

# Road Diet/Complete Streets Concept Study - Phase I



September 2016



Consultant Team



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# Project Overview

The purpose of this study is to explore potential changes to several corridors that pass through the UAB campus. The concepts presented in this report are conceptual options meant to illustrate how streets can be enhanced to:

- Improve campus safety
- Expand travel options to and on campus
- Support the overall quality of life on campus

Additionally, the concepts presented in this plan are conceptual and not intended to be detailed design documents. Changes to any corridor through campus will be implemented in partnership with the City of Birmingham, the UAB campus community, and the surrounding neighborhoods.

Corridors studied as part of this project include:

- 10th Avenue South Corridor
- 13th Street South Corridor
- 14th Street South Corridor
- 7th Avenue South Corridor
- 12th Street South Corridor
- 8th Street South/5th Avenue South Corridor

More detailed information about these corridors and the potential changes explored for these corridors can be found in the subsequent chapters of this report.

The photo renderings to the right represent potential changes along the 10th Avenue South Corridor and illustrate how the corridor can evolve over time to meet the stated goals above.



Existing Condition: 10th Ave. S. between 14th St. and 13th St.



Potential Short-Term: 10th Ave. S. between 14th St. S. and 13th St. S.



Potential Long-Term: 10th Ave. S. between 14th St. S and 13th St. S.



Existing Condition: 10th Ave. S. at 14th St. S.



Potential Short-Term: 10th Ave. S. at 14th St. S.



Potential Long-Term: 10th Ave. S. at 14th St. S.

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# Existing Typical Conditions

## Intersections

Due to the grid structure of the street network, many of the intersections are relatively perpendicular and most are signalized. The intersections along the study corridors can be uncomfortable for people travelling on foot or bike. Many have wide crossing distances for people on foot and bike and there are few mid-block crossing points for pedestrians. Most intersections have standard crosswalk treatments, some of which are faded and in need of maintenance. For bike treatments, some intersections have shared road markings at the approach or immediately following the intersection, but no intersections have dedicated space for people biking. The image to the right depicts several of the qualities that are common at study corridor intersections.



Figure 1. Typical Intersection Conditions



Corridors

The study corridors share many qualities. Between the curbs, there are wide travel lanes, stretches of on-street parking, and two to four travel lanes. There are no existing dedicated bikeways along the study corridors, but some have shared lane markings and “share the road” signs. Sidewalks are available along the entirety of the study corridors. Some sidewalks are buffered from moving vehicles by a landscape strip, street lights, or on-street parking.

The image to the right depicts a stretch of roadway with characteristics that are typical for study corridors.



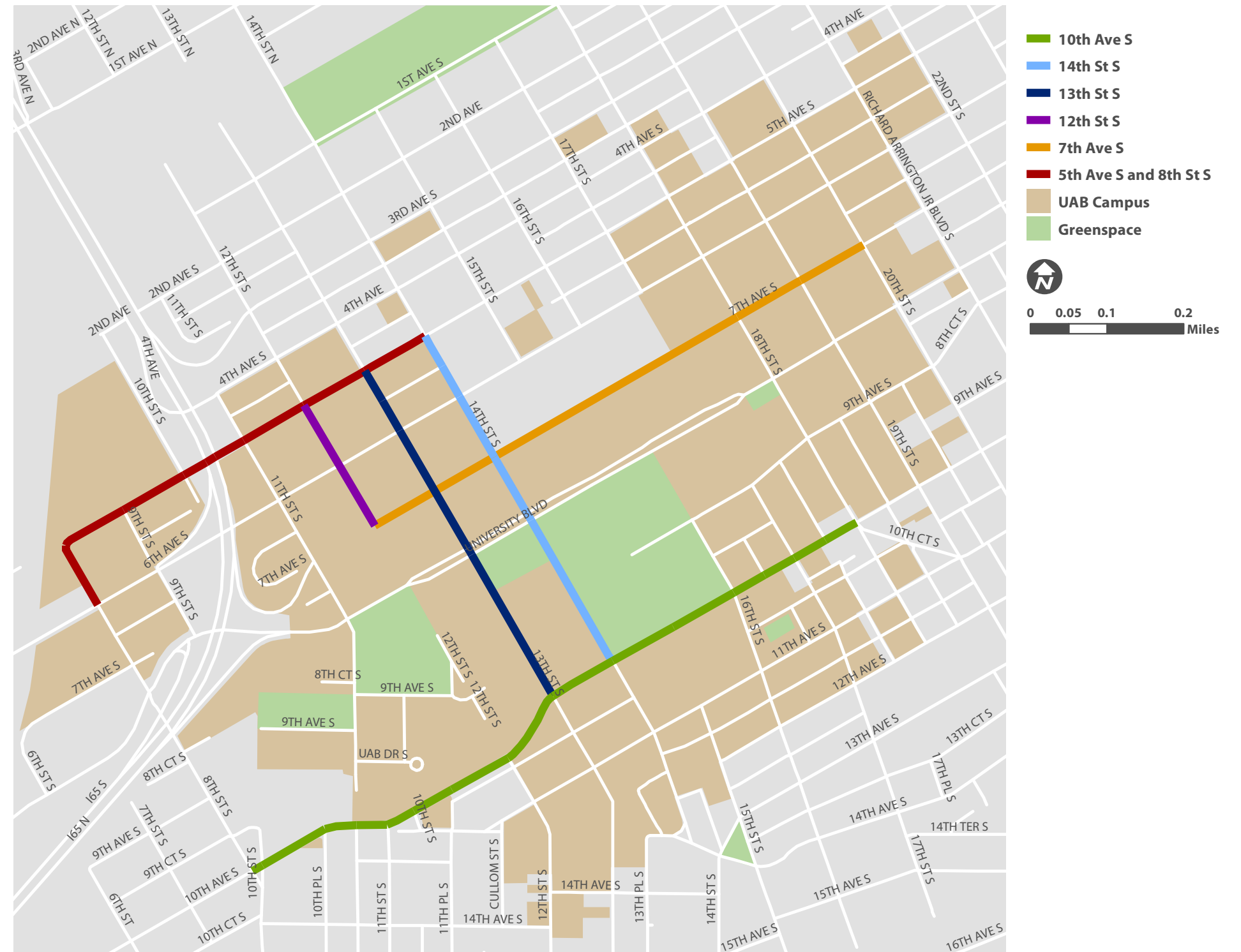
Figure 2. Typical Corridor Conditions



## Study Corridors

## Overview

The study corridors illustrate the network strategy for this study. Logical termini were selected for each corridor to create a “minimum grid” of complete street enhancements to improve pedestrian, bicycle, vehicle, and transit connectivity to priority destinations on and near-by campus. Specific notes about each strategic corridor and design considerations are summarized on the subsequent pages.



### Figure 3. Study Corridors

10th Avenue South Corridor

Corridor Overview

10th Avenue South serves as the primary east-west corridor through the southern portion of the UAB campus. It also serves as a parallel route to University Boulevard, connecting the Five Points area east of campus to the interstate (via 8th Street South ) and adjacent neighborhoods. For this study, the corridor extends from 8th Street South to 18th Street South.

Design Considerations

General

- Enhance pedestrian crossings, particularly at intersections.
- Balance multi-modal needs of UAB staff, students, and visitors.
- Create dedicated space for people biking along the corridor.
- On-street parking may drop at intersections to accommodate dedicated turn lanes for vehicles or be used for bump-outs to increase queue space for pedestrians.

Short-Term

- Reallocate roadway space using striping and other treatments that provide cost-effective safety and performance enhancements.
- Install curb extensions as part of first phase.

Long-Term

- If short-term treatments achieve corridors goals, turn temporary treatments into permanent roadway changes by reconstructing streetscape.
- Implement streetscape enhancements between the curb and buildings along the corridor to enhance aesthetic quality and character of the street, as well as the comfort and safety for those walking, biking, driving, and taking transit along the corridor.

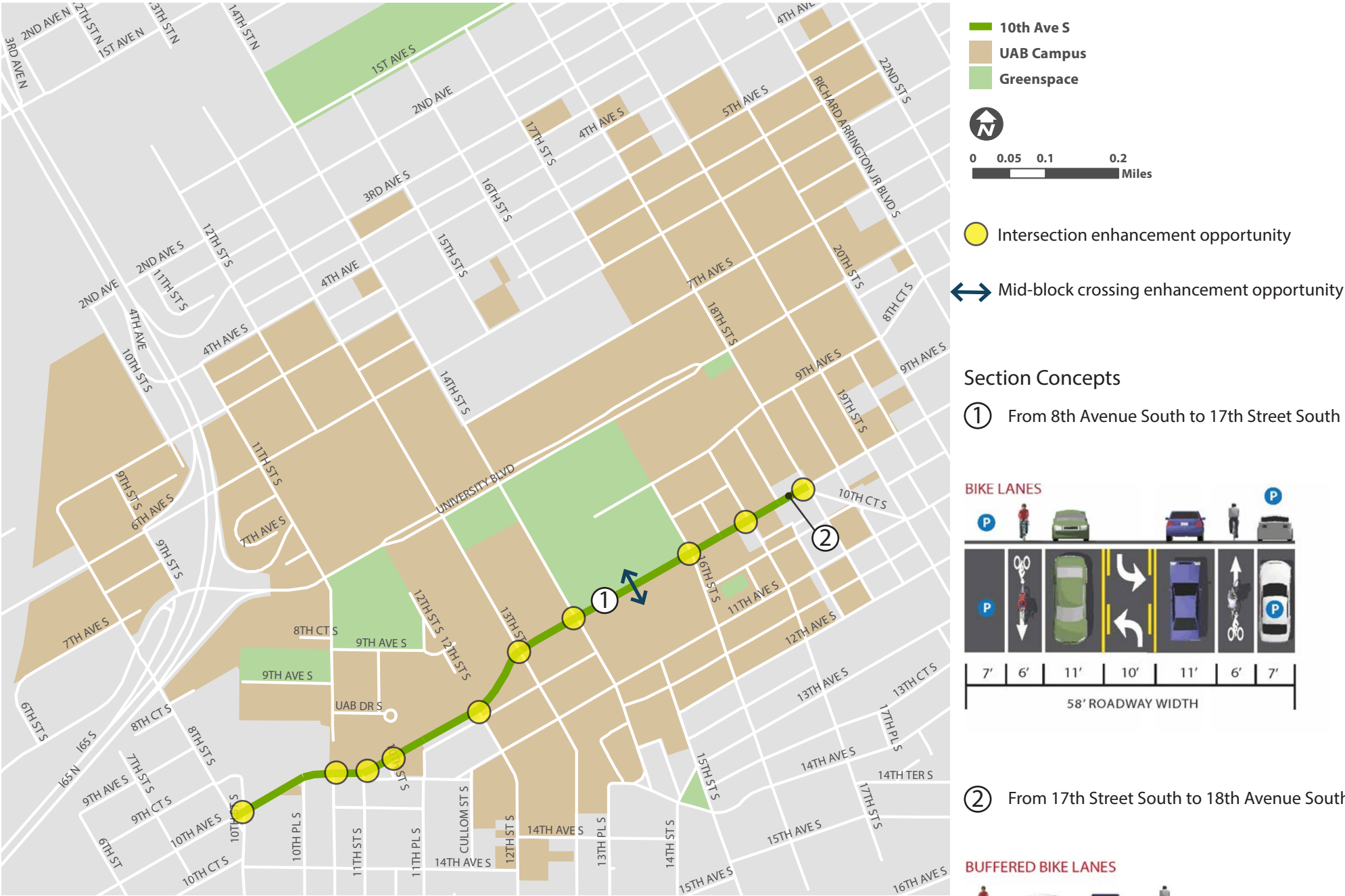


Figure 4. 10th Avenue South Corridor



## 13th Street South Corridor

### Corridor Overview

13th Street serves as one of the primary north-south streets connecting the southern part of the UAB campus to the northern part of the UAB campus. It also serves as an important connection to University Boulevard. For this study, the corridor extends from 10th Avenue South to 5th Avenue South.

