

NC 86 / Martin Luther King Jr. Boulevard Corridor and Town-Wide Pedestrian Safety Evaluation Study

Town of Chapel Hill, North Carolina
February 2007



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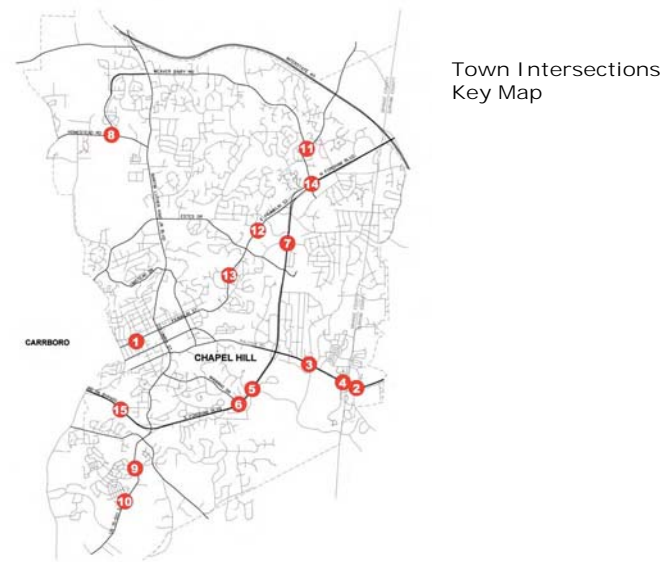
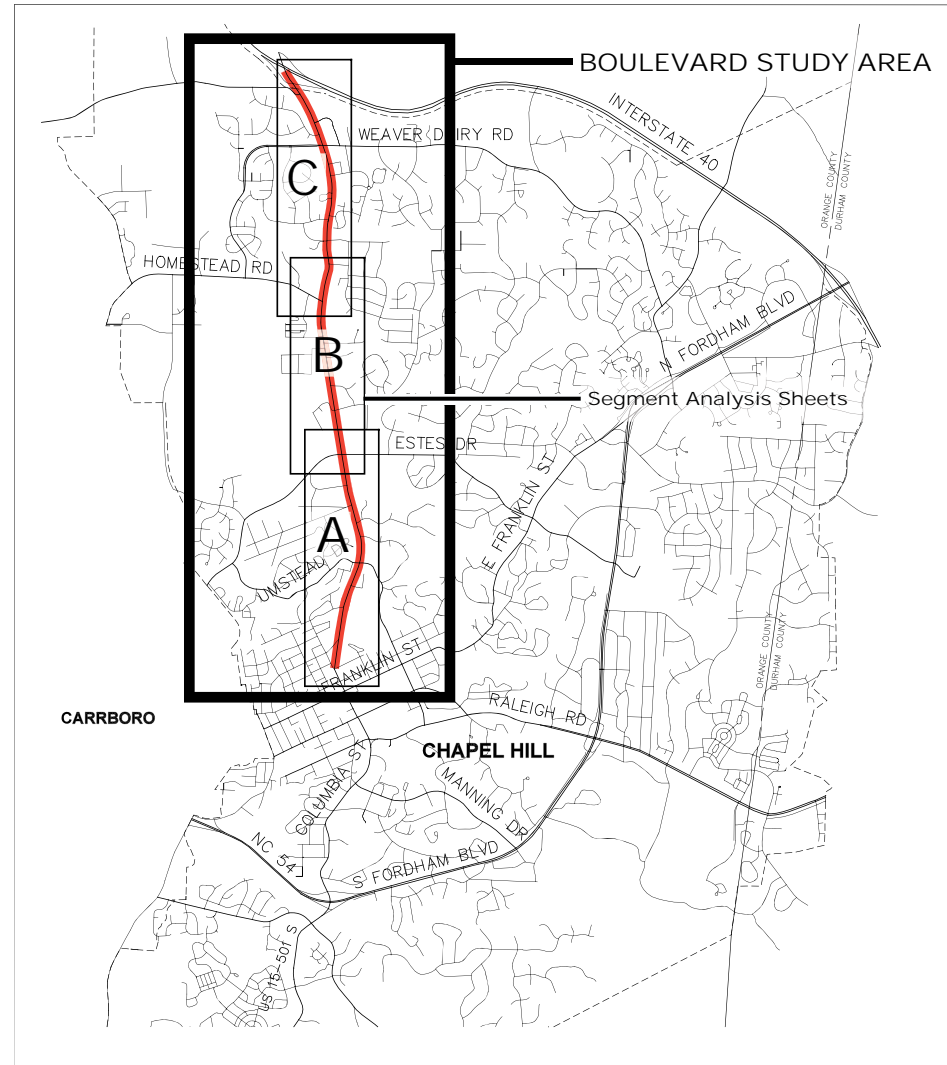


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Purpose and Goals of this Study

In August, 2004, the Highway Safety Research Center of the University of North Carolina published the *NC86/ Airport Road Pedestrian and Bicycle Safety and Mobility Study*, which identified critical safety and access problems for pedestrians, bicyclists, and transit users along a four-mile stretch of NC Highway 86. In addition, the study proposed numerous treatments for the corridor to improve conditions for walking, biking, and transit in a streetscape that is now largely dominated by automobile traffic. NC Highway 86 has since been renamed Martin Luther King Jr. Boulevard.

In April 2006, the Town of Chapel Hill retained a team of consultants from the traffic engineering, planning, and landscape architecture disciplines to study the feasibility of the treatments proposed in the Mobility Study.

The goal of this study is as follows:

- to test the treatments proposed in the earlier report against the specific conditions found in the corridor such as existing road widths, topography, and regulatory constraints.
- to make recommendations for improvements based on the findings of the earlier report and display those recommendations in a series of plan drawings and other graphics.
- to present their recommendations to the public at an open forum and to the Town Council for review.

Method

In spring and summer of 2006, representatives from Lappas+Havener, PA and Ramey Kemp & Associates conducted site visits and noted deficiencies, hazards, and site constraints throughout the corridor. On base maps generated from GIS and aerial photo information provided by the Town, the planning team produced a series of diagrams to document existing conditions in plan format. The team took field measurements at selected locations to confirm dimensions. After consultation with Ramey Kemp about the feasibility of various alternatives from a traffic engineering standpoint, the team developed a series of recommendations for realizing many of the measures proposed by the Mobility Study. These recommendations were drafted on the plan sheets included here and presented to Town staff for review. After revisions, the plans were presented at a public forum for review.

Structure of this Study

This study is divided into two parts.

Part I analyses and makes recommendations for the Martin Luther King Jr. Corridor, and Part II presents recommendations for fourteen intersections throughout the Town.

Part I, dealing with the Martin Luther King Jr. Boulevard Corridor, is divided into Analysis and Recommendations portions. Analysis information is presented first at the scale of an overview of the entire corridor, and then in greater detail in three sheets that break the four mile corridor into Segments A, B, and C. Following this documentation of existing conditions, recommendations are presented in a series of 1"=50' scale plan sheets that further break down the A, B, and C segments. Finally, the recommendations are illustrated with perspective drawings in which proposed improvements are keyed to the plans by number.

Part II, dealing with Town intersections, describes recommended improvements through a series of plan graphics. Part II is described in more detail in the Introduction to Part II.

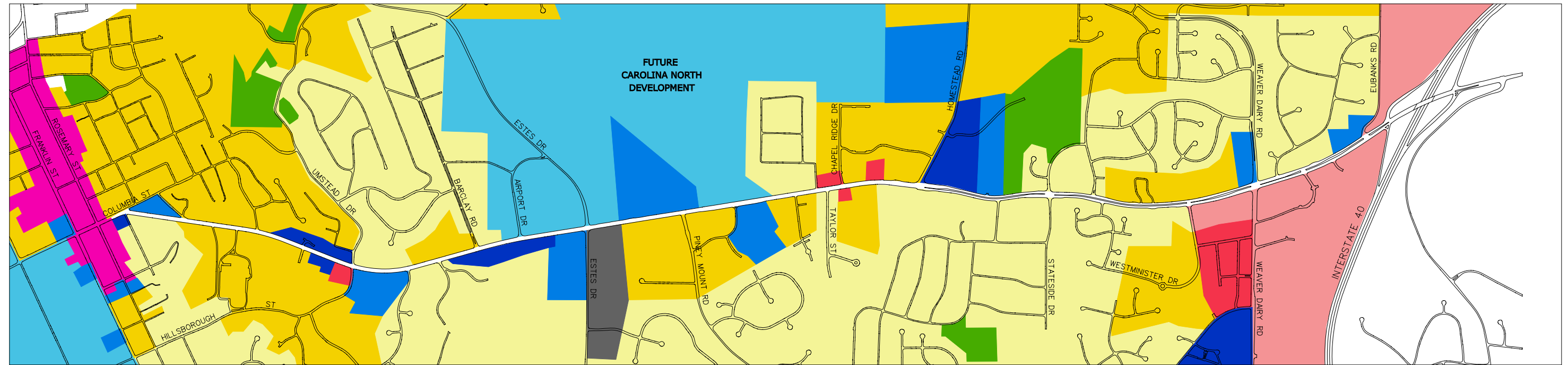
NC 86/Martin Luther King Jr. Boulevard Corridor and Town-Wide Pedestrian Safety Evaluation Study

Introduction

HIGHER DENSITY, MORE URBAN CHARACTER

LOWER DENSITY, MORE RURAL CHARACTER

LOWER DENSITY, SUBURBAN CHARACTER



LEGEND

- LOW DENSITY RESIDENTIAL
- HIGH DENSITY RESIDENTIAL
- OFFICE
- INSTITUTIONAL
- UNIVERSITY
- COMMERCIAL
- MIXED USE
- TOWN CENTER
- PARKS / OPEN SPACE
- AIRPORT HAZARD

Land use in the Martin Luther King, Jr. Boulevard (the Boulevard) Corridor ranges in general from higher density residential in the first half-mile north of Columbia Street, to lower-density residential north of Umstead Drive. Pockets of office, commercial, and higher-density residential also occur in a patchwork fashion throughout the corridor. Near Interstate 40, recent large-scale commercial development has taken place. Between the automobile-oriented activity of this development and the older neighborhoods close to the Town four miles south, most of the corridor has either a suburban or even rural feel, depending on the age and nature of adjoining development.

Most buildings, whether residential, office, commercial, or institutional, are either set well back from the Boulevard or do not face it at all, but rather are oriented to surrounding neighborhoods, parking lots, or adjacent streets. This largely suburban pattern of building orientation is the predominant "look" of the street, except in the half-mile south of the Bolin Creek bridge, where a prewar development pattern of houses facing the street can be seen.

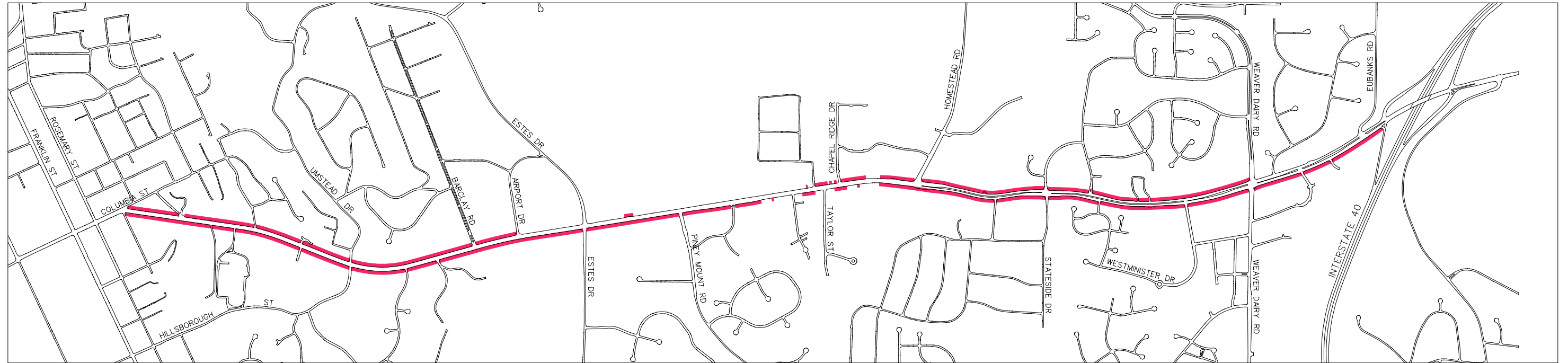
The future development of Carolina North, a new campus of UNC Chapel Hill slated for the old Airport site, will have a significant impact on the character of the middle third of the corridor. Some early proposals have called for utilizing the Boulevard as a "Main Street," thus orienting buildings toward it. Whether this pattern or a more suburban model is chosen will influence the future form of not only the Boulevard but also of other developments nearby.

