



Visioning Bellaire

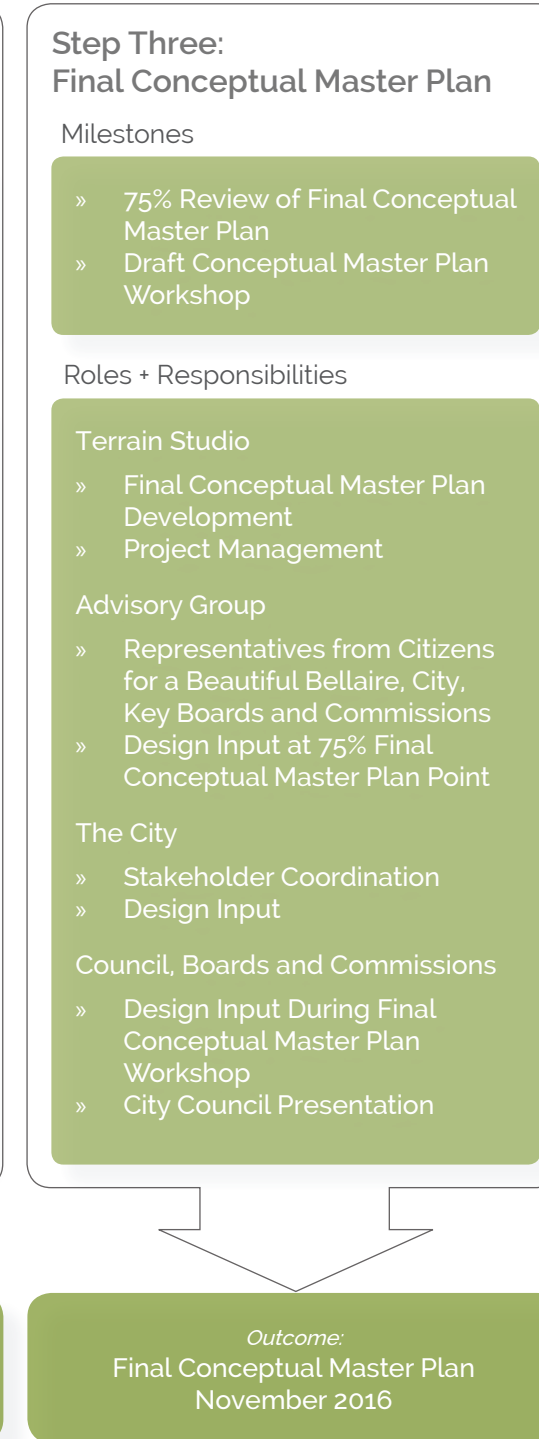
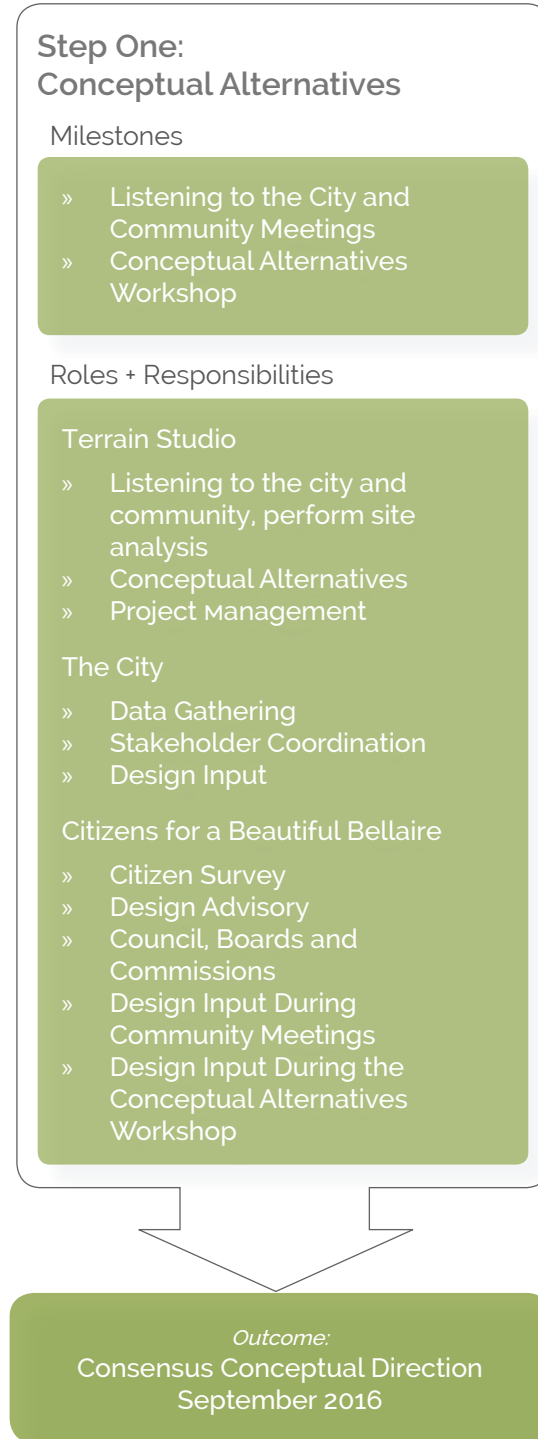
Urban Design and Beautification Conceptual Master Plan

December 2016



Design Process

The Urban Design and Beautification Conceptual Master Plan has been prepared as a collaborative and cooperative effort. Through a design process characterized by listening, fluid idea-generation, stakeholder involvement and on-site workshops, the general public was provided the opportunity to voice their concerns and make recommendations regarding issues to be considered in the Conceptual Master Plan. The design team has developed a long-range planning tool for the City of Bellaire addressing the physical, social, and sustainability challenges, which the City will face in the future. This Plan has been crafted to address both a near- and long-term strategy for implementing beautification interventions required to achieve the consensus vision.

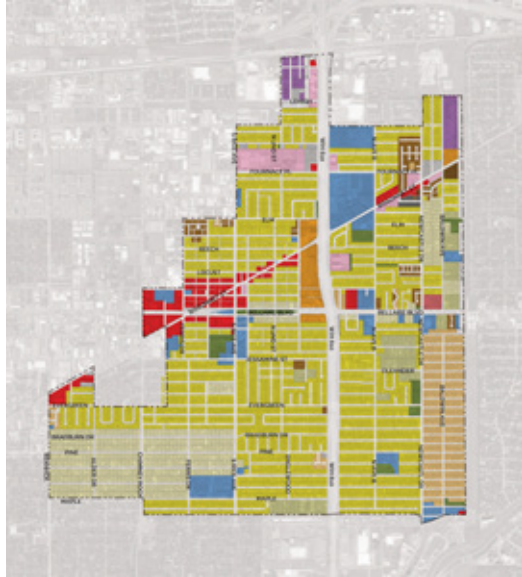


Key Components

Everything, including Bellaire's proximity to regional destinations, the city's urban forest, and auto-oriented development, has made the City what it is today.



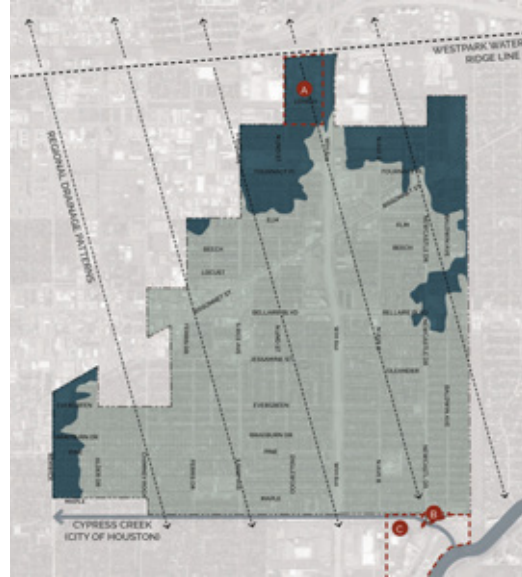
IMAGE FROM "LIFE AND TIMES AROUND BELLAIRE, TEXAS: 1909-2013" BY J. MICHAEL MCCORKLE



01. Land-Use



02. Urban Fabric



03. Natural Systems



04. Cultural Systems

Inventory + Analysis

Necessary efforts for an enhanced urban fabric, multi-modal connectivity, and beautification are made clear through a series of analyses. These four chosen analyses include layers of information that help establish the design principles and proposed design initiatives.

HISTORIC STORMWATER MANAGEMENT

One constant throughout Bellaire's history is flooding. Countless flood events have occurred in the city since its beginning. Overtime, the impervious land area has also increased dramatically as land use has shifted to a higher built ratio.



1955: STREET FLOODING RESULTING FROM RAIN STORMS



2001: THE AFTERMATH OF TROPICAL STORM ALLISON

IMAGES FROM "LIFE AND TIMES AROUND BELLAIRE, TEXAS: 1909-2013" BY J. MICHAEL MCCORKLE

Two Approaches can be used: traditional engineering, or green infrastructure.