### Design Considerations

#### General

- Enhance pedestrian crossings at intersections and key mid-block crossings on campus.
- Balance multi-modal needs of UAB staff, students, and visitors.
- Create dedicated space for people biking along the corridor.
- On-street parking may drop at intersections to accommodate dedicated turn lanes for vehicles or be used for bump-outs to increase queue space for pedestrians.

#### Short-Term

- Reallocate roadway space using striping and other treatments that provide cost-effective safety and performance enhancements.

#### Long-Term

- If short-term treatments achieve corridors goals, turn temporary treatments into permanent roadway changes by reconstructing streetscape.
- Implement streetscape enhancements between the curb and buildings along the corridor to enhance aesthetic quality and character of the street, as well as the comfort and safety for those walking, biking, driving, and taking transit along the corridor.

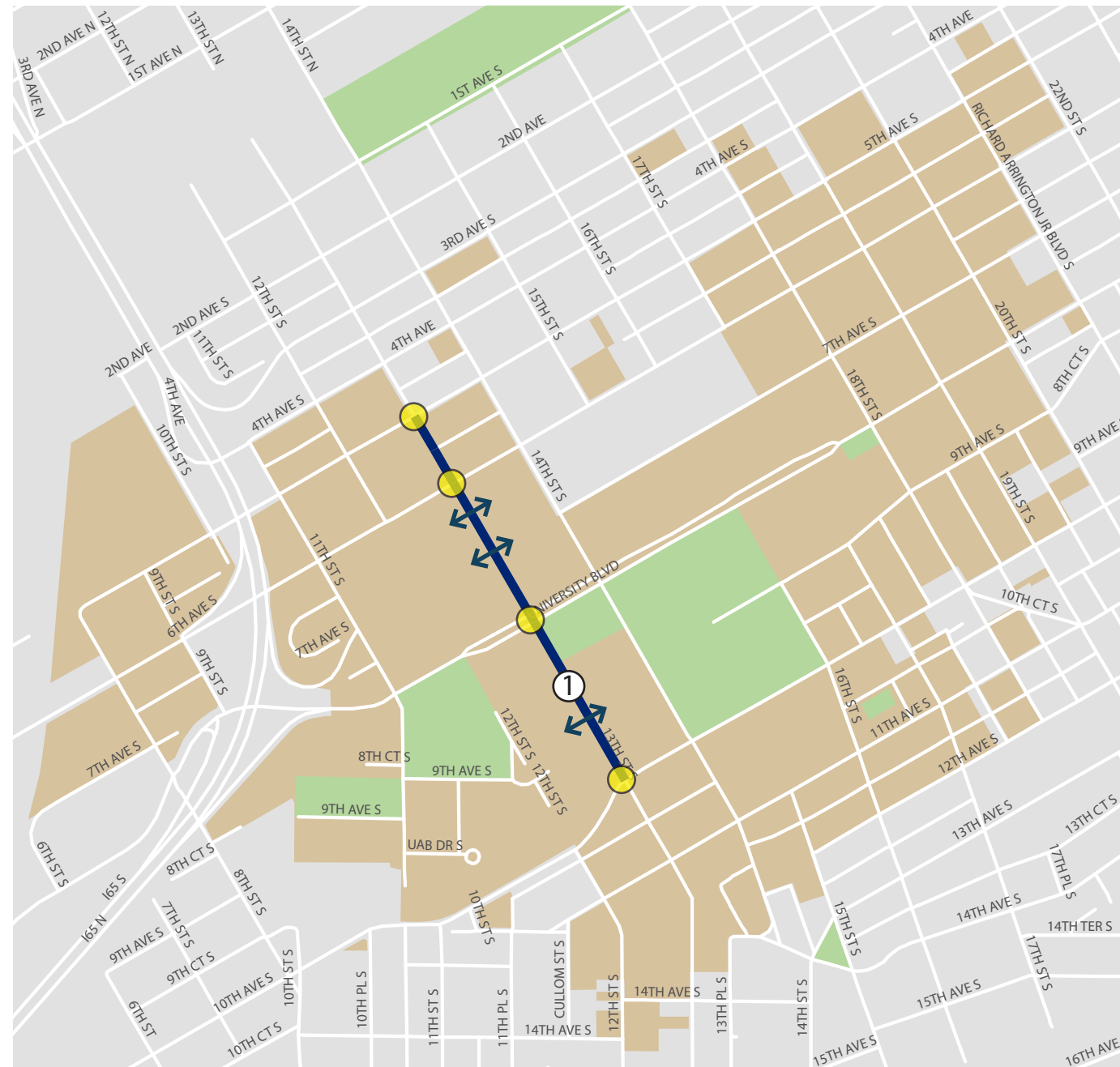


Figure 5. 13th Street South Corridor

13th St S  
UAB Campus  
Greenspace



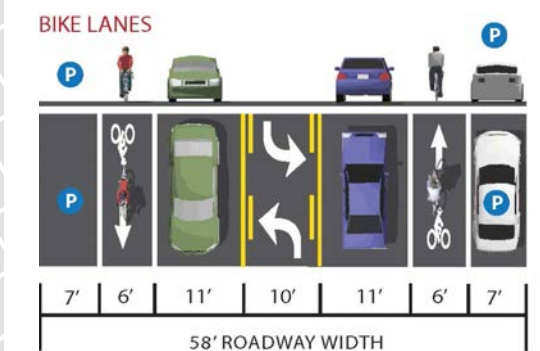
0 0.05 0.1 0.2  
Miles

Intersection enhancement opportunity

Mid-block crossing enhancement opportunity

### Section Concepts

① From 10th Avenue South to 5th Avenue South



14th Street South Corridor

Corridor Overview

14th Street serves as one of the primary north-south streets connecting the southern part of campus to the northern part of campus. It also serves as an important connection to University Boulevard and areas north of campus including Regions Field, Railroad Park, and Downtown Birmingham north of the railroad tracks. For this study, the corridor extends from 5th Avenue South to 10th Avenue South.

Design Considerations

General

- Enhance pedestrian crossings, particularly at intersections.
- Balance multi-modal needs of UAB staff, students, and visitors.
- Create dedicated space for people biking along the corridor.
- On-street parking may drop at intersections to accommodate dedicated turn lanes for vehicles or be used for bump-outs to increase queue space for pedestrians.

Short-Term

- Reallocate roadway space using striping and other treatments that provide cost-effective safety and performance enhancements.

Long-Term

- Extend limits of study northwards to Regions Field, Railroad Park, and beyond to enhance connection from campus to near-by destinations.
- If short-term treatments achieve corridors goals, turn temporary treatments into permanent roadway changes by reconstructing streetscape.
- Implement streetscape enhancements between the curb and buildings along the corridor to enhance aesthetic quality and character of the street, as well as the comfort and safety for those walking, biking, driving, and taking transit along the corridor.



Figure 6. 14th Street South Corridor



## 7th Avenue South Corridor

### Corridor Overview

7th Avenue South Street is a primary east-west corridor through the northern portion of the UAB campus. It connects the athletic facilities on the western edge of campus to the student center and the medical facilities in the middle and eastern parts of campus. A bike lane on 7th Avenue already exists, starting at 20th Street South and heading east. For this study, the corridor extends from the athletic fields between 5th Avenue South and University Boulevard east to 20th Street South.

### Design Considerations

#### General

- Enhance pedestrian crossings at intersections and key mid-block crossings on campus.
- Balance multi-modal needs of UAB staff, students, and visitors.
- Create dedicated space for people biking along the corridor.
- Extend existing bike lane along 7th Avenue South east of 20th Street south west through campus.
- Maintain access for service vehicles making deliveries to buildings along the corridor.
- Enhance off-street pathways for people walking and biking.
- Create safe and intuitive transitions between off-street pathways and on-street walkways and bikeways.
- Off-street pathways create opportunity for green infrastructure to manage stormwater run-off.

#### Short-Term

- Reallocate roadway space using striping and other treatments that provide cost-effective safety and performance enhancements.

#### Long-Term

- If short-term treatments achieve corridors goals, turn temporary treatments into permanent roadway changes by reconstructing streetscape.
- Implement streetscape enhancements between the curb and buildings along the corridor to enhance aesthetic quality and character of the street, as well as the comfort and safety for those walking, biking, driving, and taking transit along the corridor.

