

US EPA ARCHIVE DOCUMENT



GREENING AMERICA'S CAPITALS

LITTLE ROCK, ARKANSAS

GREENING AMERICA'S CAPITALS

Greening America's Capitals is a project of the Partnership for Sustainable Communities between the U.S. Environmental Protection Agency (EPA), the U.S. Department of Housing and Urban Development (HUD), and the U.S. Department of Transportation (DOT) to help state capitals develop an implementable vision of distinctive, environmentally friendly neighborhoods that incorporate innovative green building and green infrastructure strategies. EPA is providing this design assistance to help support sustainable communities that protect the environment, economy, and public health, and to inspire state leaders to expand this work elsewhere. Greening America's Capitals will help communities consider ways to incorporate sustainable design strategies into their planning and development to create and enhance interesting, distinctive neighborhoods that have multiple social, economic, and environmental benefits.

Little Rock, Arkansas was chosen as one of the first five state capital cities to receive this assistance beginning in the fall of 2010 and concluding with a site visit in early 2011.

More information about Greening America's Capitals is available at <http://www.epa.gov/smartgrowth/greencapitals.htm>.

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I. EXECUTIVE SUMMARY

The City of Little Rock received assistance from EPA's Greening America's Capitals program to help the city envision improvements to the Main Street corridor, which runs north-south from the River Market district in downtown to the neighborhood south of Interstate 630 known as the Southside Main Street (SOMA) district. The City selected Main Street for this project because redevelopment has been occurring in both the River Market and SOMA districts, and there is great potential to spur similar revitalization along this historic corridor through the redevelopment of vacant buildings and underused parking lots, streetscape improvements, public art, and new parks and green spaces.

The project team, which included Nelson Byrd Woltz Landscape Architects (NBWL), City of Little Rock staff, and EPA staff, worked together to assess the existing conditions along Main Street, examine important initiatives already underway, and help the community develop a set of design strategies that meet environmental and economic objectives. The design and consultation process included a three-day workshop in Little Rock with federal, state, county, and city staff; Main Street property owners; SOMA residents and representatives; local developers and designers; and citizens.

This report illustrates potential design strategies that address environmental concerns such as polluted stormwater runoff and heat island effect while also creating attractive streets and public spaces that reflect Little Rock's sense of place. Some of the designs could be applied along the full length of Main Street from the Convention Center in the River Market district to 17th Street in the SOMA district, but many focus on four vital nodes where green infrastructure could be used to manage stormwater and improve the public right of way.

Green infrastructure includes a range of natural and built approaches to stormwater management—such as bioswales, rain gardens, permeable paving, and green roofs—that mimic natural systems by absorbing stormwater back into the ground (infiltration), using trees and other vegetation to hold rain water until it is converted to water vapor (evapotranspiration), and using rain barrels or cisterns to capture stormwater for reuse.

On Main Street, green infrastructure approaches, such as rain gardens, green roofs, and permeable paving, could be integrated with ongoing private and city initiatives to spur economic revitalization along the street and in adjacent neighborhoods. The design options presented in this report depict an environmentally and economically sustainable civic vision for the Main Street corridor, one that could catalyze additional development activity in this vibrant capital city.





Figure 1: Little Rock Mayor Mark Stodola leads workshop participants on a trolley tour of Main Street.

II. THE WORKSHOP

A three-day design charrette was conducted from April 13 to 15, 2011 in downtown Little Rock. The project team presented analysis and design work done prior to the workshop. Participants then reviewed the city's ongoing initiatives through a trolley tour of Main Street and adjacent sites, including the William J. Clinton Presidential Library and Bill Clark Wetlands project.

The project team engaged the workshop participants in five collaborative, interactive sessions on specific topics: stormwater, underused buildings and lots, human-scaled streets, local design initiatives, and funding and implementation resources. [See schedule in Appendix A]. There was agreement that many diverse user groups along Main Street (particularly employees, tourists, lunch and evening crowds) could all benefit from public space improvements.

There was a strong desire for:

- Continuous street design for the length of Main Street, including for stormwater management, crosswalks, trees and other plantings, and lighting, benches and other furnishings.
- A park along Main Street that can host specific events as well as serve as a general gathering space.
- The I-630 overpass to be developed as a threshold from SOMA to Downtown.

The charrette concluded with a presentation summarizing the ideas and visions that were shaped by the five sessions and participation process. After the charrette, the project team developed this report for the city of Little Rock, based on the participant input and ideas developed in the workshop.



Figure 2: Main Street (at the I-630 overpass) as experienced on the design team's tour of the City.



Figure 3: Main Street sidewalk.



Figure 4: A SOMA storefront.



Figure 5: Part of the 3 day workshop proceedings.



Figure 6: Plan diagrams generated by NBWLA at 3 day workshop.

Workshop Proceedings



Figure 7: Diagram of the study site opportunities for greening Main Street in the context of downtown Little Rock.

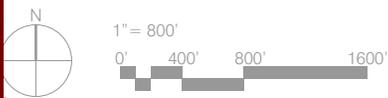
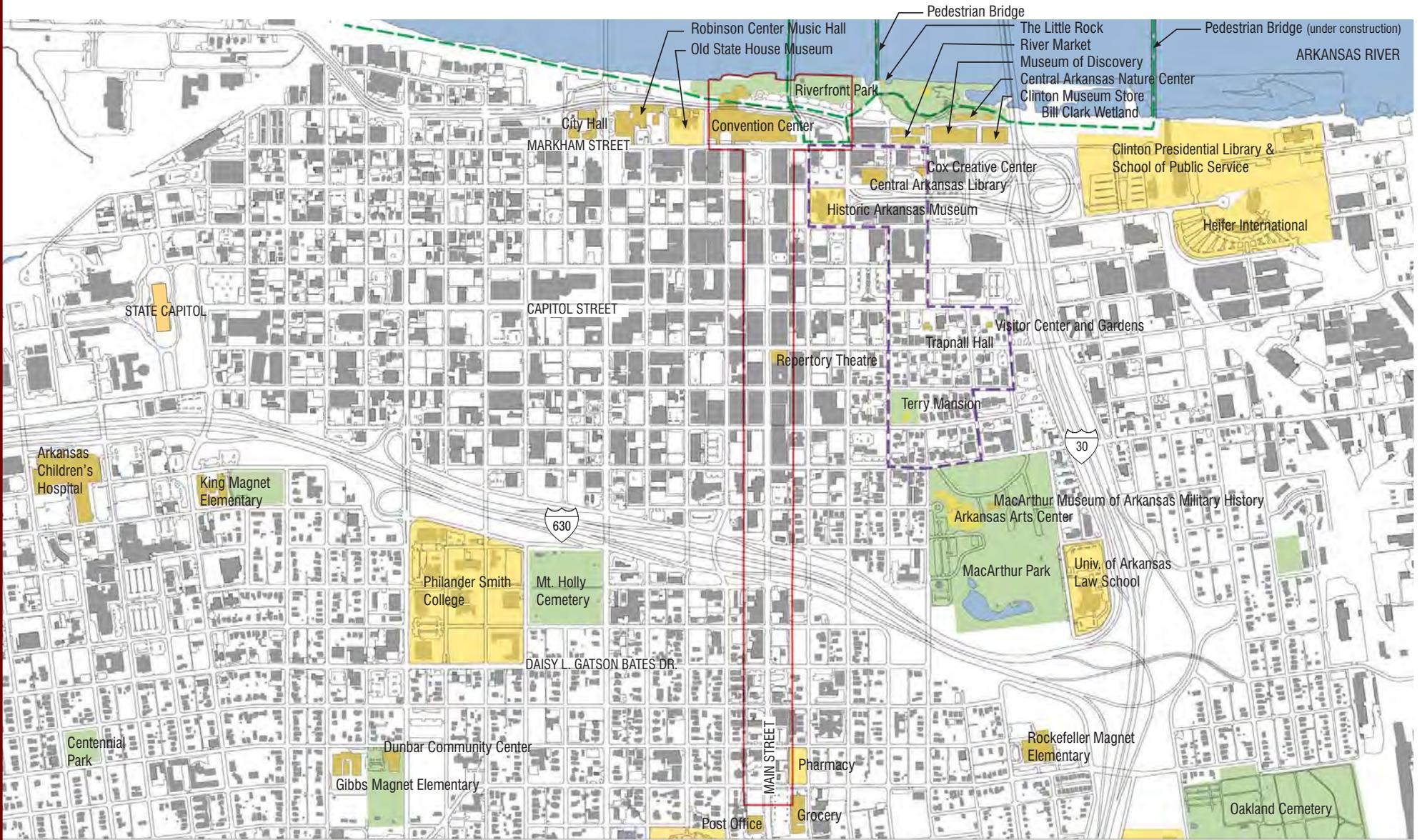
III. SITE ANALYSIS

The team analyzed the existing conditions along the Main Street corridor, including:

- The location of museums, major businesses, and arts and entertainment establishments.
- Pedestrian and automobile circulation.
- Historic and existing topography, hydrology and stormwater flows.
- Existing pervious and impervious surfaces.

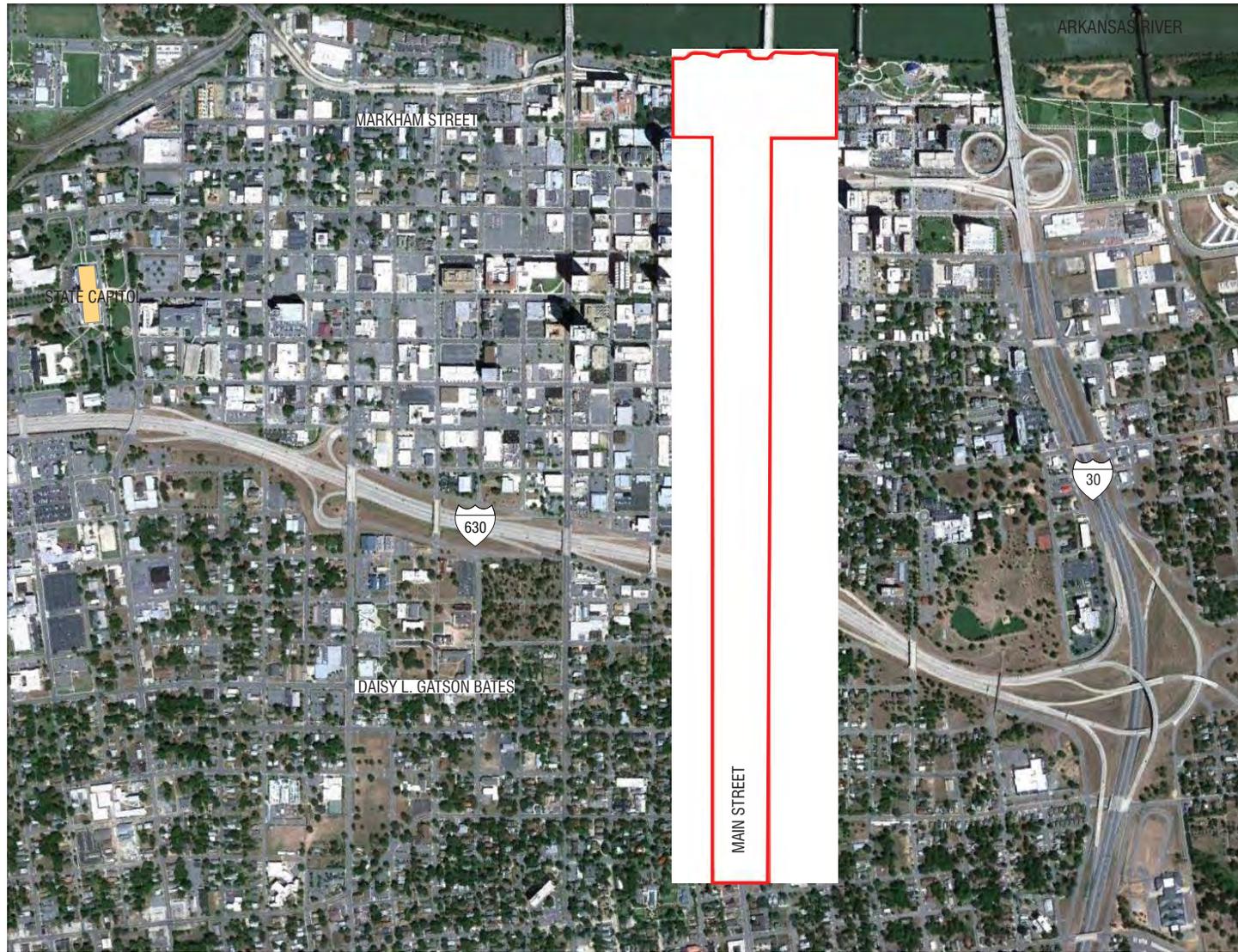
Documenting the existing built environment, current usage patterns and the flow of water through the downtown created a shared understanding between City staff and the design team about the current status of Main Street. It disclosed that there are large areas of impervious surfaces, composed of buildings, streets and surface parking, as well as established street trees along many blocks of Main Street. Analysis also showed how Main Street captures stormwater and drains into two distinct subwatersheds.

