United States Environmental Protection Agency

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GREENING AMERICA'S CAPITALS

SECOND STREET CORRIDOR

Frankfort, Kentucky

Office of Sustainable Communities
Smart Growth Program

OVERVIEW

Greening America's Capitals is a U.S. Environmental Protection Agency (EPA) program to help state capitals develop an implementable vision of distinctive, environmentally friendly neighborhoods that incorporate innovative green infrastructure strategies. In collaboration with the U.S. Department of Housing and Urban Development and the U.S. Department of Transportation through the Partnership for Sustainable Communities, EPA provides 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

Frankfort, KY was chosen in 2012 as one of five state capital cities to receive this assistance along with Baton Rouge, Louisiana; Des Moines, Iowa; Helena, Montana; and Indianapolis, Indiana.

More information is at http://www.epa.gov/smartgrowth/greencapitals.htm.

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EXECUTIVE SUMMARY

Frankfort, the capital of Kentucky, is a small historic town bisected by the Kentucky River. Second Street is a corridor on the south bank of the river in the South Frankfort neighborhood that sits between the state capitol and downtown Frankfort on the north shore.

In 2012, the city of Frankfort applied to the U.S. Environmental Protection Agency (EPA) for technical assistance under EPA's Greening America's Capitals Program to create a plan for the Second Street corridor. The city's overarching goals were to:

- Improve pedestrian and bicycle safety in the Second Street corridor, especially near the Second Street Elementary School, to encourage walking and biking and reduce greenhouse gas emissions.
- Reduce the quantity of stormwater runoff entering the drainage system to reduce combined sewer system overflows into th Kentucky River and improve water quality.
- Improve connections to the Kentucky River along a proposed Riverwalk trail.
- Improve connections between the state capitol building and downtown to attract tourists and visitors to the commercial corridor on Second Street.

The EPA team analyzed the site and found several points of conflict between cars and people in the public realm of Second Street and its intersecting streets. In particular, roads were wider than necessary for traffic conditions, creating long crosswalks, and sidewalks were narrow and intermittent. These factors contribute to a challenging pedestrian and bicycle experience, especially for students attending the Second Street Elementary School on the west end of the corridor.

The team developed a menu of potential remedies, including reducing turning radii, eliminating underused travel lanes, and widening sidewalks to make it easier and safer for pedestrians and bicyclists to get around. The team's design concepts include green infrastructure such as new street trees, rain gardens, and porous paving that can capture rain where it falls, reducing runoff volume and filtering it as it percolates into the ground wate .

In addition to improving water quality, trees and other vegetation can filter air pollutants and improve air quality in the corridor. Other concepts include a solar-powered rain-harvesting system for the community garden, a community gathering space and public art installation at the neighborhood school, and a path to the river's edge accessible to people with disabilities to improve community access and engagement in environmental stewardship of the Kentucky River. Taken together, these improvements could help create a greener, healthier, and safer environment that could revitalize the Second Street corridor.

I. INTRODUCTION

Figure 1: Second Street corridor

Frankfort, the capital of Kentucky, is a small historic town. It lies in a verdant landscape of bluegrass fields and forested hills and is bisected by the Kentucky River, which has carved a sharply defined go ge through the limestone plateaus. Second Street is a corridor on the south bank of the river in the South Frankfort neighborhood that sits between the state capitol and downtown Frankfort on the north shore. It is located within two districts listed on the National Register of Historic Places.

In 2012, the city of Frankfort applied to the U.S. Environmental Protection Agency (EPA) for technical assistance under EPA's Greening America's Capitals Program to create a plan for the Second Street corridor.[1] The city's overarching goals were to:

- Improve pedestrian and bicycle safety in the Second Street corridor, especially near the Second Street Elementary School, to encourage walking and biking and reduce greenhouse gas emissions.
- Reduce the quantity of stormwater runoff entering the drainage system to reduce combined sewer system overflows into th Kentucky River and improve water quality.
- Improve connections to the Kentucky River along a proposed Riverwalk trail.
- Enhance the visual appeal of the Second Street corridor to attract more foot traffic t local businesses, catalyze the redevelopment of vacant lots and storefronts, and support a mixed-use, walkable neighborhood.
- Improve connections between the state capitol building and downtown to attract tourists and visitors to the commercial corridor on Second Street.

This project complements other efforts in Frankfort to focus investment in the once thriving commercial district of the South Frankfort neighborhood. The Frankfort/Franklin County Comprehensive Plan Update 2010 encourages development of small area overlay plans for high priority areas, including Second Street. It also identifies goals that are consistent with the city's goals for this project, including

- Encouraging mixed use and the re-use of vacant and underutilized land.
- Implementing development principles that encourage alternate modes of transportation, connectivity to other uses, and walkable neighborhoods.

[1] Frankfort/Franklin County. Comprehensive Plan Update. 2010. http://www.frankfort.ky.gov/sites/default/files/documents/files/2020%20comp%20plan%20final%20adopted%20version% 1-18-10.pdf.

- Preserving neighborhoods while enhancing the community quality and character.

In the fall of 2011, the city launched a study to evaluate a form-based code for the Second Street corridor that could help encourage compact development, protect the area's historic character, and help cultivate a sense of place. In addition, the Frankfort/Franklin County Tourist Commission developed a Kentucky River Development Plan that includes redevelopment along the river in the South Frankfort neighborhood and a Riverwalk trail that would connect the neighborhood with downtown Frankfort and surrounding cultural and natural resources.[2] The Frankfort City Commission approved this plan in 2010.

Based on the city's goals, EPA created a design team of federal agency staff and consultants from Parker Rodriguez and CARMAN. On January 29, 2013, the design team visited the site and met with representatives of the city of Frankfort and the commonwealth of Kentucky. Together they explored the study area, discussed the city's goals for the project, and selected sites that would best illustrate the challenges and opportunities in the neighborhood in preparation for a community workshop.

[2] Frankfort/Franklin County Tourist Commission. Kentucky River Development Plan. http://kentuckyriverfront.com/Portals/130/Mktg%20Folder%202011.pdf.

II. WORKSHOP

Figure 2: Presentation to the community on the opening night of the workshop.

On April 16-18, 2013, the city of Frankfort hosted a design workshop to present design options for the Second Street corridor to the community and get feedback to help refine the options. Attendees included representatives from the Kentucky Department of Environmental Protection Brownfield Redevelopment Program, Riverfront Development, the Frankfort Sewer Department, the Kentucky Division of Forestry, the South Frankfort Neighborhood Association, the Frankfort Fire Department, the Frankfort Police Department, Walk/ Bike Frankfort, the Kentucky Heritage Council, the Frankfort Plant Board, the Second Street Elementary School, and local property owners and residents. Some of the challenges and opportunities that community members noted include:

- Very heavy vehicular traffic on Secon Street occurs twice a day for about 20 minutes at school arrival and dismissal times.
- Speeding, short sight distances, and illegal left turns into the school create dangerous conditions for drivers and pedestrians.
- Crossing Second Street at Conway Street and Ewing Street is challenging for pedestrians.
- The current layout of the school grounds often puts students in harm's way as they cross the parking lot from the playground to the school.
- Water is ponding on school grounds after rain storms. Permeable pavers in the school parking lot and rain gardens would relieve flooding and provide opportunities fo environmental education.
- Many tourists come through the area to visit the state capitol building, but wayfindin signage is poor and could be improved.
- Empty storefronts on Second Street create visual blight.
- Wider sidewalks would allow outdoor cafes and seating that could bring more people to the neighborhood and help attract other businesses.
- Better lighting, benches, and street furniture would make the area more appealing for pedestrians.
- Safe bike routes throughout Frankfort, especially across the Capital Avenue Bridge, are important for making biking a viable transportation option.

Figure 3: Open house presentation to the community.

- The community has the opportunity to celebrate its history at Battle Alley and at a trail along the Kentucky River.
- Many environmental education opportunities could occur along a river trail.
- A dock on the south shore of the river would allow boaters access to the neighborhood, which will be especially valuable once lock and dam reconstruction on the Kentucky River is finished in 2014, reopening th Kentucky River to boat traffic from th Ohio River.

After the public meeting, the design team revised and refined the plans and sketches to reflect the community input. On the third day of the workshop, the team presented the revised design options in an open house session attended by elected officials; federal, state, and local government agency staff; and members of the public. There was general consensus among the attendees that the revised design concepts met the city's goals.

III. STUDY SITES

The study sites initially selected by the design team and the city were expanded during the course of the workshop to address a broader range of community concerns. The final six study sites are:

- Second Street School area: The intersection of Second Street and Bridge Street at the southeastern corner of the school grounds is busy with both cars bound for downtown via Bridge Street and schoolchildren bound for the Second Street Elementary School. The intersection has a very long crosswalk across Bridge Street (70 feet) that is challenging for pedestrians to navigate safely. In addition, Second Street lacks crosswalks in the area directly in front of the school. The city's goal for this area is to make it safer for pedestrians.
- Second Street between Steele and Shelby Streets: The section of Second Street between Steele Street and Shelby Street is a good example of the corridor's characteristics, in that it has a mix of land uses, but also some vacant lots. The street has a bicycle lane on each side of the road but has narrow, 5-foot-wide sidewalks that have no room for street trees. The city's goal for this area is to create a pedestrian-friendly streetscape that will attract stores and stimulate revitalization.
- Capital Avenue at Second Street: The design team and city selected this intersection as a study site because Capital Avenue is the main transportation artery between the state capitol complex and downtown Frankfort. Capital Avenue has six travel lanes in this area with narrow sidewalks and no bicycle accommodations. The city's goal for this intersection is to seek a better balance between cars and people.
- Capital Avenue at Main Street: During the workshop, residents noted that any reconfiguration of Capital Avenue at Second Street would affect the intersection of Capital Avenue and Main Street. The design team added an additional study site at this location to address residents' concerns about this issue. This intersection has long crosswalks and no accommodations for bicyclists. In addition, this area is critical to having a comprehensive bicycle and pedestrian network in the city because it is one of only two ways across the river from South Frankfort.
- Dolly Graham Park: This public park has little activity between Logan Street and Norton Street except for a community garden. The design team and city selected this area of the park as a study site to increase its use and enhance the community garden. The city hopes that park improvements could stimulate a mixed-use development project on a vacant lot next to the park.
- Riverfront area: A Riverwalk along the south shore of the Kentucky River is part of a master plan for the riverfront. The design team and city selected the riverfront area parallel to Second Street as a study site because a multi-use trail there would provide pedestrian and bicycle linkages to the river and make an attractive community asset more accessible.

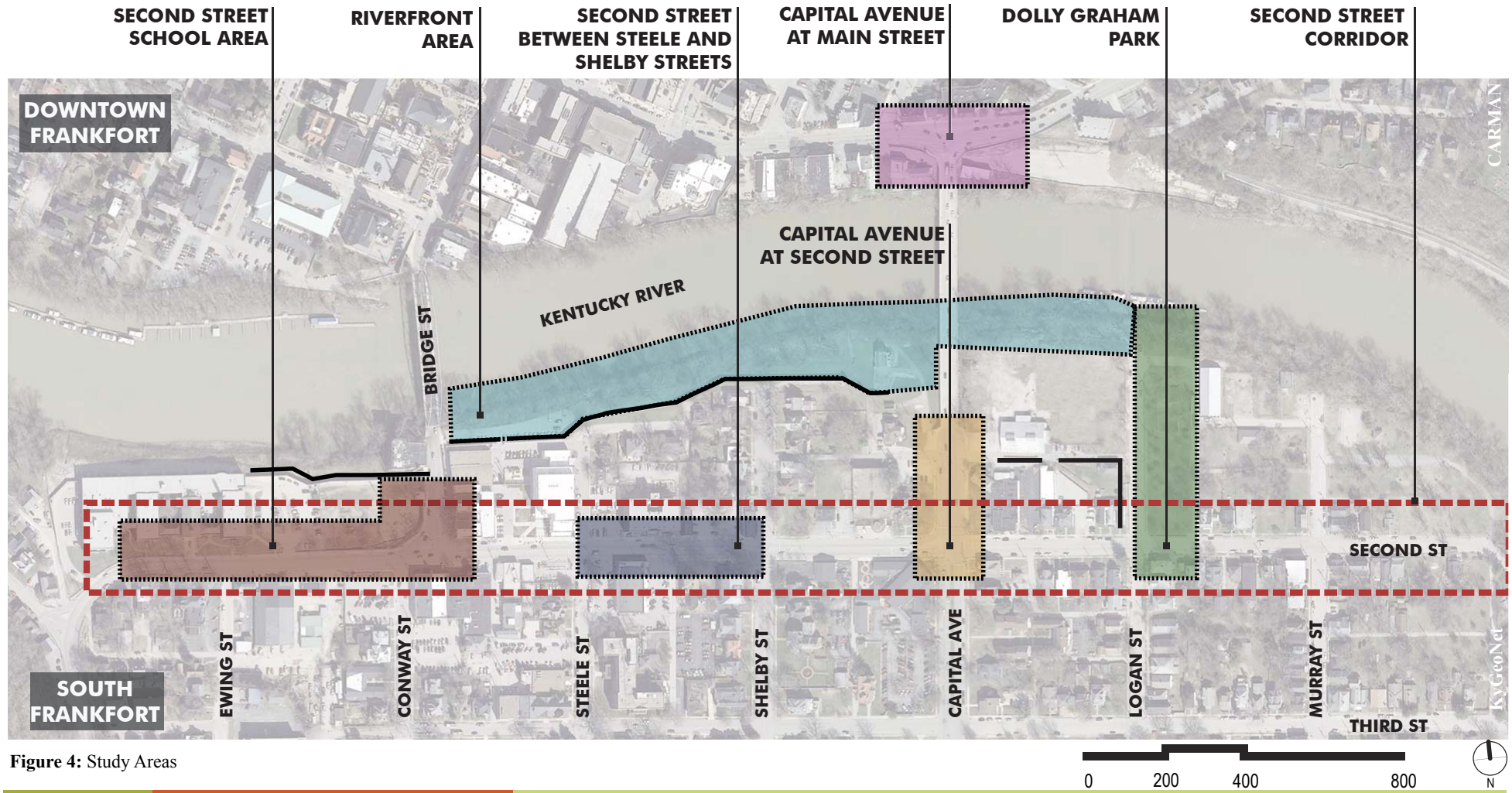

Figure 4: Study Areas

IV. SITE ANALYSIS

The design team analyzed the study area to help better understand the challenges and opportunities and to help select design solutions that are appropriate to the local environment and context. Features analyzed for the entire area include:

- Existing landmarks and land use.
- Pedestrian circulation.
- Publicly owned parcels.
- Impervious surface.
- Hydrology.
- Combined sewer lines.
- Tree canopy.

In addition, the team analyzed each study site in greater detail, noting features working against the city's goals that could potentially be addressed through a better-designed built environment. The six study sites are:

- Second Street at Bridge Street.
- Second Street between Steele and Shelby Streets.
- Capital Avenue at Second Street.
- Capital Avenue at Main Street.
- Dolly Graham Park.
- Riverfront Area.

EXISTING LANDMARKS AND LAND USE

Second Street is a commercial corridor located between the historic downtown on the north and the state capitol building on the south. The Second Street corridor consists of a mix of commercial, residential, and civic uses. Most buildings are from the late 19th or early 20th century and are two to three stories. This streetscape is scaled to people, consistent with its historic function as a neighborhood center. However, several empty buildings, vacant storefronts, and vacant lots that are used for parking detract from the continuity of the streetscape. The Second Street Elementary School, city of Frankfort offices, and police and fire stations add a strong civic presence and employment base to the corridor. A neighborhood grocery store at the corner of Steele and Second Streets is well used and could anchor additional retail in the corridor. Across the street from the grocery is an apartment building for senior citizens, providing a population of potential customers.

