



# Willow Street and Castille Avenue

## Street Improvements



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# 01

## Introduction

The Corridors study shed light on an area in need of design interventions. This chapter introduces the story and context of the site and paves the way for purposeful design recommendations.

### Willow and Castille Corridors

In 2014, Lafayette Consolidated Government (LCG) organized a comprehensive plan to establish a unified vision and framework for the community's future. This bold plan was adopted as PlanLafayette and establish the structure moving forward to 2035. As a result, more in-depth studies have led to exploring various aspects of PlanLafayette.

As part of PlanLafayette, three areas in the parish were selected to conduct further studies of the preferred growth patterns for the future. These three areas were a small sampling of various typologies within Lafayette and were chosen to represent different characteristics of the larger community. These small area plans included Johnston/Bertrand, Milton, and North Gateway.

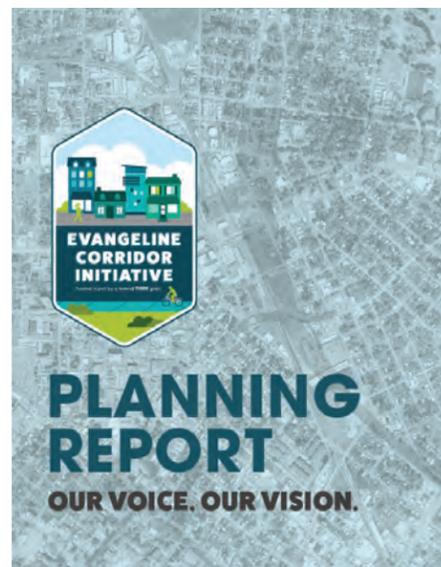
The Evangeline Corridor Initiative (ECI) is another example, as the I-49 connector is being planned and built. This corridor will certainly impact various neighborhoods throughout Lafayette. The Gateway District is one such neighborhood evaluated by the ECI with a Design Manual corroborated with community input.



Image Source: lafayettetravel.com

Although several studies cover the Willow Street and Castille Avenue corridors (North Gateway and Gateway District), LCG still struggled to determine which interventions the City-Parish could employ. In addition, whatever interventions LCG used would need to be within the public right-of-way of these corridors to help spur private economic development and growth in a district/area struggling for private investment and the future development of the I-49 connector.

The evaluation of these corridors has allowed the design team to develop solutions that will mitigate the impacts of the I-49 connector and provide a more "complete street" solution that will result in safer pedestrian and bicycle use within the Willow Street corridor. While the Castille Avenue corridor shares the same goal as Willow Street, an added benefit is the realization of the future revitalization of the Northgate Mall site.



Evangeline Corridor Initiative Document Cover

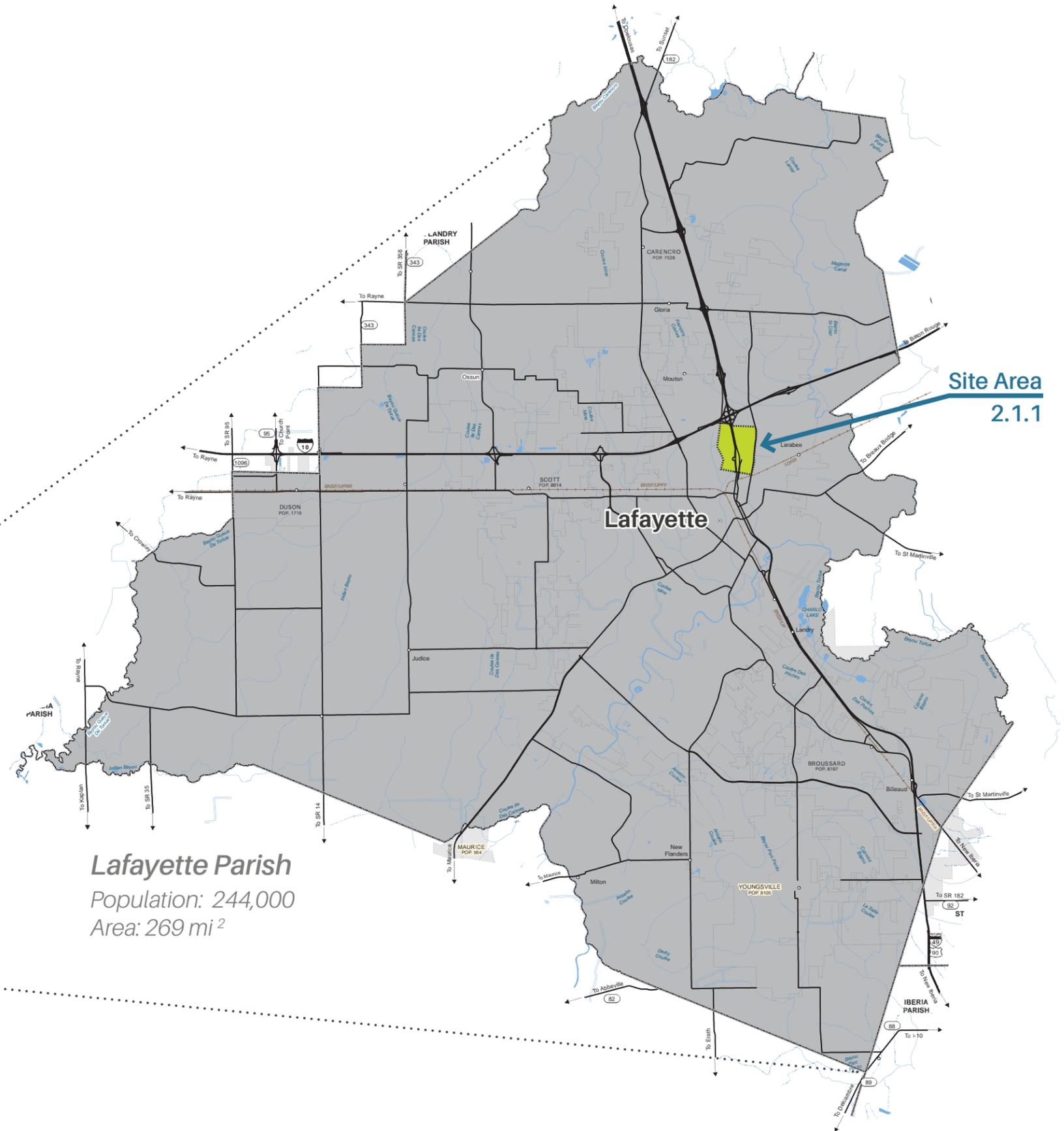
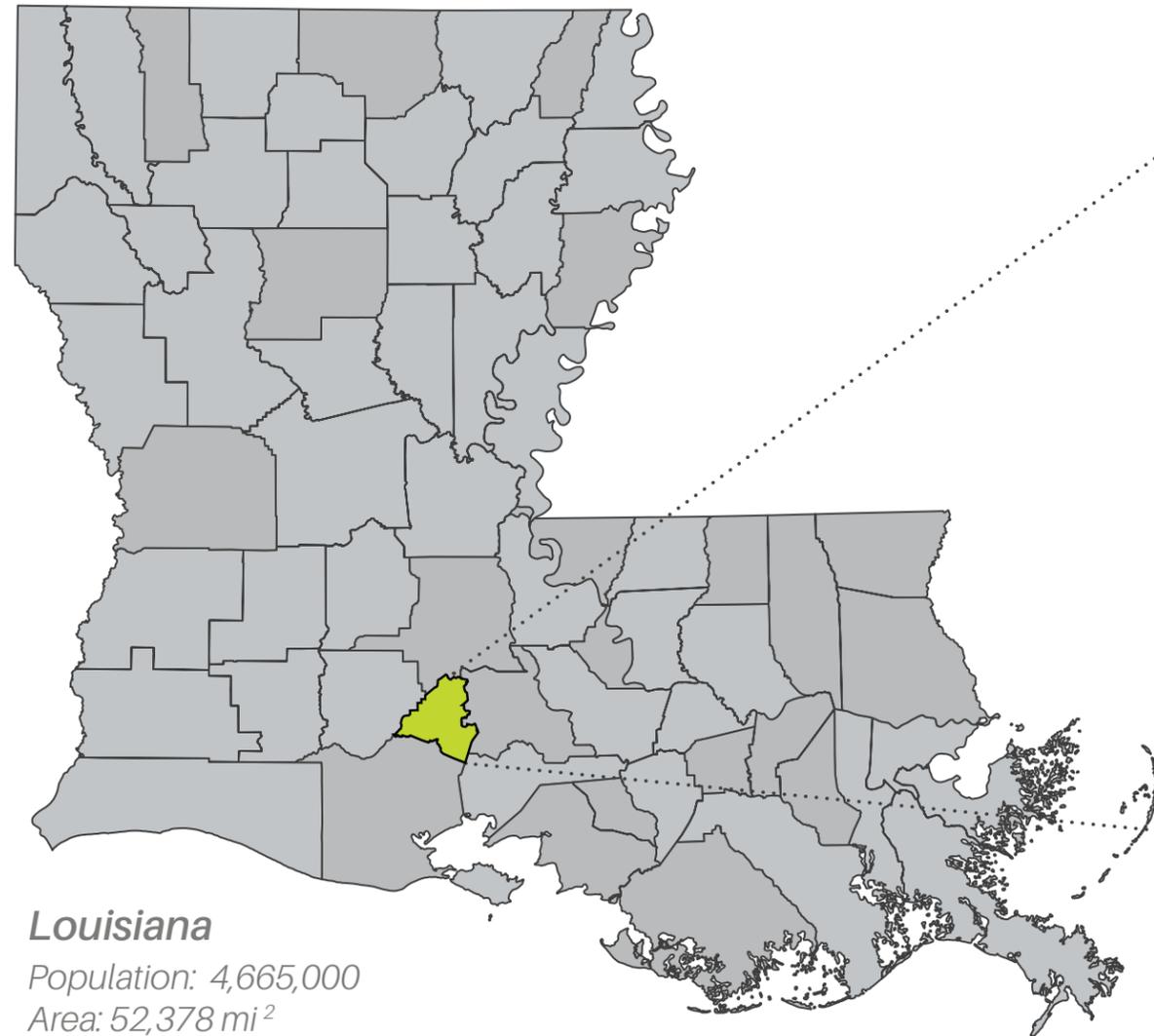


PlanLafayette Master Plan Cover

# 1.1

## Area Context

The studied sites are in the “gateway” to Lafayette along the Evangeline Thruway / I-49 corridor. This area was once a thriving commercial hub, with the Northgate Mall anchoring the surrounding communities in its prime. Today the area needs improvements to address multi-modal circulation issues, lack of investment, and shifting demographics. Design interventions would serve to reinvigorate the community and drive economic growth.

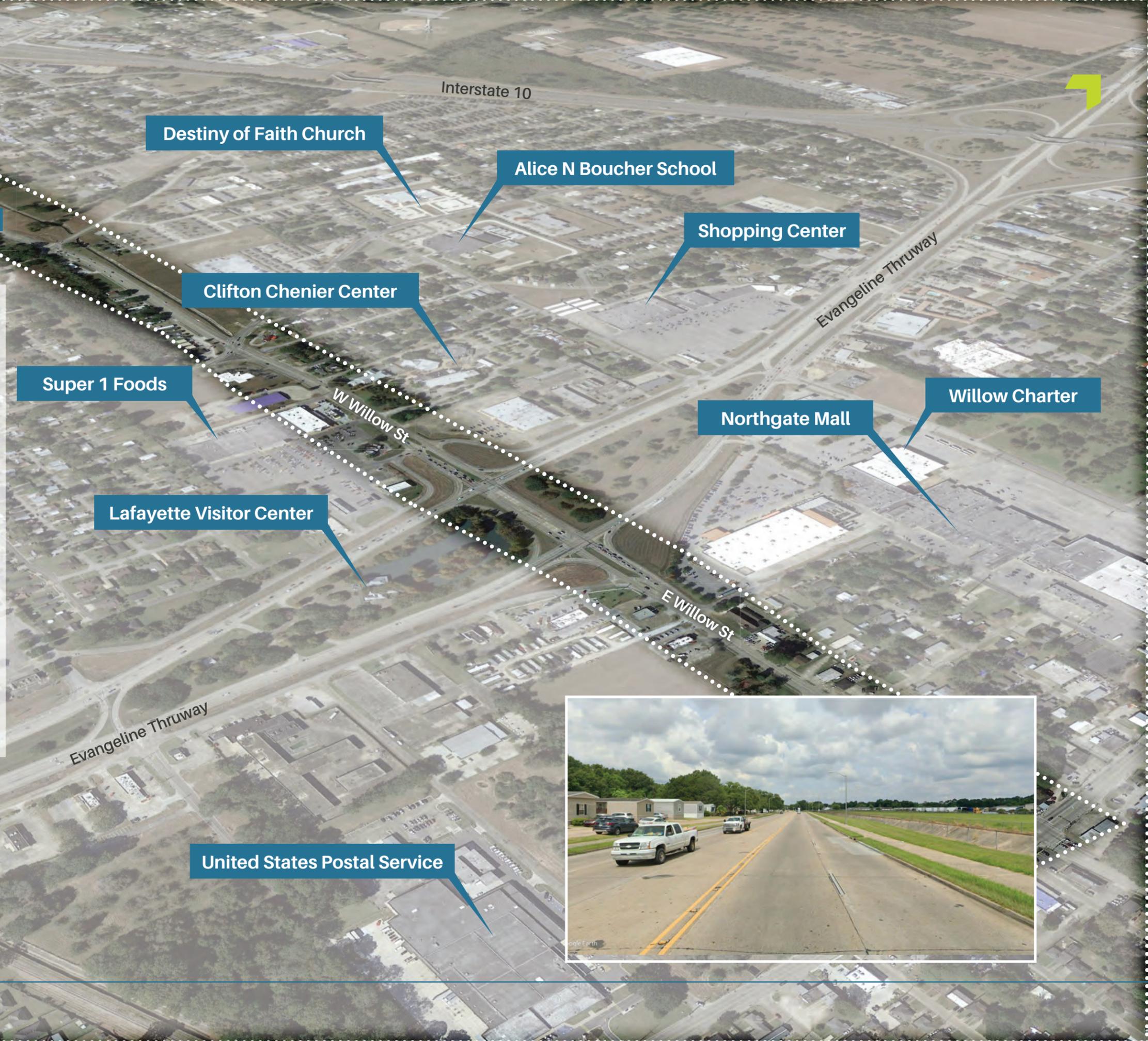


# 1.2

## Willow Street Corridor & Surrounding Neighborhood

The Willow Street corridor is a central travel route for residents of the numerous neighborhoods located along and on the periphery of its course. Government buildings (U.S. Post Office, municipal library, parks, and schools), retail (big box stores), other forms of commerce, and institutional facilities are co-located within the corridor. The primary demographic composition of the corridor neighborhoods is Single Family households that are younger with school-aged children. The area supports a relatively light employment density, with the average median gross income of \$29,000 which is low for this region.

This economic status is further reflected in the very high rate of families that do not own a car and are reliant on alternative forms of transportation. This point emphasizes the importance of creating transportation opportunities for walking, bicycling, and public transit. The future integrity of Willow Street's communities will depend on the corridor's comprehensive design and connections to other neighborhoods via unconventional modes of transport.



# 1.3

## Castille Avenue Corridor & Surrounding Neighborhood

Castille Avenue intersects the east side of Evangeline Thruway. The avenue's path reduces from four to two lanes as it moves away from the thruway and passes through a predominantly commercial area. The location of Castille Avenue is significant; the southern border is in alignment with Northgate Mall, and it will be near the Willow Street interchange with the completion of the I-49 extension. Additionally, most of the avenue's northern border consists of a large undeveloped area that presents a unique development or green space opportunity.

Despite employment opportunities, the data reflects that most jobs in this area are low earning and that the median household income is near the U.S. poverty level. Meager rates of car ownership further support this. Streets with walking and bicycle pathways and connections to public transport are essential for residents on fixed incomes or those who cannot drive. Allowing access via links to other communities and services will allow the older residents of the Castille Avenue corridor to continue to age in place, providing stability to this more senior community.



# 1.4

## The Benefits of Employing Quality of Life Interventions

As urban centers spread outward, planning and infrastructure amenities for pedestrians and cyclists alike seem to be an afterthought in certain areas. However, some took it upon themselves to either design these amenities during planning or introduced enhanced amenities after implementation. One "movement" that addresses these infrastructure amenities is "Complete Streets."

The program started in late 2003. Its goal is "ensuring the same rights and safe access for all users of streets, including pedestrians, bicyclists, motorists, and transit riders of all ages and abilities." Design features include "ample sidewalks, improved standards for street tree planting and other landscape elements, bike lanes, dedicated bus lanes, comfortable and accessible transit stops, frequent crossing opportunities, median islands, and curb extensions."

Complete Streets became an increasingly popular movement that became the adopted language for The National Complete Streets Coalition, which the American Planning Association, America Bikes, Smart Growth America, and others founded. In addition, many larger municipalities, such as San Francisco, Portland, Atlanta, and Louisville, began using Complete Streets in their planning efforts.

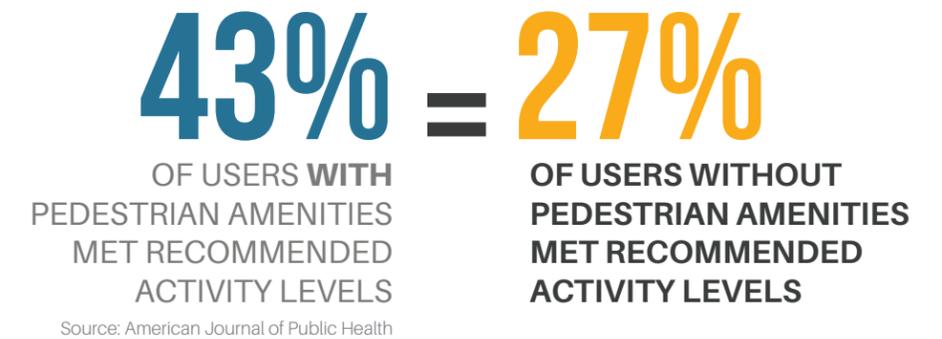
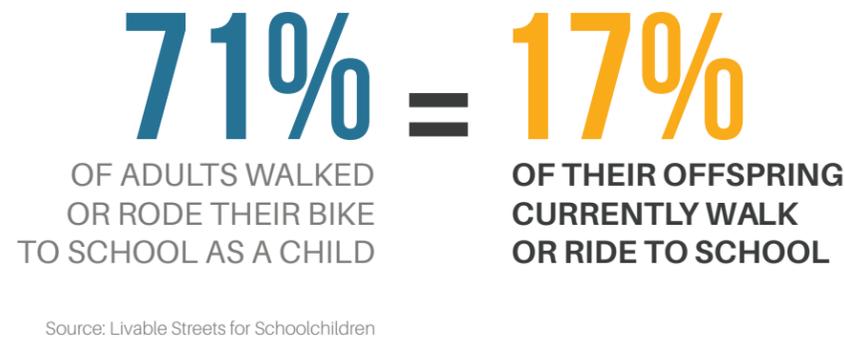
It was no coincidence that Complete Streets started growing. Multiple benefits and incentives to the movement are driven by three defined pillars: Multi-Modal, Green, and Smart. All three of these pillars cumulatively enhance the community this movement serves. Implementation challenges and public buy-in are hurdles, but the benefits outweigh the costs in this case.