Patterns of existing and anticipated pedestrian use revealed synergistic relationships that suggested developing the four nodes discussed in the next section.



- - - Museum Trail
- - - River Trail
- - - Project Area

Figure 8: Downtown Sites of Interest



Credit: Google Earth



1" = 800'
0' 400' 800' 1600'

Figure 9: Main Street Project Area

As shown in the aerial photo above, the neighborhoods to the south and east of the project area have a significant number of trees but the project area itself is highly impervious.

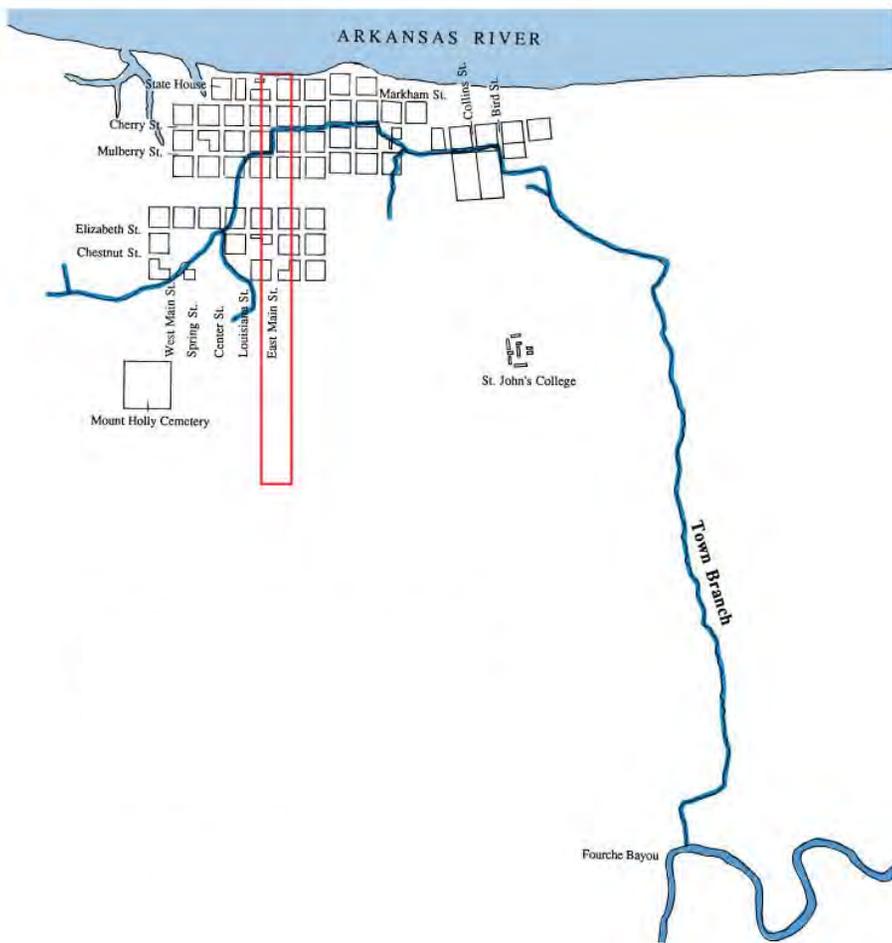


Figure 10: 1864 map of Little Rock and vicinity showing Town Branch.

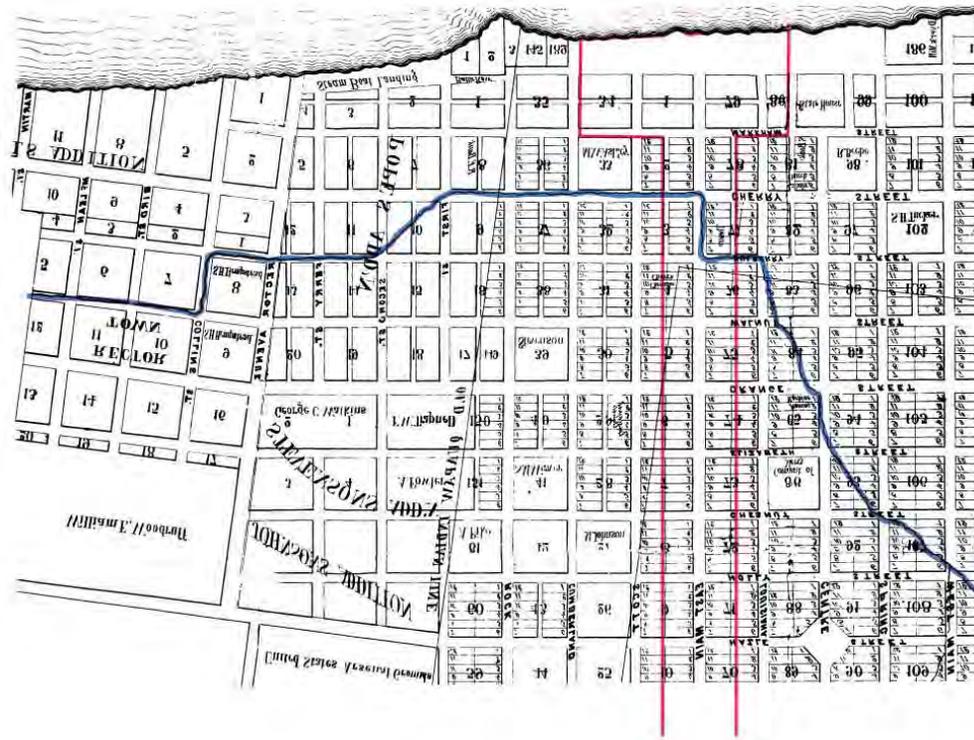


Figure 11: 1865 map of Little Rock detailing the route of Town Branch through downtown.



Historic Water Flows

Both diagrams adapted from Worthen, William. The Arkansas Historical Quarterly, Vol. 46, No. 4 (Winter, 1987), pp. 317-347.

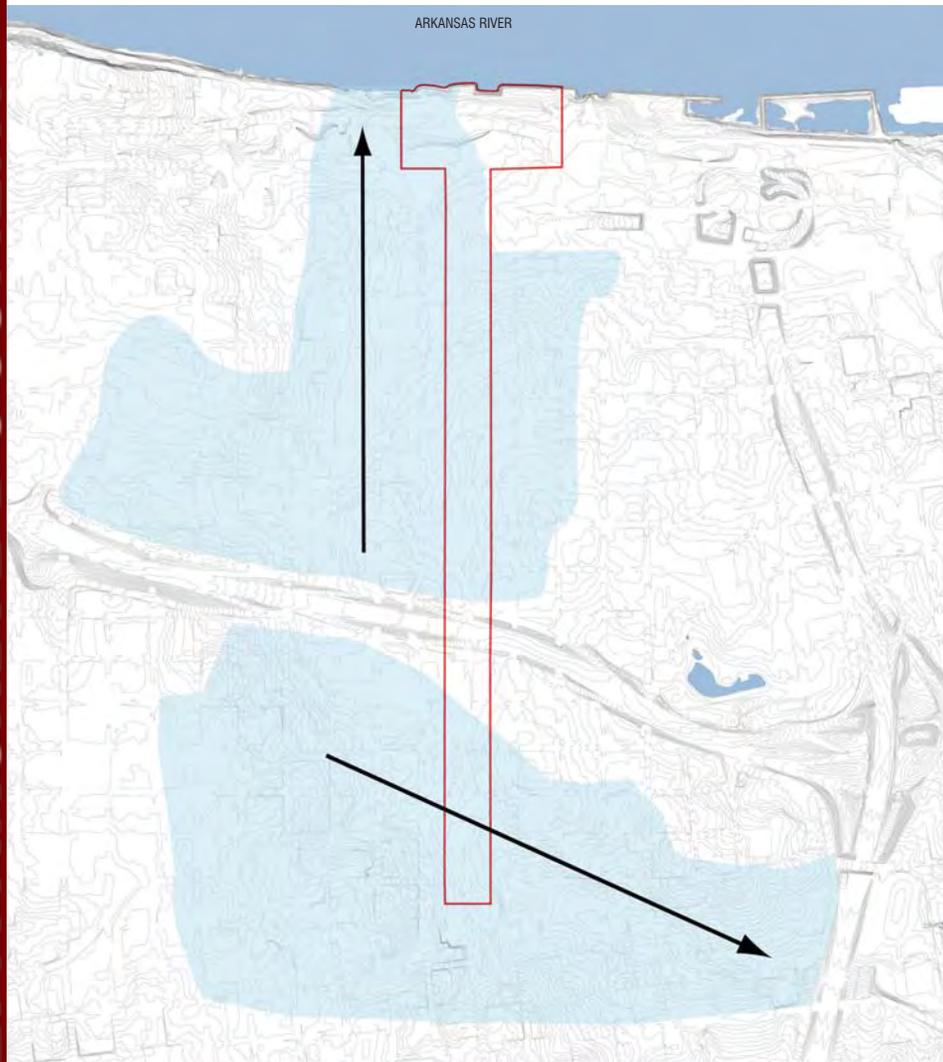


Figure 12: Existing Watersheds

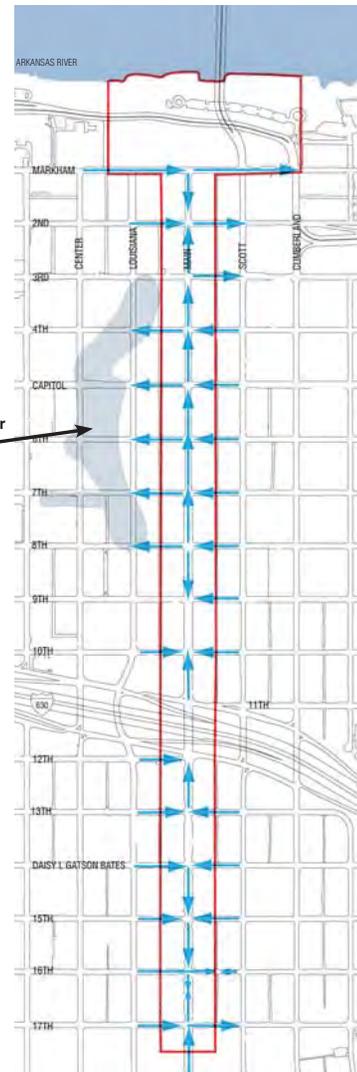


Figure 13: Street Flow

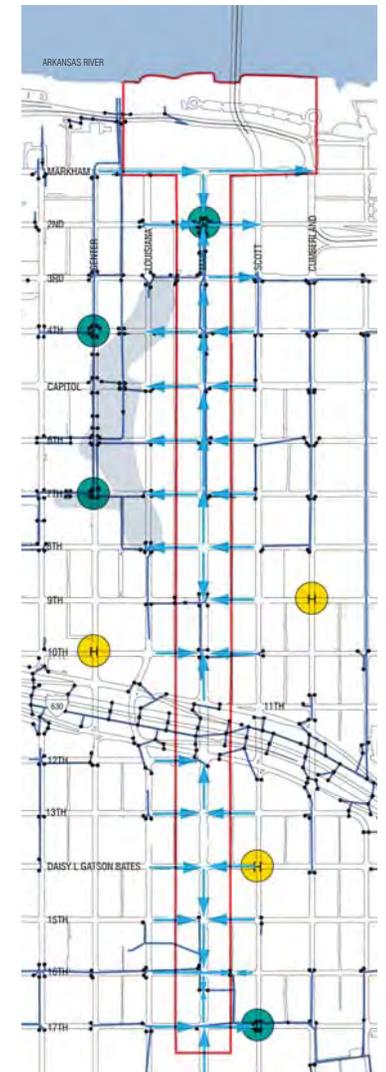
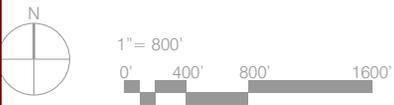


Figure 14: Stormwater Flows

● High point
● Low point

Stormwater Flows

Figure 12 illustrates how the project area is part of two separate watersheds, one of which drains directly to the Arkansas River. Figure 13 shows that Main Street is outside of the 500-year floodplain. Figure 14 shows that mains north of the highway flow directly to the Arkansas River, while mains in SOMA first flow south.



