



# LANDSCAPE DESIGN FOR A SPIRITUAL CULTURE COURTYARD DESIGN AND CONCEPTUAL LANDSCAPE MASTER PLAN

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— LANDSCAPE DESIGN FOR A SPIRITUAL CULTURE —  
COURTYARD DESIGN AND CONCEPTUAL LANDSCAPE MASTER PLAN  
A Social and Spiritual Place for the Congregation B'nai Israel

A Senior Project  
Presented to the Faculty of the  
Landscape Architecture Department  
University of California, Davis  
in Partial Fulfillment of the Requirement for the  
Degree of Bachelors of Science of  
Landscape Architecture

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June 13, 2008





# Abstract

Congregation B'nai Israel (CBI), located in Sacramento, California, is the oldest Jewish Congregation west of the Mississippi. The property has many facilities on campus that are leased to Brookfield School, a small, independent, co-educational, college preparatory school serving kindergarten through eighth grades. CBI is open seven days a week, Monday through Saturday during the summer for spiritual, congregational business and communal activities. Brookfield School uses classrooms, a multi-purpose room, the Social Hall, and the Opper Courtyard, the playground to the west of the classrooms and the courtyard area between the Kandel Building and the Social Hall during the day Monday through Friday. The proposed courtyard area is located in the heart of the property between the Kandel Building and the Temple. The landscape master plan comprises the entire property from the freeway sound wall on the west, to the sidewalk facing Riverside Blvd. and Land Park.

The Congregation has recently undergone the rebuilding and restoration of several facilities and landscapes these past years due to a fire crime in 1999. With a strong community and congregation, CBI has risen above and stood firm. With more room for landscape improvements and cultural importance for open space, there is a strong desire to establish guidelines and design plans for future development on-site that will provide dynamic spaces excellent for socializing events and contribute to cultural learning.

To achieve these goals, a research was conducted on the history of Congregation B'nai Israel, Brookfield School, Jewish culture and Israeli landscapes to provide context. Numerous site visits and site analysis were conducted to identify key opportunities and constraints, and map environmental patterns, such as sound, light, and wind.

Interviews were conducted to identify specific desires, and to provide information that is important in detail for the site analysis and research. These interviews resulted in the prioritization of goals and the identification of key assets.

The information, along with various sources of design techniques was synthesized to create a courtyard design and a conceptual landscape master plan with accompanying goals that create a unique and spiritual sense of place that is high utility and a landscape palette that is low in maintenance and drought tolerant, yet symbolic for the Congregation B'nai Israel.



# Dedication

First of all, I would like to thank God for creating everything and giving me the opportunity to complete my four years of college. I would also like to thank Him for giving me moral support through prayers and devotions that has helped me grown mentally and spiritually.

I would like to thank my parents, Sandy and Ying, thank you for your greatest support, encouragement, and unconditional love. I could not have done this without you. You've been the greatest parents for making me who I am today. I will always love you and thank you for always being there for me.

I would also like to thank my brother, Matthew, for being understanding and taking time out of his busy schedule, from playing his computer game WOW (World of Warcraft), and allowing me to use his computer so I can complete my project. Thanks Bro!

And I would like to thank my best friend and soul mate, David, for all the love, support, and late nights you have stayed up with me to finish my project. You have given me countless numbers of inspiration and motivation to do the best I can. Thank you for not giving up on me and always being there when I needed you the most.



# Acknowledgements

Special thanks to my Committee Members for all their interest and support during the length of my senior project, and for taking time out to meet with me about this project and giving me feedback for guidance.

I would like to thank Steve McNiel for encouraging and motivating me to do this project with Sketch-up. Using the application changed the way I viewed design and took visual communication to a whole new level.

I would also like to thank Patsy Owens for all the support and advice to keep me organized.

And I would like to thank Robert Thayer for guidance on my project design and teaching me the importance of shaded landscape elements.





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# 1 Introduction

## **Purpose**

Congregation B'nai Israel Courtyard design and Landscape Master Plan is a project to enhance the landscape by adding symbolic elements that are significant in the spiritual culture. In addition, to provide direction in the development of a design plan to guide future improvements that creates a strong sense of spiritual space and identity.

As a Landscape Architecture Student with a spiritual background, it was my intent to participate in the design process and create design plans and concepts to support desires and ideas of the school and temple community. The planning concepts and design plans provided in this document will focus on creating a vibrant, safe, and aesthetically pleasing courtyard and landscape master plan for CBI that will support social and environmental interactions, while creating a unique and spiritual sense of place that highlights the importance of cultural symbolism and landscape elements.

## **Process**

The process incorporates site visits, meetings and interviews with Brookfield School, CBI Board, Maintenance, and Temple Users, and design reviews to provide feedback. Research will also be conducted for a better understanding of the site history, community context, cultural background and important landscapes, and design elements.





# 2 Community Context

## Congregation B'nai Israel History



“As Sacramento’s oldest Jewish congregation and its largest Reform synagogue, B’nai Israel is devoted to honoring the traditions of their heritage while creating a Jewish experience that is relevant to today’s society. They nurture spirituality and personal reflection through prayer, music, education and social action. B’nai Israel foster friendship and community with Shabbat dinners, ritual events and affinity groups that reflect our diversity.

Congregation B’nai Israel welcomes families and singles, young and old, gay and straight” (CBI 2008).

“The congregation of this temple has started over 150 years ago with a rich history filled with early settlers who practiced Judaism in their homes within Old Sacramento, and who made monumental decisions about whether to remain an Orthodox synagogue or to adopt the thinking and practices of the Reform movement. Although there was an event of destructive fires in the summer of 1999” (Panneton 2008), the history demonstrates that the Congregation B’nai Israel has stood strong and overcome their past.

“B’nai Israel’s history can be traced back to the fall of 1849, when shop owners and crafts people gathered to celebrate the High Holy Days in Old Sacramento, the supply base and transportation hub for the bustling mining towns of the Mother Lode. During the Gold Rush, there was an influx of Jews, most of who came from Europe. Among them was merchant Moses Hyman, who invited fellow Jews into his Front Street home, a building which also housed his jewelry store. Because of his role in organizing the Jews, Hyman became known as both a pioneer of California

Judaism and the father of Temple B'nai Israel. He was just one of many Jews who contributed their time and knowledge to enrich the Jewish community and society as a whole” (Panneton 2008).

“Later, help came from Albert Priest, a Jewish worshipper who is one of the co-founder of Congregation B'nai Israel, is believed to have been the ‘first Jewish settler in Sacramento, which was then known as New Helvetia. Not long after, Hyman and his fellow Jews bought an official house of worship from a Methodist Episcopal congregation and named it Congregation B'nai Israel, “Children of Israel.” The Jewish chapel was opened on September 2, 1852, at the corner of 7th and L Streets, making it the first congregationally owned synagogue west of the Mississippi River” (Panneton 2008).

“A fire swept through Sacramento just two months later, destroying the chapel as well as 85 percent of the city. Because an arbitrator ruled that Congregation B'nai Israel did not own the property on which the chapel stood, its members had to search for another location for their house of worship.

During the 1850s, Congregation B'nai Israel operated out of three homes on 5th Street. In 1858, Congregation B'nai Israel was on the move again, buying another place of worship from the Methodist Episcopalian group at 7th and L Streets, which had been built on the same property where the congregation’s first chapel was located.

The next few years brought more adverse circumstances. In 1861, the congregation lost another synagogue to fire. Then, during the following winter, flood waters caused costly and heartbreaking damage to the grave sites of loved ones in the Jewish cemetery. But once again, adversity brought strength and unity. Congregations mourned together and once again joined to form one congregation, B'nai Israel. And



it was not until 1864 that the congregation established its third permanent home in a former concert hall for the First Presbyterian Church on 6th Street” (Panneton 2008).