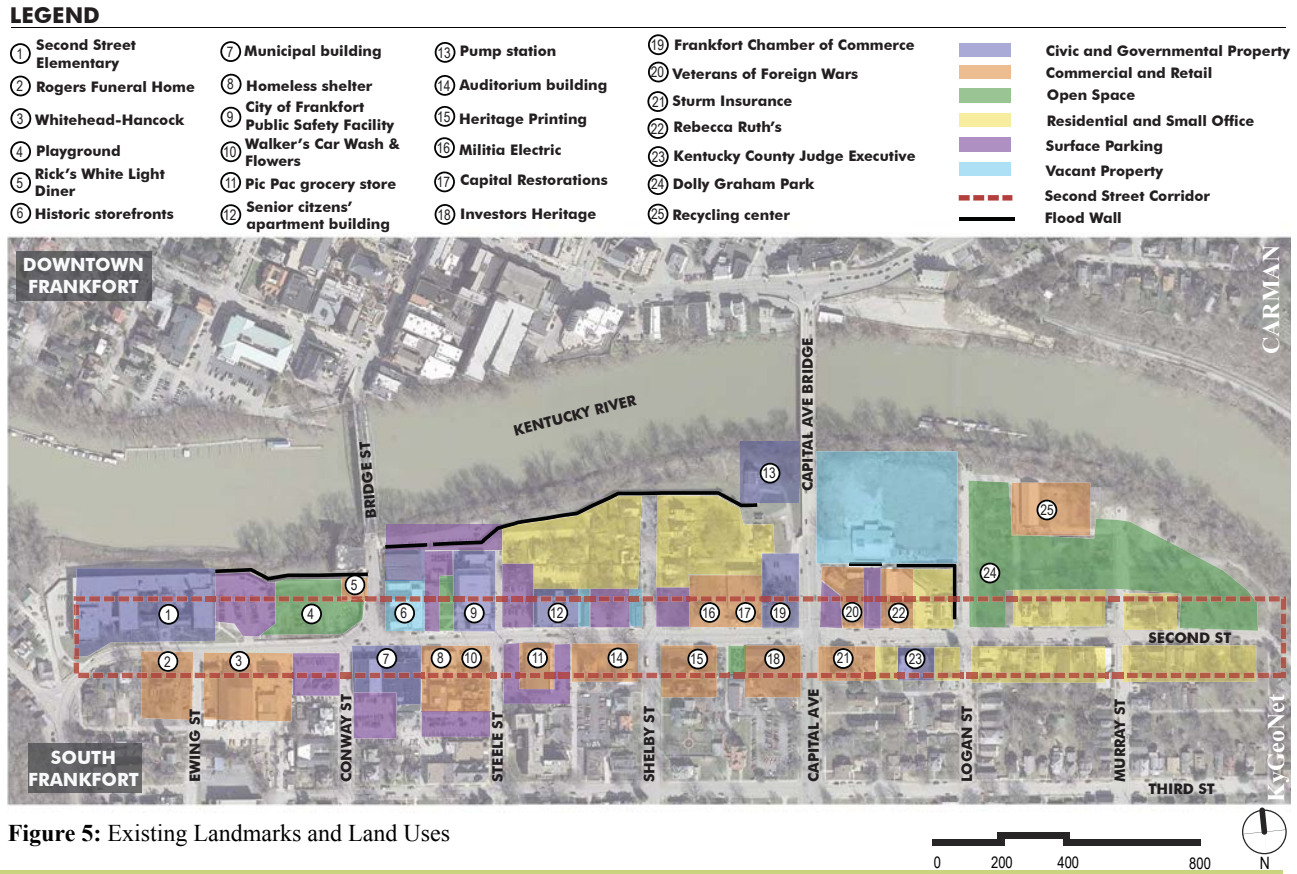

Figure 5: Existing Landmarks and Land Uses

PEDESTRIAN CIRCULATION

Second Street has sidewalks on both sides for most of its length. However, they are usually only 4 feet wide, and curb cuts, telephone poles, and other obstacles impede walking. The southern edge of Second Street between Ewing and Conway Street has no sidewalk, with perpendicular parking crossing the right of way where the sidewalk would normally be (see Figure 13). While these unsafe conditions for pedestrians are at the least a nuisance and at worst dangerous, the community is particularly concerned about these conditions near the Second Street Elementary School, where children walk every day.

The intersections in the area are also challenging to walk across safely because of long crossing distances, poorly marked crosswalks, and/or the lack of traffic signals. The existing streetscape can discourage people from walking through the area and thus works against the community's goal of developing a vital retail corridor. The Second Street corridor offers a human scale, a mix of land uses, and numerous amenities that make it a good candidate for the type of walkable neighborhood that the community desires. What is missing are streetscape elements that consistently provide an appealing environment for people walking along Second Street.

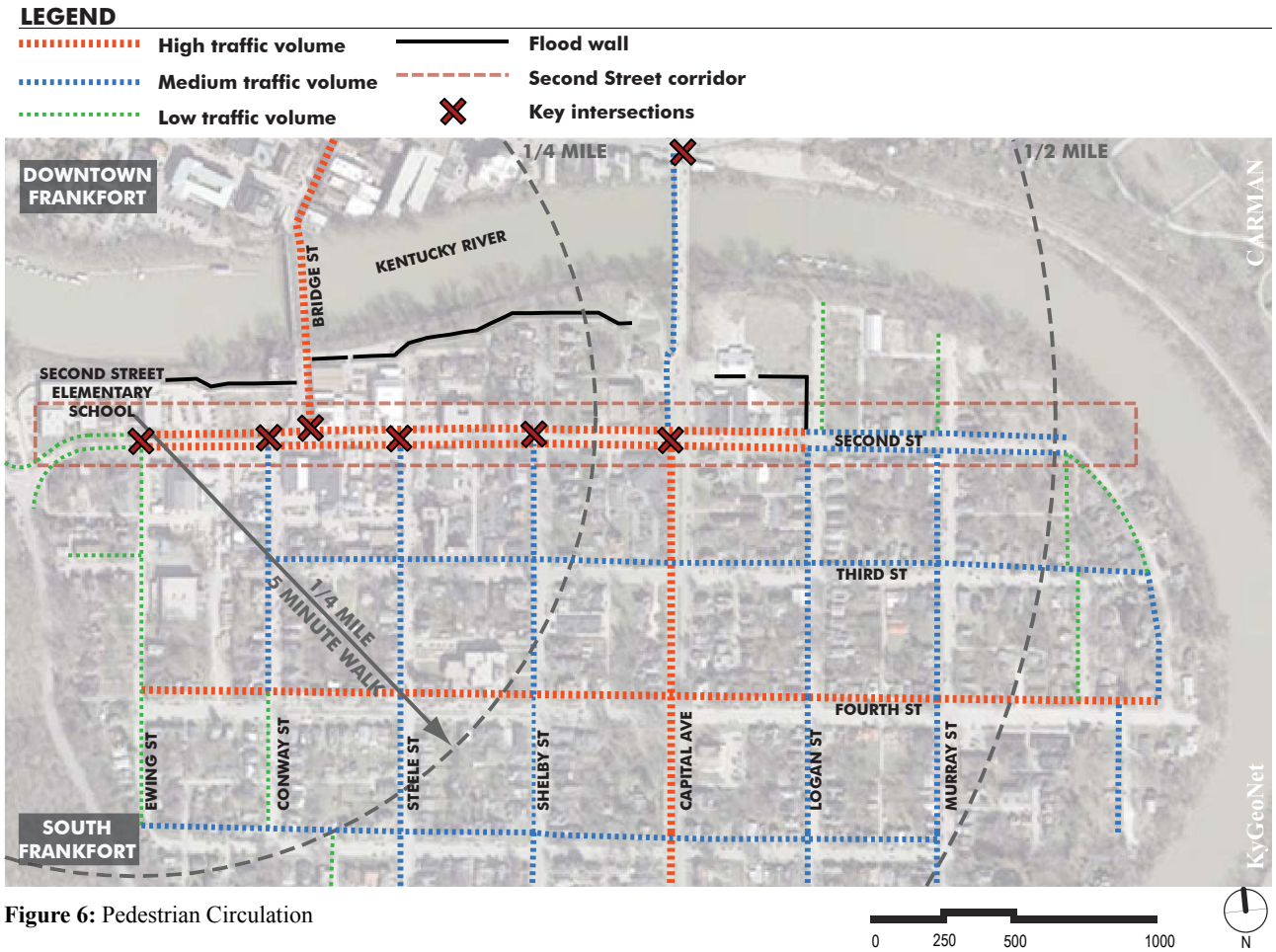

Figure 6: Pedestrian Circulation

PUBLICLY OWNED PARCELS

The study area contains a significant amount of publicly owned property. The Second Street Elementary School, its play area, and Dolly Graham Park are owned by the city of Frankfort. The entire riverfront zone, on the river side of the flood wall, is controlled by the U.S. Army Corps of Engineers, which requires permitting for any development in the area. A bicycle trail and pedestrian path could provide people with better access to the river and protect air quality by providing convenient alternatives to driving through the area. In addition, green infrastructure for stormwater management such as new street trees, rain gardens, and porous paving could capture and filter runoff to improve water quality in the Kentucky River. In addition to improving water quality, trees and other vegetation can filter air pollutants and improve air quality in the corridor. The city's Kentucky River Development Plan endorses recreational uses and environmental stewardship on these public lands as part of an overall strategy to reconnect the city to its riverfront.

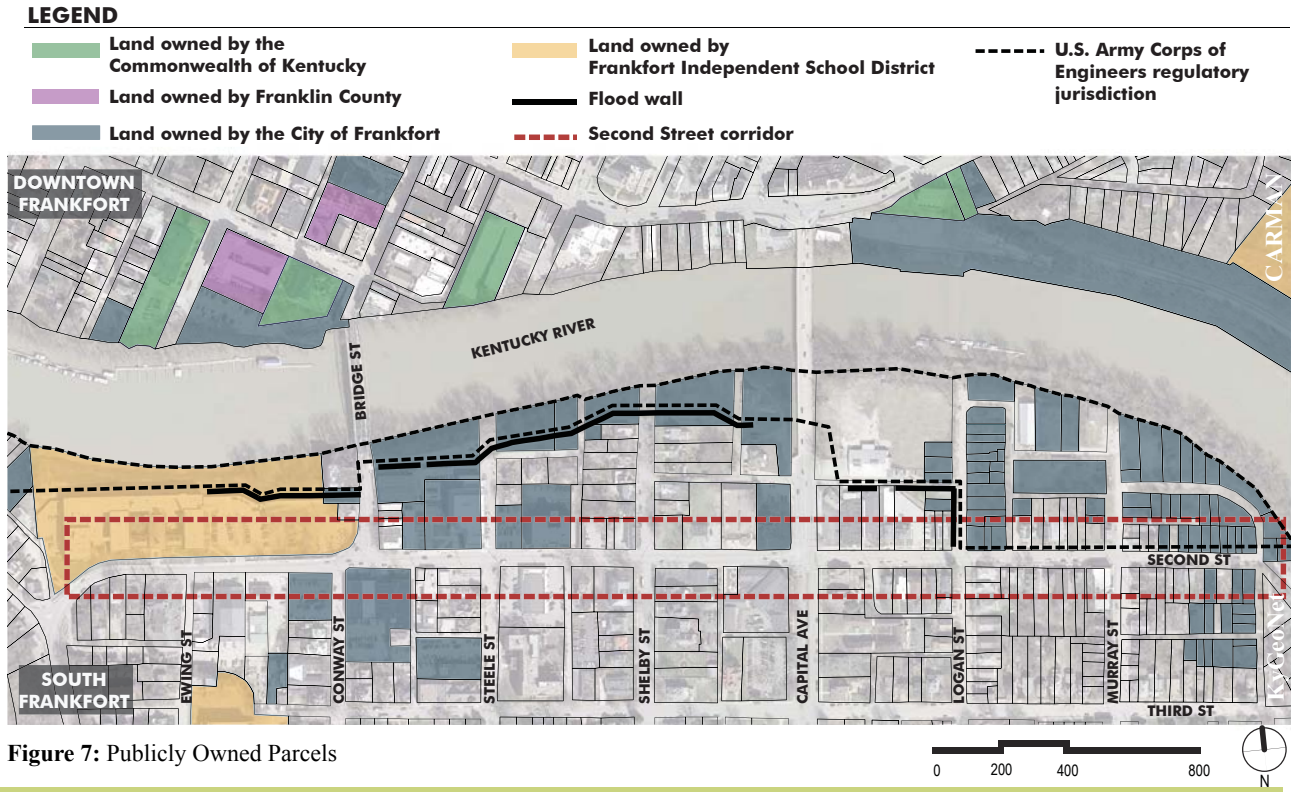

Figure 7: Publicly Owned Parcels

IMPERVIOUS SURFACE

More than 50 percent of the Second Street corridor is impervious, including rooftops and pavements. These impervious surfaces are a significant contributor to water pollution in the Kentucky River. Within the study area, they direct nearly all stormwater runoff into the storm sewer lines, which are combined with the sanitary sewer lines. During major storm events, the system can be overwhelmed, directly emptying untreated sewage into the Kentucky River, creating a health hazard for both humans and wildlife. Allowing stormwater to percolate into the soil naturally through green infrastructure techniques could reduce these overflows, filter out some pollutants, and reduc erosion.

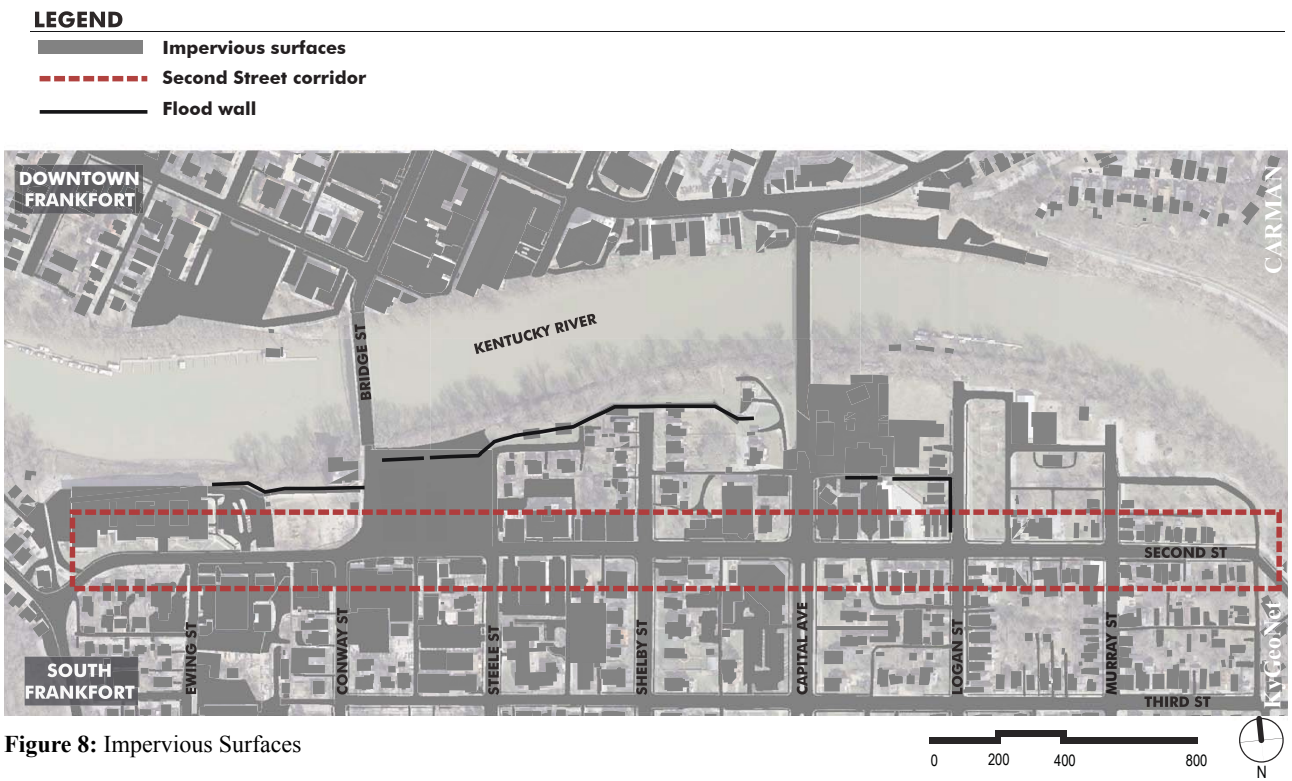

Figure 8: Impervious Surfaces

HYDROLOGY

The city of Frankfort lies within the Ohio River watershed. The Kentucky River, a key tributary of the Ohio River, bisects the city. The river has carved a deep channel through the limestone of the region, creating a steep, 30-foot high river bank that is now heavily wooded on the south side. The city lies on a relatively flat plateau flanking the river.

