

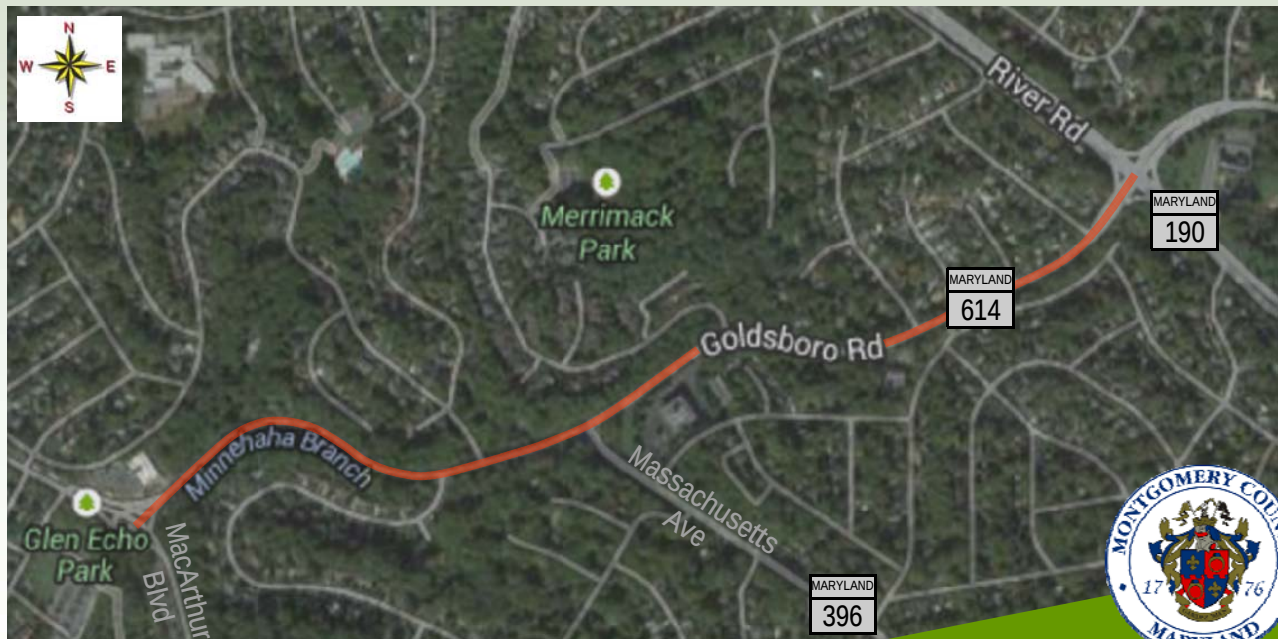
Facility Planning Study Phase I



PROJECT PROSPECTUS

August 2014

Goldsboro Road Pedestrian and Bicycle Improvements



Montgomery County Department of
Transportation

Planning



EXECUTIVE SUMMARY

I. Introduction

The Montgomery County Department of Transportation (MCDOT), Division of Transportation Engineering, has completed a Phase I Facility Planning Study to evaluate the need for master planned bicycle lanes and sidewalks along a one mile segment of Goldsboro Road (MD 614) between MacArthur Boulevard and River Road (MD 190) (see Vicinity Map, **Figure 1**). This Prospectus presents the results of the Phase I Study and will be used to determine if the project should proceed to a Phase II Facility Planning Study.

II. Background and Description

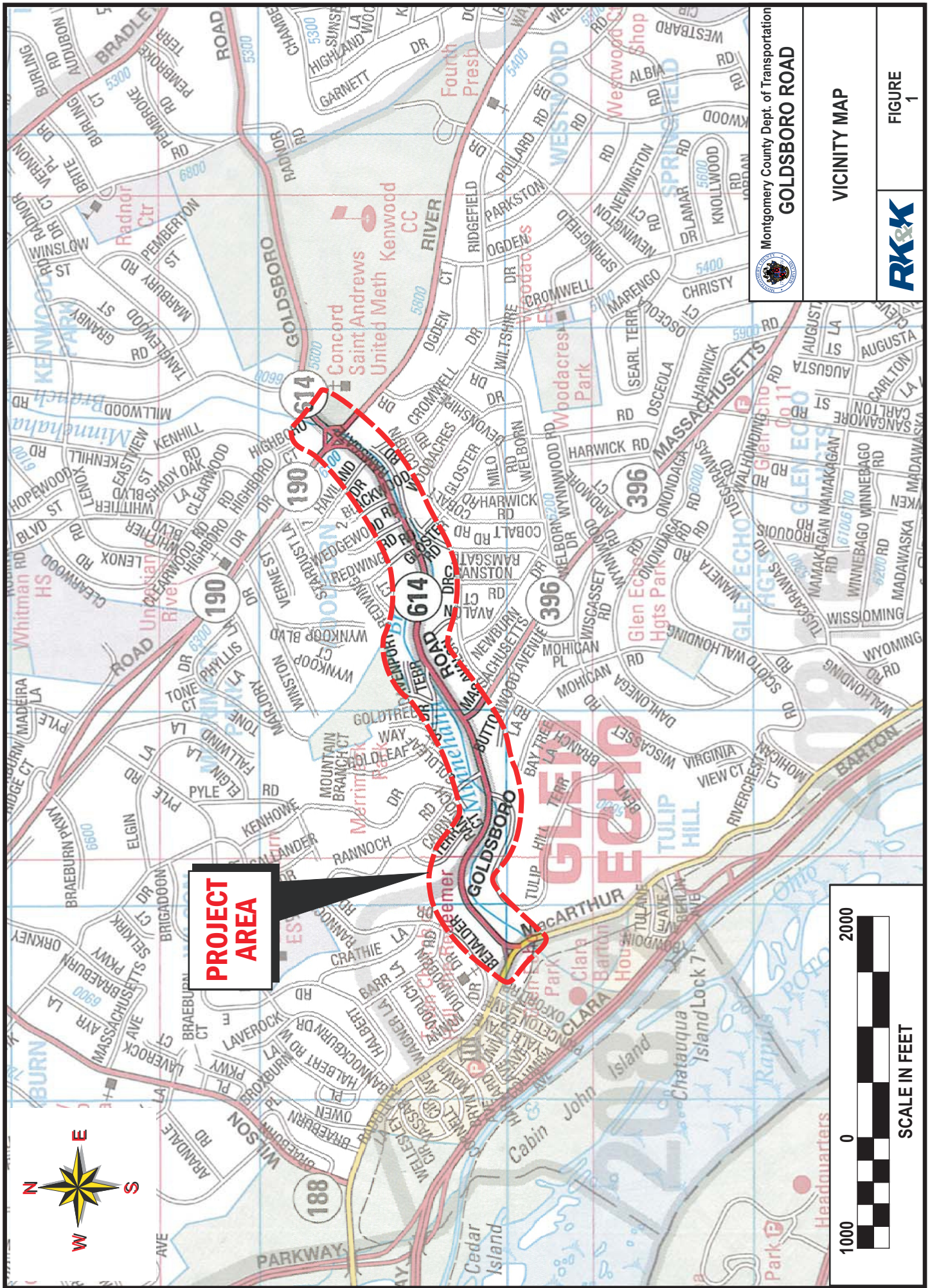
Goldsboro Road is identified in the 1990 Bethesda-Chevy Chase Master Plan as Arterial A-84 from MacArthur Boulevard to Massachusetts Avenue, and as Major Highway M-93 from Massachusetts Avenue to River Road. The Master Plan recommends that A-84 retain its two-lane section and that M-93 retain its two-lane section with consideration for the long-term expansion to its ultimate width of four lanes. The *2005 Countywide Bikeways Functional Master Plan* proposes on-street bike lanes along Goldsboro Road (identified as Route #BL-1 in the Countywide Bikeways Functional Master Plan), directly connecting to MacArthur Boulevard existing shared use path and proposed bike lanes #DB-1, Massachusetts Avenue proposed shared signed roadway #SR-50, and River Road proposed shared use path / signed shared roadway #DB-2.



Photo 1 - Goldsboro Road at Goldleaf Drive

The study area is primarily residential, consisting mainly of low-density single family homes, some medium-density residential townhomes, and one commercial office building. Minnehaha Branch, a tributary to the Potomac River, runs adjacent to Goldsboro Road. Bus stops are located throughout the study area, served by RideOn Route 29. The 2013 average annual daily traffic on Goldsboro is 11,401 west of Massachusetts Avenue, and 16,371 east of Massachusetts Avenue. At the western limit of the project is Glen Echo Park, a major destination park that hosts many arts and cultural organizations, artist studios, a restored carousel, and numerous classes in visual and performing arts.

Within the study area, Goldsboro Road is an undivided, two-lane, two-way roadway, with a speed limit of 35 mph. There are existing sidewalks in select locations along the south side of the roadway, but overall there is limited pedestrian connectivity. There are no existing marked bicycle facilities along Goldsboro Road, and the existing shoulder widths vary from one to eight feet, with a typical width of two to four feet.



III. Purpose of the Project

The purpose of the project is to:

- Enhance safety for bicyclists and pedestrians along the Goldsboro Road corridor
- Provide connections to existing and proposed bicycle and pedestrian facilities
- Improve access and links for bicyclists and pedestrians between homes, schools, places of worship, parks
- Improve access for bicyclists and pedestrians to transit facilities
- Comply with the 1990 Bethesda-Chevy Chase Master Plan and the 2005 Countywide Bikeways Functional Master Plan

IV. Project Need

The need for the project is based on the following:

- Improve the bicycle and pedestrian network as well as access to destinations along and beyond the study area
- Address existing pedestrian and bicycle facility disconnects and inadequacies within the roadway section
- Create a safer environment for bicyclists and pedestrians that utilize the corridor

V. Alternatives Evaluated

As part of the Phase I Facility Planning Study, the following four alternatives were evaluated by the study team and presented to the public for input:

- ***No-Build Alternative***
- ***Alternative 1: Sidewalk + Bike Lanes***
- ***Alternative 2: Sidewalk with Green Buffer + Bike Lanes***
- ***Alternative 3: Sidewalk Both Sides with Green Buffer + Bike Lanes***

VI. Public Outreach

The Department provided outreach to the community initially with a newsletter mailing which provided an overview of the project, invitation to a public meeting, and postage paid form to return comments on feedback. The newsletter's distribution list included of 616 property owners and civic associations. (See **Appendix D** for copy of November 2013 Newsletter). A public meeting was held on December 4, 2013 at Walt Whitman High School where 43 people attended. Three build alternatives were presented. The feedback and comments were positive, with 61 out of 65 comments expressing support for the project or one of the alternatives. The public did not express a strong preference for one specific build alternative.

VII. Preferred Alternative

In addition to the feedback from the community, the study team reviewed each of the alternatives for the advantages and disadvantages. Alternative 3 was subsequently eliminated due to its significant environmental impacts, and associated costs. Providing continuous

sidewalk along both sides of the roadway would cause numerous impacts to Minnehaha Branch, requiring retaining walls and significant stream impact mitigation/relocation. The crosswalks and refuge islands under the Preferred Alternative will allow the continuous northern sidewalk to serve all destinations in the study area.

Alternative 2, which incorporates green buffers between the roadway and sidewalk, was selected as the Preferred Alternative over Alternative 1 because the buffers were considered to be an important feature that will improve the comfort and safety of pedestrians utilizing the new sidewalks. The Preferred Alternative, however, does omit the buffers at select locations where their inclusion would have caused significant impacts to the adjacent stream or residential properties.

The Preferred Alternative (see **Figure 3** on pages vi and vii) proposes a continuous sidewalk and a continuous bike lane along the north side of Goldsboro Road, and a continuous bike lane and intermittent sidewalk along the south side of Goldsboro Road as needed to improve pedestrian and bicycle access and connectivity. The proposed improvements also include sidewalk, shared use path and bikeable shoulders at the MacArthur Boulevard intersection, to provide connections to adjacent pedestrian and bicycle facilities, including the MacArthur Boulevard Bike Trail.

The Preferred Alternative includes crosswalks and refuge islands to allow pedestrians to safely cross Goldsboro Road, River Road and MacArthur Boulevard. The proposed crosswalks address comments received from the public with concern that the existing crosswalks are ineffective at compliance from drivers.

Figure 2 below illustrates the proposed typical section for Goldsboro Road which meets the Montgomery County Design Standards and includes the following features:

- Two 11-foot travel lanes
- 5 to 5.5-foot bike lane in each direction
- 5-foot sidewalk along the north side, with green buffer
- 5-foot sidewalk along the south side at select locations, with green buffer
- Street lighting

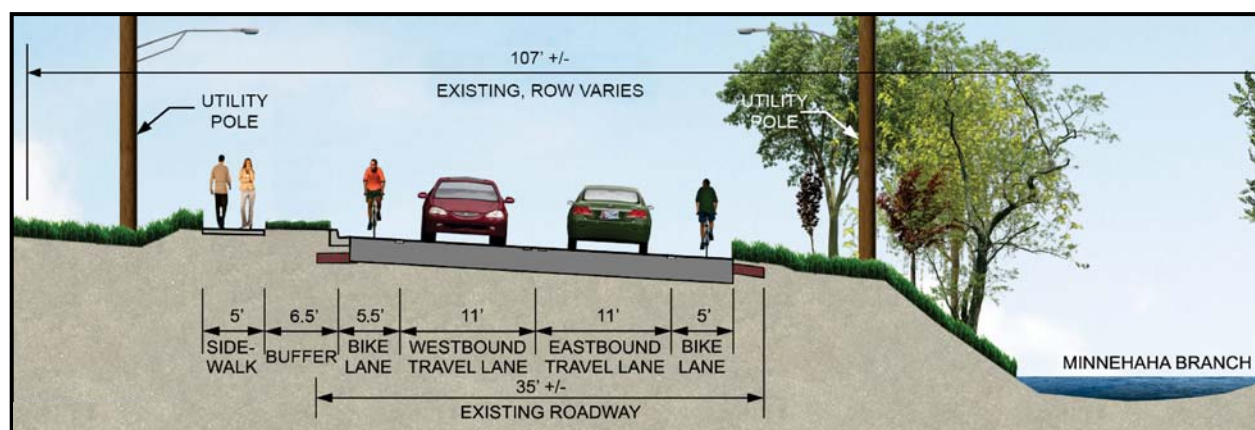


Figure 2 – Proposed Goldsboro Road Typical Section

The proposed project will include minor roadway widening, new curb and gutter, sidewalk, storm drainage, stormwater management, sediment control, traffic control, pavement markings,

signage, lighting, forest conservation, landscaping, and utility relocation/adjustments. The proposed traffic operation features along Goldsboro Road are subject to review and approval of SHA. A summary of the potential impacts associated with the Preferred Alternative are summarized in **Table 1**. During the design phase, refinements will be performed for the Preferred Alternative to minimize impacts, including maintaining natural overland sheet flow.

Table 1: Impacts for Preferred Alternative	
Erodible Soils	Yes
Prime Farmland / Farmland of Statewide Importance	Prime Farmland soils are present
Forest	0.8 Ac in 6 separate wooded areas
Specimen Trees (> 24" dbh)	32
Floodplains	Yes
Waters of the U.S.	40 LF - Culvert Extensions
Wetlands	0.02 Ac
Special Protection Area	No
Rare, Threatened and Endangered Species	No
Forest Interior Dwelling Bird Habitat	No
Historic and Archeological Resources	Washington Aqueduct; Not Impacted
Parks and Recreational Facilities	Minor Impacts to NPS Property
Community Facilities	None
Properties Impacted	5
Right-of-Way Required	0.02 Ac
Displacements	None
Hazardous Material Sites	Exxon Gas Station
Utilities	Overhead Utility Pole Relocation, Potential Water & Gas Relocation

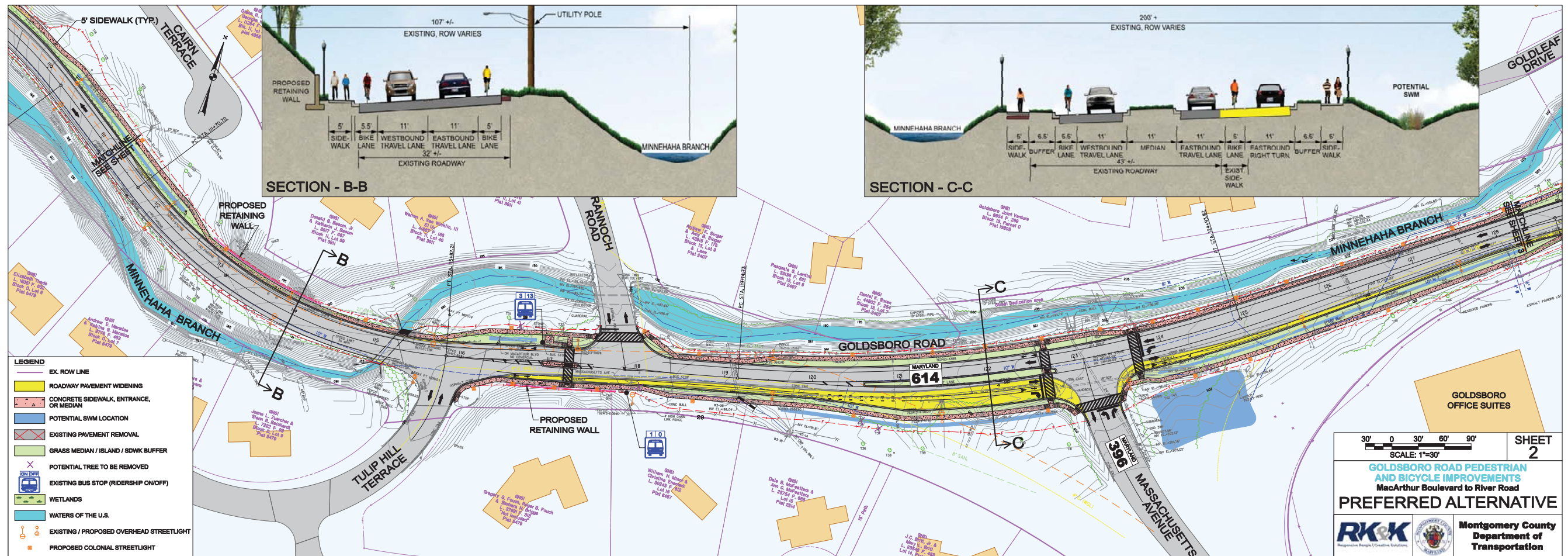
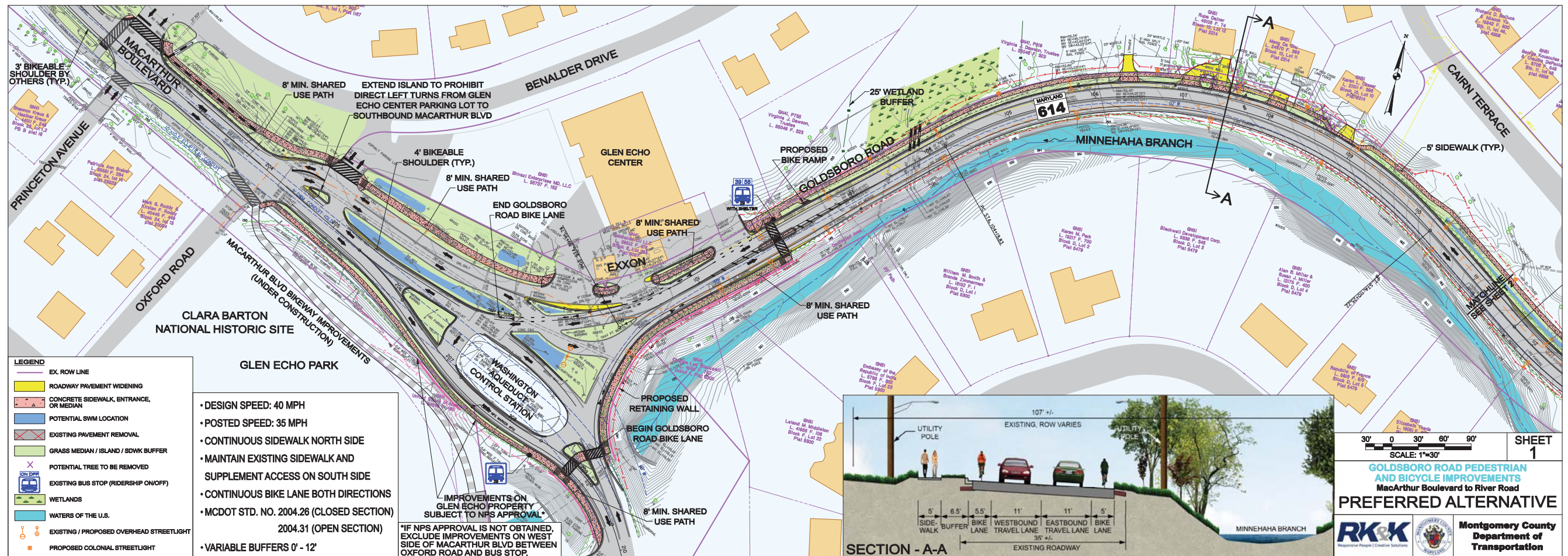


