

Sustainable Relaxation

AND LEARNING GARDENS

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APPROVAL

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ABSTRACT

This senior project will be research on a sustainable relaxation and learning garden and the construction of one at Mission Education Center Elementary School located at 1670 Noe Street, San Francisco, CA 94131. Through the process of interviews and other sources, research and application will be conducted and reported in three phases: First will be the history and the program of Mission Education Center as one of the transition schools for children who recently immigrated to the United States and who only speak Spanish. Second are the many aspects behind relaxation and learning gardens, and third will be the process of creating a sustainable relaxation and learning garden for children and faculty to enjoy.

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TITLE: Sustainable Relaxation and Learning Garden

PREFACE:

Popular music artist Whitney Houston once sang, "I believe the children are our future. Teach them well and let them lead the way." This way of thinking should be embedded in the minds of everyone, but more than anyone it should be embedded in the minds of teachers who will teach the children of our futures. A small community of teachers with that very mindset exists in a small corner of Noe Valley in an elementary school named Mission Education Center. These teachers that form a total of 9 for the entire school, teach K-5 students that are newly immigrated to the United States and who mostly speak only Spanish.

Mission Education Center or MEC, was founded in 1972 in response to the lack in educational and community needs of Spanish speaking immigrant students and their families. Many have tried to shut this school down due to the disappointing test results that the school produces, failing to see that those results actually express an impressive difference from when these students first attended the school program. After giving student assessments upon arrival, 95% of the students arrive below grade levels in reading and comprehension, while 75% are below in Math skills, as stated in the key findings section of the MEC's Academic Plan for student achievement 2007-2008. With results such as these it is not surprising that the difficulty to achieve basic grade levels are high amongst similar school systems such as Chinese Education Center and Pilipino Education Center. It is the very reason that MEC is the only new-comer school for Spanish speaking immigrants in San Francisco that they continue to thrive amongst our school district and are continually recommended by the EPC (Educational Placement Center) of San Francisco.

Programs associated with Mission Education Center include many community activists such as: Good Samaritans, New College, Lion's Club, Performing Arts Workshop Foundation, the SF Public Library, as well as SF school Volunteers. Through the collaboration of these groups and cooperation with guardians and teachers, it is possible for the school to provide programs such as educational support, mental health support, medical and dental assistance, ESL (English Second Language) Classes, Family literacy, computer classes, and tutorial programs. The school even offers parent educational workshops in order to buffer student's transition to their new home and surroundings. Many of these students come to the US with little or no education whatsoever. MEC has been looked down upon due to performance levels, but through its existence and community support has maintained the grade levels of other public schools and even helped set the bar for basic level education throughout the district.

STATEMENT OF PURPOSE:

In the school environment, teachers go through many hardships in their daily activities and interactions. At times children may be enrolled by guardians that may not appreciate or respect the school system but relent due to the wishes of the parents who are across the border. Stress can accumulate either through dealing with a troublesome child to dealing with a troublesome parent or guardian, and only a few teachers will be shown appreciation for all their hard work. When adults look back at their elementary school years and think about the time they spent, many memories come flooding back to them. Will any of those memories involve how attractive the school was and how much one looked forward to walking through their school and experiencing what the school had to offer? Did any dream of what you would be when you grew up spark during those precious years?

My senior project consists of research on a sustainable relaxation and learning garden, and the potential construction of one at MEC Elementary School located on 1670 Noe Street, San Francisco, CA 94131. The purpose of this project is to fully understand the effects of a relaxation garden, advocate for sustainability, and construct a product that the deserving hard working staff and children of Mission Education Center can enjoy. By creating this garden, I hope to create an environment that one can find escape from the hectic school atmosphere and calm themselves, or their students. Through the application of sustainable practices I wish to allow passer-bys to become more open-minded and curious as to what other conservation strategies exist. By implementing “learning” into what the sustainable relaxation garden consists of, I hope to educate our younger generations about the different effects plants can have on a setting, as well as expose the young minds of our future to the necessity of green motivation and its resulting possibilities.

Green Design Strategies- New innovations and ideas that conserve or recycle water and energy into the design

Relaxation Garden- A garden specifically designed to calm the mind from the stress of everyday life

Sustainable Gardens- A garden designed to have minimal negative impact on the surrounding environment (can include the use of green design strategies)

Regenerative Gardens- creating a natural system, which creates more output than input in rejuvenating itself

Restorative Gardens- Gardens that are meant to heal people psychologically, socially, and physically through the interaction of nature involved environments.

Water conservative gardens- Gardens that reduce the amount of water (including rainwater) that is wasted through drains and other means and is instead kept and used on site for as long as possible.

Learning Garden- A garden that can be used as a way to learn about nature through labeled plants to demonstrations amongst them.

Healing is generally known as the process of promoting well-being, and can be separated into three degrees. (Marcus 1999). The first is achieving a *relief from physical symptoms* or awareness of those symptoms. This is directed more to patients with an acute illness or trauma, and especially those with chronic illness in which they can care for through pain management. The second degree in which healing can take place is through *the reduction of stress*. By increasing the level of relaxation, not only patients but also perhaps staff and visitors can distract themselves. This becomes particularly useful for individuals with chronic or terminal conditions where thinking about their life can be strayed. The third and final form of healing would be the patient's *improvement in the overall sense of well-being*. This is where a patient uses hope and transcends beyond the idea of just relaxing to a point where he/she believes that he/she is feeling better, and in turn actually results in the actual recovery of the patient. Even for chronic patients, the sense of well-being can lead to more functionality.

So what makes a healing garden? Ulrich (1999) proposes that the ability for a garden to promote healing is based on an individual's ability to cope with stress. He believes that a person in a healthcare garden setting is given the ability to gain a sense of control and access to privacy, spaces for social support, opportunities for physical exercise, and positive distractions. Kaplan and Kaplan's (1998) theory stated that mental fatigue was the result of the effort required to focus one's attention by blocking out distracting stimuli. The only way to relieve one's mind from the fatigue was to relax and rest it by experiencing something pleasurable or interesting; citing four mind restorative components:

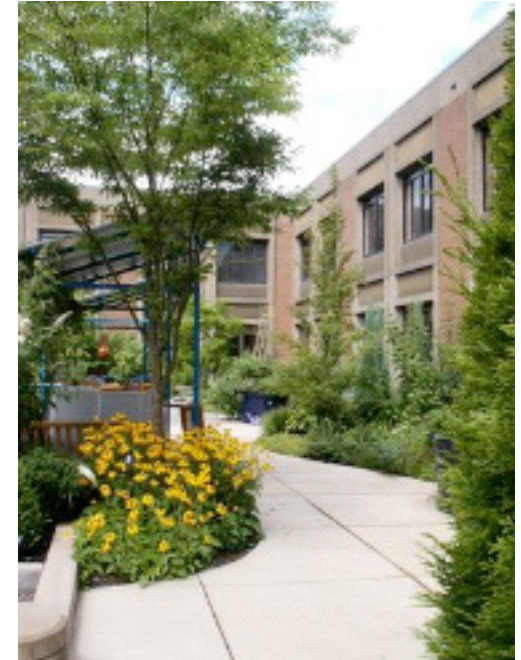
1. Being away (escaping to another world)
2. Extent (being in a large enough space where boundaries are not easily noticeable)
3. Fascination (acquisition of one's attention with little or no effort)
4. Compatibility (being in a setting that is supportive of one's efforts)

Their conclusion was that since nature applies to each of the four components, it would fall into the category of restorative.



Tenryuji Temple, the first of the five great Zen temples of Kyoto. Muso Soseki, a famous garden designer, transformed Tenryu-ji's existing garden into a Zen masterpiece with the addition of seven vertical rocks called Ryumon no Taki (Dragon's Gate Waterfall - photo).

Source: <http://www.japan-zone.com>



Oregon Burn Center; in this photo a sheltered seating area exist along the path outside the building to allow for staff to sit and relax.

Source: <http://www.legacyhealth.org>



The secret gardens of le Marais; gives you a sense of space, openness, fascination, and allows you to enjoy someone's efforts in his or her design.

Source: www.parismarais.com

Water Management

Large storms seem to hit our homes on and off throughout the year, affecting some more than most. Within boundaries of our cities more than some people may pay no heed to major storms since they come and go, and they believe our cities are built to whip the runoff somewhere else where it won't affect them. In the United States, runoff is the leading source of pollutants for water bodies that fail to meet water quality standards (USEPA 2006). Even though it is a natural process for there to be runoff from storms into our aquatic systems, humans can cause large alterations to the natural accumulations and drainage occurring. This ultimately introduces pollutants, increase erosion, and degrade natural habitats and wastes water that can still be used.

In many developed areas, the problems start with the roads, sidewalks, parking lots, and roofs. These are common locations for needed better water management practices, often due to its impervious surface construction, which means no water can penetrate through them.

When water cannot percolate through the surface, it usually slides along the slope of the material and is directed into the nearest drain, carrying with it all the debris and pollutants the surface was covered in. Once all those pollutants enter the storm drains they are carried off directly into creeks and other bodies of water if not filtered. To make matters worse, due to the impervious surfaces and the fastest route to an exit being a straight line, rainwater runoffs flow at a faster rate and in large volumes, having the ability to erode natural creek beds and banks.

When these creek channels become larger by erosion and become less stable it is known as hydromodification, which is only somewhat taken care of by site planning techniques known as Best Management Practices (BMP). The erosions created cause the destruction of natural habitats in the area. So what can be done to address these occurrences? By using different methods to capture, slow, filter, or absorb storm water, we can rid ourselves and habitats of large amounts of pollutants and erosion. Post-construction storm water control measures can be divided into four categories: site design measures, source control measures, storm water treatment measures, and hydromodification management measures (C.3 STG 2006).

Site Design Measures: are site-planning techniques that ultimately reduce the affects of stormwater runoff from developed areas by addressing problems before they become too large to handle. Some examples of site design measures include:

- Producing more pervious surfaces and less impervious surfaces that lead water directly into storm drains.
- Minimize the use of impervious surfaces by using narrow streets, sidewalks and driveways.
- Preserving open space, and minimal disturbance to the land.
- Use landscape as a drainage feature (an example being a filter for pollutants)

Source control Measures: are methods of good maintenance at the source of the pollutant discharge and runoff. This is used in order for the least amount of contact between pollutants and stormwater to occur. Examples include:

- Berms that control the direction and flow of the pollutants
- Roofed trash enclosures
- Street sweeping
- Inspection and cleaning of storm drains

Stormwater treatment measures: are systems that have been created in order to remove the pollutants from water using methods such as filtration, infiltration, flotation, and sedimentation. Examples include:

- Bioretention areas
- Flow-through planterbeds
- Extended detention basins
- Media filters
- Tree well filters
- Infiltration trenches
- Vegetative swales
- Buffer strips
- Rain gardens
- Extended Curbs

Hydromodification Management Measures: includes a site design and source control measure that will lower the rate and flow of runoff. Usually this already incorporates constructed facilities such as basins, ponds, or vaults that will control how much and how fast water is leaving the site.

According to the San Mateo County Sustainable Green Streets and Parking Design Handbook, sustainable storm water design should be able to achieve three goals: Water quality, Flow reduction, and volume reduction.

Water Quality:

By allowing stormwater to work its way through plants and soils, better water quality measures can be met that should filter and remove pollutants. Examples may be through pollutant settling in the soils and plants, absorption into the soils and uptake from the plants.