Second Street runs along a ridgeline along the south side of the Kentucky River from east to west, dropping to a low point at the Second Street School, which is the site of a former tributary that was filled to build the school.

The runoff from Second Street flows slowly from this ridgeline, mostly toward the river, where it is blocked by the Second Street School and the concrete flood walls that line the riverfront, draining only through storm sewers.

A small area near Capital Avenue flows south to another drainage way, which drains to the east. Dolly Graham Park is also the site of a former tributary and still serves as a drainage way from Second Street to the river. The park's mostly pervious surfaces allow runoff to be absorbed into the soil before it makes its way to the river through subsurface channels.

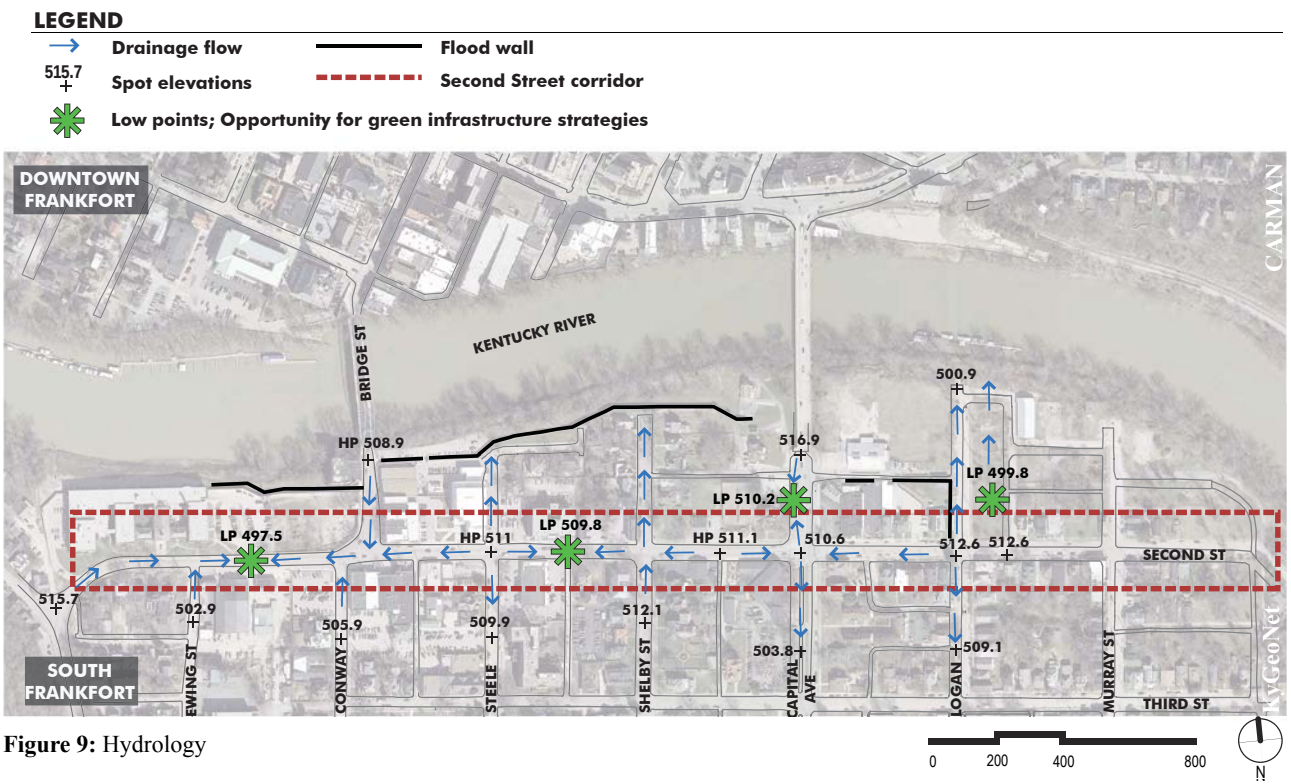

Figure 9: Hydrology

COMBINED SEWER LINES

Runoff entering directly into the river is minimal because the floodwall prevents most overland flo . Stormwater runoff in the Second Street corridor that does not infiltrate into the ground or flow directly into the river enters a combined sanitary and stormwater sewer system. During normal conditions, the majority of runoff is pumped through sewer lines to a treatment plant across the river. However, during major storm events, overflow pipes convey some of the runoff directly into the river, along with untreated sewage. Reducing the amount of stormwater entering the combined sewer system would mitigate this health hazard and improve the river's water quality.

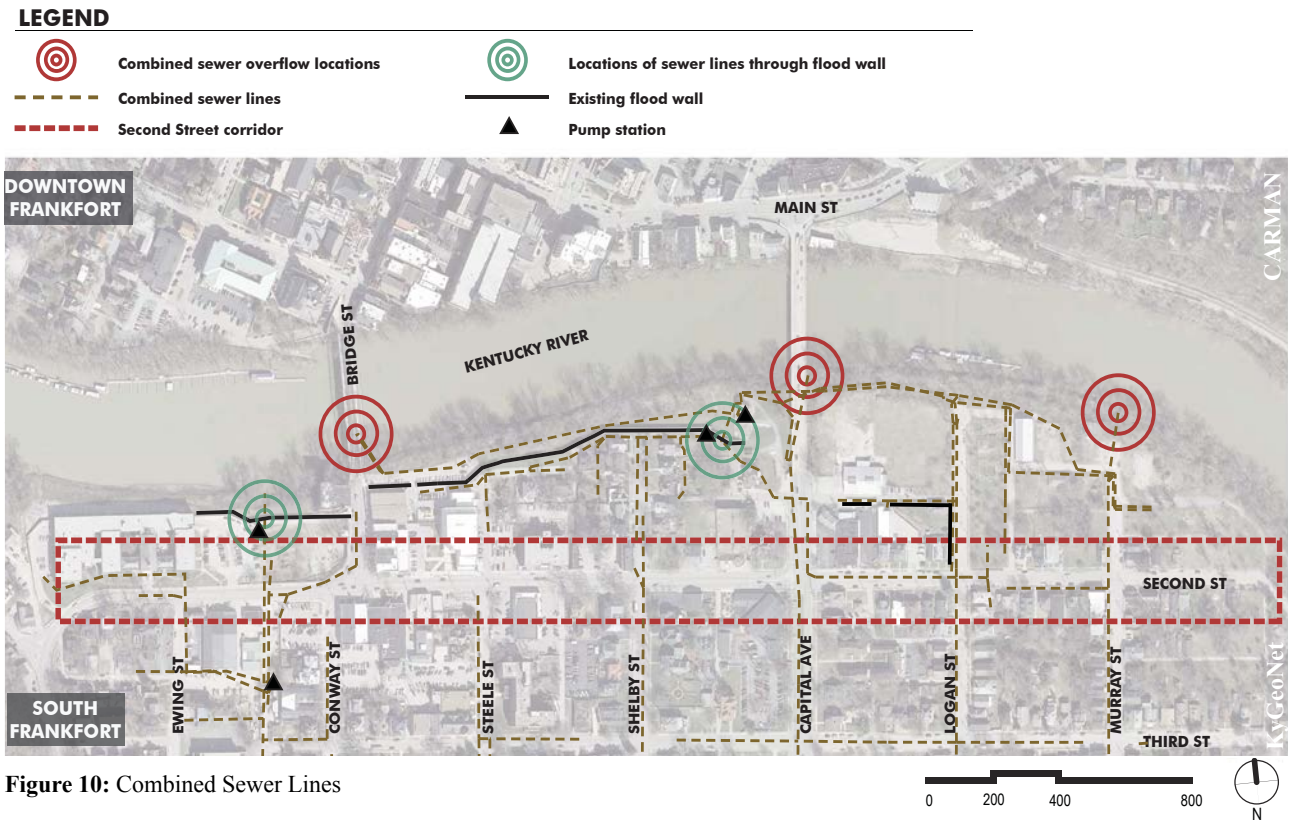

Figure 10: Combined Sewer Lines

TREE CANOPY

More than 75 percent of Second Street does not have street trees. The lack of trees increases temperature of the developed area relative to its rural surroundings and discourages walking during hot weather because of lack of shade. In contrast, the wooded canopy of the river bank could be a welcome retreat for the neighborhood residents. However, the river bank area is mostly inaccessible because it lies behind the flood wall, and steep slopes prevent access to the river's edge. Increasing the tree canopy along Second Street and improving access to the forest along the river bank could not only improve the aesthetic character of the corridor but also improve local air quality by reducing ozone and particulate matter pollution, improve local water quality by reducing stormwater discharges, and improve residents' health and quality of life.

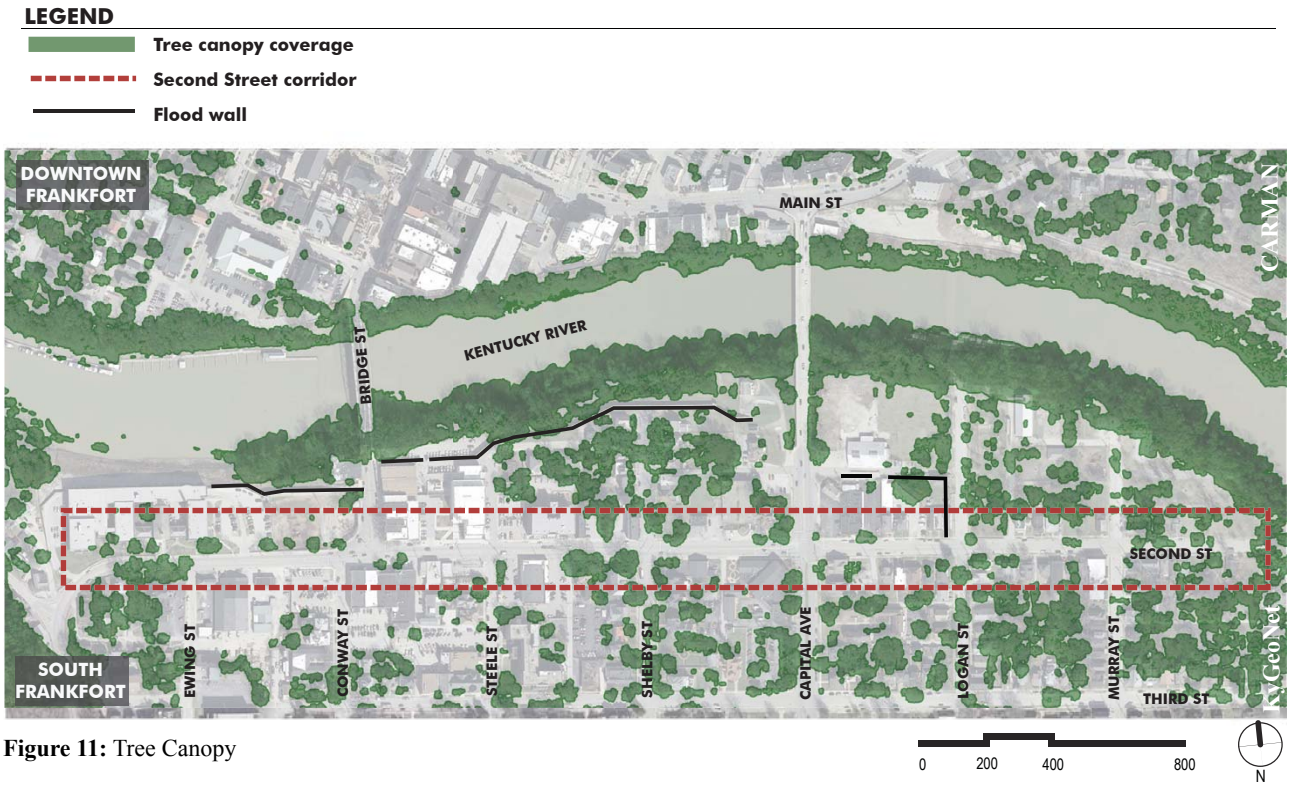

Figure 11: Tree Canopy

SECOND STREET SCHOOL AREA

The intersection of Second Street and Bridge Street on the southeast corner of the school grounds is an important juncture for traffic moving between South Frankfort and downtown Frankfort on Bridge Street. It is also a key intersection through which children pass each day on their way to the Second Street Elementary School. The crosswalk at this intersection is 70 feet long and is a challenge for both children and adults to cross safely. In addition, some areas west of the intersection have no sidewalk, further hampering safe walking.

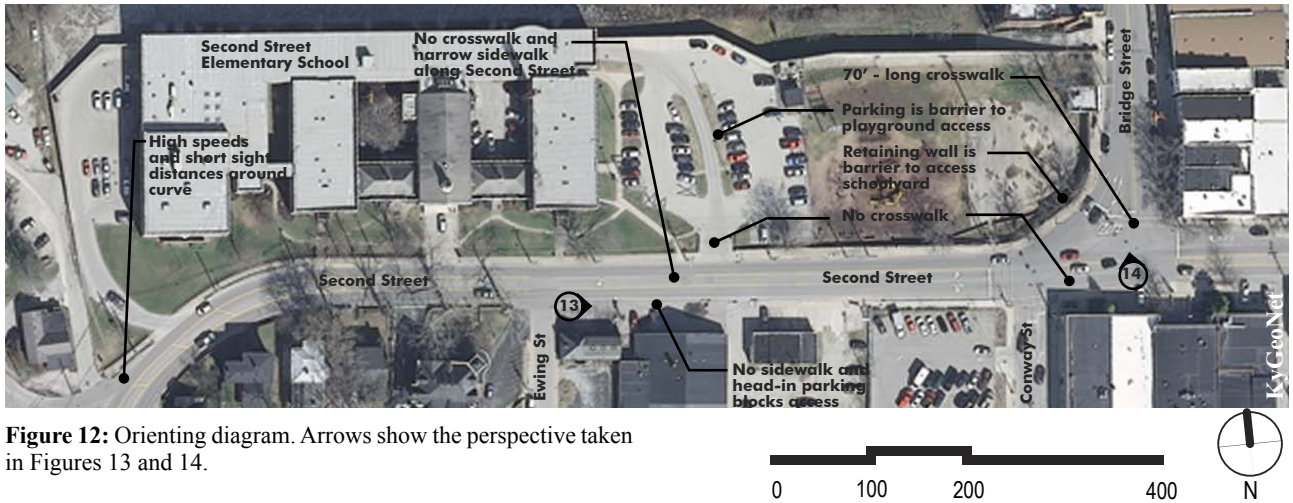

Figure 12: Orienting diagram. Arrows show the perspective taken in Figures 13 and 14.

