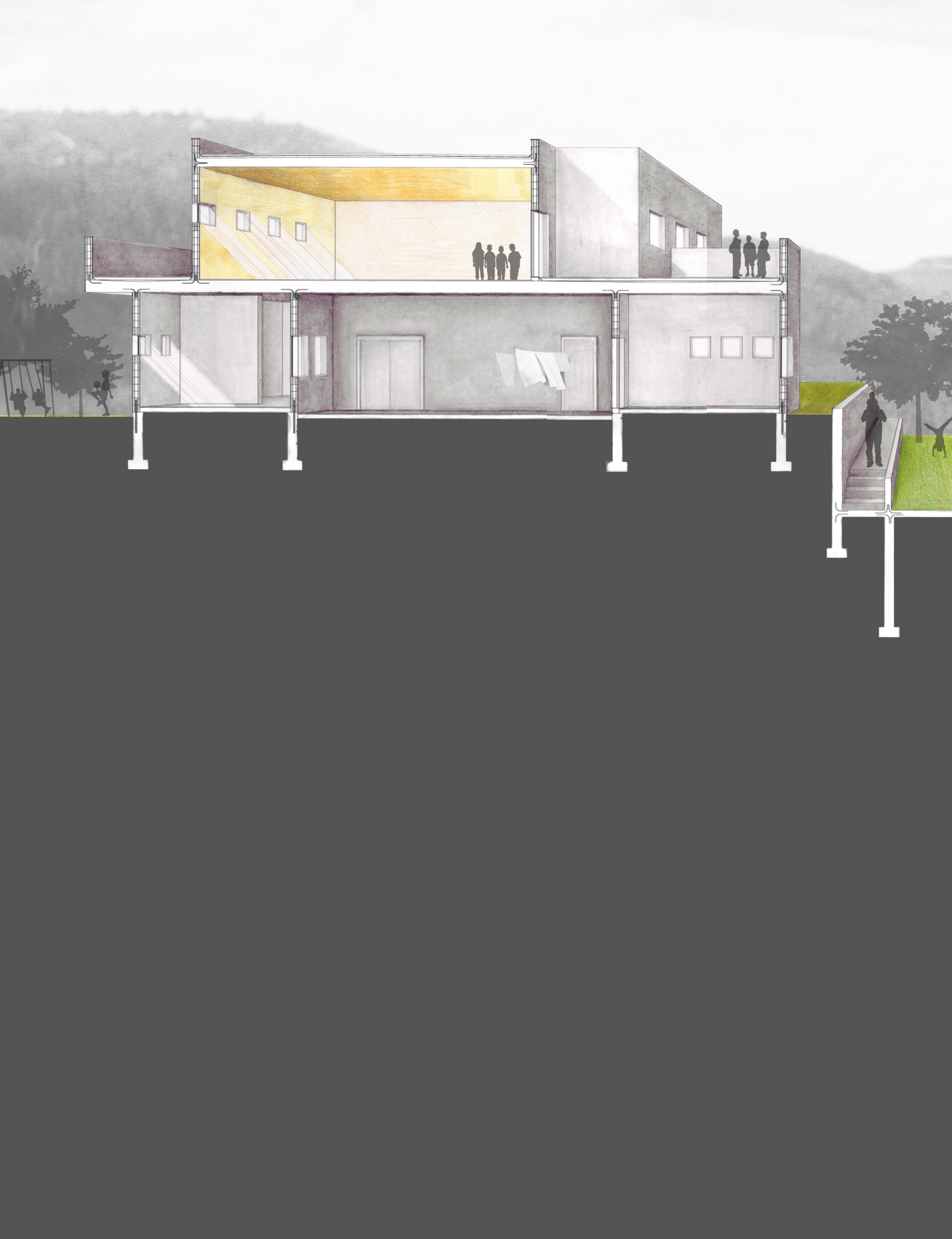
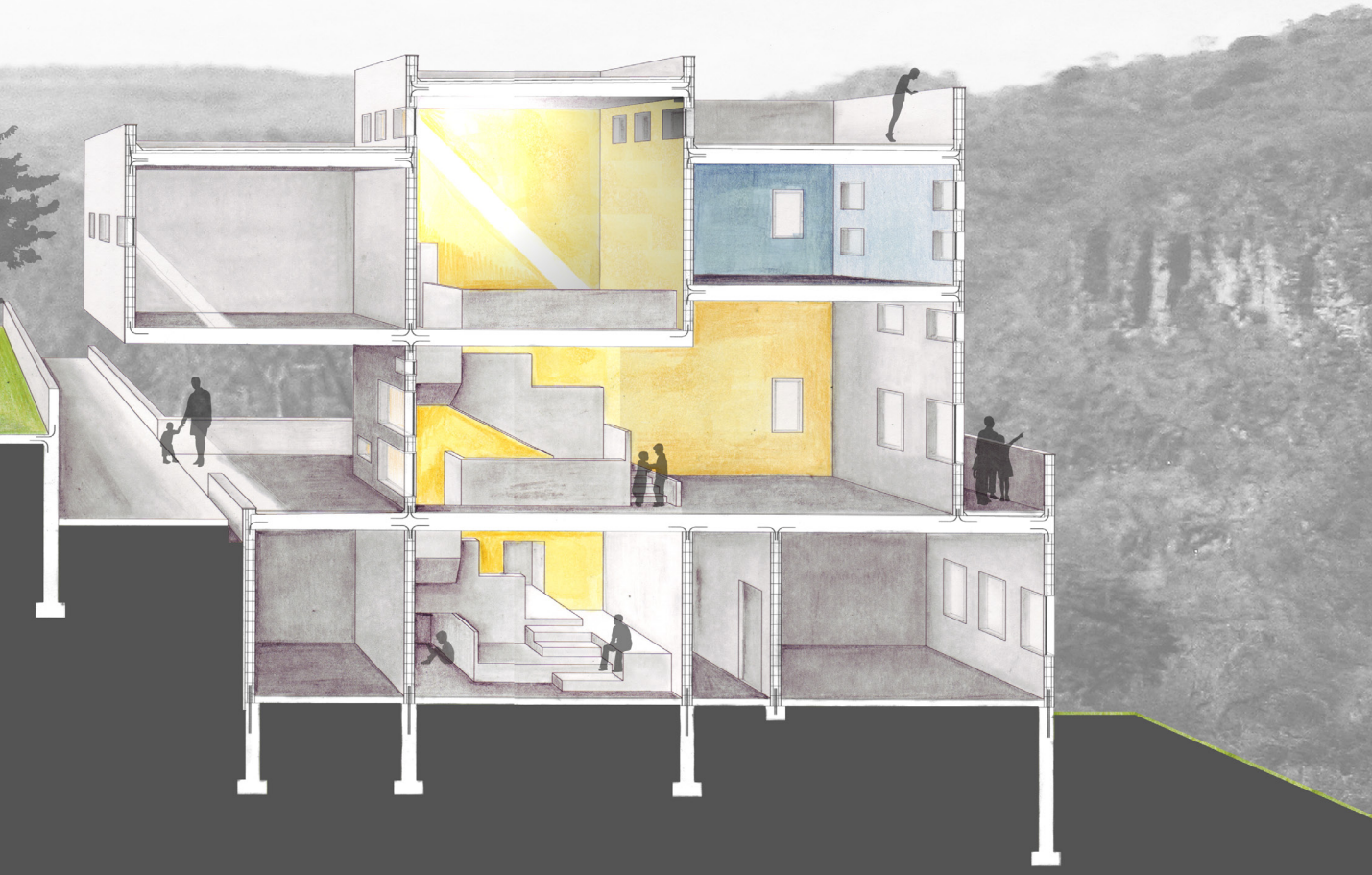
JOURNEYMAN INTERNATIONAL, INC.

DESIGN AND CONSTRUCTION PROPOSAL

ENFOQUE CIUDAD ORPHANAGE

GUADALAJARA, MEXICO





casa hogar

journeyman international, Inc.
A 501(c)3 endeavor

9393 eagle vista way
atascadero ca, 93422

www.journeymaninternational.org
2011

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what is JI?

Journeyman International helps International NGO's design and construct sustainable humanitarian facilities.

why?

Because dentists are not architects.
Because doctors are not engineers.
Because orphanage directors are not construction managers.
Because third world contractors cannot be trusted.
Because sustainable construction fights poverty.

THE IMPACT

"The Journeyman International strategy not only coordinates students to work in an integrated, real-life approach, but also provides opportunities for the student to make a direct humanitarian impact."

-Al Hauck, Department Head
Construction Management
California Polytechnic State University

"Journeyman International empowered our organization, giving us the technical and professional services needed to see our vision succeed. J.I.'s partnership will help us provide full dental services to tens of thousands of Belizeans in the coming years."

-John Look, President
Global Health Services

THE HISTORY

Journeyman International was birthed from a desire to
rebuild the world.

In 2007, a team of students at California Polytechnic State University sat down with a simple vision: integrate the sustainable revolution with humanitarian projects.

Since 2007, J.I. has developed an 'Associate Network' of volunteers who designed, engineered, fund raised, and stacked the bricks of the dental facility which will serve half the country of Belize. This project was a catalyst.

We are just getting started.

July 1, 2011

Enfoque Ciudad
San Javier 244 Colonia El Campanario Zapopan,
Jalisco C.P. 45640,
Mexico

Attn: Mr. Darren Hurst and Mr. Justin Hurst
Executive Board members of Enfoque Ciudad Inc.

Dear Justin and Darren Hurst,

The Journeyman International team has dedicated the past several months to the development of the following design and construction analysis for the Enfoque Ciudad orphanage project in Tonala, Mexico. The proposal was created with two key priorities in mind: enabling the Enfoque Ciudad vision and protecting it's ministry assets. Enclosed you will find the following documents:

- architecture experiments
- case studies
- CHILD and architecture
- child and ARCHITECTURE
- color studies
- contractor/owner contract
- construction estimate
- construction safety plan
- construction schedule
- construction scope analysis
- explore: growth and manipulation
- floor plans
- green design strategies
- guadalajara weather and climate
- hazard mitigation plan
- history of guadalajara
- material cost data
- mexican architecture traditions
- modern orphanage case studies
- place: guadalajara
- process
- program
- quantity take offs
- renderings
- schematic design
- sections
- site analysis
- site logistics
- site plan + landscape
- soils analysis
- stair design
- stormwater pollution prevention plan
- wall detail
- water catchment system

Journeyman International exists to aid non-profits in constructing sustainable humanitarian facilities, and we will assist Enfoque Ciudad during construction to ensure the facility opens on time, on budget, and without legal complications. The team at Journeyman International is thrilled to partner with Enfoque Ciudad in providing relief to the suffering and abandoned through the Tonala Orphange Project. We look forward to the possibility of future collaborations and the development of a long-term partnership. Should you have any questions, please contact the undersigned at your earliest convenience.

Sincerely,

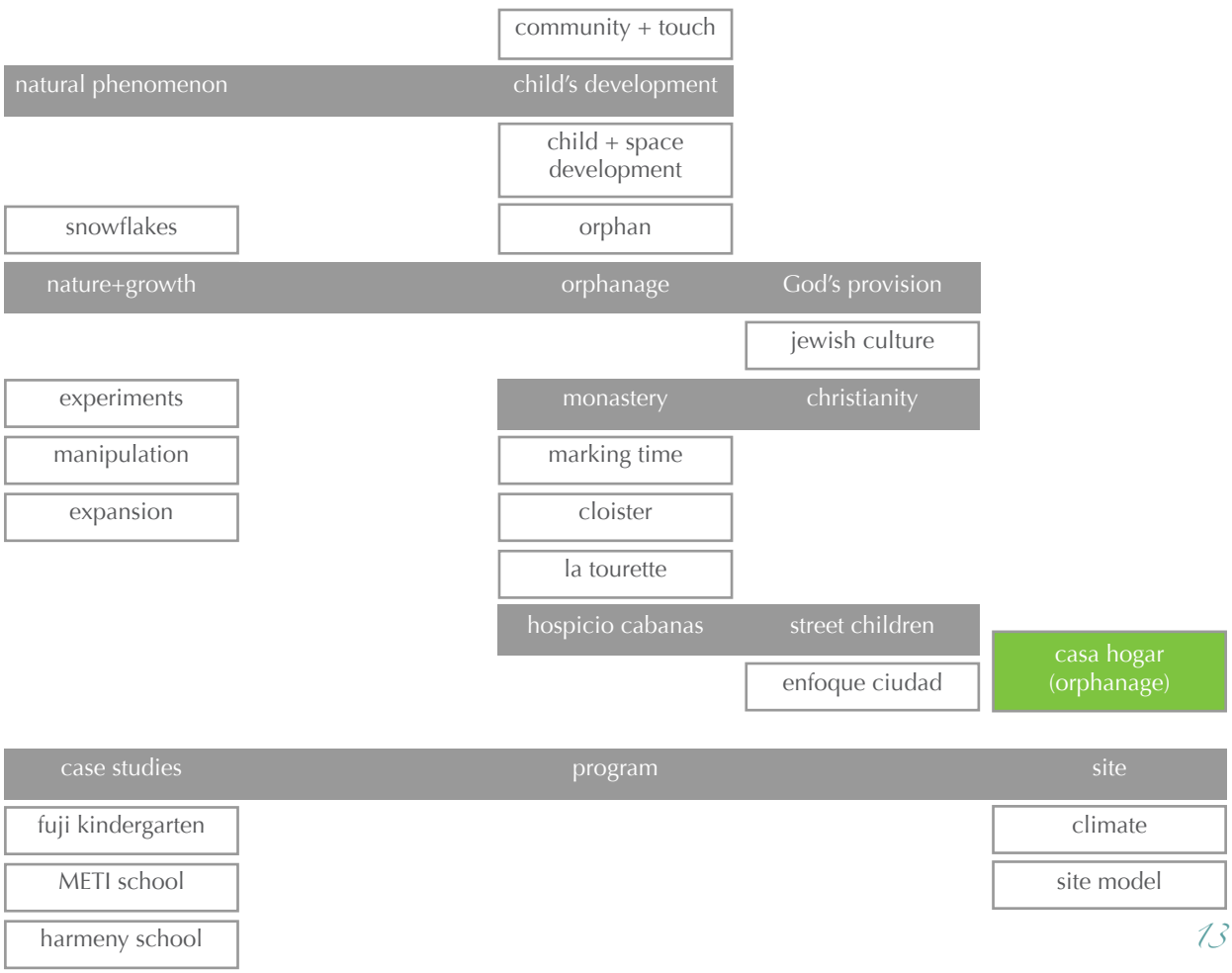
Journeyman International, Inc.

Daniel P. Wiens
President

a note from the designer:

This work is dedicated to Jesus Christ, for whom I am forever thankful and in awe. To my family and friends who have lived life with me and loved me through it. To the Hurst brothers who are laboring in Guadalajara and devoting their lives to teaching about Jesus and helping lost children attain a hopeful future. And to the boys that are sleeping on the streets of Guadalajara who will hopefully find a home.

growth [in] community [in] guadalajara



introduction

LIFE GROWS and develops in two intertwined elements: time and environment. Time is beyond manipulation; environment is not. Time is continuing with a steady rhythm and pace; environment is constantly changing. Architecture holds life within its skin and its significance lies in its ability to manipulate and create influential environments.

Life is a process of growth. Growth's effects are present in everything around us. Many natural processes arrive out of seemingly simple structures, yet under the influence of time and environment manifest into beautiful and complicated entities. These natural processes of growth mirror the development of an individual child, that child in community and that community within the larger cultural context.

Through a study of growth and development within the biological, physical and psychological disciplines, this thesis proposes an orphanage based in Christian faith and hope for the street children of Guadalajara.

The psychological growth and development of children is influenced by their physical experience and conceptual understanding of their environments. A child's development follows a predictable process starting with conception, continuing through infancy, childhood, adolescence and finally arriving in adulthood. Environmental, social and emotional factors are constantly influencing this development throughout the different stages. While this process is intended to be carried out in a family unit, for some children, their development is impacted with the loss of one or both parents. This deeply affects the influencing factors in a child's life, resulting in changing environments.

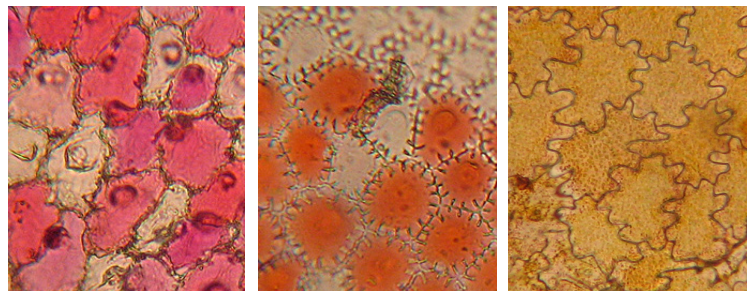
Architecture is the means of manipulating the environment. A child's psychological development is served by appropriately stimulating spaces. Understanding how a child's spatial understanding matures can inform the spatial configurations and material choice to reinforce and challenge their growth. Architecture thus inherits the responsibility to be effective in serving their development. All space facilitates some type of environment; some can evoke an environment of healthy growth and development. For a child who has experienced the loss of parents, an orphanage is a spatial manipulation that seeks in a hopeful manner to serve that child in the midst of a community. The orphanage is an environment in which to grow in the midst of bereavement.

While growth occurs within a space, the space itself can grow and transform. This flexibility allows for multiple uses but also a growth of the physical building as it adapts and configures to immediate and long-term needs. Allowing a child user to manipulate their surroundings presents an opportunity for a variety of constructed

spaces, while also serving the child's spatial development and understanding. Within this space, there is a reflection of values and creation of identity because orphans have lost a significant part of their identity, the connection to a place can create constancy and permanence. The monastery is a building typology that illustrates how values and beliefs are transcribed into built form and connected with a sense of identity.

The process of growth spreads out from the individual child and building to the larger scale of city and culture. A city's growth and development is made up of layers of past memory which presently influences its citizens. Any site has a geographical and regional presence with a history associated with it. This memory informs the current population and the future of the city and its individuals. The growth of the city up to this point, and the continuing cultural and population factors that will drive growth into the future influence the site and in turn, the children.

This orphanage is a manipulation of the environment in such a manner as to serve and positively influence the orphans in Guadalajara. Growth is a phenomenon that is daily occurring in the environment. Its effects can be seen from the smallest formation of a snowflake to the complex process of a child's development and identity. Growth is a process that occurs in time and is influenced by the effects of the environment. Architecture is the means by which to manipulate the environment.



Flower petals at a microscopic scale: rose, geranium and marigold

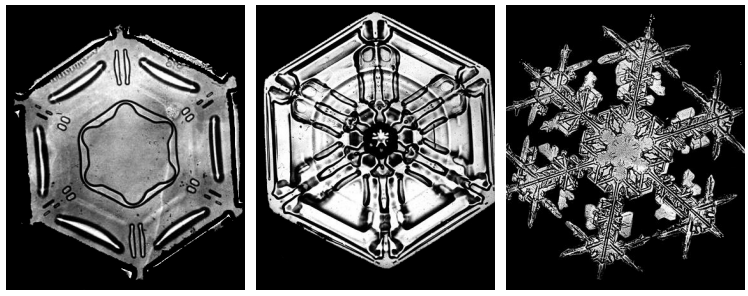

explore
growth + manipulation

growth

1. a progression from a simple to a more complex level
2. increase: a process of becoming larger or longer or more numerous or more important
3. emerging: the gradual beginning or coming forth

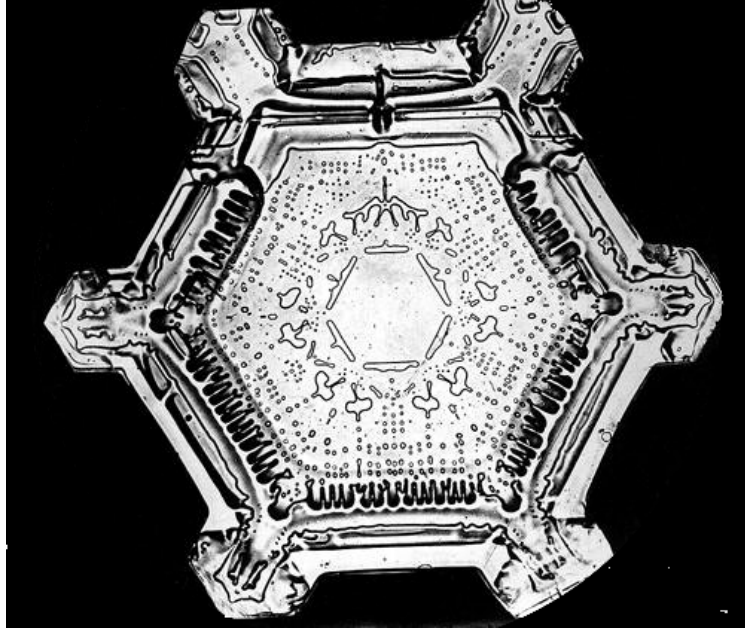
GROWTH is inherently tied to the concept of time, for growth implies that there is a process involving physical addition, knowledge accumulation or increased complexity from one condition to another. Any natural process illustrates the phenomenon of growth, and perhaps because of this, it is often simplified and overlooked. However, even while it is a constant presence, there are deep intricacies and structures embedded within it's commonality.

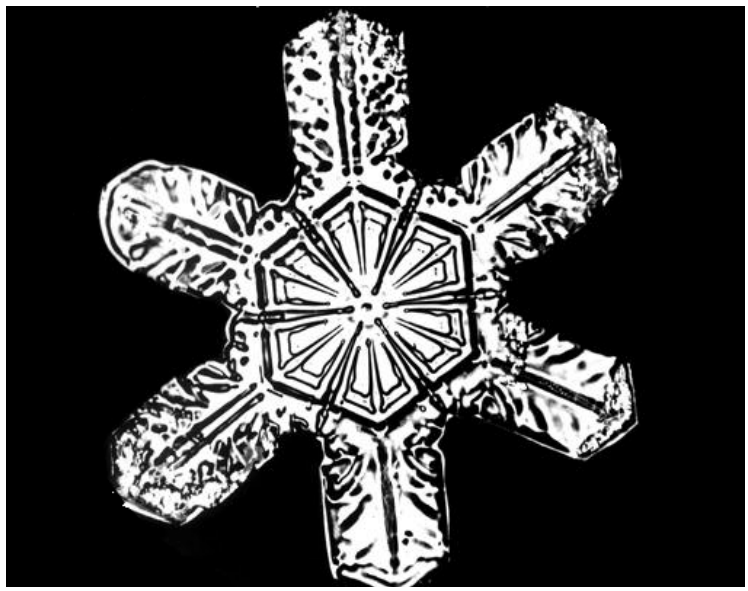
Growth is paradoxical. It has a certain repetition and consistency that can be measured and quantified coupled along with an intimate and individual aspect which generates a qualified uniqueness. Biological life emerges from a foundation of strict requirements and cellular standardization, resulting in somewhat surprising beauty

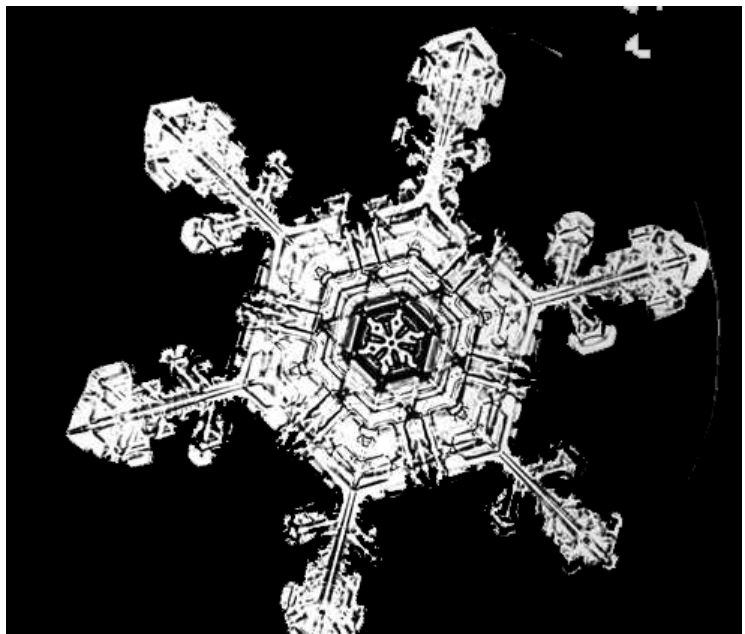


and variety. A particular cell is consistent in its shape, size, contents and function. And yet within this structure there is the possibility of infinite outcomes. In his book *The Form of Function*, Farshid Moussavi illustrates this concept through the formation of snowflakes. He describes how all snowflakes are essentially built out of the simple and prevalent water molecule: two hydrogen atoms and an oxygen atom. This molecular configuration, under the influence of temperature, humidity, wind and position, creates a structure out of which a myriad of forms are generated. Simplicity gives way to an increasing complexity and beauty as the water passes through different environments and emerges as a completely different form having little in common, except memory, with what it once was. Water vapor forms into hexagonal prisms which grow into plate or columnar structures.[1] As the snowflake grows, branches sprout off of the corners. As water vapor passes through the air, it adds to the emerging growth. The repetition of this addition and branching process produces an ice dendrite. The specific formation and growth pattern is influenced by the surrounding environmental factors. Lower atmospheric pressure produces less dendrites, while higher atmospheric pressure produces more. Also, simpler forms occur in low humidity environments, and more complex with higher humidity.[2]

A careful study of this internal structure not only reveals new and far greater elegance of form than the simple outlines exhibit, but by means of these wonderfully delicate and exquisite figures much may be learned of the history of each crystal, and the changes through which it has passed in its journey through cloudland. Was ever life history written in more dainty hieroglyphics! William Alwyn Bentley[3]

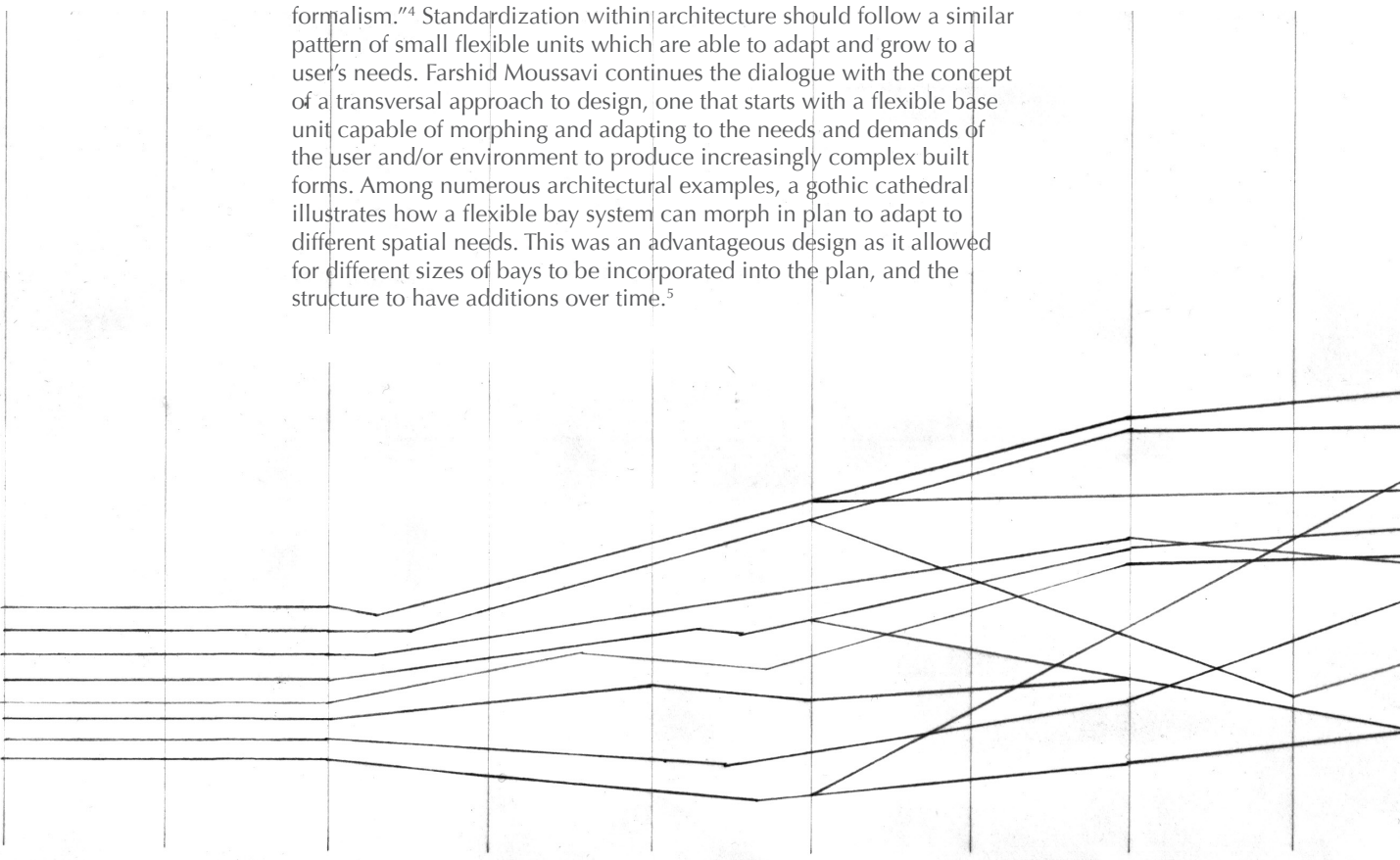


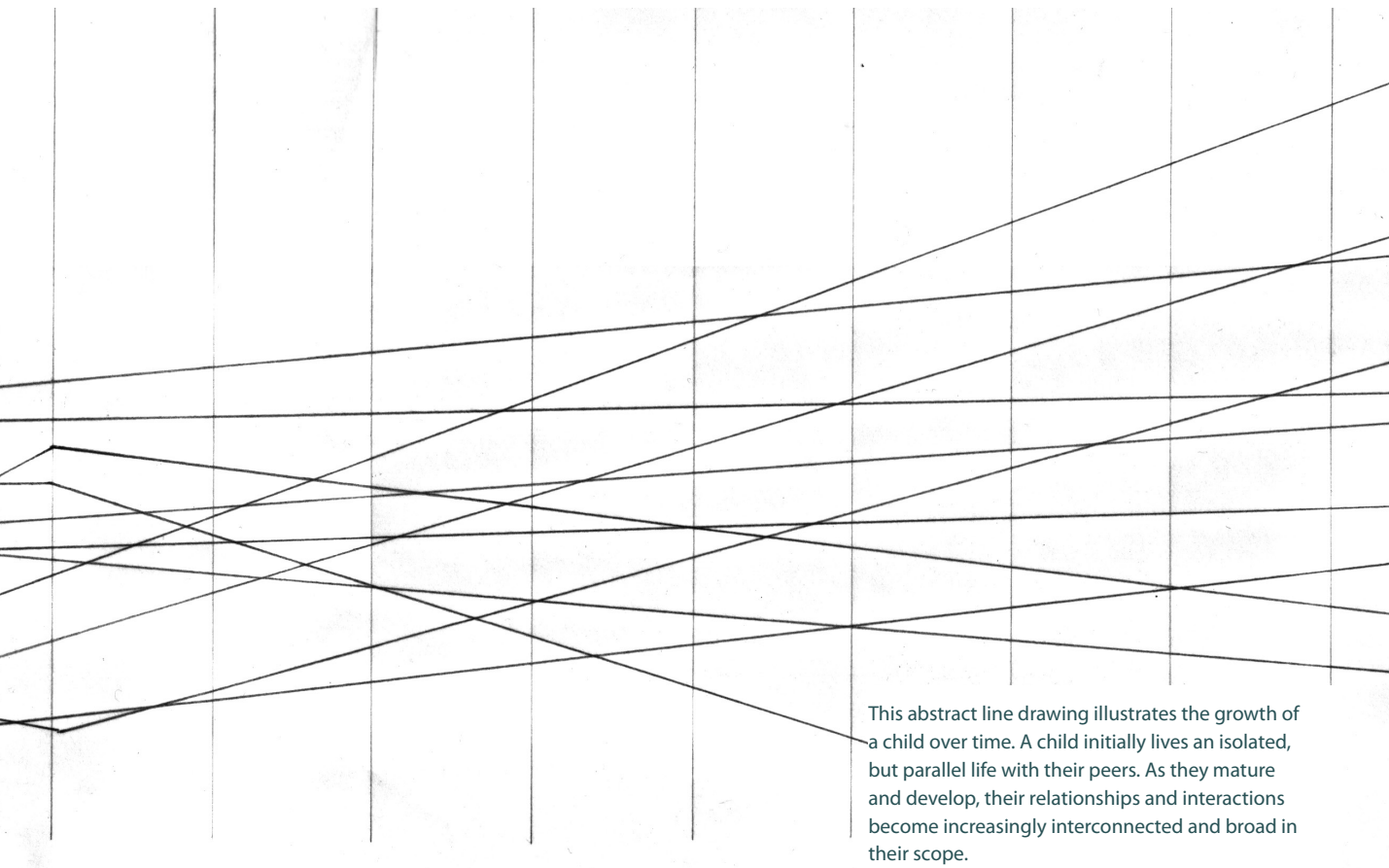




Trees illustrate this example with a less transient structure. Trees of the same species have the same elements. Their manner of maturation will occur within a similar time frame. In one sense, they are very much the same; in another, very dissimilar. Their process of growth under the influence of environment and time has produced two unique trees. Their cellular structure and base elements are the same. Their appearance is different. In addition to this qualified uniqueness, the small parts are not singularly focused to facilitate one function or need but fulfill numerous requirements with one form. The root system of a tree provides not only a structural foundation from which the tree can grow, but is also the means of collecting and transmitting nutrients to the tree.

Natural structure can inform a building's structure and form. However, unlike many natural structures whose growth is guided with seemingly little choice or option, humanity has the opportunity of shaping and manipulating the structure of their environments. Alvar Aalto describes how standardization occurs in the smallest cellular structure, but gives rise to "…millions of elastic combinations in which there is no trace of formalism."[4] Standardization within architecture should follow a similar pattern of small flexible units which are able to adapt and grow to a user's needs. Farshid Moussavi continues the dialogue with the concept of a transversal approach to design, one that starts with a flexible base unit capable of morphing and adapting to the needs and demands of the user and/or environment to produce increasingly complex built forms. Among numerous architectural examples, a gothic cathedral illustrates how a flexible bay system can morph in plan to adapt to different spatial needs. This was an advantageous design as it allowed for different sizes of bays to be incorporated into the plan, and the structure to have additions over time.[5]

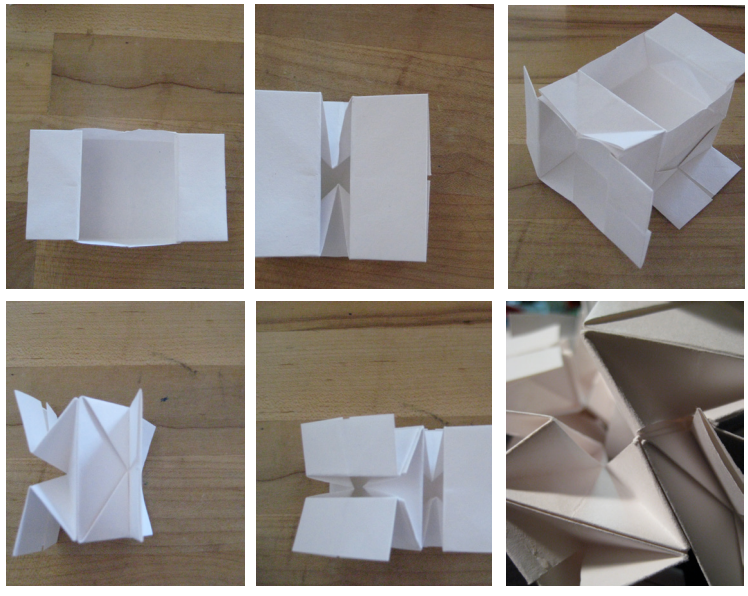


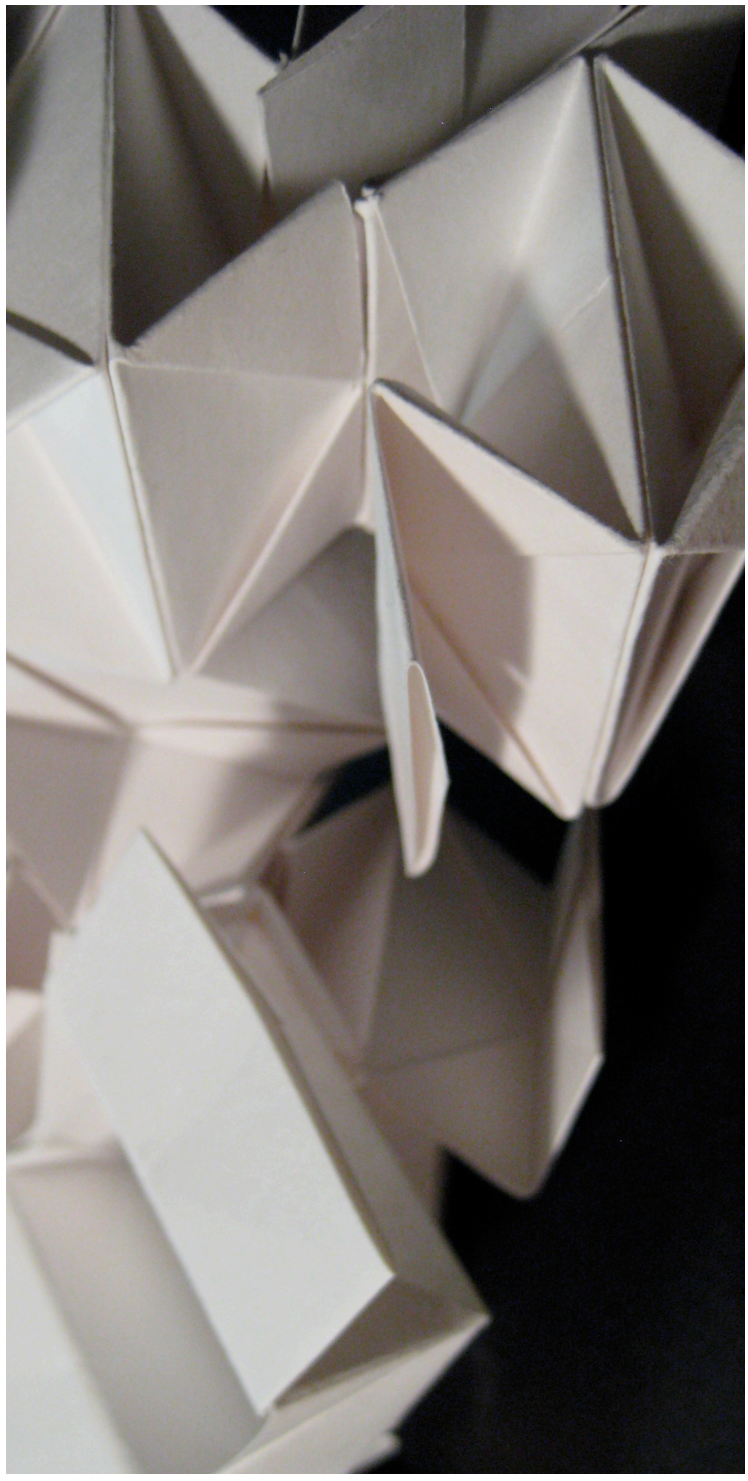


This abstract line drawing illustrates the growth of a child over time. A child initially lives an isolated, but parallel life with their peers. As they mature and develop, their relationships and interactions become increasingly interconnected and broad in their scope.

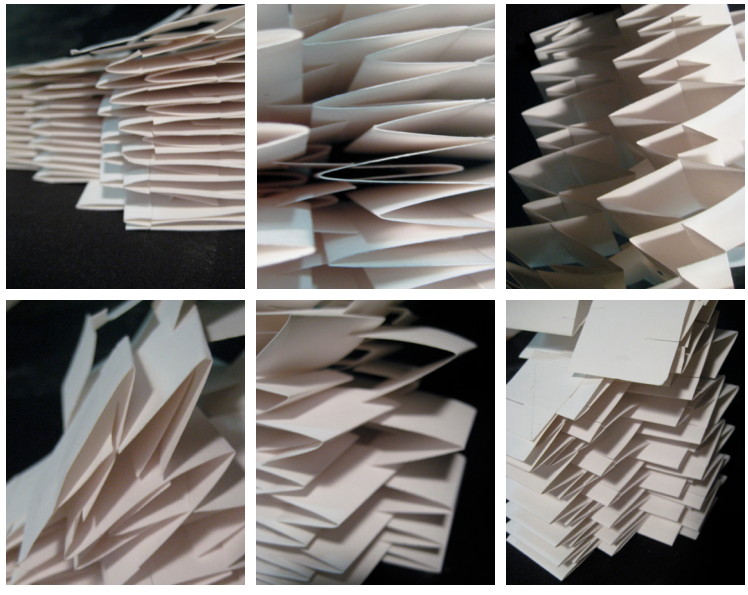
experiments

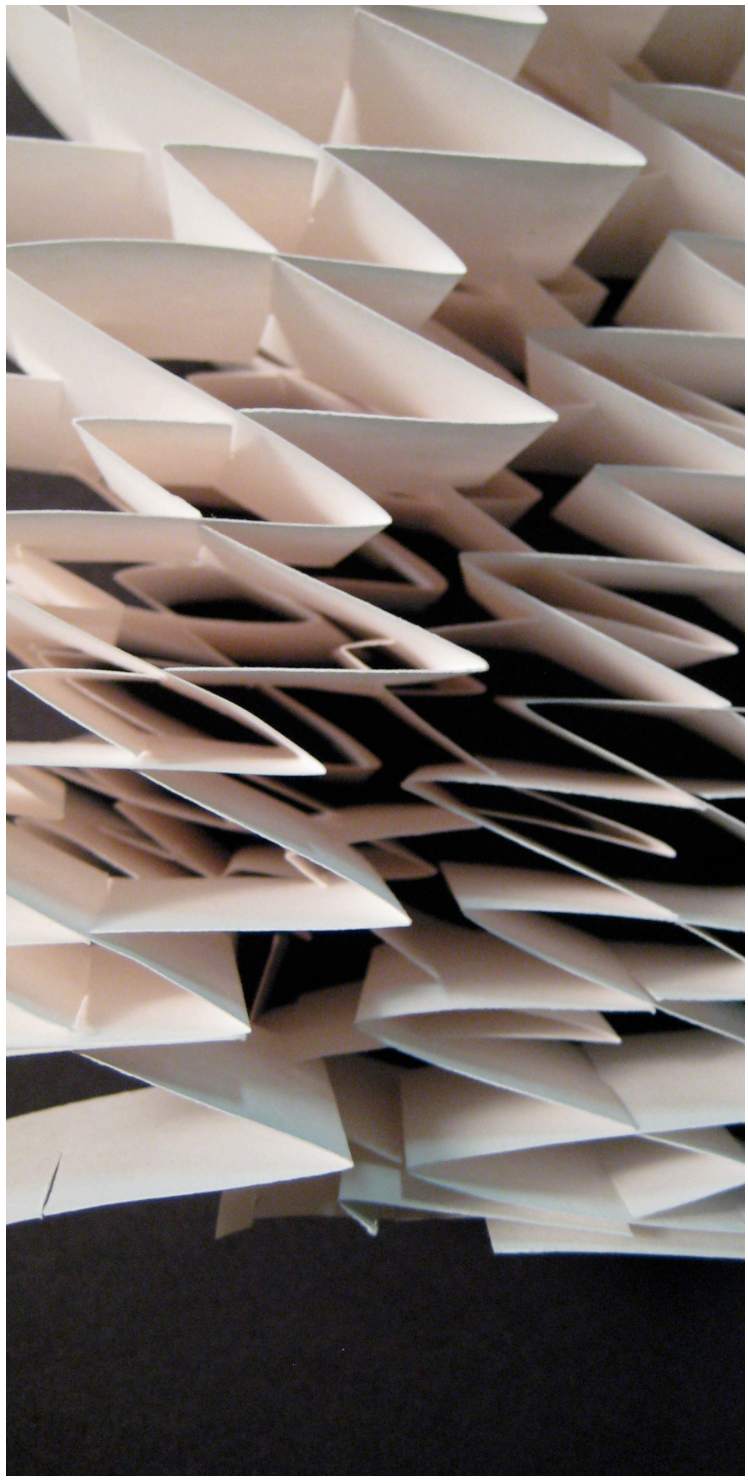
Exploring the realm of natural growth and their effects on architectural thought lead to several experiments which attempted to place these ideas into three dimensional forms. Standardized, natural structures giving rise to complexity fueled the first spatial experiment. A base unit was created through folding origami boxes. These structures have inherent complexity and beauty in and of themselves. They can also be combined in various configurations to create a more complex and less straightforward series of spaces and structures. The entire form can be folded into a flat plane. Once the boxes begin to be opened, the space continues to unfold, never arriving at any static point, but constantly changing and morphing while staying within the original structural parameters. The form explored complexity generated out of a repeated entity as well as how the introduction of a human element might manipulate and inform the space. This first exploration lead to





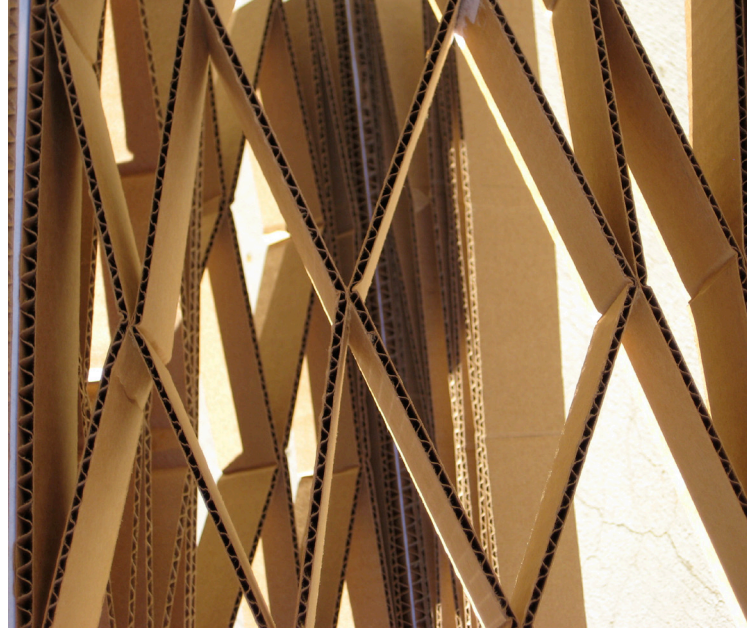
the second. Instead of boxes as the base module, a series of identical paper strips were cut and folded. The only variable introduced was the length and placement of the slots. As strips were connected and added, an organic form emerged. There is the potential to continue the module addition to an infinite number; a simple module giving rise to a manipulative and complex structure and form.

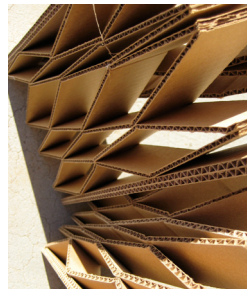


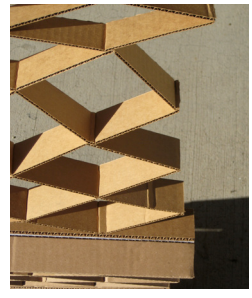


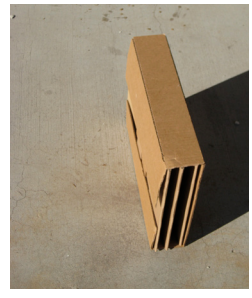
The third experiment adapted the first two experiments of manipulation and base structure into a 1:1 scale. A bench was created out of cardboard that was connected and folded in the same manner as the second experiment. The final experiment continued the exploration at a larger scale, and incorporated expansion and hinging. The form has no set orientation or configuration. It can be shifted and molded into numerous forms, and suggests that the form can continue additions to a variety of sizes and lengths, while being constantly changed and manipulated.

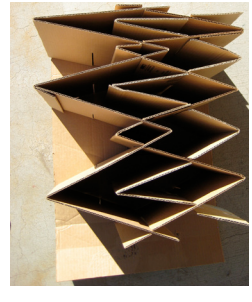
The explorations were applied further in the design of a child's piece of furniture. The piece was conceived as a way of allowing a child to explore and manipulate a piece of furniture to suit his or her needs or desires. A child experiences the world around them through their bodies. As they mature, their spatial understanding moves from being affected by their environments to manipulating their situations. The furniture responds to the child's development in two ways. The first is there is a set number of configurations. The base structure of the piece is a series of five panels connected to each other through fabric joints. The edges of the panels are faceted in such a way that they can be configured into a table and then into a chair. This allows for the child to explore the piece. The second way in which the furniture responds to a child's development is through the flexibility of the joints. While there are three predicted arrangements in the form and construction of the hinged joints, the nature of the hinged fabric joints also allow for numerous explorations and configurations.





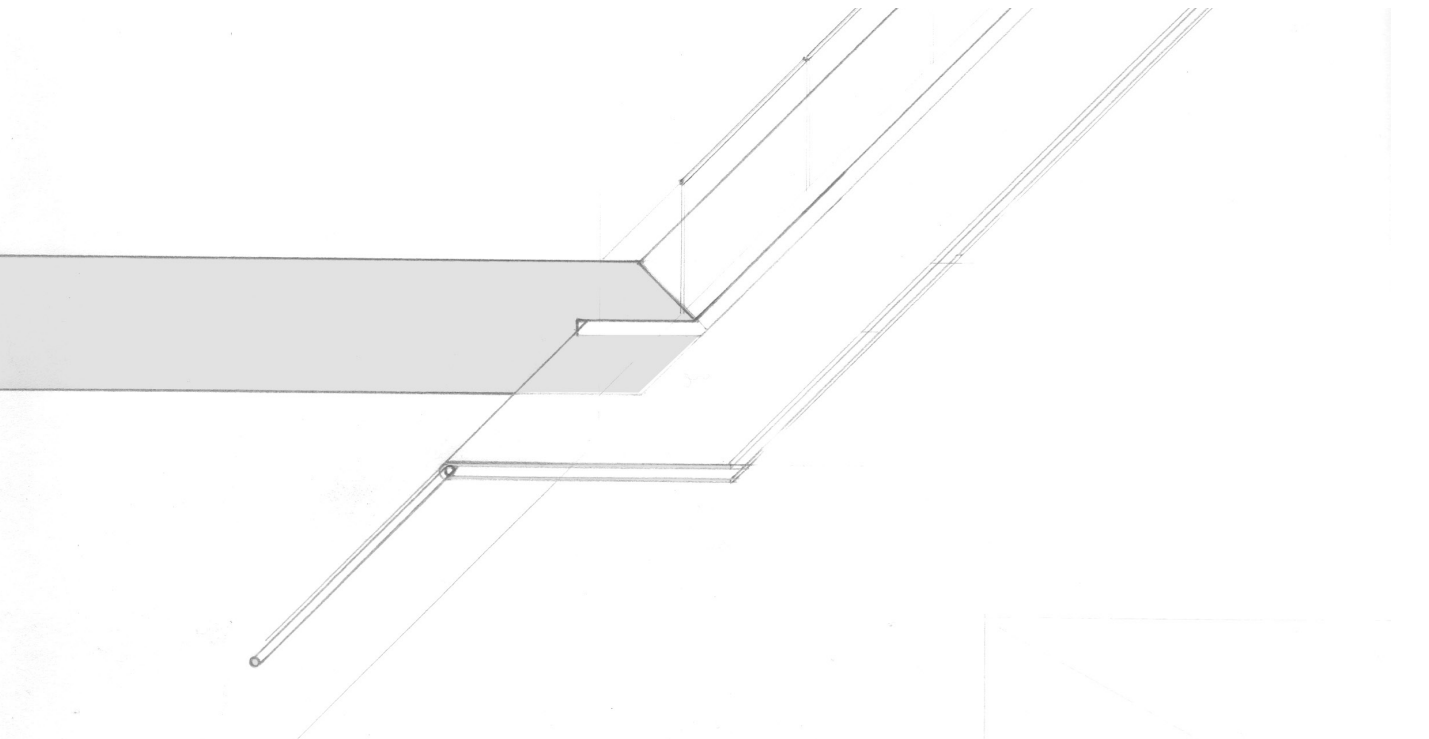






maniP[u]LAYtion:
child's furniture

vellum



A monastic day is broken up by communal gatherings. The day is punctuated by calls to prayer which are often followed by a shared meal.

Breakfast was a silent meal at the monastery I visited. The morning was silent except for the bells and lauds.

In between prayers and meals, the brothers had a free schedule and could pursue their passions. One of the brothers is known for his calligraphy. Another helps in the local community, and others give spiritual council to church members.

