

r i v e r f r o n t c r o s s i n g s d i s t r i c t

sub-area plan



iowa city. ia

april. 2011

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executive summary

executive summary

In 2010 Iowa City was one of only five communities across the country selected by EPA through a competitive process as a Brownfield Pilot as part of the Partnership for Sustainable Communities. The Partnership for Sustainable Communities is a joint venture of the U.S. Environmental Protection Agency (EPA), U.S. Department of Housing and Urban Development (HUD), and U.S. Department of Transportation (DOT) based on “livability principles” that guide inter-agency collaboration and support the integration of safe, reliable and economical transportation; affordable, energy-efficient housing; and sustainable reuse of idle or underutilized land. Designation as a pilot provided technical assistance to expand on previous planning efforts to create a more detailed plan for a sub-area of the larger Riverfront Crossings District, just south of Downtown Iowa City.

This Sub-Area Plan is based on six key project goals that represent a holistic approach to the redesign and redevelopment of the study area.

- Develop a new mixed-use, pedestrian-oriented district
- Create a resilient riverfront park system
- Enhance Ralston Creek to become a community asset
- Develop a multi-modal transportation network
- Create a network of green streets in the district
- Promote sustainable design practices within the district

The study area encompasses roughly 80 acres in the southern portion of the district and is bounded by U.S. Highway 6 on the south, the Iowa River on the west, the Interstate Rail Line on the north and the Cedar Rapids and Iowa City (CRANDIC) Rail Line on the east. Currently a low-density, auto-oriented district, the goal is to transition the area over time to a more pedestrian-oriented, mixed-use neighborhood, with a new riverfront park and a highly connected mobility network.

Large portions of the study area were inundated by flooding in 2008, including the City’s North Wastewater Treatment Plant, which is located adjacent to the Iowa River. Plans are for the treatment plant to be relocated and its site transformed into a riverfront park designed to help absorb flood waters and provide a variety of public multi-use spaces, trails, and access to the river. The riverfront park will also become a catalyst for redevelopment of the district.

The east side of the park is bordered by Ralston Creek. Most existing development in this area has turned its back on the creek, which has been degraded over time by polluted urban runoff. Opening

up the creek, using ‘soft’ bank stabilization methods, and restoring riparian habitat will help enhance Ralston Creek as a community amenity.

The goal for the Riverfront Crossings District is to transform it into a prototype for sustainable stormwater management. As such, a set of conceptual stormwater best management practices (BMPs) was created to help define areas that have potential applicability for providing on-site treatment of runoff.

The potential for high-speed rail and light-rail service within the Riverfront Crossings District provides the foundation for an interconnected mobility network. The Rock Island Station, located just north of the study area, is a possible stop on the high-speed rail connection to Chicago. Two stops for light-rail (which would ultimately connect to Cedar Rapids) are also proposed in the study area. An expanded bus network, new on-street and off-street bike facilities, and a highly connected vehicular and pedestrian network will give residents and visitors a variety of options for sustainable modes of transportation.

The Riverfront Crossings Sub-Area will also be developed as a pedestrian-oriented, mixed-use neighborhood. Gilbert Street is a major north/south corridor in Iowa City and will become an attractive place for mixed-use development with ground-floor commercial. As Ralston Creek is restored and becomes an amenity for the community, residential buildings will be constructed to overlook the creek and the riverfront park. The southern portion of the study area, along Gilbert Street, is located within the flight zone of the Iowa City Municipal Airport and will be subject to Federal Aviation Administration (FAA) height restrictions. The northern portion of the study area is located outside the height restrictions and has the potential to be developed with higher-density blocks. Proposed residential towers in this area will take advantage of views overlooking the riverfront park and the Iowa River corridor. Housing typologies proposed for the area will be attractive to a range of household types and income levels.

Design guidelines will guide development of the Riverfront Crossings Sub-Area and establish standards that are intended to help create the mixed-use, pedestrian-oriented community envisioned. These standards primarily look at form, function, and features of buildings that define and shape the public realm. They are composed of guidelines for land use, building height, frontages and setbacks, parking and access, and special requirements.



project background

project background

In 2009, as a part of post-flood recovery efforts, Iowa City received a grant of technical assistance through the U.S. Environmental Protection Agency's (EPA) Smart Growth Assistance Program. The City worked with EPA representatives and private planning consultants to survey the neighborhood, interview property and business owners and other stakeholders, and conduct several public input sessions. Through this process, the EPA and its planning consultants compiled the research and public input from which they drafted a number of policy recommendations relating to future economic development potential, changes to land use and urban form, and enhancements to transportation options for the area. An overview of these policy recommendations is summarized below.

Final Market Overview

ICF International. 12/11/2009

- Iowa City has experienced some of the most stable market conditions across the country, mostly because it is a recession-resistant college town.
- Iowa City is consistently ranked as one of the best places in America to live, and the large University enrollment translates into increased housing and consumer market demand.
- Although funding is uncertain, there is the future potential for both high-speed rail and light-rail within the district. Future stops would make this district ideal for transit-oriented development (TOD) that could support high density mixed-use development.
- Proposed Riverfront Crossings District redevelopment will offer a mixed-income, mixed-use, transit-oriented, urban neighborhood that will likely appeal to various segments of the young professional market.
- The “creative class”, the young professionals age 25-34 who are attracted to high-density, affordable, urban living, will be drawn to amenities such as transit accessibility, proximity to cultural activities, downtown, and open space.
- The region will continue to grow more quickly than the state and will add an average of 1,064 new households to the residential market annually. The number of households is growing faster than the overall population growth.
- The Riverfront Crossings District will likely have apartment-style condominiums because of the current lack of for-sale units targeted towards young professionals.
- It is likely that downtown expansion, because of the growth of

- professional jobs and University expansion plans, will occur south of downtown into the Riverfront Crossings District.
- The Riverfront Crossings District is considered to be a less expensive alternative to downtown, and using it to establish affordable housing is very important to the community.
- Marketek estimates that from 2007-2017, Downtown Iowa City has a potential to absorb approximately 2,257 units of market rate for-sale and rental housing.
- By 2017, an additional 800,000 SF of retail space could be supported by population increases in the greater market area. The Riverfront Crossings area should expect to capture some of this.
- Not all development in Riverfront Crossings should be required to be mixed-use.
- Because of the daily workforce population currently within the district, there is existing but untapped local-neighborhood demand for commercial services.

Final Transportation Policy Options

Nelson/Nygaard Consulting Associates. 01/06/2010

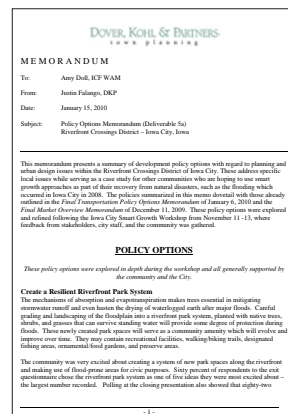
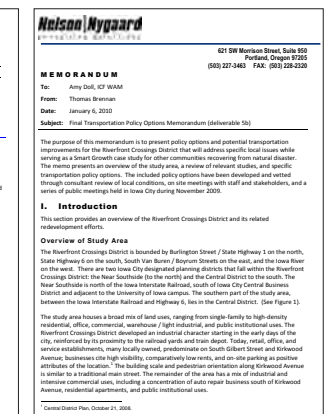
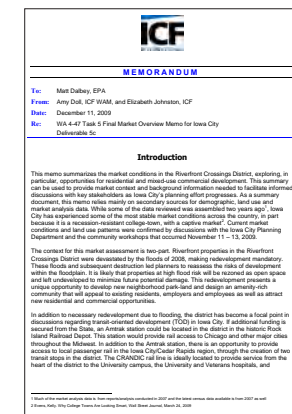
- Policy Options:
 - › Improve transportation network connectivity and comprehension
 - › Complete all district streets
 - › Implement a road diet on Gilbert by converting it into a three-lane roadway with center turn-lane and on-street parking
 - › Revert one-way streets back to two-way streets
 - › Expand or reroute circulator to serve Riverfront Crossings District
 - › Brand high quality transit offerings
 - › Fund and implement station area development and access plans
 - › Price parking to ensure curb-space availability
 - › Create a universal transit pass program
 - › Implement a local car sharing program
 - › Transit service and facility policy options
 - › Transportation demand management options
 - › Additional parking policy options
 - Create a neighborhood parking permit system
 - Redefine parking demand as access demand
 - Expand parking maximums
 - Implement a parking cash out program
 - Require and support shared parking facilities

- › Additional bicycling policy options
 - Improve on-street bicycle facilities
 - Include bicycle facilities in intersection improvements
 - Expand bicycle parking requirements for new development
 - Improve bicycle parking
 - Provide end-of-trip facilities and services
 - Consider implementing pilot programs

Policy Options

Dover, Kohl, & Partner. 01/15/2010

- Policy options with regard to planning and urban design issues within the Riverfront Crossings District include:
 - › Create a resilient riverfront park system
 - › Enhance Raiston Creek
 - › Establish community gardens in the Riverfront Crossings District
 - › Create new mixed-use zoning with design provisions for Riverfront Crossings
 - › Draft and adopt a form-based code
 - › Seek a range of affordable housing types and diverse business in Riverfront Crossings
 - › Encourage small-scale, sustainable energy production
 - › Encourage innovative stormwater management
 - › Create a network of green streets in Riverfront Crossings
 - › Improve streetscapes within Riverfront Crossings and plant more trees
 - › Brand Riverfront Crossings as a “green district”
 - › Establish an updated, design-driven vision for Riverfront Crossings



analysis

site context

physical features





natural features

site context

The Riverfront Crossings District is located just south of Downtown Iowa City and southeast of the heart of the University of Iowa Campus. It is bounded by Burlington Street on the north, U.S. Highway 6 on the south, Riverside Drive on the west and South Van Buren/Boyrum Streets on the east. The sub-area is located in the southern portion of the larger district, bounded by the Iowa Interstate Railroad on the north, U.S. Highway 6 on the south, the Iowa River on the west and the CRANDIC Rail Line on the east.



vicinity map

-  1/4 Mile (5 minute walk)
-  1/2 Mile (10 minute walk)
-  Riverfront Crossing District Boundary
-  Riverfront Crossings Sub-Area Boundary



- 1 Rock Island Train Depot
- 2 Substation
- 3 City Carton Recycling
- 4 Johnson County Administrative Offices
- 5 North Wastewater Treatment Facility



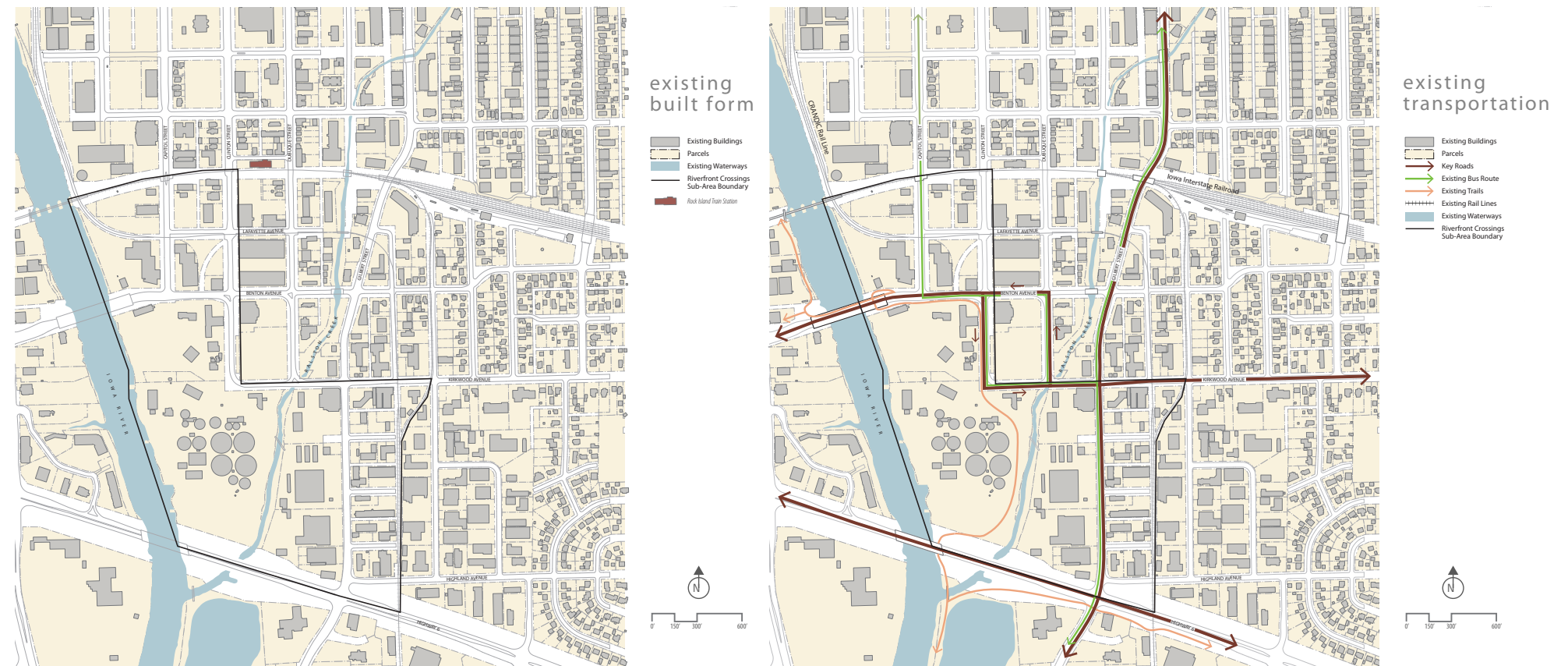
physical features

The study area straddles the floodplain on the east bank of the Iowa River. The auto-oriented area contains low-rise structures and the North Wastewater Treatment Plant. Its proximity to the Iowa River and location along rail lines encouraged industrial and commercial uses, with a limited number of retail and office uses lining Gilbert Street. From a vehicular standpoint, the site is well connected. U.S. Highway 6 and Benton Street/Kirkwood Avenue are primary arterial streets that run east-west through the area. Gilbert Street is the primary north-south arterial within the study area. The Benton Street and the U.S. Highway 6 bridges over the Iowa River provide direct access to the study area from neighborhoods located to the west. To accommodate through-traffic on Benton Street/Kirkwood Avenue, a full block "traffic circle" was developed. This modification, which incorporated one-way streets, significantly altered the traditional network of two-way streets. Over time, this framework has led to real and perceived deficiencies in the area's pedestrian environment. Redevelopment of the study area should balance the regional needs of commuters with the local desire to create a pedestrian-friendly street network conducive to residential and mixed-use development.

The major trail located in the study area is the Iowa River Corridor Trail. This trail is 6 miles in length and provides access to major points in Iowa City. The trail parallels the east bank of the Iowa River, except where it swings to the east around the North Wastewater Treatment Plant. The trail connects to the west side of the Iowa River via the Benton Street bridge. Future trail extensions will connect the Iowa River Corridor Trail with new development within the study area.

Currently, the major bus routes in the study area run north/south along Gilbert Street and connect to Capitol Street via the Kirkwood Avenue/Clinton Street one-way pair. As redevelopment occurs and traffic patterns change, the bus routes within the area will need to be re-examined to ensure full coordination with the district's mobility objectives. Bus stops within the study area currently consist of small signs with few public amenities. Future bus stops should be designed with enhanced signage and route information and provide amenities such as shelters, benches, and bicycle parking.

Two rail lines also bisect the study area - the CRANDIC Railroad which runs north/south through the district and the Iowa Interstate Railroad which runs east/west through the district. Both rail lines

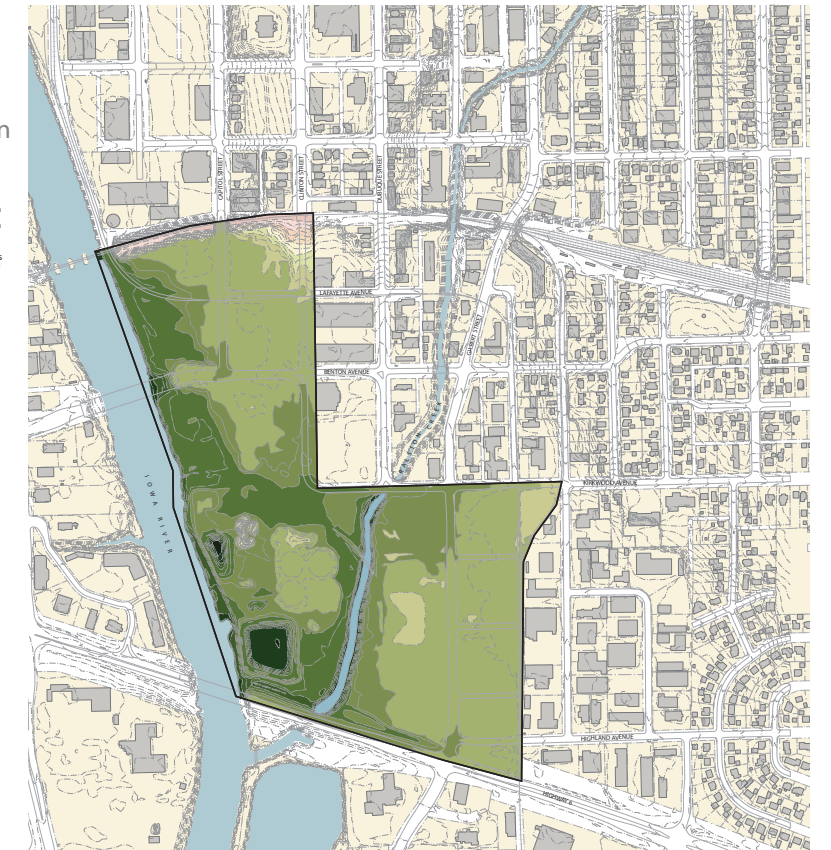
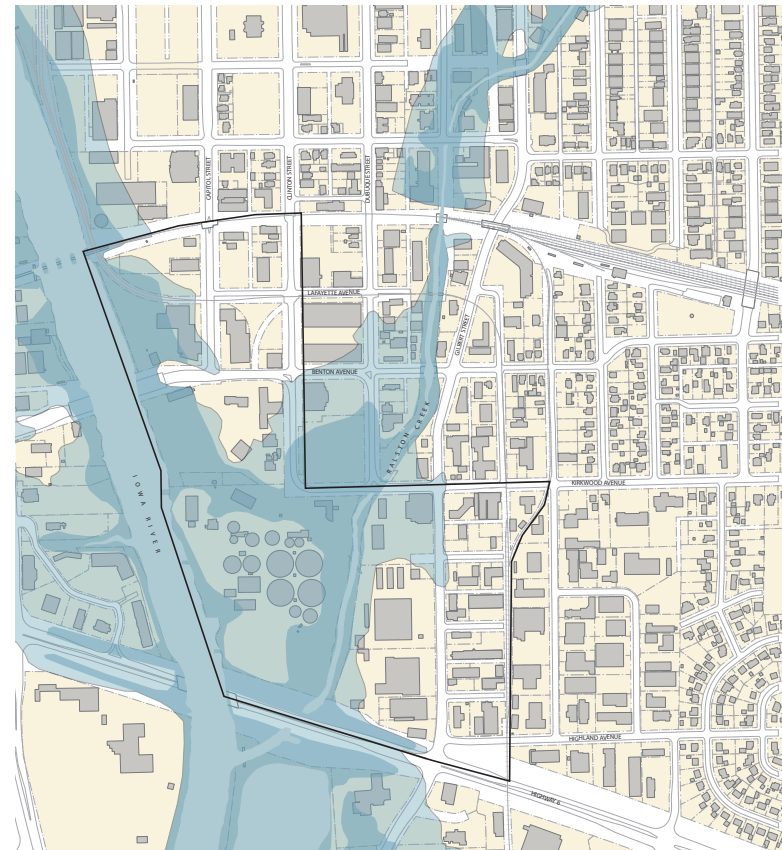


are designated as future transit lines. Amtrak is examining the east/west line to be used as a high-speed rail line connecting Iowa City to Chicago. The potential location for the Iowa City Station is the 1898 Rock Island Station located on Wright Street, just outside the study area on the north, but located in the middle of the Riverfront Crossings District. In addition, the north/south line is being considered for light rail service from Cedar Rapids, North Liberty and Coralville to Downtown Iowa City and the University of Iowa.

natural features

In June of 2008, the Iowa River crested almost 10 feet above flood stage, inundating a large portion of the study area, including the North Wastewater Treatment Plant. Properties north of Highway 6 and west of Dubuque Street were also affected. The flood prompted Iowa City to plan for the relocation of the Treatment Plant and Recycling Center, which would free up land in the floodplain for future use as green space. This green space will be used as an amenity and catalyst for redevelopment of the area, in addition to protecting the area against future flooding.

A large portion of the study area is located within the 100 year and 500 year floodplain. The Plan works to keep private development outside of the 100 year floodplain, making that land available for future green space. The Study Area has relatively little change in topography, except in the northern portion, which gradually rises to the railroad. Subtle topographical changes along the riverfront helped drive design decisions relating to the park and open space system.



Aerial photo of the June 2008 flooding



1. Existing Rock Island Train Station located on Wright Street
2. View of the Iowa River from study area
3. Existing CRANDIC Rail Line and adjacent Substation looking west
4. Existing water treatment facility building terminating Clinton Street
5. View of an existing water treatment tank
6. Recently built Johnson County office building with adjacent parking garage
7. View looking north from the study area – the old Capitol Building and Johnson County Courthouse Building can be seen in the distance
8. Ralston Creek
9. Recently built mixed-use Telluride Building north of the study area
10. Johnson County Courthouse Building located north of the study area
11. Existing City Carton Recycling facility site



sub-area plan

planning workshop
plan

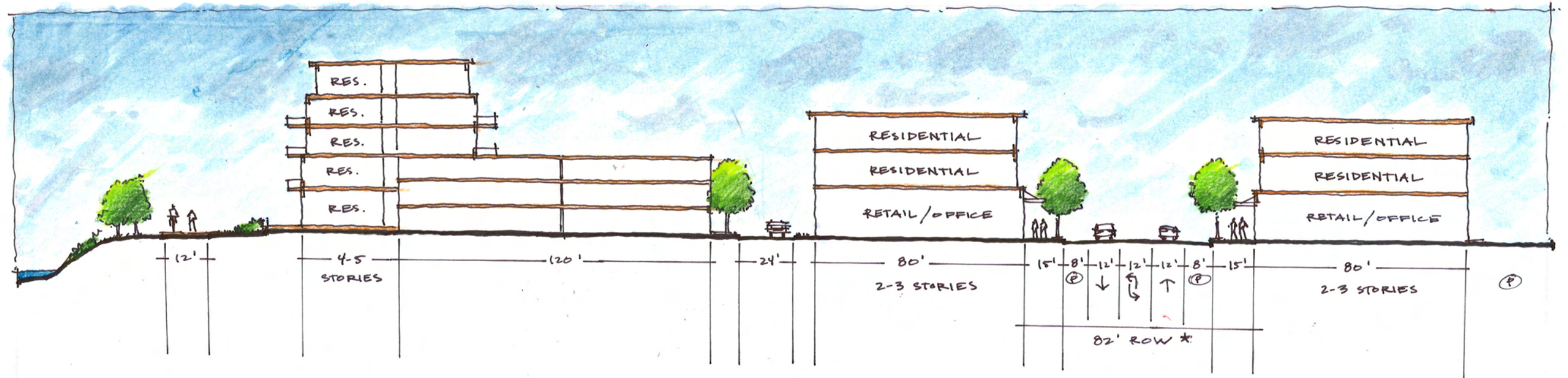
planning workshop

A planning workshop, held from October 4-6, 2010, allowed City Staff and key stakeholders an opportunity to discuss and refine initial design concepts. Over the course of three days, the design team created a framework plan for the development of the sub-area and a concept for the riverfront park. A major outcome of the workshop was the evaluation and agreed upon solution for the Sub-Area's proposed new street network. Discussions regarding the density of development were driven by FAA height restrictions in the southern portion of the study area.

Based on traffic volumes, accessibility and views, it was determined that the Gilbert Street corridor would be redeveloped as a "main street" with ground-floor commercial and on-street parking. Residential buildings to the west of Gilbert Street were designed to overlook the enhanced Ralston Creek corridor and proposed riverfront park. A potential site for a small box retail store, which could provide local goods and services, was identified at the northeast corner of the intersection of Gilbert Street and Highland Avenue. A new Capitol Street/Kirkwood Avenue connector street was identified and creates a new block for higher density residential with limited ground-floor commercial. Placed outside of the FAA height restrictions, these potential tower sites take advantage of the riverfront park and view of the Iowa River corridor. The northwest corner of the Benton Street/Clinton Street intersection was reserved for the potential future Johnson County Ambulance Center.

A concept plan for the riverfront park, which would replace the existing wastewater treatment plant, was created. This plan utilized existing topography and the adjacent street network to organize space and site potential amenities. Development of the park will also displace the Iowa City Fire Department Training Center, which the City hopes to relocate to a more suitable alternate location in the district. A new trail system is designed to run along Ralston Creek and the Iowa River, connecting to existing trails and providing easy access to the site. Active spaces include community gardens, an amphitheatre, and parking areas. The southern portion of the park was designed with a large pond and wetland to be used as a flood mitigation device and amenity for the park.





* TAKE AN ADDITIONAL 22' OF ROW ON WEST SIDE OF GILBERT.

3



One-Way Concept

LOS with existing traffic, extra capacity for future development

- Pros:
- Traffic moves
 - Additional capacity
 - Similar to current
 - Less congestion at Peak hours

- Cons:
- Traffic moves
 - Not user friendly/confusing
 - Difficult access to County / ambulance
 - Not retail friendly



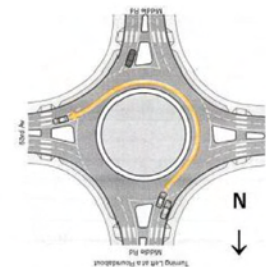
Two-Way Concept

LOS B with existing traffic, extra capacity for future development

NB lefts of 600 vehicles operate acceptably in single land due to low opposing traffic

- Pros:
- Calmer traffic
 - Fits existing grid
 - Retail friendly
 - County/Emergency service access
 - Traffic distributed/flexible

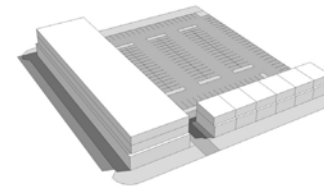
- Cons:
- Less capacity



Round-a-bout

- Pros:
- Traffic continuously moving
 - Landmark opportunity

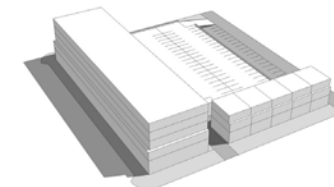
- Cons:
- Size: takes from development potential
 - Not pedestrian/bike friendly
 - Difficult with left turn movements



Option 1

- 25K s.f. retail
- 40 residential units
- 6 tuck-under townhomes
- 144 surface parking spaces

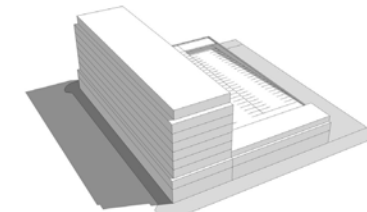
-22.3 d.u./acre



Option 2

- 25K s.f. retail
- 80 residential units
- 5 tuck-under townhomes
- 195 surface/deck parking spaces

-41.1 d.u./acre



Option 3

- 25K s.f. retail
- 25K s.f. office
- 160 residential units
- 390 garage parking spaces

- 77.4 d.u./acre

5

1. Photos of the workshop and interactive process.
2. There refined development concepts showing building layout, location of parking and new street network. The riverfront park is designed with a variety of multi-functional green spaces interconnected by trail and pedestrian pathways.
3. An initial look at a Gilbert Street 'road diet' which employs on-street parking and reduces the street to three lanes with a center turn lane. It was later decided that high travel volumes would not make this section applicable. Buildings would front onto the street with parking in the center of the block and residential units overlooking Ralston Creek.
4. Evaluations of one-way, two-way and round-a-bout concepts for the Benton Street/Kirkwood Avenue connector street.
5. Graphics created during the workshop that examined potential configurations for parking and buildings at a range of densities.

4

plan

The Riverfront Crossings District Sub-Area Plan was driven by six key project goals that were based on city, stakeholder, and community visions for the future of the area.

