

# The Green Pearl

## 6<sup>th</sup> Street Revitalization LID

### Design Narrative

Team ID number: 02-01

#### **The Green Pearl Vision**

To continue to define the character of the Pearl District as a hub for culture and sustainability through the promotion of Low Impact Development to create an attractive, pedestrian-focused streetscape.

Our design concept establishes a sense of place utilizing a broad range of Low Impact Development and sustainable elements to create:

#### **1 A Place to Live**

A welcoming neighborhood street providing a desirable location for people to live, work, and visit, the Green Pearl will provide a vibrant, pedestrian friendly streetscape.

- Green space with native trees and plantings.
- Canal feature with flowing water.
- Serpentine streets to slow traffic.
- A mix of historic buildings and high quality new developments.

#### **2 A Place to Grow**

A neighborhood that encourages an active street life, a strong sense of place, and new economic and cultural development will be both successful and sustainable.

- A pedestrian plaza that emphasizes people over vehicular traffic.
- An area that promotes cultural diversity and the emerging art community.
- An outdoor place for special events.

#### **3 A Place to Learn**

A neighborhood that serves as a living example of low impact development and sustainable design.

## **The Program**

The Green Pearl is part of the 6th Street Infill Plan which was adopted in 2006. The Pearl District Association has been actively involved in planning for the revitalization of their neighborhood. The neighborhood has experienced significant flooding problems and is in need of a revitalization effort to help stimulate reinvestment and growth. The proposed flood control improvements in the 6th Street Infill Plan include a two cell 10'x10' reinforced concrete box below grade for storm water conveyance, an open channel at street level as public amenity and water feature, and reconstruction of 6th Street between Peoria and Rockford Avenue and Rockford Avenue between 6th Street and 7th Street.

**Our Vision** is to continue to define the character of Pearl District as a hub for culture and sustainability through the promotion of LID to create an attractive pedestrian-focused streetscape.

## **Existing Conditions**

The mission statement for the Pearl District Association is to “*reinvent the art of city life*” with an emphasis on turning the neighborhood into a “*world class model of sustainability, community, economic reinvigoration and pedestrian friendly lifestyle*” (source: Pearl District website). The Pearl District is bounded by Interstate 244, Utica Avenue, 11th Street and US Highway 75/Inner Dispersal Loop. Several decades ago, 6th Street was a thriving corridor, but today, only about 12% of the neighborhood is owner-occupied. (source: The 6th Street Infill Plan) There are a number of benefits surrounding this site including the close proximity to downtown, recent investment and revitalization at The Village at Centennial Park, excellent access to public transportation, connectivity to Centennial Park, and the ability to provide a link between Tulsa University and downtown Tulsa. A historic district exists along 6th Street between Peoria and Quaker includes several classically designed brick structures that have great potential for renovation or reuse. The proposed land use for the project site is Mixed Use Infill based on The 6th Street Infill Plan that was adopted in 2006.

## **Concerns with the current plan**

The current plan identified several preferences by the neighborhood including:

- A desire for pedestrian-oriented development
- A lack of enthusiasm for suburban, car-oriented development
- A preference for quality of design over density and building type
- Acceptance of mixed-use development
- Urban water features/ lakes / canals
- Walkable urban neighborhood

The proposed design incorporates the desires of the community and creates a pedestrian oriented space. Two main concerns with the current design that we attempted to resolve with our proposed design concept are the circulation conflicts between a water feature in the center of the street with traffic on either side, and the idea that the proposed design includes all impervious surface with no regard to storm water run-off. Although the character sketch of the site invokes a pedestrian friendly feeling, the section and perspective of the site show that accessing the canal would require crossing traffic without much space for enjoyment near the edge of the canal. Currently, the site experiences flooding issues, which has resulted in plans for major storm water infrastructure in the future. The proposed design manages the flooding issues with traditional storm water infrastructure techniques. While effective at managing water, the design does not assist in the quality or reduced quantity of storm water run-off in the area.

## **Our Project Objectives**

- Develop a new standard road section for Rockford from 6th to 7th Street that can serve as a model for future roadways.
- Create a pedestrian plaza that emphasizes people over vehicular traffic along 6th Street from Peoria to Rockford.
- Reduce development costs from those included in currently proposed design.
- Reduce stormwater peak runoff discharge rates.
- Minimize and disconnect impervious surfaces, lengthen time of concentration, and promote bio-filtration of runoff to improve the quality of stormwater leaving the site.
- Eliminate storm drain inlets and piping along 6th Street and minimize drainage infrastructure.
- Minimize the need for potable water for irrigation.