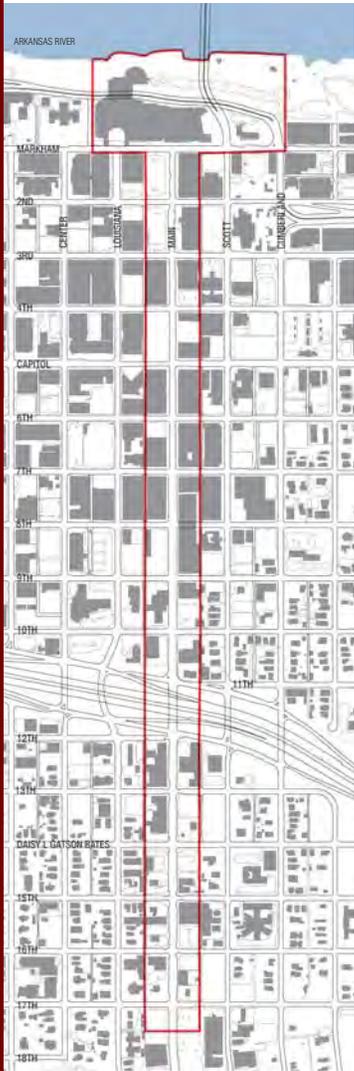


Figure 15: Buildings



Figure 16: Streets

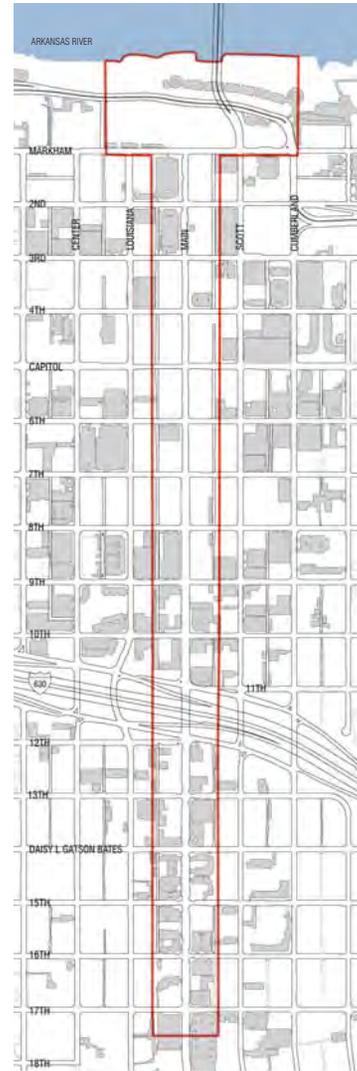


Figure 17: Parking Lots

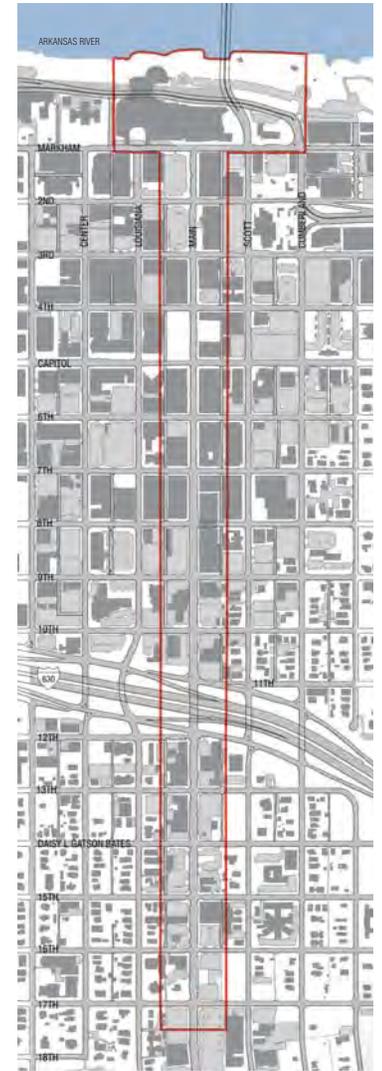
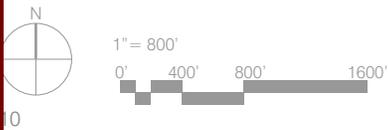


Figure 18: All Impervious Surfaces



Impervious Surfaces

Multiple sources of hardscape — including buildings, streets and parking lots — contribute to the project area being heavily impervious (or impenetrable) to rainfall.



Figure 19: Existing Parks and Trees



Figure 20: Add Green Alleys



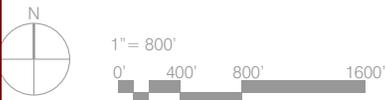
Figure 21: Add Pervious Parking Lots with Landscape Islands



Figure 22: Add Green Roofs

Greening Strategies

There are diverse ways to add pervious surfaces, including switching to permeable paving surfaces in alleys and parking lots, adding landscape beds, and creating green roofs.



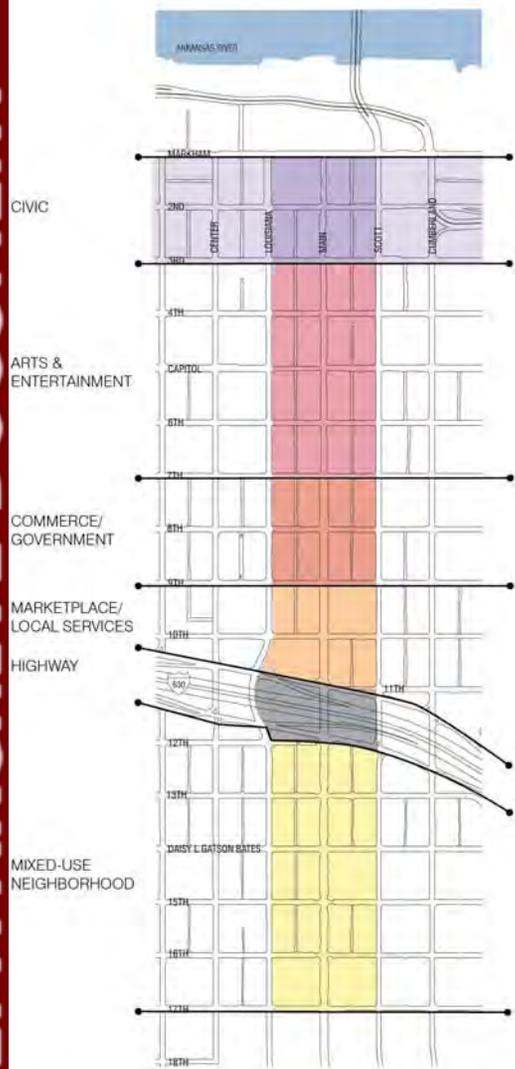


Figure 23: Potential Use Precincts



Figure 24: Nodes and Pedestrian Connections

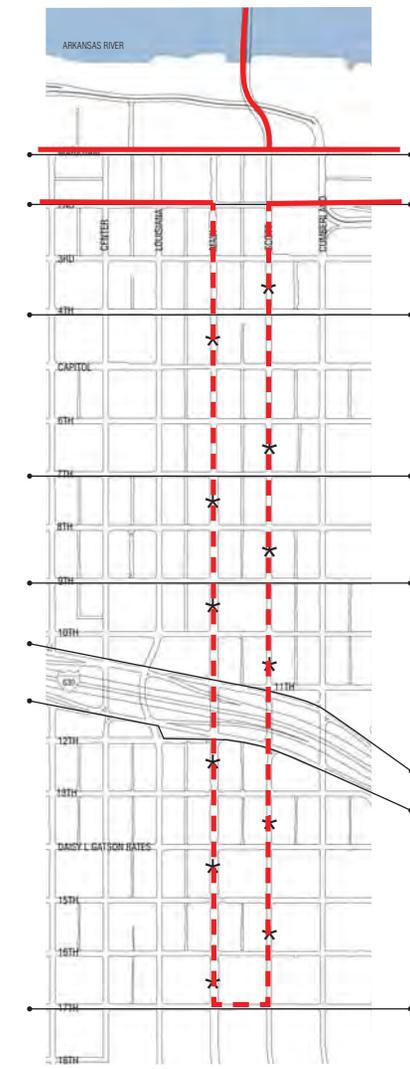
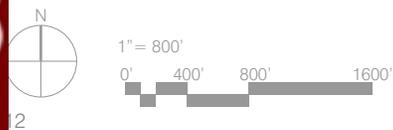


Figure 25: City-Proposed Trolley Route and Stops

Districts and Connections

Potential zones of use, based on existing building occupancies and desires expressed in the workshops. Increased use of each zone would be bolstered by existing nodes and pedestrian connections, and a current proposal to extend the trolley route along Main Street.



IV. MAIN STREET STRATEGIES

Creating a beautiful, functional, and sustainable streetscape can have economic as well as environmental benefits (see case studies in Section V). The design strategies the team developed for an environmentally and economically sustainable Main Street include green infrastructure techniques and pedestrian, bike, and transit improvements.

Using these strategies along the entire length of Main Street, including the SOMA neighborhood and the River Market district, and utilizing consistent plant choices, setbacks, raingarden designs, and street furnishings, will create a cohesive sense of place and a dynamic identity for Main Street.

For descriptions of benefits and images of potential strategies see the Figures listed below.

GREEN INFRASTRUCTURE TECHNIQUES

- Rain gardens with native plants. (Figures 30, 32, 34, 35, 43, 45, 48, 50, 51)
- Street trees (native species that tolerate the urban environment and provide shade). (Figures 30, 32, 34, 35, 43, 45, 48, 50, 51)
- Green roofs. (Figure 45)
- Downspouts linked to rain gardens. (Figures 41, 45)
- Parking areas with permeable pavement. (Figures 34, 41, 45, 50, 51)

PEDESTRIAN, BIKE, AND TRANSIT EXPERIENCE

- Reduced ambient air temperature through use of rain gardens and street trees.
- New crosswalks. (Figure 32)
- A shaded sidewalk on the I-630 overpass. (Figure 38)
- A bike route on a parallel street (to be determined) and more bike racks on Main Street. (Figure 48)
- An expanded trolley route along Main Street. (Figures 43, 45)

FOUR NODES

The designs in this section focus on four key proposed nodes (as shown on the following page) and their potential for new features:

- 1) A neighborhood park in SOMA.
- 2) I-630 crossing.
- 3) A new arts park at the intersection of Main Street and Capitol Avenue.
- 4) The Convention Center Gateway.

These nodes are approximately five minutes walking distance from each other, and creating new destinations at these nodes will better link the SOMA neighborhood with the River Market district.

The following pages describe the four nodes. Accompanying perspectives and sections illustrate design options and streetscape improvements. The designs are future possibilities meant to illustrate a range of ideas and are not precise design proposals.

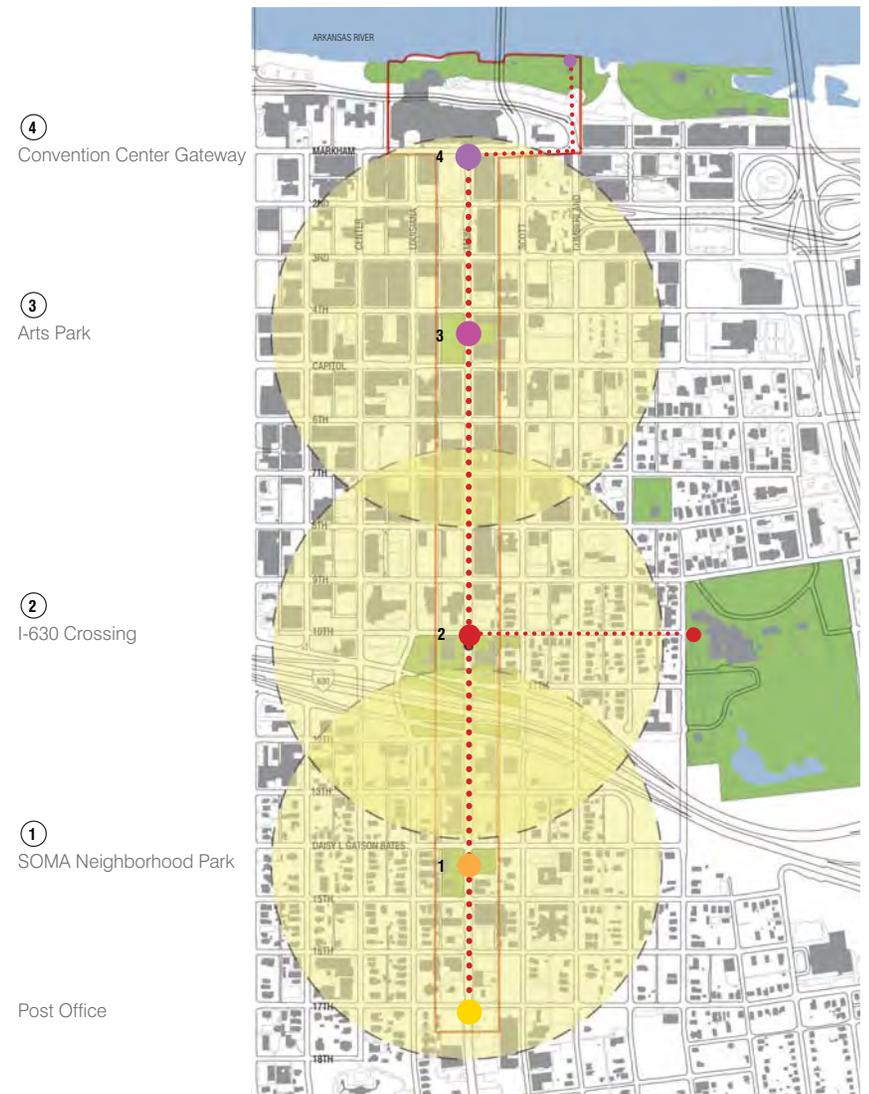


Figure 26: Creating a sustainable, walkable Downtown.