- **Develop a new mixed-use, pedestrian-oriented district**

- Create a mix of housing, office and retail uses within the district
- Develop a new urban fabric that is pedestrian-friendly

- **Create a resilient riverfront park system**

- Create parks for both the local community and the city that balance active and natural open spaces
- Use flood mitigation measures to protect against future flooding

- **Enhance Ralston Creek to become a community asset**

- Priority should be given to protecting Ralston Creek and restoring it as a natural waterway

- **Develop a multi-modal transportation network**

- Reduce the dependence on the automobile by providing access to a variety of transportation options

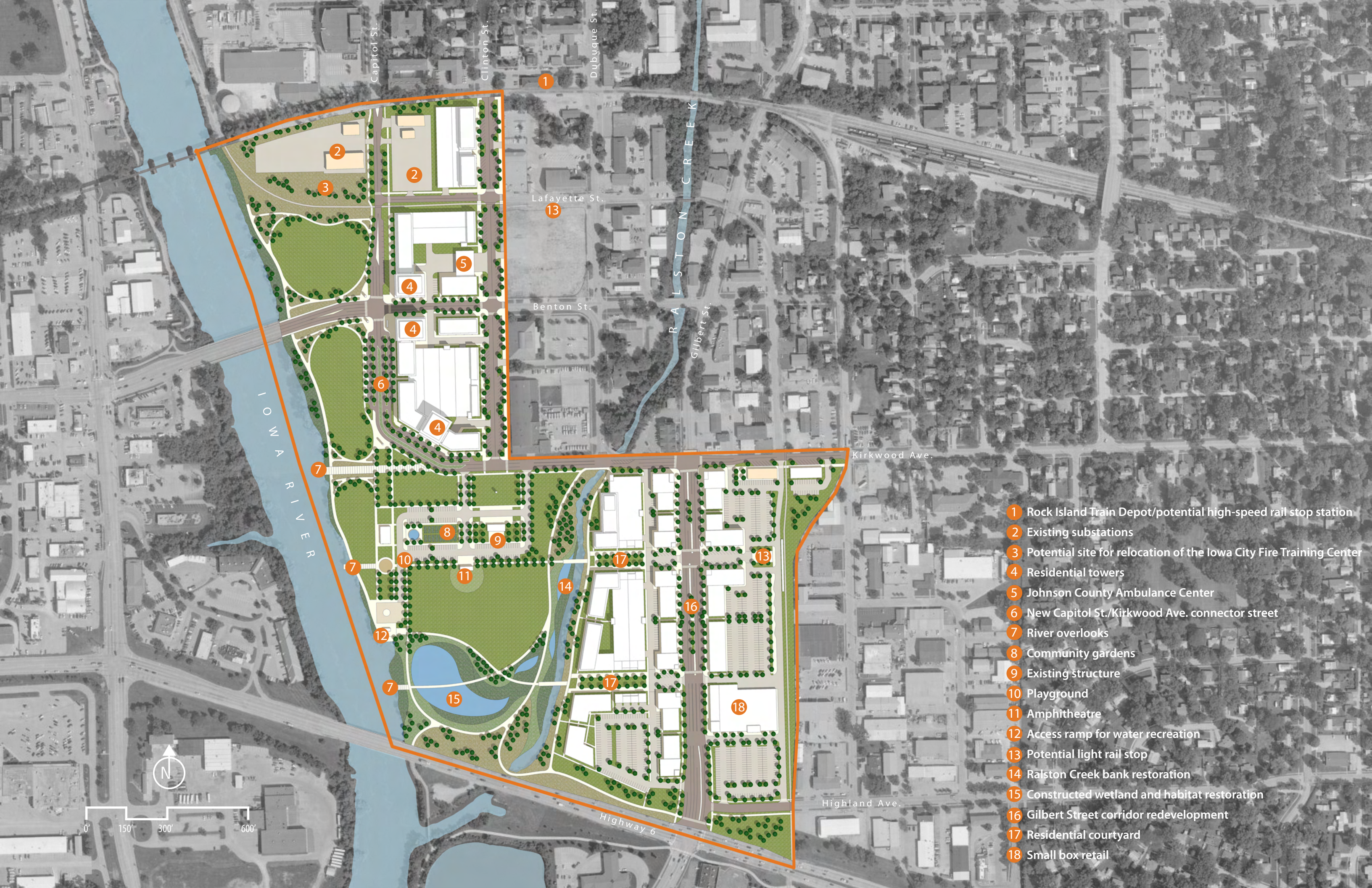
- **Create a network of green streets in the district**

- Activate and improve streetscapes by providing enhanced pedestrian amenities
- Landscaping and street trees will be essential for providing ecological benefit, pedestrian comfort, and aesthetic interest along the sidewalk
- Revert one-way streets back to two-way to create a pedestrian- and driver-friendly street grid network

- **Promote sustainable design practices within the district**

- Encourage a low impact development (LID) approach to design and development
- Create a system of stormwater best management practices (BMPs) to control and cleanse runoff throughout the district





Capitol St.

Clinton St.

Dubuque St.

RALSTON CREEK

IOWA RIVER

Lafayette St.

Benton St.

Gilbert St.

Kirkwood Ave.

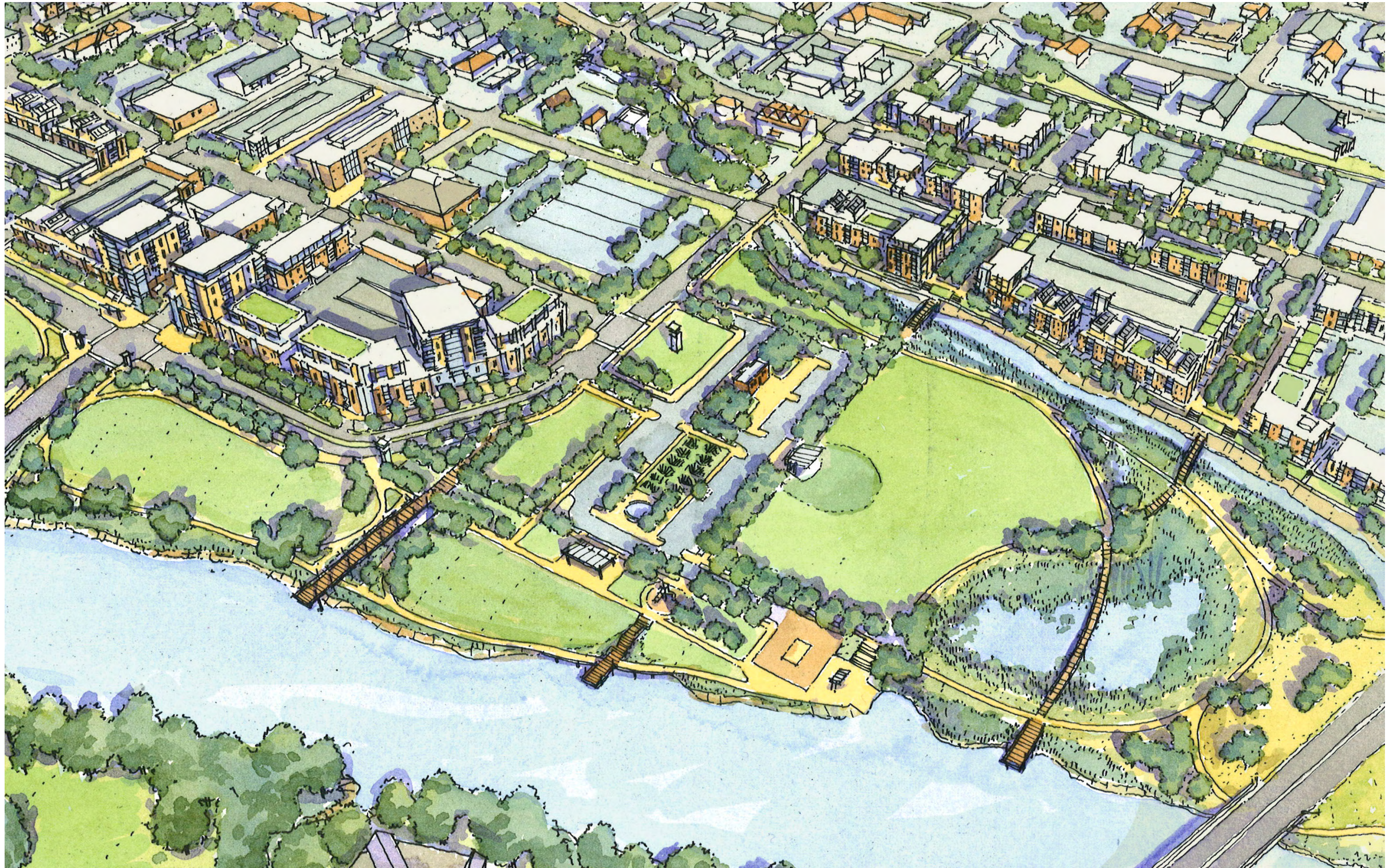
Highland Ave.

Highway 6

- 1 Rock Island Train Depot/potential high-speed rail stop station
- 2 Existing substations
- 3 Potential site for relocation of the Iowa City Fire Training Center
- 4 Residential towers
- 5 Johnson County Ambulance Center
- 6 New Capitol St./Kirkwood Ave. connector street
- 7 River overlooks
- 8 Community gardens
- 9 Existing structure
- 10 Playground
- 11 Amphitheatre
- 12 Access ramp for water recreation
- 13 Potential light rail stop
- 14 Ralston Creek bank restoration
- 15 Constructed wetland and habitat restoration
- 16 Gilbert Street corridor redevelopment
- 17 Residential courtyard
- 18 Small box retail



0' 150' 300' 600'

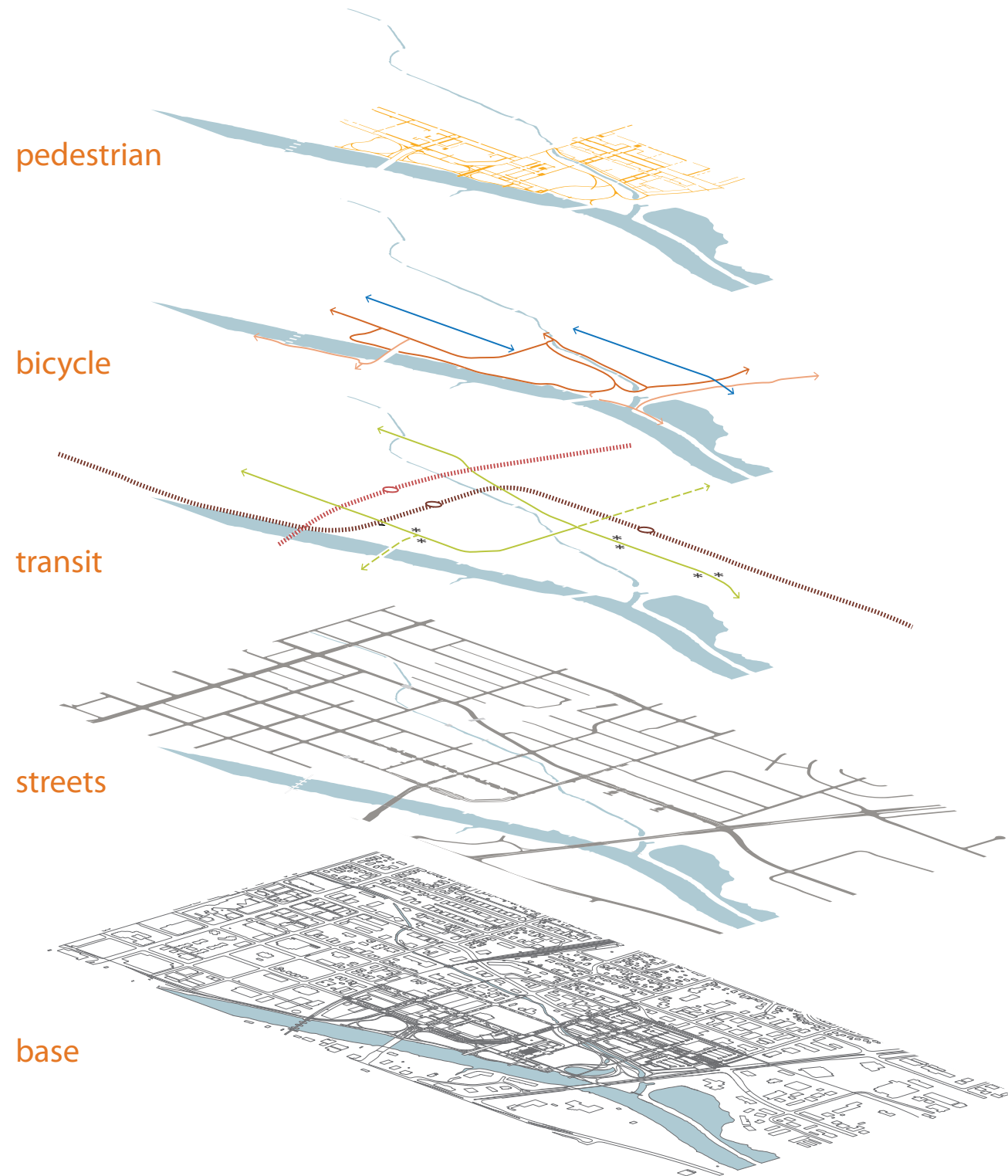


Rendering showing proposed development and riverfront park system along the Iowa River. The new park will provide a variety of spaces for multiple uses throughout the year. The green space will be a catalyst for redevelopment of the area.

framework elements

mobility
green space

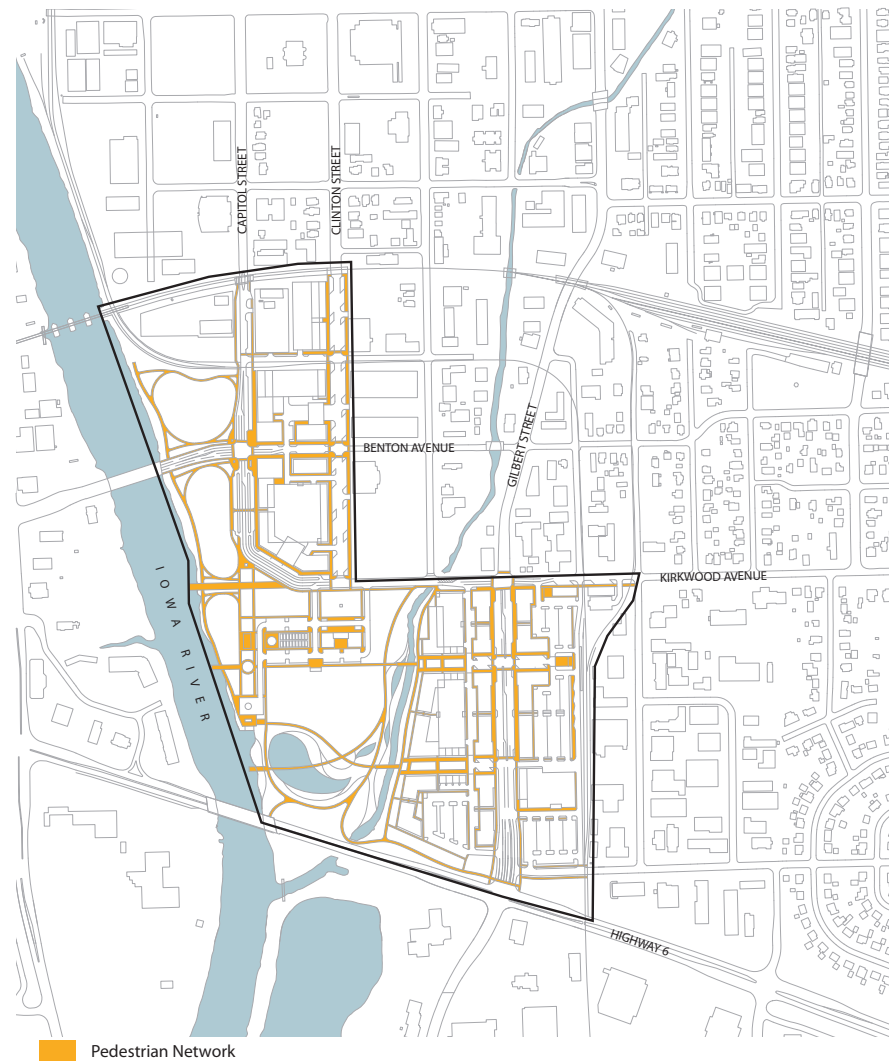
mobility



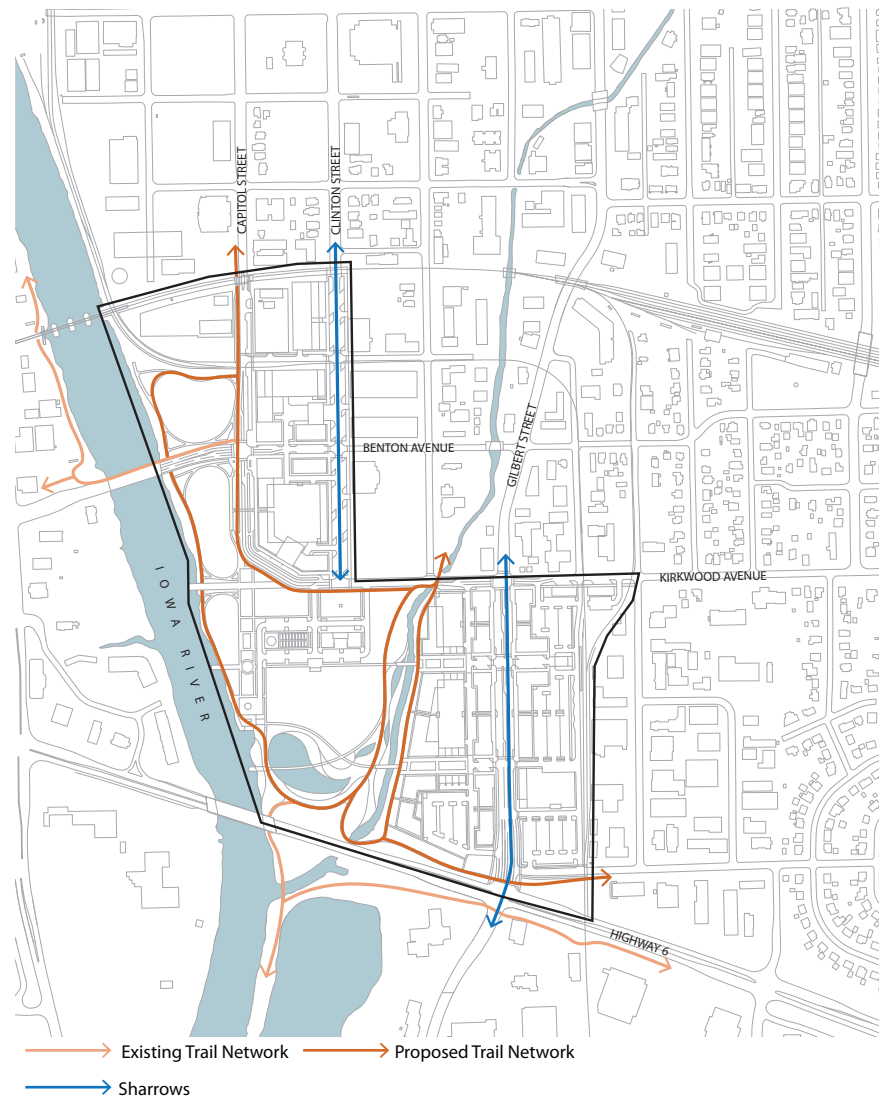
The Riverfront Crossings Sub-Area is designed to encourage sustainable modes of transportation. Providing an interconnected system of pedestrian, bicycle, transit and vehicular movements will give residents and visitors multiple options for travel. Expanding on and improving the existing networks will be important to create the pedestrian-friendly environment envisioned for the District. Investment should focus on the provision of public amenities that are consistent throughout the area to enhance the image and identity of the mobility network within the Riverfront Crossings District.



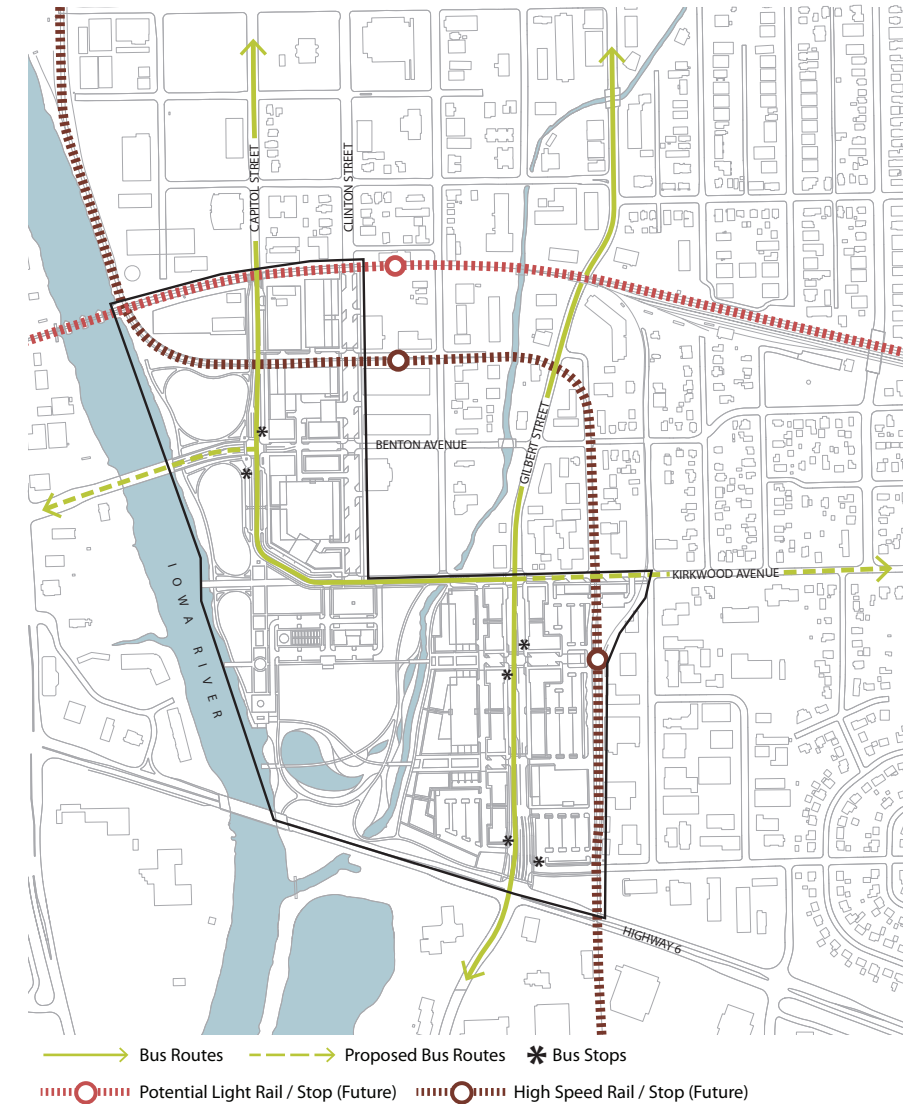
built form



pedestrian Enhancements to the public realm will need to be made to create the walkable, pedestrian-oriented environment that is envisioned for the area. Currently, sidewalk connectivity is limited, which creates an uninviting place for pedestrians. The design for the public realm, including streets and the placement of buildings, will greatly affect the quality of place for Riverfront Crossings. Pedestrian comfort and safety should be placed at a premium during design phases. The circulation pattern should continue the gridded network of streets already in place, while connecting to the larger trail network along the Iowa River. To connect residents and visitors along the Gilbert Street corridor to the riverfront park, east/west connections, with pedestrian bridges across Ralston Creek, should be developed. Consideration should be taken to provide amenities for pedestrians, including street furniture and landscape amenities.



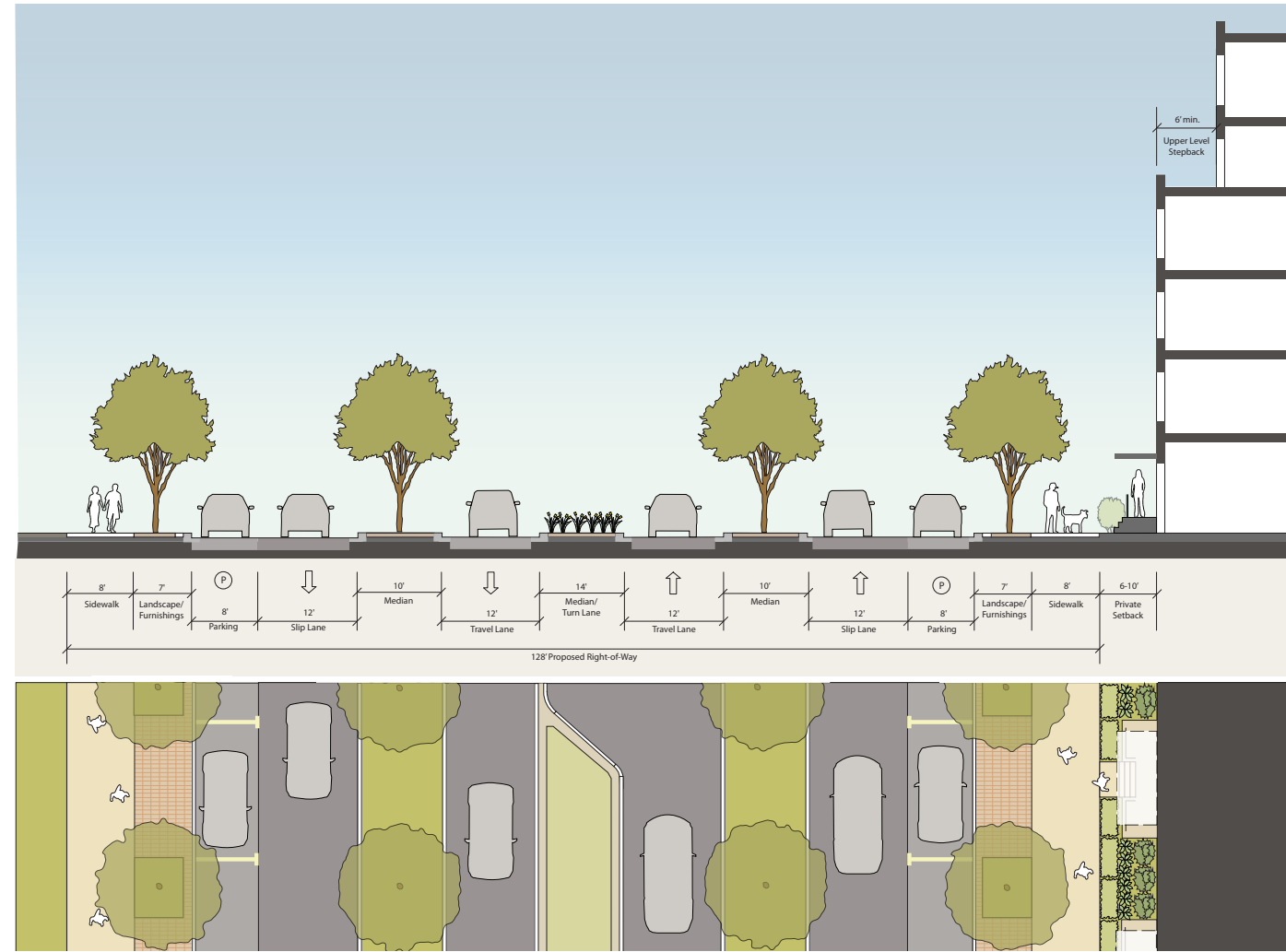
bicycle Bicycle facilities were included in the design of the Sub-Area to help promote a variety of mobility options. Currently, the bicycle network includes on-street facilities designated as 'sharrows' (shared bike and automobile lanes) and the off-street Iowa River Corridor Trail that runs along the Iowa River and passes through the southwestern corner of the study area. Clinton Street and Gilbert Street are designed as sharrows due to the connection to Downtown Iowa City. Off-street facilities should include an expanded trail network that connects the Iowa River Corridor Trail to the north and south and includes connections along Ralston Creek and Capitol Street. Providing both on-street and off-street bicycle facilities will provide the Riverfront Crossings district multiple options for bike riding. Bike parking, lockers, and other amenities should also be provided in the District.



transit The Riverfront Crossings District will be served by future potential high-speed and light rail service. Along with the proposed high-speed rail station at the former Rock Island Station, two light rail stations are proposed to help create a transit-oriented neighborhood. The southern stop, along 1st Street, will be the access point for the Gilbert Street corridor and the riverfront park. The north stop will pair with the high-speed rail station to create an intermodal center at the north end of the Sub-Area.

Bus service will be expanded within the District to provide more local access for residents and visitors of the neighborhood and park. The existing bus line will be realigned to continue through the new Capitol Street/Kirkwood Avenue connector street. Bus stops are proposed at key intersections, most notably at Gilbert Street and 1st Street. This stop will help to integrate bus and light-rail riders. Transit stops should be taken into account when designing the roadway network within the Sub-Area. Providing public amenities at the stops will improve ridership and enhance the image of the Riverfront Crossings District.

mobility



Capitol/Kirkwood Connector (A-A')

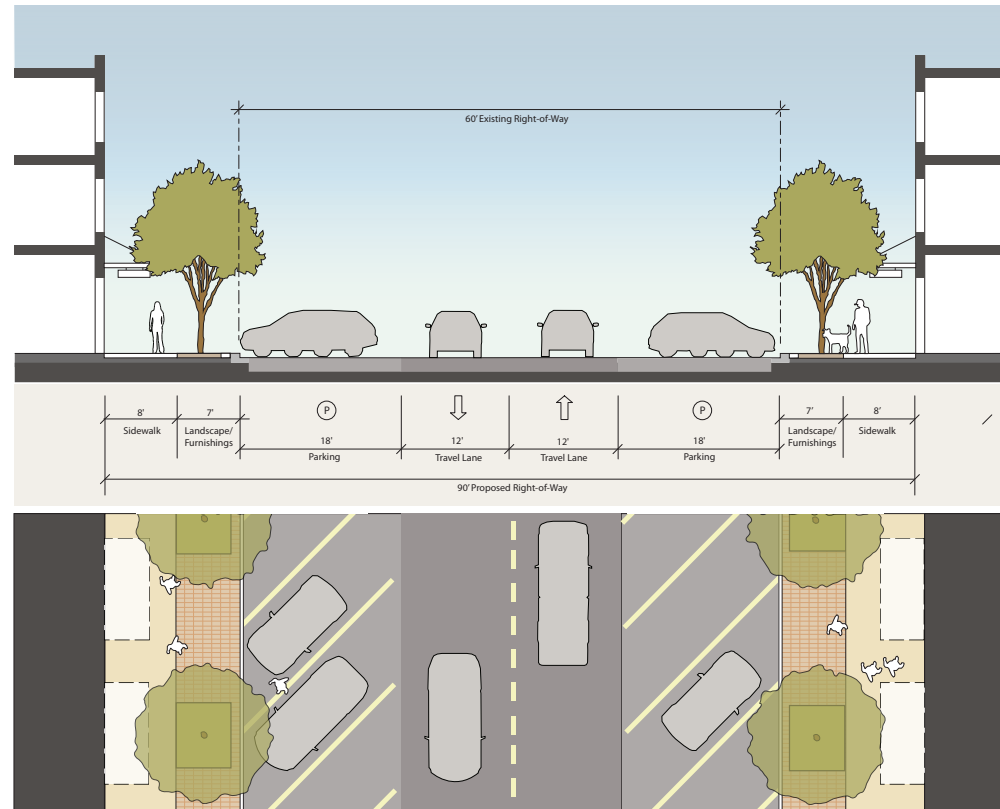
streets

The current one-way configuration of the Benton Street/Kirkwood Avenue connector will be returned to a two-way street network. To ensure that the arterial nature of the current configuration is continued, a new connector street from Capitol Street to Kirkwood Avenue will be developed. This connector street will produce a new development block overlooking the proposed riverfront park.