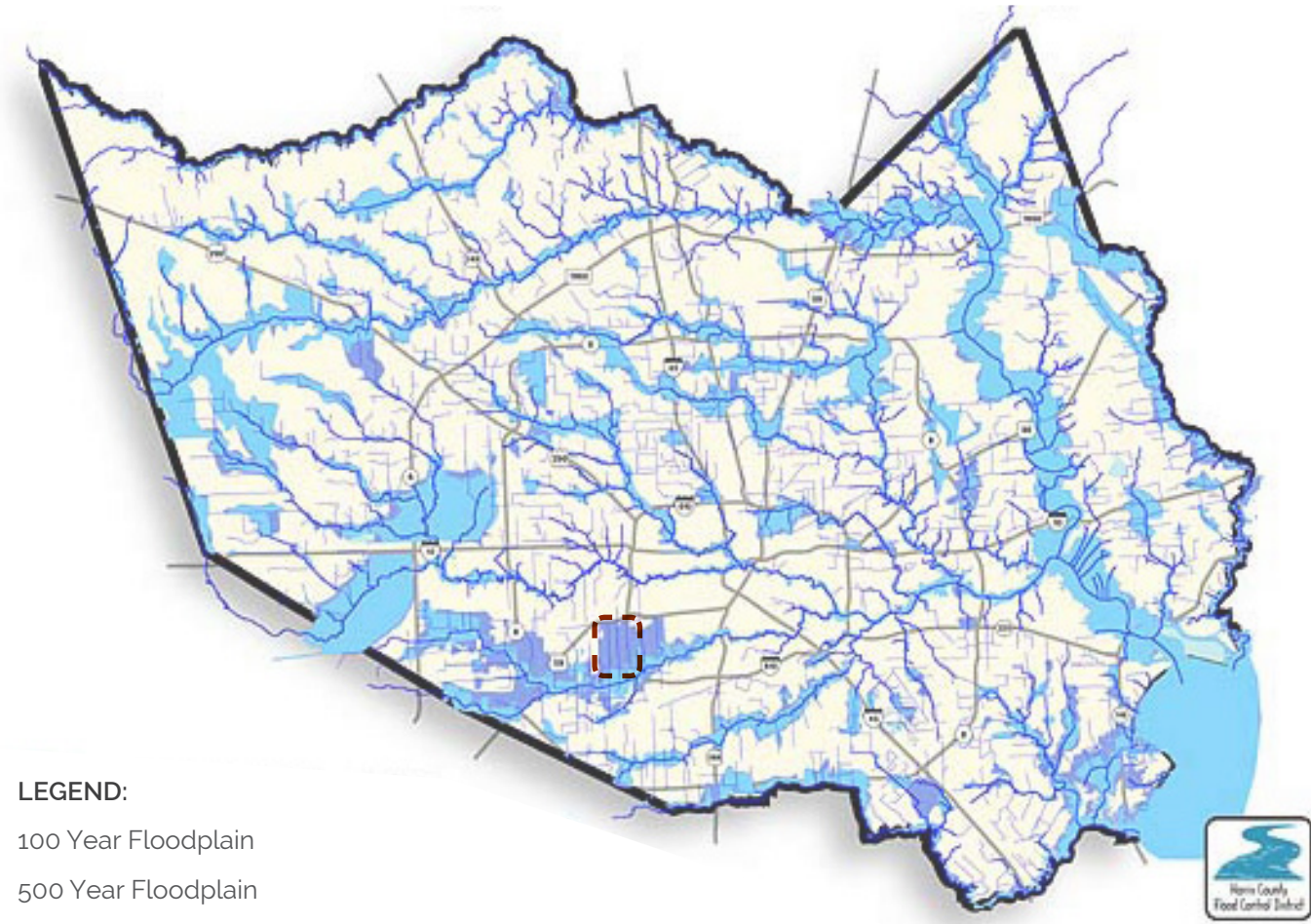


IMAGES FROM 2015 FLOOD



IMAGES FROM 2016 FLOOD

Harris County's Current Floodplain




LEGEND:

- 100 Year Floodplain
- 500 Year Floodplain
- City of Bellaire


Design Principles

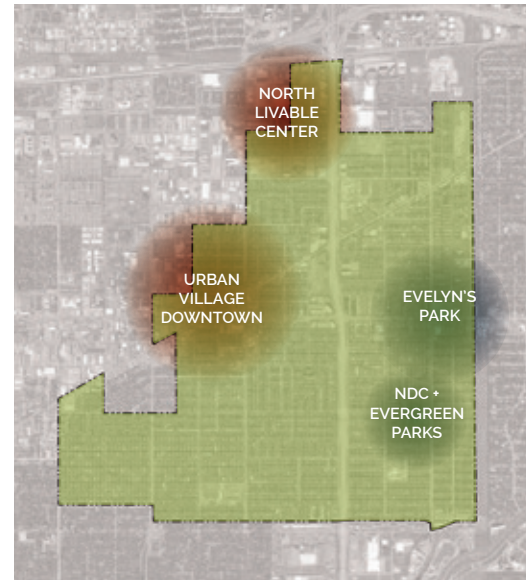
Through understandings gained from listening to the community and the land a set of design principles emerge that form the framework for urban design and beautification initiatives.



 01. "One" City



 02. Brand Clarity



 03. Destinations



 04. Connectivity



 05. Green Infrastructure



 06. The Social Landscape

Renewing the 1908 Vision for Bellaire



1908

Bellaire founded by William Baldwin as part of the 23,000 acre Rice Ranch. It was envisioned to be a

“GARDEN CITY”



Bellaire's Brand

**THE
NEW
GARDEN CITY**

a harmonious, family-oriented community balancing the best of town and country

Beautiful

Sustainable

Connected/Social



Stormwater Management

BIO-RETENTION GARDENS

Throughout the entire city of Bellaire, bio-retention gardens shall be placed on all neighborhood streets, connector streets, and major thoroughfares. The impact of placing bio-retention gardens throughout the city has an enormous impact on overall stormwater infiltration.

INFILTRATION PLANTERS

Infiltration planters are specified for Bissonnet Street because of its urbanity as a corridor. With the small right-of-way width, incorporating stormwater management is still a primary priority.





EASEMENT SWALES

At easements, there lies a perfect opportunity to create bio-retention swales with the proposed undulating topography. The significant impact on stormwater management for Bellaire while utilizing this application is extremely beneficial.

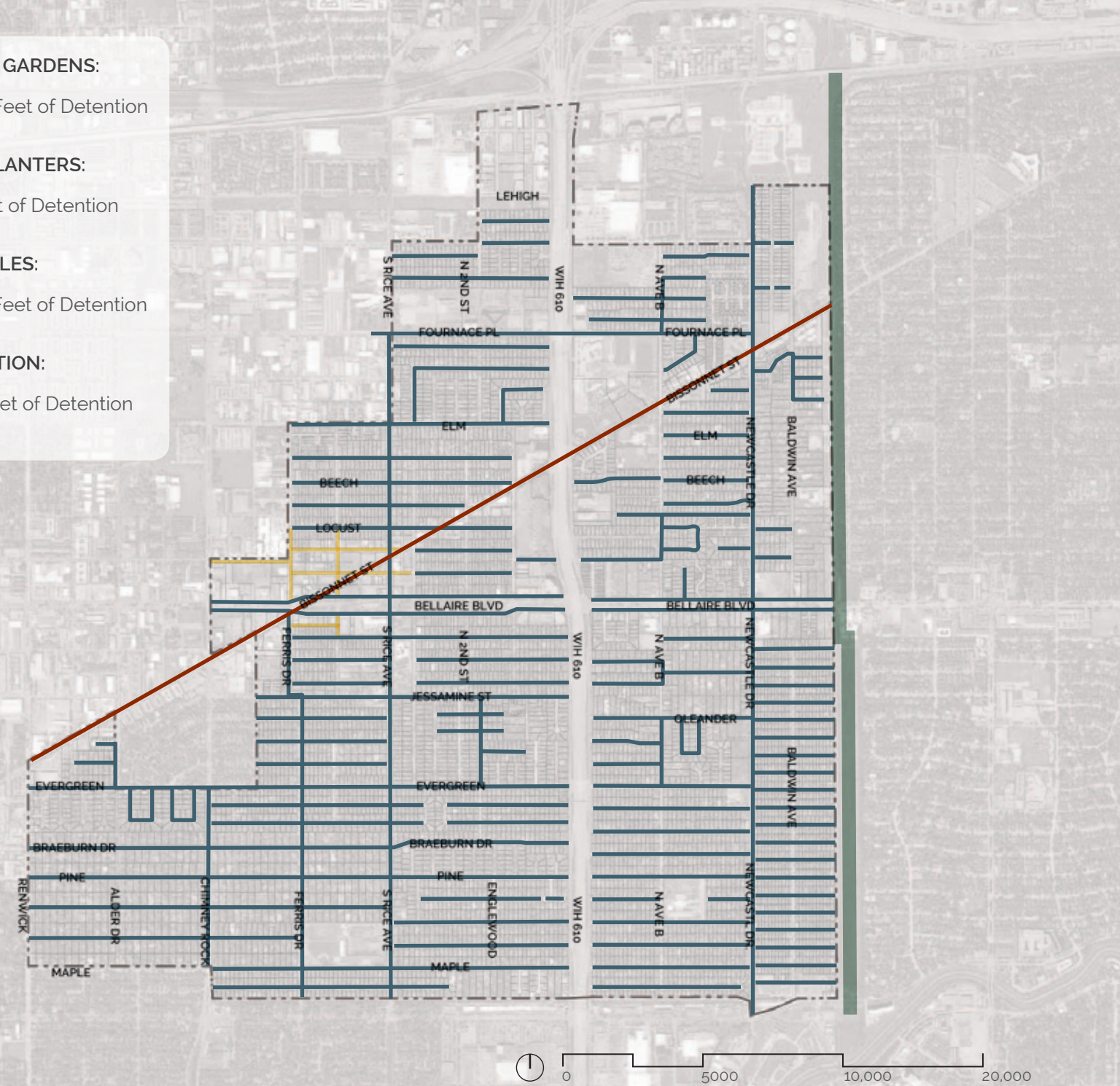
CUMULATIVE DETENTION BENEFITS

In aggregate “green infrastructure” stormwater management initiatives will store a total of 3, 111,705 cubic feet of stormwater. This equates to 71.43 acre-feet of storage (71.43 acres detaining water 12” deep).

