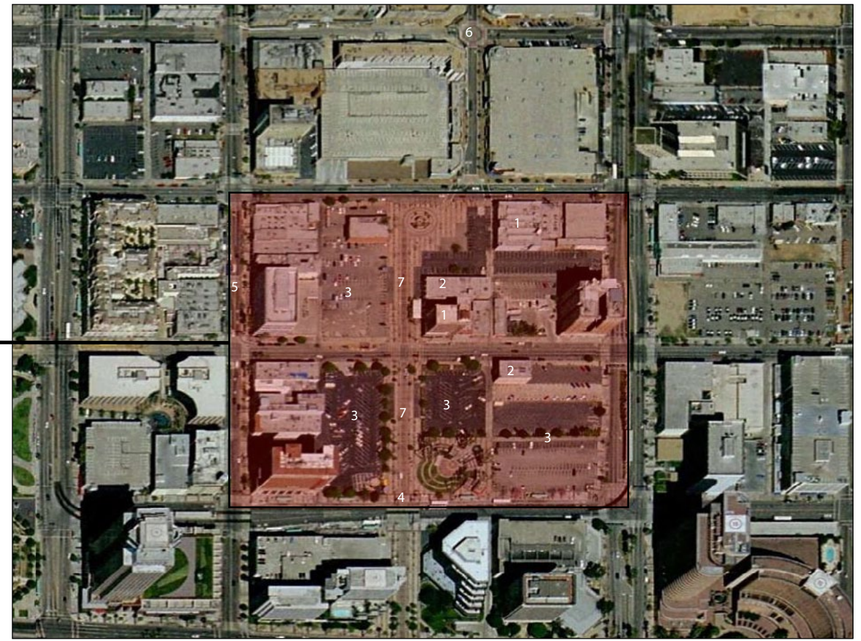
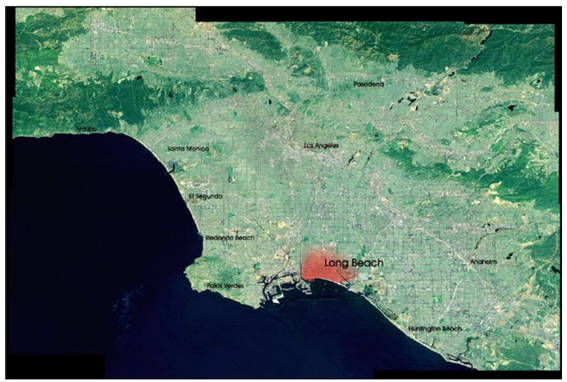
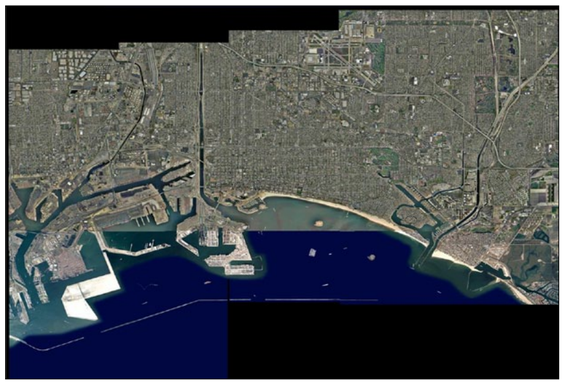


photo source: TerraServer.com

Site Analysis

Prior to actually designing this project or even coming up with a program for the site it was important for me to develop an in-depth analysis of the site and its surroundings. In the broadest sense, sustainability boils down to being sensitive to context making it imperative to know and understand exactly what this context is. A considerable amount of time was spent researching both on and off the site and then processing this information and analyzing it to figure out what the implications on my design would be. The context of the site influenced every aspect of this project from its early program development all the way through schematic design and design development. In the next part of this book I will put all of the site information I gathered and explain its significance and what I learned from each part.





Where is the site?

While at one point Long Beach was its own clearly autonomous city, its edges are not as demarcated as they once were. The post World War 2 Los Angeles building boom, which has continued until today, has rendered Long Beach's borders unclear. It is however still very much its own city with a character that is quite different than other cities in the greater Los Angeles area. The ocean and harbor that Long Beach has relied on for commerce and recreation also gives the city a micro-climate that is quite pleasant all year round. Long Beach also does not have nearly as large of a smog problem because of the off shore breezes that keep this air from stagnating above the city.

photo source: TerraServer.com

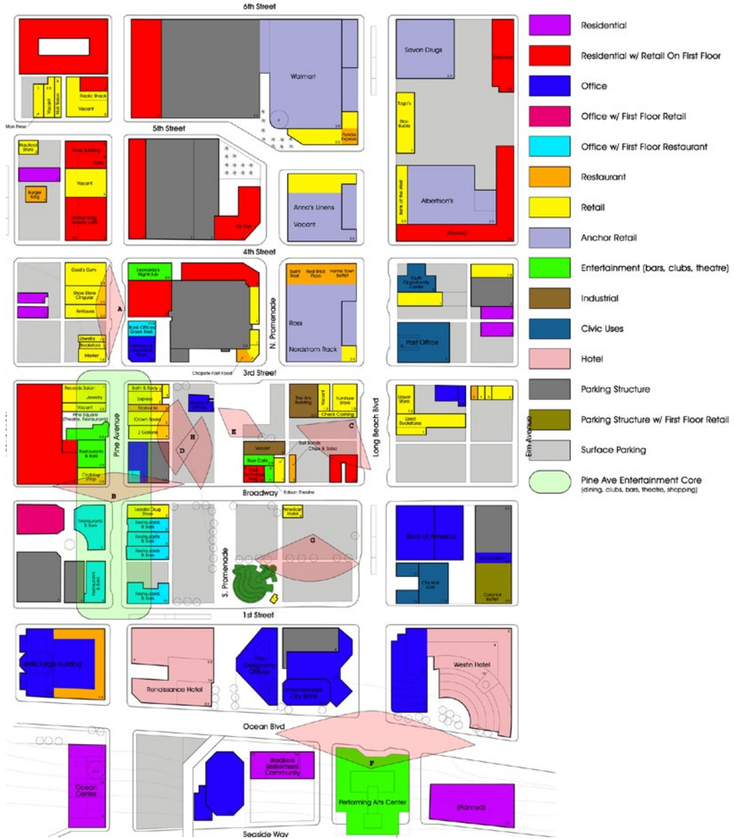
Regional Uses and Attractions

1. City Place: Mixed use development featuring large & small retail, restaurants, fast food, Walmart, 3 parking structures, and quite a bit of residential above the first level.
2. Pine Ave: Entertainment and shopping zone with clubs, restaurants, bars, small shops, and a movie theatre.
3. Hotels & Offices
4. Civic Center: City Hall, public library, and park
5. Business District: Large skyscraper buildings including the world trade center. Mainly banks and oil companies.
6. The Pike: High end condos, a large movie theatre, retail, and restaurants.
7. Long Beach Performing Arts Center
8. Long Beach Convention Center
9. Beach, Bluffs, & Bike Path
10. Hyatt Hotel & Park
11. Shoreline Village: Marina, retail, & restaurants
12. Rainbow Harbor: Pedestrian promenade & marina
13. Aquarium of the Pacific
14. Catalina Ferry Docks

Times of Use

What is around my site?

It was important to conduct a thorough survey of the existing context in the area in order to get an accurate idea of what pragmatic elements I would like to place on my site and what elements would be successful. For example, locating amenities like grocery stores in order to support residential developments helped me determine what supportive fabric exists in the area, and what new supportive elements I would need to create. The thorough survey also allowed me to get a good idea of what my site felt like and what the architectural character of the immediate area is.



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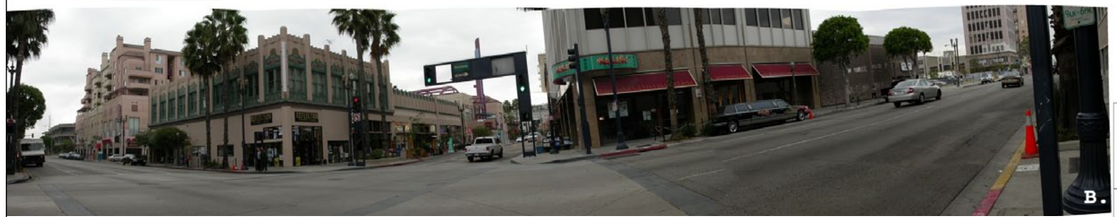

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Parks

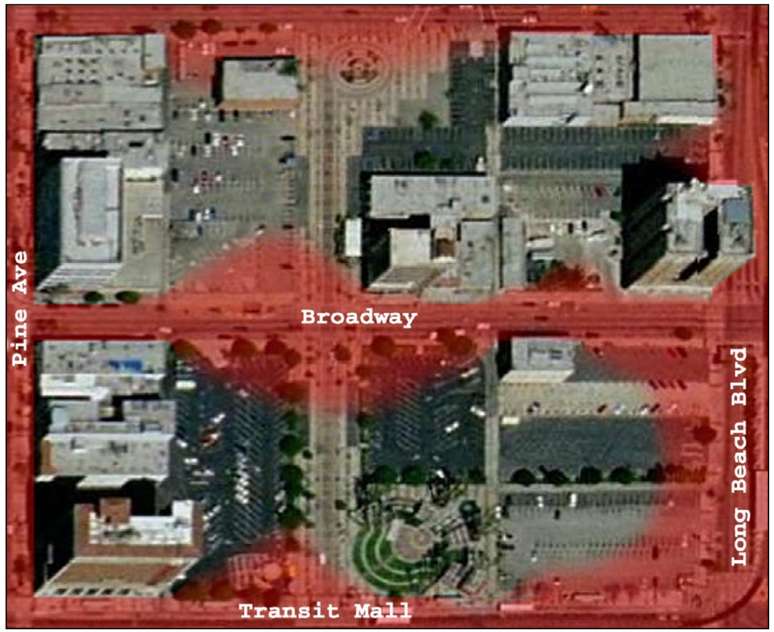
There are many parks within the vicinity of my site. Park (a) is a green belt located along the LA River. Park (b) is part of the civic center and is primarily used by vagrants. Park (c) runs along the marina and there is a promenade connecting the Aquarium of the Pacific and Shoreline Village. Park (d) is located on my site and is near the transportation mall. It is primarily used by vagrants. Park (e) connects the convention center with the marina. It contains an artificial lake and is used by strollers and joggers. Park (f) is the beach and is lined with bluffs that have a biking/jogging path that runs for 4+ miles along the coast.