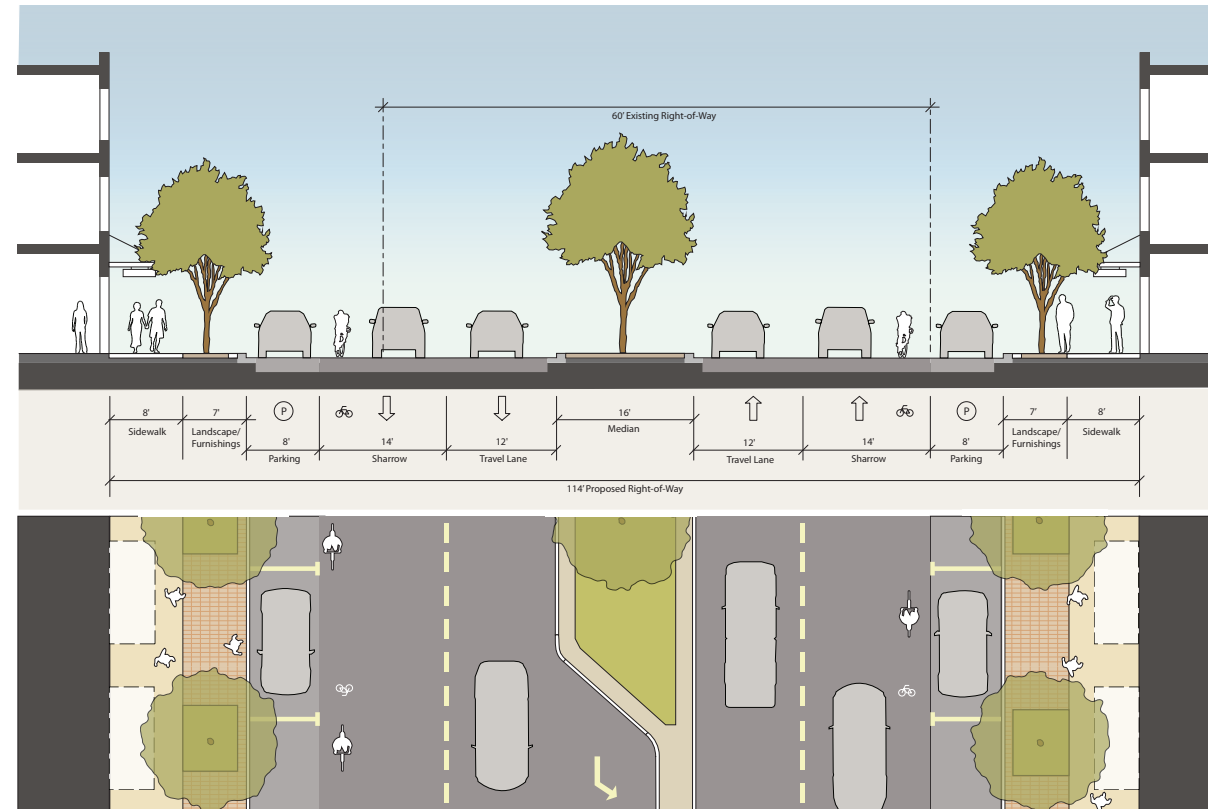
Taking into account existing and future development and traffic volume, Gilbert Street will need to be redeveloped as a 5-lane roadway with a center turn-lane and landscaped median. This will require an increase from the current 66' right-of-way (ROW) to a 114' ROW. On-street parking will be provided on the northern portion of the Gilbert Street corridor to help encourage ground-floor commercial uses. On-street parking will also help to create a buffer between traffic flow and pedestrians walking on the sidewalk, providing enhanced safety. Commercial uses are designated on the side streets off of Gilbert Street. These side streets will help provide additional on-street parking to help enliven the sidewalk and allow customers easy access from the street. Per the traffic analysis, the Gilbert Street/U.S. Highway 6 intersection will need to be increased to seven lanes to allow for southbound dual left-turn lanes. Outside lanes will be designated as shared bicycle and motorist lanes, or 'sharrows.'

Compared to the auto-only character of the current streets, with few, if any pedestrian and bicycle amenities, the proposed street network in the Sub-Area will create urban street sections that provide safe and convenient movement for pedestrians, bicycles, transit, and automobiles. Amenities such as outdoor seating, street trees, lighting, and bike racks will help build vibrant street life.

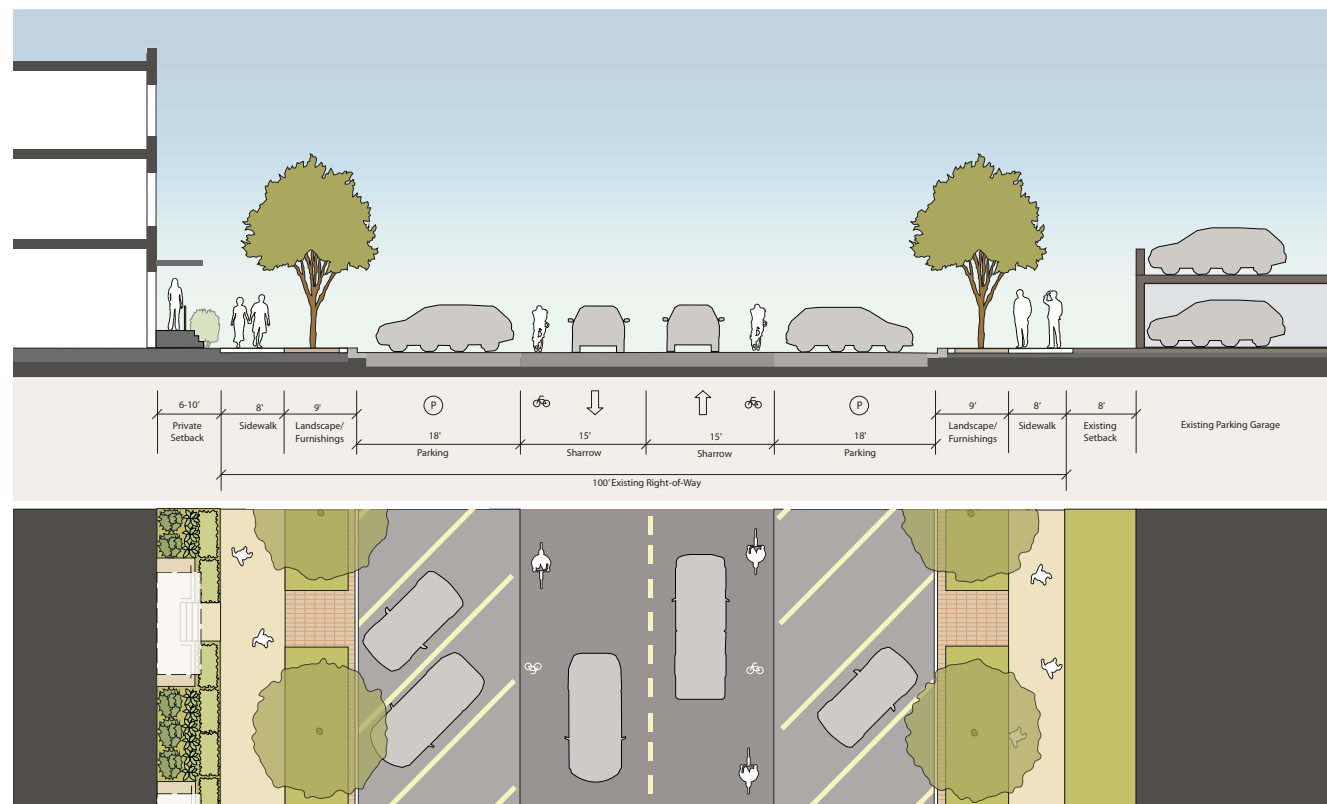
The illustrative street sections conceptually identify proposed rights-of-way and recommended functions. Additional traffic study will be needed to finalize roadway design recommendations, as achieving the intended street character will be important to balance the transportation goals for pedestrians, bicycles, transit, and automobiles.



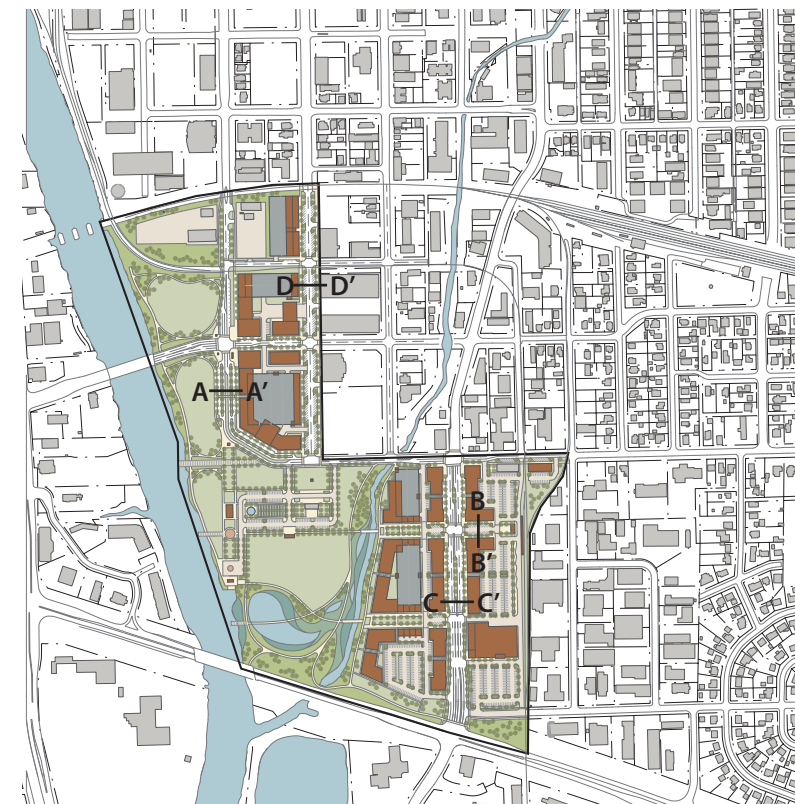
1st Street section (B-B')



Gilbert Street section (C-C')

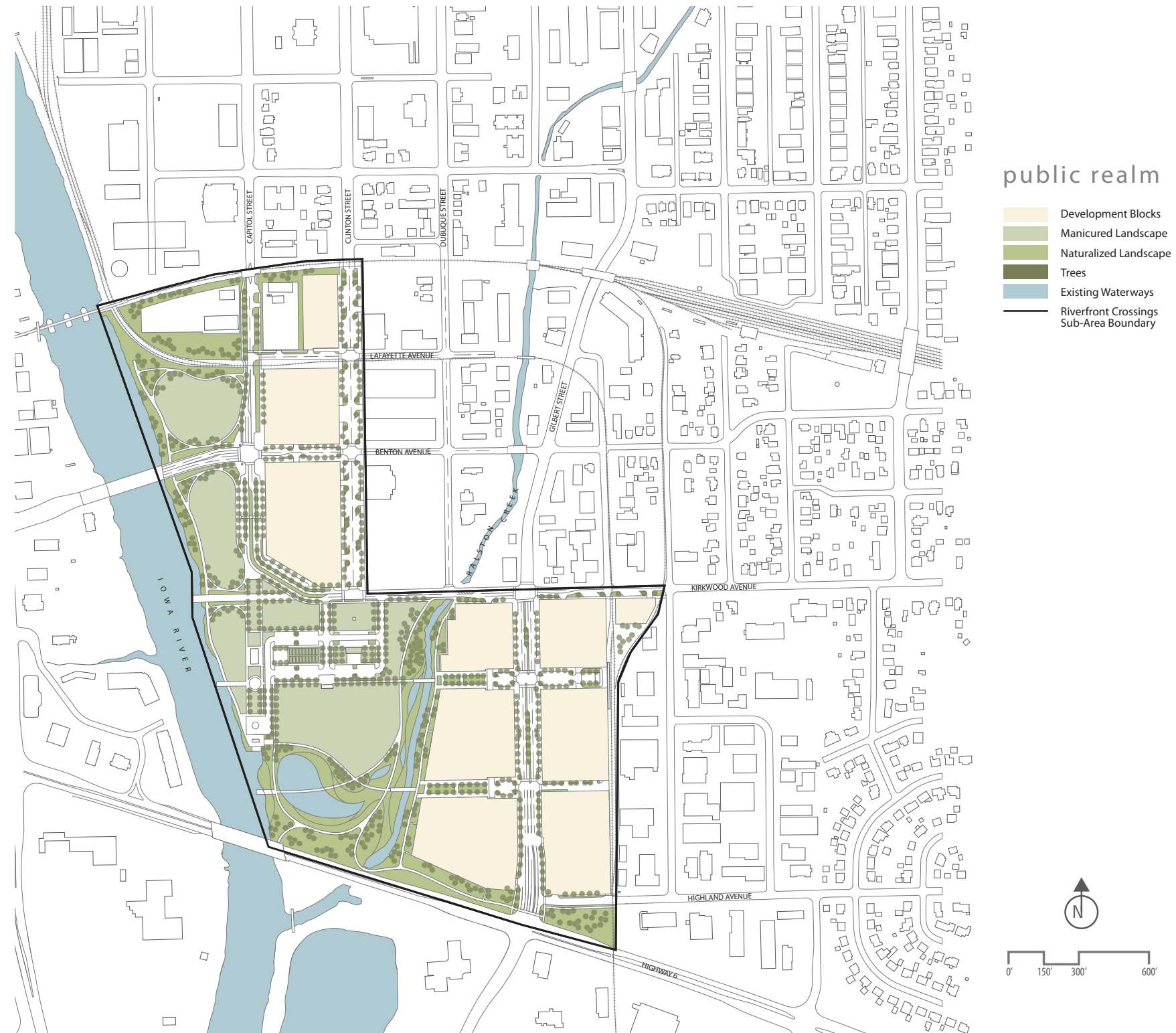


Clinton Street section (D-D')



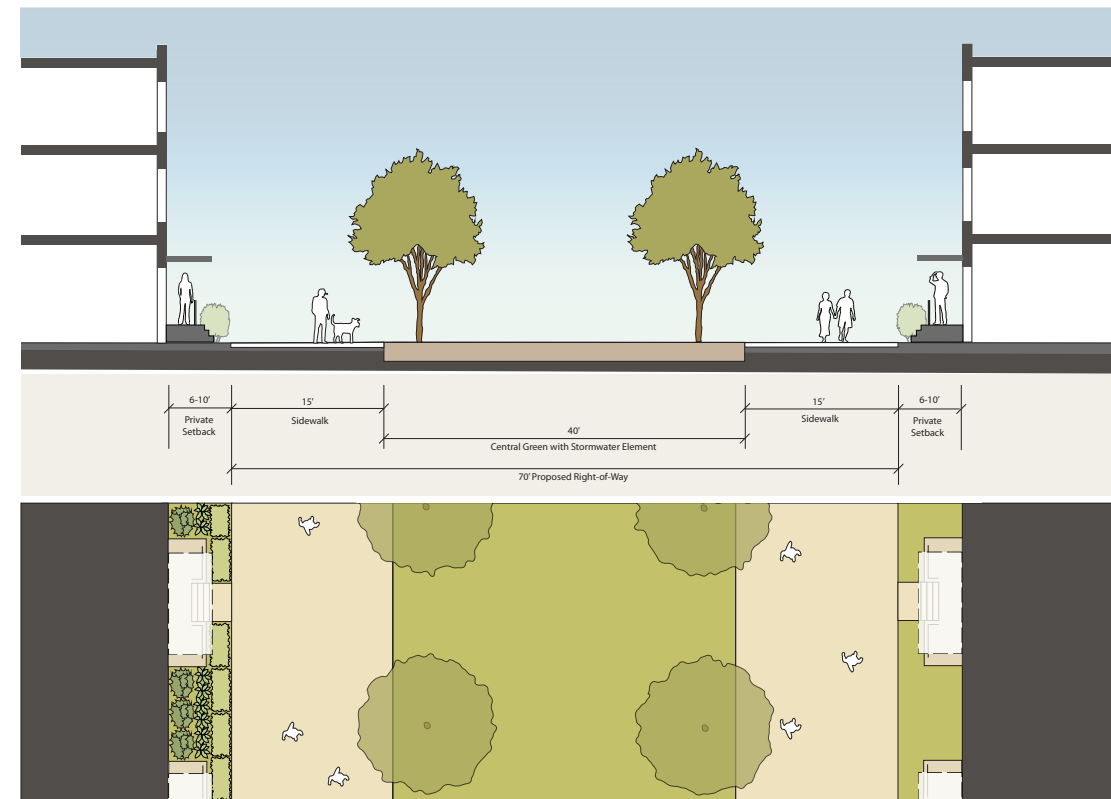
green space

The public parks and open space plan consists of different types of green space that will respond to both community and environmental needs. The riverfront park will contain both passive and active green space. The plan illustrates a spatial layout that provides opportunities for a variety of park amenities, such as public plazas, outdoor gathering spaces, trails, community gardens, river overlooks, access ramps to the Iowa River, and areas used for stormwater management. Passive recreation areas with sidewalks, trails, informal green space, and natural areas will be located in flood-prone areas along the Iowa River and Ralston Creek. The large green space at the center of the park is an appropriate location for more active uses, such as a playground, amphitheater, and community gardens. A parking area for visitors is located in this central, higher activity area. The plan illustrates how the east-west connections to the park from the Gilbert Street corridor extend all the way to the river providing easy access for boating and to overlooks for bird watching, fishing and views up and down the Iowa River. Smaller residential courtyards will be located along these east/west connections and provide green “fingers” into the Gilbert Street corridor. .

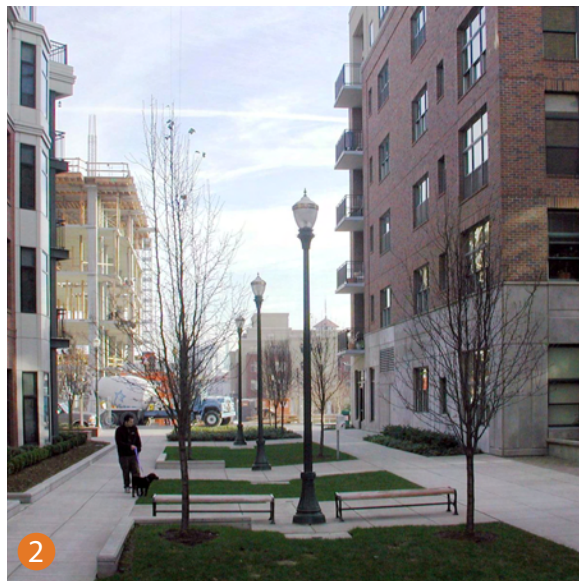




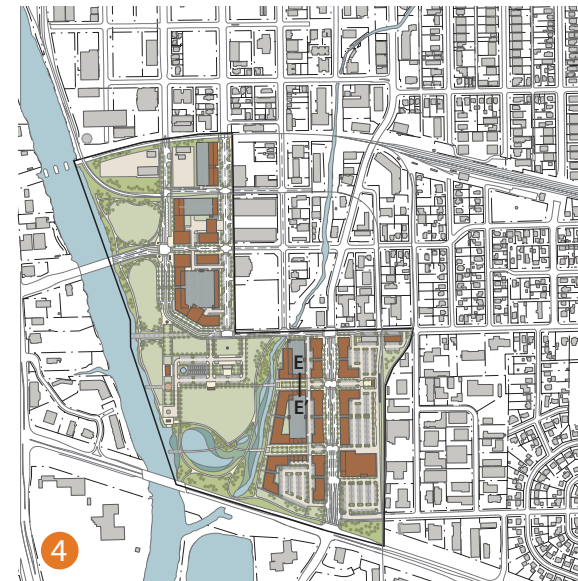
1. Greenspace along the river provides places for recreation and relaxation in Boston, MA
2. A riverfront trail located along the Missouri River in Omaha, NE
3. A large green space in Council Bluffs, IA is used as an outdoor amphitheatre
4. Community gardens in Omaha, NE provide places for interaction among residents and a place for urban agriculture
5. Overlook pier in Portland, OR allows visitors to take in expansive views of the river corridor
6. Residential units are designed to overlook the new riverfront park and trail system.



1st Street Residential Courtyard (E-E')



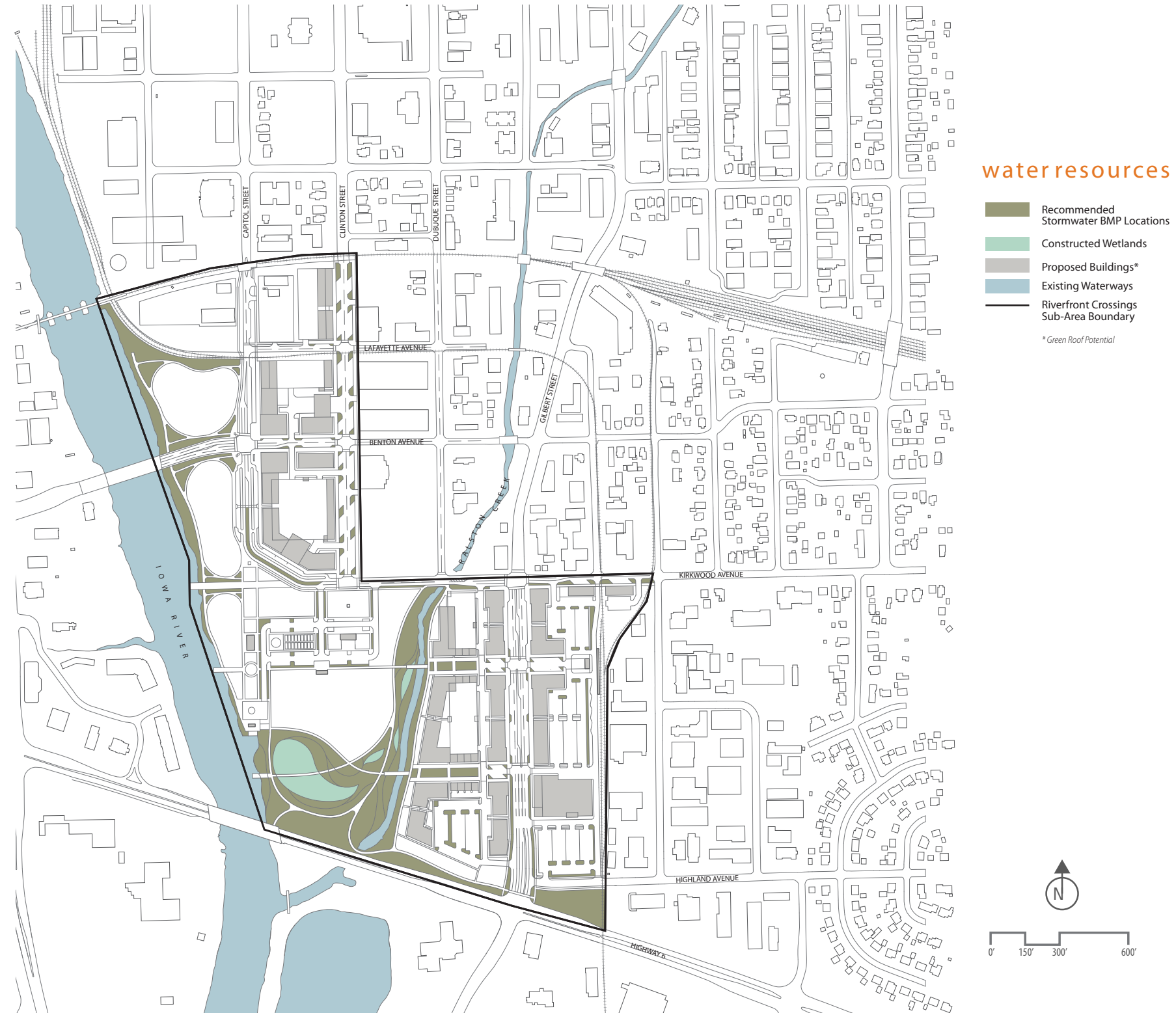
1. Residential units along 1st Street are designed to front onto small courtyards offering recreational and stormwater functions. The large sidewalks provide access and views into the riverfront park across Ralston Creek.
2. Residential building fronting onto greenspace in Portland, OR
3. A pedestrian-only courtyard in Portland, OR
4. Locator diagram



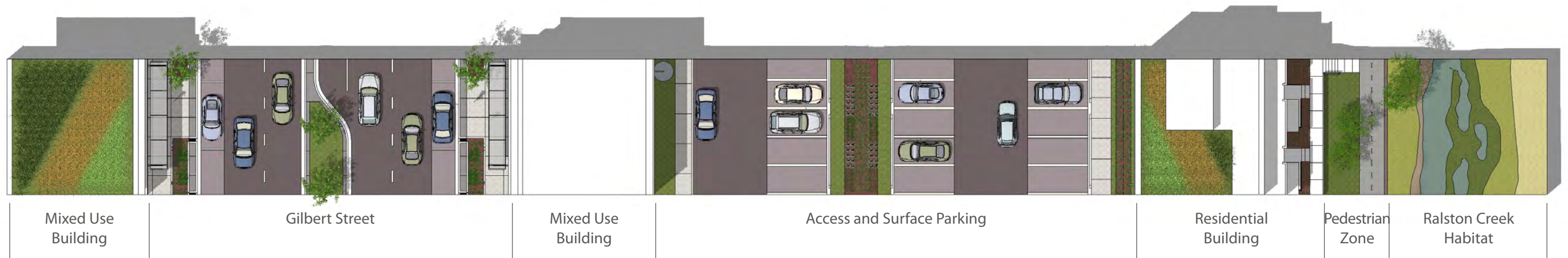
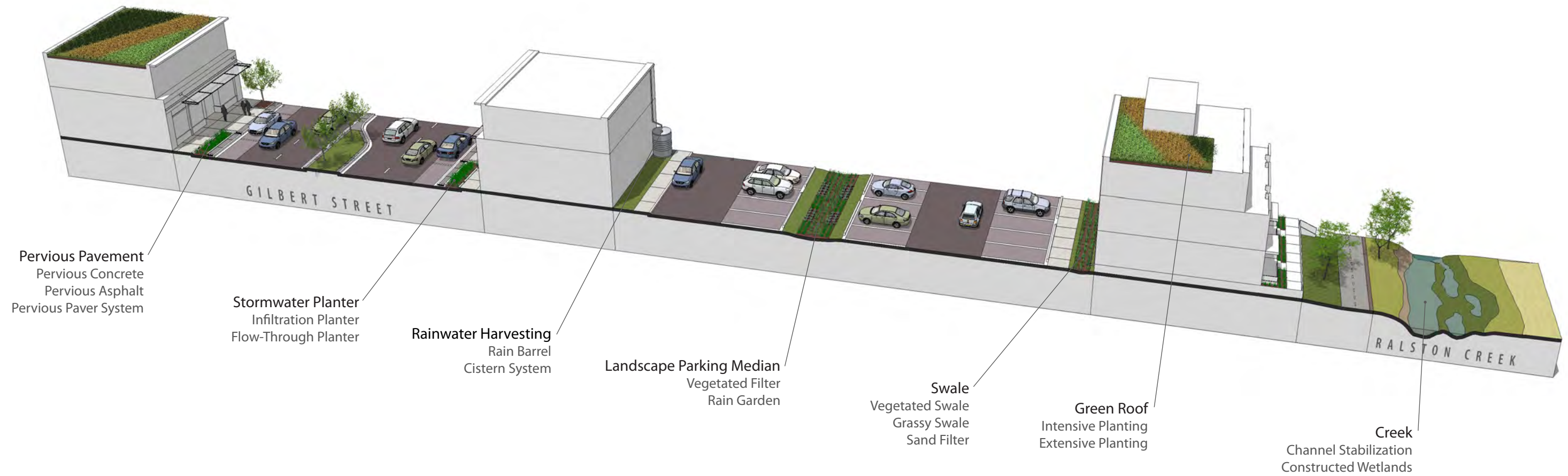
stormwater bmps

stormwater bmps

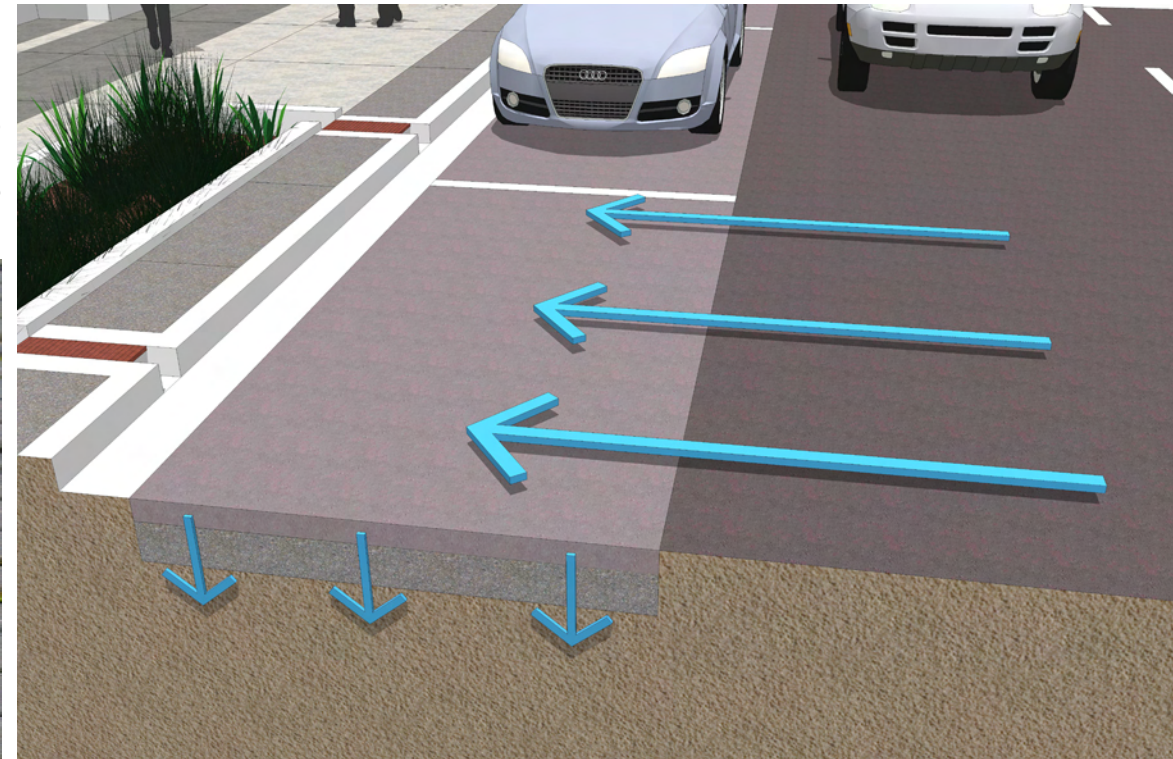
The Riverfront Crossings District should be designed to minimize the impact of stormwater runoff on the environment. A key goal of the Sub-Area Plan is to encourage the development of stormwater facilities throughout the area. The riverfront park has the potential to be designed to address water quality and quantity issues at a regional scale, as well as flood control during larger storm events. Ralston Creek has the opportunity to be designed to both stabilize the creek bank and create a restored riparian corridor alongside the creek. This area would include pockets of wetlands and native vegetation that would provide wildlife habitat and ecological benefit. A larger constructed wetland is designated for the southern portion of the riverfront park. This wetland would be designed to retain, infiltrate and treat stormwater runoff. Throughout the Sub-Area there are opportunities to spread, slow down, and/or treat stormwater runoff before it enters Ralston Creek or the Iowa River. These facilities should be designed to work together toward an integrated stormwater management approach. Public outreach and education should be part of this approach. While the conceptual plan identifies potential areas where runoff mitigation is possible, further study will be necessary to provide technical expertise and to identify the appropriate locations for stormwater management facilities. On-going inspection and maintenance appropriate to each facility will be important to assure proper long-term functioning.



stormwater transect



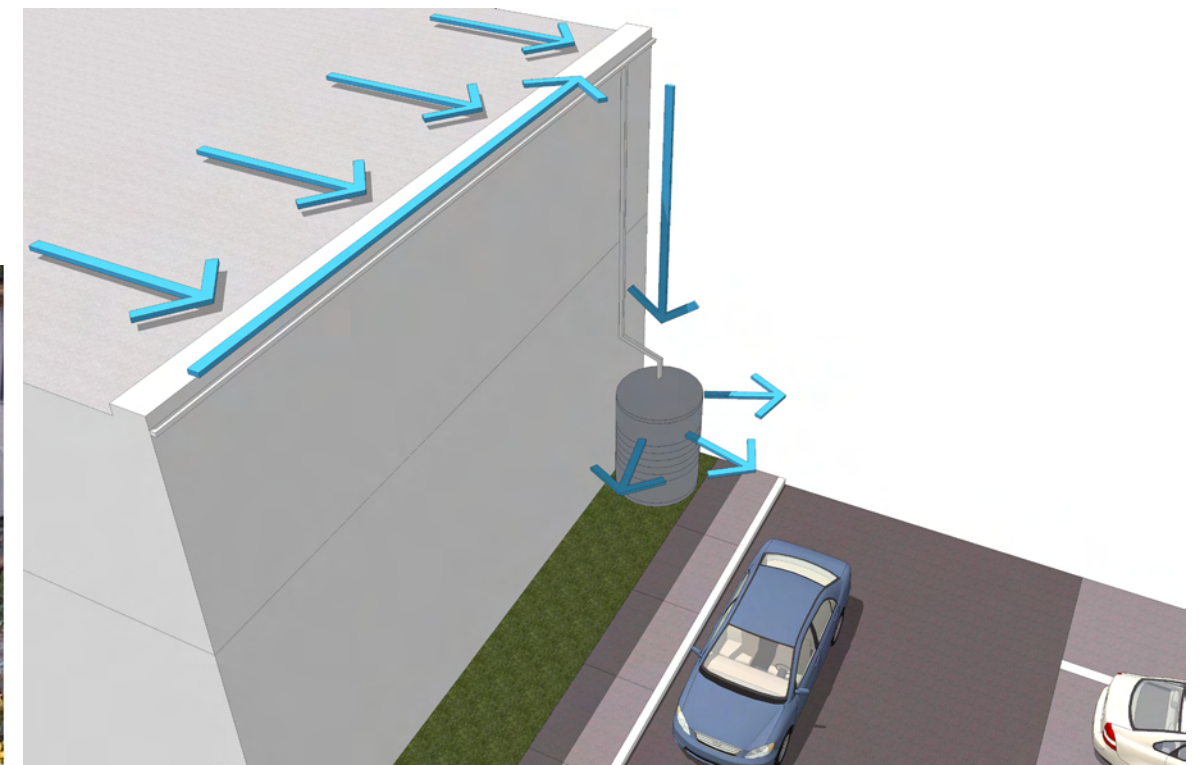
pervious pavement Combined with other stormwater BMPs, pervious pavement helps to slow down and infiltrate polluted water before leaving a site. Pervious pavement can be placed in parking areas but should be avoided in high traffic areas. There are a variety of pervious pavement types including modular porous pavement systems, pervious concrete, porous asphalt, and reinforced grass pavers. All of these systems allow water to percolate through the pavement into a sub-layer of aggregate before infiltrating into the soil. Pervious pavements also help to filter sediment from runoff and therefore should be placed at the beginning of a BMP treatment network (here with a vegetated infiltration basin).