SOURCES:  
1 Corey Zehngebot and Richard Peiser, "Complete Streets Come of Age", American Planning Association, May 2014, <https://www.planning.org/planning/2014/may/completestreets.htm>



## THE BENEFITS OF COMPLETE STREETS

Thoughtful roadway designs with multiple users in mind - pedestrians, seniors, children, cyclists, transit riders, drivers, and people with disabilities - provide enhanced benefits. Intentional streets are safe, healthy, equitable, and overall better for the environment.



## COMPLETE STREETS IMPROVES COMMUNITIES



# 1.5

## Traffic Analysis

The concept for the segment of Willow Street between Evangeline Thruway (southbound, S.B.) and Moss Street includes reallocation of the pavement from its current four-lane undivided cross section to a section with two travel lanes, a center two-way left turn lane with intermittent planted spot medians/mid-block pedestrian crossings and separated bicycle lanes.

The concept addressed stakeholder concerns about the lack of safe bicycle facilities and protected pedestrian crossing opportunities along the Willow Street corridor. Furthermore, the safety benefits of lane reallocations of this type have been documented and compiled in the Road Diet Informational Guide (FHWA, 2014) and show a reduction in crashes on similar lane reallocation case studies 19 and 47 percent.

Evaluation of this concept included a traffic operation analysis to compare travel and delay times for through-vehicle traffic to what is experienced today on the four-lane section—a detailed memorandum summarizing that research can be found in Appendix (C) of this report. However, the evaluation concludes that converting this segment of East Willow Street from a four-lane undivided to the proposed three-lane concept would result in minimal additional vehicle delay at peak hours. Therefore, given the expected safety benefits and the addition of enhanced facilities for bicycles and pedestrians, the lane reallocation concept for this segment of Willow Street was carried forward as a recommendation.



Source: Tavella Design Group

Direction	Average Travel Time (s)					
	AM Peak-Hour			PM Peak-Hour		
	Existing	After Lane Repurposing	Δ	Existing	After Lane Repurposing	Δ
Eastbound	147.1	159.0	11.9	158.6	173.4	14.8
Westbound	179.3	183.3	4.0	188.5	212.2	23.7

Source: Kittelson + Associates: Technical Memorandum - Willow Street Lane Repurposing Study (Appendix B,C)

# 02

## Existing Conditions

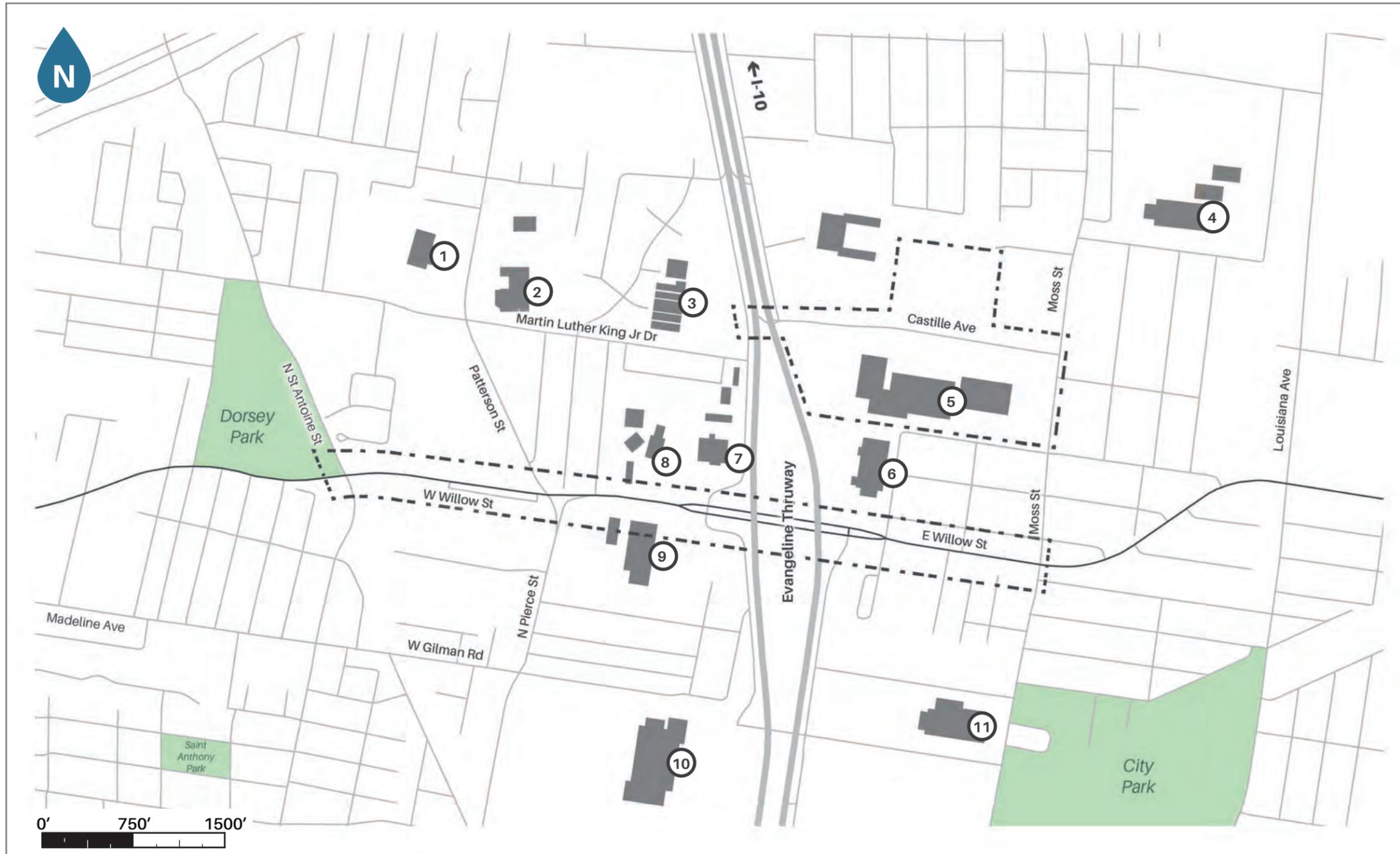
This section focuses on the existing conditions of the Willow Street and Castille Avenue study areas. These maps tell the site's story, existing multi-modal circulation constraints, and opportunistic design intervention areas. Additional Mapping information can be found in Appendix A of this document.



# 2.1

## Context

Evangeline Thruway and Willow Street's intersection is an anchor for the surrounding site area. In addition, several points of interest, including the iconic Northgate Mall, populate the area and serve as critical points in the analysis of this intervention.



### Legend

- Site Area
- ① Destiny of Faith Church
- ② Alice N Boucher School
- ③ Parkway Plaza Shopping Center
- ④ Northside High School
- ⑤ Northgate Mall
- ⑥ Home Depot
- ⑦ Philadelphia Christian Church
- ⑧ Clifton Chenier Center
- ⑨ Super 1 Foods
- ⑩ Walmart Supercenter
- ⑪ United States Postal Service

Source: DDG GIS

# 2.2

## Pedestrian 10 Minute Walk Radius Map

Key points of interest radiate from the Evangeline Thruway/ Willow Street junction. This map shows the average walking time from the center moving outwards. Average walking times in this area are approximately 10 minutes from the surrounding residential areas on the previous map. While the proximity to these points is close, the danger increases as you get near the center, as shown in the following map.



### Legend

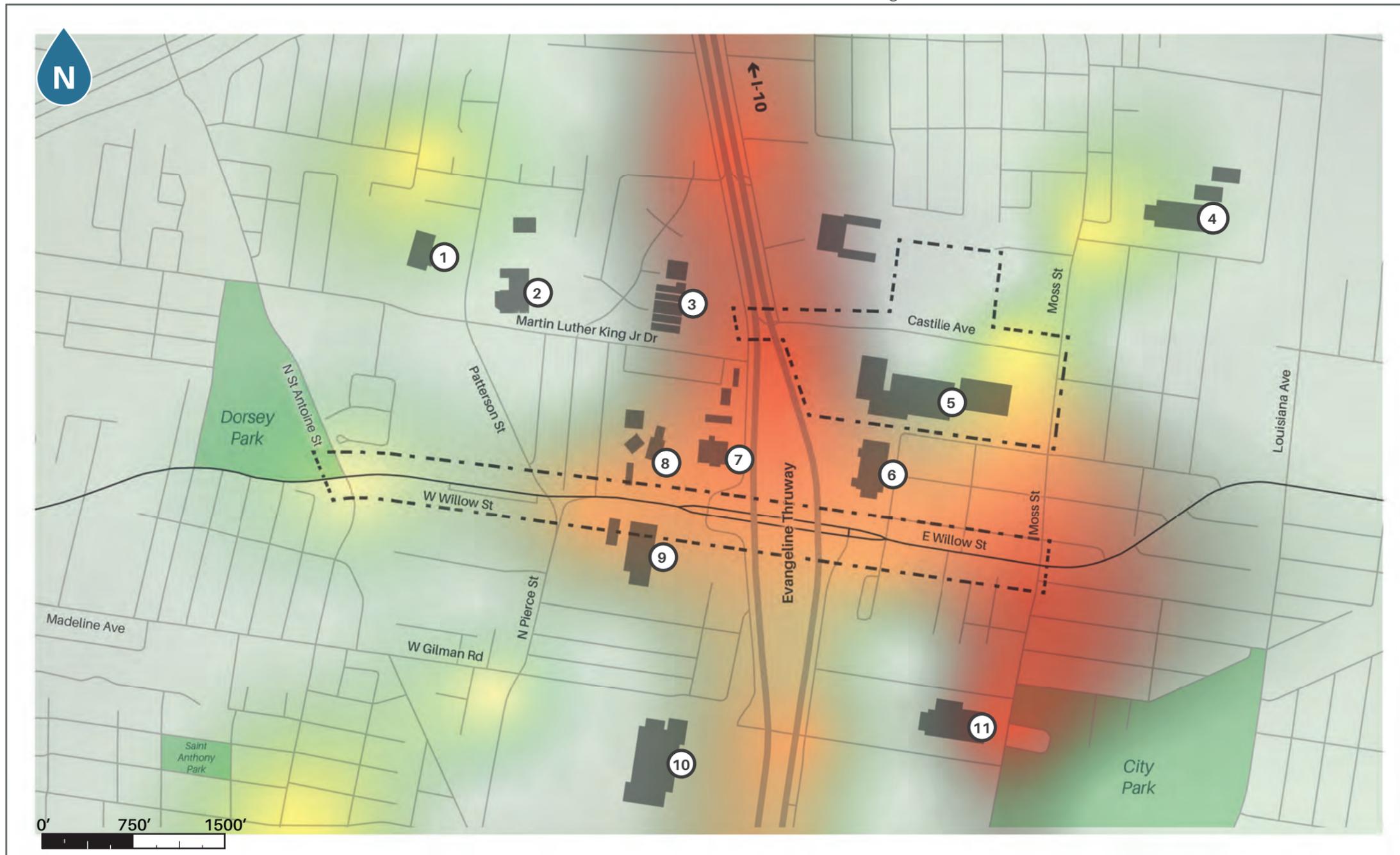
- Walking Times
- Site Area
  
- ① Destiny of Faith Church
- ② Alice N Boucher School
- ③ Parkway Plaza Shopping Center
- ④ Northside High School
- ⑤ Northgate Mall
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- ⑨ Super 1 Foods
- ⑩ Walmart Supercenter
- ⑪ United States Postal Service

Source: DDG GIS

# 2.3

## Pedestrian & Bike Accident Prone Intersections

Based on recorded data, the below graphic shows areas that are prone to pedestrian and bicycle related accidents involved with motorized vehicles. These areas coincide with intersections observed to have outdated and/or inadequate amenities for safe circulation for multi-modal transportation. Interventions in these "hot-spots" are crucial in addressing overall safe movement throughout the site area.



### Legend

Accident Probability



- Site Area
- ① Destiny of Faith Church
- ② Alice N Boucher School
- ③ Parkway Plaza Shopping Center
- ④ Northside High School
- ⑤ Northgate Mall
- ⑥ Home Depot
- ⑦ Philadelphia Christian Church
- ⑧ Clifton Chenier Center
- ⑨ Super 1 Foods
- ⑩ Walmart Supercenter
- ⑪ United States Postal Service

Source: DDG GIS

# 2.6

## Analysis & Vision

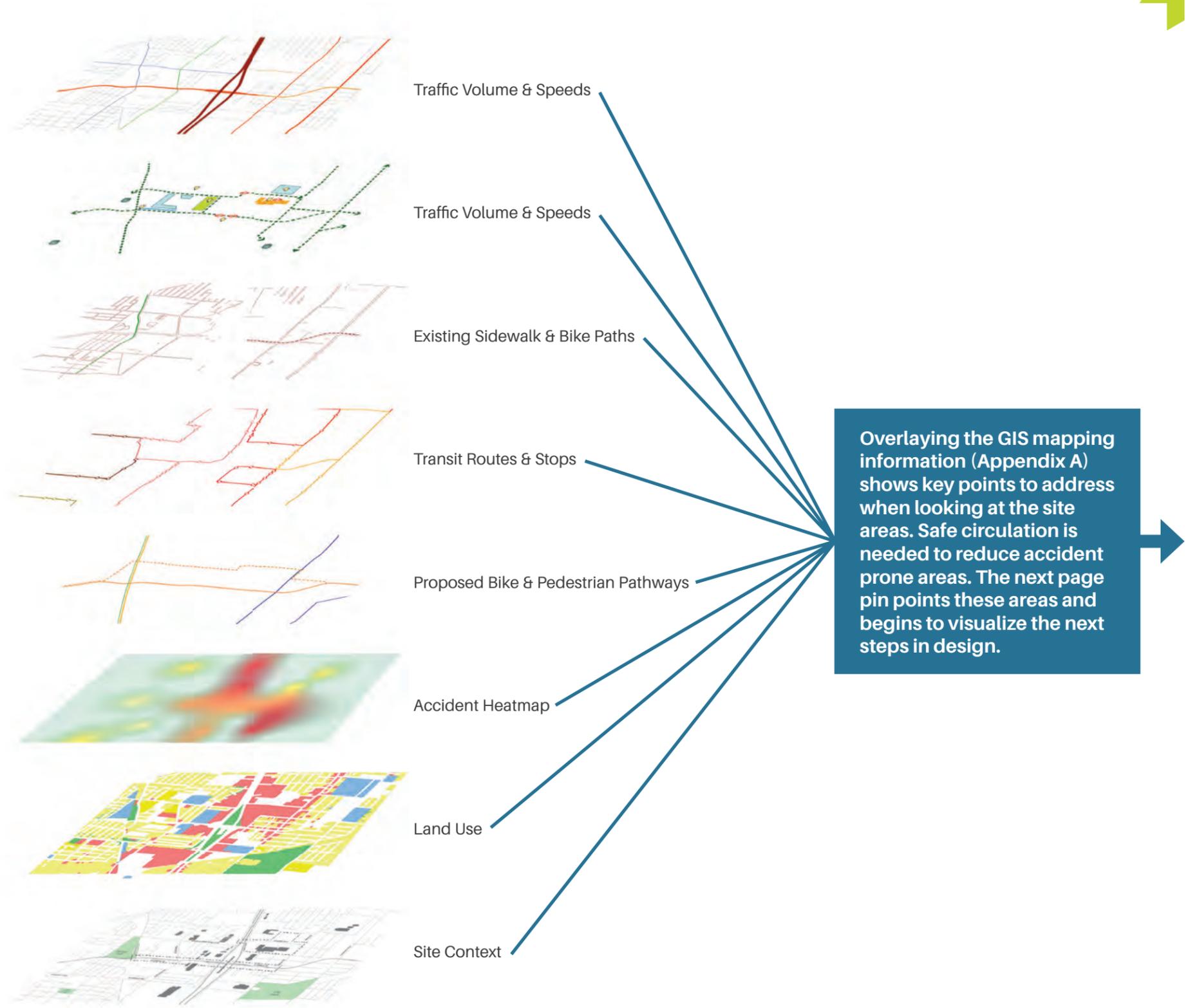
### Analysis of the Corridors and Site Area

After compiling data into map form and overlaying these layers, areas of constraint and opportunity within and around the site become apparent. For example, the Evangeline Thruway currently divides the adjacent communities and acts as a circulation constraint with accident-prone areas along the corridor. Without drastic configurations to the existing I-49/ Evangeline Thruway corridor, design interventions should include enhanced visibility crosswalks with pedestrian and bicycle-friendly features.

Another area of constraint and opportunity is the Northgate Mall site. The site currently occupies a large footprint and interrupts the flow of the surrounding street grid. While once an iconic feature in the Lafayette area, the Mall sees less use, and the occupation of retail stores is diminishing. Therefore, reconfiguring the mall site is recommended to enhance and revitalize the once-prevalent area of the Northgate Mall.