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Lappas + Havener, PA LANDSCAPE ARCHITECTS
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Existing Land Use





LEGEND

— EXISTING SIDEWALKS

Concrete sidewalks line the Boulevard on the northernmost and southernmost thirds of its length, whereas the middle third of the Boulevard generally has either discontinuous sidewalks or none at all.

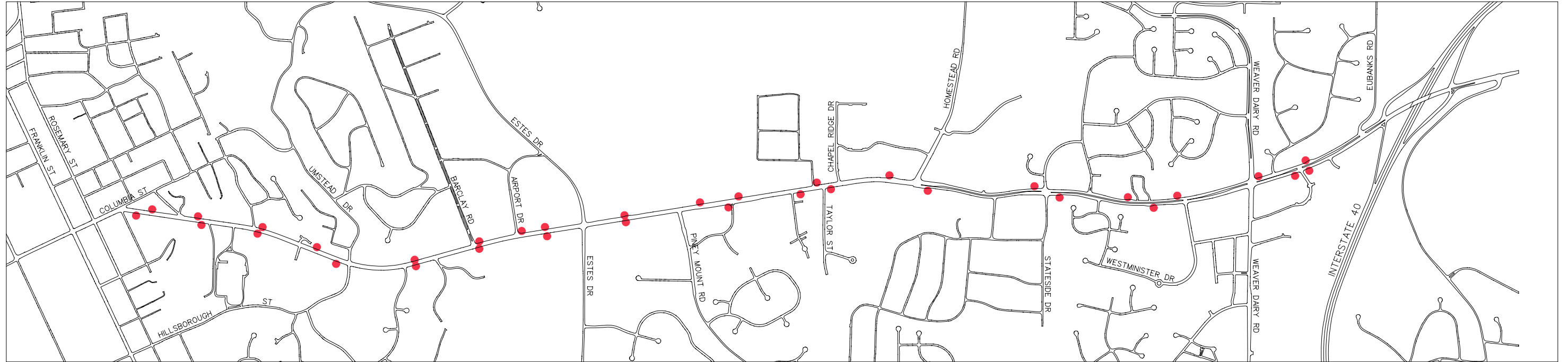
Where they exist, sidewalks are typically five feet wide and are usually separated from the curb by a 24-30" grassed strip. Some sidewalks in the southern third are placed directly behind the curb, with no grassed strip. Between Umstead Drive and Estes Drive, the sidewalk on the east side of the street is about seven or eight feet wide, and heavily used by pedestrians and joggers. Pedestrian use in the northern two-thirds is lighter than in the southern third, and tends to be related to the use of the Town's transit system.

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Existing Sidewalks





LEGEND

- BUS STOPS

Especially when UNC classes are in session, use of the transit system is heavy during am and pm peak periods. Insufficient benches and lack of waiting room at many stops is evident many mornings as crowds of bus riders fill the sidewalk in many locations. Where they exist, many benches are sited uncomfortably close to the road, or are in poor condition.

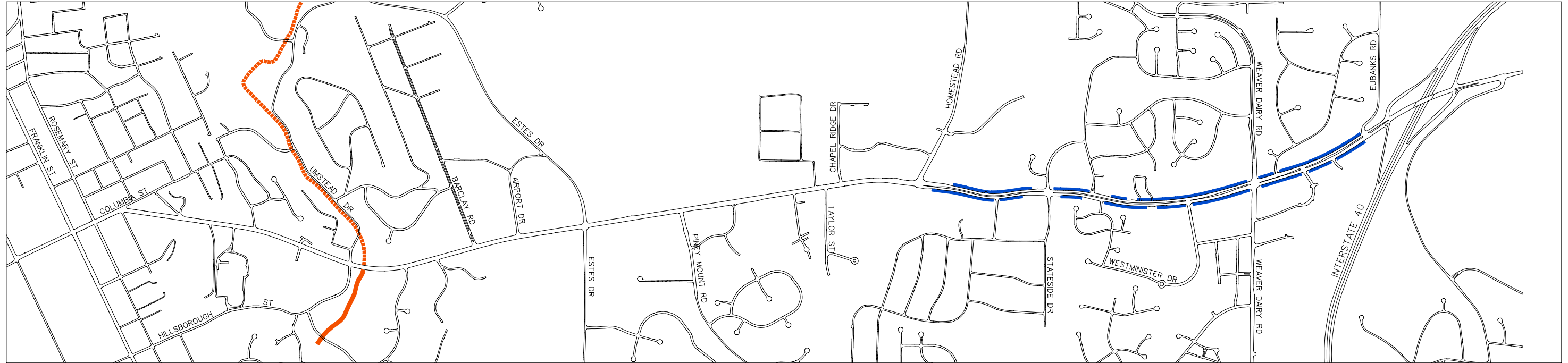
The lack of sufficient crosswalks in the vicinity of the bus stops means that many riders cross the road at mid block locations either while going to their stop or returning home.

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Existing Bus Stops





LEGEND

- EXISTING BIKE LANES
- BOLIN CREEK GREENWAY (EXISTING)
- - - BOLIN CREEK GREENWAY (PROPOSED)

Four-foot-wide bike lanes have been striped from Homestead Road north to Eubanks Road as part of the recent Boulevard widening project. The rest of the corridor lacks bike lanes, though bicyclists can utilize a wide right lane, ranging from 14 to 17 feet wide, in the southern two-thirds of the corridor. Wrong-way and sidewalk bicycle riding occurs throughout the corridor, especially in the vicinity of the Bolin Creek Greenway trailhead near Umstead Drive. The Town is planning a future connection of this greenway underneath the roadway and extending west along the Creek. This extension would include a sidewalk connection from the west sidewalk to the trail. If preliminary design is approved, this connection could be constructed by midsummer of 2008.

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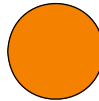



Lappas + Havener, PA LANDSCAPE ARCHITECTS
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Existing Bike Lanes and Trails





LEGEND:

-  INTERSECTION W/ SIGNAL
-  MULTIPLE CURB CUTS/DRIVEWAYS
-  SIGHTLINE ISSUE
-  MEDIAN

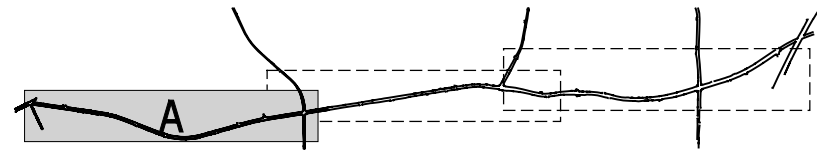
In its southern two-thirds, the Boulevard is a four-lane roadway with a two-way left turn lane, with no median. North of Homestead Road, in the northern third, a variable-width median has been added, in which some trees have been planted. Sight distances are limited by vegetation and by vertical and horizontal curves in several locations in the southern third of the corridor. A few sites along the corridor – primarily gas stations and commercial strips – have multiple driveways that could be consolidated to clarify circulation and make pedestrian passage safer.

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Existing Vehicular Traffic

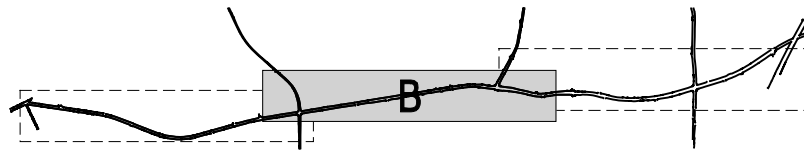




SEGMENT A



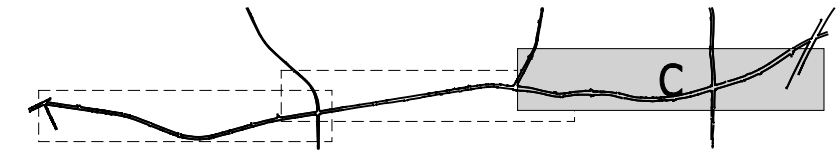
VIEW SOUTH NEAR NORTHAMPTON TERRACE APARTMENTS



SEGMENT B



VIEW SOUTH FROM HOMESTEAD ROAD



SEGMENT C



VIEW SOUTH NEAR WESTMINISTER DRIVE



NARROW SIDEWALK NEAR BOLIN CREEK



IRREGULARLY ORIENTED SIDEWALK



STEEP SIDE SLOPE NEAR UMSTEAD ROAD



WORN FOOTPATH NEAR BUS STOP AT TIMBER HOLLOW APARTMENTS



SIDEWALK LACKING PAVED CONNECTION NEAR HOMESTEAD ROAD



SIDEWALK LACKING PAVED CONNECTION NEAR NORTHFIELD DRIVE



BUS STOP WITHOUT BENCH NEAR WESTMINISTER DRIVE



NARROW PLANTING STRIP BORDERING SIDEWALK



NO PEDESTRIAN REFUGE LOCATED IN CROSSING

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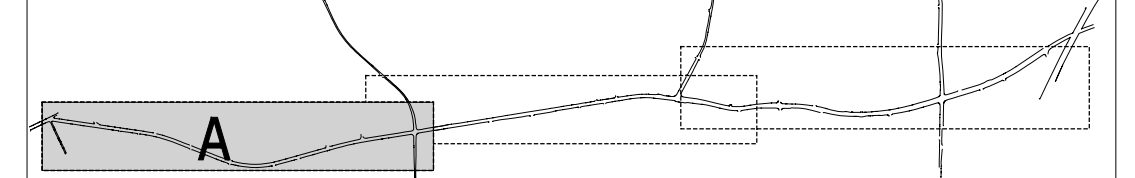
Lappas + Havener, PA LANDSCAPE ARCHITECTS
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Boulevard Character Images

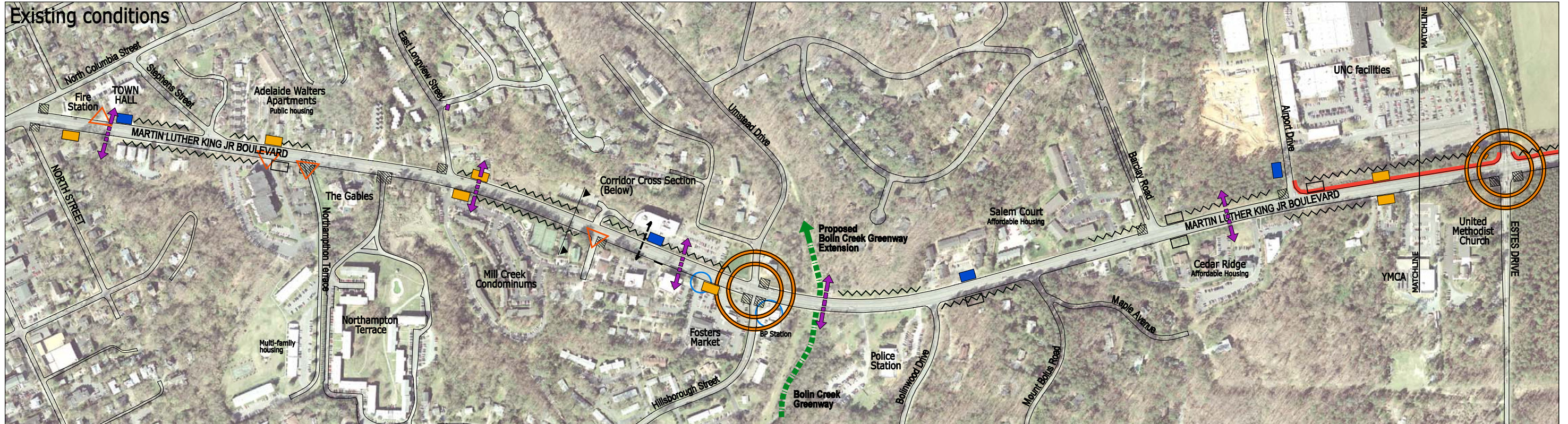
Key

Bus stop with shelter and bench	Multiple driveway location	Signalized intersection	Steep slope adjacent to road or sidewalk
Bus stop with sign and bench only	Curb ramp not in conformance with ADA	Signalized intersection with pedestrian signals	
Bus stop with sign only	Sidewalk not present		
Limited sight distance location	Mid-block jaywalking hazard location		