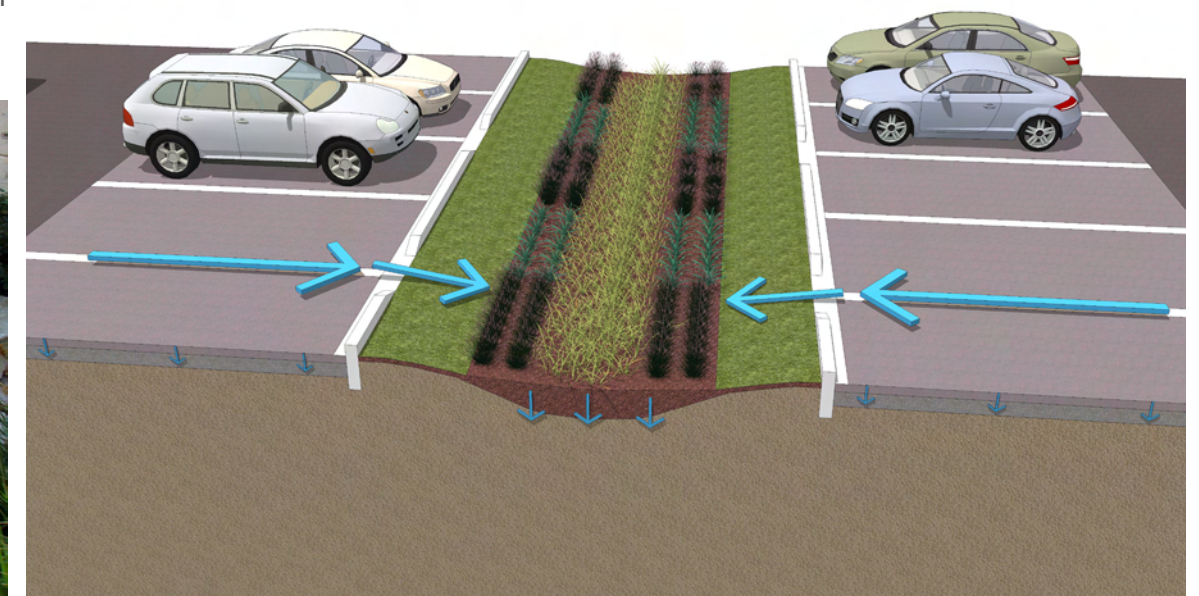
stormwater planter Landscape planters placed along the street provide opportunity for retention, infiltration, and/or treatment of water during storm events. Instead of transporting polluted water downstream, these facilities are designed with wide variety of vegetation to slow down and treat stormwater. Curb-cuts will divert storm flows into the planters. Street site distances at intersections should be maintained by selecting low ground cover type plantings. This type of BMP helps to provide an aesthetic and ecological function to the street.



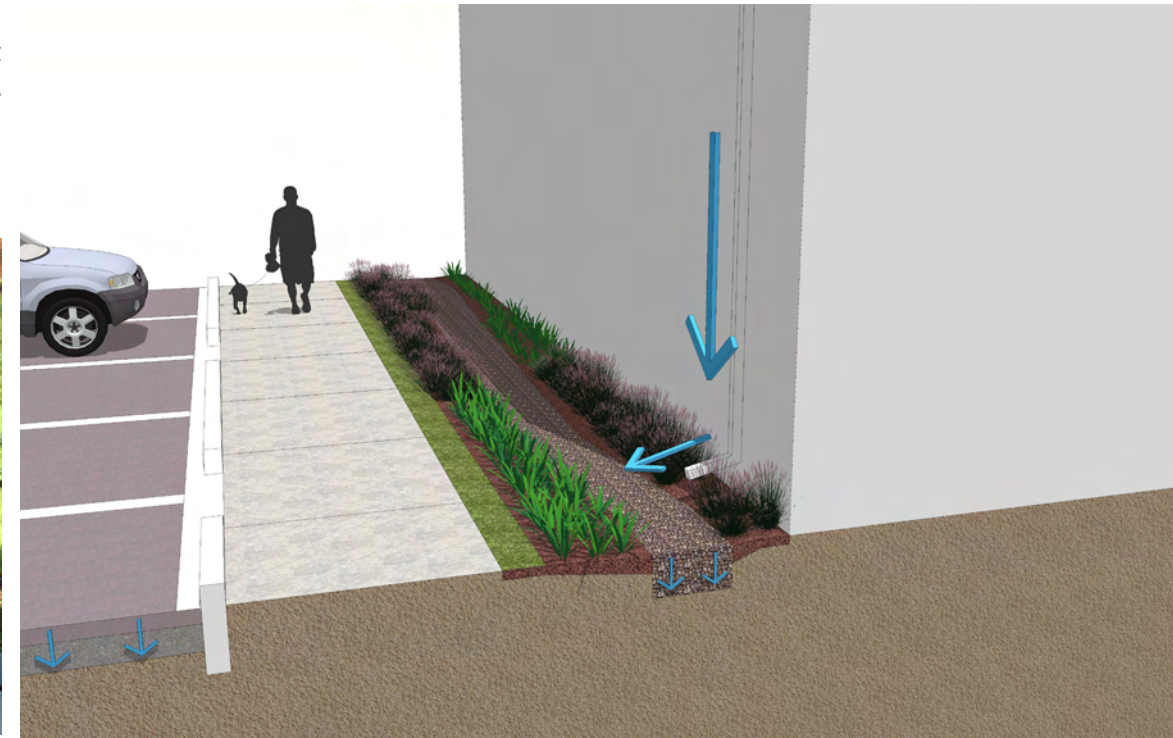
rainwater harvesting This BMP involves the collection, storage, and reuse of stormwater runoff from building roofs. Rainwater harvesting reduces runoff volume and peak flows and can provide full water cycle benefit to communities. Depending on rooftop material and harvesting system used, collected rainwater may be used for landscape irrigation, drinking water, and greywater uses, such as flushing toilets. Some of these may require treatment before use. Rainwater harvesting systems may be as inexpensive and simple as a rain barrel connected to a downspout to more complex systems such as an underground catchment tank.



landscape parking median Rain gardens are designed to filter, infiltrate, and treat stormwater runoff. Stormwater is treated as it passes through the plant and soil community. Their relatively small size allows them to be placed in many different locations, including parking medians and near buildings. Typically planted depressions, rain gardens should be designed in areas with well-drained soils to allow for infiltration. If well-drained soils are not available, amending the soil with a more permeable mix is advised. A plant palette that can tolerate wet and dry cycles is necessary.



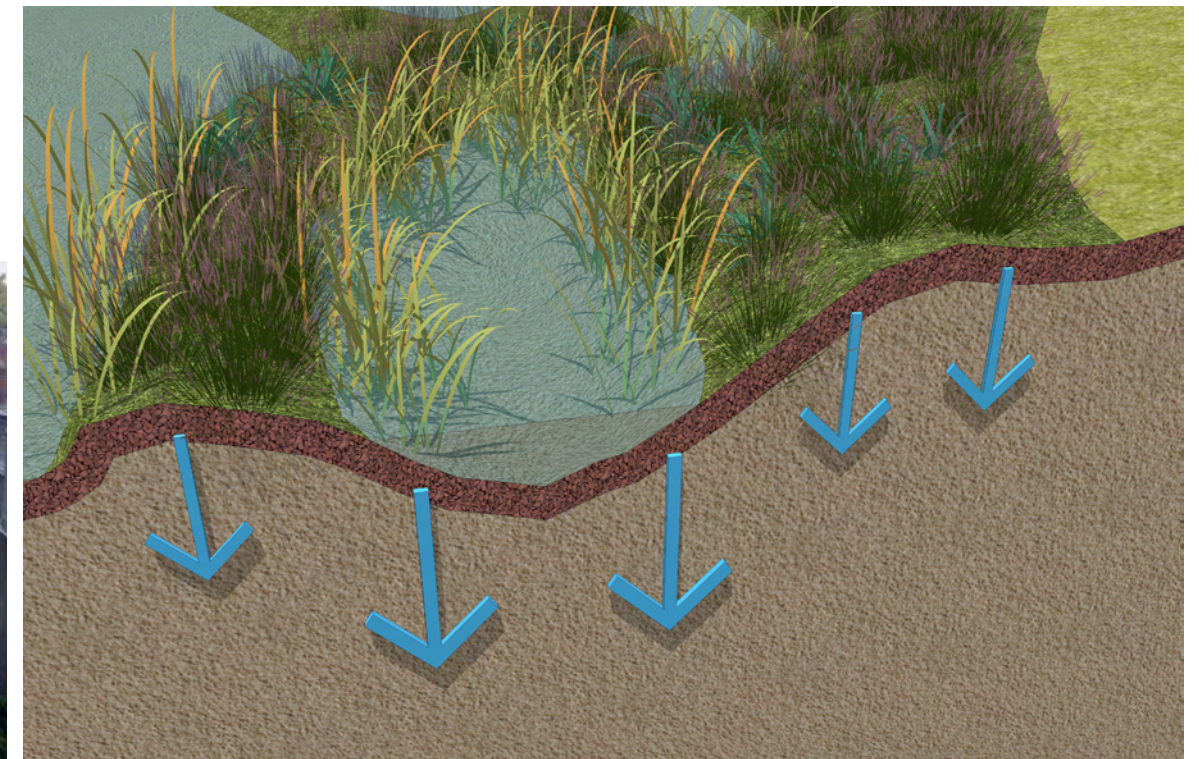
swale Swales are designed to help collect, filter, and/or infiltrate runoff and convey it to an adjacent stormwater management facility. Swales can be planted with vegetation or designed in more poorly-drained soils with an aggregate trench to allow infiltration. If planted, native vegetation should be used to minimize maintenance and provide ecological benefit. Swales should be designed between buildings, parking areas and alongside roadways to slow down peak flows and to move water to an acceptable location.



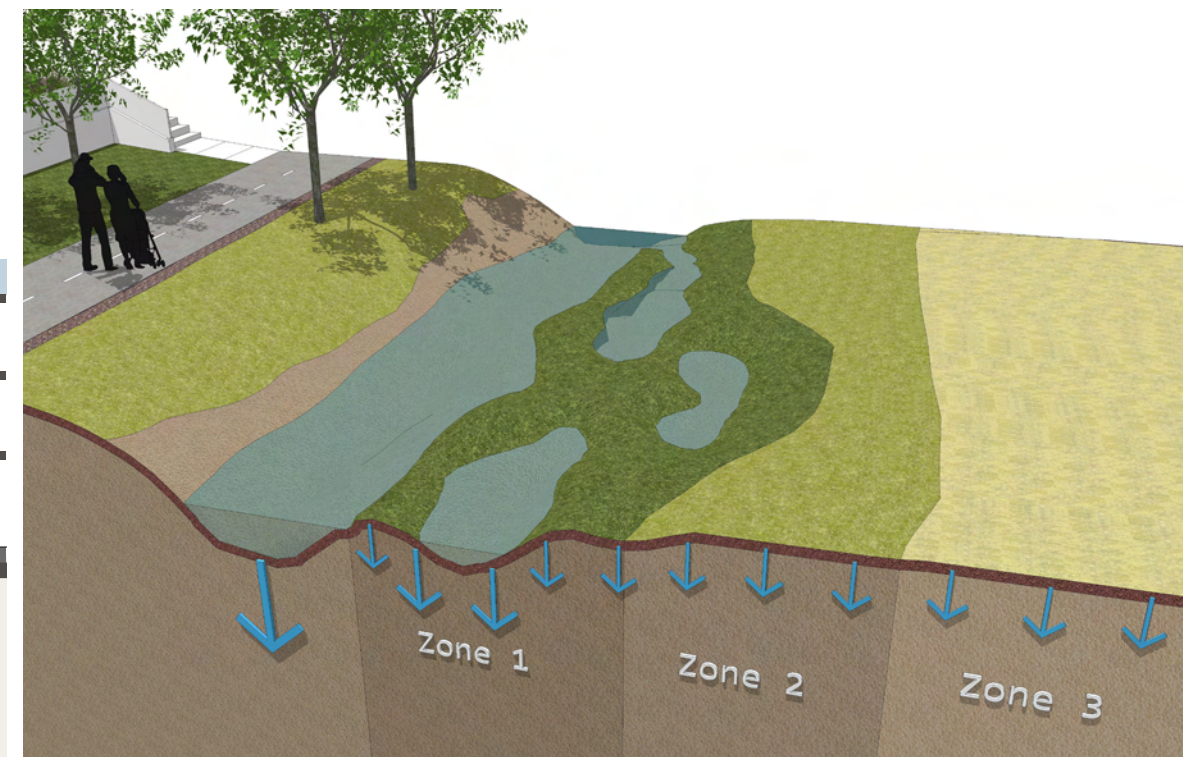
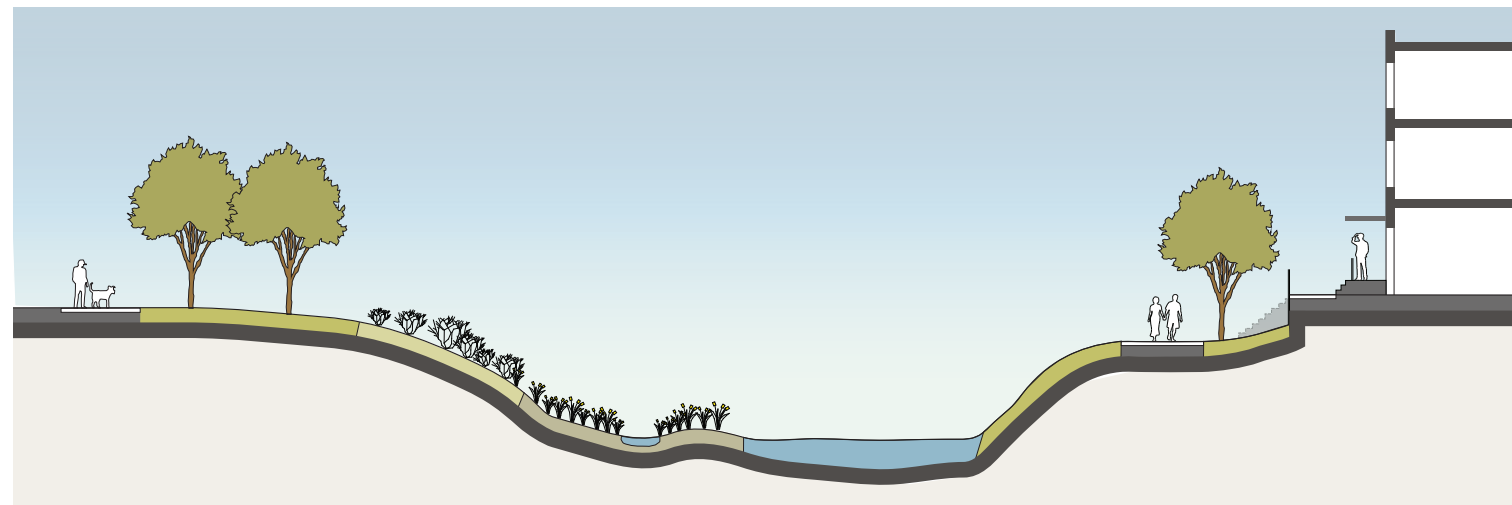
greenroof In urban areas, building roofs account for a large portion of impervious surface. These roofs can be planted with vegetation to help treat and retain stormwater. Green roofs require structural improvements to support soils, vegetation, and loads associated with rainfall and snowfall. Benefits include providing habitat for plants, animals, and insects, reducing the heat island effect, and providing a development tool to create green space in otherwise under-utilized space. Vegetation should ideally be native species that are drought tolerant.



constructed wetlands Wetlands provide a full range of ecological services for polluted runoff, including retention, infiltration, and treatment as well as educational and aesthetic benefits for surrounding communities. Constructed wetlands are man-made but are designed to replicate the natural system. They enhance water quality and provide flood storage. Depending on the size of catchment, constructed wetlands are typically large in scale to provide enough area for water storage, vegetative cover, and wildlife habitat. Vegetation should consist of a variety of native species well-suited for wet soil conditions.



creek Ralston Creek is an important natural drainageway in Iowa City. Years of urbanization and stormwater runoff have degraded the creek and significantly eroded its banks. An important aspect of the new riverfront park should be the implementation of bank stabilization and restoration of Ralston Creek. Rather than structural solutions for the creek, "soft" methods should be used, including channel shaping and restored riparian corridor vegetation. This vegetative buffer will help to filter and treat runoff prior to entering the creek, enhancing the water quality and function of the stream, while also providing wildlife habitat. This will help Ralston Creek become a multi-functional community asset for Iowa City.



1. A large constructed wetland is proposed on the southern end of the new riverfront park. A boardwalk provides close encounters with the diverse vegetation and habitat. This wetland will provide flood storage and habitat restoration for the Riverfront Crossings District. Residential towers are seen in the background overlooking the park and river.
2. A pedestrian bridge across the headwaters of the Mississippi River in Itaska State Park, MN provides access and views of creek habitat
3. This boardwalk in Woodinville, WA is sensitive to the adjacent wetland habitat
4. Construction photo of soft bank stabilization methods at Indian Run Creek near Concord, NC



design guidelines

land use

heights

frontages and setbacks

parking and access

special requirements

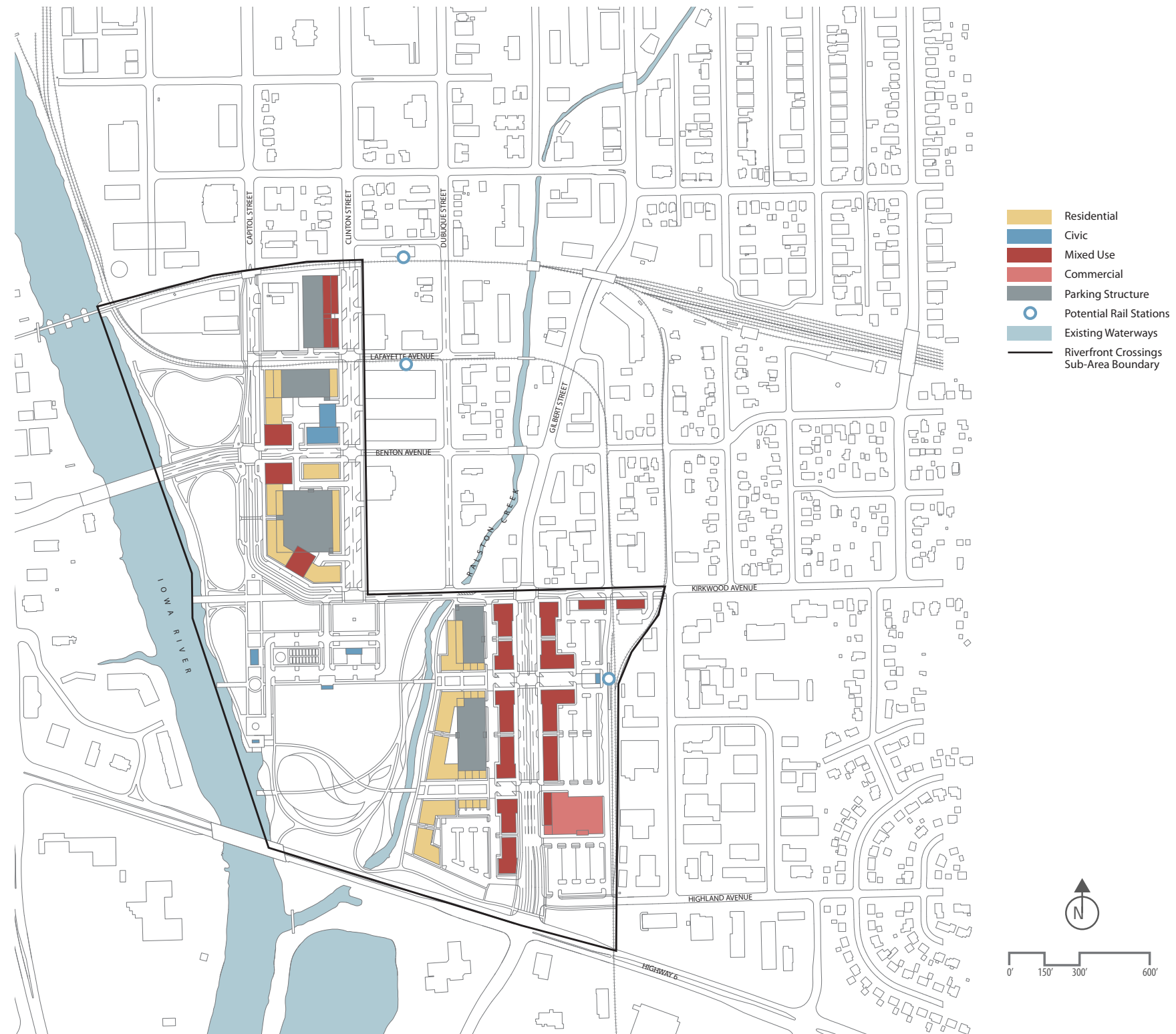
land use

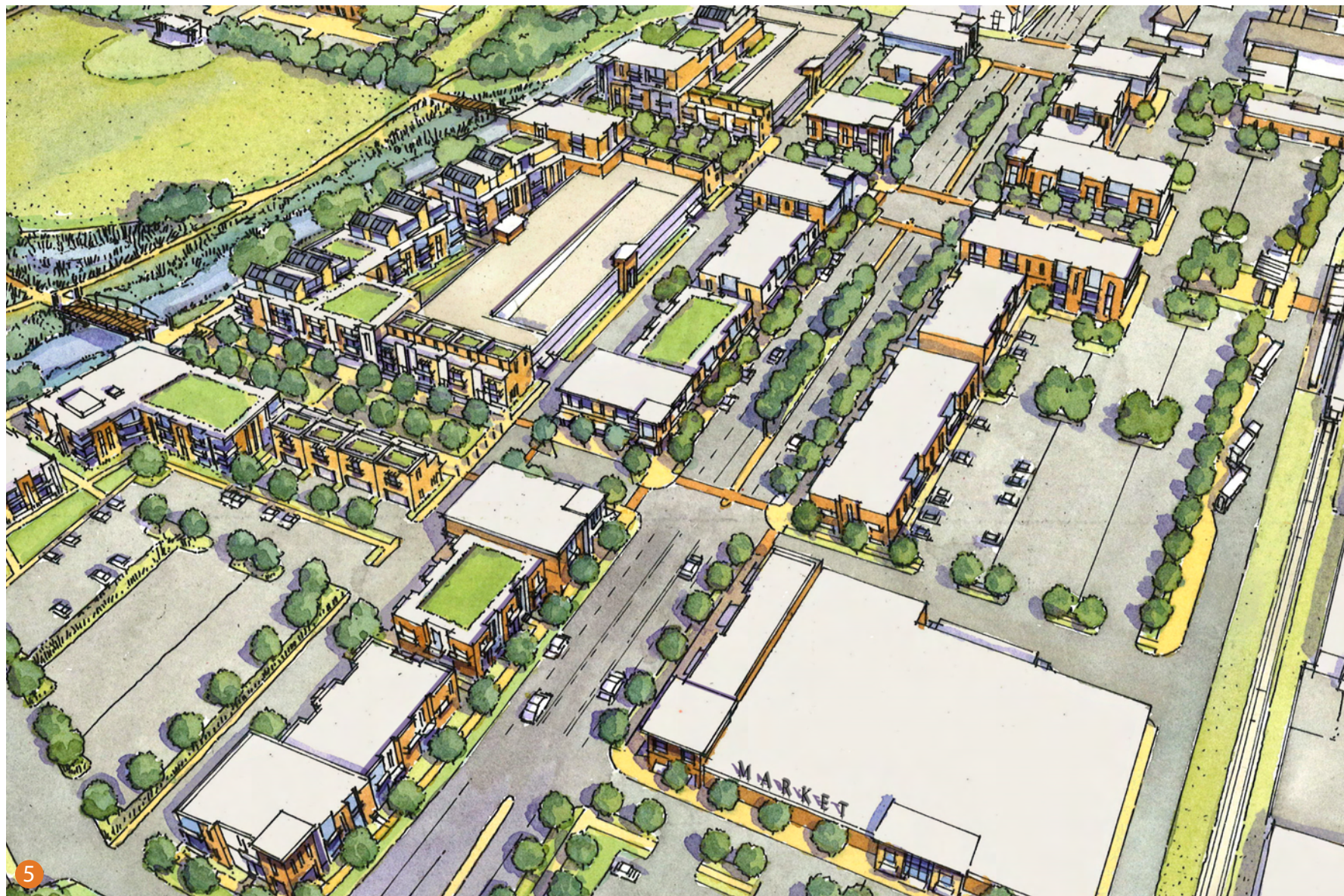
The Riverfront Crossings Sub-Area will be developed as a mixed-use neighborhood that provides new opportunities for people to live within walking distance of jobs, shopping, recreation, and cultural amenities in the downtown area. Gilbert Street will be designed as a main street with frontages and ground floor building spaces attractive to retailers, restaurants, and other desired commercial uses. The high traffic volumes at the intersection of U.S. Highway 6 and Gilbert Street will be important for retail to function properly. The high volume and visibility of this intersection may support a small box retail store, which would provide goods and services to the adjacent neighborhoods.

A considerable amount of residential is encouraged to maximize the economic potential of the area, create the threshold of consumer demand necessary to attract neighborhood-serving businesses, and to realize the desired return on investment in additional transit service, park amenities, and street infrastructure. A mix of residential unit types is proposed to take advantage of Ralston Creek and the riverfront park, with townhouses fronting on courtyards west of Gilbert Street and denser residential typologies fronting onto the park. The north development blocks will be primarily residential, with key frontages designed to accommodate ground-floor commercial intermixed. The northern most block should be mixed-use in nature to take advantage of the adjacent potential high-speed rail station and light rail stop. The variety, size, and design of the residential units should further the goal of creating a neighborhood with a stable population of long-term residents of all incomes and ages, rather than focusing on the market for university student housing.

Recent market analyses indicate that there is also a need for office and hotel space in the downtown area. Offices can easily be mixed within buildings, both on the upper and lower floors along Gilbert Street and in the blocks overlooking the new park. Hotels should be designed to fit into the pedestrian-oriented, urban context of the area.

Auto-oriented uses, such as gas stations and drive-through facilities are generally disruptive along a pedestrian-oriented street frontage. However, there may be limited locations that are acceptable for such uses and facilities. See Appendix A for a more detailed description for how to incorporate these uses into the district.