This is equivalent to the amount of water held within 1,300 typical 20’x40’x3’ residential swimming pools.

- LEGEND:**
-  Bio-retention Gardens
 -  Infiltration Planters
 -  Easement Swales
 -  Shared Detention

- BIO-RETENTION GARDENS:**
1,275,000 Cubic Feet of Detention
- INFILTRATION PLANTERS:**
11,976 Cubic Feet of Detention
- EASEMENT SWALES:**
1,630,278 Cubic Feet of Detention
- SHARED DETENTION:**
194,460 Cubic Feet of Detention





Overhead Power Lines

An overall initiative for the city of Bellaire is to bury a portion of the overhead power lines in order to bring the city up to contemporary standards. This standard helps achieve three ideas:

01. Dependability of service
02. Public safety
03. Visual quality

Implementation of such standards can happen in association with street reconstruction. Key locations for burying would be at locations where overhead power lines are extremely visible. Other locations can happen as funding allows.

Above-Ground Line Locations

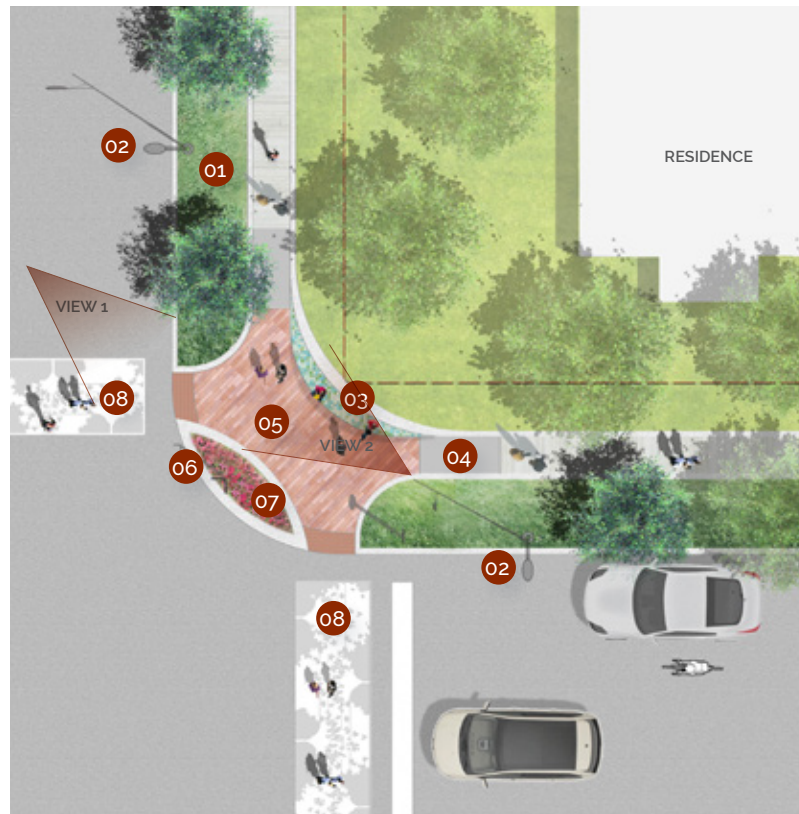


LEGEND:

— Overhead Power Lines Fronting Streets



Typical Street Corner (With Art and Mural Wall)



VIEW 1



VIEW 2

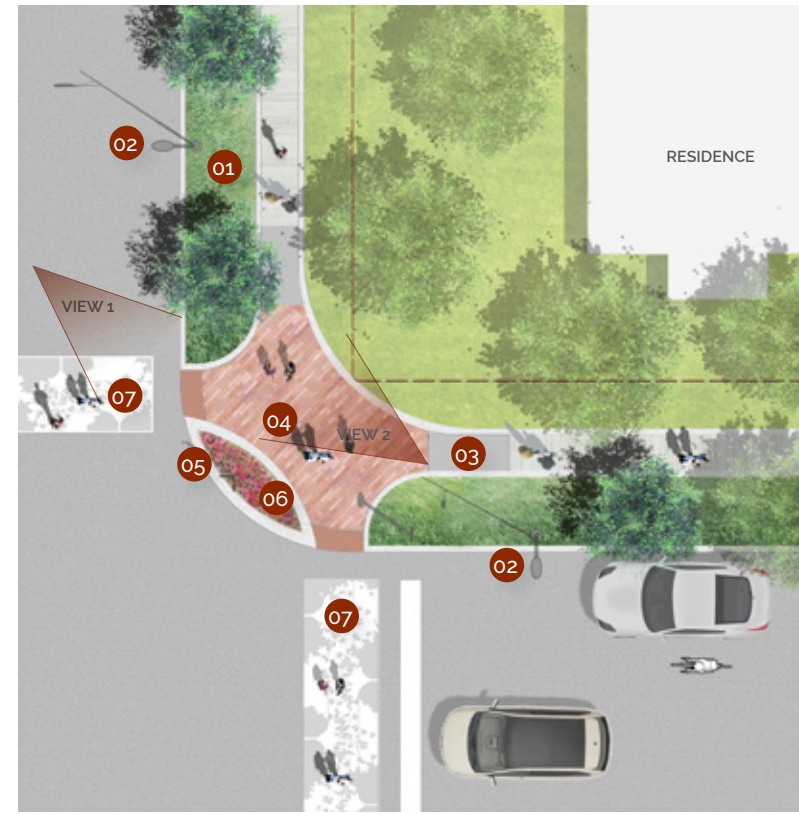


VIEW OF INTERSECTION

LEGEND

- 01. Bio-retention Garden
- 02. Street Light
- 03. The "Bellaire Bench"
- 04. Curb Ramp
- 05. Corner Plaza
- 06. Stop Sign
- 07. Corner Garden Planter
- 08. Art Crosswalk

Typical Street Corner (Without Art and Mural Wall)



VIEW 1



VIEW 2



VIEW OF INTERSECTION

LEGEND

- 01. Bio-retention Garden
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Neighborhood Streets (cont'd)

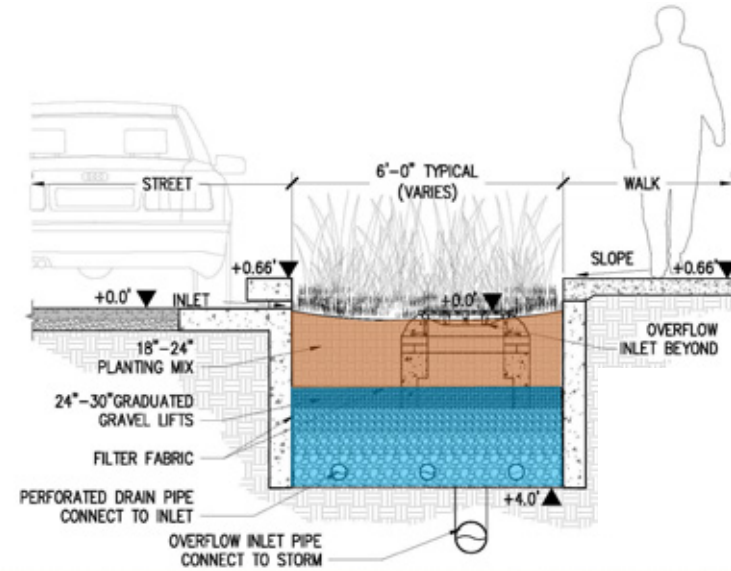
BIO-RETENTION GARDEN IMPACTS

Bio-retention gardens improve water quality through filtering pollutants, reduce flood impacts through capturing and retaining water on-site, and also create new wildlife habitats (Designing For Impact Guide for Governments, Houston-Galveston Area Council). Along neighborhood streets, trees shall not be placed in bio-retention gardens because of the strong, existing tree canopy. Common plant species for new gardens also grow best in full sun. Plants species should also be robust and shown to have succeeded in other landscapes in the Houston area.

	Life Cycle Cost (\$, NPV) Net Present Value			
	Conventional	LID	Difference	%
Curbs & Gutters	\$ 67,984	\$ 67,984	\$ 0	0 %
Street	\$ 1,110,977	\$ 555,488	\$ 555,489	-50 %
Conventional Stormwater Storage	\$ 297,208	\$ 297,208	\$ 0	0 %
Bioswale	\$ 157,514	\$ 403,629	(\$ 248,115)	156 %
Trees	\$ 0	\$ 63,922	\$ 63,922	
Total	\$ 1,633,683	\$ 1,388,231	\$ 245,452	-15 %

These numbers compare landscape development and stormwater management costs. They do not account for cost to construct buildings.