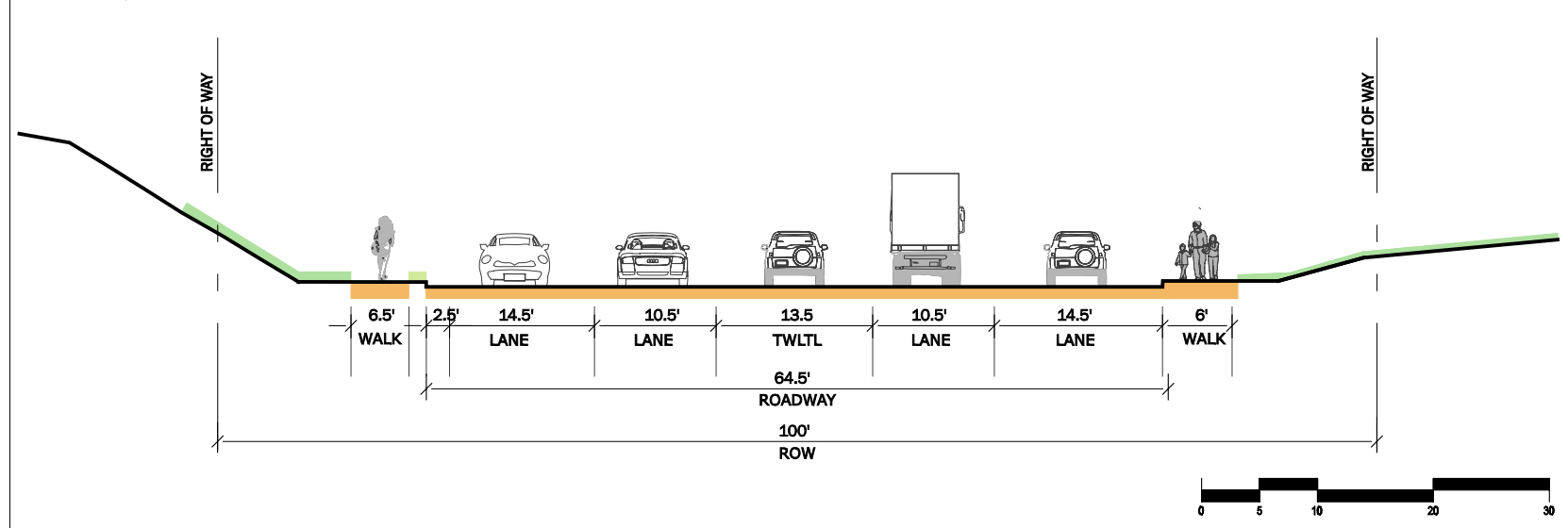
Location Map not to scale



Existing conditions



Existing Cross Section



TRANSIT SYSTEMS

Bus stops are located roughly every 300 feet. Conditions of facilities vary widely; some stops are furnished with shelters and benches and are well lighted. However, more than half are designated only by a sign with no benches. Where present, benches are sited too close to the road or sidewalk.

PEDESTRIAN SYSTEMS

Sidewalks are either "monolithic" (attached to the back of curb), or separated from the curb and roadway by a thin, two-foot-wide grass strip. This lack of adequate separation contributes to an uncomfortable pedestrian experience along much of the segment. Substandard curb ramps and numerous curb cuts for driveways also make use of the sidewalks challenging. Runners make good use of the newer, 8' wide sidewalk on the east side of the street near the Bolin Creek Greenway to access that trail.

BICYCLE SYSTEMS

This segment does not have bike lanes, and bicycles must share the wider outer lanes with motorists. Bicyclists often use sidewalks here, particularly near the Bolin Creek Greenway access. The proposed extension of this greenway to the southwest will provide an alternate route for bicyclists heading to the Town center and the Campus.

VEHICULAR SYSTEMS

This segment consists of two vehicular lanes in each direction with a central two-way left turn lane (TWLTL), with no median, and with curbs on both sides. The speed limit is posted at 35 mph. Primary intersections occur at North Columbia Street, Hillsborough St/Umstead Road, and Estes Drive. Vehicles tend to increase speed when approaching the bridge over Bolin Creek from either direction.

LANDSCAPE AND CONTEXT

This segment has more spatial constraints than the more northerly segments, owing to the older age, finer grain, and higher density of adjacent development. Buildings are closer to the roadway here than in the other two segments. In addition, steep side slopes flank much of the roadway in this segment. Any significant widening of the corridor here would require extensive retaining wall construction and thereby incur significant costs.

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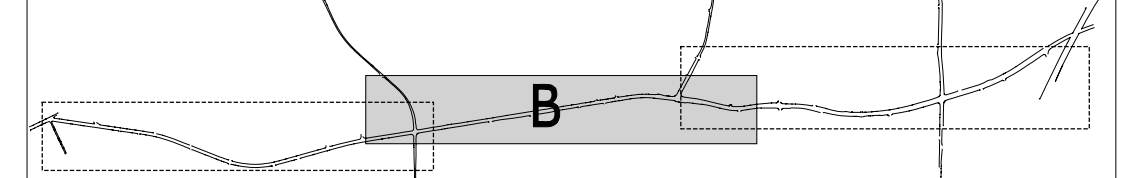
Segment A: North Street to Estes Drive



Key

Bus stop with shelter and bench	Multiple driveway location	Signalized intersection	Steep slope adjacent to road or sidewalk
Bus stop with sign and bench only	Curb ramp not in conformance with ADA	Signalized intersection with pedestrian signals	Existing bus pullouts
Bus stop with sign only	Sidewalk not present		
Limited sight distance location	Mid-block jaywalking hazard location		

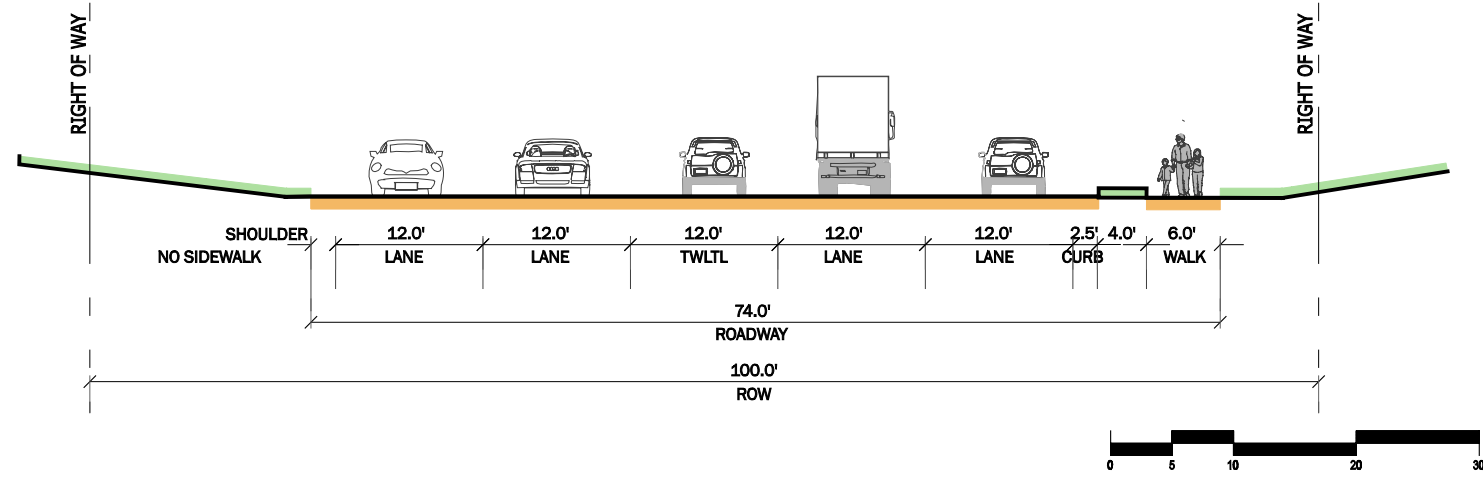
Location Map not to scale



Existing conditions



Existing Cross Section



TRANSIT SYSTEMS

Many bus stops lack shelters and benches. Accessing the stops on the west side of the street is difficult because of a lack of sidewalks there. Southbound bus rides from neighborhoods east of the corridor often cross at midblock locations to get to the bus stop.

PEDESTRIAN SYSTEMS

Most of the west side of the street lacks sidewalks in this segment; pedestrians on the west side walk on the grass shoulder of the road. On the east side of the Boulevard, a gap in the sidewalk between Timber Hollow and Northfield Drive is particularly problematic. Estes Drive and Homestead Road intersections have pedestrian signals in on or two directions only, and not to cross Martin Luther King Jr. Boulevard itself.

BICYCLE SYSTEMS

There are no bike lanes in this segment. Outside vehicular lanes are about 14.5 feet wide, with a three to four-foot shoulder where no curbs exist.

VEHICULAR SYSTEMS

This segment consists of two vehicular lanes in each direction with a central two-way left turn lane (TWLTL), and no median. Most of the roadway is uncurbed. The speed limit is posted at 35 mph. Primary intersections occur at Estes Drive, Piney Mount Road, Northfield Drive, and Homestead Road.

LANDSCAPE AND CONTEXT

This zone is one of transition between the more rural and suburban areas north of Estes Drive and the denser and more "townlike" areas south of Estes Drive. Most buildings in this segment are set far back from the street, and the lack of sidewalks contributes to a rural feel. Past Piney Mount Road traveling south, the Town of Chapel Hill begins to appear to the south atop the opposite hill, where the University tower becomes visible.

The future Carolina North development will occur on the site of the old airport. This development will have a profound impact on the ultimate character of the M.L.K. Boulevard. If the development in configured to face the boulevard, an improved boulevard can support the goal of giving the development a "Main Street" appeal.