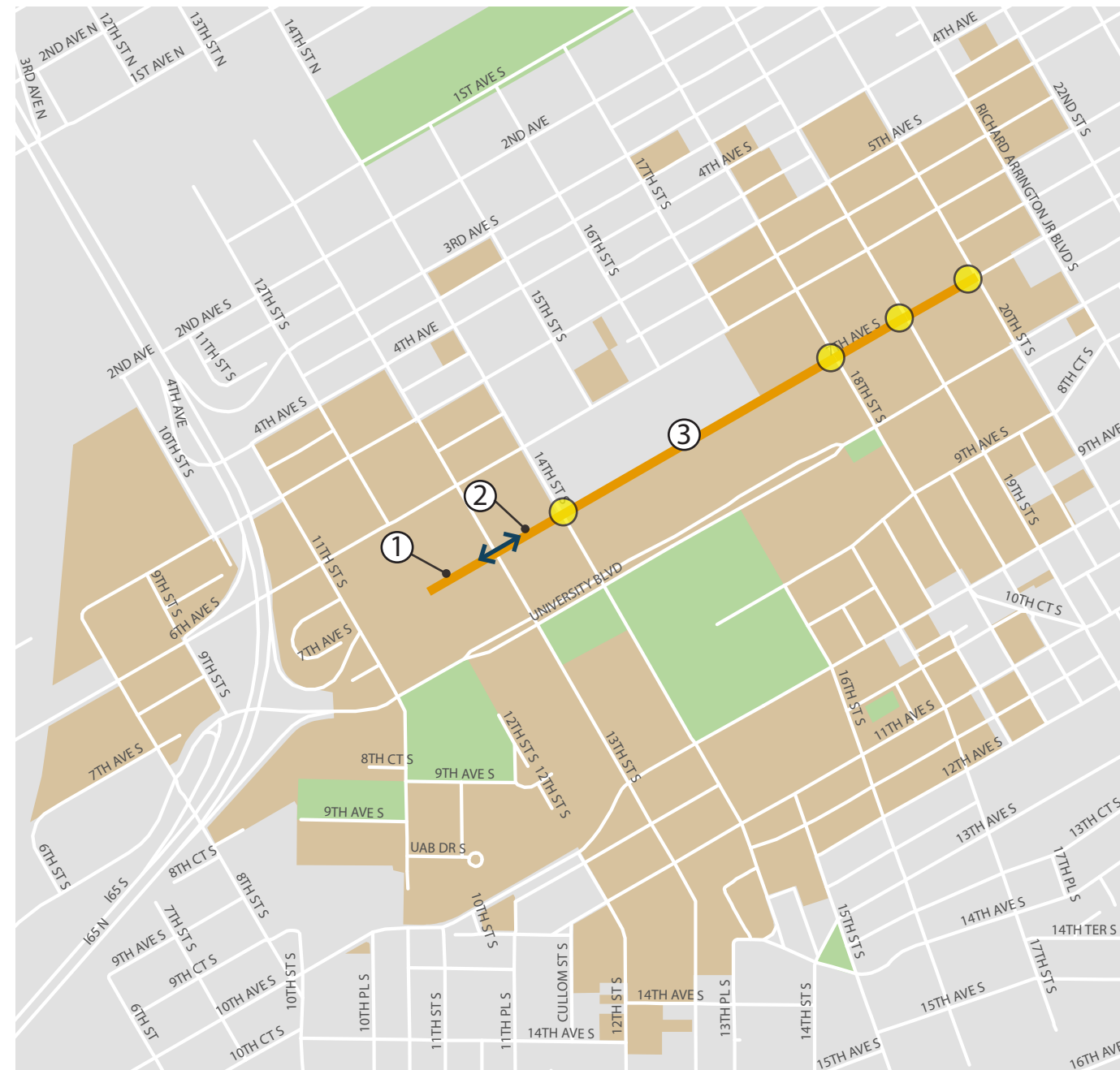


Figure 7. 7th Avenue South Corridor



## 12th Street South Corridor

### Corridor Overview

The 12th Street South Corridor includes an off-street pathway and on-street bikeway connection from the athletic field at the western edge of the UAB campus to Regions Field, Railroad Park, new development around Region’s Field and Railroad Park. For this study, the corridor extends from the 7th Avenue Corridor and the UAB athletic fields north to 5th Avenue South.

### Design Considerations

#### General

- Enhance pedestrian crossings, particularly at intersections.
- Balance multi-modal needs of UAB staff, students, and visitors.
- Create dedicated space for people biking along the corridor.

#### Short-Term

- Reallocate roadway space using striping and other treatments that provide cost-effective safety and performance enhancements.

#### Long-Term

- Extend limits of study northwards to Regions Field, Railroad Park, and beyond to enhance connection from campus to near-by destinations.
- If short-term treatments achieve corridors goals, turn temporary treatments into permanent roadway changes by reconstructing streetscape.
- Implement streetscape enhancements between the curb and buildings along the corridor to enhance aesthetic quality and character of the street, as well as the comfort and safety for those walking, biking, driving, and taking transit along the corridor.

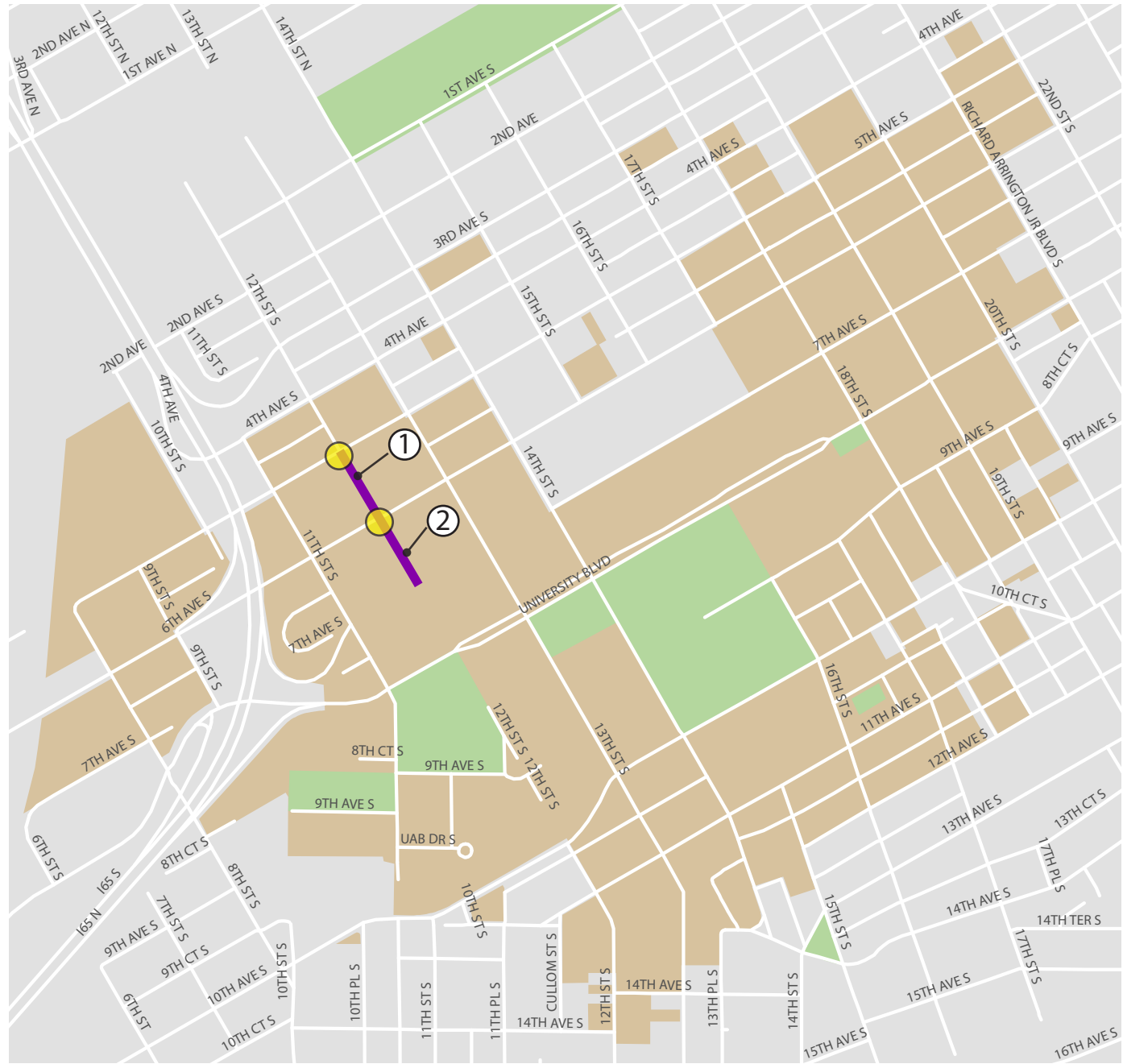
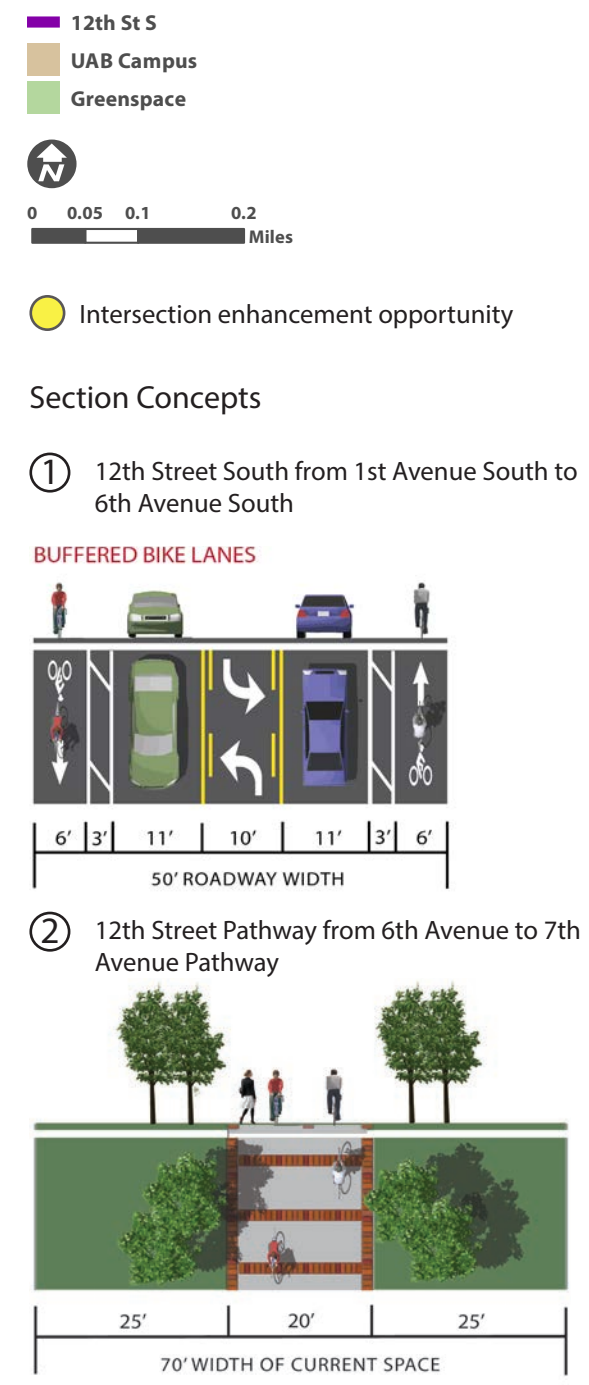


Figure 8. 12th Street South Corridor





## 8th Street South/5th Avenue South Corridor

### Corridor Overview

8th Street South/5th Avenue South Corridor connects UAB campus properties west of I-65 to campus destinations east of I-65. The corridor is also a proposed bus rapid transit route and will connect future commuter parking lots for campus west of I-65 to UAB campus destinations each of I-65. For this study, the corridor follows 8th Street from 6th Avenue South to 5th Avenue South, and then follows 5th Avenue South from 8th Street South to 14th Street South.

### Design Considerations

#### General

- Enhance pedestrian crossings, particularly at intersections.
- Balance multi-modal needs of UAB staff, students, and visitors.
- Create dedicated space for people biking along the corridor.
- Coordinate implementation of bus rapid transit proposed along 5th Avenue South with project stakeholders.

#### Short-Term

- Reallocate roadway space using striping and other treatments that provide cost-effective safety and performance enhancements.