FIGURE 3
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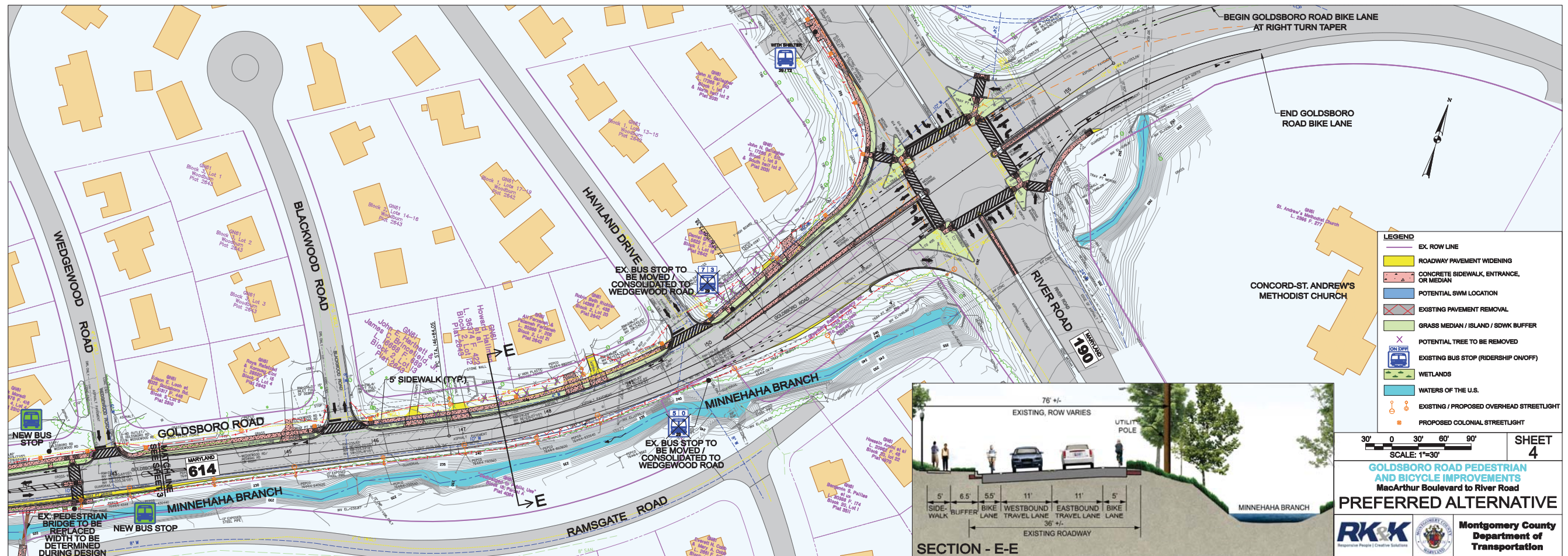
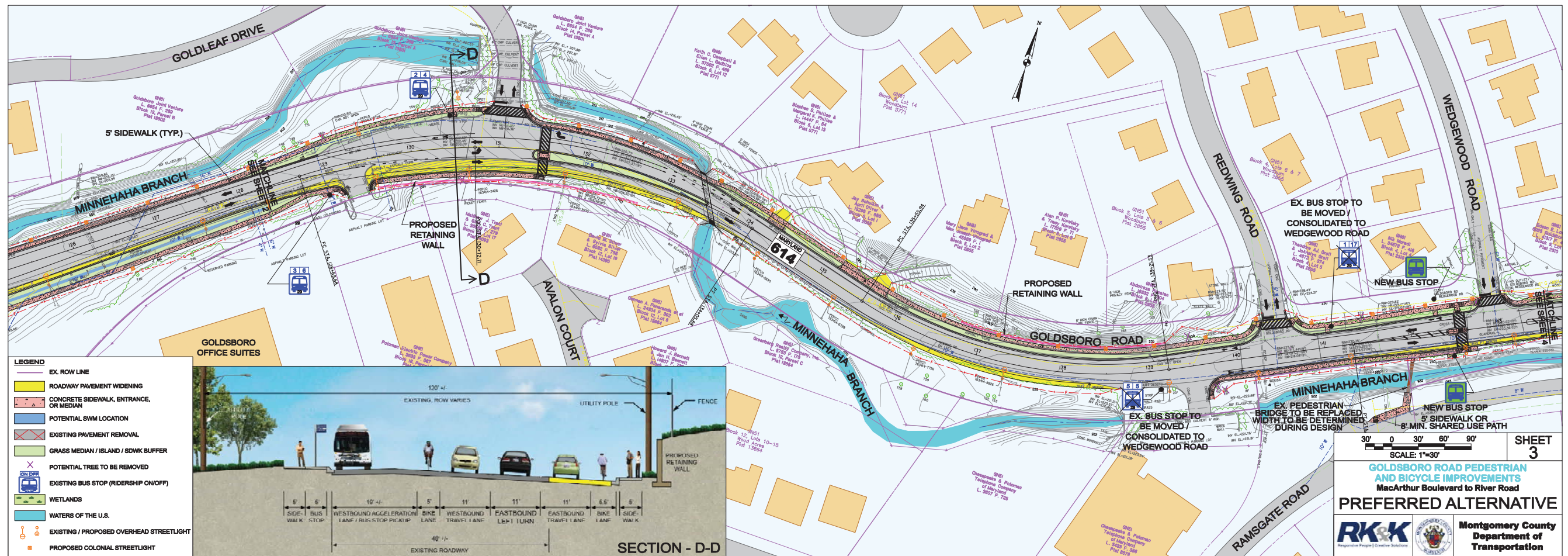


FIGURE 3
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GOLDSBORO ROAD PEDESTRIAN AND BICYCLE IMPROVEMENTS SUMMARY TABLE	
PROJECT STUDY INFORMATION	
Name of Project and CIP #	Goldsboro Road Pedestrian and Bicycle Improvements, CIP #509337
Study Phase	Facility Planning, Phase I
Transportation Category	Roadway/Pedestrian and Bicycle Facilities
Study Performed by	Montgomery County Department of Transportation (MCDOT) Division of Transportation Engineering
Phase I Project Manager	Greg Hwang, 240-777-7279
Phase I Consultant	Rummel, Klepper & Kahl, LLP (RK&K) Pat Martino, 410-462-9313
Road Name	Goldsboro Road (MD 614)
Project Limits	MacArthur Boulevard to River Road (MD 190)
Project Length	1 Mile
Functional Classification of Roadway	Arterial (A-84) / Major Highway (M-93)
EXISTING CONDITIONS	
# of Lanes	2
Typical Lane Width	11'
Average Daily Traffic (ADT)	11,401 west of Massachusetts Avenue 16,371 east of Massachusetts Avenue
# of Bus Stops	9
Signalized Intersections	River Road (MD 190) Massachusetts Avenue (MD 396)
Stop-Controlled Intersections	MacArthur Blvd / Goldsboro Road (Partial Stop Control @ Circle) Tulip Hill Terrace / Goldsboro Road Rannoch Road / Goldsboro Road Goldleaf Drive / Goldsboro Road Redwing Road / Goldsboro Road Wedgewood Road / Goldsboro Road Blackwood Road / Goldsboro Road Haviland Drive / Goldsboro Road
Posted Speed	35 mph
Adjacent Communities	Bannockburn Civic Association Goldsboro Homeowners Association Wood Acres Citizens Association Tulip Hill Citizens Association
Homes Adjacent to Goldsboro Road	36
Homes with Driveway Access	13
Schools	5 (Concord-St. Andrews Cooperative Nursery School, Bannockburn Elementary, Wood Acres Elementary, Thomas W. Pyle Middle, Walt Whitman High)

Places of Worship	2 (Concord-St. Andrews United Methodist Church, The Episcopal Church of the Redeemer)
Parks	2 (Glen Echo Park and Clara Barton National Historic Site, Merrimack Neighborhood Park)
Other Places of Interest	n/a
Portion with Closed/Open Section	Typically open section 1000 LF of partial closed section adjacent to homes at eastern limits of study area
Portion with Sidewalk	1300 LF along south side of Goldsboro Road between Tulip Hill Terrace and Goldleaf Drive
Portion with Shared Use Path	n/a
Right-of-Way Widths	Varies - 75' to 100' typically, some areas wider
CRASH HISTORY	
2007 to 2011 - Goldsboro Road	22 crashes, no fatalities, 0 crashes involving bikes or pedestrians
2008 to 2012 - MacArthur Blvd Circle and Adjacent Roadway	8 crashes, no fatalities. 3 of the crashes involved bikes. All 3 bicycle crashes had injuries.
FACILITY PLANNING, PHASE I SUMMARY	
Transportation Category	Roadway/Pedestrian and Bicycle Facilities
Referenced Master Plans	1990 Bethesda-Chevy Chase Master Plan 2005 Countywide Bikeways Functional Master Plan
Annual Growth Policy Area	Bethesda / Chevy Chase
Purpose	• Comply with the 1990 Bethesda-Chevy Chase Master Plan and the 2005 Countywide Bikeways Functional Master Plan • Promote bicycling and pedestrian use along the Goldsboro Road corridor • Provide connections to existing and proposed bicycle and pedestrian facilities • Improve access for bicyclists and pedestrians to transit stops, parks and recreation areas, places of worship, schools and homes • Enhance safety for bicyclists and pedestrians along the Goldsboro Road corridor, including at intersections and transit stops
Need	• Improve the bicycle and pedestrian network as well as access to destinations along and beyond the study area • Address existing pedestrian and bicycle facility disconnects and inadequacies within the roadway section • Create a safer environment for bicyclists and pedestrians that utilize the corridor
Project Start Date	December 2012
Facility Planning, Phase I Project Prospectus Completion Date	August 2014

Alternatives Evaluated	• No-Build Alternative • Alternative 1: Sidewalk + Bike Lanes • Alternative 2: Sidewalk with Green Buffer + Bike Lanes • Alternative 3: Sidewalk Both Sides with Green Buffer + Bike Lanes	
Preferred Alternative	Alternative 2 • Two 11-foot travel lanes • 5 to 5.5-foot bike lane in each direction • 5-foot sidewalk along the north side, with green buffer • 5- foot sidewalk along the south side at select locations, with green buffer • Street Lighting	
Preferred Alternative Impacts	<u>Property Impacts</u> • 1 property with Right-of-Way required • 0.02 acres of Right-of-Way • 5 properties with grading easements required • 0.1 acres of grading easement • No displacements <u>Natural Environment Impacts</u> • 0.8 Ac in 6 separate wooded areas • 0.02 acres of wetland • 40 LF of waters (culvert extensions) • 1.1 acres of additional impervious area • 32 specimen trees <u>Utility Impacts</u> • 29 utility poles, w/ overhead electric & cable • Underground gas & water lines present During the design phase, refinements will be performed for the Preferred Alternative to minimize impacts, including maintaining natural overland sheet flow.	
PUBLIC OUTREACH		
Public Meeting	December 4, 2013	
Newsletters	November 2013	August 2014
Mailing List	616	661
PERMITS		
Permits Required	• Access Permit – Maryland State Highway Administration • NRI/FSD, Forest Conservation Plan – M-NCPPC • Erosion and Sediment Control and Stormwater Management – MCDPS • Joint Permit Application (JPA) - MDE & USACE • Floodplain Permit – USACE • Special Use Permit - NPS	

Agencies Requiring Coordination	• Montgomery County Department of Transportation (MCDOT) • Montgomery County Department of Permitting Services (MCDPS) • Montgomery County Department of Environmental Protection (MCDEP) • Montgomery County Historic Preservation Commission (HPC) • Maryland-National Capital Park & Planning Commission (M-NCPPC) • Maryland Department of the Environment (MDE) • Maryland Department of Natural Resources (MDNR) • Maryland Historical Trust (MHT) • Maryland State Highway Administration (MDSHA) • US Fish and Wildlife Service (USFWS) • National Park Service (NPS) • U.S. Army Corps of Engineers (USACE)
OTHER	
Unresolved Issues	• Sidewalk widening on Glen Echo Park NPS Property is subject to NPS approval & coordination. • The width of the proposed pedestrian bridge and south approach will be determined during design to address the public input in the design phase and comply with AASHTO, SHA and MCDOT design guidelines and criteria. • Measures to mitigate existing flooding issues on Goldsboro Road at Massachusetts Avenue • Continue coordination with SHA for improvements at River Road intersection • Extend island between service road and MacArthur Boulevard to prohibit direct left turns from Glen Echo Center parking lot to southbound MacArthur Blvd. Coordination with property owner is required. • The design will include a wayfinding plan to help bicyclists navigate the transitions between the MacArthur Blvd (west side) shared use path and the Goldsboro Road bike lanes.
Unique Features	Washington Aqueduct weight restrictions require ongoing coordination with USACE for MacArthur Boulevard improvements.
Basis for Typical Section	The proposed Goldsboro Road roadway typical section is based on MCDOT Standard No.MC-2004.26, Suburban Minor Arterial Road With Bike Lanes. The width of the green space buffer (where feasible) and sidewalk widths are based on Standard MC-2004.08A, Suburban Arterial Road, 4 Lanes with Bike Lanes.
Basis for Major Decisions of Preferred Alternative	The Preferred Alternative addresses the following goals: • Meets the project's purpose and need; • Provides safe, direct pedestrian and bicycle access along the corridor and to transit stops within the project area • Minimizes impacts to Minnehaha Branch
Basis for Streetscape, Landscape Panel, Streetlights, etc.	• MCDOT Standard MC-2004.08A, Suburban Arterial Road, 4 Lanes with Bike Lanes.

Basis for Stormwater Management (SWM) Design	• Incorporates the new Chapter V protocols and subsequent guidance documents of the Maryland Stormwater Design Manual dealing with the Environmental Site Design (ESD) criteria as required by the SWM Act of 2007. • Design projects utilizing Environmental Site Design (ESD) practices in landscaped areas for stormwater treatment.
Planning Board Briefing Date/Comments	TBD
Montgomery County Council's Transportation, Infrastructure, Energy and Environment Committee (T&E) Date/Comments	TBD

STUDY TEAM CONTACT INFORMATION

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I. PROJECT PURPOSE AND NEED

A. Background and Description

The Montgomery County Department of Transportation (MCDOT) performed a Phase I Facility Planning Study to evaluate the need for master planned bicycle lanes and sidewalks along a one mile segment of Goldsboro Road (MD 614), between MacArthur Boulevard and River Road (MD 190). The objectives of the study are to improve the Goldsboro Road roadway section to provide adequate on-street space and improved safety for bicyclists. The study also provides recommendations for improving pedestrian access and safety adjacent to the roadway, at pedestrian crossings and intersections and at transit stops along the corridor.

Within the study area (see **Figure 4** on the following page), Goldsboro Road is an undivided, two-lane, two-way roadway, with a speed limit of 35 mph. The roadway is located within a residential community, with relatively small commercial centers located just east of the Goldsboro Road / Massachusetts Avenue intersection and just north of the MacArthur Boulevard / Goldsboro Road intersection. Goldsboro Road is centrally located within the 4-miles between the Capital Beltway (I-495) and the Washington D.C line and serves as a primary east-west connection between the Glen Echo and Bethesda areas of southwestern Montgomery County.

There are three major intersections along Goldsboro Road within the study area, including a complex stop sign and yield-controlled traffic circle / frontage road at MacArthur Boulevard and signalized intersections, with turn lanes, at Massachusetts Avenue (MD 386) and River Road. Other intersections along the corridor are stop sign controlled for the minor roadway. Throughout the corridor there is a network of Ride-On bus stops, most located along existing shoulders. **Figure 4** identifies the intersection controls and bus stops along the corridor.

1. Master Plan Recommendations

Goldsboro Road is identified in the *1990 Bethesda-Chevy Chase Master Plan* as Arterial A-84 from MacArthur Boulevard to Massachusetts Avenue, and as Major Highway M-93 from Massachusetts Avenue to River Road. The Master Plan recommends that A-84 retain its two-lane section, and recommends M-93 retain its two-lane section with possible consideration of four lanes in the long term.

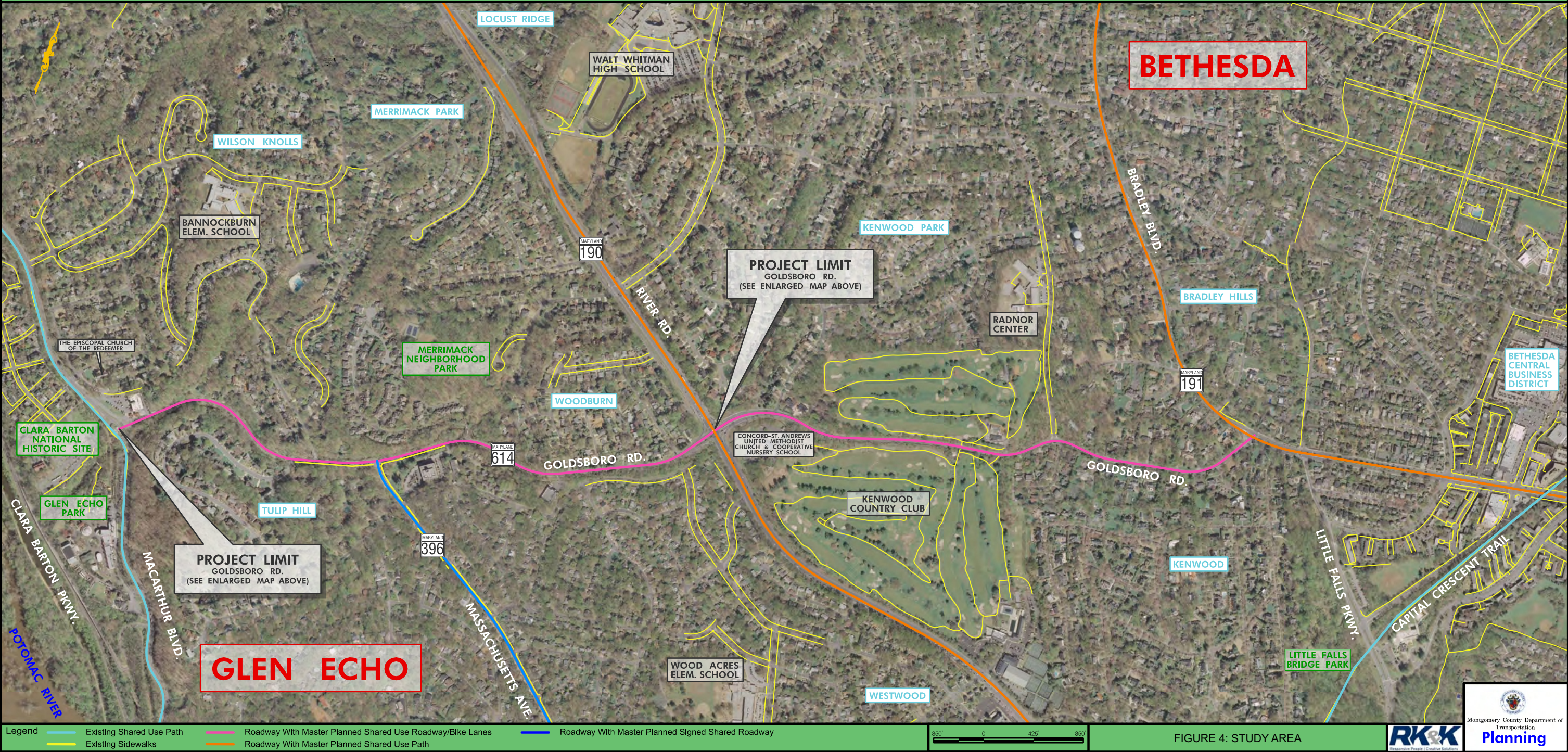
The *2005 Countywide Bikeways Functional Master Plan* proposes on-street bike lanes along Goldsboro Road (identified as Route #BL-1 in the *Countywide Bikeways Functional Master Plan*) within the limits of the study.