Flow Reduction:

By allowing water to stay on site for longer periods of time, stormwater can be detained, retained, or at least delayed from becoming high-speed runoff. This in time will allow for more manageable peak flow rates and erosion control downstream. Different design strategies today actually try to incorporate naturalized surface features or green infrastructure that imitates the natural hydrological cycle and reduces the need for other drainage methods that speed our storm water flow.

Volume Reduction:

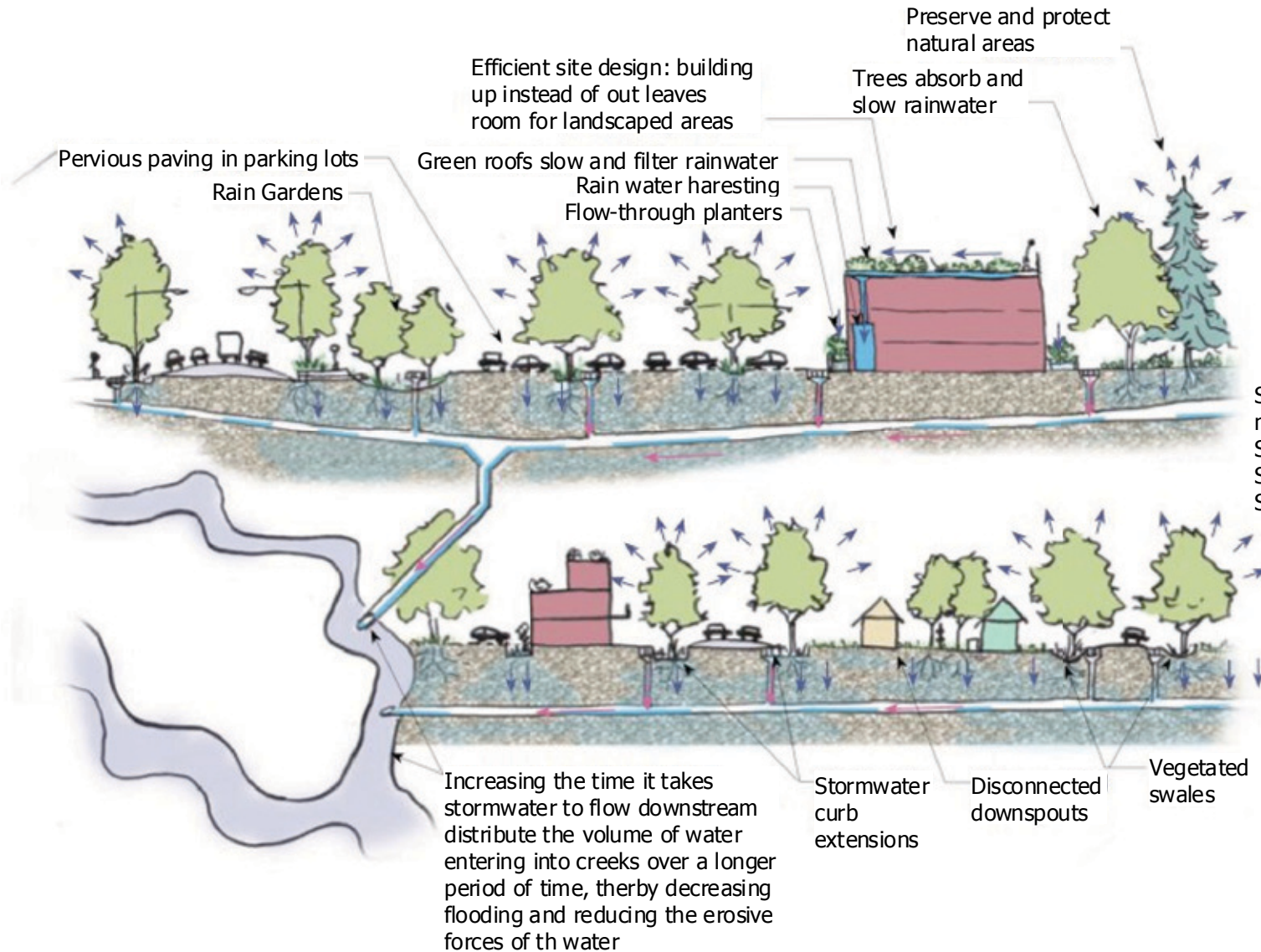
By keeping as much water as possible on site by collecting or absorbing it, one could reduce the overall volume of runoff into drainage systems. Stormwater retention is able to store water for later use or groundwater recharge. Through the process of “cleaning” the water as it passes by plants and soil, one can even store relatively clean water through their facilities for reuse.

The Use of Native plants are very important factors that should be included in more designs today. The use is very noticeable when it comes to ecological restoration and naturalization. In order for ecosystems to recover from being degraded or destroyed over time, one must take into account the native plants that can be used in order to encourage the process. Native plants are plants that have existed on site long before settlers came to the area. These plants in particular are good for planting in their preferred conditions due to the very fact that they have evolved throughout time to adapt to the conditions of the soil, water intake, and temperatures of that particular place. Plants such as these have also evolved with local animal or bug populations that may require them as a source of food or a place to live. An additional benefit to the use of native plants is that they need little maintenance due to adaptation to the natural resources of the their area, meaning they need little physical and chemical attention (e.g. pesticides).

If one were to use natives as natural filter systems for storm water then one would be able to clean the water as it runoffs, while at the same time not have to maintain the system aside from trimming due to its natural ability to absorb the amount necessary when it rains.



A balance of economy, ecology, and society efforts will contribute to sustainable stormwater design
Source: Nevue Ngan Associates



Learning Outdoors

Every child should have the chance to experience what one can in a 'green' setting, but they won't be the only ones to benefit from creating a green space outside their classrooms. According to Nature Nurtures: Investigating the Potential for school grounds, which is a document that summarizes research done by Evergreen, the very existence of a greening projects in a school would benefit the school in more than a few ways:

For the students-

- There would be different and new ways to play and learn
- A safer and less hostile outdoor environment would be created
- There would be improved academic performance levels
- A sense of pride and ownership in their learning
- Creation of a sense of space
- An increase in environmental awareness
- Lower exposures to toxins

For the teachers-

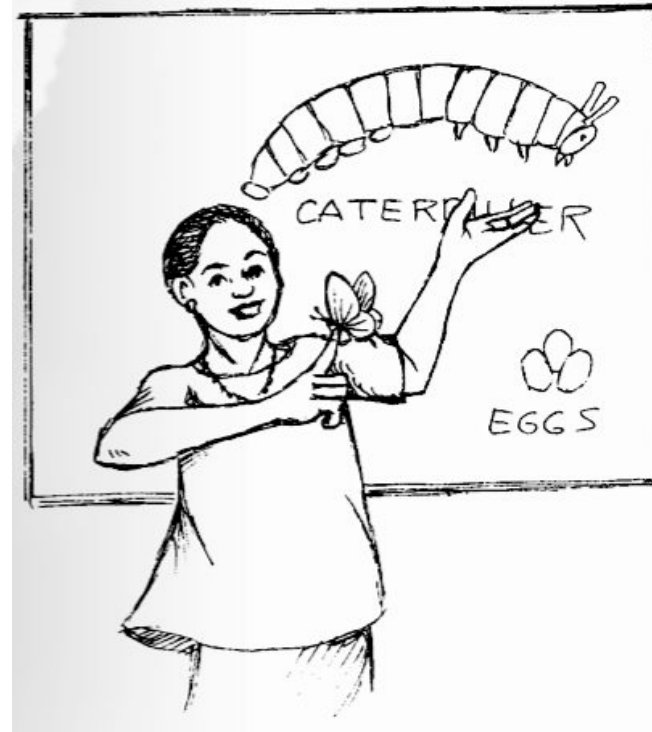
- New curriculums can be created with more options
- An increase in morale and enthusiasm for learning and teaching
- More engagement and hands on activities
- Fewer discipline and classroom problems
- A space of relaxation
- A place other than the classroom setting

For the school-

- Increased pride in the school
- Better attendance and fewer students dropping out
- Decrease in bullying occurrences
- A decrease in anti social problems
- Better interactions with the community and potential external support

For the community-

- A stronger sense of community would be created
- Parent involvement
- Nicer to look at than a school without the program
- Increased community satisfaction
- Healthier natural environment
- Potential financial savings



Out door teaching can be fun and lead to more experiences one cannot learn indoors
SOURCE: www.nwf.org

Outdoor Learning = Increased Student Achievement

In 1999, a consortium of education agencies from 12 states, called the State Education and Environment Roundtable, published a groundbreaking study. Entitled Closing the Achievement Gap: Using the Environment as an Integrating Context for Learning. This study quantified and legitimized that which teachers had been observing and noted for years—the academic value of using the environment as a framework for instruction.

The roundtable studied schools nationwide that are using the environment as the context for interdisciplinary, student-centered, hands-on learning and teaching across all subject areas.

The study reports that students in such programs:

- perform better on standardized tests
- earn higher grade point averages (in language arts, math, science, and social studies)
- improve their attendance record
- improve their behavior in school
- demonstrate an increased ability to think creatively
- demonstrate increased problem-solving abilities

SOURCE: Lieberman, Gerald A. and Linda L. Hoody, eds. Closing the Achievement Gap: Using the Environment as an Integrating Context for Learning. State Education and Environment Roundtable San Diego, 1999. (Download report: www.seer.org)

OPTIONS AVAILABLE TO APPLY THERAPEUTIC/ RELAXING DESIGN AND WATER MANAGEMENT PRACTICE TO LANDSCAPES:

Every place has a designated reason for looking the way it does, whether it be for protection from the outside area, protection from what is inside an area, to personal or public distractions like smell, sites to see and sounds to hear.

One might want to design an area where an individual may want to incorporate a connection between people and the environment around them, especially if those people are individuals who are incapable of exploring no more than what is allowed by the premise boundaries:

- Include elements from the surrounding buildings and landscapes into the exterior design.
- Use nature to create a entrance path to the area
- Use colors when designing the exterior; therefore bringing a sense of life and energy
- When fences are necessary, cover them with a dense climbing plant material

Mental hospitals were once designed like prisons because of the assumption that mental patients were all violent when in fact a very small percentage are. Ideas behind the design of these facilities should be less focused on control of these patients but instead on keeping these patients from acting on their frustrations by alleviating them. Children also have spurts of aggression as they grow older and learn to overcome them, but in order to do so they need environments that promote other means to de-stress or distract them. To keep the focus within the grounds while also reducing possible aggression:

- If the building allows for two to three stories to be built, design it to include a completely enclosed open-air courtyard.
- If it is not possible to have direct surveillance in all the outdoor spaces for individuals to have access to the outside environment, install electronic surveillance devices.
- If open-air courtyards are not possible, try indoor streets with skylights and interior trees.
- If the building is multistory, try for an interior landscaped atrium.

People need to socialize once in a while, but sometimes people also need time to themselves:

- Offer a variety of movable seating arrangements and furniture so that people have the choice of being alone or not, while also adding some benches with their backs towards the outdoors in order to avoid feeling like a museum display.

You can still control the extent of movement of furniture by installing short chains to them.

People need to stay active in order to stay healthy, become healthy or even just to keep them from becoming bored. Cooper Marcus and Francis (1992) found that a well-designed area for recreation can direct a child's play habit and spirit, reducing disruptive behaviors and discipline problems:

- Include lawns for picnics and various sports and a paved area for basketball or dancing.
- Include playground areas for children but allow easy access for parents to keep a safe distance.
- Locate toilets and water fountains near the exterior places.