7.30 bells ring

laud [lawd]

verb

1. **to praise**; extol

noun

2. a song or hymn of praise
3. lauds (used with a singular or plural verb) Ecclesiastical. A canonical hour, marked especially by psalms of praise, usually recited with matins

8.00 breakfast — breakfast

12.00 bells

12.30 dinner — lunch

5.30 bells ring

vesper [vesper]

noun

1. vespers (sometimes with a capital letter) Ecclesiastical
   a. a religious service in the late afternoon or the evening
   b. the sixth of seven canonical hours, or the service for it, occurring in the later afternoon or evening
   c. **evensong**

6.30 — dinner

8.00 bells ring

compline [kom-plin]

noun

Ecclesiastical. the last of the seven canonical hours, or the service for it, originally occurring after the evening meal but now usually following immediately upon vespers

marking time with song

a benedictine monastery

For my 24 hour site exploration, I spent a day and night at a monastery in Santa Barbara, CA. In the earlier portion of my research, I began looking at monasteries as a building type that embodied meaning along with communal living-two things I felt were important in studying the spatial needs of an orphanage. I was unsure of what knowledge would be collected through my time there. By the end, I was deeply impressed by the brother's dedication and pace of life. The regularity and rhythm of daily life was structured through the times they spent together in the chapel chanting prayers. This concept of marking time and establishing a structure to the passing of time, informed my following light experiment, and lead me to consider what aspects of architecture can physically mark time's passage, as well as create space for gathering and communing.

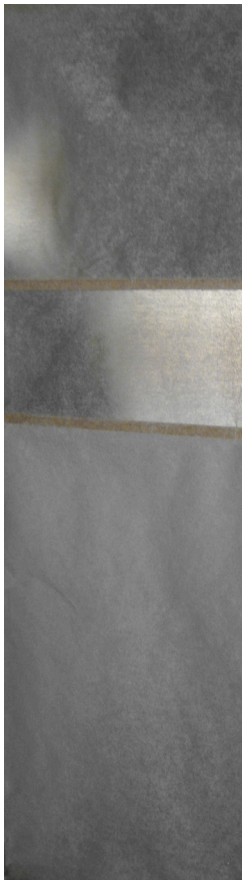
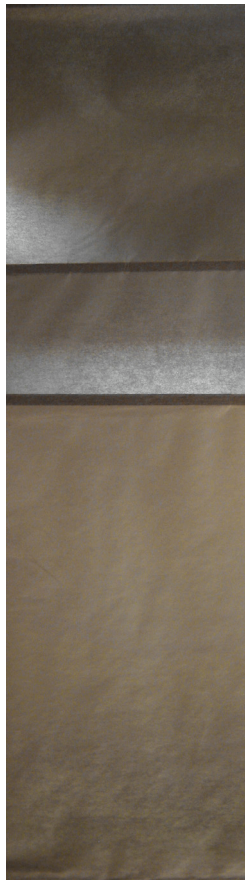
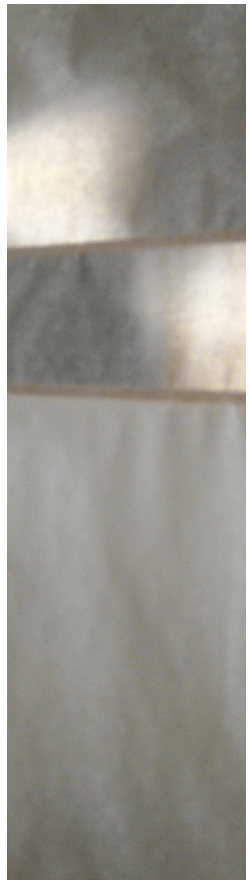
I arrive at a monastery. Bells ring and I go to the small chapel. The brothers enter dressed in white robes. They are quiet. Brother Williams stands and all rise with him. A single note punctuates the morning air, the first sound that has been made since sunrise. A single chant. Then joined by the others. Brother Williams closes his eyes and looks to heaven as he sings. He clutches his liturgy and holds it as it is very precious. They are practicing The Presence. He is always here. They are intentional with their lives. Their pace of life is unhurried, and so marked by this regularity.

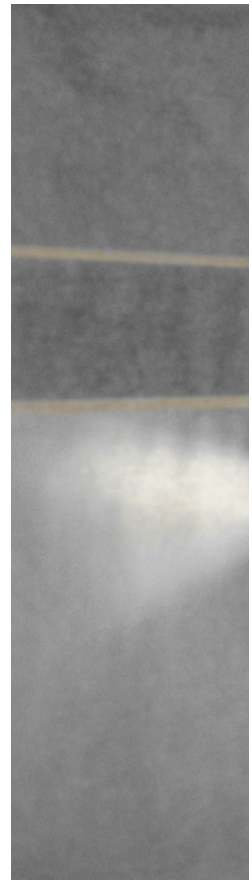
Life is marked by the noise and silence. A bell rings and calls the brothers and guests to prayers. A bell rings and invites them to partake in a meal together. Silence is most prevalent, which makes the songs and words said all the more important.

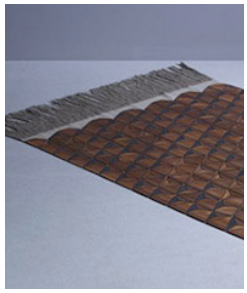
The songs are not merely a series of notes. They mark the time of the day. Whether it is morning or evening or night. They are also a means of instruction. The lauds encourage praise and remembering God's faithfulness and commitment to living the day well and intentional. The complines are quiet and still, thanking God for the work of the day, and asking for rest and peace through the night. The songs are also a means of community. A brother begins and then is joined by his brothers. There is an exchange between the one song and the corporate song.

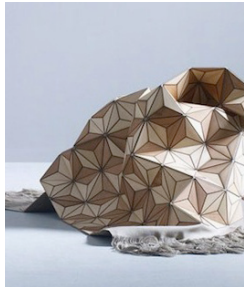
Life reflects values. Everything is embedded with meaning. The structure of the day, the things that are said, the manner in which the day is spent.

In the monastery, the day was punctuated with calls to prayer. The bells created a structure from which the rest of the day's activity hung. Just as the chant marked the day, this light box marks the passing of time through light. This light box is made up of three chambers with slots in each side of the box. The box is opaque except for the back side, and as light filters through the slots in the box, qualities of light are projected on the back transparent screen. The chambers are visually separated, allowing light to map across the back face as the light position and qualities change throughout the day.







carpet wood by Elisa Strozyk

This wooden carpet is made up of small pieces of wood, configured in such a way that they can move and fold into interesting forms. Significance: folding and becoming spatial from a two dimensional plane.

http://www.boewer.com/#/en/furniture/wooden-carpet/wooden-carpet-a.html

softwall + softblock modular system with LED lighting by molo design

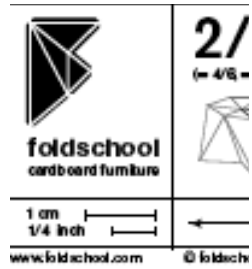
This is a flexible wall system that is made out of honeycomb paper. It allows for a user to manipulate interior space to create more intimate arrangements. The form can also be lit and so act as a light fixture as well. Significance: User-created space.

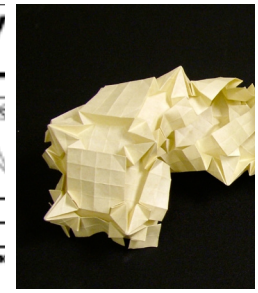
http://www.designerpages.com/products/555701-softwall-softblock-modular-system-with-LED-lighting

solar pavilion 3 by
situ studio

This solar pavilion was designed and fabricated by situ studio. The base pieces are easy to move and put together, and the design morphs as it is assembled by the users.
Significance: User input on the design.

http://www.aiany.org/eOCULUS/newsletter/index.php?s=stuy

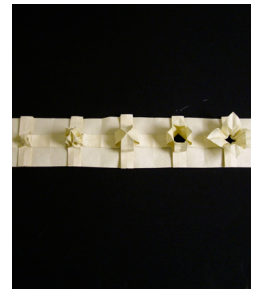


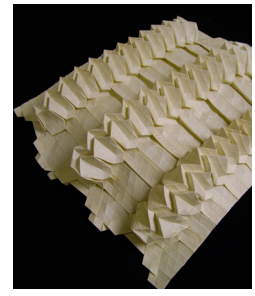


foldschool by Nicola
Enrico Stäubli

These cardboard child furniture patterns are free to the public and start a dialogue between design and production. The designs are created to utilize standard sheets of cardboard and can be assembled quickly and easily.
Significance: Ease of production and user assembly.

http://www.designerpages.com/products/555701-softwall-softblock-modular-system-with-LED-lighting





folded paper
by Eric Gjerde

This paper origami is folded by Eric Gjerde.
Significance: space that is created out of a two dimensional surface.

http://www.flickr.com/photos/origami/

child + architecture

child

A child is needy and vulnerable. Unable to easily fend for themselves, and not yet mature to properly assume adult responsibilities, they need intentional and loving care. For an orphan, this responsibility of care is removed and fractured. Throughout history, the Church has taken the role of guardian to those orphaned and abandoned. In James, religion is described as "…visit[ing] orphans and widows in their trouble, and to keep oneself unspotted from the world." (James 1:27) Integral in Christian theology is the imitation of Christ's life on earth, desiring to give the grace and mercy that He gave to the less fortunate. The plight of orphaned and abandoned children in Mexico is a needy recipient of such grace. The solution is not one which is easily administered. Instead, it requires a dedicated, communal investment in the child's life and an investment in the physical environment which the child will grow and develop within.

God's provision

For a Christian, James 1:27 carries huge implications as to how a follower of Jesus is to conduct his or her life. It rebukes the idea that one can merely talk about following Jesus with few actions to accompany it; caring for others is not merely encouraged but is considered a natural result of faith. From the beginning of Jewish law, there was built-in provision for underprivileged. In the book of Deuteronomy, which describes the laws given to the Jews by God, the Jews are instructed to harvest their crops in a specific manner. "When you gather the grapes of your vineyard you shall not glean it afterward, it shall be for the stranger, the fatherless, and the widow." (Deuteronomy 24:21) Yet even before this provision was established in the Jewish culture, God Himself was provisional. When He revealed His character throughout the scriptures, He revealed Himself as a

Justin and Darren Hurst eating a meal in an orphanage where they are interning in Guadalajara.

"Pure and undefiled religion before God and the Father are this: to visit orphans and widows in their trouble, and to keep oneself unspotted from the world." James 1:27

Father of the fatherless. Numerous times throughout the Old Testament, He is praised and worshipped for being a Father, as in Psalm 68:5 "A Father of the fatherless, a defender of the widows, is God in his holy habitation." And Psalm 10:14 "But you, O God, do see trouble and grief; you consider it to take it in hand. The victim commits himself to you: you are the helper of the fatherless."

Out of a desire to reflect God's character in their own lives, the Jewish (and later Christian) adherents were exhorted to care for the defenseless and compromised. Isaiah 1:17 says "Learn to do good; seek justice, rebuke the oppressor; defend the fatherless, plead for the widow." Similarily, Isaiah 58:6-7 says, "Is this not the fast that I have chosen: to loose the bonds of wickedness, to undo the heavy burdens, to let the oppressed go free, and that you break every yoke? Is this not to share your bread with the hungry, and that you bring to your house the poor who are cast out; when you see the naked, that you cover him, and not hide yourself from you own flesh?"

Hundreds of years after these laws were given, Jesus, the Son of God, came as the Savior of the world. For those that believe in Jesus as the Savior of the world, He is Father, and they are children. When a Christian is concerned about the welfare of an orphan, they are mirroring and reflecting what they themselves have experienced. Having received Jesus as their Savior and Lord, they are adopted as children. In Romans 8:15 it says, "For you did not receive the spirit of bondage again to fear, but you received the Spirit of adoption by whom we cry out, 'Abba, Father.'" Experiencing this adoption spurs a desire to extend a similar grace to those in need.

enfoque ciudad

Enfoque Ciudad (City Focus) is a nonprofit organization that seeks to "…impact the youth of Mexico by the gospel to see people meet Jesus and in turn live new lives of loving God and their neighbors."[1] Having chosen to follow Jesus, they desire to share that same hope and grace with the orphaned and abandoned children in Guadalajara, Mexico. Enfoque Ciudad was started by Eric Doster along with Darren and Justin Hurst, all of whom graduated from California Polytechnic State University. Darren and Justin are currently living in Enfoque Ciudad,

interning with an orphanage with the desire of opening their own. They have lived with these children and have acquired first-hand experience into what is required in an orphanage. Darren says that the "…primary problem with orphanages is not adequate food and shelter, it's kids walk[ing] into the real world at 18 with zero future ahead of them. Our vision is that these children would lead lives with a future, as college students and engineers who enter the real world and make an impact." Justin comments on how challenging but rewarding the process can be: "We are traveling down a road few venture: rescuing street kids and at-risk youth in Mexico. We aim not only to feed and clothe kids, but to give meaning and hope to those who once lived only in despair."

street children

There are 1,400,000 orphans in Mexico[2]. Of these children, not all of them have lost both parents. There is no foster care system in Mexico, so some children who live in orphanages have been brought there by the equivalent of social services, or were abandoned by their parents because of a lack of resources. Street children make up a portion of this demographic and are the focus of Darren and Justin's future orphanage. UNICEF defines three types of street children. The first are those who live and work on the street and have either run away or have been abandoned by their families. The second are those who work in the street and spend most of their time in the street, but return to their families periodically. The third group consists of those who live and work with their families in the streets. They are often between six and eighteen years of age, and are vulnerable to abuse and addiction.[3] They are also recruited and used by the drug cartels as messengers, which results in the children themselves becoming addicted to hard drugs. Recently, the Mexican military was looking for a hit man associated with a drug cartel who was only twelve years old.[4] It is estimated that 90% of them are addicted to inhalants, and likely half of them have been sexually abused. They are locked into a vicious cycle and have no hope for the future. Within the State of Jalisco there are an estimated 1,200 to 2,500 street children with their populations mostly centered in the large metropolitan areas of Guadalajara, Puerto Vallarta and San Juan de los Lagos.[5]

oikos

These children have been stripped of their family community, and are

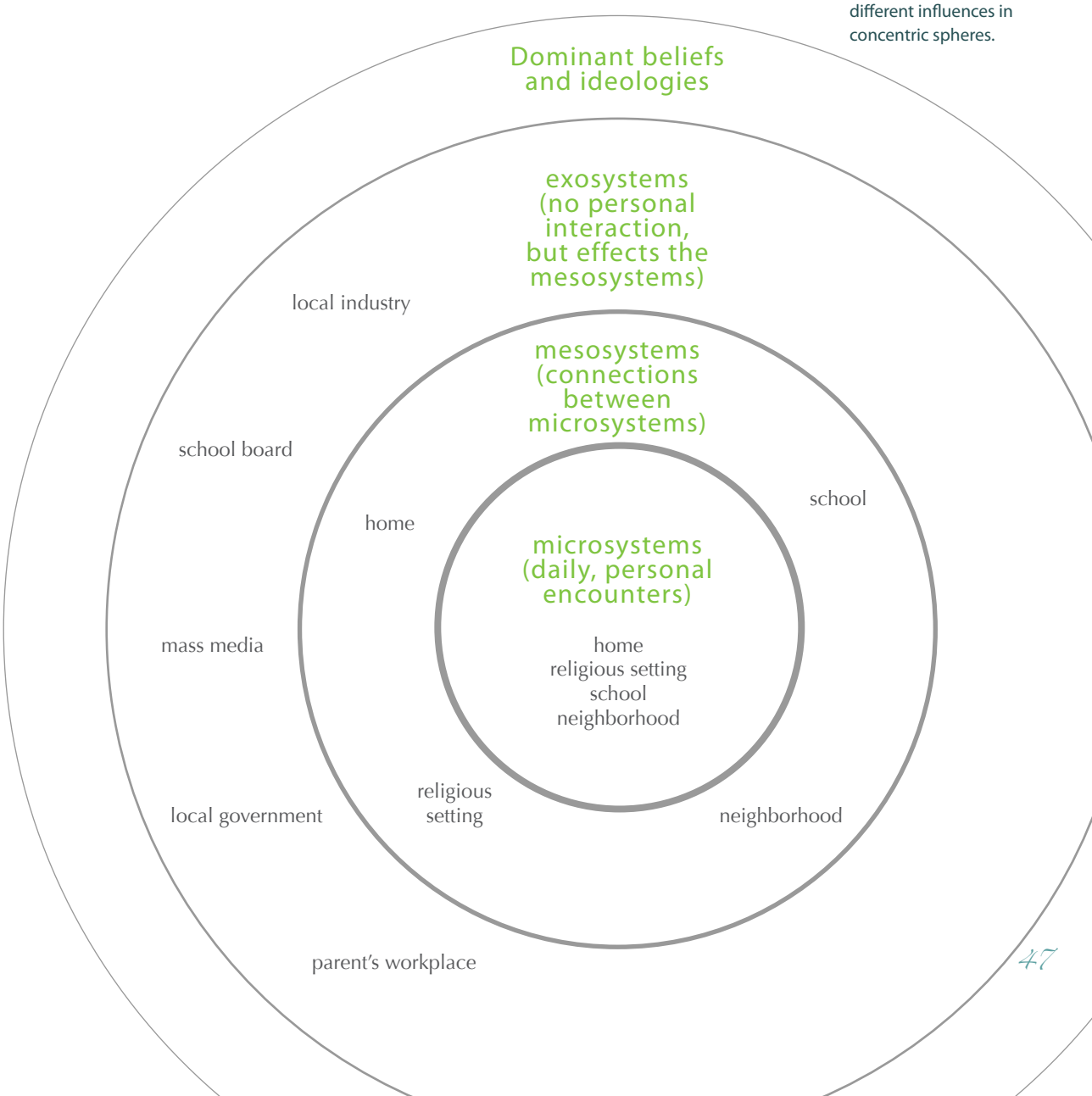
Justin and Darren Hurst working with the street children in Guadalajara, Mexico. They spend time with them and lead them in Bible studies (bottom picture)

left to form communities of their own, which are not often beneficial or healthy. The word community has some of its orgins in the Greek word Oikos, which originally referred to the house or family. Today it is the root for two English words: ecology and economics.[6] In the biological sciences, ecology refers to the habitat of a specific group of plants and animals. In child development psychology, ecology refers to the types of situations in which individuals will find themselves, or more simply put, their environment.[7] Oikos was the base unit for society in ancient Greek city-states. It not only structured the physical layout of the house and the city, but also arranged hierarchical relationships between the individual family members. The modern definition of oikos has expanded in sociology to not only refer to immediate family members, but the group of individuals with whom the most amount of quality time is spent.[8] A child's relationships to their community, or oikos, is called a development niche, which is comprised of three elements: the physical and social context of the child's surroundings, the cultural norms of parenting and education, and the child's parents.[9] These different elements all interact to influence a child's growth and development. Community is the intended environment of life. It is a means of growth. Community has a double-imprinting effect: it influences and is influenced by individuals. The values that are communicated and demonstrated in a community are hugely influential upon the growth and environment of that community.

community + touch

Community and interaction is centered on the phenomenon of touch. Touch is the means by which an individual navigates their surrounding environment and interacts to others by understanding where self ends and begins. A leper's loss of feeling wreaks havoc upon their body

Bronfenbrenner's ecological model organizes these different influences in concentric spheres.



"Children need people in order to become human beings"
-Uri Bronfenbrenner

and isolates them from their environment and community. No longer able to feel where their body ends, they unknowingly beat their body to death. Touch allows for individuality and a feeling of place and belonging. Studies have connected physical touch and interaction with development and social abilities. Orphans reared in institutions with good community and interaction did not lag behind their non-orphan peers. Often the developmental delays found amongst institutionalized children stem from a lack of socio-emotional interaction with caregivers coinciding with a lack of long-term relationships with consistent caregivers. Since community is tied so closely to the promotion of healthy development, an orphan's life should be as normalized as possible by creating an interactive environment with stable and loving adults thereby establishing a sense of self-esteem and a sense of worth. A lack of interaction and community not only has psychological implications but also physical effects. A child can suffer from psychosocial dwarfism which inhibits their physical development.

implementing materials

The implications of touch in architecture applies to the implementation of materials. Materials have the potential to convey meaning about the surroundings. They act as a filter through which meaning or use is conveyed. Materials transmit information about the surrounding physical environment.[10] They transmit ambient temperature and can heighten the awareness of light or color. Just as materials impact the user's sense of architectural space, so too the user imprints on the materials over time. There not only becomes an interaction between the users in the space, but a coinciding interaction between the users and the physical space.

Every child comes to understand its surroundings through physical interaction. Since a young child learns through experiencing his or her surroundings, the formation of these influential environments carries with it a weighty responsibility. Within environmental psychology, studies continue to infer that the physical environment has a significant impact on the development of a child.[11] "Children need architecture not to shape, but to serve them."[12] As the child develops in the physical, social, emotional and spiritual realm, a portion of influence comes from the spatial environment. This influence can be either beneficial or detrimental. The importance of the surrounding environment can be illustrated in the three most

influential factors in an infant's life that will affect them later in life: changes in environment, bio-social shifts, and the way in which a child experiences their environments.[13] The task at hand then becomes discovering what spatial needs these children have, and how best to accommodate these needs in design.

child's spatial development

A child and adult experience space in different ways. A child experiences space with their whole body, while an adult might only experience it with one or two senses.[14] As adults, space is categorized into specific areas that facilitate specific actions, such as a kitchen or an office. On the other hand, a child sees a space as full of multiple possibilities—having an edge and center with dense space and open space in different areas.[15] Even as a child passes through the different states of development, their spatial understanding similarly develops. For a preschooler on a playground, they will likely spend most of their time on the swings and in the sand. A child in middle school on the same playground will want freedom to explore and create without a rigid structure and adult supervision.[16]

A child's development moves from being egocentric to altruistic. This affects the way in which they understand and experience space. A child between the ages of three and five years begins to separate themselves from the immediate affects of their surroundings. Previous to this their moods can be greatly affected and changed by the feeling of their surroundings. A child who is four to seven years old begins to question how a space can be used. By nine years old, the child's sense of space has emerged. Up until this point, most of their perception and understanding comes through experiencing what is around them. However, once a child reaches eleven years old, they are able to conceptualize a place through listening to descriptions and connecting with past experiences.[17] The child "…gradually build[s] a conception of the world by acting upon it. From a physical world, consisting basically of a series of necessary activities, the child gradually arrives at a hypothetical world of possible courses of action."[18] The nook, the path, stimulating yet clear space and outdoor space are four spatial design factors that positively affect a child's development.

The nook. A young child is egocentric and needs spaces that are inward-facing and 'heavy'.[19] Up until the age of twelve, they will create

dens and hideouts to play and pretend.[20] Once a child reaches their teenage years, they use nooks as places to hide away and process the changes happening internally and externally.[21] If the child has access to the outdoors, they will often create spaces in trees and caves. Perhaps, since they are often unable to manipulate their surroundings, they move towards environments that are easy to control and adapt.

The path. A child often uses the edge of space. There is a sense of safety and the ability to hide when close to the edge as opposed to the unsheltered open.[22] Children's paths are distinct from ones used by adults. From a child's perspective, an adult's path may appear to be busy and hurried. The potential of adult traffic or interference with their play might lead a child to use a separate path.[23]

Stimulating but clear spaces. The opportunity to explore and understand spatial arrangements allows for a sense of independence to grow within a child.[24] Complex spaces are stimulating and challenging and lead to exploration and discovery. However, children also need clarity in understanding where from they have come and where they

[child's age]		
1|2	tactile	affective space
3|4	tactile	affective space
5|6	tactile	affective space
7|8	sense of space emerges	manipulating space
9|10	conceptual	manipulating space
11|12	conceptual	manipulating space
13|14	conceptual	manipulating space
15|16	conceptual	manipulating space
17|18	conceptual	manipulating space

might be able to go. Paths and sensory connections between spaces, whether visual or auditory, allow for clarity and safety.[25]

Outdoors. Children need to have interaction with outdoor spaces. They "…grant special significance to rivers and lakes though these are often restricted areas and rarely visited. Other outdoor places of high value are woodsy areas and settings that foster the construction of 'hideouts' and 'lookouts'."[26] Engaging with the exterior world allows them to explore and understand the natural world around them on their own.

The presence of these four design elements in child-serving architecture connects the developmental needs of the child to their surroundings. This coupled with the careful implementation of materials creates the physical space in which a child grows. Placing loving and invested adults in this environment who are committed to the well being and development of the child, who, having experienced grace, willingly giving it, fills some of the holes in an orphaned child's life and presents an opportunity for hopeful growth.

energy-directed	ego-centric	reliance & attachment
energy-directed	ego-centric	reliance & attachment
energy-directed	ego-centric	reliance & attachment
energy-directed	altruistic	reliance & attachment
thought-directed	altruistic	exploration
thought-directed	altruistic	exploration
thought-directed	altruistic	exploration
thought-directed	altruistic	exploration
thought-directed	altruistic	exploration

child + architecture

architecture

orphan statistics

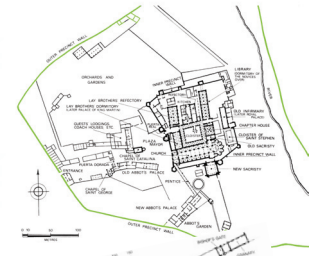
In 2008, there were 143 million orphans in the world.[1] A somewhat negative view of orphanages has developed in the child psychology realm, supported by the widely held belief that a child will fail developmentally if deprived of their mother.[2] It is true that children need constancy and permanence in their relationships with adults, especially that of their relationship with their mother.[3] However, as important as a family setting is for the healthy growth and development of a child, the overwhelming numbers of orphans do not allow for every child to experience an intimate family-like environment. David Macarov argues that trying to provide a family-like setting for every orphan creates a "… cruel triage [which] holds what is believed to be optimum care for the few must be offered even it if means that little or no help is provided for the overwhelming majority." [4] While the care givers in an orphanage will never be able to replace the role of a mother in a young child's life, invested, loving caregivers can be a beneficial alternative.

alumni survey

Richard B. McKenzie has conducted the largest-scale longitudinal study of orphanage alumni. The study illuminated how orphan alumni viewed their orphanage experience and how their lives compared to their peers after they left. The survey polled 1,800 alumni of eight privately run and one state run orphanage using the 1990 census. The respondents had lived in the orphanage for 1 to 17 years and had been out of the orphanage for over thirty years. Half of the alumni had spent over nine years in the orphanage, and only 1.6 percent had spent less than two years.[5] The homes were all located in the southern United States,[6] and were situated in a rural or small town setting and included extensive acreage with shops and/or farms. The homes also included on-campus schooling.[7] When asked about their experience, their reply was overwhelmingly positive, both in their own impression and in comparison to their non-orphaned peers. "As a group, the respondents have outpaced their counterparts of the same racial and age group in general population by wide margins on practically all measures, not the least of which are education, income, and attitude toward life."[8] The only area where there was discrepancy was in a slightly higher divorce rate amongst the orphanage alumni. Not only did their success compare relative to their peers, but their impressions of life at the orphanage were positive. The elements of orphanage life they saw as being beneficial to their later success in life were a strong education, emphasis on personal and religious morals, and encouragement of a strong work ethic.[9]

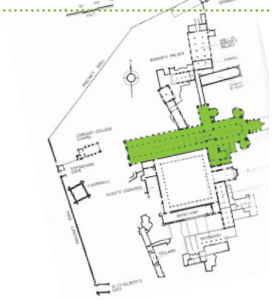
history: monastery

In the Medieval era, orphans were often taken care of by the Church, being housed in monasteries. The Church sought to instruct the orphans in such a way so they had trade skills that enabled them to



poblet
1151

Poblet is Cistercian monastery located in Spain. It is a royal monastery where most of the monks were of royal descent. Spain was on the 'front lines' of Christendom, and the monastery reflects this geographic location with a certain intensity in it's layout.

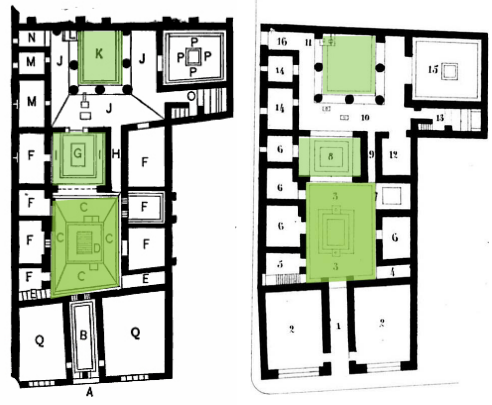


norwich
1094

Norwich is a Benedictine monastery located in England. The cathedral was built first and construction moved westward. The monastery was built near a town but remained removed from the outside world.

fontenay
1098

Fontenay is a Cistercian monastery in France. It was constructed in a valley and was built around the concept of self-sufficiency. Simplicity and poverty were emphasized and valued over academia. The cloister is located on the south side of the Cathedral, and acts as a central space around which all of the domestic buildings are connected.



Roman house plan: The historical origins are based in the peristyle court of a greek house or the colonnaded atrium of a roman house.

make a living for themselves when they left and entered society as an adult.[10]

Monasteries as a building typology are intimately influenced by the beliefs and lifestyle of the monks. St. Benedict wrote the Rule around 535 AD, which laid out a means of governing all aspects of the monastic life, including both the spiritual and material. The Rule orders a daily routine, which intimately connects the aspects of prayer, work and study.[11] Other values the Rule promotes are communal living, lack of private property, moderation and giving to the community. St. Benedictine also described how a monastery should be spatially organized:

"The monastery should, if possible, be so arranged that all necessary things, such as water, mill, garden, and various crafts may be within the enclosure, so that the monks may not be compelled to wander outside it, for that is not expedient to their souls…If it is possible…all sleep in one place; but if their numbers do not allow this, let them sleep by tens or twenties, with seniors to supervise them."[12]

There are numerous spatial elements within a monastery. The following three are significant to this specific study as they relate to the implementation of values to the spatial configuration of the building with and emphasis on community.

The wall: Many monasteries have a wall surrounding the complex that served as a shelter and a barrier from the outside world both physically and symbolically.

The cathedral: The cathedral was often the first structure built on the site. It was oriented with the apse facing east towards Jerusalem. Buildings were consecutively built out from the cathedral moving westward.

The cloister: The domestic buildings were configured around a cloister which acted as a heart within the monastery. The cloister was often attached to the southern flank of the church and was loosely based off the peristyle court of a greek house, or the colonnaded atrium of a roman house. The circulation through the different portions of the monastery often transversed the cloister. Honorious of Autun, Sicard of Cremona and William Durandus philosophized about the meaning embodied in the cloister. The four sides of the monastery metaphorically symbolized: contempt of self, contempt of the world, love of one's neighbor and love of God. The cloister was a metaphor for paradise and the trees within the cloister a metaphor for the books of scripture. The enclosed quality of the cloister was related to the idea of heaven. It was a way of organizing life on earth while also looking to the future.[13]

The monastery reflected the values and beliefs of the monks in its orientation and spatial configuration. Buildings reflect our beliefs about the world.

La Tourette

[circulation + cells]

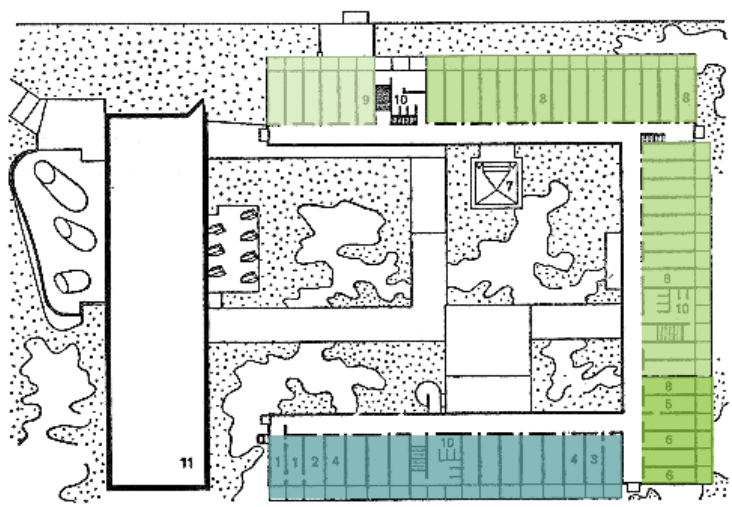
Le Corbusier

Early in Le Corbusier's life, he spent time at two different monasteries: the Carthusian monastery of Ema near Florence, and the monastic island of Mount Athos. These early experiences would later influence many of his works, including the Unites d'Habitations and the La Tourette monastery.[20]

The island of Mount Athos is an autonomous republic made up of twenty monasteries. Seven thousand men were living on the island at the time that Le Corbusier visited. The monasteries provided different avenues of carrying out their monastic call: some were communal monasteries, while others were isolated hermitages.[21] The monastic lifestyle presented a tensioned balance of seemingly paradoxical values: communal and individual, freedom of personal belief and repetitive ritual, vernacular architecture and established religious forms.[22] His eighteen-day visit laid foundations for some of his architectural ideas.

When it came time to design the monastery at La Tourette, Le Corbusier looked to the monastery at Ema for inspiration. He commented that it was a 'paradise on earth'.[23] La Tourette is an exploration in the tension between shape and shapeless form,[24] possibly referring back to his experiences on Mount Athos with so many contradictions held about him in an established way of life.

La Tourette is conceived similarly to a traditional monastery with four buildings surrounding an inner courtyard. There is an interplay between individual and communal spaces and needs both in the plan and section of the building. Throughout the building there are spaces set aside for different individuals within the monastic community. Some of the rooms are set aside for lay brothers, for student brothers and for fathers. This separation of spaces within a common group of functions acknowledges the individual who lives in the monastery while also distinguishing between groups made up of the individuals.

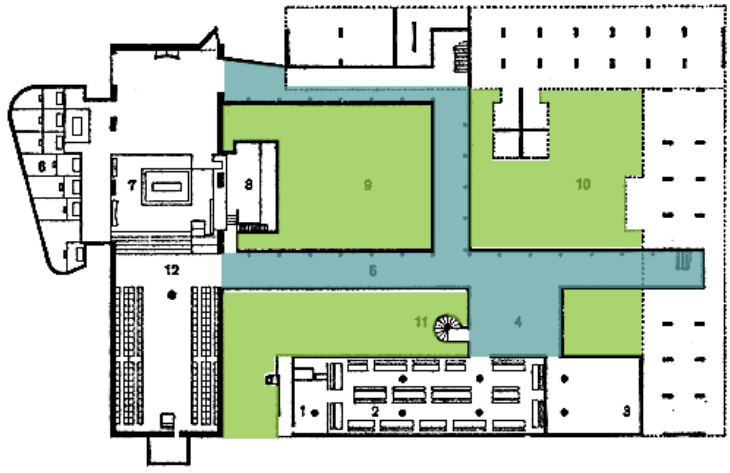


The upper floor with individual cells for the monks. The blue is the infermary and the green shows the progression of the cells according to rank, beginning with the student priest's cells in the bottom right and moving up to the student brothers and finally the lay brother's quarters

The circulation at La Tourette is an inverse and complex interpretation of a traditional monastic circulation. The steeply sloped site allows for the entrance of the building to be on the middle floor. This floor holds the work and study spaces such as the library, lecture and common rooms.

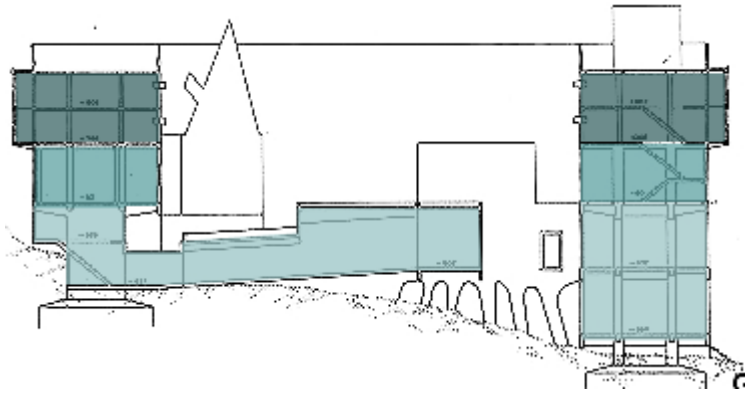
From the entrance one can travel through the work and study floor towards the atrium which is located nearly in the center of the plan. The atrium leads to the ground floor which hugs the slope of the hill and contains the chapels and the church as well as the refectory and chapter room. The circulation in a traditional monastery would have lead around the courtyard, but Le Corbusier inverses this tradition, and creates the circulation as an intersection through the central courtyard on this lower floor.

From the entrance, one can also travel upwards to the top two floors, which are the private cells for the monks. The cells are small, only 8 ft by 24 ft, but Le Corbusier's careful study of the human body allowed for an interaction between the man and his surroundings. The cells were based on the Modular, which was a function of harmonics and the golden section.[25] These cells spoke of the inner life of the monastery and granted importance to the inner life of the individual.[26]



The bottom floor with the traditional 'cloister' in green and the intersecting circulation in blue.

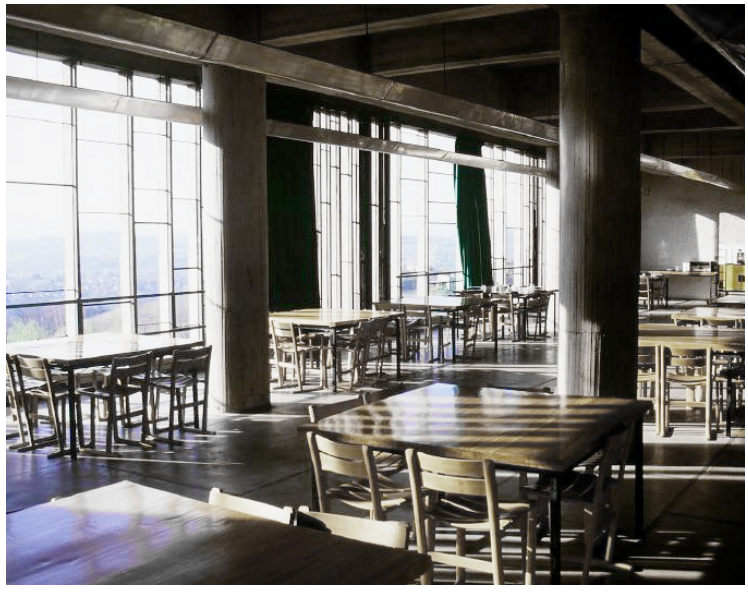
Section through the building showing the very private cells in the upper two floors, the middle floor with the work and study areas and the public bottom floor with the chapel, church, refectory, chapter house and circulation through the cloister.



The circulation cutting across the inner courtyard

The practice alters: hugging the slope of the ground with natural light streaming from above.

Corridors along the monk's individual cells looking out over the interior courtyard



One of the study spaces for the fathers on the intermediate floor

A monk's cell with their own balcony looking out from the exterior of the building

modern orphanages

In the modern era, there are numerous established orphanages. Some have been specifically built with the purpose of being an orphanage, while others have been formed out of modified houses. The Barium Springs Orphanage is still in existence today, and is one of the orphanages whose alumni were surveyed in McKenzie's study. Their mission and vision is centered around the following values: faith based, child-centered, holistic, diverse, innovative, providing highest quality services, family-focused, responsive, respectful, implementing the best practices, collaborative, and willing to change for the future while respecting the past.[14] During the time when the alumni from the survey were living at Barium Springs, 'The Home', was a small child's village forming a community out of shared need, and connected to a greater network of communities that were invested in the well being of the children.[15] The campus was located five miles away from the nearest town and was organized around a main dining hall. The dining hall allowed for interaction and socialization between all age groups, as well as visitors. The cottages had living rooms with television sets and apartments for the housemothers.[16]

The largest organization dedicated to caring for orphans is SOS Children's Villages. The founder of SOS Children's Villages was Dr. Hermann Gmeiner who established it in response to the large numbers of World War II orphans.[17] He believed that recreating a family-like setting was the best means to help an orphan grow into a healthy and responsible adult.[18] There are many SOS Children's Villages all over the world, but many of them have similar characteristics that guide the manner in which they are built and run. The village is not closed off, but is integrated with its surrounding community. The houses are built in a local vernacular style and might include fifteen to twenty houses. For the younger children, each house has 7 to 9 children who are overseen by a housemother. Once the children grow, they are moved to gender-specific hostel-type dwellings where they are able to continue their education. There is a huge emphasis on teaching the children to become independent and employable so once they graduate and leave, they are able to be self-sufficient. Another emphasis of the village style is the training process the house mothers must go through. The mothers go through a thirty-week training course instructing them in basic household skills as well as child psychology, nutrition and such.[19]

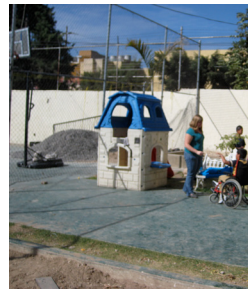
These organizations illustrated two types of orphanage care: Barium Springs as a larger, more isolated campus, and the SOS Children's Village as a smaller, more integrated system. An emphasis on personal morals and values, along with varying degrees of community living, promote a healthy environment in which a child's growth and development are nurtured.

In addition to designs with orphans in mind, numerous architects have

barium springs staff housing

barium springs manse

The buildings are oriented together to create both individual spaces for each of the houses, but also shared community space



above: dining room
left: storage and
outdoor space

[existing: orphanage]
ninos en victoria

Ninos en Victoria is an all boy's orphanage in the central area of Guadalajara. The facility is adequate and clean. The bed rooms are dormitory style with only one bathroom per floor. While the complex is small, there is outdoor space for the children to play in, and a lot of natural light enters the buildings.

above: living room
left: bedroom

Montessori School: Fuji Kindergarten

[roof]

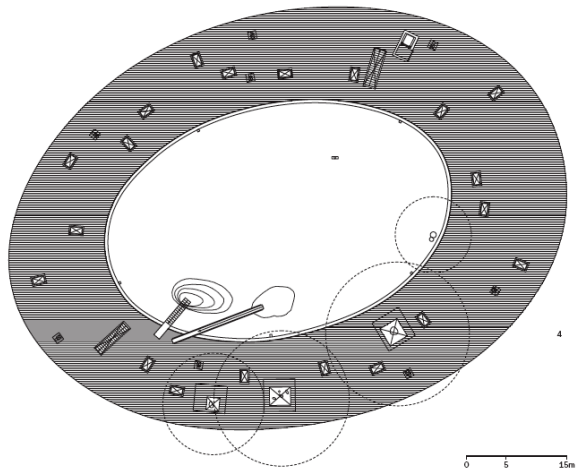
Tachikawa, Tokyo, Japan

Takaharu + Yui Tezuka
Complete in 2007

designed spaces with the needs and desires of children in mind.

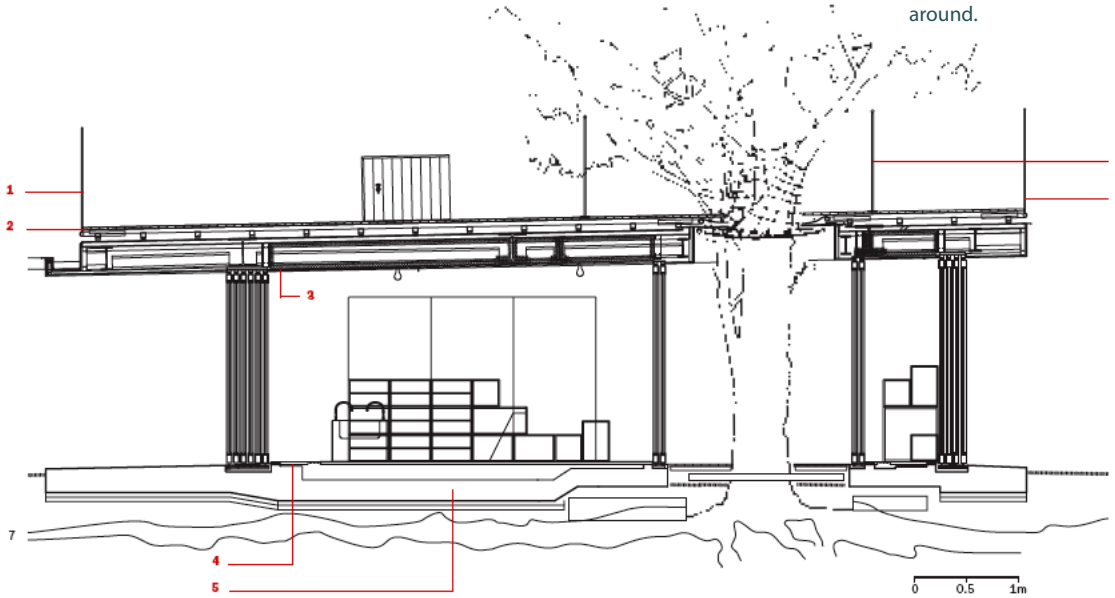
The Fuij Kindergarten Montessori School by Takaharu and Yui Tezuka is an nontraditional approach to school design. Much inspirtation and influence came by way of the Montessori teaching method, which emphasizes moving, running, interacting freely with peers and self-discovery. These values are reflected in the layout and structure of the school. The school is located in a dense urban area, so the Tezukas created an ellipse-shaped building that centered activity in the courtyard. The ellipse is somewhat free form and was generated out of a spontaneous sketch of a child's circular running path. The Tezukas also conceived of the roof as an additional play space for the students. Each classroom has a rope ladder and a skylight that allows for the children to climb up onto the roof to play. There are no 'play structures' on the roof, but a few trees that poke out through the roof, and various skylights at different heights and angles.
The interior of the space was also specially conceived to serve the occupants. There are no interior partitions between the classrooms, but rather wood boxes or various incremental sizes that allow for the children to make partitions or spaces for themselves. The space is not scripted or determined, but allows for the child to discover and form their environment.

school in context. The school is sheltered from the surrounding bustle, but is very open and spacious in the interior, allowing the children to freely roam



left: plan
The trees that poke through the roof have netting at their base, so that the children are able to play and climb around them. There is also a slide from the roof to the center courtyard.

bottom: roof section:
The building is scaled to the heights of children with the ceiling just over 6ft tall. The roof is tilted slightly towards the interior courtyard to encourage running around.



METI School

[play caves]

Anna Heringer and Eike Roswag

Rudrapur, Dinajpur district, Bangladesh

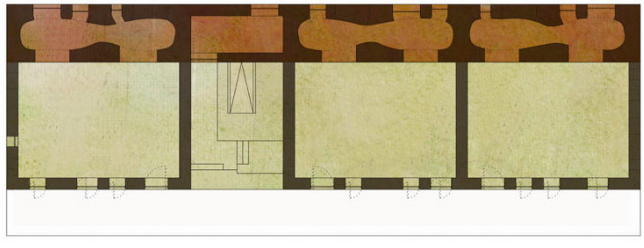
325 m^2
2007

The METI handmade school was born out of Anna Heringer's master's thesis. After spending time in the Bangladeshi village and surrounding areas, she discovered a lack of educational opportunities for the villagers. This school was conceived to benefit the community in numerous ways, and has shown itself to be successful in the wake of its completion. Not only does this building provide education, but in the process of it's construction, local construction methods were explored and improved, with the resulting knowledge conveyed back to the local work force to promote safer building in the future. The school building is constructed out of local materials: earth and bamboo. The first floor carries the structural weight of the building with massive earth walls. Adjacent to the classrooms are a series of play caves for the children to utilize in various ways. The upper floor is made of bamboo, creating a light structure that helps to ventilate the building. These different materials and the variety of their implementation creates different qualities of space that allow for different activities to be carried out in an appropriate atmosphere. Additionally, this building's construction has spurred an increasing interest in architecture and building in the local population. The project is an innovative and effective approach to building design which is sensitive to the local vernacular while also challenging and improving upon the local standards.

Exterior facade:
The large overhangs help shade the building and prevent the mud walls from eroding in the rainy season.

Ground level:
The thick walls are formed in a local construction method out of mud work. Their construction allowed for local labor to be used and for the building to fit into the local context

Upper classroom



north

Ground floor plan showing the classrooms and the adjacent play caves

Harmeny School

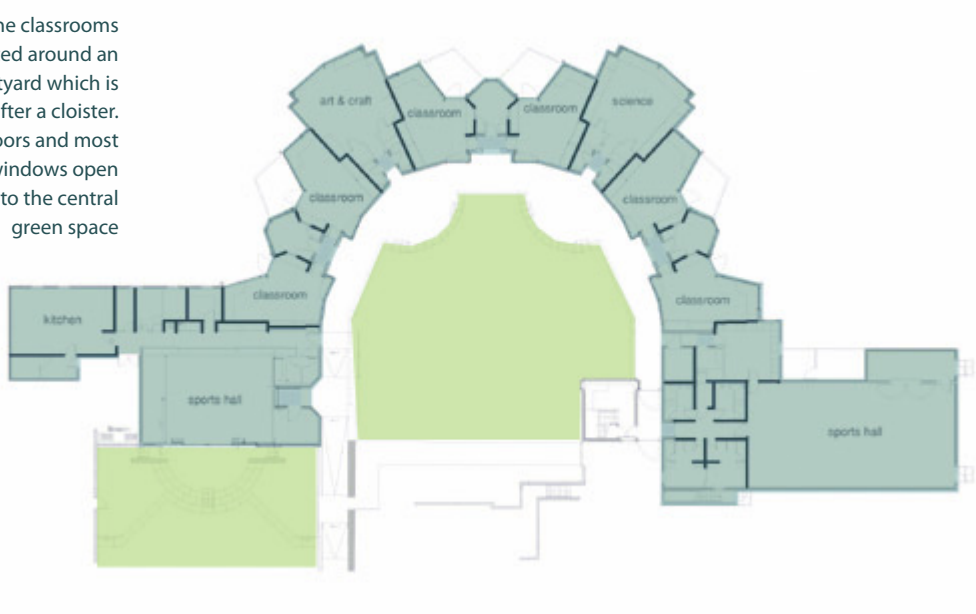
[courtyard]

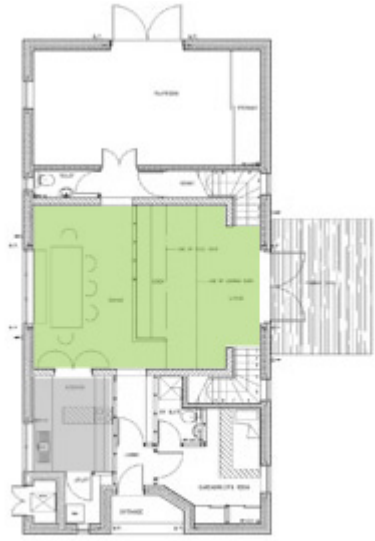
Edinburgh, Scotland

Richard Murphy Architects

The Harmeny school is designed for students who are eight to twelve years old and suffer from emotional or developmental needs. The school is located on the property of an old house, with the new additions connecting to the existing buildings both physically and spatially. The school includes a series of classrooms oriented around a central courtyard and two additional residences for the students. The intention was to to create clear hierarchical boundaries without appearing to be too institutional. There are numerous types of spaces within the school. Windows are of different heights and have ledges or nooks associated with them. Each of the classrooms is slightly different to create interest between spaces. The green space is also varied, with a large central green and a smaller, more private space to the side.

The classrooms oriented around an inner courtyard which is modeled after a cloister. All the doors and most of the windows open out into the central green space



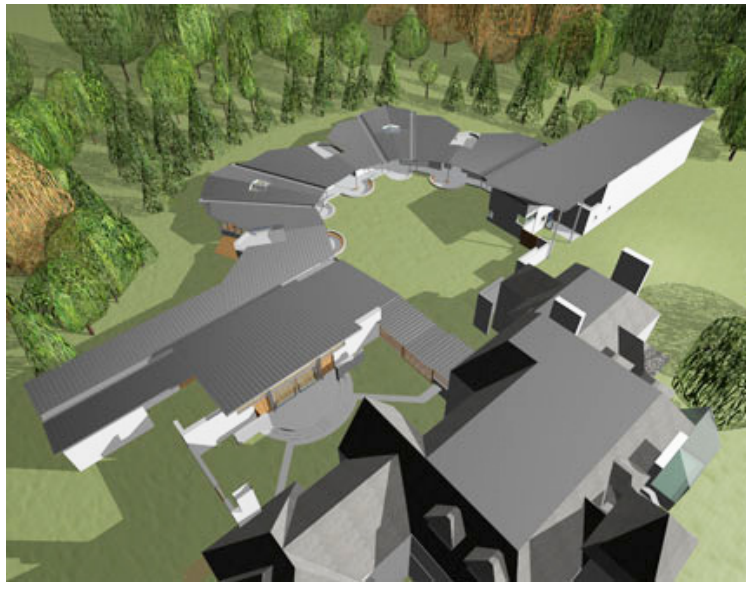


GROUND FLOOR PLAN

FIRST FLOOR PLAN

In addition to classrooms, there are residencies on the site for the students. They are comprised of individual sleeping units that share a bathroom. On the first floor there is a central eating and gathering space.

Interior view of the courtyard



A model of the new addition with the old house, showing the two courtyards: one being more private and the other being more public

mexican architecture tradition

One of the giants in Mexican architecture tradition is Luis Barragan. He was born in Guadalajara, and as a result, was greatly influenced by the local vernacular architecture. Many of the structures were traditionally built out of adobe with a tile roof and wood supporting columns. This region in Mexico often used wood shutters and overhangs to help shelter from the hot sun. Most of the traditional architecture is built and constructed to shield from the hot sun. There are very few openings on the exterior of the building, letting the central courtyard bring light and air throughout the building.