### Vision for Willow and Castille Corridors

With these opportunity areas defined, site recommendations came to life after data analysis, community outreach sessions, and design charrettes. Street typologies were in early sketches as the rights-of-way for Willow and Castille were being reconfigured, along with opportunity areas noted. Dorsey Park was a focus area early in the project, with a potential opportunity for connection to Martin Luther King Boulevard to the adjacent community. This area could also connect to the existing bike trail and future Rails-To-Trails path parallel to North St. Antoine Street, as shown to the right. This area also highlights the coulee that runs alongside West Willow Street. A small park with a stormwater swale featuring native plant species serves as a placemaking opportunity at this critical intersection and offers educational opportunities for the surrounding community. The vision for the Castille corridor was to enhance the Northgate Mall site and create safe connectivity to the surrounding neighborhoods by reconfiguring existing rights-of-way and breathing life into the historic mall site.



# 2.5

## Opportunities & Constraints



### Legend

- Site Area
- Opportunities
- Constraints
- Connectivity
- Coulee
- Northgate Mall
- Private/Public Open Space
- Clifton Chenier Connection
- Public Park

# 03

## Treatments/ Interventions

With existing conditions considered, several interventions and recommendations were provided to help alleviate traffic issues and improve connectivity throughout the study area. The following pages in this section show several graphics of intervention typologies.



# 3.0

## Street Typologies Introduction

The following street typologies and design interventions were developed after analyzing the existing conditions to establish safe and accessible multi-modal circulation throughout the Willow and Castille corridors. Utilizing the traffic analysis (Appendix A), GIS mapping (Section 2), and onsite due diligence, recommendations and reconfigurations were made to the existing rights-of-way. As a result, several typologies were created to address these individual ROW sections along Willow Street and Castille Avenue.

Pedestrian and bike facilities were the main focus of this intervention to create a safe passage through the defined site areas. Dedicated bike lanes with a minimum width of 5' were incorporated into the reconfiguration of the ROW along Willow Street and Castille Avenue. The lanes, acting as paved shoulders, are separated by marked lines, and high-visibility green paint is applied at intersections, crossings, and driveways to increase visibility for other modes of circulation (see Sec 3.2). In addition, disconnected sidewalks are reconnected and serve as multi-use paths that run parallel to major roads.

Intersections and crossing interventions were recommended to supplement the pedestrian and bike facilities. This solution would help enhance the safety of users through high visibility markings, Rectangular Rapid Flashing Beacons (RRFB), and dedicated crosswalks to easily access and control the flow of traffic at safe speeds while increasing motorized vehicular awareness.

Public transit stations were recognized through the site area and integrated into the recommended facilities to address. Key stations were identified and included safe layering of lanes with pedestrian and bicycle circulation. In addition, the stations identified have nearby marked crosswalks to help increase the safety of transit users and access throughout the area.

An additional layer of Traffic Calming was included in the design intervention to increase safety across the site further. Currently, Willow Street acts as a "raceway" with wide 12' lanes and no existing devices to help mitigate abuse of speed regulations. Adding the design solutions mentioned above increases awareness and begins to address calming traffic issues. In addition, reduced speeds significantly decrease fatalities associated with pedestrian-vehicular accidents. Reinforcing this with Road Diet applications further enhances the effect of traffic slow-down with drivers paying more attention to closer vehicular proximities. The Road Diet design also increases the overall ROW area to incorporate pedestrian and bicycle facilities along the street.

Streetscape elements are recommended as an additional layer within these design typologies. The existing street conditions provide little shade, furnishings, or safety lighting. Street trees provide a myriad of benefits to streetscapes: increasing driver awareness, adding new habitat for wildlife, filtering and improving the quality of air produced by motor vehicles, reducing sub-canopy ambient temperatures, reduction of erosion through soil stabilization, absorbing stormwater runoff, providing a physical separation between vehicular and pedestrian traffic, and increasing adjacent property values. With the addition of pedestrian-scale lighting and amenities, the site safety and overall health of its users and environment would increase.

The final layer to supplement these typologies would be the addition of Green Infrastructure. With Louisiana receiving between 50 and 70 inches of precipitation each year (Source: ncics.org 2022), design interventions for the site should also consider sustainably mitigating this influx of rainfall. Recommended interventions include utilizing stormwater planters, bioswales, permeable pavers, and enhancing existing drainage infrastructure, such as permeable coulees.



# 3.1

## Pedestrian & Bicycle Facilities



Castille Ave Mid Block

# 3.1

## Pedestrian & Bicycle Facilities



### Sidewalks

A sidewalk's most significant benefit is safe pedestrian passage along transportation routes. Walking is a primary mode of transportation, and pedestrians are susceptible to substantial injuries and mortality in areas without sidewalks or where sidewalks stop. Over 4,000 pedestrians are killed by cars each year in the United States. Sidewalks provide safe, accessible pedestrian travel to sites within a community and connect and route neighborhoods to retail and commercial locations. Encouraging and providing safe passage for pedestrians provides the public health benefits of physical activity. Sidewalks are also considered a public amenity and increase property values where they are installed, which boosts revenues generated from property taxes.

Image Source: Adobe



### Paved Shoulders

Paved shoulders are adjacent to the road layout, usually four feet or greater, to either side and assist with stabilizing road infrastructure edges. The addition of a rumble strip alerts drivers who stray out of their lanes. Paved shoulders are usually wide enough to be used as a bike lane, which helps to prevent bicycle collisions with vehicles. The extra width also provides pedestrian pathways when dedicated sidewalks are unavailable along streets and highways in urban areas. Statistically, roads with paved shoulders tend to have lower crash rates.

Image Source: Iowa City Press-Citizen



### Separated Bike Lanes

Bicycle lanes provide bikers with a designated space on the road for safely navigating traffic in urban settings. Properly designed bicycle lanes also decrease commonly occurring bike accidents such as dooring (when motorists open a car door into a biker's path) and right hooks (when motorists make a right turn into a biker's path approaching an intersection). Bicycle lanes also decrease bike collisions with pedestrians by preventing the need for bikers to move from the road onto the sidewalk. In addition to improved safety, designated bike lanes improve traffic flow by allowing bikers to move at consistent speeds and without dodging in and out of traffic. Additionally, bicycle lanes create a feeling of safety which encourages more people to bike, helps to decrease the use of fossil fuels, thereby improving air quality, and has the added health benefits of exercise.

Image Source: Adobe



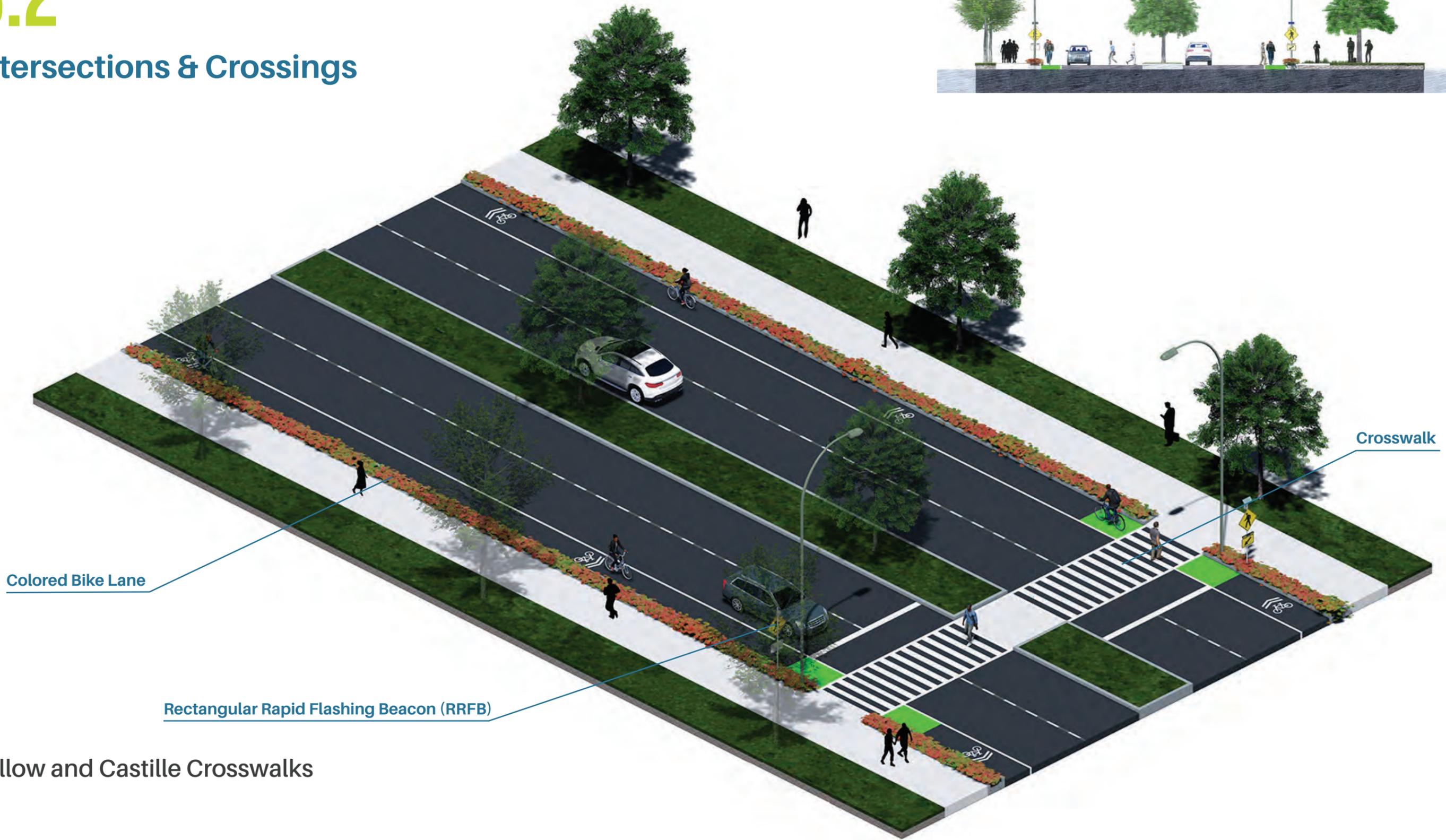
### Shared Use Path

Shared Use Paths are pathways that are physically separated from motorized traffic. They support multiple types of users, such as pedestrians, joggers, bicyclists, and wheelchair use. Also known as greenways, trails, or bikeways, Shared Use Paths create a desirable space for transportation and recreational use. Benefits of having Shared Use Paths include providing safe, accessible transportation and recreation routes, improving individuals' health and well-being, and improving a community's quality. Also, economic reports indicate there is increased money spending while using the path, which generates jobs and tax revenues.

Image Source: Adobe

# 3.2

## Intersections & Crossings



Willow and Castille Crosswalks

# 3.2

## Intersections & Crossings



### RRFB

The need to use signals, beacons and other traffic calming measures at crosswalks varies with traffic speed and traffic or pedestrian volume. For example, a Rectangular Rapid Flashing Beacon (RRFB) is a user-engaged warning signal that consists of a single or dual-sided light bar with horizontal lights. It is activated to flash by pedestrian movement rapidly and draws a driver's attention to the crosswalk. These beacons provide advanced notice of pedestrian crossing usage and improve driver yield rates by 90%. Data show that RRFBs are most beneficial for multi-lane crossings and should be used with pedestrian signage and painted crosswalks.

Image Source: Adobe



### Bike Lane Markings

Colored pavement helps motorists identify the designated space for bicyclists. A select color (green) increases a bike lane's visibility, raising awareness and providing motorists with a clear understanding of a bicycle pathway. Bike Lane Markings also reinforce bicyclist priority, increase yielding rates, discourage illegal parking in bike lanes, and help to reduce conflict at intersections with turning motorists. The green paint increases bicyclist visibility and comfort by clearly defining the space. The use of colored lanes is included along entire corridors, across intersections where bike paths may be unclear, across entries and driveways, and within bike lanes.

Image Source: Adobe



### Crosswalks

Crosswalks save lives by providing designated separate spaces on roadways where pedestrians have the right of way and are expected to cross. They can occur at intersections, mid-block, and near significant landmarks such as hospitals and major public buildings. All new crosswalks must be ADA-accessible. Louisiana's pedestrian law L.A. Rev. Stat. § 32:212 states that pedestrians have the right of way in marked crosswalks. Vehicles must yield to any pedestrian within the crosswalk on the roadway the vehicle travels or turns. Most urban pedestrian-vehicle fatalities occur when people cross roads at unmarked locations or away from an intersection. Areas with higher vehicle speed, low visibility or nighttime, and distracted driving contribute to pedestrian-vehicle accidents. Hispanics and adults over 65 account for the most significant number of pedestrian deaths in the U.S. each year.

Image Source: Adobe



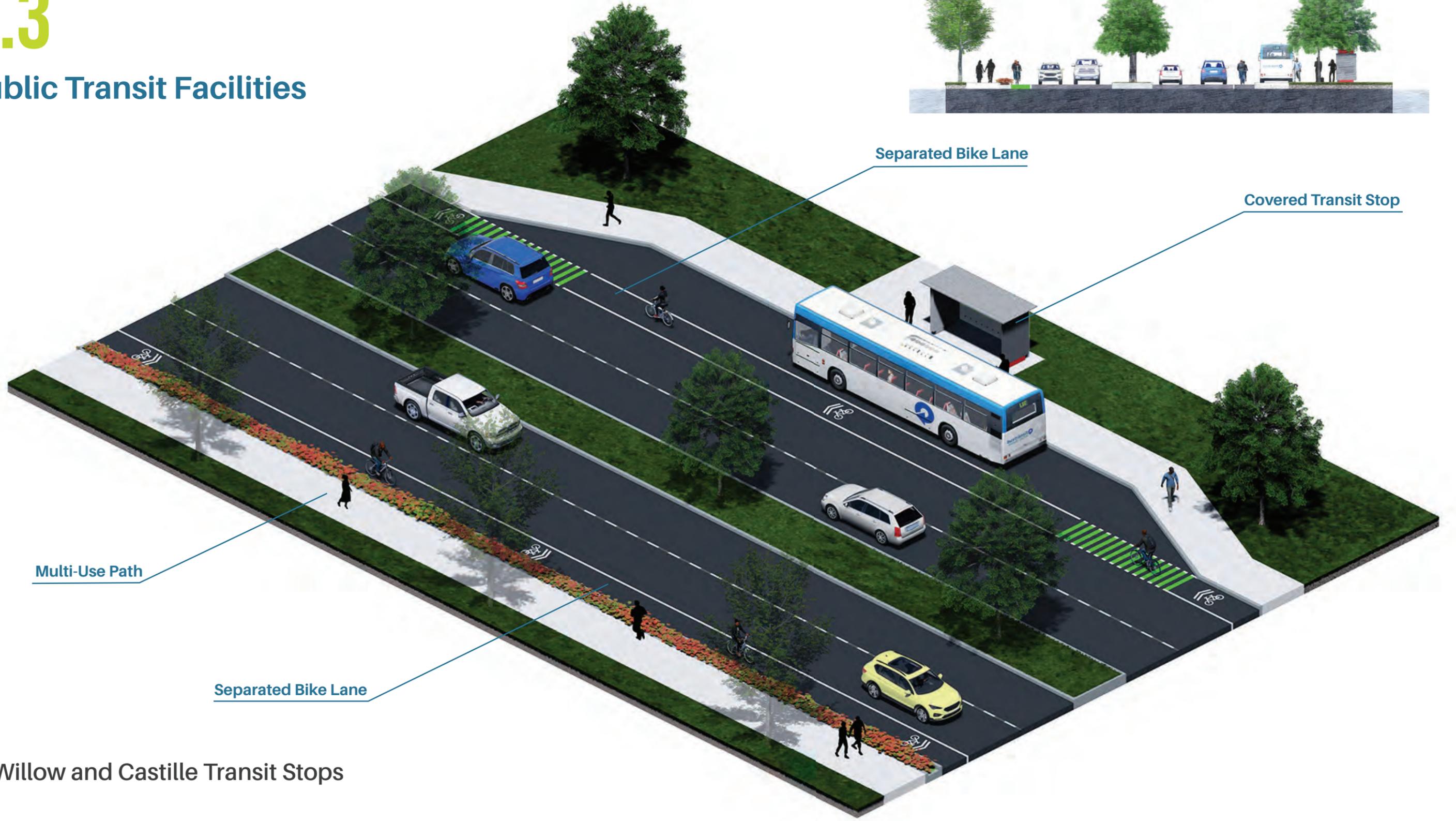
### Unsignalized Crossings

Unsignalized crossings contain painted road markings and signs that slow or stop traffic. The Federal Highway Administration has documented that zebra-striped crosswalks were the most effective road markings for drivers to identify pedestrian crossings during the day and at night. Pedestrian safety islands are raised medians in the middle of a roadway, designed to protect pedestrians from moving traffic when crossing busier streets and to shorten distances when crossing multiple lanes of traffic. Safety islands are generally used with un-signalized crossings.

Image Source: Adobe

# 3.3

## Public Transit Facilities



W Willow and Castille Transit Stops

# 3.3

## Public Transit Facilities

### Buses

Bus transit systems provide reliable and rapid transportation, often comparable to private vehicles. Rider costs should be affordable, and the routes should provide transport to as many destinations as possible. Public transport supports dense communities/ neighborhoods, individuals who cannot afford private vehicles, and those who choose not to or cannot drive. Communities that provide public transportation options show increased employment and higher resident productivity, which positively impacts the local economy (every dollar invested in public transportation generates approximately 4 dollars in economic returns). In addition, public transit systems help to reduce motor vehicle use on roadways, which aids in reducing traffic congestion and lowering transport emissions, thereby improving air quality.

A well-developed public transport system has well-integrated nodes and stops to meet the local community's needs. Internal guidelines should be developed for transit routes, the location of stops, and the spacing between stops. Federal funds are available to help start and maintain most public transit services.