1

SOMA NEIGHBORHOOD PARK

Design options in this node build off of the existing vibrant arts community and current development.



STREETSCAPE

Along the entire length of Main Street the streetscape design options include: more tree cover, rain gardens with native plants to treat stormwater, energy efficient lighting, and improved signage.

2

I-630 CROSSING

Design options improve the pedestrian experience on the overpass, add trees to the interchange to create a more attractive gateway from the freeway to Main Street, and re-use vacant lots as community gardens and nurseries.

3

ARTS PARK

Design options provide more public plazas to host community arts events and more outdoor seating for local restaurants.

4

CONVENTION CENTER GATEWAY

Design options create a more attractive gateway for Main Street from the Convention Center by screening adjacent parking lots, and re-uses the space in front of the city parking garage as a rain garden.

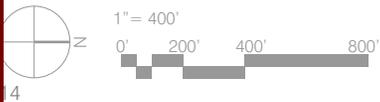
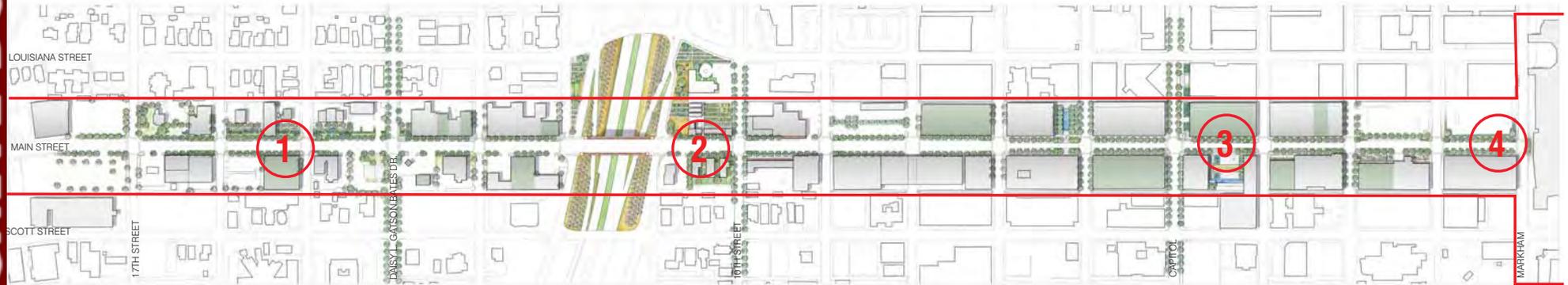
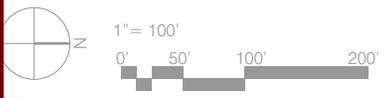


Figure 27: Four Nodes



Figure 28: Node 1 — SOMA Neighborhood Park



Section Location

Perspective Location

POST OFFICE PARKING LOT

The parking lot at the post office could be a good site for rain gardens that could capture and filter water from the large, existing parking lot. Streetside rain gardens could also provide more shade and greenery for pedestrians on Main Street.



Figure 29: Existing view (Main Street, showing post office parking lot).



Figure 30: Design concept for a streetside rain garden with native shade trees.

Conceptual Street Perspective A

NEW CROSSWALKS

To be a true heart of the city, Main Street needs to be easy for all users to access and must feel comfortable and safe for pedestrians of all ages and abilities. New or improved crosswalks are an integral part of this effort, particularly in the SOMA neighborhood where the street is wider and traffic moves faster. Crosswalks with longer crossing times, embedded lights, reflective striping, and vocal countdowns are safer for tourists, families, differently-abled pedestrians, and other users.

Giving a consistent design to new and existing crosswalks all along Main Street, including SOMA, can help create a sustaining sense of place and identity. These designs also enhance visibility.

NEW BUILDINGS

New buildings that are built up to the sidewalk and face Main Street are already being built in the SOMA neighborhood. Wherever feasible, new buildings should have minimal setbacks and parking in the rear to allow gardens and civic space along the street, which would create a better environment for walking and biking. On parcels with existing buildings with larger setbacks, a rain garden could be built to collect and treat the runoff from the entire lot (see Street Section B on page 19).



Figure 31: Existing view (Corner of Main and 15th, looking south).



Figure 32: Design concept for Main Street with new buildings, new crosswalks, and a rain garden.

Conceptual Street Perspective B

MURALS

Public art, such as murals, can be an integral part of any streetscape. Murals can depict the history, culture, and hopes of a city or neighborhood.

Designing and creating a mural can engage different parts of the community, including building owners and developers, students, educators, artists, scientists, historians, and tourists. A mural can also turn a blank wall facing the street from an unused space that offers little of interest to passersby into an amenity that beautifies the street and adds to the neighborhood's sense of identity.



Figure 33: Existing view (Main Street, looking northeast towards 13th).

Figure 34: Design concept for a streetscape with a parking lane with permeable paving, shade trees, and a mural.

Conceptual Street Perspective C

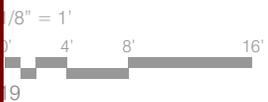
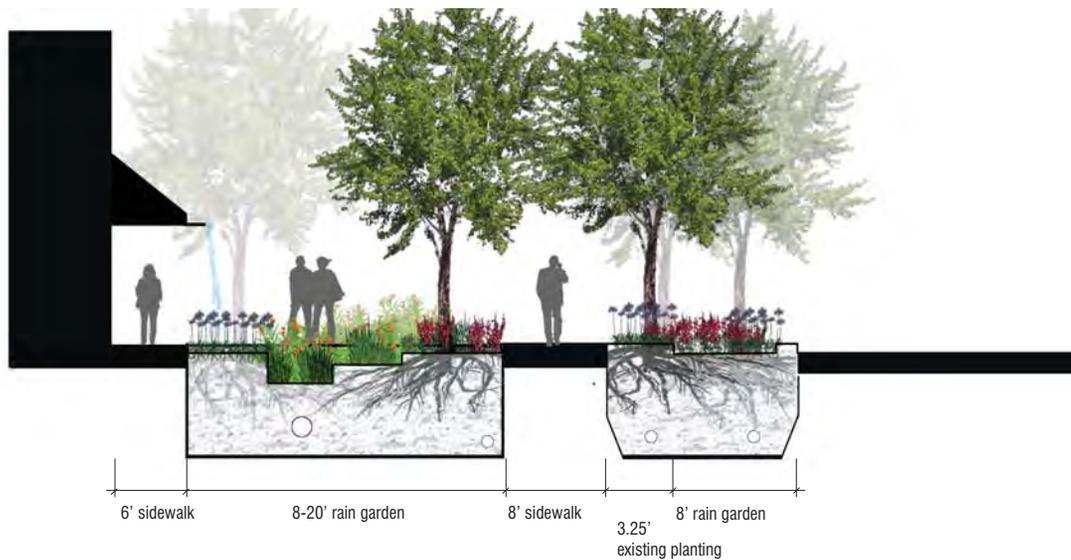
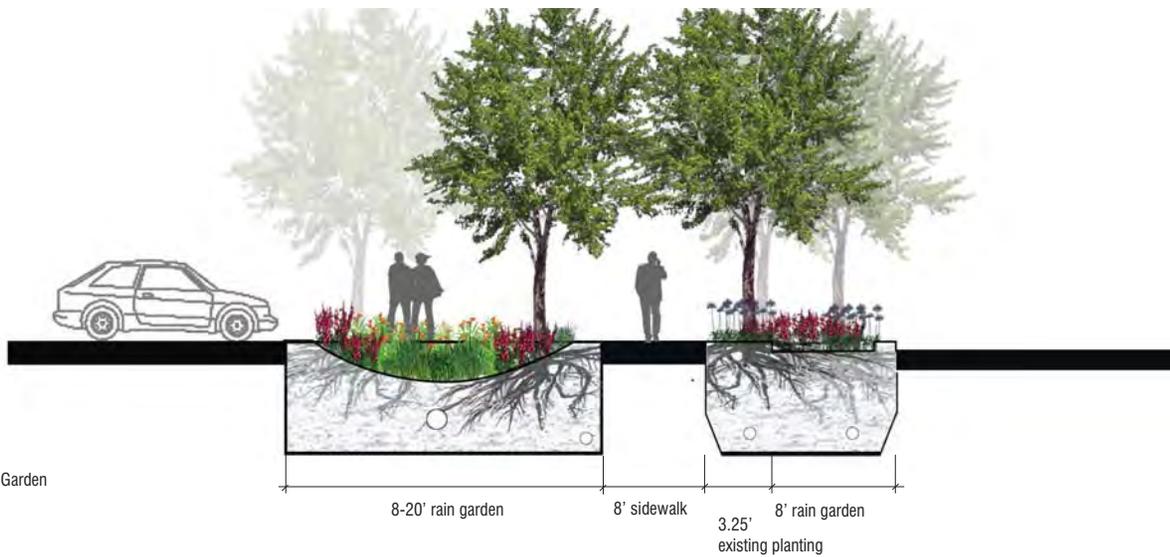
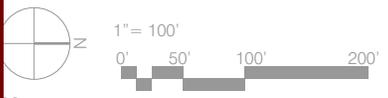


Figure 35: Conceptual Street Sections



Figure 36: Node 2 — I-630 Crossing



Perspective Location

BRIDGE ENHANCEMENTS

Currently, crossing the I-630 overpass is unpleasant for pedestrians and creates a significant barrier between SOMA and the downtown. Adding a shade canopy to the overpass could greatly improve the pedestrian experience. The shade canopy could incorporate solar panels to power street or pedestrian lighting and could include public art.

HIGHWAY PLANTINGS

The highway embankments along I-630 could be used to make a notable statement about Little Rock's new initiatives. Planting the embankments with American crabapple trees would create an instant identity for an area that is the gateway to Main Street from the freeway.



Figure 38: Design concept for bridge enhancements to improve the pedestrian experience.



Figure 37: Existing View (Bridge over Interstate 630, from southeast).

Conceptual Street Perspective D



- Potential Green Roof
- Potential Green Alley
- Potential Sculpture Location

Figure 39: Node 3 — Arts Park

1" = 100'
 0' 50' 100' 200'
 N
 Perspective Location

GREEN ALLEYS

Alleys can be good locations to begin to incorporate green infrastructure techniques because they generally have less car and truck traffic and therefore are simpler sites for piloting green infrastructure approaches.

All the strategies that can be used on streets, such as green roofs, downspouts into rain gardens, permeable pavers, or murals, can also be used in alleys. These improvements have the potential to activate otherwise forgotten parts of the public right of way in Little Rock.



Figure 41: Design concept for a green alley with downspout rain gardens, green roof, permeable pavement, and a mural.



Figure 40: Existing view (Alley east of Main between 6th and 7th).

Conceptual Street Perspective E

STREETSIDE RAIN GARDEN

The rain gardens along Main Street would detain and filter stormwater runoff before the water flows into the eventual stormwater outfall into the Arkansas River. Slowing down the water and allowing it to infiltrate into the ground would mean the city would not need to expand drainage pipes along Main Street. The rain gardens would also provide more greenery on the street and could include educational signs about how runoff from buildings and streets affects natural water systems. The rain gardens could be planted with native plants, such as the *Eupatorium maculatum* (Joe-Pye Weed), *Camassia leichtlinii* (Camas Flower) and *Juncus effusus* (Soft Rush) shown in Figure 43, that are well adapted to urban conditions and fluctuations in water levels. They are also attractive in multiple seasons and easy to maintain.

TROLLEY

Expanding the existing trolley route to Main Street is another way to create a pedestrian-friendly Main Street that also helps the city meet its environmental goals. It gives people choices besides driving, and links walkable destinations with public transit.



Figure 42: Existing view (Southwest corner of 6th and Main, with Repertory Theater in background).



Figure 43: Design concept for a streetside rain garden, with expanded trolley system.