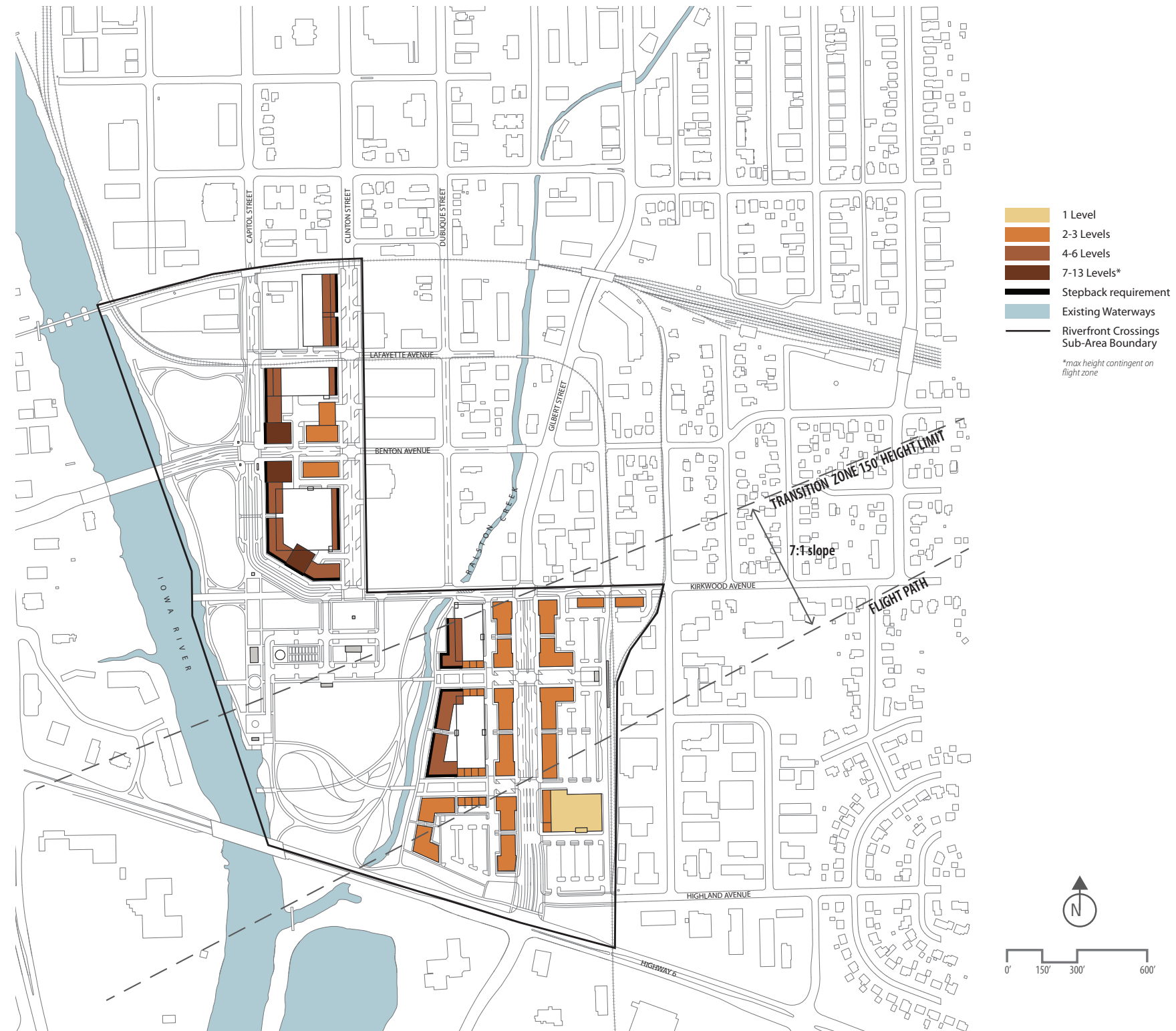
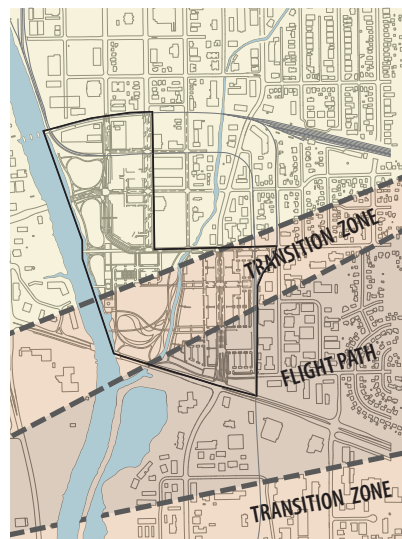


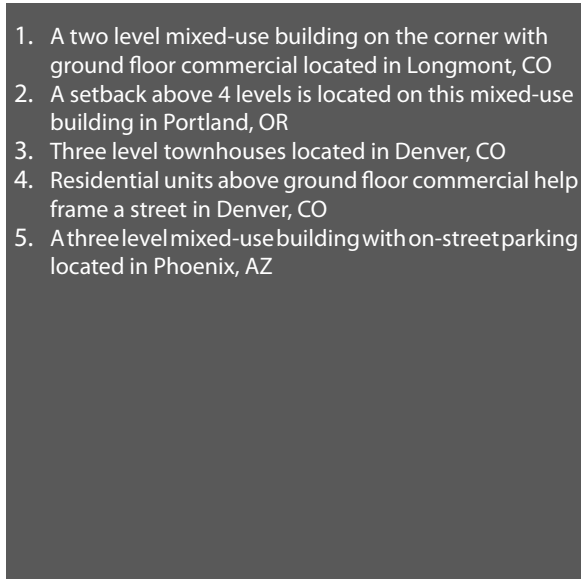
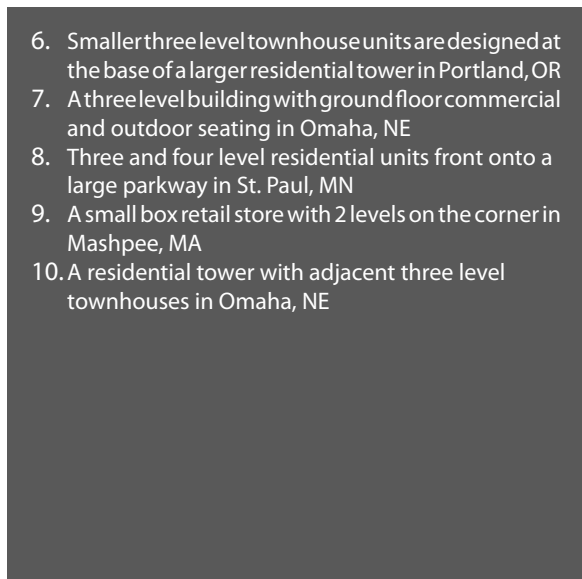
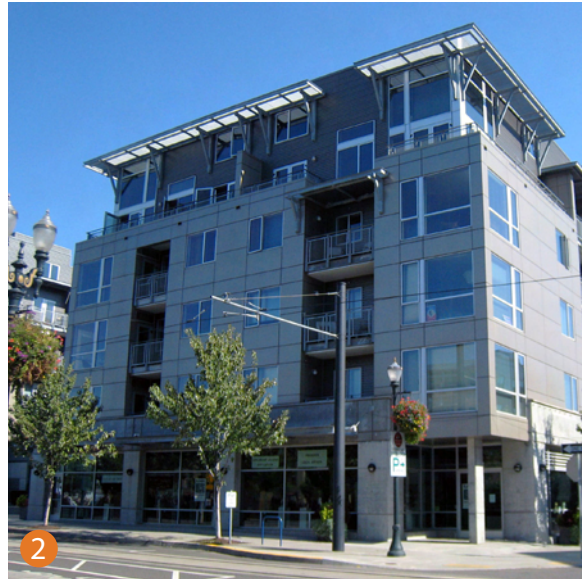
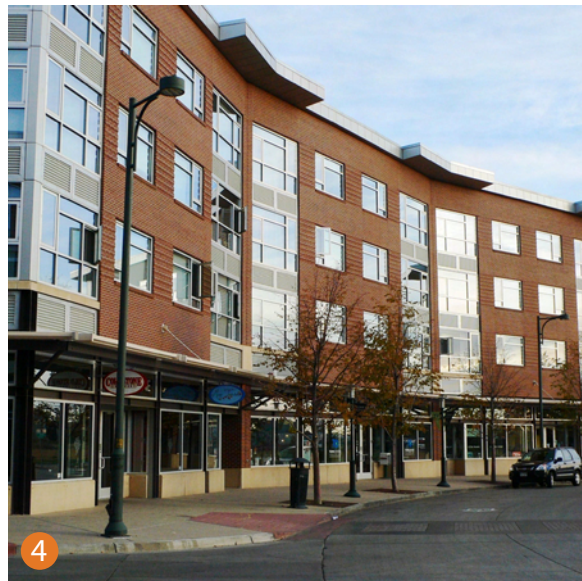
1. Residential units with balconies overlooking green space in Omaha, NE
2. Ground floor commercial with large windows in Boise, ID provide areas for merchandise display that gives visual interest and activates the sidewalk
3. Two and three level townhouses line the street in Belmar, CO
4. This mixed-use building in Omaha, NE has offices and residential units above ground floor commercial
5. Redevelopment along the Gilbert Street corridor should be mixed-use and provide street level activity. A small box retail store is placed at U.S. Highway 6 and Gilbert Street intersection to take advantage of the highly traveled roadways and views to the site. Residential units are proposed on the east/west courtyards to the riverfront park and along Ralston Creek.
6. In Southlake, TX, this commercial box store is designed with architectural detail to create a more pedestrian friendly environment



heights

The building heights of the Sub-Area are based on the desired urban form of the district, market analysis of the residential and commercial demand, and FAA airport height restrictions. The southern portion of the Sub-Area along Gilbert Street is located within the flight path and transition zone of the Iowa City Municipal Airport. These areas are regulated by the FAA and provide vertical height limits. In response, building heights will transition from 1-3 levels on the southern end to 4-6 levels on the northern end of the Gilbert Street blocks. Outside of the transition zone, in the northern blocks, residential towers of 7+ levels (on top of lower rise residential pedestal buildings) are proposed. These residential towers will take full advantage of the riverfront park and views of the Iowa River. Minimum and maximum building heights are proposed to create an acceptable urban form within the Sub-Area. Developers will need to work with the City to ensure that proposed building heights meet FAA airport height regulations.





1. A two level mixed-use building on the corner with ground floor commercial located in Longmont, CO
2. A setback above 4 levels is located on this mixed-use building in Portland, OR
3. Three level townhouses located in Denver, CO
4. Residential units above ground floor commercial help frame a street in Denver, CO
5. A three level mixed-use building with on-street parking located in Phoenix, AZ

6. Smaller three level townhouse units are designed at the base of a larger residential tower in Portland, OR
7. A three level building with ground floor commercial and outdoor seating in Omaha, NE
8. Three and four level residential units front onto a large parkway in St. Paul, MN
9. A small box retail store with 2 levels on the corner in Mashpee, MA
10. A residential tower with adjacent three level townhouses in Omaha, NE

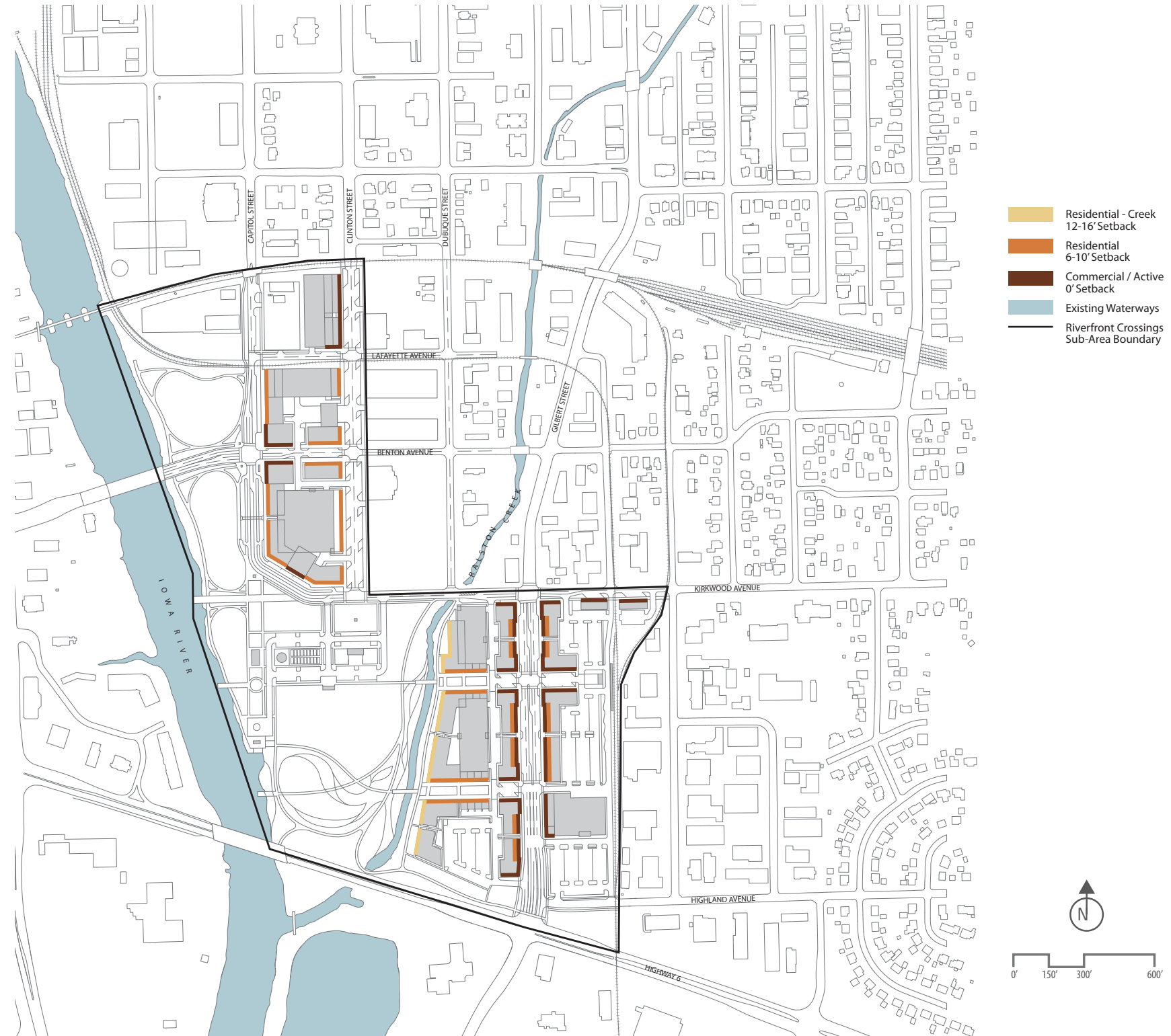
frontages and setbacks

Guidelines for frontages and setbacks help to ensure the proper engagement of buildings within the public realm. This will help to ensure that the interface between the building and sidewalk is detailed appropriately.

Frontages that are assigned “active” will be built to the property line, except to accommodate desired articulation of building façades, recessed doorways, outdoor plaza or cafe spaces, public art features, or other pedestrian amenities. Building setbacks necessary to achieve such desired articulation and street-side amenities should not exceed 12 feet. This build-to-line will ensure that ground floor commercial spaces will be properly designed to activate the street. Shopfronts should be designed with a high percentage of glazing and prominent pedestrian entrances at or near grade. Storefront windows should be clear glass to allow views into building interiors. Awnings or canopies are encouraged and should be allowed to encroach into the public ROW a minimum distance to provide pedestrians with shade and shelter from inclement weather, to protect window displays from sun damage, and prevent excessive glare that may obscure views to or from shop interiors.

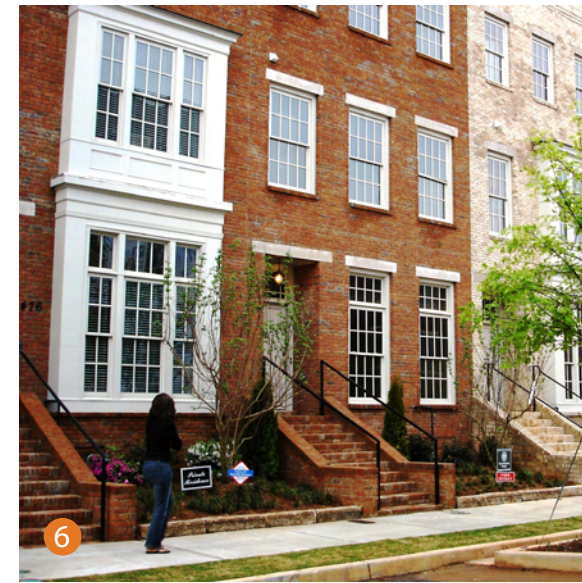
Residential units will be designed with a 6–16 foot setback. This setback will allow for landscape and architectural treatments to help give privacy to the ground floor unit. Stoop, porch, and terrace encroachments will be allowed within the setback zone to allow for an interface with the sidewalk. Care should be taken when regulating minimum stoop, porch, or terrace depth to ensure that usable spaces are created.

Along Gilbert Street, all frontages should be built with shopfront features to encourage commercial uses on the ground floor. However, as illustrated on the map, the mid-block locations may also be suitable for live-work units where a 6-10 foot residential setback would allow for additional landscaping, outdoor seating, and/or other amenities attractive to both residents and businesses located on the ground level. Stoop and dooryard frontages may be appropriate in mid-block locations toward the southern end of the Gilbert Street corridor where on-street parking is not available.

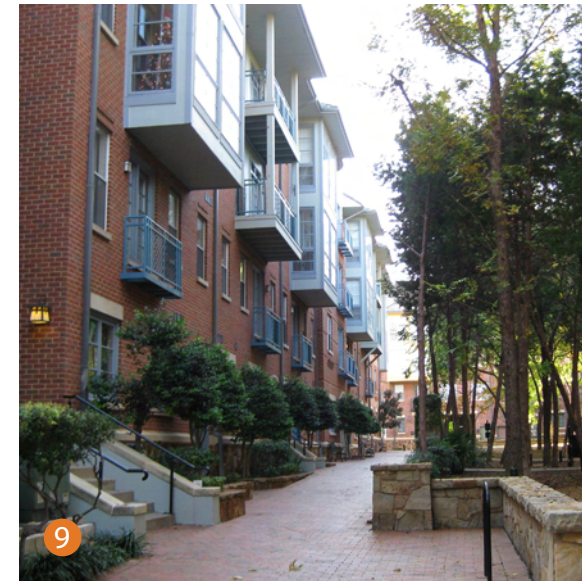




1. This canopy in Omaha, NE protects the entrance to the ground-floor commercial use.
2. Formal, fenced-in outdoor seating helps to create a vibrant sidewalk in Washington D.C.
3. Retail storefronts and canopies front directly onto the sidewalk to engage passersby in Winter Park, FL.
4. Outdoor seating along this sidewalk provides interaction with pedestrians in St. Louis, MO
5. A small residential setback in Portland, OR allows for privacy via a raised stoop and balcony frontage.

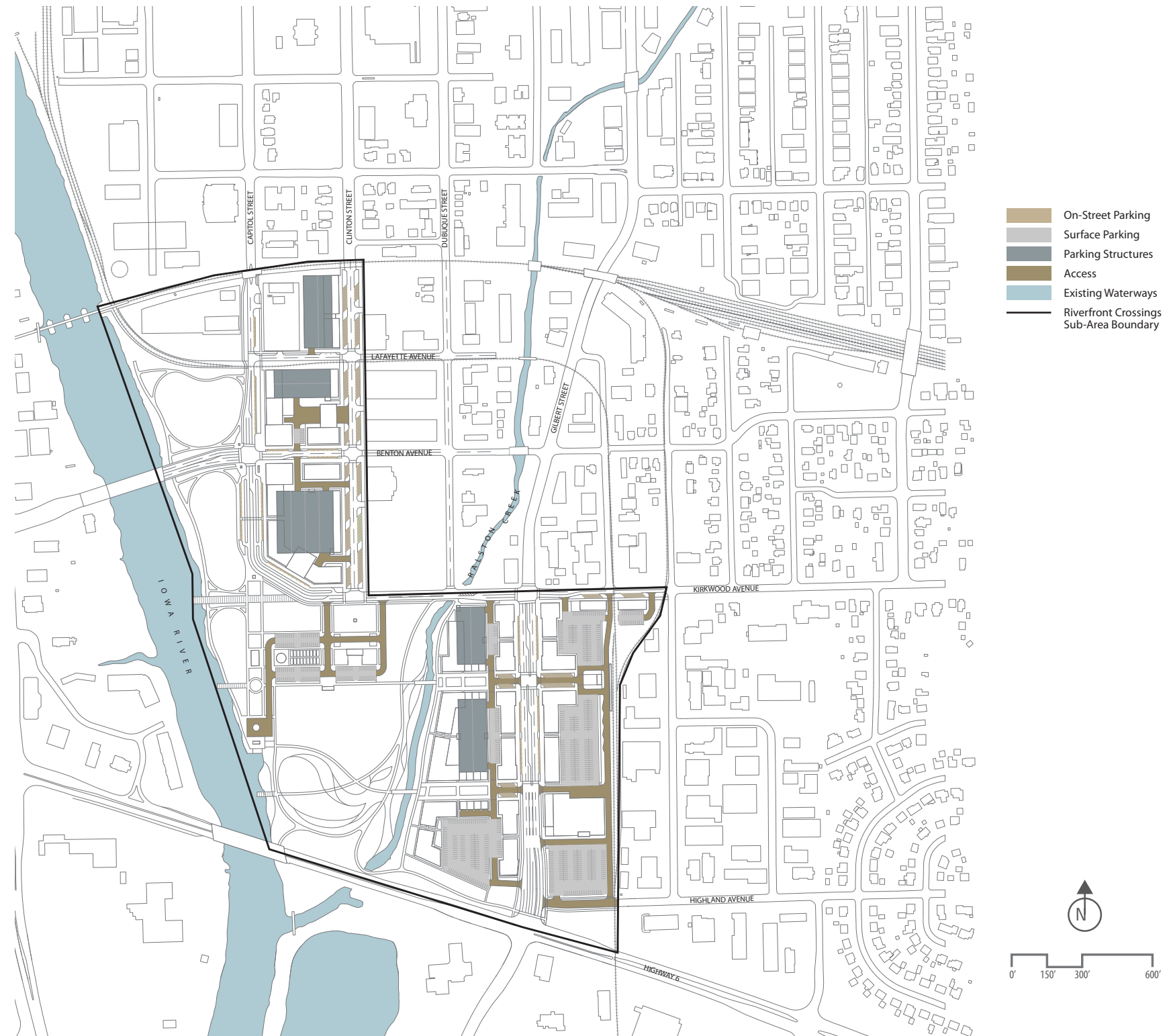


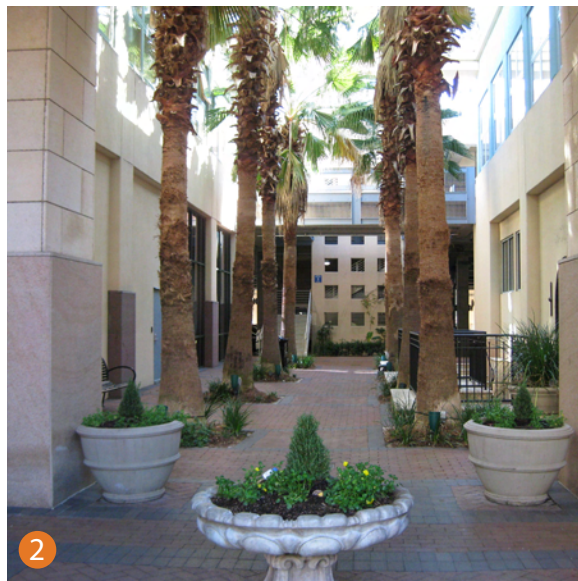
6. Townhouses setback from the sidewalk allow for a stoop frontage in Atlanta, GA
7. In Seattle, WA residential units are setback to allow for a privacy wall and small stoop frontage along the sidewalk.
8. Larger setbacks for these residential units allow for stoop frontage and landscaping in Southlake, TX
9. Ground floor residential units share stoop entrances and front onto a green space in Addison, TX
10. Storefronts with canopies protect window shoppers in Seattle, WA



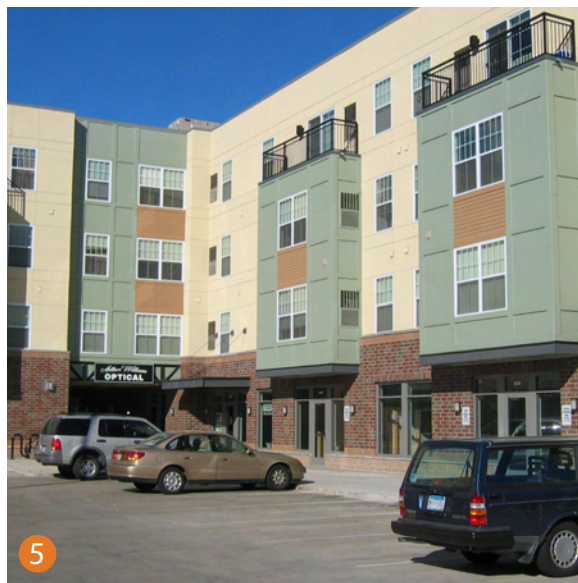
parking and access

The type of parking and how it is accessed should be addressed for proper development of the Sub-Area. Entries to parking areas should be limited from the street to ensure a comfortable, pedestrian-oriented environment. The more entries, the more unsafe and inconvenient the area becomes for pedestrians. With the exception of the small commercial box store, parking should always be located to the rear of buildings and accessed through alleys. The access to, and location of, utilities, loading docks, and dumpsters should be located to the rear of buildings so as not to detract from the pedestrian experience. On-street parking should be provided whenever possible to activate the street and provide a buffer for pedestrians. The intent of the Sub-Area Plan is to provide enough parking within each development block to accommodate its adjoining uses. The number of parking spaces will be determined by the density of development, with higher density blocks requiring structured parking solutions.

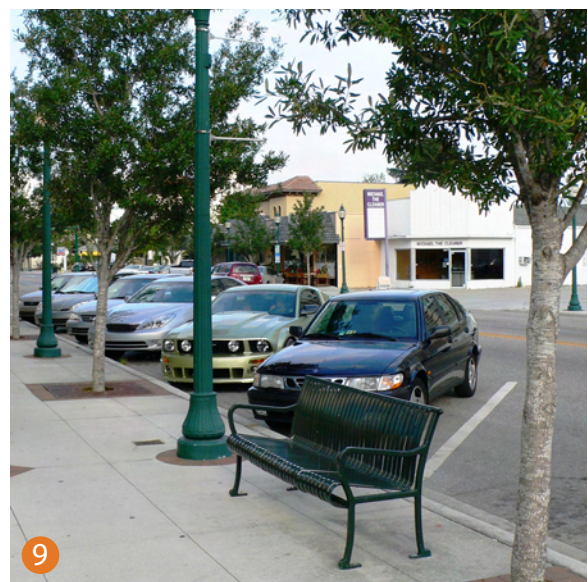




1. Parallel on-street parking is delineated by permeable pavers in Washington D.C.
2. A small landscaped courtyard provides access to a parking garage in Legacy, TX
3. In Madison, WI, the garage entry is accessed by an alley located to the rear of residential buildings
4. Parking for these townhouses in Kansas City, MO is located to the rear of the buildings in attached garages which are accessed via an alley
5. Mixed-use buildings in Falcon Heights, MN surround the parking lot to conceal it from the street

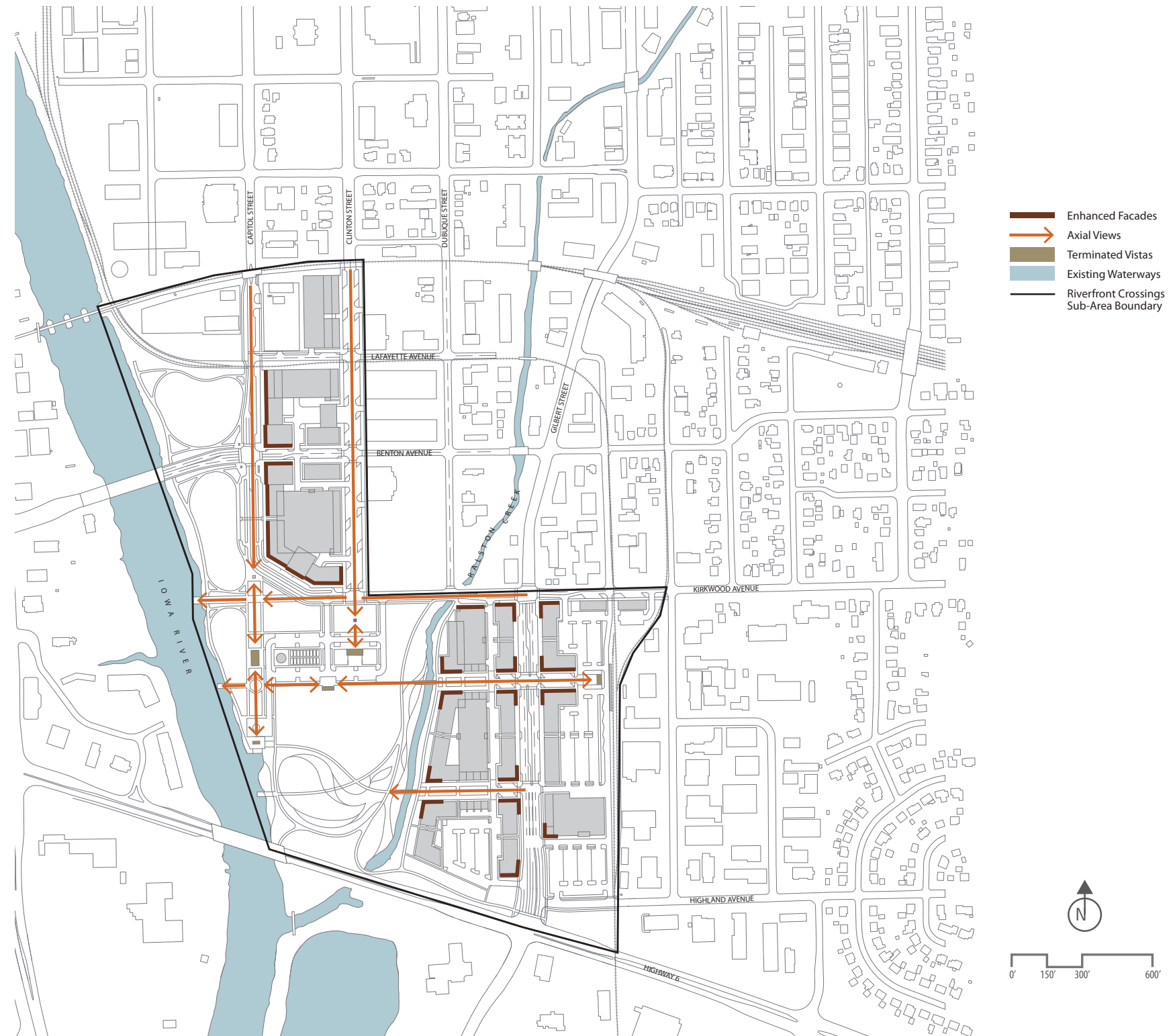


6. Surface parking lot accessed through a small break in the street wall in Dubuque, IA
7. Landscaping and architectural detailing help to hide this parking garage in Winter Haven, FL so that it does not take away from the pedestrian experience along the sidewalk
8. Parallel on-street parking helps to provide safety for pedestrians and direct access to neighborhood businesses in Portland, OR
9. Angled parking in Sarasota, FL provides more on-street spaces than parallel parking
10. Surface parking lots should be designed with extensive landscaping, as shown in Southlake, TX



special requirements

The Sub-Area Plan is designed to create a well connected environment. Axial relationships help to reinforce the public realm network and to provide areas of civic importance. Vertical elements such as buildings, statues, fountains, or other public art should be designed in these areas. Individual buildings should be designed to respond to key functional and aesthetic cues. Important corners should receive special architectural features, such as façade enhancements, turrets, and/or entrance embellishments. All street facing buildings should be required to have a minimum level of architectural treatment, but higher design standards should be placed on buildings fronting the park and along key streets and corners.