Nearby existing and proposed Master Plan bicycle facilities include (see **Figure 4** on the following page):

- MacArthur Boulevard (Route #DB-1, existing shared use path / proposed bike lanes)
– **directly connected to Goldsboro Road**



GOLDSBORO ROAD (MD 614) BICYCLE & PEDESTRIAN IMPROVEMENT PROJECT

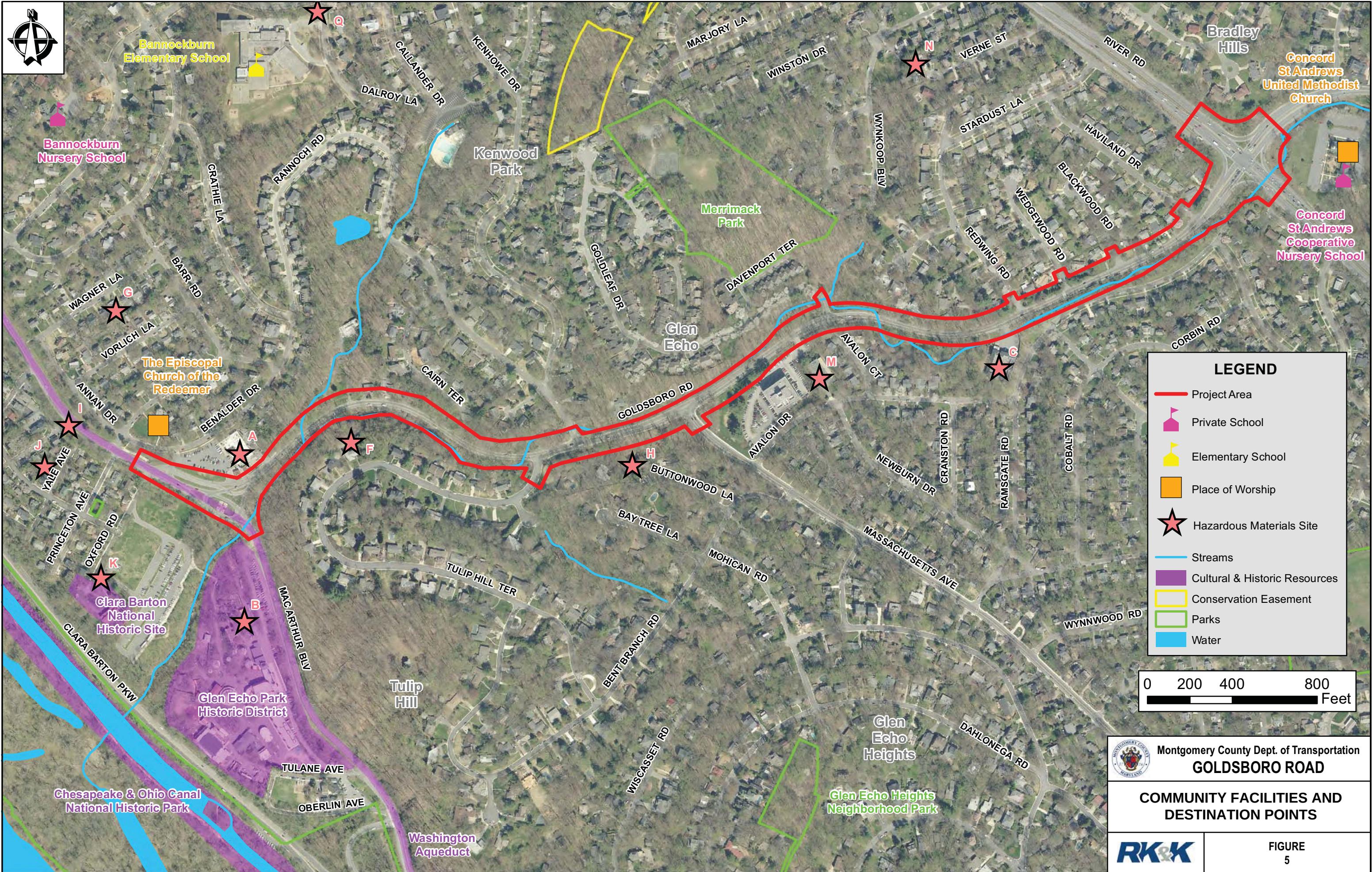


- Massachusetts Avenue (Route #SR-50, proposed signed shared roadway) - **directly connected to Goldsboro Road**
- River Road (Route # DB-2 – proposed shared use path / signed shared roadway) - **directly connected to Goldsboro Road**
- Bradley Boulevard (Route #DB-4, proposed shared use path / signed shared roadway) - **directly connected to Goldsboro Road with future Goldsboro Road improvements between River Road and Bradley Boulevard**
- Capital Crescent Trail (existing shared use path) – **connected to Bradley Boulevard**

2. Community Facilities and Destination Points

Community facilities and destination points within the study area include (see **Figure 5** on the following page):

- Glen Echo Park and Clara Barton National Historic Site (National Park Service managed sites) located just west of the Goldsboro Road / MacArthur Boulevard intersection with entrances in close proximity to Goldsboro Road. Pedestrians and bicyclists were observed crossing MacArthur Boulevard at the Goldsboro Road traffic circle to access these sites.
- Merrimack Neighborhood Park, a 10-acre multi-use recreational facility, is located just north of Goldsboro Road, with access off of Goldleaf Drive via Goldsboro Road.
- The Episcopal Church of the Redeemer located just north of the Goldsboro Road / MacArthur Boulevard intersection.
- Concord-St. Andrews United Methodist Church and Cooperative Nursery School located at the Goldsboro Road / River Road intersection.
- The MacArthur Boulevard Multi-Use Trail, which extends north-south through the project area along southbound MacArthur Boulevard.
- Wood Acres and Bannockburn Elementary Schools (less than ½ mile from Goldsboro Road), Thomas W. Pyle Middle School (approximately 1 ¼ mile from Goldsboro Road) and Walt Whitman High School (less than 1 mile from Goldsboro Road).



3. Existing Bicycle and Pedestrian Facilities

Existing travel lanes along Goldsboro Road are typically 11'-12' wide. Shoulders along the majority of the project corridor are typically only 2'-4' wide. In some spot locations, mainly east of Goldleaf Drive on the westbound side, the shoulders vary to approximately 8' wide. Approaching the Massachusetts Avenue intersection (where turn lanes are formed) shoulders reduce to approximately 1' wide. The existing shoulders provide some space for bicyclists, but widths are inconsistent and existing shoulders and pavement edges are deteriorated in many locations throughout the corridor. Bicyclists were observed utilizing the Goldsboro Road through lanes along the corridor.



Photo 2: Goldsboro Road looking west toward Massachusetts Avenue

There are limited pedestrian facilities along Goldsboro Road. The only continuous sidewalk is along the southern side of the roadway, from Tulip Hill Terrace to approximately ¼ mile east of Massachusetts Avenue. West of Massachusetts Avenue this sidewalk is concrete (5' wide) and east of Massachusetts Avenue this sidewalk is asphalt (approximately 4' wide). **Figure 4** on page 2 identifies existing sidewalk along the corridor.

There is one marked pedestrian crosswalk across Goldsboro Road located near Wedgewood Road. This crosswalk is a marked school crossing and it is adjacent to an existing pedestrian bridge over Minnehaha Branch, a stream that parallels and crosses Goldsboro Road through the limits of the project. There is an unmarked crossing with pedestrian ramps located at the intersection of Rannoch Road, providing access to existing bus stops on the eastbound and westbound sides of Goldsboro Road. There are no marked cross walks or pedestrian ramps at the Goldsboro Road / River Road and Goldsboro Road / MacArthur Boulevard intersections.

4. Public Transportation

Goldsboro Road is served by Ride-On Route 29, which operates from Bethesda Metro Station to Friendship Heights Metro Center. Weekday services for the route are provided from approximately 5:45 AM to 10:00 PM. All buses are wheelchair accessible.

Ride-On Route 29 services nine stops on Goldsboro Road between MacArthur Boulevard and River Road. Also, within the study area, there is one bus stop on MacArthur Boulevard (west side of traffic circle) and two bus stops on River Road (just north of Goldsboro Road). Existing bus stops include small sections of sidewalk near the stop or no sidewalk with access at the roadway shoulder. The bus stop with the highest ridership is the stop located just east of MacArthur Boulevard (near the Exxon Station)

with 39 riders on / 58 riders off. **Figure 4** on page 2 shows the locations of bus stops. **Table 2** identifies ridership (provided by Montgomery County Ride-On) at each stop.

Table 2: Goldsboro Road Bus Stop Ridership

Bus Stop Location	Direction	Riders On	Riders Off	Sidewalk / Pad at Stop	Shelter at Stop
Rannoch Road	Eastbound	1	0	Yes	No
Goldleaf Dive	Eastbound	3	6	Yes	No
Redwing Road	Eastbound	5	5	No	No
Haviland Drive	Eastbound	5	0	No	No
Haviland Drive	Westbound	7	3	No	No
Redwing Road	Westbound	1	17	No	No
Gold Leaf Dive	Westbound	2	4	No	No
Rannoch Road	Westbound	3	13	Yes	No
MacArthur Blvd.	Westbound	39	58	Yes	Yes

There are public school bus stops along Goldsboro Road serving Wood Acres Elementary School (three stops), Thomas W. Pyle Middle School (four stops) and Walt Whitman High School (five stops). The school bus stops are located at Rannoch Road, Tulip Hill Terrace, Goldleaf Drive, Wedgewood Road, Blackwood Road, Haviland Drive and at three residences along the corridor.



Photo 3: Goldsboro Road Bus Stop at Goldleaf Drive

5. Traffic and Safety

Field visits were performed in January 2013 to observe pedestrian and bicyclist activity along the corridor. Pedestrian and bicyclist volumes were relatively low during these observation periods, mainly believed to be a result of very cold temperatures. During the visit (6:00 AM to 7:00 PM), 36 pedestrians and 3 bicyclists were observed along Goldsboro Road.

Additional field visits were performed on a Friday and Saturday in April 2013 (both 7:00 AM to 7:00 PM) to observe pedestrian and bicyclist activity along the corridor during more favorable weather conditions. During the Friday visit 61 pedestrians and 17 bicyclists were observed. During the Saturday visit 38 pedestrians and 83 bicyclists were observed. Pedestrians (87 total during the April 2013 visits) were observed crossing at the MacArthur Boulevard traffic circle with destinations being Glen Echo Park, the MacArthur Road multi-use trail and an existing bus stop along MacArthur Boulevard on the south side of the circle. Without clear pedestrian routes (sidewalk / pedestrian ramps), these crossings occurred at various locations around and through the traffic circle.

Capacity analyses were performed at the signalized intersections along Goldsboro Road (River Road and at Massachusetts

Avenue). The results of the analyses showed that both intersections currently operate at level of service (LOS) D or better during both

the AM and PM peak hours on a typical weekday. Analyses were also performed to determine if the addition of pedestrian signal phasing would have an adverse impact on peak hour vehicular traffic operations. The analyses indicated that the addition of pedestrian phasing would have no impact on intersection performance, even with much higher pedestrian volumes that would be expected in warmer temperatures (see **Table 3** on the following page).



Photo 4: Pedestrians crossing MacArthur Blvd. traffic circle (Goldsboro Rd. on left, Glen Echo Park on right)

Table 3: Traffic Analysis Summary

Intersection	Peak Period	Existing Level of Service (Delay in sec./veh.)	Level of Service with Pedestrian Crossing Phase
Massachusetts Avenue	AM	C (26.5)	C (26.5)
	PM	C (24.7)	C (24.7)
River Road	AM	C (31.3)	C (31.3)
	PM	D (47.4)	D (49.4)
*Note: A sensitivity analysis was completed to determine the pedestrian volume threshold to yield on unacceptable level of service (LOS E). There would need to be more than 400 pedestrians crossing at each intersection to cause LOS E.			

A review of Maryland State Highway Administration (SHA) data on reported crashes along Goldsboro Road for a five year period (2007 – 2011) indicated there were no pedestrian-related crashes. There were a total of 22 crashes reported during this period with the predominant type being fixed-object/run-off-road collision.

SHA also provided crash data reported during a five year period (2008 – 2012) for MacArthur Boulevard from south/east of Goldsboro Road to Oxford Road. There were a total of 8 crashes with 3 crashes involving vehicles striking bicyclists. Aside from the bicycle-involved crashes, the most common crash type was the angle crash. Most crashes occurred during off-peak daytime hours on weekdays under dry pavement conditions. Only the 3 bicycle-involved crashes resulted in injuries; the remaining 5 crashes were property damage only.

B. Purpose of the Project

The purpose of the Goldsboro Road project is to:

- Enhance safety for bicyclists and pedestrians along the Goldsboro Road corridor
- Provide connections to existing and proposed bicycle and pedestrian facilities
- Improve access and links for bicyclists and pedestrians between homes, school, places of worship, parks
- Improve access for bicyclists and pedestrians to transit stops
- Comply with the 1990 Bethesda-Chevy Chase Master Plan and the 2005 Countywide Bikeways Functional Master Plan

C. Project Need

The need for the Goldsboro Road project is based on the following:

- Improve the bicycle and pedestrian network as well as access to destinations along and beyond the study area
- Address existing pedestrian and bicycle facility disconnects and inadequacies within the roadway section
- Create a safer environment for bicyclists and pedestrians that utilize the corridor

II. ALTERNATIVE EVALUATION

A. Introduction

Three build alternatives were developed to address the purpose and need for the Goldsboro Road Pedestrian and Bicycle Improvements project. The alternatives were developed to provide various levels of pedestrian and bicycle improvements through the corridor.

The three alternatives were presented to the community at the December 4, 2013 public meeting. Based on the public feedback and comments, a modified version of Alternative 2 was developed and is proposed as the Preferred Alternative.

B. Existing Conditions

1. Roadway

a. Functional Classification and Existing Lane Configurations

Table 4 below lists the Master-Planned functional classifications for Goldsboro Road as specified in the *1990 Bethesda-Chevy Chase Master Plan* as well as the existing and recommended lane configurations.

Table 4: Functional Classification and Existing Lane Configurations of Study Area Roadways				
Roadway Name and Master Plan Designation	Functional Classification	Limits	Existing Lane Configuration	Master Plan Recommendation
Goldsboro Road	A-84 Arterial	MacArthur Boulevard to Massachusetts Avenue	Two-Lane, Two-Way Undivided	Maintain 2 Lanes
	M-93 Major Highway	Massachusetts Avenue to River Road	Two-Lane, Two-Way Undivided	Possible Consideration of 4 Lanes in the Long Term

b. Traffic Control

Within the Project Area, there are two signalized intersections: Goldsboro Road at Massachusetts Ave, and Goldsboro Road at River Road. The intersection of MacArthur Boulevard and Goldsboro Road is a traffic circle with unconventional yield conditions. The remainder of the intersections within the Project Area are stop controlled on the minor approaches only.

Traffic analyses were performed for the three major intersections

- Goldsboro Road at MacArthur Boulevard
- Goldsboro Road at Massachusetts Avenue

- Goldsboro Road at River Road

The results of the traffic analyses were used to determine lane configurations and turn bay lengths for the intersections. The full Traffic Report can be found as Appendix I.

c. Public Right-Of-Way

The existing Right-of-Way width for Goldsboro Road varies significantly, but is typically a minimum of 75', with some areas having a continuous width of 100', and some areas being much wider, particularly at the intersection of Massachusetts Avenue.

Minnehaha Branch acts as an additional constraint on the sidewalk and roadway widening, and the wide Right-Of-Way includes the stream in many locations.

d. Typical Section

Goldsboro Road between MacArthur Boulevard and River Road is a two-lane, two-way undivided roadway. The existing typical section consists of two 11-foot travel lanes, with paved shoulders that vary in width from 2 feet to 8 feet. The roadway is primarily open section, but several areas are closed section with curb and gutter. Existing sidewalk, where present, is 5 feet wide, and located immediately behind the curb and gutter.

2. Transit

Goldsboro Road is served by Ride-On Route 29, and there are nine bus stops on Goldsboro Road within the Project Area, as well as three additional bus stops on MacArthur Boulevard and River Road, immediately adjacent to the Project Area. See the Purpose and Need section for more detailed transit information.



Photo 5 – Goldsboro Road, looking East at Exxon

3. Bicycle/Pedestrian Access

Existing bicycle and pedestrian access along Goldsboro Road is minimal. There is sidewalk along the south side of Goldsboro Road from Tulip Hill Terrace to the bus stop

opposite Goldleaf Drive. For the rest of the Project Area, pedestrians walk on the shoulder, or on the ground next to the pavement, or behind the roadway guardrail.

Within the Project Area, bicyclists typically ride on the paved shoulders, but since the shoulders vary in width, they will often ride within the roadway travel lanes.

C. Alternatives Evaluation

1. Proposed Typical Section of Goldsboro Road

The proposed typical section for the three Goldsboro Road Alternatives share several common elements:

- Two 11-foot travel lanes
- 5' to 5.5'-foot bike lane in each direction (5' in open section, 5.5' in closed section)
- 5-foot sidewalk and curb and gutter along north side

Other elements of the typical section, such as green buffer, vary among the alternatives, and will be discussed under each Alternative.

2. Common Elements

a. Travel Lanes

The two 11-foot travel lanes are based on MCDOT Standard MC-2004.26 Suburban Minor Arterial Road - 2 Lanes with Bike Lanes (see **Appendix C**). The 11-foot lanes also match the existing width of the travel lanes.

b. On-Road Bike Lanes

The on-road bike lanes were included because they are proposed in the *2005 Countywide Bikeways Functional Master Plan* along Goldsboro Road, and address the project's purpose and need. The 5.5-foot bike lane width (measured to face of curb) was selected based on MCDOT Standard MC-2004.26 Suburban Minor Arterial Road - 2 Lanes with Bike Lanes. In open sections, the 5-foot width was based on MCDOT Standard MC-2004.33 Rural Minor Arterial Road - Open Section: 2 Lanes w/ Bike Lanes (see **Appendix C**).

The design of the bike lanes is consistent with the SHA May 2013 Bicycle Policy and Design Guidelines.

c. Sidewalk

In order to address the project's purpose and need of improving pedestrian access, continuous sidewalk along one side of the roadway was identified as an essential element of all alternatives. The north and south side of Goldsboro Road

were compared and evaluated for the feasibility and effectiveness of locating the sidewalk on each side.

Since there are pedestrian destinations on both sides of the road, they were both considered to be effective in improving pedestrian access. However, due to site constraints such as Minnehaha Branch, building sidewalk along the south side of Goldsboro Road would have required a great deal of roadway reconstruction. So the north side was selected for the continuous sidewalk.

Along the south side, existing sidewalk would be replaced in the same locations, as well as being extended to adjacent intersections, or to connect crosswalks to adjacent roadways crosswalks (at MacArthur Boulevard, for example).

All sidewalks will be designated accessible routes, meeting all ADA requirements, including the provision of ADA-compliant pedestrian ramps.

The 5-foot width of the sidewalk was based on MCDOT Standard MC-2004.26 Suburban Minor Arterial Road - 2 Lanes with Bike Lanes (see **Appendix C**).

d. Lighting

In order to improve lighting along the corridor, all alternatives include the replacement of the existing roadway lighting with updated 80 Watt LED luminaires mounted to each utility pole along the corridor. In addition to the roadway lighting, colonial post-top LED luminaires are proposed along the proposed sidewalks. The Phase 2 study should conduct a detailed lighting study, especially at the crossings, to assess its adequacy in regard to AASHTO standards and IES – RP8 guidelines.

e. Retaining Walls

In several locations along the alternatives, retaining walls are proposed in order to reduce impacts to adjacent properties or environmental features. These walls vary in height, typically 3 - 6' in height, and some are located in cut sections, and some in fill sections.

f. Culvert Extensions

There are three locations along Goldsboro Road where existing culverts pass underneath the roadway where widening is proposed as part of the alternatives. In order to accommodate the widening, these culverts would be lengthened, and the impacted headwalls / end sections would be reconstructed.

