

REHABILITATIVE LANDSCAPE

by

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A REPORT

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Dilemma

Druid City Hospital in Tuscaloosa, Alabama is one of the fastest growing heart, cancer, and rehabilitation hospitals in the southern United States. Although once characterized as one of the greatest modern innovations of the early century, the exterior is now outdated (DCH, 2009). However, as the hospital has increased in size and new additions constructed the identity and character of the once prized facility have been lost. Today the existing campus is a juxtaposition of mixed architecture styles and hastily planned construction efforts. The patients and employees of the Druid City Hospital believe that the exterior of the hospital fails to reflect the diligence and care being given within (DCH, 2009). The creation of a unified and cohesive exterior landscape would bring a strong connection between the interior and exterior and once again showcase the hospital as a marvel of its time.









Thesis

Through the implementation of spaces designed specifically for rehabilitation, the design of a cohesive landscape will address the current needs and existing conditions of the Druid City Hospital in Tuscaloosa, Alabama. The application of a health care garden typology and rehabilitative design elements taken from Clare Cooper Marcus and Marni Barnes as well as the American Horticultural Therapy Association will aid in the design solutions and creation of a cohesive landscape.

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Table of Contents

	Foundation	2
	Guiding Questions	10
	Framework Plan: Application of Research	48
	Rehabilitative Spaces	66
	Creating a Cohesive Landscape	76
	Glossary	102
	References	118
	Appendix	126

List of Figures

Figure 1.0 :	Rosette Goals and Objectives.	6
Figure 1.1 :	Guiding Questions	11
Figure 1.2 :	Courtyard Garden Type.	17
Figure 1.3 :	Entry Garden Type.	18
Figure 1.4 :	Front Porch Garden Type.	19
Figure 1.5 :	Healing Garden Type.	20
Figure 1.6 :	Landscaped Grounds Garden Type.	21
Figure 1.7 :	Landscaped Setback Garden Type.	22
Figure 1.8 :	Meditation Garden Type.	23
Figure 1.9 :	Plaza Garden Type	24
Figure 2.0 :	Rooftop Garden Type	25
Figure 2.1 :	Rooftop Terrace Garden Type.	26
Figure 2.2 :	Viewing Garden Type.	27
Figure 2.3 :	Container Gardening.	32
Figure 2.4 :	Edgings	33
Figure 2.5 :	Level Site.	34
Figure 2.6 :	Open Space.	35
Figure 2.7 :	Vegetative Planters.	36
Figure 2.8 :	Seating.	37
Figure 2.9 :	Sensory Stimulating Elements	38
Figure 3.0 :	Shielded Structure.	39
Figure 3.1 :	Surfaces.	40
Figure 3.2 :	Tables.	41
Figure 3.3 :	Vegetative Buffers.	42
Figure 3.4 :	Views.	43
Figure 3.5 :	Water Feature.	44
Figure 3.6 :	Wayfinding.	45
Figure 3.7 :	6' Wide Paths.	46
Figure 3.8 :	DCH Garden Typology Suitability Model	50
Figure 3.9 :	External Site Analysis	52
Figure 4.0 :	Internal Site Analysis	53

List of Figures

Figure 4.1 :	Garden Suitability Model.	54
Figure 4.2 :	Courtyard Analysis.	55
Figure 4.3 :	Entry Garden Analysis	56
Figure 4.4:	Front Porch Analysis.	57
Figure 4.5 :	Landscaped Grounds Analysis.	58
Figure 4.6 :	Landscaped Setback Analysis.	59
Figure 4.7 :	Plaza Analysis.	60
Figure 4.8 :	Rooftop Analysis.	61
Figure 4.9 :	Preliminary Framework Plan.	63
Figure 5.0 :	Program Relationships.	67
Figure 5.1 :	Courtyard Program.	68
Figure 5.2 :	Entry Program.	69
Figure 5.3 :	Front Porch Program.	70
Figure 5.4:	Landscaped Grounds Program.	71
Figure 5.5:	Landscaped Setback Program.	72
Figure 5.6:	Plaza Program.	73
Figure 5.7:	Rooftop Program.	74
Figure 5.8:	Design Parti	77
Figure 5.9:	Master Plan	78
Figure 6.0:	Final Framework.	84
Figure 6.1:	Plaza and Courtyard Location.	85
Figure 6.2:	Plaza Design	86
Figure 6.3:	Plaza : 6' Container Gardening	89
Figure 6.4:	Plaza : Sensory Stimulating Elements	90
Figure 6.5:	Plaza : 6' Tables	91
Figure 6.6:	Plaza : 6' Wide Paths	92
Figure 6.7:	Courtyard Design	93
Figure 6.8:	Courtyard : Water Feature	96
Figure 6.9:	Courtyard : Open Space	97
Figure 7.0:	Courtyard : Seating.	98
Figure 7.1:	Courtyard : Wayfinding	99

Foundation

PROGRESSION OF THE DRUID CITY HOSPITAL
IMPORTANCE OF THE DRUID CITY HOSPITAL
EXISTING PROBLEMS FACING THE DRUID CITY
HOSPITAL
PROJECT INTENT



PROGRESSION OF DRUID CITY HOSPITAL

Druid City Hospital, DCH, first opened its doors on March 25, 1923 and was regarded by many as the greatest achievement from a humanitarian viewpoint accomplished by the present generation (DCH, 2009). However, to meet the growing demand for services new accommodations were needed and in December of 1952, the current Druid City Hospital opened to the community of Tuscaloosa, Alabama. The 240 bed hospital was so progressive for its time that it earned coverage in Modern Hospital and Life magazines (DCH, 2009). DCH has continued to grow over time and additions were added in 1958, 1976, and again in 2003. The most recent addition, a new cancer treatment facility is currently being constructed and is set to open in the summer of 2009.

IMPORTANCE OF DRUID CITY HOSPITAL

Druid City Hospital holds significant meaning not only to the patients, visitors, and employees of the hospital, but also to the community of Tuscaloosa Alabama. Although progressing as one of the fastest and most prestigious heart and cancer hospitals in the southern United States, DCH has been able to remain in private hands. Being a private organization has allowed DCH to establish a standard of care that remains unmatched throughout the region. The vision of the Druid City Hospital is to be the best health system in the nation for patients to receive care, employees and volunteers to work, and physicians to practice medicine. DCH's one of a kind health care standard is creating a name within the health care industry while also providing prestigious recognition for the City of Tuscaloosa.



PROBLEMS FACING THE EXISTING DRUID CITY HOSPITAL

Although the care that is provided within the interior of DCH remains unrivaled, over time the identity of the hospital has become lost due to conflicting design standards and poor maintenance of exterior elements. The existing exterior design encompasses a juxtaposition of building styles and materials, poor circulation, and expresses an unfriendly exterior environment.

Building Styles and Materials

Additions have been made to the existing core of the Druid City Hospital for almost a century. As additions transpired, the building style and materials for each addition were selected based upon the most modern construction styles of the given time period. This selection of building materials has ultimately created a juxtaposition of varying building materials and styles.

Circulation

Circulation throughout the exterior of Druid City Hospital is currently a maze of unidentifiable and decaying walkways. A current lack of way-finding elements makes it difficult for individuals to decipher between existing exterior paths. The existing walkways are too small for many individuals, particularly those in wheelchairs and gurneys, to move about independently. This lack of circulatory elements has made it difficult for patients, visitors, and staff to enjoy the experience of nature and the healing affects that occur with such encounters.



Un-Welcoming Exterior Environment

Currently the exterior of Druid City Hospital expresses an unattractive and un-welcoming exterior environment. The existing vegetation is sparse and a lack of landscape maintenance has allowed the existing vegetation to become weathered and visually unappealing. The implementation of an excess number of surface parking lots has created an endless sea of concrete and asphalt. The excess amount of hardscape materials that overlays the DCH grounds, ultimately results in a lack of vegetation and depleted views from hospital windows.

PROJECT INTENT

The intent of this project is to resolve the existing problems that confront the Druid City Hospital by creating a unified landscape that ties together the hospital exterior with the interior. The landscape will be choreographed through the use of health care garden typology with emphasis on developing specific spaces for rehabilitation purposes. The specific goals and objectives of creating a unified landscaped are outlined in figure 10 Rosette: Goals and Objectives.

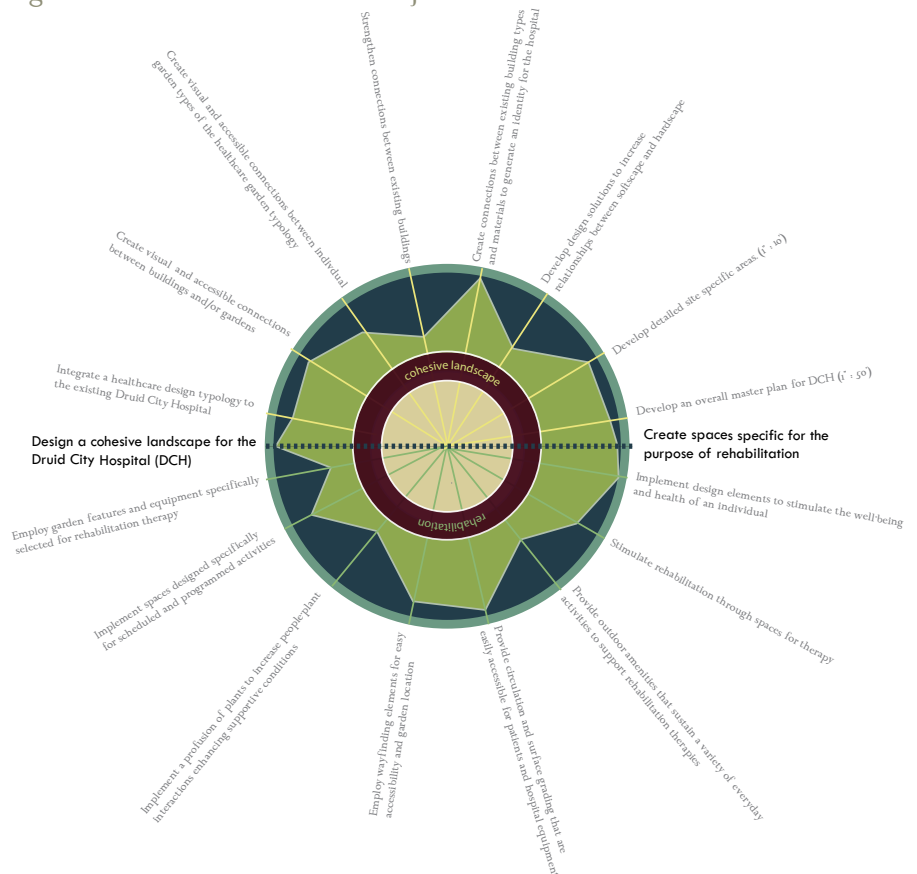


Figure 10 Rosette: Goals and Objectives



GOALS AND OBJECTIVES

GOAL | Cohesive Landscape

Design a cohesive landscape for the Druid City Hospital

OBJECTIVE | Cohesive Landscape

- Integrate a health care design typology to the existing DCH site
- Create visual and accessible connections between buildings and/or gardens
- Create visual and accessible connections between individual garden types of the health care garden typology
- Strengthen connections between existing buildings
- Create connections between existing building types and materials to generate an identity for the hospital
- Develop design solutions to increase relationships between softscape and hardscape
- Develop an overall master plan for the Druid City Hospital (1" : 50')
- Develop detailed site specific areas (1" : 10')

GOAL | Rehabilitation

Create spaces specific for the purpose of rehabilitation

OBJECTIVE | Rehabilitation

- Implement design elements to stimulate the well-being and health of an individual
- Stimulate rehabilitation through spaces for therapy
- Provide outdoor amenities that sustain a variety of everyday activities to support rehabilitation therapies
- Provide circulation and surface grading that are easily accessible for patients and hospital equipment
- Employ wayfinding elements for easy accessibility and garden location
- Implement a profusion of plants to increase people-plant interactions enhancing supportive conditions
- Implement spaces designed specifically for scheduled and programmed activities
- Employ garden features and equipment specifically selected for rehabilitation therapy



Guiding Questions

PHILOSOPHY

RELATIONSHIP BETWEEN HEALTH AND THE NATURAL ENVIRONMENT AND ITS IMPORTANCE WITHIN THE HEALTH CARE INDUSTRY

ROLE OF THE NATURAL ENVIRONMENT AND ITS VALUE TOWARDS REHABILITATION

GARDEN CHARACTERISTICS AND DESIGN ELEMENTS BENEFICIAL TO REHABILITATION

PHILOSOPHY

Three questions were choreographed to guide the resolution of the dilemma and existing problems facing the Druid City Hospital. These questions are outlined in figure 11 Guiding Questions

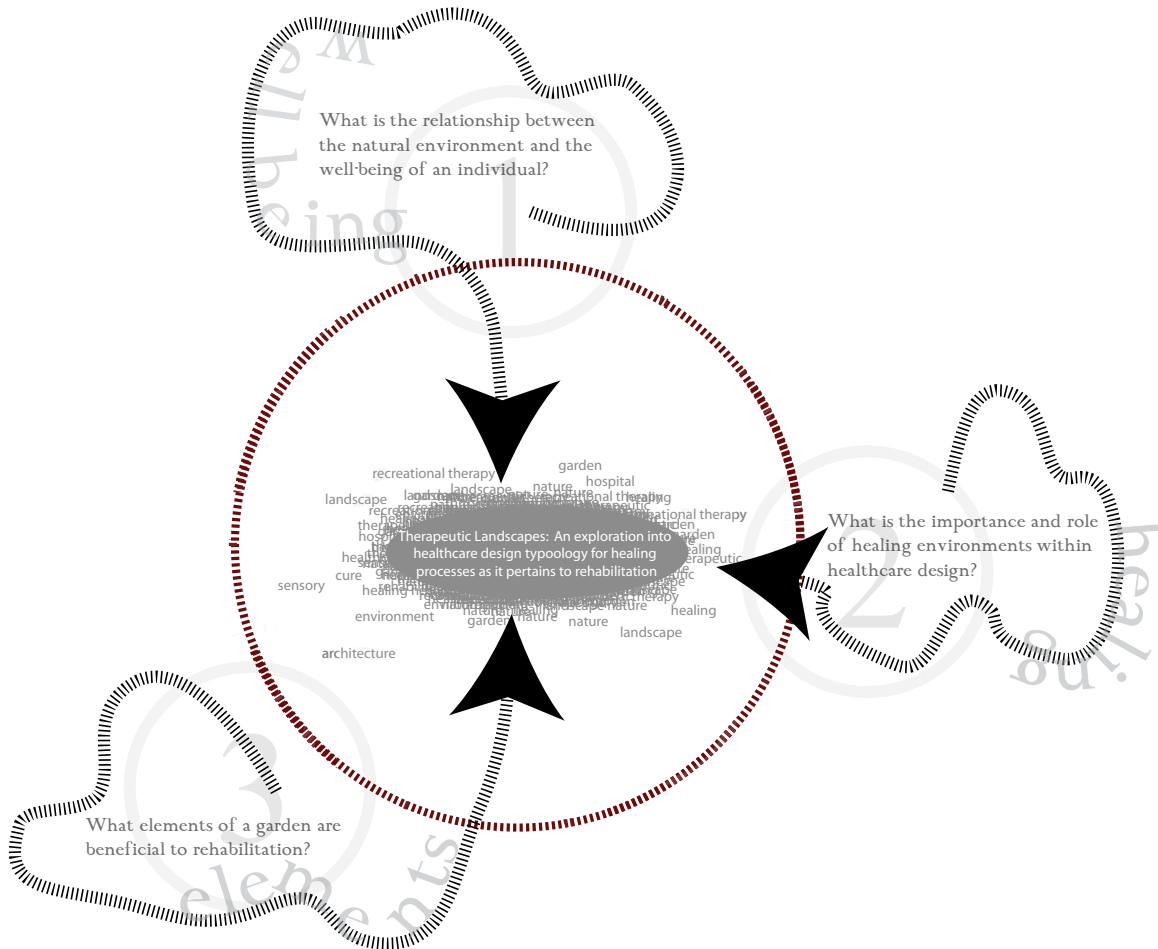


Figure 11 Guiding Questions



RELATIONSHIP BETWEEN HEALTH AND THE NATURAL ENVIRONMENT AND IT'S IMPORTANCE WITHIN THE HEALTH CARE INDUSTRY

HISTORY OF HEALING

Throughout history, cultures have stressed the importance of a unified balance within the individual for the maintenance of good health. This unified balance has historically been linked to natural environments or gardens emphasizing healing characteristics with religious symbolism (Cooper Marcus and Barnes, 1999). These garden environments were originally branded as healing gardens and began centuries ago within hospitals and monasteries ministering to the sick, the insane, and the infirm. However over time, the religious connection between spiritual healing and the garden began to fade and give way to a more humanistic view of medicine (Gerlach-Spriggs, 1998). These humanistic views ultimately led to a greater concern with medicinal practices than with the well-being of an individual. Fortunately within the last 20 years there has been a renewed interest in the role of designed natural environments and health. The emphasis of the hospital environment has returned to the healing of the whole person, rather than simply alleviating symptoms, reviving the interest in garden as healer has been revived (Kaplan, 2001)



HOSPITAL DESIGN AND ITS RELATIONSHIP TO HEALING

Hospitals provide healing environments that promote and acknowledge the physical and spiritual wellness of a patient proving that healing powers lie within the design of a hospital. Many studies have been conducted providing evidence linking hospital design with the healing of patients. Studies have found that wisely planned hospital spaces can help reduce a patients stress, improve safety and health and enable staff to care for patients on an easier basis. These elements all help to increase the well-being and health of a patient.