“With the arrival of Rabbi Brad Bloom at B'nai Israel, congregants became more involved in broadening their

knowledge of Judaism and alternative forms of worship and spirituality. This gave rise to another major improvement to the temple during the summer of 1998. The Opper Courtyard, built in a style reminiscent of Old Jerusalem, enhances the worship and reception space at the temple by providing an intimate, peaceful setting for services and life-cycle events” (Panneton 2008).

“Rabbi Brad Bloom, installed as Rabbi Frazin’s successor in 1995, provided comfort to distressed congregants during the morning of the fires, saying, “The feeling of our congregation is Congregants just hours after devastation, June’ 8, 1999 fire is shock and numbness. But we are going to move in a positive direction, rebuild and create a stronger community.” Undeterred by the fires, Shabbat services were held at the Sacramento Community Center on that very evening.

As the congregation welcomed the Jewish New Year on September 10, 1999, more than I,200 people gathered at the Convention Center. As the worshippers showed tickets to gain access to the room, they were greeted by a poster bearing the senti-



ment, “We are strong. We are proud. We are together.” This is the same sentiment that the early members of Congregation B’nai Israel felt in their hearts and souls when they joined in worship to welcome the new year in Old Sacramento 150 years ago” (Panneton 2008).

#### *CBI Staff and Board of Trustee*

“Rabbi Mona Alfi is a spiritual leader of B’nai Israel that has worked in merging religion and social action in her career path, with a vision for reaching out to the diverse Jewish community. Rabbi Alfi has served three years as the Executive Director of the Hillel at Davis and Sacramento, worked for five years as B’nai Israel’s assistant and associate rabbi, and spent four years as the chaplain for the California State Assembly. Through these positions, Rabbi Alfi was able to cultivate relationships with a variety of branches in the local Jewish community—young and old, gay and straight, single and married, interfaith and traditional families. As a rabbi, she has created study groups and sessions to foster meaningful communication as well as helped found the first Jewish preschool in Yolo County.

Carl K. Naluai, Jr. is the Chazzan of B’nai Israel. Having an amazing musical and educational career, Carl earned his doctorates in Practical Music with an emphasis

in theatrical conducting, as well as in Ethnomusicology specializing in the chanting traditions of the Middle East.

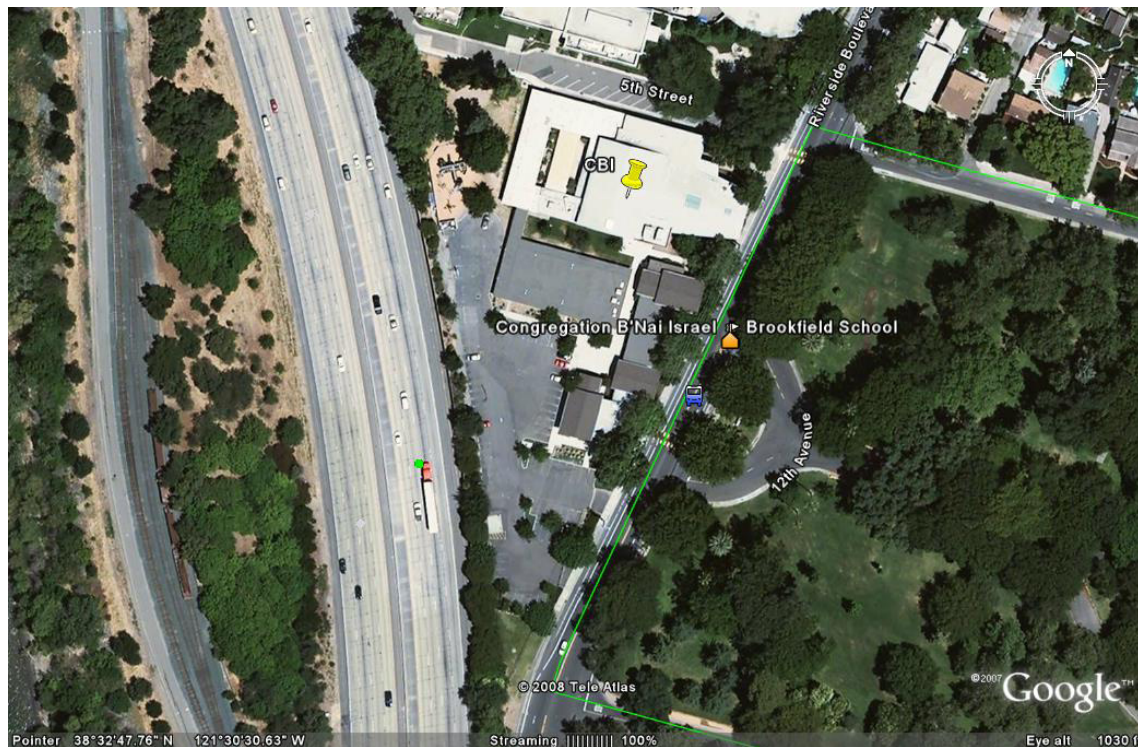
Sunny Romer is the Director of Education of B'nai Israel. She holds a Masters degree in Jewish Education and Jewish Communal Service. In May of 2001, Sunny was awarded an Honorary Doctorate in Jewish Religious Education and became one of the first Jewish Educators to receive this degree.

Mandy Greene has been the Temple Administrator since 1994. He holds a Masters degree in Public Administration and in Jewish Communal Service.

Jeremy Hollis is the President in the Board of Trustee for the Congregation B'nai Israel" (CBI 2008).

## Location and Orientation

Congregation B'nai Israel is located on Riverside Boulevard, adjacent to many important places and roads that make this location very unique.





*Interstate 5 Highway*

Located west of CBI, the Interstate 5 highway is one of the busiest, and arguably the most important highway along the west coast of North America. Millions of people travel on the Interstate 5 as part of their daily transportation route. The Interstate 5 facilitates easy automotive travel along the west coast connecting from Vancouver, Canada to Tijuana, Mexico, running through the states of Washington, Oregon, and California.

*William Land Park*

Located east of CBI, Land Park is the major city park in Sacramento, California. Several city attractions located within the park is the Sacramento Zoo, Fairytale Town, The William Land Golf Course, and Funderland. Having Land Park across the street from the Congregation B'nai Israel is a benefit for Brookfield School, especially with large, open space areas for children to run and play.

*Wastewater Treatment Plant*

Located north of CBI, the Wastewater Treatment Plant treats polluted water through a treatment process of screening, pumping, aerating, removing sludge, removing scum, and killing bacteria to help keep our waterways clean.

**Brookfield School**

“Brookfield School is a small, independent, co-educational, college preparatory school serving kindergarten through eighth grades. The school has been operating since 1962 with classes held from Monday through Friday on regular school hours. The typical class size is 18 students with approximately 150 students in total. Facility spaces are leased from the Congregation B'nai Israel with access to Land Park for recreational activities. The school is best known for its strong academic curriculum and personal attention. Brookfield's primary purpose is for students to master the core curriculum. This provides a solid foundation for high school, college and post-graduate studies. We also want our students prepared to become independent, productive citizens and enable them to be leaders in their chosen professions” (Brookfield 2008).

“To achieve these goals, academic standards are high, the curriculum content is rich and classes are small. Teachers are selected for their dedication to teaching an accelerated program and interest in providing individual attention and guidance. Students are selected for their positive attitude toward learning, as well as their expected ability to rise to the high standards and expectations for achievement set by Brookfield” (Brookfield 2008).