Conceptual Street Perspective F

DOWNSPOUT RAIN GARDEN

Runoff from the roofs of Main Street buildings could be directly connected to rain gardens on the street through downspouts. If attractively designed, the downspouts could be public art. These artistic downspouts would create a dramatic visible sign to visitors and residents about the presence of water in the city and how it is managed from roofs to streets.

GREEN ROOFS

Green roofs are important in retaining and detaining stormwater, reducing the ambient air temperature (or urban heat island effect) in the city, and reducing the heating and cooling needs of a building. Over time, buildings on Main Street could be retrofitted to include green roofs using lightweight, drought-tolerant plants such as sedums and grasses. Each structure and roof would need to be evaluated and the expense of retrofitting or engineering for a new green roof weighed against the environmental benefit.

PERMEABLE PAVERS

Permeable pavers could provide structured surfaces for on-street parking, let stormwater percolate into the ground and into nearby rain gardens, and make the street more attractive.



Figure 45: Design concept for a streetscape that includes a streetside rain garden, a parking lane with permeable paving, a downspout rain garden, and a trolley track.



Figure 44: Existing view (Southeast corner of 6th and Main, with Repertory Theater in background).

Conceptual Street Perspective G

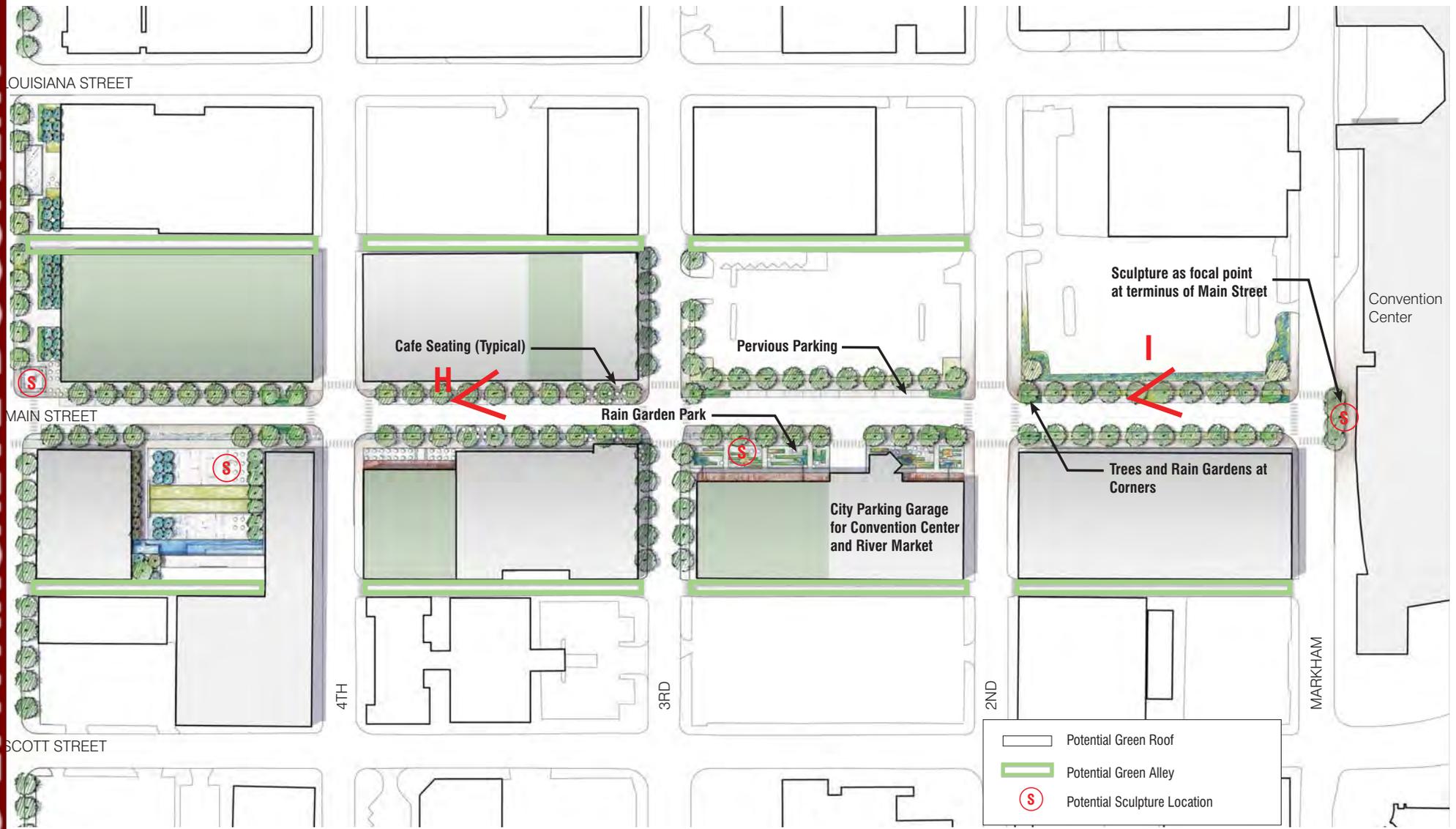


Figure 46: Node 4 — Convention Center Gateway

CAFE SPACE

Main Street could offer shaded, outdoor seating near the new businesses that are scheduled to be completed in the near future. Providing new, shaded café seating would build off of and encourage the emerging arts and entertainment establishments in the downtown and encourage pedestrian activity from the River Market district up Main Street.

BIKE RACKS

Adding bike racks in addition to the expanded trolley line and pedestrian amenities would create more options for active transportation that could have public health benefits for people who choose to walk and ride bikes. In addition, new bike racks and pedestrian amenities could create more activity for businesses and destinations along Main Street.



Figure 48: Design concept for a streetside rain garden with cafe space and bike racks.



Figure 47: Existing view (Main Street, looking north from 4th).

Conceptual Street Perspective H

GREENING PARKING AREAS

Parking lots along Main Street present good opportunities to use green infrastructure techniques to capture and filter stormwater runoff and provide a more appealing environment for pedestrians.

Rain gardens and bioswales (long, linear rain gardens) between the sidewalk and parking lot (as shown in Figure 50) could be lushly planted, shading pedestrians and cars and reducing the heat island effect by lowering the ambient air temperature.

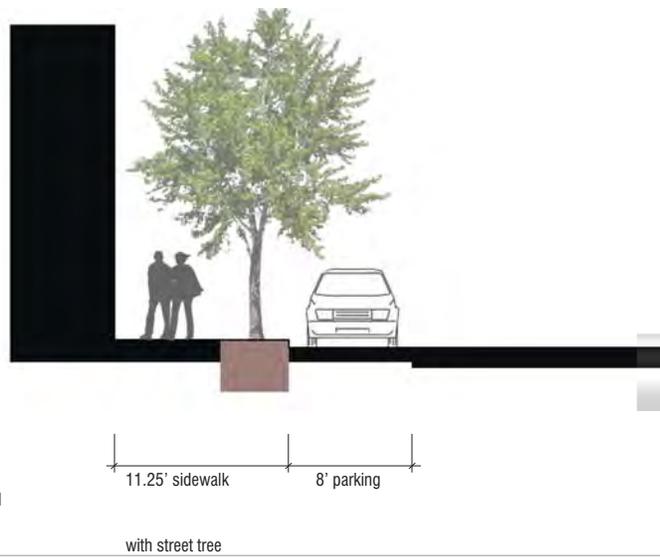


Figure 49: Existing view (Main Street, looking north from 3rd).



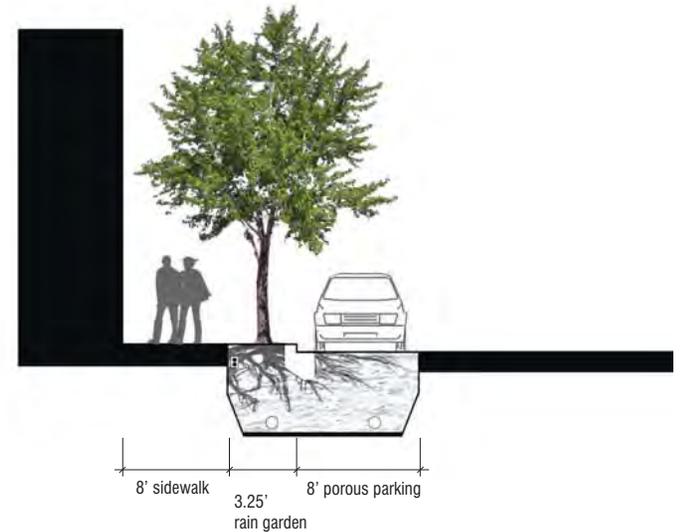
Figure 50: Design concept for a streetscape that includes a streetside rain garden, a parking lane with permeable paving, and a parking lot with a rain garden.

Conceptual Street Perspective I

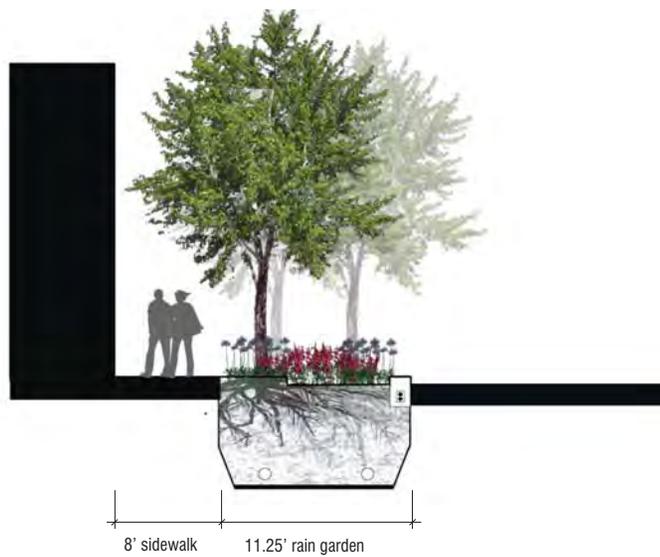


Existing: Limited Tree Root Space and Impervious Parking

with street tree

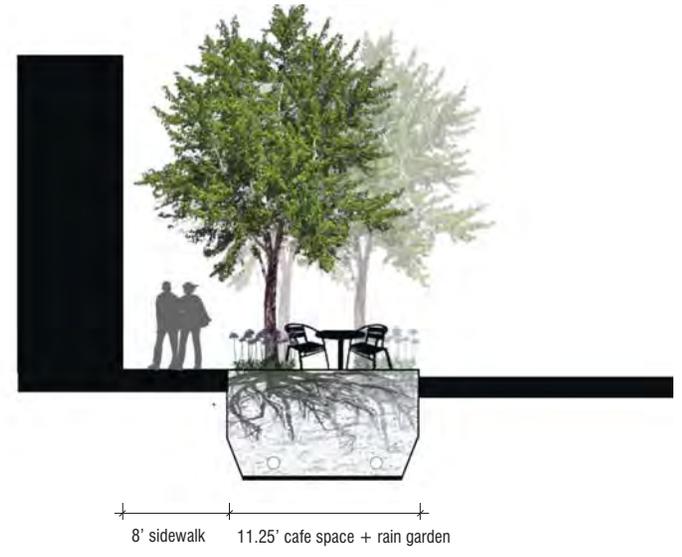


Section 'A': Proposed Rain Garden and Porous Parking



Section 'B': Proposed Rain Garden (All Planted)

8' sidewalk | 11.25' rain garden



Section 'C': Proposed Rain Garden (Cafe)

8' sidewalk | 11.25' cafe space + rain garden

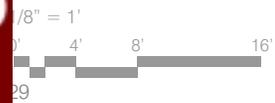


Figure 51: Conceptual Street Sections



Figure 52: Rain gardens line a sidewalk at Citygarden in St. Louis, MO.

V. CASE STUDIES

This section describes some examples of how other cities have used design strategies similar to those described in this report to revitalize streets, parks, alleys, and other public spaces. There is a growing body of literature and expertise on these strategies that can be found in academia, at professional conferences (such as the American Society of Landscape Architects), in government agencies, and in city departments. Redesigning streets, which have complex interactions between utilities, traffic, neighborhood concerns, hydrology, and existing buildings, will always involve challenges unique to each project. However, Little Rock can learn important lessons about funding, design, and most importantly, implementation from other cities' experiences.