#### Long-Term

- If short-term treatments achieve corridors goals, turn temporary treatments into permanent roadway changes by reconstructing streetscape.
- Implement streetscape enhancements between the curb and buildings along the corridor to enhance aesthetic quality and character of the street, as well as the comfort and safety for those walking, biking, driving, and taking transit along the corridor.

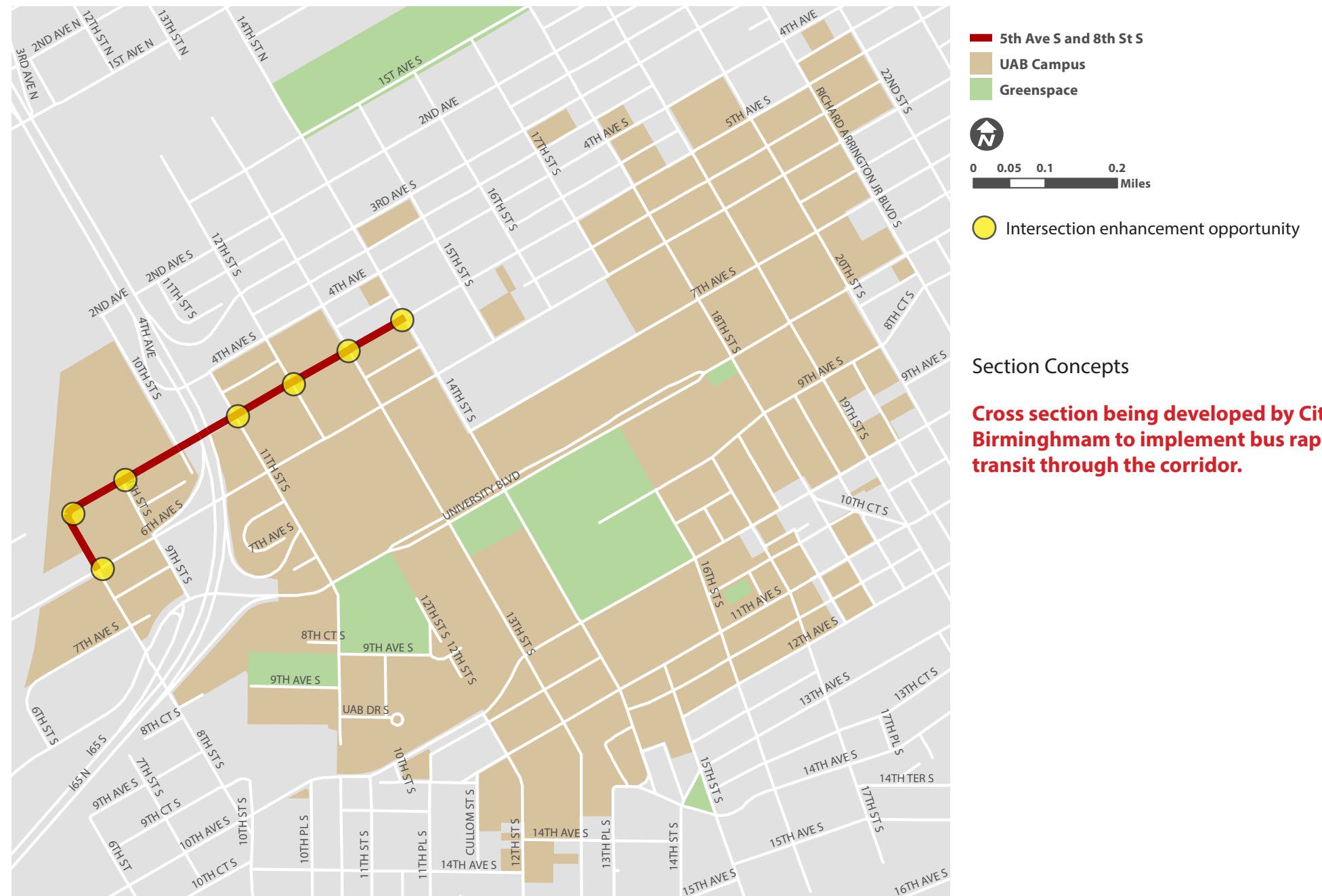


Figure 9. 8th Street South/5th Avenue South Corridor

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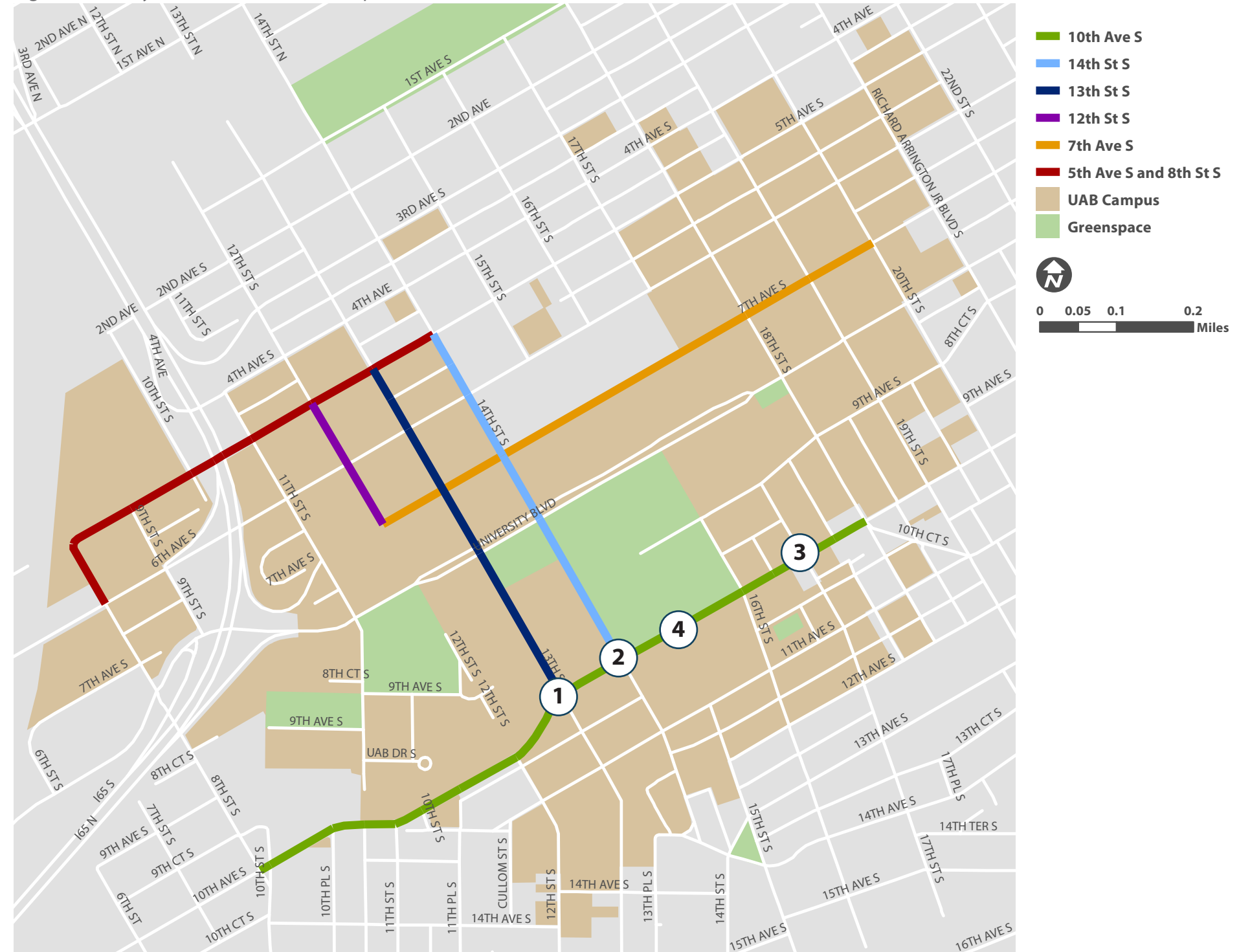
# Priority Intersection Concepts

## Overview

Several key intersections within the study area were identified for safety improvements. Field observations and interviews with campus stakeholders were used to identify conflict points and potential design strategies. The concepts presented for these projects can be implemented as stand alone projects or can be incorporated into larger corridor improvement projects. The concepts are intended to provide potential design solutions as opportunities for projects arise.

- ① 10th Avenue South at 13th Street South
- ② 10th Avenue South at 14th Street South
- ③ 10th Avenue South at 17th Street South
- ④ 10th Avenue South at UAB Campus Green  
(note no concepts are developed for this crossing as part of this study)

Figure 10. Study Area Intersection Concepts





Potential Interim Design Strategies

Interim design strategies are a set of tools and tactics that communities can use to improve their roadways and public spaces in the near-term. Low-cost, interim materials allow communities to make quick changes and test their performance before making them permanent with construction.

Examples of interim design strategies include:

- Moving the curb line with interim materials
- Using pilot projects to test a street design strategy before it is used for a larger corridor or area.
- Creating interim public plazas transform underutilized areas of roadway into public spaces for surrounding residents, visitors, students, and businesses.

Several interim design treatments are proposed as potential treatments to implement intersection improvements quickly and cost effectively within the study area. Some picture examples of proposed treatments are provided to describe design intent. Actual materials, pavement markings, and streetscape treatments will vary based on design selections, degree of desired durability of treatments, and available funds for projects.



**Interim Curb Extensions.** Using paint or epoxy gravel can be a cost effective way to create more compact intersections.



**Interim Public Plazas.** Re-claiming under-utilized street space for people to socialize helps create a sense of place and opportunities to connect with others.



**Planters.** Using planters or other vertical, movable streetscape treatments helps enhance the visual quality of a street and define the edges of street space, such as a bikeway, sidewalk, on-street parking lane, or public plaza.



**Bike Corrals.** Re-purposing space previously used for vehicle on-street parking with bike racks can increase bike parking availability and make bike access to near-by destinations more convenient.



## Potential Intersection Treatments

Proposed intersection treatments within the study area are intended to create intuitive, seamless, and predictable travel behavior for those passing through the study area. They are also intended to improve safety for all street users by creating a space in which users are mutually aware of one another and visible and predictable in their actions to reduce the overall rate and severity of crashes.

Some picture examples of proposed intersection treatments are provided to describe design intent. Actual materials, pavement markings, and streetscape treatments will vary based on design selections, safety priorities, and desired intersection performance.



**High Visibility Crosswalks.** This type of crosswalk treatment is more visible to approaching vehicles and have been shown to improve yielding behavior.



**Curb Extensions.** Curb extensions visually and physically narrow the roadway, creating safer and shorter crossings for pedestrians while increasing the available space for streetscape features such as street trees.



**Bikeway Intersection Crossing Markings.** This type of marking guides bicyclists on a safe and direct path through intersections and provides a clear boundary between the paths of through bicyclists and either through or crossing motor vehicles in the adjacent lane.