Transportation

Long Beach is well connected with the other parts of LA County through both the Metro and the freeway systems. The Metro Blue Line ends at my site and there are four stops for it located around my site. The Metro Blue Line brings 5,106 riders into Long Beach each day. Los Angeles' downtown financial district is approximately 1 hour away via the Metro. Long Beach is easily accessible on the 710 and 405 freeways. In addition, highway 1 connects it with other beach communities to the south such as Seal Beach and Huntington Beach. Long Beach has a strong bus network with many stops along my site, especially at the transit mall near the southern edge. There are water taxies that connect many of the points along the marina, and docks for boats that travel to Catalina.

Noise on the Site

Sound sources on my site are typical of those found in most dense urban areas. The primary source of noise is automobile traffic. The major sources of traffic noises are Long Beach Blvd, Pine Ave, and Broadway as they are the busiest roads. In addition, there is some noise coming from the light rail lines and buses that stop at the transit mall.



Demographics

statistic source: U.S. Census Bureau 2000 Census

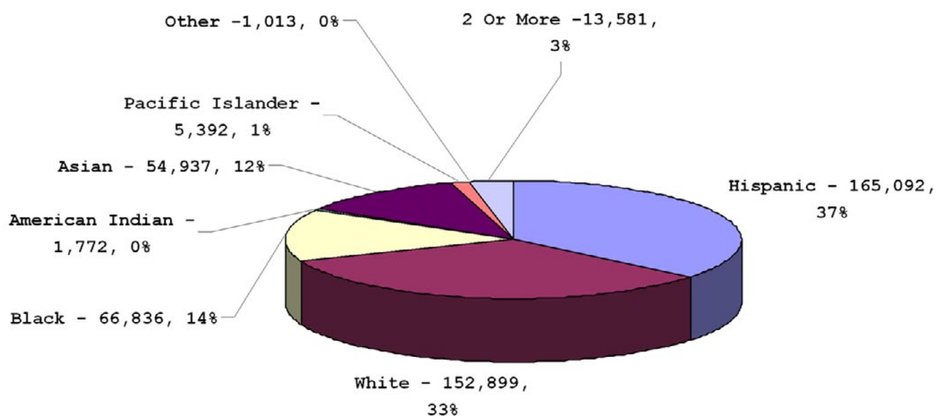
The People

Total Population: 461,522 (49% Male, 51% Female)
Average Household Size: 2.2
Average Family Size: 3.55

Work & Income

Unemployment Rate: 5.8%
Median Household Income: $37,270
Occupations:
- Management & Professional: 34.3%
- Service Occupations: 15.8%
- Sales and Office Occupations: 27.2%
- Farming, Fishing, & forestry Occupations: 0.1%
- Construction, & Maintenance: 7.7%
- Production & Transportation, Material Moving: 14.8%

Cultural Makeup



Demographics

statistic source: U.S. Census Bureau 2000 Census

Housing

Owner-occupied housing units: 41%
Renter-occupied housing units: 59%
40.1% of structures built 1940-1959
33.4% of houses valued at 200-300K
Median home price $210,000
Median rent/month: $639

Education

Less than 9th grade: 14.2%
9th to 12th grade(no diploma):13.1%
High school graduate: 18.8%
Some college (no degree): 22.9%
Associate degree: 7%
Bachelor's degree: 15.8%
Graduate degree: 8.2%

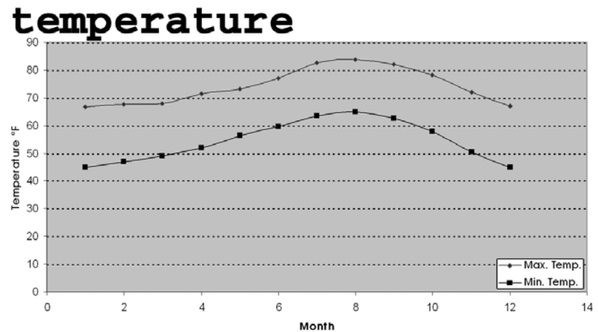
Conclusions

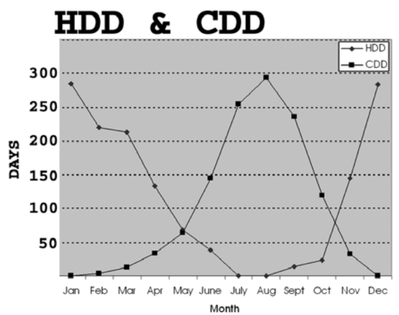
Long Beach's largest ethnic group is Hispanics. This needs to be taken into account by adding uses to this area that will capitalize on this. The average income level is only $37,000 while the average home is $210,000. This means that home ownership would be difficult for most and that there is a need for affordable housing. It also accounts for the fact that 59% of the housing units are tenant occupied. Care needs to be taken to ensure that the problem or absentee landlord neglect does not take place. Only 18.8% of the population has a high school diploma which seems to be very low.

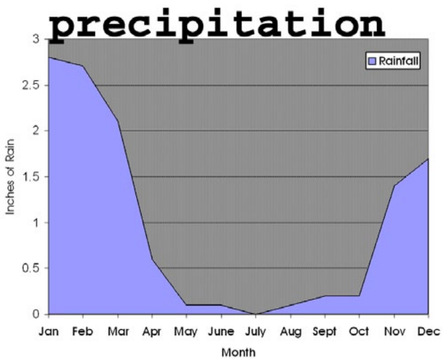
Climate Information

Climate Summary

Long Beach is located in the very mild and semi arid climate of southern California and is kept cool year round by offshore ocean breezes which can bring humidity. Winter temperatures are mild and require very little heating with only 280 heating degree days during its peak heating times in January and December. There are only 12 inches of precipitation annually, the majority of which fall during the winter months thus requiring an irrigation system in place for most plants to survive the arid summer months. On average in Los Angeles county 73% of the daylight hours are clear of clouds so solar heating, hot water, and electricity will work quite well.







