



## KEY POINT SUMMARY

### OBJECTIVES

This study was developed to identify design principles and features that would assist in designing a courtyard that would provide restorative experiences of renewal and stress relief for nursing staff and provide the basis for creating a baseline for a future post-occupancy evaluation.

## Humane Design for Hospital Landscapes: A Case Study in Landscape Architecture of a Healing Garden for Nurses

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### Key Concepts/Context

Research has shown many direct and indirect health benefits related to views of nature and access to nature. As hospitals begin to integrate ecological sites, it becomes imperative to understand the interconnection between future users' attitudes and preferences, intended health outcomes, and the design features within the natural environment.

### Methods

A standard landscape architecture ecological site design process was integrated with a qualitative empirical study of staff characteristics and landscape preferences for this study. Two distinct proposed designs for the new courtyard were developed utilizing the standard landscape architecture site design process. Nurse surveys were then used to evaluate the two proposed plans. Insights generated from the nurse surveys were used to develop design principles that informed the final design proposal of the new courtyard.

The ecological site assessment was used to gain understanding into the following areas: (1) ecology of the site, (2) desired program, and (3) intention of the owner. This was done through a physical assessment of geometry, views, existing landscape features, access and entrances, movement patterns, climate, and proximity. The underlying quality of the space was assessed through observing how others used the space and by spending time in the space. Discussions with hospital administration were used to gain insight into the owner's objectives, the target user, and user needs.



### DESIGN IMPLICATIONS

This research has demonstrated that a design process utilizing user input to inform the final design of a landscape can potentially increase the intended health outcomes associated with the design. Future healthcare projects looking to integrate the healing properties of nature into their design should look to utilize user input from the intended primary user in order to strategically design the landscape to address specific desired health outcomes.

Surveys were developed to gain insight into the following areas: (1) nurse attitude towards the outside and (2) nurse input on proposed design concepts and their perceived ability to reduce stress. The survey consisted of two parts and took approximately 15 minutes to complete; they were distributed during the nurses' monthly staff meetings. The first section was composed of multiple-choice questions relating to the nurses' attitude towards being outside in general and being outside during work. The second section used perspectives of two different proposed designs of the courtyard. The first design represented a more formal style; the second proposed design represented a more personal style. Participants were asked to answer each question by evaluating pairs of perspectives from each of the proposed plans. Participants were asked to give both positive and negative feedback on the design concepts within the perspectives to ensure a data-driven outcome. A total of 61 nurses participated in this study. Analysis of the multiple-choice questions was done using descriptive statistical analysis. Written comments were analyzed through thematic content analysis.

### Findings

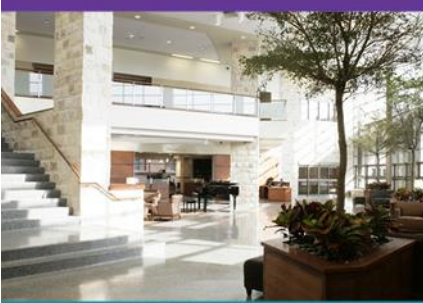
Results from the landscape architectural site analysis revealed a 1:2 geometry that influenced the ratio for the development of subspaces. Proximity of the chapel influenced the spiritual dimension of the program. Visual access from interior rooms at ground level was predominately on the south, and axonometric views from above occurred on all four sides from the second, third, and fourth floors. Open breezeways between the POB and the old hospital offered views into the courtyard. Grass, ivy, small Chinese hollies, a few shrub bamboos, Asian jasmine, and a couple dozen small crape myrtles made up the existing plant material. The existing ground surface was concrete with brick trim, and the current tables and benches were also concrete. Access on the north side was ambiguous, and access on the south was much more direct. Overhead breezeways created thresholds on both the north and south entrances. Observation of movement patterns revealed that due to lack of visual cues, use of the formal entrance was discouraged. The climate in Bryan, Texas is hot and humid. Since the courtyard did not offer opportunities for shade, during the summer months conditions in the courtyard can become difficult to endure. The location of the courtyard among the other buildings also hindered drainage, limited breezes, and provided constant shade in certain areas. Due to proximity, it was discovered that the nurses most able to take advantage of the courtyard for breaks would be the nurses from ER and Oncology. Through an examination of the physical attributes of the space and the intuitive sense gained by spending time in the space, the potential for creating a healing space was realized. Through this assessment, an oasis was chosen to be the appropriate archetype for creating a place of sanctuary. Discussions with hospital administration determined that the primary users of the new garden would be nurses and visitors and that careful attention should be paid to ensure all views from existing hallways and patient rooms were able to reflect the healing benefits of nature.