COST BENEFIT OF STORMWATER MANAGEMENT INFRASTRUCTURE FROM "DESIGNING FOR IMPACT GUIDE FOR GOVERNMENTS" BY HOUSTON-GALVESTON AREA COUNCIL



TYPICAL CONSTRUCTION DETAIL OF BIO-RETENTION GARDEN

Bio-Retention Garden Examples



West Loop Motor Courts

MOTOR COURTS

The current connection to the West Loop's frontage roads makes for an unsafe environment for a family-oriented community due to the high volume of commuter traffic. These intersections (such as the "Before" image shown to far right), create an undesirable front door to the West Loop abutment wall.

Design initiatives that disconnect the street to create a motor court could provide a variety of advantages. The closings create social spaces and promote safe, neighborhood activities.

One challenge with closing certain intersections is the impact on current traffic flow and the potential for congestion elsewhere. A traffic study for this initiative is heavily encouraged.

Certain residents may want to keep their street open due to personal concerns. An alternative for the selection of street closings in conjunction with a traffic study might be residents volunteer their block to be disconnected from the frontage road.

Converted Motor Court Locations





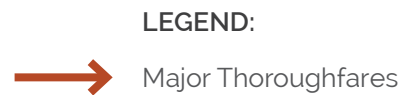
Major Thoroughfares

South Rice is the north/south heart of Bellaire. It is a civic street lined with residences, churches, schools, parks, the Municipal Complex and businesses. It links many of Bellaire's neighborhoods to these and other destinations within and beyond the city limits.

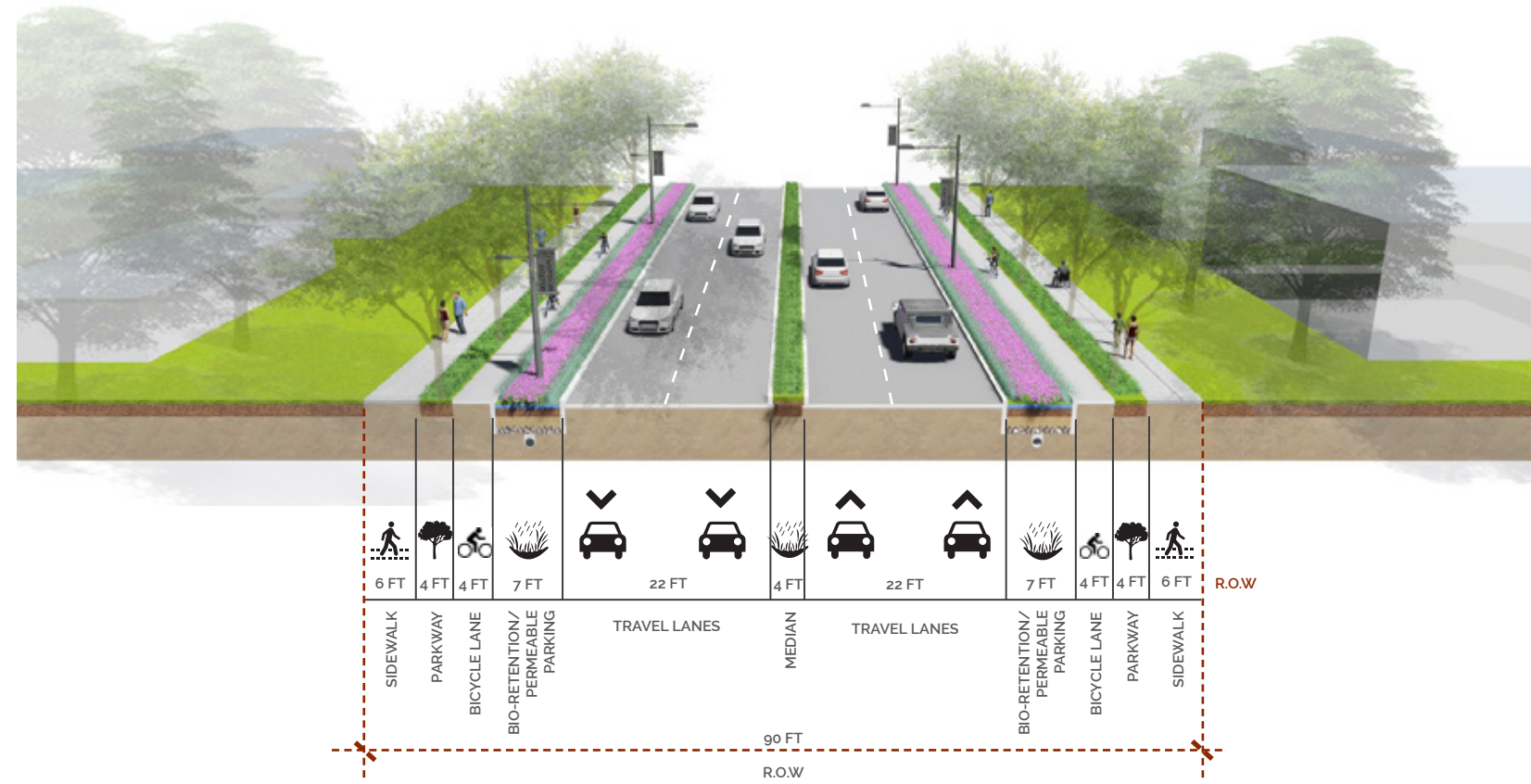
Both South Rice and Chimney Rock exist within a generous 90' right-of-way allowing these streets to become "green" streets in character and sustainable functionality. South Rice can include multi-modal connectivity with two lanes of traffic in each direction, wide sidewalks, dedicated bike lanes, parkway green space, Bio-retention gardens and a planted median. When needed 7' wide Bio-retention Gardens can be paved with pervious paving to accommodate parallel parking.

Chimney Rock can include the same functions but given its residential character parallel parking is not required.

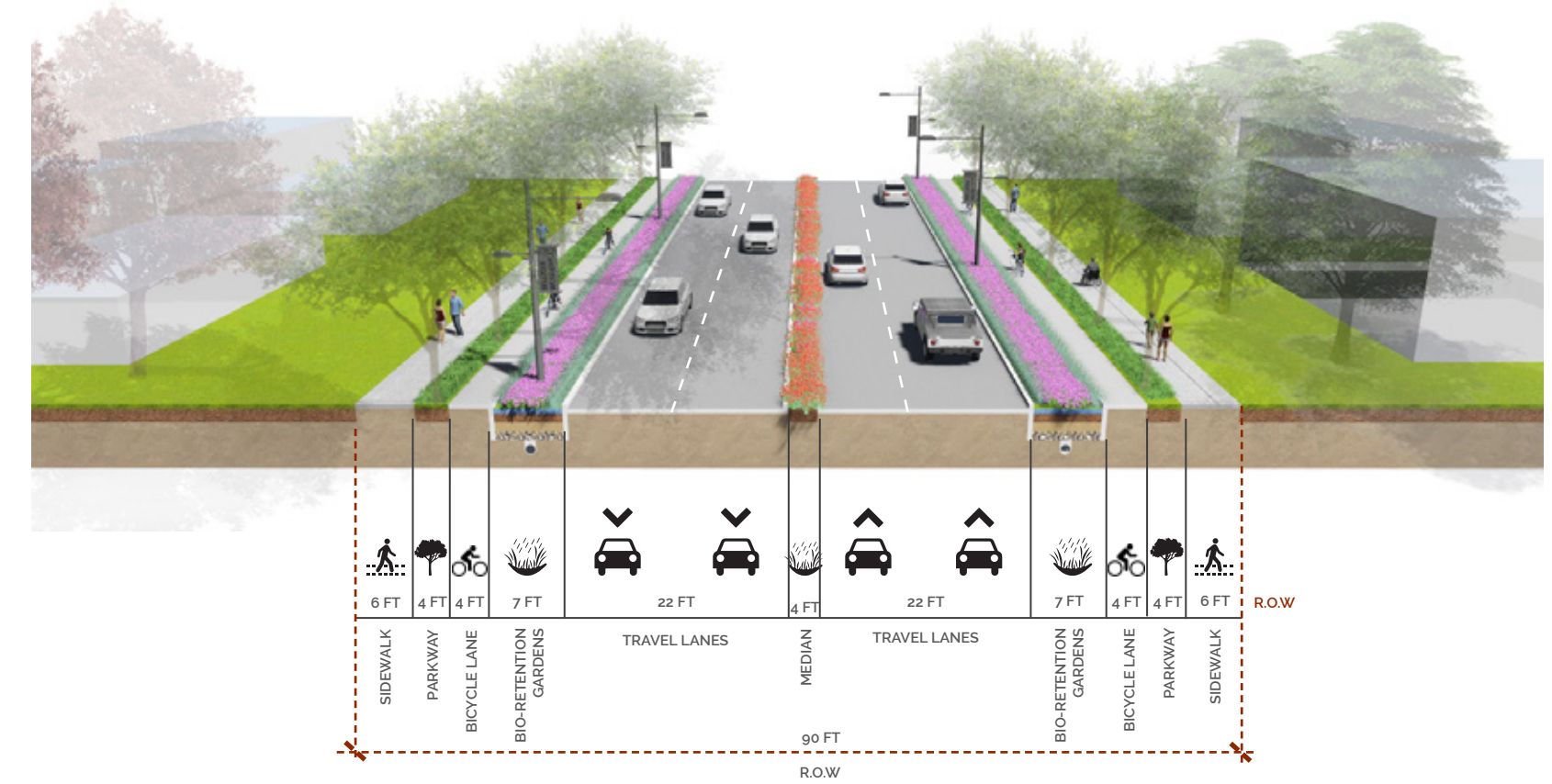
Bissonnet is envisioned as Bellaire's urban street allowing the wide variety of land-uses that front Bissonnet to gain vehicular, pedestrian and bike access from it while creating space for coffee shops, restaurants and other businesses to spill out onto generous sidewalks. Additional sidewalk space is created by removing the existing "chicken lane" in the middle of the street while maintaining four (4) lanes of traffic, two (2) in each direction. Recently the "chicken lane" on Westheimer east of Shepherd was removed, a corridor with much higher traffic demands than Bissonnet through Bellaire, a model that Bissonnet can emulate.