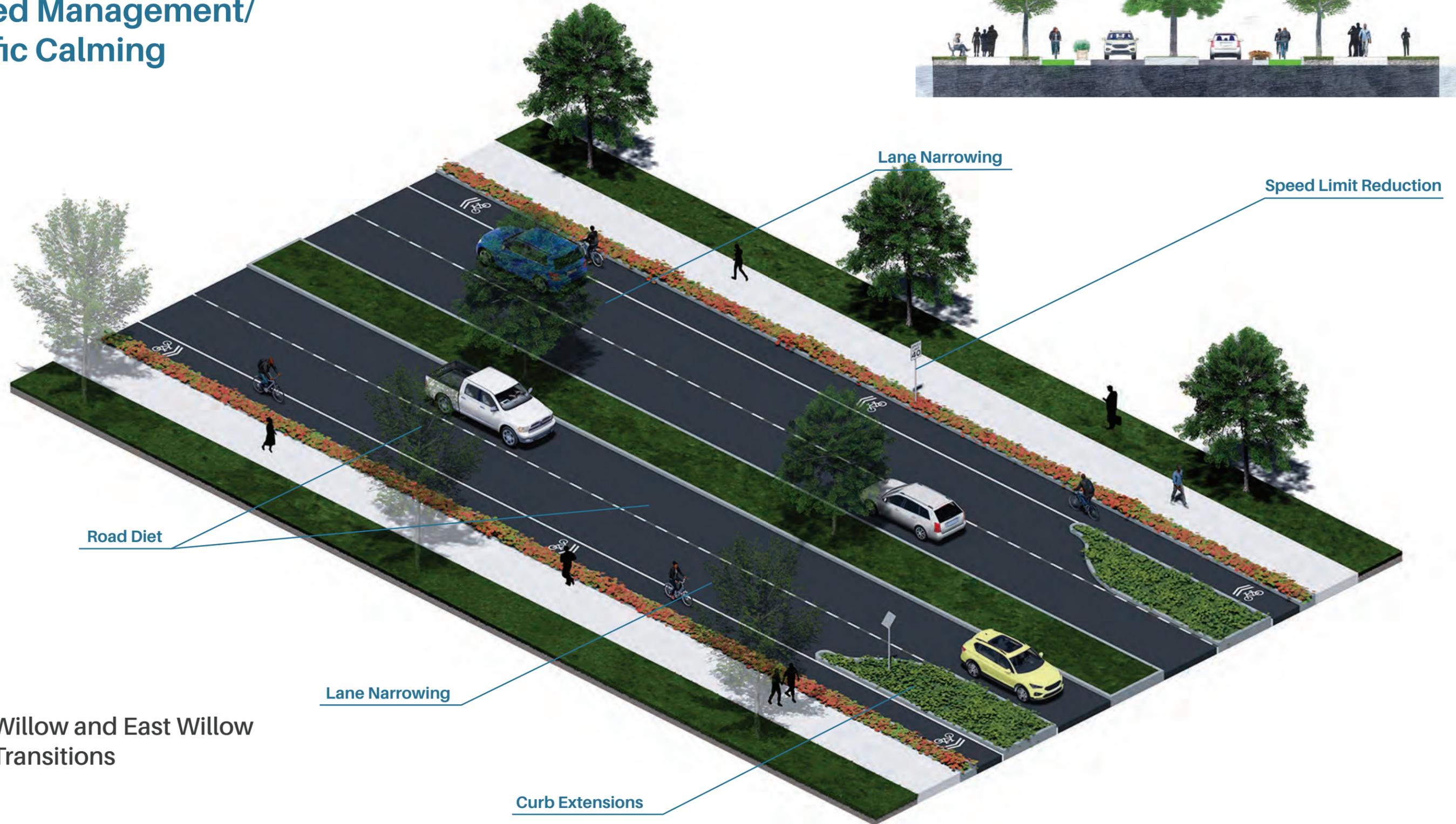
Criteria are available for bus transit systems, including a recommendation on bus lane designs, the location of bike facilities and street crossings, interventions to minimize conflicts with bike lanes, transparent directional and informational systems, year-round rider comfort and safety at bus stops or dedicated waiting areas, ADA access at boarding locations, sidewalks, and lighting.



Image Source: Adobe

# 3.4

## Speed Management/ Traffic Calming



West Willow and East Willow  
Lane Transitions

# 3.4

## Traffic Calming



### Speed Limit Reduction

Meta-analysis shows a direct relationship between the increase in vehicular speed and the probability that a collision with a pedestrian will result in a fatality. The risk of pedestrian death is almost 100% at speeds greater than 50 mph, 80% at 40 mph, 40% at 30 mph, and 5% at 20 mph. This pattern of injury and death is even more severe for cyclists as they move at higher speeds than pedestrians. The average city street speed limit in the U.S. is 35 mph. Data from numerous studies, including the National Highway Traffic Safety Administration, shows the number of fatalities or serious injuries for cyclists and pedestrians begins to decline under 35 mph and serves as evidence for installing measures to reduce vehicular speeds. Studies also reveal that lowering speed limits does not change driver behavior and only results in an approximate 25% decline in vehicular speed. However, road design and engineering solutions (traffic calming) have successfully reduced vehicular speeds. Traffic calming is a system of design strategies allowing vehicular and other uses (bike lanes, buses, walking) on streets.

Image Source: Adobe



### Road Diet

Road reconfiguration that decreases the number of lanes along a traditional undivided four-lane highway is known as a Road Diet. The modifications (four-lanes to a three-lane segment) provide extra space for other uses (turn, bike or transit lanes, pedestrian sidewalks, parking, landscaping, etc.), which improves access for all users (Complete Streets). Statistically, four-lane highways have a high collision rate, and the Federal Highway Administration promotes Road Diets as a safety countermeasure that can reduce crash rates by 19 percent to 47 percent.

Image Source: Adobe



### Lane Narrowing

Narrower traffic lanes cause drivers to slow down, creating a safer environment for pedestrians and bicyclists. For example, the traditional twelve-foot lane can be designed as little as nine feet, allowing for widening sidewalks, transforming existing traffic lanes into bike or bus lanes, or for non-traffic uses such as green infrastructure.

Image Source: Adobe



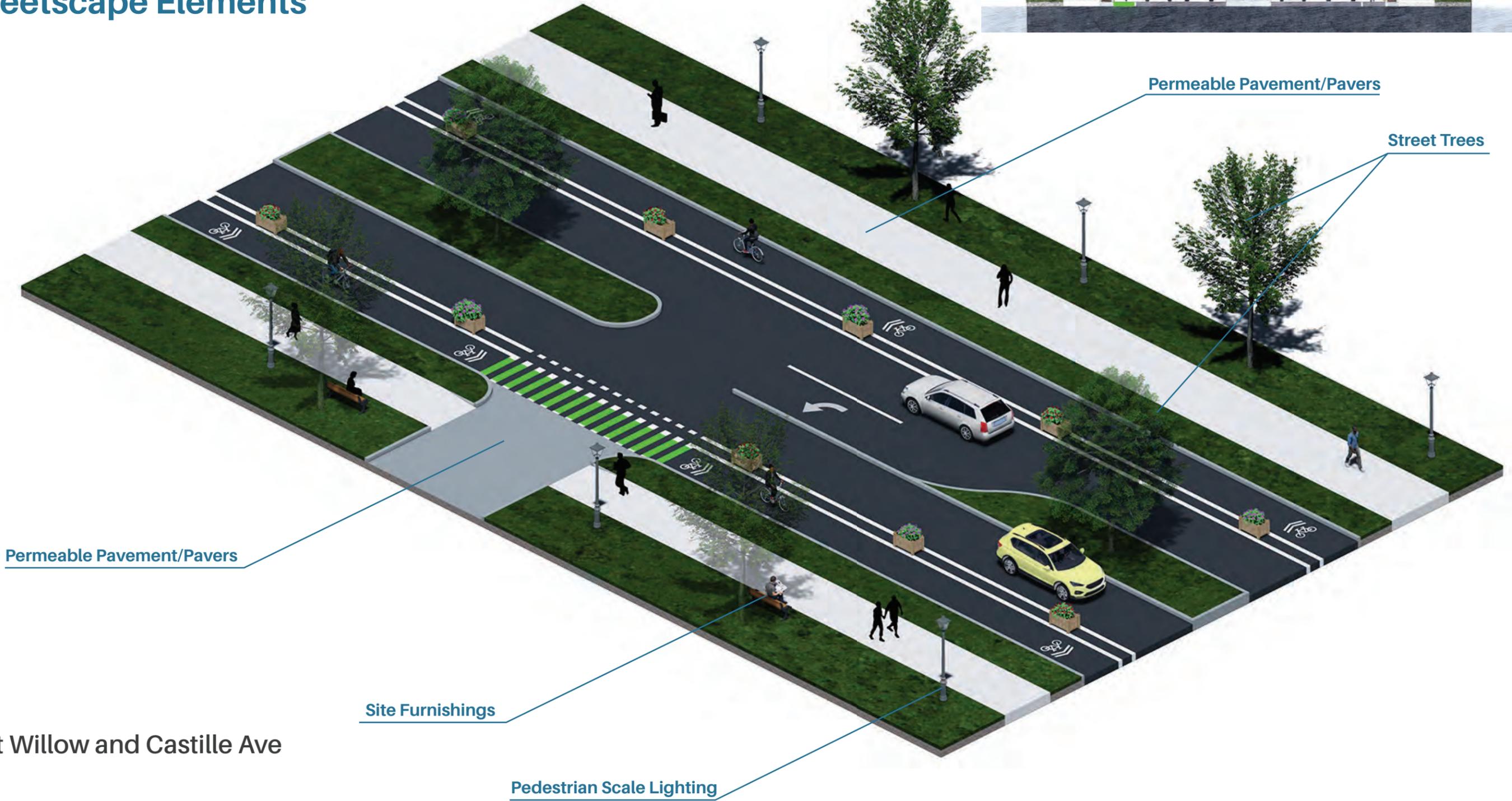
### Curb Extensions

Curb extensions are widened sidewalk areas, typically at intersections or mid-block. They are implemented by removing on-street parking and extending the sidewalk into the roadway. This provides pedestrians with a safe and highly visible area when waiting to cross a street and shortens the crossing distance or may function as an entry point. The extra space may also be used for streetscape amenities such as trees and lighting.

Image Source: Adobe

# 3.5

## Streetscape Elements



East Willow and Castille Ave

# 3.5

## Streetscape Elements



### Street Trees

Urban trees (and forests) offer environmental, public health, and economic benefits. Urban forests provide summer shade, block cold winds, and improve air quality through photosynthesis. They also reduce stormwater runoff and create green spaces that allow for stress reduction and habitat for urban wildlife while increasing property values. Municipal planning should include a tree canopy goal and provide adequate space for tree planting. Trees along streets reduce traffic speeds by creating a visual wall and a defined edge along streets. Trees frame the space for motorists and pedestrians by creating a boundary, adding to pedestrian safety. Trees are vertical elements that reduce a driver's optical width, causing a speed reduction. Properly placed street trees allow features (traffic signs, etc.) to be better seen. Street trees improve the harsh angular aesthetics of a roadway and prolong the life of pavement and asphalt by 40% - 60% due to less heating and cooling (expansion and contraction cycles). Trees also create a pleasant walking environment with shade and protection from the elements. Businesses on treed streets experience a 12% higher revenue flow than those without trees.

Image Source: Adobe

Trees and plant material (color and texture) can signal gateways, corridors, or entry into a specific place. Urban street tree canopies assist with stormwater management and absorb the first 30% of precipitation onto their leaves and branches. This intercepted water from the tops never reaches the ground; therefore, less drainage infrastructure is required. Additionally, the root zone of mature trees provides uncompacted soil volume and can absorb 50 to 100 gallons of water a day. Tree roots and tree litter stabilize the soil around the tree, filter stormwater, and can slow the velocity of runoff beneath the tree. Strategic planting of new trees reduces stormwater discharge and prevents erosion along roadways, slopes, retention basins, and waterbodies. Sufficient open space should be provided for planting street trees. Structural cell systems can provide space for street trees and underground stormwater management on paved surfaces such as sidewalks. Cell systems suspend pavement with support from a skeletal matrix of pillars, allowing for a large volume of soil and tree root growth beneath the pavement. The cells allow for stormwater capture and drainage during heavy rains and flooding.



### Pedestrian Scale Lighting

Implementing improved lighting in urban street interventions enhances the quality of the street condition for both vehicular and pedestrian users. Adequately placed lighting enhances the visibility of the roadway for all users, increasing safety and security. Lighting reduces the risk of accidents as pedestrians are now more visible to all users. Lighting also adds protection and helps to deter criminal activity in well-lit areas. With design in mind, lighting can also add an aesthetically pleasing layer to urban streets, highlighting features along their paths.

Image Source: Adobe



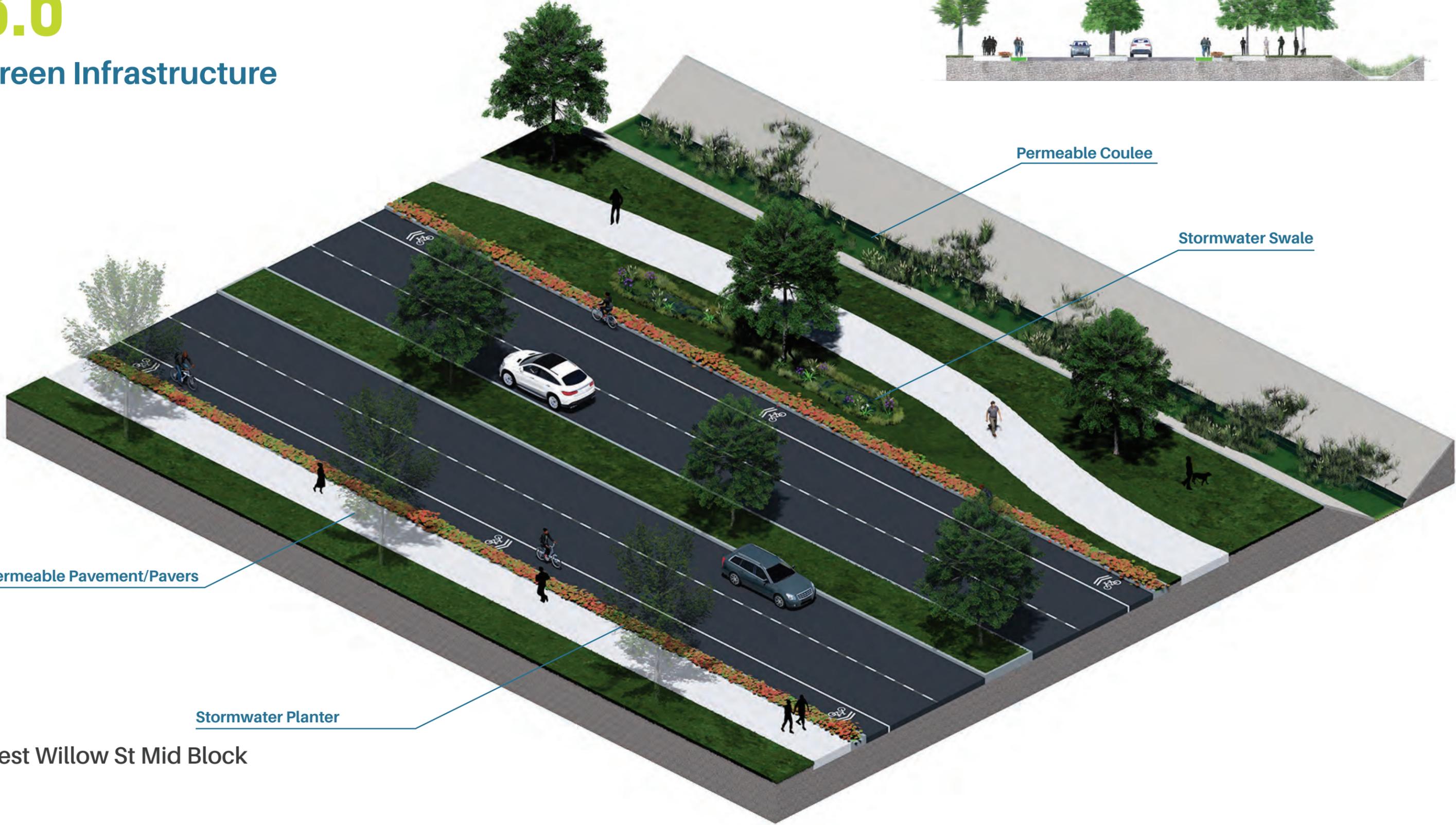
### Site Furnishings

Public furnishings are often associated with the ever-popular bench. In addition to providing seating, benches allow for social interaction, which is essential for mental health and reducing feelings of isolation. Seating is also crucial for physical health. Studies show that benches encourage the use of walkways by giving people resting spots along a route. Benches also add aesthetic and placemaking value to a site. Other essential site furnishings include waste and recycling bins which help to control the site's cleanliness. Bike racks encourage cyclists to stop at a location, and picnic tables provide surfaces for games, activities, and meals in community spaces.

Image Source: Adobe

# 3.6

## Green Infrastructure



Permeable Pavement/Pavers

Stormwater Planter

Permeable Coulee

Stormwater Swale

West Willow St Mid Block

# 3.6

## Green Infrastructure



### Stormwater Swales

Stormwater swales are shallow linear open channels with vegetative or rock lining. They are designed to catch, slow, divert, and treat stormwater. Decreased water velocity allows time for sediment to settle out, the filtration of pollutants via soil filtration, and water infiltration (groundwater recharge). Stormwater swales are helpful controls for runoff from highways, residential streets, parking lots, and commercial developments. In addition, by conveying and slowing stormwater, swales help to reduce flooding. Design documents recommend longitudinal slopes of 2% - 4% and side slopes that do not exceed 1:3 to prevent erosion and allow for ground maintenance.

Image Source: Adobe



### Stormwater Planters

Stormwater planters are rain garden boxes with vertical walls and either an opened or closed bottom. Planters collect and briefly store pond water (< 30 hours) from streets, downspouts, sidewalks, roofs, parking lots, and other impervious surfaces. Planters function to slow and filter runoff before it leaves the planter and allows for stormwater infiltration if there is an opened bottom. The planters can serve as reservoirs by connecting to underground drainage wells, increasing stormwater storage capacity. The rain garden (plants, soil, mulch) acts as a filter to reduce water pollutants and beautifies city streets. Planter shapes can be designed, and vegetation can be selected to fit a site's character, allowing a more customizable aesthetic. Maintenance is minimal and usually involves watering plants during dry periods and weeding/ mulching once or twice a year.