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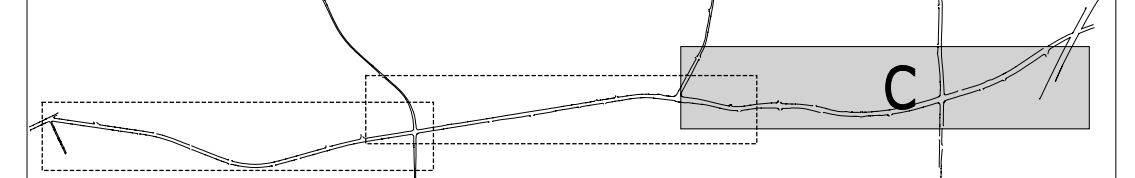
Segment B: Estes Drive to Homestead Road



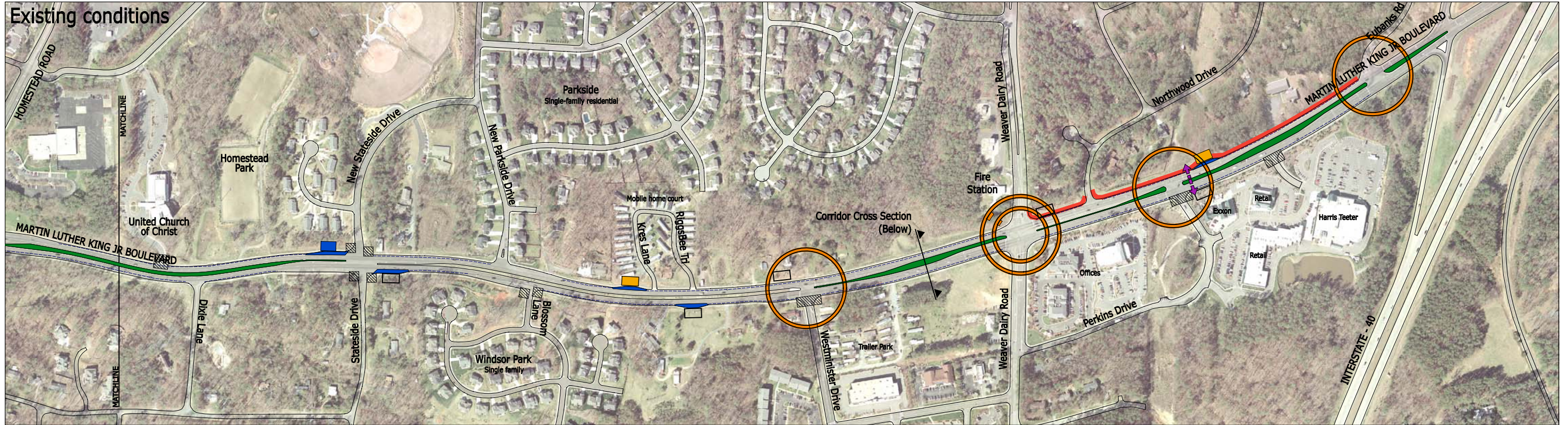
Key

Bus stop with shelter and bench	Multiple driveway location	Signalized intersection	Steep slope adjacent to road or sidewalk
Bus stop with sign and bench only	Curb ramp not in conformance with ADA	Signalized intersection with pedestrian signals	Median
Bus stop with sign only	Sidewalk not present	Existing bus pullouts	Bike Lane
Limited sight distance location	Mid-block jaywalking hazard location		

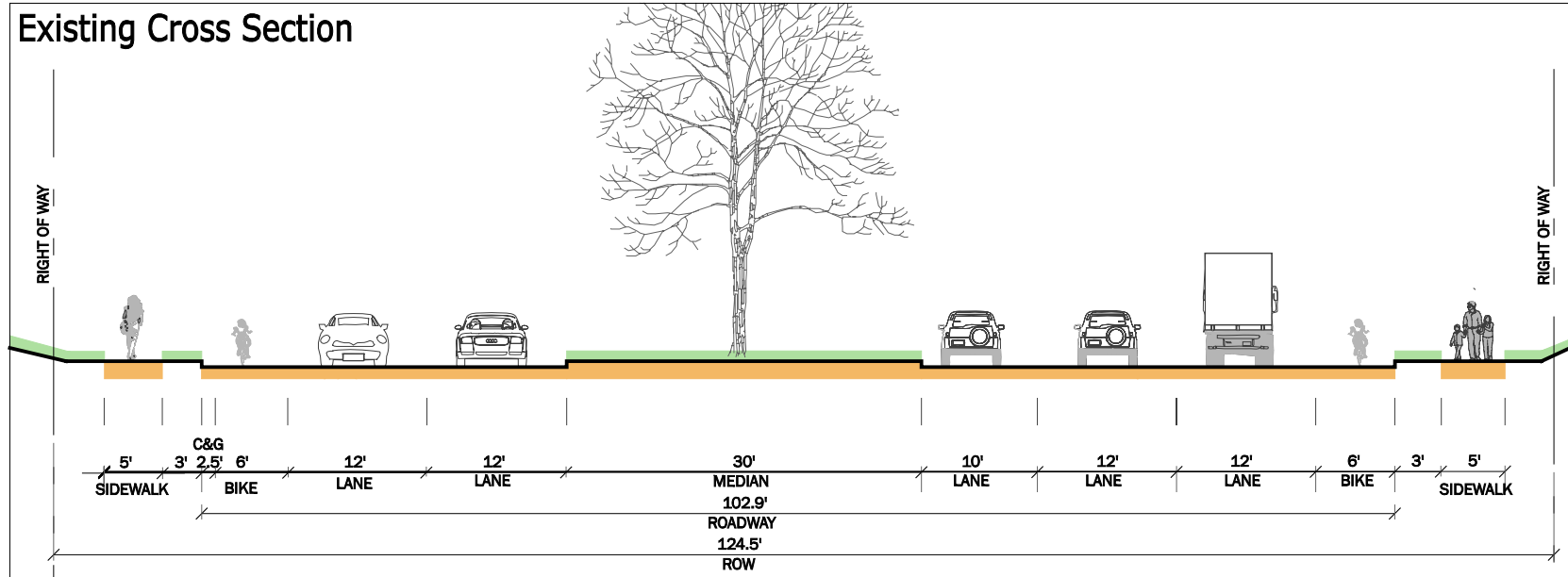
Location Map not to scale



Existing conditions



Existing Cross Section



TRANSIT SYSTEMS

Roughly half the bus stops in the segment have no benches, and only one has a shelter. Stops are located 1100 feet apart on average. Bus pull-outs have been built at some stops as part of the recent roadwork in the segment.

PEDESTRIAN SYSTEMS

Pedestrian crossings have been striped only to cross side streets in the segment. Median pockets were not included in recent median construction. Five-foot sidewalks are separated from the curb by a 2 1/2 foot grassed strip. The sidewalks are recently constructed and in good condition. Many curb ramps do not conform to current ADA standards.

BICYCLE SYSTEMS

Four-foot bike lanes are provided on both sides of the roadway. These lanes do not run continuously through the intersections but are interrupted by right turn lanes. Despite the provision of bike lanes, some cyclists can be observed using the sidewalks, especially riding against the direction of traffic.

VEHICULAR SYSTEMS

The roadway provides two lanes in each direction separated by a variable-width median. Left-turn pockets are located at six intersections. Right-turn lanes occur at Stateside, Blossom, and Weaver Dairy Road. As a result, the roadway is typically wider here than in the segments further south.

LANDSCAPE AND CONTEXT

The land use in the segment is predominantly single-family residential, with office and retail functions closer to Interstate 40. The corridor in this segment was recently widened and redesigned to accommodate increased vehicular traffic in this area. This redesign includes a median with lawn and primarily ornamental trees, though some larger species have also been planted in the widest median conditions.

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Segment C: Homestead Road to Interstate 40





Recommendations: Overview

Following a review of the improvement measures recommended by the Pedestrian and Bicycle Mobility Study of 2004, and after an analysis of the physical features and traffic engineering requirements of the Boulevard, the planning team recommends the improvements illustrated on the following pages. The improvements, like those recommended in the Mobility Study, seek to improve conditions for pedestrians, bicyclists, and transit users in the corridor, and to enhance the overall appearance of the Boulevard.

In summary, this Study recommends the following:

- Construct ADA-compliant curb ramps where they are lacking throughout the corridor.
- Provide pedestrian signals where they are absent, especially crossing Martin Luther King Jr. Boulevard.
- Fill in gaps in existing sidewalk coverage to complete the sidewalk network.
- Stripe crosswalks at intersections.
- Construct sidewalks across driveways to provide a continuous walking surface.
- Construct sidewalks with 4' min. planting strips where possible, and wider where conditions permit tree planting.
- Provide median pockets to allow mid-block crossings where warranted by pedestrian activity.
- Construct stone retaining walls at back of walk to retain grade at steep side-slope conditions.
- Stripe 4' or 5' wide bike lanes on both sides of the street the entire length of the corridor; this width is exclusive of the width of the gutter.
- Construct bus pullouts at selected locations.
- Replace benches at bus stops with durable, attractive, standardized furnishings; provide at least two benches at stops that are busy during the morning rush hour.
- Widen the Boulevard at intersections to allow for U-turns and for 8' wide minimum pedestrian refuge areas in the median.
- Stripe 11' wide travel lanes on the Boulevard from Columbia north to Homestead Road.
- Construct a planted, raised median, and include trees where possible in median planting.
- Narrow curb radii at intersections to 25 feet maximum where feasible to shorten pedestrian crossing distances.
- Improve lighting in the corridor, with a focus on intersections, mid-block crossing locations, and other high pedestrian use areas.

Some of the above measures, such as completing the sidewalk network and updating curb ramps to ADA-compliant standards, can be achieved at relatively little cost and pursued immediately. Other measures, such as widening the Boulevard at intersections and providing a raised median, will require further study based on information such as ground survey, traffic counts, and midblock crossing warrant studies.

Among the "big-ticket" items that will create the most benefit for pedestrians, bicyclists, and transit users are the creation of a raised median, striping of bike lanes, and narrowing of vehicular lanes. These measures will all contribute to an actual and perceived narrowing of drive lanes, which will encourage slower driving. A raised median will eliminate many of the conflict points that currently obtain in the corridor as a result of a continuous two-way left-turn lane. A median can also provide pedestrian refuge areas at intersections and midblock crossing locations that reduce crossing length.








For the southern two-thirds of the corridor where no median currently exists, the implications of providing a raised median are the following:

- Since the median would be continuous with gaps only at major intersections, U-turns would have to occur at those intersections. To enable these U-turns, some widening of intersections would be required.
- This Study recommends providing a pedestrian refuge of 8 feet minimum at major intersections. The roadway widening at intersections would also make this provision possible.
- This study also recommends four-foot bike lanes adjacent to a two-foot concrete gutter that is not a part of the bike lane. Ideally, the Boulevard would be widened along much of its length to provide both a twelve to twenty-foot median as well as bike lanes. However, this study suggests that with an eight-foot median, both a median and bike lanes can be provided without moving curbs. Since eight feet is a minimum practicable width for a grassed median, the exact dimensions of the existing roadway are critical in determining the feasibility of this option. Precise ground survey is beyond the scope of the present Study. Dimensions given on these plans are based on rough field measurements only.
- If the option of a continuous median is not pursued, this Study recommends that smaller medians, with median pockets, be provided to allow for midblock crossings of pedestrians at selected locations. Locations of these items are indicated on the plans following. Median pockets will require further study in the form of a MUTCD Warrant Study to determine whether conditions are appropriate for their construction.

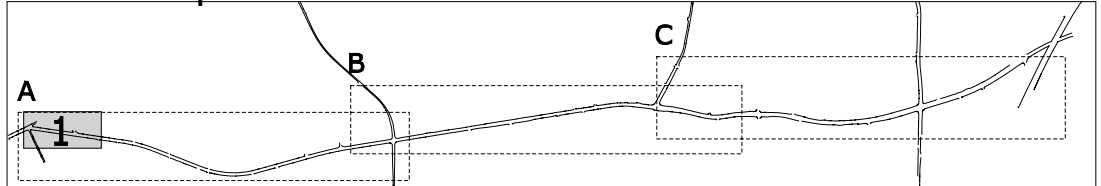
All changes to the Boulevard within the Right of Way are subject to the review and approval authority of NCDOT, who is the owner of the Boulevard. That agency has been informed of this study and should continue to be a part of any proposal to modify the existing roadway and associated facilities.