“The School has no religious affiliation or instruction and children of many different backgrounds attend. The School is co-educational and welcomes students of all races, religions, and national or ethnic origins. Classes are small and the overall size of the school ensures the personal attention that encourages student achievement and fosters responsible behavior” (Brookfield 2008).





# 3 Site Analysis

## Existing Conditions

The Congregation B'nai Israel is a beautiful site with many large, mature trees and vegetation along the site that gives privacy and peace. The structures are in great condition, with the exception of several newer facilities that are in excellent condition. Majority of the landscapes are natives to either California or the Middle East in the Mediterranean climate. There are many areas on-



site that have high potential in creating an open space for social and environmental interactions, vibrant outdoor events, and a place for meditation. Although the site is quite wonderful and unique, there are some issues that should be taken into consideration for improvements.

## Environmental Setting

### *Noise*

Noise pollution is a displeasing or created sound that disrupts activity or happiness in everyday life. The most common form of noise pollution is from transportation motor vehicles. Although there is a sound wall from the freeway and some tree and vegetation establishments along the property boundary, the main sources of noise coming into the CBI property are the Interstate 5 highway and automotive transportations along Riverside Boulevard.

With noise pollution, it comes with causes and effects of hearing damage and education linkages. “According to the investigations of Cohen and colleagues, reading and math scores of third grade students in noise abated classrooms were higher than those in classrooms without that same quality” (Nunez 1998).

“More recently, Green and co-workers of New York University Institute of Environmental Medicine found that for all elementary schools in areas of Brooklyn and Queens that “an additional 3.6% of the student in the noisiest schools read at least one year below grade level”. The study remarked, “the dose response relationship indicated that the percent reading below grade level increased as noise level increased” (Nunez 1998).

### *Pollution*

Similar to noise pollution, the main sources are the Interstate 5 highway, Riverside Boulevard, and motor vehicles in the parking lot. When the air is polluted, people breathe in particles and harmful gases that can be detrimental to their overall health. Not only is air pollution harmful to the human health, but it can also damage the environment and small living organisms. “Air pollution can cause coughing, the burning of eyes, and other breathing problems that is dangerous. Children are at a greater risk because their lungs are still growing and are not fully developed. And with children playing outside and being active, they tend to breathe in more outdoor air that is polluted” (UCAR 2006).

### *Wind*

The wind direction on the CBI property is from the Northwest. Because the Interstate 5 highway is on the west and the wind is coming from the highway, the wind may pick up harmful particles that add onto the air pollution, which can be harmful to the environment and human health. The wind is also responsible for the redistribution of heat. On a hot summer afternoon, with a slight breeze, the air temperature that we feel is intensified by the wind as it distributes heat throughout the area.

### *Light*

Light from the sun's rays can be beautiful on a nice, warm day. But when there is no shade and the sun is shining directly above us, people may feel over-

whelmed by the hot air temperature that is created. The major area on-site with the largest open area with minimal shading is the heat island located in the center of the parking lot. As the sun moves across the sky during the day, the parking lot is constantly generating a high air temperature that can be hazardous to children and adults. The lighting in the proposed courtyard area is a tricky one. Because there is an overhang on the north side of the Kandel Building, a lot of shade is generated into the courtyard area, leaving the open space cold and shady majority of the time.

## Opportunity and Constraints

### *Opportunity*



The South Corner of the property is currently isolated with a protected gate, a highway sound wall, and small shrubs. The landscape is well maintained with healthy turf grass and small vegetations that show little or no signs of sickness. The drainage system is working great with no visible drainage issues. Although the summer camp held by CBI may use this area, the space is great for an organic vegetable garden.

Organic gardens are wonderful uses of space that is fun, educational, healthy, and environmental friendly.

As we move into the parking lot area, there is a massive heat island that can be potentially dangerous because of its increased air temperature and large open space. With large areas of the pavement absorbing the heat, adding large tree canopies and vegetation can lower the air temperature, increase the shading coverage, and make the parking lot more aesthetically pleasing. In addition, having a cooler parking lot can reduce the ventilating costs within the building facilities.



The Proposed Courtyard Area is currently a sloped lawn with three moderately sized trees with drainage issues along the south side. The overhang on the adjacent building, Kandel Building, creates excess shading that can result in low sunlight into the open space. The proposed location has high potential for outdoor open space for a wide variety of uses. The area is located in the center of the building properties that is wonderful for providing a connection between the spaces and unifying the place. With many groups of community users, this space has great potential for a small courtyard and seating section for kids to eat lunch and a quieter zone for outdoor socializing events. The landscape would focus on an Israeli theme to capture the cultural landscape importance with low maintenance and aesthetic values. CBI has adopted a sustainability plan, which makes the use of Mediterranean plants logical for their drought tolerance in addition to their relationship to the Bible and modern Israel. Currently, CBI has an existing Opper Courtyard that has a quasi-biblical theme. Because the proposed courtyard area is adjacent to the Temple entrance, it is important to use Jerusalem stone and certain materials to set an existing precedent for making biblical and Israeli connections in the design, which can truly define the character of the place.



### *Constraints*

There are two major constraints that are difficult to design around—existing easement and the Interstate 5 Highway. The existing easement comes from the Waste-water Treatment Plant, Pump Station #2. With a seven-foot diameter sewer line that is only four foot below the surface, this makes designing more complicated. The sewer line is only located under the playground site. Adjacent to the sewer line is a 42-inch water main that runs beneath the playground, through the kitchen and Kandel Building, and slopes down toward the street with a higher elevation at the kitchen (west). Having an existing easement will definitely limit certain design elements in the open space. Another existing constraint factor is the Interstate 5 Highway. The highway produces constant noise and pollution that is environmentally harmful and can affect human health. With the freeway emitting particles that may be detrimental, the design would have to work around the limitation in reducing noise and pollution.



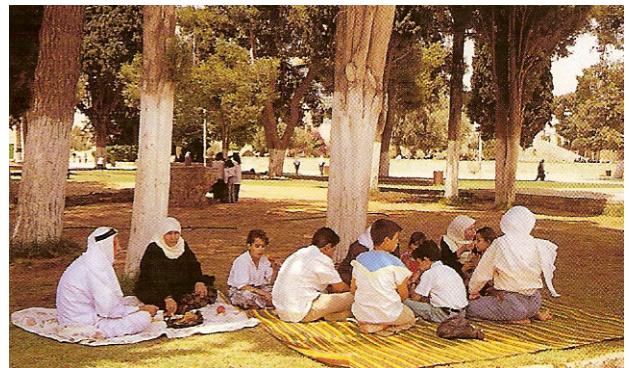
# 4 Cultural Research

## Jewish Cultural Context

“B’nai Israel is Sacramento’s oldest Jewish congregation and largest Reform synagogue with a devotion to honoring traditional heritage. B’nai Israel helps people grow spiritually with personal reflection through prayer, music, education and social action. They hold events that encourage friendships and community growth with social events that reflects diversity by welcoming families, singles, young and old, gay and straight members” (CBI 2008).

The B’nai Israel site is used for spiritual, educational, and communal purposes. The Temple holds its spiritual services every weekend, while leasing part of its facilities to Brookfield School for educational purposes. Aside from Brookfield using the site for education, CBI also uses this site for summer camps and other fun, active, and educational events. Because there is a large Jewish community using the Temple, using Israeli landscape elements would define the space by enhancing its cultural character.

The Jewish religion is built on a yearly lunar cycle, with three major holidays on full moons. Jewish people are very aware of the seasons in their holiday celebrations. When Jews lived far away from Israel, they have always kept in touch with the weather and seasons in the land of Israel. Although California is far away from Israel, many Jewish people are very fortunate to share similar climatic patterns and plant plants that are native to Israel. A landscape that reflects the character and plants of Israel adds not only to their educational experiences, but their spiritual experiences as well.