NATURAL ENVIRONMENTS WITHIN THE HEALTH CARE INDUSTRY

Health care institutions are increasingly recognizing the need for exposure to natural environments within the context of health care (JCAHO, 1999). Studies have shown that hospital patients are more willing to pursue rehabilitation goals with greater ease in natural environments rather than in a therapy room. The familiarity that nature can bring, the sensory stimulation that is part of being surrounded by and working with plants, the distraction and focus of working with plants all play a part in the healing process (Kaplan and Kaplan, 1995). Unfortunately, it remains difficult to make firm recommendations for the precise connection between nature and healing, an emerging area of research and design focus has sought to address the relationship of designed natural environments to health and healing.



BENEFITS OF NATURAL ENVIRONMENTS WITHIN HOSPITALS

Natural Environments have three significant values to the healing processes including the physical, psychological, and sociological well-being of an individual.

PHYSICAL VALUE

The physical value of rehabilitation stems from studies concluding that rehabilitative practices not only enhance the physical stamina of a person, they also help to provide an increase in a person's physical well-being. Stress has been found to be the number one deflator for people participating in rehabilitation therapies (Minter, 2005); however, studies have repeatedly found that natural environments can have an impact on multiple processes that affect physical health including: a decrease in stress hormones, blood pressure, and respiration rate (Carpman, 1999). The natural environment also provides patients with a greater sense of well-being, which has characteristically been shown to increase a person's physical health. In a study of the home environment, it was found that living in a place with windows overlooking a natural scene resulted in "micro-restorative experiences" enhancing quality of well-being, when compared to views of built elements (Ulrich, 1991). An improved sense of well-being results in an improvement in physical health.



BENEFITS OF NATURAL ENVIRONMENTS WITHIN HOSPITALS (cont.)

PSYCHOLOGICAL VALUE

There are many theories supporting the idea of an existing relationship between nature and the psychological processes of the mind. The mind's psychological processes have an impact on the nervous and immune systems of the human body, which is known as Psychoneuroimmunology (Durana, 2004). Numerous studies are being conducted to produce concrete data that signifies a connection between nature its affects upon the personal psyche.

SOCIOLOGICAL VALUE

Social integration

Natural environments such as gardens promote social integration by providing a series of spaces that amplify social interaction. Social interaction fosters an increase in the sociological value to an individual by increasing social support. Gardens in health care facilities have produced evidence implying that these settings can be very important for increasing access to social support for patients, families, and staff (Cooper Marcus and Barnes, 1999). Social support enhances immune functions, promotes better moods, and produces better treatment compliance among patients (Kaplan, 2001). Participation in social activities is valuable because it may be the only way for physically disabled people to become part of the community, to meet others in the same situation, and interact with family members outside of a hospital setting. Every person, no matter age or disease, needs a recreational and social outlet (Kaplan, 2001).



HEALTH CARE DESIGN GARDEN TYPOLOGY

Clare Cooper Marcus and Marni Barnes have established a design typology reflecting the various garden types within the health care industry. These garden types will be implemented into the existing site of the Druid City Hospital site to create a garden typology for the hospital.

Courtyard

A courtyard is a space that forms the “core” of a building complex. Ideally a courtyard should be immediately visible or apparent on entering the hospital so that visitors and patients know of its existence. Advantages of a courtyard are that it is semi-private and secure; surrounded by hospital buildings; depending on location, may be easily viewed and accessed or shielded from wind; buildings likely to provide shade; likely to be of human scale. Disadvantages associated with this type of location, may create a “fishbowl” experience for those using it; If too small to include adequate buffer planting, adjacent rooms may need to keep blinds drawn for privacy (Marcus and Barnes, 1995).



Figure 12 Courtyard Garden Type (Photo courtesy of)

Entry Garden

An entry garden is a landscaped area close to a hospital entrance that is a green space with a garden image that is designed and detailed for use. Advantages for creating an entry garden is that it is visible and accessible, makes positive use of a location that might otherwise have been paved for parking, provides a pleasing image on entering hospital environment, and allows use by ambulatory patients who want to see a little “action” near the main entrance. The disadvantages for the entry garden is that without sensitive planting to may be to exposed to nearby parking and entry roads (Marcus and Barnes, 1995).



Figure 1.3 Entry Garden Type (Photo courtesy of "david.vigh" at www.flickr.com)

Front Porch

Most hospitals have some features at the main entrance that are analogous to the front porch of a house. These might include an overhang or porch roof, a turnaround for vehicle pickup and drop-off, seats, directional signage, a post box, phone, bus stop and so on. The advantages of a front porch include providing a visual cue to the main entrance; drop-off overhangs may scale down size of building; sensitively located seating provides amenity for those waiting to be picked up or waiting for a bus. Disadvantages of this space include that the area may be overused if it is the only outdoor seating area provided by the hospital and may be underused if main access to hospital is via parking under building (Marcus and Barnes, 1995).



Figure 1.4 Front Porch Garden Type (Photo courtesy of CHRISTNER at www.christnerinc.com, 2005)

Healing Garden

The healing garden includes outdoor or indoor garden spaces that are specifically designated as healing gardens by the administration of the hospital. The advantages of healing gardens are that the users can expect that some thought has been given to creating an environment that is therapeutic; possibly disruptive activities, such as children playing or groups eating and laughing will probably not be found within the space. Disadvantages are that depending on the size, location, and visibility, some people might feel self-conscious using such a garden. And if not clearly defined as a healing garden, users may be confused as to its function (Marcus and Barnes, 1995).



Figure 1.5 Healing Garden Type (Photo courtesy of TBG Partners at www.flickr.com, 2008)

Landscaped Grounds

Landscaped Grounds consists of a landscaped area that forms an outdoor area between buildings. It is often used as a walking route between buildings, a setting for eating or waiting, and as a space for ambulatory patients for those using wheelchairs. This is the most spacious type of outdoor area in Cooper Marcus and Marni Barnes health care typology and is sometimes described by users as a park. Advantages of landscaped grounds include the ability of this garden type to tie together a variety of buildings by function, style, or age into a campus like setting. It can also serve a variety of users and activities. The disadvantage is that maintenance may be costly (Marcus and Barnes, 1995).



Figure 16 Landscaped grounds (Photo courtesy of Deborah Lynn Guber at www.flickr.com, 2008)

Landscape Setback

A landscaped setback is an area in front of the main entrance to a medical center, usually comprising of lawns and trees. This space is not usually intended for use, but to provide a visually pleasing setting on approach to the hospital entrance. Advantages include may evoke a familiar, comforting image at the hospital entrance; provides offices or rooms at the front of building with some privacy. Disadvantages include, while not usually intended for use, if this is the only outdoor space, its lack of seating, pathways, etc may be frustrating for staff or visitors who want to use it (Marcus and Barnes, 1995).



Figure 1.7 Landscaped Setback Garden Type (Photo courtesy of Michael Patric at www.flickr.com, 2005)

Meditation Garden

A meditation garden is a small, very quiet, enclosed space specifically labeled with a plaque as a meditation garden by the administration and or the designer. The advantages of this garden type include providing a space for those in a hospital setting who want to be very quiet and contemplative; precludes other, possibly distracting activities. The disadvantages include if visible from indoor spaces, one might feel self-conscious. It is quite probable that only one person at a time might use such a space, depending on its size. Given its designation, one might feel self-conscious about using for other legitimate quiet activities that are not meditation (Marcus and Barnes, 1995).



Figure 1.8 Meditation Garden (Photo courtesy of "PVCC Survey" at www.flickr.com, 2007)

Plaza

Hospital Plazas are outdoor areas, furnished for use, and predominantly hard-surfaced. Plazas may include trees, shrubs, or flowers in planters; however, the overall image is not of a green space, but of a paved urban area. The advantages for this type of design are low plant maintenance and irrigation costs; small space can be designed for relatively heavy use; patients using wheelchairs, walkers, or crutches may be able to move easily in this space. Disadvantages for this type of design are that it may have few qualities that people perceive as therapeutic in outdoor spaces such as an overall green and/or colorful setting, a garden or oasis image (Marcus and Barnes, 1995).



Figure 19 Plaza Garden Type (Photo courtesy of La Citta Vita at www.flickr.com, 2008)

Roof Garden

The roof garden is an area atop of a hospital building that is specifically designed and landscaped for use by patient, staff, and visitors, and in some cases for viewing from offices and hospital units. The advantages for this type of design are that it captures space that might otherwise be unused; space is usually private and unlikely that the public would use it; has potential for expansive views. The disadvantages are that it is exposed to elements; may be windier than ground level, or an enclosed courtyard. Also depending on the growth and height of adjacent buildings, temperatures may be uncomfortable (Marcus and Barnes, 1995).

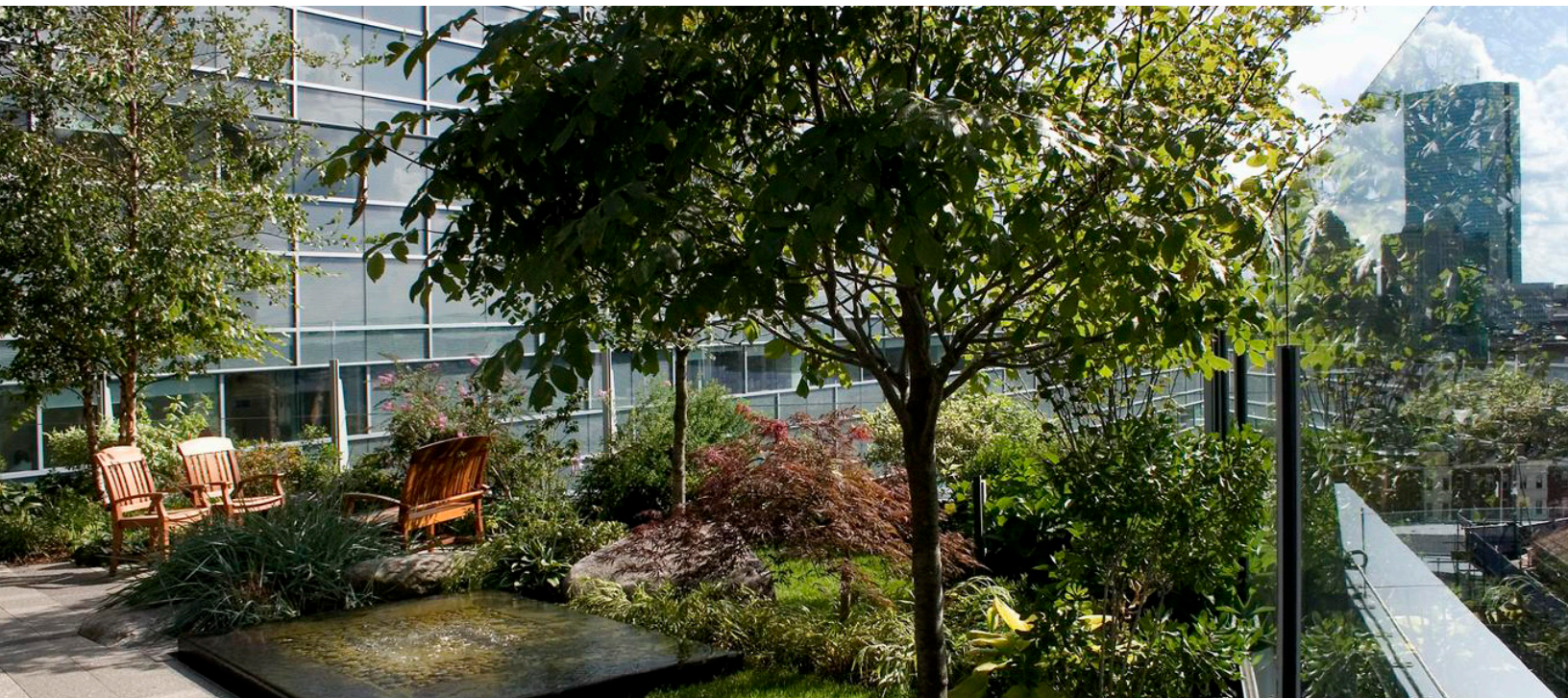


Figure 2.0 Rooftop Garden (Photo courtesy of "laffingstock" at www.flickr.com, 2008)

Roof Terrace

Unlike a roof garden, a roof terrace is an accessible outdoor area that is bounded on one side by a building and often forms a long narrow balcony to that building. The basics of such a space are plantings, a choice of seating types; a choice of seating locations with regard to privacy and sun/shade; and accessibility/visibility to potential users. The advantages include that it captures space that might otherwise go unnoticed and it has the potential for expansive views. Disadvantages are that depending on location, may be too windy, too hot, or too shaded (Marcus and Barnes, 1995).



Figure 2.1 Rooftop Terrace Garden Type (Photo courtesy of "modulargarden" at www.flickr.com, 2008)

Viewing Garden

A viewing garden is a small garden that cannot be entered but can be viewed from inside the building. Advantages include green space in a small area, views from comfortable indoor seating areas sheltered from rain; low maintenance costs. Disadvantages include greenery, flowers, etc cannot be viewed up close or their fragrances enjoyed. Water and other sensory elements cannot be heard and enjoyed (Marcus and Barnes, 1995).

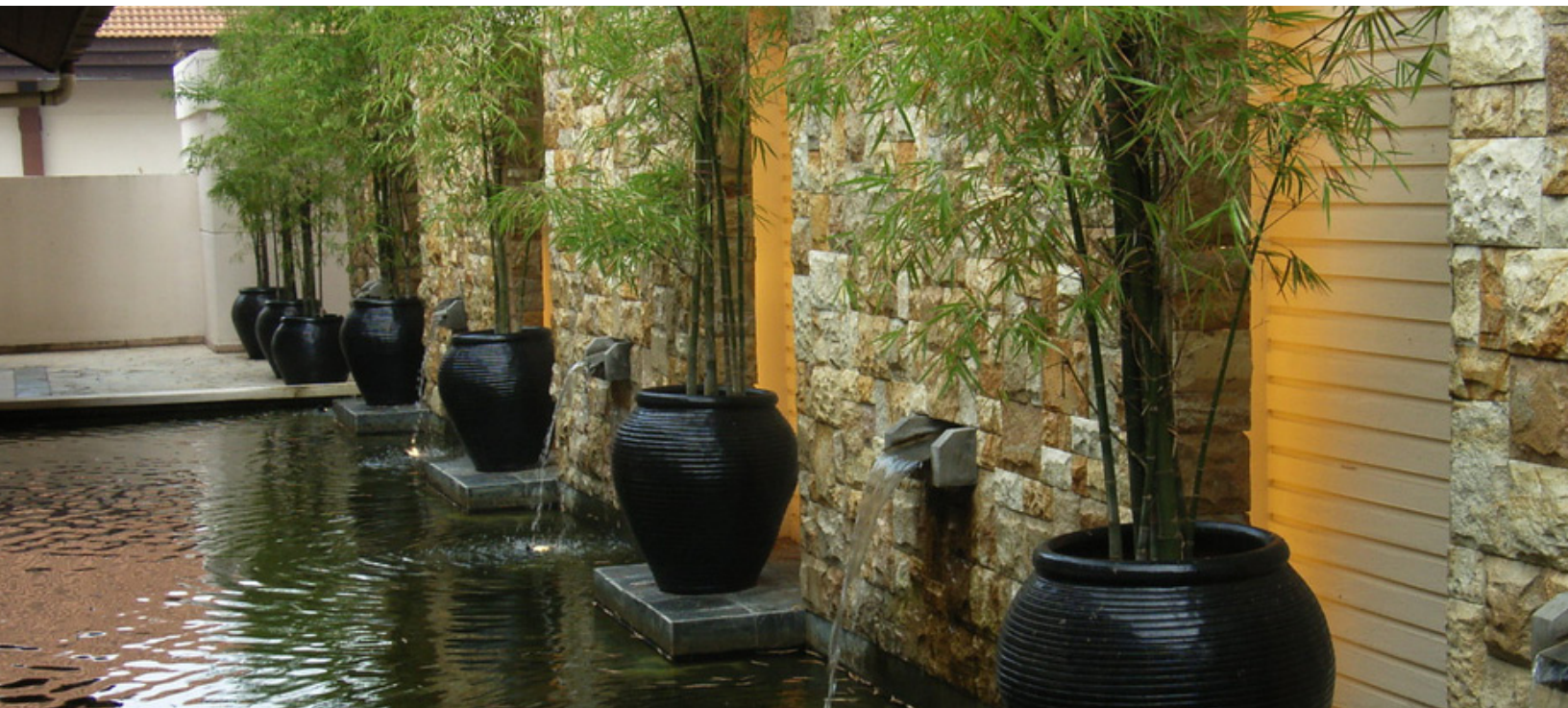


Figure 22 Viewing Garden (Photo courtesy of www.lickr.com, 2008)



NATURAL ENVIRONMENT AND ITS VALUE TOWARDS REHABILITATION

RELATIONSHIP BETWEEN THE NATURAL ENVIRONMENT AND REHABILITATION

Nature does not have the power nor the potential to physically mend a broken bone (Marcus and Barnes, 1999); however, research suggests that exposure to the natural environment can indirectly and directly impact an individual's well-being (Kaplan, 2001). The natural environment provides spaces and opportunities for rehabilitation to occur. Rehabilitation practices increase the level of functioning of an individual. Rehabilitation usually comes in the form of therapeutic activities supervised by trained individuals. However, natural environments can also play a direct role in the improvement of an individual's health by creating a place for healing practices such as rehabilitation to occur. Many studies have suggested that a sense of well-being can be fostered by an increased level of functioning (Minter, 2003). Therefore, the creation of exterior spaces for rehabilitation practices can help to promote physical movement influencing the well-being and health of an individual. Rehabilitation practices increase physical movement but they also provide cognitive benefits which enhance the ability of the mind to receive information, process, store, and react to it.