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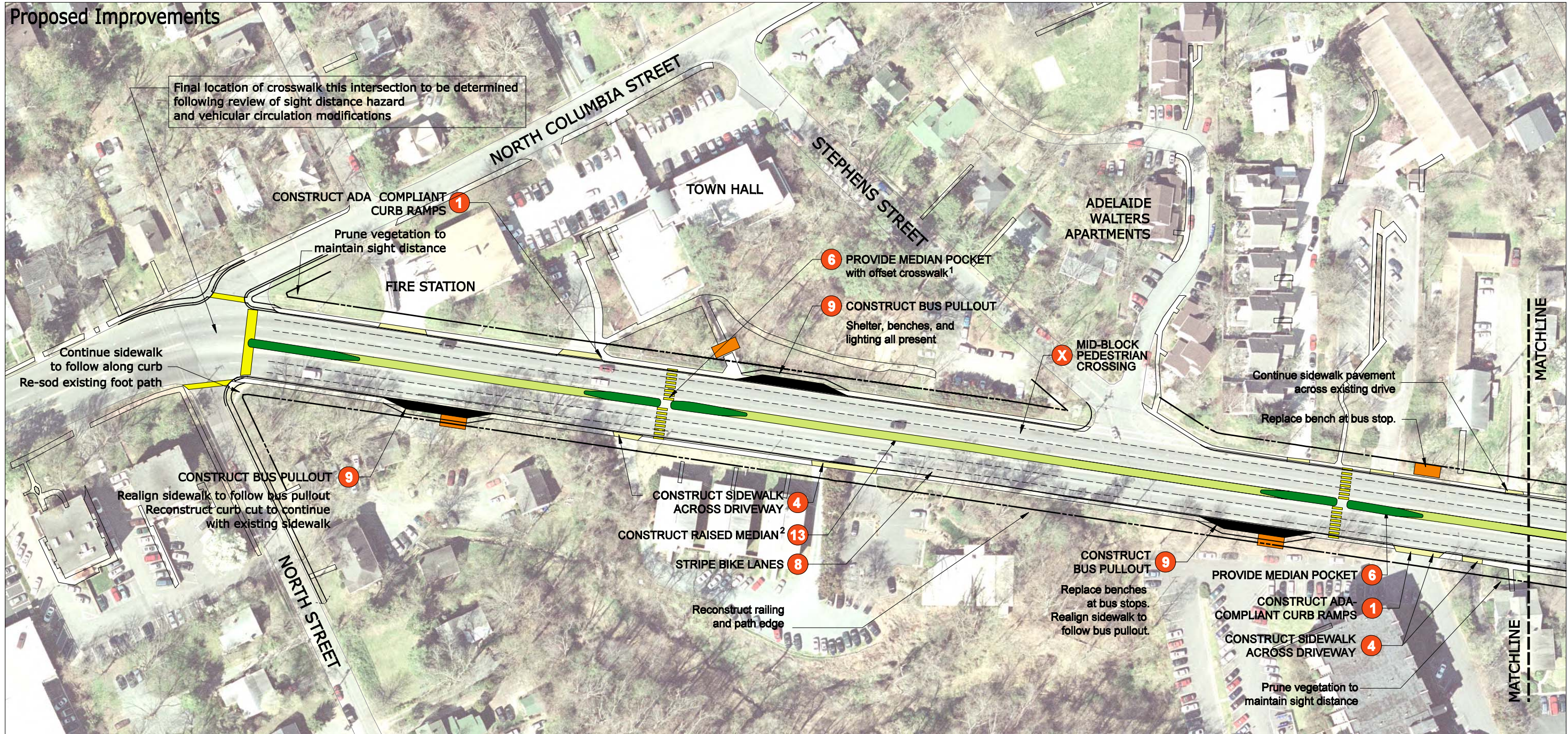
Key

	RETAINING WALL		BUS SHELTER		SEE ILLUSTRATIONS #1 AND #2 FOR DETAILS OF PROPOSED IMPROVEMENTS
	SIDEWALK		BUS PULLOUT		
	CROSSWALK		MEDIAN POCKET		

Location Map not to scale



Proposed Improvements



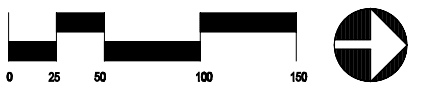
Notes:

1. A threshold of 100 alighting's/day at nearby bus stops was used to determine the location of marked crosswalks at median pockets. Most median pockets in the project area do not currently meet this threshold; however, these locations should be re-evaluated as conditions change.
2. A raised median is intended as a long-term goal for the Boulevard. By contrast, the median pockets shown are intended as a short-term and relatively low-cost solution to the problem of pedestrian crossings of the Boulevard. In the future, the median area may serve as a bus or rail corridor instead of a planted median; in that case, pedestrian crossings at the selected locations shown must also be part of the final design.








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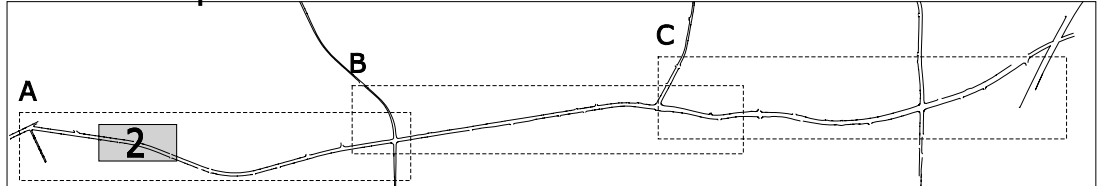
PLAN A1



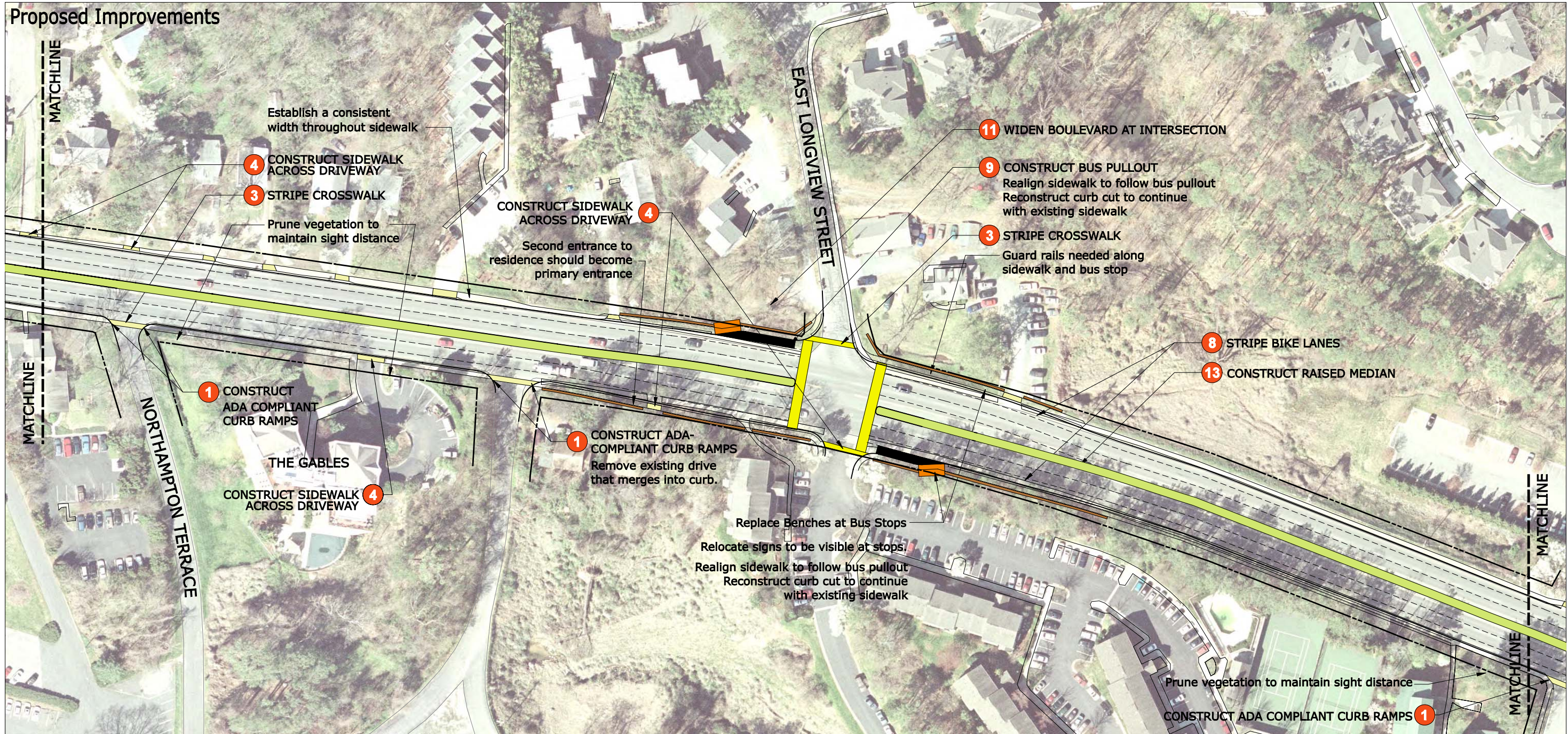
Key

	RETAINING WALL		BUS SHELTER		SEE ILLUSTRATIONS #1 AND #2 FOR DETAILS OF PROPOSED IMPROVEMENTS
	SIDEWALK		BUS PULLOUT		
	CROSSWALK		MEDIAN POCKET		

Location Map not to scale

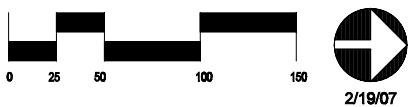


Proposed Improvements










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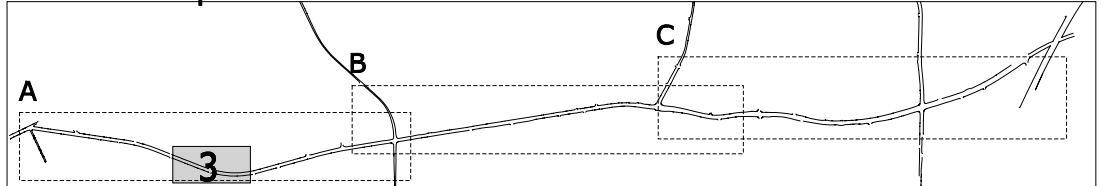
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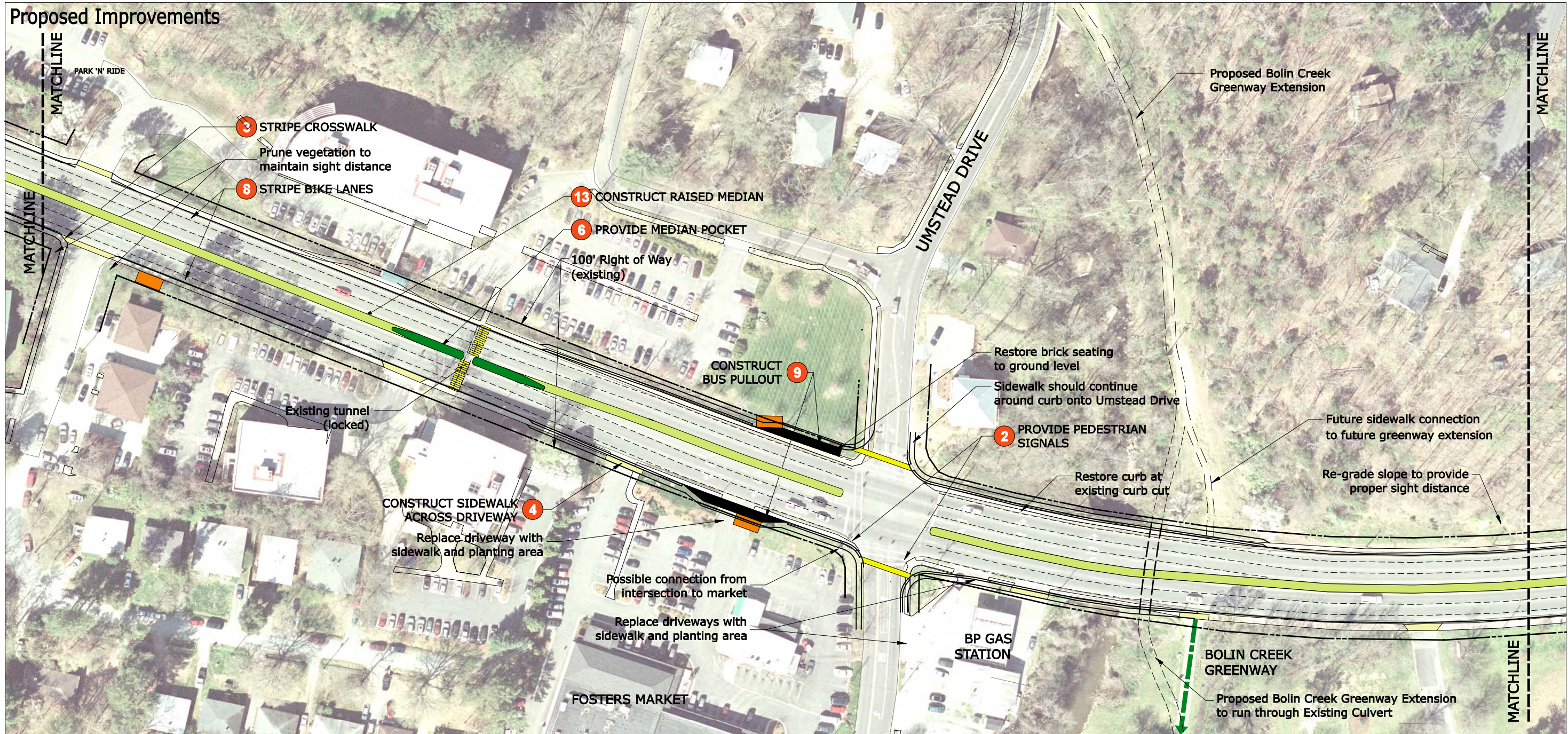
Key