Figure 13: The area along the south side of Second Street has been subsumed by perpendicular parking for a local business, making an unsafe walking environment.

Figure 14: The crosswalk on Bridge Street at the intersection of Second Street is 70-feet long. Though there is a painted refuge in the middle of the crosswalk, it offers little safety for people crossing the road.

SECOND STREET BETWEEN STEELE AND SHELBY STREET

The typical streetscape along Second Street includes narrow, 4-foot-wide sidewalks; on-street parking on the north side of the street; and marked bicycle lanes on each side of the road. There are two travel lanes, one in each direction and a central dedicated turning lane. Residents reported that this turning lane is rarely used. In addition, the street lacks identity without uniform street lighting and landscaping. Building voids from vacant lots interrupt the rhythm of a consistent street character that prevailed historically in this corridor.

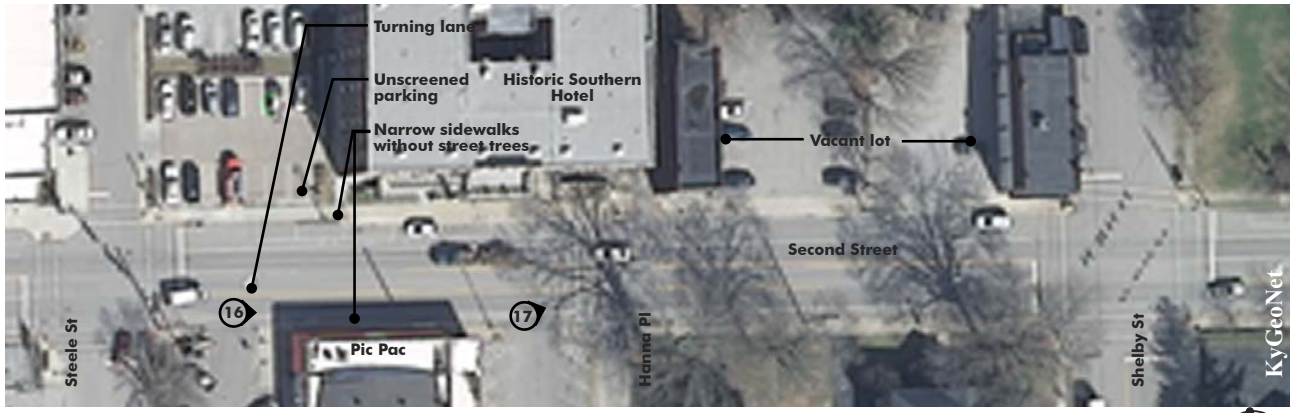

Figure 15: Orienting diagram. Arrows show the perspective taken in Figures 16 and 17.

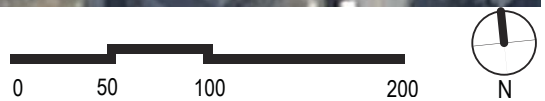

Figure 16: The streetscape at the grocery store on the south side of the street shows how utility poles reduce the sidewalk's effective width. The marked bicycle lanes provide an important route for bicyclists.

Figure 17: The road includes an underused dedicated turning lane. A vacant parcel in the background might provide a place for a new development that provides neighborhood stores with residences above.

CAPITAL AVENUE AT SECOND STREET

Capital Avenue is the main transportation artery between the state capitol complex and downtown Frankfort. The Capital Avenue Bridge has three travel lanes and narrow, 5-foot-wide sidewalks on each side of the bridge. These sidewalks are immediately adjacent to fast-moving lanes of traffic, which makes walking across the bridge unpleasant. The bridge has no bicycle lanes, limiting bicycle circulation in the area. At the intersection of Capital Avenue and Second Street, the road widens to six lanes, with dedicated turn lanes. The crosswalk at the intersection is 72 feet long with no refuge and is a challenge for pedestrians to cross safely.

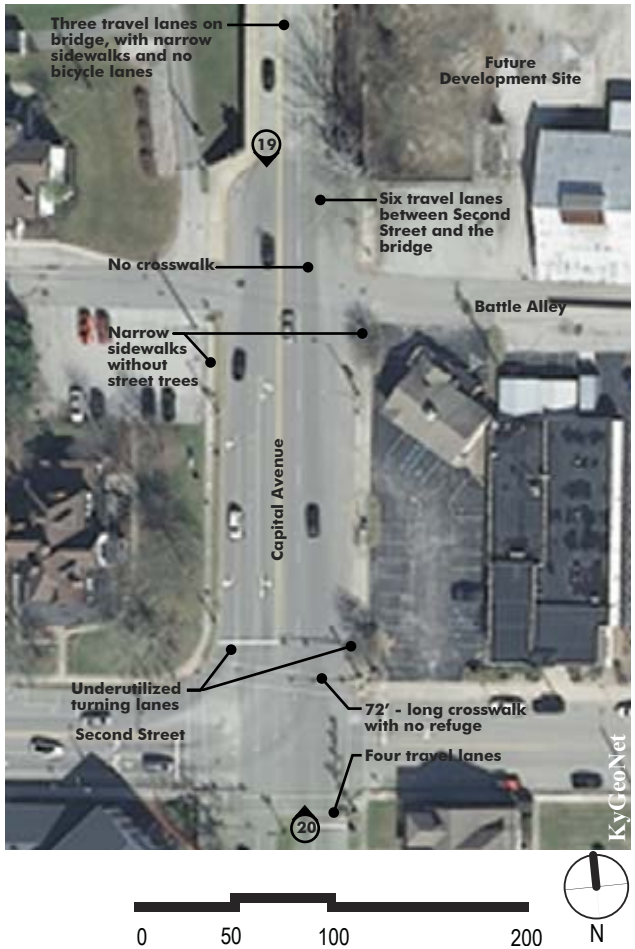

Figure 18: Orienting diagram. Arrows show the perspective taken in Figures 19 and 20.

Figure 19: The view looking south on Capital Avenue toward Second Street shows how the road widens from three to six lanes.

Figure 20: The 72-foot-long crosswalk on Second Street across Capital Avenue offers no refuge for pedestrians.

CAPITAL AVENUE AT MAIN STREET

The Capital Avenue Bridge meets Main Street on the north shore of the Kentucky River in downtown Frankfort. The bridge has two northbound lanes and one southbound lane with narrow sidewalks. The intersection is scaled more like a highway interchange than a city street intersection, featuring wide turning angles for vehicles traveling on Main Street to enter the bridge and for vehicles turning from the bridge onto Main Street. Because of the wide turning radius, many cars travel at high speeds as they move through the intersection. The high speeds and lack of infrastructure to protect pedestrians make it dangerous for pedestrians trying to cross the bridge and enter downtown. Neither street has bicycle lanes, so the intersection is equally challenging for bicyclists to navigate. There is a painted median in the middle of the intersection, but it offers little real relief from the passing cars.

Figure 21: Orienting diagram. Arrows show the perspective taken in Figures 22 and 23.

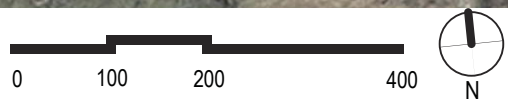

Figure 22: The painted median on Main Street offers little protection to pedestrians trying to cross the 60-foot-long crosswalk.

Figure 23: Main Street has large turning radii, creating an expanse of paving that is a challenge for pedestrians to cross safely. Cars travel at 30 miles per hour or faster through this intersection, making it hazardous for pedestrians and cyclists.

DOLLY GRAHAM PARK

Dolly Graham Park is a city park with a variety of uses that extends from Logan Street east to the Kentucky River. The study site between Logan Street and Norton Street has a thriving community garden and an area of trees and other plantings where the city of Frankfort Parks and Recreation Department plans to create a botanic garden called Fantasy Forest. The study site lies in the area of a former tributary of the Kentucky River and acts as a drainage way for the neighborhood. The north end of the park has views of the river, but no access or pathways to it.

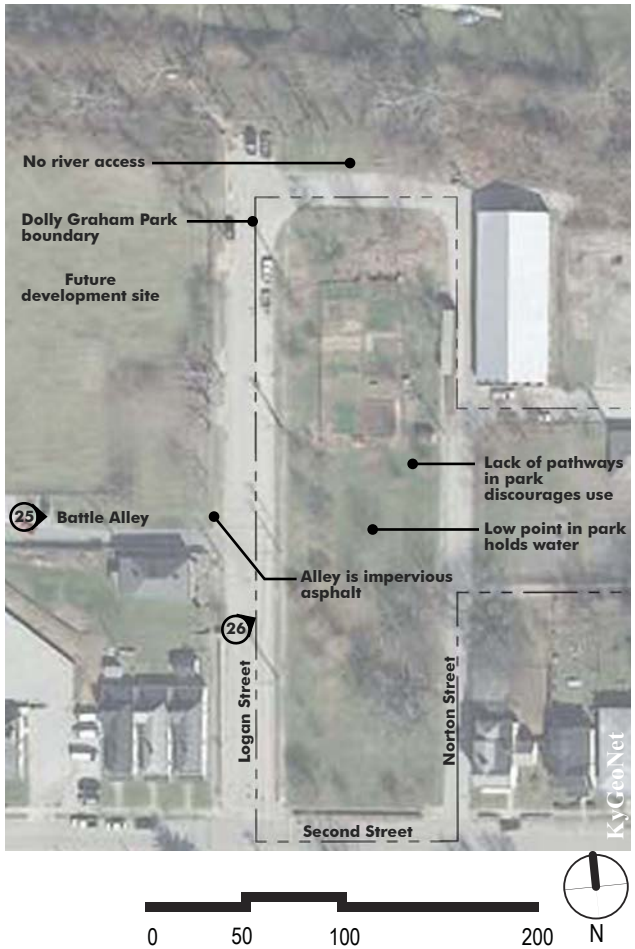

Figure 24: Orienting diagram. Arrows show the perspective taken in Figures 25 and 26.

Figure 25: Battle Alley connects Capital Avenue to Dolly Graham Park. Vehicles rarely use the alley, and it could provide a safe pedestrian link from the park to a trail along the river west of Capital Avenue.

Figure 26: The southern half of the park has a variety of trees that surround a shallow depression that follows the path of the former tributary.

RIVERFRONT AREA

The Kentucky River flows through the middle of Frankfort and has historically been the center of the community and its economy. However, a 20-foot-high concrete flood wall separates the river from the Second Street corridor. In addition, the river itself is some 30 feet below the top of a densely forested embankment. The Kentucky River Development Plan includes a Riverwalk along the river to make it easier for people to see and get to the river from several locations and to create a transportation route and recreational destination.

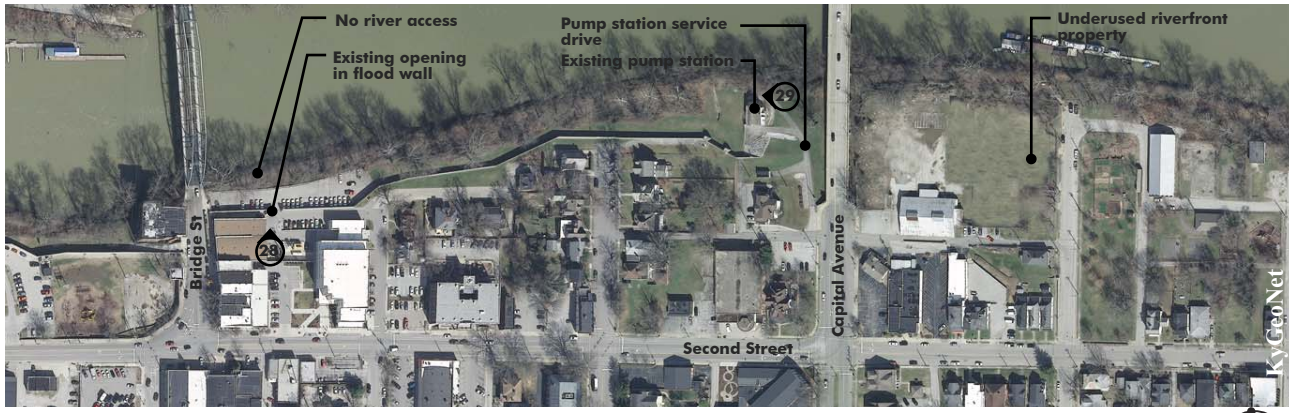

Figure 27: Orienting diagram. Arrows show the perspective taken in Figures 28 and 29.

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Figure 28: An opening in the flood wall could become a point of access to a river trail if it were connected to sidewalks on Second Street.

Figure 29: A service drive to the pump station on the riverfront near Capital Avenue could become part of a multi-use trail going west toward Bridge Street and beyond.

V. DESIGN CONCEPTS

The overall plan concept for the Second Street corridor study area (Figure 30) improves pedestrian circulation in the neighborhood by creating a new multi-use trail along the river that provides access to docks at the river's edge and by improving safety at key intersections and along major pedestrian corridors. New wayfinding signage will help people driving, biking, or walking through the neighborhood on their way to the capitol building. Redevelopment of vacant and underused sites in the neighborhood could increase the vitality and economic viability of the commercial corridor. The design team developed the overall design concept with community input. It reflects the city's goals to make it more safe, comfortable, and convenient for pedestrians and bicyclists to move through the neighborhood and to improve access to the Kentucky River. When walking and biking through the neighborhood become safer and more convenient, people can choose not to drive as much, which can reduce air pollution and improve pedestrians' and bicyclists' fitness and health. These additional transportation options can benefit downtown employees and residents seeking to access businesses and services in South Frankfort. Taken together, these improvements could also help revitalize the neighborhood by increasing foot traffic in the corrido . Figure 31 shows an overview of the entire study area, indicating the six study site locations. This chapter describes detailed design concepts for each of the sites:

- **Second Street School area** – This intersection is challenging for pedestrians, especially children traveling to Second Street Elementary School, to navigate. The design concept includes reducing the crosswalk length, widening the sidewalk, and creating a set of steps and seating terraces to more directly connect the school yard to Bridge Street.
- **Second Street between Steele and Shelby Streets** – The street's sidewalks are narrow and discourage walking. The design concept eliminates a vehicular turn lane in the roadway and widens the sidewalks to allow room for street trees, street lights, benches, and bike racks. In addition, the concept incorporates the city's desire for infill development that orients mixed use buildings to the street, encouraging walking in the neighborhood and increasing economic vitality.
- **Capital Avenue at Second Street** – The 72-foot-long crosswalk at this intersection is daunting for pedestrians. The design concept would eliminate two vehicular turn lanes, reducing the crossing distance to 58 feet, and use that area to add bicycle lanes and street trees.
- **Capital Avenue at Main Street** – This intersection is equally daunting for pedestrians and bicyclists trying get across the river from South Frankfort because it is designed more like a highway interchange than a neighborhood street. The design concept would reduce curb radii to create shorter crosswalks that are safer for people to cross.
- **Dolly Graham Park** – The park is underused and not well connected to the Second Street corridor. The design concept would create pedestrian paths, community gathering areas, and a rainwater-harvesting system to enhance the existing community gardens.
- **Riverfront area** – The Kentucky River is a significant part of the city s cultural heritage but is largely invisible and inaccessible to pedestrians and bicyclists. The design concept would create a network of paths to and along the river to help connect people to the waterfront, provide interpretive nature areas, and offer recreational boat access.