GARDEN CHARACTERISTICS AND DESIGN ELEMENTS BENEFICIAL TO REHABILITATION

CHARACTERISTICS

Therapeutic Characteristics

The characteristics of therapeutic gardens are a set of objectives or intentions that must be met in order for a garden to be classified as therapeutic. Rehabilitation is best performed through therapeutic exercise to increase and individuals physical and cognitive functioning. Therapeutic garden characteristics are not specific design elements but rather a set of design objectives for a garden. The following design objectives are recognized by the American Horticultural Therapy Association (AHTA) as an appropriate way of classifying a therapeutic garden: inclusion of space for scheduled and programmed activities, features must be modified to improve accessibility; perimeters must be well defined, a profusion of people/plant interactions, benign and supportive conditions for rehabilitation practices, universal design, and recognizable placemaking.

AHTA GARDEN CHARACTERISTICS

AHTA are therapeutic guidelines for spaces intended for rehabilitative purposes.



Scheduled and programmed activities

A program guiding and promoting a program of activities and experiences in the garden is ideal. However, even in gardens designed for the passive/independent enjoyment by visitors, special events increasing the number of visits, classes encouraging routine garden tasks, and publicizing activities of all kinds familiarize special populations, facility staff, families of clients or patients, and nearby community residents with the garden (AHTA, 1995).

Well-defined perimeters

Edges of garden spaces and special zones of activities within the garden are often intensified to redirect the attention and the energies of the visitor to the components and displays within the garden (AHTA, 1995).

Profusion of plants and people plant interactions

Gardens promote four seasons of sensory stimulation that introduce individuals to planned, intensive outdoor environments. These are outdoor environments in which the conscious provisions of spaces and places for restoration, horticulture education, therapy, and for social exchanges are organized into legible and verdant, plant-dominated open spaces with simple patterns of paths and workplaces. (AHTA, 1995).

Benign and supportive conditions

Gardens emphasizing therapy and rehabilitation provide safe, secure and comfortable settings for people. The avoidance of potentially hazardous chemicals such as herbicides, fertilizers, and insecticides; the provision of shade and other protective structures; flourishing plants, and the protected and protective nature of the garden offer personal comfort and refuge to the garden user (AHTA, 1995).



Universal design

Gardens emphasizing rehabilitation are designed for the convenience and enjoyment for people with the widest possible range of conditions. As practical and pleasurable landscapes for people of all ages and all abilities, these gardens commonly stimulate the full range of senses including memory, hearing, touch, smell and sometimes taste as pleasurable alternatives to the visual experience of gardens. The therapeutic garden exploits the most complete range of people/plant interactions and experiences possible within its enclosures (AHTA, 1995).

Recognizable placemaking

Rehabilitative and therapeutic gardens are frequently simple, unified and easily comprehended places. An intensified recognition of garden patterns and garden experiences enhance the unique identity of a garden as a special place for the people it serves. Placemaking is an important strategy in all landscape design efforts in that it heightens the visitor's focus on plant-related sensuality, comfort, and independence experienced within a garden (AHTA, 1995).

DESIGN ELEMENTS

Design elements are specific variables that are recommended for use in garden design to enhance rehabilitation practices. The following elements were developed from Clare Cooper Marcus and Marni Barnes' health care design standards as well as the spatial therapeutic guidelines described within the AHTA Garden Characteristics.

Container Gardening

Rehabilitation Benefits

Container gardening stimulates physical activity which increases the well-being of an individual as previously described in the Benefits of Natural Environments within Hospitals.

Design Criteria

Container gardens create easy access to plants for all garden users, including those who are confined to a wheelchair, visually impaired, or have trouble stooping or kneeling. Beds placed at lower heights that are comfortable for children will encourage them to explore the plantings (Marcus and Barnes, 1999).



Figure 23 Container Gardening (Photo courtesy of www.flickr.com)

Edgings

Rehabilitation Benefits

Rehabilitation benefits of edgings include the differentiation of one place or path for another to navigate a person with poor eyesight and keep individuals from stumbling off a path, or from going somewhere they should not (Marcus and Barnes, 1999)

Design Criteria

Edges can be surface changes, walls, or hedge plantings. Plantings have the ability to create a softened edge and transition between the dramatic height of a fence or building edge and the ground plane of the garden.



Figure 24 Edgings (Photo courtesy of Phil Frank Garden Design at www.flickr.com, 2008)

Level Site

Rehabilitation Benefits

A level site allows people with disabilities to maneuver easily around an area. A person limited to a wheelchair will have access to all locations of a site rather than being limited to just a specific area due to his immobility (Marcus and Barnes, 1999).

Design Criteria

To allow for all individuals to use the site, limit grade changes in the most highly used outdoor areas. However if slopes are unavoidable, provide a continuous handrail along walkways with sloped grades to support weakened and recovering patients.

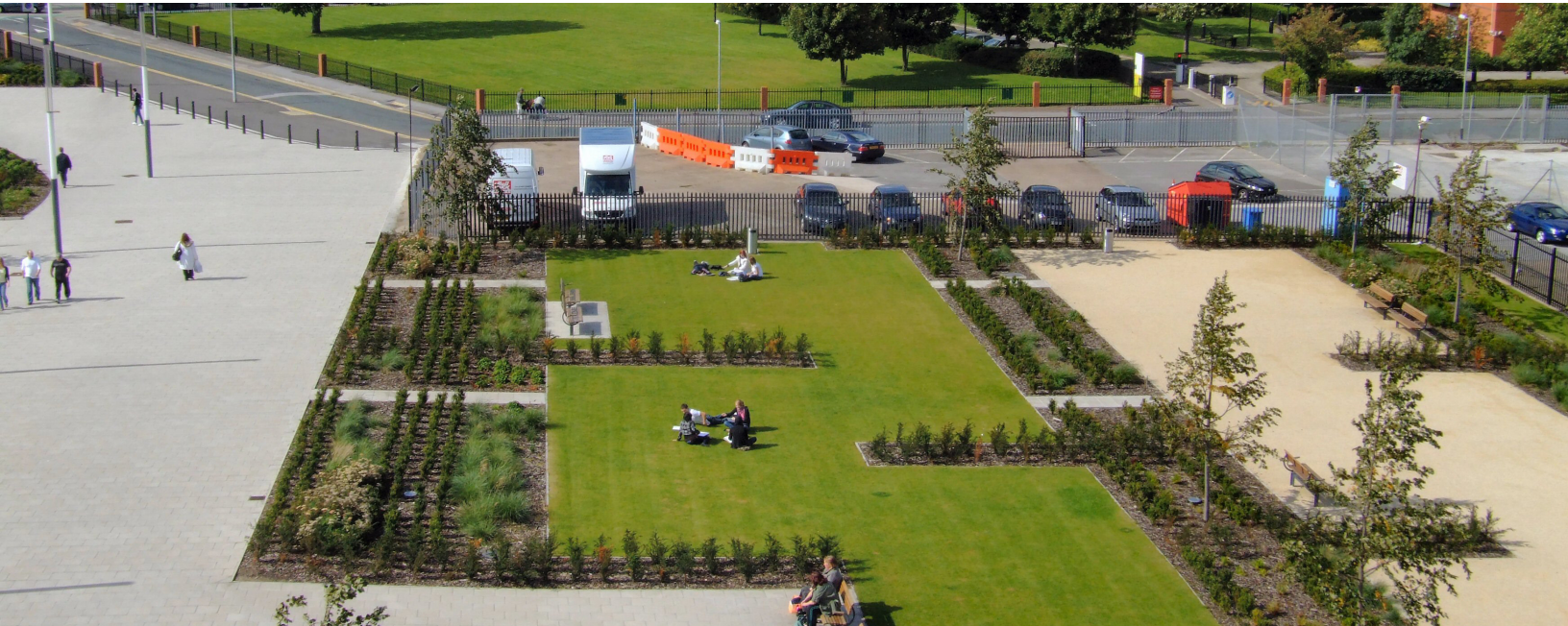


Figure 2.5 Level Site (Photo courtesy of www.flickr.com)

Open Space

Rehabilitation Benefits

Open space provides individuals with the opportunity to participate in recreational activities increasing physical stamina and well-being.

Design Criteria

Provide spaces large enough for recreation to occur but small enough for patients with disabilities to easily return to the hospital interior unattended. Places where the hospital grounds are sufficiently large, it may be helpful to provide an area for special outdoor events. (Cooper Marcus and Barnes, 1999).



Figure 26 Open Space (Photo courtesy of www.flickr.com)

Vegetative Planters

Rehabilitation Benefits

Vegetative planters give the opportunity for patients to be closer with vegetation. Vegetative planters soften hardscape areas by implementing green and luscious softscape materials.

Design Criteria

Vegetative planters should be designed at a height of 2.5 feet for easy accessibility by all. Ledgings of vegetative planters can also provide the opportunity for seating in areas where otherwise it might not be possible. (Cooper Marcus and Barnes, 1999).



Figure 2.7 Vegetative Planters (Photo courtesy of Clive Nichols at www.charlotterowe.com)

Seating

Rehabilitation Benefits

Employing moveable seating increases social integration and interaction. Providing elements for social integration stimulates the benefits for social support described in detail in the Benefits of Natural Environments Within Hospitals.

Design Criteria

Allow seating for large groups as well as for individual users. to create public and private spaces. Orient seating for specific use: right-angled seating allows for a comfortable distance and orientation for conversation, fixed-linear seating allows for meditation without confronting others, and fixed-opposite seating allows for more intimate conversations with others (Cooper Marcus and Barnes, 1999).



Figure 28 Seating (Photo courtesy of "modulargarden" at www.flickr.com)

Sensory Stimulating Elements

Rehabilitation Benefits

Plants and greenery are often cited as the most significant instrument for creating positive distractions (Cooper Marcus and Barnes, 1999). A positive distraction is an environmental feature or situation that promotes an improved emotional state in the perceiver, may block or reduce worrisome thoughts, and fosters beneficial changes in physiological systems such as lowered blood pressure and stress hormones (Ulrich, 1986).

Design Criteria

Provide a variety of lush plantings with contrast and harmony in texture, form, color, and arrangement. Choose plant materials that provide a variety to hold attention and help draw focus away from an individual (Cooper Marcus and Barnes, 1999)



Figure 2.9 Sensory Stimulating Elements (Photo courtesy of "tubblesnap" at www.flickr.com)

Shielded Structure

Rehabilitation Benefits

Many patients, often due to illness cannot be exposed to the outdoors. Shielded exterior structures allow for exterior spaces to be used year round instead of just a few months out of the year. These shielded structures allow patients a place of solace and respite without having to leave the indoors (Gerlach-Spriggs, 1998). They also provide protection from climatic conditions, allow adjustment to bright outdoor light, and provide a place to sit and watch outdoor activities without being involved in them (Cooper Marcus and Barnes, 1999).

Design Criteria

Exterior spaces should always provide an escape from impending climatic conditions. Enclose or provide wall in the direction where harsh elements may occur (Cooper Marcus and Barnes, 1999).

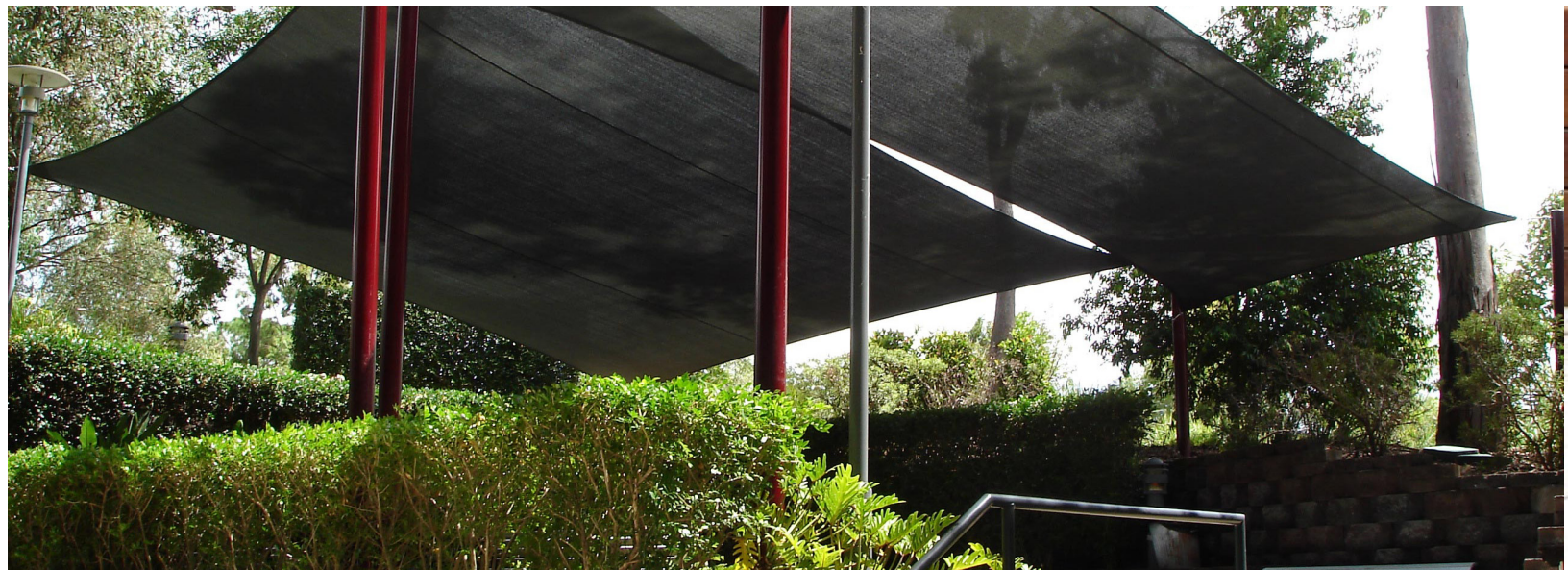


Figure 3.0 Shielded Structure (Photo courtesy of www.flickr.com)

Surfaces

Rehabilitation Benefits

Utilizing a variety of surfaces and surface materials creates visual aesthetic but can also be implemented for rehabilitation techniques as well. Changes in surface from hard vs. soft or vice versa foster rehabilitation through the change in movement forced upon patients when changing surface types.

Design Criteria

Implement various surface types and textures that are permeable by microclimatic conditions to reduce surface maintenance. Surface types should also be chosen that are accessible by all individuals including those in wheelchairs (Cooper Marcus and Barnes).



Figure 3.1 Surfaces (Photo courtesy of "modulargarden" at www.flickr.com } 40 }

Tables

Rehabilitation Benefits

Tables provide seating and eating areas providing individuals the opportunity to partake in the outdoor natural environment.

Design Criteria

The placement of tables should allow for accessibility by wheelchairs and other instruments used by individuals with disabilities. Table height should be at a minimum of twenty-nine inches to allow for wheelchairs to fit smoothly beneath (Cooper Marcus and Barnes, 1999).



Figure 3.2 Tables (Photo courtesy of www.flickr.com)

Vegetative Buffers

Rehabilitation Benefits

Participation in rehabilitation therapies take a multitude of concentration and attention from an individual (Kaplan, 2001). Intrusive stimuli can break concentration negatively hindering the rehabilitation process. Therefore, the presence of positive qualities such as quiet, birds, breezes, moving water, may increase the effectiveness of providing concentration.

Design Criteria

Provide vegetated buffers so that people walking or sitting in a garden do not feel that they are intruding in the privacy of those indoors. Also provide buffer plantings where appropriate to hide or shield obtrusive elements that might hinder the rehabilitation process (Cooper Marcus and Barnes, 1999)



Figure 3.3 Vegetative Buffers (Photo courtesy of www.flickr.com)

Views

Rehabilitation Benefits

Views out from a hospital setting to birds and wildlife can reassure patients of the natural order of life (Cooper Marcus and Barnes, 1999). Views also have therapeutic effects upon the psyche of an individual described in the Benefits of Natural Environments within Hospitals.

Design Criteria

Design spaces and implement elements such as buildings, vegetation, etc to frame positive views. (Cooper Marcus and Barnes, 1999).



Figure 3.4 Views (Photo courtesy of "asmundur" at www.flickr.com, 2006)

Water Feature

Rehabilitation Benefits

The sound of water provides individuals with a sense of healing, rest, and contemplation. Sights and sounds of water are particularly soothing to people who are stressed or upset. (Francis and Cooper Marcus, 1992).

Design Criteria

Design water features large enough to engage the hearing and sight of an individual. To maximize the benefit of the water feature provide seating in semiprivate niches near to the water for those who wish to meditate, nap or view the water in seclusion (Marcus and Barnes, 1999).



Figure 3.5 Water Feature (Photo courtesy of "mgminthu" at www.flickr.com)

Wayfinding

Rehabilitation Benefits

Wayfinding promotes independence allowing individuals the opportunity to find specific locations without help from others. "Individuals will be much more likely to engage in on-site use of a garden that is located near his/her room" (Carpman and Grant, 1993).