Another form of recreation or sense of relaxation could be the inclusion of horticultural therapy. Through the different pleasures of smells, colors, tactile experiences, sense of control over the environment, as well as a way to connect with people on a new level, all are ways to incorporate another sense of a relaxation garden:

- Locate water sources and storage spaces for tools near the potential garden site.
- Locate movable chairs for people who will work in the garden or who would just like to enjoy the setting and activities that can initiate.
- If it is not possible to start a ground level garden, start a roof garden, but remember to apply fences or walls to keep people from the edge of the roof.
- It is best to allow the option of mediocre work or no work at all when it comes to being interactive within your garden setting.
- Choose plants that rustle in the breeze
- Install fountains or other forms of running water for the calming sound, but keep water-retaining areas shallow for safety and maintenance reasons.

- Choose native plant material that will attract birds and butterflies and avoid plants with toxic berries that patients or children might eat.
- Provide arcades and porches to create shade along with arbors with climbing plants.

Color and sounds are important in any setting, but more important in settings meant for relaxation. Colors can be used to pull away from dreariness, which could also be implied by the insensitive use of them. Sounds are important to incorporate as well, especially when trying to communicate with one another:

- Use earthy tone colors for exterior walls, seating walls, and pathways
- Select flowers to attract interest but not to take away from the rest of the landscape.
- Avoid adding highly reflective surfaces that can create confusing acoustics with the echoes it produces, or install dense planting to minimize the reflection off the walls and windows
- Avoid cobbled pathways that could be a disturbance to wheelchair users

There is a concept of the Japanese garden called *Yugen*, which is the profound mystery of things revealed indirectly and experienced through the process of discovery. Through the sense of discovery, you also find a sense of freedom:

- Plan outdoor paths with curves so that the destination is not visible from the entrance
- Place special spaces or points of interest like fountains, bird feeders or artwork along or at the end of your paths
- Create places to sit and reflect on the special spaces provided

Plants in themselves have effects on people that make them therapeutic outside of design. The softening of man-made environments, the changing they do on their own as they grow, the obliviousness to humans as they exist and evolve on their own time, all are plant characteristics which we can apply to designing our therapeutic and relaxation gardens. The ability to predict the cycles of growth in which plants grow depending on the care an individual gives it, to the colors and smells they will produce, to allowing the eventual natural change of environments flourish so that we can be distracted from the stresses or pains of our continuing lives through nature, is the sense of a functional relaxation garden which can be used by all ages.



Bronson Methodist Hospital, Kalamazoo, Michigan; therapeutic garden within a building, and area to get away from the stresses of the workplace while not leaving it, for both staff and patients. Source: www.planterra.com

A winding path with different irregularities and an movable chair
Source:
<http://livinghealthy.typepad.com>



Methods-

In order to gather what I felt was needed to get my project off the ground and make the best decisions I could, involved research information, site visits and survey data:

Research- In order for me to make the best decisions possible for a final design, it was necessary for me to learn as much as I could about the components that go into a Relaxation garden and the reasons that those components are able to have the effects they are meant for. At the same time it is necessary for me to understand which methods of water management would be best suited for the site.

Site Visits- In order to know what research would go best with my site I would have to visit Mission education Center as well as other examples. I concluded with certain design aspects based on what I learned from my own site's analysis, but also through the visits I made to the following places in San Francisco:

- Alice Fong Yu Alternative School
- Sherman Elementary School
- SF General Hospital Tranquil Scott St. Labyrinth
- Avon Healing Garden
- Hans Schiller Plaza and Visitation Valley Greenway
- Yerba Buena Gardens

Survey Data- As I did not want to decided for the children of the school what they would want to include in their hands on garden, I conducted an informal survey of what some of them may want by talking with one of the teachers of the school and collaborating a way for me to get the information without interrupting too much of the teacher's lesson plans.

Data collection-

Research- I recalled all the information that I have gathered through past courses and referred to much secondary data that I was able to collect through library research and document searching.

Site Visits- By performing a site analysis I was able to gather information on the Sun/Shade, the soil type of the school grounds, where the structural components of the school were located, what already exists on the site, where possible improvements could be made, and relation to the outside of the school.

Survey Data- What I needed from the children was to focus in on certain vegetables or flowers that they may want to plant in their own garden, and combine what I could into the areas that they would be designated to. As for the area that would not be open to wandering students without proper supervision, I talked to my student advisory committee for ideas and information that would help me determine what components may work best for the site:

Through conversing with the Principal of the school Deborah Molof, I was able to gather ideas that she herself had for the different areas.

Through conversing with the Executive Director of San Francisco Green Schoolyard Alliance Arden Bucklin-Sporer, I was able to gain much of the information I needed for the site and school gardens in general.

Through conversing with Landscape Architecture Professor Steve Mcneil, I was able to gather more ideas to better perform a site analysis as well as my design program.

Through conversing with Professor David Burger and attending a course of Plant Sciences of his, I was able to gather a general idea of which plants I may want to use for the site and how easy or difficult some plants may be to grow.

Through conversing with my father and teacher at Mission Education Center Mario Chang, I was able to conduct the survey with the children in his first grade class.

Challenges-

I anticipated that I would encounter many problems mostly with fitting all I needed to do within my schedule and those of others.

Finding time to go to the site in San Francisco would be restricted to weekends due to my academic course layout for the quarter. In order to compensate, I was able to talk freely with my father at any time during the night and communicate via e-mail with committee members in order to gather the status of the project.

Most of the sites were closed during weekends; therefore I had to choose certain Fridays to visit.

As I initially had no knowledge of which plants are best suited for children, it was necessary to research this. I came to the conclusion though, that my pallet was not restricted as long as I chose non-toxic plants and created certain barriers that would restrict the space but not take away from the natural beauty I wanted to create.

Alice Fong Yu Alternative School
1541 12th Ave.
San Francisco, California
94122

Alice Fong Yu is the nation's first Chinese immersion school, providing an education program from kindergarten to the eighth grade. Through the school years, English proficient students are able to learn Cantonese through a half and half curriculum with an addition of Mandarin introduction within the upper-grades. As a former student of the school I take pride in mentioning what my school had to offer me. I was in one of the first classes to graduate from Alice Fong Yu at the eighth grade level, continuing my middle school years through the same school. During my time there I was able to experience a range of different programs that were offered including sports, lion dancing within the Chinese New Year parade, along with many other activities the school offered. Amongst the many other programs that were included within our school years, those spent in our garden are amongst the fondest. I remember when one could wander into the garden and would be encouraged to taste the harvest. Though the garden at that time consisted mostly of planter boxes, it was nevertheless a great experience to learn about the different plants that were growing there. The process and importance of compost and the natural habitats of the butterflies, earthworms and other creatures that also benefited the small enclosure were amongst some of what I was exposed to.

Today, the school has been modified and enlarged from the time I attended. The school itself has grown to include a gym, a whole new building of classrooms where the original Garden existed, along with new basketball courts to occupy the remaining length of the property. The Garden has been pushed back to the very top of the hill though the site still thrives with life due to the competent maintenance and involvement of the school.

Garden Analysis: When you drive by the school you see the sign at the very top of the hill on Lawton St. From behind the sign you can over see the whole garden since it has been arranged along the slope of the hill.

Structural Components-

- Terraced Planter boxes with both vegetables, fruits, and flowers exist
- A small out door learning area has been created using haystacks placed in a circular fashion for seating surrounding a chalkboard.
- A small shed is located at the very top of the hill, which is painted in the colors of the rainbow.

Water Feature: A small pond like structure is placed at the very top of the hill

Circulation- Access is available through a gated entrance next to the buildings. The paths within the garden are sloped and wood chipped.

What one can look forward to in this design:

What I enjoyed was the view from the top of the hill as you walk by the school. It allows you to see all of what the garden has to offer with its lush green vegetation growing everywhere. The use of the planters on the hill makes the garden look very back-pain friendly and is very pleasing to look at as you walk up and down the hill's path where they are practically eye level.

SITE VISITS



Sherman Elementary School
1651 Union St.
San Francisco, California
94123

Sherman Elementary School was founded in 1892 and is a well-known school amongst the elementary schools in San Francisco as a response to the impressive academic track record.

Garden Analysis: The site is surrounded by the busy streets of the downtown area and is gated off to the public, but you can easily see the yard as you drive down Franklin St. between Green and Union.

School yard - The school consist of a green school yard where rather than only designating space for gardening, there are also spaces in the same area designated for outdoor teaching space and other activities.

Water feature - The water fall and pond itself is a magnificent way to relax due to the sound of running water.

Seating Area - An amphitheatre area is located by the tool shed, where one can gather a sense of discovery as they walk along the path between trees to reach the area.

Circulation - There exist a designated pathway that reaches all aspects of the green schooyard. The paved main path runs across the entire yard from one end to the other allowing easy access by foot or wheelchair.

Maintenance - The yard is well maintained and has lush greenery along-side pathways surrounding the open space. The planters and other plantings are taken care of by the faculty, students and volunteers.

What one can look forward to in this design:

I thoroughly enjoyed the sound of the water as a change from the constant sound of cars rushing down the neighboring streets. I also like how the green yard is separated into its own section away from the rest of the concrete yards of the school. A large variety of plants seem to grow from the planters and are not over shadowed by the young trees that are planted nearby.



SITE VISITS



SF General Hospital Tranquil Scott St. Labyrinth Garden
Duboce Ave. and Scott St.
San Francisco, California
94117

Scott St. Labyrinth was the second phase of the Duboce Park Playground Project that began in 1998 as part of a plan to renovate both of the children's play areas in the park.

Garden Analysis: As you look for parking near Duboce Park, you may turn down Scott St. and find a secret. A small area has been put aside where a 23' diameter labyrinth has been placed for the relaxation of any passing pedestrian.

Vegetation: Park and Rec planted the cherry trees near the entrance to the labyrinth and the podocarpus trees that surround the giant circle. The rest of the flowers and plants were chosen and planted by volunteers.

Structural component: Seating around the labyrinth is available as well as on five drum stools near the entrance. The labyrinth is made up of about 200 4"x4" tiles and 17 skate board preventing notches, while the seating has 2"x2" commemorative photo tiles and a special 15 tile collage that commemorates the pirate ship play structure that the labyrinth replaced. Located on the opposite side from the stools is a small feature that models the labyrinth in miniature scale. Along the wall of the seating is the message:

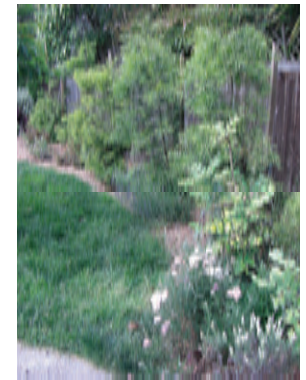
"A labyrinth is a single windy path that takes one to a center place and back out again. It is not a puzzle or maze, nor does it have multiple paths or dead ends. Labyrinths have been used by many cultures for thousands of years. Walking a labyrinth can foster meditation, contemplation, and relaxing."

"There is no right or wrong way to walk a labyrinth. Begin at the outermost edge and follow the path to the center. At the center you may wish to take a moment to reflect. To complete the journey, retrace the path from the center outward"

What one can look forward to in this design:

When one walks down Scott St. and finds the labyrinth, one is drawn into the circle by the size of it and how inviting the path bordered by vegetation to its entrance is. The very fact that it is a public healing place for anyone who may walk by just adds to its unique addition to the city-scape. Since the dog park is right next to the area, the labyrinth is passed by and walked through many times a day due to the small effort it takes to walk up the hill and around the corner of Scott and Duboce.