- Lansing, Michigan has recently re-built a section of Michigan Avenue near the Capitol building and carefully designed and sequenced construction to deal with necessary utility improvements at the same time as stormwater. Their scale and scope is comparable to Little Rock.
- Chicago has been a leader in green building and infrastructure for several years. Their Sustainable Street Pilot Program includes cost analysis, implementation documentation, and post-construction evaluation that is meant to help other cities in creating green streets. They also have established a city-wide Green Alleys program and handbook.
- Indianapolis' Cultural Trail stretches across the city, but the quality and integration of signage, lighting, crosswalks, bike facilities, raingardens and public art along the trail, particularly in the downtown sections, are pertinent to Little Rock.
- Birmingham Railroad Park and Citygarden in St. Louis are examples of the redevelopment potential of sustainable infrastructure on underutilized blocks in an urban core. In both examples, exemplary destination parks were created downtown and have spurred additional downtown development and excitement.
- Citygarden employs a number of green infrastructure tactics related to stormwater that help alleviate the impact of runoff on St.Louis' overburdened combined stormwater/sanitary sewer system, and on the Mississippi River to which it discharges.
- Lynchburg, Virginia is another example of creating a new network of pedestrian-friendly streets that also deal with significant stormwater issues. The raingardens and porous parking are both beautiful and functional.



Little Rock, AR: Main Street



Lansing, MI: Michigan Avenue Sustainable Streetscape



Chicago, IL: Cermak Rd./Blue Island Ave. Sustainable Street Pilot Program



Birmingham, AL: Railroad Park



Indianapolis, IN: Cultural Trail (bike and pedestrian streetscape)



St. Louis, MO: Citygarden

Figure 53: Case Study Scale Comparisons



LANSING: MICHIGAN AVENUE STREETScape

Who: City of Lansing (Michigan), with C2AE and Tetratech
Scope: Urban streetscape (4 blocks)
When: task force 2004, Design 2006, Completed 2008
Cost/Funding Sources:
 MDEQ - Clean Michigan Initiative Grant; EPA Region 5 - 319 Non-point Source grant; Michigan Dept of Transportation - Federal Transportation Enhancement Funding

Contact/More Information:
 Chad Gamble, City of Lansing
www.lansingmi.gov/pubserv/cso/michigan_ave_rain_gardens.jsp
<http://gogreengolansing.com/>
www.c2ae.com/who-we-serve/municipal/michigan-ave.html

Notes:
 Federal, state, and local governments collaborated with private businesses and contractors on both funding and implementation. Collaboration among city departments was particularly important to make the utilities and engineering work smoothly with the rain gardens.

The rain gardens were developed in conjunction with the city's combined sewer overflow (CSO) upgrades as a means to clean, control, and reuse stormwater. Rain gardens are an initial step of a larger, citywide water quality improvement initiative, working in conjunction with the city's National Pollution Discharge Elimination System (NPDES) Phase II permitting efforts.

In this project, the city used sustainable design approaches to improve the pedestrian approach to the state capitol building along Michigan Avenue to complement the street improvements and CSO separation work. The city's goal was to make Lansing's primary downtown thoroughfare comfortable for pedestrians and drivers alike while highlighting the city's commitment to green infrastructure through the use of rain gardens. Special attention was given to selecting plantings that would create a formal yet inviting approach to the capitol. The trees and plant beds were accented by ornamental paving and site furnishings.

Design Challenges and Solutions

- Public Perception especially pedestrian safety and storefront access.
- Bioretention Layout
 - Existing utilities
 - Tie-in to existing storm system
 - Existing landscaping and driveways
 - Constructability/structural and cost concerns



Figure 54: Michigan Avenue during construction.



Figure 56: Michigan Avenue after construction.



Figure 55: Construction photo showing utility conduits.

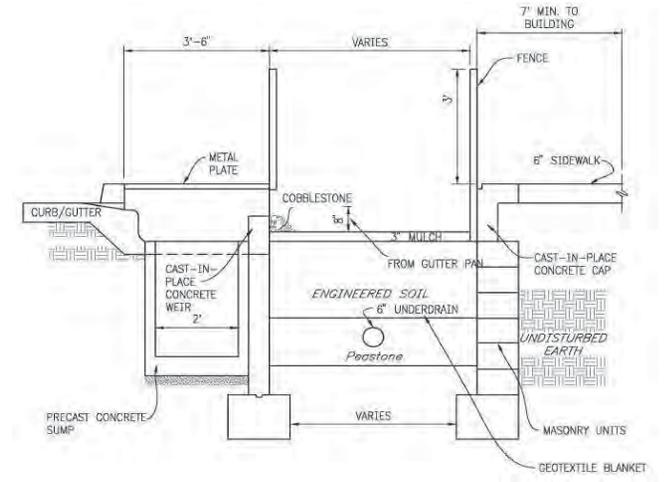


Figure 57: Typical construction section of the sidewalk and rain garden.

Precedent: Lansing

CHICAGO: CERMAK ROAD-BLUE ISLAND AVENUE SUSTAINABLE STREET PILOT

Who: City of Chicago Department of Transportation
Scope: Urban corridor, streetscape best practices
When: Pilot for best practices; under construction 2011
Cost/Funding Sources: \$16.6 million. Funded by the City of Chicago, with grants from Illinois Environmental Protection Agency and Federal Highway Administration. Support from ComEd.

Contact/More Information:
 Janet Attarian, Project Director, CDOT jattarian@cityofchicago.org
 www.cityofchicago.org/content/dam/city/depts/cdot/CBISS_flier_2010.pdf

Notes:
 The city's first "sustainable streetscape" intended to use the most innovative practices in order to test and monitor implementation and performance at all levels. Cost is 21 percent below average block cost for street retrofits. The project is being evaluated based on LEED-ND, Sustainable Sites, Illinois DOT sustainability standards, and others for comparative purposes. Janet Attarian stressed that the project should create a beautiful space that residents want to use for daily activities.

The 1.5-mile-long streetscape will include new sidewalk and roadway surfaces, street trees and landscaped planters, roadway and pedestrian lighting, and public art.

Sustainable features and design objectives include:

- Recycled content— recycle at least 90 percent of construction waste, and specify new materials with at least 10 percent recycled content. (Large contractor learning curve).
- Energy conservation— reduce energy use below the typical streetscape baseline; use reflective surfaces on sidewalks and roadways; use dark-sky-friendly light fixtures.
- Stormwater management— divert 80 percent of the typical average annual rainfall from the storm sewer system through use of pervious pavements, bioswales, and infiltration planters.
- Urban heat island mitigation— reduce ambient summer temperatures on streets and sidewalks through use of reflective pavements on roadways, light-colored sidewalks and trees for shading.
- Alternative transportation— provide new ADA compliant sidewalks and ramps, improve bus stops with signage, lighting; add bike lanes along Blue Island and bike racks throughout project.
- Water efficiency— eliminate potable water sources for irrigation; use native or climate-adapted, drought-tolerant plants for all landscaping.
- Education— through community identifiers and self-guided tour brochures highlight innovative, sustainable features of streetscape.
- Monitoring— CDOT will partner with the Metropolitan Water Reclamation District to monitor the project and measure its environmental impacts.



Figure 58: Typical illustrative section of street, sidewalk, swale, and signage.



Figure 59: Cermak Road during construction of permeable parking, stormwater storage, and sidewalk planters.



Figure 60: Permeable pavers mark a bike lane and parking area. The pavers contain a special compound to absorb nitrogen oxides.



Figure 61: Cermak Road after construction of permeable parking/bike lane, stormwater storage, and sidewalk planters.

Precedent: Chicago

INDIANAPOLIS: CULTURAL TRAIL

Who: Public-private partnership, managed by a six-person Cultural Trail Management Team of local civic leaders, with hired consultants.

Scope: 8 mile urban greenway; public art; interpretive signage

When: 2007-2012 (Seven corridor segments over 5 years)

Cost/Funding Sources: \$55 million. The Cultural Trail is made possible by a large public and private collaboration led by Central Indiana Community Foundation (including \$2 million matching fund from one donor), the City of Indianapolis and several not-for-profit organizations devoted to building a better city. \$20 million from U.S. DOT's Transportation Investment Generating Economic Recovery (TIGER) program.

Contact/More Information: www.indyculturaltrail.org

Notes:

The Indianapolis Cultural Trail: A Legacy of Gene & Marilyn Glick is a world-class urban bike and pedestrian path that connects neighborhoods, five downtown Cultural Districts and entertainment amenities, and serves as the downtown hub for the entire central Indiana greenway system. It also connects to The Canal & White River State Park, the Wholesale District, and the Monon Trail.

Currently \$2 million (over 4% of the construction budget) has been allocated to public art - a major design component of the Cultural Trail. Guiding the team's effort is a mission to create a world-class, 21st century icon and an unprecedented model for multi-modal transportation systems in urban areas.

Other features:

- Extensive use of stormwater planters and bioswales to filter street runoff.
- Community bike program to provide inexpensive bicycles for rent.
- De-icing and salting regulations to protect plants from chemicals.
- There is a Maintenance Endowment thanks to individual donations and matching funds from the Margot L. and Robert S. Eccles Charitable Fund.



Figure 63: The Cultural Trail is located in an urban, downtown context.



Figure 64: Planting stormwater basins bring beauty to the streetscape.



Figure 65: Lighting and seating make the space safe and welcoming.



Figure 66: Downspouts flow into stormwater basins along the Trail.



Figure 62: Innovative, safe crosswalks brand the Cultural Trail.

Precedent: Indianapolis

BIRMINGHAM: RAILROAD PARK

Who: City of Birmingham/ Railroad Park Foundation (client); Tom Leader Studio (landscape architect)

Scope: Urban park (re-use; 4 blocks, 19 acres)

When: Completed 2010

Cost/Funding Sources: \$17.5 million

Contact/More Information: www.railroadpark.org

Notes:

TL worked extensively with a public / private partnership to build this downtown central park and master plan the rail corridor. This project celebrates the active participation of 11 tracks of well-loved trains that slowly lumber through this downtown on a viaduct.

The park site is a former warehouse and brick-making site and much of the park is formed with materials recovered from historic uses. The park is four blocks long by one block wide and was historically, the lowest point in town. The scheme draws on this ample water in creating a large reservoir or irrigation which also discharges through a stream and series of ponds as a summer fountain. Needed floodwater storage is created by excavating for this water system, using the spoils to create a series of knolls along the rail viaduct. The "Rail Trail", located atop this little mountain range is a series of on-grade and bridge connections which allow train-spotting up close, views over downtown and of the frequent large music events and parties within the park. The park contains performance venues of varying scales from small to extra large such as the annual "Crawfish Boil" attracting 30,000 music fans. Noisy or quiet, day or night, the park is only completed by the industrial ballet of freight cars slowly rolling in both directions.

TL also designed a structure which grew out of the park master plan to accommodate park food service, concessions, administration, rest rooms, and storage on a strict budget. These functions were housed in a series of four wooden "boxcars" along the edge of the park's main entry plaza. Above these, a shed-like metal roofed canopy extends the entire 220 feet of the plaza length to provide sun and rain shelter as well as frame the "east gate" to the park lakes and open space beyond.



Figure 68: The Railroad Park site.



Figure 69: The lake literally reflects the industrial heritage of Birmingham.



Figure 70: The 17th Street plaza.



Figure 71: The Railroad Park amphitheatre fills on a summer movie night.



Figure 67: The Railroad Park site showing stormwater infrastructure.

Precedent: Birmingham

ST. LOUIS: CITYGARDEN

Who: The Gateway Foundation (Client), NBWLA (Landscape Architect) and Durham Associates (Local Architect)

Scope: 2 block (2.9 acre) public sculpture garden and city park

When: 2007 - 2009; Opened July 1, 2009

Cost/Funding Sources: \$30,000,000

Contact/More Information:

infova@nbwla.com www.nbwla.com/featured/citygarden.htm
www.citygardenstl.org/

Notes: Citygarden's 2.9 acres include a variety of experiences to accommodate the diverse interests of St. Louis residents, and provide a completely free and open gathering space for all. With careful planning and clear communication with the client, this \$30 million park was completed in just over two years — from design inception to the public opening — with weeks to spare before the set completion date: baseball's All Star weekend. The park is highlighted by water expressed in a variety of reflective and vibrant forms, by a café featuring locally-grown food, by a series of plantings that are primarily Missouri natives, and by an extensive collection of contemporary sculpture unbound by fences.

Donated to the City by the Gateway Foundation, Citygarden realizes a long-term goal of revitalizing the Gateway Mall with an active public gathering space. Citygarden creates a place that is at once a sculpture garden, botanic garden, and city park. As a sculpture garden, it is designed to be an inviting and inspiring setting for a variety of contemporary sculptures while remaining free and open to the public at all hours. Its spaces create a diverse array of experiences for a population with wide ranging interests. As a botanic garden, Citygarden features native Missouri trees, shrubs, perennials, groundcovers, grasses, and wildflowers. Plantings were selected in collaboration with horticulturists from the Missouri Botanic Garden to create a beautiful and engaging place for year-round enjoyment. As a city park, Citygarden attracts thousands of visitors from St. Louis and beyond. In the intense summer heat, it serves as an urban oasis. The garden's three fountains and shade, afforded by the lush plantings, keep Citygarden active.