“ The landscape language of Israel is spoken in the material elements of stone, water, and plants, the construction of space, and a distinctive culture of use. These are the vocabulary of the Israeli landscape. Speaking of them, an undeniable Israeli garden is emerging. It speaks through the powerful and subtle use of stone, the sparing yet dramatic use of water, a rich palette of plants, a sensitivity to scale that addresses the proximate and distant, and is subject to intense use.”

**–Kenneth Helphand**





## Israeli Landscape Elements

### *Landscape Intro*

Israeli gardens play a historic role in shaping modern design. Geographically and culturally speaking, it is grounded in the Mediterranean and Middle East. The vocabulary of design in terms of Israeli gardens is very different and unique. Kenneth Helphand addresses the components of stone, water, plants, space, and use to understand their meanings and use in design.

“The initiation of the garden (Gan) and landscapes (Nof) were mentioned in the first book in the Torah with the story of creation and the first home of human kind—Garden of Eden” (Helphand 2002).

“The Lord God planted a garden in Eden, in the east, and placed there a man whom He formed. And from the ground the Lord God caused to grow every tree that was pleasing to the sight and good for food...” –Genesis 2:8



(Helphand 2002).

“The beautiful garden shows its appreciation of nature with elements that were formed by nature—stone, water, and plants. The gan, is not limited to a simple garden, but expands into outdoor places at any scale. From houses and apartments having a gan, to a neighborhood park being a gan, as well as national parks”

### *Types of Israeli Gardens*

“The garden is a metaphor of landscape architecture with a full range of functions, themes, and ideas. Israeli garden that explore, reveal, and celebrate both natural and cultural history. There are those that commemorate and memorialize, that attempt to provide a space for the deepest of emotions. There are those that create a frame for and give form to ideas” (Helphand 2002).

“There are gardens that are integral with architecture and the city. There are gardens that are contemplative and are centers of activity. There are gardens that are communities, that people live in, that enrich the commonplace occurrences of everyday life. The interaction of people and place is embodied in the creation of landscape. Landscape encompasses a broad ideal. The interaction between people and the physical environment has become a cultural phenomenon that has evolved through the centuries” (Helphand 2002). As Jerusalem architect David Reznik expresses, “landscape is the culture of the environment where environment is the way of life of the people.”

### *Mediterranean Environment*

“Two seasons, a cool wet “European” winter and a hot dry “African” summer, characterize the Mediterranean environment. Mediterranean vegetations are distinguished by its evergreen hardwoods, sclerophyl forests, and little ground vegetation. Oaks and pines are part of the forest mix, but an important species is the olive. Once destroyed, many species are non-regenerative, but the olive is able to survive after much abuse and live for centuries. Similar to the environment in California, Mediterranean climates have hot dry summers and cold winter conditions with a variety of natural landscape formations of cliffs, canyons, and plains. Designs need to respond to the extreme Mediterranean conditions such as heat, nighttime cold, glare, dryness, and the unpredictable” (Helphand 2002).

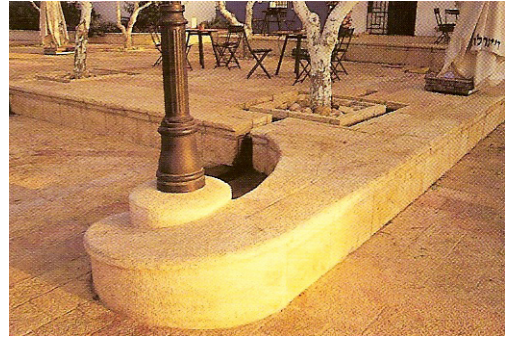


### *Stone*

“In Israel, its landscape is materially rich and symbolic. Stone is the primary material and foundation of a place. Stones mean connection, solidity, and permanence. An American writer, Herman Melville writes in his journal that the landscapes in Israel in dominated by stone. “Stony mountains, stony homes, and stony tombs. Stones to the right and stones to the left—everywhere.” The ancient landscapes of Israel had altars, foundations, tombs, and building materials made of stones; this gives Israel their distinct character.

Limestone is the basic building block. Kurkar is a type of sandstone that is

easy to cut and shape. Basalt is used in areas with volcanic history. Stones have rich textures and qualities. They range in color and palette. In Israel, the most common are the tans, rusts, and brown of limestone. Because of its strong, textured surface, we are naturally attracted to it. The surface can range in a variety of levels quality as well. Even leket is a rough stone, typically joined with mortar on the inside. Chami is a cut stone with a rough surface. Tubze is the roughest surface; taltish and mesamsam are the most delicate” (Helphand 2002).



“Although stones are used in a variety of ways in the landscape, it can bring unity among spaces and tie different elements together. Stone functions as surface, support, boundary, and marker, and symbolically. As a surface, it is the ground and pavement; as a supportive element, it is the structure of walls and terraces; as a boundary, it acts as an edge; as a marker, it is a focus of attention.

The design vocabulary and the form are deceptively simple but strong. Stone is the basic element. Large stones are used as boundaries, marking roadways, points of entry, and acts as a barrier for automobiles. Smaller stones are used to create walls of different heights and seating areas. These materials present great challenges, as well as opportunities, for developing a language around their distinctive properties and characteristics” (Helphand 2002).



### *Water*

“Similar to California, Israel, being a Mediterranean environment, has drought summers, therefore, water is used sparingly. In Israel, water is used to intensify the character of its landscape. Water systems are also an essen-





tial part of the nation's history and heritage. Many ancient systems have been restored and made accessible to open modern experiences. The scarcity of water adds to its significance" (Helphand 2002).

### *Plants*

"In designed landscapes, plants moderate climate and shape space. Plants are the essence of nature with its own history and dimension. Olives, oaks, pines, eucalyptus, palms, and oranges all have a role in forming character in Israel. The Bible describes the land of Israel through its plants. When Moses's spies returned from the land of Canaan with clusters of grapes, pomegranates, and figs as evidence of the fertility of the land, they explained that the country was filled with milk and honey. Deuteronomy 8:7-8 describes, "a good land, a land with streams and springs and fountains issuing from the plain and hill; a land of wheat and barley, of vines, figs, and pomegranates, a land of olive trees and honey." (Helphand 2002). Pomegranates are considered especially noteworthy; each fruit is considered to represent the 613 mitzvot (commandments) of the Torah. Jewish ritual plants of importance include Myrtle (*Myrtus communis*), not the dwarf one, etrog, apples, and various fruits and nuts. These plants are associated with the land of Israel and are appreciated for their symbolic values as well as their productive worth.



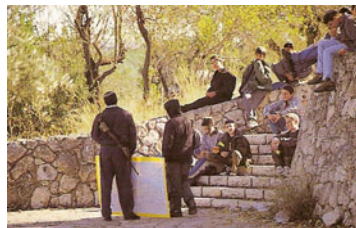
"Trees are filled with meaning. Certain trees portray an Israeli landscape image. There are trees that have a sacred status. Long-lived trees symbolize strength, immortality, and continuity: oak, cypress, carob, olive, and fig. Olives, being the symbol of peace, is now politically identified with the Palestinians and Israeli-Arab population. There

are plants associated with the Bible and Jewish ritual. Plants are part of a collective environment characterized by distinctive plant communities and associations.

The main plant communities of Israel are Mediterranean and desert. With climatic influences, the orientation of the natural landscapes has created complex vegetative textiles that produce ideological foundation and associations within Israel. Oasis, park, bustan, pardes, forest, and campuses are different types of landscapes with diversified settings and experiences” (Helphand 2002).