3. Alternatives Analysis

Three build alternatives were developed to improve bicycle and pedestrian access through the Project Area, and address the Project Purpose and Need.

a. Alternatives

i. Alternative 1 – Sidewalk + Bike Lanes

Alternative 1 minimizes impacts, while still providing all the common elements that were identified as essential to meeting the purpose and need. The sidewalk along the north side of the roadway is located directly behind the curb. There is still separation between pedestrians and vehicular traffic, because of the bike lanes located between the travel lanes and curb.

See the proposed Typical Section for Alternative 1 on the following page, **Figure 6**, and see the proposed plans on pages 16 and 17, **Figure 9**.

ii. Alternative 2 – Sidewalk with Green Buffer + Bike Lanes

Alternative 2 is similar to Alternative 1, except that it adds 6.5 feet of green buffer (as measured to the face of curb) between the curb and the sidewalk. This buffer is based on MCDOT Standard MC-2004.08A Suburban Arterial Road - 4 Lanes with Bike Lanes (see **Appendix C**). This standard was used because the wider buffer shown in Suburban Minor Arterials would create excessive impacts, and would not significantly increase the feeling of safety for pedestrians.

See the proposed Typical Section for Alternative 2 on the following page, **Figure 7**, and see the proposed plans on pages 18 and 19, **Figure 10**.

iii. Alternative 3 – Sidewalk Both Sides with Green Buffer + Bike Lanes

Alternative 3 is similar to Alternative 2, except that the green buffer and continuous sidewalk is provided along both the north and south side of the roadway.

See the proposed Typical Section for Alternative 3 on the following page, **Figure 8**, and see the proposed plans on pages 20 and 21, **Figure 11**.

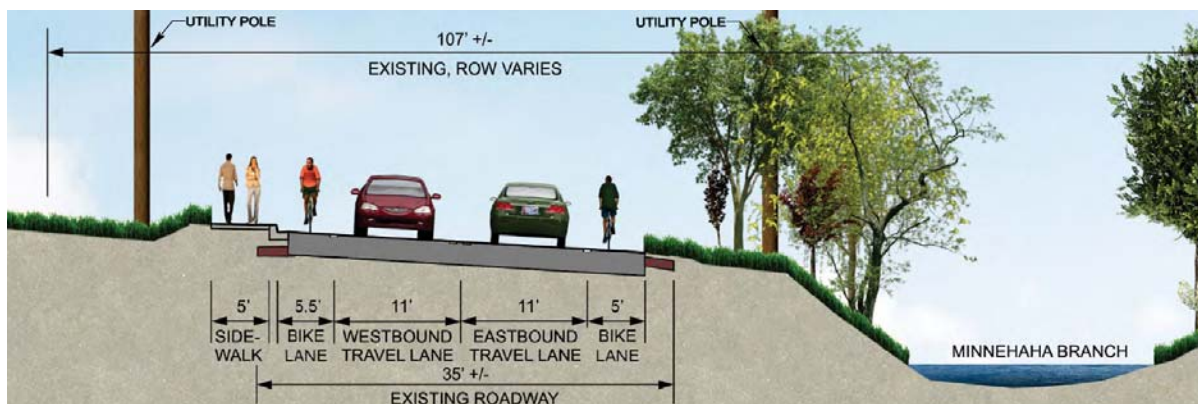


Figure 6 - Typical Section - Alternative 1 - Sidewalk + Bike Lanes



Figure 7 - Typical Section - Alternative 2 - Sidewalk with Green Buffer + Bike Lanes

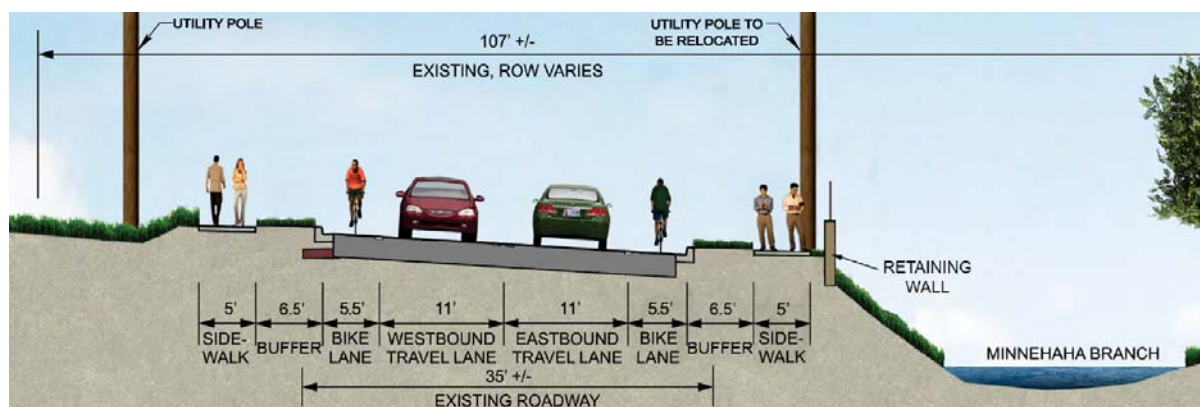


Figure 8 - Typical Section - Alternative 3 - Sidewalk Both Sides with Green Buffer + Bike Lanes

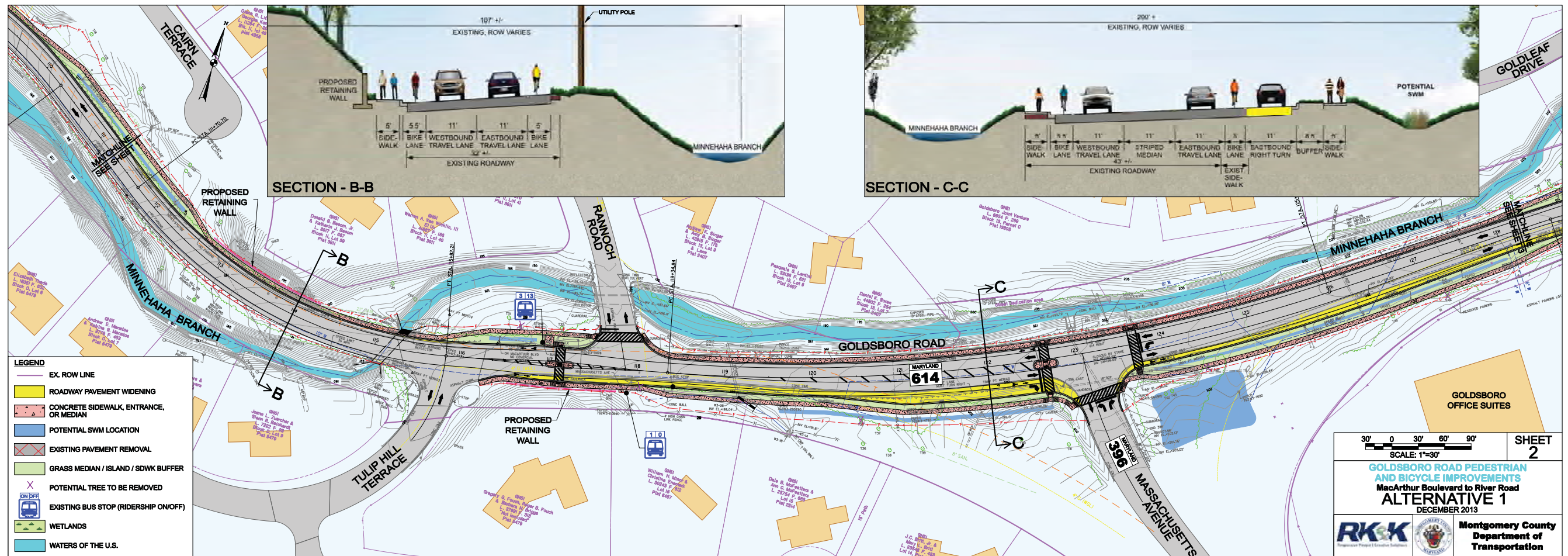
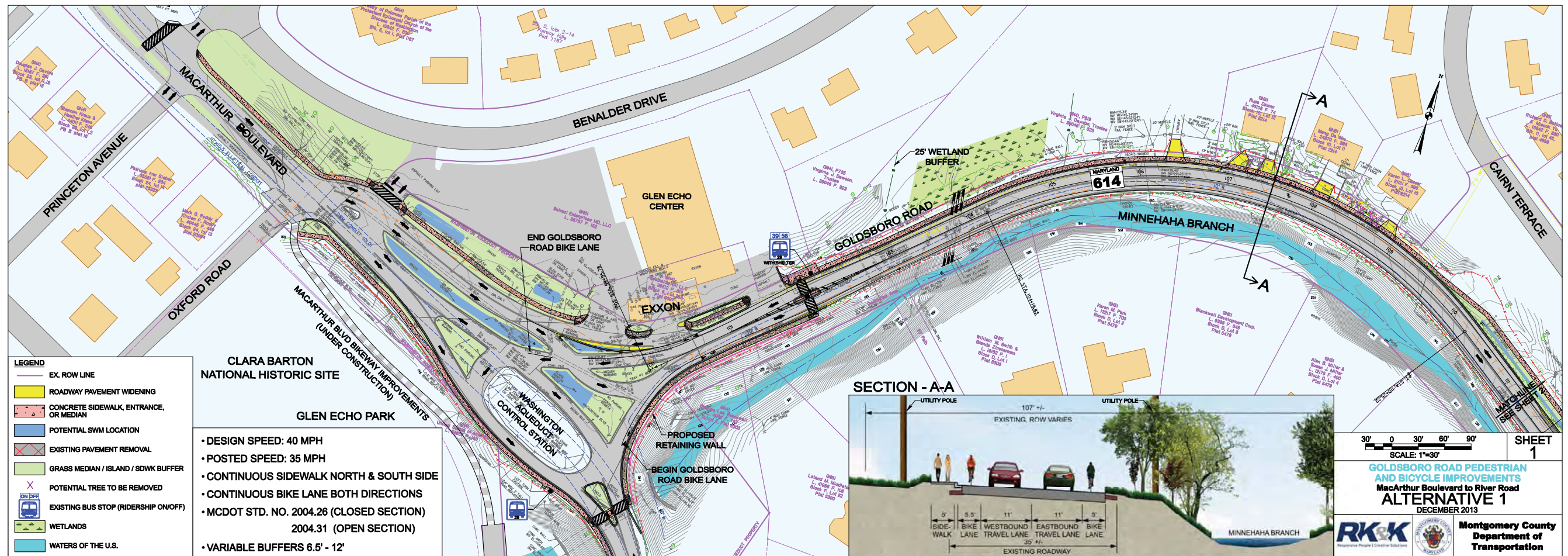


FIGURE 9
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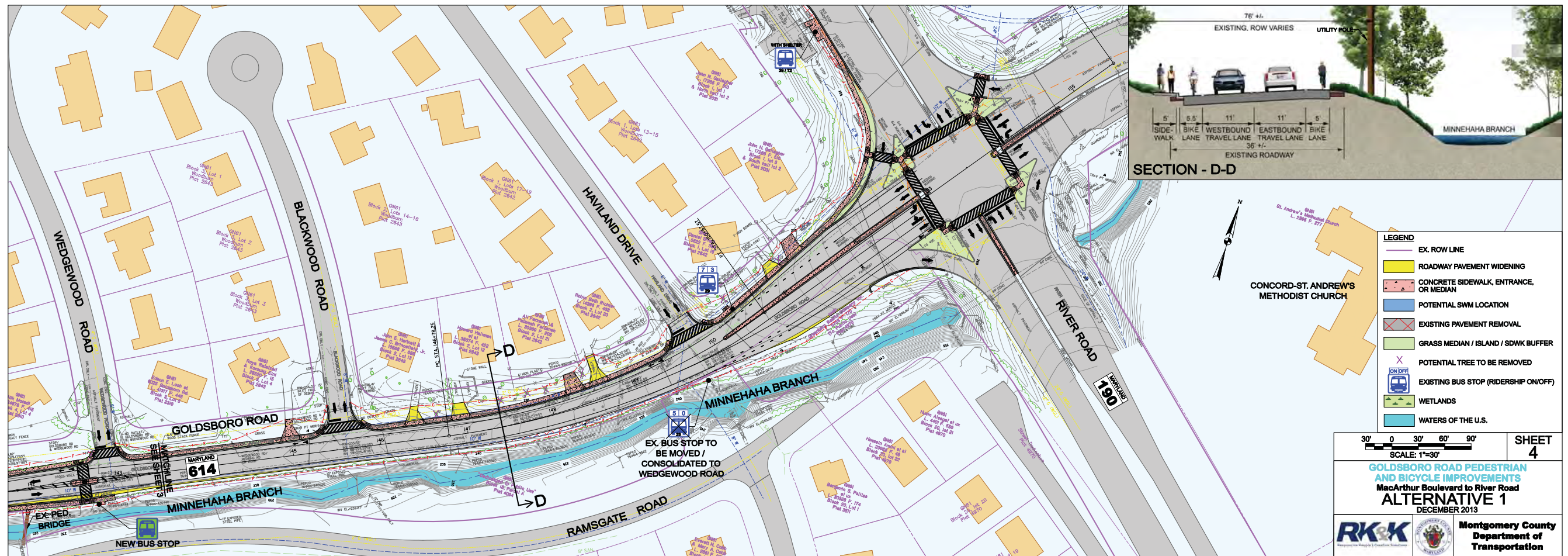
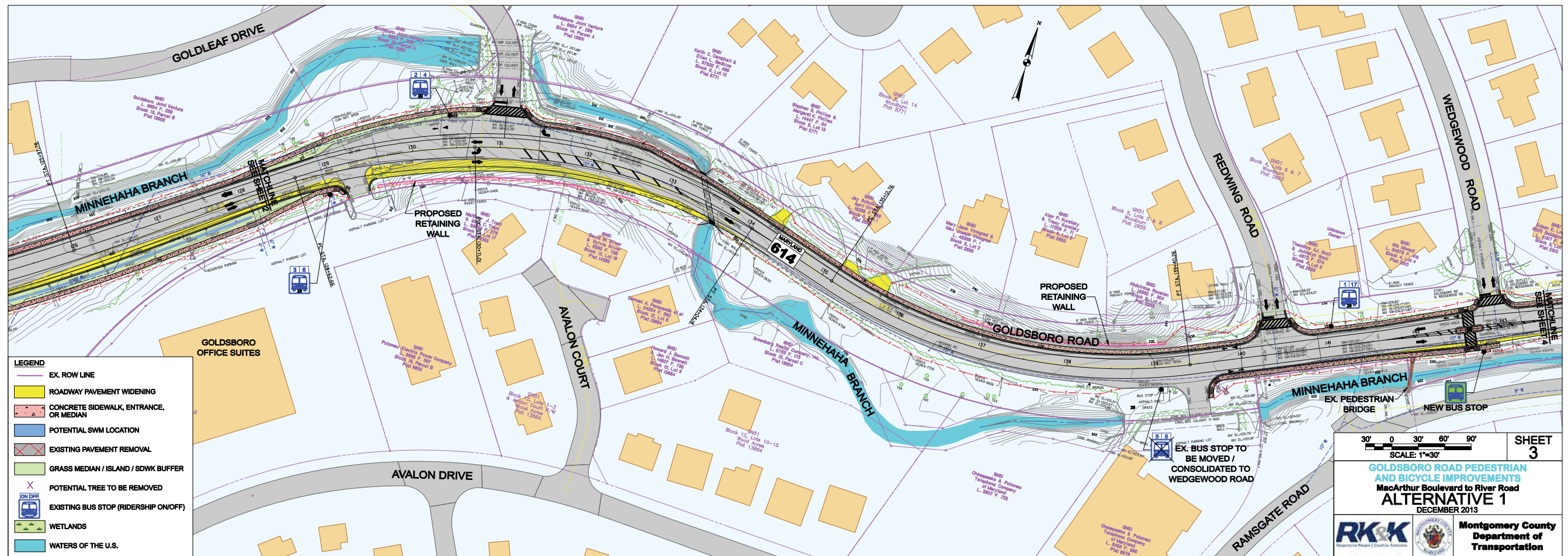


FIGURE 9
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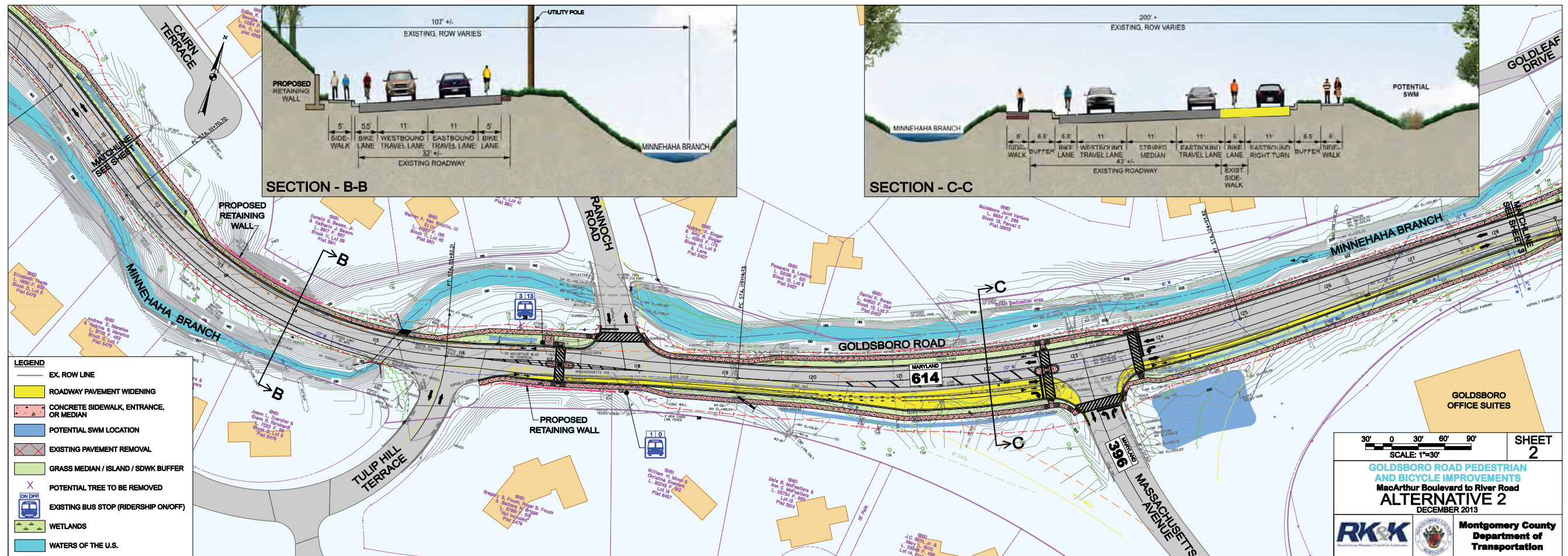
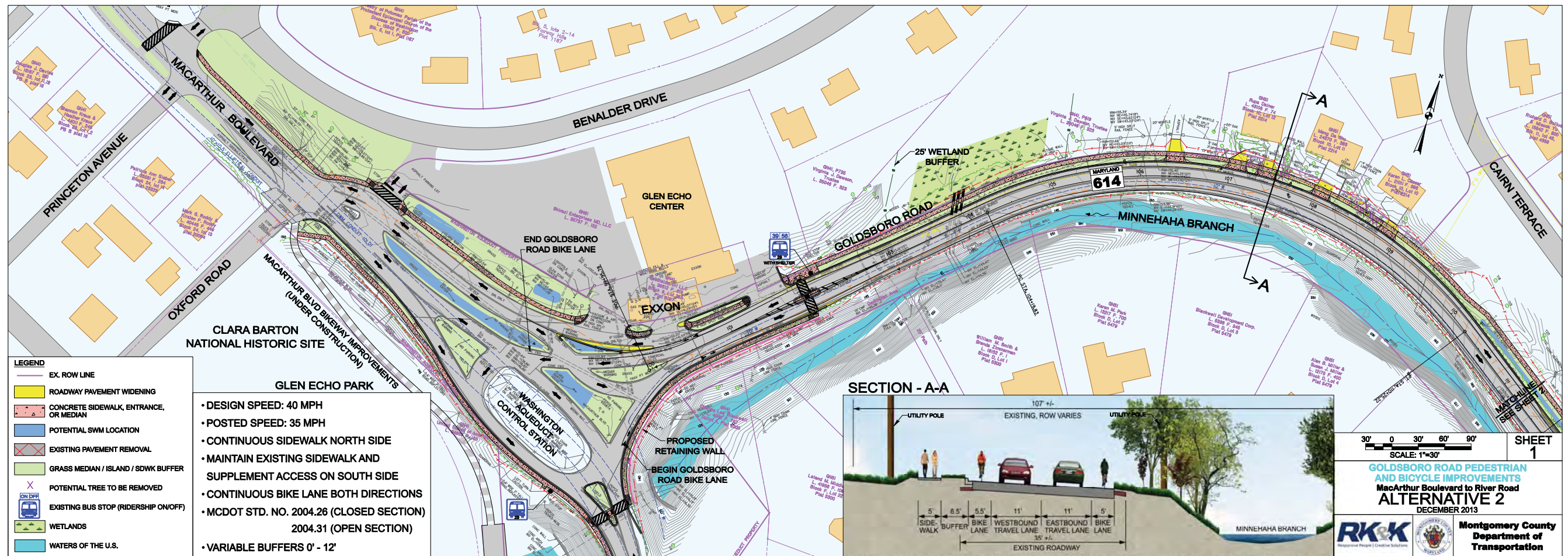