The garden's many facets are united by materials and forms unique to St. Louis and its regional context. The Mississippi River bluffs are abstracted in a broadly arcing wall that spans the garden's two blocks. Constructed of local limestone, the arc wall delineates a more urban 'upland' precinct to the north and creates an open 'floodplain' through the center of the site. To the south a meandering seat wall edges the richly planted garden precinct that is inspired by the region's agricultural patterns associated with its rivers. In addition, garden paths and beds mark historic building footprints.



Figure 72: The Cafe is an additional destination, and helps to frame other historic buildings.



Figure 73: Citygarden is an urban, downtown, civic heart of St. Louis.



Figure 74: The Arch is set off by a landscape at once ecological, civic, and beautiful.



Figure 75: All ages are drawn to the spaces.

Precedent: St. Louis

LYNCHBURG, VA: RIVERFRONT IMPLEMENTATION PLAN

Who: City of Lynchburg (Client), NBWLA (Landscape Architect)

Scope: planning and design services for 14 acres downtown, including Phase I: Jefferson Street North streetscape and raingardens.

When: 2006- ongoing

Cost/Funding Sources: \$2.4 million

Contact/More Information:

infova@nbwla.com www.nbwla.com/boards/boards.html

Notes:

The city of Lynchburg developed an implementation plan for the revitalization of the downtown riverfront that included an eight-acre Riverfront Park and the renewal of nearby streets with spaces for stormwater management, recreation, interpretive facilities, and public gatherings. The plan also included a re-imagined mixed-use pedestrian corridor, restored streets, and public spaces with dedicated outdoor café spaces, play areas, a large canal basin, mountains, and an events plaza. The design process involved several meetings with city and private stakeholders, and the plan was endorsed by the city council in 2006.

The first riverfront project, Jefferson Street North, a streetscape that incorporates significant green infrastructure, was opened to the public in June 2010. Plans include a pedestrian arts and dining corridor along Jefferson Street South and the Lower Bluff Walk Corridor that will connect Main Street and the riverfront. Included in this work are design guidelines for the site development and architecture in the area. A detailed stormwater strategy will help the downtown protect the James River watershed and provide a model for improved public spaces with environmental benefit. The project also includes the re-direction of runoff from the overburdened combined sewer system to new permeable parking areas and extensive rain gardens. The rain gardens have flowering native plants and interpretive signage and are an educational and aesthetic asset to the city.



Figure 76: The Lynchburg Riverfront master plan.



Figure 77: Riverfront Park, showing the wide planted swale and bridges during a festive event.



Figure 78: Swale, cobbled street and brick crosswalk.

Precedent: Lynchburg



Fig. 79: The old rail bridge and new pedestrian bridge over the Missouri River.

VI. NEXT STEPS + FUNDING

Little Rock and its residents and stakeholders can use the designs and strategies described in this report to help determine how to proceed with revitalizing Main Street. To help prioritize its actions, the city could focus on the four nodes discussed in this report: the SOMA Neighborhood Park, the I-630 Crossing, the Arts Park between 4th and Capitol Streets, and the Convention Center Gateway. Developing these nodes would create newly vibrant areas of Main Street at easily walkable distances from each other and demonstrate multiple environmentally and economically sustainable strategies to the public at key locations. These additional points of interest could help draw more people and businesses to Main Street.

Private property owners and the city could work together to enhance the public realm with cafe seating and rain gardens between parking lots and sidewalk. City departments, such as Public Works, could begin improvements, such as converting some on-street parking to cafe seating or rain gardens in order to create inviting spaces.

City staff will need to coordinate necessary utility and street improvements with an overall, long-term vision for the street, which would include permeable parking lanes, rain gardens, and increased cafe space.

During the charrette, participants brainstormed resources that might be used to implement design options.

I. Federal and/or State Resources

- 1) EPA's 319 Grant Program www.epa.gov/owow_keep/NPS/cwact.html
- 2) EPA's State Revolving Fund for Clean Water http://water.epa.gov/grants_funding/cwf/cwsrf_index.cfm
- 3) FHWA funds through Metro: Could be used for road diets, bump outs, bike lanes
- 4) FHWA Transportation Enhancement Program www.fhwa.dot.gov/environment/te/index.htm
- 5) Federal Transit Administration, Livable and Sustainable Communities Program http://fta.dot.gov/publications/publications_10935.html
- 6) Department of Energy, Qualified Energy Conservation Bonds
 - Administered by Arkansas Development Finance Authority (ADFA)
 - Could be used for green roofs, efficient lighting, and street trees
- 7) EPA Regional, State, and Local Funding Opportunities: A guide of regional, state, and local funding resources http://www.epa.gov/smartgrowth/state_funding.htm
- 8) DOT, HUD, and EPA Programs for Sustainable Communities funding opportunities: www.sustainablecommunities.gov/grants.html

II. City/County Resources

- 1) Pulaski County Brownfield Revolving Loan Fund (BFRLF)
- 2) Downtown Community Development Corporation (CDC)
- 3) 12th Street Plans: City streetscape between University Avenue and Central High School
- 4) Arkansas Department of Corrections for labor assistance
- 5) Metro: Congestion mitigation funds available as related to EPA's nonattainment finding
- 6) Central Arkansas Water: demonstration project

III. Community Resources

- 1) University of Arkansas Fay Jones School of Architecture and Department of Landscape Architecture
 - Solar manufacturer set to underwrite some of their projects
 - Studio projects could be used to generate ideas
- 2) University of Arkansas Community Extension Service: street tree and raingarden expertise or implementation
- 4) Community-based projects
 - Brick drive with property owners to create interim improvements to vacant lots and parking lots
 - eStem Public Charter School garden patch at north end of Main Street
 - Tailgate football event at Center Street
 - Other volunteer days to bring energy and attention to Main Street
- 5) Home Depot Foundation
- 6) Local businesses (matching funds)

Other community partnerships could be formed with arts organizations, the William J. Clinton Presidential Library, community gardens and local food organizations, the University of Arkansas and other colleges and schools, Arkansas Children's Hospital and other health organizations, and other local foundations and businesses. Local businesses and city departments such as Parks and Recreation and Public Works will be especially crucial for helping with construction, installation, management, and maintenance of Main Street improvements.

IV. Tools and Resources

EPA offers a number of useful tools, scorecards, and education and outreach resources to help communities implement smart growth principles and techniques. Specific examples are listed below, and more can be found at <http://www.epa.gov/smartgrowth/>.

Essential Smart Growth Fixes for Urban and Suburban Zoning Codes

Offers 11 Essential Fixes to help local governments amend their codes and ordinances to promote more sustainable development.

http://www.epa.gov/smartgrowth/essential_fixes.htm

Green Infrastructure Municipal Handbook

The Municipal Handbook is a series of documents to help local officials implement green infrastructure in their communities. Handbook topics cover issues such as financing, operation and maintenance, incentives, designs, codes and ordinances, and a variety of other subjects. <http://cfpub.epa.gov/npdes/greeninfrastructure/munichandbook.cfm>

Parking Spaces / Community Places: Finding the Balance Through Smart Growth Solutions

Highlights proven approaches that balance parking with broader community goals.

<http://www.epa.gov/smartgrowth/parking.htm>

Sustainable Design and Green Building Toolkit for Local Governments

Addresses the local codes of ordinances that affect the design, construction, renovation, and operation and maintenance of a building and its immediate site to help local governments, the development community, and other building professionals identify and remove barriers to sustainable design and green building in their permitting processes.

<http://www.epa.gov/region4/recycle/green-building-toolkit.pdf>

Water Quality Scorecard

This scorecard offers policy options for protecting and improving water quality across different scales of land use and across multiple municipal departments.

http://www.epa.gov/smartgrowth/water_scorecard.htm

i-Tree Tools

i-Tree is a state-of-the-art, peer-reviewed software suite from the U.S. Forest Service that provides urban forestry analysis and benefits assessment tools. i-Tree tools help communities of all sizes to strengthen their urban forest management and advocacy efforts by quantifying the structure of community trees and the environmental services that trees provide.

<http://www.itreetools.org>



Fig. 80: Widely adaptable, native flowering plants such as Purple Coneflower and Black-eyed Susan create a vibrant rain garden in Lynchburg, VA.

VII. APPENDICES

- A. WORKSHOP SCHEDULE
- B. RECOMMENDED PLANT LISTS

FINAL CHARRETTE SCHEDULE

WEDNESDAY, APRIL 13

MEET and GREET (8:00-8:15)

INTRODUCTION (8:15-8:45) – Intro by Mayor Mark Stodola and Abby Hall/Clark Wilson of the EPA

- Greening America's Capitals
 - Program introduction and goals, Little Rock's selection as a pilot city, Clarify intent and expectations
- Welcome
 - Introduction of Team Members and Stakeholders
 - Greening America's Capitals goals, building on the Mayors' Institute on City Design completed in 2009
- Charrette Overview
 - Schedule and Process

OVERVIEW of PRELIMINARY DESIGN IDEAS AND DISCUSSION POINTS (8:45-9:15) – PPT by NBWLA

- Main Street Study Area
 - Site analysis-- Maps/photographs of existing conditions and site analysis
 - Review of preliminary ideas – G.R.E.E.N.ing Main Street

OPEN DISCUSSION AND Q&A (9:15-10:00)

TROLLEY TOUR (10:15-11:30)

- Trolley tour - led by Caran Curry and Mayor Mark Stodola; Main Street to review preliminary design ideas, brain storm and discuss issues.

LUNCH @ THE HEIFER PROJECT (11:30-12:30)

CLINTON LIBRARY/WETLAND/RIVERFRONT PARK TOUR (12:30-2:30)

- Clinton Library – led by Debbie Shock, Director of Ops and facilities, Clinton Presidential Center
- Bill Clark Wetlands and Riverfront Park – led by Mark Webre

BREAK (2:30-2:45)

FOCUS SESSION I - STORMWATER (2:45-4:15)

Stormwater management as civic amenity, educational opportunity, and aesthetic asset

- **CONTEXT, ANALYSIS AND PROPOSALS**
 - Detailed review Hydrologic Site Analysis: Topographic analysis, Regional picture, History
 - Brief description of Little Rock's stormwater/wastewater network maps
 - Green Infrastructure Precedents
- **SKETCH SESSION AND DISCUSSION**
 - Little Rock infrastructure opportunities: Discussion of green roofs, rain gardens, drainage swales and stormwater daylighting; what can happen at the end of Main where the storm daylight to the river from main street?

CORE TEAM MEETING and SKETCH SESSION (4:30-6:30)

THURSDAY, APRIL 14

FOCUS SESSION II- RE-USE: VACANT AND UNDERUTILIZED BLDGS AND SURFACE PKG LOTS (8:15-10:00)

What are the most strategic design proposals that infill Little Rock's urban fabric and balance mixed-use urban infill development with parking needs?

- **CONTEXT, ANALYSIS AND PROPOSALS**
 - Review of site opportunities and constraints
 - Presentation of potential strategies; Boutique restaurant/retail, community gardens, arts district
- **SKETCH SESSION AND DISCUSSION (POSSIBLE SITE WALK ON MAIN TO TEST IDEAS)**

BREAK (10:00-10:15)

FOCUS SESSION III - HUMAN-SCALED STREETS; NEIGHBORHOOD CONNECTIONS (10:15-12:00)

How do we get people on the streets and create a lively pedestrian culture down the entire corridor?

What is the feasibility of narrowing/eliminating parking lanes on Main Street to accommodate bicycles, green infrastructure, pedestrian amenities? Trolley route?

- **CONTEXT, ANALYSIS AND PROPOSALS**
 - Zoning and DOD design standards on project site (City of Little Rock)
 - Review of site opportunities and constraints
 - Presentation of potential strategies
- **SKETCH SESSION AND DISCUSSION**

LUNCH BREAK (12:00-1:00)

FOCUS SESSION IV - BRINGING DESIGN TO MAIN STREET (1:00-2:45)

Connecting with local design professionals in Little Rock bring their expertise and influence to Main Street

- **CONTEXT, ANALYSIS AND PROPOSALS**
 - Review of design ideas including stormwater, re-use, and streets (sessions I, II and III)
- **SKETCH SESSION AND DISCUSSION**

CORE TEAM MEETING and SKETCH SESSION (3:00-6:00)

FRIDAY, APRIL 15

FOCUS SESSION V - GOVERNMENT RESOURCES, PRIVATE/PUBLIC PARTNERSHIPS, IMPLEMENTATION AND FUNDING (8:15-10:00)

What are the possible means of implementing short-term or long-term design interventions? What design implementations can the City do to provide the most robust framework for successful development?