	RETAINING WALL		BUS SHELTER		SEE ILLUSTRATIONS #1 AND #2 FOR DETAILS OF PROPOSED IMPROVEMENTS
	SIDEWALK		BUS PULLOUT		
	CROSSWALK		MEDIAN POCKET		

Location Map not to scale

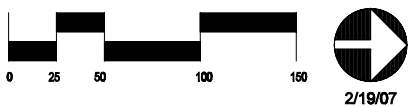


Proposed Improvements










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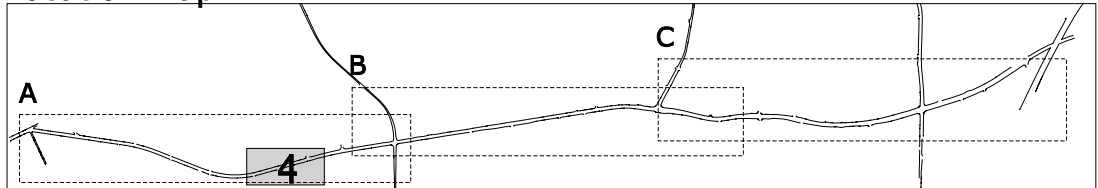


PLAN A3

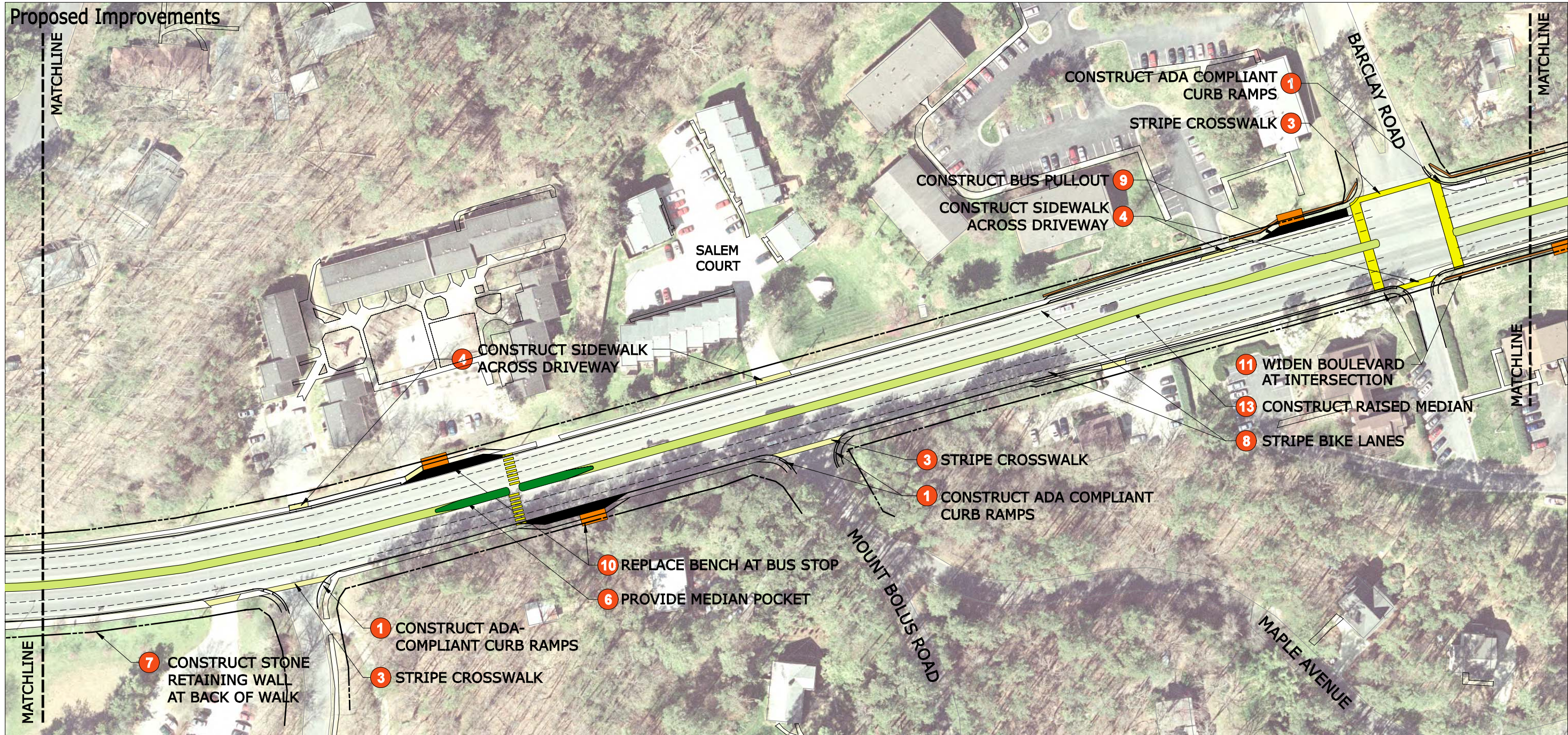
Key

	RETAINING WALL		BUS SHELTER		SEE ILLUSTRATIONS #1 AND #2 FOR DETAILS OF PROPOSED IMPROVEMENTS
	SIDEWALK		BUS PULLOUT		
	CROSSWALK		MEDIAN POCKET		

Location Map not to scale



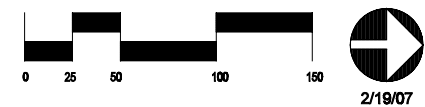
Proposed Improvements










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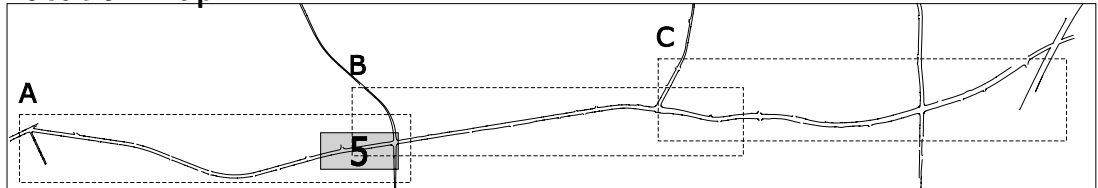
PLAN A4



Key

	RETAINING WALL		BUS SHELTER		SEE ILLUSTRATIONS #1 AND #2 FOR DETAILS OF PROPOSED IMPROVEMENTS
	SIDEWALK		BUS PULLOUT		
	CROSSWALK		MEDIAN POCKET		

Location Map not to scale

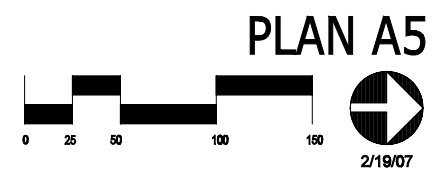


Proposed Improvements










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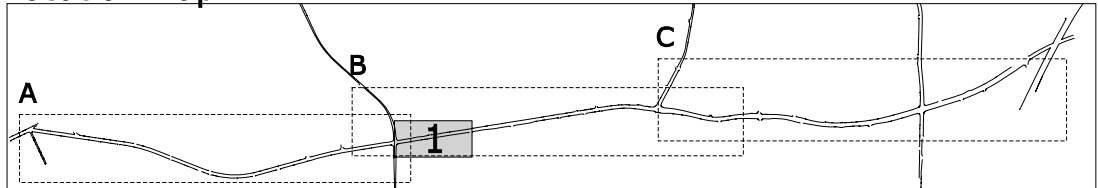


PLAN A5

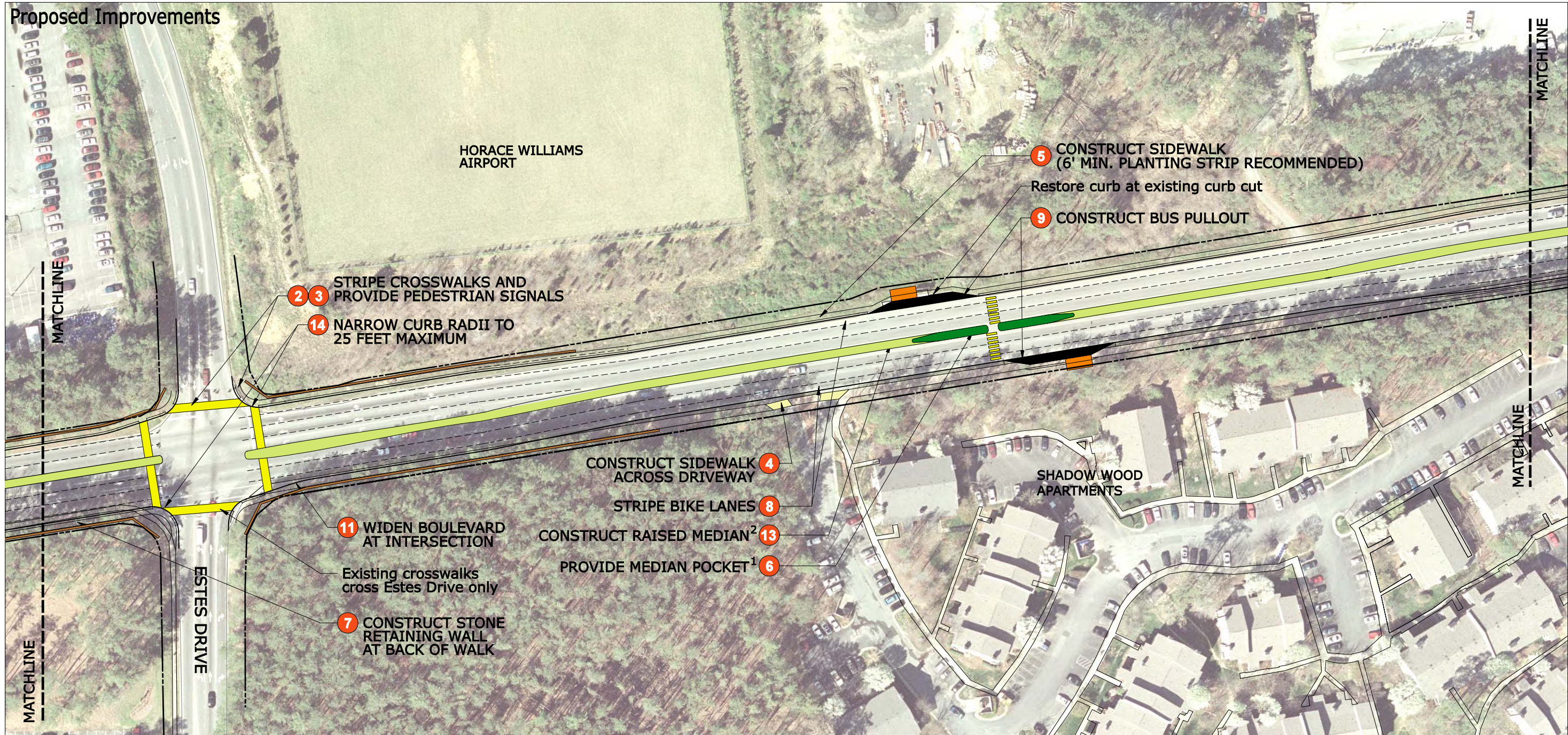
Key

	RETAINING WALL		BUS SHELTER		SEE ILLUSTRATIONS #1 AND #2 FOR DETAILS OF PROPOSED IMPROVEMENTS
	SIDEWALK		BUS PULLOUT		
	CROSSWALK		MEDIAN POCKET		