SITE VISITS



Avon Healing Gardens
1001 Portrero Ave.
San Francisco, California
94117

The Avon healing center was brought together through efforts from the San Francisco General Hospital and the Avon Foundation. The area was developed for the new Avon Breast Center that opened May 13th, 2004 intentionally created for the use of the patient. As the city's only public hospital, the research, treatment, clinical care and education are all efforts done with the underserved women in mind.

The 20'x20' healing garden was created by Topher Delaney, Inc./SEAM Studio in collaboration with Tsang Architecture and the SF GH facilities team. Through Delaney's own experience with breast cancer, aesthetics meet function as she created an area that would be visually pleasing as well as both heal and teach.

Vegetation: Ginkgo trees *Ginkgo biloba* are the first thing you see as you enter the garden, leading to a saucer magnolia *Magnolia soulangiana* which has been placed into the water feature. Citrus tree canopies cover areas where medicinal plants used for the treatment of breast cancer are being grown.

Structural components: Seating is located in many sections of the garden, while there are even some areas that are sectioned off to induce privacy. The paved floor makes it easy for wheel chair accessibility. The walls are a musky orange color that does not strain the eyes and is meant to give one a happy feeling rather than sad.

Water features: two water fountains exist on the site though the most distinguishing is the bowl fountain in the center of the site.

What one can look forward to in this design:

The sounds of the two fountains drain out the noise one might hear from the outside. One can sit and relax as there is plenty of seating on the site. When Topher Delaney designed this site, she had in mind the mentality that nature enhanced the healing process.



Hans Schiller Plaza and Visitation Valley Greenway

Spanning across Leland Ave., Raymond Ave., Arleta Ave., Teddy Ave., Campbell Ave, and half way to Tucker Ave. between Rutland St. and Alpha St.

San Francisco, California

94134

In San Francisco, Visitation Valley is one of the places that one would deem unsafe to wander alone. Through the funds of a \$300,000 grant from the Columbia foundation, the Trust for Public Land and Friends of Visitation Valley Parks dedicated a plaza to the memory of an Architect named Hans Schiller. Hans Schiller was an activist who was committed to allowing anyone regardless of status access to a park or open space. The corridor runs about five blocks within the visitation valley district with six lots totaling 2 acres. If one just happens to need a place to relax within the area, there are three separate areas allocated for the easiest access and use of pedestrians.

Garden analysis: The access points to each of the green places are located at both north and south entrances to the spaces except for the one connecting to Campbell Ave. which ends behind the house facing Tucker Ave. The entrance that is most used and accessible due to the stores that are located along side the entrance is the one located on Leland St. As you go higher up the hill along Rutland St., you can experience different types of hill planting from terraced to planters.

Circulation- Each designated area has a meandering path that whips around the green lawn and seating areas. The roads themselves are stamped concrete and accented by medium sized boulders and planting areas.

Vegetation- the first plot of land connected to Leland St. has the least amount of horticultural variability. Included within this first section are a few natives that border the pathway and vines that climb the wooden arbor. The second plot starts on Raymond Ave. and ends on Arleta Ave. This area looked more naturally vegetated in which it looks as though no maintenance is needed to reflect its natural beauty. The third plot is from Arleta Ave. to Teddy Ave, with interesting terraced ground for planting, while the fourth plot of land has two paths which begin at the entrance on Teddy Ave. and connects to Campbell Ave. Aside from having the same plant selection as the first plot there is a section near the top left corner that includes a separated two tiered section held back by a stone retaining wall. This area has been planted with a few colorful annuals that seem to be planted by the community members. The final section of the plots I was able to visit contained what seemed to be most of the tools used to maintain the other plots. With high wooden fences along one side and a iron fence along Rutland St., it looks very secluded and has yet to look approachable.

Things to look forward to in this design:

The effort put forward by the community shows in the design, as well as involvement in the park's flora and good maintenance. The park and plaza were built as an example for the underserved community as a push for community renewal and improvements. The winding paths that take you through each portion of the park allow for time to enjoy the scenery as well as time to contemplate. If you think about the effort that went into constructing such a place, it may encourage you to get involved as well.

SITE VISITS



Yerba Buena Gardens

Covers two square city blocks surrounded by Mission, Folsom, Third and Fourth Streets.

San Francisco, California

94103

Focus: on top of the Moscone Center connecting to Sony Metreon complex.

Yerba Buena Gardens is located atop the George Mason Moscone Center and is only one section of many when it comes to the large public space. The location that I have chosen to study is called the Sister City Gardens.

Garden Analysis: the location of the gardens is on the upper terrace of the esplanade and is easily accessible from the ground floor next to the entrance to Mocone center. The garden features flowering plants from San Francisco's thirteen sister cities around the world. The purposes of the different city plants are to stimulate the idea of how connected San Francisco is beyond the bay. Glass pyramid like looking skylights are located within the planters that hold the many plants.

Uses: The area is open to the public and allows a visitor to relax. While working at the Moscone center, I noticed that the area is also used mostly by those who either work or visit the conferences that occur within the Moscone convention center. During breaks I would see workers go to the gardens to relax and eat their lunch.

Water feature: 120,000 gallons of non-potable water is used to make a beautiful water feature that spills over the roof to complete the Martin Luther King Memorial.

Maintenance: The grounds are kept and maintained by MJM management group, which is the contracted property manager for Yerba Buena Gardens for the San Francisco Redevelopment Agency since it's opening in 1993.

What one can look forward to in this design:

What I enjoyed most about this site was the ability to go up the stairs to find seating areas covered by canopies in a peaceful setting away from the busy streets of San Francisco. If you wanted to drown out the sounds of the world you could sit near the water feature, though you can hear it while on the benches next to the flower planters.



CITY	Plant Common Name	Scientific Name
San Francisco, CA	Yerba Buena	<i>Satureja Douglasii</i>
Shanghai, China	Camellia	<i>Camellia Sasanqua</i>
	Flowering Quince	<i>Chaenactis Sp.</i>
	Winter Daphne	<i>Daphne Odora</i>
	Daylily	<i>Hemerocallis</i>
Haifa, Israel	Cyclamen	<i>Cyclamen Sp.</i>
	Carpet Bugle	<i>Ajuga Reptans</i> ("Giant Green")
Assisi, Italy	Rosemary	<i>Rosmarinus Officinalis</i>
	Crimson-Spot Rock Rose	<i>Cistus Ladanifer</i>
Thessaloniki, Greece	Bear's Breech	<i>Acanthus Mollis</i>
Abidjan, Ivory Coast	Lily-of-the-Nile	<i>Agapanthus</i>
Manila, Philippines	"Red" Dwarf Variety	<i>Canna</i>
Osaka, Japan	White Margeurite	<i>Chrysanthemum Frutescens</i>
Cork, Ireland	Heath	<i>Erica Sp.</i>
Tapel, Taiwan	Sago Palm	<i>Cycas Revoluta</i>
Caracas, Venezuela	"Carnival" Lantana	<i>Lantana Montevidensis</i>
Sydney, Australia	Australian Bluebell	<i>Sollya Heterophylla</i>
Seoul, South Korea	Star Jasmine	<i>Trachelospermum Jasminoides</i>
Estele, Nicaragua		<i>Lobelia Laxiflo</i>



FROM MAIN WEBSITE

SITE ANALYSIS

-Site Analysis

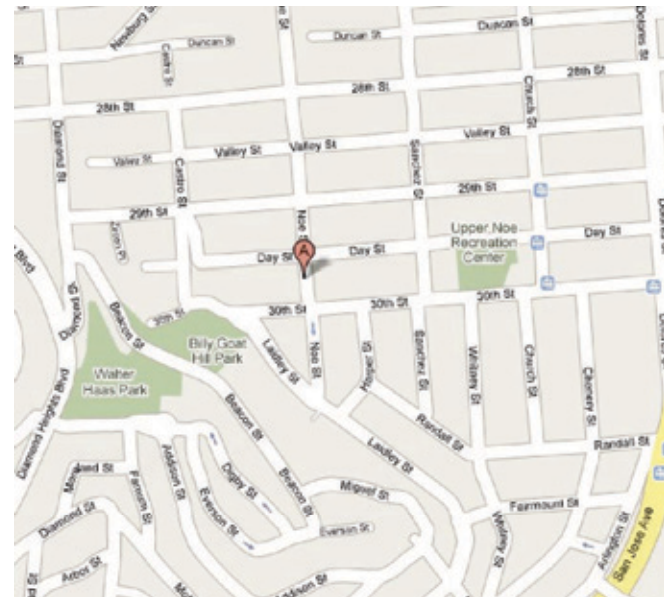
The main entrance to the school is located on the corner of 30th St. and Noe St., though the road most used is along Noe St. and there is a back entrance on Day St. The slope of the hill on 30th St. is very steep and therefore is difficult to park on but if you find yourself on top of the hill, the view shows the school in its entirety.

The soil type found on the site is sandy loam though the soil that will be used for the children will be amended in order for them to plant what they choose.

A drip line irrigation system seems to be implemented and can be used for the site's initial vegetation growth.

The Northern site area facing Day St. is always in the shade and practically never receives any sunlight due to the trees that overshadow the area. A few trees cover the site facing Noe St. but the sun penetrates the area along with the rest of the school throughout the day until about 5 in the afternoon when the sun starts to set behind the hill.

-Site location
1670 Noe St.
San Francisco, California
94131

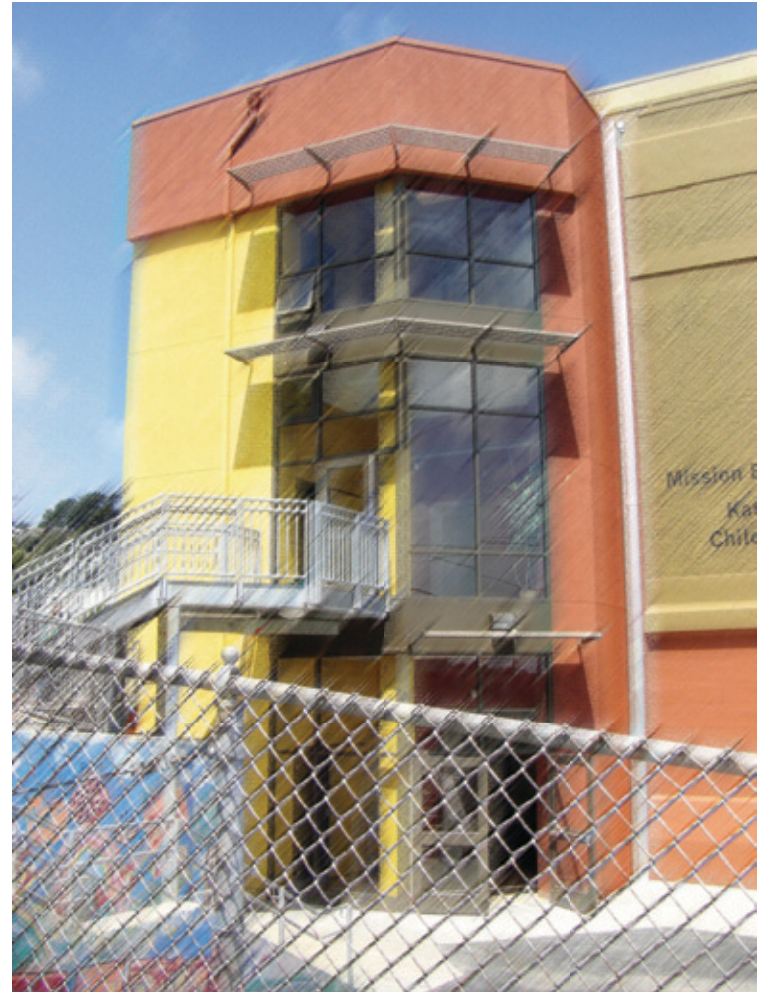


-Overview

The plants that exist on the site consist of many weeds, which need to be removed before any action can be initiated. The trees that are located on the northern side facing Day St. have been there for many years and therefore should not be removed because of cost as well as the shade that they provide for potential public areas underneath their large canopies.