1. An iconic sculpture is strategically placed within greenspace in Kansas City, MO



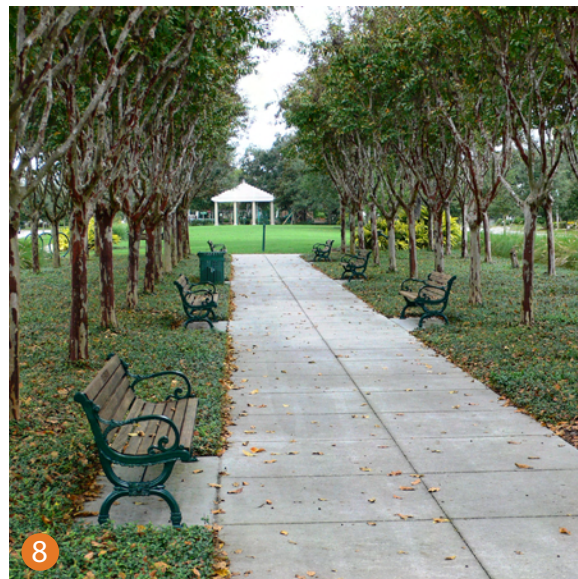
2. Special treatment is given to this mixed-use corner in Austin, TX



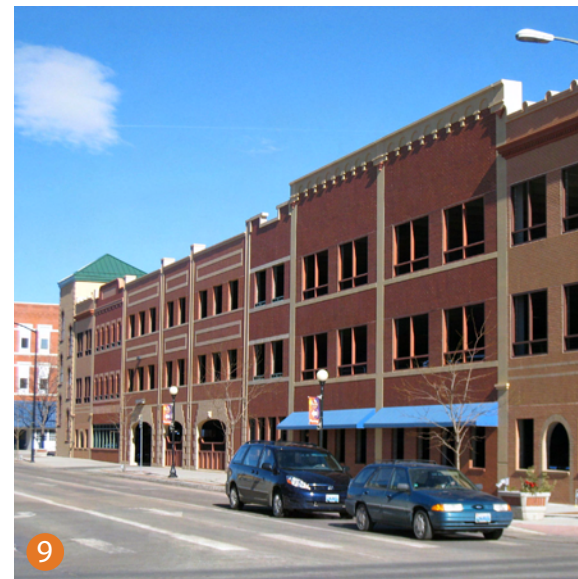
3. In Frisco, TX, the articulation of building mass helps to give definition and visual interest to pedestrians



4. This fountain in Celebration, FL terminates the main retail street



5. Different materials and an articulated facade emphasize this building in Portland, OR



6. This corner is defined by taller building height and variation of window size in Belmar, CO

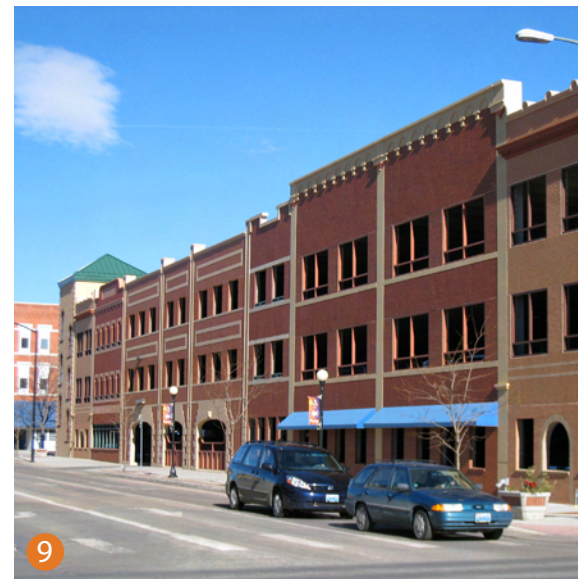


7. Sidewalk vegetation frames the view corridor to the Gateway Arch in St. Louis, MO

8. This allée of trees help define the sidewalk and provide shaded areas of seating in this park in Celebration, FL

9. This parking garage in Cheyenne, WY uses façade enhancements to replicate neighboring buildings and define the public realm

10. A corner retail store in Southlake, TX terminates a main view and articulates the corner with enhanced architecture.



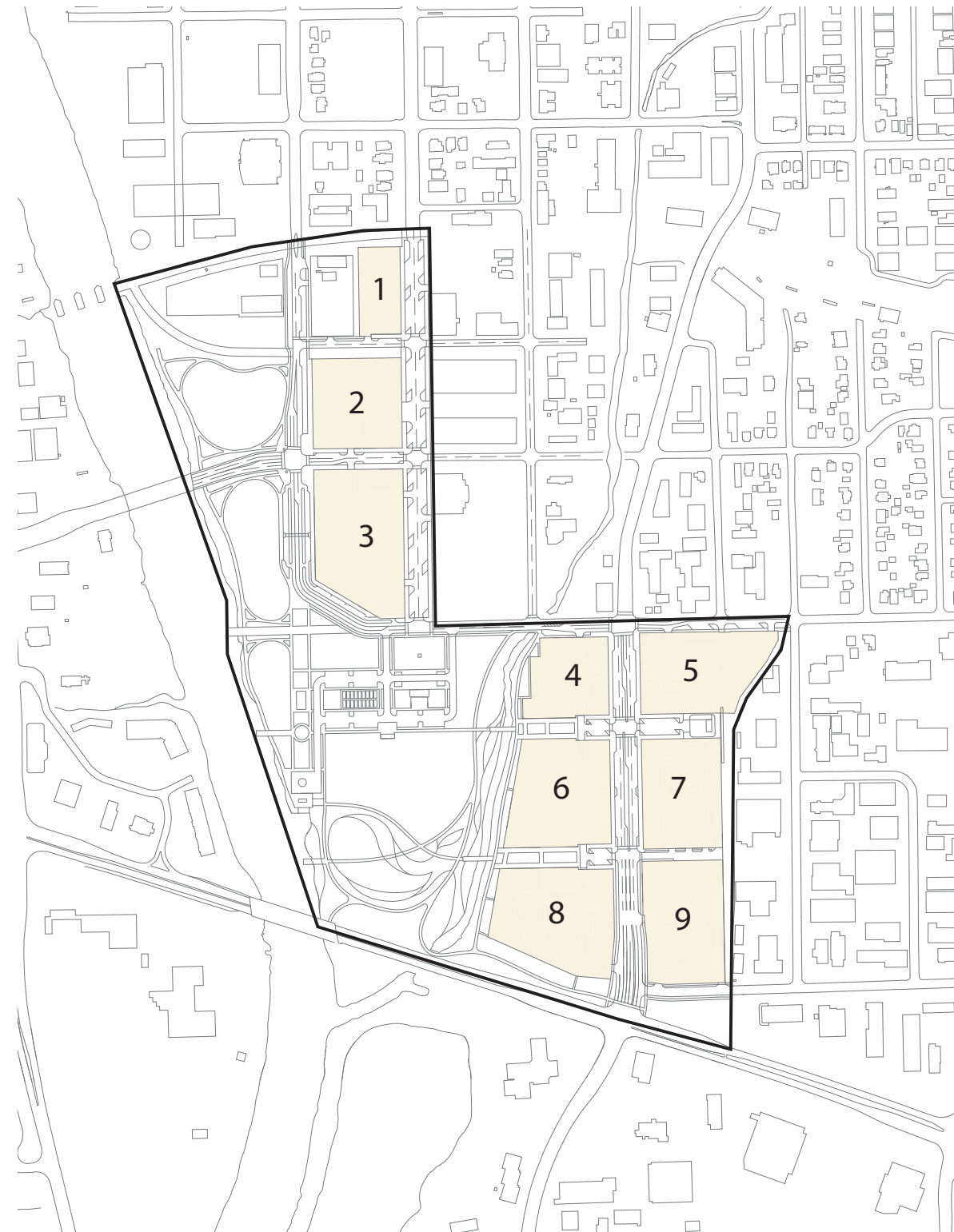
block analysis

development block diagrams

development block diagrams

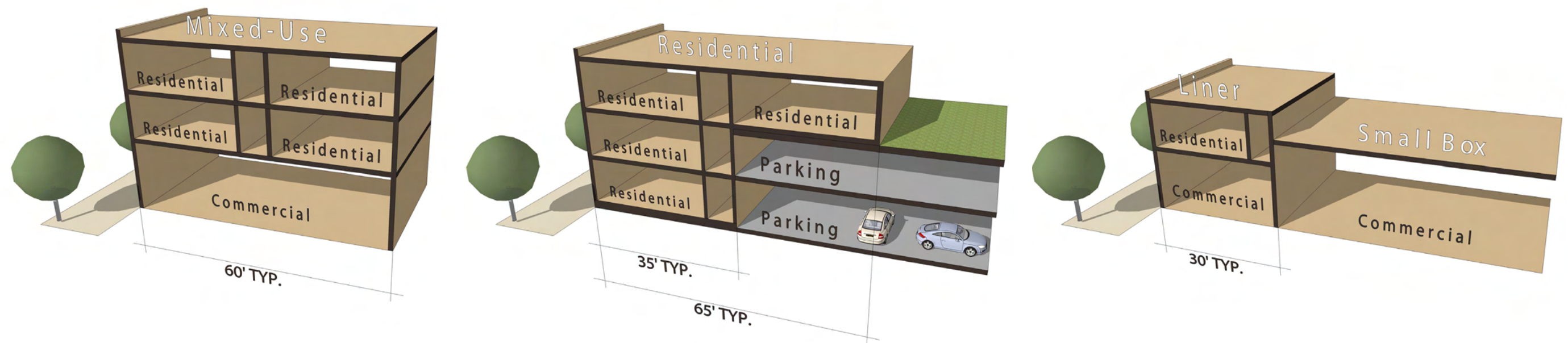
The Riverfront Crossings Sub-Area contains nine development blocks. Each of these blocks will contribute to the formation of a new mixed-use, pedestrian friendly neighborhood. Based on the existing grid street network that is found throughout Iowa City, these small blocks will help to create a walkable district. Although each block will have its own unique mix of uses, heights, and frontages, the overall structure should be kept similar. Parking should be placed on the interior of the blocks with buildings around the perimeter.

The following pages represent a block by block analysis of the Sub-Area Plan. The blocks are designed to allow for different densities and configurations as the district transforms and the market matures.



development block diagrams

As Riverfront Crossings begins to transition into a mixed-use neighborhood, it will be important to consider building use when designing the site. The Plan uses three main building types: mixed-use, residential, and liner. Although these buildings are configured in a variety of ways, the dimensions are similar throughout the Plan. It should be noted that these dimensions are provided as a guide for development, and may vary depending on specific programmatic requirements. The diagrams below represent the typical dimensions shown in the Riverfront Crossings Plan.



mixed-use building

Mixed-use buildings can vary in depth, depending on the uses within. They typically range from 60'-70' in depth. This dimension accommodates ground-floor commercial as well as double-loaded residential units on the upper levels. These residential units are usually accessed by a lobby or central corridor with elevator and/or stair access. Whereas a 60' depth may be ideal for retail and residential, office floorplates are typically a minimum of 80' in depth and therefore may require a deeper building. For that reason, it is important for the developer to coordinate the proposed development program with the site.

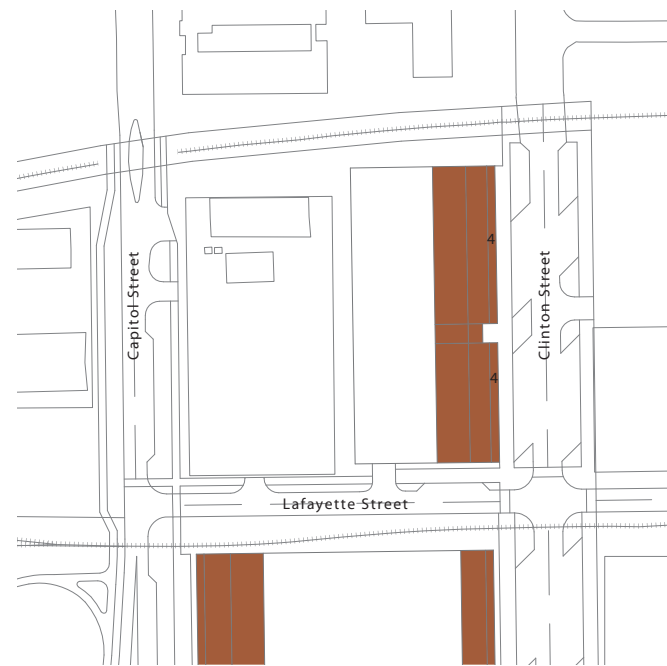
residential building

Residential buildings are typically 65 -75' in depth. This dimension provides for a double-loaded corridor with units that have access to sunlight and natural ventilation. Embedding garages in residential buildings are a way to gain density in tighter areas while also providing direct access from parking to units. The levels with the embedded garage would have a single-loaded corridor and residential units typically 35'-40' in depth. If not used for parking, the top of the garage can be used for outdoor living space, including green roofs or patios for rear facing units.

liner building

Liner buildings are relatively shallow in depth and are used to conceal parking structures and larger format retail stores. The building depth can range from 20'-40', depending on the tenant or available area. The purpose of this type of building is to create an active street frontage with shops, offices, and/or residential units. Although larger businesses may find this building to be too shallow to function, others, such as cafes and specialty retailers, find it appropriate. Residential liners are typically single-loaded to provide adequate sunlight throughout the units, with a corridor located to the rear, similar to units with an embedded garage.

block 1

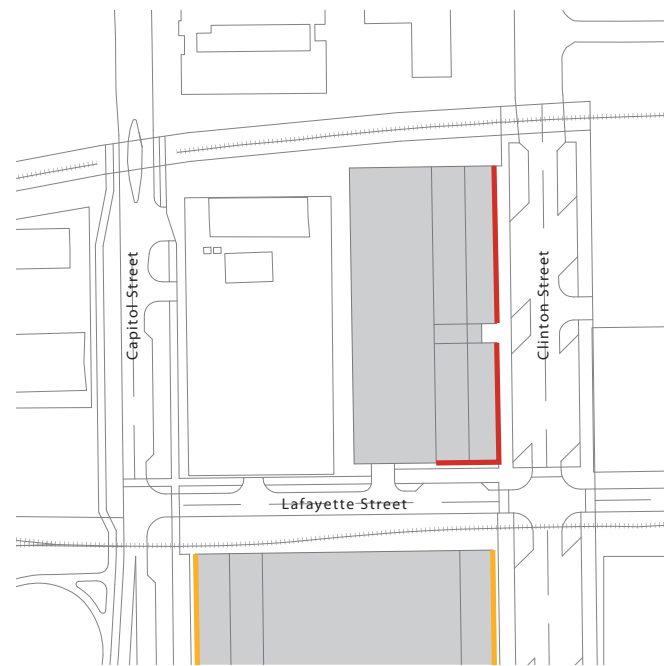


- 1 Level
- 2-3 Levels
- 4-6 Levels
- 7-13 Levels*

*max height contingent on flight zone

heights

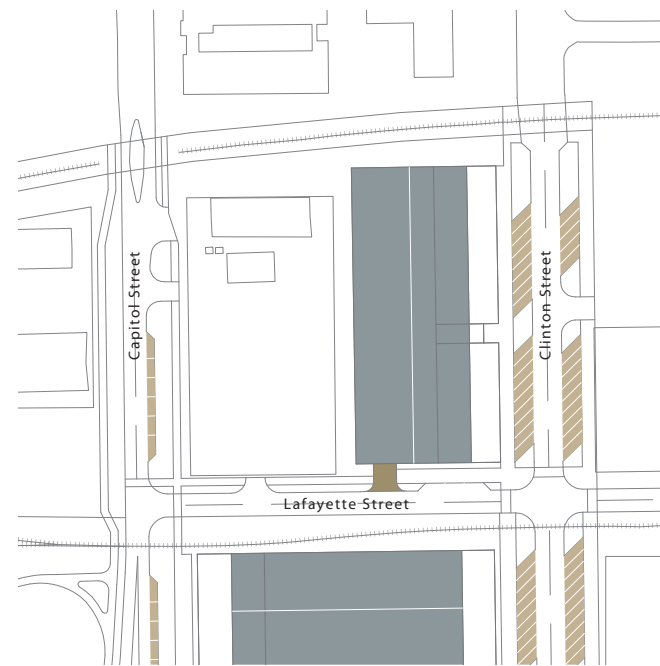
The building along Clinton Street will be 4-6 levels in height with a required stepback after four levels.



- Residential - Creek 12'-16' Setback
- Residential 6'-10' Setback
- Commercial/Active 0' Setback

frontages and setbacks

This building will have a 0' retail setback with canopy or awning frontage. This retail frontage should turn the corner at Lafayette Street.



- On-Street Parking
- Surface Parking
- Parking Structures
- Access

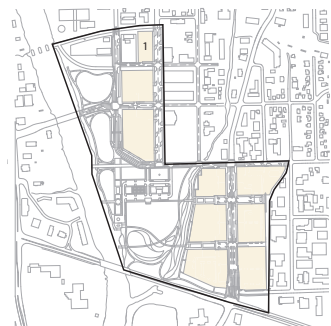
parking and access

Parking for the building will be located in an embedded parking garage three levels in height accessed by a drive off of Lafayette Street. Angled on-street parking will be available on Clinton Street with potential for parallel on-street spaces where possible on Lafayette Street.



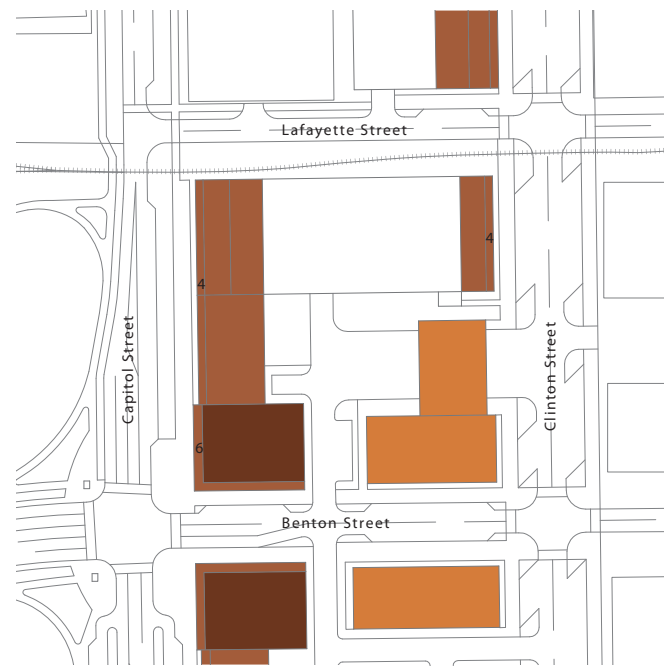
massing

A large mixed use building will define frontage along Clinton Street. The parking garage should be designed to define as much of Lafayette Street as possible.



Block 1	
Area (acres)	2.75
Residential SF	79,300
Retail/Office SF	15,250
Total SF	94,550
Residential Units	70
Parking Spaces	189
On-Street Parking	37

block 2

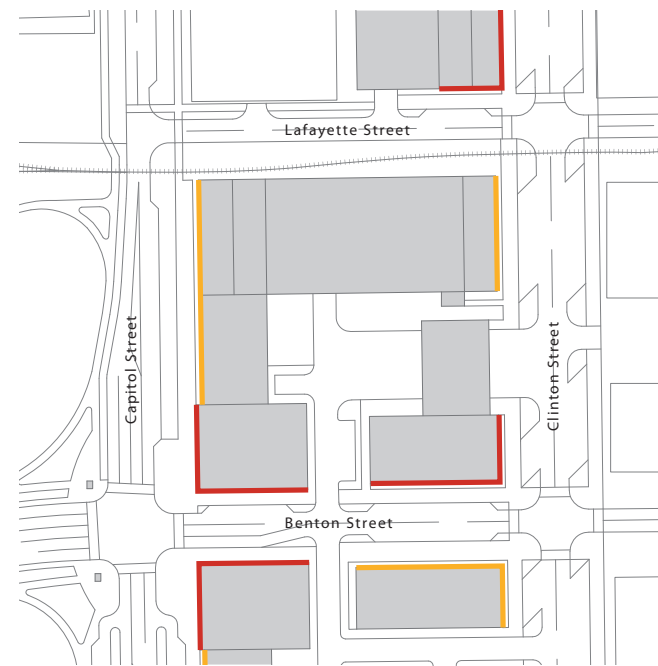
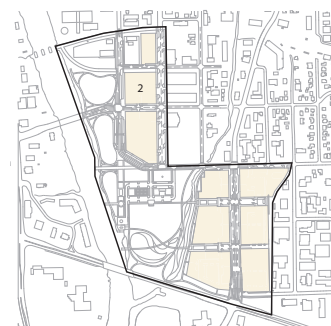


- 1 Level
- 2-3 Levels
- 4-6 Levels
- 7-13 Levels*

*max height contingent on flight zone

heights

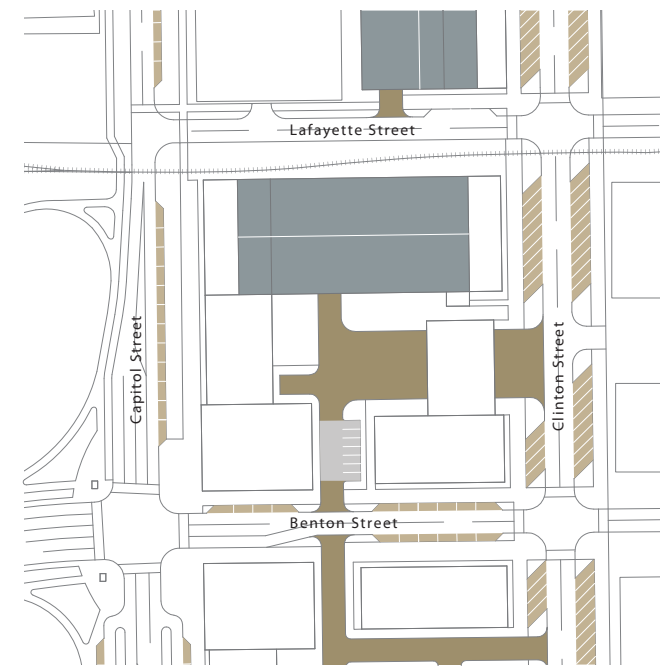
A tower 7+ levels in height will be located at the Benton Street/Capitol Street intersection and along with the tower to the south, will be a gateway for the area. A required stepback is placed after six levels. The adjacent building along Capitol Street will be 4-6 levels in height with a required stepback at four levels. The same constraints apply for the residential liner building on Clinton Street. The Johnson County Ambulance Center is designed to be 2-3 levels in height at the corner of Benton Street and Clinton Street.



- Residential - Creek 12'-16' Setback
- Residential 6'-10' Setback
- Commercial/Active 0' Setback

frontages and setbacks

The residential tower at the intersection of Benton and Capitol Streets will have ground floor commercial with a 0' setback and canopy or awning frontage. The Ambulance Center should also have a main pedestrian entrance at the corner to activate the intersection. North along Clinton Street and Capitol Street, buildings will have a 6'-12' residential setback with stoop or dooryard frontages.



- On-Street Parking
- Surface Parking
- Parking Structures
- Access

parking and access

Block 2 will be parked by a parking garage lined by buildings along Capitol and Clinton Streets. This parking garage will be three levels in height. An access drive to the garage will be located along Benton Street. Angled on-street parking will be available along Clinton Street with parallel parking along Benton Street and Capitol Street wherever possible.

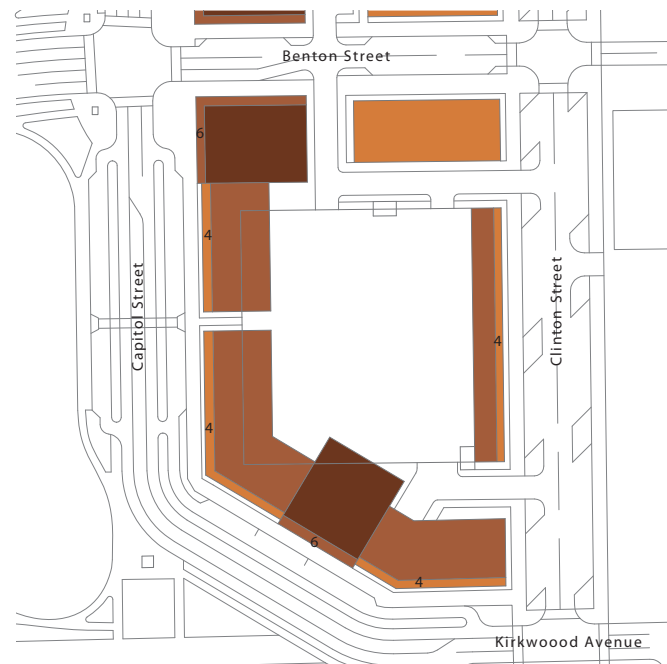


massing

The residential tower at the corner of Benton and Capitol Streets will "hold" the corner with a larger residential building fronting onto Capitol Street. The Ambulance Center should also be designed to "hold" the corner at Benton and Clinton Streets. The apparatus bays should be set back from Clinton Street.

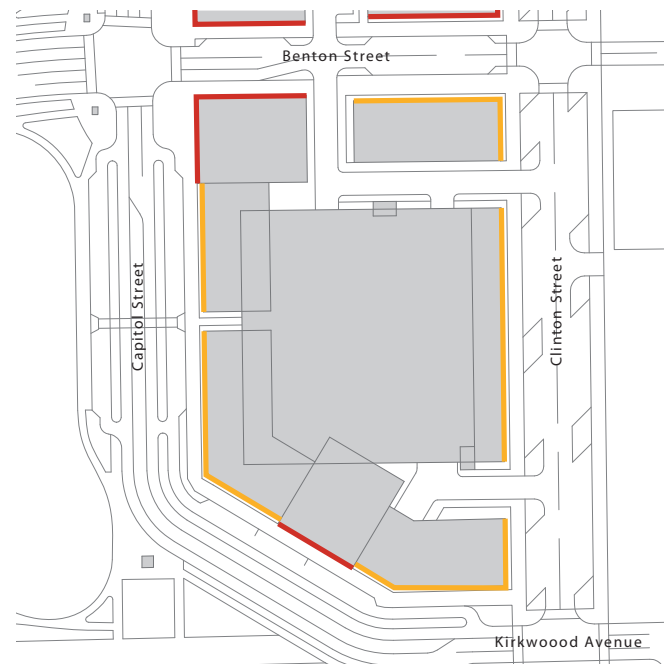
Block 2	
Area (acres)	2.85
Residential SF	196,500
Retail/Office SF	37,200
Total SF	233,700
Residential Units	175
Parking Spaces	327
On-Street Parking	53

block 3

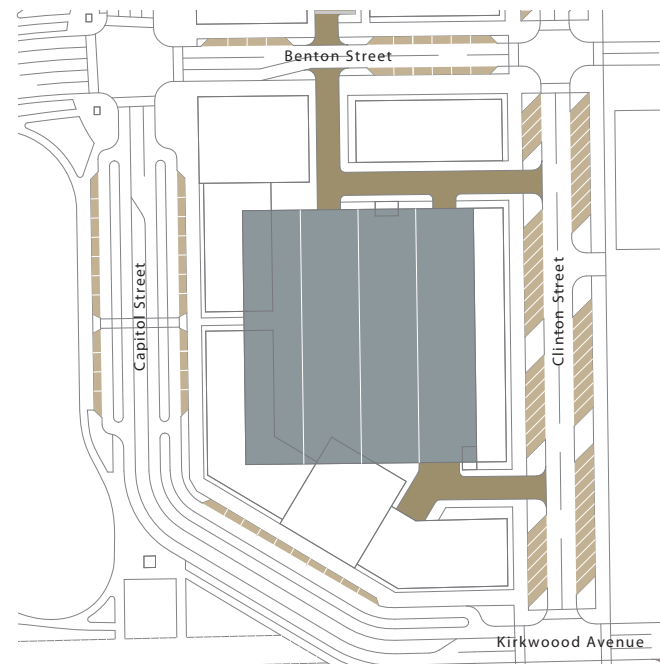


- 1 Level
- 2-3 Levels
- 4-6 Levels
- 7-13 Levels*

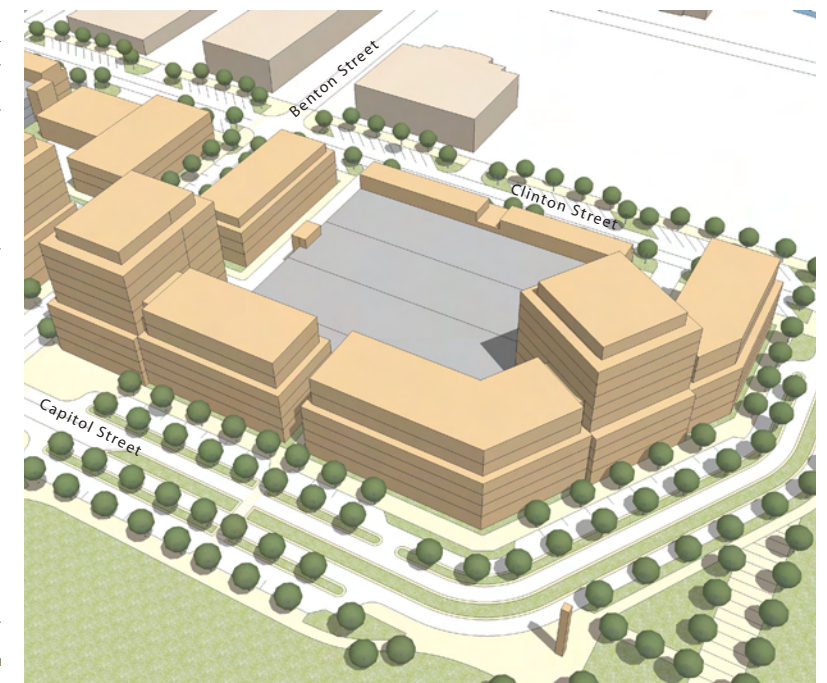
*max height contingent on flight zone



- Residential - Creek 12'-16' Setback
- Residential 6'-10' Setback
- Commercial/Active 0' Setback



- On-Street Parking
- Surface Parking
- Parking Structures
- Access



heights

Block 3 will contain pedestal buildings punctuated by towers. One tower will be located at the intersection of Benton and Capitol Streets. Another tower will be located mid-block on the Capitol/Kirkwood Connector. These towers will have a required stepback after six levels. The pedestal buildings adjacent to the towers will be 4-6 levels in height with a required stepback above four levels. A low-rise residential building will be located at the Clinton Street/Benton Street intersection.

frontages and setbacks

Residential towers along the Capitol Street/Kirkwood Avenue connector street will have ground floor commercial with a 0' setback and canopy or awning frontage. The rest of the block will be designed with a 6'-10' residential setback that will allow for stoop or dooryard frontages.