Location Map not to scale



Proposed Improvements

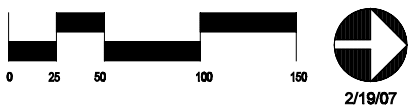


Notes:

1. A threshold of 100 alighting's/day at nearby bus stops was used to determine the location of marked crosswalks at median pockets. Most median pockets in the project area do not currently meet this threshold; however, these locations should be re-evaluated as conditions change.
2. A raised median is intended as a long-term goal for the Boulevard. By contrast, the median pockets shown are intended as a short-term and relatively low-cost solution to the problem of pedestrian crossings of the Boulevard. In the future, the median area may serve as a bus or rail corridor instead of a planted median; in that case, pedestrian crossings at the selected locations shown must also be part of the final design.








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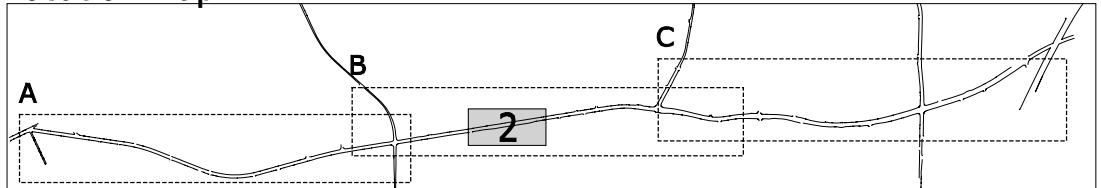


PLAN B1

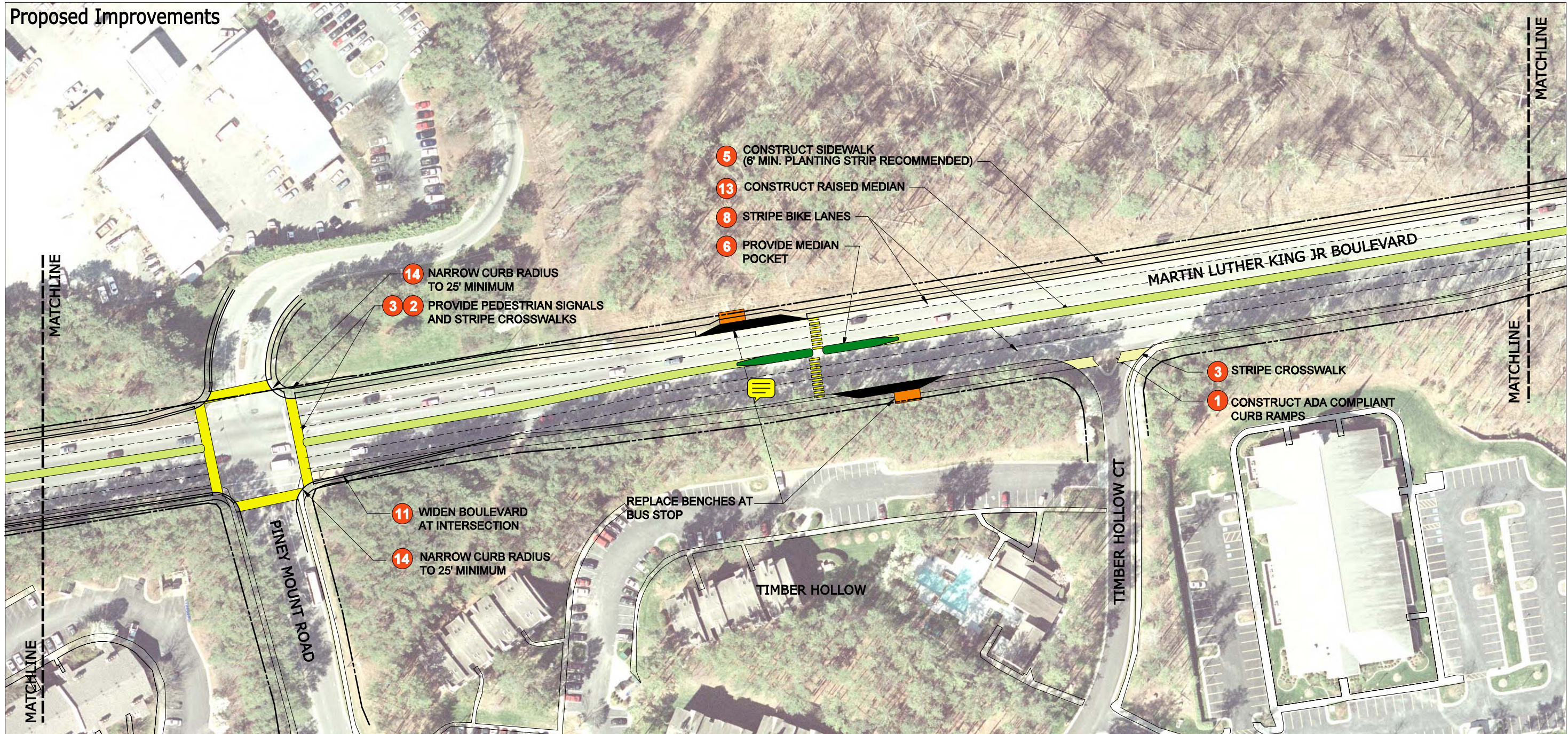
Key

	RETAINING WALL		BUS SHELTER		SEE ILLUSTRATIONS #1 AND #2 FOR DETAILS OF PROPOSED IMPROVEMENTS
	SIDEWALK		BUS PULLOUT		
	CROSSWALK		MEDIAN POCKET		

Location Map not to scale



Proposed Improvements









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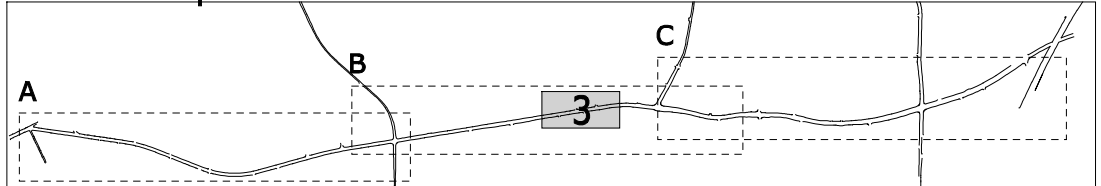
PLAN B2



Key

	RETAINING WALL		BUS SHELTER		SEE ILLUSTRATIONS #1 AND #2 FOR DETAILS OF PROPOSED IMPROVEMENTS
	SIDEWALK		BUS PULLOUT		
	CROSSWALK		MEDIAN POCKET		

Location Map not to scale



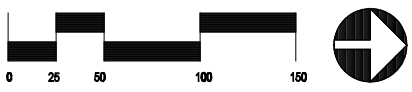
Proposed Improvements










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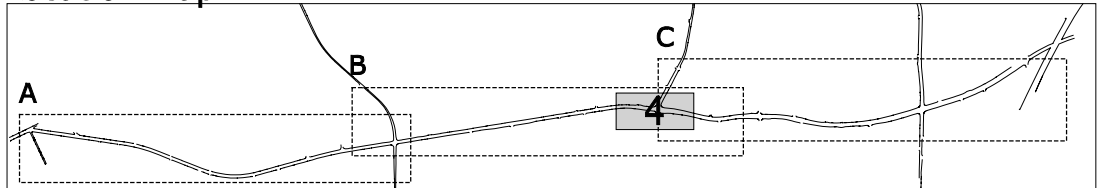
PLAN B3



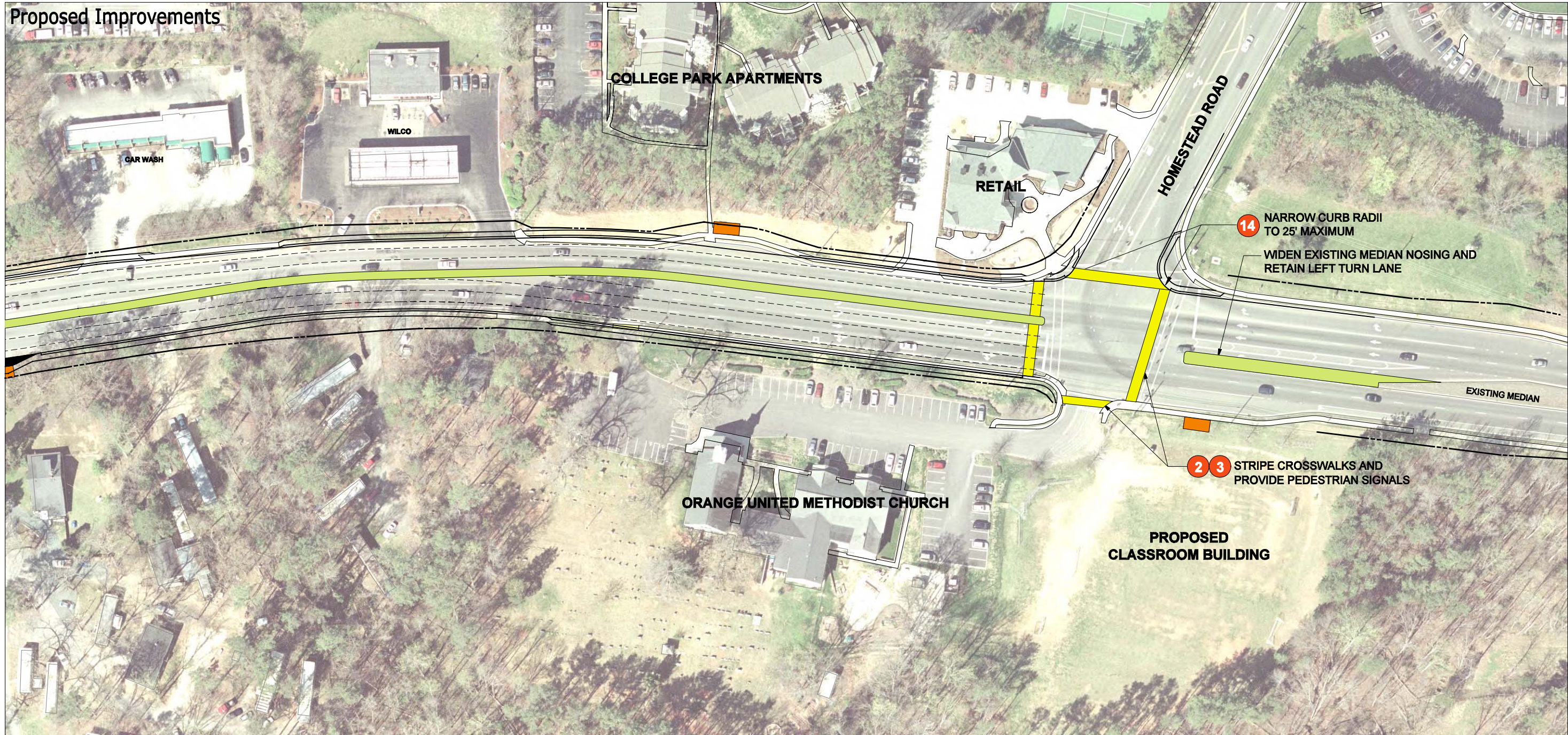
Key

	RETAINING WALL		BUS SHELTER		SEE ILLUSTRATIONS #1 AND #2 FOR DETAILS OF PROPOSED IMPROVEMENTS
	SIDEWALK		BUS PULLOUT		
	CROSSWALK		MEDIAN POCKET		