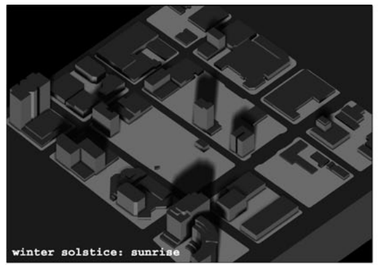
Annual Wind Frequencies

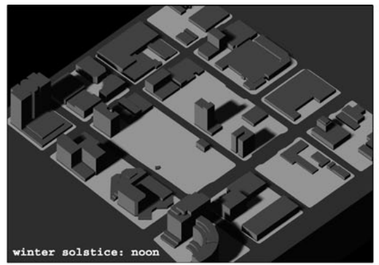
Calm 23.4% of the time

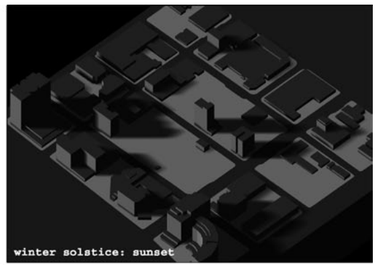
Mean Wind Speed: 4.9 knots

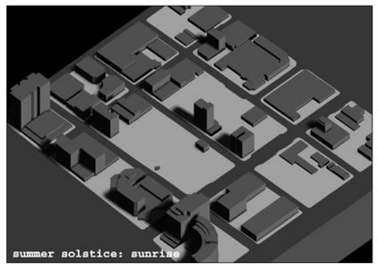
Sun Path Diagram

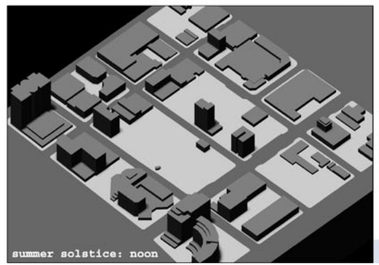
Shading Analysis

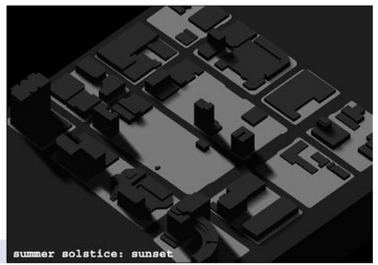






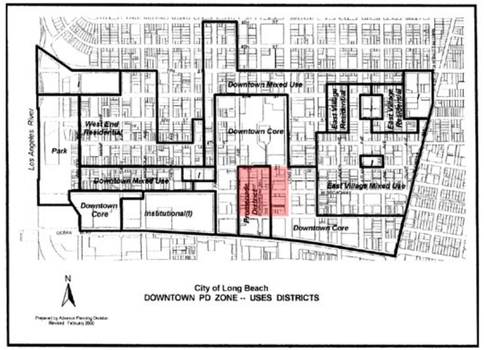


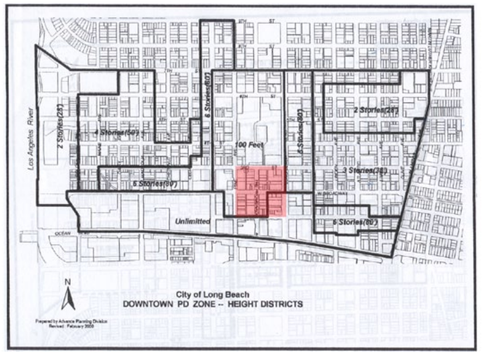


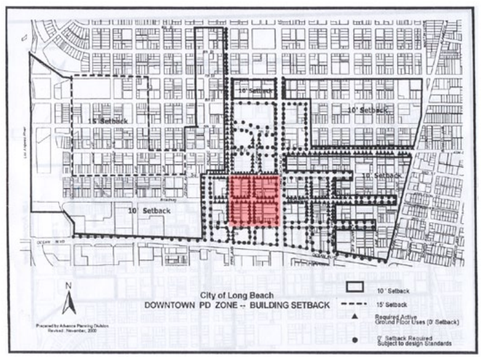


Zoning Information

source: Long Beach Planning Department







About The Promenade District

"This district is intended to provide opportunities for a range of entertainment and visitor serving commercial uses. Due to the level of commercial and entertainment activity desired in this area, residential uses are prohibited in this district. The Promenade shall be preserved as an essential pedestrian link between Downtown's commercial districts and the Queensway Bay development."

Potential for This Site

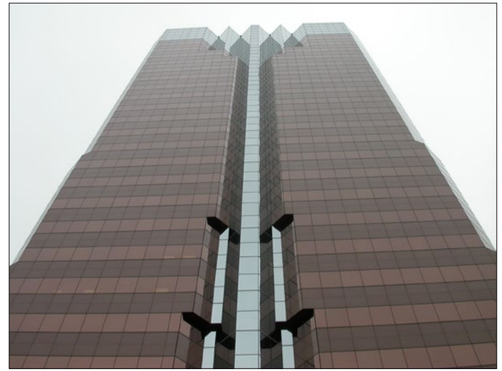
At first glance this site may look bleak with little potential. However, below this rough initial impression there is immense potential to create a wonderful development. There are a few existing elements in the surrounding environ that will greatly increase the likelihood of creating a success example of sustainable development.

The Transit Mall

The transit mall located directly on the southern edge of my site offers a tremendous source of people to visit my site. The mall has a metro stop for the blue line which brings on average 5,106 people to downtown Long Beach each day. 23.16 million people ride the blue line each year and the stop that lies on the southern edge of my site is less than an hour ride from the financial district of downtown Los Angeles. In addition, the bus lines that stop here bring a tremendous amount of people to my site and its surrounding areas from locations in and around Long Beach.

Pine Ave
The Pine Ave retail/restaurant/entertainment area draws a large number of people to this area. It is easily forseeable that I can use this existing sink for people as an additional source for people to my site.

Existing Office Environments
The large office areas that are near my site and could potentially offer large numbers of patrons to my site during lunch and after office hours.

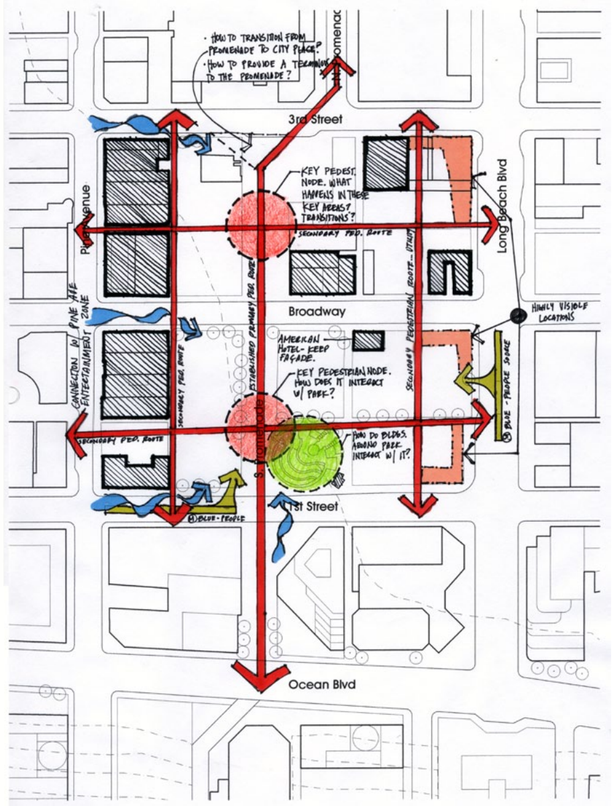


Convention Center and Hotels
The convention center and hotels that lie to the south of my site offer a large source of people that are looking to recreation and dining experiences.

Existing Historic Buildings
The historic buildings on my site are prime candidates to be used for adaptive reuse and can show the potential for this type of development.

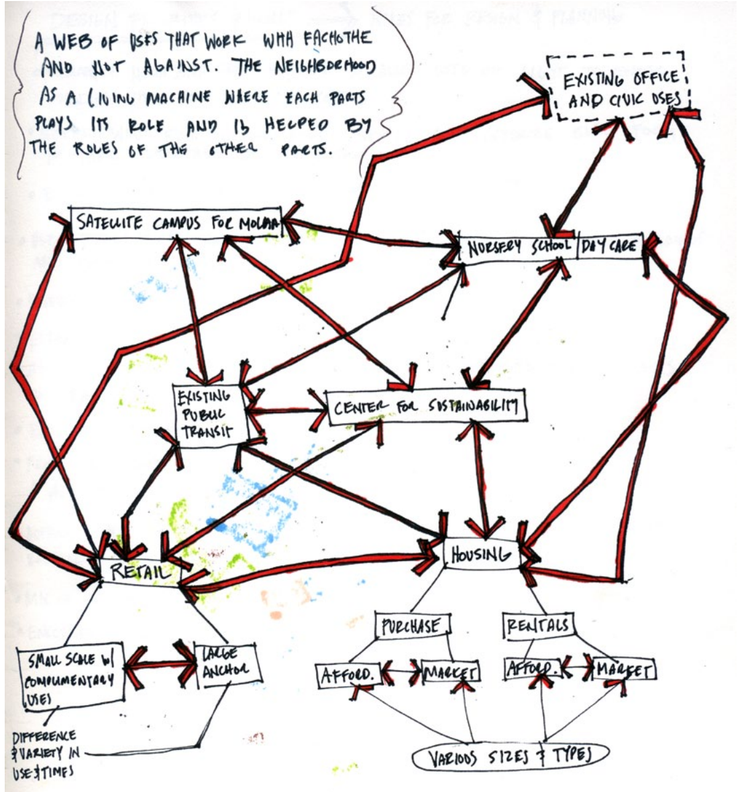
Mixed Use Development

The mixed use redevelopment to the north of my site offers another large people source. The Wal-Mart component of this development is a large draw for people, many of which will travel from the transit mall on the southern edge of my site, up north though my site, and eventually to the Wal-Mart.



Turning Thesis Ideas into a Program for the Site

The site is a canvas where a web of uses can be created that not only assure their own success but also support the success of the both new and existing uses that surround it. The neighborhood is seen as a living machine where each part plays its own role and is helped by the roles of the other parts. In order to achieve this end it is important to interpret and analyze the site information that was presented in a previous section. With this information in hand it is possible to deduce several pragmatic elements that will work on the site. Another powerful resource was literature provided from the Long Beach Redevelopment Agency that identifies several key uses that are needed in downtown Long Beach. The easiest way for me to start developing a finalized program was to diagrammatically present all the uses I believed were needed and show the connections and dependencies that are present between these uses and existing uses in the area. After much in depth analysis of the existing context the following program diagram was derived.



Center for Sustainability
As identified earlier in this book, education plays a dominate role in the acceptance of sustainability and its conversion to becoming the 'norm' for new development. The Center presents a unique opportunity to not only educate those in the building industry about sustainability but more importantly those normal people that live, work, and shop in this area. The Center becomes a destination that supports the retail and entertainment areas that surround it as well as providing collaboration opportunities with the Multi Cultural Center/MOLAA Annex and nursery school. In addition, getting to the Center in a sustainable fashion becomes easy due to the proximity of public transportation.

Multi Cultural Center / Museum of Latin American Art (MOLAA) Annex
The cultural diversity within Long Beach and the fact that no such place currently exists solidifies the success of this type of use in the downtown core of Long Beach. It is important that the cultural makeup of Long Beach is not ignored and that it is given a prominent place in my development. This building will in itself become a destination that brings people to the area, lending to the success of the retail and other uses planned for the site. The exiting MOLAA in Long Beach is located well outside the city core. A significant portion of this building's individual program will be dedicated to a downtown annex for the MOLAA. This will give it a strong presence downtown as well as recognize its importance in Long Beach's culture.

Nursery School/Day Care
Clearly identified within the Long Beach Redevelopment Agency's reports is the key need for a nursery school or day care in downtown Long Beach. Everyday thousands of people come into downtown Long Beach to spend their days working in the offices of its massive skyscrapers. It would be extremely convenient if these workers had a place were they could bring their young children for day care on their way to their offices. The presence of the transit mall at the southern edge of my site, which many of these office employees use to commute to work, allows for a great opportunity to put this type of nursery school/day care use on my site. This use would also bring these same people to my site at the end of the day, supporting the various retail and dining uses that I plan to create.