Image Source: Adobe



### Permeable Pavement/Pavers

Permeable paving is used to limit stormwater runoff and improve water quality. Permeable pavers allow stormwater to pass around the surface of a concrete or clay brick into the joints between the bricks, which are filled with a crushed aggregate. As rainwater moves through the material, it is filtered for pollutants and can be stored in the aggregate below the bricks until it has time to percolate into the subgrade. Pervious pavement types contain voids, allowing stormwater to infiltrate through the pavement's surface to the ground below instead of running off. The stormwater can be stored in a reservoir where it can slowly enter the soil or be directed to a drain. Pervious pavement types may include concrete or asphalt with a stone/ gravel base. Both types of systems assist with stormwater peak flow and pollutant reduction and help mitigate the urban heat island effect. Permeable pavers also have aesthetic value by providing an architectural appearance. However, both systems require some maintenance to prevent clogging of their aggregate system.

Image Source: Adobe



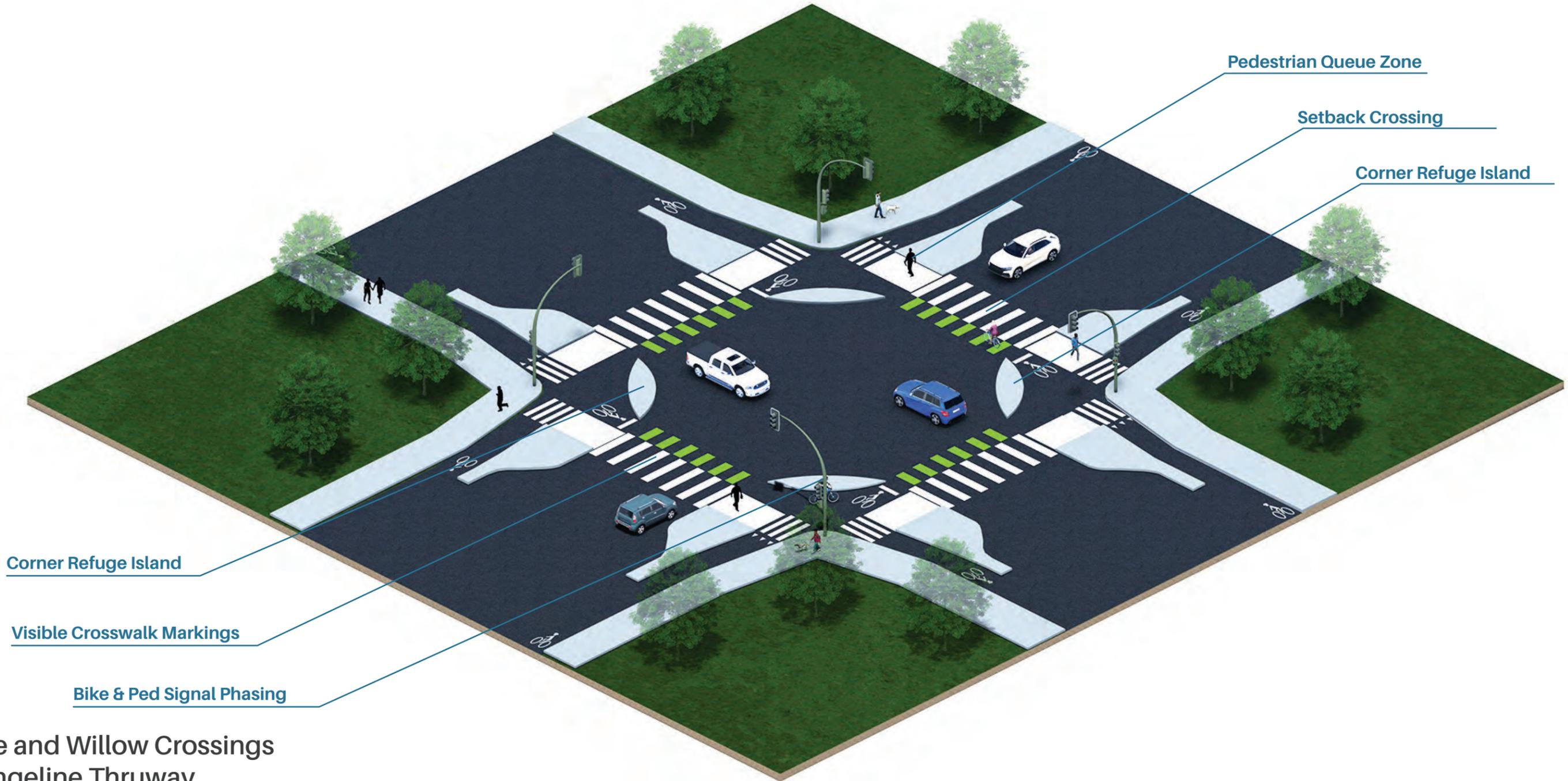
### Permeable Coulees

Manmade coulees mimicked the natural features of gullies and ravines that quickly drain stormwater away from a site. However, unlike natural coulees, manmade features are lined with impervious surfaces such as concrete, inhibiting stormwater contact with the soil and preventing water percolation into the sub-base. Concrete removal from the channel bottom at strategic locations or along sections of the lined coulee restores contact between water and the soil. The result is channel naturalization and the restoration of ecological services, which can slow water flow, improve water quality through soil filtration, allow for stormwater infiltration into the subgrade, and create a habitat for flora and fauna. In addition, studies have shown that neighborhoods with walkways and green spaces near blue spaces (water) significantly increased physical activity, lowered obesity, improved mental health, and lowered the risk of premature death.

Image Source: Adobe

# 3.7

## Protected Intersection



Castille and Willow Crossings  
at Evangeline Thruway

# 3.7

## Protected Intersection



### Corner Refuge Island

A corner safety island is a raised area that separates the separated bike lane from the general purpose travel lane and defines the corner radius of the intersection. The island provides comfort for waiting bicyclists and may manage the speed of turning vehicles. Corner safety islands have multiple roles: offering a protected place for bicyclists to queue when crossing and turning, and managing the speed of turning vehicles when permitted turn conflicts are allowed. Special attention should be paid to the amount of deflection required for both pedestrians and bicyclists in advance of the intersection.<sup>1</sup>

Image Source: momentummag.com



### Setback Crossing

To improve sightlines and clearly establish priority, the bicycle and pedestrian crossings are set back from that of the adjacent through travel lanes. Bicycle and pedestrian crossings set back from the intersection create space for turning motorists to yield to bicyclists and pedestrians. Research has found crash reduction benefits at locations where bicycle crossings are set back from the motorist travel way by a distance of 6 ft. to 16.5 ft.

Image Source: altago.com



### Additional Elements

The forward stop bar marks the location at which bicyclists are intended to stop and wait at a red signal indication. The separated bike lane may shift in advance of the intersection to align bicyclists with the setback bicycle crossing. This taper should be subtle to minimize impacts to bicyclists. Bicyclists should yield to crossing pedestrians at the location of pedestrian crosswalks prior to progressing to the forward stop bar. Yield line markings and signs should identify this requirement.

Image Source: waba.org



### Bike & Ped Signal Phasing

Various signal phasing schemes may be used in combination with geometric design to mitigate or prevent conflict between bicyclists, pedestrians, and turning motor vehicles.

Image Source: images.immediate.co.uk

# 3.8

## Placemaking

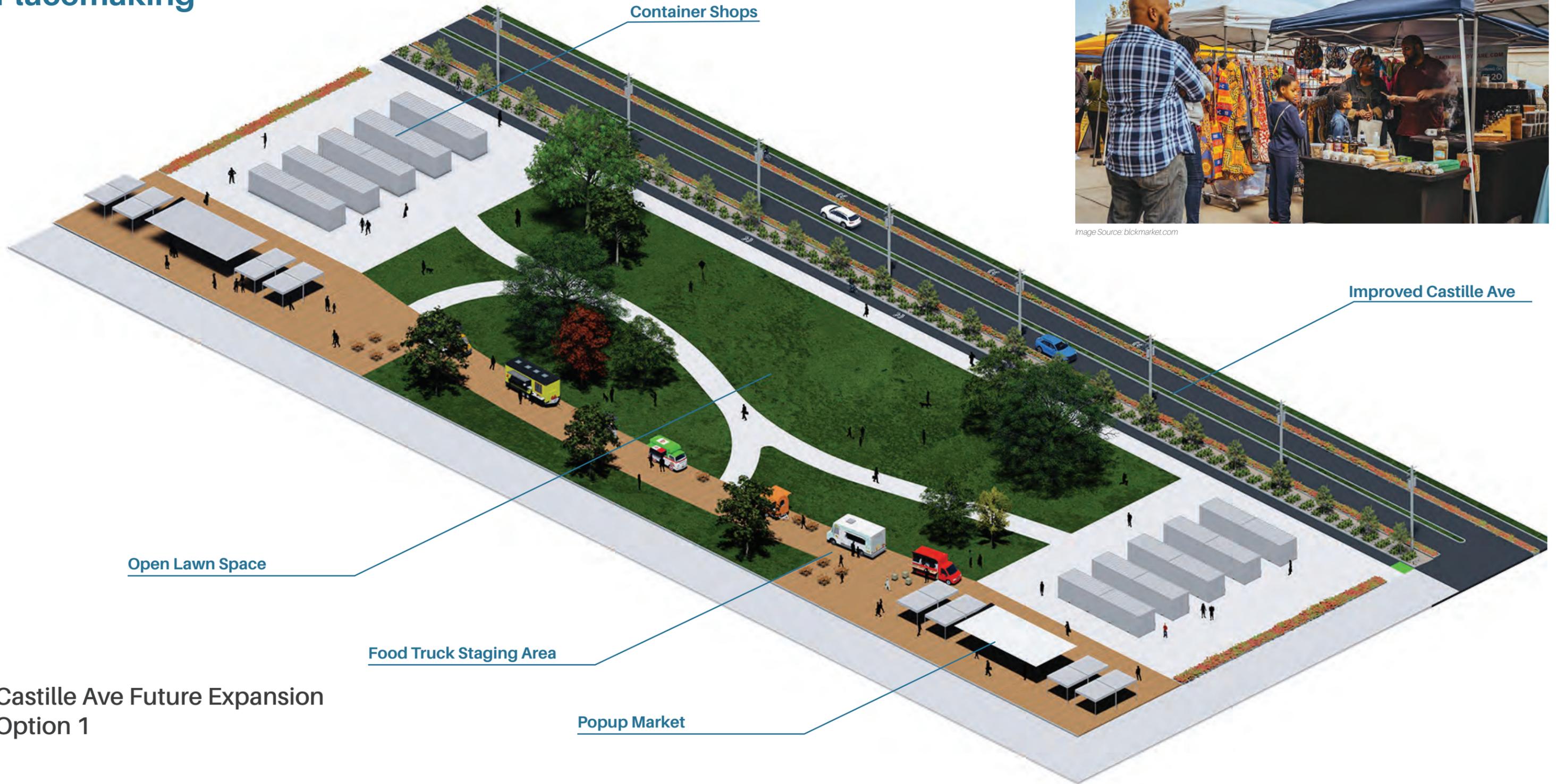


Image Source: blkmarket.com

Castille Ave Future Expansion  
Option 1

# 3.8

## Placemaking

Placemaking is the creation of quality public spaces that improve and contribute to a community's quality of life. Reshaping the public realm is a collaborative process that focuses on a community's cultural, physical, and social identities. Grassroots-driven input helps to program spaces and implement a community's vision into a plan that creates unique, functional, inclusive, sustainable places and enables social interactions. Placemaking can re-imagine and transform a city by creating great places where people want to be and want to participate in onsite activities, are well connected to other vital areas, and are comfortable and accessible.



Image Source: Adobe



Image Source: Adobe



Image Source: Adobe

# 04

## Implementation Strategy for the Willow Street Corridor

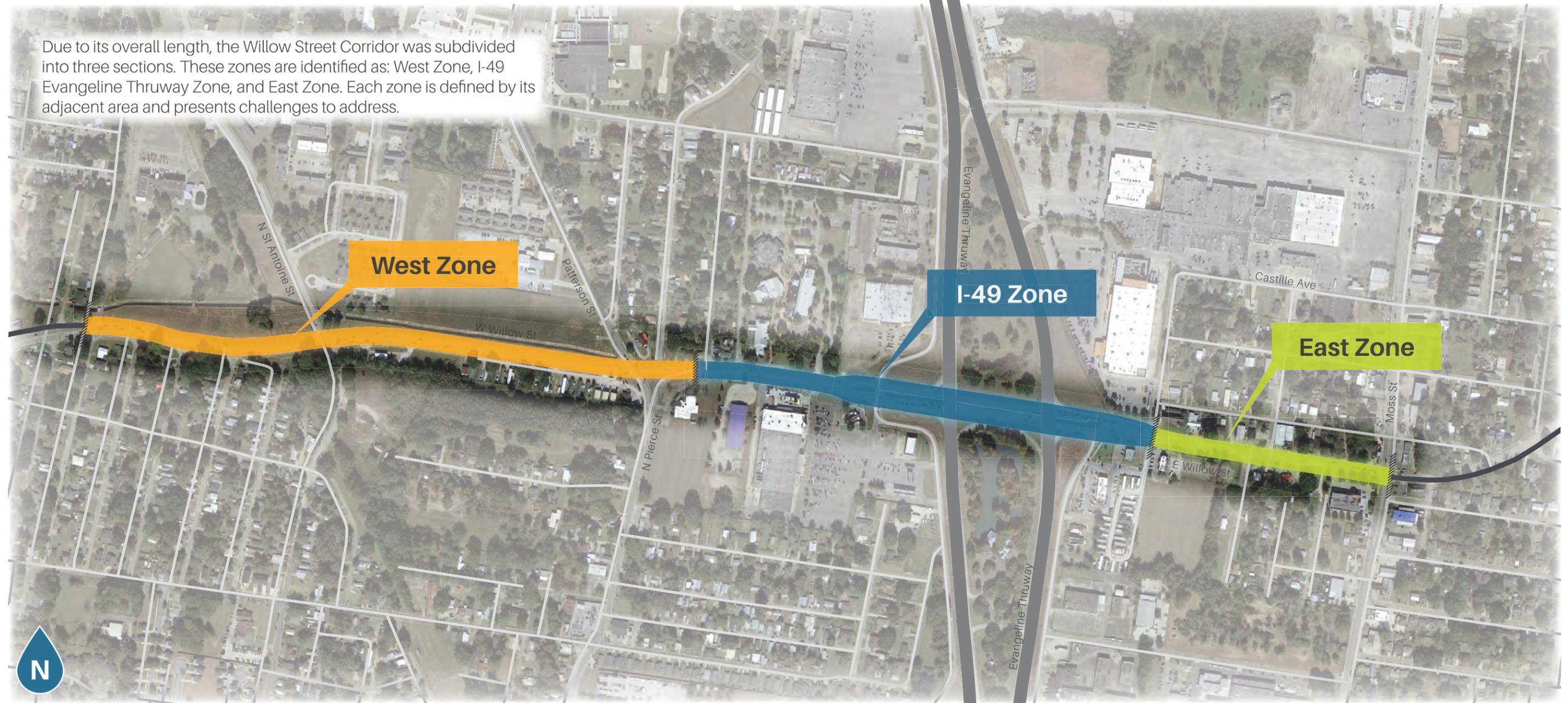
Utilizing the Analysis from Section 2 and defined Street Typologies from Section 3, interventions were placed along identified zones along the Willow Street Corridor.



# 4.1

## Identifying Zones within the Willow St Corridor

Due to its overall length, the Willow Street Corridor was subdivided into three sections. These zones are identified as: West Zone, I-49 Evangeline Thruway Zone, and East Zone. Each zone is defined by its adjacent area and presents challenges to address.

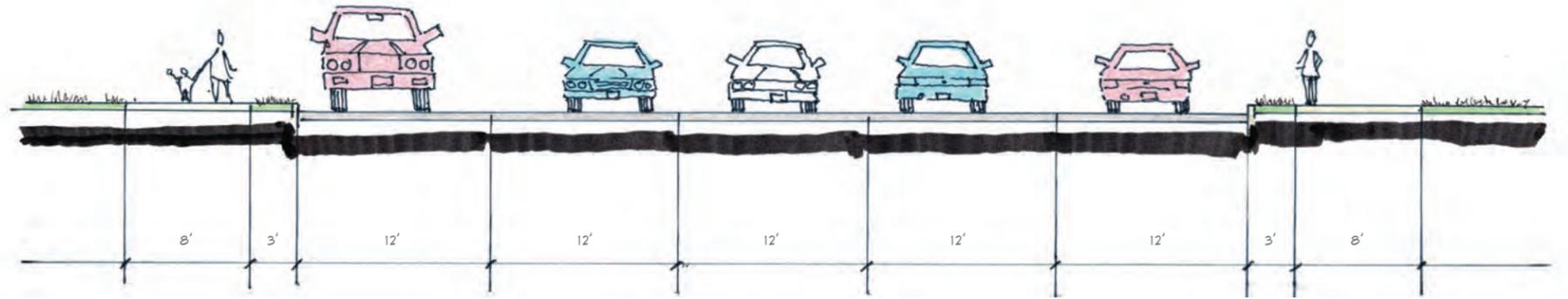


Source: DDG GIS | Willow St Corridor Defined Zones

# 4.1.1

## West Zone Existing Conditions

The Willow Street West Zone identity comprises four 12' lanes with a 12' center turn lane. Intersection markings are faded and not visible, and bike lanes are nonexistent. The current layout encourages increased vehicular speed from the lack of traffic calming devices. In addition, sidewalks are fragmented and dangerous to pedestrian users.