FIGURE 10
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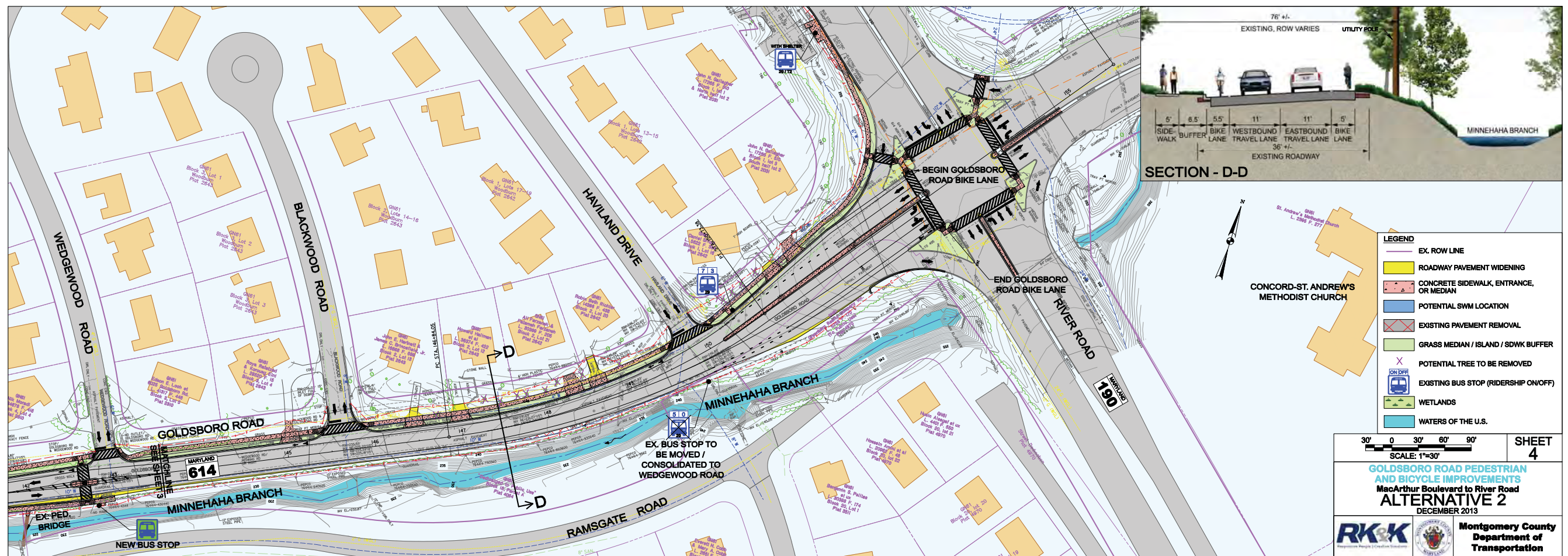
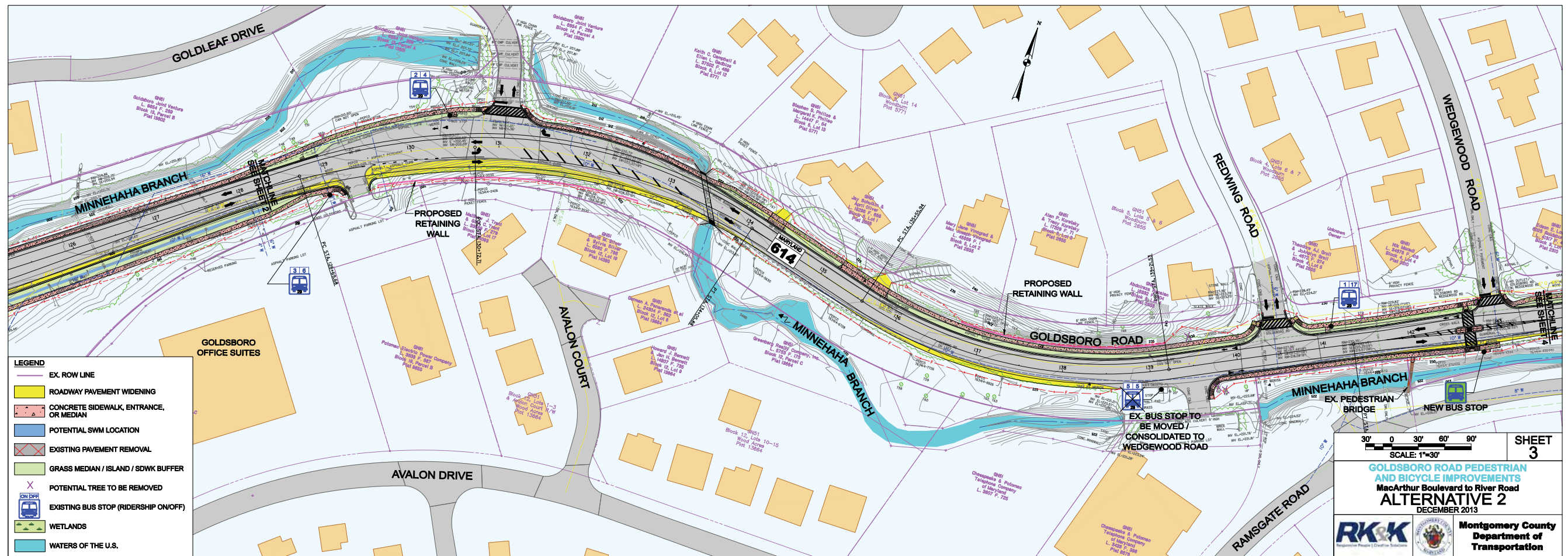


FIGURE 10
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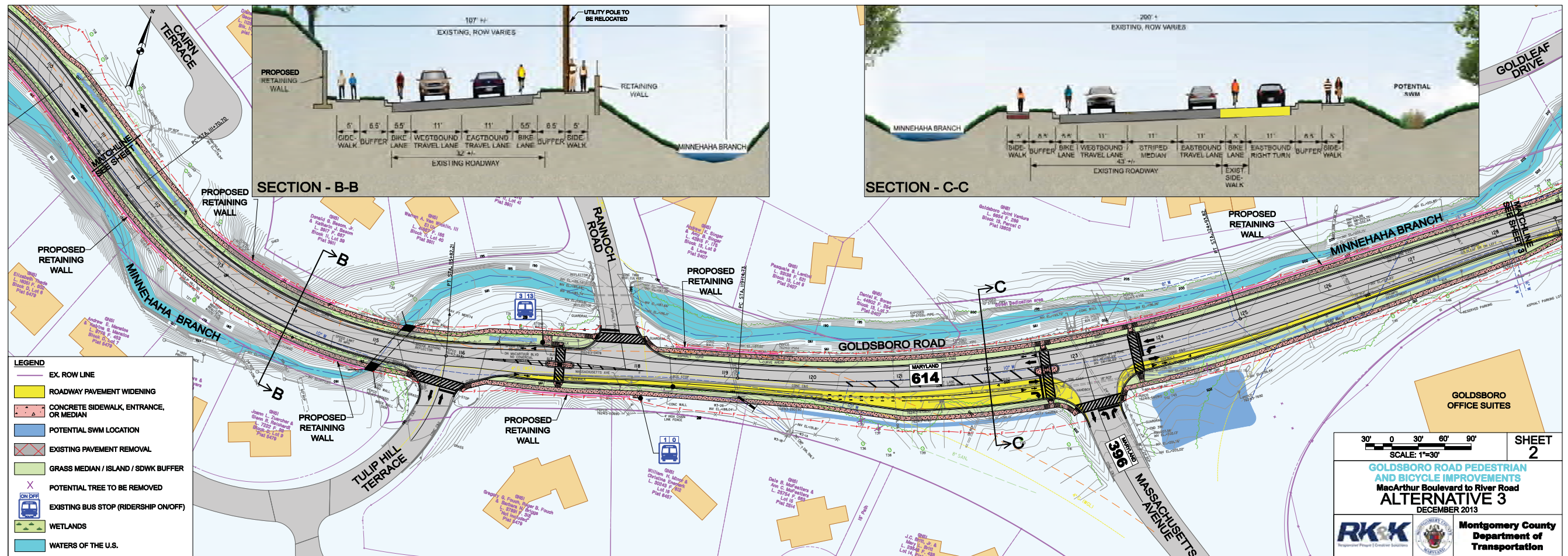
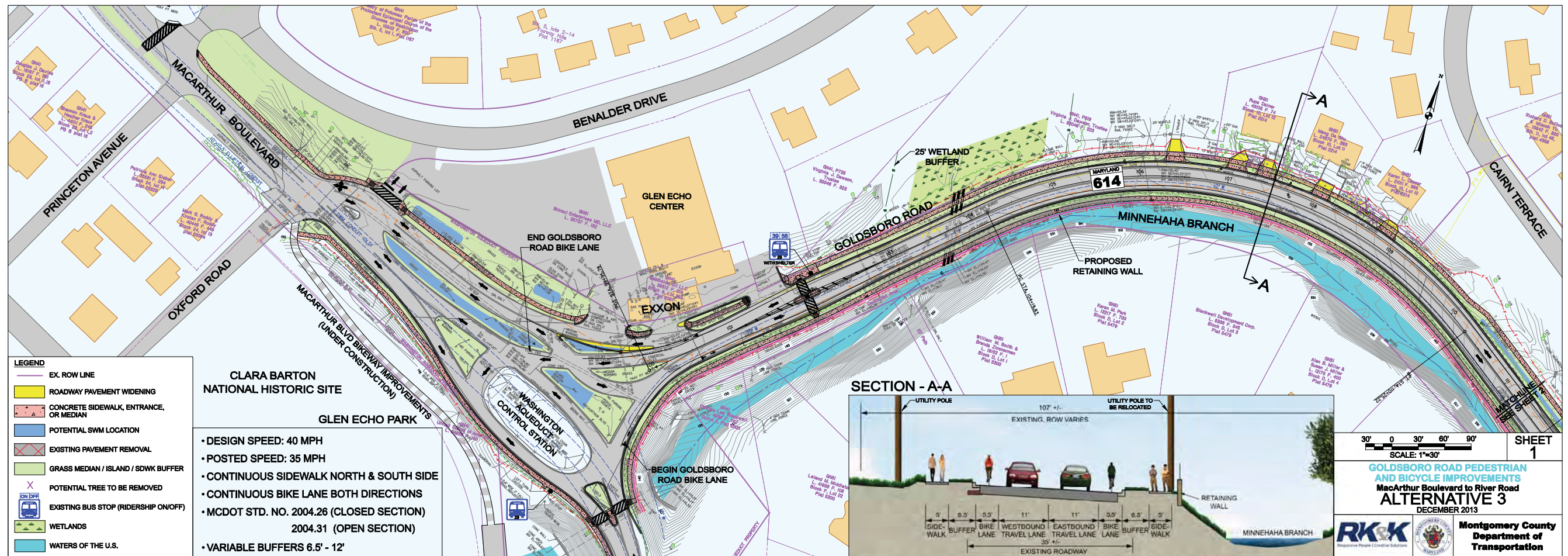


FIGURE 11
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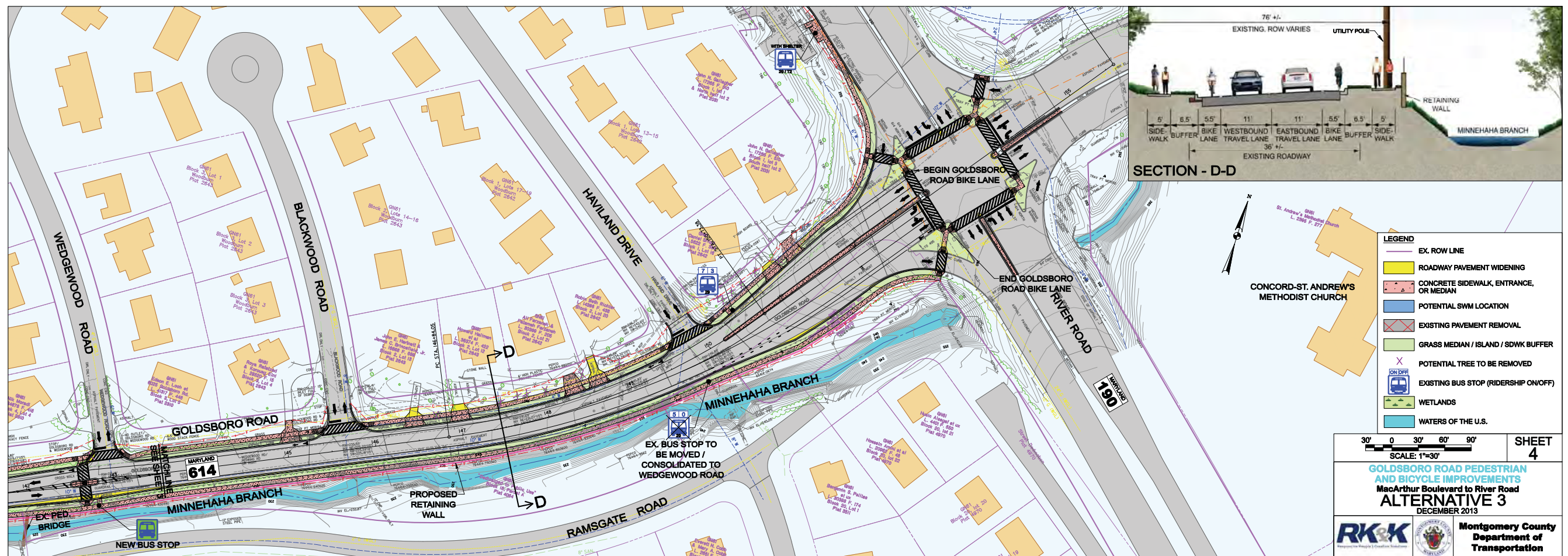
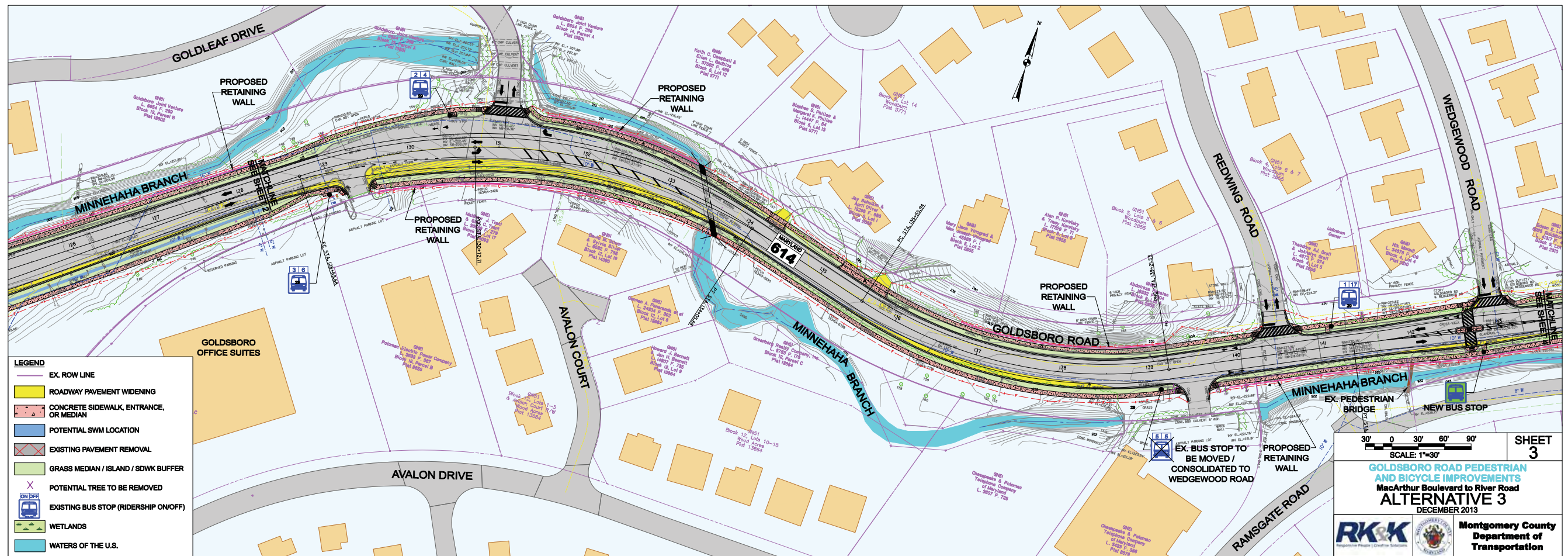


FIGURE 11

b. Comparison of Alternatives

i. Benefits Comparison

All the Alternatives address the Project's Purpose:

- Enhance safety for bicyclists and pedestrians along the Goldsboro Road corridor
- Provide connections to existing and proposed bicycle and pedestrian facilities
- Improve access and links for bicyclists and pedestrians between homes, school, places of worship, parks
- Improve access for bicyclists and pedestrians to transit stops
- Comply with the 1990 Bethesda-Chevy Chase Master Plan and the 2005 Countywide Bikeways Functional Master Plan

and address the Project's Need:

- Improve the bicycle and pedestrian network as well as access to destinations along and beyond the study area
- Address existing pedestrian and bicycle facility disconnects and inadequacies within the roadway section
- Create a safer environment for bicyclists and pedestrians that utilize the corridor

Alternative 3 does meet these to a greater degree, since it provides a larger continuous sidewalk network, but the inclusion of numerous crosswalks and pedestrian refuges in Alternatives 1 and 2 ensures that they provide a safe network connecting all destinations in the Project Area.

Alternative 2 meets the purpose and need slightly better than Alternative 1 due to the improve comfort and safety from the green buffer, but overall the benefits of Alternative 1 and 2 are similar.

ii. Impacts Comparison (see Table 5 on page 30)

Alternative 3 has significantly greater environmental impacts compared to the other alternatives, due to the construction of additional sidewalk adjacent to Minnehaha Branch, where it would require retaining walls, and still causes considerable impacts to the stream.

Alternatives 1 and 2 have similar amounts of impacts. Alternative 1 eliminated the green buffer in all areas in order to absolutely minimize the impacts. Alternative 2 eliminates the green buffer in select areas where it would otherwise impact the stream. So in comparing Alternatives

1 and 2, Alternative 2 adds the green buffer only in areas where doing so would not create significant impacts.

iii. Selection of Preferred Alternative

Alternative 3 was discarded from consideration for preferred alternative because of its considerable environmental impacts. Since there are other feasible alternatives, it is likely that this alternative would not be deemed permissible by MDE or the U.S. Army Corps of Engineers. Alternative 1 was discarded from consideration because its reduction in impacts - its only benefit compared to Alternative 2 - was not significant.

Alternative 2 was selected as the Preferred Alternative because it best meets the project's Purpose and Need of improving pedestrian and bicycle access and safety, without causing excessive impacts. Alternative 2 does incorporate aspects of Alternative 1 by eliminating the green buffer in select locations to reduce impacts. During the design phase, refinements will be performed for the Preferred Alternative to minimize impacts, including maintaining natural overland sheet flow.

c. Goldsboro Road / MacArthur Boulevard Intersection Options

During the development of the Alternatives, the project team identified that it would be desirable to reconfigure the existing unconventional intersection of MacArthur Boulevard and Goldsboro Road, in order to simplify the pedestrian and bicycle crossing movements, while also improving operation and safety of the intersection for all users, including vehicles, pedestrians, and cyclists.