Typical Section: Chimney Rock Street



Typical Section: South Rice Boulevard (Without Street Parking)



Key Map:



SOUTH RICE BOULEVARD (NO PARKING):

South Rice Boulevard exists as one of the major streets in the city of Bellaire. There are several aspects that make it a unique street:

- 01. Able to create sidewalks on both sides for walkability
- 02. Dedicated bicycle lanes with physical barriers separating one-way bicycle lanes on both traffic directions

- 03. Seven-foot continuous bio-retention gardens that are made to accommodate parallel parking widths in parts of the corridor that require street parking
- 04. Two, eleven-foot lanes that allow for a vegetated median to help establish beautiful streetscape
- 05. Streetscape is able to create a garden street that enables all modes of transportation and ample green infrastructure



Bellaire Boulevard: The Heart of Bellaire

As the corridor running through the heart of the city, it links destinations such as the Urban Village Downtown, Evelyn's Park, and the municipal complex. Bellaire Boulevard plays a crucial role in connecting pedestrians and bicyclists to the remainder of the city.

Similar to other proposed streetscapes throughout the city of Bellaire, Bellaire Boulevard's edges keep the same treatment of multi-modal accommodation and bio-retention gardens within the existing right-of-way. A double allee of live oak trees will be planted, one row living in the bio-retention gardens. These bio-retention gardens should include shade tolerant species.



LEGEND:

- Bellaire Boulevard East
- Office
- Paseo Park
- Urban Village

PASEO PARK WEST

At the west end of the Paseo Park, a large intersection at Bissonnet and Bellaire Boulevard provides opportunity for a welcoming water garden that emphasizes the entrance into the "Garden City" around a new traffic circle. Visitors then enter the extension of Paseo Park to the west. This portion of the streetscape holds the existing location for the Metro Station.

The widening of Paseo Park in the west section allows sidewalks to be adjacent to developments on the north and south sides of Bellaire Boulevard. Paseo park itself helps activate necessary north-south connections.

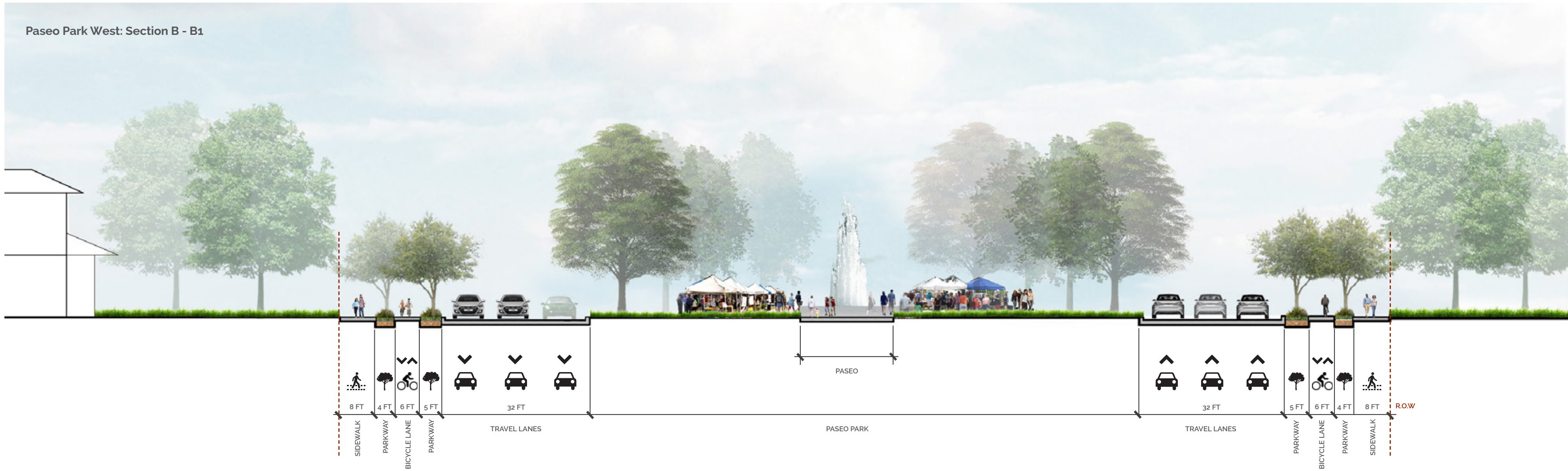


LEGEND:

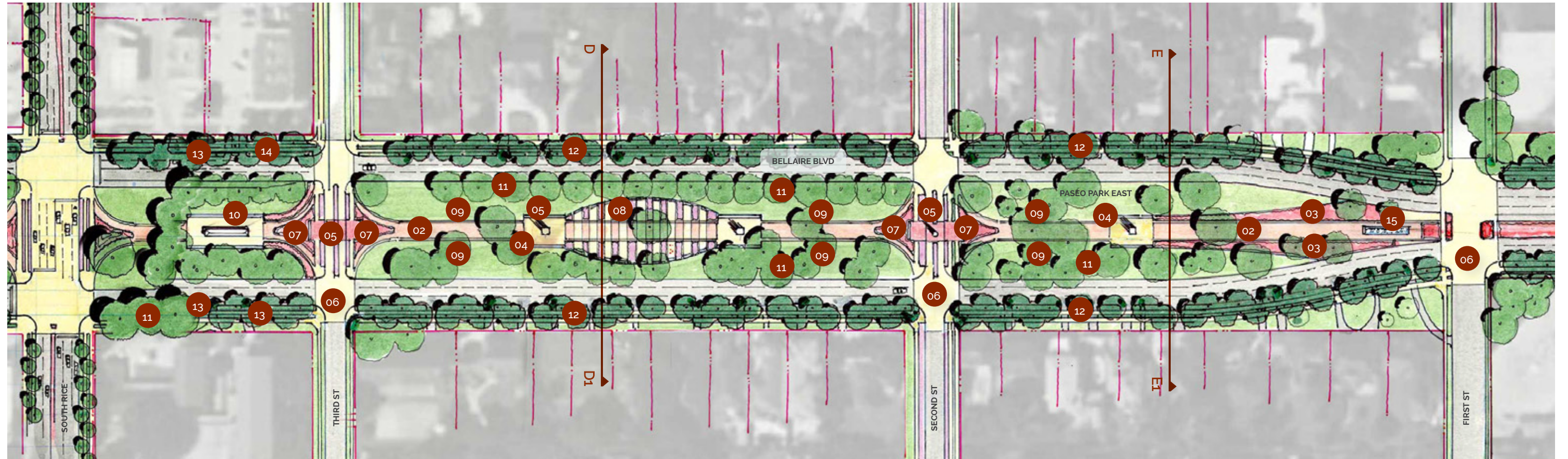
- 01. The Paseo – 20' Wide with Decomposed Granite
- 02. Park Architecture / Cafe's / Coffee Shops
- 03. Art Terrace
- 04. Public Art
- 05. Metro Transit Stop
- 06. Connector Plazas
- 07. Annual/Perennial Display

- 08. Bellaire Water Gardens
- 09. Bellaire Weekend Farmers Market
- 10. Existing Trees to Remain
- 11. Live Oak Allee
- 12. Dedicated Bicycle Lane
- 13. 8' Sidewalk

Paseo Park West: Section B - B1



PASEO PARK EAST



LEGEND:

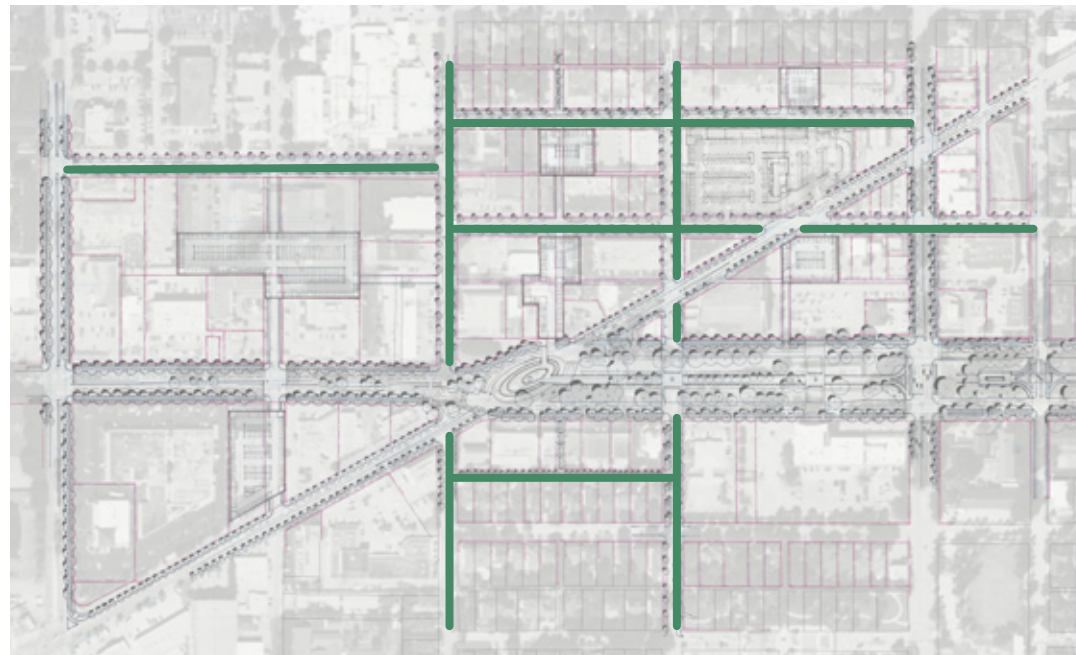
- | | |
|--|------------------------------|
| 01. West Loop Gateway | 08. Community Gardens |
| 02. The Paseo – 20' Wide with Decomposed Granite | 09. Weekend Farmers Market |
| 03. Teas Legacy Rose Garden | 10. Trolley Pavilion |
| 04. Art Terrace | 11. Existing Trees to Remain |
| 05. Public Art | 12. Live Oak Allee |
| 06. Connector Plazas | 13. Dedicated Bicycle Lane |
| 07. Annual/Perennial Display | 14. 6' Sidewalk |
| | 15. Founders Fountain |

Urban Village Downtown (cont'd)

INCENTIVIZE DEVELOPMENT

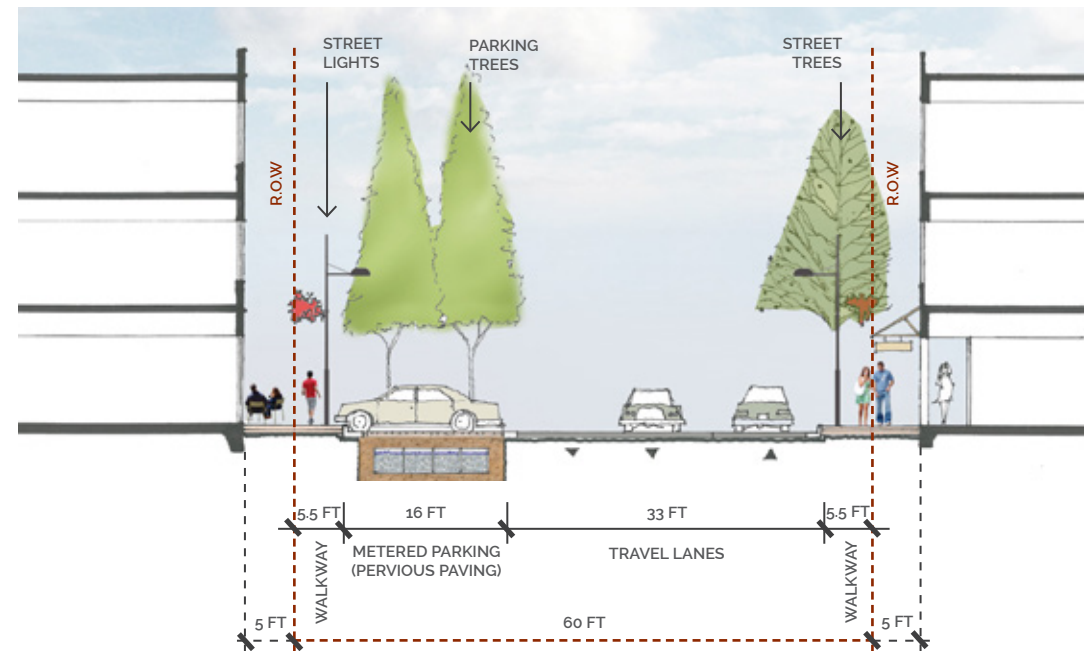
To overcome these the challenges in the existing downtown, the city can utilize the public right-of-way by establishing complete streets that offset burdensome parking requirements, as well as building parking structures strategically within city blocks.

These complete streets would include shared street parking and water detention zones via pervious paving, along with beautification and connectivity efforts.

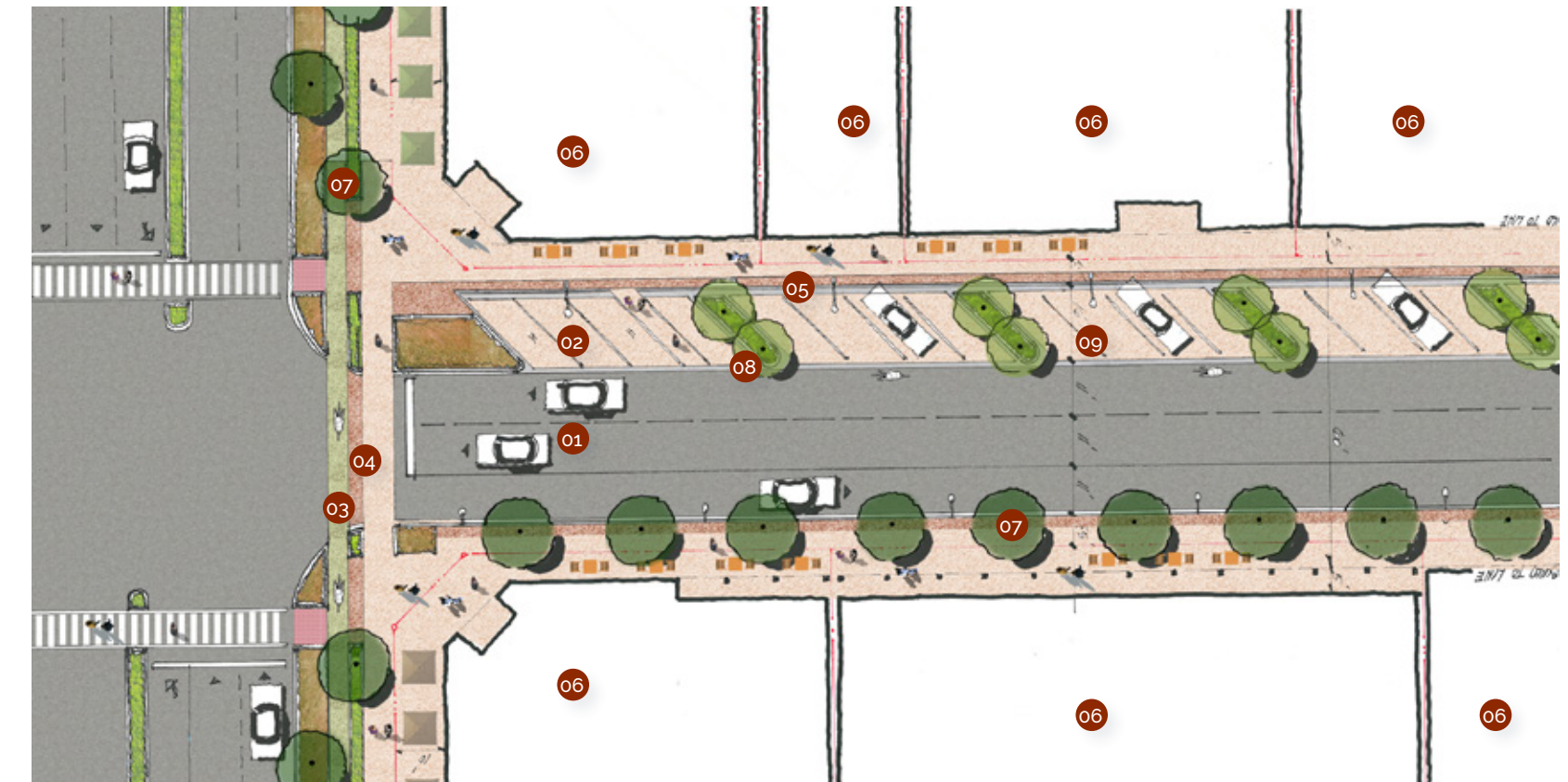


SHARED STORMWATER DETENTION ZONES

Typical Urban Village Downtown Streetscape, Section View



Typical Urban Village Downtown Streetscape, Plan View



LEGEND

- 01. Travel Lanes
- 02. Metered Parking
- 03. Bicycle Lane
- 04. Walkways
- 05. Street Lights
- 06. Future Mixed-Use Development
- 07. Street Trees
- 08. Parking Trees
- 09. Pervious Paving



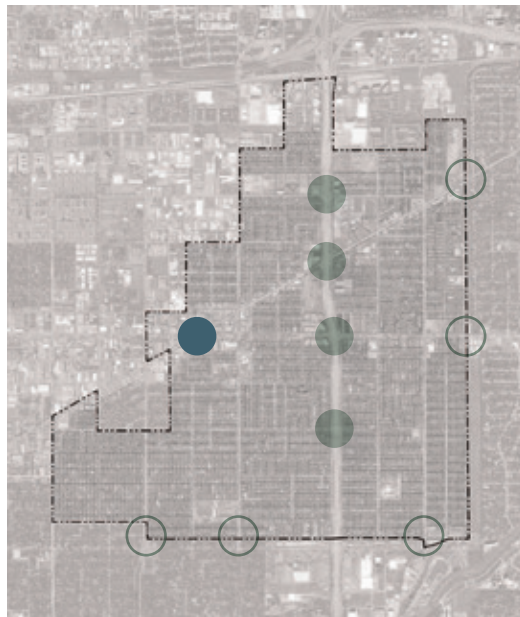
City Gateways

WEST LOOP GATEWAYS

Instead of shying away, the city can embrace the underpasses of the West Loop. These underpasses are the chance to have an iconic moment that give an architectural elegance, as well as an opportunity for art. Additionally, lighting is extremely important in these spaces, as it makes the new gateways a comfortable space for pedestrians — day and night.