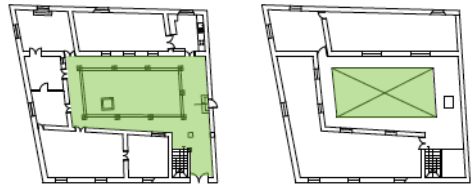
In the Haciendas, there were often small buildings grouped around a larger main building with a corresponding courtyard. Also, the play of light and color in traditional Mexican housing is very important. Each color has its own meaning and implication within the design.

figueroa uriza dwellings in mexico city by Luis Barragan

"For me the lessons contained in the traditional architecture of the Mexican provinces have been my permanent source of inspiration: their whitewashed walls; the tranquility of their courtyards and kitchen gardens; the color of their streets and the humble majesty of their squares surrounded by shady porches." Luis Barragan in his Pritker Prize acceptance speech

Traditional Mexican House

This traditional plan is derived from a typical turn of the century house. Originally, the second floor was only used for storage, but rooms have been added for its modern use. The rooms were oriented around a central courtyard.
The house was built with a masonry foundation with timber columns and beams and baked clay brick infill.

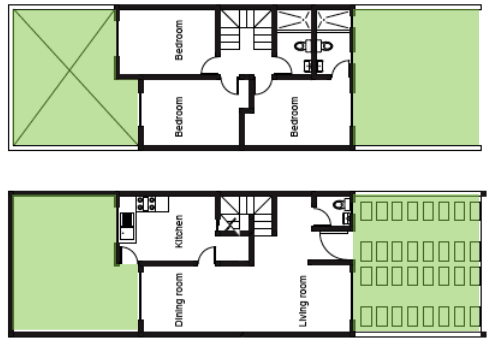


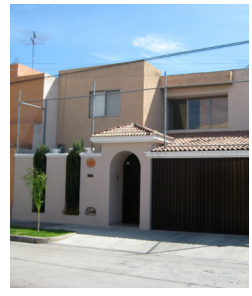
first floor second floor

Modern Mid-class Mexican House

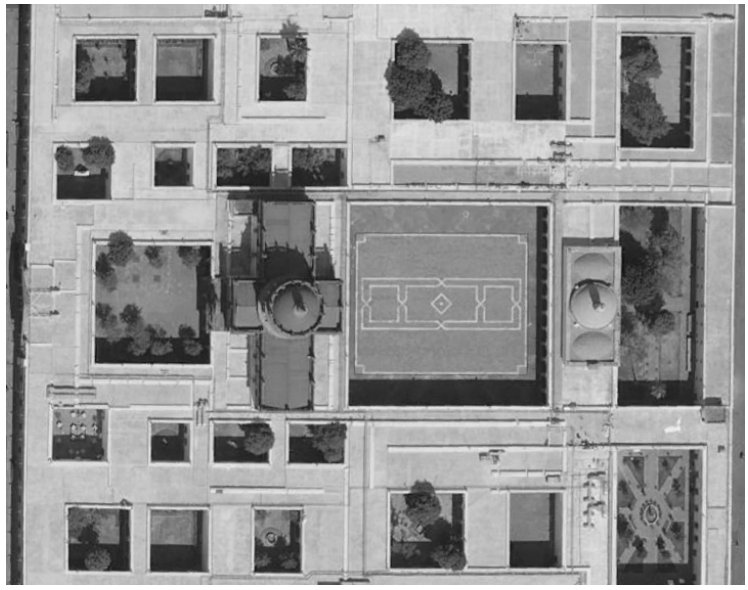
More modern housing plans have moved the courtyard to the front and back of the living spaces, allowing for the houses to be built in close proximity to each other.

The foundation is often a continuous footing with reinforced concrete columns and beams and masonry infill. The elements of construction are very similar, while the materials of construction vary.





A typical street in Guadalajara with examples of typical housing types. Evaluating the concept of threshold and the value of the wall in Mexican architecture.



The Hospicio Cabanas is a significant piece of architecture in Guadalajara that was built as a place for orphans, the sick and the less fortunate. It was a monumental piece of architecture when it was designed and built, and took into consideration the needs of the people it would be serving. It was modeled after El Escorial in Spain and reflects the local tradition of courtyards.

It also acts as a grounding point in the city's grid. It is located at the end of a long avenue that runs through the old portion of the city.

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ano del Rio de Guazacualcos Cituado en
Costa del N. del Seno Mexicano Probincia
de Guadalajara.
Punta del C.
Punta del O.
Vistas.
Barra ó Laguna
Lago de Terranoba
Paso del Cort.o de Ygu.n
Ysla del Cap.n D.n Jose Arr.a
Parase R.l de S.n Ant.o
sla del Medio.
K Cabeza del O.
L Y.a del P.to D. V.n Cu.o Cast.e
M Emb.o de las Maderas
N Depo.to de Mader Corta.n
P Asti.o don.e se Cort.n la N.a C.a
O Pueblo de Yguatan.
Q Meganos de Santiago
R Paso R.l de Maluc.n
S Cabeza del C de la Barra
O


place

Guadalajara, Mexico

20 66 N, 103 38 W,
5088 feet (1551 meters)

GUADALAJARA has a population of 4.1 million people and is regarded as the second city in Mexico. It is the capital of the state of Jalisco and is considered the 'silicon valley' of the region. It is an important communications and industrial center, with a rail link to the United States and a large hydro-electric dam in the previous location of the Juanacatlan falls on the Rio Grande de Santiago River.

There are many remnants of the Spanish colonial era, and the city's charm has made it known as the 'pearl of the west'. It is also known for its intricate glassware and pottery.

The city lies in the basin of the Lerma River. The river runs into Lake Chapala south of the city, and exits the lake as the Rio Grande de Santiago. Lake Chapala is the largest lake in Mexico, covering an area of 417 square miles.

The city resides on the edge of numerous geographic features in Mexico. It straddles the western extension of the great central mesa of Mexico and skirts the northern boundary of the east-west volcanic range that bisects Mexico.

The many valleys that lie within the vicinity are all remains of ancient lakes.

Perhaps the most significant geographical feature near the city is La Barranca, a gorge reaching two thousand feet deep that runs along the north east side of the city and contains the river at its bottom.

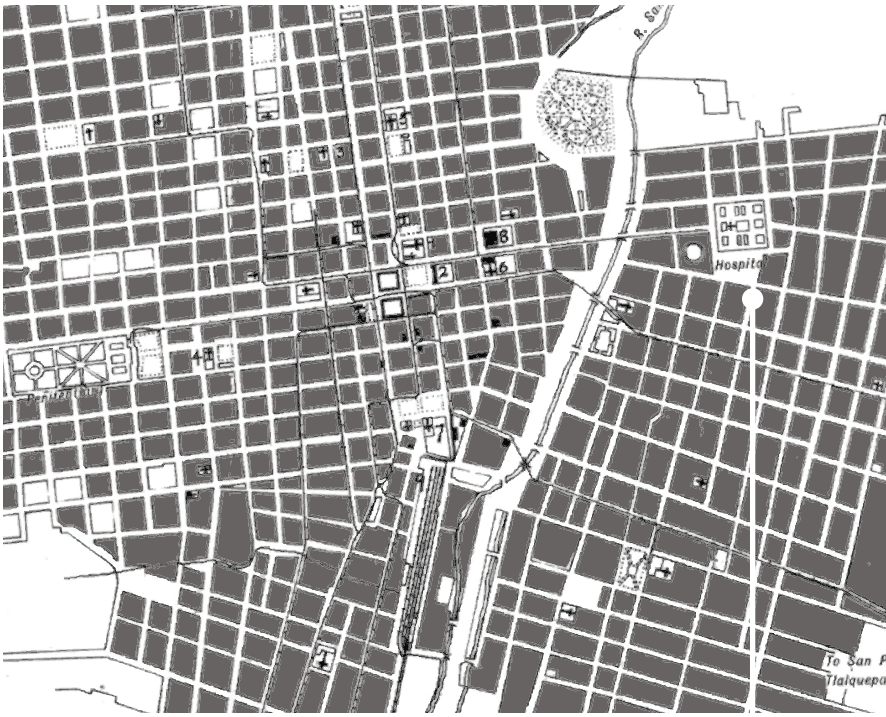
then

Guadalajara was established as a Spanish colony in 1542. Previous to this, there was little permanent native settlement in the area. Prehistorically, this region lies north of the 'high culture,' such as the area of the Aztecs, who inhabited other parts of Mexico. The area was quickly conquered due to this lack of settlement.

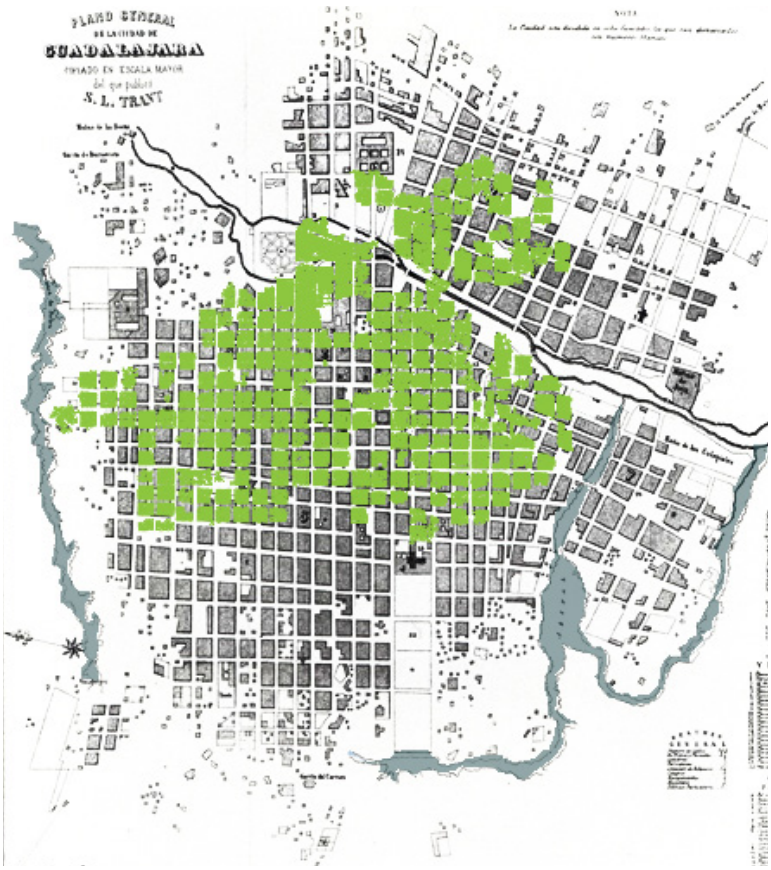
The area was countrified and mostly made up of haciendas until the middle of the eighteenth century when the city began to increase in population and have more cultural influence and significance.

The city was laid out in a grid with public life revolving around the public plaza.

In 1791, a university was established, and in 1803 the Hospicio Cabanas orphanage was opened. By 1810 Guadalajara was established as a political, banking and market center in Mexico and was supplying agricultural products to the surrounding areas, as well as Europe.



center of Guadalajara



historic 1842 map of Guadalajara

1542: guadalajara established

population: 1500

1600

population: ~3000

1700

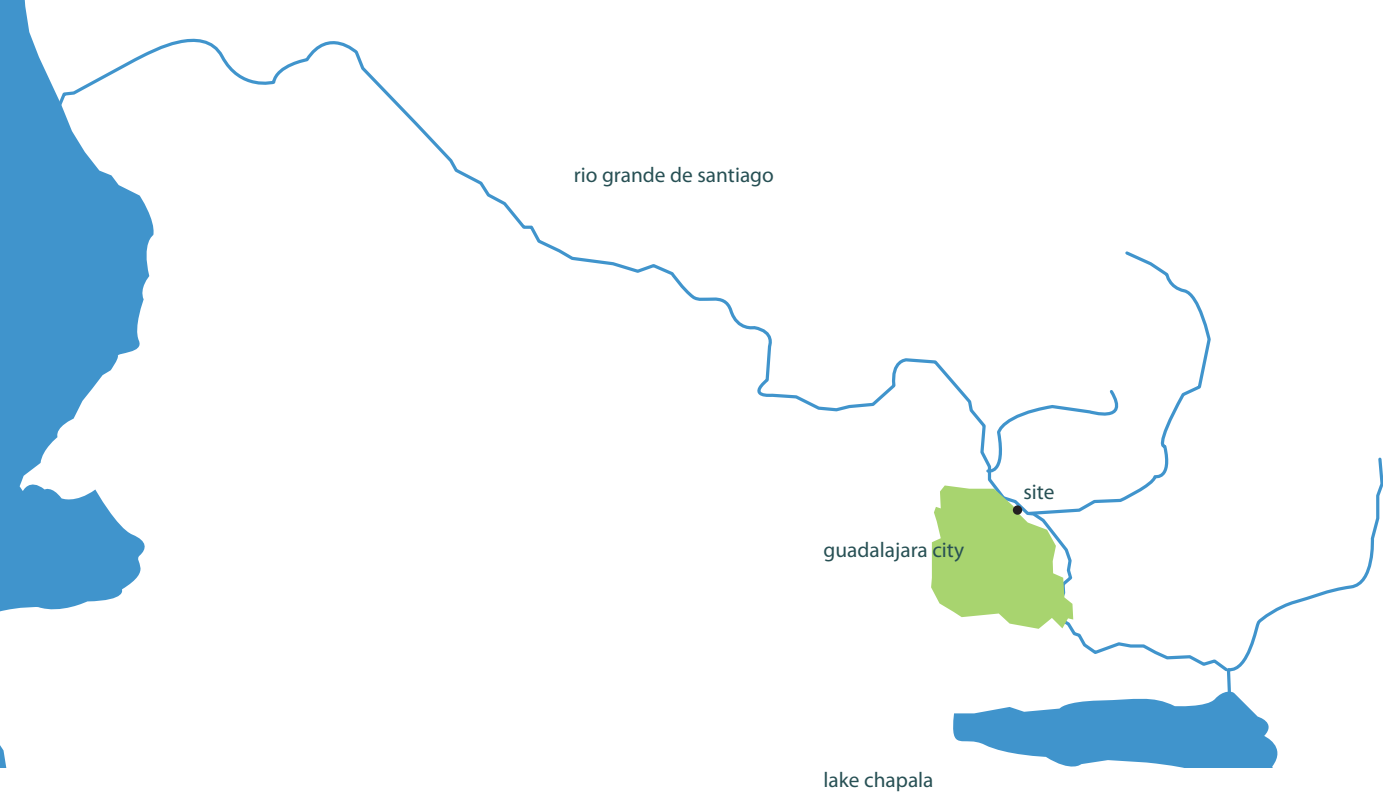
population: ~6000

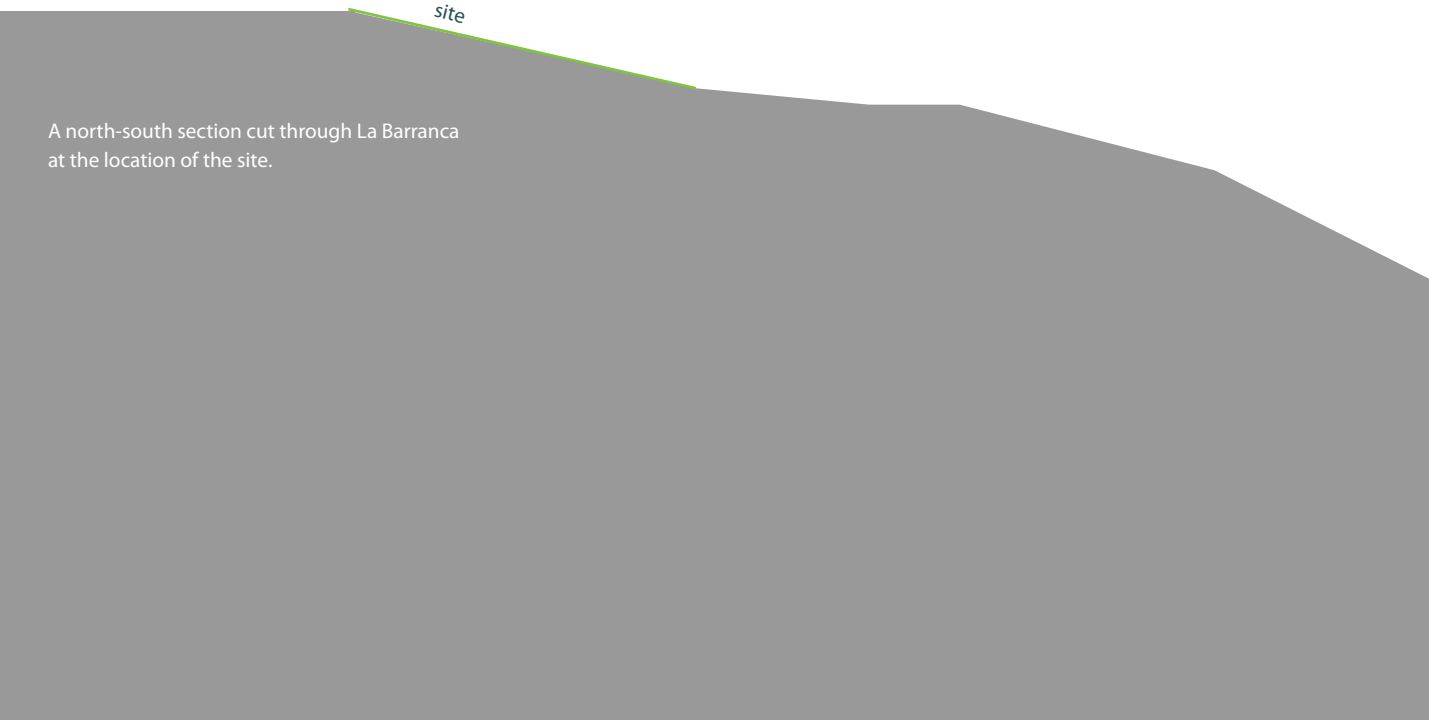
1800: important economic and cultural center

population: ~40,000

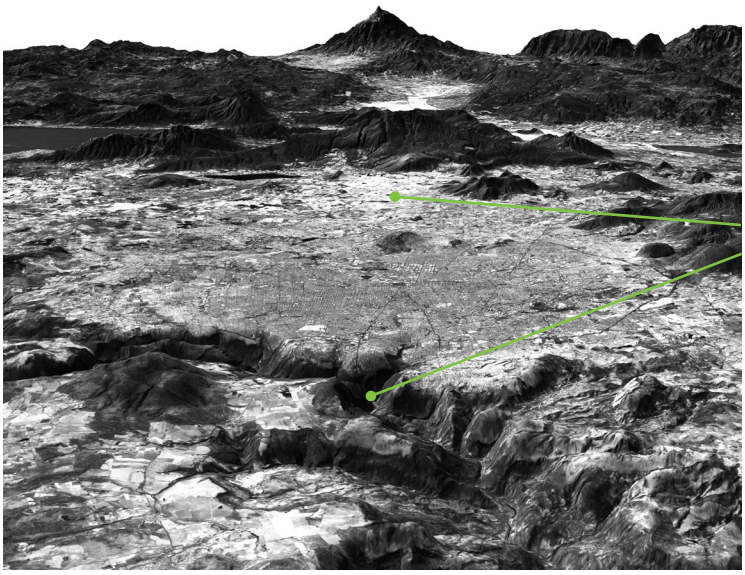
1842 (map)

The green buildings are the 1800 limits of the city imposed on a 1842 map. The city was experiencing rapid growth at this point in time and was expanding out of the central node of the city.





A north-south section cut through La Barranca at the location of the site.



This composite satellite picture show the city and its proximity to La Barranca. This view is looking south over the city.

Center of Guadalajara
La Barranca


CARNES SELECTAS
LOPEZ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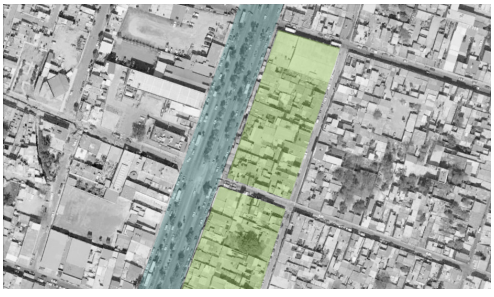


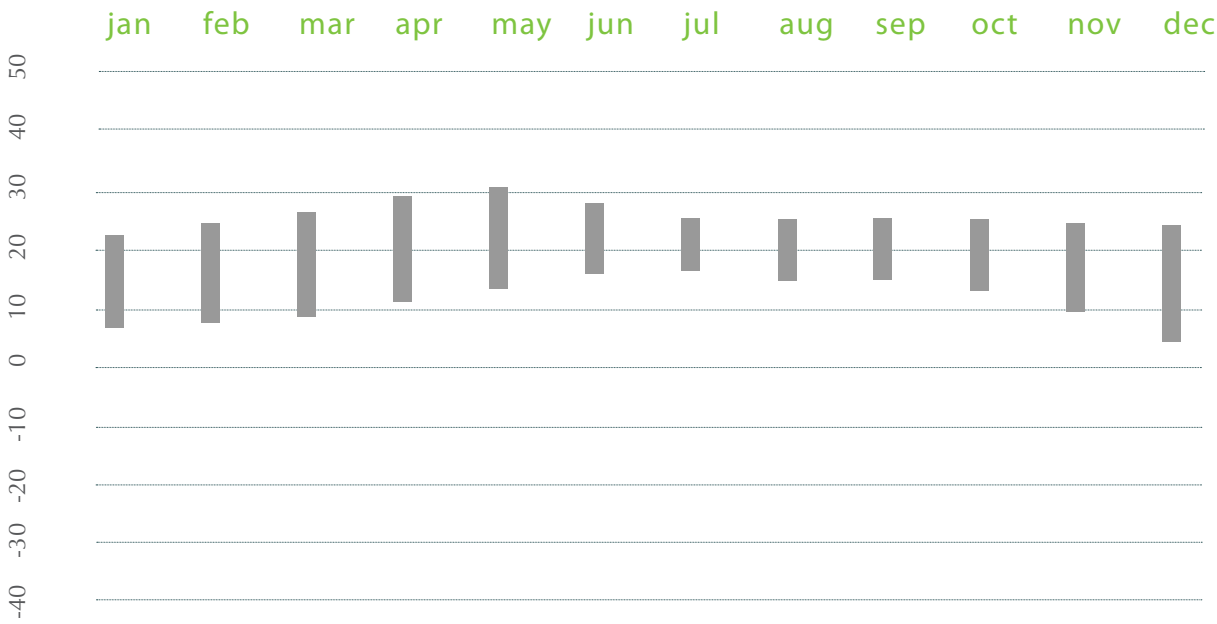
The main street of Tonala, which is known for its crafts and pottery

"The climate of Guadalajara is hot...the sunlight is ...bright and the atmosphere...full of color. The roofs are constructed of adobe and their thickness is 40 centimeters. The roofs are built with low brick vaulting and iron beams. The entire building is faced with lime mortar and yellow sand." -Luis Barragan

climate

Guadalajara has a humid subtropical climate with dry and cold winters and warm and wet summers. The climate in Guadalajara is somewhat unique because of its high elevation compared to other large cities in Mexico. March tends to be the driest month, with July being the wettest. The precipitation can occur quickly and in large quantities during the heaviest months.

average temperature (c)



average precipitation (cm)

jan	feb	mar	apr	may	jun	jul	aug	sep	oct	nov	dec
1.17	0.53	0.32	0.25	0.74	10.04	18.92	16.69	12.01	4.6	0.65	0.7

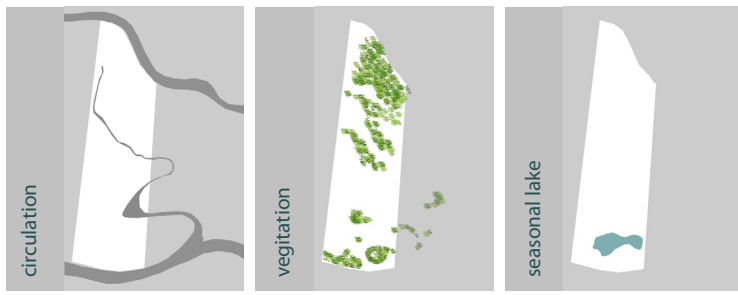
wind direction and speed (knots)

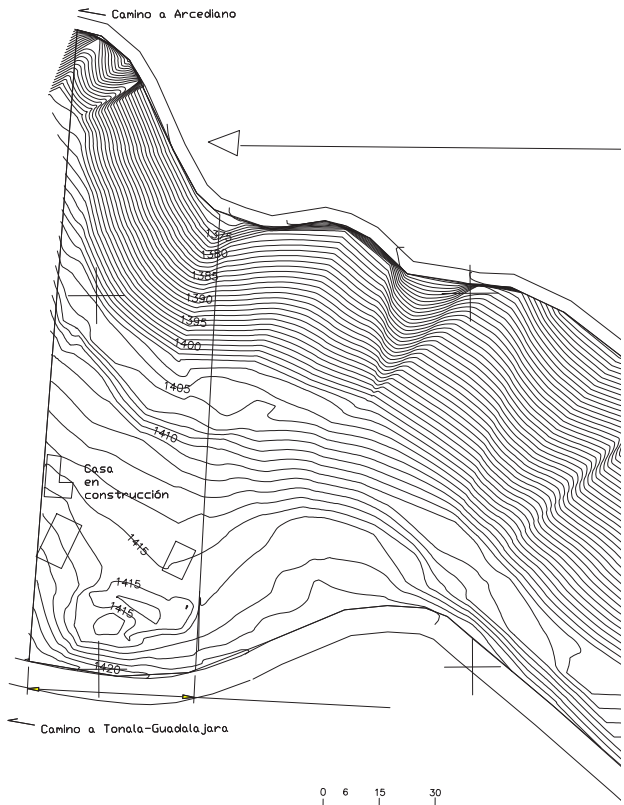
jan	feb	mar	apr	may	jun	jul	aug	sep	oct	nov	dec
6	7	8	9	7	6	5	5	5	6	6	6

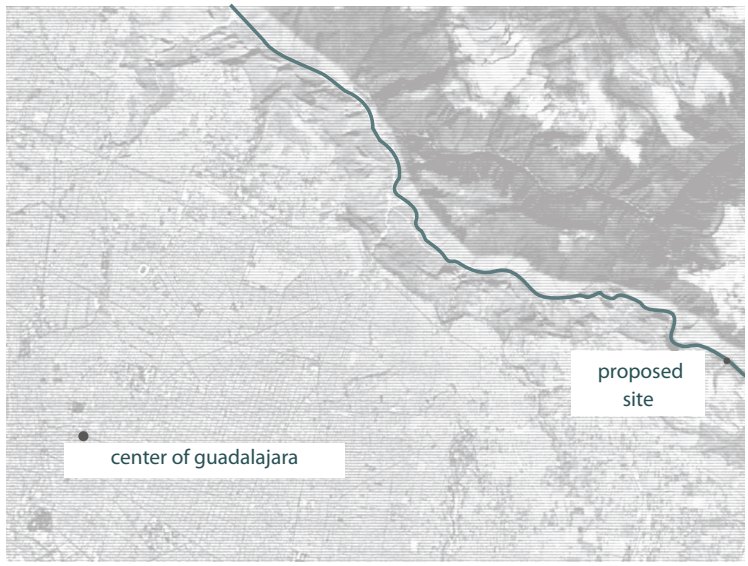
site: existing conditions

The proposed site lies at the furthest extent of the Guadalajara metropolis, on the edge of the La Barranca gorge, the symbolic and physical edge of the city. The green portion of the map indicates where there is open, green space. There is no development on the north east side of the gorge, which acts as a physical barrier. The site hugs the last portion of buildable land before the gorge plummets down to the river below. The yellow indicates where recent development has occurred. The site inherits an interesting melding of an impassable natural barrier, older sprawl out from the city and newer development.

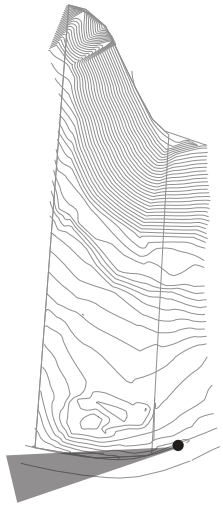
The site is significantly sloped, leaving only a portion of the site buildable. There is a lake at the top of the site, which creates interesting drainage patterns to the gorge below.

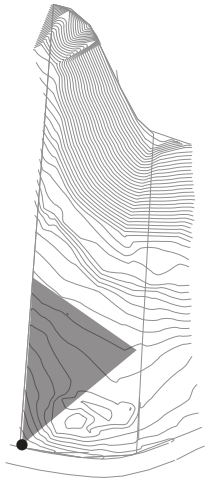


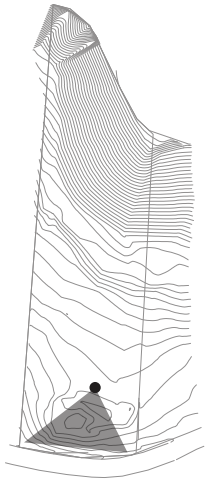


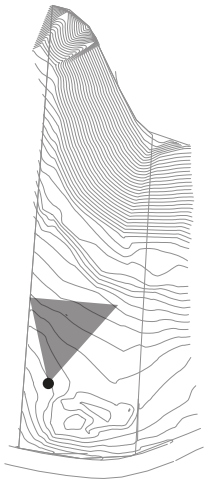

proposed
site
center of guadalajara

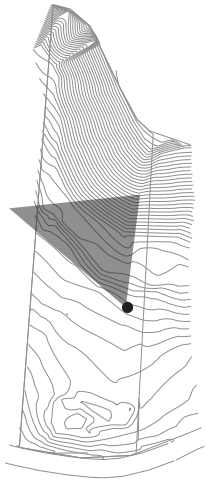
The site is currently in a semi-natural state although it has been developed in the past and has had structures on it in the past. It is situated in such a way as to afford beautiful views to the rural area across the gorge. During the rainy season, the vegitation on the site is currently lush and full, making passage through the site difficult. During the winter, dry months, the land and lake dries out.

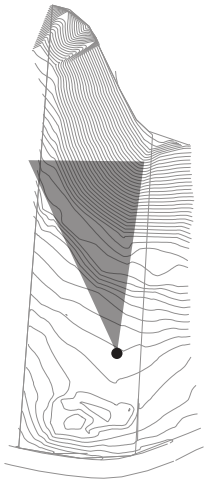


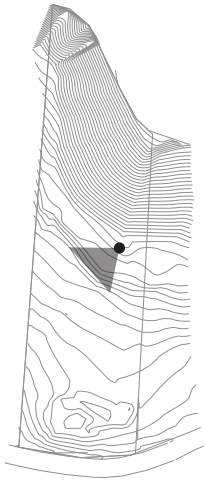


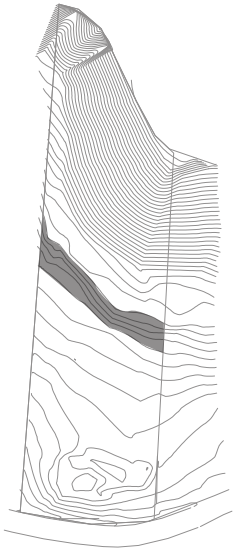


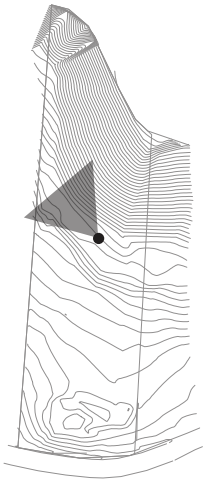


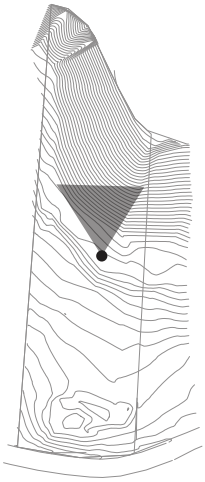


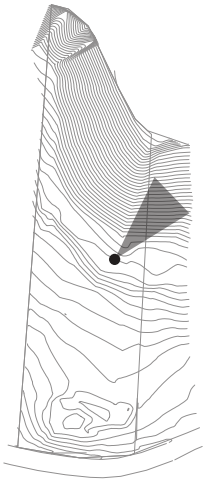


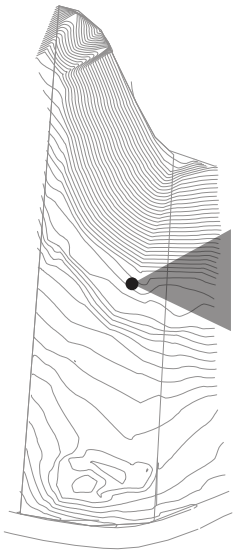


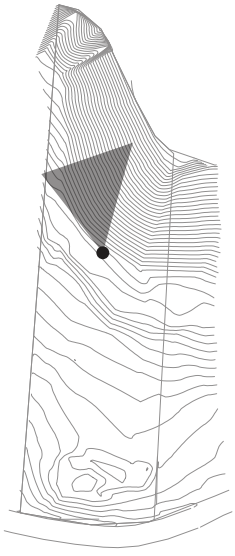




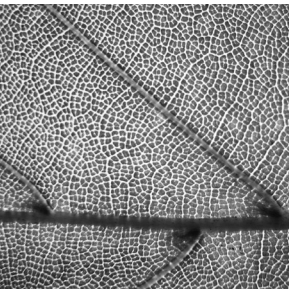









program

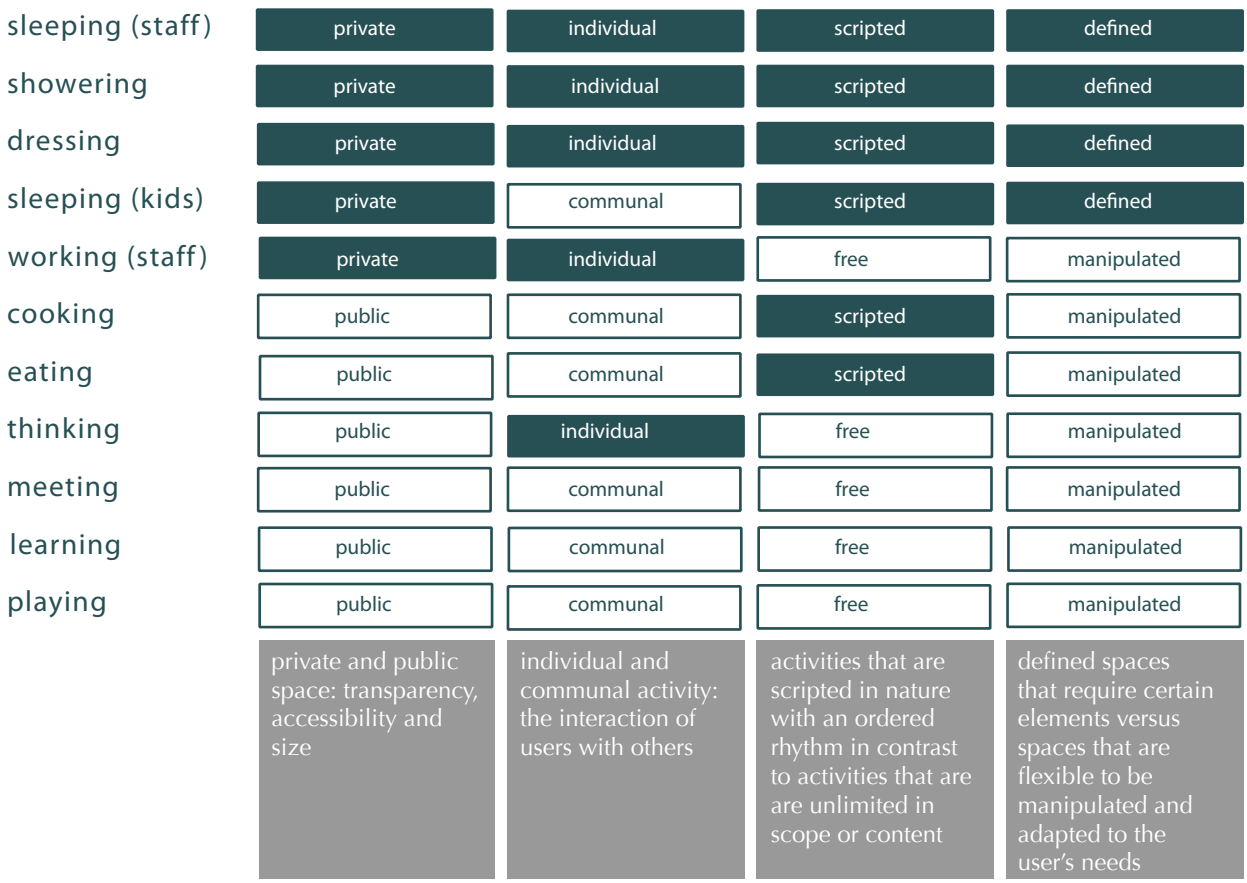


program

A tree's structure is interconnected. The xylem tissue is made up of large cells that distribute water up through the tree from the roots below to the leaves where it is needed for the process of photosynthesis. At the same time, the phloem tissue transports the sugar from the leaves down through the tree. Each system begins with microscopic capillaries, either in the root or in the leaf. These networks interlace as they condense in the main trunk of the tree, where the exchange of nutrients is made across the xylem tissue.

The cross section of a tree reveals the inherent structure and system that is found within. Each element in the tree facilitates more than one function; the vascular system that transports nutrients throughout the tree is also the means of structure and support.

This integration of use and structure in an interconnected systems is

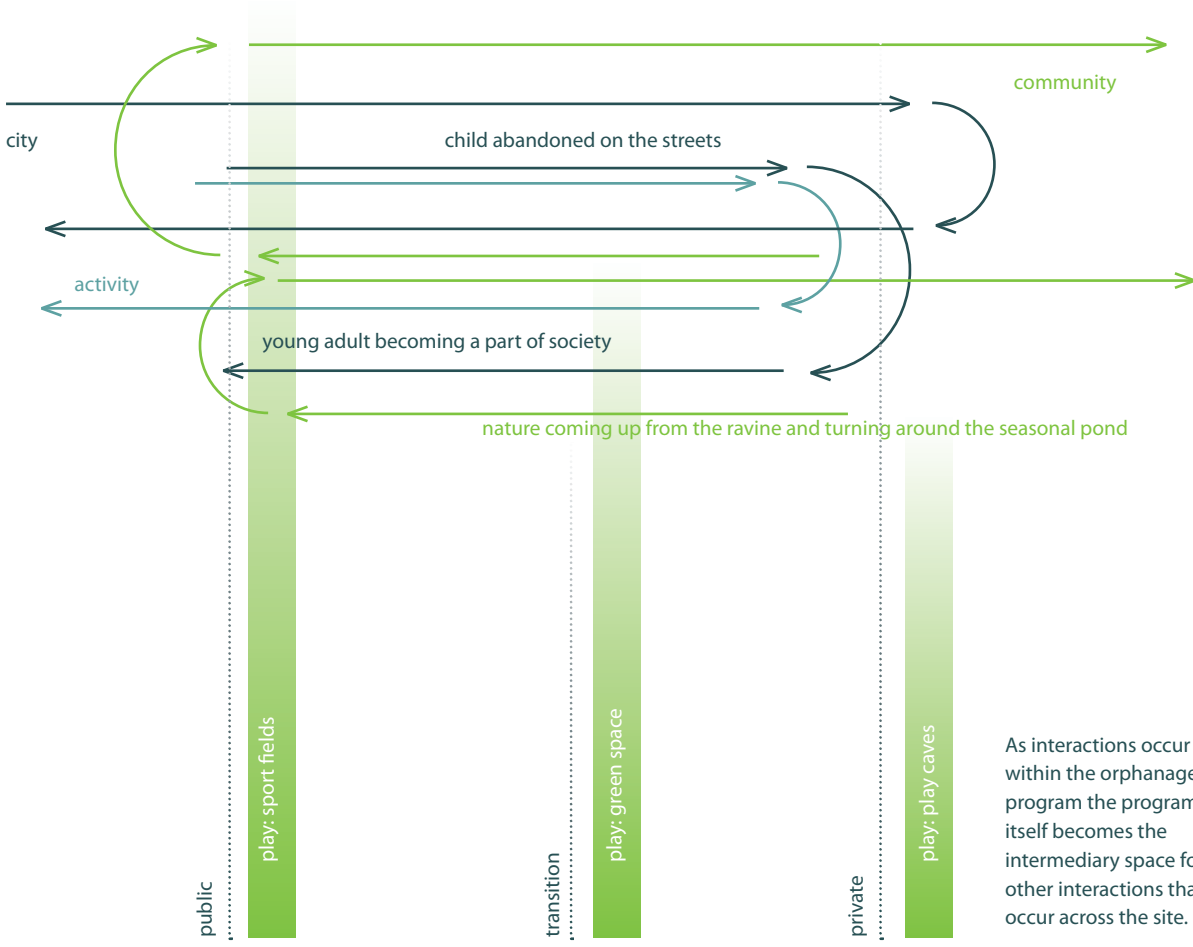

sleeping (staff)
private
individual
scripted
defined
showering
private
individual
scripted
defined
dressing
private
individual
scripted
defined
sleeping (kids)
private
communal
scripted
defined
working (staff)
private
individual
free
manipulated
cooking
public
communal
scripted
manipulated
eating
public
communal
scripted
manipulated
thinking
public
individual
free
manipulated
meeting
public
communal
free
manipulated
learning
public
communal
free
manipulated
playing
public
communal
free
manipulated
private and public space: transparency, accessibility and size
individual and communal activity: the interaction of users with others
activities that are scripted in nature with an ordered rhythm in contrast to activities that are are unlimited in scope or content
defined spaces that require certain elements versus spaces that are flexible to be manipulated and adapted to the user's needs

metaphorically applied to the program needs of an orphanage. An orphanage is comprised of individuals that are living in a communal whole. There are various elements that are interwoven and connected, facilitating various functions and user needs. Circulation between the spaces becomes a means of structuring the spaces.

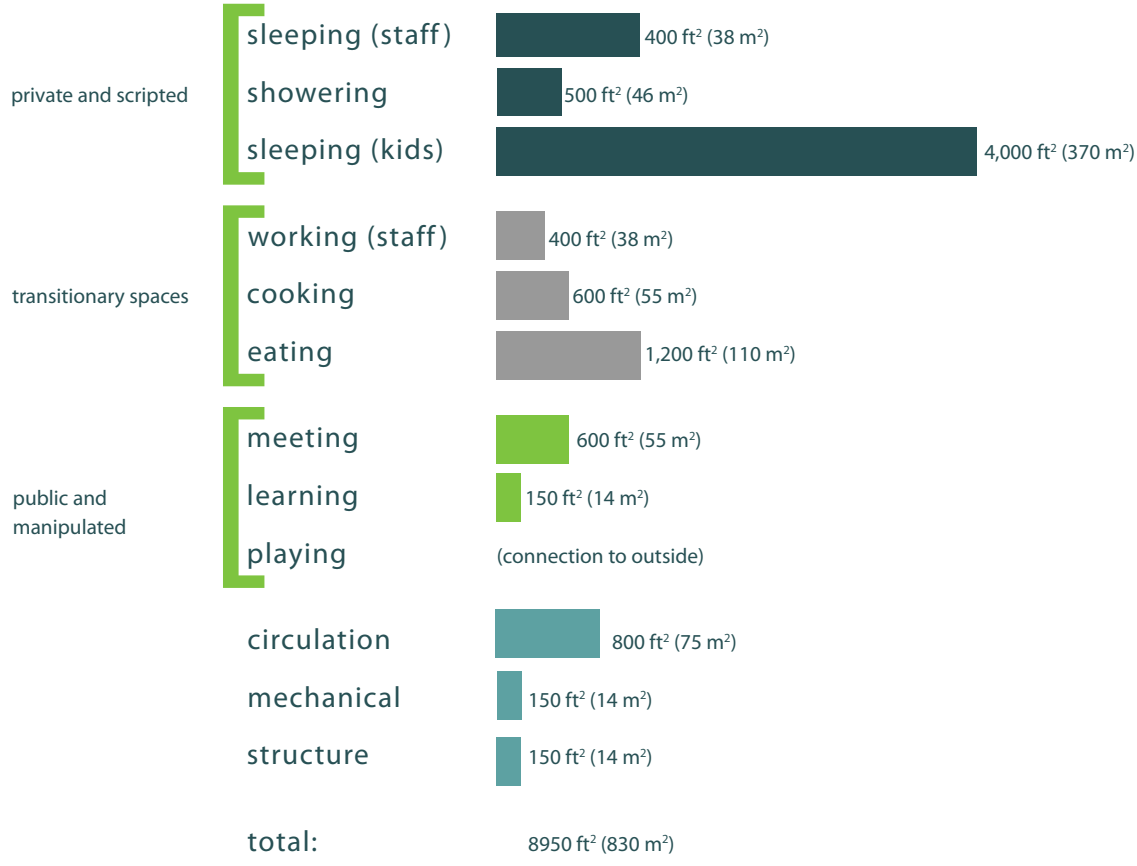
By diagramming the programmatic components with various filters: private vs. public, scripted activity vs. free activity, defined space vs. manipulated space and individual activity vs. communal activity, a pattern of use emerges. The private spaces tend to be more defined with specific needs. Conversely, the public spaces lend themselves to being free to interpretation and manipulation, suggesting a flexible system that can adapt as changes occur in activities or needs.

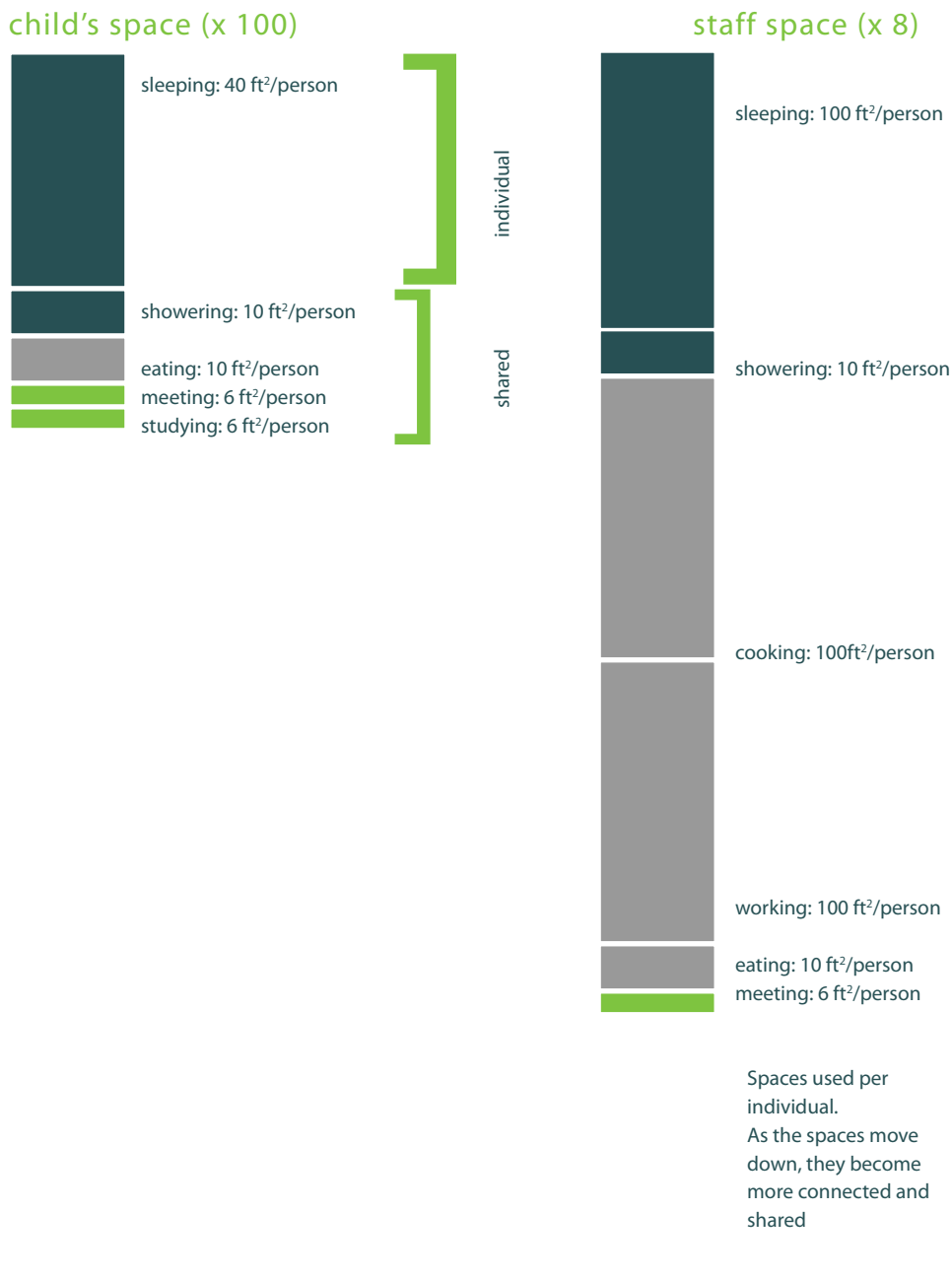
There are also certain spaces that are associated with activities that are ordered in nature, suggesting that they will facilitate a pattern of use throughout the day.

Two systems of use emerge. One is compromised of small, individual spaces with scripted activities. The other is made of larger, communal, manipulative spaces. In their exchange, a tertiary system of space emerges, facilitating transfer through these two places.



As interactions occur within the orphanage program the program itself becomes the intermediary space for other interactions that occur across the site.