**Green Pavement Markings.** Using solid green pavement markings to fill in bikeway treatments at the bikeway approach to an intersection or dashed green pavement markings where vehicles may cross a bikeway increase awareness and visibility of bicyclists for those driving.



**Active Warning Beacons.** User-actuated amber flashing lights that supplement warning signs at unsignalized intersections or mid-block crosswalks are used to alert drivers to yield where pedestrians or bicyclists have the right-of-way crossing a road.



10th Avenue South at 13th Street South

Project Need

The current intersection has an off camber and irregular alignment for a four-way intersection, creating long crossing distances for pedestrians on the west and north crosswalks. Excess space and wide lanes encourage higher speeds for vehicles passing through the intersection, which creates more traffic stress for those walking, biking, and driving through the intersection. There is also no dedicated space for bicyclists. The intersection has an urban context and is situated within the UAB campus.

Proposed Improvements

Moving the curb line, re-aligning travel lanes, creating dedicated space for people biking, and installing high visibility crosswalks enhances visibility and predictability for all roadway users of the intersection. Extending the curb line at each corner of the intersection reduces the distance pedestrians have to cross and helps slow vehicles making right turns, which is a safety enhancement.

Near-Term Improvements

- Road diet along 10th Avenue South and 13th Street South north of the intersection creates a dedicated left-turn lane for vehicles and a bike lane.
- Extending the curb line with pavement striping and low-cost materials creates space for a new public plaza and creates a more compact intersection, making it easier for pedestrians to cross the street and slowing the speed of turning vehicles through the intersection.
- Preserving on-street parking maintains vehicular access to near-by destinations and a buffer between the sidewalk and travel lane.

Long-Term Improvements

- Re-constructing the sidewalk to make new curb lines permanent.
- Add streetscape elements with sidewalk construction, such as street trees, pedestrian lighting, and other elements that improve the comfort for those walking along the street.
- Create a planted median between intersections to enhance the visual quality of the corridor.



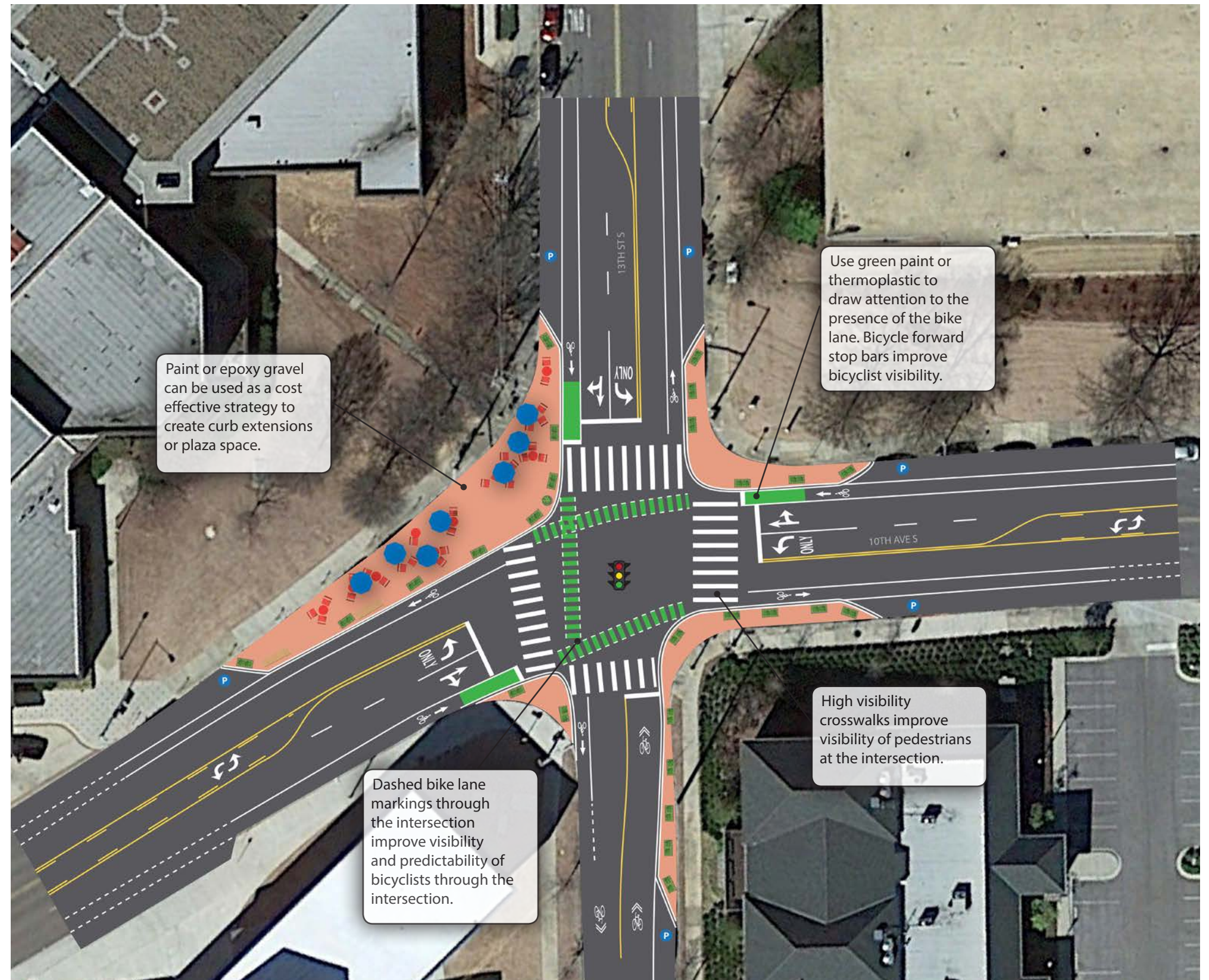
Existing Condition



# 10th Avenue South at 13th Street South Phase 1

## Key Recommendations

- A road diet along 10th Avenue South creates a dedicated left turn lane for vehicles and space for bike lanes in both directions.
- A road diet along 13th Street South north of 10th Avenue South creates a dedicated left turn lane for vehicles and space for bike lanes in both directions.
- Signal upgrades, such as exclusive left turn phases if warranted, should be made to accommodate changes in turning movements with proposed road diets along 10th Avenue South and 13th Street South.
- Preserve on-street parking, but move on-street parking away from intersection to improve visibility and sight lines for those walking, biking, and driving.
- Moving the curb line at each corner of the intersection helps reduce the distance and time it takes pedestrians to cross the street. A temporary curb line can be denoted with a double white line and enhanced with vertical elements such as a rubber curb, planter boxes, or other temporary streetscape treatments.
- High visibility crosswalks enhance visibility of areas where people walking cross the intersection.
- Green paint and bikeway pavement markings through the intersection help highlight conflict points where a vehicle may cross the bikeway or denote the dedicated space someone biking should use to cross through the intersection.
- The excess pavement space on the northwest corner of the intersection creates space for place-making treatments, such as a plaza. The plaza could include moveable tables and chairs to create a space for people to sit as well as public art to enhance the connection between the Abroms-Engel Institute for the Visual Arts and the Alys Robinson Stephens Performing Arts Center.



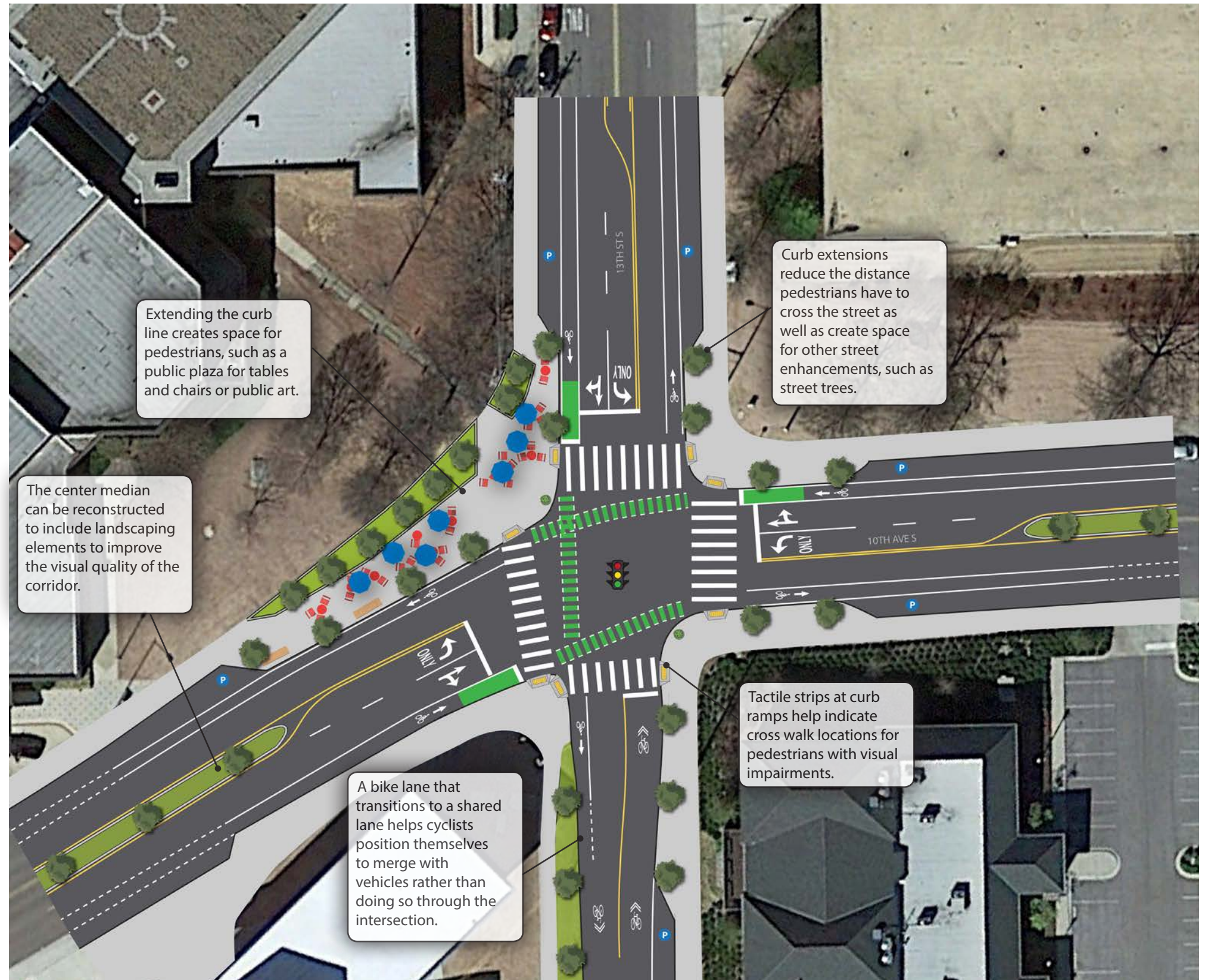
### Proposed (Near-Term)



## 10th Avenue South at 13th Street South Phase 2

### Key Recommendations

- A road diet along 10th Avenue South creates a dedicated left turn lane for vehicles and space for bike lanes in both directions.
- A road diet along 13th Street South north of 10th Avenue South creates a dedicated left turn lane for vehicles and space for bike lanes in both directions.
- Signal upgrades, such as exclusive left turn phases if warranted, should be made to accommodate changes in turning movements with proposed road diets along 10th Avenue South and 13th Street South.
- Preserve on-street parking, but move on-street parking away from intersection to improve visibility and sight lines for those walking, biking, and driving.
- Moving the curb line at each corner of the intersection helps reduce the distance and time it takes pedestrians to cross the street.
- The sidewalk is reconstructed to create space for streetscape elements such as shade trees, pedestrian-scaled lighting, seating, and other features that improve the comfort and safety of people walking along the street.
- High visibility crosswalks enhance visibility of areas where people walking cross the intersection.
- Green paint and bikeway pavement markings through the intersection help highlight conflict points where a vehicle may cross the bikeway or denote the dedicated space someone biking should use to cross through the intersection.
- The excess pavement space on the northwest corner of the intersection can be reallocated to pedestrians for place-making treatments, such as a plaza. The plaza could include moveable tables and chairs to create a space for people to sit as well as public art to enhance the connection between the Abroms-Engel Institute for the Visual Arts and the Alys Robinson Stephens Performing Arts Center.
- The center median can be reconstructed to include landscape elements such as grass, flowers, bushes, and trees to enhance the visual character of the streets.