- Continue Pearl District branding to create a pedestrian destination.
- Increase marketability of development.
- Remove a portion of Total Suspended Solids (TSS)
- Treat the 1-inch storm water volume from the site

The neighborhood around the 6th Street project has experienced numerous issues with flooding in the past. Management of storm water in this area is a public safety concern and requires a functional infrastructure strategy to convey water from the proposed east detention pond to Centennial Park. After studying the proposed 6th Street Infill Plan utilizing two 10'x10' concrete conveyance boxes to move storm water to Centennial Park, we determined that system will provide a level of comfort and security to the neighborhood and City officials if left as designed. Our LID design focuses on the quality and quantity of run-off within our project right-of-way boundary. Our goal was to filter and slow the water from 6th Street and Rockford to minimize our storm water run-off to an already strained system. Through a series of LID techniques, the storm water is filtered and dispersed creating irrigation for plants while removing pollutants in the water before leaving the site.

### **LID Techniques**

The overall project utilizes five LID “tools” to reduce and filter storm water on site, including, flow through planters, infiltration trenches, a cistern system, permeable pavement, and bio-retention medians. The 6th Street right-of-way uses flow through planters to filter and slow water from the roofs of adjacent buildings. Any water not utilized by the plant material is allowed to pass through the bottom of the planter and is then intercepted by brick lined infiltration trenches. These trenches are capable of storing large volumes of water, but from the surface appear to be a two foot wide brick accent along the street. The infiltration trench is filled with aggregate and wrapped in filter fabric to allow for storm water storage and infiltration into the surrounding soils. Any excess water not captured by the flow through planter or infiltration then crosses the street and is filtered by the grass slopes of the canal before entering the canal itself. Water reaching the low point of the canal at Peoria passes through an invisible edge drain that connects to the 10'x10' conveyance structure below the street. The combination of LID techniques allows for enough storage and use of storm water to eliminate all standard inlets and piping typically used along 6th Street, resulting in a huge cost savings over traditional construction.

The original canal in the 6th Street Infill Plan used potable water to maintain the water feature. The proposed LID plan captures “useless” storm water with a cistern and pump system, pulling water from one of the 10'x10' storm water conveyance structures below the road. The storm water is filtered and pumped into the canal at the intersection of Rockford and 6th Street. The water travels through the canal feature and is piped below intersecting roadways as a continuous water canal from Rockford to Peoria.

The streetscape along Rockford provided us the opportunity to create a LID approach that could be copied and applied to most typical street renovations in the future. The creation of bio-retention medians is an easy method for filtering and slowing street run-off. The street is repaved creating a crown that allows water to flow toward the curb and gutter. The design utilizes the existing curb along the street, excavating six feet behind the curb to create a six foot landscaped median along both sides of the street. Small sections of the existing curb are cutout every fifty feet to allow water from the street to enter into the medians. The medians slope with the street and allow any excess water to exit the median through saw cuts in the curb at the low point allowing metered flow back to the street during large storm events. Any water leaving the median has been filtered through the use of plant material and soils and the volume of water is greatly reduced.

Utilization of pervious paving and pavers throughout the development has numerous benefits as part of the LID design including:

- Reduce amount of impervious cover
- Capture “First Flush” (typically first ½ inch of rainfall)
- Help meet national/state stormwater regulations
- Conserves space: Usable pavement above detention facility
- 100% runoff reduction for low intensity storms
- Filter and reduce pollutants and metals
- Increase groundwater recharge
- Lower peak flows = reduce downstream flooding and erosion
- Reduce runoff temperatures
- A mix of paving types can add to the visual interest of the site
- Paver patterns can direct traffic
- Relatively easy to repair
- Filters oil drippings and petroleum residue

## Successful Mixed Use Development

A critical part of the success of The Green Pearl will be creating a vibrant, pedestrian friendly streetscape. The close proximity to downtown, the Pearl District residential neighborhoods and higher density townhome and loft style developments like The Village at Centennial Park is essential to creating an urban destination both day, and night. Elements of design that contribute to this overall feeling include:

- **Vehicular Connections** – slowing traffic with serpentine streets, using decorative pavement for traffic calming at pedestrian crossings, and the ability to shut down street for farmers markets or events.
- **Parking Areas** - placing parking lots behind buildings with easy access to street through reinvigorated alleys.
- **Branding and Placemaking** – naming the street The Green Pearl, using the Pearl District signage as a theme for future signs, use of sandstone in canal and on street signs columns to continue Centennial Park materials and theme.
- **Historic Buildings** – celebrating the historic building in the area with signage and maintaining a similar architectural feel for future buildings through classic Georgian style architecture and brickwork.

## Design Guidelines

Providing design guidelines for the development will be a useful next step to maintaining the look and feel of The Green Pearl. Design guidelines will help the future owners and builders understand the importance of design choices such as:

- Adaptive Reuse
- Sustainable Building Materials
- Green Roofs
- Consistency in Site Furnishings
- Architectural Signage Standards
- Water Harvesting and Reuse