### *Culture of Use*

“It is very difficult to understand the landscapes of Israel without understanding the Israeli way of life. There are a variety of aspects that are characteristic of the Mediterranean and Middle East and the environment virtually sets the parameter of possibilities. Summer is hot and dry, while the winters are cold and moist, which makes it comfortable to live out-of-doors by walking and sitting outside for most parts of the year” (Helphand 2002).



## **Other Landscape Features and Studies**

### *Organic Garden*

Good tasting, healthy food, and environmental benefits are just several factors that make an organic garden attractive. Organic garden is a garden that does not use harmful chemicals and excessive fertilizers that creates wastes and environmental pollution to grow food. An organic garden is a method to grow fresh and tasty fruits and vegetables that don't rely on artificial flavors, but allows us to discover and experience the real and sweet crops.



The CBI community has proposed a raised-bed organic garden that has yet to be placed into a design plan or implementation. Because there is high potential

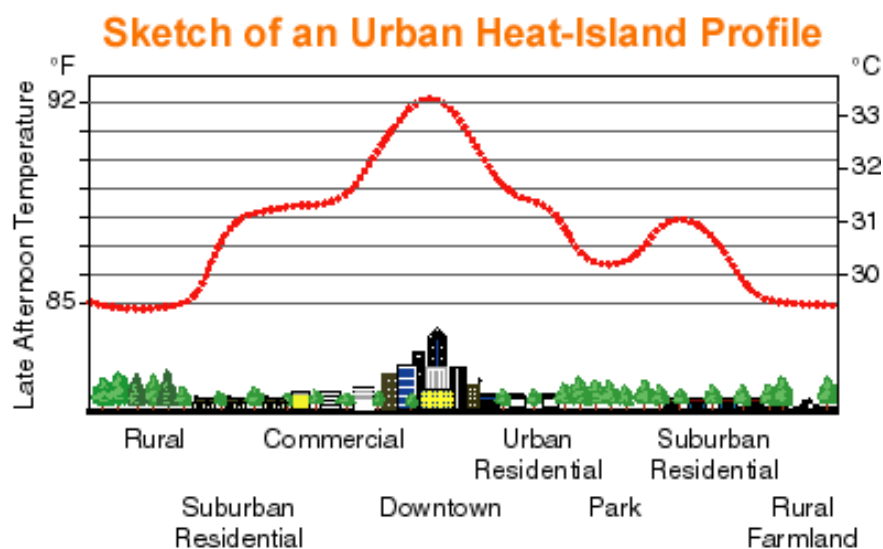
on the south corner of the CBI property, creating an organic fruit and vegetable garden will utilize the turf area and benefit CBI, Brookfield, as well as the community.



### *Heat Island Effect*

Cities and areas predominant with pavement made of dark materials tend to absorb the sun's heat rays and cause the air temperature to rise, instead of reflecting them away. Without vegetation for shade, these areas result in Heat Islands. If we take our focus into the parking lot of CBI, we notice from the aerial view that there is a significant heat island in the center of the lot. This heat island can be dangerous for people, especially children, if the temperature is extremely high on a summer afternoon because of the increased air temperature. In this case, the "extra heat is caused by several sources: paved areas and dark pavement surfaces absorb more sunlight, motor vehicles produce heat that is slowly removed from the area, and the loss of vegetation eliminates natural cooling from evapotranspiration and shading" (Reyes 2007). While the parking lot is a heat sink, the danger comes more from the poorly designed circulation. A redesign of the parking lot, would improve traffic flow, and could add shade by providing landscaping.

To reduce the extra energy produced by the sources and create a more comfortable condition, using proper materials and design standards are vital to reach this goal. Some examples of these are planting trees and vegetation, and using cool pavements, which can all create a more comfortable condition. The techniques for lowering temperatures can benefit CBI and Brookfield School by saving money for



air conditioning bills and making the place more safe and pedestrian friendly.

Providing more vegetative cover and planting trees and shrubs is a very effective way of reducing the heat island effect. “It is estimated that tree and vegetative shading can minimize a building’s cooling energy consumption by up to 25% per year” (Reyes 2007). In addition to shading, vegetative cover can also cool the air through evapotranspiration. “Shade reduces the amount of open, radiated surfaces and keeps them cool. Shaded areas may be 9 to 36°F (5 to 20°F) cooler than areas of non-shaded surfaces and can also reduce the heat transfer to the surrounding area” (U.S.EPA 2008). Other benefit of planting trees and vegetation, great for CBI, is a reduction of air pollution to improve air quality. “Another source to lower surface temperatures is to use cool pavement or permeable concrete and porous asphalt to reduce the heat island effect. Lighter color pavements have a higher solar reflectivity that is cooler in the sun and porous or permeable pavements benefit from the cooling effect of evaporation” (Reyes 2007). These are all options for reducing heat islands, but some maybe not practical for CBI.

“The Urban Heat Island Group, a division of the United States Government’s Lawrence Berkeley Laboratory, has done studies that show remarkable differences in temperature between standard blacktop paving surfaces and newly-developed reflective pavements. In one study, an area with blacktop paving surface displayed a scorching 123°F on a bright sunny day, while a section of reflective asphalt in the same parking lot was a relatively cool at 88°F, with a overall difference of 35 degrees! The blacktop had a reflectivity of only 5%, while the new pavement reflected 51% of incoming sunlight” (Johnson 2000).

“Another example of cooling effect provided by tree and vegetation shade is from a National Public Radio special on heat islands featuring a scientist taking heat readings in a parking lot. In his study, the non-shaded areas of the lot reached a blistering 108°F, while a patch of shaded area underneath a tree was only 86°F. Even after the sun went down, the shady spot was many degrees cooler than the surrounding area” (Johnson 2000).





# 5 Interviews

## Brookfield School

Brookfield School is one of the main users of the facilities and property, and hearing feedback from their Principal and Teachers are very important. The main questions I asked Principal Jo were, “What do you want to see different in the landscape? What is your ‘wish list’ for the landscape master plan and the proposed courtyard design?” As Jo answers, she gave a lot of great ideas that would be beneficial to both Brookfield and CBI. Some of her main concerns were to design for more paved and built in seating for children during lunch and play hours, to choose plants that attract beneficial insects and are pedestrian friendly, to look at drainage issues that is currently affecting the landscape, and to design for a tree canopy buffer along the sound wall to block noise and pollution. Many of Principal Jo’s feedback were great for creating a preliminary design, but the teacher’s desires and concerns were not included. In the final wish list, it comprises of the Principal and Teacher’s ideas.

### Brookfield School “Wish List”

1. Shaded eating area in the grassy area near the kitchen. It should be designed by easy maintenance and maximize seating.
2. A decomposed granite running track that circles the perimeter of the yard.
3. Adequate drainage for the lawns.
4. Re-sod or reconsider groundcover behind the play structure.
5. Treat and cure the diseased trees near the play structure (or remove them and plant new shade trees).
6. Create a new smaller eating area for older students adjacent to the playground.
7. Provide additional large storage for equipment that can be locked.
8. Plant sound barrier and pollution absorbing trees along the freeway bern.

After CBI reviewed the list, they have concluded that they approve all except a design of a running track and label the storage shed “possible storage shed.”