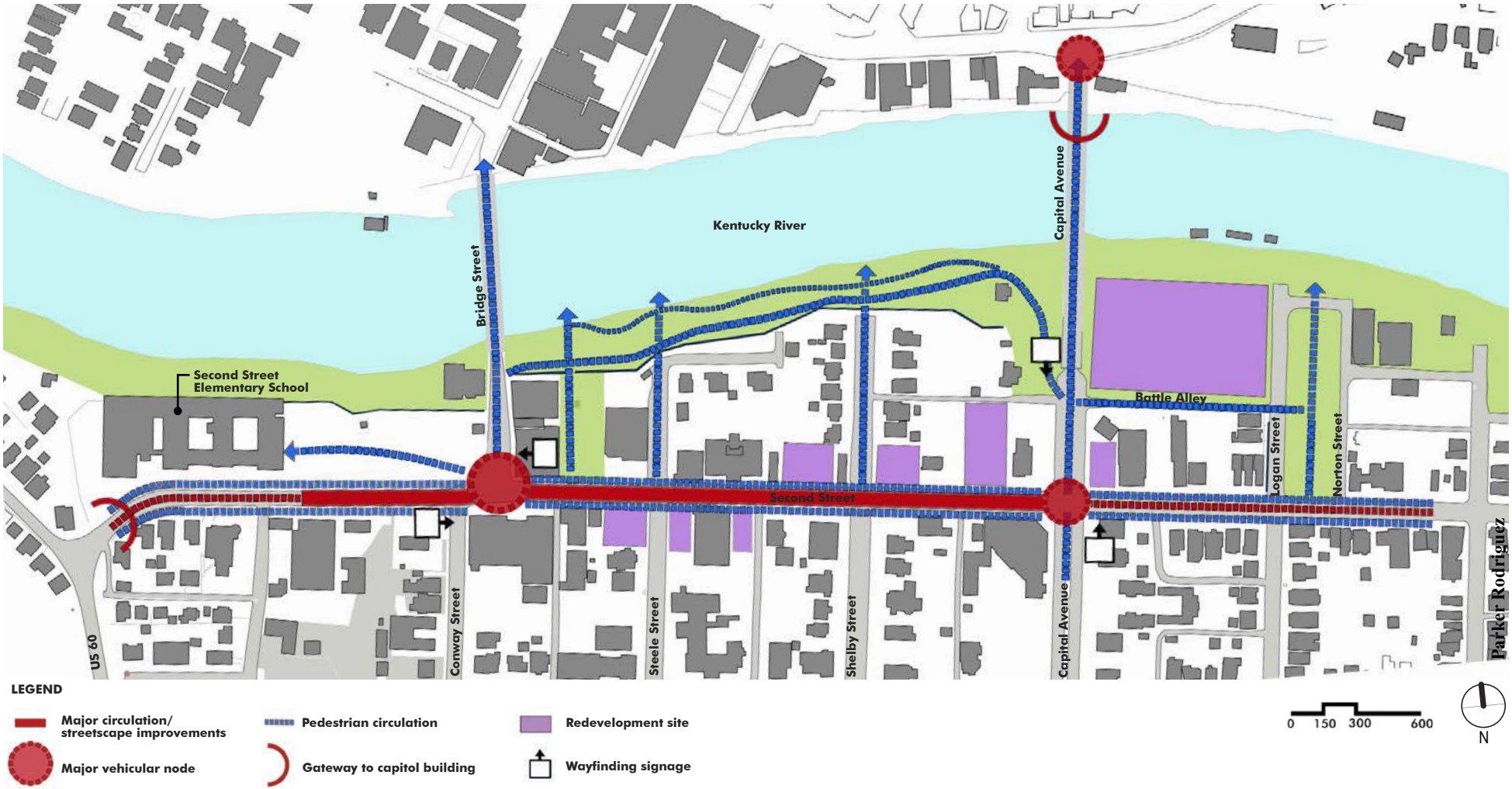

Figure 30: Diagram of the overall plan concept.

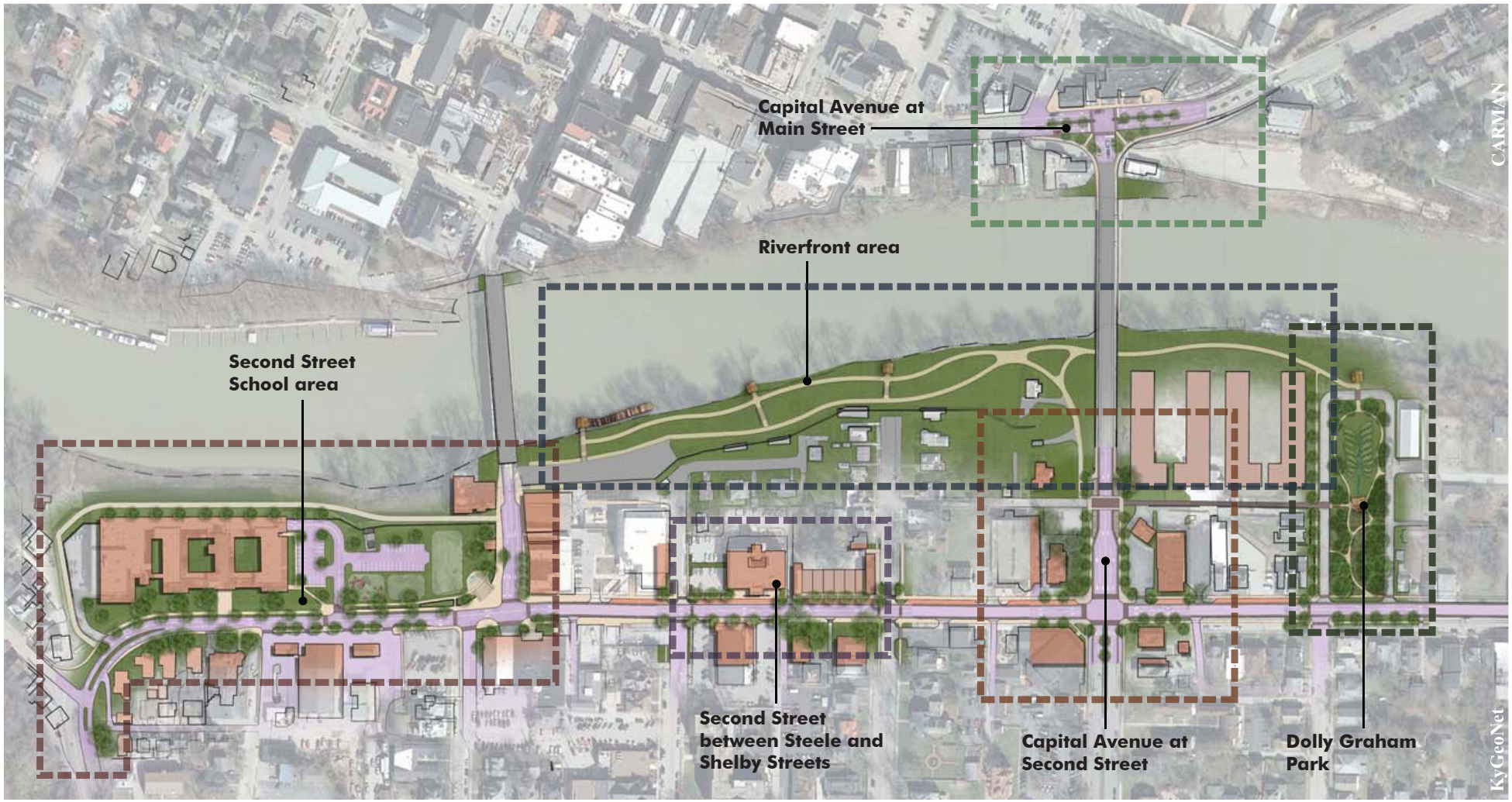

Figure 31: The selected study sites

SECOND STREET SCHOOL AREA

Site improvements could make the intersection of Second Street and Bridge Street safer for pedestrians and bicyclists, especially for Second Street Elementary School students. A single southbound lane on Bridge Street widens to three lanes at the intersection with Second Street. Removing one of these lanes and reducing the curb radius could shorten the crosswalk across Bridge Street to 36 feet and create a new pedestrian plaza.

Replacing part of an existing wall between the school yard and Bridge Street with steps would directly connect the school to the street, create an amphitheater space for community events, and create space for a water feature and/or public art.

In addition to the intersection improvements, the sidewalk on the south side of Second Street could be extended to Ewing Street for a more complete pedestrian network.

A path could be added behind the Second Street Elementary School and the flood wall. It would create a continuous, more scenic pedestrian and bicyclist route from Bridge Street, along the Kentucky River, and back to Second Street.

On the west end of the school, a landscaped median could be placed within Second Street to reduce its impervious surface, calm traffic, and prevent illegal left turns into the school at a place with limited site distance. Finally, the playground in the school yard could be moved closer to the school so children would not have to cross the parking lot to reach it. The parking lot could be reconfigured and moved north of the playground while retaining the same number of spaces.

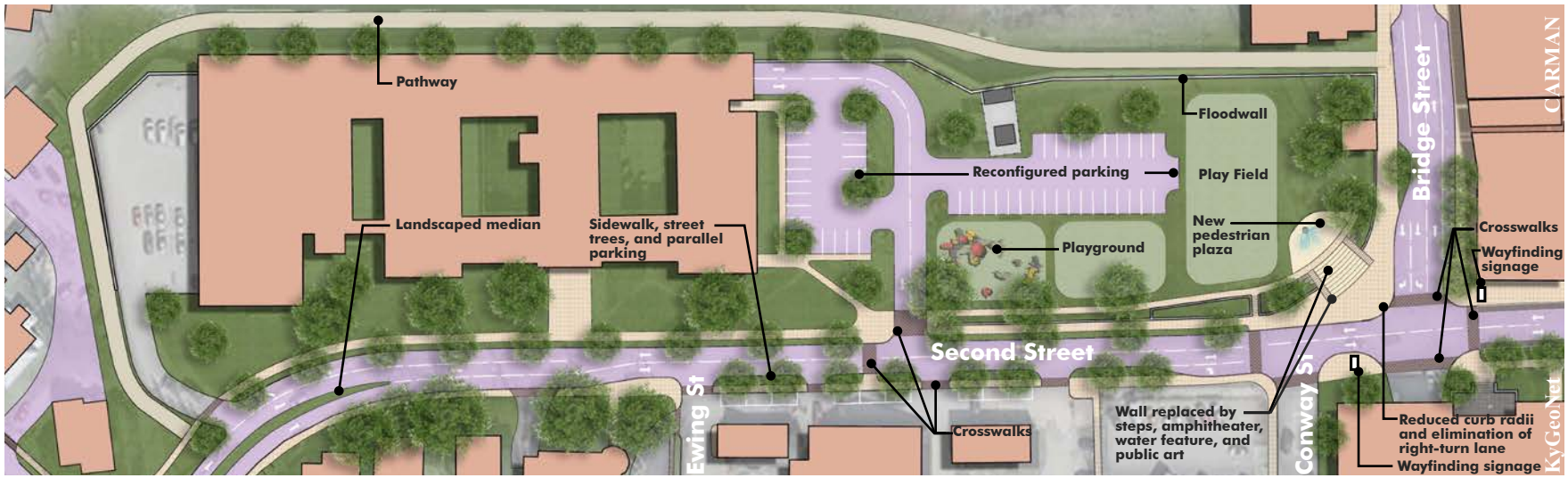

Figure 32: Design concept for the Second Street at Bridge Street intersection

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SECOND STREET SCHOOL AREA

Bridge Street has one northbound lane with on-street parking and three southbound lanes. Two of the southbound lanes are right-turn only and are separated from the other traffic lane by a painted median. The total crosswalk length is 70 feet at the intersection. The approximately 12-foot-high retaining wall that abuts the sidewalk on the west side of Bridge Street prevents direct access to the school playground below.

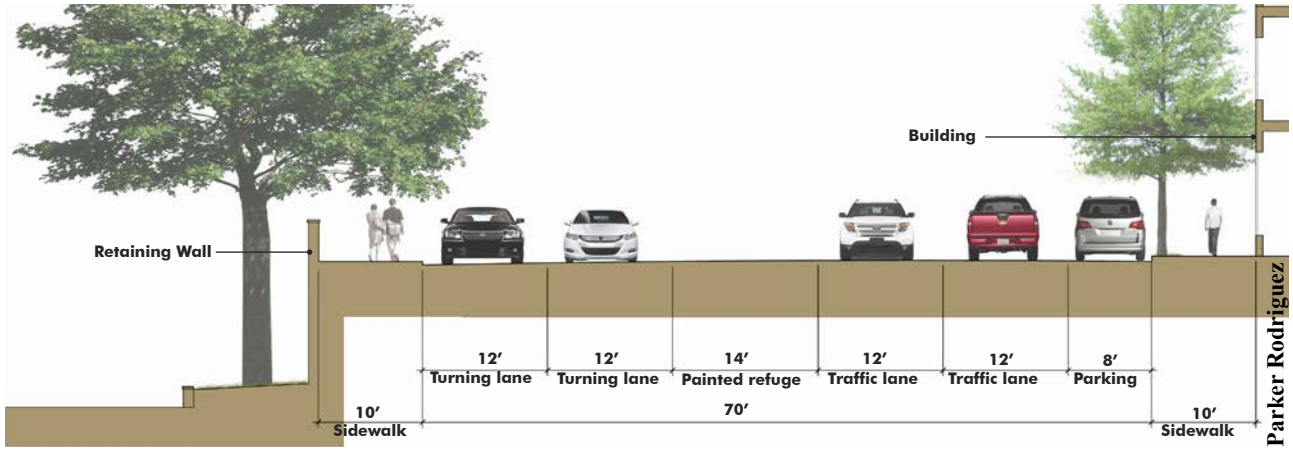

Figure 33: Existing cross section of Bridge Street at the intersection with Second Street

Bridge Street could be reconfigured to increase pedestrian safety by removing one southbound right-turn lane and reducing the curb radius, creating a 36-foot-long crosswalk. This change would allow an expanded sidewalk on the west side of the road, making walking in this area more pleasant and attracting potential customers for renovated storefronts on the other side of Bridge Street. Replacing part of the retaining wall with steps would allow easy access to the playground and create an amphitheater setting for community gatherings and performances, which would help attract residents to the corridor.