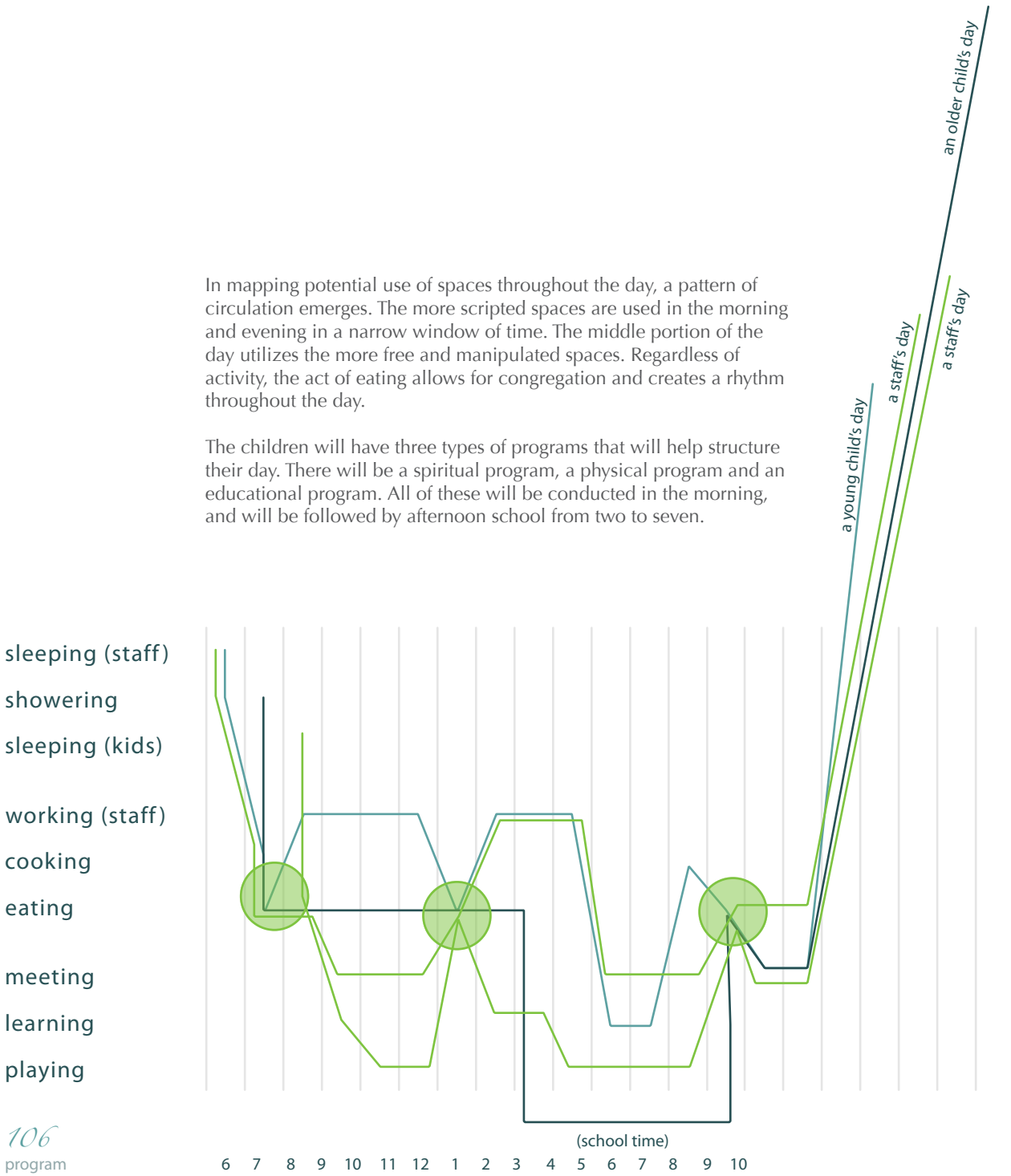

private and scripted
sleeping (staff)
400 ft² (38 m²)
showering
500 ft² (46 m²)
sleeping (kids)
4,000 ft² (370 m²)
transitionary spaces
working (staff)
400 ft² (38 m²)
cooking
600 ft² (55 m²)
eating
1,200 ft² (110 m²)
public and manipulated
meeting
600 ft² (55 m²)
learning
150 ft² (14 m²)
playing
(connection to outside)
circulation
800 ft² (75 m²)
mechanical
150 ft² (14 m²)
structure
150 ft² (14 m²)
total:
8950 ft² (830 m²)

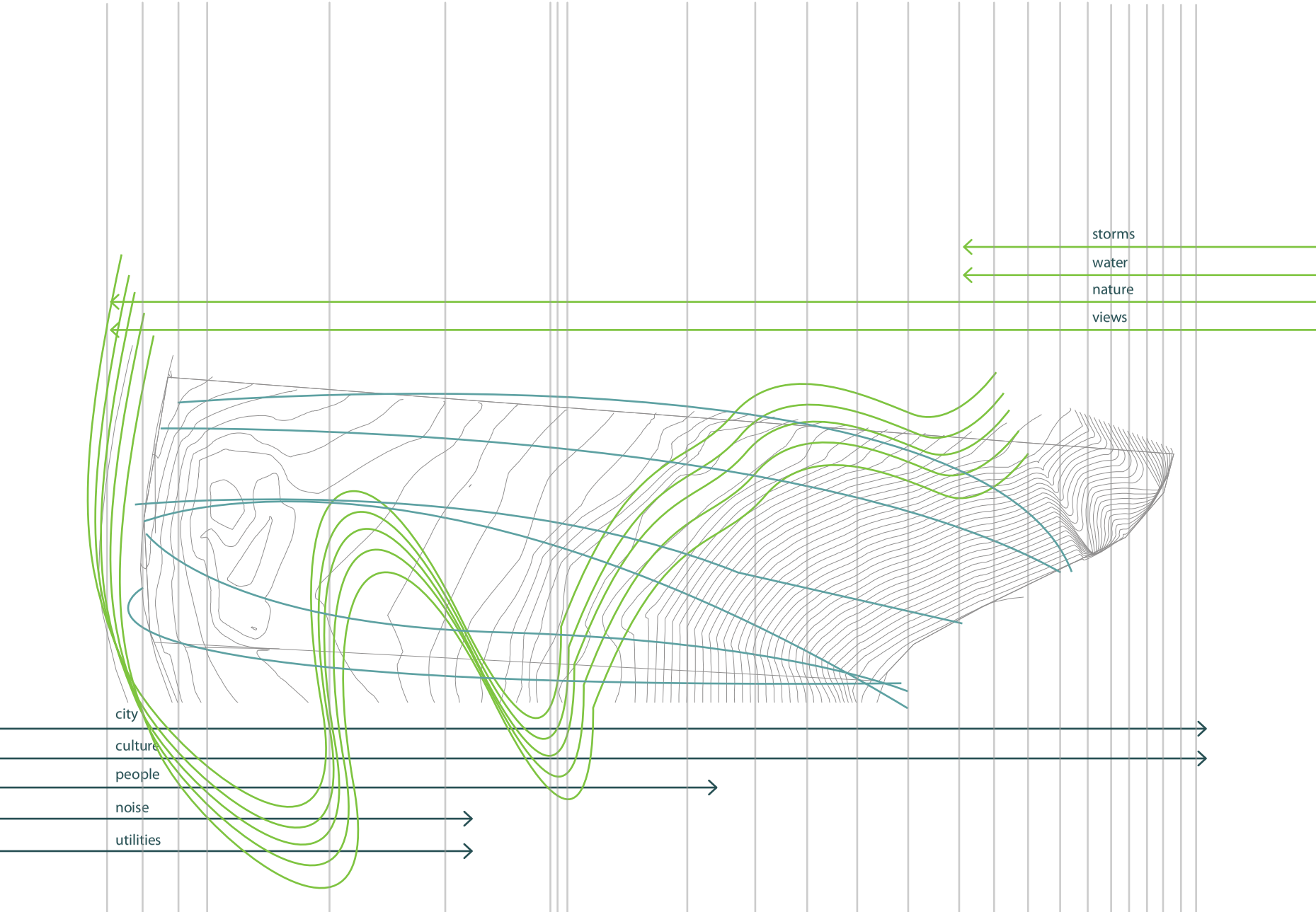


Spaces used per individual.
As the spaces move down, they become more connected and shared

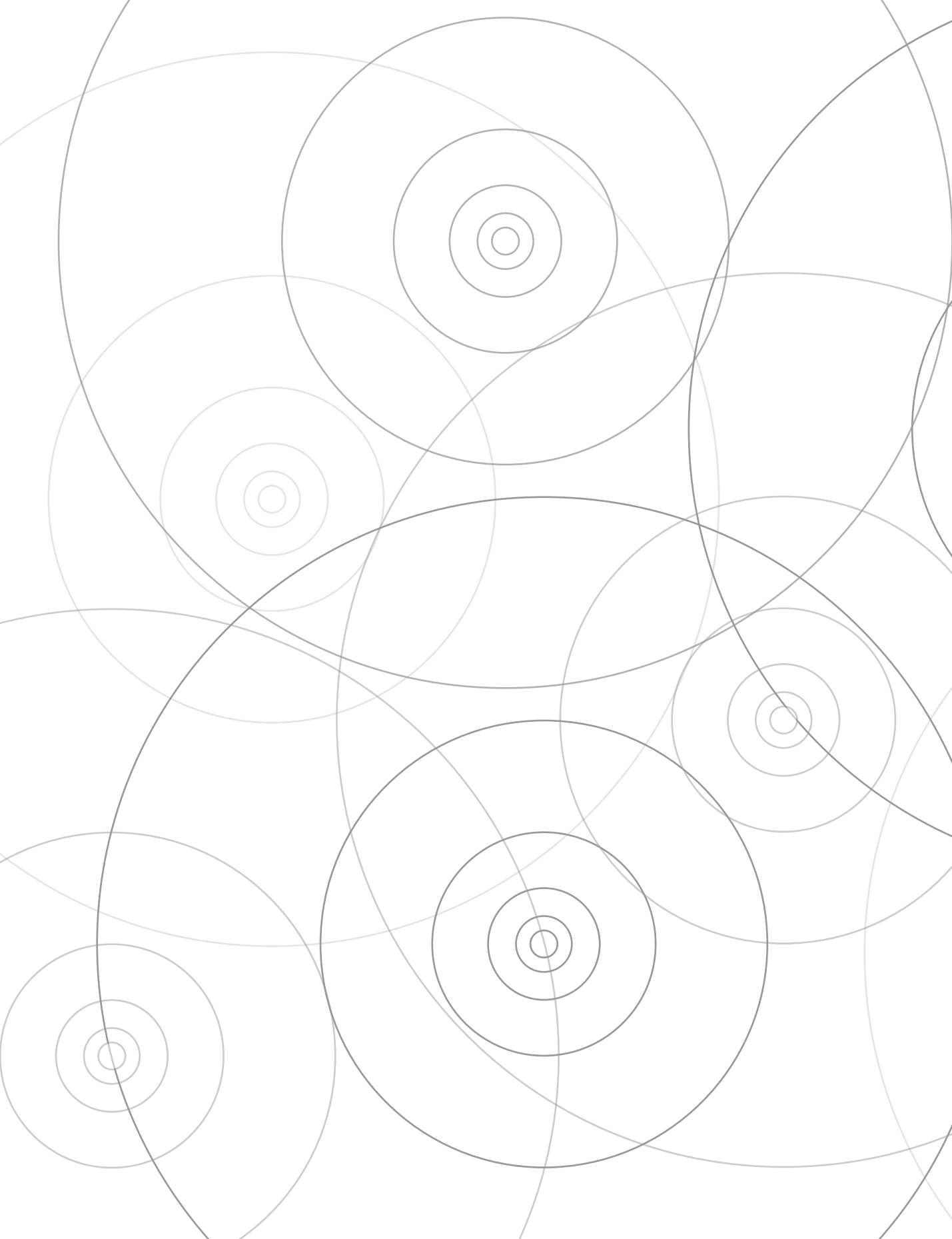
In mapping potential use of spaces throughout the day, a pattern of circulation emerges. The more scripted spaces are used in the morning and evening in a narrow window of time. The middle portion of the day utilizes the more free and manipulated spaces. Regardless of activity, the act of eating allows for congregation and creates a rhythm throughout the day.

The children will have three types of programs that will help structure their day. There will be a spiritual program, a physical program and an educational program. All of these will be conducted in the morning, and will be followed by afternoon school from two to seven.




storms
water
nature
views
city
culture
people
noise
utilities

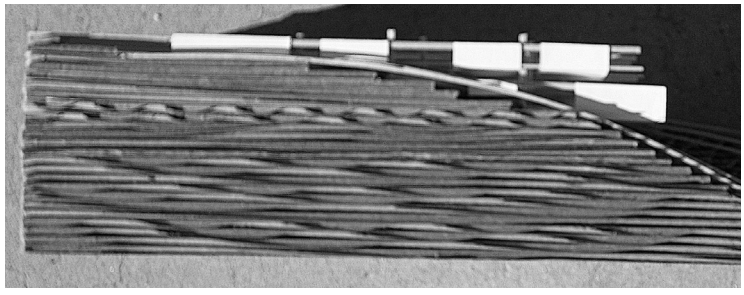
process



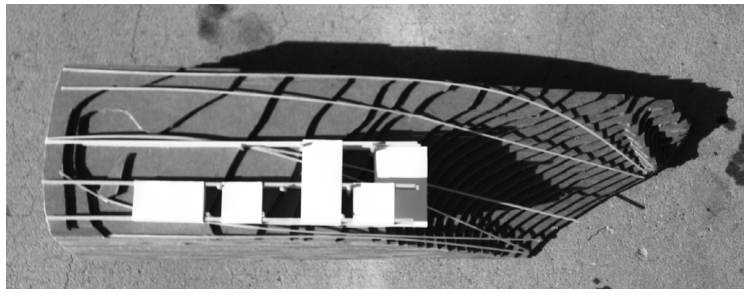
haven
regenerates
orphan's roots;
emanating
growth

site model

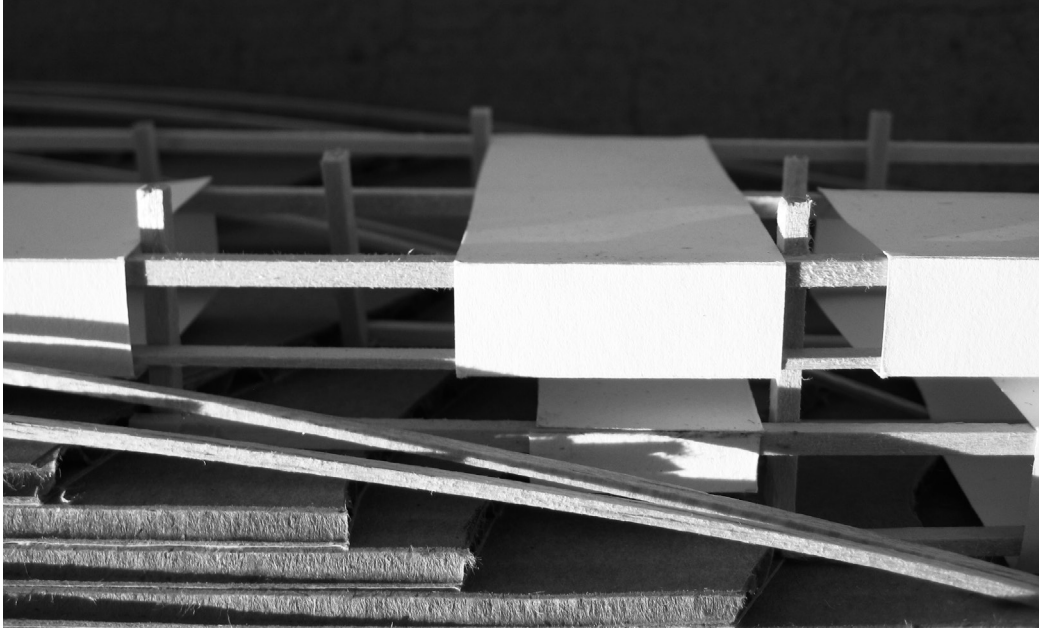
The site model has two grids running through it. One is indicative of the way water would run off the site in to the gorge below. This is naturally more organic in form. The second is the grid of the city pulled across the site with its rectilinear structure. The spaces slide in and out of the grid as it intersects with the organic grid and encounters the slope of the site.

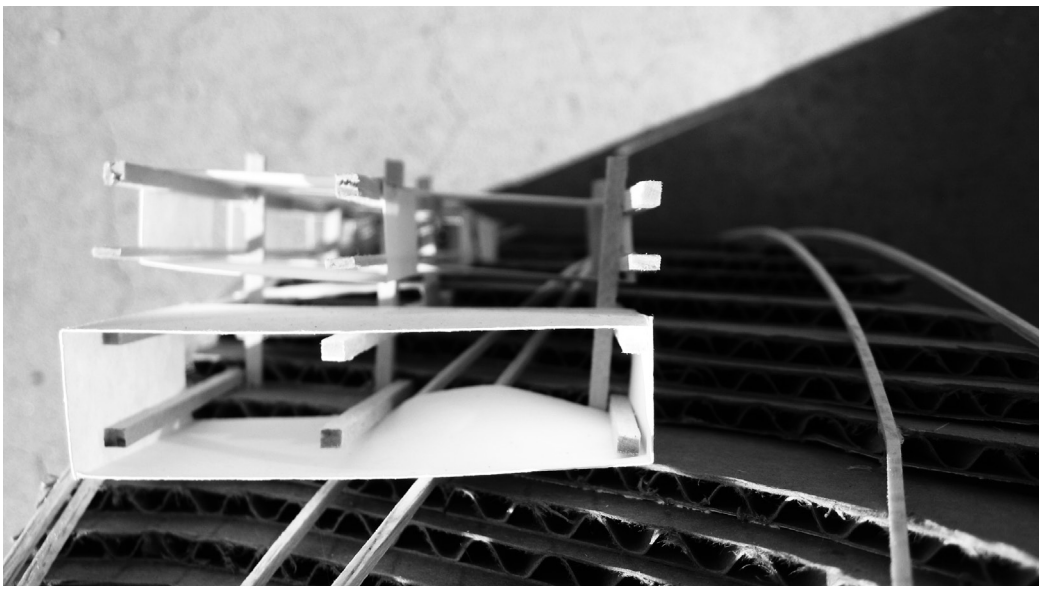


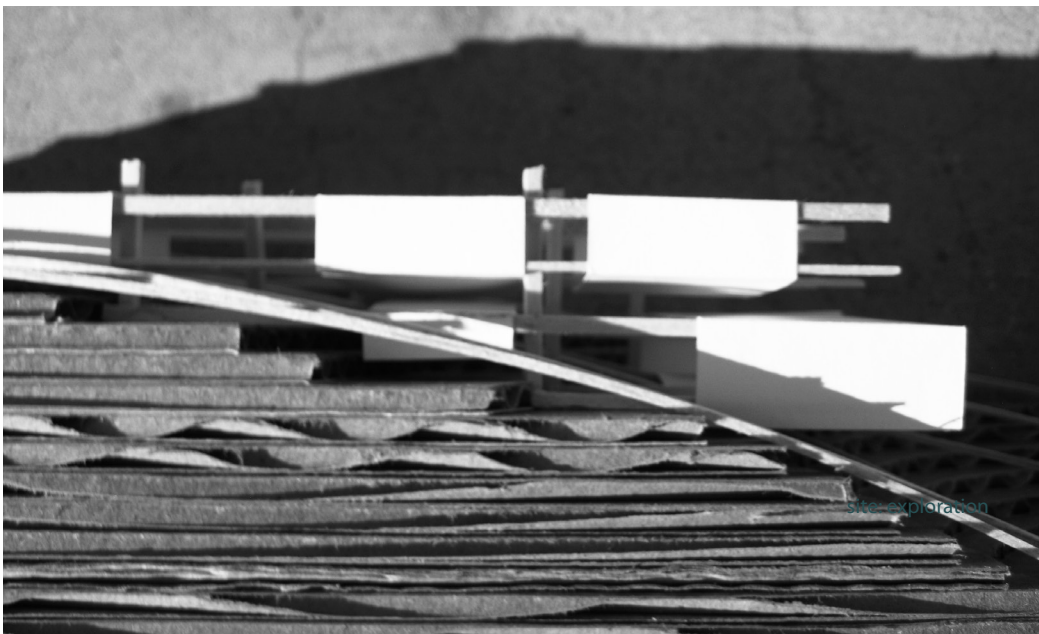
plan



section



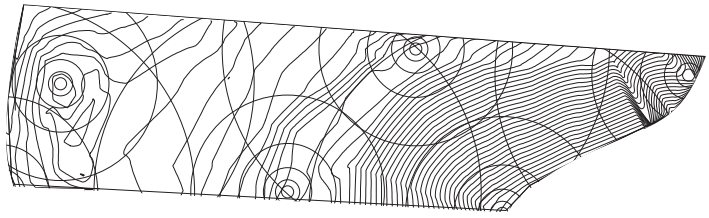
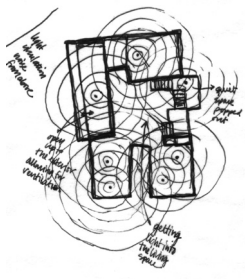




Site exploration

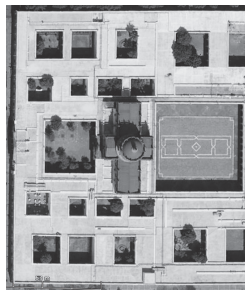




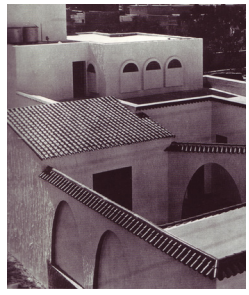



[ripples]

An individual's life emanates out and affects the surrounding individuals and community. When a wave collides with another, a dynamic interaction follows. Water was 'dropped' on the site in important places to create a grid of interaction. This created a beginning structure from which to organize the site and program.

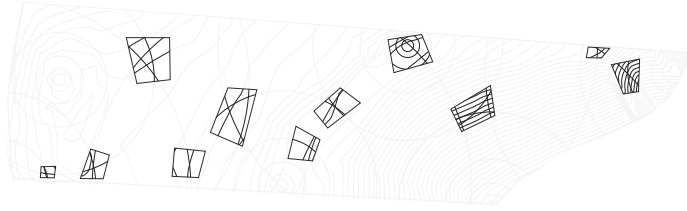
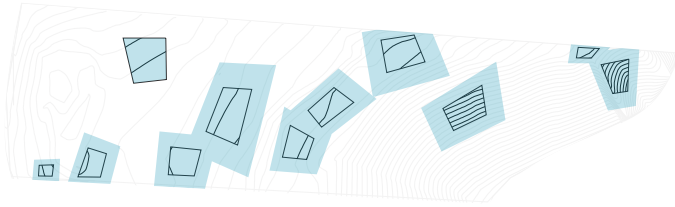







[courtyards]

A series of courtyards were formed out of points of intersection. The essense of the courtyard is interaction and intersection. Some of the courtyards might facilitate circulation in a more traditional sense, while others might help facilitate light getting into the building, or water flowing through the site.

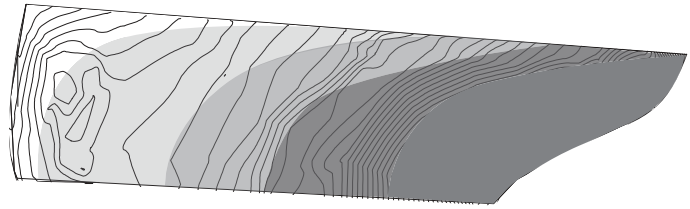
It is difficult to find a country so well identified with one particular architectural element as Mexico is with the wall. Mexico is a country of architecture without architects, full of mystery, color, sun, and shade, and so deeply identified with the wall that it has become a central element of everyday life. In Mexico, the wall is always at hand, first as a national element, then as a prevailing and necessary force. In the end, the wall is the most basic element of true Mexican architecture. The wall stands the test of time...Strong, sweet, romantic and full of color and light, the wall immediately reveals Mexico as a place open to outside influences, yet deeply rooted in its true character and values.

R. Legoretta

[building as threshhold]

The program and site has a broad range of privacy. The buildings and outdoor spaces become thresholds to mitigate the transition from certain levels of privacy to others. On the lower portion of the site, the slope becomes a concern for safety and observation. The buildings respond by themselves becoming a wall or threshold on the site and creating a division between the living and natural portion of the site.

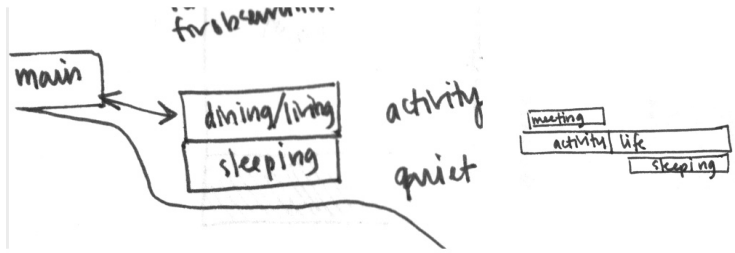
top: casa horizontes by RCR architects
middle: casa gilardi by Luis Barragan
bottom: transition of privacy across the site



quiet|live|sleep

active|play

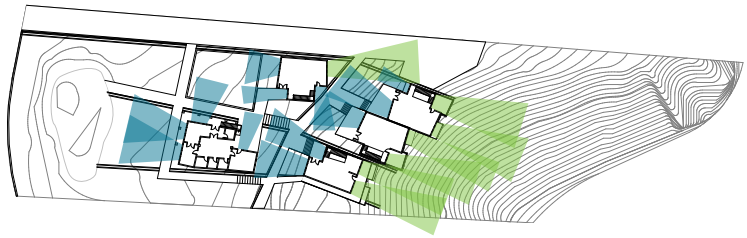
quiet|live|sleep



[public|private]

"The living space of each scheme was designed in line with Mexican lifestyle, with the aim of creating something privated and introverted. The focus is thus on forms that hug and protect. The house is closed in on itself, like a patio dwelling where only the core is open to the sky....this is a traditional theme that the architect interpreted, using the area as an outdoor room and as a means of trapping light and shadow, rather than as distribution of space." Daniele Pauly, commenting on Luis Barragan's work in Space and Shadow, Walls and Color.

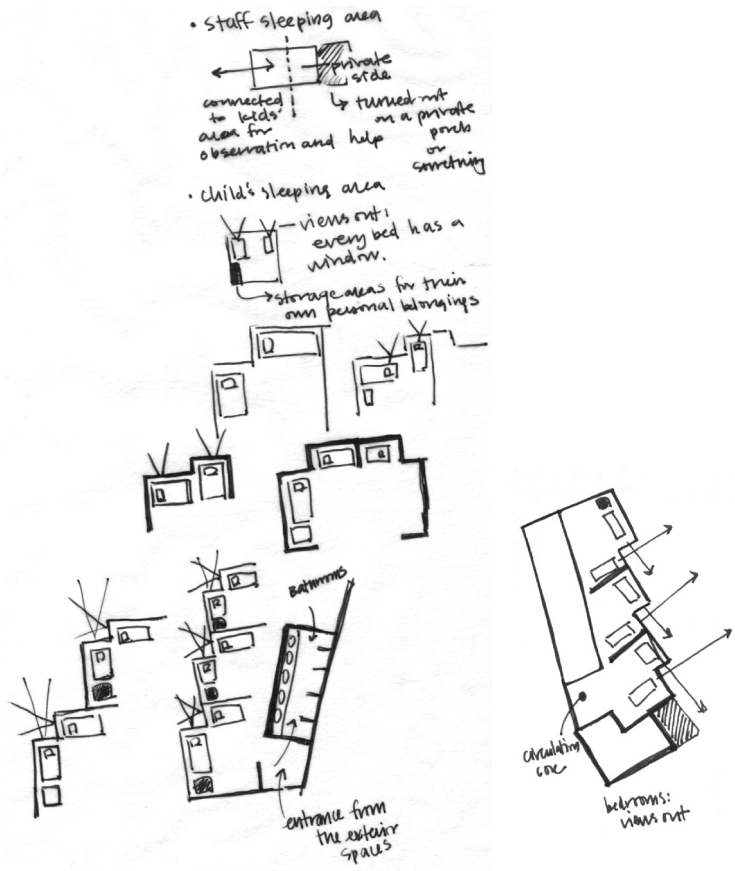
The buildings are oriented in section around a main active core that runs along the main level of the site. From here, quieter aspects of the program either branch up or down off the main core. In addition to this, the buildings turn out or in depending on their programmatic elements. There are smaller inner-facing activity cores in each of the buildings, but a larger core is created in the transition space between the buildings that bridges across the topographical change on the site.

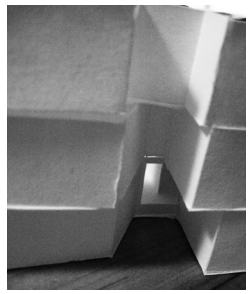


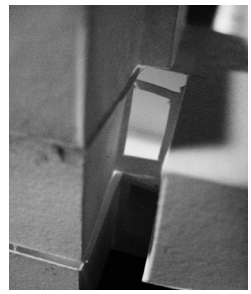
[observation | view]

The concept of observation and view is very strong and important in this project. The view across the gorge to the natural areas roots and grounds the site, and introduces a quiet and uncluttered or hurried aspect to the buildings. The buildings are oriented to look out in such a way as to take advanatage of those views (demonstrated by green view cones).

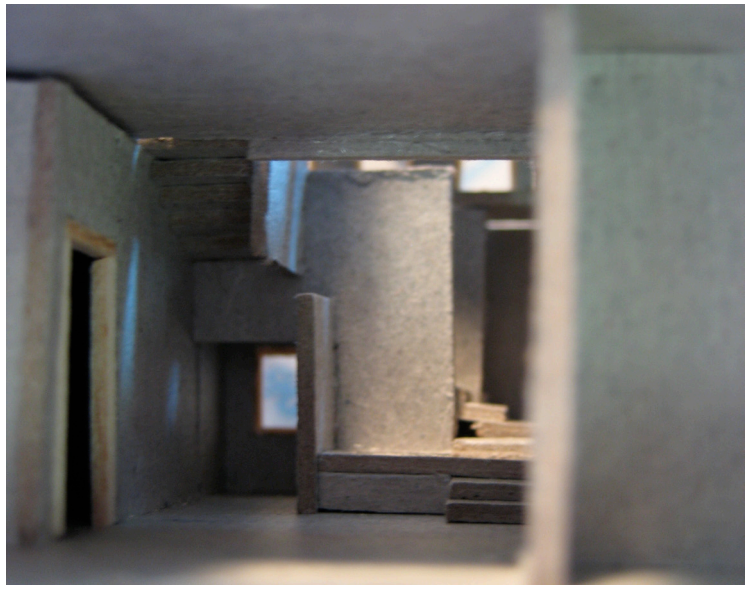
On the other hand, the children will be young (5-10 years old at arrival) and require observation. The children need to have a sense of relative freedom: that they are able to make their own choices, but within a protective boundary. The buildings respond to this by turning and looking out on the play spaces that emerge in between the buildings. The resulting affect is very observable spaces that is still free and unencumbered (demonstrated by the blue view cones).


• staff sleeping area
private side
connected to kids' area for observation and help
↳ turned out on a private porch or courtyard
• child's sleeping area
views out; every bed has a window.
↳ storage areas for their own personal belongings
Bathrooms
entrance from the exterior spaces
circulation core
bedrooms: views out





exploring how the volume could be pushed and pulled to let light get into the darker recess of the program

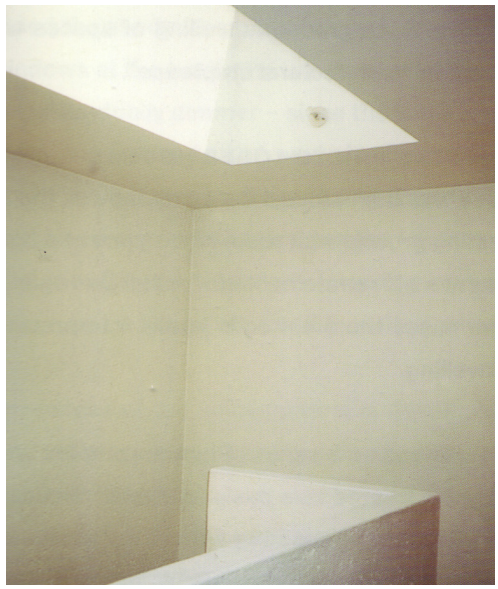


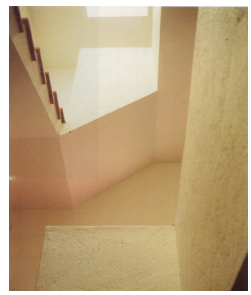
[light]

Light is an important factor in Mexican architecture. The direct sun is often avoided because of the heat and intensity it brings, leaving interior courtyards and corridors to act as filters to get light into the deeper interior spaces.

In the casas, small windows are dappled on the south side of the building, and large windows are placed on the north side to take advantage of the cool light and the striking views. In addition to being a circulation space, the stair becomes an open lightwell, bringing light to every floor.





Luis Barragan's use of light in his works



color in barragan's and legoretta's buildings

Color is a very important aspect in Mexican architecture. Barragan and Legoretta are very bold with their use of color, and allow it to influence the mood and feeling of the spaces they design.

Red is associated with the east, the rising sun, birth and blood. Yellow is associated with the south, corn, life, and the blazing sun. Blue is associated with the sky, water, rain and fertility. Green is associated with vegetation and jade. White is associated with the north and with change. Black is associated with the west, the death and night.

Color is also significant in the psychological experience of a space. Certain colors tend to be associated with certain moods or emotions. Patricia Valdez and Albert Mehrabian did a study where they evaluated the pleasure level and arousal level of certain colors. Yellow/green is the least pleasureable while also having the greatest arousal level. On the other hand, blue/purple has a high pleasure level and a low arousal level. These effects combine to produce a reaction to the color.

The Wexner Study associated colors with words associated with different moods and emotions.

cheerful | jovial | joyful

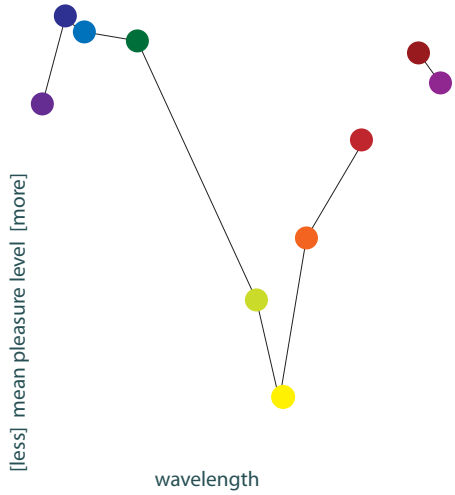
exciting | stimulating

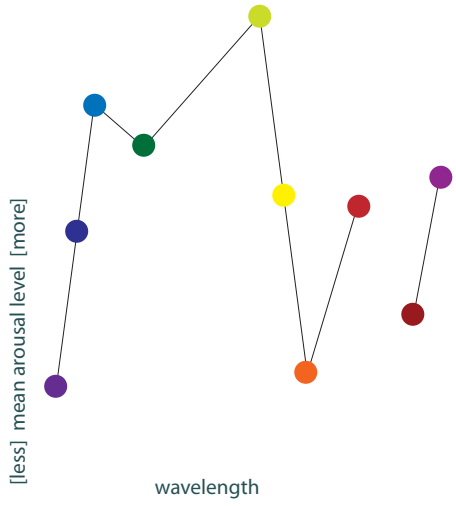
secure | comfortable

calm | peaceful

tender | soothing

This translated into how color was applied within the buildings. The playful areas and circulation are hues of yellow and orange because they collect sun and light and spread it throughout the building, as well as being spaces that are intended to be highly interactive and energetic. The bedrooms are colored with blues and greens to reflect the more quiet nature of the space and activity that goes on within.

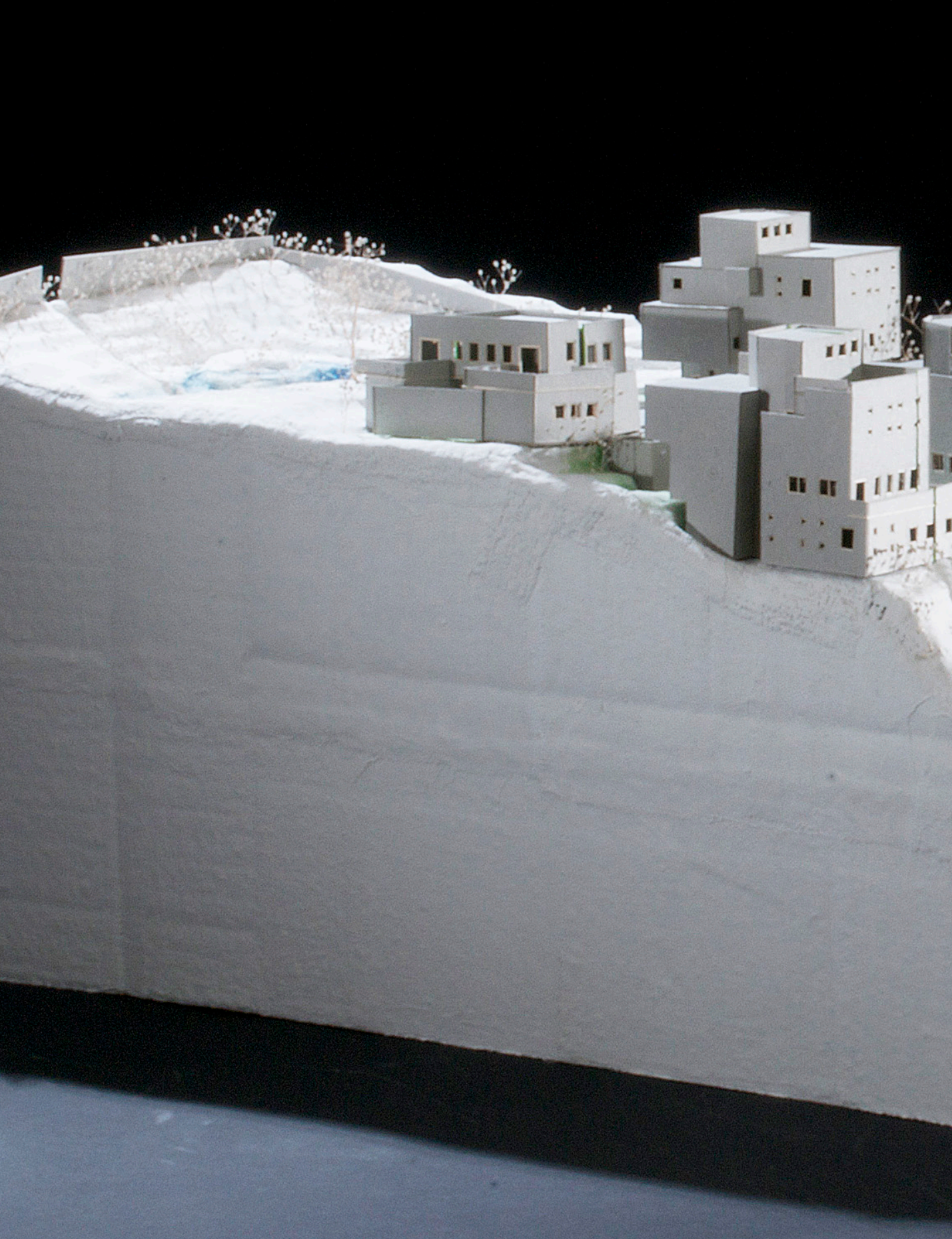

[less] mean pleasure level [more]
wavelength


[less] mean arousal level [more]
wavelength

mark rothko

Painter Mark Rothko was a contemporary of Luis Barragan. While they may or may not have influenced each other, their use of color is similar. His life-size paintings are very evocative of emotions and mood. His composition and palettes inspired the colors used in the stair wells.

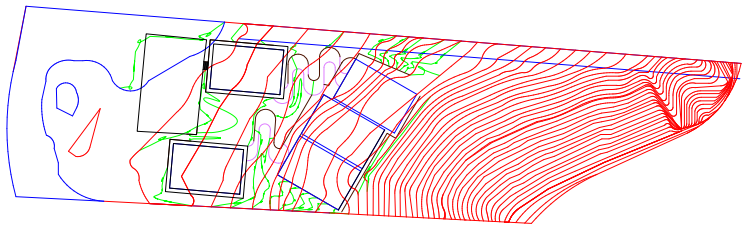

casa



landscape and drainage plan

The final landscape plan was a product of constraints and opportunities. Essentially finding as many opportunities for increasing play areas, fun, and creative spaces for the children while allowing for proper drainage in spite of the incredibly variable site topography. Grading was also designed in such a way as too alleviate as much extra hydrologic pressure on the massive lower site retaining wall during downpours. This could otherwise compromise the integrity of both the wall and its contiguous structure which will house 75% of the children in the orphanage. This was done through natural diversion of runoff through grading as well as a subterranean drainage system comprised of perforated pipes and gravel to allow water that has percolated into the ground to quickly move out from behind the wall and around the rest of the structure.

Site amenities such as the pond, soccer field, benches, and the swing structure with climbing/workout partition cater to all ages providing fun activities year round no matter the children's age. And the 2' diameter plastic drainpipes that help water flow under the paths down to the lower dormitories double as exciting creative play space for younger children...when dry of course.




Path
Medium Shrub to 4'
Side Walk
Road
Soccer Field
Small Shrub to 2'
Pond
Foot Bridge
Seating
Dormitorios
Officina
Dorms
Building
Bench
Vine Covered Retaining Wall
Swing Structure
Medium Tree to 20'
Large Tree to 35'
N

original
contours
highlighted
in green

proposed changes in contours highlighted in green

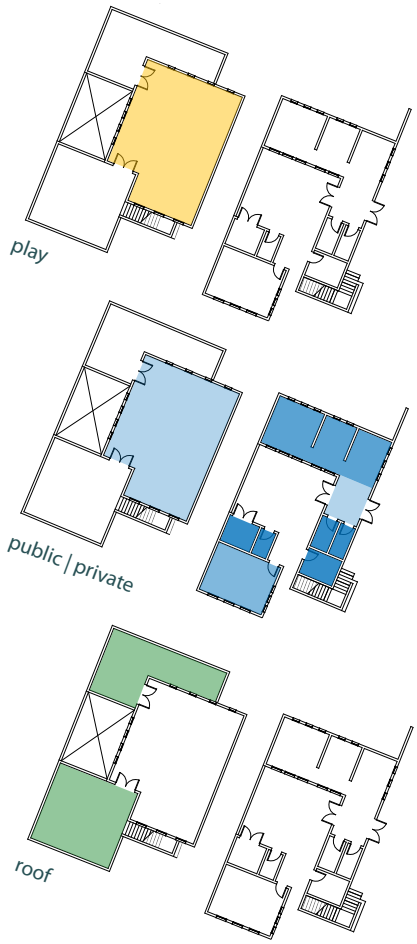
retaining walls
highlighted in green

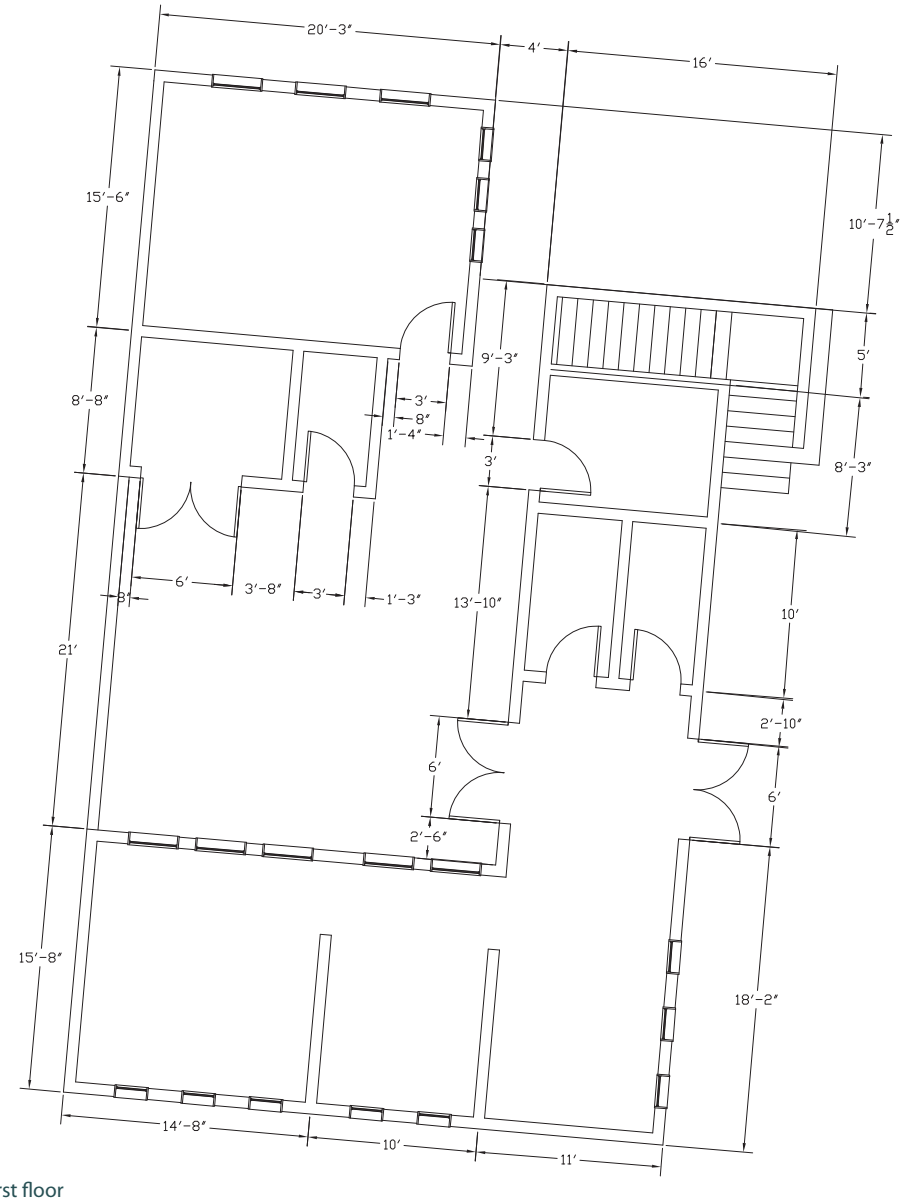
path highlighted in green

overall site plan

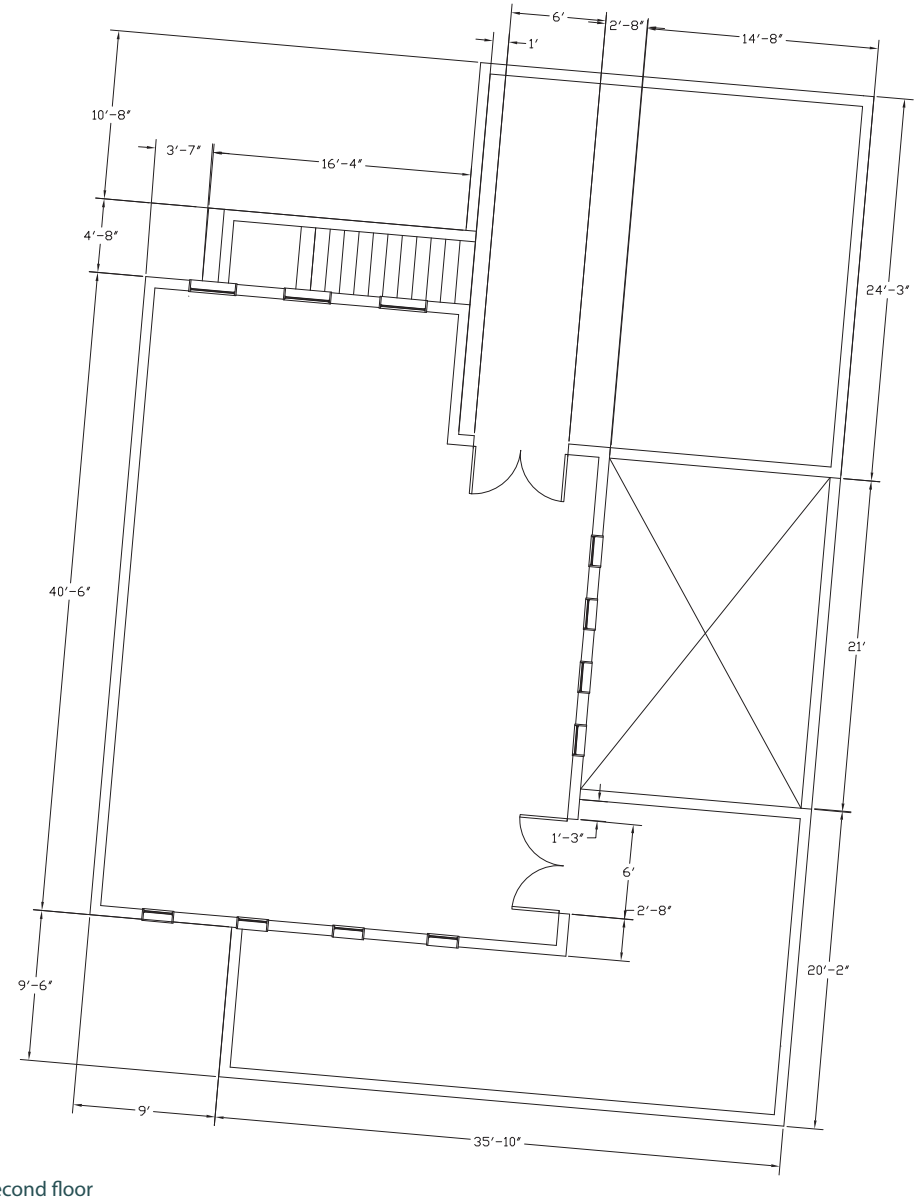

casa two
casa three
casa four

administration building


play
public | private
roof

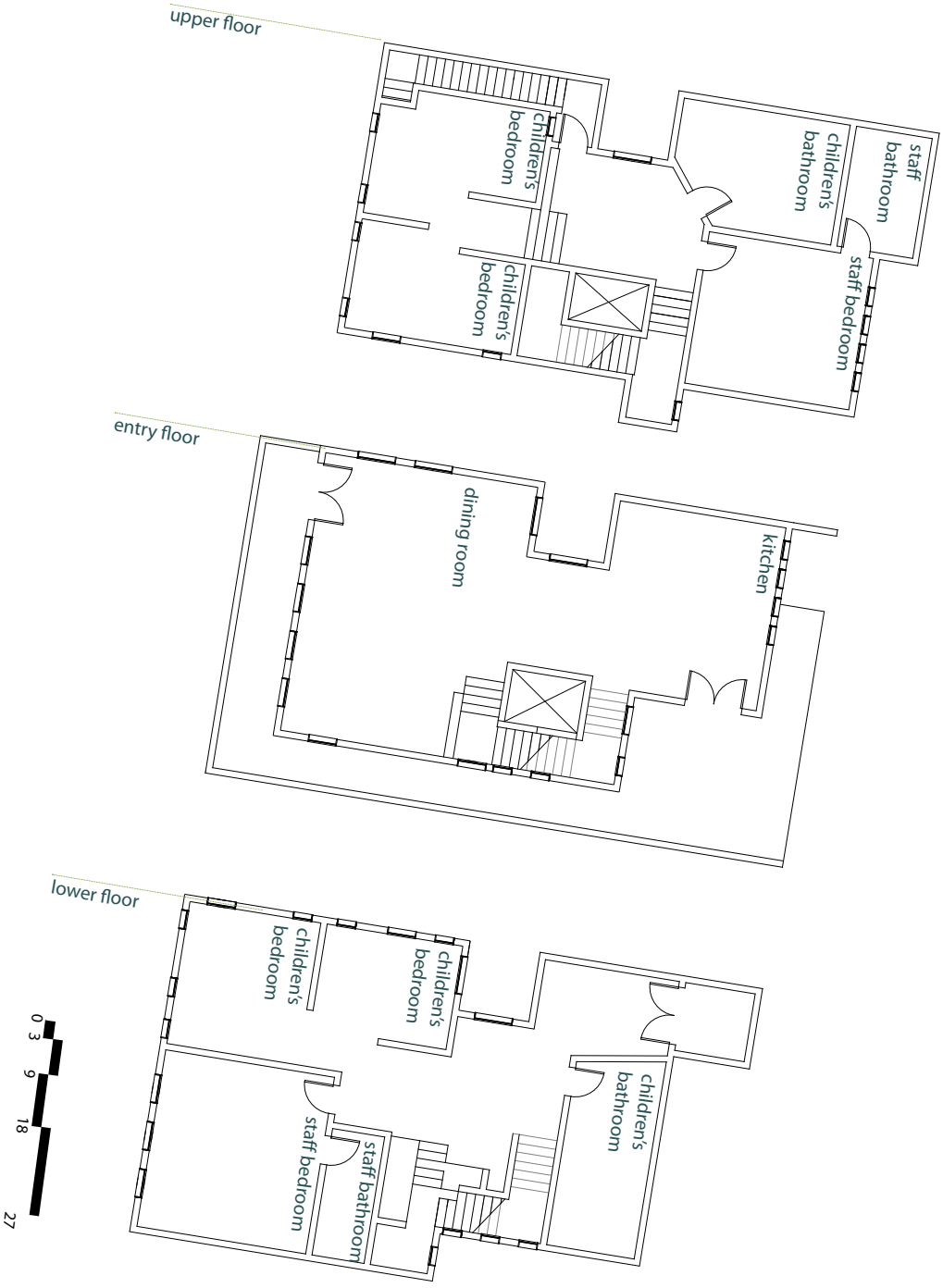


administration building first floor



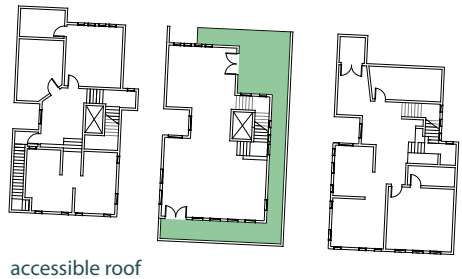
administration building second floor

casa floor plans (1-4)



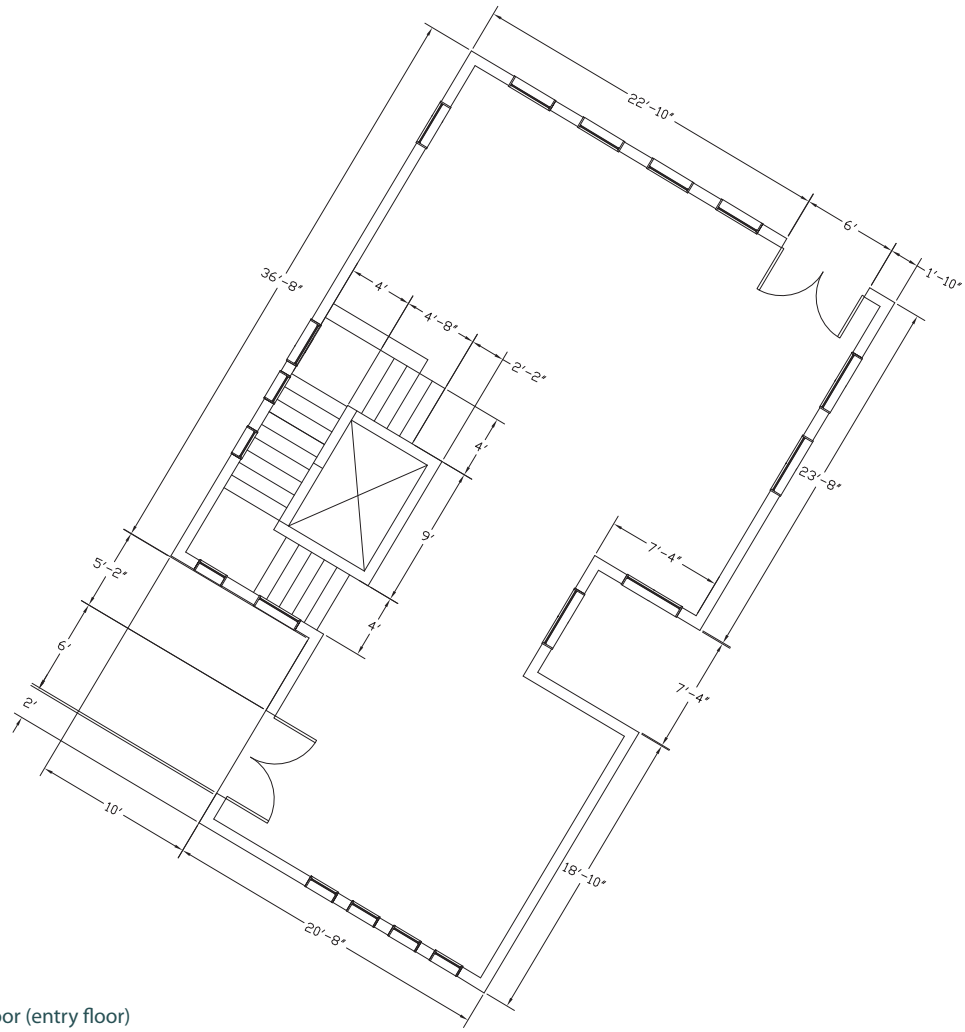
play

public | private

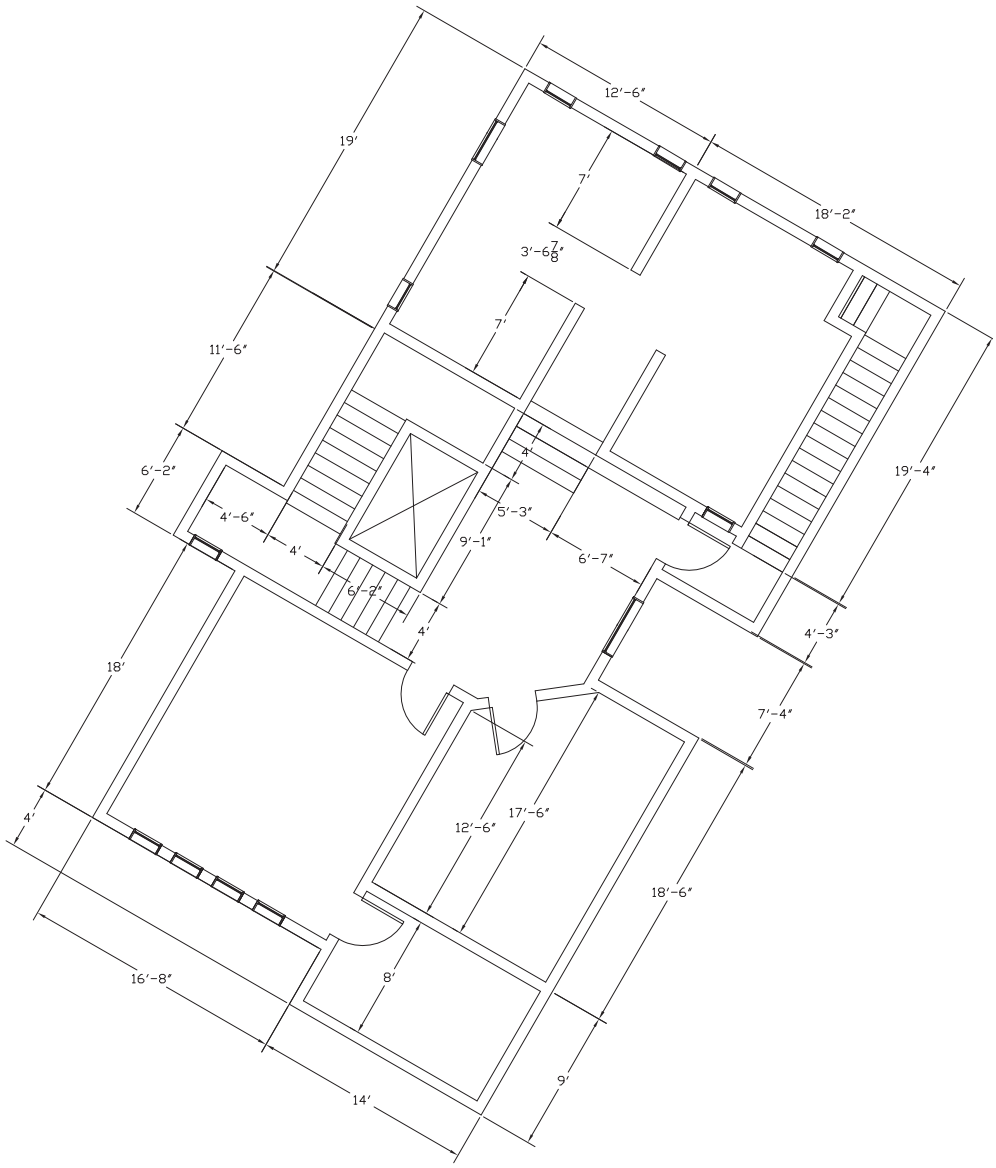


accessible roof

casa bottom floor



casa middle floor (entry floor)



casa top floor

green design strategies

Stack Ventilation- The concept of creating a shaft which allows the warm air to be drawn up and out of the lower floors, to prevent still air from collecting in rooms. The central stairwell is serving as a circulation vent for the hot air to leave the building through the operable windows at the top.