New Retail and Dining Uses
The retail and dining uses I've planned for the site are not only destinations in themselves but highly supportive and supported by the various uses in the area. The abundant offices in the area would provide a solid lunch time and after hours crowd to patronize these uses. In addition, the variety of other retail and dining experiences in the area can provide people to patronize the new retail and dining on my site. In conjunction with these existing uses the entire area will become a major retail and dining destination. It is important however to carefully analyze exactly what retail and dining uses already exist in order to insure that none of them are repeated on my site.

When planning the individual retail spaces for my site it was also important to plan both anchor and supportive retail uses. The anchor stores become a strong element that people are likely to make specific trips to patronize. In between these large retail anchor would be smaller supportive retail spaces that are generally not destinations in themselves but can be made successful by the strong pedestrian movement that would exists between the large anchor spaces.

Mixed Housing
The large amount of offices in the area makes the possibility of placing housing on my site a strong possibility. Living near their places of work is an attractive option for many of the people. This factor and the abundant retail and entertainment options in the area solidify this possibility for success. Placing housing in this area creates more potential customers for the retail uses I have planned for the site. The proximity of mass public transit would also be attractive for these residents.

The housing I have planned would be a mix of owner-occupied and rentals in order to prevent absentee landlord problems, encourage a strong mix of income and culture, and give a variety options for people wanting to live in downtown Long Beach. Subsidized affordable housing would also be created to encourage this. It is important to create adequate supportive infrastructure is to ensure the success of the affordable housing. These include things like public transit, which already exists in the area, and plentiful non-professional jobs. One possibility to offset the costs of creating affordable housing would be to subsidize its costs with the revenue generated from the higher end housing planned for the site. These higher end housing units would be occupied by people that are financially well-off and willing to pay a little bit extra in order to live close to their places of work.

Thoreau Center of Sustainability, San Francisco CA

photo source: thoreau.org

What is it?
The Thoreau Center for Sustainability is a multi tenant non-profit complex located at the Presidio in San Francisco. The tenants at the center are dedicated to addressing the world's most critical environmental, cultural, and social challenges.

Why is it relevant?
The center is located in a historic hospital at the Presidio that was rehabilitated in a sustainable manner to fulfill new needs. I have several historic buildings that I am keeping on the site which will need to be renovated for new uses. The Thoreau Center's mission is similar to that of my Center for Sustainability and I've built a major portion of the Center's program based on the program of the Thoreau Center. The Thoreau Center is "a global center dedicated to addressing the world's most critical environmental, cultural, and social challenges." This is one of the goals of my Center for Sustainability.

What can be learned?
The center shows that sustainable renovations can be preformed on historically significant structures without compromising the historic character of the building. In addition, it shows how several different non-profit groups can come together to collaborate and become a more significant catalyst for positive change.

Four Times Square, New York, NY

What is it?
Four Times Square is a 48 storey office building that was designed within sustainable guidelines. It is one of the first buildings of this size to be built and operated within sustainable parameters.

Why is it relevant?
Sustainability is all too often a thing of rural isolated buildings. Putting a sustainable building is a densely populated urban area helps bring this type of development to the masses. This is similar to what I would like my project to achieve. While I am not looking to do anything at this scale for my site it is interesting to see how sustainability can be achieved on a monumental scale.

photo source: usgbc.org

PRISMA, Nuremberg Germany

What is it?
PRISMA is a mixed use office, retail, café, residential, kindergarten building with an onsite parking structure located in a densely populated part of Nuremberg Germany. It has an extensive rainwater collection system and implements many different sustainable design practices.

Why is it relevant?
PRISMA is a successful example of sustainable building practices being applied to a medium sized mixed use development. It is similar in scale to many of the buildings I will be placing on my site and the program is similar to many of the uses I'm going to be creating. There is a central atrium which acts as circulation and brings in plentiful daylight. The atrium acts as an indoor garden that helps bring the outdoors in and allows for the opportunity to use rainwater collected from the extensive collection system to both water plants and use as water elements. The atrium also servers to passively condition air for interior use. This is similar to what I am trying to do with the atrium on my Center for Sustainability. This building is an excellent example of how live, work, and educational uses can be integrated together.

photo source: greenbuilding.ca

Design Priorities Derived from Site Analysis

A set of core goals and design guidelines was derived from site analysis and thesis ideas. While these ideas are vast and encompassing, it was important to briefly outline a quick list that could be quickly referenced during the design process. If a question in my design manifested itself, it was easy to reference the following list to ensure I wasn't violating any of more core ideas.

I. Maximize north and south exposure to allow lots of light to enter buildings that is easy to control with shading devices.

II. Screen wind from outdoor public space and optimize building orientation and form to take advantage of cross ventilation. Cross ventilation works well in this climate and the abundant wind makes this a highly viable option for passively cooling the buildings.

III. Encourage strong pedestrian movement through site. Build strong pedestrian paths through the development that also connect, embrace, and strengthen the existing pedestrian paths and pedestrian feeling of the area.

IV. Create spaces that feel comfortable and are at a human scale.

V. Use pedestrian paths and nodes of open space to connect buildings and form public spaces. These nodes can become strong plazas for congregation, activity, and non-official uses such as vendors, musicians, and public art. The nodes should develop at intersections of primary pedestrian paths in order to ensure their heavy use and occupancy.

VI. Provide a terminus for views along the promenade. The existing view is terminated by a parking structure. Since this is the most visible portion of the site it would make sense to put the building of greatest significance to my project here.

VII. Establish a better connection between the City Place promenade and the promenade through the heart of my site that connects to Ocean Boulevard.

VIII. Encourage pedestrian traffic along retail corridors to ensure their monetary success.

IX. Provide landscaping that adds to the quality of outdoor spaces and serves as a way finder through the site. Use landscaping and hardscape to frame views and encourage a strong sense of serial vision.

X. Outdoor water elements provide an opportunity for evaporative cooling, use of recycled/collected water, sound mitigation, and create friendly enjoyable spaces. They also allude back to the historical dependence of Long Beach on the water front and the natural water courses near my site.

XI. Create a mix of architectural styles and ages creating variety and a play of old and new, high tech and classical. The existing architecture in Long Beach is an eclectic mixed of various styles and themes which presents an interesting opportunity to recall this mix but at the same time establish a unique character for this area.

XII. Encourage diversity on all levels throughout the site. Plan uses on the site that acknowledge Long Beach's diverse cultural makeup and use turn this into an opportunity to create a unique and rich area.

XIII. Keep as many existing buildings on the site as possible and encourage adaptive reuse. These historic buildings allude to the history of Long Beach while the new buildings that will surround them refer to its hopeful future. This will help to create a rich mix of new and old and presents an opportunity to preserve their strong architectural heritage while leading Long Beach into the future.

XIV. Plan uses for the site that are not repetitive for the area. Encourage a network of uses that work not only with each other but also with the existing uses. This will help to build a web of uses where every thing has a symbiotic relationship that encourages mutual success.

XV. Plan uses that will create a variety of time occupancies. This will ensure that the site is never left dead. Keeping eyes on the street at all times creates a natural self-policing effect which leads to a safer neighborhood and less crime.

Defining the Scope of the Project

Problems with defining the scope of the project occurred once the site selection process was complete and the task of context analysis begun. Originally, the site I had chosen was only the northern portion of my final site. The dilemma occurred when I came to the realization that no matter how responsible a project I placed on this site, it would only solve part of the greater problem in the greater area. Whatever I chose to do with the site would still leave an entire area to the south of my site as a void in the urban fabric. I decided that the boundaries of my site must be demarcated by solid logic and reason. I had to ask myself, why am I stopping where I am stopping? The answer that it would be easier this way lacked complete merit and led to my site encompassing approximately twice its original area. The expansion was necessary to get my project logical boundaries which would make for a stronger project.

Once this decision was finalized and master plan development begun another problem with the scope of project became evident. I am an extremely ambitious person but soon came to the realization that I would need to set limits on exactly what on the site would be developed, and to what detail. The realization that I am only one person and can only do so much was a hard pill to swallow yet necessary if I hoped to make a solid project. With this in mind and much help from Professor Kent MacDonald I was able to define exactly what limits for detail and development I would be setting for this project. With Professor MacDonald's help, we were able to define three scales that I could look at my project from and clearly define in order to set the scope for the project.

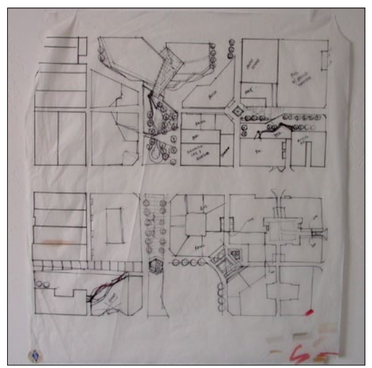
Original Project Size

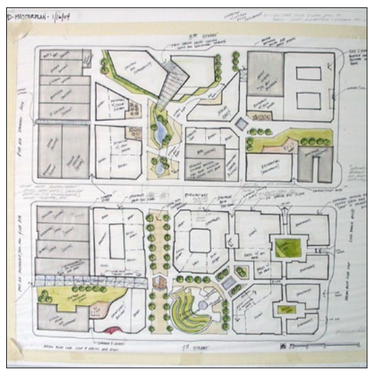
Final Project Size

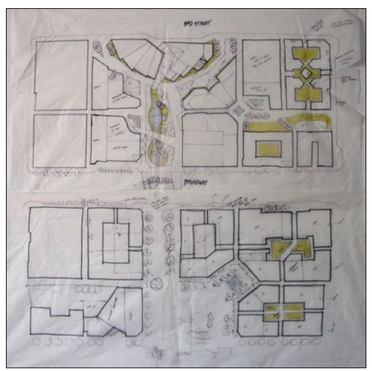
Planning Scale

The planning scale was the broadest and most encompassing scale at which I looked at my project. It helped to set the basic guidelines for the entire site from which further detail could be developed. This scale included the basic building uses, footprints, and heights. In addition, it laid out the circulation paths through and around my site. The basic design of the project was defined at this scale in order to ensure that each part or portion of the site works with all the other parts and portions of the site in order to create a comprehensive whole. Thorough analysis of sun angles and solar access helped to determine building heights, and placements of outdoor spaces. This analysis provided an important first step in ensuring the proper passive solar design for buildings on the site.