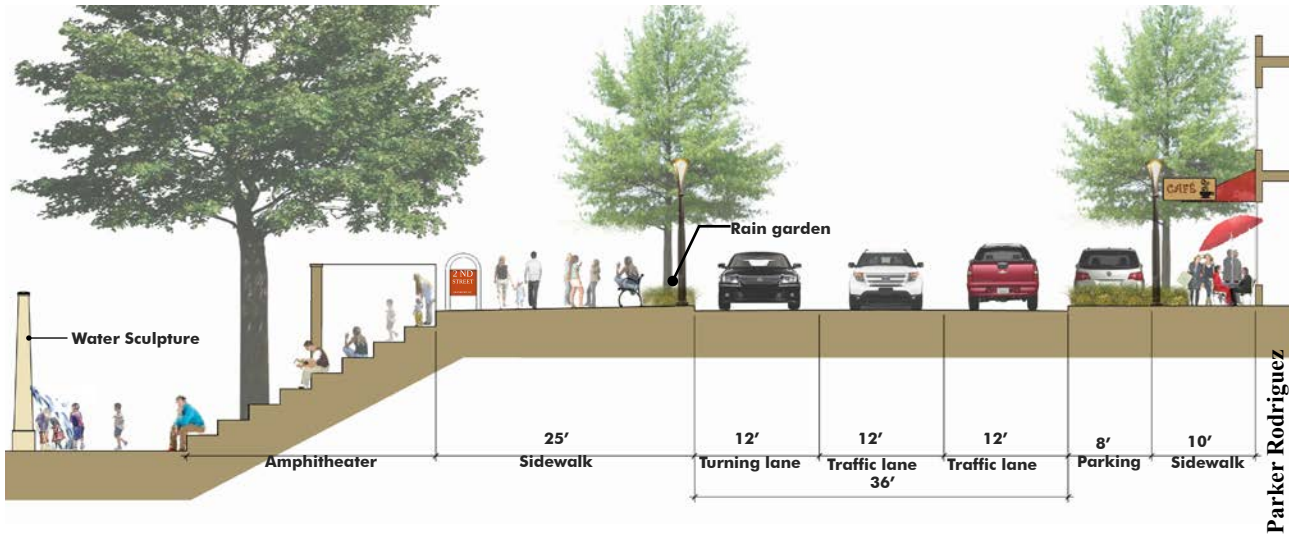

Figure 34: Design concept cross section for Bridge Street.

SECOND STREET SCHOOL AREA

The playground has two trees that provide shade, but the area has no seating or places to gather. A narrow stairway at a break in the retaining wall along Second Street allows access to the playground.

Figure 35: Current conditions at the Second Street Elementary School playground looking east towards Bridge Street.

Removing the wall between the existing trees could create an opportunity for steps and seating terraces connecting Bridge Street and the playground. A tall masonry column could have spray jets of water for summertime recreation for the neighborhood children. The column's height matches the high-water mark of flooding in Frankfort in 1937 and 1978, approximately 20 feet above the playground elevation.

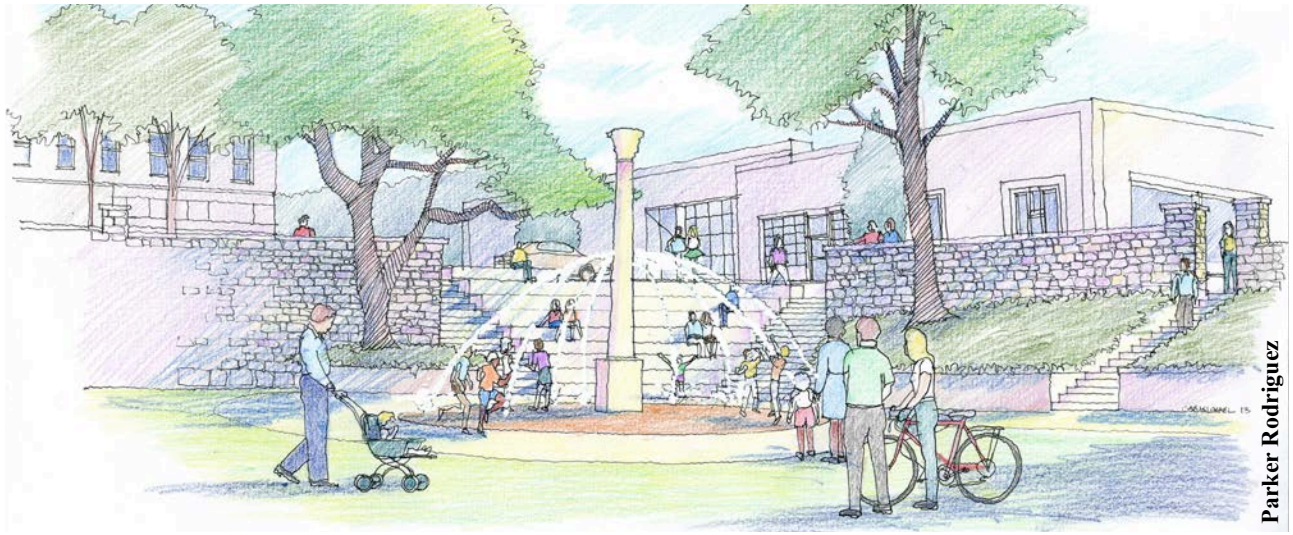

Figure 36: Design concept for the Second Street Elementary School playground.

SECOND STREET BETWEEN STEELE AND SHELBY STREETS

Changes to Second Street could improve pedestrian safety, help manage stormwater by reducing impervious surfaces, increase tree canopy, and support the area's revitalization.

Residents reported that traffic on Second Street is relatively light outside of short periods at morning and evening rush hours. If the dedicated turn lane on Second Street were removed, traffic is likely to be una fected during most times of the day. The sidewalks could then be made 12 feet wider, making room for street trees, street lights, street furnishings, and outdoor cafes, consistent with the community vision for a revitalized retail street. New, mixed-use development on the north side of the street would add more residents and businesses and further help enliven the area. Parking along Second Street could be screened to enhance the visual appeal of the area.

To reduce impervious surfaces and help the city achieve its goal of improved water quality, the on-street parking spaces on the north side of the street and the areas between tree boxes could be repaved with porous paving, and the tree boxes could be rain gardens. Both porous paving and rain gardens would infiltrate stormwater before it reaches the Kentucky River.

Visually enhanced crosswalks at each intersection would keep pedestrians safer by making the crossing more visible. On the north side of the street where on-street parking would be, curb bulb-outs at the intersections would reduce crosswalk length, which also helps protect pedestrians. The existing bicycle lanes on Second Street would remain, as they provide a valuable transportation option.

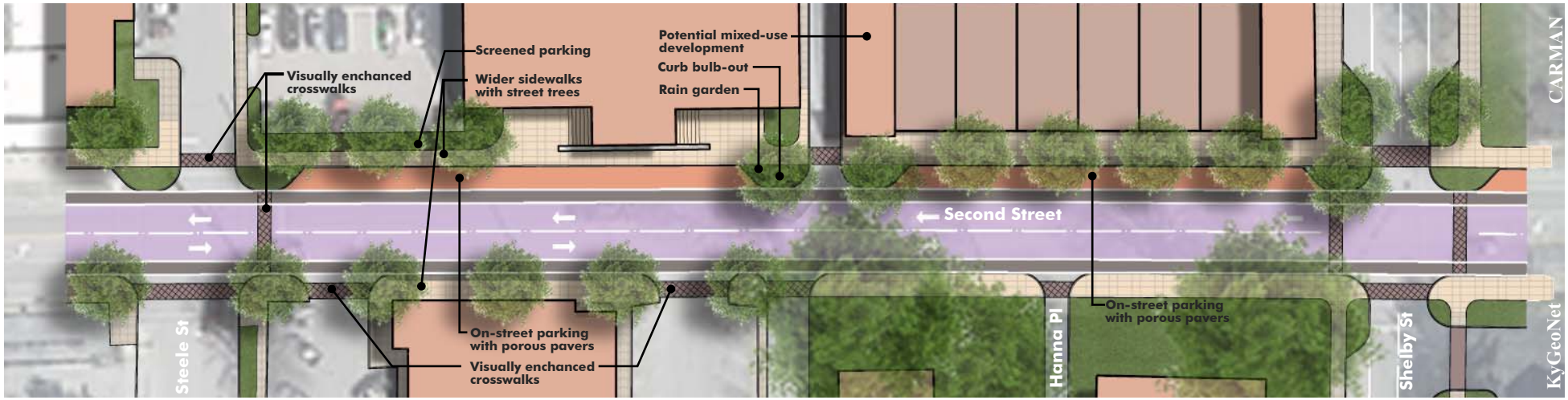

Figure 37: Design concept for Second Street Streetscape.

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SECOND STREET BETWEEN STEELE AND SHELBY STREETS

Second Street between Steele Street and Shelby Street has bicycle lanes in both directions, two travel lanes, a rarely used dedicated turning lane, and on-street parking on one side of the street. The sidewalks are only 4 feet wide, barely wide enough for two pedestrians to pass comfortably and too narrow to support street trees or other street furnishings.

If the dedicated turn lane were removed, the sidewalk zone could be widened, creating space on both sides of the street for street lights and street furnishings such as bicycle racks and benches.

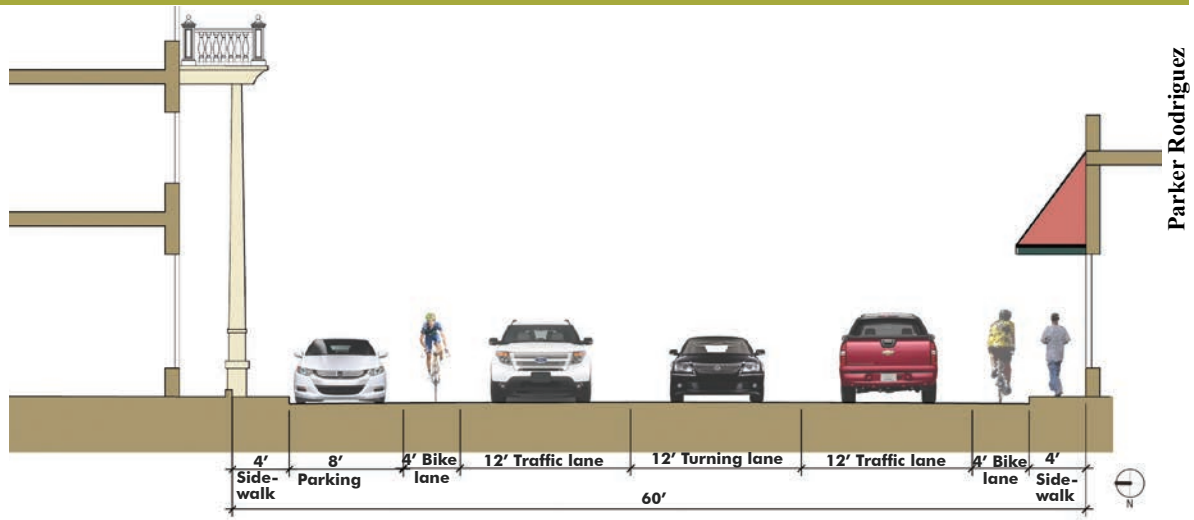

Figure 38: Existing cross section of Second Street between Steele and Shelby Streets.

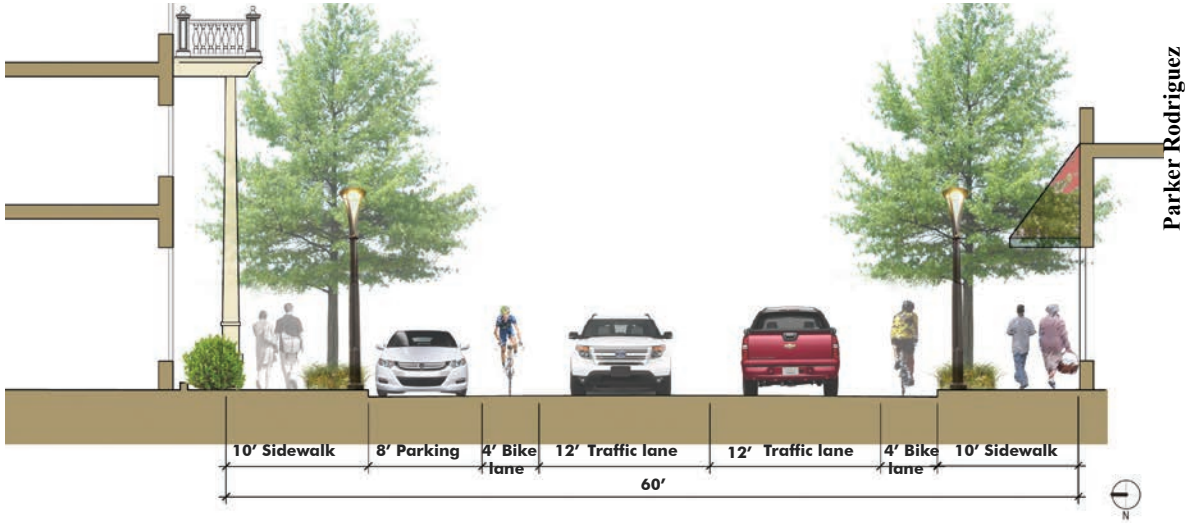

Figure 39: Design concept cross section for Second Street.

SECOND STREET BETWEEN STEELE AND SHELBY STREETS

A parking lot on a vacant parcel along Second Street breaks the continuity of the streetscape. This site is an opportunity for infill development.

Figure 40: Current conditions on Second Street between Steele Street and Shelby Street, looking north.

The design concept for this stretch of Second Street includes widened sidewalks, bicycle lanes, street trees, street lighting, and on-street parking over porous pavement. A new, mixed-use building on what is now a vacant lot would support the city's goal to create a more vibrant public space that could encourage walking and stimulate economic revitalization while respecting the scale of the adjacent historic buildings. Moreover, public investment to create a more attractive streetscape and enhance the distinctive neighborhood character could stimulate new private investment in the area.

Parker Rodriguez

Figure 41: Design concept for Second Street between Steele Street and Shelby Street.

CAPITAL AVENUE AT SECOND STREET

Capital Avenue is a major connection between the state capitol building and downtown Frankfort across the Kentucky River. The street could be improved by making it more convenient and pleasant for pedestrians and bicyclists, reducing impervious surfaces, and adding crosswalks at key intersections. For a short stretch near its intersection with Second Street, Capital Avenue has six lanes, two more than Capital Avenue south of Second Street and three more than Capital Avenue on the bridge. Eliminating dedicated turn lanes could shorten the crosswalk, providing space for wider sidewalks, street trees, and rain gardens to cleanse stormwater runoff. Bicycle lanes could be added on the bridge by eliminating the third lane, not only increasing route options for bicyclists but also improving the experience for pedestrians by adding a buffer between the narrow sidewalk and fast-moving traffic

At the intersection of Battle Alley and Capital Avenue, new crosswalks with porous pavers could link Dolly Graham Park to the river trail.