Design Criteria

Implement wayfinding elements adjacent to building ingress and egress points for easy identification and location throughout the garden (Cooper Marcus and Barnes).



Figure 3.6 Wayfinding (Photo courtesy of www.flickr.com)

6' Wide Paths

Rehabilitation Benefits

Paths are the fundamental design element to orient and support outdoor recreation. The benefit of physical recreation was described in Benefits of Natural Environments within Hospitals.

Design Criteria

Design walkways and paths six feet wide. Six feet allows two gurneys to pass each other and for two to three people to walk side by side. Paths should also contrast in color with planting areas to help define the boundaries between hardscape and softscape materials (Cooper Marcus and Barnes).



Figure 3.7 6' Wide Paths (Photo courtesy of TBG Partners at www.tbgin.com)



Framework Plan: Application of Research

- PHILOSOPHY
- DCH GARDEN TYPOLOGY
- SITE ANALYSIS
- TYPOLOGY ANALYSIS



PHILOSOPHY

The Framework Plan: Application of Research will choreograph a garden typology as well as determine the opportunities and constraints of the existing site and determine a preliminary framework plan for the campus.

DCH GARDEN TYPOLOGY

A garden typology was constructed to determine specific garden types applicable to the existing Druid City Hospital campus. The garden types were choreographed through the use of a suitability model utilizing Clare Cooper Marcus's (CCM) and Marni Barnes' established health care garden typology. The suitability model, figure 3.8 DCH Garden Typology Suitability Model, was choreographed using design elements specifically related to each garden type within CCM's health care garden typology. The garden types that are applicable to the existing Druid City Hospital campus are courtyard, entry garden, front porch, landscaped grounds, landscaped setback, plaza, and rooftop garden. The suitability model was formed based on design elements specific for each garden type.

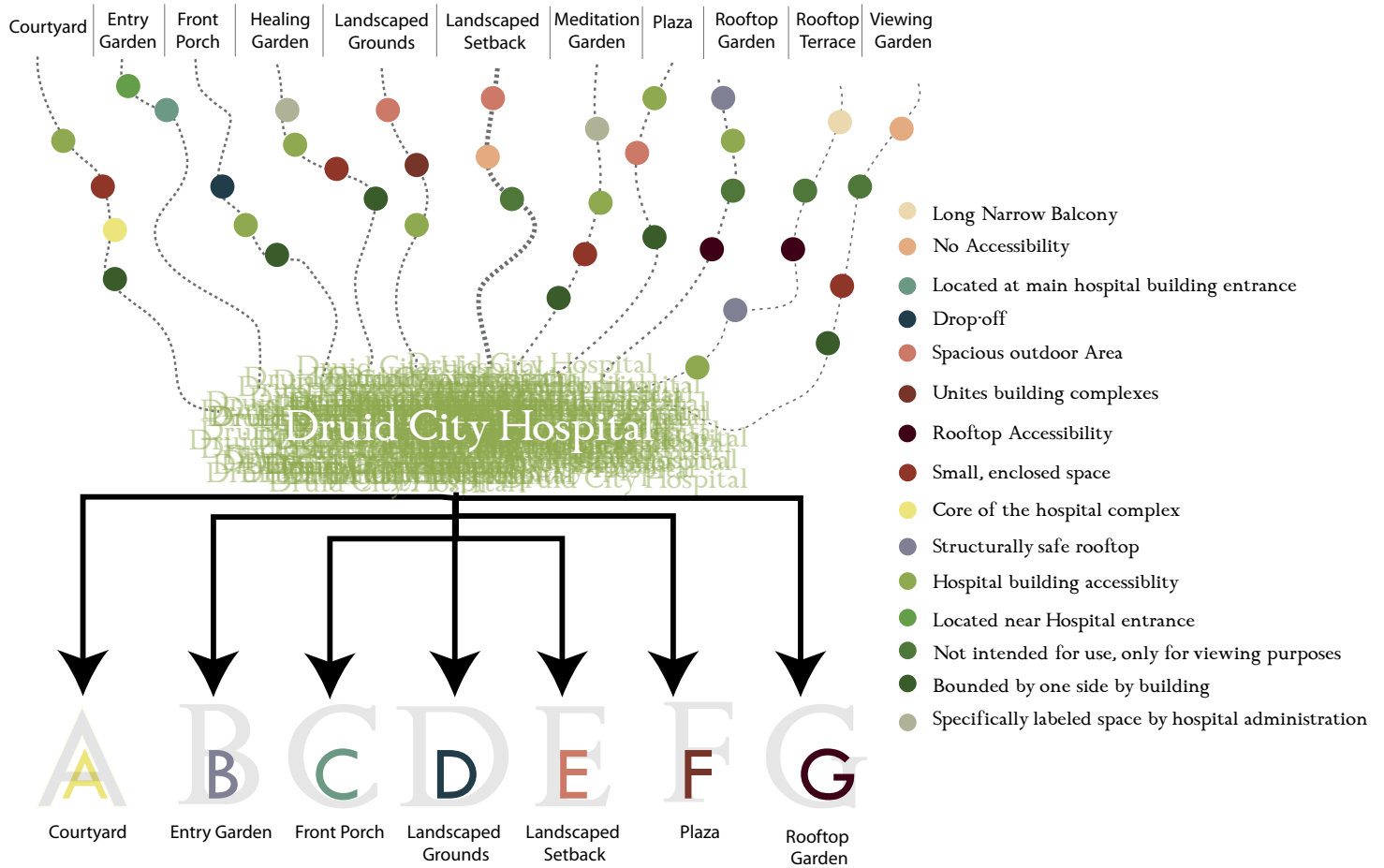


Figure 3.8 DCH Garden Typology Suitability Model



SITE ANALYSIS

Rationale

A site analysis determines the opportunities and constraints that occur within an existing site. Two types of analysis were conducted of the existing Druid City Hospital site. A comprehensive analysis was conducted to gain an understanding of the external and internal influences applied to the site and a typology analysis was conducted to select the appropriate location of each garden type of the DCH Garden Typology.

Importance of site analysis for design

The site inventory is an essential step in understanding the character of the site and the links that exist between the site and the surrounding landscape.

COMPREHENSIVE ANALYSIS

The comprehensive analysis was conducted to determine the existing conditions and external elements that will influence the site selection of the DCH Garden Typology.

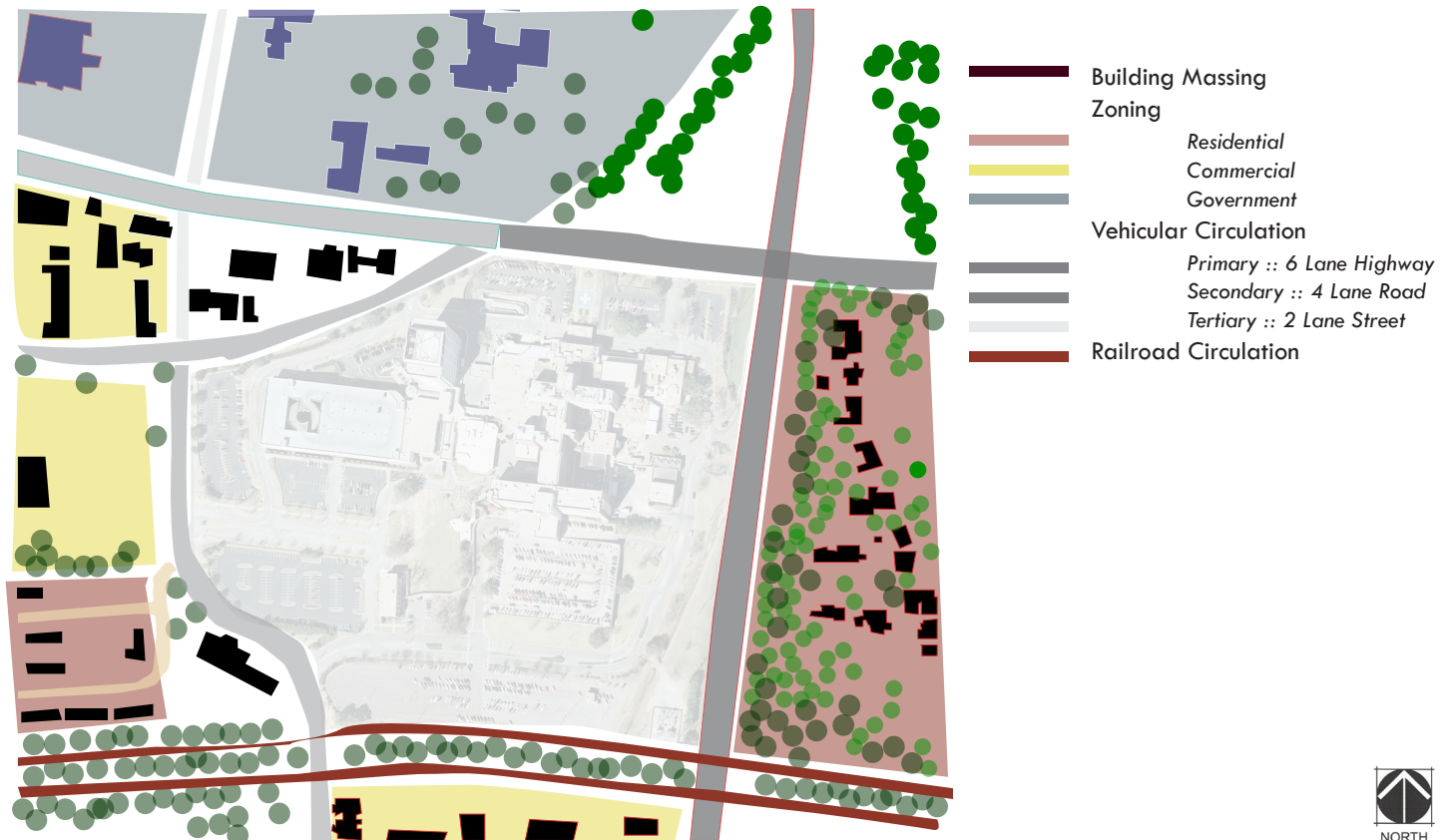
External Analysis

Inventory Analyzed

The inventory analyzed included building massing, zoning, vehicular and railroad circulation.

Conclusions

The external analysis helped to guide the conclusions to the preliminary framework located in figure 4.9 Preliminary Framework.



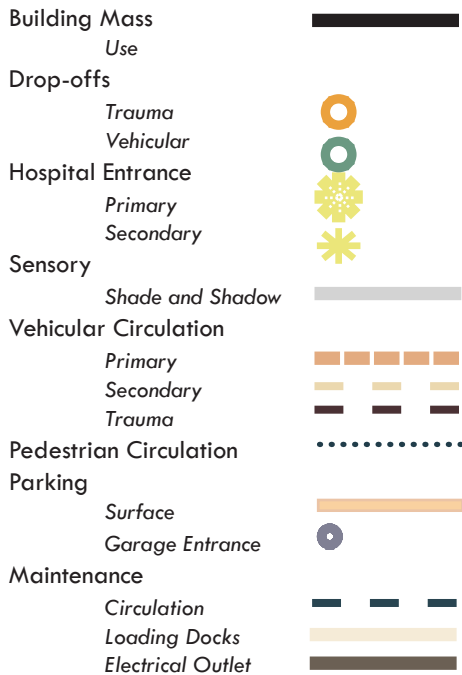
Internal Analysis

Inventory Analyzed

The inventory analyzed include the building massing, drop-off locations, hospital entrances, sensory stimulating elements, vehicular, pedestrian and maintenance circulation paths, and parking conditions.

Conclusions

The internal analysis has diagrammed the existing constraints and opportunities within the DCH Campus.

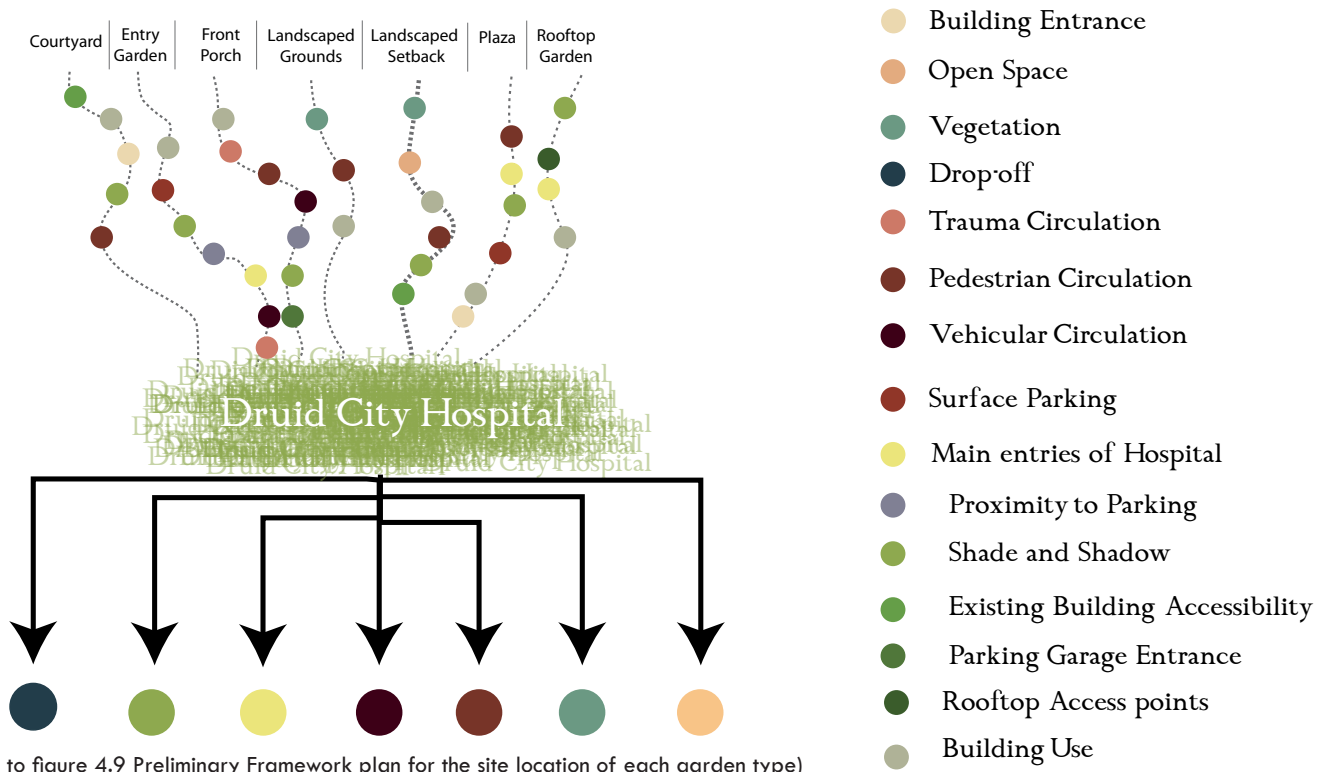


TYPOLOGY ANALYSIS

A thorough analysis was conducted to determine the location(s) of each garden type within the DCH Garden Typology as it applies to the existing DCH campus.

INVENTORY SUITABILITY FOR DCH GARDEN TYPOLOGY

Suitability for each garden type is outlined in figure 4.1 Garden Suitability Model.



(Refer to figure 4.9 Preliminary Framework plan for the site location of each garden type)

Figure 4.1 Garden Suitability Model

COURTYARD

Inventory Analyzed

Primary and secondary building entrance locations, building massing and use, exterior and interior pedestrian circulation, shade and shadow patterns, and primary and secondary vehicular circulatory systems.

Conclusions

The analysis of the inventory has designated in figure 4.9, Preliminary Framework Plan, the appropriate locations of the courtyard garden type within the existing DCH Site.

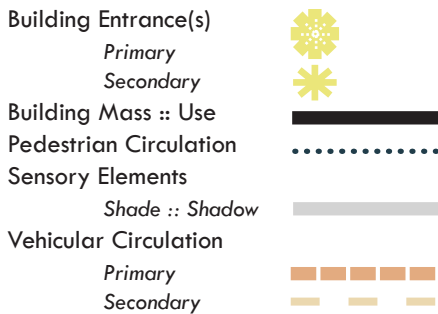


Figure 4.2 Courtyard Analysis

ENTRY GARDEN

Inventory Analyzed

Primary and secondary building entrance locations, building massing and use, parking garage entrances and surface parking locations, exterior and interior pedestrian circulation, shade and shadow patterns, and primary, secondary, and trauma vehicular circulatory systems.

Conclusions

The analysis of the inventory has designated in figure 4.9, Preliminary Framework Plan, the appropriate locations of the entry garden type within the existing DCH Site.