## CBI President Board of Trustee– Jeremy Hollis

1. What are some of your ideas/desires for the landscape master plan and the proposed courtyard area? I very much like your courtyard concept. *“I do not have pre-conceived ideas regarding the entire master plan - that is why your services/ideas are much appreciated.”*

2. The proposed courtyard area is located between the Kandel Building and the Temple. This space has great potential for a small courtyard for kids to eat lunch and for outdoor socializing events. The location of this courtyard is wonderful because it is right in the center of most of the facilities. The design plan will aim for ease of maintenance, low-cost, with an Israeli theme that has plant species native to the Middle East. Can you take a look at my preliminary designs and give me any feedback you have? *“I like the plan very much- I believe there is a slope in this area, so I don't know how this is dealt with. Also for the water feature, I am not sure how that is created.”*

3. Is there any possibility of removing the overhang on the north side of the Kandel Building? The overhang is not needed for shade and give more area for the courtyard area to work with. *“I do not think removing the overhang should be in our immediate plans, due to the cost.”*

4. I would like to propose a design plan for an organic vegetable garden on the south end of the property on the turfgrass area. Do you have any thoughts on that? Mandy mentioned to me that the summer camp might be using that area. *“This is an idea I have heard before; I think it is very possible to locate the vegetable garden there.”*

5. There is a huge heat island in the center of the parking lot. What are your thoughts on that? *“On busy days, Sundays, cars park in the area I believe you are talking about. We need the space for cars.”*

6. Is there anything else you would like to add about the site that I am missing? Have you addressed the playground area? *“Immediately to the right of the main entrance to the Sanctuary we need plantings to create a more welcoming entrance- any thoughts from you would be helpful.”*

## CBI Maintenance - Mandy Greene

Although there was no major problematic maintenance on the landscape, there were some issues that stand out. Starting from the north and working down the site, the secondary entrance to the temple has a large tree that fell over during a windy storm this past winter. The tree stump and several large cuttings are currently on the site with an area that has potential for landscaping. Lighting along the secondary entrance walkway is also a great option in addition to landscaping with trees and vegetation. The secondary entrance is the best entrance for handicap accessibility and is ADA compliant.

The current large piping(s) located throughout the site are designated as the water main and backflow prevention pipes. Because it is the water main, there may be fire regulation codes that prohibit of growing shrubs to cover them up.



Other issues on the property are the sick and dying trees located throughout the site. There are several Olive trees located in the main courtyard that is either diseased or is dying. Another tree having similar symptoms is the peach tree located in the center of the proposed courtyard area. The great feature about the landscapes on the site is that they are mostly natives to the Middle East and the Mediterranean climate; therefore there is ease in the maintenance part. Overall, some vegetation and trees create some problem, but adds beauty to the place. Aside from landscape, drainage is problematic in certain areas. The south side of the proposed courtyard area has drainage issues with a dieback of turfgrass. In addition, the concrete walkway by the playground has repeated flooding when the surrounding watering systems turn on. The flooding is the result of a pipeline that was accidentally cut when installing the playground.



# 6 Design Concept

## Objectives

1. Develop a sustainable design that would truly define the character of the place and reinforces the unique history.
2. Design for an Israeli theme courtyard that enhances vibrant and social interaction, and create a sense of community.
3. Create space for high utility and develop a Mediterranean landscape palette that is both low in maintenance and drought tolerant.
4. Improve the air quality and temperature by proposing shade vegetation and permeable pavement materials in the heat island parking lot.

## The Courtyard Design



The concept of the design is to develop a cultural character of the place that enhances social interactions and connections to unify the place. The proposed courtyard consists of three sections: quiet, transition, and noisy. The quiet zone is designated for the section closest to the temple entrance as an area for socializing and meditating. The transition zone is where the quiet zone change to the noisy zone, which is designated for seating and eating area for temple activities and for Brookfield School's lunch period. The design plan will aim for ease of maintenance, low-cost, with an Israeli theme that has plant species native to the Middle East as well as reinforce the history of the congregation.

### *Elements of the Courtyard*

Referencing back to the research section, the main elements included in the design are stone, landscape, space, culture, and water. Stone is used for its importance in the Jewish Culture and its beautiful textures, colors, and shapes. Landscape plant species are chosen for its symbolic meanings.

### **Materials and Recommended Plants**

Jerusalem stone is a symbolic material for enhancing a biblical and Israeli connection in the design. The texture should be smooth to be ADA compliant and for safety reasons. Color and texture should be decided by the Congregation B'nai Israel. As for plant types, the palette should be very symbolic and distinct to the Spiritual and Jewish culture. Again, as Deuteronomy 8:7-8 describes, “a good land, a land with streams and springs and fountains issuing from the plain and hill; a land of wheat and barley, of vines, figs, and pomegranates, a land of olive trees and honey.” (Helphand 2002). Pomegranates are considered very noteworthy and other important Jewish plants Myrtle (*Myrtus communis*), not the dwarf one, etrog, apples, and various fruits like citrus and nuts. In addition, long-lived trees such as oak, cypress, carob, olive symbolize strength, immortality, and continuity for the culture.





### Courtyard Design I

This courtyard design was the first preliminary design for the proposed courtyard area. The design focused on maximizing seating with a quiet zone, transition zone, and a noisy zone and did not focus solving the shade issue with the overhang on the Kandel Building. Trees were placed for shade during hot summer days and to block noise, to give a more quiet space near the Temple entrance. The water feature was also design to block loud noises coming from the freeway and childrens playground, as well as for aesthetics. The tables and umbrellas are designated for an outdoor eating area for Brookfield School during lunch period and for the Temple during socializing events.











### Courtyard Design I - Details

The figures shown on this page is an overview of the courtyard design with landscape elements such as stone pavement, water feature, Mediterranean-climate plants, and the use of space in the Israeli culture. The stone pavement should be a smooth finish to be ADA compliant, and for safety reasons.









## Courtyard Design II

When designing the courtyard, the focus was to create an outdoor space that has high utility to maximize usage of the central, yet unifying area. In the design shown in the picture above, there are three zones that make the use of space distinctive. The right side of the design, closest to the Temple entrance, is a more quiet area to accommodate spiritual uses such as for socializing events and meditation. Large tree canopies and a designated area for either a water feature or sculpture are great elements to include when making a space more calm and personal. In contrast, the left (west) side is focused on accommodating larger crowds for, again, socializing events, outdoor dining, and gathering area. There are a variety of seating choices and planting selection to bring out the cultural aspects of the Temple. Tables and chairs with umbrellas is great for outdoor eating for both Brookfield School and the Temple. Shaded plants are grown on the south side of the courtyard to help manage the current drainage issues with open soil and loss of turfgrass. To help maintain a clean environment, trash receptacles are in place to encourage cleanliness. The picture on the right is the courtyard view from the west side, showing a more detailed view of the eating area.







## Courtyard Design II - Overview Details

The figure on the top right shows a perspective looking towards the East side of the proposed courtyard. The bottom right picture is a perspective looking the opposite way, through the entire courtyard. The bottom model is a birds eye view of over the courtyard area.