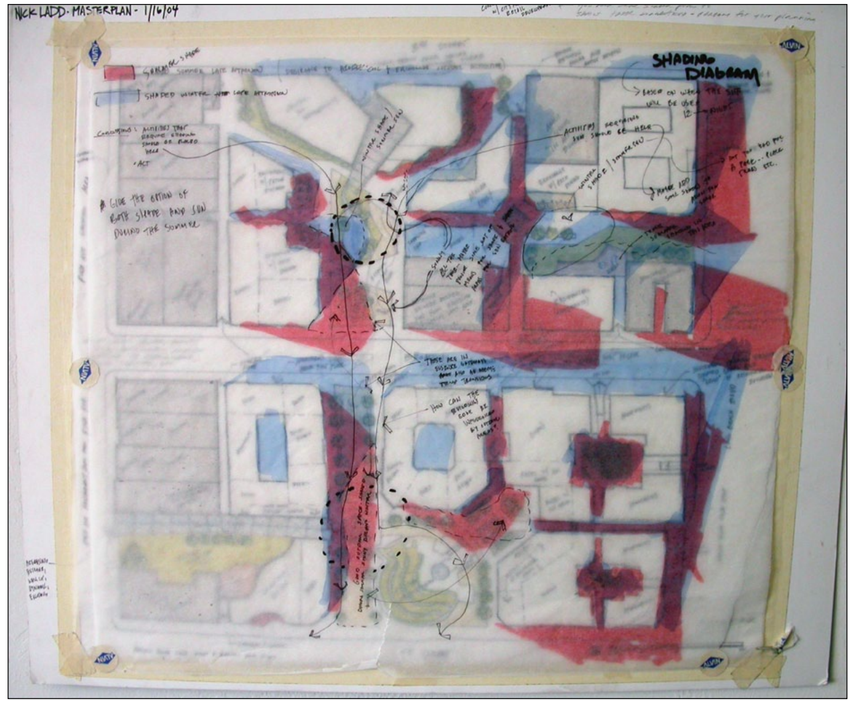
Early Masterplans for the Site







Shading Analysis for Preliminary Masterplan



Final Planning Scale Plan

Existing Buildings

Mixed Use Retail / Residential

Residential

Restaurant

Civic / Institutional

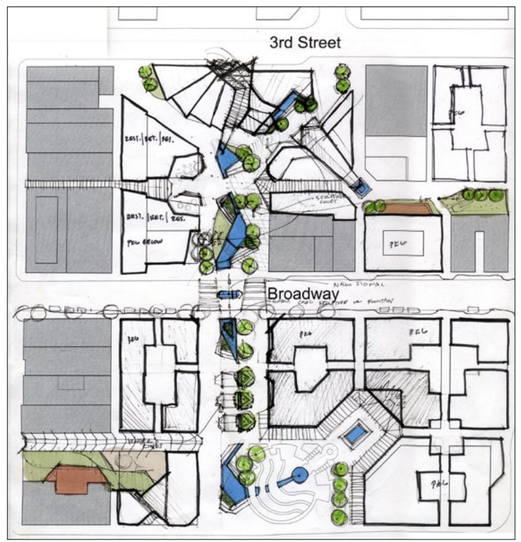
Notes:

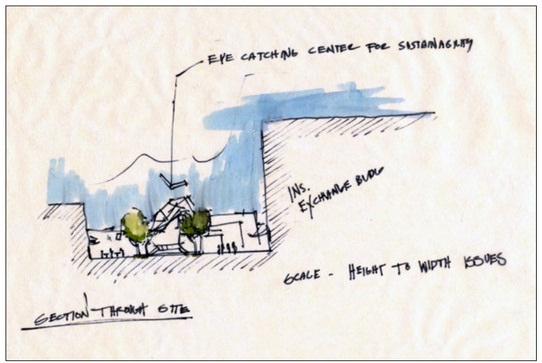
1. Center for Sustainability: This building has two main purposes, education and public outreach. The western wing features a lobby, exposition space, lecture hall, video room, library, and reading room. The eastern wing houses office for non-profits that advocate environmental and social issues as well as several classrooms. The central atrium is public circulation space that contains informational boards about issues of sustainability. Both walls within the atrium can open completely up to the atrium and serve as a place to hold fundraising parties.
2. MOLAA (Museum of Latin American Art) Annex: The existing MOLAA in Long Beach is disjointed from the downtown core. This new building gives them a presence downtown and provides more gallery and workshop space.
3. The Arts Building: This historic art deco building would be converted into artists lofts.
4. New restaurant that acts in conjunction with the MOLAA to serve its patrons.
5. 8 stories of affordable housing. Parking is provided with a sub-terrain parking structure.
6. 4 story mixed use retail and high end residential complex.
7. Existing bar called "Blue"
8. Historic Insurance Exchange building currently being converted into a restaurant / nightclub on the ground floor and high end condos above.
9. 6 stories of mixed income housing. Parking is provided with a sub-terrain parking structure.
10. Existing middle income residential block.
11. New 6 story mixed use building with a retail arcade on the ground and 2nd floors. Retail mix includes two large department stores with complementary 'mom and pop' shops in between. Middle to high end residential above.
12. New covered pathway gives a dynamic and interested entrance to the site from Pine Ave.
13. Pine Ave. pedestrian oriented retail/entertainment district.
14. Outdoor sculpture exposition space to be used in conjunction with the MOLAA.
15. New parallel parking adds convenience and a buffer zone between pedestrians and traffic.
16. New traffic signal slows down traffic and gives pedestrians a safe way to cross Broadway.
17. 6 story mixed use residential and retail building with sub-terrain parking structure.
18. New open air market with permanent vendor stales.
19. 6 story mixed use residential and retail building with sub-terrain parking structure.
20. 8 story mixed use residential and retail building with sub-terrain parking structure.
21. 8 story mixed use residential and retail building with sub-terrain parking structure. Residential areas are devoted to affordable senior housing and are conveniently located near public transit.
22. Existing amphitheatre gets renovated and integrated with the new water feature.
23. New nursery school / daycare is conveniently located near the transit mall.
24. New covered pathway gives a dynamic and interested entrance to the site from Pine Ave.

Urbanism Scale

Moving from the planning scale and looking at key areas in more detail lend me to what I defined as the urbanism scale. This scale focused specifically on the quality and genus loci of the outdoor spaces and their relationships with the buildings on the site. In order to give sufficient development to this portion of my project I choose to focus on only the northern portion of my site and the outdoor promenade that runs the entirety of my site. Imperative to the success of these outdoor urban spaces was in-depth analysis of what creates successful places. It gets back to the idea of establishing sustainability through a high embodied use of place.

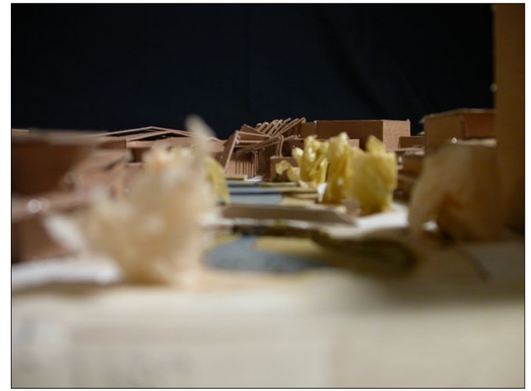
Process Drawing of Urban Space





Site Section
Sketches of sections cut through the urban spaces were used to help determine the correct human scale for these ares.

Process Study Model
Study models were built in order to investigate the relationships between buildings and the outdoor urban spaces that surround them. In addition, they were used to accurately model and investigate the shadows buildings cast upon the outdoor urban spaces.



Final Urbanism Plan

Architectural Scale

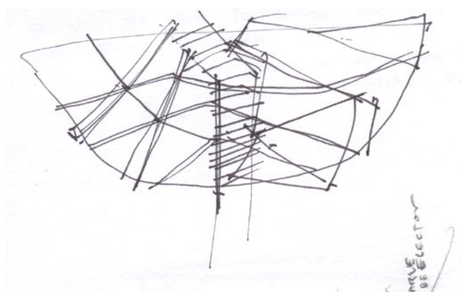
Coinciding with the development of a strong urban scheme was the detailed development of key buildings. The buildings I choose were deliberately diversified in order to show the different levels where sustainability can exist and how its principles may be applied over a variety of scales and uses. I chose buildings that were sited along the highly developed urban-scape in order to show the connections and integration buildings can have with their surrounding environment and the transitions that can exist between outdoor space and the built environment.