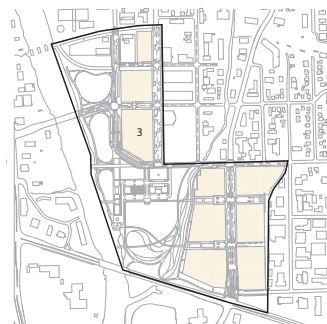
parking and access

A three level parking garage will be located mid-block and provide parking for the entire development block. This garage should be hidden by surrounding buildings. Access drives will be sited along Clinton Street and Benton Street to create a continuous street wall on the Capitol Street/Kirkwood Avenue connector street. Angled on-street parking will be available along Clinton Street with parallel parking on Benton Street and the Capitol/Kirkwood Connector slip-lane.

massing

Large residential buildings will front onto the Capitol/Kirkwood connector street with two towers rising from this base. These buildings would act as a gateway to the area and provide extensive views of the river corridor and park. Smaller residential buildings will front onto Clinton and Benton Streets.

Block 3	
Area (acres)	3.54
Residential SF	355,900
Retail/Office SF	19,800
Total SF	375,700
Residential Units	316
Parking Spaces	510
On-Street Parking	83



block 4

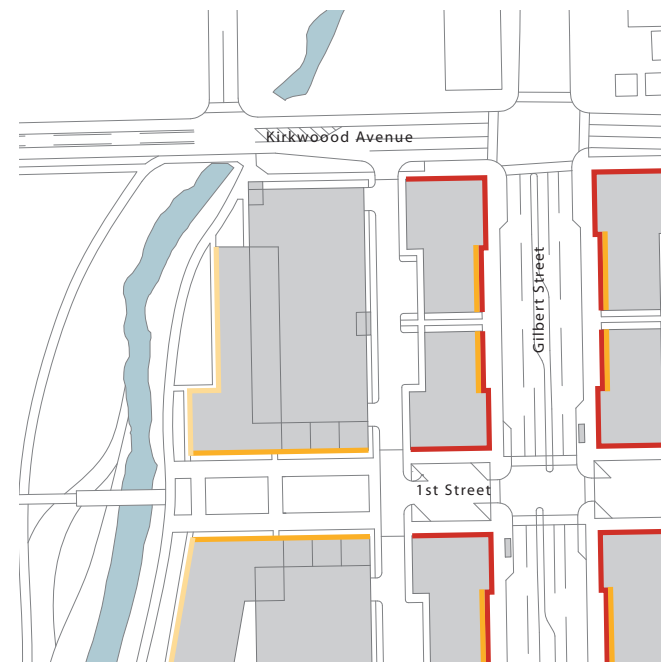


- 1 Level
- 2-3 Levels
- 4-6 Levels
- 7-13 Levels*

*max height contingent on flight zone

heights

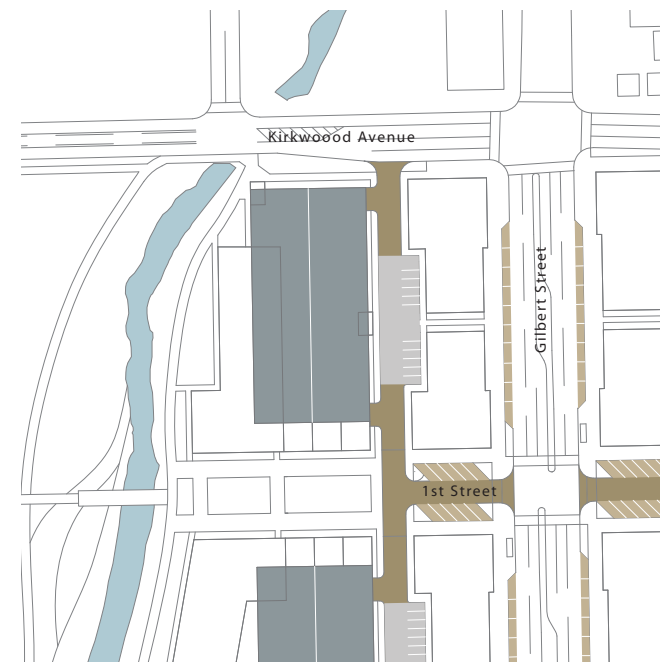
A 4-6 level building will front onto Ralston Creek, allowing views into the proposed park. Buildings along Gilbert Street and the 1st Street residential courtyard will be 2-3 levels in height.



- Residential - Creek 12'-16' Setback
- Residential 6'-10' Setback
- Commercial/Active 0' Setback

frontages and setbacks

Buildings along Gilbert Street will have a 0' retail setback with canopy or awning frontage or a 6'-10' residential setback midblock. The residential buildings along the 1st Street courtyard will have a 6'-10' setback that will allow for stoop or dooryard frontage. Buildings fronting onto Ralston Creek will have a designated creek setback of 12'-16'. This setback is designed to allow for a private sidewalk and stoop frontage.



- On-Street Parking
- Surface Parking
- Parking Structures
- Access

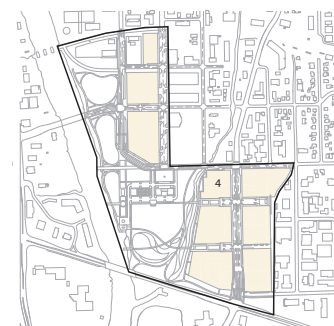
parking and access

A three level parking garage is attached to buildings fronting Ralston Creek and the 1st Street residential courtyard. This garage will be accessed by an alley that connects 1st Street with Kirkwood Avenue. This alley will also provide surface parking spaces for visitors. Angled on-street parking will be located along 1st Street with parallel on-street spaces located on Gilbert Street.



massing

A larger residential building will front onto Ralston Creek and provide wide views of the riverfront park. Smaller townhouses should front onto the 1st Street courtyard. Gilbert Street should be defined by lower rise mixed-use buildings. Architectural treatments can help define prominent corners along Kirkwood Avenue and Gilbert Street.



Block 4	
Area (acres)	2.02
Residential SF	94,400
Retail/Office SF	18,600
Total SF	113,000
Residential Units	85
Parking Spaces	172
On-Street Parking	15

block 5



- 1 Level
- 2-3 Levels
- 4-6 Levels
- 7-13 Levels*

*max height contingent on flight zone

heights

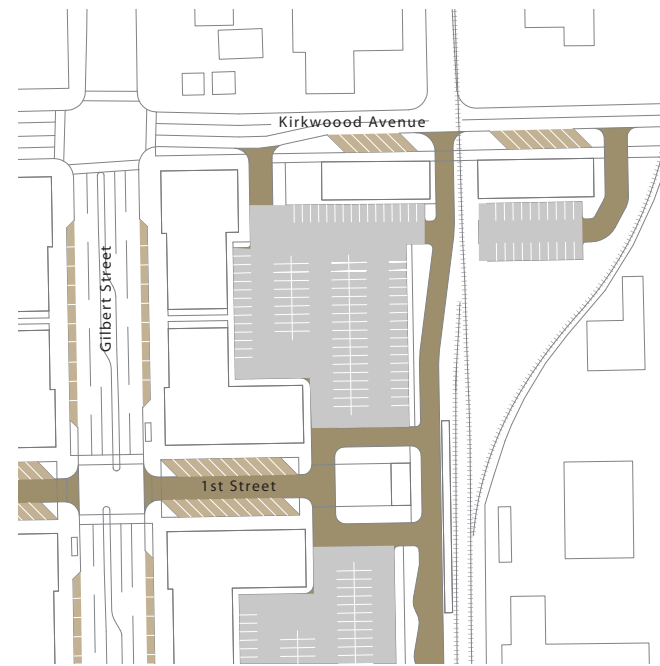
Buildings fronting onto Gilbert Street, 1st Street, and Kirkwood Avenue should be 2-3 levels in height.



- Residential - Creek 12'-16' Setback
- Residential 6'-10' Setback
- Commercial/Active 0' Setback

frontages and setbacks

Buildings along Gilbert Street, 1st Street, and Kirkwood Avenue will have a 0' retail setback with canopy or awning frontage. Along Gilbert Street there is potential for midblock locations to have a 6'-10' residential setback.



- On-Street Parking
- Surface Parking
- Parking Structures
- Access

parking and access

A surface parking lot concealed by buildings from Gilbert Street and Kirkwood Avenue will provide parking for the block. Access to the parking lot will be provided by drives off of Gilbert Street, 1st Street, Kirkwood Avenue, and a new north/south access street connecting Kirkwood Avenue to Highland Avenue. Angled on-street parking will be located along 1st Street with parallel parking spaces on Gilbert Street and Kirkwood Avenue where possible.



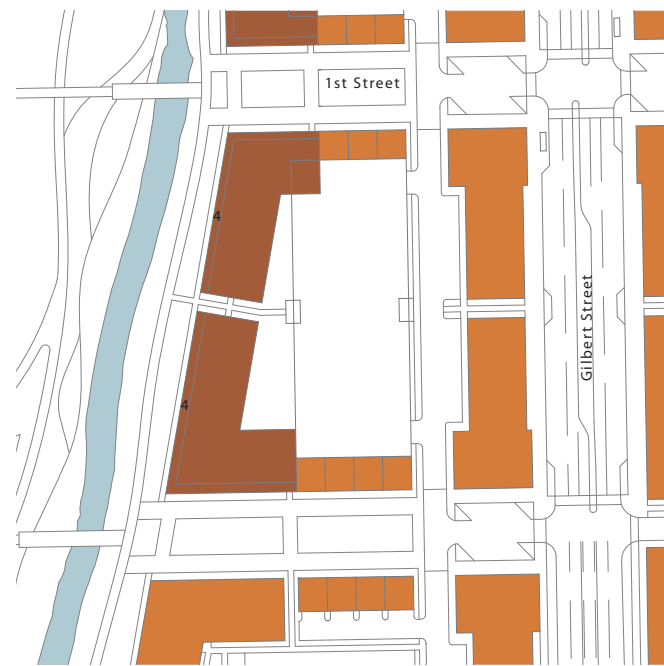
massing

Low-rise mixed-use buildings should define Gilbert Street, 1st Street, and Kirkwood Avenue. Enhanced architectural treatment should occur at the corners of Gilbert Street and 1st Avenue and Kirkwood Avenue.

Block 5	
Area (acres)	2.62
Residential SF	44,400
Retail/Office SF	31,400
Total SF	75,800
Residential Units	40
Parking Spaces	129
On-Street Parking	35



block 6



- 1 Level
- 2-3 Levels
- 4-6 Levels
- 7-13 Levels*

*max height contingent on flight zone

heights

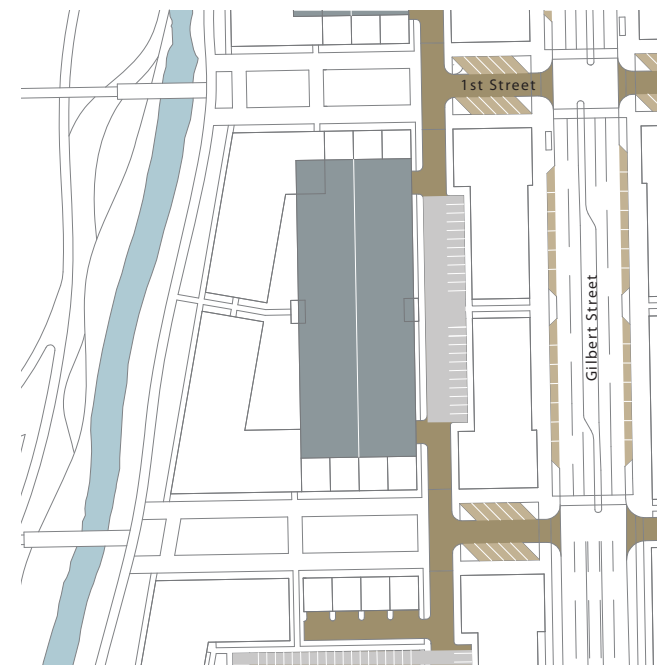
Buildings 4-6 levels in height will front onto Ralston Creek and the park with a required stepback after four levels. Buildings along Gilbert Street and portions of the residential courtyard will be 2-3 levels in height.



- Residential - Creek 12'-16' Setback
- Residential 6'-10' Setback
- Commercial/Active 0' Setback

frontages and setbacks

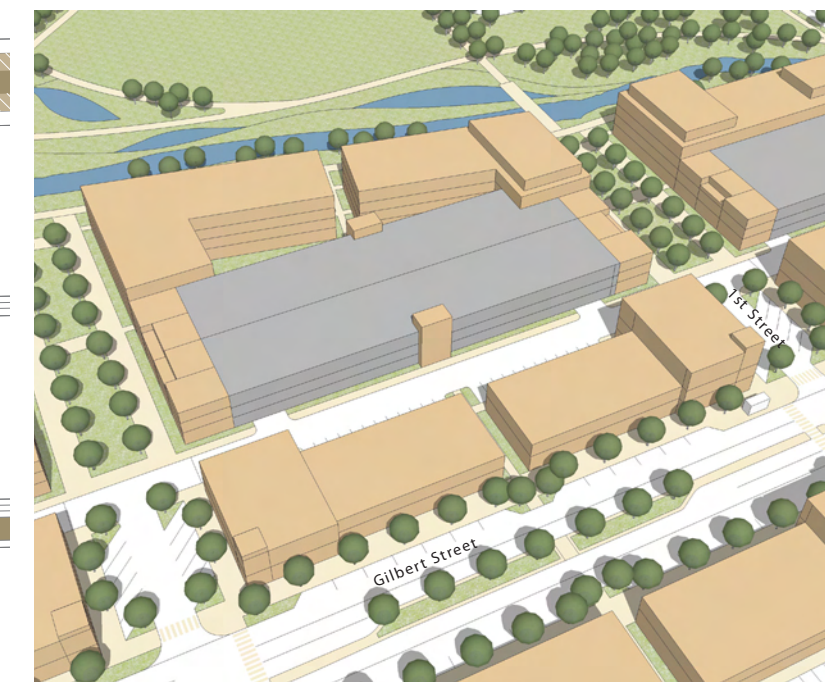
Buildings along Gilbert Street will have a 0' retail setback with canopy or awning frontage, or a 6'-10' residential setback located midblock. The residential buildings along both residential courtyards will have a 6'-10' setback that will allow for stoop or dooryard frontage. Buildings fronting onto Ralston Creek will have a designated creek setback of 12'-16'. This setback will be designed to allow for a private sidewalk and stoop frontage.



- On-Street Parking
- Surface Parking
- Parking Structures
- Access

parking and access

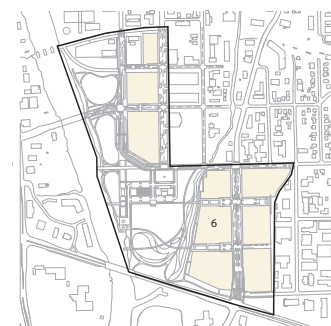
A four level parking garage located mid-block will provide parking for the development block. This garage should be hidden on all sides by buildings and accessed by an alley running north/south. This alley will be accessed off of 1st Street and a new street located on the south side of the block. This alley will also provide surface parking spaces for visitors. Angled on-street parking will be located along 1st Street and the new street, with parallel on-street spaces located along Gilbert Street.



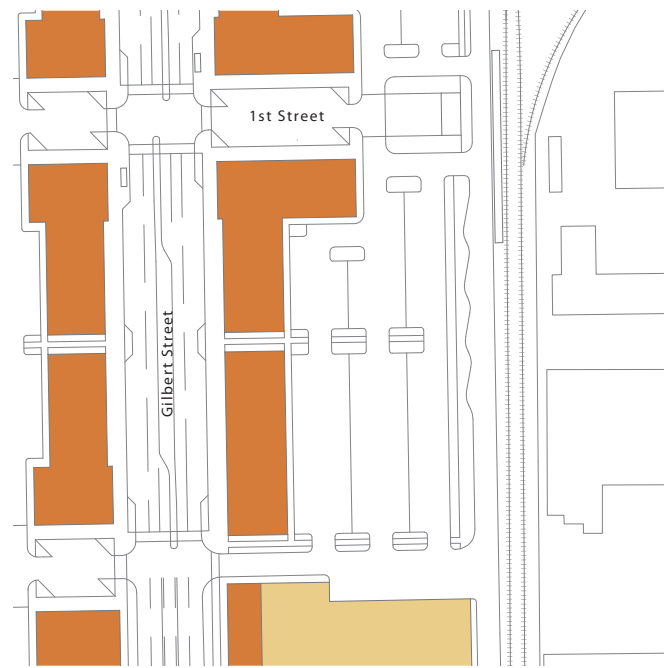
massing

Larger residential building will front onto Ralston Creek to give wide views of the riverfront park. Smaller townhouses should front onto the northern and southern courtyards. Gilbert Street should be defined by lower rise mixed-use buildings. Enhanced architectural treatment should define the corners of 1st Street and the new street off of Gilbert Street.

Block 6	
Area (acres)	3.14
Residential SF	156,100
Retail/Office SF	24,200
Total SF	180,300
Residential Units	139
Parking Spaces	348
On-Street Parking	24



block 7



- 1 Level
 - 2-3 Levels
 - 4-6 Levels
 - 7-13 Levels*
- *max height contingent on flight zone*

heights

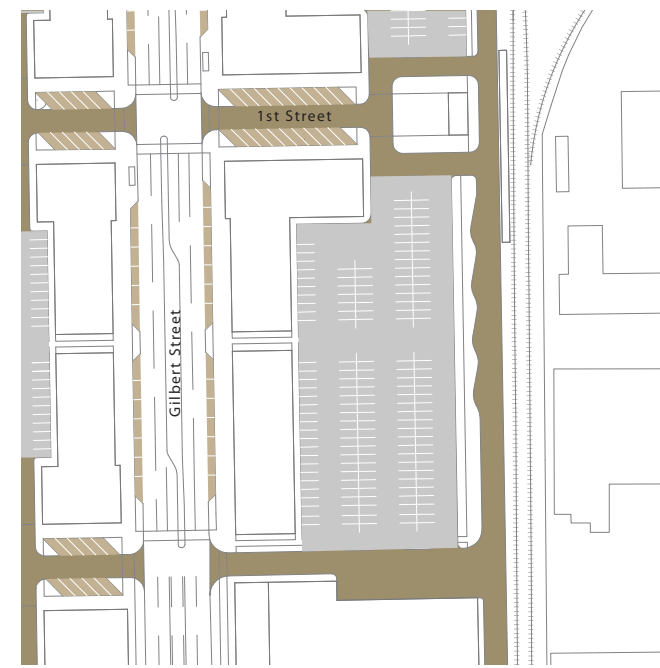
Buildings fronting onto Gilbert Street and 1st Street should be 2-3 stories in height.



- Residential - Creek 12'-16' Setback
- Residential 6'-10' Setback
- Commercial/Active 0' Setback

frontages and setbacks

Buildings along Gilbert Street and 1st Street will have a 0' retail setback with canopy or awning frontage or a 6-10' residential setback midblock.



- On-Street Parking
- Surface Parking
- Parking Structures
- Access

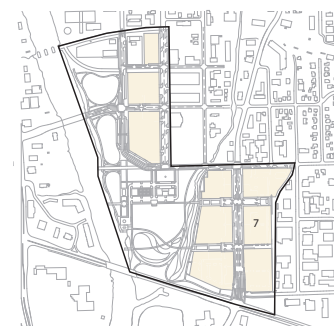
parking and access

A surface parking lot concealed by buildings from Gilbert Street and 1st Street will provide parking for the block. Access to the parking lot will be provided by drives off of Gilbert Street, 1st Street and by a new north/south access street connecting Kirkwood Avenue to Highland Avenue. Angled on-street parking will be located along 1st Street with parallel parking on Gilbert Street.



massing

Low-rise, mixed-use buildings should define Gilbert Street and 1st Street. Enhanced architectural treatment should define the corner of Gilbert Street and 1st Street.



Block 7	
Area (acres)	2.59
Residential SF	44,000
Retail/Office SF	27,900
Total SF	71,900
Residential Units	40
Parking Spaces	164
On-Street Parking	24

block 8

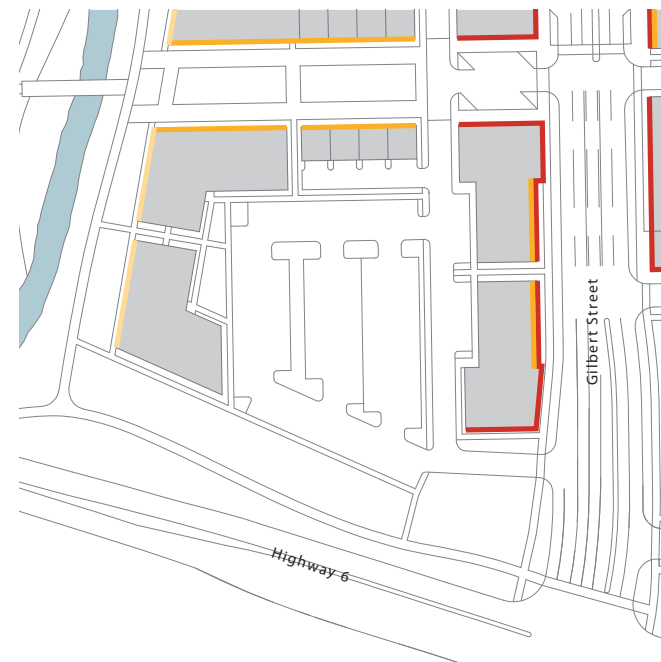


- 1 Level
- 2-3 Levels
- 4-6 Levels
- 7-13 Levels*

*max height contingent on flight zone

heights

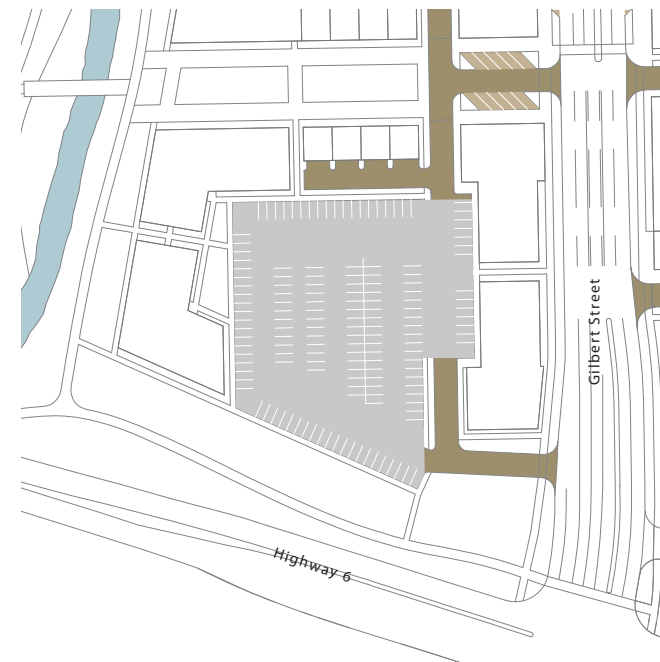
Block 8 should be developed with buildings 2-3 levels in height. This block is located in the flight path of the Iowa City Municipal Airport and therefore is regulated by Federal Aviation Administration (FAA) height restrictions.



- Residential - Creek 12'-16' Setback
- Residential 6'-10' Setback
- Commercial/Active 0' Setback

frontages and setbacks

Buildings along Gilbert Street will have a 0' retail setback with canopy or awning frontage or a 6'-10' residential setback midblock. Residential courtyard buildings will have a 6'-10' setback that would allow for stoop or dooryard frontage. Buildings fronting onto Ralston Creek will have a designated creek setback of 12'-16'. This setback will be designed to allow for a private sidewalk and stoop frontage.



- On-Street Parking
- Surface Parking
- Parking Structures
- Access

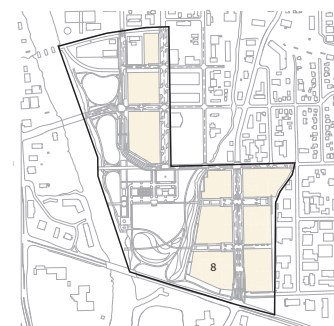
parking and access

Parking for this block will be located in a large surface parking lot located mid-block. This parking should be concealed from Gilbert Street by liner buildings and accessed by drives located off of Gilbert Street and the new east/west street located to the north of the block. Townhouses fronting onto the courtyard will have tuck-under garage spaces accessed by an alley to the rear of the buildings. Angled on-street parking will be located on the new street.



massing

Low-rise, mixed-used buildings should define Gilbert Street, the residential courtyard and Ralston Creek. Enhanced architectural treatment can help define the corners of U.S. Highway 6 and the new street off of Gilbert Street. The U.S. Highway 6 intersection should include an entry feature into the new district from the south.



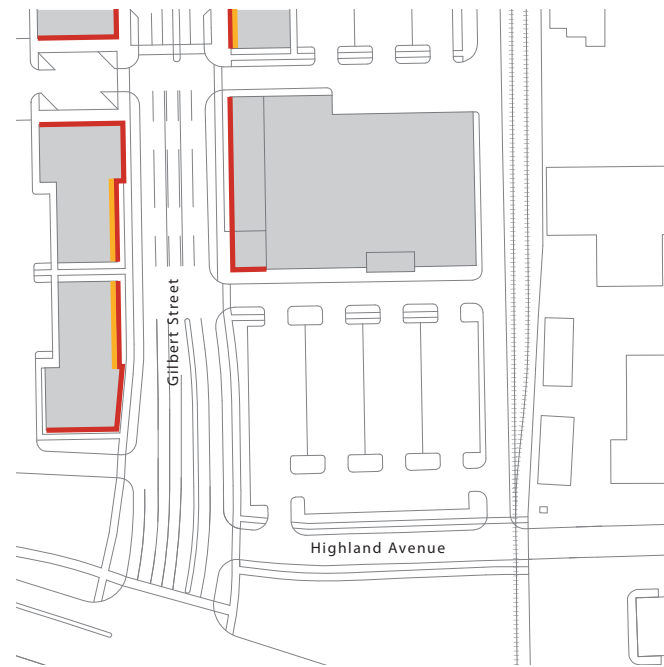
Block 8	
Area (acres)	3.29
Residential SF	84,200
Retail/Office SF	17,400
Total SF	107,400
Residential Units	70
Parking Spaces	160
On-Street Parking	5

block 9

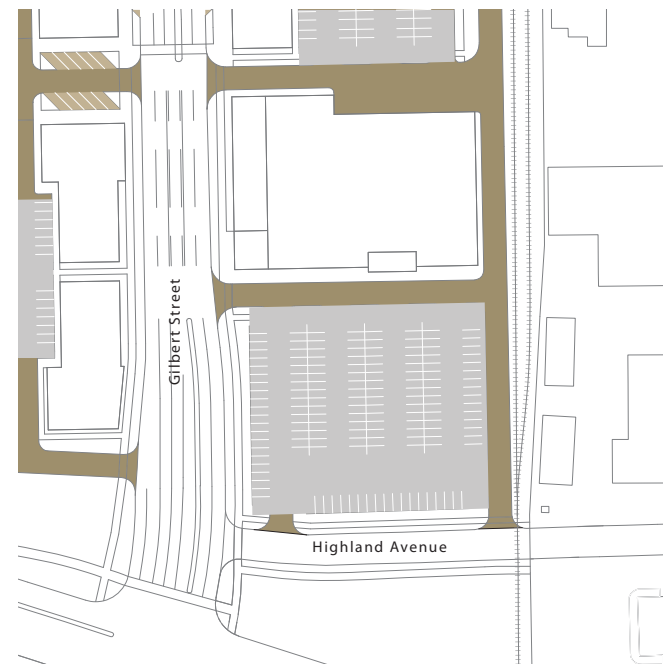


- 1 Level
- 2-3 Levels
- 4-6 Levels
- 7-13 Levels*

*max height contingent on flight zone



- Residential - Creek 12'-16' Setback
- Residential 6'-10' Setback
- Commercial/Active 0' Setback



- On-Street Parking
- Surface Parking
- Parking Structures
- Access



heights

The liner building along Gilbert Street should be 2-3 levels in height, with the small box retail store being one level. This block is located in the flight path of the Iowa City Municipal Airport and therefore is regulated by Federal Aviation Administration (FAA) height restrictions.

frontages and setbacks

The building fronting onto Gilbert Street should have a 0' retail setback with canopy or awning frontage or a 6'-10' residential setback midblock.