Cross Ventilation- The prevailing winds at the site move from West to East, which can be harnessed to aid in cooling of the building during the hottest periods of the year. There are operable doors and windows on both the western sides of the buildings to allow inlets for the wind, and on the eastern sides of the buildings to allow outlets for the air.

Building Orientation- Building orientation is hugely important for allowing the sun to naturally heat the building, and wind to naturally cool the building, relying less on HVAC systems, and therefore electricity. Quality of sunlight varies based on global location, but below is a breakdown of directional light quality in the Northern Hemisphere.

North Sunlight- Known for a pleasant light quality, roughly the same amount of ambient light all throughout the day. The north side of the building receives indirect light throughout the day.

East Sunlight- The east side of the building receives the morning light, which is cooler, but direct for the first half of the day.

South Sunlight- The south face of the building receives the most amount of direct light throughout the day, which can be used to the designers advantage in the winter, so that sun can naturally heat the building, penetrating into the south facing rooms as the sun is lower in the sky during that time of year. At the same time it is very important that there are substantial shading devices to protect the windows and doors in the hottest times of year. Not protecting the glazed surfaces (doors and windows) can result in the south facing rooms getting too much heat and demanding electric cooling systems to maintain comfort.

West Sunlight- The western side of the building will receive direct sun, similar to the east side, though it is much warmer because it sees the West side from approximately noon to sundown, which is the hotter part of the day. It is important to shade the West windows because the heat can make a big difference to the Western Rooms

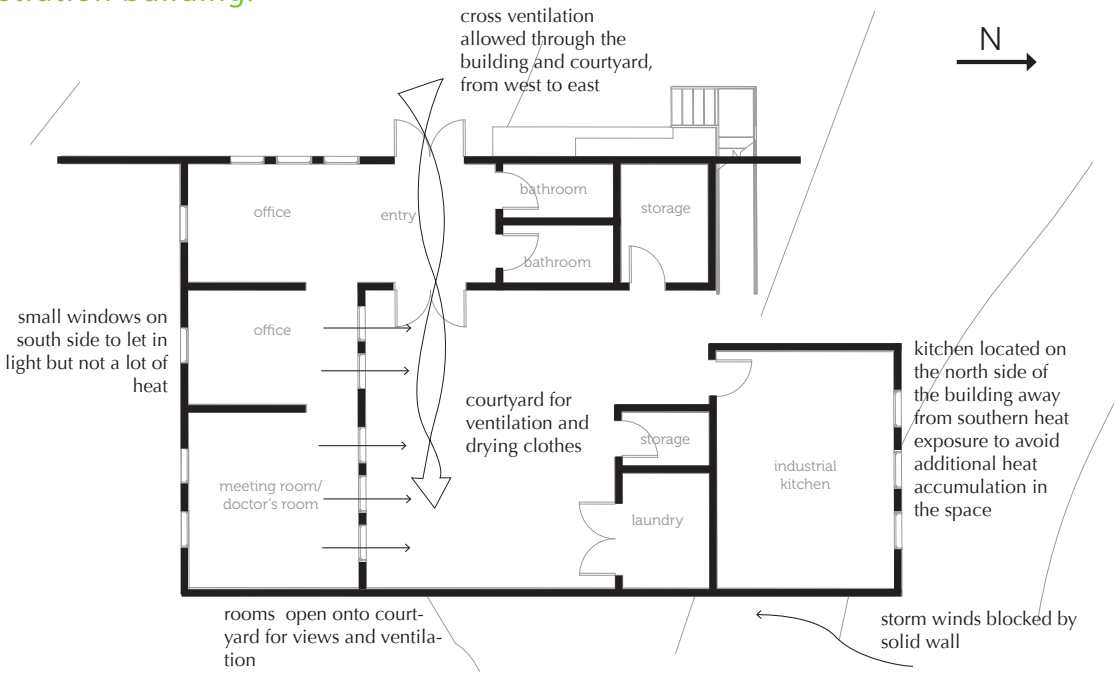
Thermal Massing- Thermal Massing is an option for the southern and west facing walls, though may not be practical in this project. The idea is that the walls will be constructed thicker than the other walls, with more mass, so that they can store the heat that is absorbed during the hottest part of the day. Then, at night, when the outside temperature is cooler, the stored heat is released in attempt to reach equilibrium. In doing so, the rooms bordered by the thermal massing receive heat.

Heat Gain- Refers to the amount of solar radiation a space receives, and therefore the rise in temperature caused by that solar raditation. Southern and Western faces of buildings predominantly receive higher amounts of solar (heat) gain.

Water Catchment System- A system designed to catch and and store enough rainwater to service the needs of building, resulting in less demand for city pipeline water.

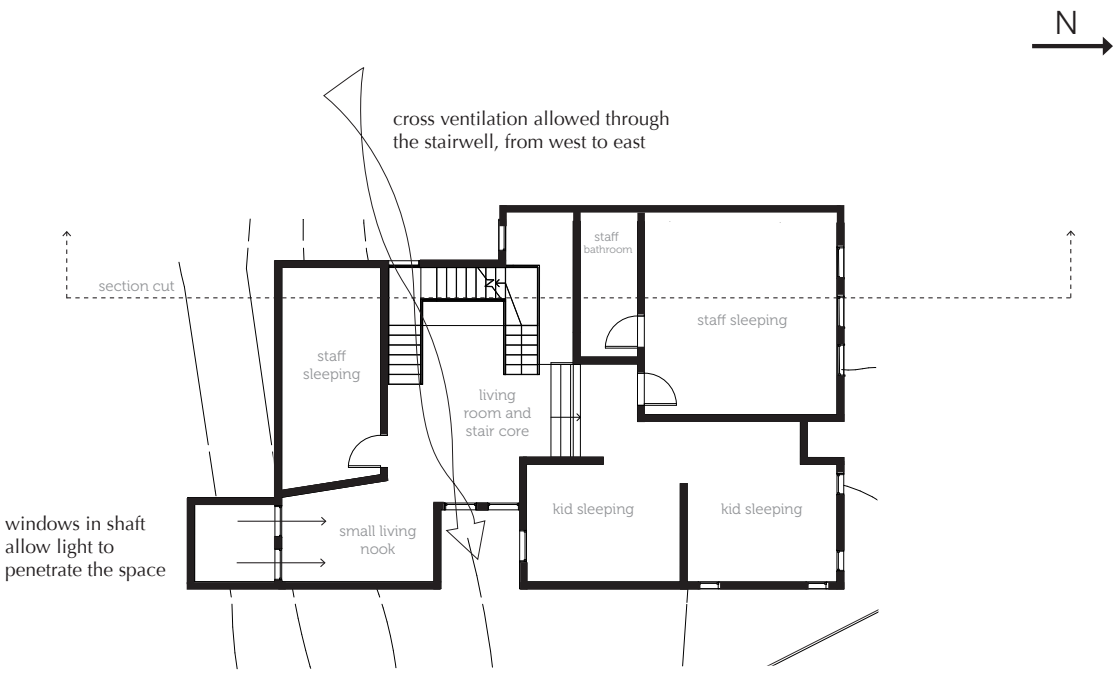
LEED for Homes rating system- LEED for Homes is a consensus-developed, third party- verified, voluntary rating system which promotes the design and construction of high- performance green homes. Point values are assigned to different sustainable building tactics and components of design. Below is a list of LEED qualifications that the orphanage would meet during construction and site development.

administration building:

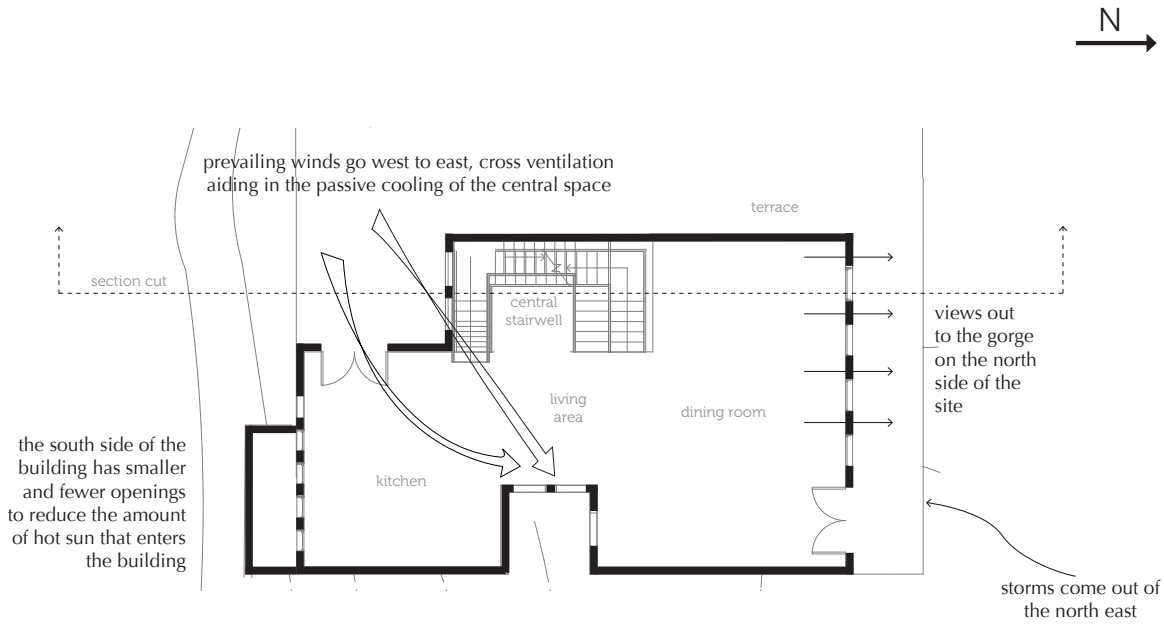


GREEN DESIGN OF BOTTOM FLOOR

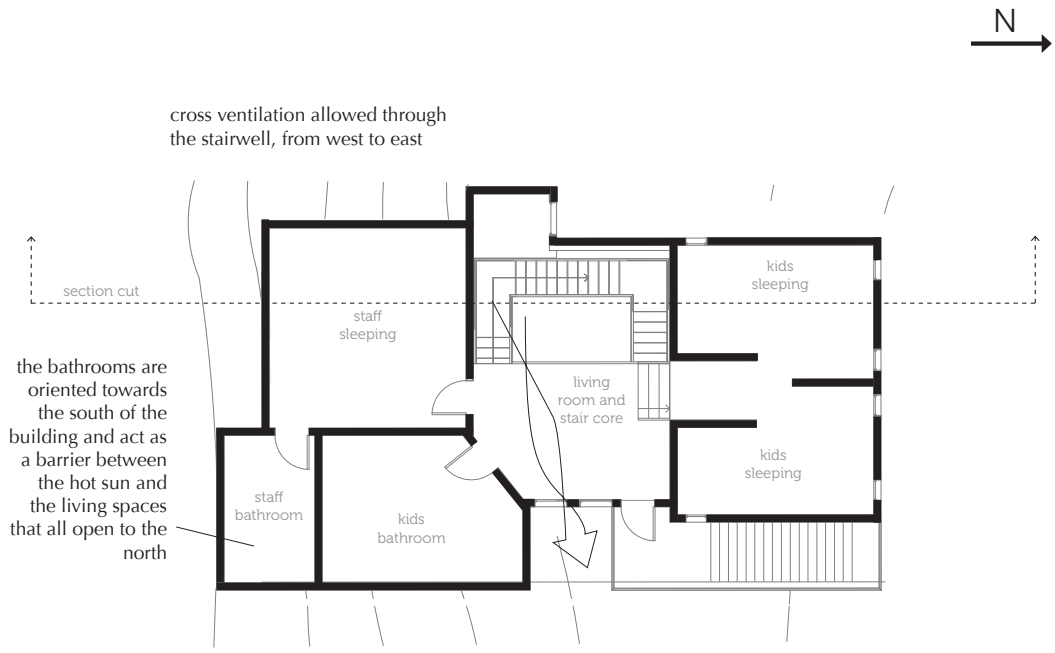
casas (1-4)



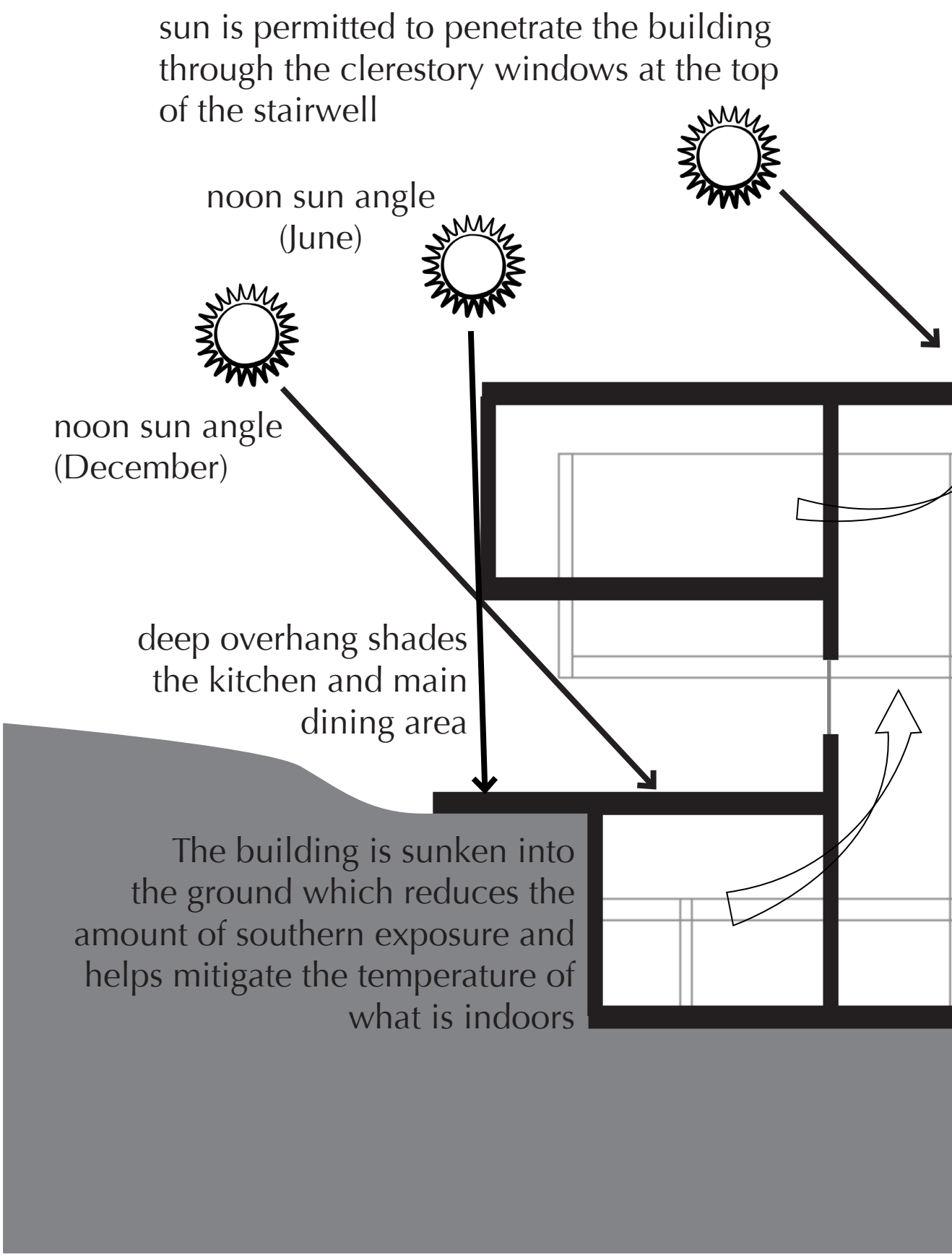
GREEN DESIGN OF BOTTOM FLOOR



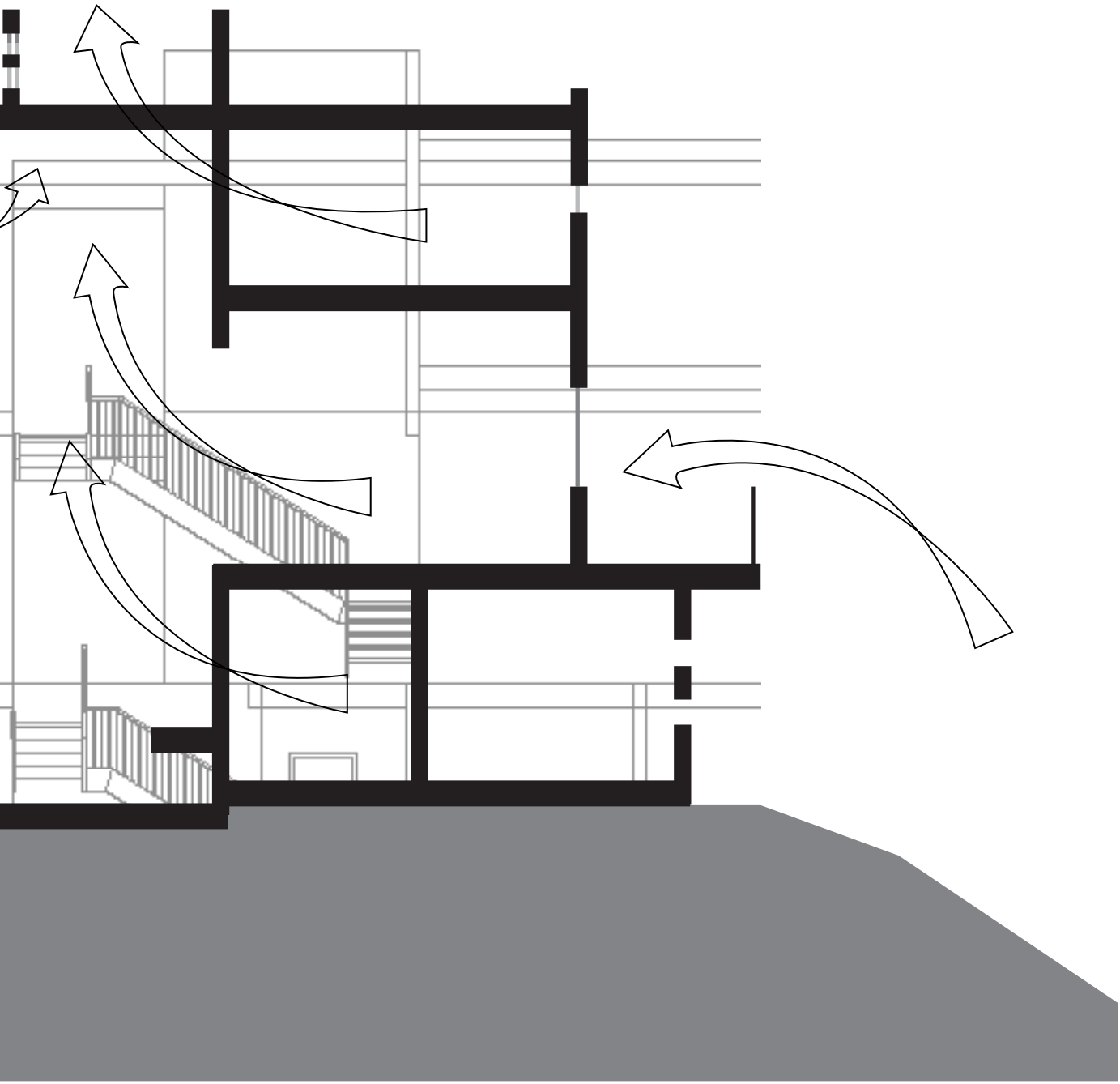
GREEN DESIGN OF MIDDLE FLOOR



GREEN DESIGN OF TOP FLOOR


sun is permitted to penetrate the building through the clerestory windows at the top of the stairwell
noon sun angle (June)
noon sun angle (December)
deep overhang shades the kitchen and main dining area
The building is sunken into the ground which reduces the amount of southern exposure and helps mitigate the temperature of what is indoors

the stairwell acts as stack ventilation for the spaces, drawing heat and air out of the building



Four Common Grades of Water in Buildings

Potable Water- Usually treated, suitable for drinking and all other household uses

Rainwater Potential Uses: Bathing and laundry, toilet flushing, irrigation, evaporative cooling. Little to no treatment is necessary.

Graywater- Waste water not from toilets or urinals. Potential Uses: Usually limited to use for irrigation water. More treatment required than for rainwater.

Blackwater- Water containing toilet or urinal waste. Potential Uses: Requires extensive treatment, impractical for household use.

Rainwater Recycling

1) Water is collected on properly sealed roof surfaces, then moved down and away from the building via an appropriately sized gutter and downspout system.

2) Either a roof washer receives the first runoff, to collect the primary unwanted particles, or the water is transported directly into a layered filter, comprised of a screen, sand layer and gravel layer.

3) The water then passes into a storage cistern which is sized to accomodate enough water based on the average monthly rainfall, and demands of the site.

4) From the cistern the water is pumped up to the top of the site where it is stored in the pond until it is needed for use.

5) It may be necessary to install a pond liner to retain the maximum amount of water.

Monthly Rainfall in Guadalajara, Mexico (in inches)

January	.7
February	.2
March	.1
April	.3
May	1.3
June	6.6
July	9.8
August	8.2
September	5.9
October	1.9
November	.7
December	.5

Cistern Sizing

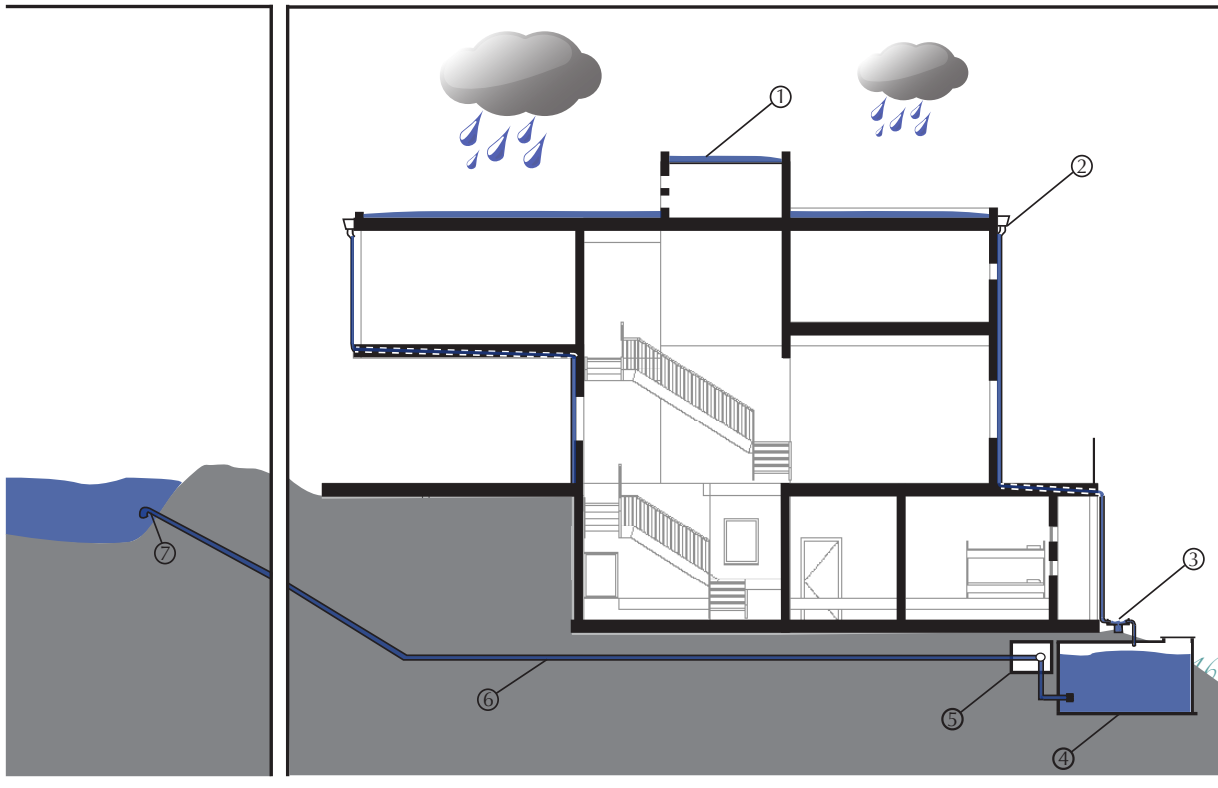
Based on calculations incorporating the monthly rainfall in Guadalajara, one 5000 gallon cistern per building would be substantial enough to accomodate the rainwater runoff.

Gutter Sizing

Based on the worst case scenario amount of rainfall (2 in. rain/hr), 4 inch gutters would provide enough volume to accomodate maximum water flow.

Approximate Roof Area
1500 sq.ft. per dormitory building

1)	2)	3)	4)	5)	6)	7)
Rain water is first collected on a concrete sealed roof or drainage bins	Gutters transport water down and away from the building envelope	Roof washer receives first runoff from roof. Major sediment collects here.	Underground cistern stores the collected rainwater before it is moved elsewhere.	Pump provides power to move the water up the hill.	Pipe transfers water from pump to the storage pond	Rainwater is released in pond on upper part of property where it is stored before purification



LEED for Homes Categories and Applicable Sub-Categories with possible point values

Location and Linkages
1. access to open space (1)

Sustainable Sites
1. site stewardship (1)
2. landscaping (7)
4. surface water management (7)
5. nontoxic pest control (2)
6. compact development (high density) (3)

Water Efficiency
1. rainwater harvesting system (4)
2. irrigation system (4)
3. indoor water use (9)

Energy and Atmosphere
1. water heating (3)

Materials and Resources
1. material efficient framing (4)
2. environmentally preferable products (8)
3. waste management (3)

Awareness and Educating
1. education of homeowner or tenant (2)
2. education of the building manager (1)

main plaza

the main plaza

The main plaza looking down towards the gorge.

The main plaza from the lower buildings. It acts as both a sheltering space and a view corridor across the length of the site,

the transition

building as a wall: the side of the buildings oriented towards La Barranca acts as a wall and a threshold on the site

above: the transition is pushed and pulled with nooks, mass, walls and voids on the courtyard side. This is juxtoposed with the building as wall on the north side of the site

left: the connection between the main plaza and the transition space

section

threshold from the city

administration building

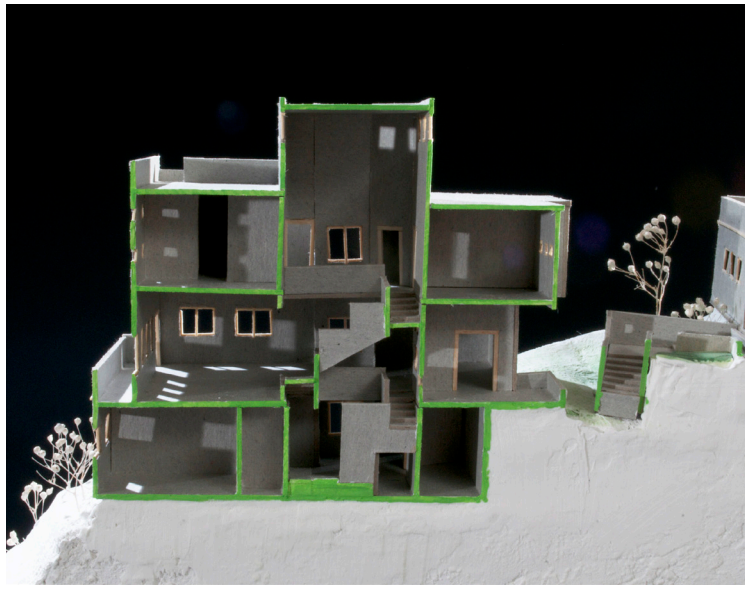
transition [exterior play]

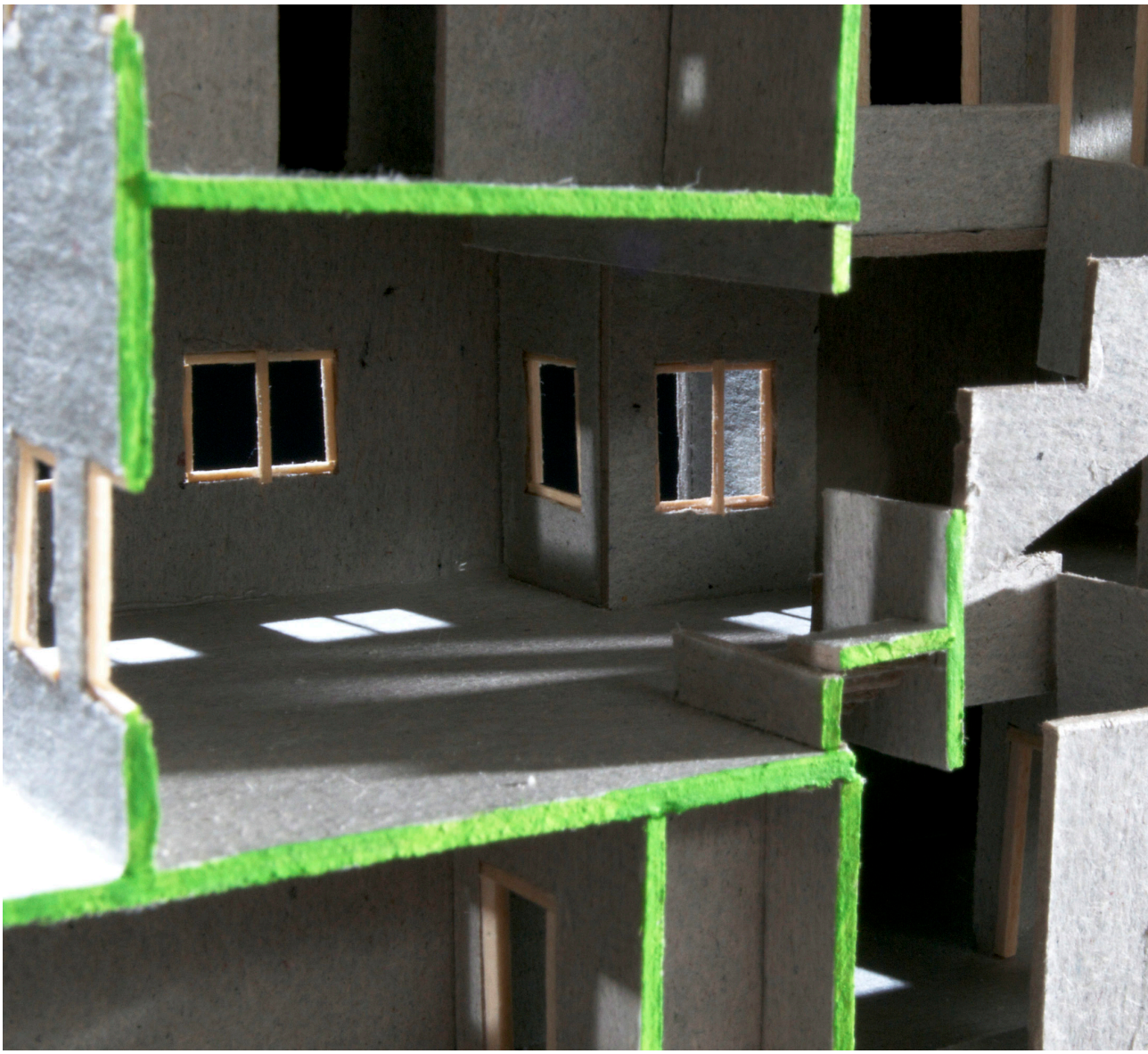
casa

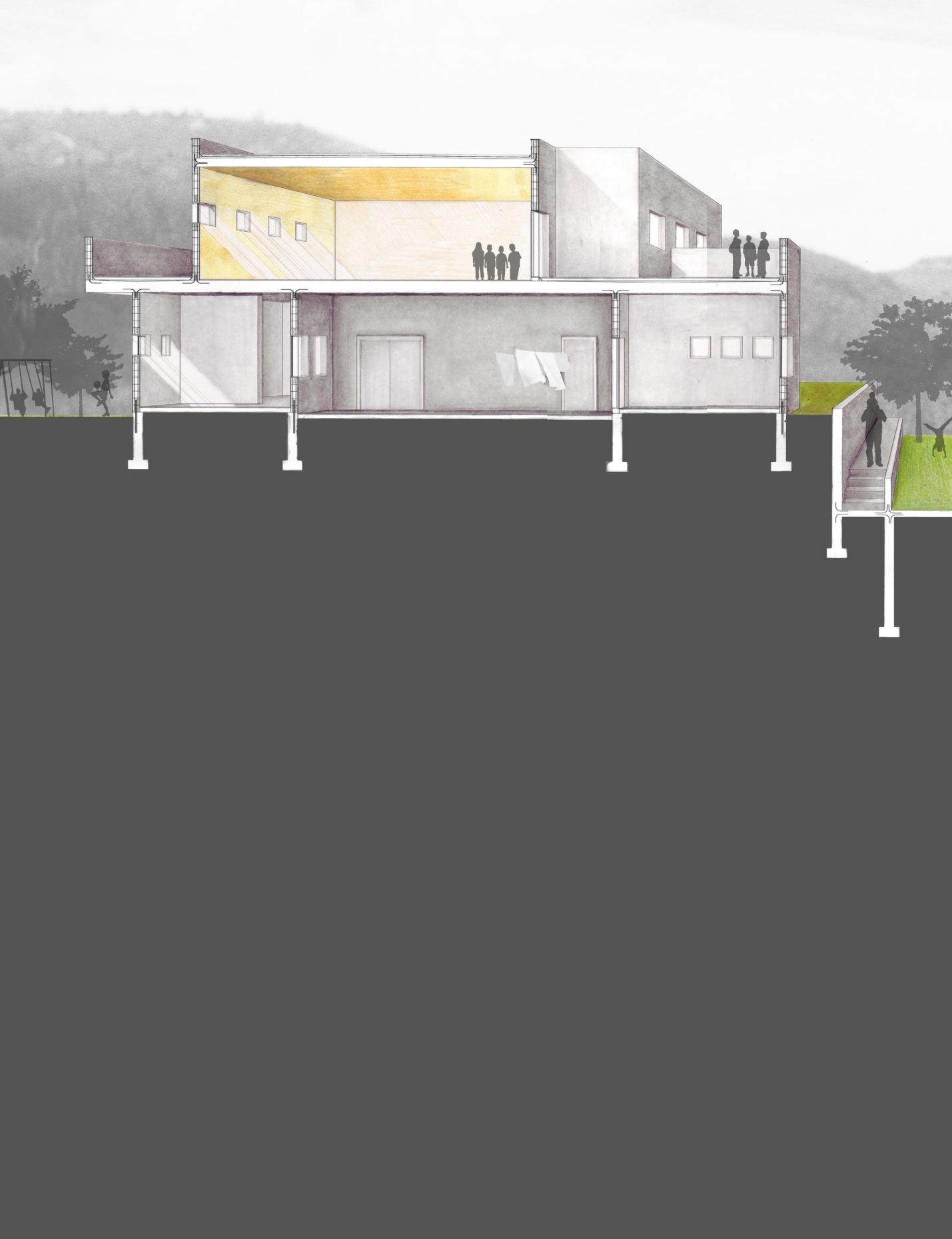
stair [interior play]

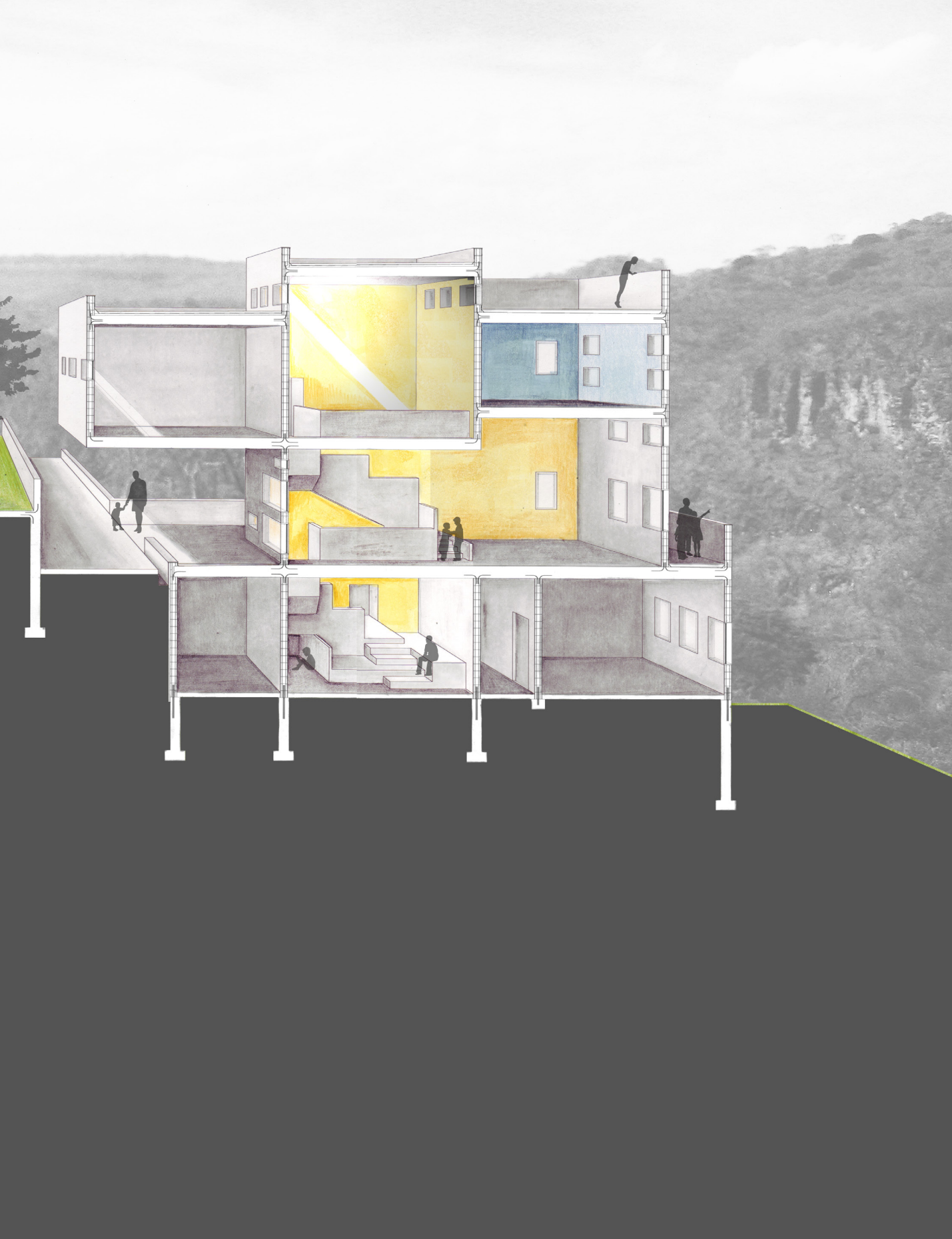
threshold between La Barranca

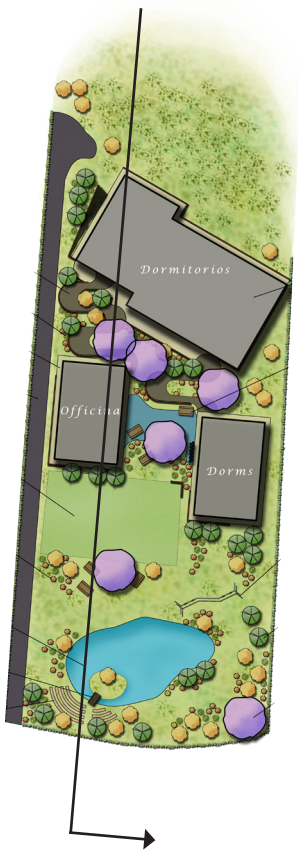
A section through the site model showing the connection between the casas and the administration building.

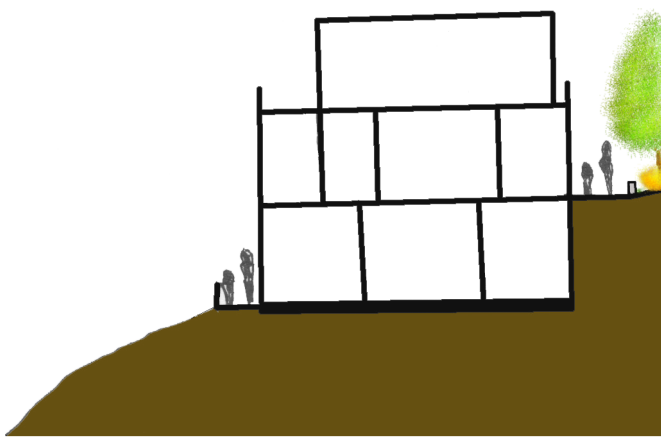


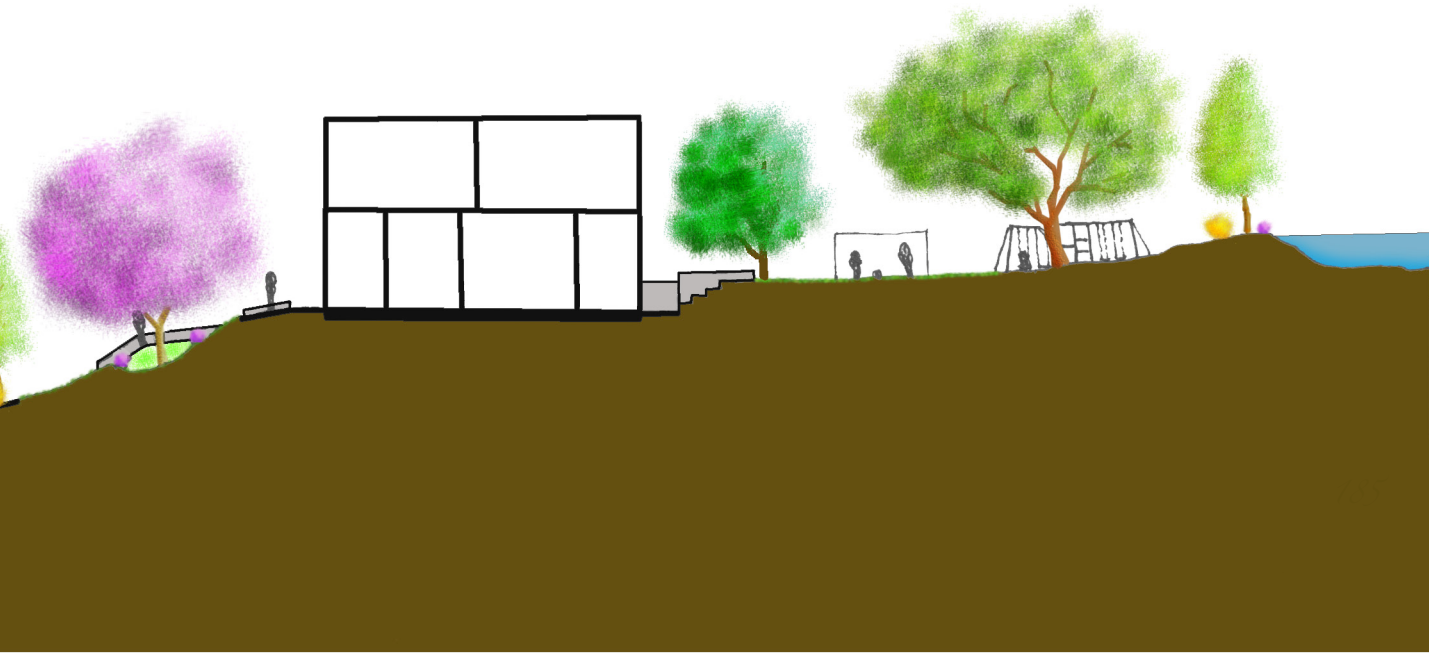







Dormitorios
Officina
Dorms





[threshold]

Survellience and observation becomes an important balance of freedom and boundary. The buildings face inward towards the active transition zone. They act as barriers or walls towards the cliff and the city, creating a safe inter-zone.

[transition]

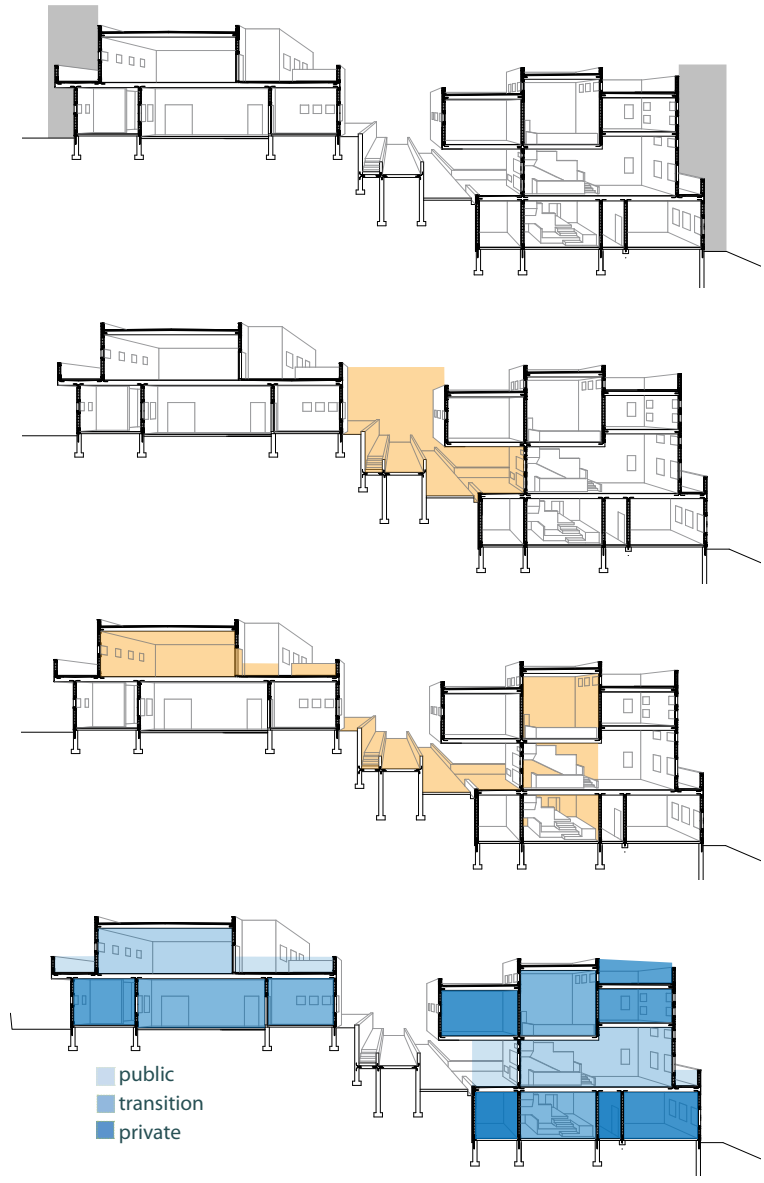
The in-between space between the buildings also transverses the steep slope difference on the site. It becomes a dynamic outdoor area where interaction between different spaces and groups of people occur; a place where numerous paths cross.

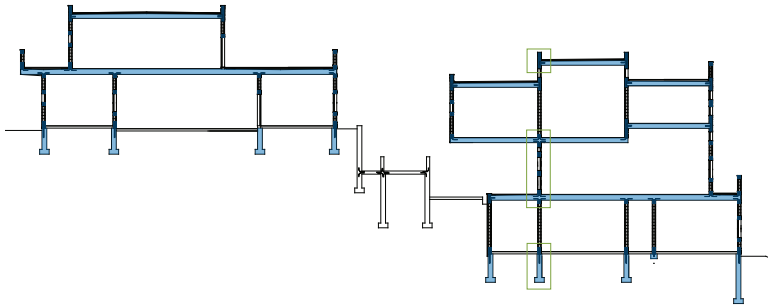
[play]

Play flows through the site and program in numerous ways. The playful spaces tumble in section from the multi-purpose room, through the transition spaces, ending in the stair well.

[public | private]

The public spaces are contained within a plane from which increasingly private spaces emerge.