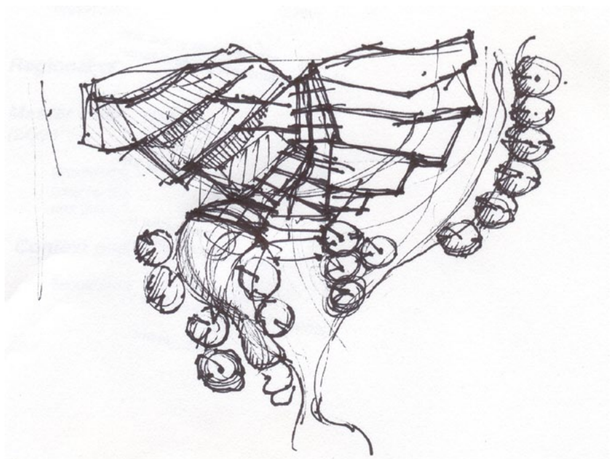
Process Study Model - Used to investigate building forms in relation to each other.

Center for Sustainability

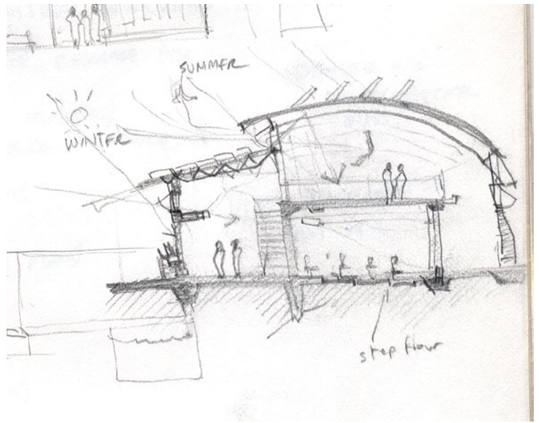
The adoption of sustainability as the norm begins with educating both the current and upcoming generations of decision makers (everyone) to the virtues of living in a sustainable manner. In order to do this, centers for sustainability should be developed and placed in highly visible and populated areas in order to have the greatest reach. The center that I've placed on my site would be open to the public free of charge and contain informational displays, a video room, a lecture hall, workshop spaces, a small library, a reading room, and a small bookshop. In addition to the more public components there would be space allocated for non-profit organizations dealing with environmental and social inequality causes. These offices would all be centered around a common space on each floor that could be used as a common collaborative space.

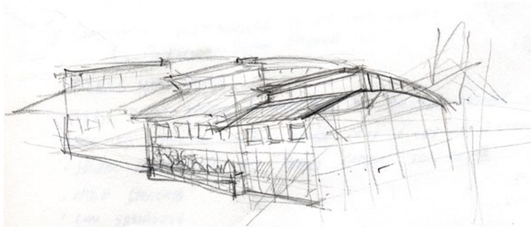
Process Drawings

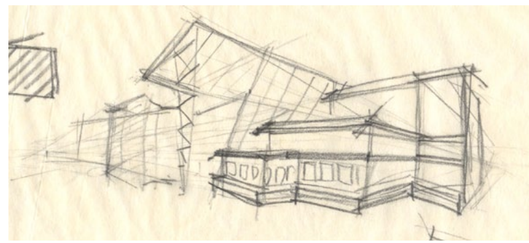


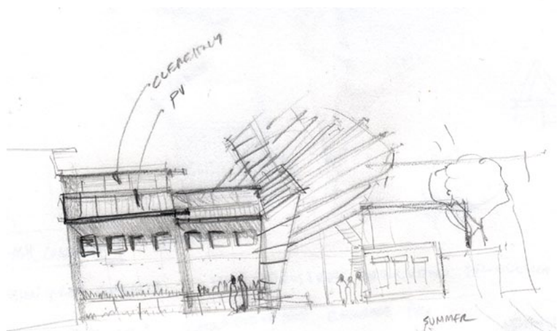


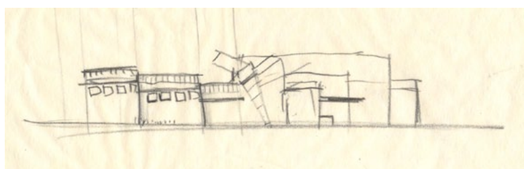
Process Drawings



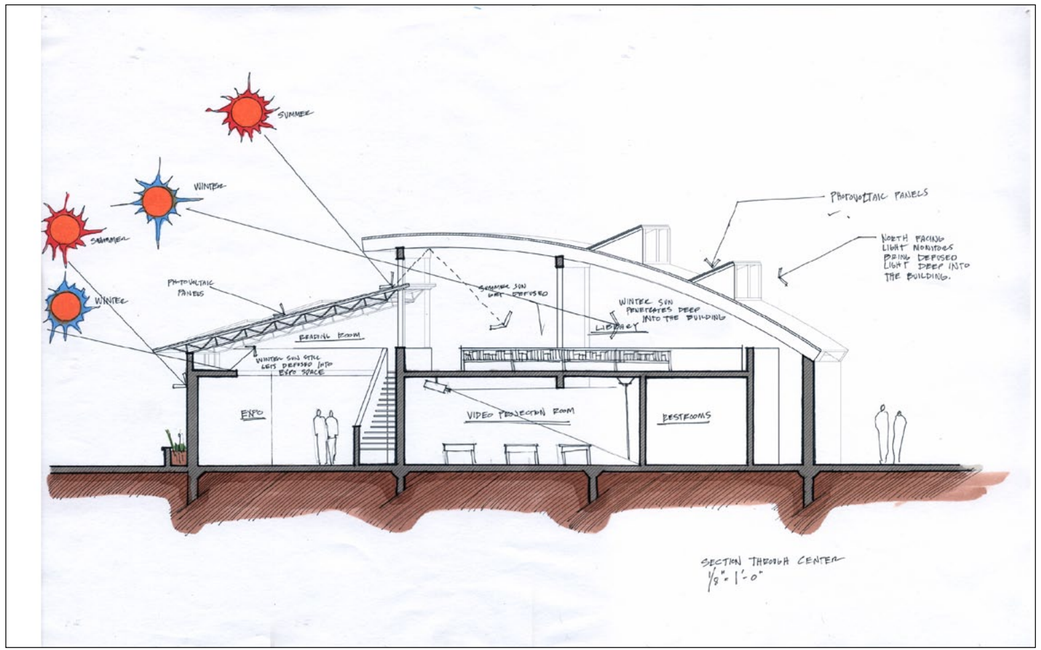




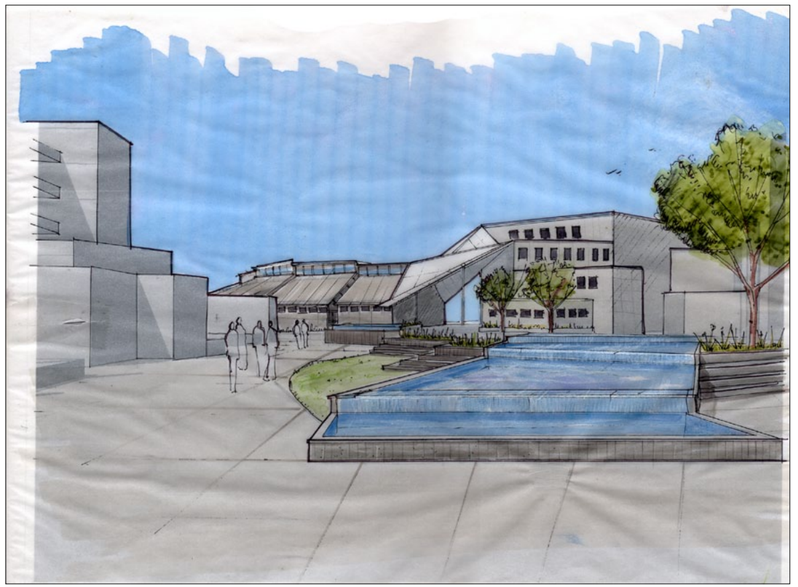




Section Study



Perspective Study



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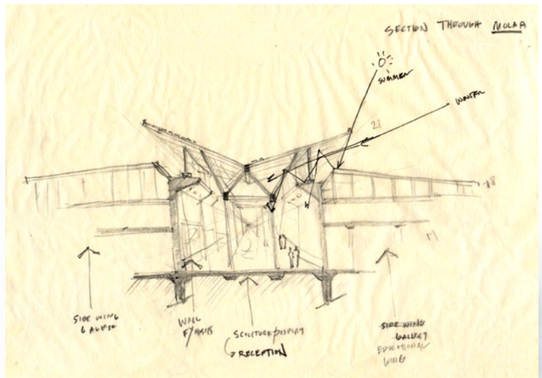
LB Cultural Center & MOLAA Annex