The site itself consists of paved areas throughout most of the school which is bathed in sun through out the entire time school is in session; therefore more shade systems should be implemented into the site. Areas that could use more shade are the concreted area where the rainbow benches are located, as well as near the basketball courts and the small seating area next to the play structure.

Seating areas are limited to the linear pattern alongside the large wall and the small area next to the play structure. Other areas that could use seating could be along the fence that wraps the corner of the northeastern outdoor staircase to the second floor.



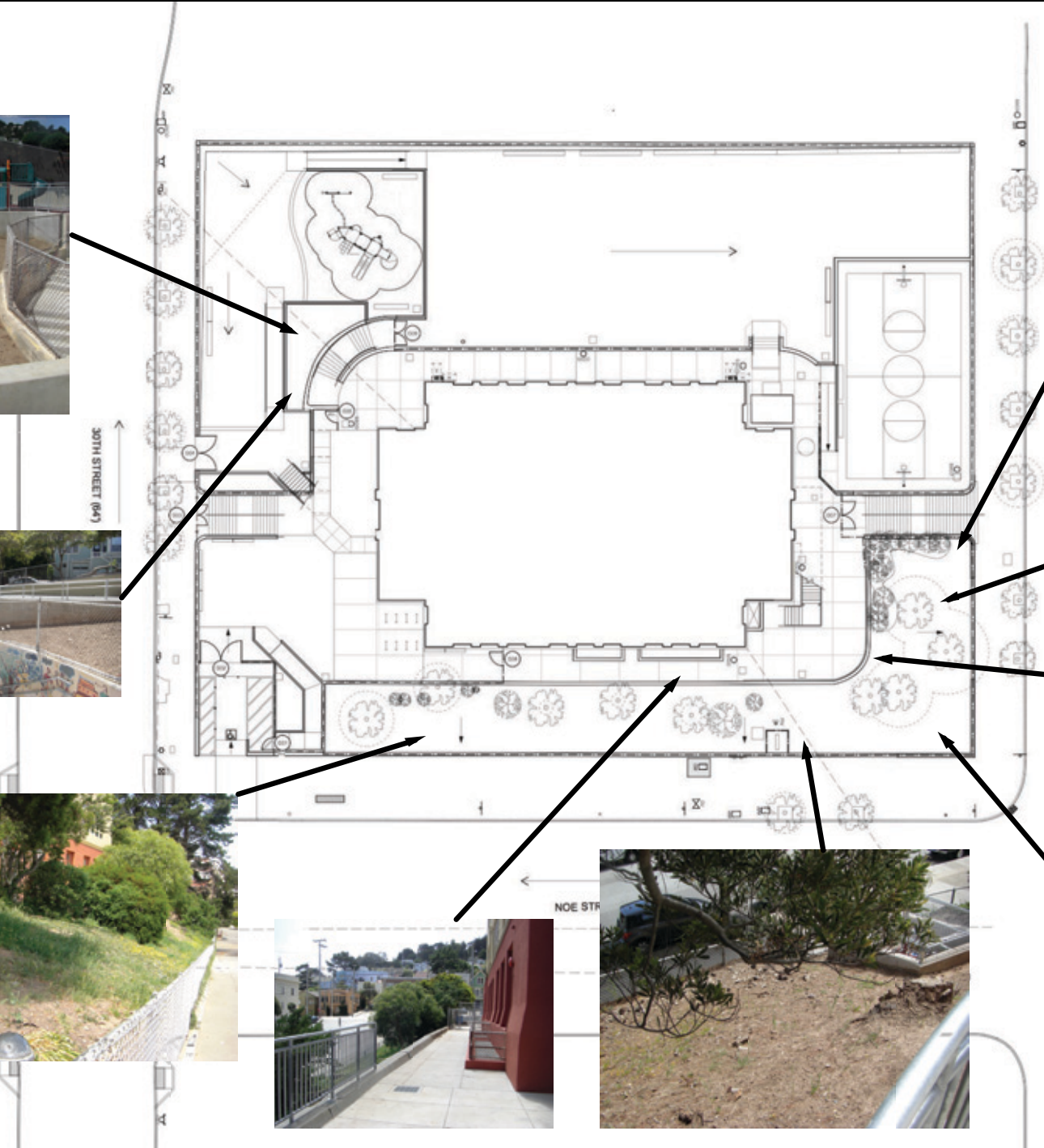
SITE ANALYSIS

The site designated for the relaxation area is visible from the basketball courts as well as from the stairs connected to Day St. and the path along the east side of the school hugging the wall.

Since the renovations done to the school, no access points have been made to the children's patch of soil next to the play structure, nor to the designated relaxation area. Therefore, I think the most suitable areas to place the access points shall be where it is safest to access for both students and adults.



SITE ANALYSIS



SITE ANALYSIS

-Survey and Action
Children involved Gardens-

Individual choices

¿Qué te gustaría plantar en el jardín?

A mi Ona Khan
me gustaría plantar
tomates, calabacines,
pepino y lechuga.

¿Qué te gustaría plantar en el jardín?

A mi Noemi Chavez
me gustaría plantar
espárragos, brócoli y tomates.

¿Qué te gustaría plantar en el jardín?

A mi Luis Acevedo
me gustaría sembrar
tomate, manzana
y elote.

¿Qué te gustaría plantar en el jardín?

A mi Jose Chavarria
me gustaría sembrar
tomates, calabacines
y fresas.

¿Qué te gustaría plantar en el jardín?

A mi Sheila Soto me
gustaría sembrar abas,
sandias y fresas.

¿Qué te gustaría plantar en el jardín?

A mi Egerardo
me gustaría
sembrar manzanas,
uvas y peras.

¿Qué te gustaría plantar en el jardín?

A mi Guadalupe,
me gustaría sembrar
sandias, elote y limones.

¿Qué te gustaría plantar en el jardín?

A mi Melissa Hernandez
me gustaría plantar
sandias, tomates y uvas.

¿Qué te gustaría plantar en el jardín?

A mi Stacy me gustaría
plantar bananas y fresas
y sandia.

¿Qué te gustaría plantar en el jardín?

A mi Juliana me gusta
sembrar fresas,
sandia y chicharos y
uvas y ajacata.

¿Qué te gustaría plantar en el jardín?

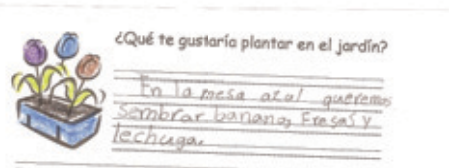
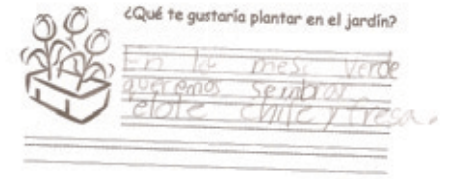
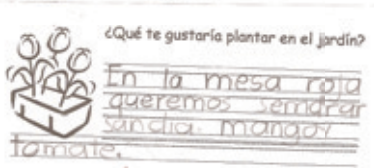
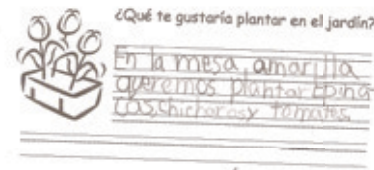
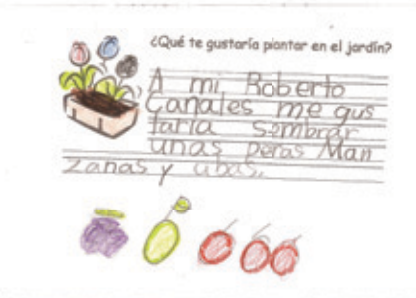
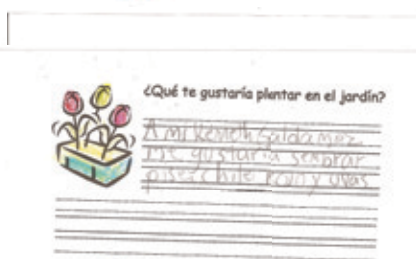
A mi Mariana
me gusta las fresas,
las manzanas y
sandia.

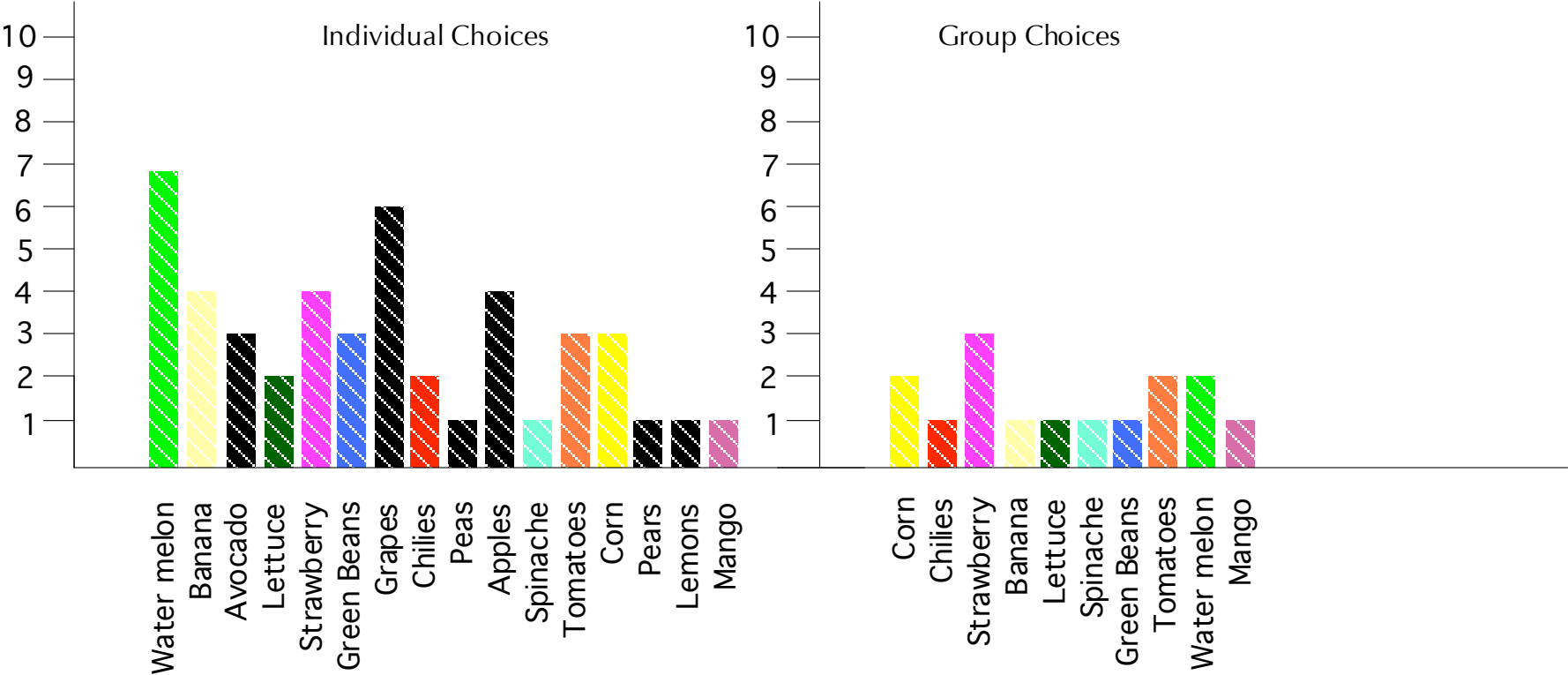
¿Qué te gustaría plantar en el jardín?