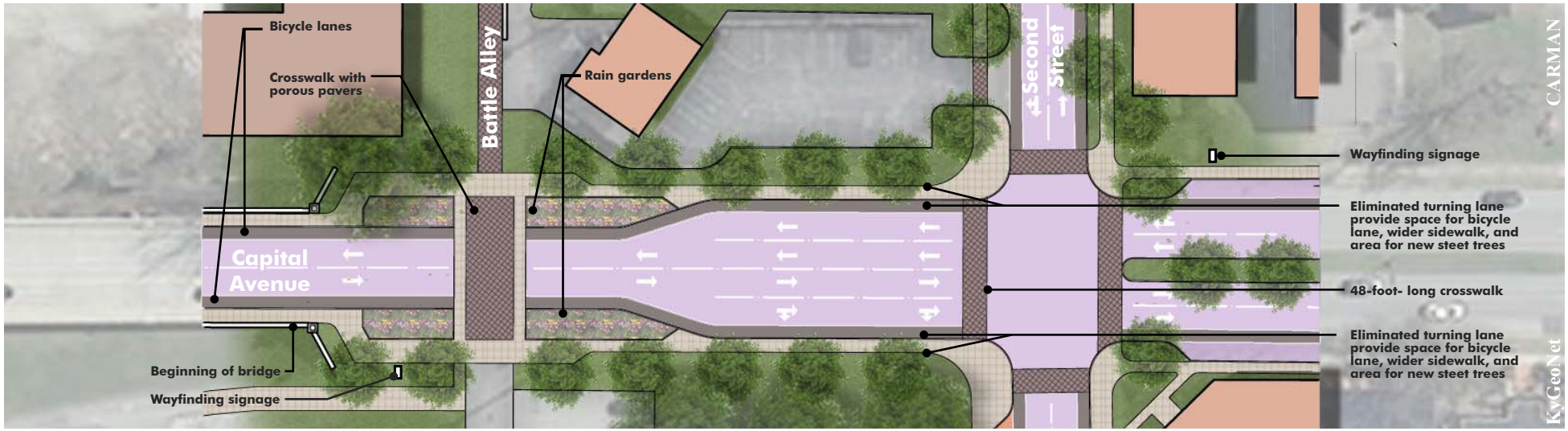

Figure 42: Design concept for Capital Avenue at Second Street

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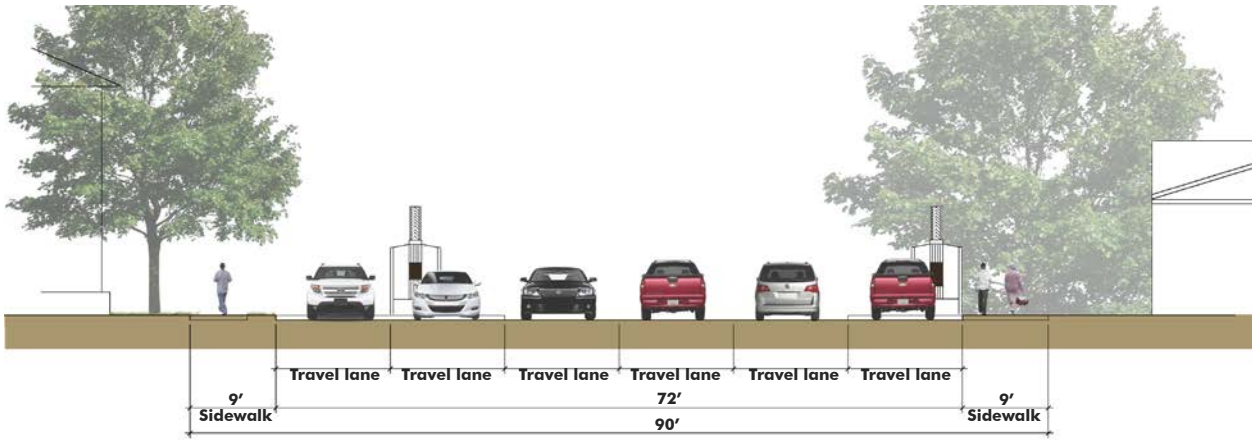
CAPITAL AVENUE AT SECOND STREET

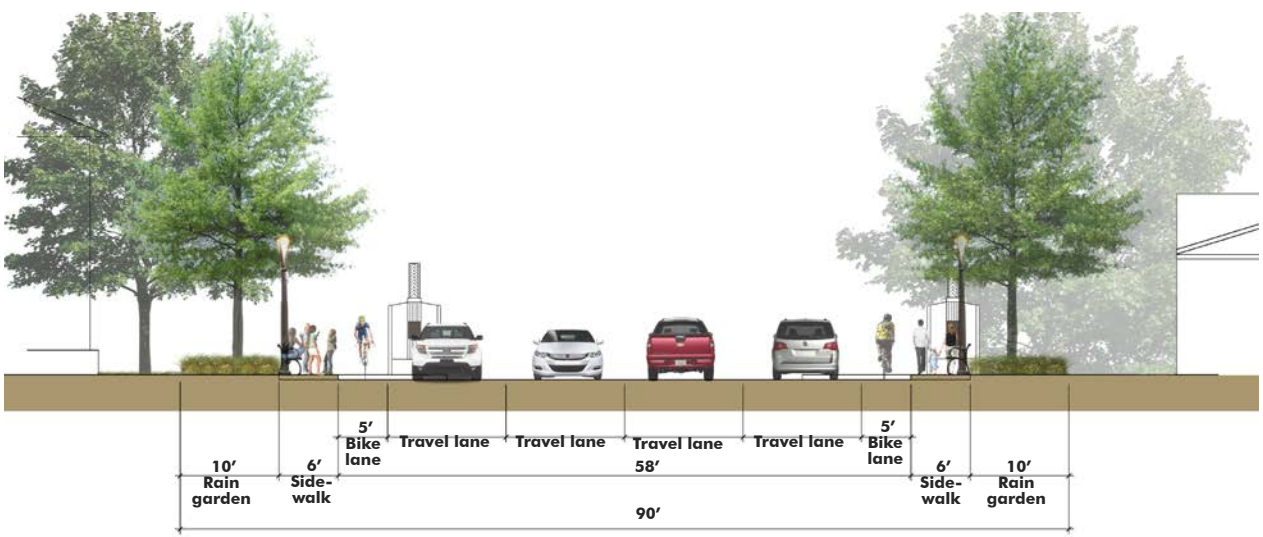
Capital Avenue between Second Street and the Capital Avenue Bridge includes three northbound lanes and three southbound lanes, resulting in a 72-foot-long crosswalk. Just south of Second Street, Capital Avenue has only four travel lanes, two in each direction. Just north of this section, the Capital Avenue Bridge has only three travel lanes, two northbound lanes and one southbound lane. The six lane section of road between Second Street and the bridge thus provides more traffic capacity than the road on either end of this half-block section.

Removing two travel lanes, one in each direction, would reduce the crosswalk to 48 feet, improving pedestrian safety. Removing the travel lanes would allow room for 5-foot-wide bicycle lanes, rain gardens to capture stormwater runoff, and a wider sidewalk with street lighting and benches to create a safer and more comfortable pedestrian environment.



Parker Rodriguez

Figure 43: Existing cross section of Capital Avenue at Second Street.



Parker Rodriguez

Figure 44: Design concept cross section of Capital Avenue at Second Street.

CAPITAL AVENUE AT SECOND STREET

The lack of street trees and bicycle lanes make Capital Avenue uninviting for both pedestrians and cyclists.

Figure 45: Current conditions on Capital Avenue, looking south from the bridge toward Second Street and beyond to the capitol.

Capital Avenue could be transformed to create a grander entrance to the Capitol Building with new bicycle lanes, wider sidewalks, wayfinding signage, seating, rain gardens, and street trees. These changes would extend the landscaping of Capital Avenue across Second Street to the bridge.

Figure 46: Design concept for Capital Avenue at Second Street.

CAPITAL AVENUE AT MAIN STREET

On the north end of the Capital Avenue Bridge, the intersection with Main Street could be improved in a similar manner by reducing the curb radii and creating a more compact crosswalk that pedestrians could more safely navigate. In addition, the bicycle lanes could follow the sidewalk and connect to Main Street away from the intersection. These improvements would reduce impervious area and introduce new landscaped areas for trees, shrubs, and rain gardens.

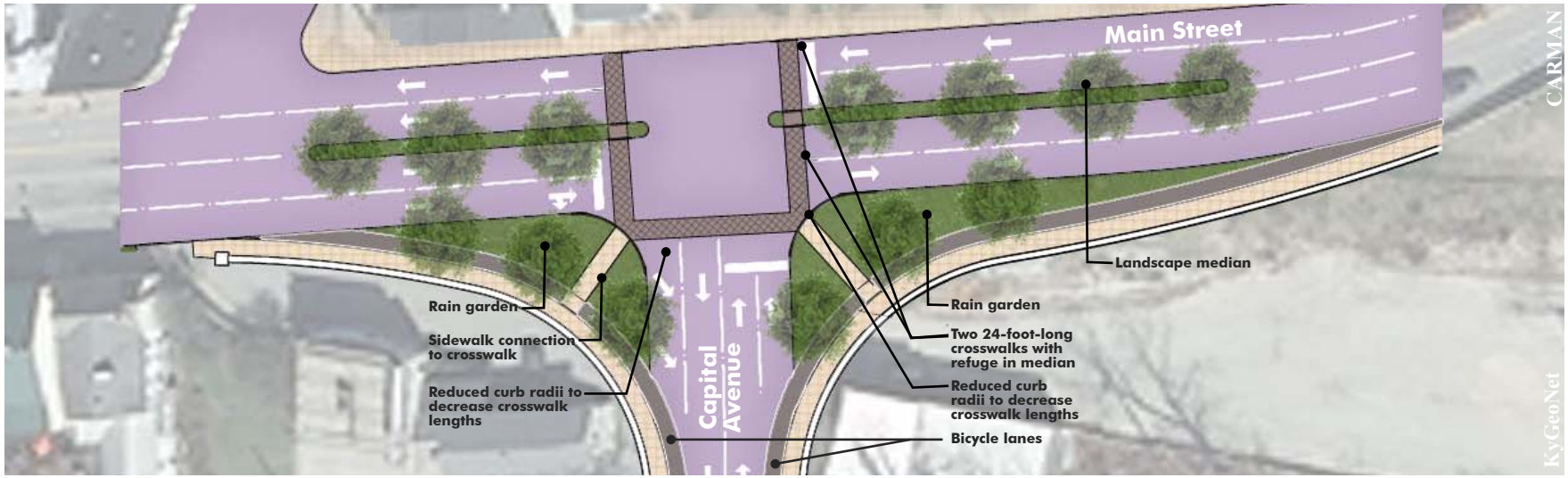


Figure 47: Design concept for the intersection of Capital Avenue and Main Street.

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DOLLY GRAHAM PARK

Dolly Graham Park could be improved through a few strategic additions. New seating areas and paths would encourage people to walk through and spend time in the park. A rain garden could collect stormwater in an underground cistern for use in the community garden, which could be redesigned so all plots could most efficiently receive water distributed from the cistern. A shelter in the center of the park could provide a place for visitors to picnic.

Battle Alley could be improved as a connection to the river trail from Dolly Graham Park to Capital Avenue. Replacing the asphalt with porous pavers would make the alley more like a pedestrian promenade while reducing runoff and filtering the stormwater before it reaches the Kentucky River. Civic programming like a farmers' market could bring activity to the alley. Making Battle Alley a better connection from highly visible Capital Avenue to less visible Dolly Graham Park could make residents and visitors more aware of the park and increase its use.

Battle Alley also fronts a proposed residential development on what is currently a vacant lot. Improvements to Battle Alley might accelerate that development and contribute to overall neighborhood revitalization. Moreover, the Battle Alley improvements could incorporate historic markers that would help preserve the neighborhood's cultural heritage.

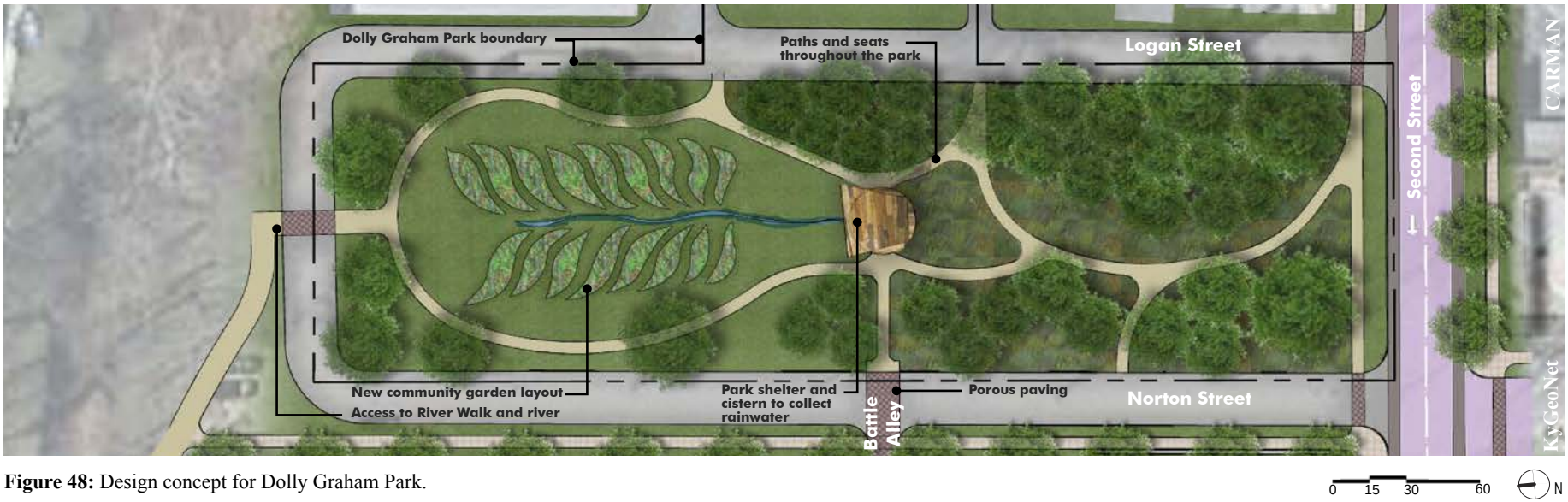

Figure 48: Design concept for Dolly Graham Park.

DOLLY GRAHAM PARK

One aspect of the design concept for Dolly Graham Park involves building a pavilion to capture stormwater runoff in the natural basin at the center of the park. The water could be captured in an underground cistern and reused to irrigate the adjacent community garden. A small picnic shelter "floating" atop the rain garden could mark the cistern's location and provide an observation well to monitor water levels. Interpretive signage could educate people about stormwater's environmental effects and ways to mitigate them. The roof would pitch to the south so solar panels atop the shelter could provide electricity to power the pump that delivers the water to the garden. In this manner, the community could become more aware of seasonal water cycles, renewable energy, and locally produced food—all in one small structure.

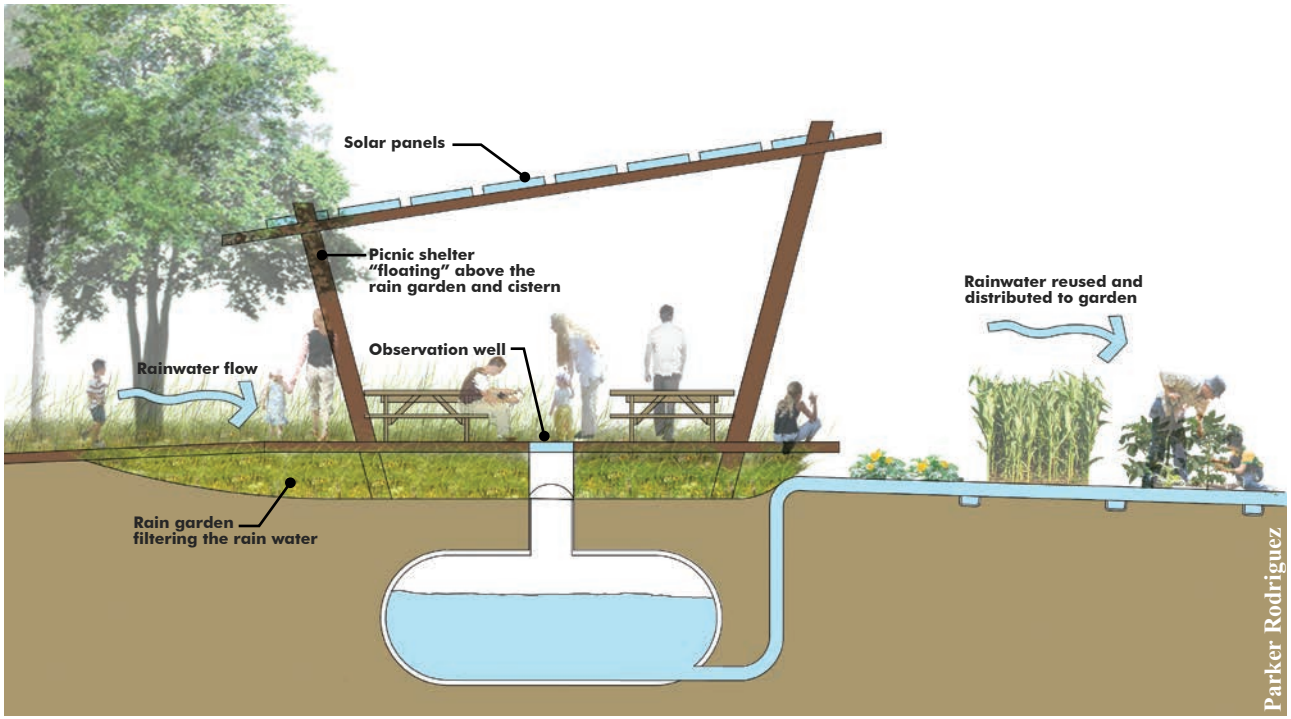

Figure 49: Design concept for picnic shelter in Dolly Graham Park.