Three conventional intersection options (A, B and C), as described below, were evaluated. As a result of the study, all of the three options were determined to be infeasible due to the presence of the historic Washington Aqueduct facilities. While all three options were designed to avoid the control station within the existing intersection, each would have necessarily routed traffic on top of the existing aqueduct in areas that could be damaged by heavy truck traffic. In order to maintain truck access to the neighborhoods west of MacArthur Boulevard, it is necessary to maintain the "bypass" lanes to the north of the existing traffic circle, which does not leave enough room to accommodate a conventional intersection configuration. See **Appendix J** for the complete Goldsboro Road / MacArthur Boulevard Intersection Improvement Feasibility Study.

i. Intersection Option A

This Option (see **Figure 12** on the following page) reconfigures Goldsboro Road and the north leg of MacArthur Boulevard into a through movement, with the south leg of MacArthur Boulevard and the Glen Echo

Center driveway forming the minor approaches. The intersection would be signalized, in order to maintain an acceptable level of service (LOS).

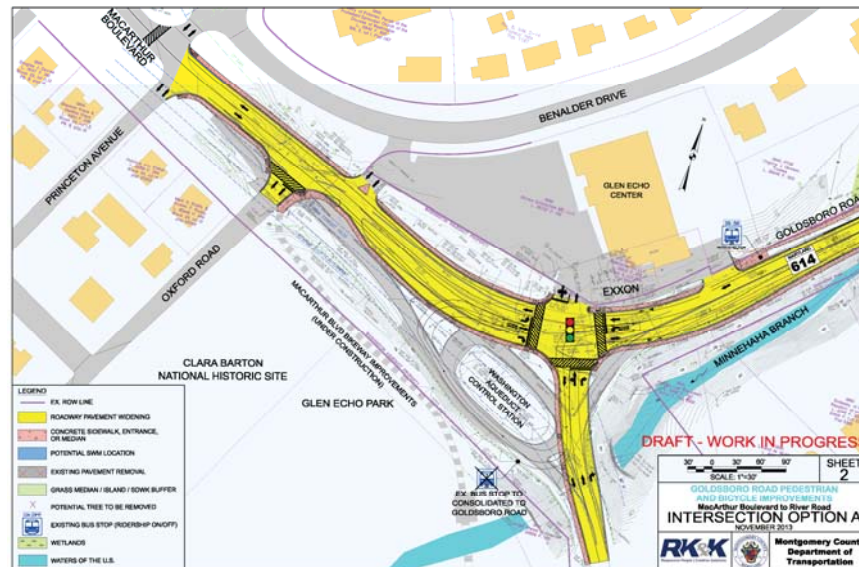


Figure 12 – Goldsboro Road / MacArthur Blvd Intersection Option A

ii. Intersection Option B

This Option (see **Figure 13**) maintains MacArthur Boulevard as the through movement, with Goldsboro Road forming the minor approach. The Glen Echo Center driveway would be closed under this Option, requiring customers to access via MacArthur Boulevard to the north, or through the Exxon driveway to the east. The intersection would be signalized, in order to maintain an acceptable LOS.

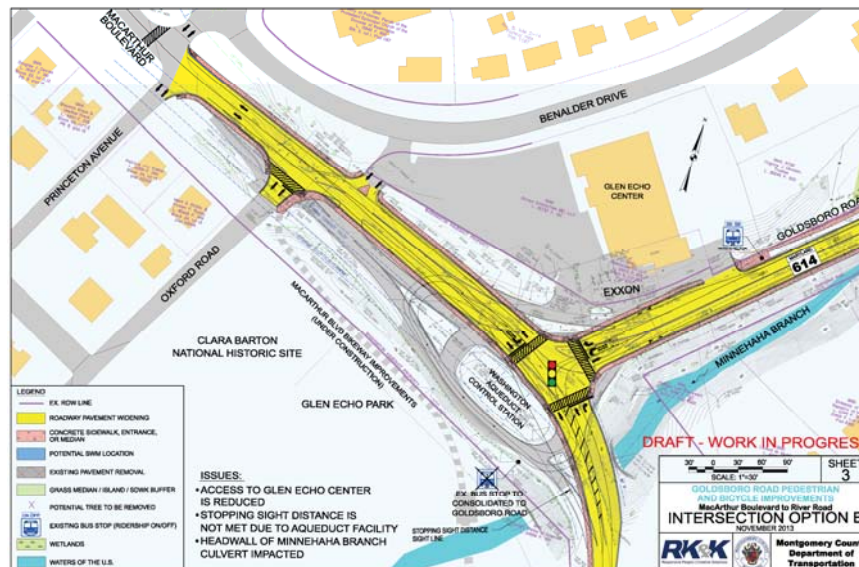


Figure 13 – Goldsboro Road / MacArthur Blvd Intersection Option B

iii. Intersection Option C

This Option (see **Figure 14**) reconfigures the intersection as a modern roundabout, requiring drivers to yield to vehicles within the roundabout, contrary to how it operates under the existing conditions. This change would improve the safety of the intersection, but would also reduce the capacity. In order to maintain an adequate LOS, the single-lane roundabout shown below would need to be widened to a two-lane roundabout, impacting the Washington Aqueduct control station or Glen Echo Center.

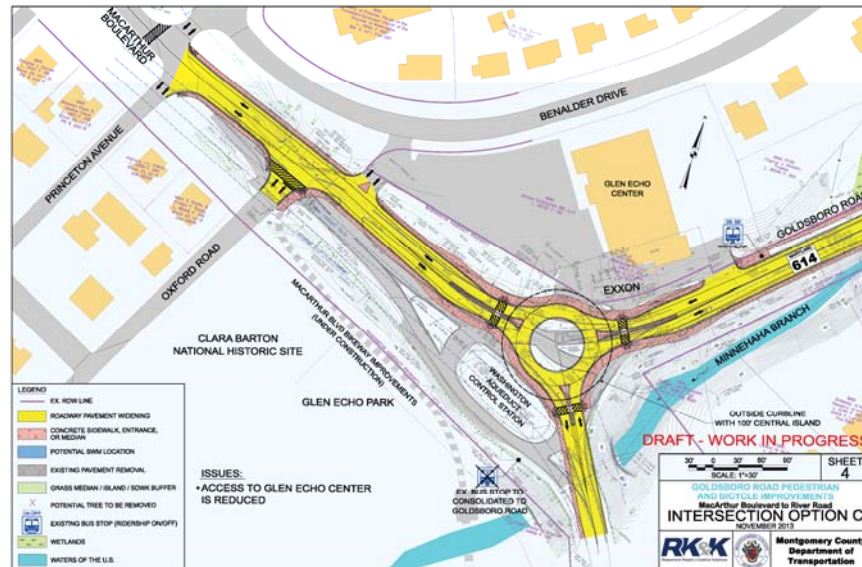


Figure 14 – Goldsboro Road / MacArthur Blvd Intersection Option C

4. Preferred Alternative (See **Figure 15** on pages 27 and 28)

The Preferred Alternative is based on Alt. 2, which was presented at the public meeting. The Preferred Alternative incorporates refinements suggested by the public and the project team. The proposed traffic operation features along Goldsboro Road are subject to review and approval of SHA. Important features of the Preferred Alternative include:

- Two 11-foot travel lanes along Goldsboro Road.
- 5 to 5.5-foot bike lane in each direction. This requires roadway widening along the south side of Goldsboro Road at some locations.
- A proposed 8' min. wide shared use path follows the east side of MacArthur Boulevard to provide a connection between the Exxon bus stop / crosswalk and the existing crosswalk at Princeton Avenue / Dunrobbin Drive.
- Sidewalk follows the west side of the MacArthur Boulevard traffic circle, to provide a connection between the MacArthur Boulevard Bikeway to the bus stop on the west side of the MacArthur Boulevard traffic circle. Portions of this sidewalk encroach on the National Park Service (NPS) property. If NPS approval is not obtained, the improvements between Oxford Road and the bus stop will be excluded.

- A proposed 8' min. wide shared use path from the bus stop on the west side of the MacArthur Boulevard traffic circle, continuing to the proposed crosswalk across the southern leg of the MacArthur Boulevard traffic circle and to the entrance to Glen Echo Park.
- A proposed crosswalk and pedestrian refuge provides a crossing of Goldsboro Road at the Exxon bus stop.
- A proposed 8' min. wide shared use path is provided along the south side of Goldsboro Road to connect the proposed Exxon bus stop / crosswalk, and the proposed crosswalk across the southern leg of the traffic circle.
- 4' wide bikeable shoulders are provided along the northbound and southbound lanes of MacArthur Boulevard between Oxford Road and the entrance to Glen Echo Park (i.e. north and south of the traffic circle).
- A 5' wide sidewalk is provided along the north side of Goldsboro Road from the Exxon bus stop / cross walk to River Road.
- A proposed crosswalk and pedestrian refuge provides a crossing of Goldsboro Road between Tulip Hill Terrace and Rannoch Road.
- Proposed crosswalks provide crossings of Goldsboro Road at Massachusetts Ave.
- The existing traffic signals at Massachusetts Avenue and River Road are proposed to be reconstructed. The new signals will include Accessible Pedestrian Signals and Countdown Pedestrian Signals.
- The existing sidewalk on the south side of Goldsboro Road, east of Tulip Hill Terrace, is reconstructed as a 5' wide sidewalk and extended further east to a proposed crosswalk and pedestrian refuge at Goldleaf Drive. The location of this crosswalk allows approaching drivers from both directions to see pedestrians entering the crosswalk.
- The existing crosswalk at Wedgewood Road is reconstructed, and a proposed pedestrian refuge provides a safer crossing of Goldsboro Road.
- A 5' wide sidewalk is provided along the south side of Goldsboro Road between the Verizon facility at 6200 Goldsboro Road and the reconstructed crosswalk and proposed pedestrian refuge at Wedgewood Road.
- The existing pedestrian bridge over Minnehaha Branch on the south side of Goldsboro Road near Wedgewood Road is proposed to be replaced as part of this project. A 5' sidewalk or 8' min wide shared use path will be provided at the south approach of the bridge to connect to the existing sidewalk network along Ramsgate Road. The width of the proposed bridge and south approach will be determined during design to address the public input in the design phase and comply with AASHTO, SHA and MCDOT design guidelines and criteria.
- The bus stops on the south side of Goldsboro Road at Verizon facility and opposite Haviland Drive are relocated / consolidated to one bus stop at the reconstructed crosswalk at Wedgewood Road.
- The sidewalk on the north side of Goldsboro Road continues along the west side of River Road to connect to the existing bus stop and shelter.
- Pedestrian crosswalks are provided for all legs of the Goldsboro Road and River Road intersection and associated right-turn ramps except the right-turn ramp from the northbound of Goldsboro Road to the eastbound of River Road.
- Replace existing roadway lighting with 80 Watt LED luminaires mounted to utility poles, and install colonial post-top LED luminaires along proposed sidewalks.

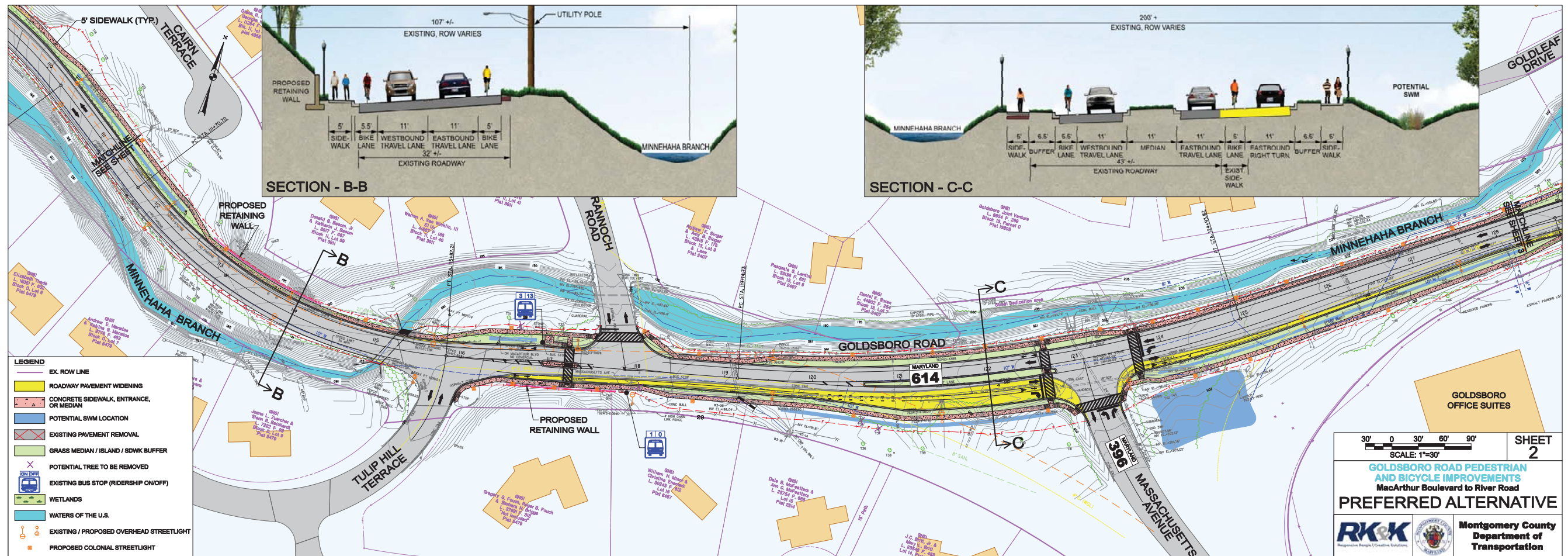
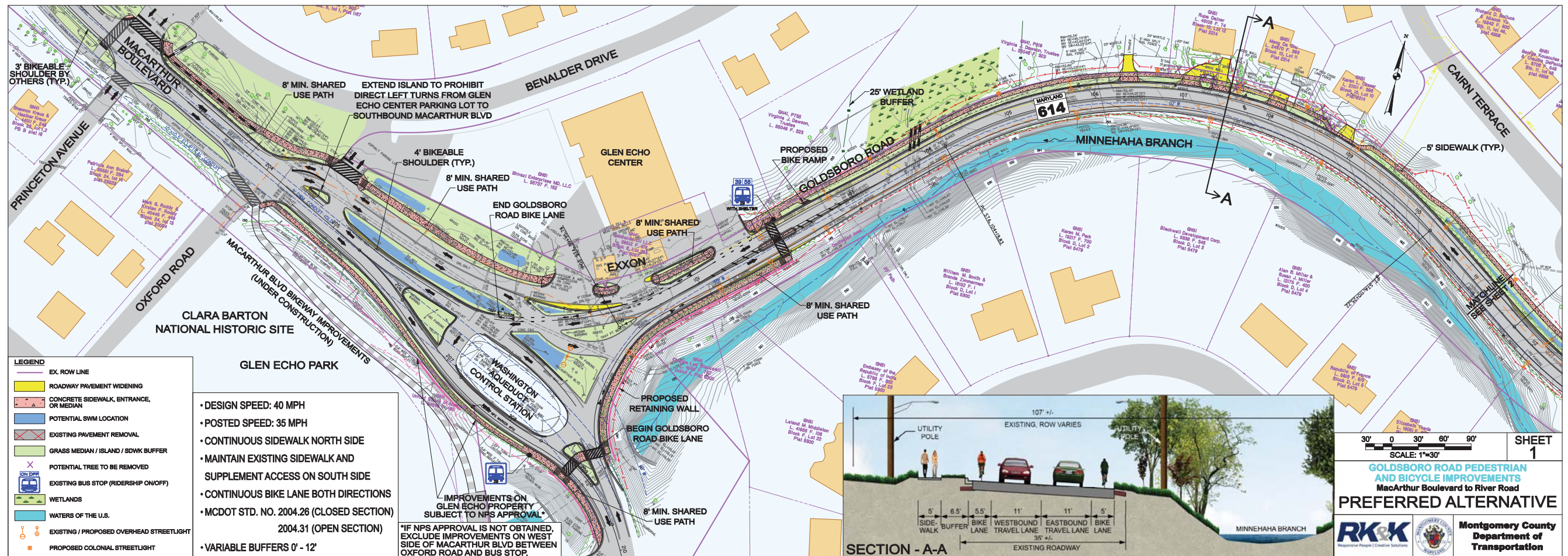
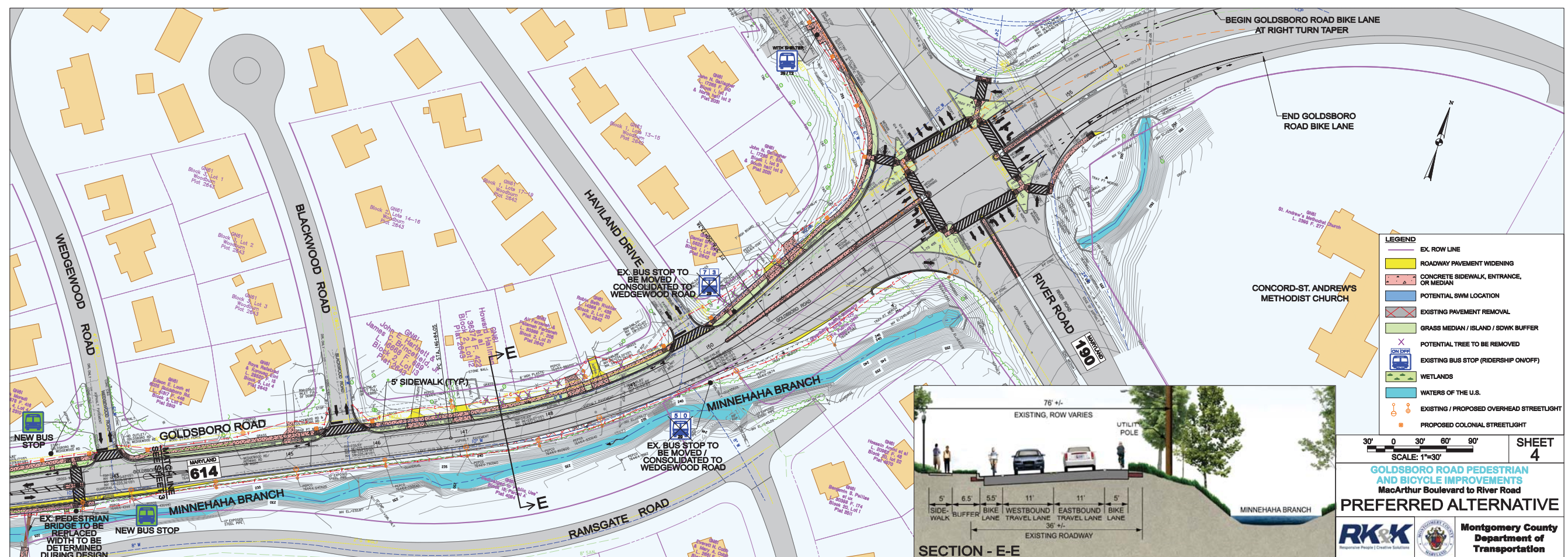
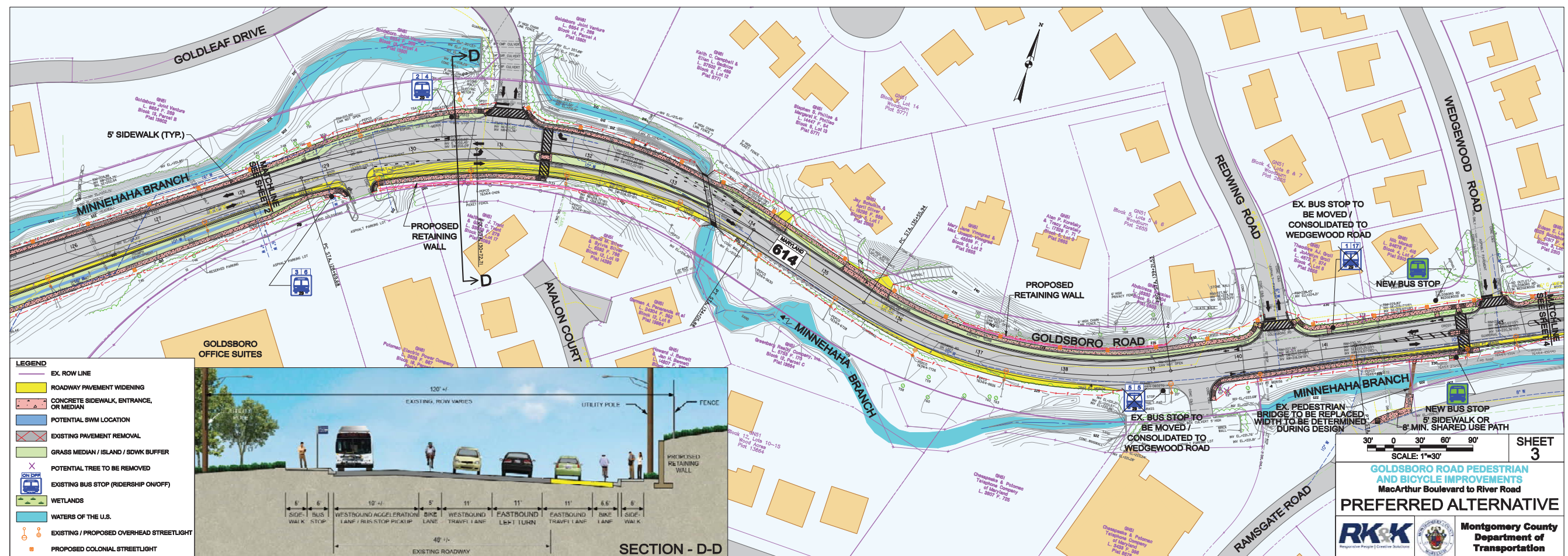


FIGURE 15
27



5. Washington Aqueduct / U.S. Army Corps of Engineers Coordination

The Washington Aqueduct is a historic feature, which provides drinking water to parts of Washington, D.C. and Virginia. The aqueduct runs underneath MacArthur Boulevard, and is the reason for strict weight restrictions on MacArthur Boulevard. During design and construction, the proposed improvements and construction methods should be closely coordinated with the U.S. Army Corps of Engineers (USACE).