A mi Bassem me
gustaría sembrar
elote, uvas y sandia.

SITE ANALYSIS

By 5 Tables
 From Top Left to bottom: Green Team,
 Yellow Team, Blue Team, Another
 Green Team





-Black colored bars were vegetables or fruits that were not picked within groups

Due to the information gathered from the 1st grade surveys, I propose for the gardens to consist mostly of vegetables and fruits rather than flowers. I would like to keep the children away from cars as much as possible and so therefore would like to use the small area of soil near the double gates for a small flower patch that will need little maintenance from the staff or a supervised child. I believe that when the children become involved, they will learn to appreciate a garden and all it has to teach us.

Relaxation Garden-

Considering the space that is available and the plants that already exist on the site, I would like to fit in as many components as possible without disturbing as much as possible. Therefore I have designed a plan that will include all the existing trees, as well as the trees that former students had planted a few years back.

Components that I would like to include on the site include:

A winding pathway: in order to accentuate the idea of staying within the site and discovery of freedom through different end points within the area.

A few focus points: can be used to distract a wanderer within the garden as well as signify the entrance and exit. By distracting the wanderer, he or she would be able to find relief from the work environment that they will be engulfed in throughout the day, reduce their stress through the relaxing environment of the greenery, as well as improve their overall sense of well being by convincing themselves that by being in that environment they have healed themselves and are fresh and ready to head back into the work environment.

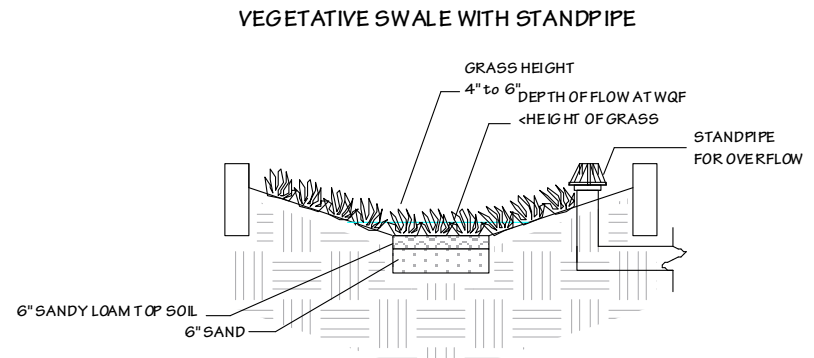
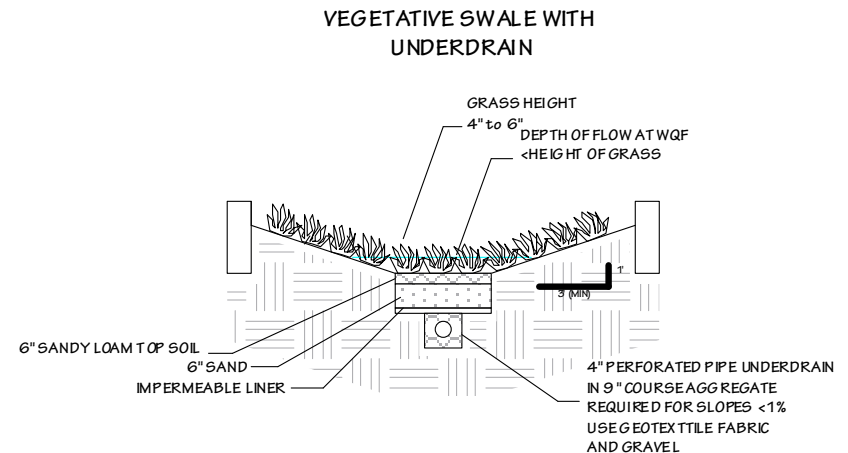
A designated sign and entrance: would be used to welcome any passerby who may be interested in what the garden may consist of. Telling people that there is a garden would be useless if no one could find it. The relaxation area will be located on the sides of the school, which are not easily visible from the entrance of the school. Therefore, a poster board that can be designed by the students can be posted on the fence that separates school grounds from Noe St. in order to direct those interested in the garden as to where the entrance is.

Amphitheatre: an area that is designated for outdoor teaching can be placed on the northeastern corner of the site. This area can be used to encourage learning in a change of environment that can be new and also fun for the children as well as teachers.

Water management practice component: I believe that the easiest water management practice that can be applied to the landscape with comparable effort to the rest of the garden is to add a bioswale to the bottom of the relaxation area. There is just enough space so that they will not interfere with the old tree roots.

Bioswales: long and narrow landscaped depressions that have a slight longitudinal slope so that water can be directed towards a drain whilst being cleaned by the vegetation it flows through. As stormwater flows through bioswales it is slowed down by the vegetation and soil, which allows pollutants and extra sediment to be taken up by the plants or infiltrate into the ground. The longer the swale the more effective due to more time stormwater has to filter and infiltrate. Vegetated swales can be planted in many ways, which include mown grasses to a variety of rushes, sedges, shrubs, certain ground covers as well as certain trees. Most vegetated swales can be as small in width as 3 feet, but 8 feet is recommended including the 3:1 side slopes on either side of the swale.

Not only are bioswales easier to create than other water management practices; they are also a beautification factor to the site as well as something more to learn about. For varying slopes in order to imitate the functions of check dams we can add boulders to further slow the flow of water into the drains.



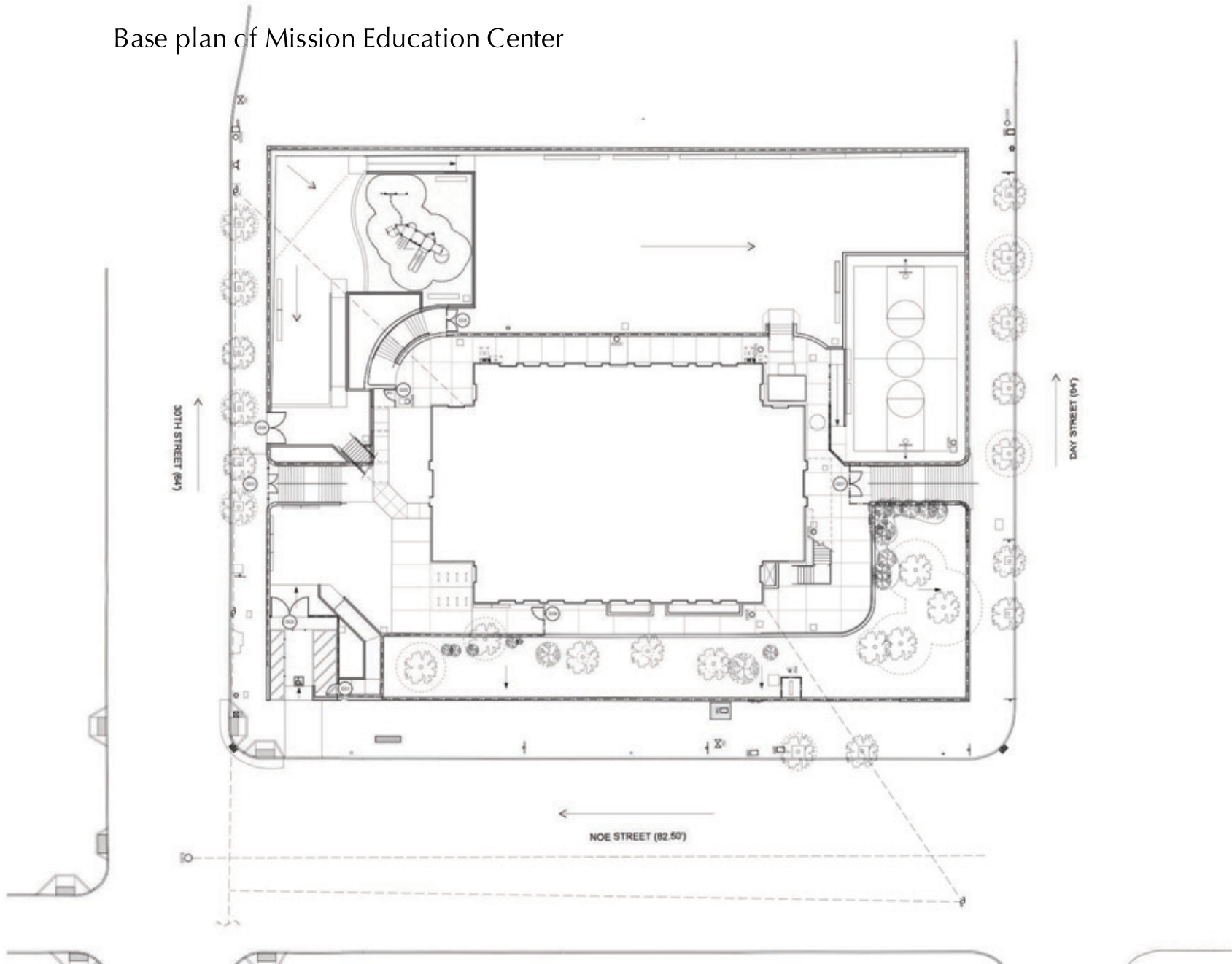
Native plantings: I believe that planting native plants will allow the school to have a beautiful site and do as little of maintenance as possible. The school currently does not have a specialized gardener that can care for the plants initially so the community and faculty will have to be involved in the initiation of the garden. As the plants begin to thrive they will need less and less maintenance due to their adaptability of their native roots and ability to use the water they are used to receiving in that environment.

Wildflower planting: By planting in a wild flower format for the top half of the hill, which is separated by the path, I believe one can imagine oneself in a different setting other than the school grounds and use that feeling to better relax. The reason for planting wildflower style for only half of the site is for minimal maintenance problems near the swale.