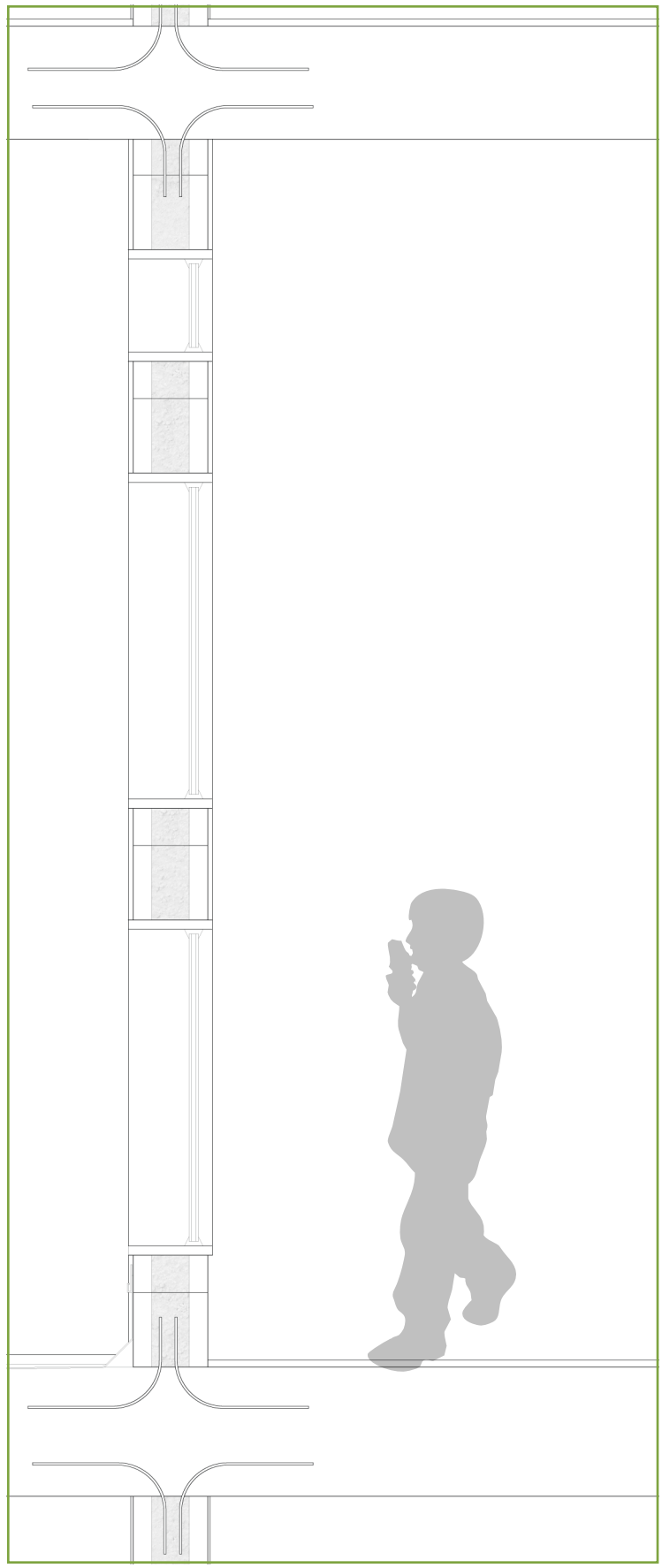

public
transition
private



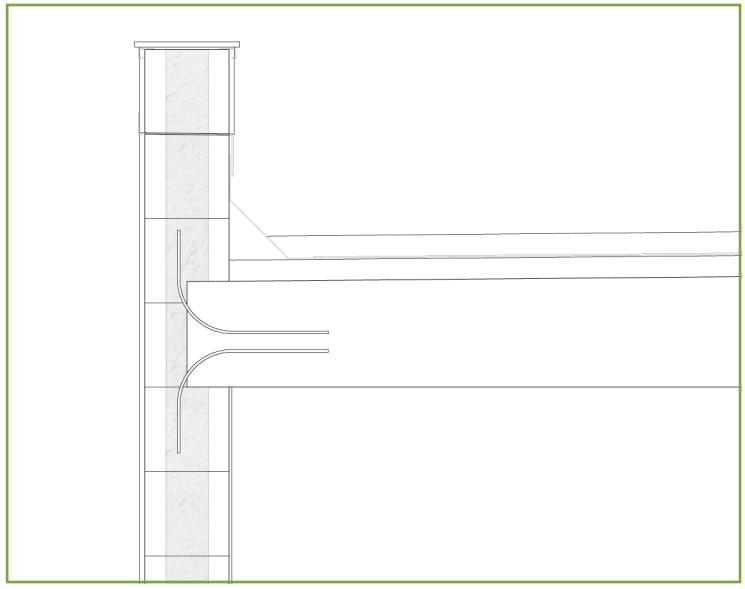
[structure and wall details]

The buildings are constructed with CMU wall construction and poured in place concrete slabs. In certain courses, the CMU is grouted to create lintels and headers to support floor changes, doors or windows.

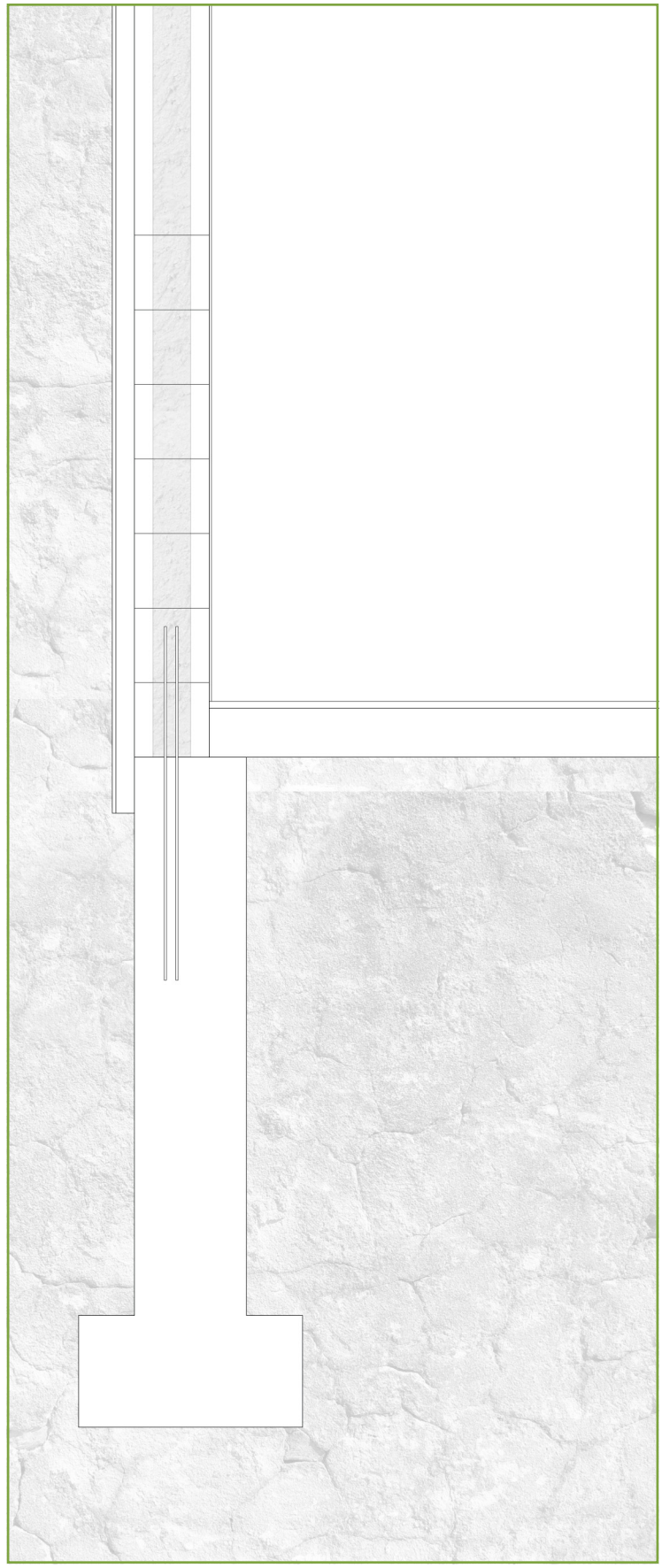
local building materials often consist of CMU or brick constructed with concrete columns and beams and brick infill



construction detail: wall



construction detail: roof

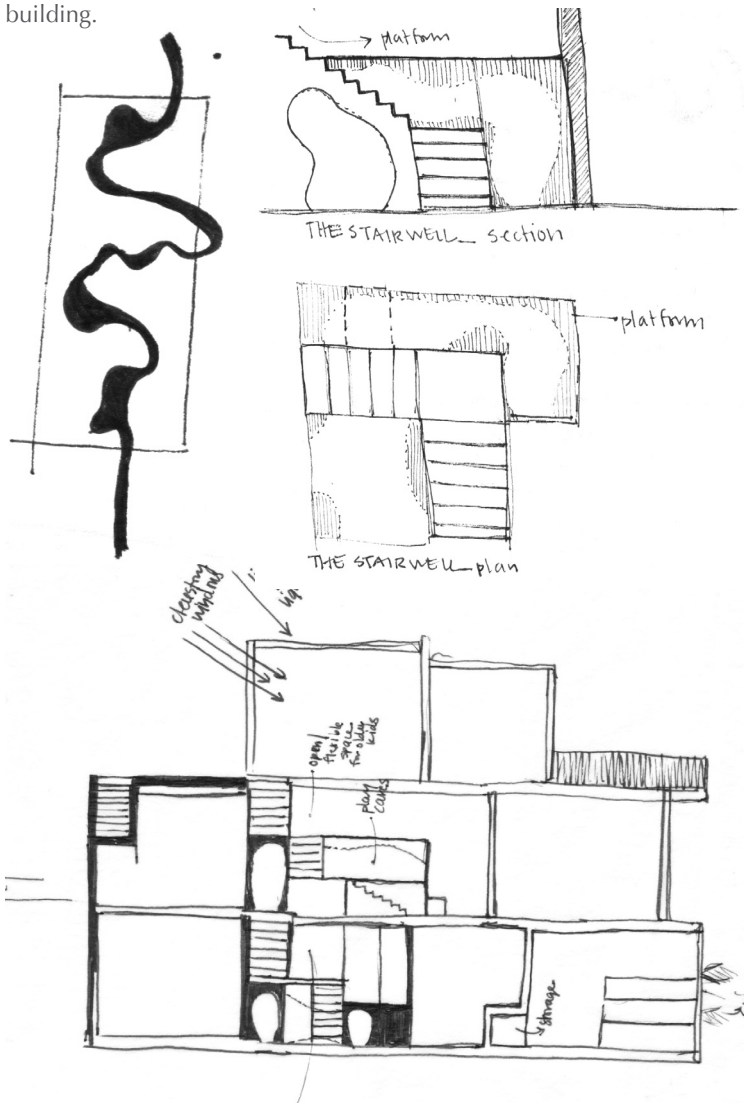


construction
detail:foundation

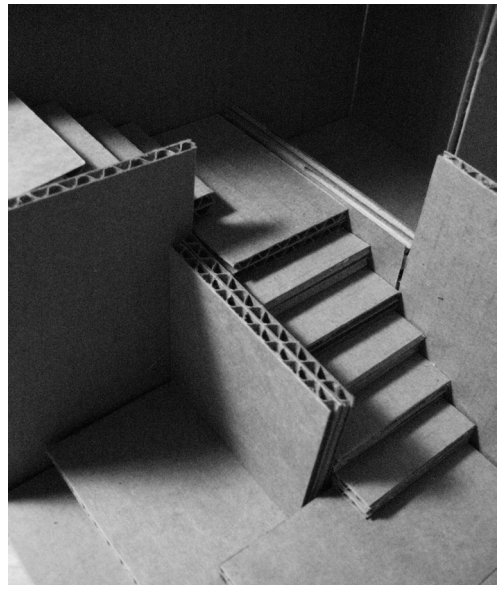
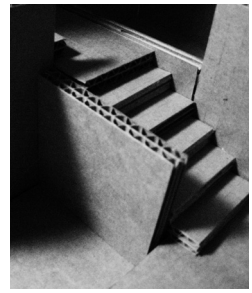
play

[circulation]

The program is structured according to what the children's needs are throughout the day. There is a certain pattern that is established in the daily routine. The transition spaces within the buildings and in the exterior spaces facilitate the important aspect of play in the day and in the architecture. The stairs and circulation cores become dynamic spaces that form secondary and tertiary elements in the program of the building.

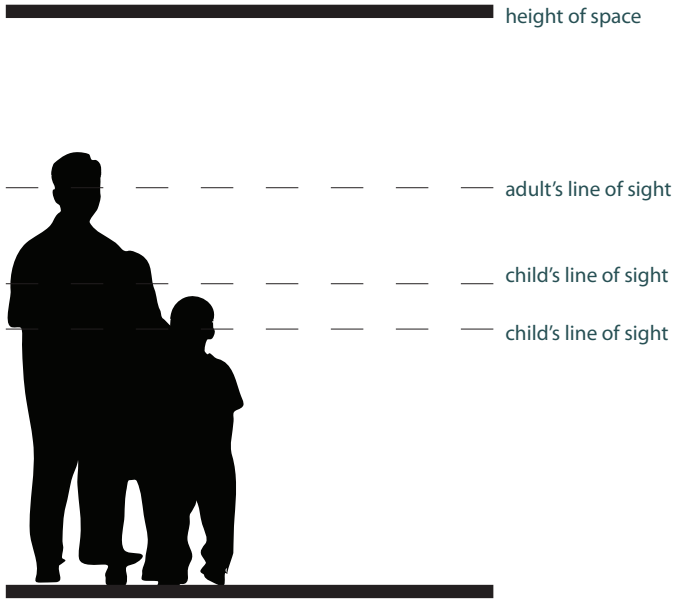


stair development and process sketches

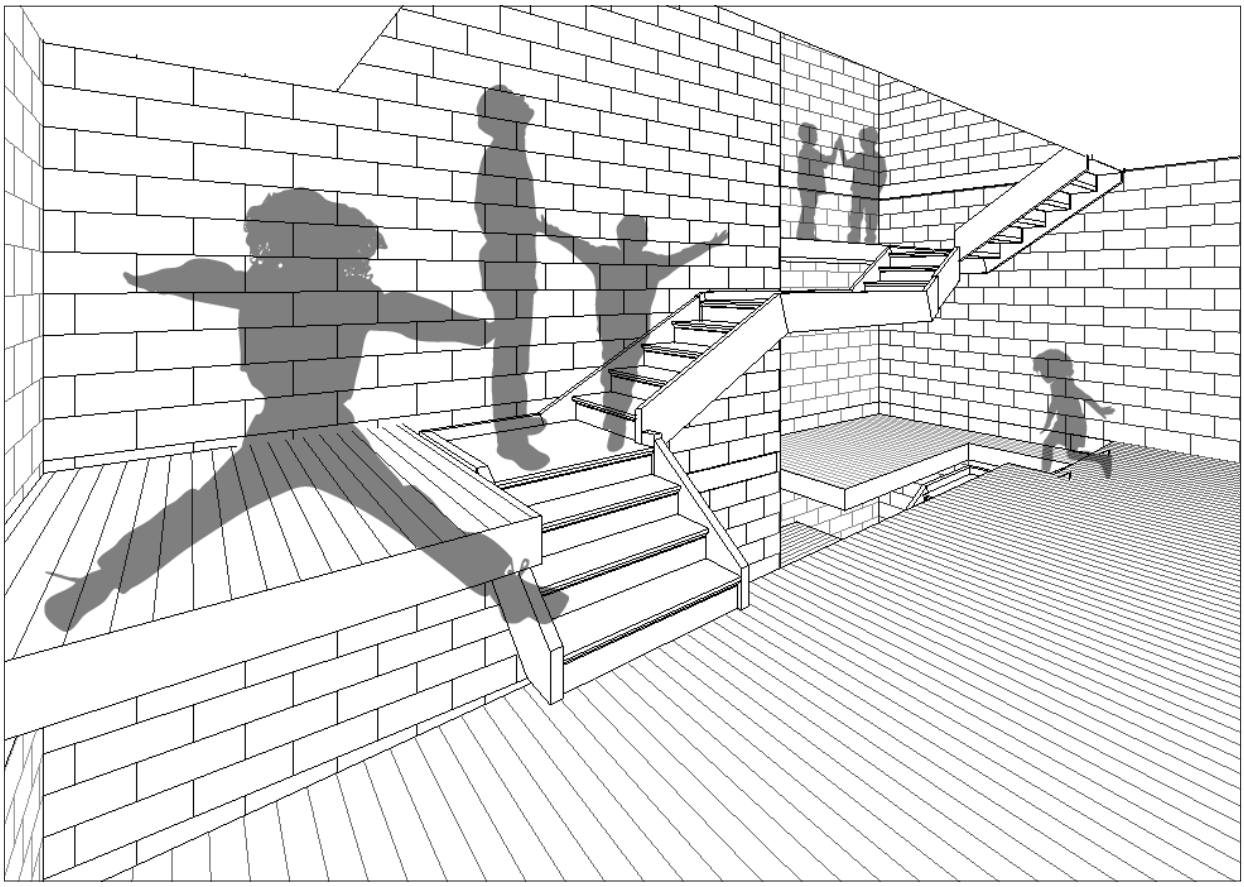


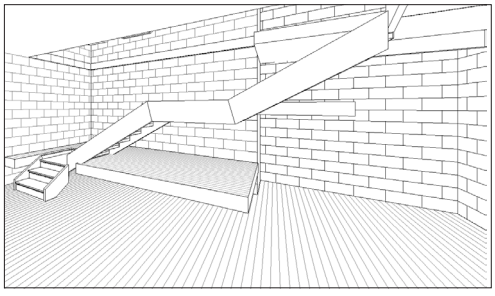
studies experimenting with the multi-storey aspect of the stair and how the stair can become an extension of space and program in a playful manner

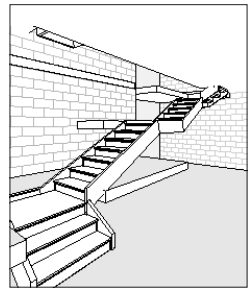


scale: the stairs have secondary and tertiary spaces that are scaled to the height and needs of a child

The development of the stairs and outdoor transition spaces also considered the idea of scaling certain spaces to an adult and others to the scale of a child. The stair wells bring light down through the entire program but also allow for smaller-scaled areas for the children to play in. Some of the scaled spaces are more open to the central living space, while others are more nook-like and turned away from the public living space. Regardless of whether they are looking in or out, the nature of the staircase creates a general sense of movement and acitivty, being loud or quiet, and with that, a sense of observation and security.



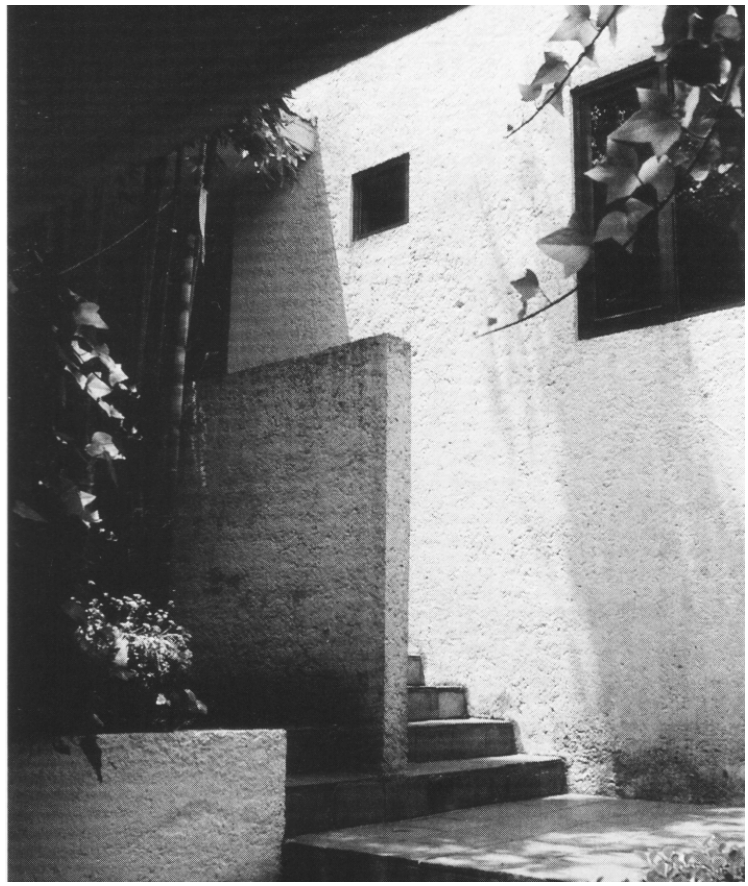


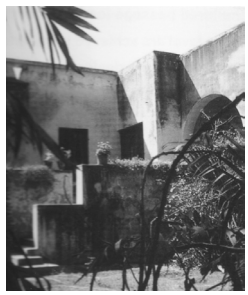


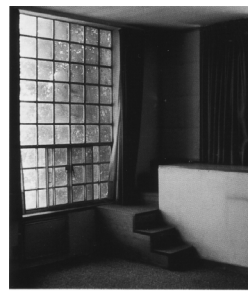
Interior view of possible stair arrangements and how the transitionary spaces both in plan and section might affect the use and feeling of the space.

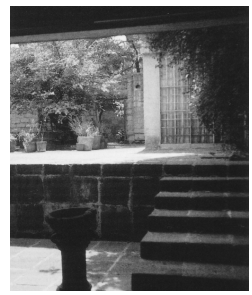
Stairs are adventurous. They indicated a path, but not always a destination. Yet, they enable us to play with color, light, mystery, and movement.

R. Legoretta





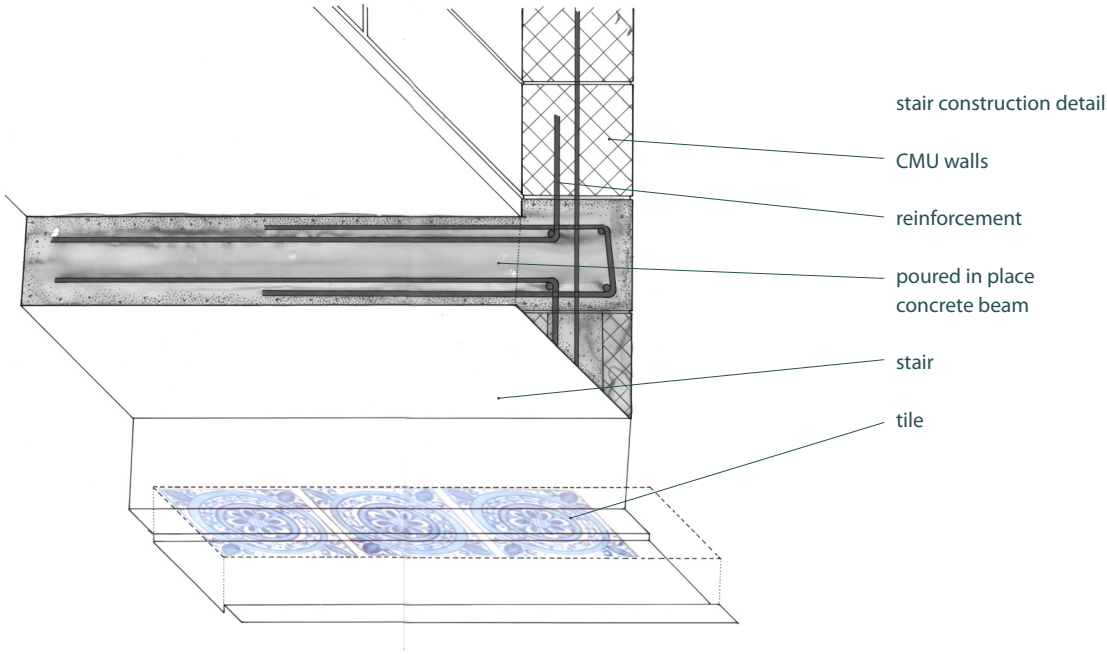




precedents: Luis Barragan's work

The stairs function on multiple levels in the design scheme. They act as a play space both in section and plan with small nooks and scaled levels. They also act as stack ventilation and a light well.

nook: play spaces
within the stair well


stair construction detail:
CMU walls
reinforcement
poured in place
concrete beam
stair
tile

interior renderings

looking up into the stair well from the the middle floor

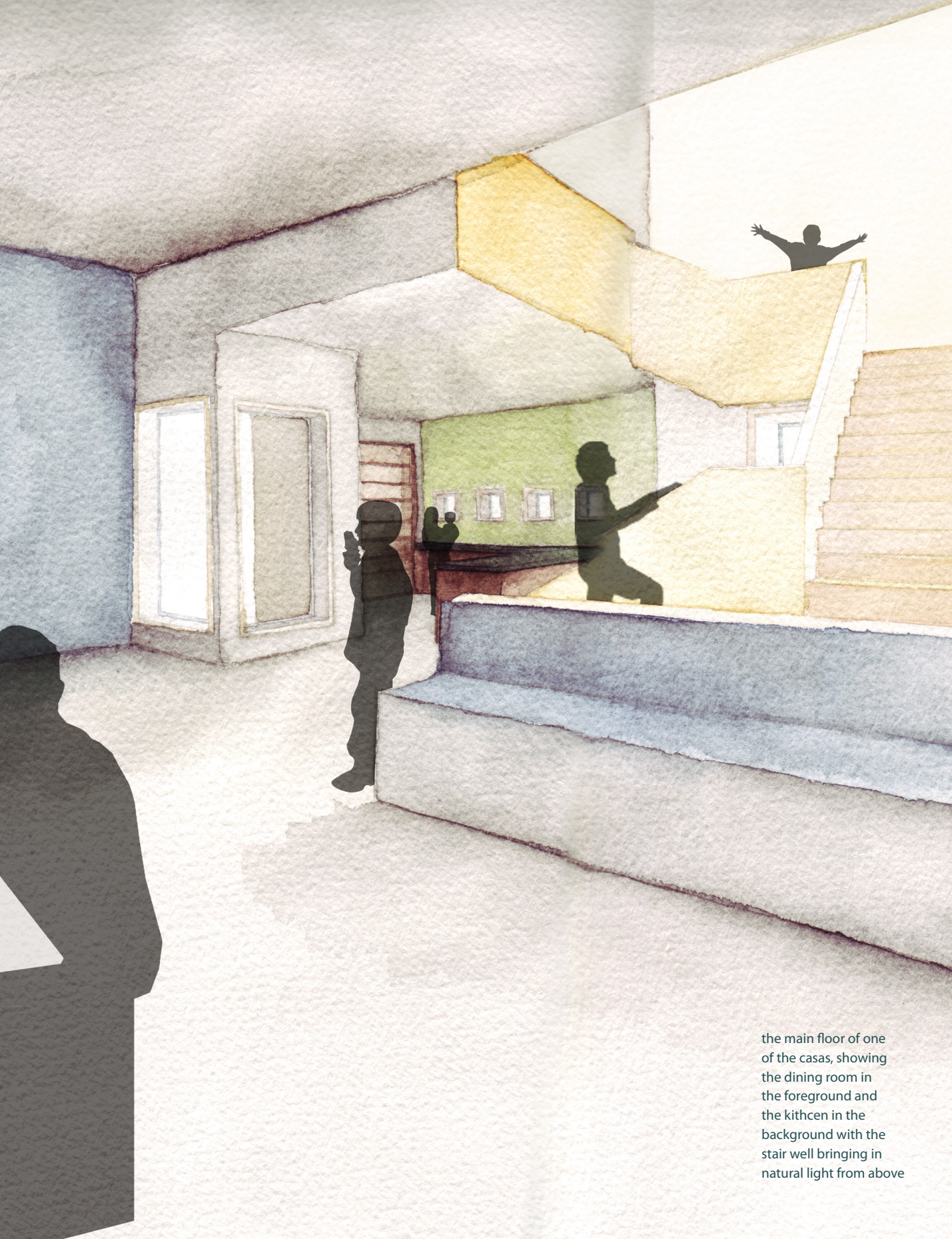
the upper floor living room adjacent to the stair well. the large windows allow for light to penetrate into the building

the bedroom: each
child has their own bed
and window

the staff bedroom and
living area

the kitchen in one of
the casas

a kid's bathroom in one of the casas



the main floor of one of the casas, showing the dining room in the foreground and the kithcen in the background with the stair well bringing in natural light from above

exterior rendering
showing the space
between the buildings

construction analysis

construction scope analysis

The following analysis aims to detail the individual construction scopes that will be required for the Enfoque Ciudad Orphanage.

General Requirements
Enfoque Ciudad will need to carefully consider all costs and schedule impacts resulting from construction permitting, zoning changes, utility connection fees, and inspection fees.

Temporary Facilities and Controls
This project will require the following temporary facilities and controls:
- Portable toilets
- Scaffolding
- Temporary electrical power
- Temporary or permanent water source during construction
- Temporary interior lighting

Traffic Control
During particular phases of construction, traffic control will be required at the frontage road. We anticipate the need for construction barricades and flaggers during construction of the stormwater curbs and gutters located at the frontage road, in addition to the drive approaches. Additionally, flaggers will be required during large concrete pours due to the quantity of the concrete trucks.

Storm Water Pollution Control
As outlined in the Storm Water Pollution Prevention Plan, significant storm water protection strategies should be implemented both on a temporary and permanent basis. This will ensure the health and safety of not only the facility, but also its occupants. We suggest the following temporary SWPPP measures:
- Gravel bags and fiber rolls
- Concrete washout area
- Construction entrance
- Dust control

Cutting and patching
During construction, E.C. may need to trench across city easements or frontage roads. If this is the case, patching will be required to meet Tonala city standards.

Sitework
Due to the gradation elevations, this project will require extensive excavation and over-excavation at building footprints and site walls. It is not anticipated that any dirt export will be required as it can be used at other locations on site. We do, however, anticipate engineered imports being required for backfill and base.

Surveying
Enfoque Ciudad should plan to have the site surveyed and recorded by a licensed land surveyor prior to breaking ground. The site should be staked for perimeter boundaries, building footprints, underground utilities and other site improvements (site walls, pathways, soccer field, etc.)

Protection of Existing Improvements
It will be important to provide protection for any existing landmarks or vegetation that may be damaged during construction. The particular items that come to mind are the pond burms and the central olive tree. In addition to markings and barricades, it will be crucial to protect against root damage to existing trees during excavation.

Selective Demolition
- Tree removal: Enfoque Ciudad should take note of the particular trees and vegetation that will be removed. Tree removal and grinding can be an expensive unforeseen cost.
- Remove select underground utilities: The project team may encounter several unforeseen site conditions (i.e. underground utilities). Be mindful of the potential for such unforeseen conditions, and safety and cost risks involved.
- Remove pads and footings: The demolition and earthwork team will be removing the existing structure on the west boundary of the site. It is important to recognize the potential complications involved with the unknown foundation system. Journeyman International estimates the existing system has a 16"x16" footing with a 5" thick slab.
- Remove fence and footing: The construction team will be removing the existing perimeter fence and footings/bases. The extent of such demolition is often unclear and can easily become more extensive that anticipated.
- Site Clearing: According to recent knowledge, the site has recently been cleared through site burnings. Construction is anticipated to begin in 6 months; enough vegetation will have likely returned to require an overall site grubbing. This will either require a site burn, or the use of heavy machinery for multiple days. Enfoque Ciudad will need to anticipate such costs.

Termite Control: Even with minimal usage of lumber and timber on this project, Enfoque Ciudad will want to capitalize on several forms of termite control. Please reference the Disaster Mitigation section of this proposal for more information.

Excavation
Site excavation will have the greatest potential for unforeseen construction costs during the project. This is particularly true with the recently increased price of petroleum. The Journeyman International team strongly encourages Enfoque Ciudad to perform soils testing, and develop a clear plan for the extent of site excavation. Important cost aspects to recognize include:
- The price of fuel
- The size and type of machinery
- The travel distance to tow such machinery
- The location and cost for any export/import
- Excavation difficulty (i.e.: rocks, clay)

Grading
Once general excavation has been completed, the construction team will perform rough grading, pad preparation, and fine grading. This will require the use of several forms of heavy machinery (i.e.: graders, compactors, etc.).

Gravel Trenches and Bioswales
Site drainage will be an extensive and expensive scope for this project. Enfoque Ciudad will need to anticipate the costs involved with excavating and creating bioswales, gravel trenches, sitewall drainage, and general site drainage systems.

Base (flatwork)
In order to ensure long lasting, quality site pathways and curbs, the use of proper compaction and base will be essential. The Enfoque Ciudad team needs to make sure that the construction team properly installs all site flatwork.

Base (paving)
The asphalt/concrete base-paving sections should meet general US standards. Journeyman International suggests the use of 10" of engineered base below all asphalt or concrete paving, and below all structural footings and slabs.

Base (foundation)
As noted above, Journeyman International suggests a minimum of 10" of engineered base below all structural footings and slabs.

Water Distribution System
If Enfoque Ciudad intends on bringing city water into the structures, as opposed to using the traditional method of water distribution, E.C. will need to anticipate the costs of trenching, compaction, backfill, meters, pumps and connections.

Sanitary Sewer System
Due to the site location, E.C. will not be able to connect to a city sewer waste system. Instead, several septic tanks and leach fields will be required. It will be crucial to locate the septic systems where septic removal trucks will have access.

Storm Drainage
Journeyman International suggests the implementation of several storm drains of the southern frontage road, in addition to site bioswales and gutters.

Gas Distribution System
City gas connections will not be available. E.C. will need to provide a detailed plan for natural gas needs and locations to be engineered.

Site Concrete
Enfoque Ciudad will need to anticipate costs for the following items:
- Bollards
- Precast splash blocks
- Curbs and gutters
- Sidewalks
- Driveway apron
- Wheel stops

Landscape Planting
Journeyman International suggests, and has designed a 'zeroscape' landscape architecture plan will utilize native local vegetation that requires no landscape irrigation.

Structural Concrete
Concrete material and delivery cost will be the greatest cost variable on this project. The Journeyman International construction estimate is based upon a $100/cy cost of concrete. Structural concrete and reinforcing systems will need to be designed by a licensed structural engineer.

Concrete Sealer
All concrete slabs will need to be sealed to prevent water intrusion.

Masonry
In addition to the structural concrete masonry unit system, masonry retaining walls, trash enclosures and perimeters will be utilized throughout the site.

Metals
Assuming the structural system for the facilities will be concrete, metal fabrications will primarily be used for miscellaneous architectural reasons. E.C. will need to consider the following likely applications of metals:
- Stairwell handrails
- Exterior site path handrails
- Security bars on windows and doors
- Awnings
- Flag pole
- Soccer goals
- Wood framing hardware
- Shower and toilet grab bars
- Stainless backsplashes and counters in food prep areas
- Traffic bollards

Sheet Metal Fabrications
Sheet metal flashing is a crucial element in preventing water intrusion. J.I. strongly encourages E.C. to maintain a financial allowance for waterproofing, including sheet metal.

Rough Carpentry
Demising walls for this orphanage can either be constructed out of light gauge steel, concrete masonry units, or wood (rough carpentry). Due to the potential termite damage, J.I. strongly encourages E.C. to use as little wood as possible, including rough carpentry.

Casework
Cabinets, casework, and countertops should also be constructed out of composite materials whenever possible. This will provide a healthier environment, and should prevent termite, mice, and general pest infestations. Casework scope will likely include:
- Cabinets
- Countertops
- Bunk beds
- Pantry closets
- Bedroom closets
- Bathroom cabinets and countertops
- Office desks
- School desks

Building Insulation
If E.C. intends on providing temperature and humidity control to any rooms, the insulated R value should be greater than that of just CMU block. Insulation will reduce sound penetration between living spaces.

Joint Sealants
J.I. strongly encourages the use of expansion joints within the CMU walls. This will prevent cracking from soil consolidation and earthquakes.

Doors and Windows
E.C. should plan on using heavy gauge steel doors on all exit routes, and steel doors and frames in all facilities.

Finishes
Interior finishes can quickly overwhelm a project budget. Please be sure to account for labor and material costs associated with all of the following finishes.
- Wall base
- Corner guards
- Painting
- Interior plaster
- Toilet partitions and accessories
- Drywall and texture
- Tile
- FRP (Fiberglass Reinforced Plastic)
- Carpet
- Epoxy floor
- Concrete sealers and stains
- Hardwood
- Window coverings
- Door and window trim
- Resilient flooring

Signage
E.C. should consider a financial allowance for the following signage applications:
- Tactile exit signs on all exits
- Tactile exit route signs on all exit routes
- Fire extinguisher signs
- Address signs
- Electrical room sign
- Parking signs

Mechanical
According to conversations to date with E.C., the plan is to utilize natural ventilation methods, and not incorporate any artificial ventilation scopes. Please contact J.I. if anything changes, and we will engineer a system for the facility.

Plumbing
Once a final construction design has been selected, Journeyman International will assist in the design of the plumbing system.

Electrical

E.C. will need to have a licensed electrical engineer design the electrical system that will be appropriate for these facilities. The following scopes will need to be considered:

- Raceways
- Busways
- Wires, Cables and Conductors
- Boxes
- Cabinets
- Wiring Devices
- Nameplates and Warning Signs
- Panelboards
- Switches, Disconnect and Safety
- Transformers (assumedly pad mounted)
- Underground Electrical Construction and Service
- Grounding
- Distribution Switchboard
- Building Lighting, Interior
- Site Lighting
- Generator System
- Automatic Transfer Switches
- Telephone Utility Service
- Cable Television Service
- Controls and Instrumentation
- Occupancy Sensors

hazard mitigation analysis

History of Natural Disasters in Jalisco

Mexico is filled with climatological, geological, and topographical contradictions: deserts, flooding rivers, arid mountains, soaking rainy seasons, sizzling dry seasons, lush plains and jungles, snow-capped peaks, tropical swamps and endless tropical beaches. What comes with this diversity are dramatic variations in climate, an exposure to both propitious and punishing aspects of nature. Nature's ferocity mixed with societal ignorance are common in Mexico's history of disasters.

The nation's greatest catastrophe was an 8.1 quake that devastated Mexico City in September 1985. Infrustruture, including most government buildings collapsed into millions of tons of rubble in minutes. Private construction, done on the cheap by sly contractors, fared no better. The capital's water system and 80 percent of its power grid collapsed. The capital's phone and telex links to the rest of the world (no Internet then) failed. Although the government claimed 4287 deaths occured, an independent organization of victims, which gathered cemetery and crematorium reports and the Red Cross figures, placed the figure at 48,000.

Besides earthquakes and floods, Mexico has a long history of hurricanes, droughts, volcanic eruptions, wildfires and extreme temperatures. Jalisco, however, has suffered less than its inhabitants often predicted.

DISASTER TIMELINE: GUADALAJARA

1536

1)The first recorded cataclysm occurred May 27, 1536, six years before the founding of Guadalajara, when Jalisco was still known as Nueva Galicia. Residents in the area of Barra de Navidad saw ocean waves like great wet walls "burying all in their path for more than half a league."

1567

2)In 1567, at Ameca, a quake cracked open a mountain range for a distance of 14 leagues, splitting surrounding fields. The local river went dry for 20 days, and when it broke open, it emitted a stream of sulphurous water for three months, causing residents to think of hell.

1568

3) In 1568 Cocula and Atoyac were badly shaken.

1573

4) Five years later, residents of the area prayed as a comet lit the skies for six months. Shortly after, a hurricane whipped through the Colima area, wrecking buildings and crops. The three-hour storm had just subsided when the ground began to heave, destroying most of what was still valuable.

1585

5) Twelve years later, the Colima volcano erupted, blackening the sky, spewing lava and boulders, showering distant Guadalajara with ash and causing its Cathedral to crack. More quakes and then a solar eclipse in 1611 convinced residents the area had fallen into heavenly disfavor.

1749

6) In 1749, almost daily quakes racked nearby Sayula and Zapotlan el Grande (later called Ciudad Guzman). These tremors ended with a hard shake, jarring Guadalajara.

1806

7) August 25, 1806, when a monster quake destroyed Ciudad Guzman, killing 2,000 people within minutes. Guadalajara was awakened at 3 a.m.

1819

8) May 31, 1819 by "loud subterranean noises." A two-minute quake toppled the Cathedral's twin towers and subsequent tremors damaged towns to the west and south.

1843

9) 1843 was ushered in with three months of tremors.

1869

10) June 12, 1869, the Colima volcano became restless. It eventually erupted seven times between February and August, 1872.

1875

11) February 11, 1875, the ground trembled and roared beneath Guadalajara, panicking residents. Damage was light, but widespread.

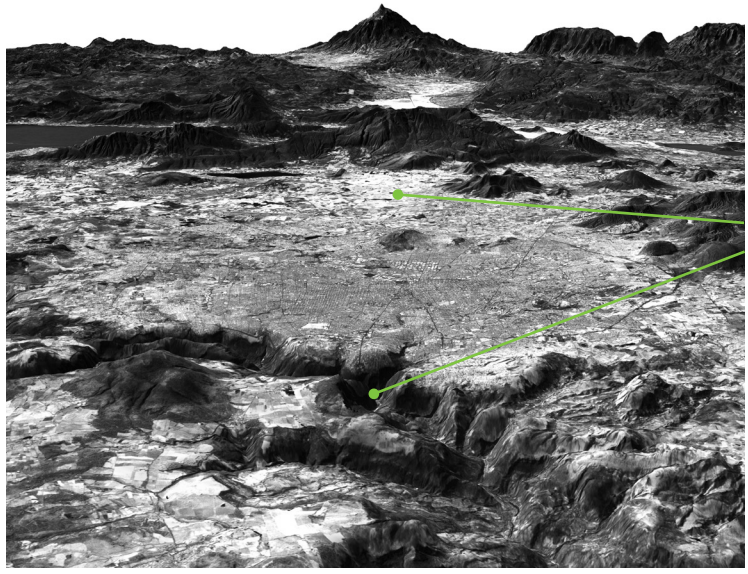
1912

12) 1912, moderate tremors led a jittery priest to advise residents to abandon the city and never return. Guadalajara has been largely undisturbed since then, except for a few widely spaced rattlers. Geologists say the city sits on a buffering bed of sand that absorbs much of the earth's movement a circumstance residents find "fortuitous."

Threats to the orphanage: earthquake

Earthquakes are always a possibility in Guadalajara, even though no major earthquake has occurred here in decades. The fact of the matter is, all of Mexico is a seismic zone. Guadalajara sits on a bed of xal, a type of rock that diminishes seismic waves, much as ball bearings in a car reduce friction. In the 1985 Mexico City earthquake, houses in Guadalajara shifted a bit and there were cracks in some walls, but the city escaped the major damage seen in the capital and in Jalisco cities, such as Ciudad Guzman. The quake of October 1995 off the Pacific coast rocked both Jalisco and Colima, but only coastal towns such as Manzanillo and Cihuatlan were damaged. *Some geologists, however, don't buy into the general optimism about local seismic risks. Guadalajara sits near two major tectonic plates (the Placa de Garcia and Placa de Cocos) which is a recipe for disaster.

* Mexico 2011 Crime and Safety Report: GuadalajaraCivil Unrest; Crime; Terrorism
https://www.osac.gov/Pages/ContentReportPDF.aspx?cid=10436



This composite satellite picture show the city and it's proximity to La Barranca. This view is looking south over the city.

Mitigation for the orphanage: earthquake

Journeyman International suggests this orphanage to be constructed in anticipation of a 9.0 earthquake. The site geology is threatened by both S and P seismic waves, with a greater damage threat caused by P waves. Fortunately, the foundation system will be fixed upon rock subgrades resulting in a limited threat from liquifcation. Facilities near the lake will face a great risk of this phenomena. As noted in the design proposal, a significant water damage risk threatens the facilities constructed below the pond. An earthquake could damage waterproof membranes, or release large amounts of water directly above these facilities. J.I. suggests an emergency runoff system be implemented. The greatest life threatening risk to this orphanage during an earthquake would be both the structural failure of unreinforeced masonry, and the structural failure of the elevated concrete slabs. J.I. strongly encourages the E.C. team to have a professional engineer design to facility to comply with the California Building Code (the most stringent seismic building code in the US). If engineered by a licensed engineer in Mexico, we encourage the design be reviewed by a licensed engineer in the US. J.I. anticipates requirements of 8"-12" thick elevated concrete slabs. Concrete Masonry Unit (CMU) walls need to be constructed with 8"x8"x16" minimum block, with at least #4 rebar 24" on center. All reinforced CMU cavities need to be mortared with 3000psi concrete. Mortar placement in additional cavities is encouraged. From our experience, it is crucial to supervise the concrete mix designs, particularly when they are a) mixed on site, b) mixed for CMU grouting. In effort to reduce cost, construction crews in developing nations often fail to meet appropriate mix designs. In summary, the three primary construction scopes that effect seismic stability are:

- Properly reinforced and grouted masonry walls
- Properly engineered and reinforced elevated concrete slabs
- Properly engineered foundation footings.

It is crucial that the orphanage children and staff know the emergency plan in case of an Earthquake.
We encourage the following emergency tactics:
- "Exit Route" signs on all surface level exit routes
- Nuclear illuminating "Exit" signs at all exits
- Facility evacuation plan posted in all facilities
- Keep 4' of egress clearance at all times
- Install panic hardware on all exit routes

Threats to the orphanage: flooding

It is common for streets in the greater Guadalajara region to flood and be shut down during periods of heavy rain. This region concentrates 85% of the urban district of the Guadalajara population (districts: Guadalajara, Zapopan, Tiaquepaque, and Tonala). Unfortunately, the chaotic growth of Greater Guadalajara has caused consistant chronic failures with the sewer system. In these four districts alone:

- There are 73 flood points with deeps from 0.20 m to 1.50 m caused by both the storm water runoff and underflow of the sewer network.
- 5 deaths every year directly related to both the storm water runoff and floods.
- Destructive impacts on 2800 houses and 650 commercial establishments per year.
- Total lost of 35 cars per year
- Lost of 440,000 working men hours per year.
- Economical annual costs of 600 million Mexican Pesos ($50 million US)

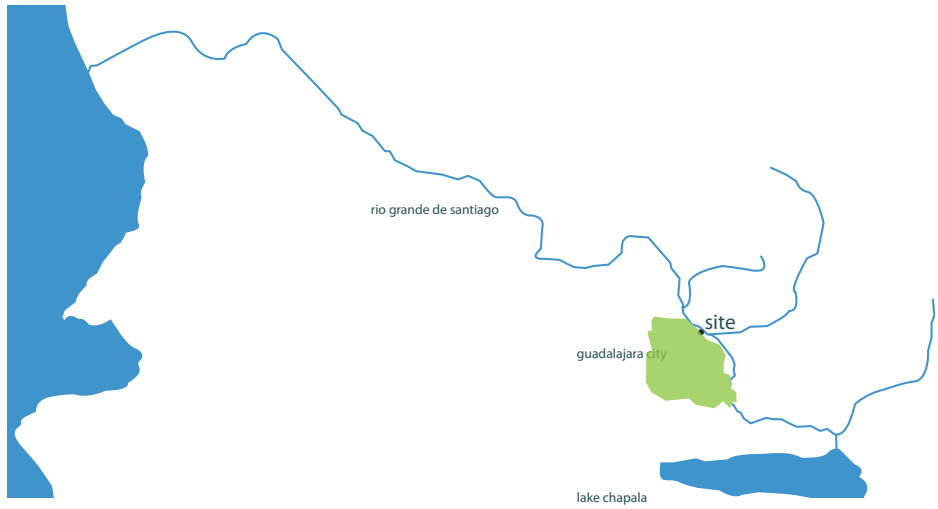
Mitigation for the orphanage: flooding

The level of flooding risk to this orphanage will be determined by the extent of water control engineering. Due to the location, water routing strategies will be crucial and extensive. To this end, however, the site allows excellent opportunities for drainage without risks of onsite ponding. The J.I. team considers the greatest flooding risks to be correlated to the following three circumstances:

1) The stormwater runoff system implemented for the 10,000 home development directly to the south will undoubtedly affect the orphanage site.

2) The site pond holds approximately holds 375,000 gallons of water. If a breach occurred, the effect would likely be devastating to the infrastructure directly below. The J.I. team strongly suggests this pond be independently controlled with membrane lining and no natural inlet. Essentially, the E.C. team should have complete control of the quantity, quality, and drainage of this pond. If a proper membrane lining is not implemented, the risks of the following issue significantly increase:

3) Groundwater seepage poses a direct threat to the second and third terraces, particularly at the retaining walls. In addition to the structural threat, if found to be toxic this groundwater poses a dangerous health risk. The first step to preventing groundwater damage is to maintain control of the pond. The J.I. team encourages the construction of a substantially reinforced and water proofed retaining wall at each terrace, with a deep structural footing and proper underground drainage. If constructed properly, this will prevent intrusion at the structure foundations.

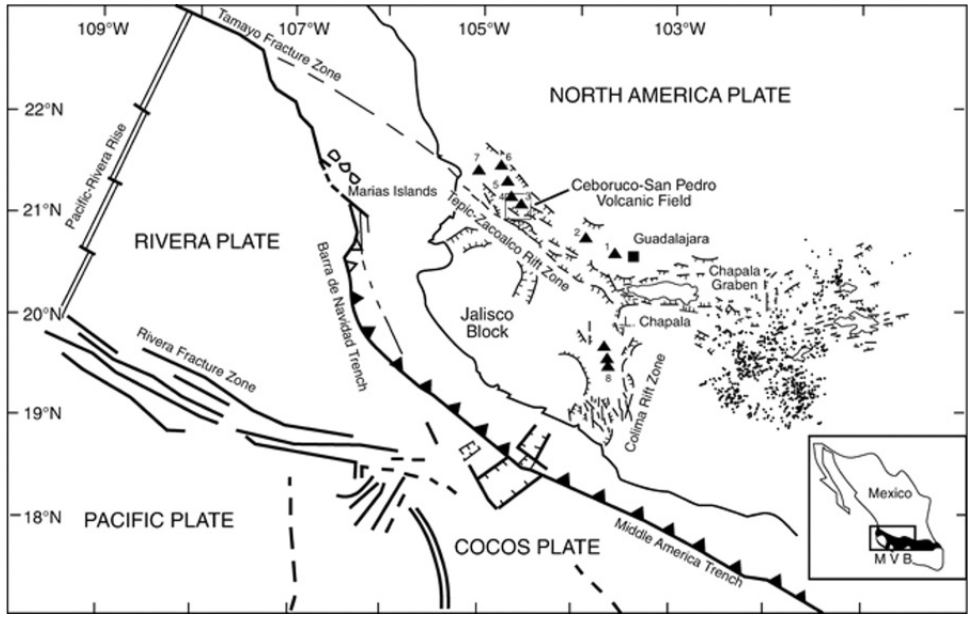


Threats to the orphanage: volcano

Believe it or not, the E.C. orphanage will be surrounded by 10 volcanoes. The Colima Volcano (only 78 miles away) is currently one of the most active volcanos in North America; it has erupted more than 40 times since 1576! There are two peaks in the volcano complex: Nevado de Colima (inactive), and Volcán de Colima (very active). In recent years there have been frequent temporary evacuations of nearby villagers due to threatening volcanic activity. Eruptions have occurred in 1991, 1998–1999 and from 2001 to the present day, with activity being characterised as "extrusion of viscous lava forming a lava dome, and occasional larger explosions, forming pyroclastic flows and dusting the areas surrounding the volcano with ash and tephra." The largest eruption in several years occurred on May 24, 2005. An ash cloud rose to over 3 km above the volcano, and satellite monitoring indicated that the cloud spread over an area extending 110 nautical miles (200 km) west of the volcano in the hours after the eruption. Pyroclastic flows travelled fourty five km from the vent, and 'lava bombs' landed 3–4 km away. On June 8, 2005, the volcano erupted again in its largest recorded eruption in several decades. Plumes from this eruption reached heights of 5 km (>3 miles) above the crater rim, prompting the evacuation of at least three neighboring villages.

Mitigation for the orphanage

Volcanic ash has rained down on Guadalajara in the past. Inhalation can be particularly dangerous for the youngest children. Aside from the environmental air quality, volcanos do not pose a significant threat to this facility.



Threats to the orphanage: crime

In Tonala and Guadalajara the numbers of violent crimes including homicides, armed robberies (business and residential), and theft increased in 2010. The areas of most serious concern are: the increasing drug trade, police corruption, and a very slow rate of investigation, prosecution, and conviction. Considering that most crimes in Mexico go unreported, multiple sources including local statistics, press reports, and eye-witness accounts indicate that murders and kidnappings have increased significantly during the past 12 months. The vast majority of homicides are drug or gang-related intimidation or retaliation murders. Lesser crimes, such as auto thefts, also increased significantly; auto theft is a lucrative business in Mexico. Kidnap for ransom crimes are increasing in Guadalajara, and the threat is very real to orphanages run by Americans. Most incidents go unreported to police and are handled directly by the victim's family or in this case, guardian. During the past year, "virtual" kidnappings have become increasingly common. Extortionists will call prospective victims on the phone, posing as kidnappers, and demand payments in return for the release of an abducted child. If E.C. receives such a call, you should be cautious but skeptical.

Mitigation for the orphanage: crime

In order to ensure the security of the facility and the safety of the children, J.I. suggests the following construction related crime mitigation strategies:

- Industrial grade security fencing with concrete encased posts. and coil barbed wire. Implementation of a subgrade concrete curb at this permiter fence would assist with pest/insect mitigation, prevent animals and children from burrowing under fence, and assist in stormwater control.
- CCTV Security System at facility entrances, children's bedrooms, and common areas.
- Significant security signage
- Solid and discrete frontage fence and locking entrance. The entrance to the facility should not stand out to those passing by.
- Permanent security lights at facility entrance
- Security bars on all windows
- Installation of a recessed safe for E.C. corporate purposes
- Installation of timer and/or motion sensor lights throughout the common site areas.
- Strategic facility locking hardware systems
- Orphanage mascot (guard dog!)
- Install heavy gauge metal exterior doors and window frames
- Use a peep hole or side angle viewer
- Secure strike plates with 3" minimum screws that penetrate the stud in the wall
- Use industrial grade security caulking and security films at all windows.
- Keep an inventory list of all posessions with photographs. This will significantly help with the police report in case of theft.

Threats to the orphanage: cockroaches and termites

60% of households in Greater Guadalajara are infested with Cockroaches. There are hundreds of cockroach species living in Central Mexico -- all with dangerous health threats. These pests have been implicated in cases of salmonella food poisoning and found to harbor staphylococcus, streptococcus, coliform and other bacterial pathogens. Cockroaches eat almost anything: crumbs, hair, fingernail clippings, spots of grease, soiled clothes, pet fur, wood, and dead insects (You know, all the common things found in an orphanage!). They will cannibalize their young if food becomes scarce.