Proposed (Long-Term)



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10th Avenue South at 14th Street South

Project Need

This current signalized intersection has a perpendicular four-way configuration. Several pedestrian crashes have occurred at this intersection where turning vehicles have hit pedestrians in the crosswalk. Excess space and wide lanes encourage higher speeds for vehicles passing through the intersection, which creates more traffic stress for those walking, biking, and driving through the intersection. There is also no dedicated space for bicyclists. The intersection has an urban context and is situated within the UAB campus and experiences higher pedestrian volumes between class changes. A new UAB building on the northeast corner of the intersection will increase pedestrian and bicycle traffic at the intersection.

Proposed Improvements

Moving the curb line, re-aligning travel lanes, creating dedicated space for people biking, and installing high visibility crosswalks enhances visibility and predictability for all roadway users of the intersection. Extending the curb line at each corner of the intersection reduces the distance pedestrians have to cross and helps slow vehicles making right turns, which is a safety enhancement.

Near-Term Improvements

- Road diet along 10th Avenue South and 14th Street South north of the intersection creates a dedicated left-turn lane for vehicles and a bike lane.
- Extending the curb line with pavement striping and low-cost materials creates space for a new public plaza and creates a more compact intersection, making it easier for pedestrians to cross the street and slowing the speed of turning vehicles through the intersection.
- Preserving on-street parking maintains vehicular access to near-by destinations and a buffer between the sidewalk and travel lane.

Long-Term Improvements

- Re-constructing the sidewalk to make new curb lines permanent.
- Add streetscape elements with sidewalk construction, such as street trees, pedestrian lighting, and other elements that improve the comfort for those walking along the street.
- Create a planted median between intersections to enhance the visual quality of the corridor.



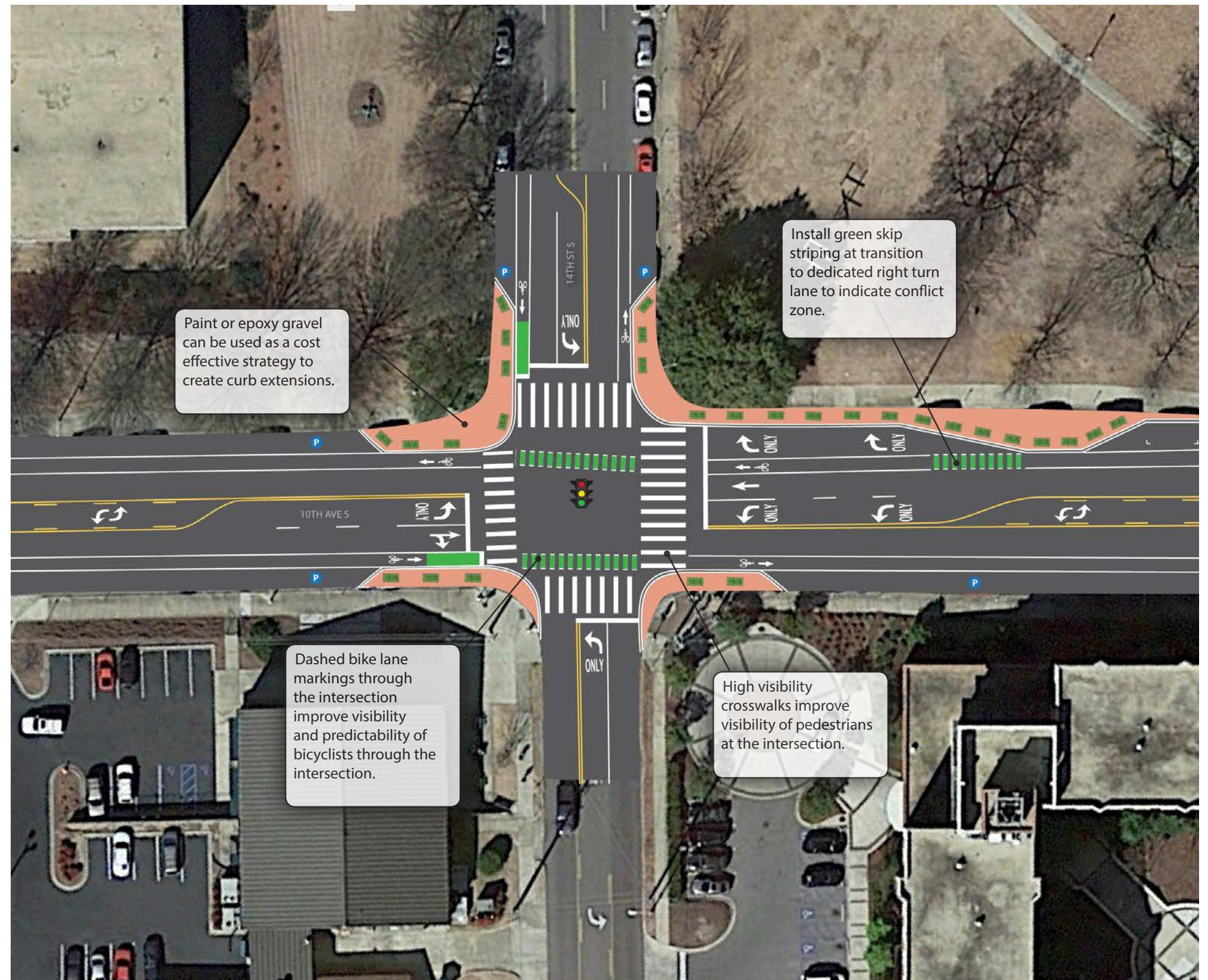
Existing Condition



## 10th Avenue South at 14th Street South Phase 1

### Key Recommendations

- A road diet along 10th Avenue South creates a dedicated left turn lane for vehicles and space for bike lanes in both directions.
- A road diet along 14th Street South north of 10th Avenue South creates a dedicated left turn lane for vehicles and space for bike lanes in both directions.
- Signal upgrades, such as exclusive left turn phases if warranted, should be made to accommodate changes in turning movements with proposed road diets along 10th Avenue South and 14th Street South.
- Preserve on-street parking, but move on-street parking away from intersection to improve visibility and sight lines for those walking, biking, and driving.
- Moving the curb line at each corner of the intersection helps reduce the distance and time it takes pedestrians to cross the street. A temporary curb line can be denoted with a double white line and enhanced with vertical elements such as a rubber curb, planter boxes, or other temporary streetscape treatments.
- High visibility crosswalks enhance visibility of areas where people walking cross the intersection.
- Green paint and bikeway pavement markings through the intersection help highlight conflict points where a vehicle may cross the bikeway or denote the dedicated space someone biking should use to cross through the intersection.



Proposed (Near-Term)



## 10th Avenue South at 14th Street South Phase 2

### Key Recommendations

- A road diet along 10th Avenue South creates a dedicated left turn lane for vehicles and space for bike lanes in both directions.
- A road diet along 14th Street South north of 10th Avenue South creates a dedicated left turn lane for vehicles and space for bike lanes in both directions.
- Signal upgrades should be made to accommodate changes in turning movements with proposed road diets along 10th Avenue South and 14th Street South.
- Preserve on-street parking, but move on-street parking away from intersection to improve visibility and sight lines for those walking, biking, and driving.
- Moving the curb line at each corner of the intersection helps reduce the distance and time it takes pedestrians to cross the street.
- The sidewalk is reconstructed to create space for streetscape elements such as shade trees, pedestrian-scaled lighting, seating, and other features that improve the comfort and safety of people walking along the street.
- High visibility crosswalks enhance visibility of areas where people walking cross the intersection.
- Green paint and bikeway pavement markings through the intersection help highlight conflict points where a vehicle may cross the bikeway or denote the dedicated space someone biking should use to cross through the intersection.
- The center median can be reconstructed to include landscape elements such as grass, flowers, bushes, and trees to enhance the visual character of the streets.



Proposed (Long-Term)



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10th Avenue South at 17th Street South

Project Need

The current intersection has a perpendicular four-way configuration and a two-way stop control. Several pedestrian crashes have occurred at this intersection where turning vehicles have hit pedestrians in the crosswalk or roadway. Excess space and wide lanes encourage higher speeds for vehicles passing through the intersection, which creates more traffic stress for those walking, biking, and driving through the intersection. There is also no dedicated space for bicyclists. The intersection has an urban context and is situated within the UAB campus and experiences higher pedestrian volumes between class changes.