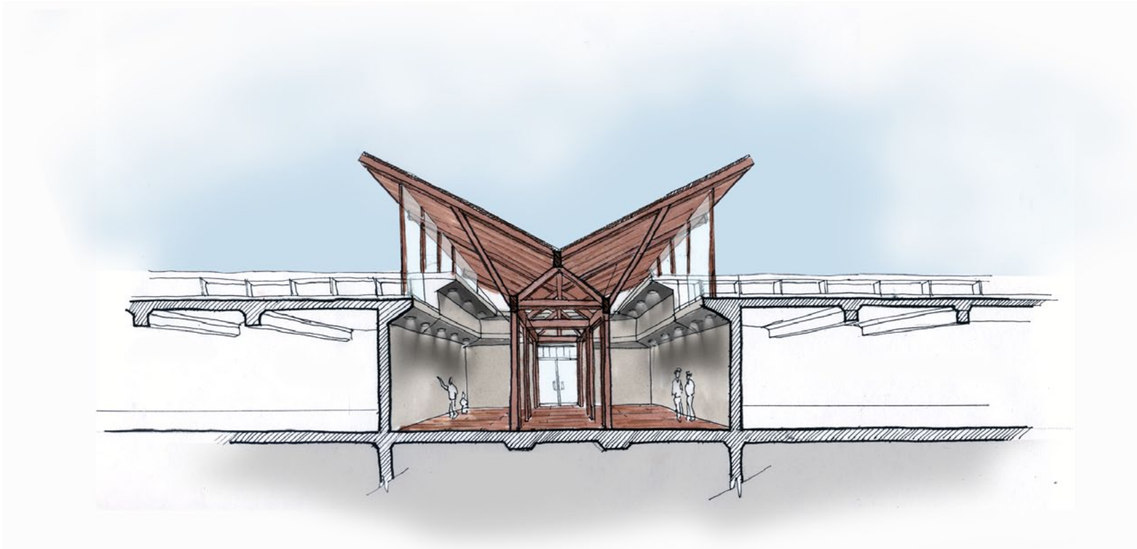
The majority of Long Beach (37%) is Hispanic with large African American (14%) and Asian American (12%) populations. With such an amazingly diverse population it is odd that no multi-cultural center exists to serve them. In addition, Long Beach contains the only Museum of Contemporary Latin American Art (MOLAA) in the nation which is poorly located several miles from downtown Long Beach in a relatively non-visible location. The goal of this building is to create a place to serve these cultures as well as create an annex for the MOLAA and give them a prominent presence in the heart of downtown Long Beach. These two functions can easily work together and help to bring cultural awareness and embracement to downtown Long Beach. Individual uses include gallery spaces, classrooms, a computer lab, a gym, meeting spaces, and a large reception hall.the more public components there would be space allocated for non-profit organizations dealing with environmental and social inequality causes. These offices would all be centered around a common space on each floor that could be used as a common collaborative space.

Elevation Study

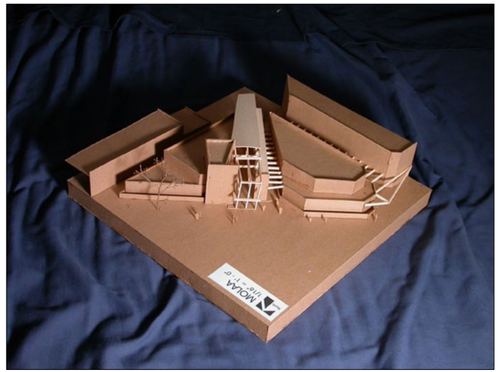
Preliminary Drawing Studies

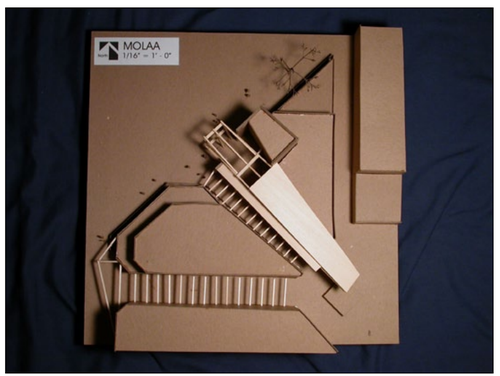


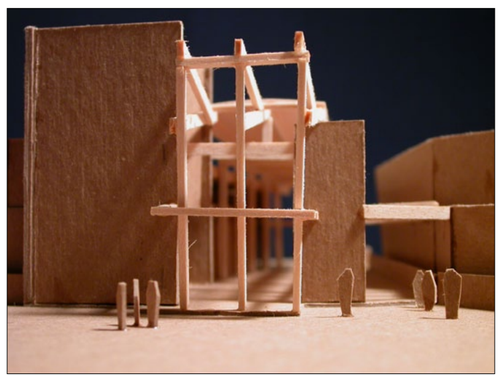
Preliminary Drawing Studies



Study Model





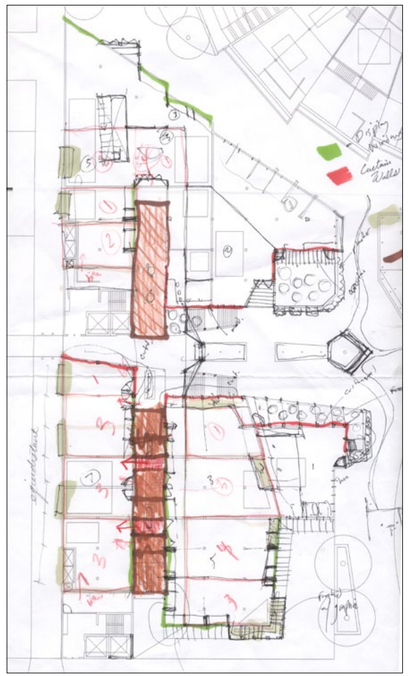


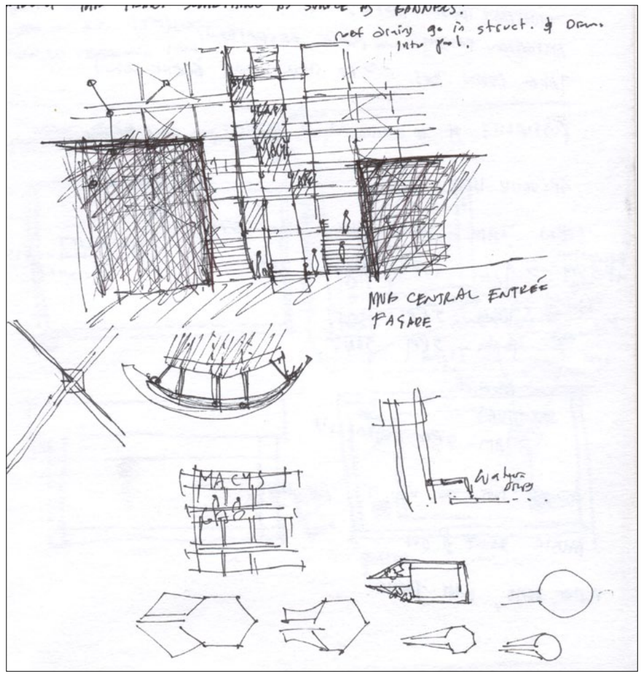
Mixed-Use Building

Mixed use buildings offer amazing advantages over the segregation of uses that is common in ordinary city planning and zoning. Allowing people to obtain all of their daily needs without the aide of an automobile frees them from the restraints of an auto and greatly reduces pollution and waste. In addition, the proximity to abundant places of work and public transportation further eliminates the need for an automobile. In order to fit with the existing heights of nearby buildings and allow solar access to the promenade, the building is limited to seven floors at its highest. The building steps back in order to not overbear on the promenade pedestrian spaces which also creates the opportunity to plant the roof-tops and create roof gardens, a wonderful amenity for those living in the building. The first two floors are dedicated to retail space with a department store on the northern end and a large anchor store at the southern end. These two stores act as people magnets and help to draw people through the retail arcade and support smaller mom and pop stores contained therein. Above the retail are 1-3 bedroom apartment units, many of which contain private balconies.