Mitigation for the orphanage: cockroaches and termites

In addition to the health risks for the staff and kids, cockroaches can discretely devestate the structural integrity of wood facilities. J.I. suggests the following mitigation strategies for the orphanage:

- Termite barriers: Avoid contact between soil and lumber by using termite-resistant concrete, steel, or masonry foundations. Keep in mind, however, even with proper barriers in place, termites have been known to chew through piping made of soft plastics and even some metals, such as lead. Common points of entry include: water and drainpipes, under the sinks, sewer pipes, conduits for electricity, or crevices in walls. The orphanage facilities should be constructed with embedded physical termite barriers so that there are no easy means for termites to gain entry.
- Soil treatment: Essentially, this is a mixture of soil and termiticide that is placed around the foundation walls, support piers and the soil to be covered with concrete slabs.
- If appropriate, consider the following termite resistant trees: Turpentine, White Cypress, or one of the Sequoias.
- Don't use wood! Construct with brick and concrete, and use metal and plastics with bunks, shelving, furniture, etc.
- Pressure treated lumber may not be the pest's favorite, but is NOT termite proof.
- If structural wood members are used, apply termite resistant chemicals.
- Keep facility walls dry. Termites will penetrate the orphanage even through the concrete walls if they find moisture. The abundance of cockroaches in Mexico's tropical climes has created a huge extermination industry: over 1,000 private exterminators currently offer their services in Guadalajara. Most exterminators charge between 250 and 500 pesos for residential fumigation which they will only guarantee for three months. E.C. should be warned that many Mexican fumigators are blissfully ignorant of the chemical properties of the insecticides they use.

Emergency Contact:

Police Response
For the most part, the police departments in Guadalajara and the surrounding metropolitan area are professional and adequately trained. Police corruption has long been considered a major problem and such concerns continue with lower ranking officials. As you know, many Mexican citizens have little regard for or trust in the police. However, our research shows proper police support for private orphanages. In this particular case, the facility is fortunate to have a police checkpoint less than a mile down the road. J.I. highly suggests a relationship is developed with the security personel at this checkpoint.

Mexico country code: 52
Guadalajara area code: 33
Police emergency: 066
Consulate main numbers: (33) 3268-2100 or (33) 3268- 2200
American Citizen Services: (33) 3268-2173 or (33) 3268- 2273
Consulate after hours: (33) 3268-2145
U.S. Embassy Mexico City: 01-55-5080-2000 (in Mexico) 011-52-55-5080-2000 (outside Mexico)

Medical Emergencies
Guadalajara has very adequate medical facilities. Facilities outside of the metropolitan area are more limited. In an emergency, dial 066 for the police and ambulance service.

Hospital San Javier
Avenida Pablo Casals 640
Guadalajara, Jalisco
Telephone: 3669-0222 (also use this number for an ambulance)
http://www.sanjavier.com.mx/

Hospital del Carmen
Tarascos 3435
Guadalajara, Jalisco
Telephone: 3813-0128 or 3813-0025 or 3813-0442
Ambulance: 3813-1224
www.hospitalangelesdelcarmen.com

Hospital Puerta de Hierro
Hospital de Especialidades Centro Medico Puerta de Hierro (in short Hospital Puerta de Hierro) Puerta de Hierro
5150, Puerta de Hierro
45116 Zapopan, Jalisco
www.cmpdh.com

Air ambulances:
Global Life Flight (plane located in Guadalajara)
Telephone: 01 800 305-9400 or 3615-2471
www.globallife.com

Airlink Ambulance
San Gonzalo 1859
Col. Santa Isabel
Zapopan, Jalisco 45110
01 800 024-8600 or 3688-5040 or 3688-6702
www.airlinkambulance.com

soils analysis

Reference: Tonala Orphanage
Subject: Soils Analysis

Dear Just and Darren Hurst,
Pursuant to the request from the Enfoque Ciudad (E.C) team, please find the following Soils Analysis for the E.C. Tonala Orphanage. The proposed orphanage will involve excavation, rough grading, backfill, foundation systems, exterior flatwork, retaining walls, drainage and final grading on the 2 acre site located in the northeast region of the Tonala Municipality. The site is outside of city limits, and is accessed from a gravel public road. Site demolition will include the removal of a 800 sf. CMU residence, located on the west boundary. Site excavation will involve the construction of a driveway to the third tier, site preperation and overexcavation of the second and third tier, and rough grading for the site facilities on the first tier. Due to the square footage requirements for the facilities on the second tier, we anticipate the need for engineered retaining walls, shoring, and caissons or piles.

The Journeyman International team has visited the site twice to take a visual assessment. However, this document **IS NOT** a Soils Report, and should not be used to make structural decisions. A soils report should be performd by a licensed engineer in Guadalajara. The scope of work for the soils engineering report should include: a general site reconnaissance, subsurface exploration, laboratory testing of selected soil samples, and geotechnical evaluation of the data collected. Primary influence shall be placed on subsurface conditions, including drainage and structural integrity.

Regards,

The Journeyman International Team

Preliminary geotechnical recommendations

The J.I. team has visually assesed the site and significantly researched its topography. Our honest conclusion: this multi-tired site is complex with several soils types apparent and has numerous constraints and unforseen variables. From our analysis, we offer the following suggestions:

1. The existing ground surface in all new improvement areas (i.e. retaining wall backfill areas, Portland cement concrete (PCC) foundation areas, stair tower areas, etc.) should be prepared for construction by removing existing vegetation, tree stumps, existing fill, construction debris, large roots, and other deleterious material. If any existing utilities are found, they should be removed or properly abandoned. The appropriate method of utility abandonment will depend upon the type and depth of the utility.

2. If voids are created by the removal of materials, the underlying soil should be analysed prior to backfill. Backfill should be compacted to a minimum of 90 percent with engineered fill.

3. Where tiers are to be cut, the prepared soil in new facility areas should be excavated to subgrade elevation. If soil is exposed by excavation of these tiers (we anticipate mostly bedrock), the soil should be moisture conditioned and recompacted to a minimum of 90 percent of maximum dry density.

4. To protect new slabs-on-grade from expansive soil damage, the upper 18 inches of soil beneath all new slabs should consist exclusively of nonexpansive material, i.e. engineered fill as opposed to clay-like soils.

5. Prior to placement of the nonexpansive material, the exposed soil surface should be moistened to optimum moisture content and compacted.

6. All materials used as fill or backfill should be cleaned of all debris, rocks, and irreducible material larger than 3 inches in diameter.

7. The upper foot of subgrade and all aggregate base in areas to be paved with asphalt concrete should be compacted to a minimum of 95 percent of maximum dry density. Subgrade and aggregate base should be firm and unyielding when proofrolled with heavy, rubber-tired grading equipment prior to continuing construction.

Footings

1. New spread footings should have a minimum size of 2 feet square;

2. Continuous footings should be a minimum of 12 inches wide.

3. Continuous and spread footings for the stair/elevator towers should bear a minimum of 1 foot into residual soil or 1 foot into bedrock, but not a combination of the two. Deepening of the footings may be necessary in some instances to achieve the recommended penetration into one uniform material. In addition to penetrating into the residual soil or bedrock, continuous and spread footings should have a minimum depth of 21 inches below lowest adjacent grade, or 21 inches below pad grade, whichever is deeper.

4. We suggest footings be designed using maximum allowable bearing capacities of 2,000 psf dead load and 3,000 psf dead plus live loads. A one- third increase (to 4,000 psf) may be used when wind and/or seismic loads are included.

5. At a minimum, reinforcement of new continuous footings and grade beams should consist of two No.4 rebar, one at the top and one at the bottom. All reinforcing systems will need to be engineered.

6. E.C. should anticipate approximately 1/2 inch of settlement at any given footing (even with proper compaction).

Drilled, cast in place caissons

1. If drilled, cast-in-place caissons are utilized, they should have a minimum diameter of 18 inches. They should not be constructed closer than three diameters (clear span) to each other.

2. The frictional resistance of caissons should come entirely from residual soil and/or bedrock (not grout).

3. If there are any situations where caissons penetrate into unweathered bedrock, it may be possible to adjust the friction capacity to reflect the harder condition of the rock.

4. Lateral loads may be resisted by passive pressures of the soil acting on the caissons and caisson caps. A passive equivalent fluid pressure of 350 pcf may be used. Passive resistance of the soil may only be assumed to act across one caisson diameter for long term lateral loads; passive resistance may be assumed to act across two caisson diameters for short term lateral loads such as wind and seismic loads. Lateral capacity is based on the assumption that all backfill adjacent to foundations is properly compacted.

5. If subsurface water is encountered caisson reinforcing should be designed to accommodate a minimum 5-inch diameter tremie pipe. Any water encountered should be removed from the hole prior to placing the concrete.

6. As the caissons will utilize skin friction for support, it is not necessary to thoroughly clean the bottoms of the excavations, although excessive loose debris and slough material should be removed. As stated earlier, use of end-bearing capacity is not recommended.

7. Concrete used in caissons should be placed at a slump between 4 and 6 inches in dry excavations and between 7 and 9 inches when placed under water.

8. The caissons should not deviate from a plumb line taken from the center of the caisson by more than 2 percent of the caisson length, from the top to the point of interest. Adequate caisson oversize may be assumed to provide required tolerance.

Slabs on grade and exterior flat work

1. To reduce the potential for damage to new slabs-on-grade due to expansive soil, interior slabs-on-grade should be constructed over a minimum 18-inch thick layer of nonexpansive imported fill.

2. Enfoque Ciudad may also wish to consider placement of nonexpansive import under new exterior pedestrian flatwork and the soccer field to prevent damage due to the expansive soil. It is suggested that 12 to 18 inches of nonexpansive material be placed.

3. New interior slabs and exterior pedestrian flatwork should have a minimum thickness of 4 full inches of concrete. Minimum slab reinforcement should consist of #3 rebar placed at 24 inches on-center each way.

4. The most effective means of reducing the potential for infiltration of subsurface moisture vapor through the interior slab would be to cast the slab directly atop a durable, puncture and tear-resistant vapor barrier. The next most effective option would be vapor-inhibiting admixtures and/or surface sealers.

5. Positive drainage away from the structure should be maintained. If water is allowed to pond near the structures, it may seep into the ground and migrate laterally through cracks or utility penetrations in the foundation, ultimately gaining access above the vapor barrier. The presence of water above the barrier could potentially result in vapor transmission through the slab for months or years. Any sand between the vapor barrier and the slab should be moistened only as necessary to promote concrete curing. Saturation of the sand should be avoided, as the excess moisture could also result in vapor transmission through the slab for months or years.

6. To reduce shrinkage cracks in concrete, the concrete aggregates should be of appropriate size and proportion, the water/cement ratio should be low, the concrete should be properly placed and finished, construction joints should be installed, and the concrete should be properly cured.

Retaining walls

1. Foundations for retaining walls should bear a minimum of 1 foot into firm alluvium or residual soil. Deepening of the footings may be necessary in some instances to achieve the recommended penetration into these materials. In addition, footings should have a minimum depth of 27 inches (not including any keyway) below the lowest adjacent grade within 5 feet of the toe of the footing.

2. J.I. suggests the design of walls should be rougly based on the following parameters:

Active equivalent fluid pressure, native soil backfill, static conditions——————50 pcf
Active equivalent fluid pressure, imported sand or gravel backfill, static conditions—35 pcf
Active equivalent fluid pressure, imported sand, gravel, or native backfill, seismic conditions——————————————————————————————75 pcf
At-rest equivalent fluid pressure, native soil backfill, static conditions——————65 pcf
At-rest equivalent fluid pressure, imported sand or gravel backfill, static conditions—50 pcf
At-rest equivalent fluid pressure, imported sand, gravel, or native backfill, seismic conditions——————————————————————————————90 pcf
Passive equivalent fluid pressure——————————————————————350 pcf
Maximum toe pressure——————————————————————2,000 psf
Coefficient of sliding friction——————————————————————0.35

These parameters are rough guidelines and should be verified by a licensed engineer.

3. All retaining walls should be drained with perforated pipe encased in free draining gravel. The pipe should be placed perforations downward and should discharge in a nonerosive manner away from foundations and other improvements. The gravel zone should have a width of approximately 1 foot and should extend upward to 1 foot from the top of the backfill. The upper 1 foot of backfill should consist of native soil to reduce the flow of surface drainage into the wall drain system. To reduce infiltration of the soil into the gravel, a permeable synthetic filter fabric, should be placed between the two.

4. Orphanage housing walls facing habitable areas should be thoroughly waterproofed to prevent intrusion into the living quarters.

5. Retaining walls by their nature are flexible structures and surface treatments on walls often crack. Where walls are to be plastered or will otherwise have a finish surface applied, the flexibility should be considered in determining the suitability of the surfacing material, spacing of horizontal and vertical joints, etc. The flexibility should also be considered where a retaining wall will abut or be connected to a rigid structure, and where the geometry of the wall is such that its flexibility will vary along its length.

6. Long-term settlement of properly compacted sand or gravel retaining wall backfill should be assumed to be about 1/4 to 1/2 percent of the depth of the backfill; longterm settlement of native backfill should be assumed to about twice these magnitudes. Improvements that are constructed over retaining wall backfill should be designed to accommodate the estimated settlement.

Drainage around improvements

1. Unpaved ground surfaces should be graded during construction, and finish graded to direct surface runoff away from foundations, pavement, and other improvements at a minimum 2 percent grade for a minimum distance of 5 feet. On much of this site this is not feasible due to the terrain, therefore swales and other drainage tactics will need to be implemented.

2. To reduce the potential for planter drainage gaining access to subfloor or subslab areas, any raised planter boxes adjacent to foundations or on the roof should be installed with drains and sealed sides and bottoms.

3. Any eaves of the building should be provided with roof gutters. Runoff from roof gutters downspouts, area drains, weep holes, etc., should discharge to an appropriate outlet in a nonerosive manner away from foundations and other improvements. Erosion protection should be placed at drainage outlets or into the stormwater system.

4. The site soils are erodible. It is essential to stabilize the surface soils, particularly those disturbed during construction, by vegetation or other means during and following construction to reduce erosion damage. Care should be taken to establish and maintain vegetation. The landscaping and exterior flatwork should be installed to maintain the surface drainage recommended above.

construction safety plan

This section aims to provide a template for a Construction Safety Plan that can be used for this project.

General safety requirements

All safety rules must be obeyed. failure to do so will result in immediate dismissal from the jobsite.

1. Head protection will be worn on job sites at all times by all trades.
2. Eye protection will be worn when there are potentials of hazards from flying objects or particles, chemicals, arcing, glare, or dust.
3. Protective footwear shall be worn to protect from falling objects, chemicals, or stepping on sharp objects. Athletic or canvas-type shoes shall not be worn.
4. Protective gloves or clothing shall be worn when required to protect against a hazard.
5. Harnesses and lanyards shall be utilized for fall protection.
6. Keep your mind on your work at all times. No horseplay on the job.
7. Precautions are necessary to prevent sunburn and to protect against burns from hot materials.
8. If any part of your body should come in contact with an acid or caustic substance, rush to the nearest water available and flush the affected part. Secure medical aid immediately.
9. The use of illegal drugs or alcohol or being under the influence of the same on the project shall be cause for termination. Inform your supervisor if taking strong prescription drugs that warn against driving or using machinery.
10. Do not distract the attention of fellow workers. Do no engage in any act which would endanger another employee.
11. Sanitation facilities have been or will be provided for your use. Defacing or damaging these facilities is forbidden.
12. A clean job is the start of a safe job.
13. Do not use a compressor to blow dust or dirt from your clothes, hair, or hands.
14. Never work aloft if you are afraid to do so, if you are subject to dizzy.
spells, or if you are apt to be nervous or sick.
15. Never move an injured person unless it is absolutely necessary. Further injury may result. Keep the injured as comfortable as possible and utilize job site first-aid equipment until an ambulance arrives.
16. Know where firefighting equipment is located and be trained on how to use it.
17. Lift correctly - with legs, not the back.
18. Nobody but the operator shall be allowed to ride on equipment unless proper seating is provided.

19. Do not use power tools and equipment until you have been properly instructed in the safe work methods and become authorized to use them.
20. Be sure that all guards are in place. Do not remove, displace, damage, or destroy any safety device or safeguard furnished or provided for use on the job, nor interfere with the use thereof.
21. Do not enter an area which has been barricaded.
22. If you must work around power shovels, trucks, and dozers, make sure operators can always see you. Barricades are required for cranes.
23. Never oil, lubricate, or fuel equipment while it is running or in motion.
24. Before servicing, repairing, or adjusting any powered tool or piece of equipment, disconnect it, lock out the source of power, and tag it out.
25. Trenches over five feet deep must be shored or sloped as required. Keep out of trenches or cuts that have not been properly shored or sloped. Excavated or other material shall not be stored nearer than two feet from the edge of the excavation. Excavations less than 5 ft may also require cave in protection in some instances.
26. Use the "four and one" rule when using a ladder. One foot of base for every four feet of height.
27. Portable ladders in use shall be equipped with safety feet unless ladder is tied, blocked or otherwise secured. Step ladders shall not be used as a straight ladder.
28. Ladders must extend three feet above landing on roof for proper use.
29. Defective ladders must be properly tagged and removed from service.
30. Keep ladder bases free of debris, hoses, wires, materials, etc.
31. Build scaffolds according to manufacturers' recommendations.
32. Scaffold planks shall be properly lapped, cleated or otherwise secured.
33. Use only extension cords of the three-prong type. Use ground fault circuit interrupters at all times and when using tools in wet atmosphere (e.g. outdoors) or with any temporary power supply. Check the electrical grounding system daily.
34. The use of harnesses with safety lines when working from unprotected high places is mandatory. Always keep your line as tight as possible.
35. Never throw anything "overboard." Someone passing below may be injured.
36. Know what emergency procedures have been established for your job site. (location of emergency phone, first aid kit, stretcher location, fire extinguisher locations, evacuation plan, etc.)

I, _____agree with the above standards that have been set forth by Journeyman International in accordance with
General Safety Requirements.

_____ _____
(Signature) (Date)

Required Fall Protection Situations

I. Excavation

A. Excavations greater than 6 feet deep shall be protected from falling using one of the following methods: guardrail systems, fences, or barricades.

B. Where walkways are provided across excavation deeper than 6 feet guardrails will be provided on the walkway.

II. Erection, Leading Edge Work or Unprotected Sides

A. All employees working on a leading edge work (Precast Concrete Erection, Roofing, Steel Erection, etc.) 6 feet or greater above lower levels shall be protected by one of the following: guardrail system, safety net system, or personal fall arrest system. If these systems create a greater risk of harm to employees then the group must meet collectively and come up with a fall protection plan that is feasible. This fall protection plan must be implemented prior to commencement of work.

III. Unprotected Openings

A. Holes are considered a gap or void two inches or more in the least dimension in a floor, roof or walking/working surface.

B. Holes that have a falling distance of less than 6 feet must be covered or clearly marked out with caution tape or a guard rail system to identify the potential fall hazard.

C. Holes that have a falling distance greater than 6 feet above lower levels must be clearly labeled “Hole” or “Cover” and covered with a secured cover rated to withstand without failure at least twice the maximum load of the largest piece of equipment, employees, or materials that may be imposed on that cover at one time.

D. Wall openings such as windows, doors, elevator shafts, stairs, ladders access, material receiving areas and trash chutes with a distance greater than 6 feet above lower levels and the bottom edge of the wall opening is less than 39 inches above the walking or working surface must be protected from falling by the use of a guardrail system, safety net system or personal fall arrest systems.

E. Ramps, runways and other walkways shall be protected with a guardrail system when the walking surface is greater than 6 feet above the lower level.

Confined Space Entry

No employee shall enter areas defined below without authorization:
i. A space that is not designed for continuous employee occupancy; and
ii. Is large enough and so configured that a person can bodily enter into and perform assigned work and
iii. Has limited or restricted means for entry or exit; and
iv. May have a possible hazardous atmosphere that may expose employees to the risk of death, incapacitation, impairment of ability to self rescue caused by:
a. Flammable gas
b. Airborne combustible dust
c. Atmospheric oxygen concentration below 19.5 or above 23.5%
d. A toxic atmosphere or substance
e. Danger of engulfment

General Confined Space Entry Procedure

i. There shall be no unauthorized entry into a confined space by any person.
ii. An authorized person shall examine, test and evaluate a potential entry space and determine if it is a "non-permit space" and meets the following requirements:
a. It does not contain any atmospheric hazards or dangers of engulfment capable of causing death or serious physical harm;
b. The space has been proven safe, has been verified, documented, and has a certified guarantee of a safe environment.

The Space:

a. Contains or has a potential to contain a hazardous atmosphere.
b. Contains a material that has a potential for engulfing an entrant.
c. Has an internal configuration such that an entrant could be trapped or asphyxiated by inwardly converging wall or by a floor which slopes downward and tapers to a smaller cross section; or
d. Contains any other recognized serious safety or health hazard.

Enfoque Ciudad Safety Manual And Health Policy Agreement

If a job represents a potential safety or health threat, every effort will be made to plan a safe way to do the task. Every procedure must be a safe procedure and follow all guidelines listed herein. Shortcuts in safe procedures by either foremen or workers will not be tolerated. If a worker observes any unprotected job, which may pose a potential threat to their health or safety, he or she must inform management and management must take adequate precautions.

It is the policy of the General Contractor to provide protection and leadership to all employees from unsafe work conditions and practices on the jobsite. Our employees are considered the most fundamental asset of our operations. Their safety must be considered first when planning any construction activity. All employees have the responsibility to work safely and ensure that fellow workers also work safely on the job to ensure everyone leaves the jobsite unharmed at the end of the day. I have read and agree to adhere with all included policies set forth herein accordance to the Enfoque Ciudad Safety Manual. I will follow all policies and procedures set forth within this manual to ensure the well being of all job site employees.

_____ _____

(Signature) (Date)

Stormwater Pollution Prevention Plan (SWPPP)

1.0 SWPPP Goals

This Storm Water Pollution Prevention Plan (SWPPP) will provide the E.C. Tonala Orphanage with the tools to reduce pollutants contained in storm water discharges and to properly contain construction related contaminants. Due to the steep location of the site, stormwater protection and control will be crucial not only for the effected river below, but also for the safety of the orphanage facility and it's occupants.

1.1 Nature and Sequence of Construction Activities

Enfoque Ciudad Inc. is proposing to develop a 2 acre lot on the northeast region of Tonala, transforming the substantially undisturbed site into an orphanage. Total site development will include (3) 3-story residential units, (1) Central Administration facility, (1) Mult-purpose facility, a soccer field, an ampitheatre, and site hardscapes. The orphanage will be constructed in two phases; the third residential unit and several site finishes will begin construction one year after phase 1 completion. Several bioswales, trench dranes and site gutters will be installed to convey runoff. Soil disturbing activities will include: clearing and grubbing, installing stabilized construction exits, installing erosion and sediment controls, grading, utilities, building foundations, construction of roads, and preparation for final seeding, mulching, and landscaping.

SWPPP activities will include:

1. Install orange fencing and mark trees to be preserved in areas identified as Preserve Existing Vegetation.
2. Install perimeter silt fences and bury tail 6" underground.
3. Construct stabilized construction exits for the site.
4. Begin clearing and grubbing, grading, and installation of stormwater

drainage at the beginning of construction activities.
5. Construct site gutters, dikes, and bioswales.
6. Establish topsoil stockpiles and stabilize with erosion control.
7. Construct combined staging and materials storage area and stabilized with erosion control. Establish a safe location for hazardous material storage.
8. Install recycling and trash dumpsters for the site.
9. Install utilities, sanitary sewers, and water services.
10. Prepare pavement subgrade and install gutters, curbs, storm drain inlets, sewer manholes.
11. Construct temporary concrete washout area near the southeast exit.
12. Prepare final seeding and landscaping.
13. Monitor stabilized areas until final stabilization is reached.

1.2 Soils, Slopes, Vegetation, and Current

Soil types:
The current soil type of the site consists of gravely fine sand loam soil with bedrock subsoil. It appears that the previously excavated locations on site have received 6" of construction base. Due to the nature of the site, it is believed that bedrock is located near the surface throughout the site.
Slopes:
The site has several locations of radical slope. The southeast corner of the site has the greatest elevation while the northeast corner has the lowest elevation. The second and third tiers have been previously excavated and have a near 90 degree excavated edge. The acreage north of the third tier drops off at an intense 30 degree slope. This region will require significant engineering and excavation to become constructible land.
Drainage Patterns:
Existing site water is received from the frontage road in the southeast corner, and flows either into the retention pond or down the future site driveway. In order to control site drainage, a gutter or swale will be required at the frontage road.
Vegetation:
The lower region of the site supports blocks of old and young trees and undergrowth vegetation. The upper region contains small shrubs and brush (to be removed), and one large olive tree near to the pond.

1.3 Construction Estimates

The following are estimates of the construction site:
Total project area ——————————2 acres
Construction site area to be disturbed ——————1 acre
Percentage impervious area before construction ———45 %
Runoff coefficient before construction ——————.7
Percentage impervious area after construction ———40%
Runoff coefficient after construction ——————.31

1.4 Features to be Preserved

Journeyman International strongly encourages the preservation of the current vegetation on the northern 50% of the site. In order to maintain this, we suggest this region be fenced off and for no construction activity to be allowed in this area. Additionally, we encourage the preservation of the large Olive tree and the larger vegetation surrounding the pond.

1.5 Potential Sources of Pollution

Potential sources of sediment to stormwater runoff:
- clearing and grubbing operations
- grading and site excavation operations
- topsoil stripping and stockpiling
- landscaping
- combined staging area: small fueling activities, minor equipment maintenance, sanitary facilities and hazardous waste storage
- materials storage area: general building materials, solvents, adhesives and paving materials, paints, aggregates, trash, etc.
- construction activity: paving, curb/gutter installation, concrete pouring, mortar/stucco and building construction
- concrete washout area

1.6 Vegitation Swale

A vegetated swale will be installed on the east and west perimeters of the site. The swale will have side slopes (2:1), and the slopes and bottom of the swale will be seeded, mulched, and stabilized using erosion control blankets to allow vegetation to be established. Fiber roll check dams will be installed along the vegetated swale. The rolls will consist of rolled tubes of erosion control blankets (8 inches in diameter) and bound at each end with jute-type twine. The rolls will be placed along the swale in 6-foot intervals and staked into the ground using wooden stakes (24 inches long) 3 feet apart. The vegetated swale will remain as a permanent stormwater structure after construction is complete. Journeyman International can provide construction details upon request

1.7 Geotextile Erosion Control Blanket

Geotextile erosion control blankets may be used to provide stabilization for The exposed slopes throughout the site. The bottom and side slopes will be seeded and mulched before the blanket is applied. The blanket will be installed by digging a small trench on the upside of the slope, 12 inches wide by 6 inches deep, and stapling the leading edge of the blanket in the trench. The blanket will be rolled down the slope slowly to maintain soil contact and stapled in 12-inch intervals. If the blanket cannot cover the entire slope, the blankets will be overlapped (minimum of 2 inches) and stapled at the overlapped edge.

1.8 Establish Perimeter Controls and Sediment Barriers

Silt fences will be installed around the perimeter of the entire site, except at the two construction entrances. A silt fence will also be installed around the topsoil stockpile and staging areas. Silt fences will be installed by excavating a 12-inch-deep trench along the line of proposed installation. Wooden posts supporting the silt fence will be spaced 4 to 6 feet apart and driven securely into the ground; a minimum of 20 inches deep. The silt fence will be fastened securely to the wooden posts with wire ties spaced every 24 inches at the top, mid section, and bottom of the wooden post. The bottom edge of the silt fence will extend across the bottom of the trench and the trench will be backfilled and compacted to prevent stormwater and sediment from discharging underneath the silt fence.

1.9 Stabilized Construction Exits

Anti-tracking pads should be installed at each exit to prevent the off-site transport of sediment by construction vehicles. The stabilized exits will consist of a 6–inch-thick layer of crushed stone which will be placed over a layer of geotextile filter fabric to reduce the mitigation of sediment from the underlying soil. Orange-colored plastic mesh fence should be installed along the length of the construction exit to keep construction vehicles and equipment on the stone antitracking pads.

2.0 Material Handling and Waste

All waste materials will be collected and disposed of into two metal trash dumpsters in the combined staging area. Dumpsters will have a secure watertight lid and be placed away from stormwater conveyances and drains. Only trash and construction debris from the site will be deposited in the dumpsters. All personnel will be instructed, during tailgate training sessions, regarding the correct procedure for disposal of trash and construction debris.

2.1 Final Stabilization

Permanent landscaping will be applied immediately after the final design grades are achieved. After the entire site is stabilized, any sediment that has accumulated will be removed and hauled off-site for disposal. Construction debris, trash and temporary SWPPP materials will also be removed and any areas disturbed during removal will be seeded immediately.

Contractor/ Owner Contract

This document aims to provide a template for a contract between the owner and general contractor.

This agreement is made this <date> by and between <CONTRACTOR>, <ADDRESS> and Enfoque Ciudad Inc. located at San Javier 244 Colonia El Campanario Zapopan, Jalisco C.P. 45640, Mexico.

Enfoque Ciudad does hereby employ the Contractor to do all the work and provide all the materials, tools, machinery and supervision necessary for the construction of the Enfoque Ciudad Orphanage complete per the contract scope of work.

This project will be on a cost-plus basis with a gross maximum price.

The estimated construction cost is $XXX,XXX.00 USD.

The contractor fee will be X% of the total construction cost.

Change orders to the contract scope of work are to receive a mark up of no greater than X%.

The Contractor shall commence the work to be performed within ___days from the date of the Notice to Proceed, and shall complete the work ___ days thereafter, or by <DATE>, whichever comes later.

The Contractor shall carry liability insurance with the limits of <AMOUNT> for injury to or death of one person, <AMOUNT> for injuries or death suffered in one accident and <AMOUNT> property damage and Workman's Compensation insurance and shall provide Enfoque Ciudad with proof of such insurance.

Hold Harmless
The Contractor agrees to defend, indemnify and hold the owner harmless from any liability or claim for damage because of bodily injury, death, property damage, sickness, disease or loss and expense arising from the Contractors' negligence in the performance of the construction Contract. Each Contractor and subcontractor is acting in the capacity of an independent Contractor with respect to

Enfoque Ciudad. The Contractor further agrees to protect, defend and indemnify Enfoque Ciudad from any claims by laborers, subcontractors or material men for unpaid work or labor performed or materials supplied in connection with the Construction Contract.

Lien Waivers
The Contractor shall protect, defend and indemnify Enfoque Ciudad from any claims for unpaid work, labor or materials.

General Guarantee
The Contractor shall remedy any defect due to faulty material or workmanship and pay for any damage to other work resulting therefrom which shall appear within the period of one year from final payment. Further, the Contractor will furnish Enfoque Ciudad with all manufacturer's and supplier's written guarantees and warranties covering materials and equipment furnished under this Contract.

Permits and Codes
Enfoque Ciudad shall obtain all necessary building permits, including those required by the District of Tonala, City of Guadalajara, and federal jurisdictions. The Contractor will secure at his own expense any other necessary permits and licenses required to do the work and will comply with all building and code regulations and ordinances whether or not covered by the specifications and drawings for the work.

Work Performance
1) The Contractor shall protect all work adjacent to the Contract site from any damage resulting from the work of the Contractor and shall repair or replace any damaged work at his/her own expense.
2) The Contractor shall replace and put in good condition any existing conditions damaged in carrying out the contract.
3) The Contractor shall take all precautions to protect persons from injury and unnecessary interference or inconvenience.
4) The Contractor shall conduct his activities in a business like manner and adhere to the reasonable wishes of Enfoque Ciudad in relation to his working schedule.

Condition of Premises
The Contractor agrees to keep the premises clean and orderly and to remove all debris as needed during the hours of work in order to maintain work conditions which do not cause health or safety hazards.

Use of Utilities
Enfoque Ciudad shall permit the Contractor to use, at no cost, power and water necessary to the carrying out and completion of the work.

Inspection
Enfoque Ciudad shall have the right to inspect all work performed under this contract. As well it shall be a condition of this contract that all work that needs to be inspected or tested and certified by the engineer or inspected and certified by the local health officer, shall be done at each necessary stage before further construction can continue. All inspection and certification will be done at Enfoque Ciudad's expense.

Right to Stop Work
If the Contractor fails to correct defective work or persistently fails to supply materials or equipment in accordance with the Contract Documents, Enfoque Ciudad may order the Contractor to stop the work, or any portion thereof, until the cause for such order has been eliminated.

Payments for work shall be as follows:
Payments shall be disbursed based on the contractor supplied and owner approved schedule of values. Within three days of notification by the Contractor of each stage of completion, Enfoque Ciudad will inspect and approve the work, or request any necessary adjustments in the work. Enfoque Ciudad agrees to make payments to the Contractor within ten days of approving work.

Contract Security
Contractor shall furnish bonds covering the faithful performance of the Contract and the payment of all obligations related thereto and as required in the instructions to bidders or elsewhere in this Contract.

Liquidated Damages
Contractor hereby agrees to commence work under this contract within <DAYS> days of the Notice to Proceed and to fully complete the project within <DAYS> consecutive calendar days thereafter. Contractor further agrees to pay as liquidated damages, the sum

of $100 USD for each consecutive calendar day thereafter. These damages shall not apply, should unforeseeable causes beyond the control and without the fault or negligence of the Contractor cause delays in the completion of this project.

Taxes
Enfoque Ciudad hereby agrees to supply the Contractor with its tax exempt number for relief from the sales tax on purchase of materials, if applicable.

Arbitration
All claims, disputes, and other matters in question arising out of, or relating to, the Contract Documents or the breach thereof, except for claims which have been waived by the making and acceptance of final payment, shall be decided by Arbitration under the jurisdiction of Journeyman International. The award rendered by the arbitrators shall be final, and judgement may be entered upon it in any court having jurisdiction thereof. Any award shall provide for payment within 30 days of the date of the award.

Conflict of Interest
No person who is an employee, agent, consultant, officer, or elected or appointed official of the <MUNICIPALITY> or other pertinent party may obtain a personal or financial interest or benefit form, or have an interest in, this contract or the proceeds hereunder, either for themselves or for those with whom they have family or business ties, during their tenure or for one year thereafter, if they exercise or have exercised any functions or responsibilities with respect to the program or are in a position to participate in a decision making process or gain inside information with regard to the program.

<date>
In witness whereof, the owner and the contractor have executed this contract as of the date first written above.

Contractor _____

Name _____

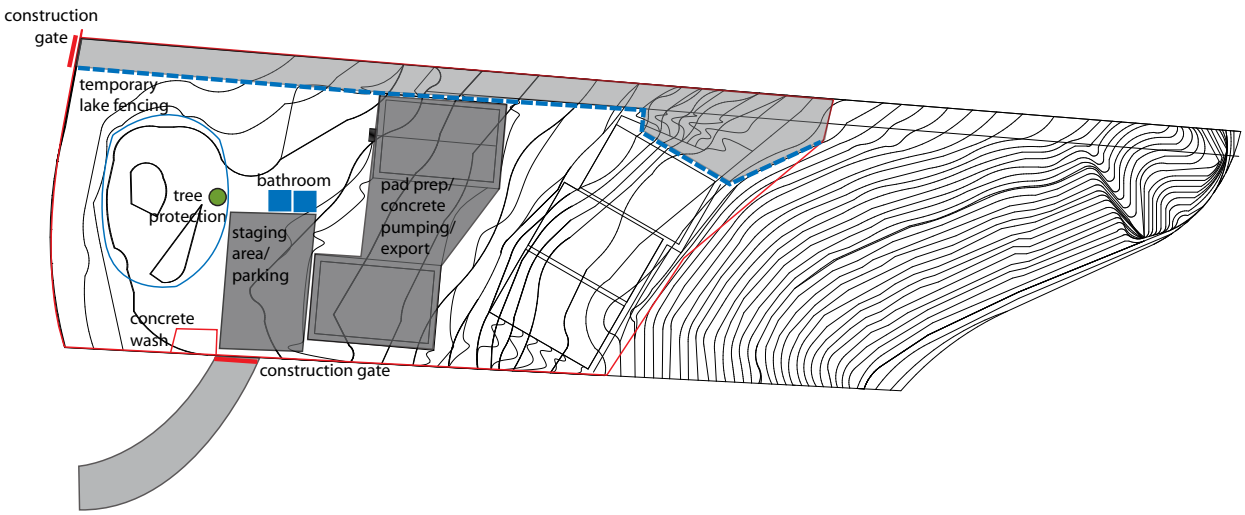
Autorized Signature _____

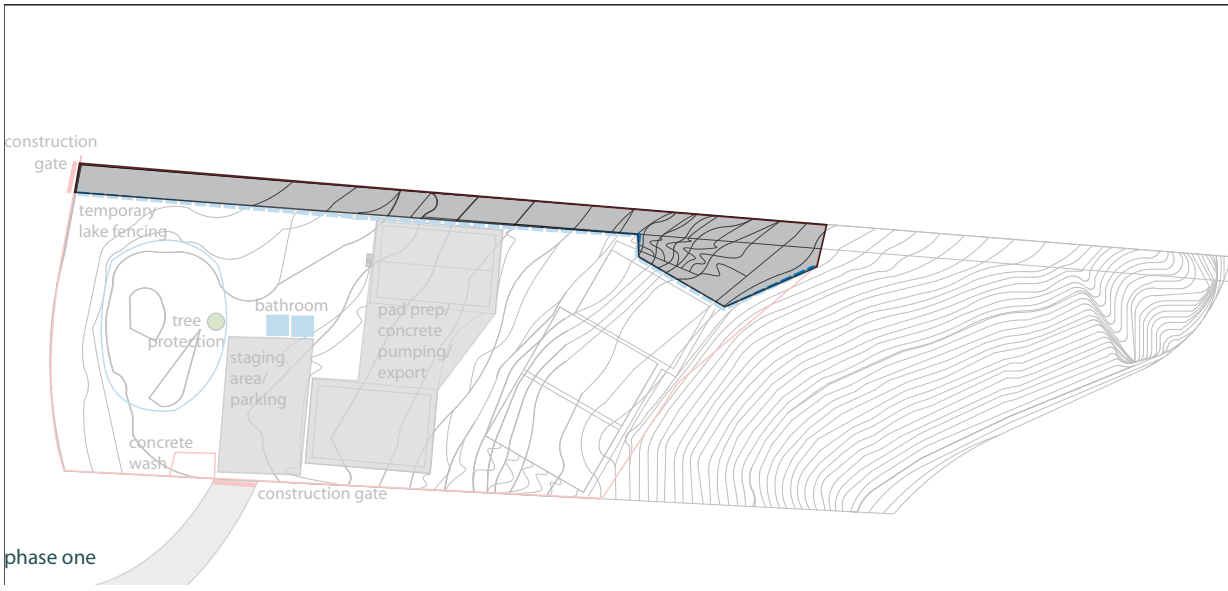
Owner _____

Name _____

Autorized Signature _____

site logistics plans





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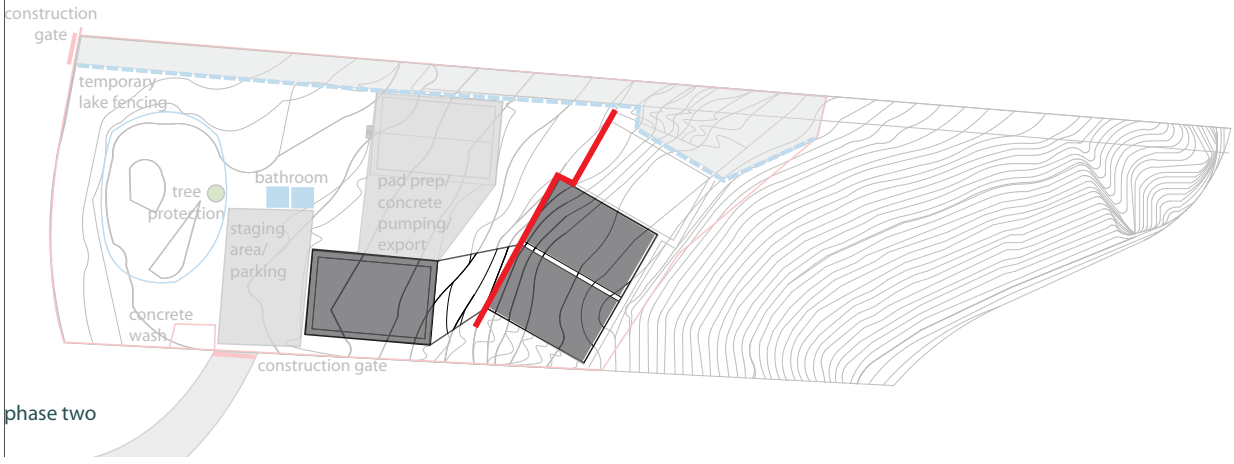
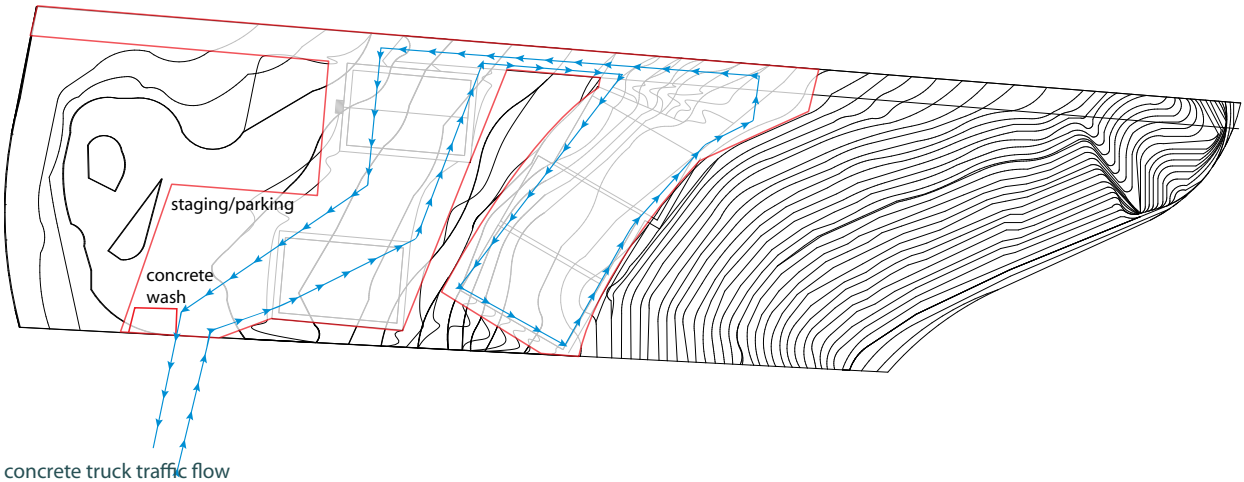
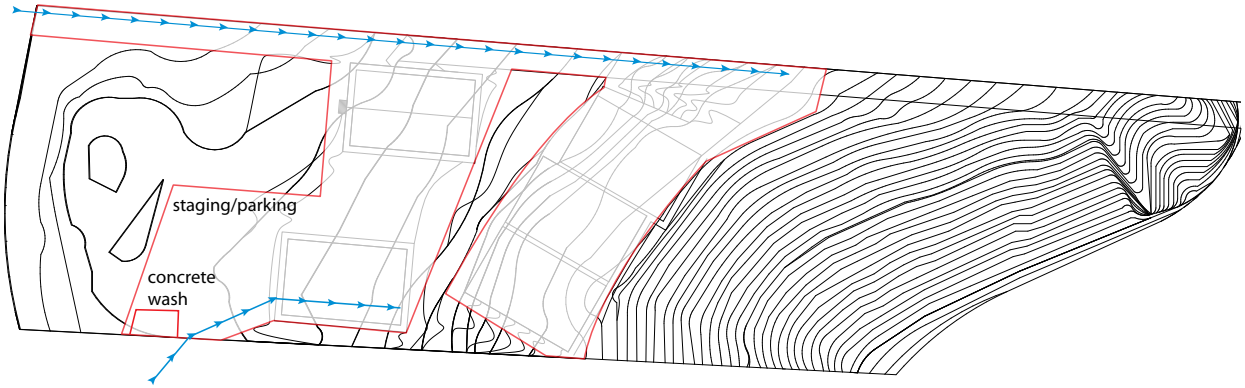


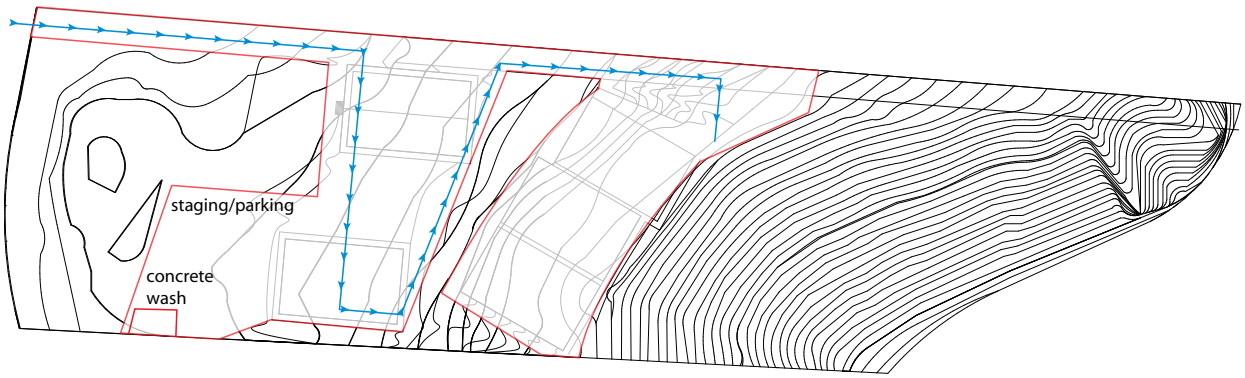
phase two



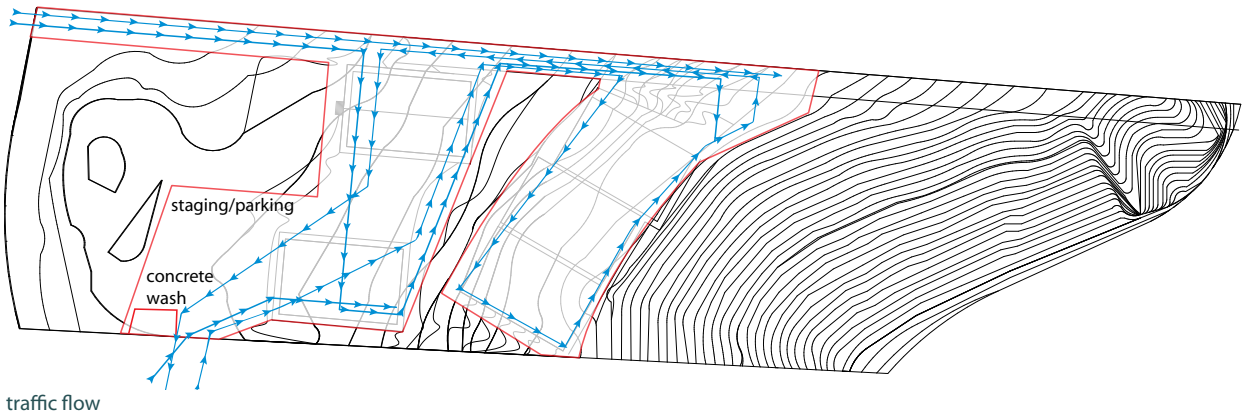
concrete truck traffic flow



man truck traffic flow



tractor traffic flow



traffic flow

PROJECT NAME: **Casa Hogar**
PROJECT NUMBER: **1,023**
LOCATION: Guadalajara, Mexico
UPDATED AS OF: 7/1/11

KEY
LS ---------- Lump Sum
Ea ---------- Each
LM ---------- Linear Meter
SM ---------- Square Meter
CM ---------- Cubic Meter
BF ---------- Board Foot
CY ---------- Cubic Yard

Quantity Take Offs

Total Quantities

Material	Quantity	Units
CMU Blocks	**39728.0**	**—**
Concrete	**503.1**	**CM**
Grout	**366.1**	**CM**
Rebar #4	**26291.0**	**LM**
Rebar #5	**#REF!**	**LM**
Stucco	**91.7**	**CM**
Paint	**554.6**	**Gallons**
Pond Liner	**320.5**	**SM**
Soccer Field Turf	**337.6**	**SM**
Soccer Field Fencing	**75.6**	**LM**
Tile	**397.2**	**SM**
Handrail	**328.5**	**LM**

Item	Number	Units	
Doors	59	--	
Windows	152	--	
- 24" x 16"	96	--	
- 24" x 24"	56	--	
- 36" x 48"	138	--	
Floor space	2920.4368	SM	
Bunk bed	44	--	
Adult bed	16	--	
Toilet	24	--	
Bathtub	24		added 2 bathtubs to both large bathrooms in C1-4

CMU Walls

Casa 1-4		
SM Wall:	716.9637274	SM
Number of Blocks:	8682	
Rebar:	2893.152266	LM of #4
Grout:	104.093489	CY
Central Facility		
SF Wall:	412.9024	SM
Number of Blocks:	5000	
Rebar:	1743.065856	LM of #4
Grout:	62.48529492	CY
Total		
SM Wall:	**3280.757309**	**SM**
Number of Blocks:	**39728**	
Rebar:	**13315.67492**	**LM of #4**
Grout:	**478.8592509**	**CY**

Assumptions:
- Not including windows and doors - areas will be smaller by area of windows and doors. Rebar lengths will also be smaller. This is conservative.
- Only accounting for exterior CMU walls.
- Estimated based on number of bricks shown.
- All "section" (which were arbitrarily defined for easy area calculation) lengths and heights were rounded up to block dimensions. Actual construction will be more complex, so this is a generally, but not universally, conservative assumption.
- Assumed each face is a single plane. Though this is not true, it will not change the area of the walls. However, it will affect edged. Assuming any partial CMU block is cut from a full block, there will be extra blocks needed at these edges. These are not accounted for. Actual number of blocks will be **higher**.
- When elevations showed an obvious slab, this was not included in CMU square footage. However, if there was any confusion and/or if the difference would be small, slab area was included as CMU. This is conservative.
- Some dimensions don't appear to line up perfectly with edges of construction on drawings. Used given dimensions anyway. This may cause errors, both high and low.