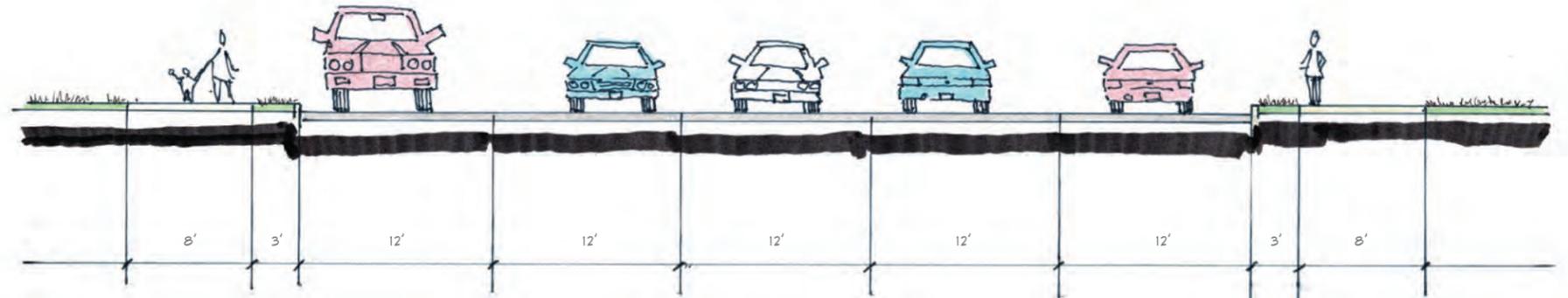
Existing Street Conditions Along W Willow St



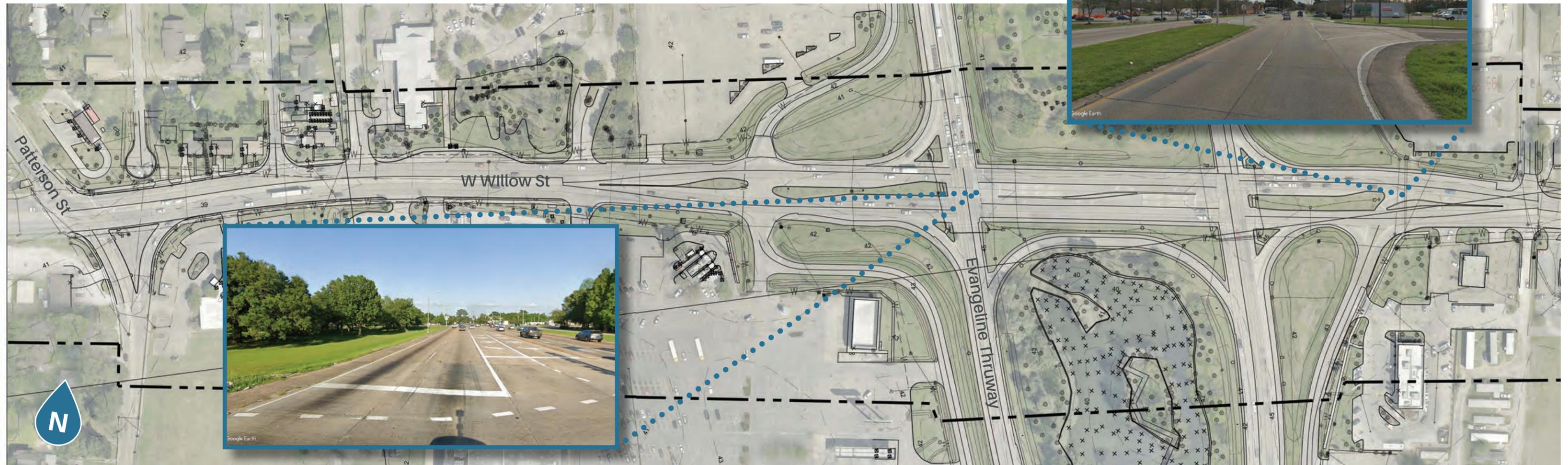
# 4.1.2

## I-49/ Evangeline Thruway Zone Existing Conditions

Willow Street I-49/Evangeline Thruway street identity comprises four 12' lanes that add two 10' left turn lanes in the middle of the intersection. As noticed in the West Zone, markings here are also not visible, and bike lanes are nonexistent. Instead, footpaths through grassy areas are seen as crossings for foot and cycle traffic across the thruway.



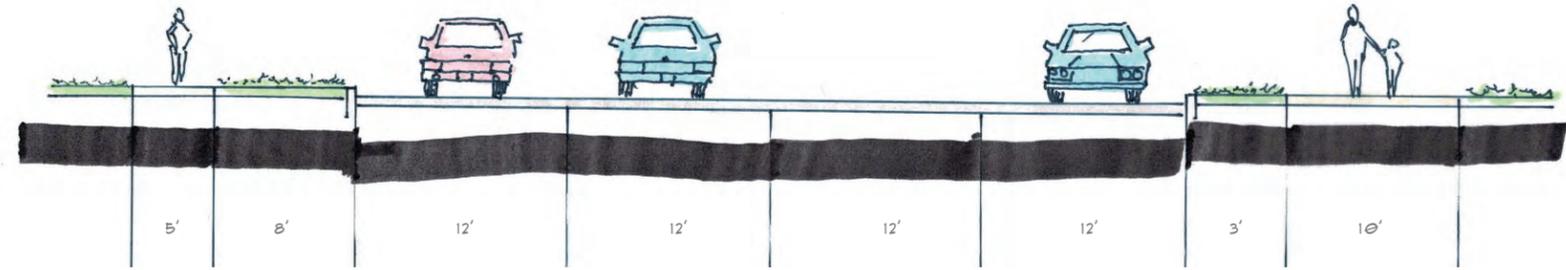
Existing Street Conditions Along Willow St



# 4.1.3

## East Zone Existing Conditions

Willow Street East Zone comprises four 12' lanes with no center turn lane. Intersection markings fade and bike lanes are nonexistent. The current layout in this area encourages increased vehicular speed from the lack of traffic calming devices. Sidewalks here are also fragmented.

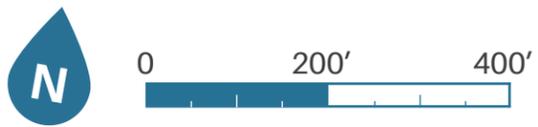
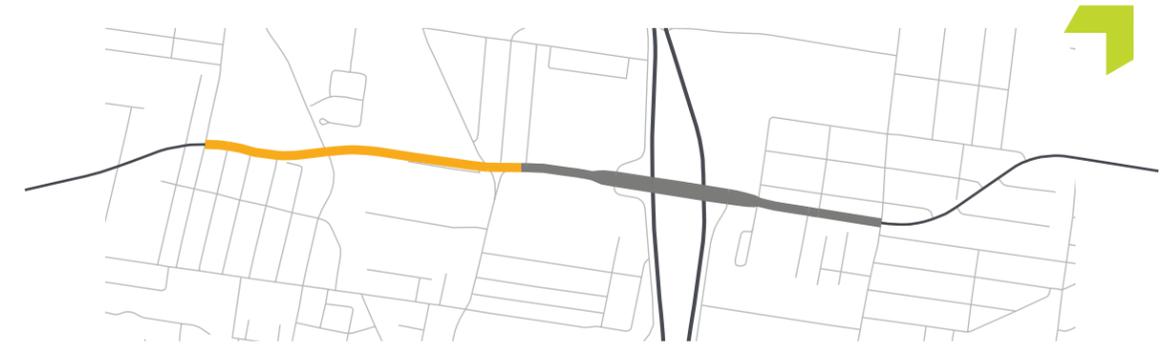


Existing Street Conditions Along E Willow St



# 4.2

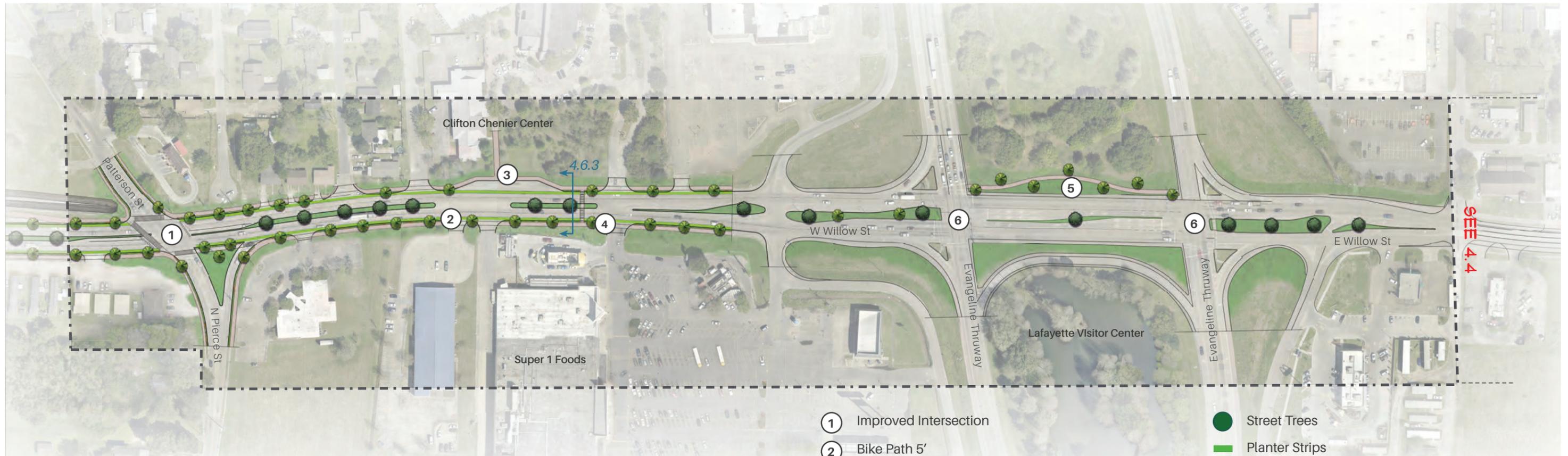
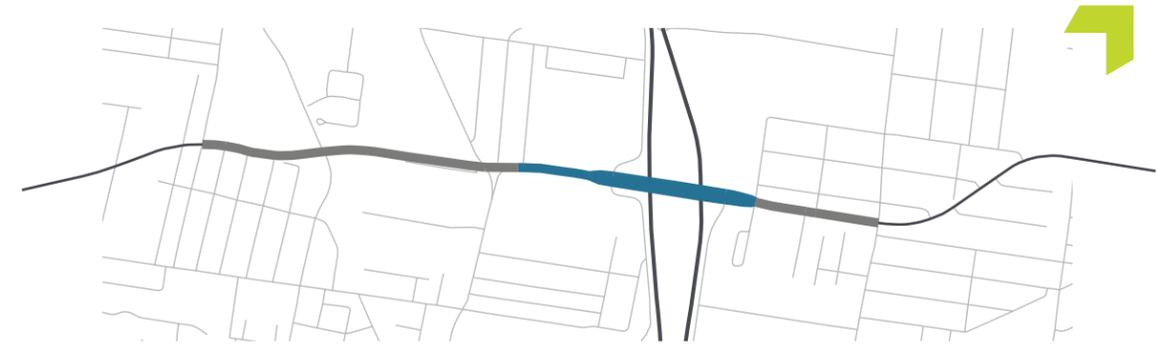
## Proposed Interventions Master Plan Willow West



- |                              |                        |
|------------------------------|------------------------|
| ① Dorsey Park                | ⑦ Permeable Coulee     |
| ② Dorsey Park Connection     | ⑧ Multi-Use Path 8-12' |
| ③ Crosswalk                  | ● Street Trees         |
| ④ Rails to Trails Path       | ■ Planter Strips       |
| ⑤ Improved Intersection      |                        |
| ⑥ Bio Swale Educational Park |                        |

# 4.3

## Proposed Interventions Master Plan Evangeline Thruway



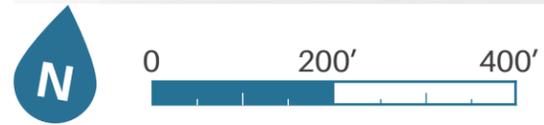
- ① Improved Intersection
- ② Bike Path 5'
- ③ Transit Stop
- ④ Multi-Use Path
- ⑤ New Center Section Path
- ⑥ Reconfigured Protected Intersection (3.7)
- Street Trees
- Planter Strips

# 4.4

## Proposed Interventions Master Plan Willow East



- ① Separated Bike Path
  - ② Paved Shoulder Bike Path
  - ③ Crosswalk
  - ④ Planted Median
  - ⑤ Multi-Use Path
- Street Trees
  - Planter Strips