The Right-of-Way for MacArthur Boulevard is owned by USACE.

6. Stormwater Management

Stormwater management (SWM) facilities will be provided to treat additional impervious area associated with the proposed sidewalk, roadway widening, and bike lane construction. SWM design will incorporate the latest Maryland Stormwater Design Manual including the requirements of the Stormwater Management Act of 2007. Design strategies will focus on the use of Environmental Site Design (ESD) techniques such as bio-swales, infiltration, and submerged gravel wetlands.

7. National Park Service

Portions of the sidewalk on the west side of the traffic circle at MacArthur Boulevard are located on National Park Service (NPS) property, and are subject to NPS approval and continued coordination. The sidewalk in this vicinity is located with green buffer so that a bus can make the turn around the traffic circle without overhanging the sidewalk turning its turning movement.

8. Exxon Gas Station and Glen Echo Center Access

During conceptual design, the project team suggested the evaluation of closing the middle Exxon Gas Station driveway in order to reduce the number of crossing movements for the proposed shared use path in front of the Exxon business. A meeting was held on July 9, 2014 with the owner of the Exxon Gas Station, who indicated that the access provided by each driveway was important to his business, and that the closing of any of the driveways would result in a significant adverse impact to the business of the Exxon Gas Station and Glen Echo Center. As a result of the meeting, the project team recommended that the existing driveway access at the Exxon Station / Glen Echo Center shared driveways be maintained.

For the Glen Echo Center driveway on the MacArthur Boulevard service road, it is recommended that the island be extended to prohibit direct left turns from the driveway onto southbound MacArthur Boulevard. This movement would instead be accomplished by turning right onto the service road, then left onto MacArthur Boulevard. This would reduce the number of conflict points at the intersection, improving safety for vehicles and cyclists. Coordination with the property owner will be performed during the design phase.

III. ENVIRONMENTAL ASSESSMENT

An inventory of the study area's natural, cultural, community and socioeconomic resources was performed to identify the project's potential environmental impacts and to enable the development of environmentally sensitive alternatives. A complete assessment of the project's resources are documented in the *Goldsboro Road, Facility Planning Study – Phase I Environmental Assessment Technical Memorandum* (June 2013) located in **Appendix H**. A brief description of the site resources and the potential impacts to these resources that could result from implementation of a build alternative are presented on the following pages. A summary of the estimated environmental impacts for the three build alternatives is presented in **Table 5** below.

Table 5: Impacts for Alternatives			
	Alternative 1	Alternative 2 (Preferred Alternative)	Alternative 3
Erodible Soils	Yes		
Prime Farmland / Farmland of Statewide Importance	Prime Farmland soils are present		
Forest	0.7 Ac in 6 separate wooded areas	0.8 Ac in 6 separate wooded areas	1.2 Ac in 8 separate wooded areas
Specimen Trees (> 24" dbh)	28	32	35
Floodplains	Yes	Yes	Yes
Waters of the U.S.	40 LF - Culvert Extensions	40 LF - Culvert Extensions	360 LF - Culvert Extensions & Direct Stream Impacts
Wetlands	0.01 Ac	0.02 Ac	0.02 Ac
Special Protection Area	No		
Rare, Threatened and Endangered Species	No		
Forest Interior Dwelling Bird Habitat	No		
Historic and Archeological Resources	Washington Aqueduct; Not Impacted		
Parks and Recreational Facilities	Minor Impacts to NPS Property		
Community Facilities	None	None	None
Properties Impacted	5	5	5
Right-of-Way Required	0.02 Ac	0.02 Ac	0.02 Ac
Displacements	None	None	None
Hazardous Material Sites	Exxon Gas Station		
Utilities	Overhead Utility Pole Relocation, Potential Water & Gas Relocation		

A. Natural Environment

The inventory of natural environmental features includes topography, geology and soils; vegetation; wetlands and other Waters of the US; floodplain boundaries; and wildlife, including rare, threatened and endangered species. The field inventory study area encompasses approximately 50 feet on each side of Goldsboro Road from MacArthur Boulevard to River Road and is depicted, along with the natural environmental features, on **Figure 16**, Environmental Features Plan.

1. Soils and Farmland

The study area is located within the Piedmont Plateau Physiographic Province. According to the *Soil Survey Geographic (SSURGO) Database for Montgomery County, Maryland* (USDA, NRCS, 2007), the following soil series occur within the study area (see **Table 6** & **Figure 16**):

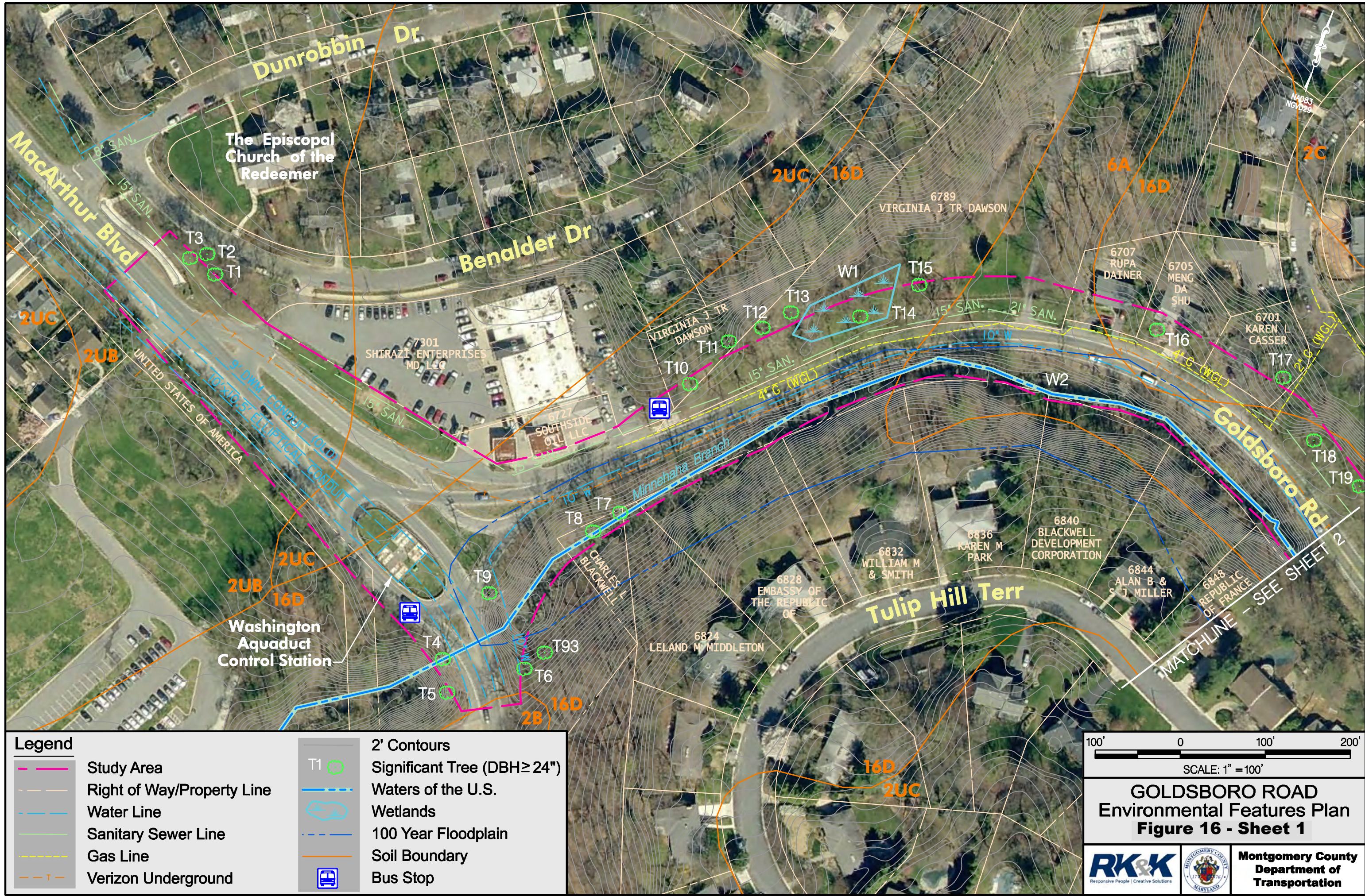
- Baile (6A) – very deep, poorly drained soils located in upland depressions and footslopes.
- Brinklow-Blocktown (16D):
 - Brinklow – moderately deep, well drained soils in uplands.
 - Blocktown – shallow, well drained soils in uplands.
- Glenelg (2B, 2UB, 2UC) - very deep, well drained soils on broad ridgetops and side slopes in uplands.

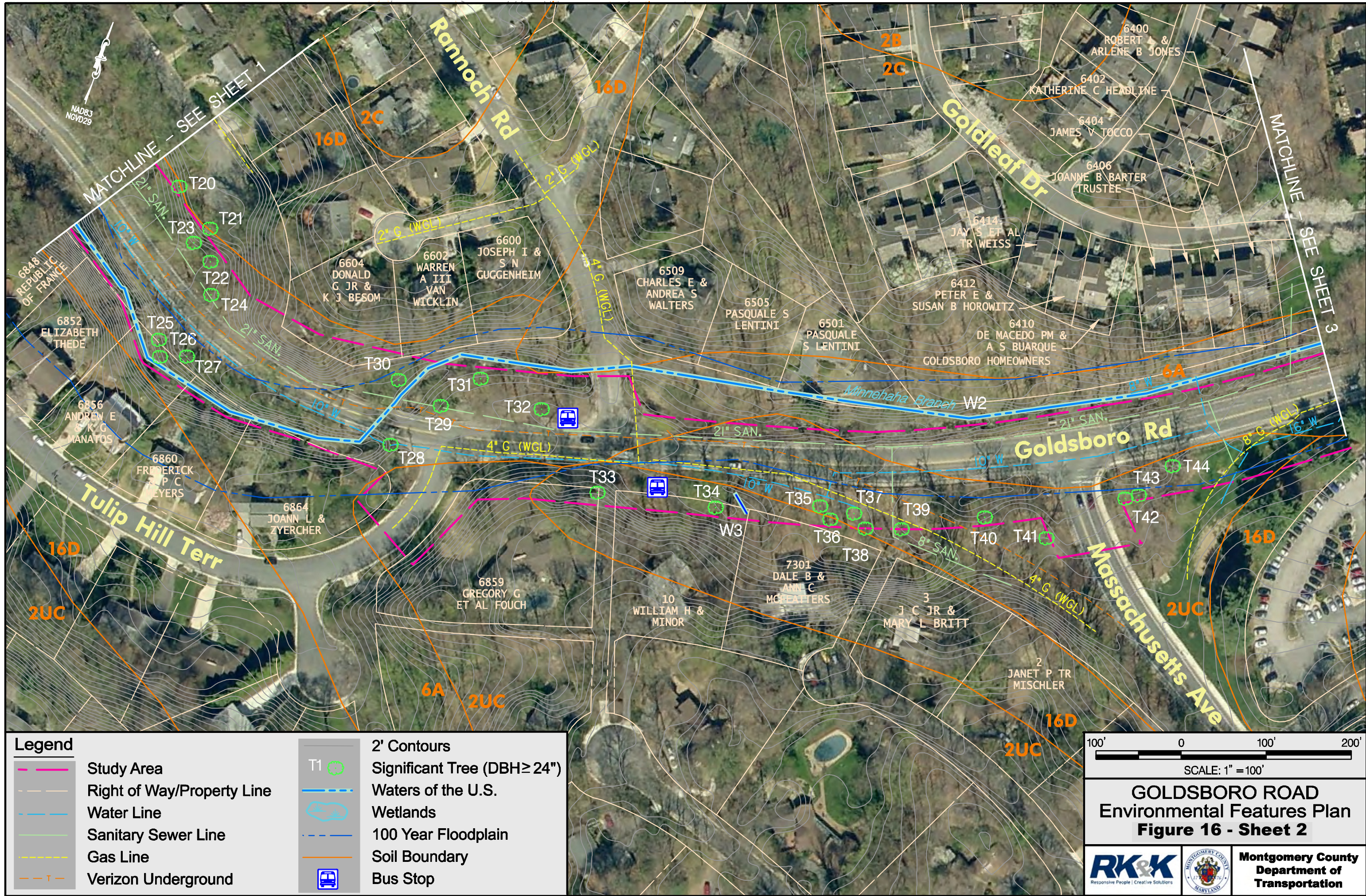
Table 6 GENERAL SOIL PROFILE		
Soil Series	Depth (Inches)	Texture(s)
Baile	0-9	Silt loam
	9-14	Silty clay loam
	14-22	Silty clay loam
	22-32	Silty clay loam
	32-65	Loam
Brinklow	0-10	Channery silt loam
	10-25	Channery silt loam, loam, silty clay loam
	25-35	Weathered bedrock
	35-39	Unweathered bedrock
Blocktown	0-6	Channery silt loam

Table 6 GENERAL SOIL PROFILE		
Soil Series	Depth (Inches)	Texture(s)
	6-17	Very channery loam, very channery silty clay loam, extremely channery silt loam
	17-21	Weathered bedrock
	21+	Unweathered bedrock
Glenelg	0-8	Silt loam
	8-28	Channery silt loam, loam, silty clay loam
	28-60	Channery loam, loam, sandy loam

The *SSURGO Database* lists the Baile soil series as hydric. The Glenelg and Brinklow-Blocktown soil series have Baile hydric inclusions in flats.

The Baile series has a reported K-value (erodibility factor) of 0.43, greater than the 0.35 threshold when soils may pose construction-related hazards. The Glenelg (2B) soil series is described as prime farmland in the *SSURGO Database*. **Table 6** provides additional information and limitations for soil subclasses.





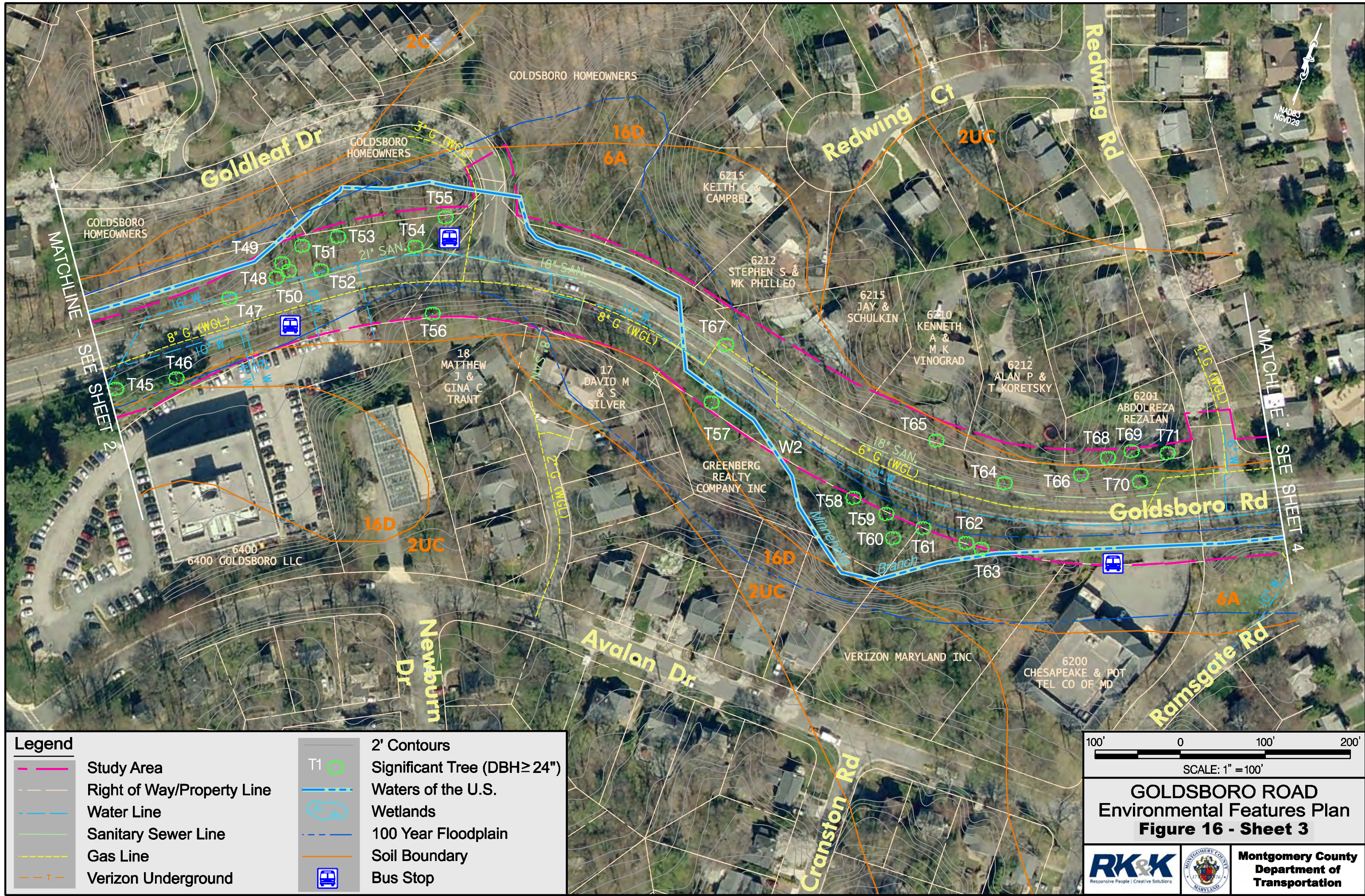




Table 7 SOIL CHARACTERISTICS AND LIMITATIONS				
Soil Type	Hydric Status	K-Value	Prime or Other Important Farmlands	Restrictions and Limitations ^a
Glenelg (2B)	Baile inclusions	0.32	All areas are Prime farmland	Somewhat limited due to frost action
Glenelg (2UB)	Baile inclusions	0.32	No	Somewhat limited due to frost action
Glenelg (2UC)	Baile inclusions	0.32	No	Somewhat limited due to slope and frost action
Baile (6A)	Yes	0.43	No	Very limited due to depth to saturated zone, frost action, and shrink-swell potential
Brinklow (16D)	Baile inclusions	0.28	None	Very limited due to slope, shrink-swell, frost action, depth to hard bedrock, and low strength
Blocktown (16D)	Baile inclusions	0.24	None	Very limited due to slope, depth to soft bedrock, and frost action

a. Based on limitations for local roads and streets.

Source: USDA, NRCS. 2007. *Soil Survey Geographic (SSURGO) Database for Montgomery County, Maryland.*

2. Forest Stands and Specimen Trees

The project team conducted a walk-through level Forest Stand Delineation (FSD) to characterize the forest within the study area on January 21 & 23, 2013. This FSD includes information typically required by the Montgomery County Trees Approved Technical Manual (i.e. common and dominant species, overall forest condition, invasive species, and successional stage). Additionally, the project team identified all significant trees (individual trees with a DBH of 24 inches or more) within the project study area in accordance with Montgomery County requirements. In total, one forest stand (FS1) and 94 significant trees were identified and are depicted on **Figure 16**.