Location Map not to scale



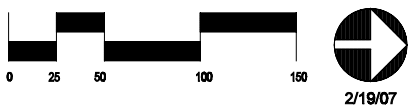
Proposed Improvements










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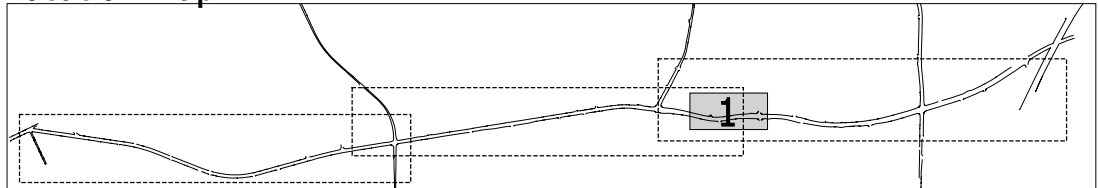
PLAN B4



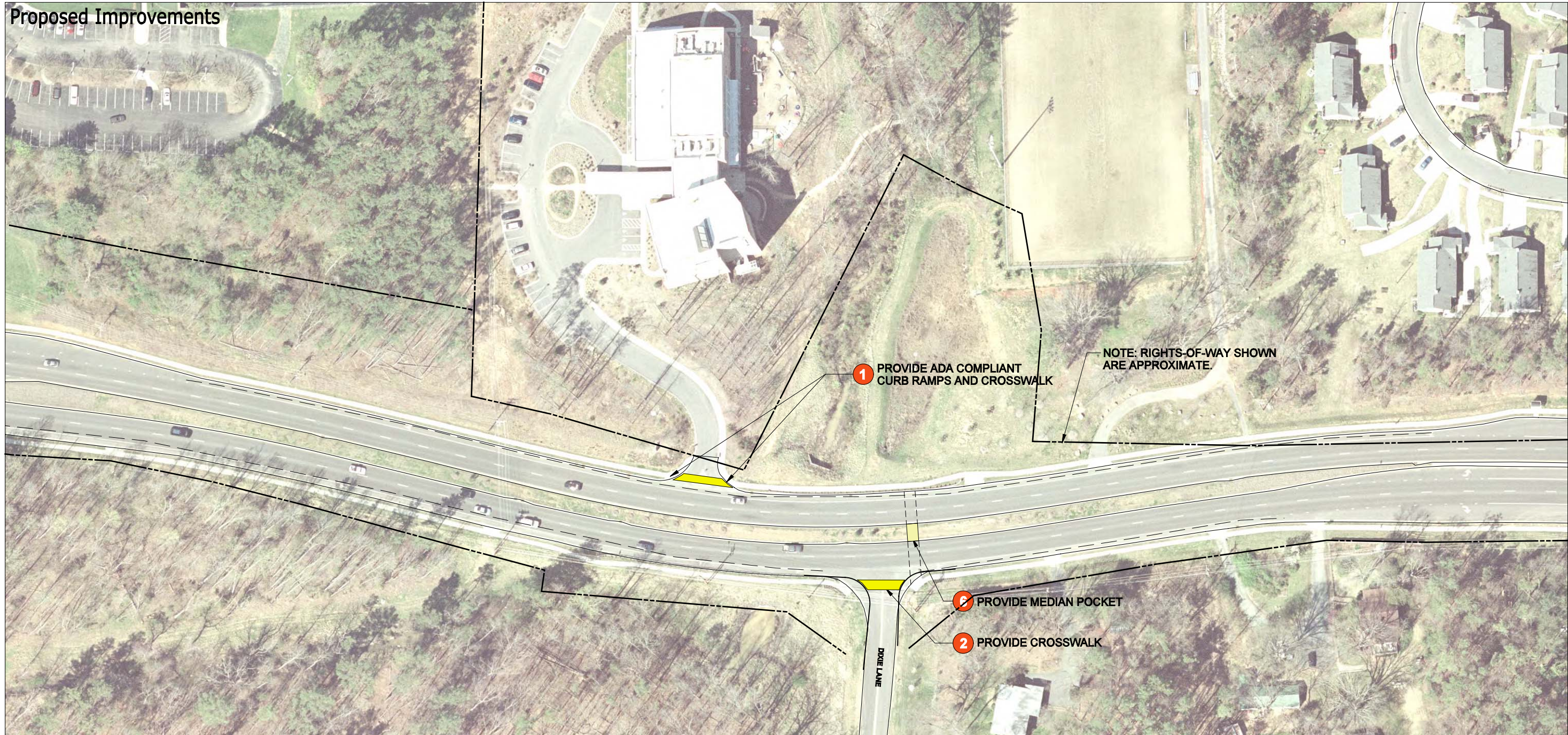
Key

	RETAINING WALL		BUS SHELTER		SEE ILLUSTRATIONS #1 AND #2 FOR DETAILS OF PROPOSED IMPROVEMENTS
	SIDEWALK		BUS PULLOUT		
	CROSSWALK		MEDIAN POCKET		

Location Map not to scale



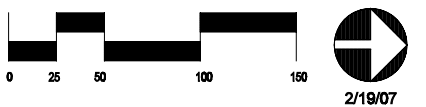
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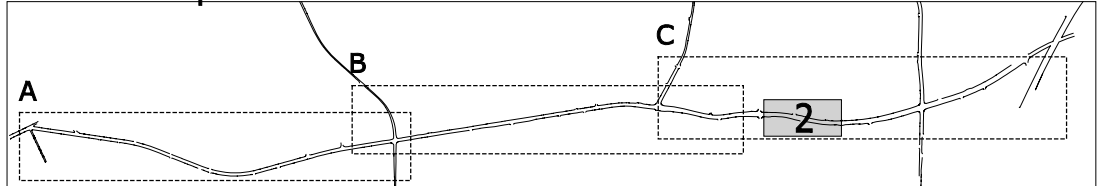
PLAN C1



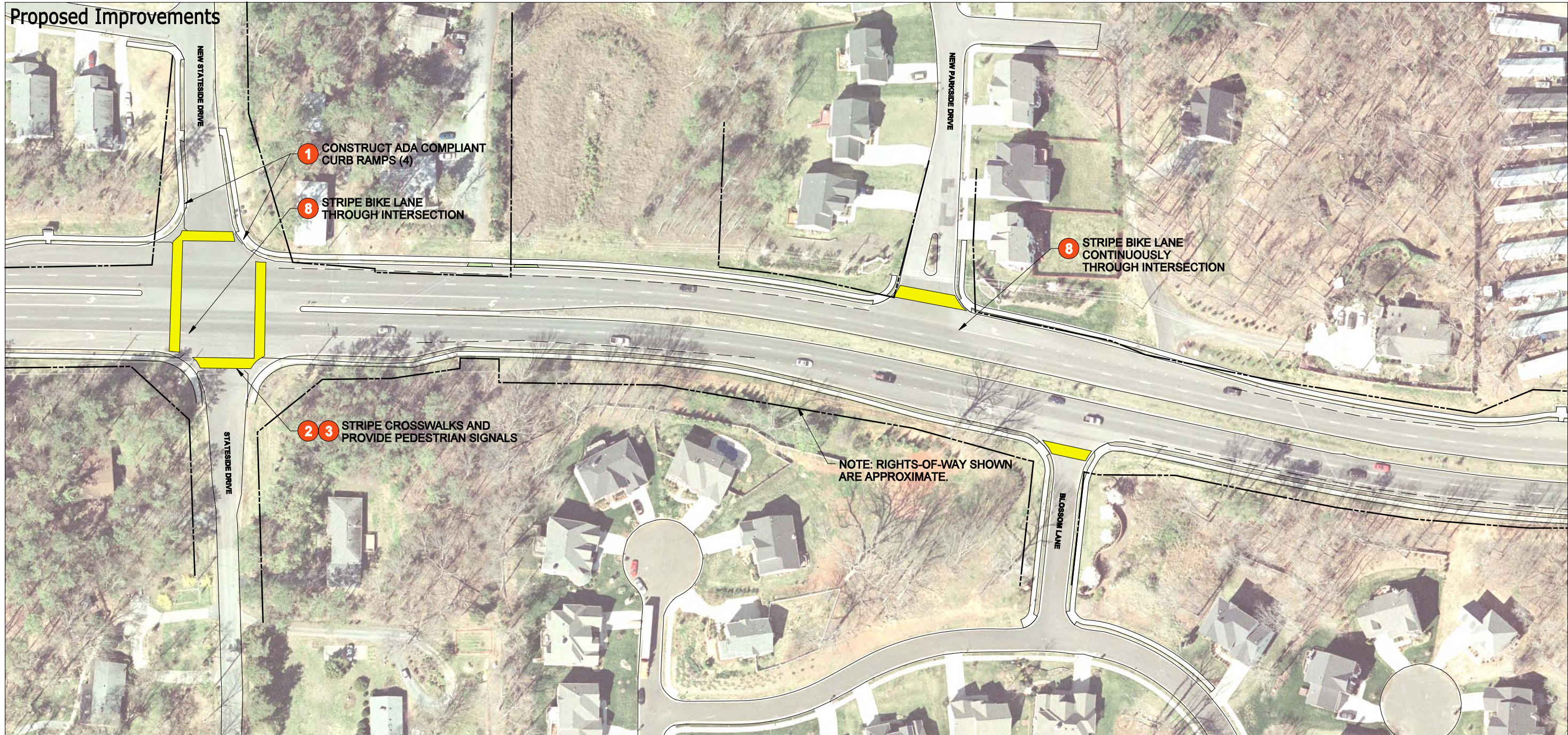
Key

	RETAINING WALL		BUS SHELTER		SEE ILLUSTRATIONS #1 AND #2 FOR DETAILS OF PROPOSED IMPROVEMENTS
	SIDEWALK		BUS PULLOUT		
	CROSSWALK		MEDIAN POCKET		

Location Map not to scale



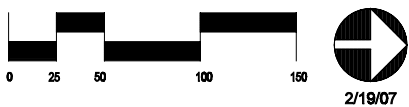
Proposed Improvements










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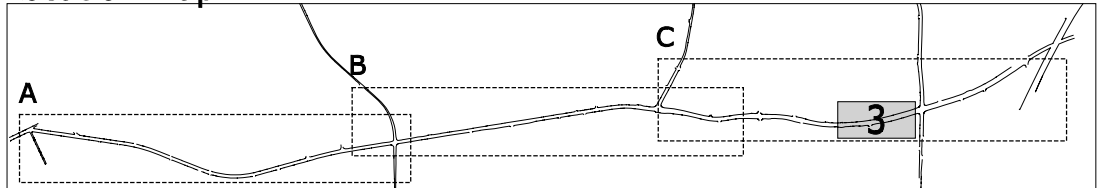
PLAN C2



Key

	RETAINING WALL		BUS SHELTER		SEE ILLUSTRATIONS #1 AND #2 FOR DETAILS OF PROPOSED IMPROVEMENTS
	SIDEWALK		BUS PULLOUT		
	CROSSWALK		MEDIAN POCKET		

Location Map not to scale



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PLAN C3