Through adding a wrap-like facade to the existing structure that floats away from the West Loop wall, lanterns and columns can landmark the threshold to form a elegant piece of civic architecture.

City Gateway Locations



PERIMETER CITY GATEWAYS:

A theme of landscaped columns and lanterns would continue to the perimeter gateways at the east. Rose gardens in memory of the Teas Nursery could also continue throughout medians and planted edges. At the west end, the water gardens at Bellaire Boulevard and Bissonnet Street act as a beautiful statement entering the city of Bellaire.

LEGEND:

- West Loop City Gateway
- Perimeter City Gateway
- Bellaire Water Gardens — West City Gateway

Perimeter City Gateway





Coastal Prairie Park

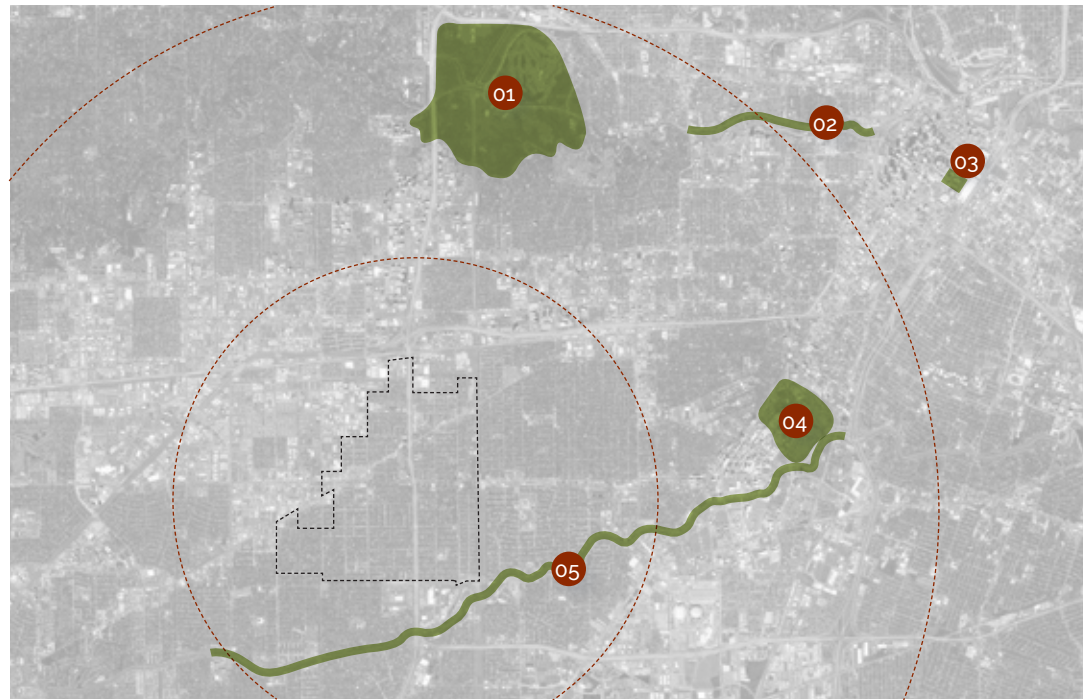
CREATING OPPORTUNITIES

A game-changing opportunity to create a Coastal Prairie Park lies at the east side of Bellaire - the Centerpoint easements. These long spans of open lawn used for electricity towers create: an affordable way to detail stormwater infiltration and detention where's it's needed (see Heat Map, page 28); provide local and regional connections; and, reconnect to the region's historic coastal prairie ecosystem.

CONNECTIVITY

The landscape is elevated as both a recreational destination and string of bio-retention swales through undulating topography and shared-use trails. Bicyclists and pedestrians would have direct, safe access to connection points at Bellaire's east edge, the Nature Discovery Center, and Evelyn's Park.

Other connections that are possible through the easements, but require working with the city of Houston are the north edges of Bellaire, North Livable Center, Memorial Park, and Hermann Park (via bridge over Brays Bayou).