Proposed Improvements

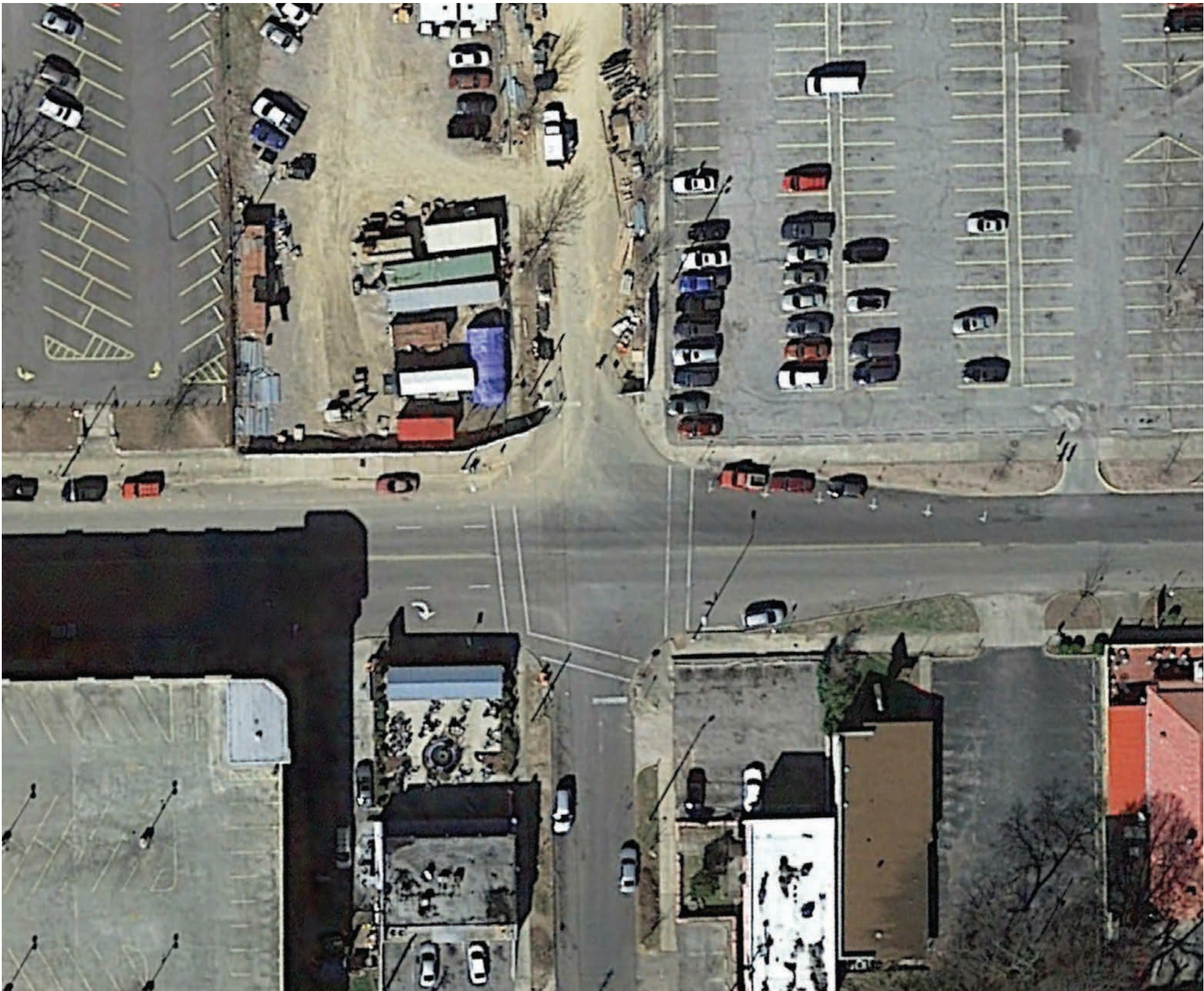
Moving the curb line, re-aligning travel lanes, creating dedicated space for people biking, and installing high visibility crosswalks enhances visibility and predictability for all roadway users of the intersection. Extending the curb line at each corner of the intersection reduces the distance pedestrians have to cross and helps slow vehicles making right turns, which is a safety enhancement. An active warning beacon also provides pedestrians additional support to notify vehicles to yield as they cross 10th Avenue South.

Near-Term Improvements

- Road diet along 10th Avenue South creates a bike lane and space for a center median island at the intersection.
- Install an active warning beacon to improve yield compliance of vehicles for pedestrians crossing 10th Avenue South.
- Extending the curb line with pavement striping and low-cost materials creates a more compact intersection, making it easier for pedestrians to cross the street and slowing the speed of turning vehicles through the intersection.
- Preserving on-street parking west of the intersection on 10th Avenue South maintains vehicular access to near-by destinations and a buffer between the sidewalk and travel lane.
- Removing on-street parking along 10th Avenue South east of the intersection creates space for a buffered bike lane, improves sight lines for those approaching the intersection, and improves the alignment of travel lanes with the proposed road diet along 10th Avenue South.

Long-Term Improvements

- Re-constructing the sidewalk to make new curb lines permanent.
- Add streetscape elements with sidewalk construction, such as street trees, pedestrian lighting, and other elements that improve the comfort for those walking along the street.
- Create a planted median between intersections to enhance the visual quality of the corridor.



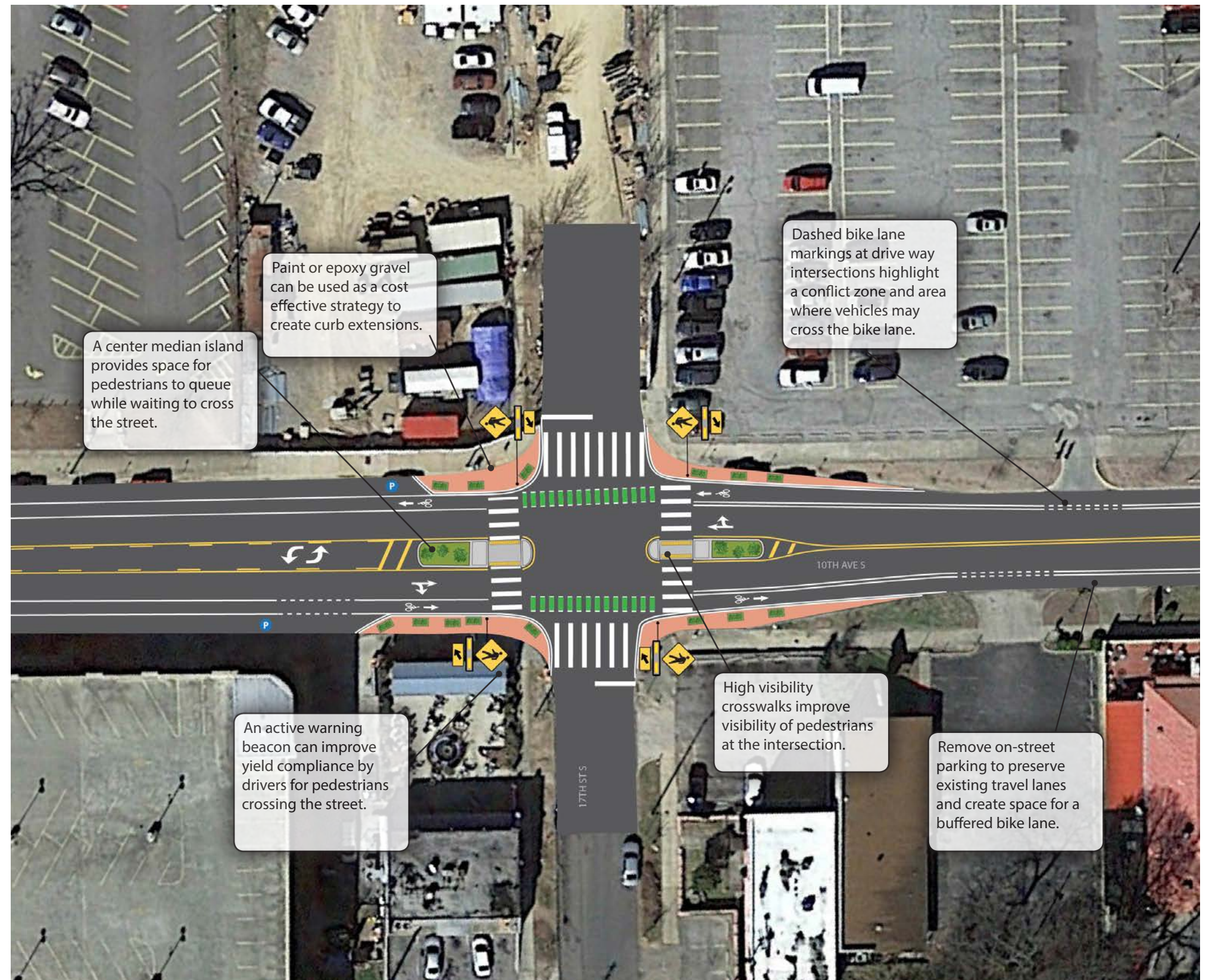
Existing Condition



## 10th Avenue South at 17th Street South Phase 1

### Key Recommendations

- West of 17th Street, a road diet along 10th Avenue South creates a center median lane for a median refuge island and landscaping as well as space for bike lanes in both directions.
- East of 17th Street, a road diet along 10th Avenue South creates space for buffered bike lanes in both directions. From 17th Street to 18th Street, on-street parking must be removed to create space for buffered bike lanes and preserve existing travel lanes.
- A rectangular rapid flashing beacon, or RRFB, can be actuated by pedestrians to encourage vehicles and bicyclists to stop while the pedestrians cross the street.
- A center median island provides queue space for pedestrians to wait for vehicles to pass and then continue crossing the street.
- Preserve on-street parking, but move on-street parking away from intersection to improve visibility and sight lines for those walking, biking, and driving.
- Moving the curb line at each corner of the intersection helps reduce the distance and time it takes pedestrians to cross the street. A temporary curb line can be denoted with a double white line and enhanced with vertical elements such as a rubber curb, planter boxes, or other temporary streetscape treatments.
- High visibility crosswalks enhance visibility of areas where people walking cross the intersection.
- Bikeway pavement markings through the intersection help highlight conflict points where a vehicle may cross the bikeway and denote the dedicated space someone biking should use to cross through the intersection.