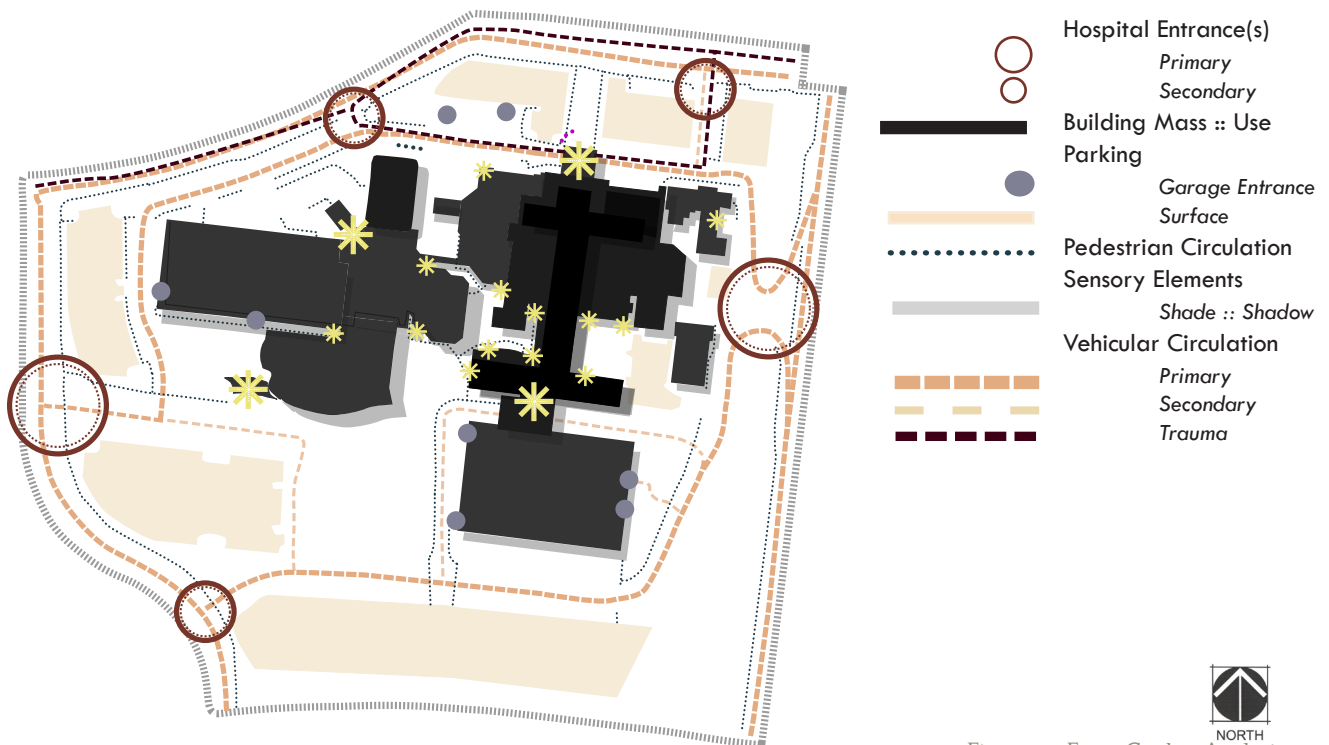


Figure 4-3 Entry Garden Analysis



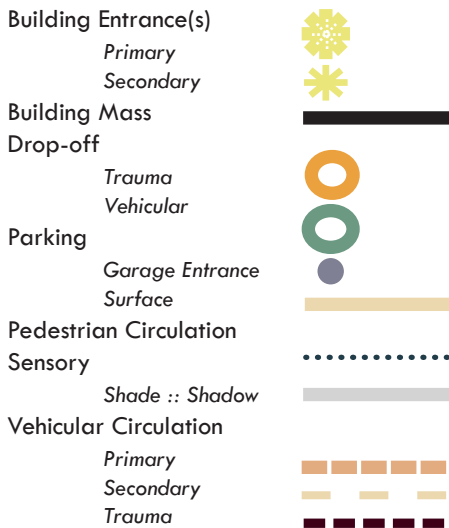
FRONT PORCH

Inventory Analyzed

Primary and secondary building entrance locations, building massing and use, trauma and vehicular drop-offs, parking garage entrances and surface parking, exterior and interior pedestrian circulation, shade and shadow patterns, and primary, secondary, and trauma vehicular circulatory systems.

Conclusions

The analysis of the inventory has designated in figure 4.9, Preliminary Framework Plan, the appropriate locations of the front porch garden type within the existing DCH Site.



NORTH

Figure 4.4 Front Porch Analysis

LANDSCAPED GROUNDS

Inventory Analyzed

Primary and secondary building entrance locations, building massing and use, parking garage entrances and surface parking locations, exterior and interior pedestrian circulation, shade and shadow patterns, vegetation, and primary and secondary vehicular circulatory systems.

Conclusions

The analysis of the inventory has designated in figure 4.9, Preliminary Framework Plan, the appropriate locations of the landscaped grounds garden type within the existing DCH Site.



Figure 4.5 Landscaped Grounds Analysis



LANDSCAPED SETBACK

Inventory Analyzed

Primary and secondary building entrance locations, building massing and use, exterior and interior pedestrian circulation, shade and shadow patterns, vegetation, and primary and secondary vehicular circulatory systems.

Conclusions

The analysis of the inventory has designated in figure 4.9, Preliminary Framework Plan, the appropriate locations of the landscaped setback garden type within the existing DCH Site.

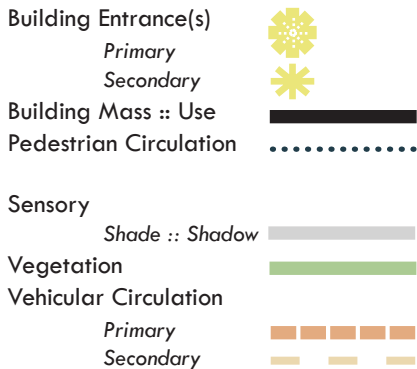


Figure 4.6 Landscaped Setback Analysis



PLAZA

Inventory Analyzed

Primary and secondary building entrance locations, building massing and use, exterior and interior pedestrian circulation, shade and shadow patterns, and primary and secondary vehicular circulatory systems.

Conclusions

The analysis of the inventory has designated in figure 4.9, Preliminary Framework Plan, the appropriate locations of the plaza garden type within the existing DCH Site.



Figure 4.7 Plaza Analysis

ROOFTOP GARDEN

Inventory Analyzed

The rooftop garden analysis consisted of the following inventory:
Rooftop building entrance locations; building massing, locations, height;
exterior and interior pedestrian circulation, shade and shadow patterns;
and primary and secondary vehicular circulatory systems.

Conclusions

The analysis of the inventory has designated in figure 11, Preliminary Framework Plan, the appropriate locations of the plaza garden type within the existing DCH Site.

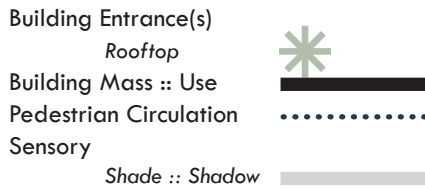


Figure 4.8 Rooftop Garden Analysis



CONCLUSIONS

Comprehensive Analysis

The comprehensive analysis determined existing design dilemmas that must be met in order to meet the goals for the design of the DCH Campus. The existing off-site and internal factors that influence the design for the landscape of the Druid City Hospital include the need for buffer along the southeast corner of the site to block noise from the interstate as well as the railroad. The analysis also showed the location of existing maintenance drop-off and loading areas that need to be addressed when selecting the site location of the DCH Garden Typology. The existing electrical outlet for the hospital located in the southeast corner of the site creates unappealing views for patients, employees, visitors, and even the community of Tuscaloosa. Buffering should be added to hinder the unattractive element. The analysis also found the amount of surface parking and parking garages that exist with the Druid City Hospital campus. The surface parking creates an endless sea of concrete compared to the existing vegetation and needs to be addressed to create a healing environment for the hospital.

CONCLUSIONS

Typology Analysis

The typology analysis determined the appropriate site location(s) of each garden type comprising the DCH garden typology. The identification and tentative location(s) for each garden type is diagrammed in figure 4-9 Preliminary Framework Plan.

-  Courtyard
-  Entry Garden
-  Front Porch
-  Landscaped Grounds
-  Landscaped Setback
-  Plaza
-  Rooftop Garden

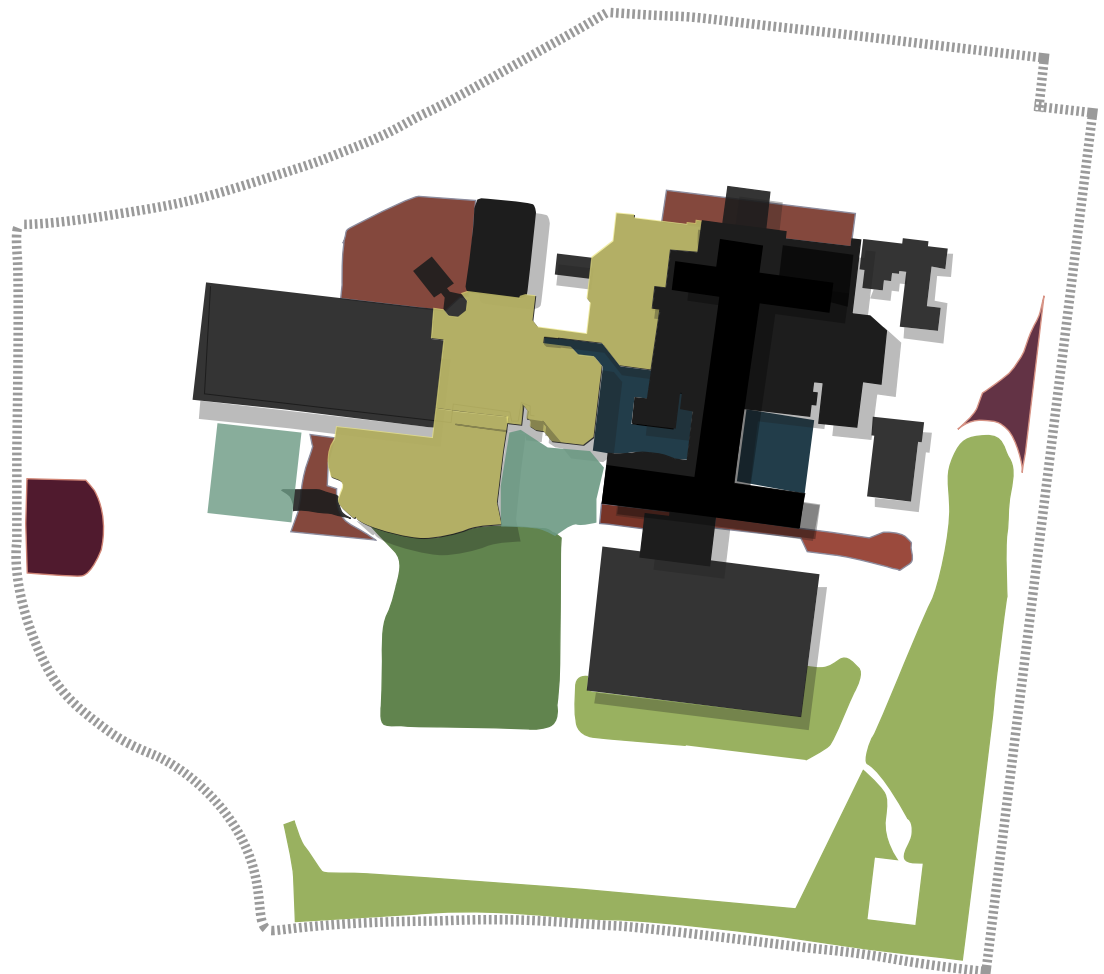


Figure 4.9 Preliminary Framework Plan





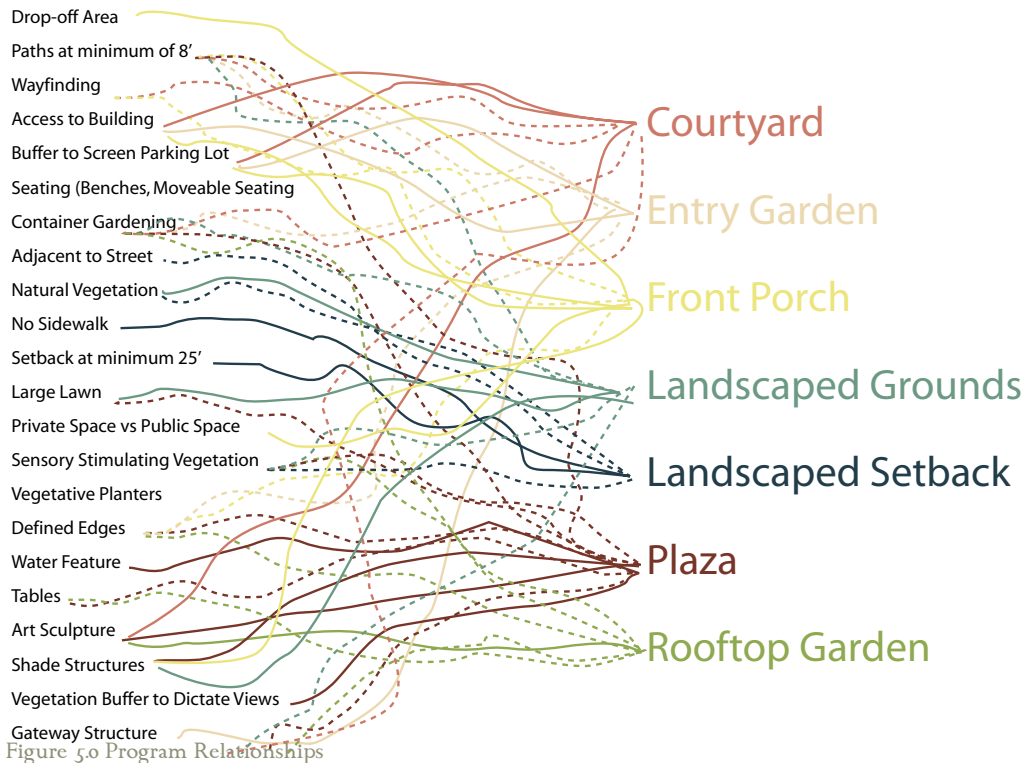
Rehabilitative Spaces

REHABILITATIVE SPACES

GARDEN PROGRAMMATIC ELEMENTS

REHABILITATIVE SPACES

For spaces to be classified as rehabilitative they must meet certain design requirements and therapeutic guidelines referred to in Garden Characteristics and Design Elements Beneficial to Rehabilitation. These guidelines and requirements foster the specific program for each garden type associated with the DCH Typology. The programmatic requirements vary for each garden type depending on the use of the garden previously outlined in the Health care Design Garden Typology. The programmatic requirements and relationships for each garden type of the DCH Garden Typology are outlined in Figure 5.0 Program Relationships.



Rehabilitative spaces for each garden type

Courtyard

Program Elements to classify a courtyard as rehabilitative are outlined in Figure 5.1 Courtyard Program

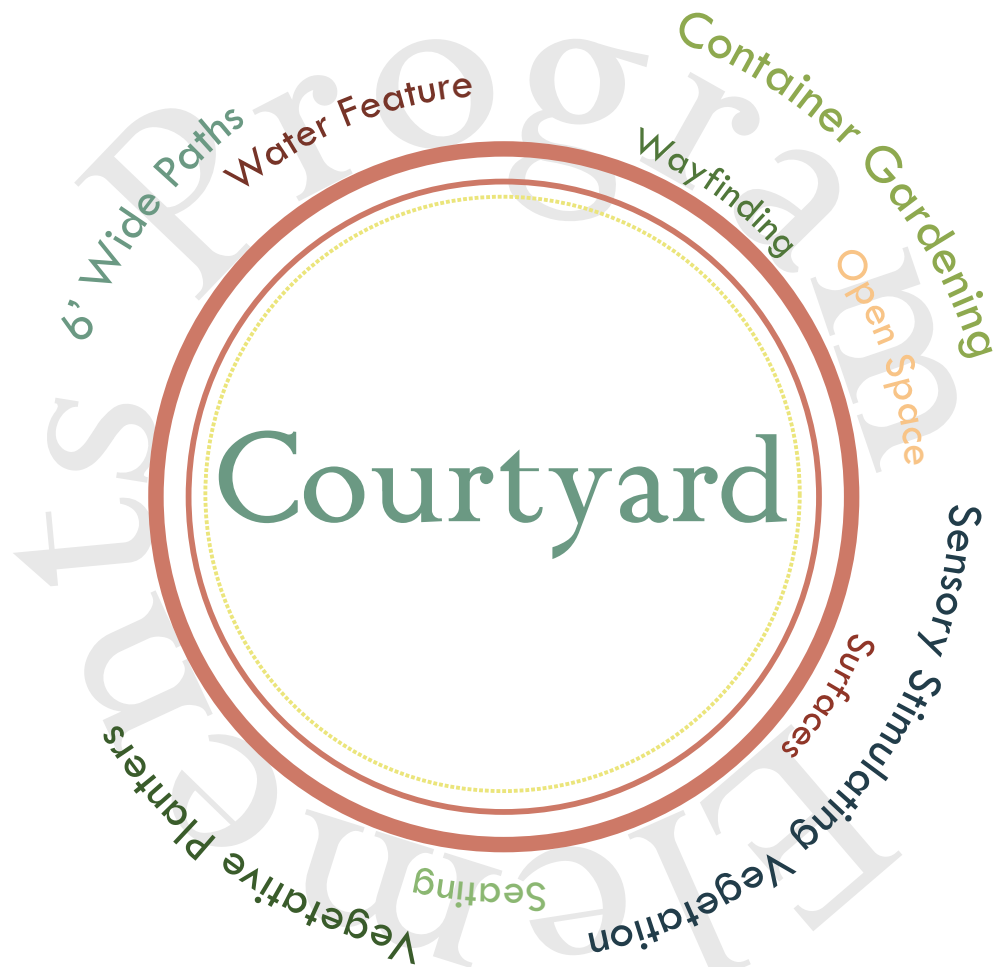


Figure 5.1 Courtyard Program

Entry Garden

Program Elements to classify an entry garden as rehabilitative are outlined in Figure 5.2 Entry Garden Program