Results from the nursing surveys revealed that 88 percent of participants felt it was important to get outside at some point in the day, while 11 percent did not feel it was important. Nurses reported that 50 percent of them go outside to be alone. The need for privacy was also confirmed by the fact that for nurses who did go outside in a group 26 percent reported they go out with only one other person and 20 percent reported they go out with two people. The most significant limiting factor for not using the courtyard reported by the nurses was weather. Participants also reported insufficient seating (23 percent) and lack of privacy (11 percent) as reasons for not using the courtyard. Most nurses (26 percent) did not report use of the courtyard as time dependent. However, regardless of when they used the courtyard during their shift, they reported that they used it for brief periods of time. Participants reported their least favorite existing features as: nature/weather-related issues (36 percent), the extensive use of concrete (all existing furniture was made of concrete) (32 percent), unpleasant spatial experience (17 percent), and lack of privacy (12 percent). Existing features that the nurses found to help relieve stress were as follows: (1) presence of furniture (32 percent); (2) contact with nature (29 percent); (3) spatial experience of being by oneself (12 percent); and (4) having privacy (10 percent). From the written comments, four themes were generated: (1) nature features, (2) artificial features, (3) privacy-related issues, and (4) spatial experience.

Comparisons of the two proposed designs were also used to gain insight into the participants' desires and needs. From the first design, 65 percent of nurses reported nature-related features as the most liked features within the design. However, while nurses liked the trees and shade in the first design, their opinion was split regarding the proposed labyrinth. The least-favored features within the first proposed design were: (1) physical-feature-related issues (52 percent), (2) lack of water and plants (35 percent), and (3) design issues (11 percent). The most favored features from the second proposed design were: presence of a diversity of natural features (46 percent), physical features (34 percent), design issues (7 percent), and spatial experience (7 percent). Participants identified the least favored features within the second design to be: (1) lack of plants, water, and shade (43 percent), (2) the amount of concrete and the need for furniture and lighting (30 percent), and (3) the linearity of the design (17 percent).

From these findings, the following eight design principles were used to inform the final design of the newly renovated courtyard at St. Joseph's Regional Health Care Center: (1) Plant trees and shrubs along paths and around seating to block views from surrounding windows; (2) In a 1:1 proportion, provide a diversity of places that are comfortable, oriented to witnessing nature, and situated in response to microclimates; (3) Organize private nooks along the way to allow observation of passersby while ensuring privacy of use; (4) Provide an aesthetic experience that contrasts with the hygienic experience inside the hospital, emphasizing the alternative experience anticipated in the garden through the use of fragrant plants, dappled lighting, muffled nature sounds, music, soft surfaces to touch, multiple textures, and so forth; (5) Design for limited but repeated use by emphasizing



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threshold features that underscore the transitional experience into the garden area. Mark the main thresholds and edges to heighten the sense of place in the hospital campus; (6) Increase access to the outdoors by creating locations that capture the best microclimate spots for year-round enjoyment; (7) Design a friendly space by providing some moveable seating furniture, preferably the kind you can stretch out on (e.g., chaise lounges, long benches, and grassy knolls); (8) Create and/or frame views of the sacred qualities of the adjacent chapel.

### Limitations

One limitation to this study was its small sample size within a specific geographic location. Also, this study was designed to address the renovation of an existing courtyard that was underused and was developed due to hospital expansion. This courtyard may not be generalizable to landscape projects that are planned to fit strategically into the overall design of a new hospital campus. Another limitation was that user input was integrated only into the design review process. While user input was used to redirect the planning, it was not incorporated in the initial data assessment. Findings were also limited in that this study only focused on the impact of nature in relation to the factors of stress and renewal.