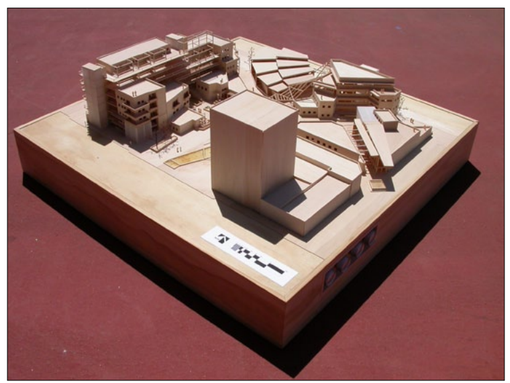
Early Elevation Study

Preliminary Drawing Studies





Daytime Photos

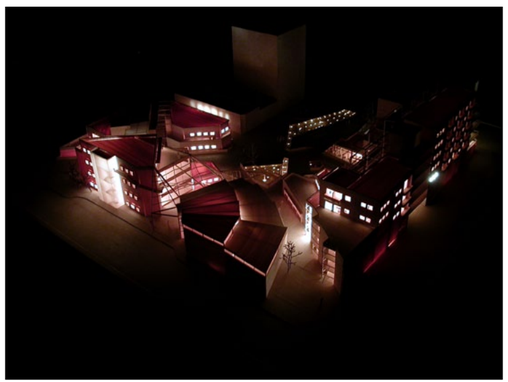


Daytime Photos

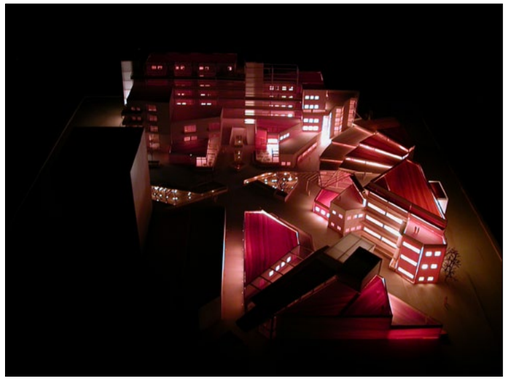



Nighttime Photos

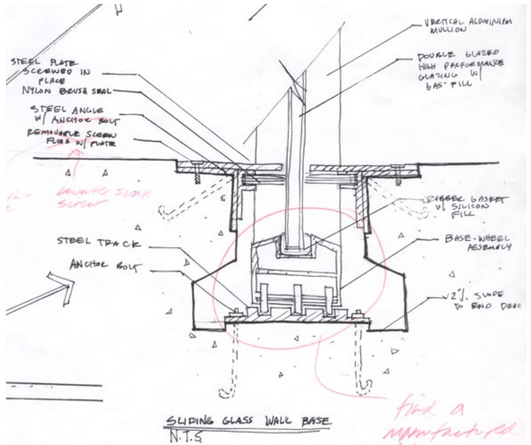


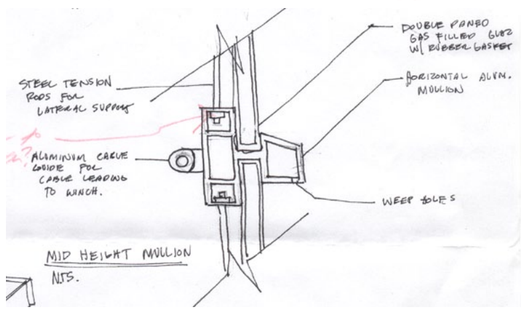



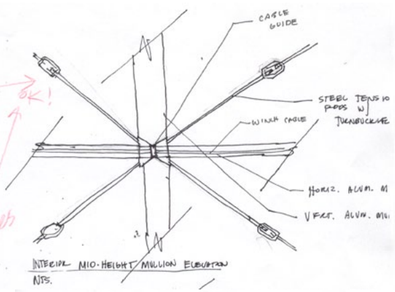
Nighttime Photos

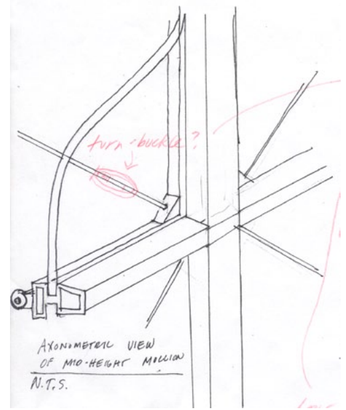


Center For Sustainability - Sliding Glass Wall Detail



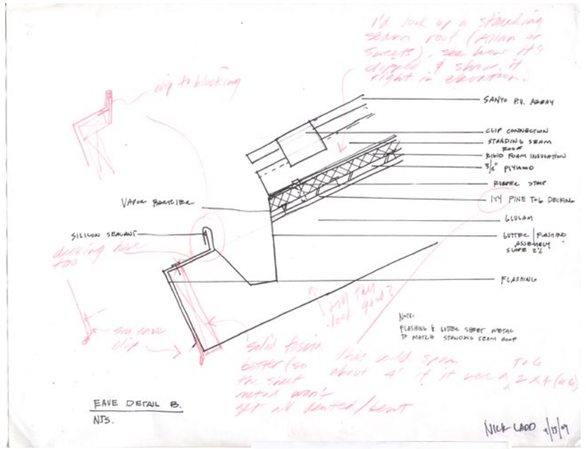


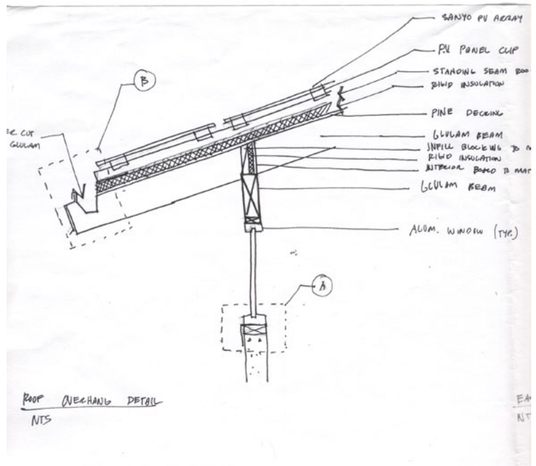


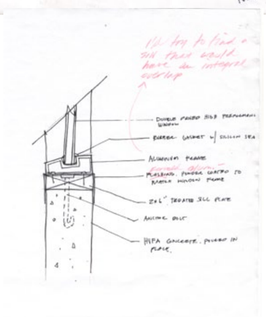


note: details will be revised and finalized, summer 2004

Center For Sustainability - Eave Detail

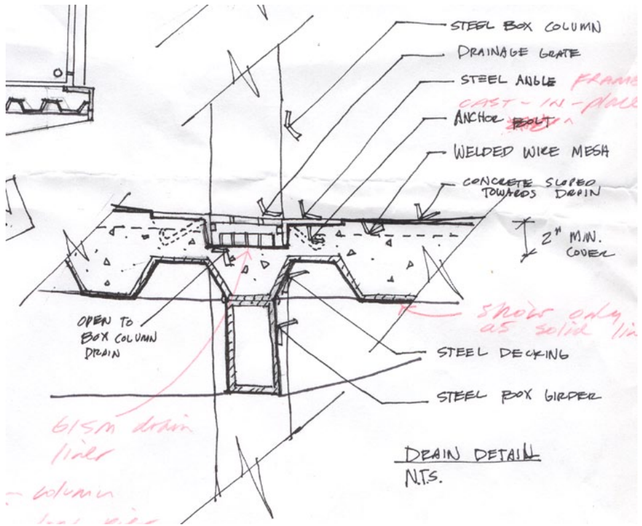


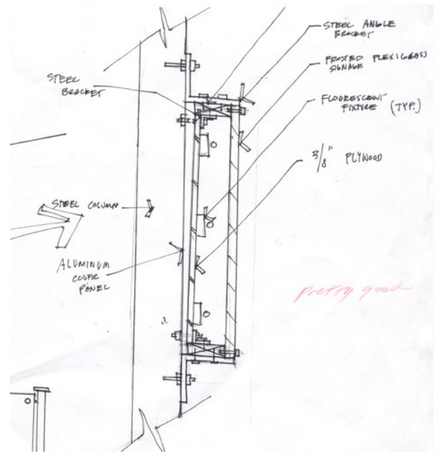




note: details will be revised and finalized, summer 2004

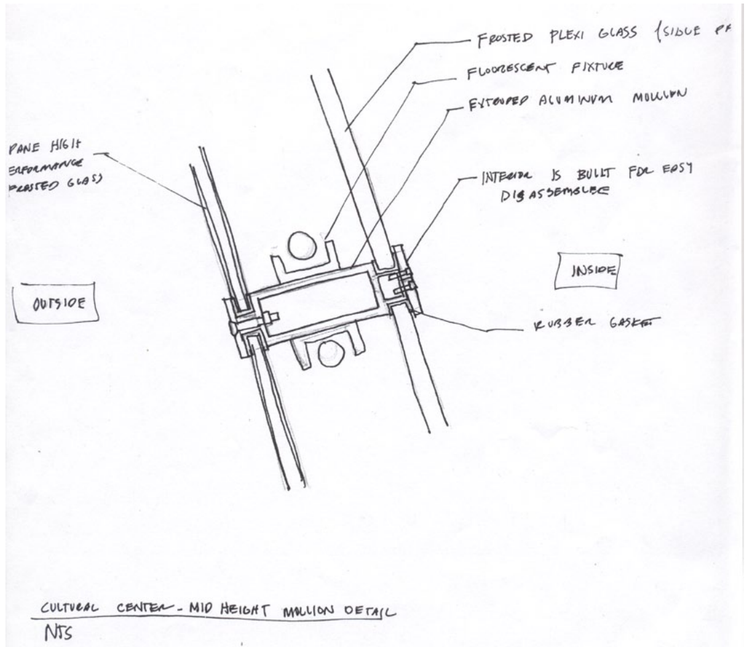
Mixed-Use Building Observation Deck and Sign Details





note: details will be revised and finalized, summer 2004

MOLAA - Curtain Wall Detail



note: details will be revised and finalized, summer 2004

Changing Perceptions

Why Create an Online Component?

With all of the work that was placed into the thesis project it is important to question why more work is needed? To me this answer seemed quite clear; to help further the sustainable cause. Changing people's perceptions is the only hope we have for adopting the ideas about sustainability presented in this book. Education, which relies on efficient communication, must take place in order to change people's perceptions. The internet is the most powerful medium we have to convey communicate to the masses in an easy and interactive manner. It is through the internet that we can convey these messages to people on a global scale. The internet offers a platform for the debate and discussion of current ideas while breeding and encouraging new ideas and thought. People from around the world are able to communicate and give their global and diverse perspectives. This site will not only be a means to distribute my thesis book and the ideas contained therein, but more importantly it will be a global forum where people can discuss sustainability. You can visit it at:

www.nickladd.com

Conclusions

Perfection is something constantly striven for yet rarely achieved. All we can do is try our hardest, learn from the experience, and do better the next time. This idea succinctly summarizes my final impressions about my senior architectural thesis project. During the past year I've struggled in many different ways. The biggest struggle occurred when on one hand I tried to be ambitious and take on as much as a possibly could, while on the other I tried to refine the scale of the project in order to fit within my personal limitations. This balance was never perfectly achieved and as a result has left several shortcomings in my design. Perhaps the biggest thing that dragged down the quality of my project was the attempt to design in detail three individual buildings. This ambitious objective has left me with three buildings that I believe have "good" designs but which are nowhere near the quality I know I can achieve.

By no means however, do I believe that this year was a failure in furthering my education or expanding my growth as a future architect. Probably the greatest lesson learned was the relationship between the places we create and their part in the greater community they are placed. This idea, which is something much of today's architecture lacks, is something that I can bring with me as I enter my architectural career. In addition, I believe the ideas I've developed and attempted to record with this book about sustainability and its redefinition hold promise to help create a better future. As I begin my architectural career it is important to not let the economic forces of the industry make me lose site of my core ideals. I have to further develop and refine these ideas outside of academia and within the constraints of the real world. The project that I've developed fell short of perfectly embodying these ideas. It is my hope that in the future I can more profoundly and successfully apply these ideas to real-world projects.

The ideas I've set to paper in this book were in many ways derived from the important work of others. The references I used to research and create my thesis we indispensable to me and relied on heavily for my project.

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