Figure 5.2 Entry Garden Program

Front Porch

Program Elements to classify a front porch as rehabilitative are outlined in Figure 5.3 Front Porch Program

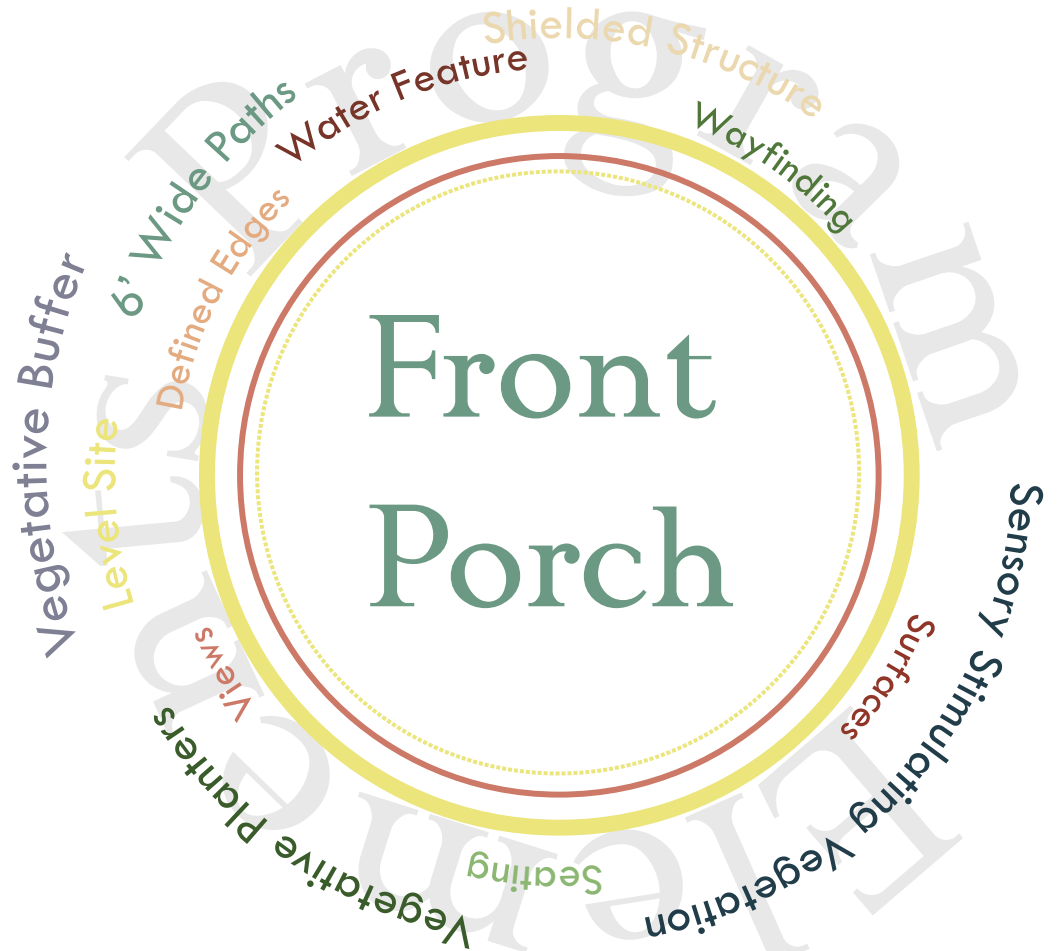


Figure 5.3 Front Porch Program

Landscaped Grounds

Program Elements to classify landscaped grounds as rehabilitative are outlined below in Figure 5.4 Landscaped Grounds Program.



Figure 5.4 Landscaped Grounds Program

Landscaped Setback

Program Elements to classify a landscaped setback are outlined below in Figure 5.5 Landscaped Setback Program



Figure 5.5 Landscaped Setback Program

Plaza

Program Elements to classify a plaza as rehabilitative are outlined below in Figure 5.6 Plaza Program.

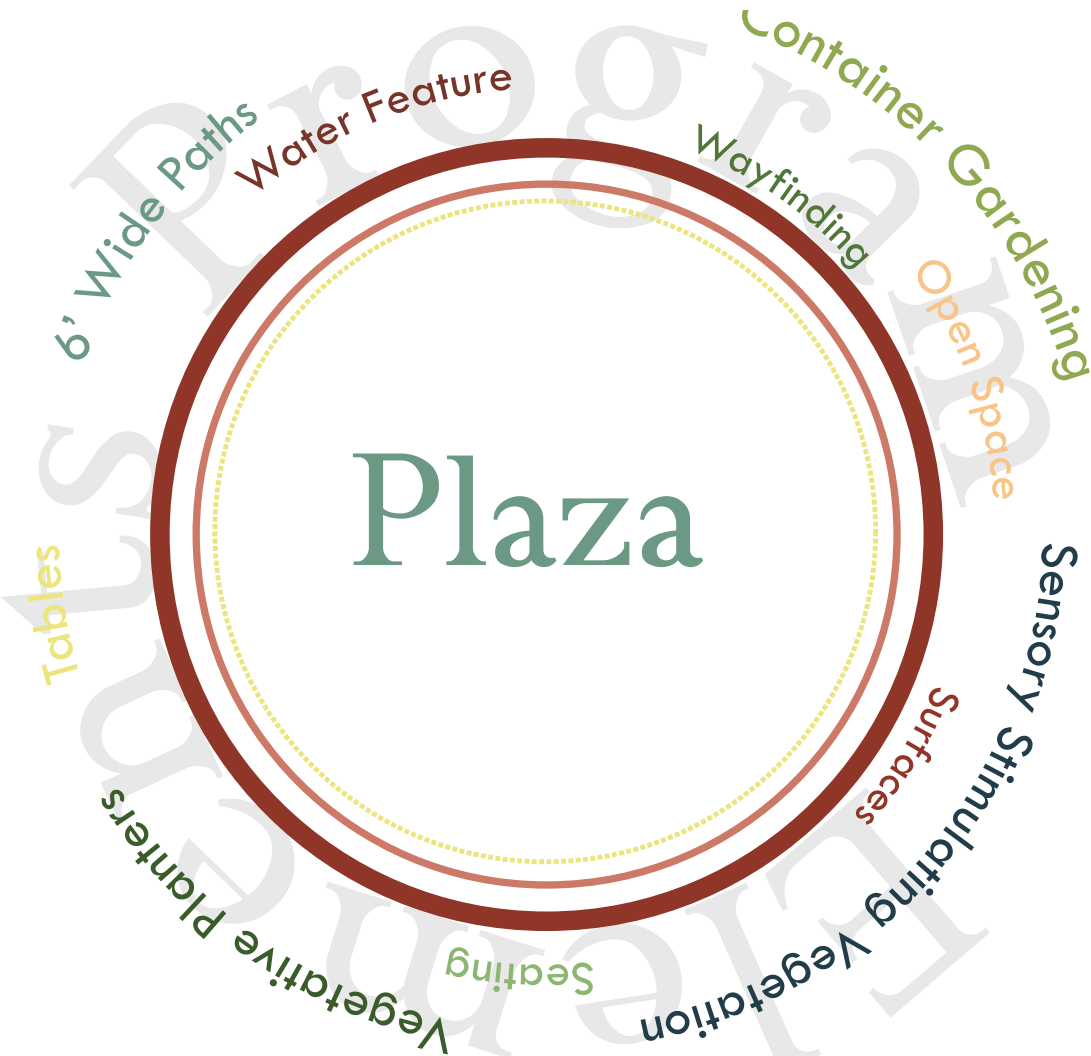


Figure 5.6 Plaza Program

Rooftop Garden

Program Elements to classify a rooftop garden as rehabilitative are outlined below in Figure 5.7 Rooftop Garden Program



Figure 5.7 Rooftop Garden Program

Creating a Cohesive Landscape

PHILOSOPHY

DESIGN PARTI

MASTER PLAN

FINAL FRAMEWORK PLAN

SITE SPECIFIC PLANS

CONCLUSIONS

PHILOSOPHY

The design is separated into two pieces, a master plan (1"= 50') and two site specific plans (1"= 10'). The master plan produces an overall cohesive landscape that unites each garden type of the DCH Garden Typology. Two site specific plans were created to design in detail the specific programmatic elements required for each space to be designated as rehabilitative.

DESIGN PARTI

The design parti was fostered through theories regarding the health benefits associated with the sound of water described in the Garden Characteristics and Design Elements Beneficial to Rehabilitation. The design parti represents a curvilinear form adapted from a sensuous free flowing wave. A natural wave is a curvilinear form that has no hard edges and flows together synonymously. The free flowing form organically represents the increase of an individual's well-being through the sounds of water.

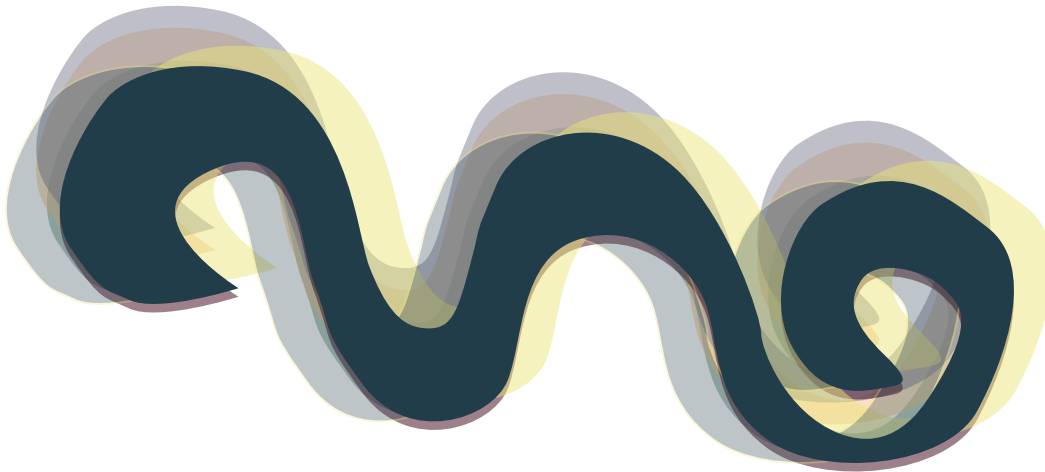


Figure 3.8 Design Part I

MASTER PLAN

Design elements were implemented to create a unified landscape as well as make visual and accessible connections throughout the Druid City Hospital. These connections help to establish relationships between each of the garden types of the DCH garden typology as well as the existing built environment. The design elements are outlined in figure 5.9 Master Plan.



- 1 Meandering Stream
- 2 Pervious Paving
- 3 Exercise Path
- 4 6' Wide Paths
- 5 Varying Surfaces
- 6 Vegetative Buffers
- 7 Retaining Walls
- 8 Rock Water Feature
- 9 Retention Ponds
- 10 Roundabout
- 11 Entry Structures
- 12 Berms
- 13 Parking Removal
- 14 Shade Structures



Figure 5.9 NORTH Master Plan



Design Elements of Master Plan

Meandering Stream

An eighteen foot wide stream was designed at the heart of the DCH Hospital to act as a focal point for the landscape. The stream begins at the old cancer treatment facility and is run by rainwater that is harvested from the rooftops and gutters of the existing buildings. The water is piped from the existing building rooftops to the rooftop garden atop the former cancer treatment facility. The former cancer treatment facility is the lowest rooftop point on the site and allows for easy collection of rainwater harvesting. The water is pooled in a basin at the top of the rooftop garden and glides from an overhang running down a water sculpture formed by stone native to Alabama, ultimately reaching the stream below. The shallow stream meanders the water throughout landscape finally reaching its final destination at the retention pond located within the landscape grounds garden type. The stream not only provides visual interest but also serves a design role as it divides the plaza and courtyard spaces into two separate garden types. A constant flow of water during peak rainfall months creates visual interest as well as helping to minimize intrusive stimuli with the soothing and relaxing sounds of moving water.

Pervious Paving

To implement sustainability into the existing DCH infrastructure, permeable paving was placed throughout the existing surface lots around the site. The surface lots were also re-designed with curb less islands to provide retention capabilities for runoff that might occur during heavy microclimatic events when not all precipitation can infiltrate through the pervious paving.

Exercise Path

An exercise path winds along the boundary of the DCH site to stimulate physical activity by patients, visitors, employees and citizens of the Tuscaloosa community. The exercise path is six feet in width allowing for easy accessibility of multiple individuals to use at any given time. The meandering path winds through an array of natural and built environments including manicured lawns, wooded areas, native vegetated plains, and also through the dense massing of hospital buildings. The exercise path is easily accessible from multiple areas allowing for use by individuals including the Tuscaloosa community who wish to use the grounds for recreational purposes.

6' Wide Paths

All paths were designed at a minimum of six feet in width to allow individuals to move with ease. The paths are also designed with surfaces that can be accessible by all individuals, including those in wheelchairs and gurneys.

Varying Surfaces

All paving surfaces were designed to be ADA accessible by all individuals, including those in wheelchairs and gurneys. Variances in surface texture also provide opportunities for rehabilitation practices to occur by allowing patients to change from one surface to another and practice balance in a controlled environment.



Retaining Walls

A series of sensuous and curvilinear retaining walls were designed along the southern boundary to help mitigate the 20' grade change that occurs towards the southern boundary. The retaining walls help to create a level surface needed for the exercise path that also borders the southern boundary. These retaining walls are planted with native grasses as well as manicured lawns and plantings. The fill dirt used to create these walls was taken from the soil removed when constructing the retention ponds.

Vegetative Buffers

Vegetative Buffers were implemented in the form of green screens to hide obtrusive objects as well as to minimize the noise affects created by cars entering and exiting the parking structures. The green screens are planted with dense colorful vegetative vines that create a appeal to the visual senses but also the sense of smell by producing a pleasant aromatic fragrance.

Rock Water Feature

To stimulate the visual and hearing senses, a rock water feature was designed to catch and direct rainwater harvested from the rooftops of buildings. The rock water feature lies along the southern building façade of the former cancer treatment center. The rock water feature consists of native stone at varying heights and depths to create visual appeal as well as to create different surfaces for the water to reflect. The feature is made from stone native to the region and correlates with the materials and textures of the existing built environment.

Retention Ponds

Two retention ponds were designed for the Druid City Hospital. The larger of the retention ponds lies to the north, while the smaller one lies just to the south. The larger retention pond catches the remnants of the water harvested from the building rooftops as well as the surface drainage from the landscaped grounds garden type. The smaller retention pond catches the surface runoff from the lower left half of the site as well as any excessive runoff that comes from the southern surface parking lot. The retention ponds not only serve sustainable purposes but also as design elements of the site. These retention ponds give individuals the chance to sit and meditate while overlooking a small body of water. Both of the retention ponds are easily accessible by six foot concrete paths. Each pond has its own small overlook with shade structures attached.

Roundabout

To allow for easy mobility into the Druid City Hospital, a drop-off was implemented in front of the new cancer treatment center to allow for easy access of patients, visitors, and staff. In addition, the drop-off was also placed and designed at this point so that individuals do not need to enter the hospital to be able to fully utilize the landscape. The roundabout was designed to fit eight economy vehicles at a given time, and can easily be expanded if the need arises due to the implementation of a roll-over curb.

Entry Structures

Entry structures were placed at the main entrances located on the East and West sides of the site. The entry structures will serve as gateway features helping to create an identity for the hospital will be implemented with native materials to create connections with the existing built environment.



Berms

Berms were designed to hide the electrical and power source that lies within the southeast corner of the Druid City Hospital. The berms are to be built with fill dirt from the retention ponds. The berms are to be landscaped with grasses native to the region. The berms also act as a buffer to minimize intrusive stimuli that stems from the adjacent interstate and railroad. In turn, the berms also act as a buffer to the citizens of Tuscaloosa by blocking obtrusive views of the hospital. When moving north along the interstate, individuals, will only be able to visibly see the natural landscape and the sensuous movement of the grasses atop the berms as they blow in the wind.