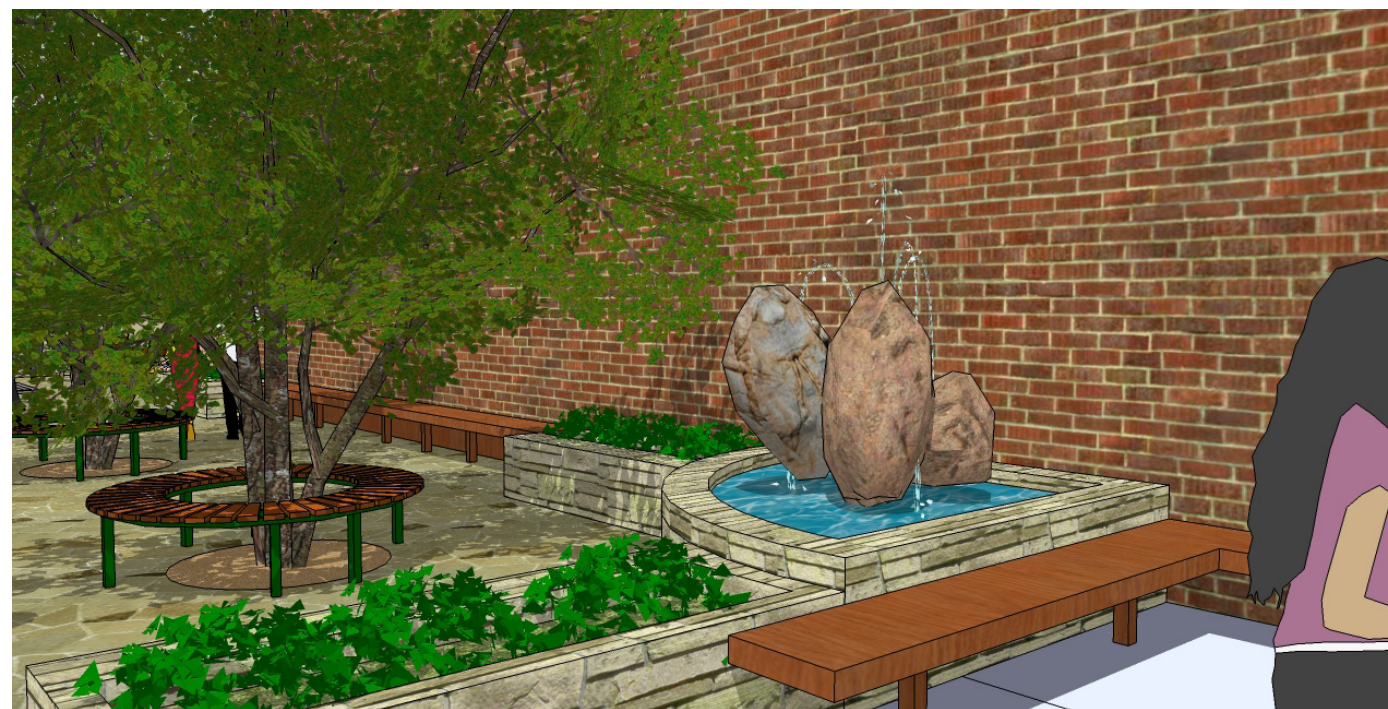






## Courtyard Design II - Details

The following figures are details of courtyard elements. The designated area next to the Temple entrance is great for a small meditative area with a calm and soothing environment. Large trees are a great landscape element that can act as a sound barrier from noisy areas. The trees can also keep the area cooler during a hot summer afternoon. Although there is a water feature and rock sculpture present in the design, the fountain is optional. Adding a water feature creates a more soothing space for meditation, keep the place cooler, and people can interact with the element. The bottom figure shows a variety of seating elements that is provided for a diversified crowd.







## Conceptual Landscape Master Plan

The landscape master plan will focus on enhancing several landscape features: designing an organic garden to promote education and environmental benefits, growing more trees with supplemental permeable parking pavement to improve the heat island effect, developing a Mediterranean plant palette that is drought and traffic tolerant, low in maintenance, and can withstand pollution.

### *Landscape Elements*

The main element included in the landscape master plan are plants. Planting more plants would help prevent the noise and pollution that is entering onto the site and can provide more shade for warm summer afternoons. Planting a second layer of shrubs and trees in the parking lot with large canopies would benefit CBI by having cheaper ventilation costs because of the lowered temperature from tree shading and making the place look more aesthetically pleasing.

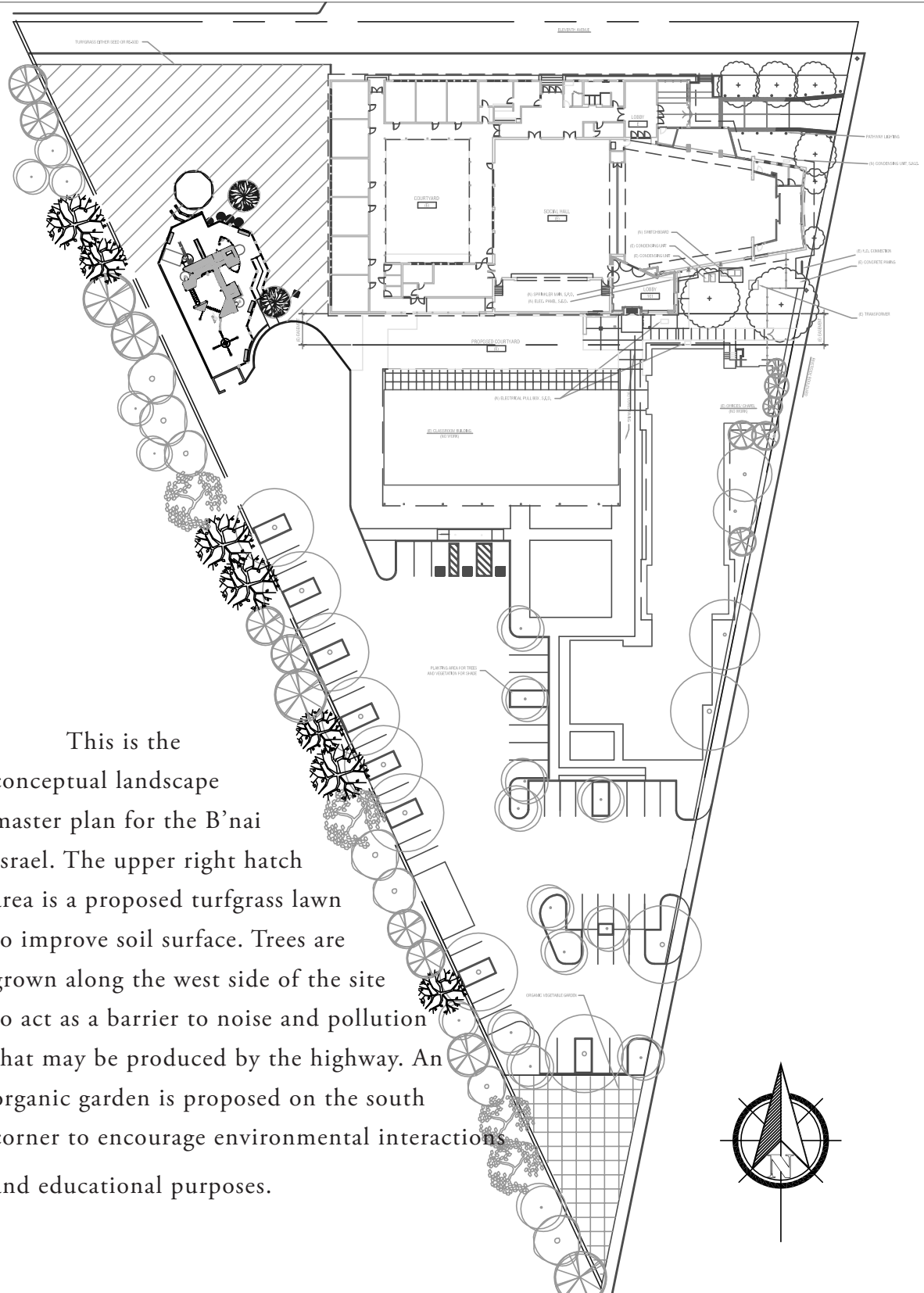
The playground area should establish a new lawn with a turfgrass cultivar that can tolerate high levels of traffic wear and compaction. The turfgrass will help make the place cooler and protect the current top soil from being eroded away.

The proposed organic vegetable garden can help provide food for the Temple as well as educate children about healthy eating habits. The proposed location is on the south corner of the site. This area is great because it is protected with a gate, has a working irrigation system, and is partially isolated.

## Materials and Recommended Plants

Some of the trees that would be great for the parking lot are oak, cypress, carob, olive, and fig. Redwoods are great for absorbing and tolerating pollution, but it does not have a high significance in the cultural context. Oaks are great because they are natives and can grow to have a large canopy to provide a enormous amount of shade for the parking lot. In addition, they are also excellent for enhancing wildlife habitats.