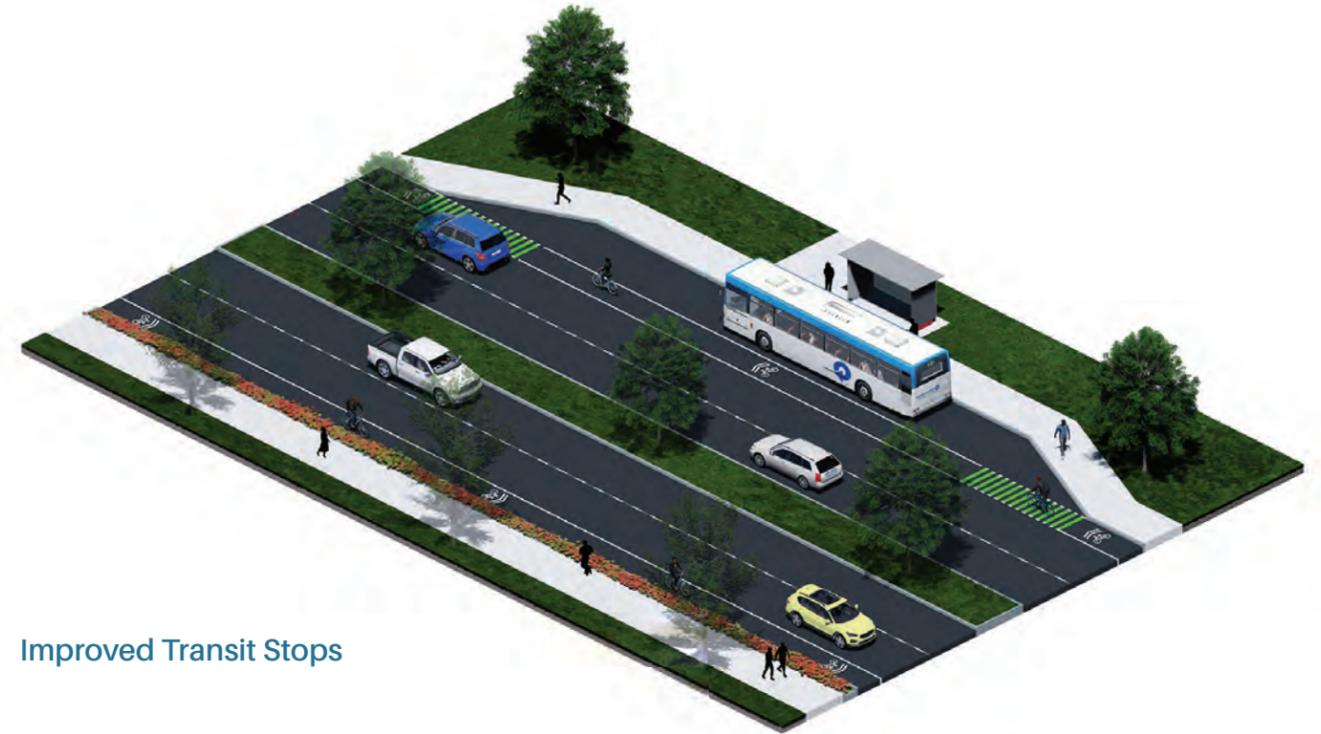


# 4.5

## Recommendations



Multi-Use Paths and Green Infrastructure Improvements



Improved Transit Stops



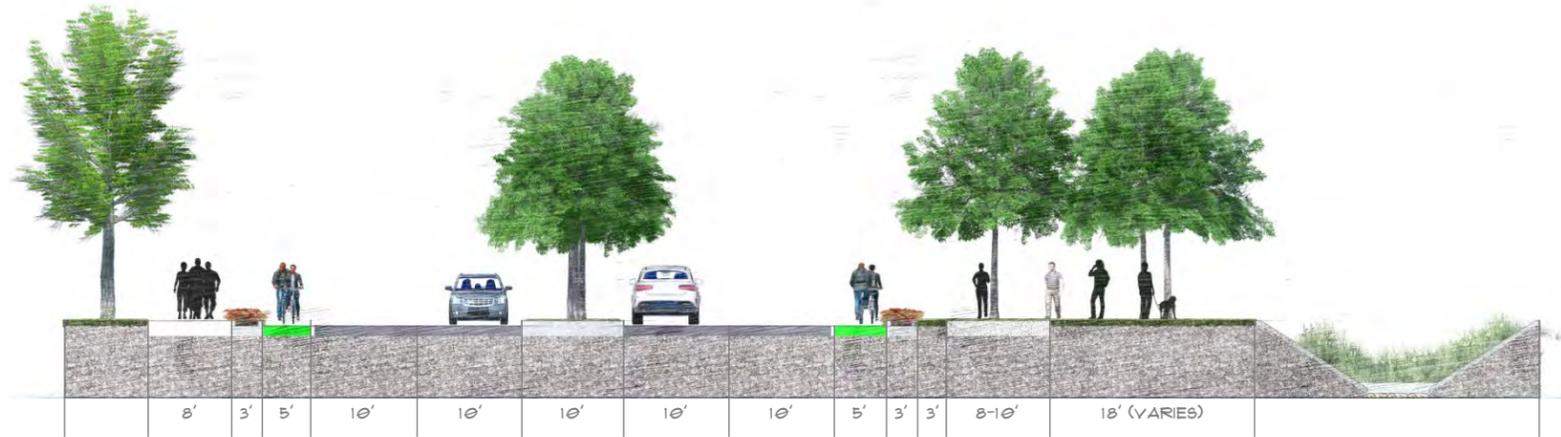
Safer Intersections and Crosswalks



Pedestrian Friendly Design Features

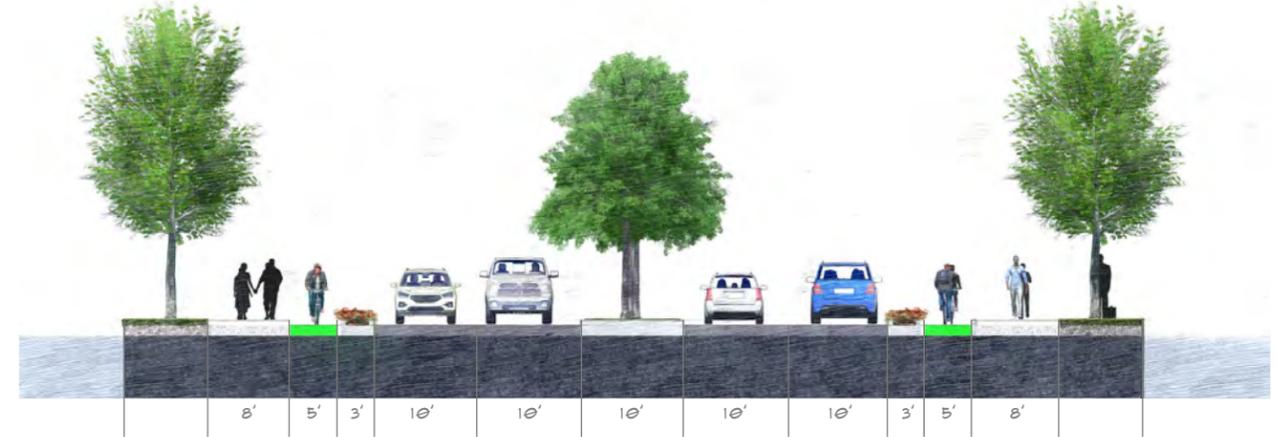
# 4.6

## Typical Cross Sections Along Willow St



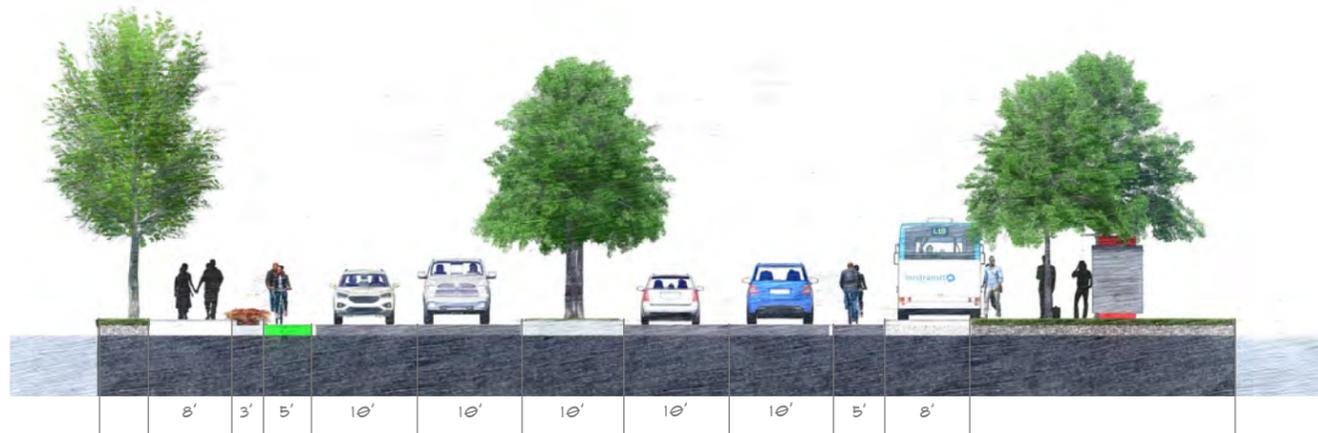
**4.6.1 - Willow West at Coulee Block**

The section of roadway along this section follows the typical street treatment seen in 4.6.2 but accounts for the additional space between the road and the Coulee. A multi-use trail with widths between 8-10' meanders through an 18' vegetated strip with intermittent tree plantings to provide shade and areas for recreation and relaxation.



**4.6.2 - Willow West Overall Street**

The typical condition for the enhanced version of Willow street fills in the center lane with a 10' planted median to clearly define the roadway. A "Road Diet" is applied to the lanes to reduce the width from 12' to 10', increasing driver awareness and allowing room for 5' buffered bikeways along the North and South side of the roadway separated from the roadway by 3' planted buffers. Flanking the cycle paths are 8' pedestrian pathways.



**4.6.3 - Willow West at Transit Stop**

This section is similar to the Mid Block portion of Willow St. with the addition of an improved transit station to allow for seamless and safe access to the area's public transportation system. Adjacent to the transit station is a crosswalk to allow pedestrians and bikers to access both the North and South sides of Willow St.



**4.6.4 - Willow East at Mid Block**

The Eastern-most section of Willow St. compresses to one lane each way with 5' buffered bike lanes on each side of the roadway. This treatment serves to increase awareness of cyclists and pedestrians and slow speeds to reduce risk of accidents. The outermost portion of the street is home to 8' and 10' multi-use pedestrian pathways.

# 4.7

## Proposed Interventions Site Character



Willow West at Transit Stop



Willow West at N St. Antoine St



Willow West at N St. Antoine Intersection



Willow West at N St. Antoine St Coulee



Willow West Mid Block



Willow West at N St. Antoine St Swale

# 05

## Implementation Strategy for the Castille Avenue Corridor

This chapter focuses on the Castille Avenue corridor, its existing conditions, the history of the Northgate Mall, and the proposed interventions to help revitalize the area and surrounding community.



Alice N Boucher School

Shopping Center

Willow Charter

Home Depot

Northgate Mall

Planet Fitness

**Economic Development District**

The Northway Economic Development District (EDD) was created by Lafayette Parish Mayor-President and former City Parish Council to provide and enhance infrastructure in dedicated areas. The area surrounding the Northgate Mall was selected to improve existing infrastructure and amenities to drive economic prosperity.

# 5.1

## Northgate Mall

By 1987, there were 30,000 malls situated across cities throughout the United States. Malls were thriving as more than a place to shop but also for social gatherings.<sup>1</sup> In recent years, Mall sales have been leveling off, leaving developers and property owners to figure out what they need to save these once-popular social gathering areas. A staggering 25% of malls are predicted to close in the next five to ten years.

The demise of the traditional American Mall, accelerated by the Coronavirus pandemic, has led to a necessary rethinking of these existing spaces. The pandemic has led to a considerable shift in our personal, professional, and societal interactions. Like most industries, the pandemic has severely compromised the integrity of our malls and the value we once saw in them.<sup>2</sup> Many thriving malls are spending millions of dollars renovating to keep up with the standard of technology and the evolution of today's world.<sup>3</sup> A standard design solution is repurposing mall buildings into warehouse spaces for tenants like Amazon. However, this solution would require rezoning, a process which typically takes considerable time and effort to achieve.

The property for Northgate Mall was acquired from Billeaud Development Company and opened its doors in August of 1969. At the time, it was the first indoor regional shopping mall between New Orleans and Houston. The Mall was originally a place for social interaction and thrived in this area for many years.<sup>4</sup> Locals still hold tight to the nostalgia of this Mall, but unfortunately, Lafayette is only hanging on to the Northgate Mall by a thread, leasing out less than half of its capacity. Rethinking the future of this development can positively impact the area in and around Northgate mall, replenishing it to what it once was to locals, a social gathering area.

A few steps can be taken to ensure the desired result. Firstly, the future of interstate 49 being raised at NE Evangeline Thruway, referred to as the I-49 connector, will help slow down the traffic around Northgate mall. Essentially, this will make it a more pedestrian-friendly area where people can walk freely from one side of town to the other. In addition, by adding sidewalk buffers and medians to Castille Street, we can continue this positive change that the I-49 connector will bring. Finally, to attract locals and bring the community together, future development may include the addition of greenery, food trucks, and gathering spaces. These interventions are intended to provide an uplifting environment and encourage future growth.

What happens next? Re-introducing the street grid can assist in defining a more pedestrian-friendly space. This improvement will allow people to get across town safely via walking or bicycling. In addition to the new street grid, street buffers will be added to invoke safer traveling. The vacant land surrounding Northgate Mall can be used for outdoor shopping areas and apartment complexes to draw people into the community. Attracting people to the site can create a positive space for the district to flourish; therefore, the intention is to slowly develop this area into a mall of today's world, with multipurpose spaces and more outdoor activities for the community to enjoy.



Image Source: Duplantis Design Group



Image Source: Duplantis Design Group

### SOURCES:

<sup>1</sup> Richard A. Feinberg and Jennifer Meoli (1991), "A Brief History of the Mall", in *NA - Advances in Consumer Research Volume 18*, eds. Rebecca H. Holman and Michael R. Solomon, Provo, UT: Association for Consumer Research, Pages: 426-427.

<sup>2</sup> Laurethomas. "25% Of U.S. Malls Are Expected to Shut within 5 Years. Giving Them a New Life Won't Be Easy." *CNBC, CNBC*, 27 Aug. 2020, <https://www.cnbc.com/2020/08/27/25percent-of-us-malls-are-set-to-shut-within-5-years-what-comes-next.html#:~:text=Giving%20them%20a%20new%20life%20won't%20be%20easy&text=Coresight%20Research%20estimates%2025%25%20of,next%20three%20to%20five%20years>

<sup>3</sup> Bhattaraj, Abha. "Malls Are Dying, the Thriving Ones Are Spending Millions to Reinvent Themselves." *The Washington Post, WP Company*, 25 Nov. 2019, <https://www.washingtonpost.com/business/2019/11/22/malls-are-dying-only-these-ones-have-figured-out-secrets-success-internet-age/>.

<sup>4</sup> Community forum, "Lafayette Memories", Facebook. <https://www.facebook.com/groups/LafayetteMemories/permalink/3296517357056343/>

# 5.2

## Proposed Interventions Master Plan - Option 1

The concept behind this design centers around placemaking. A park is proposed in an underutilized parking space surrounding the Northgate Mall, creating a new opportunity for community gatherings. Container shops, a food truck court, an open lawn, and both pedestrian and bike-friendly amenities are all features of this plan. The park frames the Northgate Mall site and creates a community destination and a welcoming entrance to the large structure to its south. Layering this park with enhanced ROW configurations along Castille Avenue aims to improve the local community's well-being and safety.



- ① Streetscape
- ② Storage Unit/Pop-up Market
- ③ Open Picnic Sitting Area
- ④ Food Truck Stations
- ⑤ Pop-Up Shop Stations
- ⑥ Jimmy Johns
- ⑦ Smoothie King
- ⑧ Potential Open Space Opportunity
- ⑨ Reconfigured Protected Intersection (3.7)



The Northgate Mall was also recently selected as a location to house Electric Vehicle (EV) charging stations, expanding Lafayette's EV infrastructure to meet the demand of increasing battery powered vehicles on the road.

Source: DDG | Castille Site Design Option #1



# 5.4

## Recommendations



Improved Street Conditions



Safer Intersections and Crosswalks



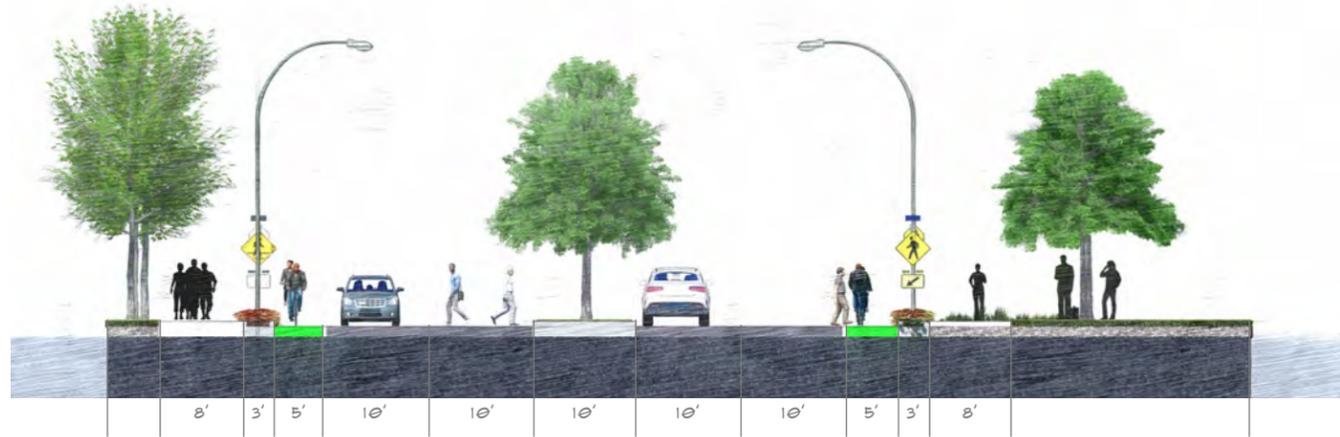
Pedestrian Friendly Design Features



Improving the existing Right of Way

# 5.5

## Typical Cross Sections Along Castille Ave



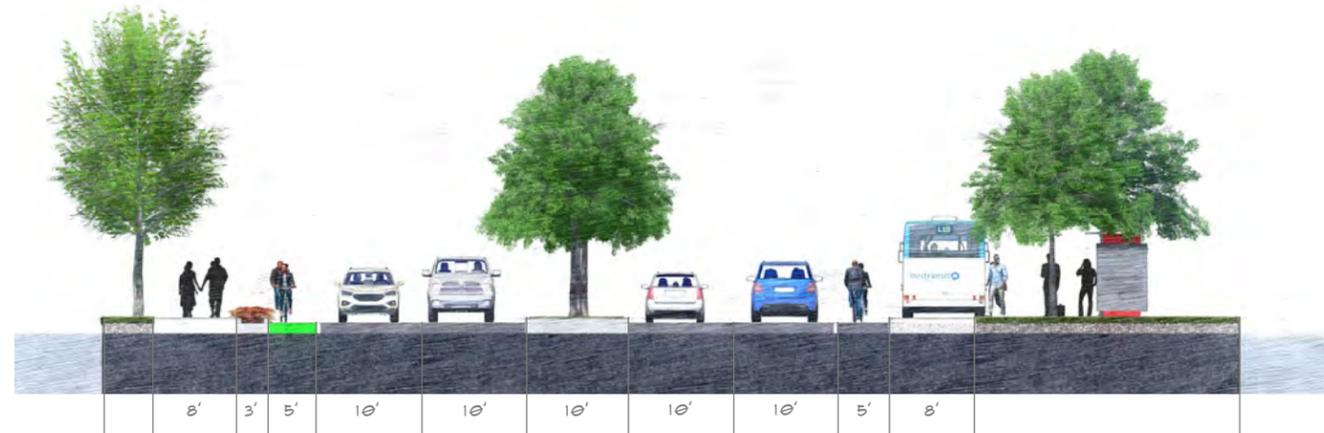
**5.5.1 - Castille 75' ROW Mid Block**

While approaching Castille Avenue from 1-49/Evangeline Thruway, the street condition is at its widest. The organization of the street gives room for both vehicular and bicycle traffic to harmoniously co-exist. Pedestrians circulation is buffered by a 3' planting strip, adding both safety and beautification to the character of this section of the road.



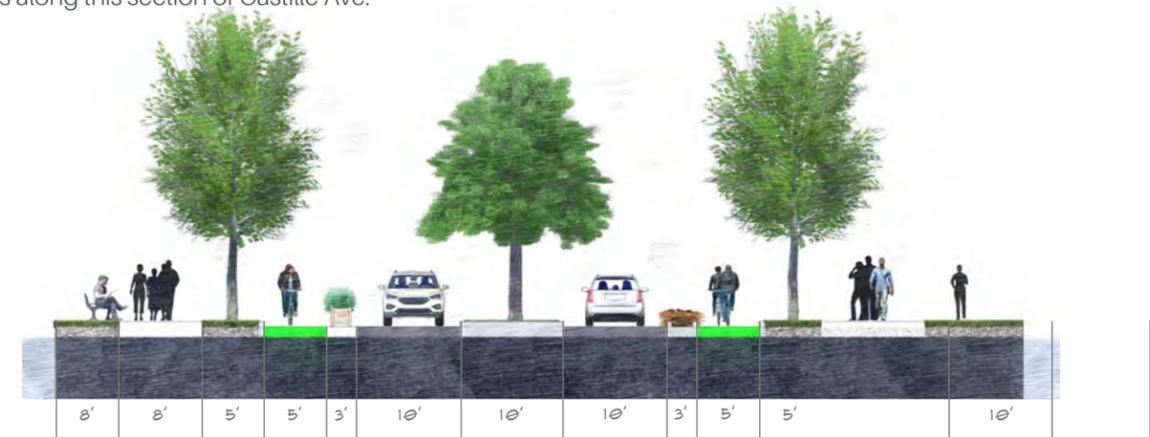
**5.5.2 - Castille 55' ROW at Northgate**

As Castille narrows in width in front of the Northgate Mall, the street condition changes to reflect an increase in pedestrian and bicycle activity. The road narrows from two 10' lanes to one each way and is divided by a small planting strip. Flanking the road is a 3' planted buffer separating bike lanes on each side. The outer-most circulation type features an 8' multi-use path for access to existing and future buildings and spaces along this section of Castille Ave.



**5.5.3 - Castille 75' ROW Transit Stop**

This section is similar to the Mid Block portion of Castille Ave. with the addition of an improved transit station to allow for seamless and safe access to the area's public transportation system.



**5.5.4 - Castille 55' ROW East Section**

The Eastern-most section of Castille follows the general layout of the 55' ROW section with the exception of the rearrangement of pedestrian and bicycle circulation flanking either side of the roadway. The multi-use path increases to 10' on the North side and the 12' buffer between the roadway and 5' bicycle path on the south side is compressed to a 3' buffer in transition to Moss St.v

# 5.6

## Proposed Interventions Site Character



Castille Ave Streetscape



Castille Ave Park - Food Truck Court



Castille Ave Park Lawn



Castille Ave Park Lawn & Court

# 06

## Conclusion & Future of The Area

This chapter focuses on the Castille Avenue corridor, its existing conditions, the history of the Northgate Mall, and the proposed interventions to help revitalize the area and surrounding community.



# 6.1

## Future of Northgate Area

The Northgate Mall and surrounding area provides ample room and opportunity for a re-imagining of its current state. Addressing the circulation issues outlined earlier in this document is the first step in creating forward momentum. Involving key people, such as the retail and commercial owners of the adjacent properties is the next crucial step in starting this conversation for the revitalization of the Northgate Mall site. If this area is to thrive, all groups must work together to create a thriving community that could provide increased health, wellness, jobs, equity, and opportunities.

Many cities are adopting the mixed-use design concept to create a holistic community that provides essential amenities for a well-rounded way-of-life. Cities such as Houston, TX and Westminster, CA (pictured to the right) are utilizing mixed-use developments to provide amenities to surrounding neighborhoods and communities. The Northgate area has the potential to thrive with the right people and right plans put into action.