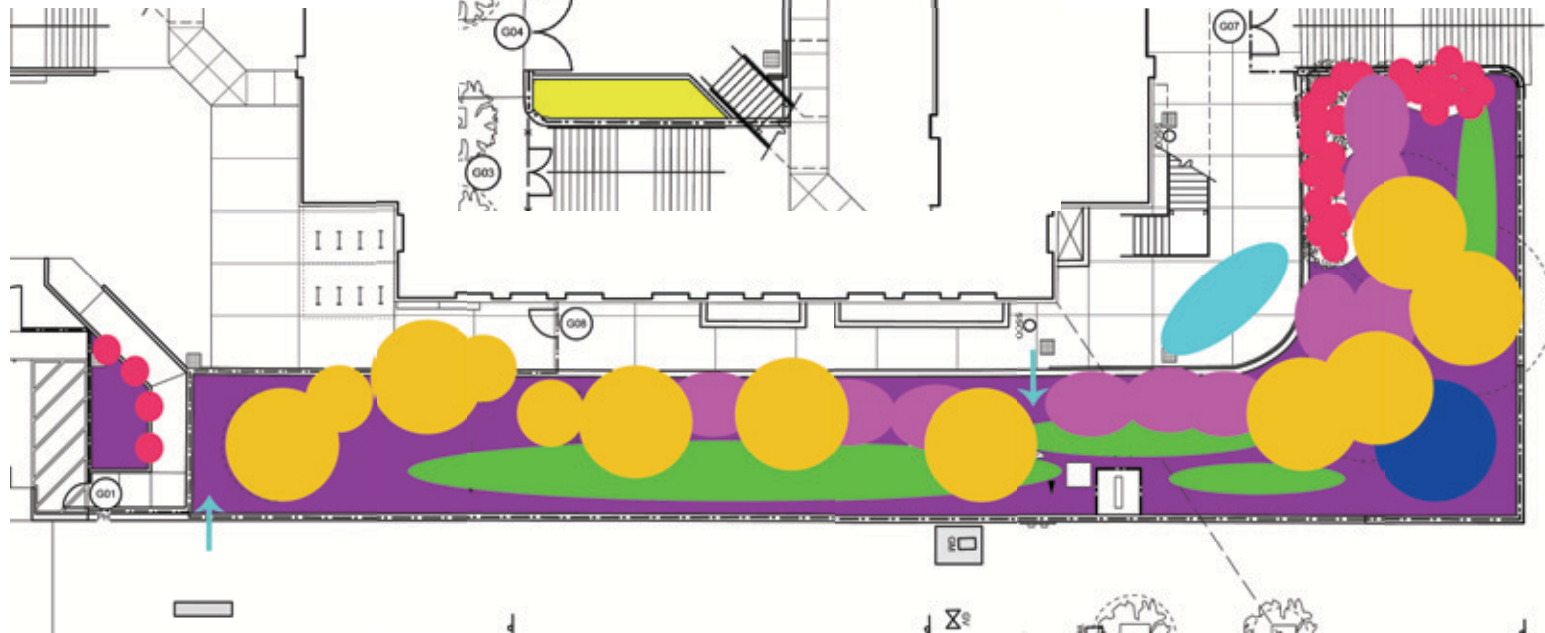
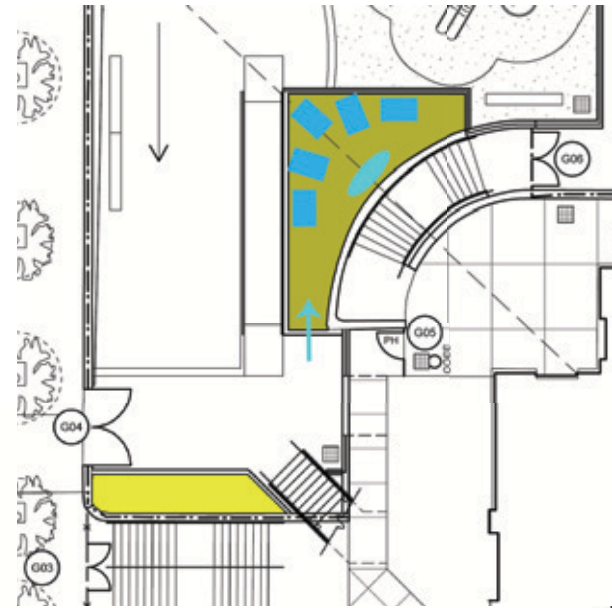
Terraced planters: By terracing and adding planters to the soil on the hill, one could create more space for plants that may have trouble rooting on a steep slope. These planters will contain flowers that are known to induce relaxation, but can also be spaces for future student plantings.

If money was not an issue: Lights could be included within the relaxation site and along the paths so that during parent teacher nights or when teachers have to work late they would be able to enjoy the area if they wanted to.

Base plan of Mission Education Center

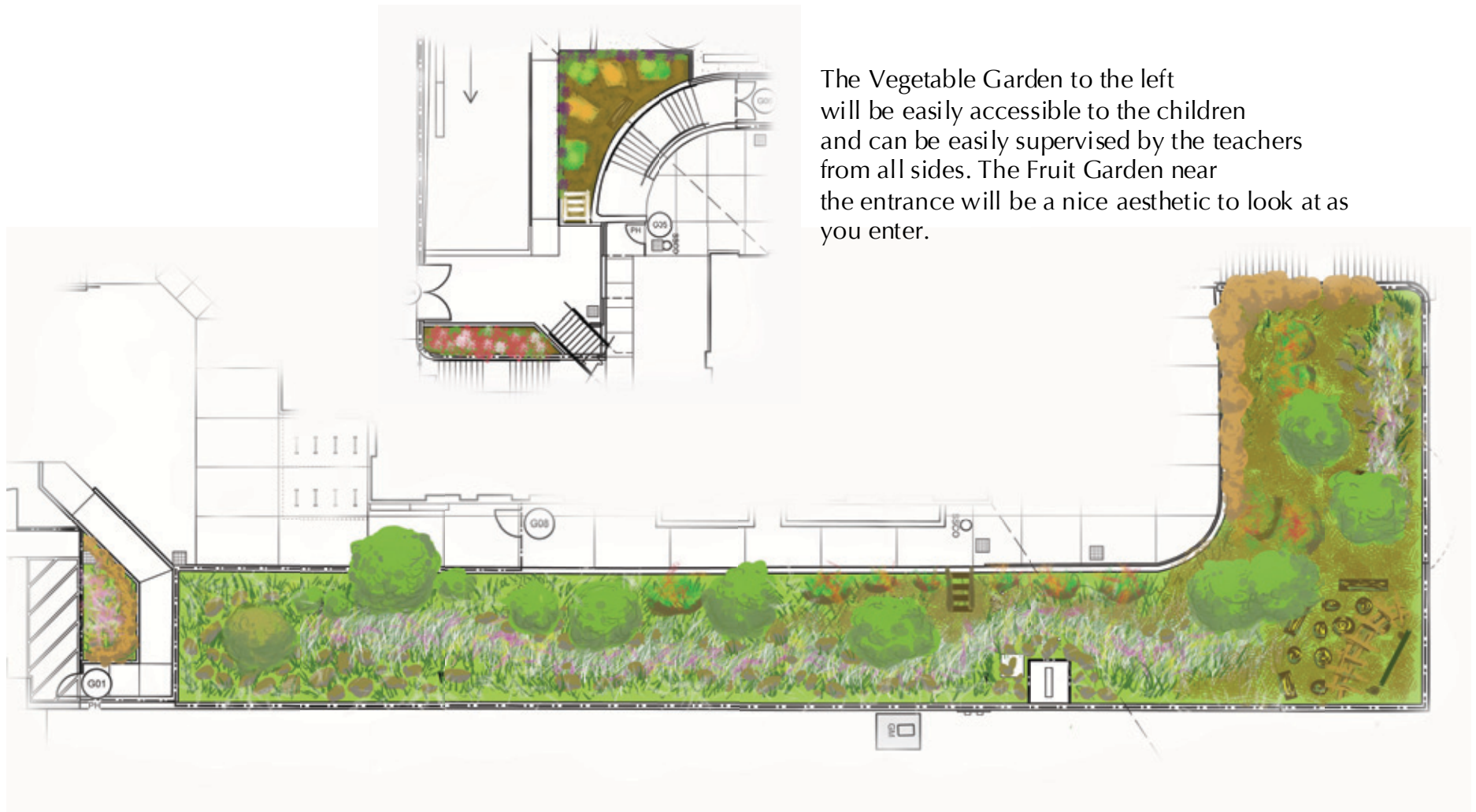


CONCEPTUAL DESIGN



- Wood chipped area for planting
- Vegetable Garden
- Fruit Garden
- Trees
- Terraced Planters
- Shrubs
- Bioswale
- Hardscape; benches and stairways
- Amphetheatre/outdoor class room
- Floor planters

ILLUSTRATIVE PLAN



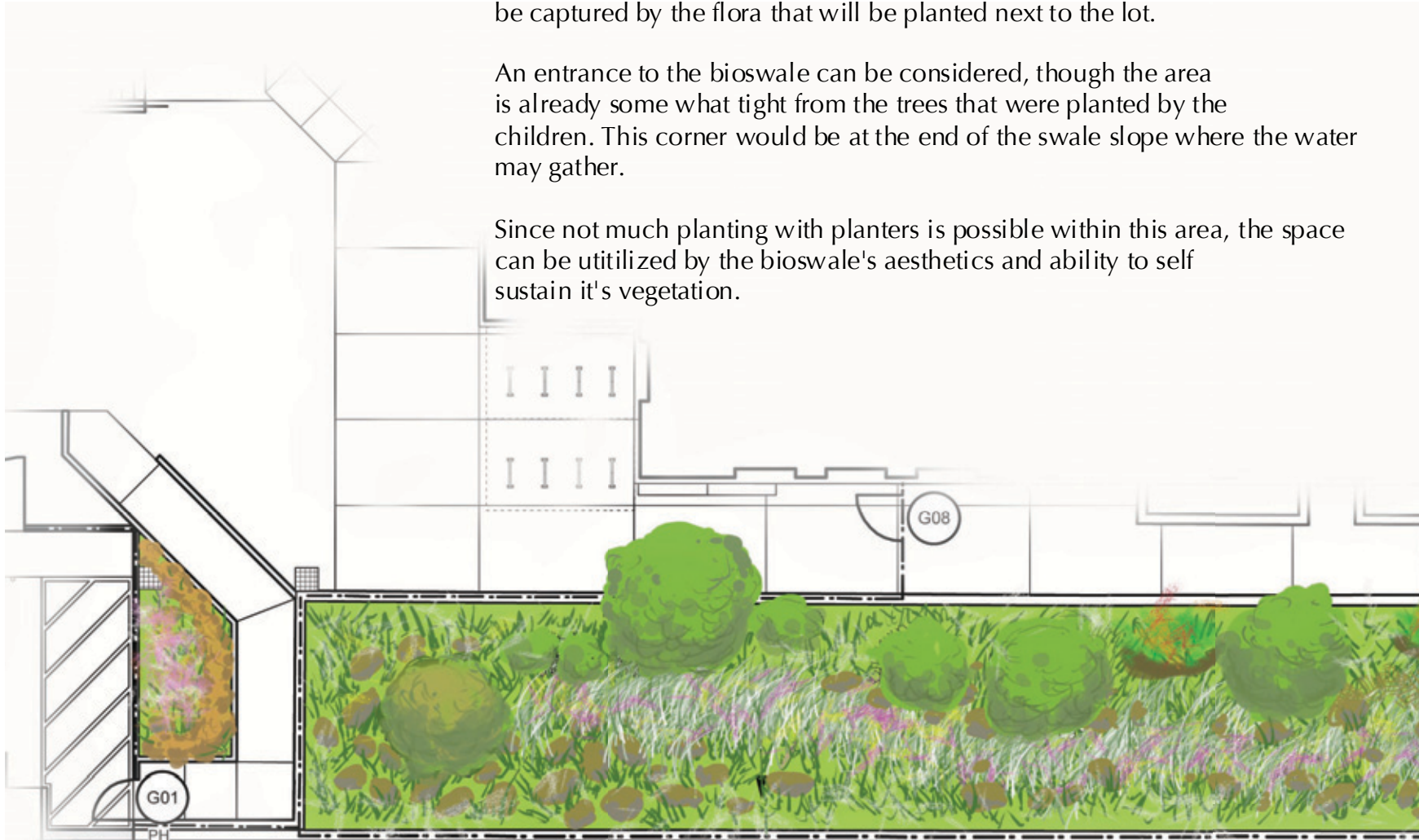
The Vegetable Garden to the left will be easily accessible to the children and can be easily supervised by the teachers from all sides. The Fruit Garden near the entrance will be a nice aesthetic to look at as you enter.

ILLUSTRATIVE PLAN

From the front entrance to the school you will instantly be captured by the flora that will be planted next to the lot.

An entrance to the bioswale can be considered, though the area is already somewhat tight from the trees that were planted by the children. This corner would be at the end of the swale slope where the water may gather.