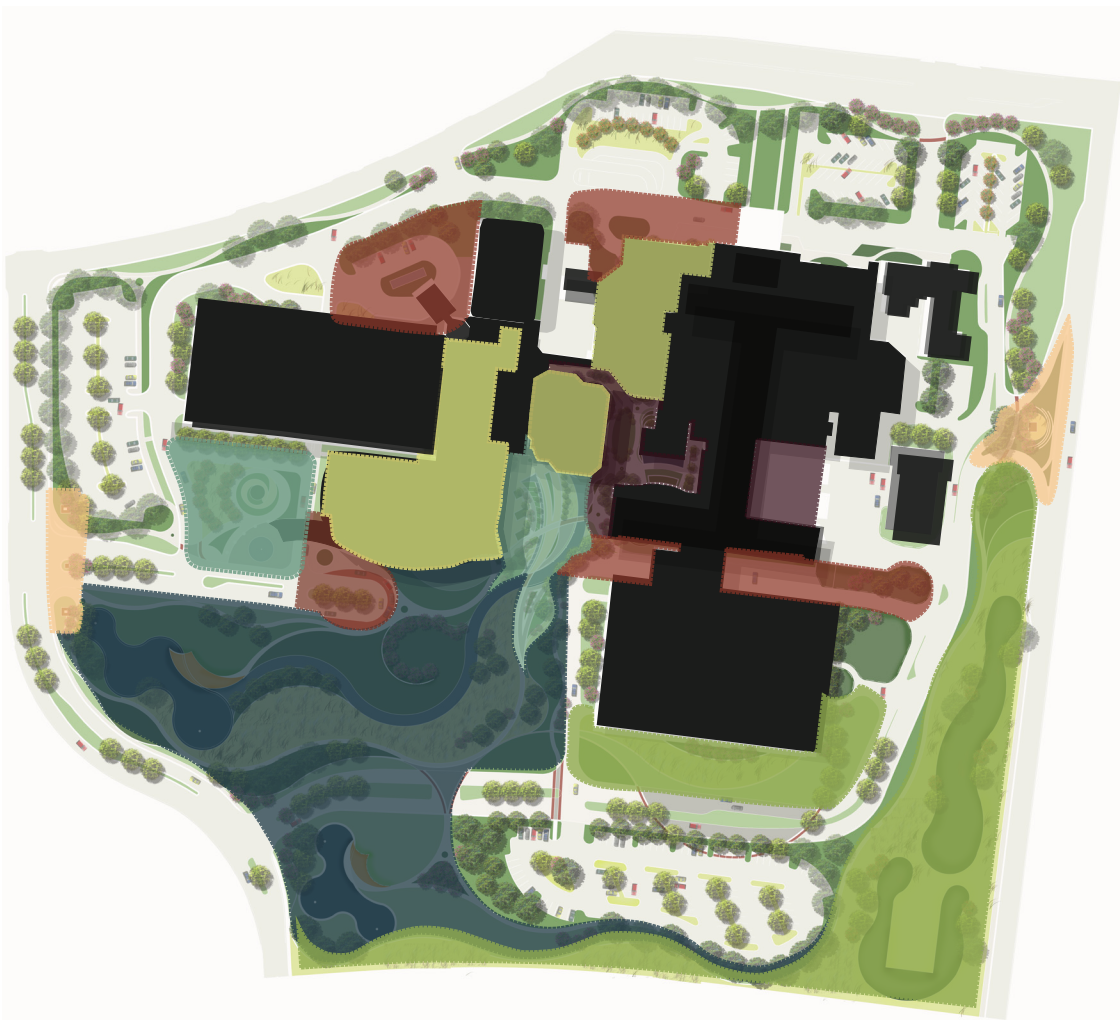
Parking Removal

To create scenic views from multiple hospital towers housing patient rooms, a large parking lot was eliminated and replaced by a vast vegetated area. Data collected from parking ratios and calculations showed an excess amount of parking stalls in conjunction with the patients, visitors, and employees of the hospital. These calculations led to the decision to remove the large surface parking lot and the replacement with softscape vegetation.

Shade Structures

Shade Structures were implemented and placed next to the pond overlooks. The shade structures were designed with a more modern approach than the existing architecture but remain connected by utilizing similar building materials such as limestone, brick, and glass. The shade structures create a more enclosed setting as well as provide refuge from microclimatic conditions.

FINAL FRAMEWORK PLAN



- Courtyard
- Entry Garden
- Front Porch
- Landscaped Grounds
- Landscaped Setback
- Plaza
- Rooftop Garden



Figure 6.0 Final Framework Plan

SITE SPECIFIC PLANS

GARDEN TYPE SELECTION

The Plaza and Courtyard garden types were selected for detailed design due to their high potential to affect the most patients, employees, and visitors due to their location. The Figure 6.1 shows the location of the plaza and courtyard location.

Garden Types

Plaza



Courtyard



Figure 6.1 Plaza and Courtyard Location

PLAZA DESIGN

The design for the plaza stemmed from the overall design parti in figure 5.8 Design Parti. Programmatic elements to certify the plaza as a rehabilitative space are outlined in figure 6.2 Plaza Design.



Programmatic Elements

- 1 Open Space
- 2 Wide Paths
- 3 Surfaces
- 4 Wayfinding
- 5 Container Gardening
- 6 Water Feature
- 7 Sensory Stimulating Elements
- 8 Seating
- 9 Tables
- 10 Vegetative Planters



Figure 6.2 Plaza Design



PROGRAM ELEMENTS

Open Space

Open space for the plaza space was designed adjacent to the building entrances of the plaza to allow for use by individuals who cannot travel far. This area provides a location for social interaction to occur with large groups of individuals as well as for activities to occur associated with rehabilitation. The Open space is vegetated by a manicured lawn as well as various low plantings encasing the edges.

Surfaces

The surface textures of the plaza include, concrete, gray and sand colored native stone paving. These hardscape surfaces vary in color with the vegetated areas of the site to create distinct edges between hardscape and softscape. All surfaces within the plaza are accessible by all individuals including those in wheelchairs, walkers, and canes.

Wayfinding

A wayfinding element was implemented adjacent to the building access points. This element creates signage to enhance the ability of individuals to maneuver throughout the plaza and hospital with independence. The wayfinding element is color coordinated with bright colors and is consistent throughout the enter site of the Druid City Hospital. A circular paving patterns surrounds each wayfinding element allowing for individuals with eye difficulties to maneuver around with ease.



Vegetative Planters

Vegetative planters were placed throughout the plaza to provide softscape to areas dominated by hardscape. The vegetative planters allow for individuals to be closer to nature and allow them to enjoy the textures, colors, and fragrance that vegetation can bring. Various vegetative planters act as seatwalls to incorporate seating within the plaza.

Water Feature

Water runs throughout the entire length of the plaza beginning at the level building entrance and ending in the meandering stream. The water feature begins at the top of the plaza and flows down along the paved curvilinear sloped surface. The water then flows under the paved walkway and downward at an even slope into the shallow stream. The water feature creates a visual appeal for the plaza as helping to minimize intrusive stimuli by creating a peaceful noise of water.

Seating

Meandering seat walls are located throughout the plaza as well as private spaces and nooks for personal meditation purposes. Moveable seating is located underneath the covered structure extending from the new cancer treatment center. Moveable seating allows for users to easily manipulate the location and arrangement of the seating to work with the various types of social interaction that occur. Moveable chairs are also located along the stream's edge near the table area.

Container Gardening

Vegetative Planters were designed in the plaza to allow patients who are relatively immobile to be able to partake in exercise to stimulate their health and well-being (Refer to Chapter 2) Vegetative planters are at a raised height of 29" to allow for access by wheelchairs. Vegetative planters were placed closest to building entrances for easy access for the immobile patients as well as easy care by the staff. This also allows patients to partake in the effects of performing tasks outside while they can be easily watched by indoor staff. The care and maintenance of the vegetative planters by the patients stimulates a sense of pride and self-worth for the patient stimulating rehabilitative affects through healing.



Figure 6.3 Plaza - Container Gardening

Sensory Stimulating Elements

Sensory stimulating elements were placed throughout the plaza in various forms of vegetation and paving surfaces. The sensory stimulating elements were implemented to provide users the opportunity to become in touch with nature hopefully evoking emotions leading to the healing and rehabilitative process. (Refer to Chapter 2) Sensory stimulating vegetation included varying vegetation through color, size, shape, fragrance, and texture of plantings.



Figure 6.4 Plaza - Sensory Stimulating Elements

Tables

The arrangement and placement of tables was designed to create a sense of solitude as well as to create a place for people to gather and engage in group social interaction. The tables were placed by the shallow stream to minimize intrusive noise that might hinder social situations. The table area is also well-lit at night by strands of light that creates a feel reminiscent of an Italian café. The nighttime lighting also allows for the space to be used around the clock by patients, visitors and employees.



Figure 6.5 Plaza - Table

6' Wide Paths

All paths located within the plaza are at a minimum of six feet in width. Many of the paths are at a greater width to allow for more individuals to pass by at one time. The paths are made of various paving patterns and surface textures. Although all different the paths all remain accessible by those in wheelchairs and walkers. Vegetative barriers create edgings for the pathways as well as barriers between waterways and pathways.



Figure 6.6 Plaza - 6' Wide Paths

COURTYARD DESIGN

The design for the courtyard stemmed from the overall design parti in figure 5.8 Design Parti. Programmatic elements to certify the plaza as a rehabilitative space are outlined in figure 6.7 Courtyard Design.



Figure 6.7 Courtyard Design

PROGRAM ELEMENTS

Sensory Stimulating Elements

Sensory stimulating elements were placed throughout the courtyard to evoke emotions that promote healing. Sensory stimulating elements include vegetation varying in color, size, and fragrance. A variety of level surface textures were implemented throughout the courtyard for patients to move easily about as well as work on their balance skills by moving from one surface to the next.

6' Wide Paths

Paths six feet in width navigate users through the space. The paths are wide enough for multiple wheelchairs and gurneys to pass at a given time.

Surfaces

Hardscape and softscape surface textures were designed throughout the site to allow for rehabilitative practices to occur. Hardscape elements include brick, concrete, and light and dark native stone paving patterns. Softscape elements encompass grassy turf and vegetated areas.

Container Gardens

Container gardens were designed adjacent to the northeast building entrance of the courtyard. This area was strategically placed in this location to allow disabled individuals to have independence to freely garden while their caretakers watch closely from inside. The container gardens were placed at a height of 29" for access by wheelchairs and to allow seat walls for individuals as well.



Vegetative Planters

Vegetative planters were throughout the courtyard area to provide sensory stimulating vegetation to an enclosed area. Bright colors, patterns, and textures of vegetation were chosen to help reduce the darkness of shadows brought about by the height of the buildings.

Water Feature

The water feature was strategically placed within the courtyard because of its visibility from the interior of the hospital. Large interior windows overlook the water feature to create and evoke emotional response from users on the interior as well as the exterior of the hospital. The water feature was also designed with three sculptural elements spewing water to minimize unwanted noise as well as create height within the courtyard to help soften the large height of the surrounding buildings.

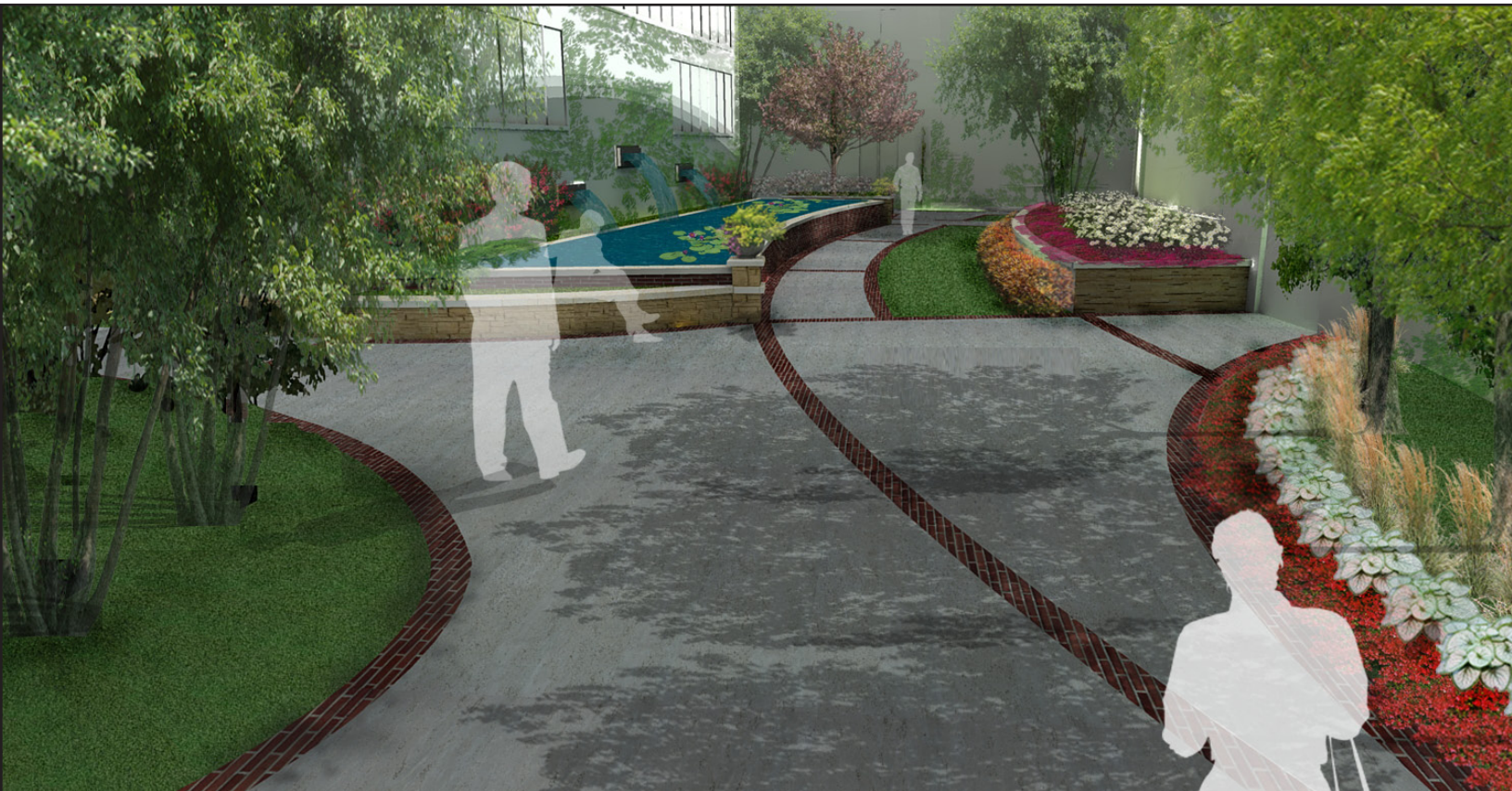


Figure 6.8 Courtyard - Water Feature

Open Space

The open space was designed as a focal point for the courtyard. The small, circular mound is vegetated with short manicured lawn to allow for people to rest, picnic with their lunch, sunbath, as well as to just enjoy nature's company. The height of the buildings provides afternoon shade for the intense hours of the sunlight so no overhead protection was needed. The open space is surrounded by seating walls for individuals to participate in the activities without being completely immersed. The building facades adjacent to the open space are covered with dense green screens to create visual and pleasant fragrance. The green screen also helps to feel like they are not in a hospital setting by covering up the congruent facades.



Figure 6.9 Courtyard = Open Space

Seating

A curvilinear seating wall lies along the eastern wall of the lowered private space. The fixed seating allows for private as well as small group gatherings to occur. The seat wall faces the rock water feature and meandering stream to also allow for a personal respite for meditation.



Figure 7.0 Courtyard - Seating

Wayfinding

Wayfinding elements were placed near the access points of the buildings. Wayfinding elements in the form of signage were placed at two locations near the entrance to the plaza. The placement of signage allows for individuals entering the gardens to be easily find their way around coherently.



Figure 71 Courtyard - Wayfinding



CONCLUSIONS

The formulation of the master plan and specific site details have helped to create a more unified landscape for the Druid City Hospital. The use of congruent elements such as paving patterns, wayfinding elements, architecture features, and vegetation have all helped to create a cohesive landscape that the patients, visitors, employees for the Druid City Hospital to be proud of.

Although the goals and objectives set forth are complete, there are many future steps that can be taken to create a more dynamic and sustainable landscape for the Druid City Hospital. The implementation of sustainable products and design materials would help to create a more sustainable hospital campus and facility. Time constraints did not warrant in-depth research into sustainable design and LEED construction.

In addition to the implementation of sustainable products to the Druid City Hospital, the application of rehabilitative design elements could be addressed in detail to the remaining five gardens of the DCH Garden Typology.



Glossary



A

Accessibility :: The accessibility of an activity to an individual is the ease with which the individual can get to the places where that activity can be performed. (LEED)

ADA :: The Americans with Disabilities Act which gives civil rights protection to individuals with disabilities similar to those provided to individuals on the basis of race, color, sex, national origin, age, and religion. It guarantees equal opportunity for individuals with disabilities in public accommodations, employment, transportation, State and local government services, and telecommunications. (ASLA).

Aesthetics :: the branch of philosophy that deals with the beauty or that which is beautiful (Murphy, 2005).

Ambient Noise :: The background noise level in a space, which is not identifiable as being from a specific source, such as a nearby piece of equipment.

Architecture :: The design discipline concerned with the creation of buildings and physical structures to shape, shelter, and facilitate human activities. (Murphy, 2005).

B

Building Height :: Distance measured vertically between the topmost point of the building (not being a vent, chimney or the like) and natural ground level below (DPD Green Building).

Built Environment :: The man-made creation of or alterations to a specific area, including its natural resources. This is in contrast to the "natural environment." (ASLA)

C

Character :: A term relating to Conservation Areas or Listed Buildings, but also to the appearance of any rural or urban location in terms of its landscape or the layout of streets and open spaces, often giving places their own distinct identity. (Planning Portal)

Circulation :: movement patterns of pedestrian and vehicular traffic. (Site Guidelines)

Cognitive Therapy :: a form of therapy stemming from the belief that emotional disorders are caused by irrational yet habitual forms of thinking; these patterns are viewed as behaviors that the therapist can try to help the patient change (ADAA)

Cohesive :: Harmonious grouping of complementary elements. A cohesive townscape contains objects and architectural elements which have a consistent overall effect.

Connectivity :: Connectivity is a measure of how connected or spatially continuous a corridor, network, or matrix is. (The fewer gaps, the higher the connectivity. Related to the structural connectivity concept; functional or behavioral connectivity refers to how connected an area is for a process, such as an animal moving through different types of landscape elements.) (Forman 1995).

Courtyard :: Space that forms the core of a building complex

.

Cure :: To heal, to make well, to restore to good health. Cures are easy to claim and, all too often, difficult to confirm.