## Conceptual Landscape Master Plan



This is the conceptual landscape master plan for the B'nai Israel. The upper right hatch area is a proposed turfgrass lawn to improve soil surface. Trees are grown along the west side of the site to act as a barrier to noise and pollution that may be produced by the highway. An organic garden is proposed on the south corner to encourage environmental interactions and educational purposes.

# 7 Conclusion

Congregation B'nai Israel's rich history and cultural context gives the site a unique challenge when it comes to developing a guidelines and design plans. Although there is much research required, the search is worth the discovery of finding important Israeli elements to input onto designs. While many Jewish people are not constantly going back to Israel or the Middle East for their cultural ties, creating a landscape design that can define the character of the place and culture can definitely help people experience their cultural landscapes again.





# Glossary

**Bustan** – fruit orchard or garden

**Chanukkah** – a Jewish holiday, also known as the Festival of lights. Chanukah is a Hebrew word meaning “dedication”. It is also spelled Chanuka, Chanukkah, Hannukah or Hanukkah. The first evening of Chanukah (called Erev Chanukah) starts after the sunset of the 24th day of the Hebrew month of Kislev.

**Etrog** (Hebrew) — A yellow citrus fruit similar in appearance to a lemon, identified as “the fruit of a goodly tree,” carried in procession during the celebration of Sukkot (Feast of Tabernacle). According to legend, the etrog, also called “the apple of Paradise,” may have been the forbidden fruit eaten by Adam in the Garden of Eden.

**Judaism** – the religion of the Jewish people, the monotheistic religion of the Jews having its spiritual and ethical principles embodied chiefly in the Torah and in the Talmud

**Menorah** – a candelabrum with seven candles that is displayed in Jewish synagogues. The original design for the menorah is in the Torah, and it was used in rituals in the tabernacle (portable sanctuary) and later the Holy Temple in Jerusalem. Since the destruction of the Temple in Jerusalem, it has had no formal role in Jewish prayer services or rituals. The presence of a menorah in some synagogues is purely symbolic.

**Mitzvot** – Literally translated, a mitzvah is a commandment. This word is often incorrectly used loosely to mean “good deed.” The Torah contains at least 613 individual commandments for Am Yisrael. The purpose of a mitzvah is to help the individual and the nation come closer to G-d and to holiness.

**Orthodox** – pertaining to Judaism

**Shabbat** – A day of rest. The Hebrew word Shabbat is best translated as “period of rest,” and is the basis of the English words “Sabbath” and “sabbatical.” Like all days of the Jewish calendar, Shabbat begins at sundown. Technically, from sundown Friday evening until three stars are visible in a single glance on Saturday night, the Jewish nation is at rest spiritually after the week’s labors.

**Synagogue** – the place of worship for a Jewish Congregation



**Tikkun olam** – a Hebrew phrase that means, “repairing the world” or “perfecting the world”

**Torah** – The word “Torah” comes from the Hebrew root Hey|Reish|Hey, which means, “to teach.” The Torah contains the basis and history of Judaism and from it are derived all of the laws that Jews follow today. The Torah is comprised of two components: The Written Torah and the Oral Torah. According to Jewish learning, they were both delivered to Moses at Mount Sinai. The Written Torah is comprised of the Five Books of Moses. The Oral Torah, which appears today in Judaism as the Mishna and Talmud, explains the Written Torah.

# References

Brookfield School. About Us: Brookfield at a Glance & Philosophy. 22 March 2008.

< <http://www.brookfieldschool.org/About%20Us.htm>>

College of Charleston. "Glossary." Jewish Heritage Collection. 23 May 2008.

< <http://www.cofc.edu/~jhc/stories/glossary.html>>

Congregation B'nai Israel. About: Our Staff and Board of Trustee. 22 March 2008.

< <http://www.bnais.com/about.cfm>>

Engler, Mira. 1999. "A Review: Making Peace with the Land by Shlomo Aronson." Land Forum O2: The International Review of Landscape Architecture Garden Art Environmental Planning and Urban Design. (P. 28-32). Berkeley, CA: Palace Press International.

Gonsalves, Jo. 2008. Interview with Fanny Yu. April 14, 2008.

Greene, Mandell. 2008. Interview with Fanny Yu. May 27, 2008.

Heat Island Group. 2008. Learn: High Temperatures. 26 May 2008. < <http://eetd.lbl.gov/HeatIsland/HighTemps/>>

Helphand, Kenneth. 2002. Dreaming Gardens: Landscape Architecture and the Making of Modern Israel. Sante Fe, New Mexico: Virginia Press.

Hepper, F. Nigel. 1992. Illustrated Encyclopedia of Bible Plants: Flowers and Trees, Fruits and Vegetables, Ecology. London, UK: Inter Varsity Press.

Hollis, Jeremy. 2008. Interview with Fanny Yu. May 28, 2008.

Johnson, Rob. 2000. "Turning Up the Heat: What is the "heat island effect" and what can you do about it?" Retail Traffic. 26 May 2008. < [http://retailtrafficmag.com/mag/retail\\_turning\\_heat\\_heat/](http://retailtrafficmag.com/mag/retail_turning_heat_heat/)>

Judaica Mall Glossary of Terms. 2008. Judaica Mall. 28 May 2008. <<http://www.judaica-mall.com/glossary-terms.htm>>

Nunez, Daniel. 1998. Cause and Effects of Noise Pollution. 14 April 2008.

<<http://www.memory.uci.edu/~sustain/global/sensem/S98/Nunez/Noise.html>>

Panneton, Judie. "History: How Beautiful is Our Heritage." Congregation B'nai Israel: About. 22 March 2008. <<http://www.bnais.com/history.cfm>>

Princeton University. 2006. WordNet. <<http://wordnet.princeton.edu/perl/webwn>>

Reyes, Jorge and Rosen, Marty. 2007. "Heat Island Effect Reduction Through Materials Usage & Design." *Creating Sustainable Communities: A Guide for Developers and Communities*. 24 May 2008. <[http://www.state.nj.us/dep/opsc/docs/Heat\\_Island.pdf](http://www.state.nj.us/dep/opsc/docs/Heat_Island.pdf)>

"Riverside Boulevard, Sacramento, CA." 2008. Map. Google Earth. March 2008.

Taylor, Meghan. 2005. *The Organic School Garden: Hands-on Teaching of Environmental Health and Social Values. Pesticides and You*. Vol. 24.4 (P. 20-23) 19 April 2008. <<http://www.beyondpesticides.org/infoservices/pesticidesandyou/Winter%2004-05/Organic%20School%20Garden.pdf>>

The Interstate 5 Highway. 2008. <<http://www.i5highway.com/>>

University Corporation for Atmospheric Research (UCAR). 2006. "Air Pollution and Human Health." The Regents of the University of Michigan. 10 May 2008.

<<http://www.windows.ucar.edu/tour/link=/milagro/effects/health.html>>

U.S. Environmental Protection Agency. 2008. Heat Island Effect: Energy Savings. 9 May 2008. <<http://www.epa.gov/hiri/about/energysavings.html>>

USGS. 2006. "A Visit to a Wastewater-Treatment Plant: Primary Treatment of Wastewater." USGS: Science for a Changing World. 27 May 2008. <<http://ga.water.usgs.gov/edu/wwvisit.html>>

Wilson, Shelby. 2007. Schoolyard Garden Program to Increase Children's Fruit & Vegetable Consumption. Maternal and Children Health Program, University of Washington, Seattle. 18 April 2008. <<http://depts.washington.edu/mchprog/docs/posters/2007/WilsonCapstone.pdf>>