CMU Wall Calculations

Calculations use feet for all linear measurements

Conversions

PROJECT NAME: **Casa Hogar**
PROJECT NUMBER: **1,023**
LOCATION: Guadalajara, Mexico
UPDATED AS OF: 7/1/11

KEY
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CY ---------- Cubic Yard

Quantity Take Offs

CMU Blocks

(8" x 16" vertical plane)
0.888888889 SF per block

Casa 1-4

Side	Section Number*	Length	Height	Square Footage**	
East	1	60.953	12.021	817.778	SF
	2	7.773	3.500	32.000	SF
	3	43.201	28.479	1271.111	SF
	4	15.000	10.979	184.000	SF
	5	18.000	15.500	288.000	SF
	6	4.000	13.500	58.667	SF
			Total	2651.556	SF

	Section Number*	Length	Height	Square Footage**	
West	1	49.193	12.021	624.889	SF
	2	6.344	15.500	106.667	SF
	3	44.583	10.979	513.778	SF
	4	40.297	13.500	578.667	SF
	5	18.234	13.000	248.889	SF
	6	18.000	2.000	37.333	SF
	7	19.333	4.000	80.000	SF
	8	18.234	4.000	74.667	SF
			Total	2264.889	SF

	Section Number*	Length	Height	Square Footage**	
North	1	35.635	15.500	576.000	SF
	2	32.773	7.500	266.667	SF
	3	2.862	11.000	45.333	SF
	4	13.930	16.833	254.222	SF
	5	5.940	13.500	93.333	SF
	6	1.682	6.500	17.778	SF
	7	14.596	10.909	166.222	SF
			Total	1419.556	SF

	Section Number*	Length	Height	Square Footage**	
South	1	36.000	15.500	576.000	SF
	2	30.667	5.700	184.000	SF
	3	36.000	10.000	360.000	SF
	4	6.667	13.333	88.889	SF
	5	14.667	8.000	117.333	SF
	6	6.667	4.667	31.111	SF
	7	12.000	2.000	24.000	SF
			Total	1381.333	SF

* For section numbers, see printout

** Square footage uses rounded up length and height to brick sizes

- For rebar calculations, assumed a constant wall height of 12ft for L1, 11ft for L2, and 17ft for L3 for C1-4. For CF, assumed constant 11ft for L1, 12ft for L2.
- For rebar calculations, assumed 80% of wall sections are not an exact multiple of 2ft. It is probably less than this, so this is conservative.
- Assumed 1 SF wall = 0.011852 CY of grout.
- For bond beam calculations, assuming 65% of volume of block will be filled.This is fairly conservative and accounts for some waste.
- For rebar in slab calculations, just assumed a constant area to rebar length ratio,

Rebar
Every 2 ft vertically, add 5% - #4

Elevated slab
#5 at 12in both directions

ground slab
#4 at 16in

Footings
2 #5's 3 layers
both directions

Central Facility

PROJECT NAME: **Casa Hogar**
PROJECT NUMBER: **1,023**
LOCATION: Guadalajara, Mexico
UPDATED AS OF: 7/1/11

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CY ---------- Cubic Yard

Quantity Take Offs

Central Facility

Side	Section Number*	Length	Height	Square Footage**	
East	1	15.651	15.500	256.000	SF
	2	44.609	12.000	544.000	SF
	3	10.000	3.500	42.667	SF
	4	39.418	12.000	480.000	SF
			Total	1322.667	SF

	Section Number*	Length	Height	Square Footage**	
West	1	60.318	12.000	736.000	SF
	2	64.469	3.500	261.333	SF
	3	39.333	8.700	373.333	SF
			Total	1370.667	SF

	Section Number*	Length	Height	Square Footage**	
North	1	15.000	15.667	256.000	SF
	2	22.000	24.333	559.111	SF
	3	9.333	12.000	112.000	SF
			Total	927.111	SF

	Section Number*	Length	Height	Square Footage**	
South	1	35.333	11.000	408.000	SF
	2	15.000	3.667	64.000	SF
	3	29.333	12.000	352.000	SF
			Total	824.000	SF

* For section numbers, see printout

** Square footage uses rounded up length and height to brick sizes

Rebar

Vertical Rebar *Equation Used:* *Length of Vert. Rebar for 1 Floor =* *[Rounddown((Length of External Wall)/2ft) + 2(# of Corners) + (Wall length factor))] x (Wall Height) x 1.05*
Wall Length Factor = Number of edges with lengths not evenly divisible by 2ft

Casa 1-4

Level	Length of External Wall	Wall Height	# of Corners	Wall Length Factor	Length of Rebar	
L1	213.7416667	12	17	13	1927.8	ft
L2	173.5083333	11	10	8	1316.7	ft
L3	202.85	17	4	8	2088.45	ft
				Total	**5332.95**	**ft**

Central Facility

Level	Length of External Wall	Wall Height	# of Corners	Wall Length Factor	Length of Rebar	
L1	244.2	11			1409.1	ft
L2	214.2166667	12	8		1549.8	ft
				Total	**2958.9**	**ft**

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LOCATION: Guadalajara, Mexico
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CY ---------- Cubic Yard

Quantity Take Offs

Horizontal Rebar

Equation Used: Length of Hor. Rebar for 1 Floor = [Roundup((Wall Height)/2ft)] x (Length of External Wall) x 1.05

Casa 1-4

Level	Length of External Wall	Wall Height	Length of Rebar	
L1	213.742	12	1346.573	ft
L2	173.508	11	1002.011	ft
L3	202.850	17	1810.436	ft
		Total	**4159.019**	**ft**

Central Facility

Level	Length of External Wall	Wall Height	Length of Rebar	
L1	244.2	11	1410.255	ft
L2	214.217	12	1349.565	ft
		Total	**2759.820**	**ft**

Grout

Casa 1-4:

Conversion factor: 0.011852 CY grout per 1 SF wall area

Side	Wall Area	
East	2651.556	SF
West	2264.889	SF
North	1419.556	SF
South	1381.333	SF
Total	**7717.333**	SF

Volume of Grout =	**91.466**	**CY**

Central Facility:

Side	Wall Area	
East	1322.667	SF
West	1370.667	SF
North	927.111	SF
South	824.000	SF
Total	**4444.444**	SF

Volume of Grout =	**52.676**	**CY**

Bond Beam

Casa 1-4

Two bond beams per story
Volume/LF = 8"x8"x0.65 x 2 / 27 CF/CY
0.021399177 CY Grout per LF of Bond Beam

Level	Length of External Wall	Volume Grout
L1	213.742	4.574
L2	173.508	3.713
L3	202.850	4.341
	Total	**12.628**

PROJECT NAME: **Casa Hogar**
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UPDATED AS OF: 7/1/11

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Quantity Take Offs

Central Facility

Level	Length of External Wall	Volume Grout
L1	244.200	5.226
L2	214.217	4.584
	Total	**9.810**

Concrete Slabs

Casa 1-4

Total Slab Area:	611.023	SM
Volume of Concrete:	101.497	CY
Length of Rebar:	2700.223	LM

Central Facility

Total Slab Area:	476.345	SM
Volume of Concrete:	79.126	CY
Length of Rebar:	2174.443	LM

Total

Total Slab Area:	**2920.437**	SM
Volume of Concrete:	**485.113**	CY
Length of Rebar:	**12975.336**	LM

Rebar Calculations

Casa 1-4:

CF = Conversion Factor (SF of area to LF of Rebar)

CF = (Spacing x 2) / Spacing^2

Level	Area	Spacing	CF	Rebar Length	
1	1730	1.333	1.5	2595	LF
2	1417	1.000	2	2834	LF
3	1715	1.000	2	3430	LF
			Total	8859	LF

Central Facility:

Level	Area	Spacing	CF	Rebar Length	
1	1900	1.333	1.5	2850	LF
2	2142	1	2	4284	LF
			Total	7134	LF

Concrete Calculations

Casa 1-4:

Level	Area	
L1	1730	SF
L2	1417	SF
L3	1715	SF
Roof	1715	SF
Total	**6577**	SF

Central Facility:

Level	Area	
L1	1900.000	SF
L2	2142.000	SF
Roof	1085.333	SF
Total	**5127.333**	SF

Concrete Foundations:

Casa 1-4

Volume of Concrete:	23.787	CY
Length of Rebar:	#REF!	LM

Central Facility

Volume of Concrete:	23.694	CY
Length of Rebar:	0.000	LM

Total

Volume of Concrete:	**118.843**	CY
Length of Rebar:	**389.992**	LM of #5

Casa 1-4:

Conversion Factor - strip foundation length to volume ratio
3

Perimeter Length	214.08333	ft
Volume of Concrete	642.25	ft^3
Perimeter Length	213.25	ft
Volume of Concrete	639.75	ft^3

Rebar

assuming only longitudinal rebar, 3 layers of 2 sets of #5

Perimeter Length	213.25	ft
Number of bars	6	ft
Length of Rebar	1279.5	ft

PROJECT NAME: **Casa Hogar**
PROJECT NUMBER: **1,023**
LOCATION: Guadalajara, Mexico
UPDATED AS OF: 7/1/11

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BF ---------- Board Foot
CY ---------- Cubic Yard

Quantity Take Offs

Volume of Concrete: *Total area of slabs x 5 inches*

Casa 1-4:		
Volume:	2740.417	CF
Central Facility:		
Volume:	2136.389	CF

Retaining Wall

Volume of Concrete:	54.074	CY
Wall dimensions		
Length (from .dwg file, chec	146	ft
Height (height of C1)	12	ft
Thickness	10	in
Volume of concrete	1460	ft^3
Horizontal Rebar		
Number of Layers	6	
Bars per Layer	2	
Length of Bar	146	ft
Length of Rebar	**1752**	**ft**
Vertical Rebar		
Number of Rows	73	
Bars per Row	2	
Length of Bar	12	ft
Length of Rebar	**1752**	**ft**

assuming no special edge conditions - rebar placed exact ends of retaining wall

Interior Wall Surface Area

Total Interior Wall Area:	5736.065	SM
Volume of Paint (inside):	352.814	gallons

<-- assuming 350 ft^2/gal, 2 coats

Casa 1-4:

Level	Height	Length of Walls	Area of Walls
1	12	391.583	4307.409
2	11	173.750	2085.000
3	17	443.550	7540.350
		Total	13932.759

Central Facility:

Level	Height	Length of Walls	Area of Walls
1	11	396.317	4359.483
2	12	137.667	1652.000
		Total	6011.483

Handrails

Total Length	328.534	LM

Casa 1-4:

Level	Length of Handrail - Horizontal
1-2	67.833 LF
2-3	113.833 LF
Total	181.667 LF

Central Facility:

Level	Length of Handrail - Horizontal
1-2	35.5 LF

terior Wall Surface Area

Total Exterior Wall Area:	3280.757	SM
Stucco Volume:	91.664	CM
Volume of Paint (outside):	201.793	gallons

<-- assuming 1in thick stucco,adding 10% for loss + parapets
<-- assuming 350 ft^2/gal, 2 coats

project budget
the actual budget has been retained for confidentiality reasons. the following spreadsheet was established to help in the estimation process

PROJECT NAME: **Casa Hogar**
PROJECT NUMBER: **$ 10,001.00**
LOCATION: Guadalajara, Mexico
UPDATED AS OF: 2/7/11

KEY
LS ---------- Lump Sum
Ea ---------- Each
LM ---------- Linear Meter
SM ---------- Square Meter
BF ---------- Board Foot
NIC ----------Not in Contract

Construction Estimate

COST CODE	DESCRIPTION OF WORK	Resource	ESTIMATE USD	ESTIMATE PESOS	QUANTITY	UNIT	UNIT PRICE USD	TOTAL PRICE USD	LABOR	EQUIPMENT	SubTotal USD	TOTAL USD	TOTAL PESOS
DIVISION 1	***GENERAL CONDITIONS***											$ -	$ -
	Field Supervision	Estimate											
	Office Project Mng	Estimate											
	General Labor	Estimate											
	Permit	Allowance											
	Cost Estimating	Estimate											
	Equipment Fuel	Allowance											
	Plan Reproduction	Allowance											
	Travel	Estimate											
	Subsistance	Estimate											
	Design and Architecture Fees	Allowance											
	Inspection/Testing	Allowance											
	Clean-Up	Allowance											
	Final Clean-Up	Allowance											
	Small Tools	Allowance											
	Misc Gen Condition	Allowance											
	Trailor/Storage	Estimate											
	Temporary Utilities	Allowance											
	Bonds	Estimate											
	All Risk Insurance	Estimate											
	Safety/OSHA Permit	Estimate											
	Temporary Fencing	Allowance											
	Project Closeout	Estimate											
DIVISION 2	***SITE WORK***											$ -	$ -
	Equip Move In/Out	Estimate											
	Traffic Control	Estimate											
	Demolition	Estimate											
	Driven Piles	Estimate											
	Surveying	Subcontract											
	Construction Water (dust control)	Allowance											
	Dewatering (flood control)	Allowance											
	Shoring	Estimate											
	Rough Grading	Estimate											
	Fine Grading	Estimate											
	Excavate road	Estimate											
	Trench/Backfill	Estimate											
	Soil Treatment	Estimate											
	Erosion Control (SWPPP)	Estimate											
	Stormwater Drainage	Estimate											
	Sewer connection	Estimate											
	Gas connection	Estimate											
	Water connection	Estimate											
	Pond and Ampitheatre	Estimate											
	Undrground Elect connection	Estimate											
	Rainwater catchment system	Estimate											
	Base Rock	Estimate											
	Asphalt Concrete Paving (road entry)	Estimate											

COST CODE	DESCRIPTION OF WORK	Resource	ESTIMATE USD	ESTIMATE PESOS	QUANTITY	UNIT	UNIT PRICE USD	TOTAL PRICE USD	LABOR	EQUIPMENT	SubTotal USD	TOTAL USD	TOTAL PESOS
	Curb & Gutter (frontage road and drainage	Estimate											
	Concrete Paving (road)	Estimate											
	Site Concrete (basketball courts, patios, etc	Estimate											
	Concrete Unit Pavers	Estimate											
	Athletic Surfaces (track, soccer field, bball	Allowance											
	Site Furnishings (benches, bridges, tables,	Allowance											
	Perimeter fencing	Estimate											
	Lake fencing	Estimate											
	Interior fencing	Estimate											
	Play Equip/Structure	Allowance											
	Landscape/Irrigation	Allowance											
DIVISION 3	***CONCRETE***											$ -	$ -
	Sub Base	Estimate											
	Forms & Accessories	Estimate											
	Form Liners (for asthetics)	Estimate											
	Reinforcement (rebar)	Estimate											
	Cast-In-Place Conc	Estimate											
	Tree Grates	Estimate											
	Caissons	Estimate											
	Curing & Sealers	Estimate											
	Precast Concrete	Estimate											
	Floor Toppings (apoxy over concrete floors	Estimate											
	CMU Grout	Estimate											
DIVISION 4	***MASONRY***											$ -	$ -
	Concrete masonry units (CMU's)	Estimate											
	Brick	Estimate											
	Stone	Estimate											
DIVISION 5	***METALS***											$ -	$ -
	Structural Steel	Estimate											
	Metal roof	Estimate											
	Crane & Hoisting	Allowance											
	Misc Metal Fab	Estimate											
	Prefabricated Stairs	Estimate											
	Handrails & Railings	Estimate											
	Gratings	Estimate											
DIVISION 6	***CARPENTRY***											$ -	$ -
	Rough Carpentry	Estimate											
	Glu Lams/Trusses	Estimate											
	Finish Carpentry	Allowance											
	Cabinets	Allowance											
	Counter Tops	Estimate											
	Architectural Mill Work	Estimate											
DIVISION 7	***THERM.&MOIST.PROTECT***											$ -	$ -
	Waterproofing	Allowance											
	Water Repellent	Estimate											
	Insulation	Estimate											
	Roofing	Estimate											
	Roof Accessories	Allowance											
	Metal Siding	Estimate											
	Deck Coatings	Estimate											
	Flashing & Sheet Metal	Allowance											
	Downspouts/Gutters	Estimate											
	Joint Sealants/Caulk	Estimate											
DIVISION 8	***DOORS & WINDOWS***											$ -	$ -
	Doors/Windows/Frames	Estimate											
	Access Covers/Panels	Estimate											
	Overhead Door Systems (garage doors)	Estimate											
	Skylights	Estimate											
DIVISION 9	***FINISHES***											$ -	$ -
	Light Guage Metal Frame	Estimate											
	Lath & Plaster (stucco)	Estimate											
	Drywall (green board, x-board, gypsum)	Estimate											
	Tile	Estimate											
	Carpet/ hardwood	Estimate											
	Wall Coverings	Estimate											
	Painting	Estimate											
DIVISION 10	***SPECIALTIES***											$ -	$ -
	Blackboards (classrooms)	Estimate											
	Bulletin/Tack Boards (classrooms)	Estimate											
	School desks and chairs	Estimate											
	Toilet partitions	Estimate											
	Bumper/Corner Guards	Estimate											
	Flagpoles	Allowance											
	Exterior Signage	Allowance											
	Interior Signage	Allowance											
	Fire Extinguishers	Allowance											
	Fire Extinguisher Cabinets	Estimate											
	Prefab Awnings	Estimate											
	Mail Boxes	Estimate											
	FRP Screen (bathroom walls)	Estimate											
	Metal Shelving	Estimate											
	Wood Shelving	Estimate											
	Toilet Accessories	Allowance											

Construction Estimate

COST CODE	DESCRIPTION OF WORK	Resource	ESTIMATE USD	ESTIMATE PESOS	QUANTITY	UNIT	UNIT PRICE USD	TOTAL PRICE USD	LABOR	EQUIPMENT	SubTotal USD	TOTAL USD	TOTAL PESOS
DIVISION 11	***EQUIPMENT***											$ -	$ -
	Audio Video Screens/TV's	Estimate											
	Lake accessories	Estimate											
	Coax/Antenna/BTS	Estimate											
	Food/Kitchen Service	Estimate											
	Appliances	Estimate											
	Sports Equipment	Estimate											
	Hood/Vent Systems	Estimate											
	Office Furnishings	Estimate											
DIVISION 12	***FURNISHINGS***											$ -	$ -
	Window Coverings	Estimate											
	Bunk beds	Estimate											
	Art work	Estimate											
	Office Furniture	Estimate											
DIVISION 13	***SPECIAL CONSTRUCTION***											$ -	$ -
	Fire/Security System	Allowance											
DIVISION 14	***CONVEYING SYSTEMS***											$ -	$ -
	Scaffolding	Allowance											
DIVISION 15	***MECHANICAL WORK***											$ -	$ -
	Fire Protection sprinklers	Estimate											
	Plumbing	Estimate											
	Cable/Coax Cover	Estimate											
	HVAC (each house)	Estimate											
	Air Test & Balance	Estimate											
DIVISION 16	***ELECTRICAL***											$ -	$ -
	Electrical	Allowance											
	Telecom	Estimate											
	Generators	Estimate											
	Lighting	Estimate											
	Data & Communication	Estimate											
	Audio/Video/CCTV	Estimate											
	Fire Alarm	Estimate											
		Estimate											
SUBTOTAL													
O.H. AND PROFIT													
TOTAL												$ -	$ -

Cost Data

COST CODE	DESCRIPTION OF WORK	DETAIL	ESTIMATE USD	ESTIMATE PESOS	UNIT
	GENERAL LABOR		$35.00	$ 412.19	per day
	EQUIPMENT				
	- Bulldozers	Mid sized	$90.00	$ 1,059.92	per hour
	- Excavators/backhoes	Mid sized	$90.00	$ 1,059.92	per hour
	- Bobcats		$42.00	$ 494.63	per hour
	- Paving equipment		$76.00	$ 895.04	per hour
	- Compactors	Gas Thumper Jack	$18.00	$ 211.98	per hour
	- Concrete truck	9 CY	$150.00	$ 1,766.54	per hour
	- Dump truck	12 cu yard	$210.00	$ 2,473.15	per day
	- Crane	18 ton crane	$185.00	$ 2,178.73	per hour
	- 1/2 sack concrete mixter	1/2 sack	$45.00	$ 529.96	per day
	- 1 sack concrete mixer	1 sack	$60.00	$ 706.61	per day
	- Scaffolding	3 sections wide, two levels high	$120.00	$ 1,413.23	per week
	-Stilts	For forming E.C.D.	$78.00	$ 918.60	per week
	HAND TOOLS				
	- Wheelbarrow	Rented individually	$25.00	$ 294.42	per day
	-Spade shovels	Rented individually	$16.00	$ 188.43	per day
	-Flat shovels	Rented individually	$16.00	$ 188.43	per day
	- Rakes	Rented individually	$16.00	$ 188.43	per day
	- Hand compactors	Rented individually	$16.00	$ 188.43	per day
	- Machetes	Rented individually	$8.00	$ 94.22	per day
	-Framing hammer	Rented individually	$11.00	$ 129.55	per day
	CONSTRUCTION SUPPLIES				
	Batt insulation	30 sf rolls	$23.00	$ 270.87	per roll
	Tile roofing	Clay Tile	$75.35	$ 887.36	Square meter
	Asphalt roofing		$7.20	$ 84.79	Square meter
	Solid surface countertops		$67.34	$ 793.06	Square meter
	Road paving	As a subcontracted fee	$18.00	$ 211.98	Square meter
	Pavers	As a subcontracted fee	$111.00	$ 1,307.24	Square meter
	Fire hydrant	Material only	$2,100.00	$ 24,731.49	Ea
	Fencing	Chain link, As a subcontracted fe	$12.20	$ 143.68	Linear meter
	Front gate	Custom steel fabrication	*$650.00*	$ 7,654.99	Ea
	Barbed wire		*$0.19*	$ 2.20	Linear Meter
	3/8" plywood	Engineered, non treated	$20.00	$ 235.54	Ea
	1/2" plywood	Engineered, non treated	$24.00	$ 282.65	Ea

	3/4" plywood	Engineered, non treated	$28.00	$ 329.75	Ea
	1" plywood	Engineered, non treated	$30.00	$ 353.31	Ea
	2"x4"x (8',10' 12' 14' and 16' lengths) pine lumber	Engineered, non treated	$1.40	$ 16.49	LF
	2"x6" (8',10' 12' 14' and 16' lengths) pine lumber	Engineered, non treated	$1.58	$ 18.61	LF
	2"x8" (8',10' 12' 14' and 16' lengths) pine lumber	Engineered, non treated	$1.90	$ 22.38	LF
	2"x10" (8',10' 12' 14' and 16' lengths) pine lumber	Engineered, non treated	$2.64	$ 31.09	LF
	2"x12" (8',10' 12' 14' and 16' lengths) pine lumber	Engineered, non treated	$3.40	$ 40.04	LF
	4"x4" (8',10' 12' 14' and 16' lengths) pine lumber	Engineered, non treated	$1.50	$ 17.67	BF
	4"x6" (8',10' 12' 14' and 16' lengths) pine lumber	Engineered, non treated	$2.00	$ 23.55	BF
	4"x8" (8',10' 12' 14' and 16' lengths) pine lumber	Engineered, non treated	$2.00	$ 23.55	BF
	16 penny nails	3"	$0.55	$ 6.48	lb
	16 penny galvanized nails	3"	$1.20	$ 14.13	lb
	Screws	3"	$3.60	$ 42.40	lb
	Metal stakes	3"	$1.25	$ 14.72	Ea
	Misc. Concrete tools	trowels, floats, etc.	$8.00	$ 94.22	Ea
	90 lb Bag of Cement		$4.50	$ 53.00	Ea
	Concrete (delivered)	9 CY concrete truck delivered	$101.00	$ 1,189.47	CY
	Sand	12 CY truck delivered	$120.00	$ 1,413.23	Load
	Base	12 CY truck delivered	$20.00	$ 235.54	12 CY
	Red Gravel	12 CY truck delivered	$65.00	$ 765.50	12 CY
	Gravel	Delivered	$18.00	$ 211.98	CY
	Water		$1.50	$ 17.67	Liters
	3/8" rebar		$815.00	$ 9,598.17	Ton
	1/2" rebar		$815.00	$ 9,598.17	Ton
	5/8 rebar		$815.00	$ 9,598.17	Ton
	rebar ties		$4.00	$ 47.11	Roll
	4 mil. Plastic		$36.00	$ 423.97	1000 sf roll
	string		$12.00	$ 141.32	Ea
	CMU (Concrete masonry Units)	8"x8"x16"	$0.70	$ 8.24	Ea
	CMU	8"x6"x16"	$0.65	$ 7.65	Ea
	CMU	8"x4"x16"	$0.60	$ 7.07	Ea
	Concrete septic tank	500 gallons	$1,500.00	$ 17,665.35	Ea
	Plastic septic tank	500 gallons	$640.00	$ 7,537.22	Ea
	Water tank	250 gallons	$250.00	$ 2,944.23	Ea
	1" PVC	10' lengths	$4.00	$ 47.11	Ea
	2" PVC	10' lengths	$12.00	$ 141.32	Ea
	3" PVC	10' lengths	$25.00	$ 294.42	Ea
	Paint	interior <--	$7.00	$ 82.44	Liter
	Drywall	4'x8' sheet	$12.80	$ 150.74	Ea
	Carpet		$6.00	$ 70.66	Square meter
	Astro Turf		$20.00	$ 235.54	Square meter
	Hollow metal doors		$222.00	$ 2,614.47	Ea
	Wood doors		$145.00	$ 1,707.65	Ea

	Door Frames		$85.00	$ 1,001.04	Ea
	Door hardware (locks, thresholds, etc)		$55.00	$ 647.73	Ea
	Tile		$8.07	$ 95.07	Square meter
	Single pane window	4'x3'	$65.00	$ 765.50	Ea
	Double pane window	4'x3'	$85.00	$ 1,001.04	Ea
	Louvers		$176.00	$ 2,072.73	Ea
	Stair hand rails	6ft <---	$112.00	$ 1,319.01	Ea
	Gutters and downspouts		$1.57	$ 18.55	Linear meter
	Electrical wire		$0.55	$ 6.49	Linear meter
	Meter base	200 A	TBD		Ea
	Breaker box	200 A	TBD		Ea
	MAIN BREAKER	100 A	TBD		Ea
	BREAKERS	30A	TBD		Ea
	SINGLE WIRE	#12 STRANDED	$0.56	$ 6.57	Linear meter
	ROMEX	12/2 STRANDED	$1.03	$ 12.09	Linear meter
	Grounding rod	6ft	$10.00	$ 117.77	Ea
	Electrical outlits		$8.00	$ 94.22	Ea
	Lighting fixtures	large range - 2 light fixture	$65.00	$ 765.50	Ea
	PLUMBING APPLIANCES			$ -	
	- Sinks		$96.00	$ 1,130.58	Ea
	- Toilets		$150.00	$ 1,766.54	Ea
	- Urinals		$100.00	$ 1,177.69	Ea
	- Shower/Bathtub		$360.00	$ 4,239.68	Ea
	- Shower		$300.00	$ 3,533.07	Ea
	- Mirrors		$100.00	$ 1,177.69	Ea
	-Toilet accessories	Grab bars, tp dispensers, partitions, paper towels, etc.	$120.00	$ 1,413.23	Per bathroom
	- Hose bib		$22.00	$ 259.09	Ea
	- Gas Water Heater	40 gal <---	$500.00	$ 5,888.45	Ea
	-Electric water heater	50 gal <--	$300.00	$ 3,533.07	Ea
	3/4" PEX		$3.75	$ 44.16	Linear Meter
	copper pipe	Type m <--	$3.28	$ 38.64	Linear Meter
	propane tank	100 lb <----	$140.00	$ 1,648.77	Ea
	Pressure tank		$95.00	$ 1,118.81	Ea
	Submersible Pump	1/6 HP <---	$66.00	$ 777.28	Ea
	APPLIANCES				
	- Range		$500.00	$ 5,888.45	Ea
	- Microwave		$150.00	$ 1,766.54	Ea
	- Dishwasher		$400.00	$ 4,710.76	Ea
	- Fridge		$1,000.00	$ 11,776.90	Ea
	- Clothes Washer		$600.00	$ 7,066.14	Ea
				$ -	

	ORPHANAGE OPERATION			$ -	
				$ -	
	ORPHANAGE FURNISHINGS			$ -	
	Bunk beds		$150.00	$ 1,766.54	Ea
	Lockers		$145.00	$ 1,707.65	Ea
	Desks		$65.00	$ 765.50	Ea
	Kitchen tables	for approx 1m^2 table <---	$150.00	$ 1,766.54	Ea
	Chairs		$25.00	$ 294.42	Ea
	Couches		$400.00	$ 4,710.76	Ea
	Projector/ speakers/ screen		$600.00	$ 7,066.14	
	Artwork		TBD		
	Pictures of kids		TBD		
	Cork wall		$139.93	$ 1,647.95	Square meter
	Window coverings		$56.00	$ 659.51	Ea
	Shower curtains		$15.00	$ 176.65	Ea
	Towels		$6.33	$ 74.59	Ea
	Soap dispensers		$17.00	$ 200.21	Ea
	Towel drying rack		$50.00	$ 588.85	Ea
	Coffee tables		$100.00	$ 1,177.69	Ea
	Bedding	pillow, sheet set, mattress, comfo	$175.00	$ 2,060.96	
	Exterior benches		$88.00	$ 1,036.37	Ea
	Metal shelving units		$26.91	$ 316.91	Square meter
	Cabinets	(36" W, 34.5" H, 24" D) <---	$175.00	$ 2,060.96	Ea
	Rugs		$8.00	$ 94.22	Square meter
	Survellience cameras and system	ten camera system <--	$400.00	$ 4,710.76	
	dental chair		$2,550.00	$ 30,031.10	
				$ -	
	OFFICE FURNISHINGS			$ -	
	Staff desks		$99.00	$ 1,165.91	Ea
	Computers		$600.00	$ 7,066.14	Ea
	Copy/fax/print		$150.00	$ 1,766.54	Ea
	Shredder		$47.00	$ 553.51	Ea
	Office Chairs		$75.00	$ 883.27	Ea
	File Cabinets	4 drawer <--	$115.00	$ 1,354.34	Ea
	Exterior harddrives	1 TB <---	$100.00	$ 1,177.69	Ea
	Rug		$8.00	$ 94.22	Square meter
	Landline phone		$20.00	$ 235.54	Ea
	Small AC unit		$389.00	$ 4,581.21	Ea
				$ -	
				$ -	
	KITCHEN FURNISHINGS			$ -	
	Cabinets	(36" W, 34.5" H, 24" D) <---	$175.00	$ 2,060.96	Ea

	Countertops		$67.34	$ 793.06	Square meter
	Pantry shelving		$150.00	$ 1,766.54	Total
	Blender		$100.00	$ 1,177.69	Ea
	Crockpot		$30.00	$ 353.31	Ea
	Pots and pans		$30.00	$ 353.31	Ea
	Plates and Bowls		$1.00	$ 11.78	Ea
	Cups		$1.00	$ 11.78	Ea
	Coffee mugs		$2.00	$ 23.55	Ea
	Silverware		$2.00	$ 23.55	Per person
	Knives	14 piece set <----	$12.00	$ 141.32	Ea
	Misc. kitchen tools (can openers, wisks, etc.)				
	STAFF LIVING QUARTERS				
	Bed		$150.00	$ 1,766.54	Ea
	Desk		$150.00	$ 1,766.54	Ea
	Rug		$8.00	$ 94.22	Square meter
	Dresser		$150.00	$ 1,766.54	Ea
	Chair		$50.00	$ 588.85	Ea
	Bedding	pillow, sheet set, mattress, comfo	$220.00	$ 2,590.92	Ea
	OUTSIDE FURNISHINGS				
	Benches		$130.00	$ 1,531.00	Ea
	Tables		$22.00	$ 259.09	Ea
	Toy storage		$150.00	$ 1,766.54	
	Basketball hoops		$450.00	$ 5,299.61	Ea
	Wallball wall		TBD		
	Teatherball		$50.00	$ 588.85	Ea
	Bridge over lake		$350.00	$ 4,121.92	
	Swings and slides		$850.00	$ 10,010.37	Ea
	Sandbox		$150.00	$ 1,766.54	Ea
	Soccer goals		$345.00	$ 4,063.03	
	Running Track (ground up tires?)		TBD		
	MISC. EXPENSES				
	Clothing costs		TBD		
	School supplies		TBD		
	Field trips/vacations		TBD		
	Party costs		TBD		

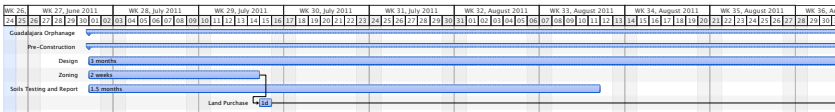
construction schedule

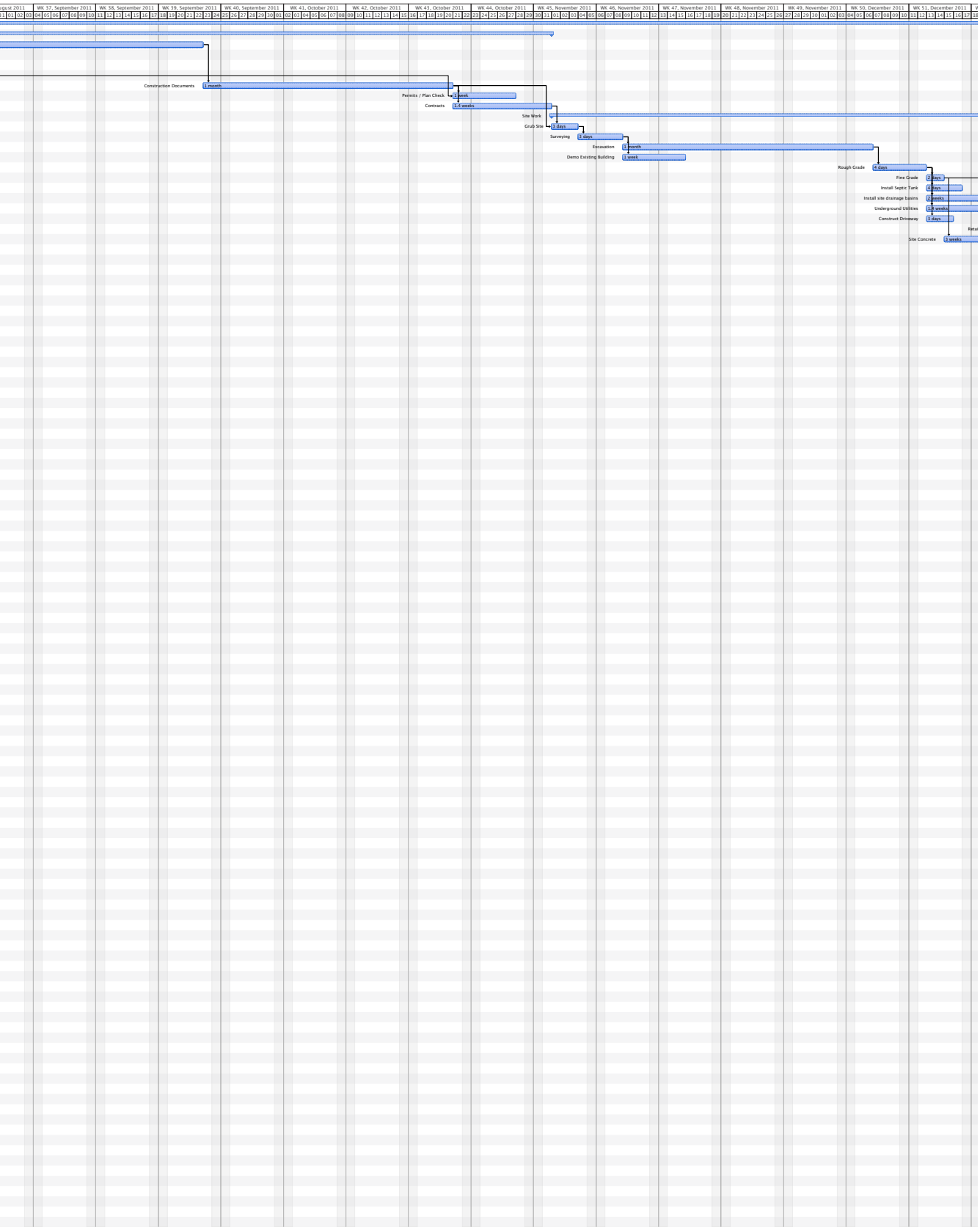
#	Info	Title	Given Planned Work	Flag Status	# Predecessors	Expected Start	Assigned Resources	% Complete
0		**Guadalajara Orphanage**				**7/1/11**		0%
1		**Pre-Construction**				**7/1/11**		0%
2		Design	60 days			7/1/11		0%
3		Zoning	10 days			7/1/11		0%
4		Soils Testing and Report	30 days			7/1/11		0%
5		Land Purchase	1 day		3	7/15/11		0%
6		Construction Documents	20 days		2	9/23/11		0%
7		Permits / Plan Check	5 days		5; 6	10/21/11		0%
8		Contracts	7 days		6	10/21/11		0%
9		**Site Work**				**11/1/11**		0%
10		Grub Site	3 days		6; 8	11/1/11		0%
11		Surveying	3 days		10	11/4/11		0%
12		Excavation	20 days		11	11/9/11		0%
13		Demo Existing Building	5 days		11	11/9/11		0%
14		Rough Grade	4 days		12	12/7/11		0%
15		Fine Grade	2 days		14	12/13/11		0%
16		Install Septic Tank	4 days		14	12/13/11		0%
17		Install site drainage basins	10 days		14	12/13/11		0%
18		Underground Utilities	7 days		14	12/13/11		0%
19		Construct Driveway	3 days		14	12/13/11		0%
20		Retaining walls	20 days		18	12/22/11		0%
21		Site Concrete	15 days		15	12/15/11		0%
22		**Foundation System**				**1/19/12**		0%
23		C1 Pad Overex, Base and Compaction	5 days		15; 20	1/19/12		0%
24		C2 Pad Overex, Base and Compaction	5 days		15; 20	1/19/12		0%
25		C3 Pad Overex, Base and Compaction	5 days		15; 20	1/19/12		0%
26		MP Pad Overex, Base and Compaction	5 days		15; 20	1/19/12		0%
27		CF Pad Overex, Base and Compact	5 days		15; 20	1/19/12		0%
28		C1, C2, C3 Underground Utilities	5 days		23; 2...	1/26/12		0%
29		C1 Foundation	10 days		28	2/2/12		0%
30		C2 Foundation	10 days		28	2/2/12		0%
31		C3 Foundation	10 days		28	2/2/12		0%
32		MP Foundation	10 days		28	2/2/12		0%
33		CF Foundation	10 days		28	2/2/12		0%
34		**Structural System**				**2/16/12**		0%
35		C1 CMU	10 days		29	2/16/12		0%
36		C2 CMU	10 days		30	2/16/12		0%
37		C3 CMU	10 days		31	2/16/12		0%
38		MP CMU	10 days		32	2/16/12		0%
39		CF CMU	10 days		33	2/16/12		0%
40		Structural Steel	3 days		29; 3...	2/16/12		0%
41		C1 First Floor E.C.D.	10 days		35	3/1/12		0%
42		C2 First Floor E.C.D.	10 days		36	3/1/12		0%
43		C3 First Floor E.C.D.	10 days		37	3/1/12		0%

construction schedule
outline view

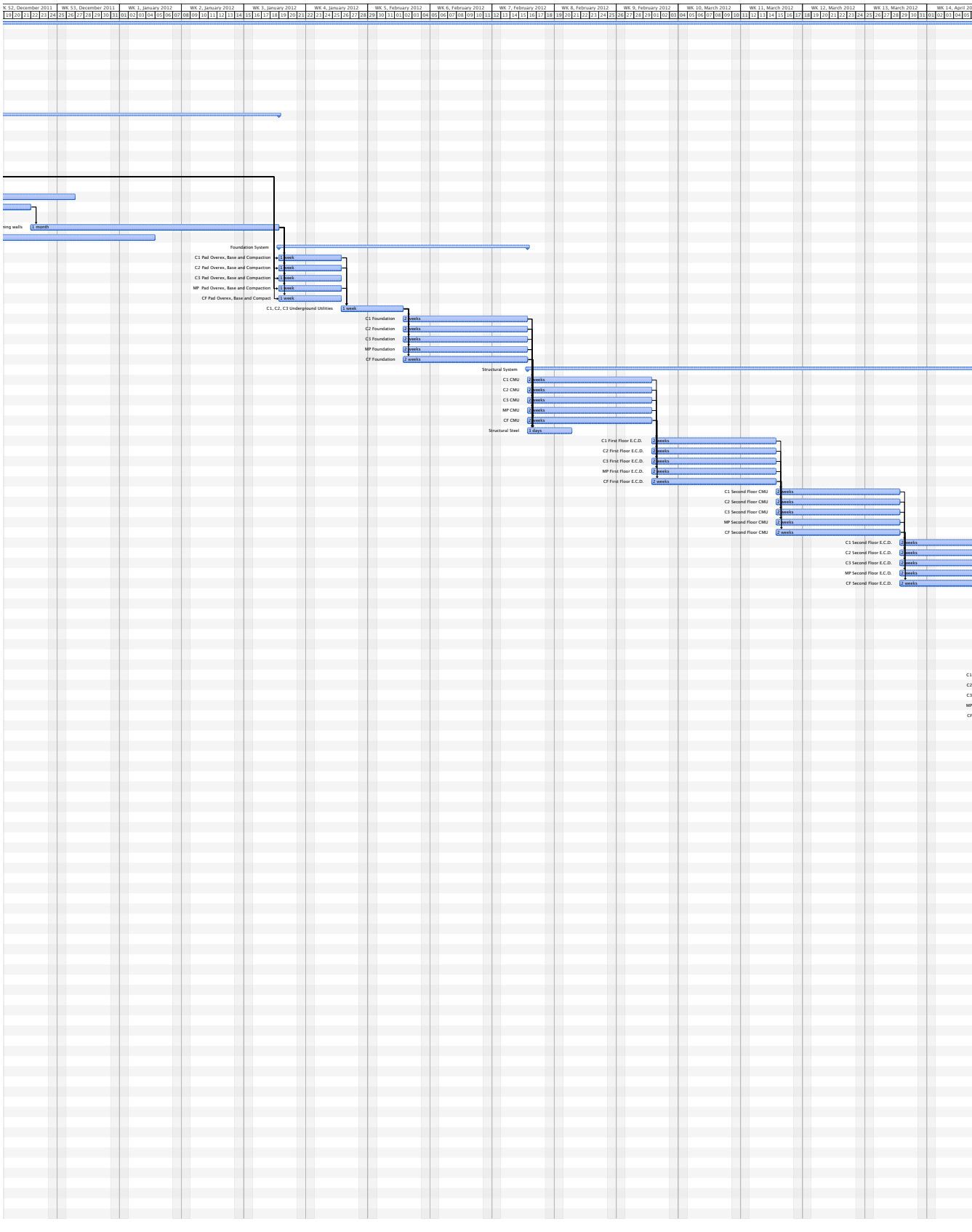
44	MP First Floor E.C.D.	10 days	38	3/1/12	0%
45	CF First Floor E.C.D.	10 days	39	3/1/12	0%
46	C1 Second Floor CMU	10 days	41	3/15/12	0%
47	C2 Second Floor CMU	10 days	42	3/15/12	0%
48	C3 Second Floor CMU	10 days	43	3/15/12	0%
49	MP Second Floor CMU	10 days	44	3/15/12	0%
50	CF Second Floor CMU	10 days	45	3/15/12	0%
51	C1 Second Floor E.C.D.	10 days	46	3/29/12	0%
52	C2 Second Floor E.C.D.	10 days	47	3/29/12	0%
53	C3 Second Floor E.C.D.	10 days	48	3/29/12	0%
54	MP Second Floor E.C.D.	10 days	49	3/29/12	0%
55	CF Second Floor E.C.D.	10 days	50	3/29/12	0%
56	Concrete Stairs	12 days	51; 52	4/12/12	0%
57	Concrete Sealer	2 days	55	4/12/12	0%
58	**Exterior Finishes**			**4/12/12**	**0%**
59	C1 Plastering	5 days	51	4/12/12	0%
60	C2 Plastering	5 days	52	4/12/12	0%
61	C3 Plastering	5 days	53	4/12/12	0%
62	MP Plastering	5 days	54	4/12/12	0%
63	CF Plastering	5 days	55	4/12/12	0%
64	C1 Roofing and Flashing	3 days	51	4/12/12	0%
65	C2 Roofing and Flashing	3 days	52	4/12/12	0%
66	C3 Roofing and Flashing	3 days	53	4/12/12	0%
67	MP Roofing and Flashing	3 days	54	4/12/12	0%
68	CF Roofing and Flashing	3 days	55	4/12/12	0%
69	C1 Painting	3 days	59	4/19/12	0%
70	C2 Painting	3 days	59	4/19/12	0%
71	C3 Painting	3 days	59	4/19/12	0%
72	MP Painting	3 days	62	4/19/12	0%
73	CF Painting	3 days	63	4/19/12	0%
74	Gutters and Downspouts	5 days	68	4/17/12	0%
75	**Rough Carpentry**			**4/12/12**	**0%**
76	C1 Window and Door Openings	2 days	59	4/19/12	0%
77	C2 WIndow and Door Openings	2 days	60	4/19/12	0%
78	C3 Window and Door Openings	2 days	61	4/19/12	0%
79	MP Window and Door Openings	2 days	62	4/19/12	0%
80	CF WIndow and Door Openings	2 days	63	4/19/12	0%
81	C1 Interior Framing	10 days	51	4/12/12	0%
82	C2 Interior Framing	10 days	52	4/12/12	0%
83	C3 Interior Framing	10 days	53	4/12/12	0%
84	MP Interior Framing	10 days	54	4/12/12	0%
85	CF Interior Framing	10 days	55	4/12/12	0%
86	**Interior Finishes**			**4/12/12**	**0%**
87	C1 Rough Electrical and Plumbing	10 days	81	4/26/12	0%
88	C2 Rough Electrical and Plumbing	10 days	82	4/26/12	0%
89	C3 Rough Electrical and Plumbing	10 days	83	4/26/12	0%

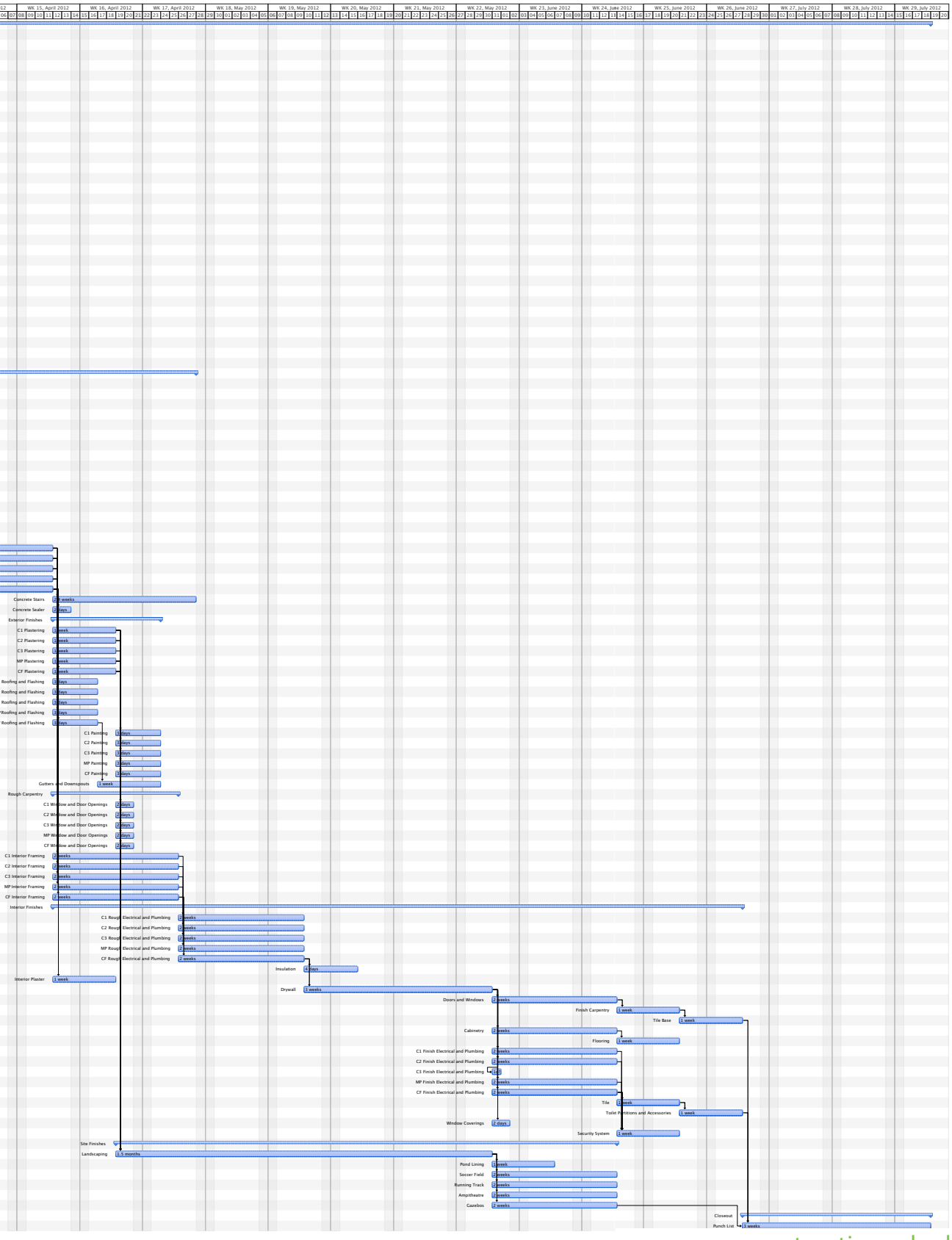
90	MP Rough Electrical and Plumbing	10 days	84	4/26/12	0%
91	CF Rough Electrical and Plumbing	10 days	85	4/26/12	0%
92	Insulation	4 days	91	5/10/12	0%
93	Interior Plaster	5 days	55	4/12/12	0%
94	Drywall	15 days	91	5/10/12	0%
95	Doors and Windows	10 days	94	5/31/12	0%
96	Finish Carpentry	5 days	95	6/14/12	0%
97	Tile Base	5 days	96	6/21/12	0%
98	Cabinetry	10 days	94	5/31/12	0%
99	Flooring	5 days	98	6/14/12	0%
100	C1 Finish Electrical and Plumbing	10 days	94	5/31/12	0%
101	C2 Finish Electrical and Plumbing	10 days	94	5/31/12	0%
102	C3 Finish Electrical and Plumbing	1 day ?	94	5/31/12	0%
103	MP Finish Electrical and Plumbing	10 days	94	5/31/12	0%
104	CF Finish Electrical and Plumbing	10 days	94	5/31/12	0%
105	Tile	5 days	104	6/14/12	0%
106	Toilet Partitions and Accessories	5 days	105	6/21/12	0%
107	WIndow Coverings	2 days	94	5/31/12	0%
108	Security System	5 days	100; …	6/14/12	0%
109	**Site Finishes**			**4/19/12**	**0%**
110	Landscaping	30 days	59; 6…	4/19/12	0%
111	Pond Lining	5 days	110	5/31/12	0%
112	Soccer Field	10 days	110	5/31/12	0%
113	Running Track	10 days	110	5/31/12	0%
114	Ampitheatre	10 days	110	5/31/12	0%
115	Gazebos	10 days	110	5/31/12	0%
116	**Closeout**			**6/28/12**	**0%**
117	Punch List	15 days	97; 1…	6/28/12	0%


Wk 26,
Wk 27, June 2011
Wk 28, July 2011
Wk 29, July 2011
Wk 30, July 2011
Wk 31, July 2011
Wk 32, August 2011
Wk 33, August 2011
Wk 34, August 2011
Wk 35, August 2011
Wk 36, A
24 25 26 27 28 29 30 01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30
Guadalupe Orphanage
Pre-Construction
Design
3 months
Zoning
2 weeks
Soils Testing and Report
1.5 months
Land Purchase
1d



construction schedule
gant view

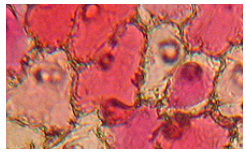

WK 52, December 2011
WK 53, December 2011
WK 1, January 2012
WK 2, January 2012
WK 3, January 2012
WK 4, January 2012
WK 5, February 2012
WK 6, February 2012
WK 7, February 2012
WK 8, February 2012
WK 9, February 2012
WK 10, March 2012
WK 11, March 2012
WK 12, March 2012
WK 13, March 2012
WK 14, April 20
sing walls
1 month
Foundation System
C1 Pad Overex, Base and Compaction
C2 Pad Overex, Base and Compaction
C3 Pad Overex, Base and Compaction
MP Pad Overex, Base and Compaction
CF Pad Overex, Base and Compact
1 week
C1, C2, C3 Underground Utilities
C1 Foundation
C2 Foundation
C3 Foundation
MP Foundation
CF Foundation
2 weeks
Structural System
C1 CMU
C2 CMU
C3 CMU
MP CMU
CF CMU
Structural Steel
5 days
C1 First Floor E.C.D.
C2 First Floor E.C.D.
C3 First Floor E.C.D.
MP First Floor E.C.D.
CF First Floor E.C.D.
C1 Second Floor CMU
C2 Second Floor CMU
C3 Second Floor CMU
MP Second Floor CMU
CF Second Floor CMU
C1 Second Floor E.C.D.
C2 Second Floor E.C.D.
C3 Second Floor E.C.D.
MP Second Floor E.C.D.
CF Second Floor E.C.D.



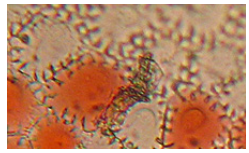
construction schedule
gant view

1. elise grinstead

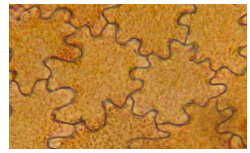
2. oak tree by john morgan



3. rose petal by kaibara87

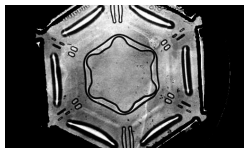


4. geranium petal by kaibara87



5. marigold petal by kaibara87

6. growth by ben + sam



7. snowflakes by william bentley

8. sayulitas 04 by Darren Hurst

9. Street kids by Darren Hurst

10. street kids birthday by Darren Hurst

11. street kids soccer jerseys by Darren Hurst

12. street kids bible study 2 by Darren Hurst

13. orphan boys in bed www.rainbowcenter forchildren.org

14. barium springs orphanage manse by barger construction

15. barium springs orphanage staff housing by barger construction

16. barium springs orphanage from google earth images

17. montessori school: fuji kindergarten
ebookpedia.net

18. METI handmade school by Kurt Hoerbst

19. METI handmade school by Kurt Hoerbst

20. METI handmade school by Kurt Hoerbst

21. METI handmade school by Kurt Hoerbst

22. harmeny school by richard murphy architects

23. harmeny school by richard murphy architects

24. la tourette by rucativava

25. la tourette circulation by p2cl

26. la tourette chapel by p2cl

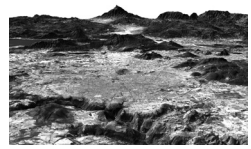
27. la tourette by tim brown architects

28. la tourette by tim brown architects

29. la tourette monk's cell by tim brown architects

30. guadalajara cathedral by wonderlane

31. la barranca by ishmael c



32. composite satellite by www.earthobservatory.nasa.gov

33. hospicio cabanas by alejandro castro

34. hospicio cabanas by eliazer

35. guadalajara by thelittletx

36. guadalajara open domain; wikimedia commons

37. guadalajara house; google street view

38. guadalajara house; google street view

39. guadalajara house; google street view

40. guadalajara street; google street view

41. site pictures by darren hurst

42. guadalajara street; google street view

43. site pictures by darren hurst

44. guadalajara street; google street view

45. site pictures by darren hurst

46. guadalajara street; google street view

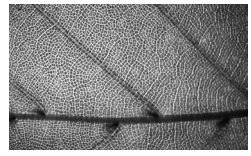
47. site pictures by darren hurst

48. guadalajara street; google street view

49. site pictures by darren hurst

50. tree by anselm

51. tree roots by lamiot



52. leaf cells by ericskiff

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