Source: Adobe



Source: Adobe



# 6.2

## Reconnecting to the Street Grid



### Legend

- Site Area
- Roadway Connection
- Community Connection

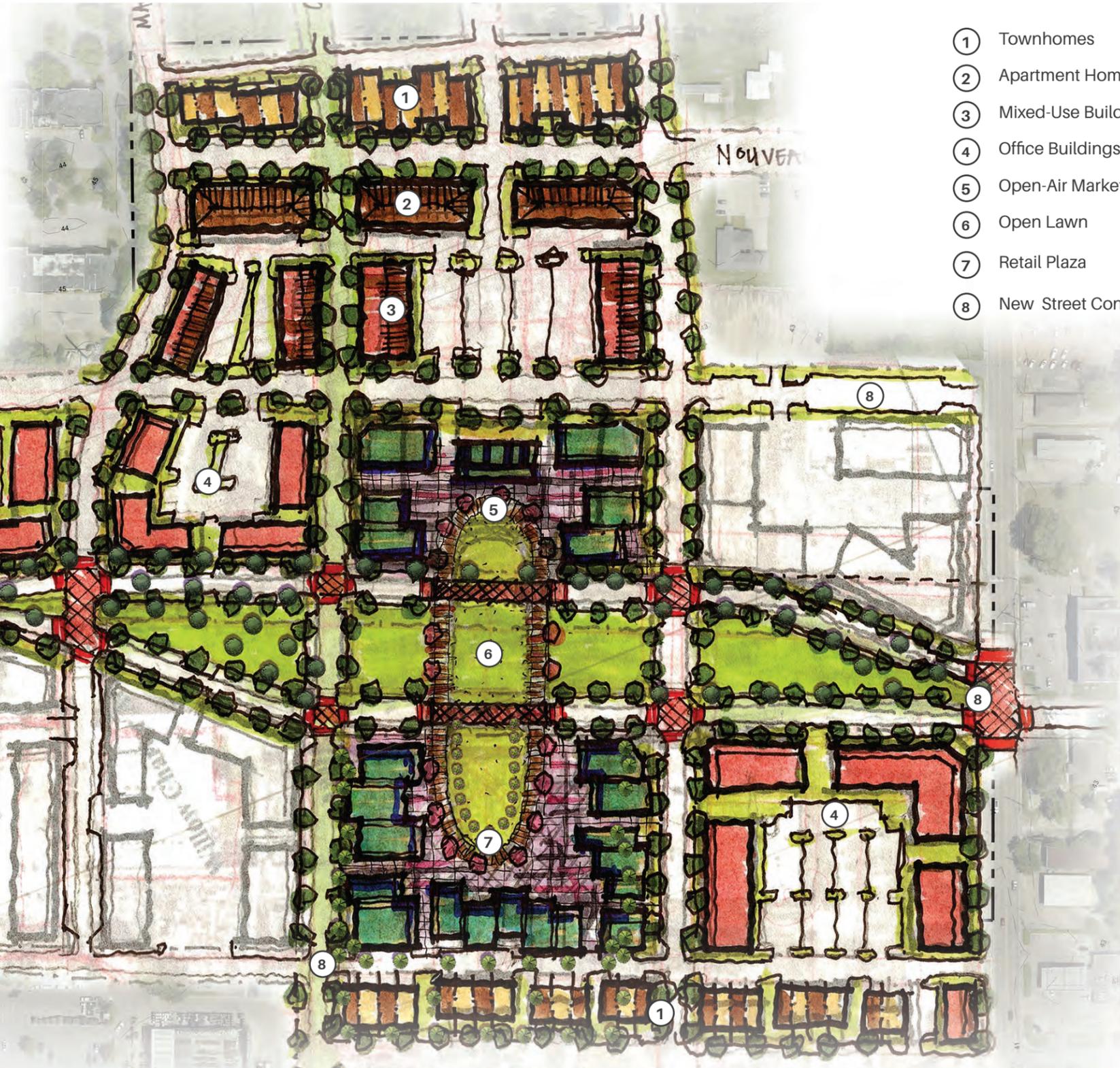
The Northgate Mall once was a focal point for Lafayette and the surrounding community. Unfortunately, the site blocks circulation to the surrounding street grid. By repurposing the ample space taken by the lot, the flow of vehicular and pedestrian traffic could be enhanced, bringing new opportunities to the area.

Circulation through the area could be improved by building new roads that tie into the surrounding street grid, eliminating dead end streets, and encouraging movement through the area. This could also provide increased development opportunity for park and recreation, commercial, and mixed-use programs (ex: 6.3). Incorporating new connections provides a new template for a community hub that can use the improved street typologies outlined in Chapter 3. This would ultimately enhance the surrounding neighborhoods and promote growth.

# 6.3

## Proposed Mixed Use Vision

The Castille Avenue corridor has the potential to become a thriving community center. With cooperation and support from private stakeholders, local government, and the surrounding community, this area could serve as a revitalized hub for the surrounding area. The proposed interventions would address crucial circulation issues, expand and reconfigure the street grid, increase the site's potential use, and ultimately increase the quality of life for the surrounding community.



- ① Townhomes
- ② Apartment Homes
- ③ Mixed-Use Building
- ④ Office Buildings
- ⑤ Open-Air Market
- ⑥ Open Lawn
- ⑦ Retail Plaza
- ⑧ New Street Connections



Source: DDG | Castille Area - Northgate Mall Street Grid and Program Reconfiguration Sketch

# 6.4

## Conclusion

The Willow Street and Castille Avenue corridors have been included in several local area projects that address regional circulation, community program expansion, land use, and developmental opportunities. However, more attention was needed to address safe circulation in this area at a small scale to inform circulation interventions at a larger scale. Traffic Study (Appendix B,C) and Crash Data shed light on the need for design interventions to address circulation and safety issues for multi-modal transportation. In addition, both corridors lack safe and seamless connections across I-49/Evangeline Thruway and the local area. By compiling traffic and crash data, as well as GIS mapping information, design interventions were recommended to address these concerns.

New street typologies were created for each corridor to address safety issues. Each treatment utilizes existing right-of-way (ROW) widths, where applicable, to save time and money and implements Complete Streets design recommendations for safe multi-modal circulation. Street Typologies (Section 3) such as Street Calming, Pedestrian/Cyclist Amenities, Green Infrastructure, and Safe Crosswalks/Intersections were recommended to enhance the street conditions of each corridor. In addition, placemaking elements were added along each corridor to bring community and well-being opportunities to the surrounding community.

With the current state of the Northgate Mall site, there is hope that further intervention will be sparked by visions of an enhanced area that drives economic development and opens new doors for opportunity. With thoughtful design consideration, the site can potentially become the destination it once was. By reconfiguring the grid of the Northgate Mall site and expanding its use, more opportunities for commercial, residential, and open spaces pave the way for community enhancement.

The recommendations mentioned aim to address critical issues discussed during research and community outreach and are intended to increase the overall health, well-being, safety, and opportunities for the Willow and Castille corridors. With these values in mind, this project hoped to catalyze future design intervention that revitalizes the local community and sparks economic development.



Source: Lafayette Consolidated Government. (2022). Clifton Chenier Center Panels in North Lafayette. (LCG, 2022)



Conceptual Rendering of Northgate Mall site with Option 1 Plan

Source: DDG | Willow St Corridor Conceptual Rendering



Conceptual Rendering of Willow St at N St. Antoine St

Source: DDG | Willow St Corridor Conceptual Rendering

07

## Appendix A

GIS Mapping Supplemental  
Information

# 7.1

## Land Use Map

The Willow and Castille sites primarily comprise residential and commercial uses, with institutional services scattered away from the Evangeline Thruway. With the thruway acting as a physical barrier and lacking pedestrian circulation features, intervention is needed to connect the East and West communities seamlessly.



Source: DDG GIS

# 7.2

## Traffic Volumes & Speed Limits Map

With the Evangeline Thruway bisecting the East and West sides of the site and existing on the same layer as community scale circulation, safety concerns increase from the harsh transition. Results show that the average risk of severe injury for a pedestrian struck by a vehicle reaches 10% at an impact speed of 16 mph. The chances of severe injury escalate with speed: 25% at 23 mph, 50% at 31 mph, 75% at 39 mph, and 90% at 46 mph. (Source: Foundation for Traffic Safety, Sep 2011).



Source: DDG GIS

# 7.3

## Pedestrian & Bicycle Circulation Map - Existing

The site currently has a fragmented circulation system for pedestrian and bicycle traffic. Most points of interest are within a 10-minute walking distance. However, the sidewalks become more fragmented as you near Evangeline Thruway, increasing the risk of an accident. Introducing a multi-use and dedicated use path would help alleviate these risks.



Source: DDG GIS

# 7.4

## Transit Facilities Map

In addition to bicycle and pedestrian circulation, transit routes and stops exist throughout the site, creating an opportunity for a “greener” multi-modal transportation network. However, access to these stops is fragmented, which hinders the ability to utilize the transit network for safe travel fully.



# 7.5

## Bicycle Circulation Map Proposed Routes

Extended and connected pathways through the Willow and Castille area have been proposed by other parties as part of a city-wide infrastructure network. These "route" would allow bicyclists and pedestrians to move safely throughout Lafayette and their local communities. One example of this is Bike Lafayette's plan, which shows several intersecting "loops" that connect to the current site, creating an opportunity for safe circulation.



08

## Appendix B

Traffic Information Technical  
Memorandum. Full study in  
Separate Document.vv

# 8.1

## Willow Street Technical Memorandum Summary



**KITTELSON & ASSOCIATES**

### Technical Memorandum

October 11, 2022 Project# 27430

To: Edward Campany, Transportation Specialist  
Lafayette Consolidated Government  
Community Development & Planning Department, Planning Division

From: G. Wade Walker, PE, Hon. ASLA, Alex Morgan, EI

CC: Chad Danos, Duplantis Design Group

RE: Willow Street Lane Repurposing Study

### WILLOW STREET LANE REPURPOSING STUDY

As part of the Willow Street and Castille Avenue planning effort, a concept was developed to enhance the walkability, safety, aesthetics, and economic viability of Willow Street between Cora Street and Moss Street, inclusive of the intersections with the northbound and southbound directions of Evangeline Parkway/US 167. A concept was developed through the study including input at two community stakeholder sessions that added planted medians, dedicated bicycle facilities, midblock pedestrian crossings, and street tree plantings to offer shade for pedestrians and a higher level of streetscape. On the segment between Evangeline Parkway northbound and Moss Street, the concept is proposing a lane repurposing. This concept will reduce the current four-lane undivided section to a three-lane section with a two way left lane and spot medians to provide space for streetscape, protected pedestrian refuges, and a separated bicycle facility. Kittelson and Associates has completed the following analyses to evaluate the change in average through travel time along the modified segment of Willow Street due to the lane repurposing.

#### 1.0 Study Corridor

Willow Street is an east-west residential boulevard in the northern part of the City of Lafayette, Louisiana and serves as a connector from the surrounding city to commercial uses along the Evangeline Parkway. It will also serve as the first exit opportunity on I-49 south of the I-10 interchange when LADOTD converts Evangeline Thruway/US 167 to the planned grade separated interstate extension. In an effort to enhance pedestrian and bicycle safety on the Willow Street corridor as well as to provide aesthetic enhancements, a concept was developed including planted medians, midblock protected crossings, street trees, and new dedicated bicycle facilities throughout the corridor. On the segment of Willow Street east of Evangeline Thruway northbound to Moss Street only, the concept included a repurposing of two travel lanes to a two-way left turn lane and spot medians.

This memo summarizes the analysis and results of a traffic analysis to measure the impacts to average through travel time on the modified segment as a result of the lane repurposing, and to outline the safety benefits associated with such a lane repurposing. The location of the study corridor and study intersections are shown in Figure 1.

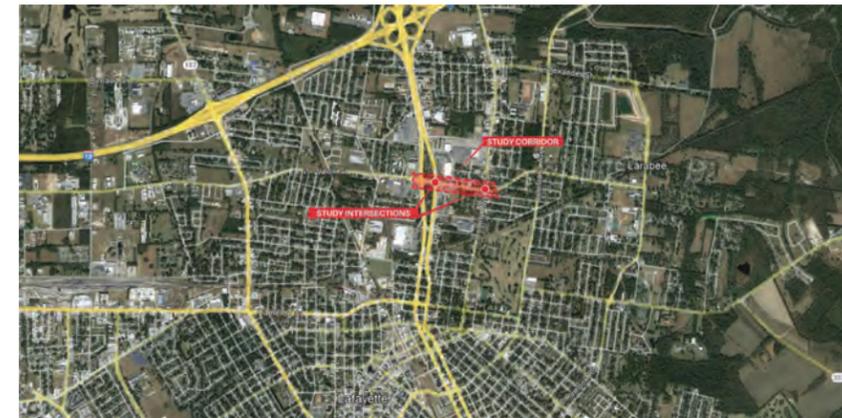


Figure 1: Study Corridor and Intersections Locations

The study corridor includes the intersection of Willow Street with Evangeline Parkway northbound lanes and Moss Street. The existing intersection lane configurations are shown in Figure 2.



Figure 2: Existing Lane Configuration

# 8.2

## Willow Street Technical Memorandum

### 2.0 Traffic Volumes

Turning movement counts (TMC) were obtained by the City of Lafayette, and existing TMC data was utilized for analysis. The TMCs are attached in **Appendix A** and summarized in **Figure 3** for the AM Peak-Hour (7:15 – 8:15 AM) and the PM Peak-Hour (4:30 – 5:30 PM).

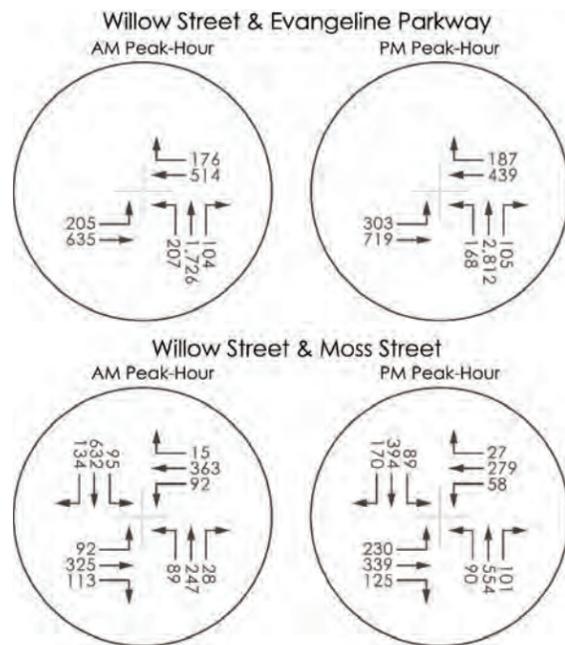


Figure 3: Turning Movement Counts

### 3.0 Operational Analysis

Highway Capacity Manual (HCM) methodologies were applied using the Synchro 11 traffic analysis software package to determine the difference in average through travel time along Willow Street between Willow Street & Evangeline Parkway, and Willow Street & Moss Street before and after the lane repurposing. Signal timings were obtained from the City of Lafayette. Splits were optimized for the existing and lane repurposing scenarios to ensure an even comparison of alternatives. The operational results of the lane repurposing are shown in **Table 1**. Synchro 11 reports are attached in **Appendix B**.

Table 1: Operational Results

Direction	Average Travel Time (s)					
	AM Peak-Hour			PM Peak-Hour		
	Existing	After Lane Repurposing	Δ	Existing	After Lane Repurposing	Δ
Eastbound	147.1	159.0	11.9	158.6	173.4	14.8
Westbound	179.3	183.3	4.0	188.5	212.2	23.7

The increase in average through vehicle travel time ranges from 4 to 24 seconds during the peak-hour analyses. However, this slight increase in delay during the peak hour yields several safety benefits, described in Section 4.0.

### 4.0 Safety Benefits

By modifying the cross section of Willow Street between Moss Street and the NB Evangeline Throughway ramps to two travel lanes separated by spot/flush medians, several safety benefits can be attained. In addition to the ability to provide facilities for cyclists and planting areas, tangible benefits for motor vehicles, pedestrians, and cyclists are possible.

For motor vehicles, the current four-lane undivided cross section of Willow forces the inside travel lane to become a de facto left-turn lane for vehicles trying to access businesses and destinations on the north and south sides of Willow. Unlike the section west of Evangeline Throughway, left turning vehicles must stop in the inside lane to wait on a gap to make a left turn. This causes delay for following vehicles in the inside lane and presents a tangible safety issue in rear-end and sideswipe crashes. Vehicles following another vehicle wishing to make a left-turn may crash into the rear end of the stopped vehicle if the following driver is not paying attention, or, in an effort to bypass the left turning vehicle, a following vehicle may sideswipe a vehicle occupying the outside travel lane. Research shows that when these undivided facilities are converted to a section where the left-turning vehicle can wait to turn in a dedicated left-turn lane, that motor vehicle crashes are significantly reduced (between 19 and 47% according to FHWA's **Road Diet Informational Guide**, [https://safety.fhwa.dot.gov/road\\_diets/guidance/info\\_guide/](https://safety.fhwa.dot.gov/road_diets/guidance/info_guide/)). Reducing the number of moving lanes from four to three lanes reduces the conflict points that vehicles exiting left from driveways or side streets will encounter, also contributing to safety benefits. By eliminating the ability for vehicles to pass one another, vehicle speeds will be regulated which contributes to an operating speed more consistent with the posted speed limit. This will prevent high-speed vehicles who slalom from lane to lane overtaking other vehicles, which contributes to greater severity of crashes.

For pedestrians and bicyclists, the current four-lane undivided street does not provide for dedicated bike facilities or midblock pedestrian crossings with refuge islands. Both of these characteristics were heard as desired elements during the community stakeholder meetings. The current concept plan includes a midblock crossing with median refuge to significantly reduce the distance between protected crossings from the 1,700 feet that exists today (signalized intersections at Moss Street and NB Evangeline Throughway). Several stakeholders indicated that there was a need for more and safer pedestrian crossing opportunities along Willow Street. Additionally, the lane reconfiguration allows for the provision of separated bike lanes between Moss Street and Evangeline Throughway to support safer bike travel along the corridor and to tie into the shared use paths that are proposed on Willow west of Evangeline Throughway.

### 5.0 Conclusions

This analysis focuses on the vehicle delay impacts and safety benefits of the proposed four to three lane repurposing on the segment of Willow Street between Moss Street and NB Evangeline Throughway. The Highway Capacity Manual analysis shows minor impacts to through traffic delay in the peak travel periods and directions analyzed. It is the opinion of Kittelson & Associates that the safety benefits outweigh the travel time costs and therefore the proposed modification should be advanced in concept.

# 8.3

## Willow Street Technical Memorandum



**Full Study attached to separate Document in Appendix C**