MODERATED BY THE EPA

- Funding mechanisms and legislative hurdles
- Environmental hurdles (subgrade condition, contamination, infiltration capacity)
- Incentives for private property proposals
- Private-public partnerships
- Street amenities and green infrastructure to spur private development

CORE TEAM MEETING AND DEBRIEF; PREP FOR WRAP-UP (10:00-12:30)

DESIGN PRESENTATION AND WRAP-UP SESSION (12:30-2:00) – 30 minute PPT by NBWLA followed by

Open Discussion

- Presentation of main ideas
- Discussion of prioritizing and implementation
- Discussion of public involvement, next steps
- Design team given feedback to further specific design proposals for phase 3

Greening America's Capitals: Little Rock

Recommended Plant List

KEY

(N) = Native to Arkansas
 * = Recommended by NBW
 ** = Highly recommended by NBW

F = Full sun
 P = Part shade
 S = Shade

W = Wet soils
 A = Average soils
 D = Dry soils

	Common Name	Scientific Name	Sun	Moisture	Height	Characteristics	Comments
Trees							
* (N)	Red Buckeye	Aesculus pavia	F-S	W-A	10-15'	Salmon/red flowers in spring; attracts hummingbirds, bees.	In use at Ark Game and Fish Nature Center
* (N)	Serviceberry	Amelanchier arborea	F-S	A-D	15-30'	White spring flowers; Magenta fruit attracts birds	
(N)	Pawpaw	Asimina triloba	F-P	W-A	15-30'	Fall color, fruits. Dark red flowers Apr-May.	
** (N)	River Birch	Betula nigra	F-P	W-A	30-90'	Multistemmed desired; seeds attract birds. Attractive bark.	Recommended for Raingarden
** (N)	Redbud	Cercis canadensis	P-S	A-D	15-30'	Magenta flowers Apr-May precede reddish leaves that fade to green.	
(N)	Fringe Tree	Chionanthus virginicus	F-P	W-A	15-25'	Creamy white fragrant flowers in May; dark blue fruit in fall.	In use at Ark Game and Fish Nature Center
(N)	Witch Hazel	Hamamelis virginiana	P	A	7-30'	Creamy to bright yellow flowers in fall and winter; golden fall color. Many cultivars.	
(N)	Southern Magnolia	Magnolia grandiflora	F-P	A	35-60'	Large fragrant flowers. Evergreen.	
** (N)	Sweetbay	Magnolia virginiana	P	W	12-20+'	2-3" white flowers spring; fruit attracts birds. Semi-evergreen. Delicate structure.	Recommended for Raingarden
(N)	American Crabapple	Malus coronaria	F	A	15-40'	Arkansas state tree; fragrant white blooms April-May.	Use along Hwy 630
(N)	Black Gum	Nyssa sylvatica	F-P	W-D	30-60'	Yellow, orange, red-purple fall color; honey plant for bees	
(N)	Laurel Oak	Quercus laurifolia	F-P	W-A	40-60'	Transplants well; shiny leaves; acorns	
(N)	Willow Oak	Quercus phellos	F-P	A	60+'	Yellow fall color; not as messy as some oaks; tolerant of urban conditions	
(N)	Bald Cypress	Taxodium distichum	F-P	W-A	50-75'	Cypress knees produced in or near water	
Shrubs							
(N)	False Indigo	Amorpha fruticosa	F	A-D	6-10'	Deep purple flowers with gold stamens attract butterflies	In use at Ark Game and Fish Nature Center
(N)	Beautyberry	Callicarpa americana	P-S	W-A	1-2'	Small white to pink flowers in summer; purple berries in fall	In use at Ark Game and Fish Nature Center
(N)	Buttonbush	Cephalanthus occidentalis	S-P	W-A	5-12'	Round white flowers in June; nultets in winter; attracts bees, birds, butterflies	In use at Ark Game and Fish Nature Center
(N)	Wild Hydrangea	Hydrangea arborescens	P-S	W-A	3-6'	White lace cap flowers; attracts bees	In use at Ark Game and Fish Nature Center
(N)	Winterberry	Ilex verticillata	P-S	W-A	3-6'	Bright red berries on female plants into wint; attracts birds	Recommended for Raingarden
** (N)	Sweetspire	Itea virginica	P	W-A	1-3'	White flowers; red berries; good screen plant; attracts	Recommended for Raingarden; In use at Ark Game and Fish Nature Center
(N)	Spicebush	Lindera benzoin	P	A	3-12'	Attracts birds	In use at Ark Game and Fish Nature Center
(N)	Southern Wax Myrtle	Myrica cerifera	F-P	W-A-D	5-25'	Tolerates salt and fluctuating water levels	In use at Ark Game and Fish Nature Center
* (N)	Swamp Azalea	Rhododendron viscosum	F-P	A-D	2-4'	White flowers in spring; fall color; honey plant	Recommended for Raingarden; In use at Ark Game and Fish Nature Center
(N)	Fragrant Sumac	Rhus aromatica	F-P	A-D	2-4'	Fall color; good for stabilizing embankments	In use at Ark Game and Fish Nature Center
(N)	Rose	Rosa sp.	F	A	2-6'	Yellow, red, pink, white blooms in summer. Many cultivars available	Use carefree, long-blooming, shrub varieties in planters or drier areas
Flowering Perennials							
(N)	Columbine	Aquilegia canadensis	F-P	A	1-3'	Drooping, 5 part bells bloom April-June	Recommended for Raingarden; In use at Ark Game and Fish Nature Center
* (N)	Swamp Milkweed	Asclepias incarnata	F	W-A	4-5'	Pink blooms late summer	Recommended for Raingarden; In use at Ark Game and Fish Nature Center
(N)	Butterfly Milkweed	Asclepias tuberosa	F	A-D	1-3'	Orange blooms June-Aug; attracts butterflies	
* (N)	White False Indigo	Baptisia alba	F-P	A-D	2-4'	White blooms Apr-May; attracts butterflies	In use at Ark Game and Fish Nature Center
(N)	Poppy Mallow	Callirhoe papaver	F	A-D		Magenta blooms Mar-July; prostrate	In use at Ark Game and Fish Nature Center
** (N)	Camass Flower	Camassia leichtlinii	F-P	W-A	3-4'	White or blue star-shaped flowers on tall racemes in Apr-May, Western native.	Recommended for Raingarden
(N)	Wild Hyacinth	Camassia scilloides	P	A	1.5-2'	Blooms Apr-May. Leaves wither in summer.	Recommended for Raingarden
(N)	Tall Coreopsis	Coreopsis tripteris	F	A-D	2-8'	Yellow ray flowers July-Sept	In use at Ark Game and Fish Nature Center
* (N)	Purple Coneflower	Echinacea purpurea	F-P	A-D	2-5'	Purplish-pink blooms June-Aug; attracts birds, butterflies	In use at Ark Game and Fish Nature Center
(N)	Rattlesnake Flower	Eryngium yuccifolium	F	A-D	4-5'	Greenish-white round blooms June-Sept; can look messy	In use at Ark Game and Fish Nature Center
** (N)	Mist Flower	Eupatorium coelestinum	F-P	W-A	1-3'	White to blue flowers Aug thru frost; tolerates poor drainage; spreads	Recommended for Raingarden; In use at Ark Game and Fish Nature Center
** (N)	Joe Pye Weed	Eupatorium fistulosum	F	W-A	3-10'	Use cultivar for smaller, tidier plants; pink blooms Aug-Oct attract butterflies	Recommended for Raingarden
(N)	Wild Geranium	Geranium maculatum	F-P	A	1-2'	Pink flowers Apr-May attract butterflies	In use at Ark Game and Fish Nature Center
(N)	Narrow-leaf Sunflower	Helianthus simulans	P	W	3-7'	Gold ray flowers Aug-Nov. Gangly, best for naturalizing in wet conditions.	In use at Ark Game and Fish Nature Center

Recommended Plant Lists



Greening America's Capitals: Little Rock

Recommended Plant List

KEY

(N) = Native to Arkansas
 * = Recommended by NBW
 ** = Highly recommended by NBW

F = Full sun
 P = Part shade
 S = Shade

W = Wet soils
 A = Average soils
 D = Dry soils

Common Name	Scientific Name	Sun	Moisture	Height	Characteristics	Comments
Flowering Perennials, continued						
* (N) Alumroot	Heuchera americana	F-P	A	1-2'	Greenish bells June-Aug; forms clumps	
(N) Marsh Blazing Star	Liatris spicata	F	A	2-4'	Intolerant of wet soils in winter. Upright clumping magenta flowers in summer.	In use at Ark Game and Fish Nature Center
(N) Blazing Star	Liatris squarrosa	F	D	2-4'	Intolerant of wet soils in winter. Upright clumping magenta flowers in summer.	In use at Ark Game and Fish Nature Center
* (N) Cardinal Flower	Lobelia cardinalis	F-P	W-A	2-4'	Scarlet stalks July-Sept	Recommended for Raingarden
(N) Great Blue Lobelia	Lobelia siphilica	F-P	W-A	2-3'	Blue stalks July-Sept	
(N) Wild Bergamot	Monarda fistulosa	F-P	A-D	2-4'	Pink globular flowers July-Sept; attracts butterflies, hummingbirds	
Daffodils	Narcissus sp.	F	A	0.5-2'	Fragrant yellow cup flowers Mar-Apr.; Many cultivars of varying size and shades.	
(N) Sundrops	Oenothera fruticosa	F	A-D	1-2'	Bright yellow open flowers May-June	In use at Ark Game and Fish Nature Center
(N) Black-eyed Susan	Rudbeckia fulgida	F	A-D	2-3'	Yellow ray flowers June-October	
(N) Cut-leaf Coneflower	Rudbeckia laciniata	F-P	A	2-9'	Yellow ray flowers July-Sept	
(N) Large Coneflower	Rudbeckia maxima	F	A-D	5-7'	Yellow ray flowers June-July	In use at Ark Game and Fish Nature Center
(N) Rough-leaved Goldenrod	Solidago rugosa	F	W-A	2-4'	Small yellow flowers along racemes bloom Sept-Oct. Does not cause hay fever.	
(N) Spider Lily	Tradescantia virginiana	F-P	A	1-3'	3-part purple-blue flowers May-July with iris-like leaves.	In use at Ark Game and Fish Nature Center
(N) Rose Vervain	Verbena canadensis	F	A-D	0.5-1.5'	Good for edge or ground cover. Magenta flowers April - Oct.	
(N) Culver's Root	Veronicastrum virginicum	F	W-A	3-7'	White, rose, blue flowers on tall spikes May-Aug. Many cultivars vary size & color.	
(N) Common Blue Violet	Viola papilionacea	F-P	W-A	0.5'	White to blue flowers Mar-May. Edible. Ground cover.	In use at Ark Game and Fish Nature Center
Vines						
* (N) Cross Vine	Bignonia capreolata	F-P	A	35-50'	Semi-evergreen, woody vine with orange-red flowers May-June. Will spread.	
* (N) Yellow Jessamine	Geisemium sempervirens	F	A	12-20'	Evergreen, twining vine with yellow fragrant flowers Feb-Apr	
* (N) Coral Honeysuckle	Lonicera sempervirens	F	A	10-20'	Deciduous, vigorous twining vine with orange-yellow flowers May-June.	
* (N) Virginia Creeper	Parthenocissus quinquetolia	F-P	A	30-50'	Deciduous, vigorous, woody vine with red fall color.	
(N) Passionflower	Passiflora incarnata	F-P	A	6-8'	White to purple fragrant blooms July-Sept; may be herbaceous in colder areas.	
Grasses & Grass-like						
** (N) Inland Sea Oats	Chasmanthium latifolium	F-P	W-A	2-5'	Clumping, upright, ornamental grass with bronzy, showy seed-heads in fall.	Recommended for Raingarden; In use at Ark Game and Fish Nature Center
(N) Purple Lovegrass	Eragrostis spectabilis	F	A-D	1-2'	Warm season bunchgrass in sandy soils; airy purple seed-heads in August.	
** (N) Soft Rush	Juncus effusus	F	W	1-3'	Upright shiny basal clumps of round blades in moist soil to 4" standing water.	Recommended for Raingarden
** (N) Gulf Muhly Grass	Muhlenbergia capillaris	F-P	W-A-D	2-4'	Showy, airy, purplish seedheads in late summer.	Recommended for Raingarden
** (N) Switchgrass	Panicum virgatum	F-P	W-A	3-6'	Clumping tall grass with good fall color, esp. in cultivars. Tolerates varying soil.	Recommended for Raingarden
(N) Little Bluestem	Schizachyrium scoparium	F	A-D	2-4'	Attractive silver fluffy seedheads and orange fall color.	

Information on this list adapted from:
 Lady Bird Johnson Wildflower Center, The University of Texas at Austin, Native Plant Database. www.wildflower.org/plants/
 Missouri Botanical Garden, Kemper Center PlantFinder. www.mobot.org/gardeninghelp/plantfinder/Alpha.asp
 PlantNative. www.plantnative.org/index.htm

Recommended Plant Lists