DOLLY GRAHAM PARK

The alley is an unassuming stretch of asphalt that provides access to several properties between Dolly Graham Park and Capital Avenue. It is open but rarely used by cars. In the background is Dolly Graham Park.

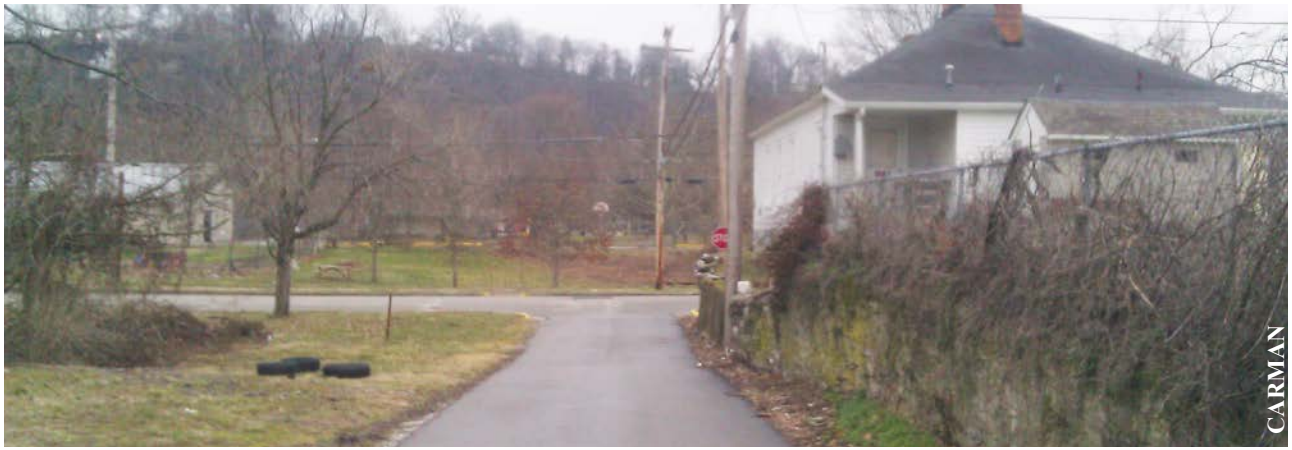

Figure 50: Current conditions in Battle Alley, looking east to Dolly Graham Park.

Porous pavers in Battle Alley would help absorb and filter rainwate . A farmers' market could bring new life and activity to the space while bringing fresh food to nearby residents.

Figure 51: Design concept for Battle Alley.

RIVERFRONT AREA

The Kentucky River flows between South Frankfort and downtown Frankfort and is an important part of the city's cultural heritage. It is, however, mostly inaccessible to residents as it lies behind the flood wall and has steep, wooded slopes that prevent easy access to the river's edge. The city of Frankfort has approved a Kentucky River Development Plan that includes new residential development and a Riverwalk along the riverfront. The Riverwalk includes a stretch parallel to Second Street, which would help connect the city to the river, add to the overall vitality of the neighborhood, and provide recreation and transportation options for pedestrians and bicyclists.

The river trail could be comprised of two pathways between Bridge Street and Capital Avenue. One branch would be an on-grade porous concrete path at the top of the river bank, north of the flood wall. A second branch could be a raised boardwalk through woodlands beginning at Capital Avenue and ending at the river's edge near Bridge Street, descending along this stretch at a 4 percent gradient to make it accessible to people with disabilities. At the river's edge, a new dock for recreational boaters could provide an entry to the neighborhood for waterborne visitors. The river trail could be continued west of Bridge Street at the top of the river bank to connect to Louisville Hill Road, creating a continuous pedestrian and bicycling loop with Second Street and providing a recreational resource for the city of Frankfort.

The river trail presents several environmental and educational opportunities. For example, rain gardens along the trail could prevent erosion along the river bank and cleanse rainwater before it enters the Kentucky River. Interpretive signage about the local flora and fauna, as well as local history, could be added along the trail system.

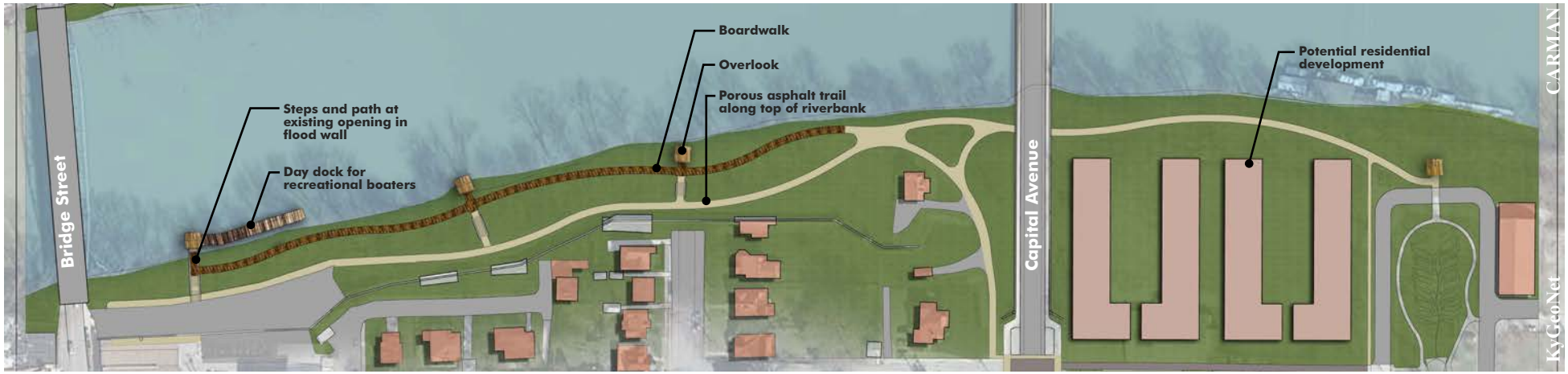

Figure 52: Design concept for the Riverfront area

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RIVERFRONT AREA

The steep, heavily wooded river bank allows no access to the water's edge. Boaters have no facilities to dock on the southern shore of the Kentucky River.

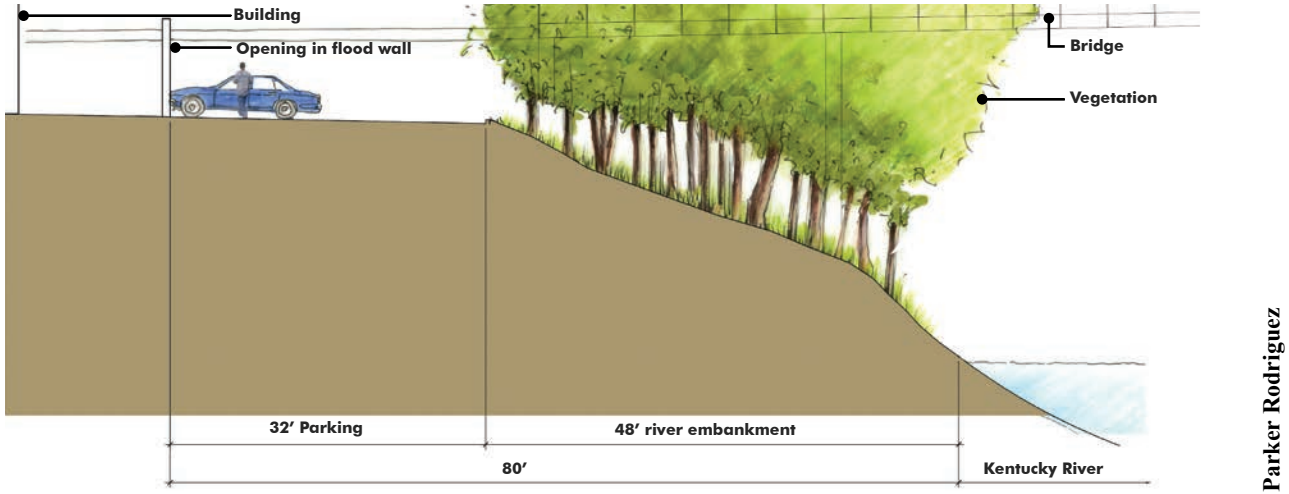

Figure 53: Existing cross section of the proposed trail along the Kentucky River at Bridge Street.

At the western terminus of the river trail, the boardwalk would meet stairs coming from the opening in the flood wall and leading to a boat dock, where boaters could temporarily tie up and visit the neighborhood. The boardwalk and boat dock would have to be built to withstand flooding

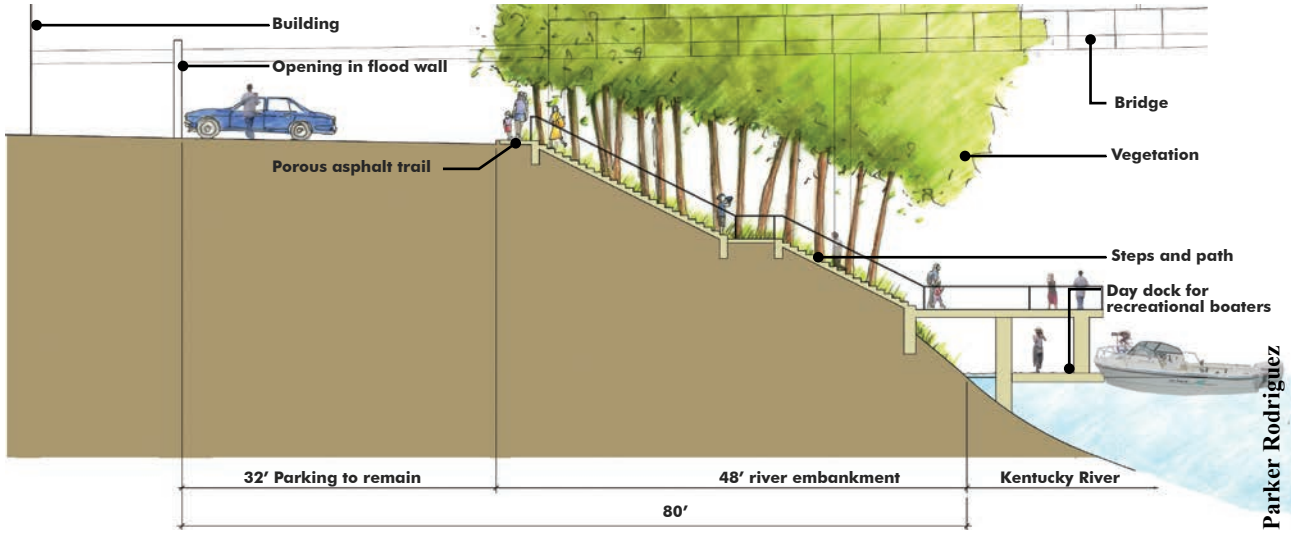

Figure 54: Design concept cross section for the western terminus of the river trail.

RIVERFRONT AREA

The area behind the floodwall is la gely inaccessible. A heavily wooded area blocks views of the river from the river bank.

Figure 55: Current conditions along the Kentucky River, as viewed from the Capital Avenue Bridge looking west to Bridge Street.

A trail behind the flood wall could improve access to the Kentucky River and provide a route along the river for walkers and cyclists.

Figure 56: Design concept for the proposed river trail.

VI. NEXT STEPS

The design concepts in this report are the product of the goals and feedback from the city of Frankfort and the city, state, and federal government officials; property owners; and community members who attended the Greening America's Capitals workshop. If the city chooses to implement any of these design concepts, the continued support and cooperation of all stakeholders will be important to achieve the community's vision for a revitalized and more environmentally sustainable Second Street corridor.

The city could implement the design concepts for the five study areas in incremental phases over time, taking advantage of funding opportunities that become available. The projects also build upon other planning efforts in the neighborhood, including the vision for a small area overlay plan set forth in the city's 2010 comprehensive plan,[3] the Kentucky River Development Plan,[4] and a Second Street corridor form-based code study. The city could attach many of the improvements in the design options to various capital improvement projects that result from these and other city plans and initiatives.

Since most of these projects are proposed upon public lands, the city of Frankfort and the Frankfort Independent School District would likely need to lead any efforts to implement the design options on the land they own and manage. They could seek guidance, technical assistance, and/or funding from a variety of sources, including:

- City of Frankfort Sewer and Water Board – Streetscape improvements along Second Street and Capital Avenue might be incorporated into a proposed capital improvement project in the next five year to replace sewer pipes in the neighborhood streets. The streetscape improvements would be less expensive if done in conjunction with already planned street reconstruction.
- The Kentucky Department for Environmental Protection Brownfiel Redevelopment Program – Through the years the Second Street corridor contained a number of gas stations and automobile repair stations that were reportedly abandoned without any type of assessment or cleanup of potential contaminants. The Kentucky Targeted Brownfield Assessment Program provides free assessments to local governments, nonprofit organizations and other quasi-governmental agencies to determine if properties are contaminated. Program staff can also help identify funding sources for any necessary cleanup activity on both public and private property. More information is available at http://dca.ky.gov/brownfields/Pages/default.aspx
- The Clean Water State Revolving Fund – Low-cost loans are available for the planning, design, and construction of green infrastructure projects, including projects like those envisioned for the Second Street and Capital Avenue streetscapes. More information is available at: water.ky.gov/Funding/Pages/CleanWaterStateRevolvingFund.aspx.
- U.S. Department of Transportation – The sidewalks, crosswalks, and traffic calmin measures near the Second Street Elementary School are eligible for funding under the Transportation Alternatives Program and Surface Transportation Program, which replaced funding for Safe Routes to School projects after passage of the Moving Ahead for Progress in the 21st Century Act. More information is available at: www.fhwa.dot.

[3] Frankfort/Franklin County. Comprehensive Plan Update. 2010. http://www.frankfort.ky.gov/sites/default/files/documents/files/2020%20comp%20plan%20final%20adopted%20version% 1-18-10.pdf.
[4] Frankfort/Franklin County Tourist Commission. Kentucky River Development Plan. http://kentuckyriverfront.com/Portals/130/Mktg%20Folder%202011.pdf.

gov/environment/safe_routes_to_school/.

- U.S. Fish and Wildlife Service – The Boating Infrastructure Grant Program provides funding for the construction of boating infrastructure facilities and associated amenities transient, nontrailerable recreational boats. The city could apply for this funding to construct the boat docks in the design concept for the riverfront area. Additional information is available at: wsfrprograms.fws.gov/Subpages/GrantPrograms/BIG/BIG_Funding.htm.

A critical part of developing an implementation strategy is a clear management structure and team leader to prioritize projects, prepare the city to take advantage of funding opportunities as they arise, coordinate the work, and ensure the continued support of the community throughout a phased process. The city of Frankfort could establish an entity to do this work as one of the first steps toward successfully implementing design solutions to achieve the community's goals.

SECOND STREET CORRIDOR

Smart Growth
GREENING AMERICA'S CAPITALS