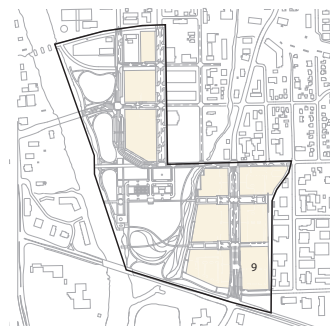
parking and access

Parking for this block will be located in a surface parking lot located at the corner of Highland Avenue and Gilbert Street. This parking lot should be accessed by drives off of Highland Avenue, Gilbert Street, and a new north/south street connecting Kirkwood Avenue to Highland Avenue. This parking lot should be well concealed from Gilbert Street using landscape and architectural treatments. An access drive to the north should be used for loading/service for the small box store.

massing

Liner buildings should be used to establish an active frontage along Gilbert Street. Enhanced architectural treatment should be provided on the southwest corner of the small box store. The small box retail store should be enhanced to give a more pedestrian scale and character that would correspond with the rest of the development.

Block 9	
Area (acres)	2.97
Residential SF	0
Retail/Office SF	42,500
Total SF	42,500
Residential Units	0
Parking Spaces	153
On-Street Parking	0



yield analysis summary

A summary of the development potential for the Riverfront Crossings Sub-Area is listed below. Green space accounts for roughly the same amount of land as private development, creating an attractive ratio for residents and visitors. The total commercial space in the plan is aggressive, and should be modified as market conditions change.

	Area (acres)	Residential SF	Retail/Office SF	Total SF	Residential Units	Parking Spaces	On-Street Parking
Block 1	2.75	79,300	15,250	94,550	70	189	37
Block 2	2.85	196,500	37,200	233,700	175	327	53
Block 3	3.54	355,900	19,800	375,500	316	510	83
Block 4	2.02	94,400	18,600	113,000	85	172	15
Block 5	2.62	44,400	31,400	75,800	40	129	35
Block 6	3.14	156,100	24,200	180,300	139	348	24
Block 7	2.59	44,000	27,900	71,900	40	164	24
Block 8	3.29	84,200	17,400	107,400	70	160	5
Block 9	2.97	0	42,500	42,500	0	153	0
Total	25.77	1,060,600	234,250	1,294,850	935	2,152	276
Park	25.99						
ROW	25.04						
Total Area	76.80						

Parking Ratios

Parking Ratios used for analysis purposes:

Residential - 1.5 spaces/unit

Retail/Office - 3.65 spaces/1000 SF

next steps

block 4

development code

Using the design guidelines provided in this document as a base, a form-based code or hybrid code should be created for the Sub-Area. This code would guide the transition of the study area into the mixed-use, pedestrian-oriented district that is envisioned. The code would be graphic in nature and would prescribe standards for building form (which includes placement and orientation), use, frontages and setbacks, parking placement, and public space standards, which includes regulation of sidewalks and thoroughfares.

detailed traffic study

This study would conduct existing traffic counts and assess future traffic growth, pass-by trips, internal trip reduction and transit usage. The study intersections would be considered as part of a network of intersections in order to assess traffic signal cycle lengths and coordination. Micro-simulation analysis, in addition to Synchro, would help determine design recommendations such as storage bay lengths. In order to assess safety, crash analysis and bicycle/pedestrian traffic should also be a part of any additional study.

integrated stormwater master plan

This master plan would incorporate ecological and engineering principles to simultaneously address both water quantity and water quality, with an emphasis on the consideration of the full water cycle; infiltration-based techniques; multi-use landscape features, including recreation and wildlife habitat; and education and outreach opportunities.

creek and habitat restoration plan

This plan should focus on soft stabilization of the stream bank, protecting water quality, and restoring the riparian corridor with native species. This plan should be coordinated with the Integrated Stormwater Master Plan.

park master plan

As the North Wastewater Treatment Plant is relocated, a Park Master Plan should be created to formalize ideas created during this Sub-Area Master Plan. This Park Master Plan would establish a more in-depth development plan for the riverfront park, creating construction documents within a specified budget. All effort should be made to incorporate the Integrated Stormwater Master Plan and the Creek and Habitat Restoration Plan with this new Park Master Plan.

existing business placement

As the Sub-Area transitions from industrial and commercial to a mixed-use, pedestrian-oriented neighborhood, tools and strategies should be developed to help existing businesses remain in the area or assist them in finding new locations that better meet their business goals.

affordable housing

The Riverfront Crossings District has the opportunity to provide a mix of housing that is both mixed-income and mixed-age. As plans for the District move forward, potential development incentives and policy options should be discussed to provide affordable housing within the district.

parking facilities

Parking within the Riverfront Crossings District should be based on a district approach. Shared parking, demand pricing, and parking structures can play a key role. As development within the district begins to occur, key policy decisions relating to parking management and the provision of parking facilities must be addressed.

appendices

appendix a: auto-oriented uses

On the periphery of pedestrian-oriented, mixed-use districts, it may be possible to have utilitarian type uses. Where these auto-oriented uses, such as gas stations, drive-thru restaurants, pharmacies, and banks are proposed, they will need to be designed in a pedestrian-oriented nature. Principal buildings should meet setback and build-to requirements and have prominent street-side pedestrian entrances with vehicular use areas properly designed and located behind buildings or along secondary frontages. These types of enhancements maintain the desired aesthetic and pedestrian-orientation of the area. In particular, these types of uses should not be located along frontages designated as warranting enhanced façades or detract from important pedestrian routes or residential frontages. Because access is important, they are often sited on corner lots.

The plan and photo here show examples of how gas stations can be contextually designed to front onto the street and activate the corner. One potential location for a gas station in the Sub-Area is the small box store site at the northeast corner of the intersection of Gilbert Street and Highland Avenue. This site is highly visible and provides easy vehicular access. The 'gas backwards' concept shown positions the pumps behind the convenience store, which fronts onto Gilbert Street and Highland Avenue. Pedestrian access to the store is provided from both the street and the pumps. The concept to the right shows a smaller retail box footprint with additional parking located to the east of the building.



In Milwaukee, WI, this mixed-use gas station locates the convenience store on the ground floor with office above.

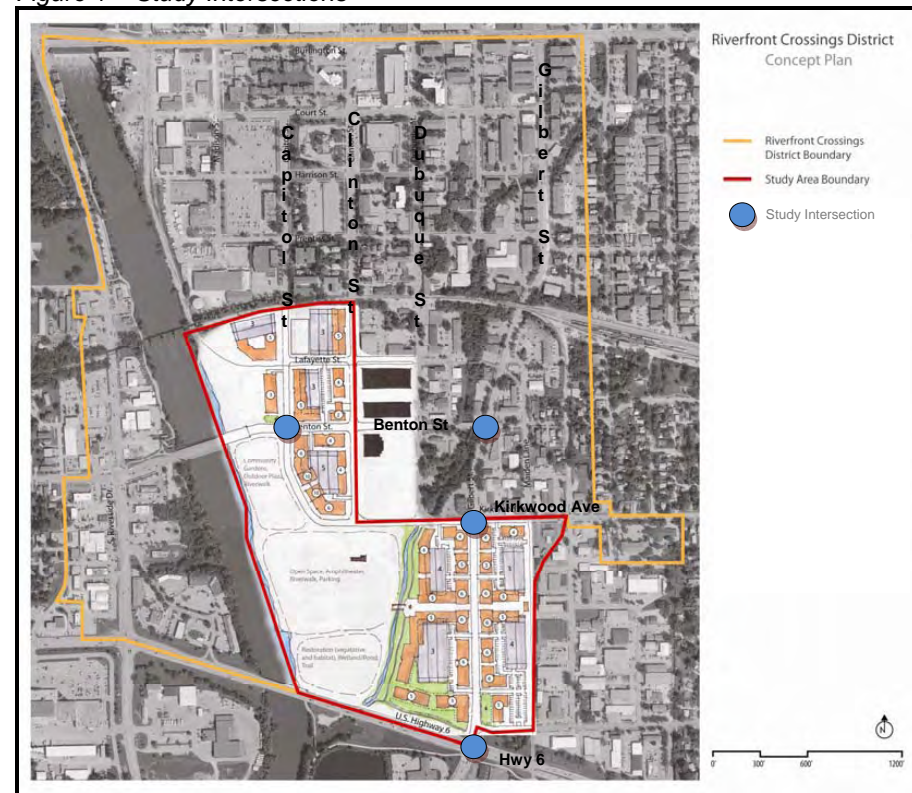


appendix b: conceptual transportation analysis

Introduction

The purpose of this memorandum is to document the traffic evaluation of the Riverfront Crossings District in Iowa City, Iowa. This is a planning-level assessment of the street options related to the current Riverfront Crossings District development concept as of October 29, 2010. The evaluation focuses on four key intersections shown in Figure 1 below. Also, there are two street concepts that are studied. The first is a one-way concept that provides counter-clockwise circulation around Dubuque Street, Benton Street, Capitol Street and Kirkwood Avenue (similar to current operations). The second concept makes all these streets two-way operations.

Figure 1 – Study Intersections



Data Collection

Traffic counts were provided by the City of Iowa City at the four key study intersections during the AM and PM peak hours. In addition, signal timing information was provided at the Gilbert Street/Kirkwood Avenue intersection which is split-phased in the NB/SB directions. Lane configurations and signal phasing were determined by using aerials and photos available from Google and Bing maps.

Existing Conditions

Synchro analysis for existing conditions was necessary in order to establish a base-line for comparison of the conceptual plan traffic operations. Cycles and splits were assumed at Gilbert St/Highway 6 and Capitol St/Benton St. Even though analysis was completed for both the AM and PM peak hours; the PM peak hour was the controlling time period. For purposes of this planning level traffic evaluation, only PM results are presented.

- Capitol St/Benton St → LOS A
- Gilbert St/Benton St → LOS E (worst-case stop-controlled approach)
- Gilbert St/Kirkwood Ave → LOS D
- Gilbert St/Highway 6 → LOS D

Development Trips

The development is broken up into two areas as shown in Figure 1. The Capitol Area has a total of 682 residential units, 35,000 square feet of office and 30,000 square feet of retail. The Gilbert Area has 498 residential units, 35,000 square feet of office and 80,000 square feet of retail. The high-rise condo, general office and specialty retail development categories were utilized in the ITE Trip Generation Handbook.

Below is a list of assumptions related to trip generation and assignment:

- Assumed lower than average vehicle trip rates for residential because of the existence of light rail and bicycle commuter emphasis
- Assumed no reduction of trips for existing land uses that would be removed as part of the new development
- Assumed no pass-by trips or internal trip reduction
- Assumed no future background traffic growth in the area
- Assumed Capitol area trips destined to/from the east side of the Iowa River would cross the Benton Street bridge
- Assumed only a small number of trips through the Gilbert Street/Benton Street stop-controlled intersection because it is approaching LOS F
- Assumed all Gilbert area trips access the development to/from Gilbert Street.

Overall the assumptions provide a conservative assessment of the traffic volumes. The table on the next page provides a summary of the trip generation results. Figure 2 and Figure 3 show the one-way and two-way concept build traffic volumes, respectively.

Table 1 – Trip Generation

Table 1. Capitol Area Development													
Land Use*	ITE Code	Intensity	Daily Trip Ends	PM Peak-Hour Trip Ends				AM Peak-Hour Trip Ends					
				Total	% In	% Out	Trips	Total	% In	% Out	Trips		
High-Rise Residential Condo/Townhome	232	682.0 Units	2,795	247	62%	153	38%	94	227	19%	43	81%	184
General Office Building	710	35.0 KSF	594	118	17%	20	83%	98	81	88%	71	12%	10
Specialty Retail Center*	814/820	30.0 KSF	1,321	93	44%	41	56%	52	76	61%	46	39%	30
Capitol Area Development Sub-Total			4,710	459		214		244	383		160		223

Note: From 8th Edition of ITE Trip Generation
*Used shopping center information for AM peak-hour

Table 2. Gilbert Area Development													
Land Use*	ITE Code	Intensity	Daily Trip Ends	PM Peak-Hour Trip Ends				AM Peak-Hour Trip Ends					
				Total	% In	% Out	Trips	Total	% In	% Out	Trips		
High-Rise Residential Condo/Townhome	232	498.0 Units	2,101	185	62%	115	38%	70	173	19%	33	81%	140
General Office Building	710	35.0 KSF	594	118	17%	20	83%	98	81	88%	71	12%	10
Specialty Retail Center*	814/820	80.0 KSF	3,460	213	44%	94	56%	120	135	61%	82	39%	53
Gilbert Area Development Sub-Total			6,156	516		229		288	389		187		203
Total (Capitol and Gilbert Areas)			10,866	975		443		532	773		347		426

Note: From 8th Edition of ITE Trip Generation
*Used shopping center information for AM peak-hour

Table 1A. Capitol Area Development - Breakdown by Block													
Land Use*	ITE Code	Intensity	Daily Trip Ends	PM Peak-Hour Trip Ends				AM Peak-Hour Trip Ends					
				Total	% In	% Out	Trips	Total	% In	% Out	Trips		
North Block (90 condos)			369	33		20		12	30		6		24
Middle Block (124 condos, 15K office)			763	96		36		59	76		38		38
South Block (468 condos, 30K retail, 20K office)			3,578	331		158		173	277		116		161
Capitol Area Development Sub-Total			4,710	459		214		244	383		160		223

Figure 2 – One-Way Build Volumes

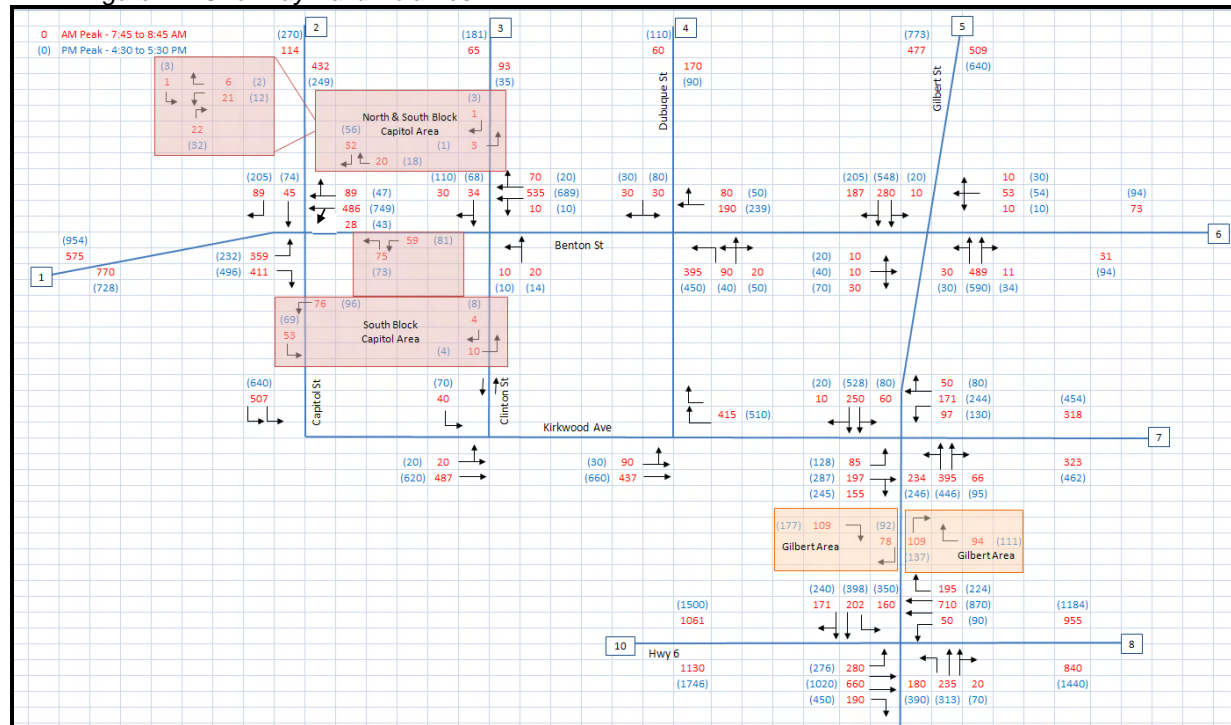
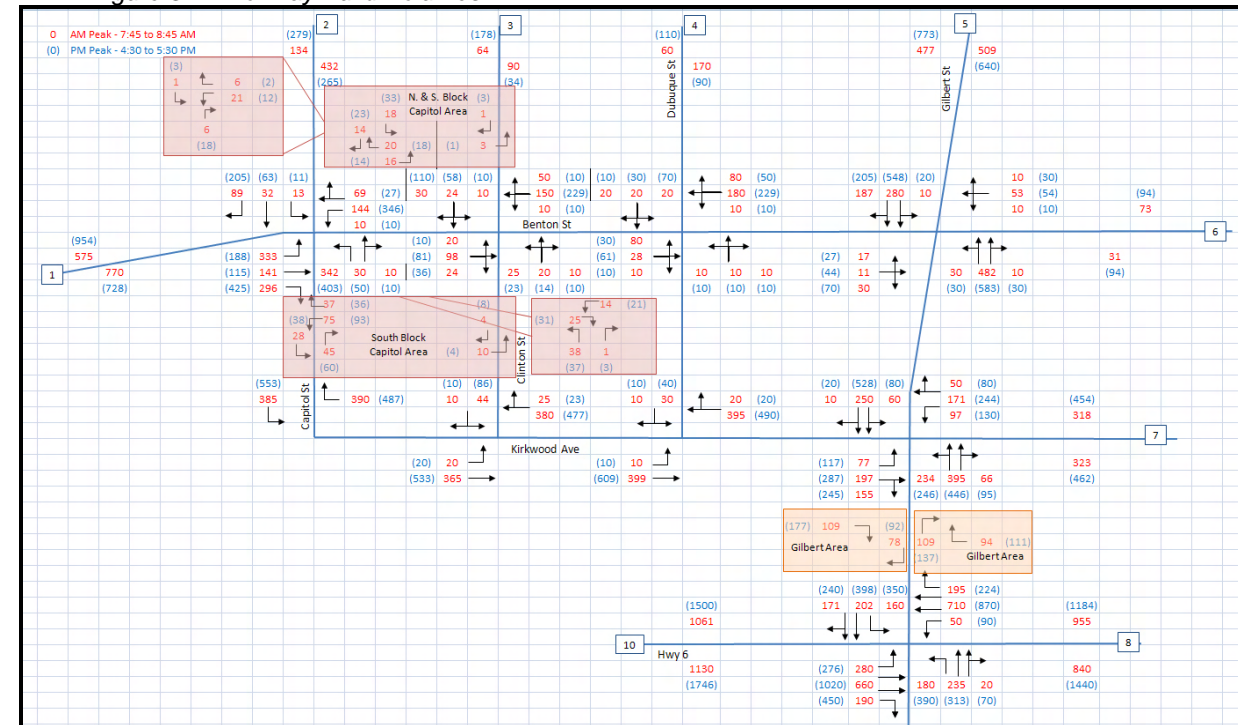


Figure 3 – Two-Way Build Volumes



Findings

One-Way vs. Two-Way Concept

The operations within the area bordered by Dubuque Street, Benton Street, Capitol Street and Kirkwood Avenue are acceptable regardless of the one-way or two-way operations. The Capitol Street/Benton Street intersection would operate at LOS B for both concepts. The one-way concept would consist of two-lanes in the counter-clockwise circulation area, as exists today. The two-way concept would operate with acceptable operations if all streets in this area were only two-lane streets. However, it is recommended that Kirkwood Avenue from Benton Street to Gilbert Street be three-lanes for increased capacity and an appearance as the primary route.

The two-way concept provides superior access alternatives in the Capitol development area when compared to the one-way concept. However, the one-way concept provides slightly better operations at the Capitol/Benton intersection and naturally diverts traffic away from the Gilbert St/Benton St stop-controlled intersection. The two-way concept could make the Gilbert St/Benton St intersection more appealing to drivers. Our study assumed minimal traffic would use Benton Street because of the poor operations from the stop-controlled approaches at Gilbert Street. However, this intersection nearly meets a peak-hour signal warrant. If a signal were installed, it would improve traffic operations but would attract additional traffic to Benton Street which the City has indicated as undesirable.

Gilbert Street/Kirkwood Avenue

Regardless of the one-way or two-way concepts, this intersection would operate at LOS F with development traffic assigned. The intersection currently operates at LOS D. The NB/SB split-phase operations (necessary because there are no left-turn lanes present) are very inefficient. Left-turn lanes would be recommended.

The peak hour and daily traffic volumes on Gilbert Street would exceed the threshold for a three-lane section with a two-way center left-turn lane. A five-lane section would be recommended.

Gilbert Street/Highway 6

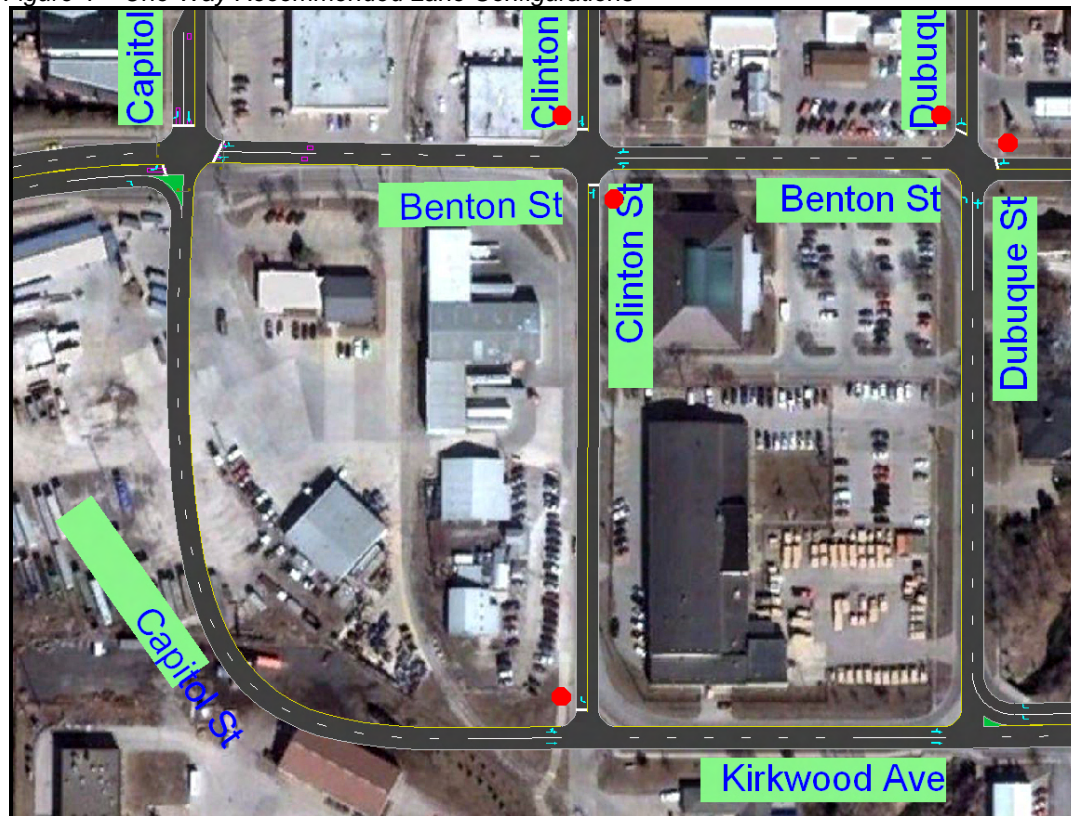
Regardless of the one-way or two-way concepts, this intersection would operate at LOS E with development traffic assigned. The intersection currently operates at LOS D. If the left-turn phases were changed to “permitted/protected” operations in all four directions, then the intersection would continue to operate at LOS D. However, the left-turn phases should remain “protected only” if safety issues preclude the use of permitted left-turns. Assuming that is the case, some other kind of capacity improvement would be required. Dual-left turn lanes in the NB and SB directions and a SB right turn lane would provide improved operations from the current conditions.

Recommendations

One-Way vs. Two-Way Concept

Other factors should influence this decision such as access management. The traffic operations are acceptable no matter which concept moves forward. But, each concept provides different lane configurations in the area (i.e. Capitol/Benton intersection). Figure 4 and Figure 5 are screen captures of the Synchro networks showing what the recommended lane configurations should be for each concept. If it is highly desirable to keep the Gilbert Street/Benton Street intersection unsignalized, then the one-way concept would favor over the two-way concept. However, there are other ways to control the traffic on Benton Street to keep traffic levels below signal warrant levels.

Figure 4 – One-Way Recommended Lane Configurations



SUDAS Minimum Criteria: For the one-way concept, all lane widths should be 12 feet except:

- Capitol Street north of Benton Street → 11 feet
- Clinton Street → 11 feet
- Dubuque Street north of Benton Street → 11 feet

Figure 5 – Two-Way Recommended Lane Configurations



SUDAS Minimum Criteria: For the two-way concept, all lane widths should be 12 feet except:

- Capitol Street north of Benton Street → 11 feet
- Clinton Street → 11 feet
- Dubuque Street → 11 feet
- Benton Street east of Capitol Street → 11 feet
- Two-Way Left-Turn Lane on Capitol/Kirkwood Connector → 14 feet

Gilbert Street

As previously mentioned, Gilbert Street will not be able to function as a three-lane roadway. Without left-turn lanes on Gilbert Street, the Kirkwood Avenue signal would have to remain split phased and would provide LOS F operations. The addition of NB/SB left-turn lanes and an EB right-turn lane would provide LOS C operations. Gilbert Street should be a five-lane roadway with a two-way center left-turn lane that would eliminate the need for split phasing at Kirkwood, but would also provide a lane for which development trips to turn from. North of Kirkwood Avenue, Gilbert Street could transition back to a four-lane roadway assuming Benton Street remains unsignalized.

Figure 6 – Gilbert Street Lane Configurations (north pointing to the right)



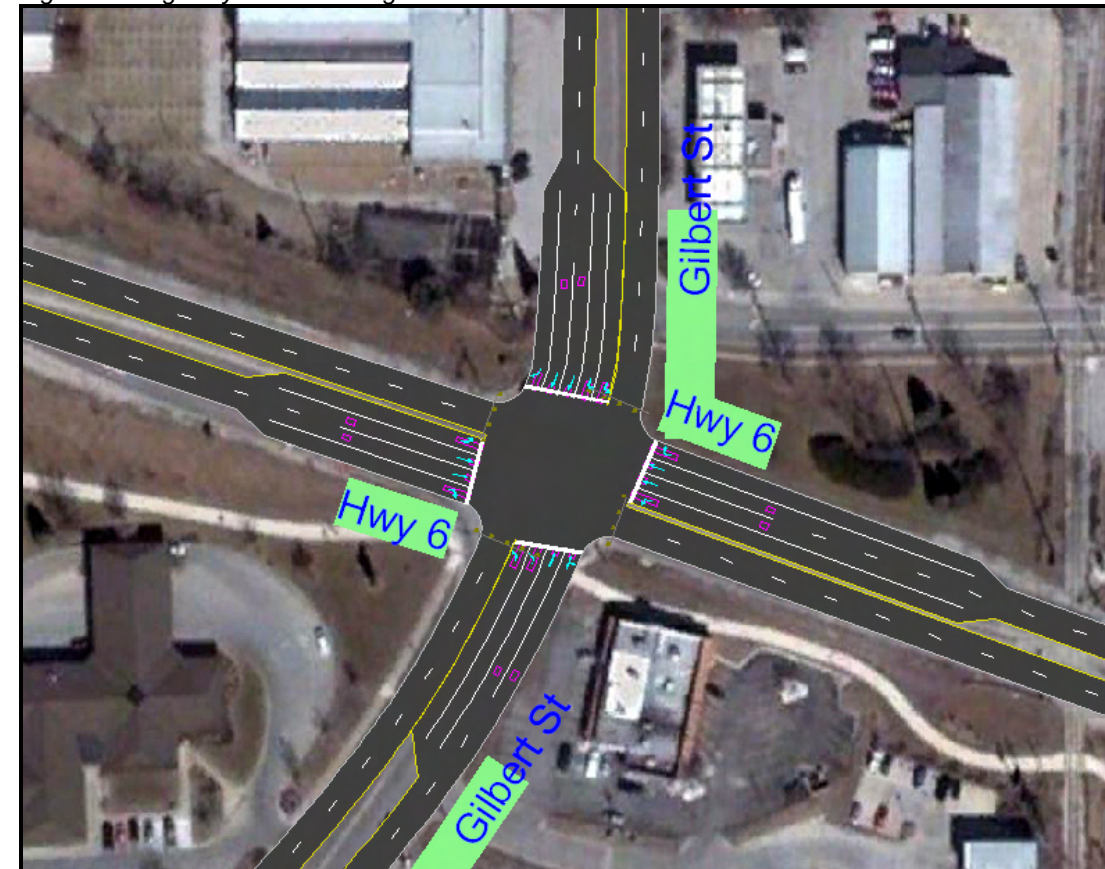
SUDAS Minimum Criteria: For the Gilbert Street area, all lane widths should be 12 feet except:

- Two-Way Left-Turn Lane on Gilbert Street → 14 feet
- Benton Street → 11 feet

Highway 6

Highway 6 operations would carry additional trips due to the development. The current operations at Gilbert Street/Highway 6 are LOS D. The addition of development trips would reduce the operations to LOS E. As previously mentioned, the left-turn phases are all protected only phases. If they were updated to permitted/protected phasing, operations would improve back to LOS D. Assuming the left-turn phases must remain protected only, other capacity improvements would be necessary. The construction of dual-left turn lanes in the NB and SB directions would improve operations back to existing LOS D levels. The addition of a SB right turn lane provides further improvement. If after those improvements dual left-turn lanes were also provided in both directions on Highway 6 (as depicted in the Engineering Alliance, Inc. conceptual drawing – 2005), the operations would improve to LOS C. The minimal recommendation for improved operations would be dual left-turn lanes in the NB and SB directions and a SB right turn lane.

Figure 7 – Highway 6 Lane Configurations



SUDAS Minimum Criteria: For the Highway 6 area, all lane widths should be 12 feet.

Additional Study

It should be noted that all recommendations in this memo are planning level recommendations. Further study is needed prior to design of any street improvements or redevelopment in order to fine tune the assumptions of this memo (density, access, transit options, etc.) and to discuss the feasibility of the planning level recommendations. The study would conduct existing traffic counts and assess future traffic growth, pass-by trips, internal trip reduction and transit usage. The study intersections would be considered as part of a network of intersections in order to assess traffic signal cycle lengths and coordination. Micro-simulation analysis, in addition to Synchro, would help determine design recommendations such as storage bay lengths. Crash analysis and pedestrians should also be part of any additional study in order to assess safety.

Typically, a detailed traffic impact study is conducted during the design phase of any proposed development. At that time, specific information regarding the type of development will be known, including proposed access locations. In some cases, local street improvement projects precede redevelopment projects. The details of the study should not change, but every effort should be made to make accurate assumptions that are documented and approved by the stakeholders.