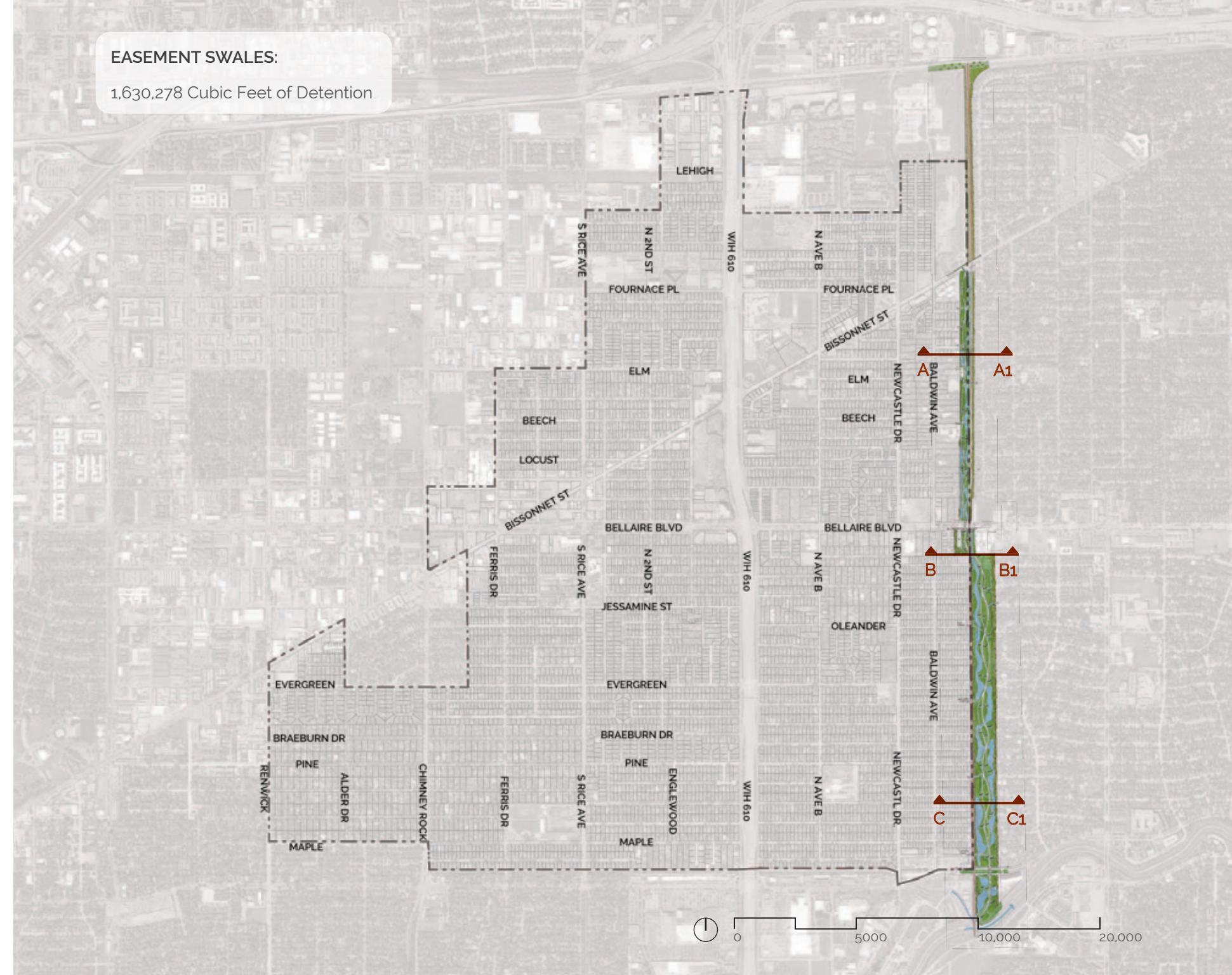
EXISTING CENTERPOINT EASEMENTS

LEGEND

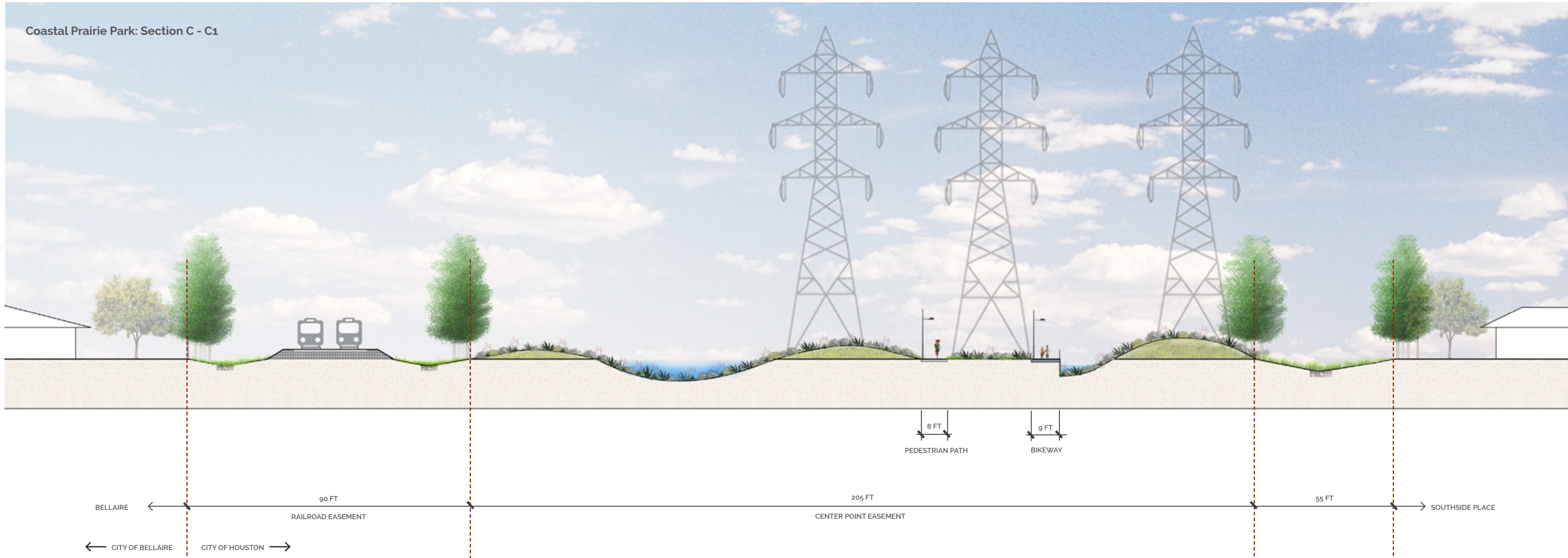
- 01. Memorial Park
- 02. Buffalo Bayou Park
- 03. Discovery Green
- 04. Hermann Park
- 05. Brays Bayou Open Space

EASEMENT SWALES:

1,630,278 Cubic Feet of Detention



Coastal Prairie Park: Section C - C1





North Livable Center

The intent of the North Livable Center is to create a vibrant area that encourages dynamic economic development focused around live, work, and play opportunities with a mix of development types; retail, office, hospitality, and residential.

The concept plan includes a range of residential options that reflect changing lifestyles. Design of streets, squares, plazas, parks, open spaces and other civic spaces emphasize pedestrian connectivity.

The Centerpoint easement on the Plan's southern edge has been utilized as an environmental transition zone between existing residential and the North Livable Center. The environmental feature — a Coastal Prairie Park that functions as storm water catchment, hike-and-bike connectivity, and buffers edge conditions maximizing value to the livable center development.

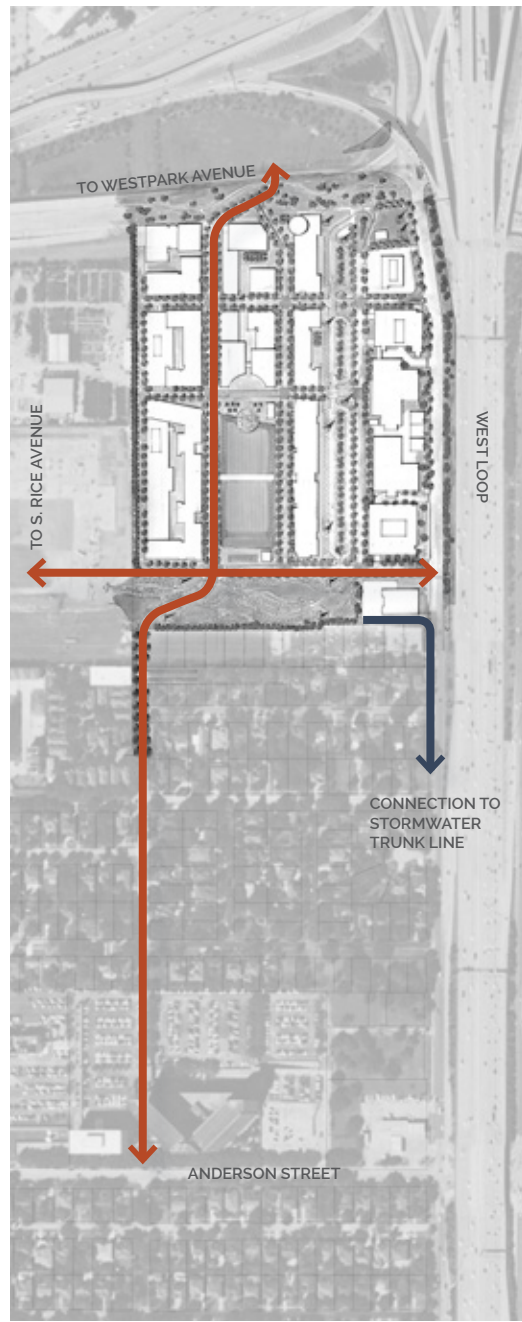
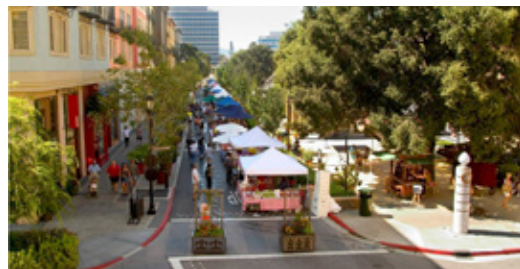




IMAGE COURTESY OF BUTLER PLANNING

Initiative: Urban Village Downtown

Complete Street / Streetscape Elements (200' prototype)

ITEM	QTY	UNIT	\$/UNIT	SUB-TOTAL	REMARKS
NEW STREET RECONSTRUCTION	200	LF	\$690	\$138,000	3 LANES
PAVER SIDEWALKS	2200	SF	\$10	\$22,000	
DRIVEWAY REPLACEMENTS	480	SF	\$10	\$4,800	
PERVIOUS PAVING PARALLEL PARKING	3200	SF	\$18	\$57,600	
SUB-GRADE DETENTION CELLS	200	LF	\$240	\$48,000	10' WIDE 3' DEEP
TREES	12	EA	\$750	\$9,000	
PLANTING AND IRRIGATION	240	SF	\$8	\$1,920	
LIGHTING BETTERMENTS	18	LS	\$5,500	\$99,000	
BELLAIRE SIGNAGE / FURNISHINGS	1	LS	\$10,000	\$10,000	
HARD COSTS TOTAL				\$390,320	
TOTAL COST				\$390,320	
COST PER FOOT				\$1,951.60	

South Rice - South - Streets / Streetscape (Bellaire Blvd - Cypress Ditch)

ITEM	QTY	UNIT	\$/UNIT	SUB-TOTAL	REMARKS
STREETS - STREETScape ELEMENTS	5598	LF	\$2,194	\$12,282,012	
PAVER INTERSECTIONS TYPICAL	11,680	SF	\$18	\$210,240	
MEDIAN PLANTING	4638	LF	\$40	\$185,520	
INTERSECTIONS W/O ART	26	EA	\$18,000	\$468,000	
INTERSECTIONS W/ ART	25	EA	\$40,000	\$1,000,000	
HARD COSTS TOTAL				\$14,145,772	
SOFT COSTS @20%				\$2,829,154	
TOTAL COST				\$16,974,926	

THIS ESTIMATE INCLUDES RECONSTRUCTION OF THE STREET AND UTILITIES AT A COST OF \$4.3M PER MILE FOR A 3-LANE SECTION AND \$3.8M PER MILE FOR A 2 LANE SECTION. SIDEWALKS, PARKWAY GREEN SPACES, DEDICATED BIKE LANES, BIO-RETENTION GARDENS CAN BE IMPLEMENTED WITHOUT RE-CONSTRUCTING THE STREET DRAMATICALLY LOWERING COSTS

First Steps

1 BUILD NEWCASTLE STREET LIGHTING AND URBAN ELEMENTS DETAILED DESIGN



\$185,000

2 BUILD ONE BLOCK NEIGHBORHOOD STREET PROTOTYPE AND URBAN ELEMENTS DETAILED DESIGN



\$756,500

3 BUILD CITY GATEWAY BELLAIRE BOULEVARD AT RAILROAD TRACKS



\$852,720

4 BUILD CITY GATEWAY BELLAIRE BOULEVARD AT WEST LOOP



\$1,674,000

5 BUILD COASTAL PRAIRIE PARK SOUTH AND STORMWATER DETENTION



\$5,000,000

6 BUILD BELLAIRE BOULEVARD AND PASEO PARK



\$13,804,212