D

Depression :: a biologically-based psychological disorder marked by sadness, inactivity, difficulty with thinking and concentration, significant increase or decrease in appetite and sleep, feelings of dejection and hopelessness, and sometimes suicidal thoughts or actions (ADAA)

D CONT

Design :: Design is a set of fields for problem-solving that uses user-centric approaches to understand user needs (as well as business, economic, environmental, social, and other requirements) to create successful solutions that solve real problems. Design is often used as a process to create real change within a system or market. Too often, Design is defined only as visual problem solving or communication because of the predominance of graphic designers. In other fields and contexts, Design might only refer to Fashion Design or Interior Design. However, recognition of the similarities between all design disciplines shows that the larger definition for Design operates at a higher level and across many media (Experience Design).

Design Goals :: the broad results intended from a design intervention that are too far removed from specific form or behavior to be directly measured. (Murphy, 2005).

Design Objectives :: the steps, or measurable actions, specifically related to design form that are employed to satisfy the design goals. (Murphy, 2005).

Design Process :: The sequence of events that extends from the time when a condition requiring design intervention is detected, through the deliberation of factors influencing the decision, to the final determination of a course of action. (Murphy, 2005).

Design Programming :: the process of acquiring knowledge to establish the statement of a problem to be solved by design (Murphy, 2005).

E

Enclosure (sense of) :: an experience in which a pedestrian feels sheltered with a semi-private realm. Buildings, trees, landscaping and street widths are all factors in creating a sense of enclosure.(Murphy, 2005).



E CONT

Entry garden :: Landscaped area close to an entrance that is designed and detailed for use (Cooper Marcus and Barnes, 1995).

Environmental Design :: Environmental Design is the field of developing physical, spatial environments (interiors and/or exteriors) to solve a particular need or create a specific experience. The field of Environmental Design could include Architecture, Urban Planning, Landscape Design, Interior Design (Experience Design).

Environmental Health :: Environmental health comprises those aspects of human health and disease that are determined by factors in the environment. It also refers to the theory and practice of assessing and controlling factors in the environment that can potentially affect health (WHO).

Environmental Inventory :: Record of an area's natural and man-made resources, including vegetation, animal life, geological characteristics and mankind's presence in such forms as housing, highways and even hazardous wastes (ASLA).

Environmental Psychology :: Environmental psychology examines the interrelationship between environments and human behavior.

F

Focal Point :: a prominent structure, feature or area of interest or activity. (Site Guidelines)

Front porch :: Located at the main entrance of a building, this area usually includes an overhang or porch roof, turnaround for vehicle pickup and drop-off, seating, directional signs, and bus stop (Cooper Marcus and Barnes, 1995).

G

Gateway :: the design of a building, site or landscape to symbolize an entrance or arrival to a special district (Planning Portal).

Green Roof :: Contained green space on, or integrated with, a building roof. Green roofs maintain living plants in a growing medium on top of a membrane and drainage system. Green roofs are considered a sustainable building strategy in that they have the capacity to reduce storm water runoff from a site, they modulate temperatures in and around the building, have thermal insulating properties, can provide habitat for wildlife and open space for humans, and other benefits. (DPD Green Building)

H

Hardiness Zone :: Established by the US. Department of Agriculture. The United States and Canada comprise 11 zones, based on average to low temperatures in winter. The hardiness of a plant is the range of zones in which it will grow most successfully (Sacchitelli landscape concepts).

Hardscape :: Elements added to a natural landscape, such as paving stones, gravel, walkways, irrigation systems, roads, retaining walls, sculpture, street amenities, fountains, and other mechanical features (ASLA).

Healing Garden :: They are generally associated with hospitals and other health care settings, designated as healing gardens by the facility, accessible to all, and designed to have beneficial effects on most users (AHTA).

Health :: a state of complete physical, mental, and social well-being, not merely the absence of disease or infirmity (WHO).

Health care Design :: specifically fulfills the informational needs of architects, designers, planners, owners, administrators, providers, facility managers, consultants and the construction community who are responsible for designing, building and renovating health care buildings. (Health care Design)

H CONT

Holistic Design :: An integrative and comprehensive design approach that considers the interrelatedness of a project's parts, components, systems, and subsystems, in order to optimize energy and environmental performance during the whole-of-life of a project (Fawcett et al., 2006).

Horticultural Therapy :: Horticultural therapy is the engagement of a client in horticultural activities facilitated by a trained therapist to achieve specific and documented treatment goals. AHTA believes that horticultural therapy is an active process which occurs in the context of an established treatment plan where the process itself is considered the therapeutic activity rather than the end product. Horticultural therapy programs can be found in a wide variety of health care, rehabilitative, and residential settings (AHTA).

Hospital Campus :: A series of hospital buildings that together comprise a hospital campus (Cooper Marcus and Barnes, 2005)

Hospital :: An institution whose primary function is to provide inpatient diagnostic and therapeutic services for a variety of medical conditions, both surgical and non-surgical. In addition, most hospitals provide some outpatient services, particularly emergency care. Hospitals may be classified by length of stay (short-term or long-term), as teaching or non-teaching, by major types of services (psychiatric, tuberculosis, general, and other specialties, such as maternity, pediatric, or ear, nose and throat), and by type of ownership or control (DEHA).



L

Land Use- Any designated use or activity on a piece of land (ASLA).

Landscape :: an area of the earth's surface that has been modified by human activity (Murphy, 2005)

Landscape Architecture-The science and art of design, planning, management and stewardship of the land. Landscape architecture involves natural and built elements, cultural and scientific knowledge, and concern for resource conservation to the end that the resulting environment serves a useful and enjoyable purpose. Successful landscape architecture maximizes use of the land, adds value to a project and minimizes costs, all with minimum disruption to nature. (ASLA)

Landscape Character :: The distinct and recognizable pattern of elements that occur consistently in a particular type of landscape. It reflects particular combinations of geology, landform, soils, vegetation, land use and human settlement (Planning Portal).

Landscaped grounds :: Open space consisting of a landscaped area at grade that forms an outdoor area between buildings (Cooper Marcus and Barnes, 1995).

Landscaped setback :: An area in the form of the main entrance comprised of lawn and trees and is used to provide a bufferseparation between the building and the street (Cooper Marcus and Barnes, 1995).

M

Maslow's Hierarchy of Needs- The basis of Maslow's theory is that human beings are motivated by unsatisfied needs, and that certain lower needs need to be satisfied before higher needs can be satisfied. Per the teachings of Abraham Maslow, there are general needs (physiological, safety, love, and esteem) which have to be fulfilled before a person is able to act unselfishly. These needs were dubbed "deficiency needs." While a person is motivated to fulfill these basal desires, they continue to move toward growth, and eventually self-actualization (Humanistic Psychology).

M CONT

Master Plan :: A preliminary plan showing proposed ultimate site development. Master plans often comprise site work that must be executed in phases over a long time and are thus subject to drastic modification (ASLA).

Microclimate :: The climate of small spaces, such as an inner city, a residential area, or a mountain valley. (LaGro, 2000).

N

Natural Resources :: The elements of supply inherent to an area that can be used to satisfy human needs, including air, soil, water, native vegetation, minerals and wildlife (ASLA).

O

Open Space :: A relatively clear or forested area left untouched in or near a city. It may be active open space, such as a baseball field, or passive open space, such as an area of natural woodland (ASLA).

Overlook :: A term used to describe the effect when a development or building affords an outlook over adjoining land or property, often causing loss of privacy (Planning Portal).



P

Physically Fit :: “The condition of perfect bodily, spiritual and social well-being and not solely the absence of illness or injury (WHO).

Physiography :: A term from physical geography that is traditionally used to describe the composite character of the landscape over large regions. (LaGro, 2000)

Planning :: The illustration and description of problem statements and large-scale design solutions that affect extensive areas of land; the anticipation of problems that will be encountered as human use and development of land continues. (ASLA)

Psychoneuroimmunology :: Psychoneuroimmunology investigates the relationships between behavior, psychosocial factors, the nervous, endocrine, and immune systems, and disease. (Daruna, 2004)

Q

Quality of Life :: Those aspects of the economic, social and physical environment that make a community a desirable place in which to live or do business. Quality of life factors include those such as climate and natural features, access to schools, housing, employment opportunities, medical facilities, cultural and recreational amenities, and public services(Smart Growth).

R

Regional Scale :: textual and cartographic determinations and information normally refer to a scale of 1:50 000 to 1:100 000. However in this project the regional scale will be set at 1:500 (Murphy, 2005)

Rehabilitation :: the process of helping a person achieve the highest level of function, independence, and quality of life possible. From the Latin “habilitas,” which means to make able. (WHO)

Restorative Gardens :: A restoration or meditation garden may be a public or private garden that is not necessarily associated with a health care setting (Cooper Marcus and Barnes, 1995)

Roof Garden :: A green roof consists of vegetation and soil, or a growing medium, planted over a waterproofing membrane. Additional layers, such as a root barrier and drainage and irrigation systems may also be included (DPD Green Building).

S

Scale :: Scale refers to the size of an object or objects in relation to the surroundings. Size refers to definite measurements while scale describes the size relationship between adjacent objects (Planning Portal).

Scope :: Preliminary exploration of a subject of project (Wates, 2004).

Sensory Integration :: form of occupational therapy in which special exercises are used to strengthen the patient’s sense of touch (tactile), sense of balance (vestibular), and sense of where the body and its parts are in space (proprioceptive). It appears to be effective for helping patients with movement disorders or severe under- or over-sensitivity to sensory input (AHTA).



S CONT

Site Analysis :: The study and evaluation of existing site conditions. This follows a site inventory and includes nonphysical features such as view, smells and sound (Sacchitelli landscape concepts).

Site Context :: Where the site in question is located in relation to the greater landscape. The surrounding area, whether city, town, wilderness, etc. (Lagro, 2000)

Site Plan :: A dimensioned drawing indicating the form of an existing area and the physical objects existing in it and those to be built or installed upon it (ASLA).

Stress :: The psychological and physiological response to conditions (typically unpredictable or uncontrollable) that represent the possibility of threat or challenge; responses include arousal and active attempts to cope (Murphy, 2005).

Suitability Analysis :: the process of determining the fitness of a landscape condition to support specific human activities or land uses.(Murphy, 2005).

T

Texture :: An element of design that is both tactile (the way the object feels) and visual whether it looks fine, medium or coarse (Sacchitelli landscape concepts).

Therapeutic Gardens :: A therapeutic garden is designed for use as a component of a treatment program such as occupational therapy, physical therapy, or horticultural therapy programs and can be considered as a subcategory of a healing garden (AHTA).

U

Unity :: A principle of design that refers to the overall harmony of the landscape and how well the various components work together (Sacchitelli landscape concepts).

User Experience :: The overall experience, in general or specifics, a user, customer, or audience member has with a product, service, or event. In the Usability field, this experience is usually defined in terms of ease-of-use. However, the experience encompasses more than merely function and flow, but the understanding compiled through all of the senses (Experience Design).

V

Values :: The ideals and principles we consider important in our lives that motivate and give purpose and meaning to our thoughts and actions (Murphy, 2005).

Viewshed :: a physiographic area composed of land, water, biotic, and cultural elements which may be viewed and mapped from one or more viewpoints and which has intrinsic qualities and/or aesthetic values as determined by those who view it (LaGro, 2000).

Visual Design :: Visual Design is the field of developing visual materials to create an experience (Sacchitelli landscape concepts).



W

Watershed :: The geographic area which drains into a specific body of water. A watershed may contain several sub-watersheds (Murphy, 2005).

Wayfinding :: the ability to cognitively map the environment and make appropriate navigational decisions (Murphy, 2005).

Wellness :: A type of preventive medicine associated with an individual's lifestyle which, through a combination of exercise and diet, can reduce health care utilization and costs (DEHA).

Z

Zone of Visual Influence :: The visual 'line of sight' or catchment area having the potential to be visually affected by a particular site or structure (Planning Portal).

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Appendix

- SITE INVENTORY



SITE INVENTORY

Inventory

The site inventory is an essential step in understanding the character of the site and the links that exist between the site and the surrounding landscape. The inventory elements for the DCH Regional Campus site's attributes is driven by the established project intentions, goals and objectives, and the knowledge gained through literature and precedent reviews. The inventory elements for the DCH Regional Campus site and surrounding area were broken into two categories: regional and site specific. The regional data will be collected at a scale of 1" = 100' while the site-specific data will be collected at a scale of 1" = 50'. A Regional Analysis (analysis on a regional scale) will be conducted to gain a better understanding of the contextual influences of the site; however, the regional analysis will not be the focus of the study as much as a detailed analysis of site specific elements and their potential to help or hurt the future expectation of the site as a rehabilitation feature.

Regional Scale (1": 50')

Existing Land Use & Context

Existing land use and context of the site is important to gain an overall understanding of the land adjacent to and the variable conditions that enclose the site. Each of the following factors and conditions has the potential to influence the site personally or through other matters. The inventory for creating a cohesive understanding of the land and land use patterns surrounding the site are as follows:

Proximity to other hospitals Type

Proximity of river or other water resources

Proximity to transportation systems

 Bus Stations

 Freeways

 Interstates

 Highways

 Airports

Proximity to Parks

Proximity to Schools

Physiography

The physiography pertains to the understanding of the processes and patterns in the natural environment. The inventory for creating a cohesive understanding of the physiography of the site at a regional scale includes:

Existing Topography

Illustrates the existing terrain and surface features that will be important to siting the gardens. Depicts the site's erosion potential, site drainage and storm water management, and affects building design and construction complexity.



Hardiness Zone Region

Illustrates the existing terrain and surface features that will be important to siting the gardens.

Microclimate

The microclimate is the climatic influences on a localized region and site. This project will encompass the microclimatic conditions on a regional scale. The microclimate inventory will encompass the following elements:

Temperature

Temperature is the most influential of all climatic conditions when designing outdoor spaces. The average temperatures designate the times of prime usage for the spaces and can help to create

Wind speed

Wind speed influences structural and plant elements. Placement of exterior spaces will be piece of inventory is valid for analysis because it will affect the potential location for placing exterior spaces as well as planting elements. Influence the location and need from protection of patients. Influences the placement of outdoor seating and planting design.

Average Rainfall

Rainfall affects the time in which a patient can experience an outdoor setting. Knowing the average rainfall area will help demonstrate the importance of creating shelter from these climatic conditions. The amount of rainfall is also useful in selection of a plant palette.



Average Sunny to Cloudy Days

Daylight has a profound affect on the sense of well-being of an individual. Creating an understanding of the average days of sunlight will help to make concise design decisions. Sunlight also causes glare and knowing these affects will help to determine proper location of gardens.

Hydrology

Hydrology examines the process and dynamics involved in the bodies of water related to the site. Gathering a complete set of hydrological data is Important to understanding the hydrologic cycle as well as understanding possible locations to reestablish wetlands, create rain gardens, as well as sustainable watershed practices such as BMPs. The inventory for creating a cohesive understanding of the physiography of the site at a regional scale includes:

Drainage

Drainage patterns are important to associations in vegetation patterns and distributions. Also deciphers flooding hazards.

Watersheds

Diagram of the potential location for reestablishing watershed regions, or for utilizing the watershed as a natural design element.



Demographics

Demographics are used to predict land use trends, assess land use and their value, conduct demographic and socioeconomic analysis and develop projects for population and income. (Site Analysis) These projects of the site will allow you to gain a better understanding of the site and identify opportunities and constraints afforded by its features.

- Age
- Income
- Race
- Crime

Site Specific Scale- (1": 50')

Circulation and Parking

Understanding the existing circulation patterns is an important piece of the overall site inventory process. Locating and creating parking structures has a profound effect on the overall effect of the design.

Within health care systems, parking usually takes up more space than the health care facility footprint itself. The circulation for the DCH Regional Medical center was broken down into two categories, exterior systems and interior systems. The exterior systems are adjacent or feeding systems in to the site. The interior systems must be linked to exterior or off-site circulatory systems.

Circulation Systems

- Vehicular
- Pedestrian
- Trauma
- Rooftop
- Entrances to building
- Access to Rooftops
- ADA Accessibility

Parking

- Structures
- Surface Lots

Sensory Elements

A person's ability to see, smell, taste, touch and hear give us access to extensive information about our surroundings. Extensive medical research has been done to understand the linkages between mind and physical well-being. Human perception, whether good or bad, can be related to a person's sight, hearing, and smell. Therefore an analysis of existing site elements pertaining to these sensory mechanisms will help to create a better place for rehabilitation to occur within the campus. This inventory will be comprised of visual sound and air quality elements pertaining to the interior, exterior, and rooftop spaces.

Noise

Possibility of noise from industry, schools, sports areas, air, rail and road traffic should be investigated.



Viewshed

Views are one of the most important elements of creating a successful therapeutic garden. Viewshed inventory will help to determine the visual experience that a person will have at each particular garden location on the site. This information will help to determine the areas with the best vantage points for locating garden sites. Adjacent land uses may affect the site through visual characteristics. Depict the visibility of off-site features as well as on site features. Deciduous vegetation can provide screens through some of the year but not through the winter months, and this must be taken into account for views. Viewshed will graphically show what locations can be seen within each view. Viewshed deciphers desirable and undesirable views

Built Environment

Massing

Contributes to the character of the site as well as deciphers potential locations for the placement of gardens. Diagramming this will help to find potential locations that might otherwise be missed.

Age of Building

Will distinguish when the building was built to help determine the potential location for rooftop gardens as well as to gain an understanding of the character of the building.

Structural Load of Building

Designate the potential building locations that have enough load capacity to withstand a rooftop garden.



Height of building

The number of stories of buildings designates the potential a building has for rooftop gardens as well as distinguishes which buildings visual quality and sense of place.