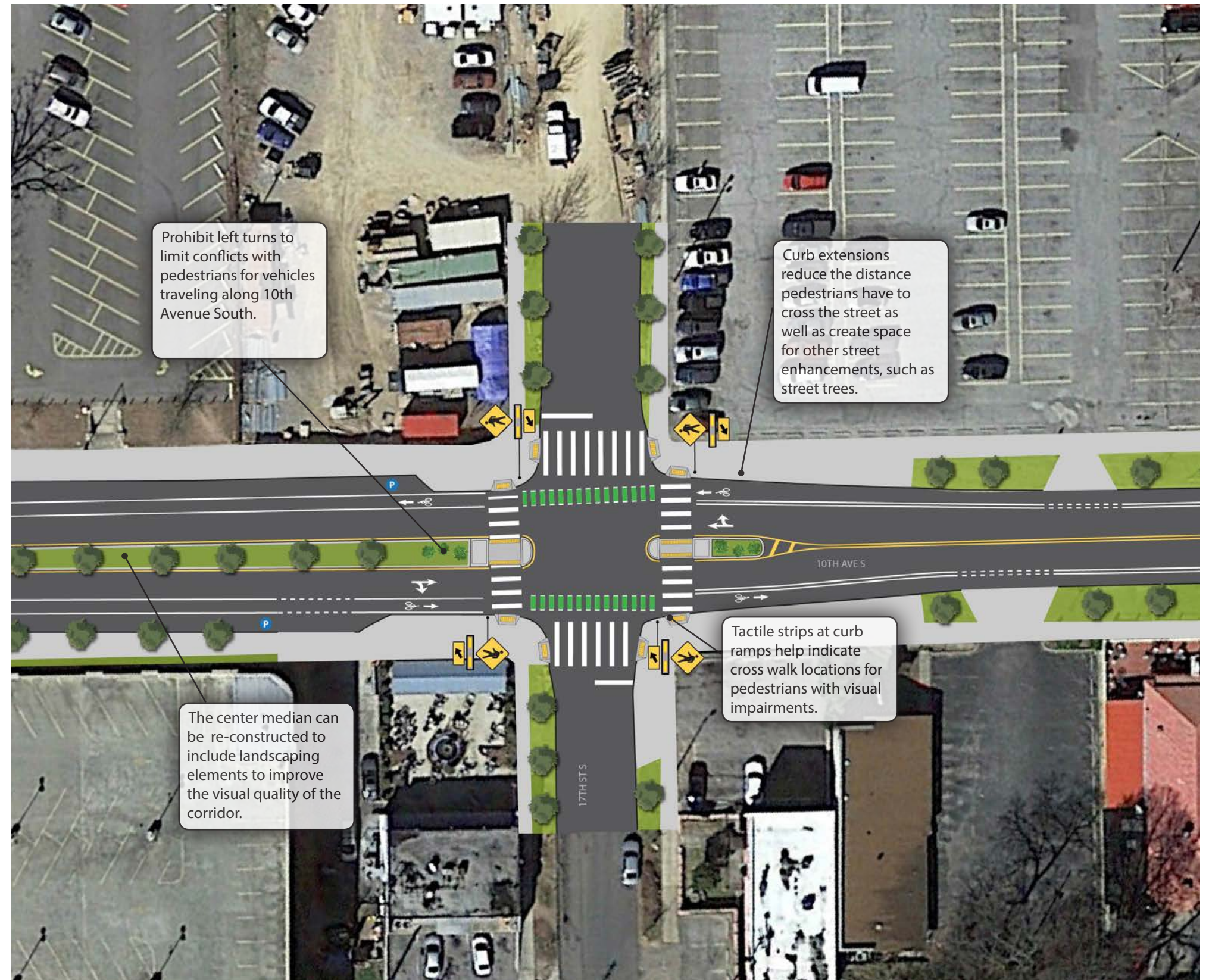
Proposed (Near-Term)



## 10th Avenue South at 17th Street South Phase 2

### Key Recommendations

- West of 17th Street, a road diet along 10th Avenue South creates a center median lane for a median refuge island and landscaping as well as space for bike lanes in both directions.
- East of 17th Street, a road diet along 10th Avenue South creates space for buffered bike lanes in both directions. From 17th Street to 18th Street, on-street parking must be removed to create space for buffered bike lanes and preserve existing travel lanes.
- A rectangular rapid flashing beacon, or RRFB, can be actuated by pedestrians to encourage vehicles and bicyclists to stop while the pedestrians cross the street.
- A center median island provides queue space for pedestrians to wait for vehicles to pass and then continue crossing the street.
- Preserve on-street parking, but move on-street parking away from intersection to improve visibility and sight lines for those walking, biking, and driving.
- Moving the curb line at each corner of the intersection helps reduce the distance and time it takes pedestrians to cross the street. A temporary curb line can be denoted with a double white line and enhanced with vertical elements such as a rubber curb, planter boxes, or other temporary streetscape treatments.
- The sidewalk is reconstructed to create space for streetscape elements such as shade trees, pedestrian-scaled lighting, seating, and other features that improve the comfort and safety of people walking along the street.
- High visibility crosswalks enhance visibility of areas where people walking cross the intersection.
- Bikeway pavement markings through the intersection help highlight conflict points where a vehicle may cross the bikeway and denote the dedicated space someone biking should use to cross through the intersection.
- The center median can be reconstructed to include landscape elements such as grass, flowers, bushes, and trees to enhance the visual character of the streets.



Proposed (Long-Term)



## On-Street Bikeway Network

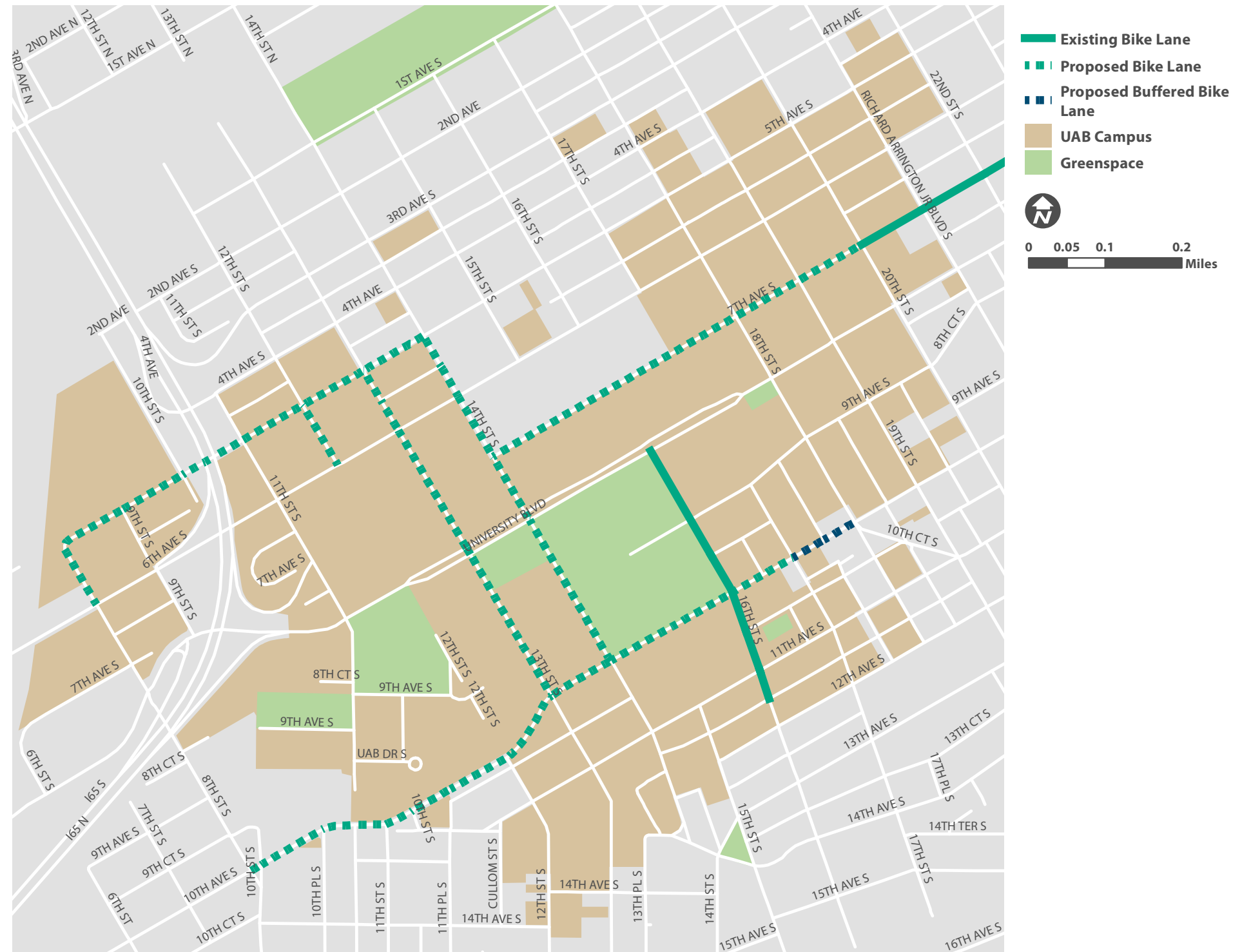
## Overview

Implementing the proposed on-street projects for each corridor will dramatically increase the on-street bikeways on campus, as well as connections to adjacent neighborhoods and destinations, such as Railroad Park.

For on-street bikeways, there are two primary bikeway treatments:

- Bike Lanes
- Buffered Bike Lanes

Both treatments provide dedicated space for people biking, enabling people to bike at their preferred speed without interference from prevailing traffic conditions. They also facilitate predictable behavior and movements between bicyclists and motorists.

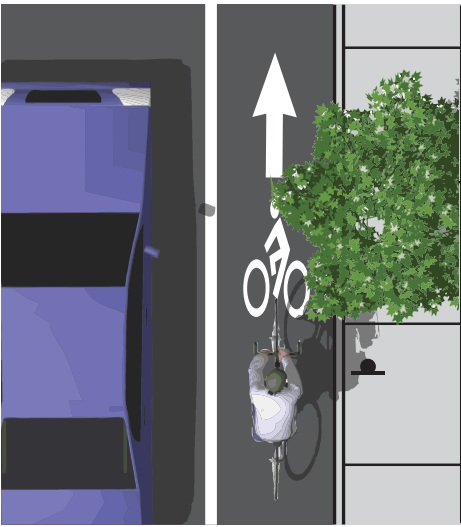


### Figure 11. Study Corridors

Design Considerations

Bike lanes and buffered bike lanes are very similar in terms of their function and use, but have a few key differences and applications in terms of design details. The graphics to the right highlight the design considerations for each facility type.

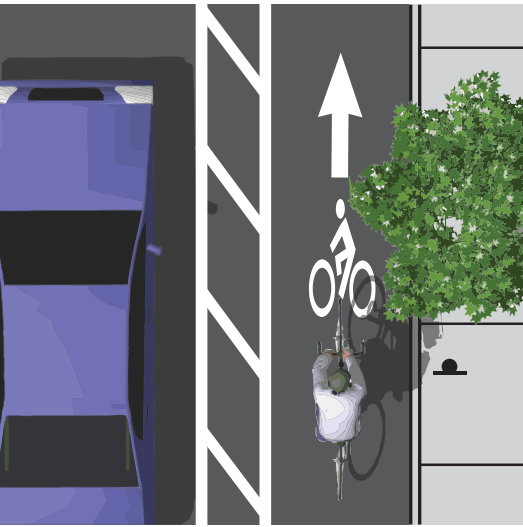
Bike Lane



Travel Lane	5'-7'	Side-Walk
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- Exclusive bicycle travel lane increases safety and promotes proper riding
- Reduces possibility that motorists will stray into bicyclists' path
- Visual reminder of bicyclists' right to the road
- 6' width recommended. 5' width in constrained locations
- Bike lanes wider than 7' may encourage vehicle loading in bike lane

Buffered Bike Lane



Travel Lane	2'-6'	5'-7'	Side-Walk
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- Provides cushion of space to mitigate friction with motor vehicles on streets with frequent or fast motor vehicle traffic
- Allows bicyclists to pass one another or avoid obstacles without encroaching into the travel lane
- Increases motorist shy distance from bicyclists in the bike lane
- Requires additional roadway space and maintenance
- Reduces risk of 'dooring' compared to a bike lane



Example bike lane



Example buffered bike lane



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