Since not much planting with planters is possible within this area, the space can be utilized by the bioswale's aesthetics and ability to self-sustain its vegetation.



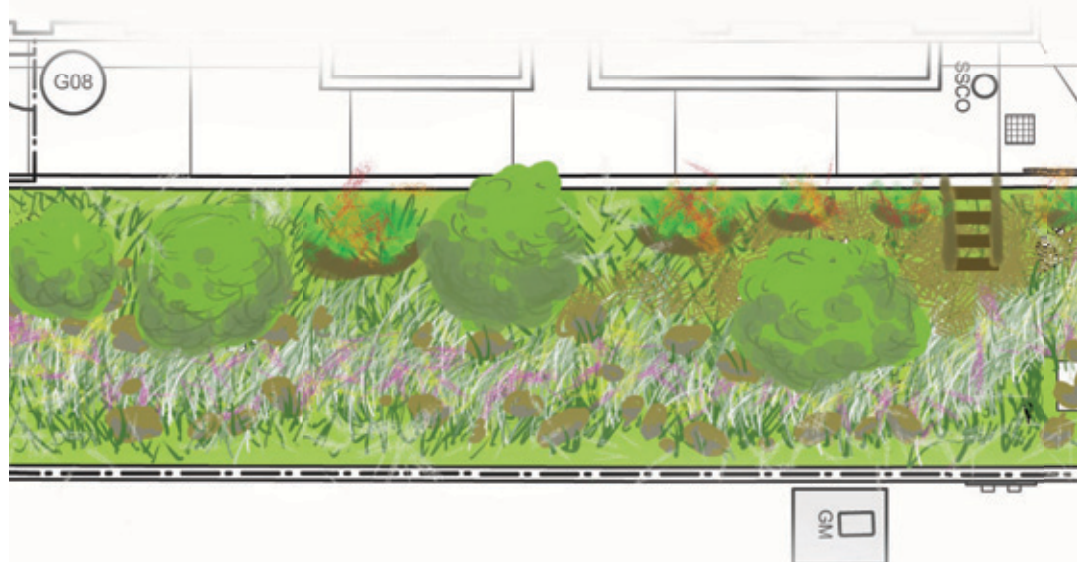
ILLUSTRATIVE PLAN

The second portion of this site is actually where the entrance to the lower half is located. Stairs will be installed where the fence ends so that children and faculty can access it easier.

As you walk down the stairs you will be welcomed by a view of the bioswale, as well as surrounded by the planters that grow the plants of your choosing.

Terraced planters are placed to slow the water from the hill and utilize it as much as possible before hitting the swale.

After the site has been more established, this area will most likely be where the notice of a garden will be held up, since you see the street from this point and vice versa.



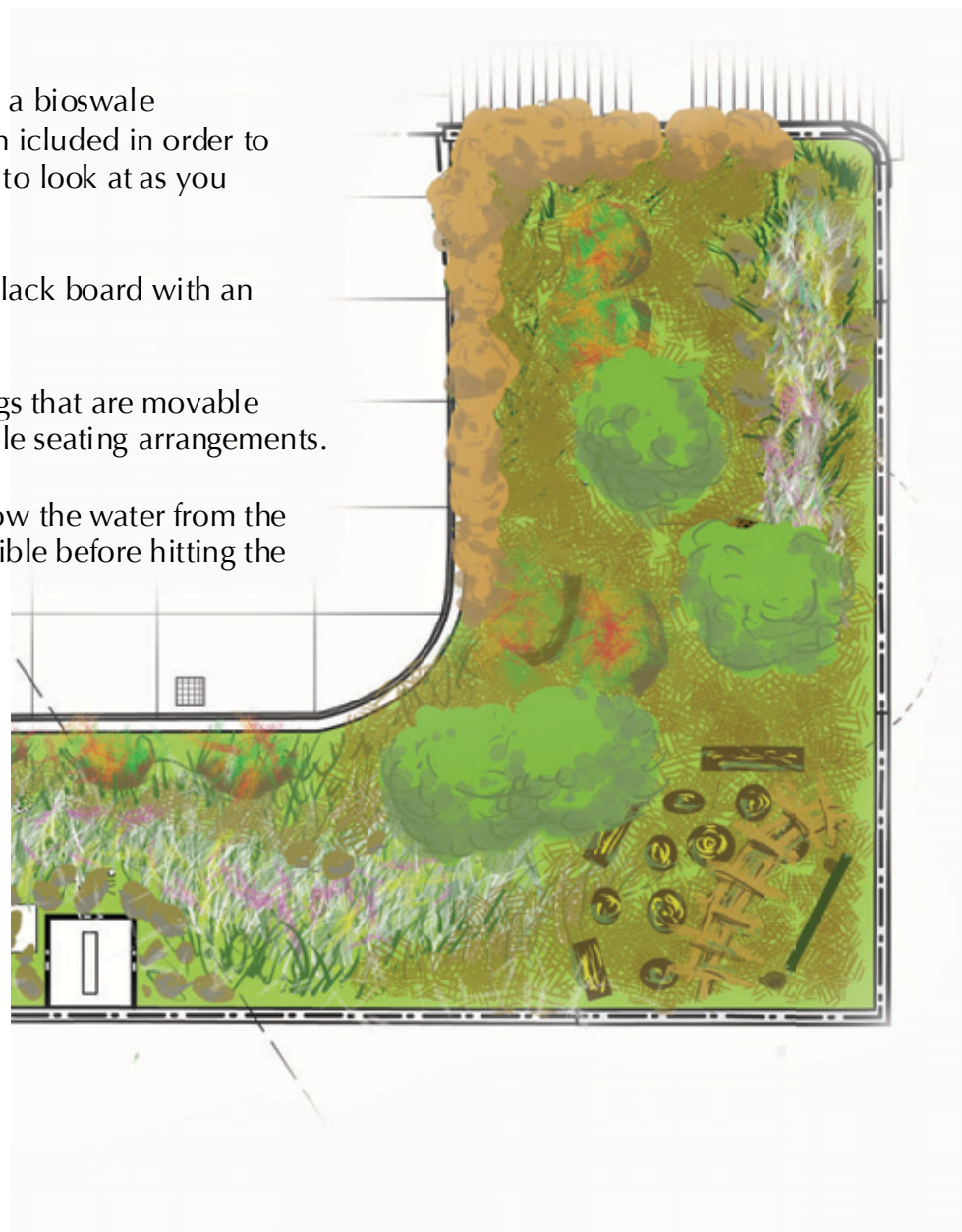
ILLUSTRATIVE PLAN

As you can see from this close up, a bioswale sloping towards the stairs has been included in order to have something other than shrubs to look at as you walk up the stairs.

The outdoor teaching area has a black board with an arbor in case of falling branches.

The seating for the children are logs that are movable to induce more comfort and flexible seating arrangements.

Terraced planters are placed to slow the water from the hill and utilize it as much as possible before hitting the swale.



What I see for the future of this project:

I would like to further implement what plants the teachers and students would like and using that knowledge create a planting plan.

I would also like to create a model of the newly renovated school with its green design and make it accessible to the public.

I believe that in order for this project to be a success, a garden committee will be formed to manage all aspects of the sites. A gardener can be hired to maintain the areas where it would be dangerous for a child to venture alone, as well as to keep the site as beautiful as possible.

I would like to allow the site on the hill to be worked on by the children in the future and be able to replace what we plant in the planters with their own choice of vegetables or flowers.

In order for the children to understand the reasons for a bioswale, I would like to create a type of guide that will explain and teach them the site's various plants as well as teach them the significance of good water management and the type that will exist on their school.

As the sites begin to thrive after a few months of being built, we can continue to add components to the garden to make it more admirable and inviting (eg. Children's artwork).

In Closing, by adding a few components here and there in a school and trying to provide the best environment for students and teachers, the school you attend becomes one of which you will have memories to take with you. Learning about labyrinths, searching for best storm water management innovations, and finding ways to get myself back to that young age where there were so many new things around me I could never concentrate, was a blast.

Through the process of visiting these past sites and working on the components that could make up a relaxing atmosphere, it occurred to me how much effort goes into forming a project such as this one. Looking at the site and trying to do the least amount of damage in a cost efficient matter will always be a challenge in this profession. Though, by following through these challenges one could only get better at what he/she does. I learned a great deal from this project and hope to learn and accomplish more as I continue working with Mission Education Center.

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PLANT LIST

Emergent: refers to those species, which occur on saturated soils or on soils covered with water for most of the growing season. The foliage of emergent aquatics is partly or entirely born above the water surface.

Grasses: refer to those species that are monocotyledonous plants with slender-leaved herbage found in the in the Family Poaceae.

Herbaceous: refers to those species with soft upper growth rather than woody growth.

Some species will dieback to the roots at the end of the growing season and grow again at the start of the next season. Annuals, biennials and perennials maybe herbaceous.

Shrub: is a horticultural distinction that refers to those species of woody plants which are distinguished from trees by their multiple stems and lower height. A large number of plants can be either shrubs or trees, depending on the growing conditions they experience.

Tree: refers to those species of woody plants with one main trunk and a rather distinct and elevated head.

PLANT LIST Plants that can be planted in a Bioswale or Flow through planter:

Emergent-

Carex obrupta
Slough sedge

Juncus patens
Blue rush

Grasses-

Festuca californica
California Fescue

Festuca idahoensis
Idaho fescue

Festuca rubra
Red fescue

Festuca rubra 'molate'
Molate fescue

Muhlenbugia rigens
Deer grass

Panicum coloratum
Kleingrass

Panicum virgatum
Switchgrass

Herbaceous Species-

Achillea millefolium
Common yarrow

Carex tumulicola
Berkeley sedge

Medicago sativa
Alfalfa

Mimulus aurantiacus
Common monkey flower

Mimulus cardinalis
Scarlet monkey flower

Shrubs-

Arctostaphylos uva-ursi
'Emerald Carpet'

Manzanita 'Emerald Carpet'

Baccharis pilularis Twin Peaks'
Coyote brush prostrate

Ceanothus spp.
Ceanothus

Cephalanthus occidentalis
Buttonbush

Heteromeles arbutifolia
Toyon

Mahonia repens
Creeping Oregon grape

Myrica californica
Wax myrtle

Philadelphus coronarius
Sweet mock orange

Physocarpus capitatus
Pacific ninebark

Rhamnus californica
Coffeeberry

Rosa californica
California wild rose

Rubus ursinus
California blackberry

Sambucus mexicana
Elderberry

Symphoricarpos albus

Snowberry

FOR MORE INFORMATION: INTERNET LINKS

MISSION EDUCATION CENTER

http://portal.sfusd.edu/template/default.cfm?page=es.mission_ed

ALICE FONG YU ELEMENTARY

http://portal.sfusd.edu/template/default.cfm?page=es.fong_yu

<http://www.afypa.org/>

SHERMAN ELEMENTARY

<http://www.shermanschool.org/>

SCOTT ST. LABYRINTH

<http://www.sfnpc.org/successduboce>

AVON HEALING GARDEN

<http://content.herbalgram.org/iherb/herbalgram/articleview.asp?a=2695>

<http://news.ucsf.edu/releases/new-avon-foundation-breast-center-to-open-at-san-francisco-general-on-may-1/>

VISITACION VALLEY GREENWAY AND HANS SCHILLER PLAZA

http://www.tpl.org/tier3_cd.cfm?content_item_id=18096&folder_id=266

http://www.tpl.org/tier3_cd.cfm?content_item_id=5348&folder_id=266

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<http://www.yerbabuenagardens.com/>