Forest Stand 1 (FS1)

FS1 is an early to mid-successional Tulip Poplar Association forest that surrounds Goldsboro Road throughout the entire study area. This urban forested community is dominated by 12-20-inch DBH tulip poplar (*Liriodendron tulipifera*), American sycamore (*Platanus occidentalis*), American beech (*Fagus grandifolia*), northern red oak (*Quercus rubra*), and white oak (*Quercus alba*) in the tree canopy. Dominant understory species include black gum (*Nyssa sylvatica*), red maple (*Acer rubrum*), American beech (*Fagus grandifolia*), box elder (*Acer negundo*), black locust (*Robinia pseudoacacia*), spicebush (*Lindera benzoin*), and white mulberry (*Morus rubra*). Common herbaceous species include common greenbrier (*Smilax rotundifolia*), Japanese honeysuckle (*Lonicera japonica*), multiflora rose (*Rosa multiflora*), English Ivy (*Hedera helix*), poison ivy (*Toxicodendron radicans*), bamboo (*Arundinaria gigantea*), purpleleaf wintercreeper (*Euonymus fortunei*), and lesser celandine (*Ranunculus ficaria*). This forest is in fair condition overall and includes some areas of disturbance, primarily along utilities and road edges. These areas of disturbance generally include 6-12 inch DBH black locust, box elder, red maple, with higher levels of invasive species. **Table 8** summarizes the investigation results.



**Photo 6 - Forest Stand 1 (FS1)
along Goldsboro Rd. near
MacArthur Blvd.**

Table 8 GENERAL CHARACTERISTICS OF FOREST STAND 1	
Forest Association	Tulip Poplar
Successional stage	early to mid
Dominant species in canopy	tulip poplar (<i>Liriodendron tulipifera</i>) American sycamore (<i>Platanus occidentalis</i>) American beech (<i>Fagus grandifolia</i>) northern red oak (<i>Quercus rubra</i>) white oak (<i>Quercus alba</i>)
Size class of dominant species	12-20 inches DBH with some larger species scattered throughout
Percent canopy closure	70-80% with some gaps
Dominant understory species	black gum (<i>Ilex opaca</i>) red maple (<i>Acer rubrum</i>)

Table 8 GENERAL CHARACTERISTICS OF FOREST STAND 1	
	American beech (<i>Fagus grandifolia</i>) box elder (<i>Acer negundo</i>) black locust (<i>Robinia pseudoacacia</i>) spicebush (<i>Lindera benzoin</i>) white mulberry (<i>Morus rubra</i>)*
Common herbaceous species	common greenbrier (<i>Smilax rotundifolia</i>) Japanese honeysuckle (<i>Lonicera japonica</i>)* multiflora rose (<i>Rosa multiflora</i>)* English ivy (<i>Hedera helix</i>)* poison ivy (<i>T. radicans</i>) bamboo (<i>Arundinaria gigantea</i>)* purpleleaf wintercreeper (<i>Euonymous fortunei</i>)* lesser celandine (<i>Ranunculus ficaria</i>)*
Invasive species	see species above with an *
Invasive cover	moderate
Downed Woody Debris	moderate
Condition	fair due to moderate invasive cover and disturbed areas

See **Table 4** in **Appendix H** for a complete list of the significant trees within the study area.

3. Watersheds, Streams and Floodplains

The project area is located in the Potomac River Montgomery County watershed (8-digit code 02140202), part of the Middle Potomac River tributary basin. This tributary basin conveys flow to the Potomac River and eventually the Chesapeake Bay.

The Q3 Flood Data; Montgomery County, Maryland (FEMA, 2001) indicates that the majority of the study area is located within the 100-year floodplain (see **Figure 16**).

4. Wetlands and Other Waters of the US

Review of the National Wetlands Inventory (NWI) and MD DNR GIS mapping for Montgomery County indicates that no wetlands were previously recorded within the study area (see **Appendix H**). MD DNR GIS mapping identifies a waterway (Minnehaha Branch) that flows through the majority of the study area along Goldsboro Road.

The project team delineated wetlands within the study area in accordance with the U. S. Army Corps of Engineers 2010 *Regional Supplement to the Corps of Engineers Wetland*

Delineation Manual: Eastern Mountains and Piedmont Region Version 2.0, ed. J.F. Berkowitz, J.S. Wakeley, R.W. Lichvar, C.V. Noble. ERDC/EL TR-12-9. Vicksburg, MS: U.S. Army Engineer Research and Development Center. Routine wetland determination methods with onsite inspection were used to determine the presence of wetlands in the study area.

Waters of the U.S., other than wetlands were delineated using the limits defined in 33 C.F.R. § 328. The boundaries of non-tidal waters of the U.S. other than wetlands were set at the ordinary high water mark (OHW), which was determined in the field using physical characteristics established by the fluctuations of water (e.g., change in plant community, changes in the soil character, shelving) in accordance with U.S. Army Corps of Engineers Regulatory Guidance Letter No. 05-05.

Clean Water Act jurisdiction of delineated features was determined in accordance with the June 5, 2007 joint guidance issued by U.S. Environmental Protection Agency and U.S. Army Corps of Engineers following the U.S. Supreme Court's decision in the consolidated cases *Rapanos v. United States* and *Carabell v. United States* (Rapanos); and the January 19, 2001 joint guidance issued by U.S. Environmental Protection Agency and U.S. Army Corps of Engineers following U.S. Supreme Court's decision in *Solid Waste Agency of Northern Cook County v. U.S. Army Corps of Engineers* (SWANCC).

The project team identified one wetland, one perennial stream (Minnehaha Branch), and one intermittent stream within the study area during the field investigation on January 23, 2013. These features are shown on **Figure 16** and are described below. A jurisdictional determination (JD) by the US Army Corps of Engineers and the Maryland Department of the Environment has not been conducted to verify the wetland and waters of the U.S. boundaries. A JD is recommended during the design phase of this project.

Wetland W1

Wetland W1 is a palustrine emergent/palustrine forested (PEM/PFO) wetland located along the westbound side of Goldsboro Road within the western limits of the project study area. Dominant vegetation includes box elder, multiflora rose, and purple-leaf wintercreeper. The soils in this area met the hydric soil



**Photo 7 - Wetland W1 along Goldsboro Rd.
near MacArthur Blvd.**

indicator F3: Depleted Matrix. Hydrologic indicators include sediment deposits, water-stained leaves, and geomorphic position. This wetland receives hydrology from an intermittent stream that flows through the center of the wetland. This small stream becomes less defined as it passes through the study area into wetland W1. Three 18-

inch pipes, mostly blocked with leaf litter and debris, convey hydrology from W1 and the stream across Goldsboro Road. These pipes drain into the main stem of the Minnehaha Branch on the eastbound side of Goldsboro Road. This wetland feature is not shown on NWI or MD DNR GIS mapping, however this area is considered jurisdictional, since all three wetland parameters were met during field investigations.

Waters of the U.S. W2

The Minnehaha Branch was identified as Waters of the U.S. W2. This perennial, relatively permanent waters (RPW) flows alongside Goldsboro Road throughout the entire study area and crosses under the roadway at two locations (Tulip Hill Terrace and Goldleaf Drive). The western portion of the stream within the study area (closer to MacArthur Blvd.) has a more natural channel shape and includes bedrock and cobble as substrate, while the eastern portion becomes increasingly channelized and includes sections with gabion baskets. The substrate in the eastern portion includes more silt, sand, and gravel and the side slopes exhibit more significant erosion. Overall, stream width averages 10-15 feet and water depth averages 12-18 inches. Sediment deposition, water stained leaves, litter and debris, scour, and flow were observed during the investigation. Vegetation along the banks consists primarily of American sycamore, tulip poplar, beech, and spicebush, with a higher incidence of black locust, greenbrier, English ivy, and bamboo in the more disturbed areas. This feature is identified on MD DNR GIS mapping and is considered jurisdictional under Rapanos guidance.



**Photo 8 - Waters of the U.S. W2 –
Minnehaha Branch at MacArthur Blvd.**



**Photo 9 - Waters of the U.S. W2 –
Minnehaha Branch near Massachusetts
Ave.**

Waters of the U.S. W3

Waters of the U.S. W3 is an intermittent RPW located along eastbound Goldsboro Road, just east of Tulip Hill Terrace. This feature originates at a 36-inch pipe and flows approximately 100 feet downstream into another 36-inch pipe, where it crosses under Goldsboro Road and connects to Minnehaha Branch (Waters of the U.S. W2). W3 has stable banks with an average width of 2-5 feet and water depth of 6-10 inches. Substrate includes silt and sand and adjacent vegetation consists of box elder, beech, red maple, tulip poplar, and English ivy. Disturbed leaf litter, water staining, litter and debris, and flow were observed during the investigation. W3 is not shown on MD DNR GIS mapping but is considered jurisdictional under Rapanos guidance.



Photo 10 - Waters of the U.S. W3 – East of Tulip Hill Terrace

The project team examined a low lying area located west of Tulip Hill Terrace on the westbound side of Goldsboro Road as a potential wetland. The area receives hydrology from an ephemeral stream; however, the project team determined that the area did not meet the three parameter wetland requirements since soils were not hydric.

Impacts to jurisdictional wetlands and/or Waters of the U.S. will require permit authorization through the USACE and Maryland Department of the Environment (MDE).

5. Special Protection Areas

A review of the Montgomery County Department of Environmental Protection mapping indicated that the study area is not within a designated Special Protection Area (SPA).

6. Wildlife, including Rare, Threatened and Endangered Species

The Nongame and Endangered Species Conservation Act (Annotated Code of Maryland 10-2A-01) governs the listing of rare, threatened, and endangered (RTE) species in the State of Maryland. Information from the United States Department of the Interior Fish and Wildlife Service (USFWS), MD DNR's Wildlife and Heritage Service, and MD DNR's Environmental Review Unit was requested January 17, 2013 to identify any previously documented RTE species in or near the study area. A summary of the responses are provided below, copies of these letters are included in **Appendix H**.

- In a letter dated March 4, 2013 USFWS responded, "Except for occasional transient individuals, no federally proposed or listed endangered or threatened species are known to exist within the project impact area."

- In a letter dated March 4, 2013 MD DNR Wildlife and Heritage Service, “determined that there are no State or Federal records for rare, threatened or endangered species within the boundaries of the project site as delineated.”
- In a letter dated February 6, 2013 MD DNR Environmental Review Unit responded with the following:

“Minnehaha Branch (Washington Metropolitan River Basin) and tributaries near the site are classified as Use I-P streams (Water Contact Recreation, and Protection of Aquatic Life and Public Water Supply.) Generally no instream work is permitted in Use I streams during the period of March 1 through June 15, inclusive, during any year....No anadromous fish have been documented near the site.”

No federal or state RTE species would be impacted by the proposed project. The instream construction restriction period would be adhered to during construction should the construction of the proposed facility occur within waterways.

B. Historic and Cultural Resources

The project team initiated coordination with the Maryland Historical Trust (MHT), Maryland-National Capital Parks and Planning Commission (M-NCPPC), and Montgomery County Planning Department on January 24, 2013. Background research completed at the MHT Library, indicated that the Washington Aqueduct is the only historic resource previously identified within the project area. The Washington Aqueduct has been confirmed as a National Register Listed National Historic Landmark and is located at the west end of the project area, along the alignment of MacArthur Boulevard. Additionally, several previously identified cultural resources and archaeological reports are located near the west end of the project area at MacArthur Boulevard. These resources include the following:



**Photo 11 - Washington Aqueduct
Valve Station at the Goldsboro Rd.
/ MacArthur Blvd. Traffic Circle**

Table 9 ARCHITECTURAL RESOURCES			
Name	MHT#	Description	NRHP Status
Cabin John Right-of-Way (Brookmont Trolley Row)	M:35-31	Unused street car right-of-way of the old Washington Railway and Electric Company's electric street railway to Cabin John, Maryland, dating to 1896.	Not previously evaluated

Table 9 ARCHITECTURAL RESOURCES			
Name	MHT#	Description	NRHP Status
Glen Echo Park Historic District <i>7300 MacArthur Blvd.</i>	M:35-41	Site of the late 19 th century Chataqua movement at Glen Echo, Maryland; a rare surviving regional example of an early 20 th century amusement park of architectural and historical significance; and a major commercial and recreational facility for area residents and visitors from its establishment in 1899 on the site of the short-lived Chataqua until its closing in 1968.	Listed (Criteria A and C)
Washington Aqueduct	M:29-49	An intact 19 th century water supply system located within Montgomery County, MD and Washington, DC. The NRHP boundary reflects the period of significance extending to 1939.	Listed (Criteria A and C) and also a National Historic Landmark

Table 10 HISTORIC ARCHAEOLOGICAL SITES			
Name	MHT#	Description	Finding
Glen Echo Chataqua	18MO153	19 th century summer resort and early 20 th century amusement park	Identified in archaeological report MO43.
Washington & Great Falls Electric Railroad Company	18MO166	Late 19 th to 20 th century electric railroad bed, trolley line	Identified in archaeological report MO43.

Table 11 ARCHAEOLOGICAL REPORTS			
MHT#	Author	Title	Date
MO43	Katherine Franklin and Sarah Gregory	Report on a Reconnaissance Archeological Survey of Park Service Property Affected by the Rock Run WSSC Alternate Points of Discharge	December 1980
MO233	Stuart Fiedel, John Bedell, and Charles Lee Decker	Archeological Identification and Evaluation Study of C&O Canal National Historical Park Rock Creek to Sandy Hook (Mile Markers 0 to 59), Volume II	December 2005

Based upon the current scope of the project, it is not anticipated that any of these resources or their environmental settings would be affected by the project.

Figure 5 depicts the location of the recorded historic resources mentioned above.

In an email dated February 28, 2013 (see **Appendix H**), MHT responded that additional consultation should occur once the project has been defined and project plans are available for review. When 35 percent design and the limit of disturbance are established for the undertaking, Section 106 consultation will continue with MHT and any additional consulting parties. This consultation will address any potential archaeological subsurface work, the identification and evaluation of properties greater than 45 years old in the area of potential effects, and the undertaking's effect on historic properties.

C. Parks and Recreational Facilities

Figure 5 depicts the location of known parks located in proximity of the study area. Merrimack Neighborhood Park is a 10-acre community park located north of the project area. Its southernmost extent abuts the northern boundary of Davenport Terrace. This neighborhood park features tennis courts, a playground, and multi-use recreational field. Glen Echo Heights Neighborhood Park is located south of the project area, at 5530 Mohican Road. This approximately two-acre park features a playground, basketball court, and small multi-use field.

Additionally, Clara Barton National Historic Site and Glen Echo Park are located south of the study area. Both of these sites are managed by the National Park Service.

The proposed bicycle and pedestrian improvements would occur primarily within the existing roadway right-of-way and any potential property acquisitions would consist of minor strip takes of neighboring properties. No parks are located directly abutting the study area. As a result, no impacts to area parks are anticipated to occur.

D. Community and Emergency Facilities and Services

The project team reviewed the study area for the presence of community facilities and services. **Figure 5** depicts the location of these facilities. Two places of worship were identified near the project area. Concord-St. Andrews United Methodist Church is located at the southeast corner of River and Goldsboro Roads, just east of the project area. In addition to worship services, this facility also operates a nursery school on site. The Episcopal Church of the Redeemer is located at the corner of Dunrobbin Drive and MacArthur Boulevard, northwest of the



**Photo 12 - Concord-St. Andrews
United Methodist Church at
Goldsboro Rd. / River Rd.**

project area. No fire stations, post offices, libraries, or other community facilities were identified within the study area. The study area is currently served by the following schools: Bannockburn Elementary School, Wood Acres Elementary School, Thomas W. Pyle Middle School, and Walt Whitman High School. All existing and planned schools are located outside the immediate project area (Goldsboro Road).

Table 12		
COMMUNITY FACILITIES AND SERVICES		
Facility	Name	Location
Places of Worship	Concord-St. Andrews United Methodist Church	5910 Goldsboro Road
	The Episcopal Church of the Redeemer	6201 Dunrobbin Drive
Schools	Concord-St. Andrews Cooperative Nursery School	5910 Goldsboro Road
	Bannockburn ES	Dalroy Lane, west of study area
	Wood Acres ES	Cromwell Drive, east of study area
	Thomas W. Pyle MS	Wilson Lane, north of study area
	Walt Whitman HS	Whittier Boulevard, northeast of study area

E. Property Impacts

The Preferred Alternative will impact approximately 5 properties along Goldsboro and will require approximately 0.02 acres of right-of-way acquisition. The proposed right-of-way acquisition for the sidewalk widening is required from one parcels (6789 Goldsboro Rd) located on the north side of Goldsboro Road, east of MacArthur Blvd. Additionally, temporary construction and grading easements will be required from an additional 4 properties in the same vicinity, for a total of approximately 0.10 acres of easements.

F. Hazardous Material Sites

The project team performed a hazardous materials preliminary screening assessment (PSA) to determine project risks associated with subsurface contamination originating at or near the project site. The PSA identifies potential sites of concern based on a database search of regulatory files for potentially contaminated sites in and around the project, a review of available historical maps and aerial photographs with coverage of the site, and a subject area inspection for any recognized environmental conditions. The georeferenced regulatory database and historic document searches covered a study area extending approximately ½ mile from the project site, searching applicable state, local, and federal databases.

The area surrounding the project site consists primarily of residential development interspersed with tracts of forest. Non-residential properties near the project site include: an Exxon gas station at 6729 Goldsboro Road, Kenwood Golf & Country Club at 5601 River Road, Walt Whitman High School at 7100 Whittier Boulevard, a small

shopping mall at 7301 MacArthur Boulevard, a corporate center at 6400 Goldsboro Road, and Concord-St. Andrew's United Methodist Church at 5910 Goldsboro Road.

An inspection of the project site occurred on December 21, 2012. The visual inspection along Goldsboro Road and the Minnehaha Branch that flows parallel to the road identified minor amounts of roadside trash and non-hazardous debris. These consisted of solid waste and household trash consistent with typical litter. A particularly large amount of trash was noted at a potential illegal dumping site located in a wooded area at 6789 Goldsboro Road. No hazardous material issues were noted at the MacArthur Boulevard traffic circle, which contains the Washington Aqueduct control station.

An inspection of the Exxon gas station identified four gasoline underground storage tanks (USTs), adjacent to the filling station island, approximately 15 to 20 feet from the project site. Adjacent to the Exxon repair shop was an exterior chemical storage area, partially protected by steel/concrete posts. This area contained: one 275-gallon aboveground heating oil tank; a double-walled waste oil container; several plastic 55-gallon drums of used antifreeze; and two steel 55-gallon drums labeled for storage of waste oil and water. The heating oil tank was in good condition and had no signs of visible staining underneath. The waste oil tank appeared to be significantly rusted but otherwise in good condition with no signs of visible staining. The 55-gallon drums were in good condition and labeled for disposal.



Photo 13 - Exxon Gas Station at Goldsboro Rd. / MacArthur Blvd.

An inventory of possible hazardous material sites was performed by reviewing environmental databases from the following federal, state, and local agencies: the Environmental Protection Agency (EPA); the Maryland Department of Environment (MDE); and the Montgomery County Department of Environmental Protection (DEP), Department of Permitting Services (DPS), and Office of Emergency Management and Homeland Security (OEMHS). *Responses are pending from all agencies other than MDE and this memo will be updated upon receipt of additional information.* See **Appendix H** for letters requesting environmentally relevant public records and for the MDE response.

Online databases of EPA and MDE records, historical USGS maps, and aerial photographs were reviewed. From this review, seventeen (17) documented hazardous material sites were identified and are summarized in **Table 9** of **Appendix H**. These sites are depicted on **Figure 5**

The Oil Control Program reports were all closed; therefore, petroleum impacts relating to these records are not expected to impact the proposed project. The RCRA sites all had no records of violations.

Historical aerial photographs from 1998 to present and topographic maps for 1982 indicate that the area has been primarily residential, with light commercial development at the intersections of Goldsboro Road with MacArthur Boulevard and Massachusetts Avenue. For the time period available, there were no observed environmentally substantive changes to the properties neighboring the subject area.

Additional records were received from MDE on January 31, 2013, under a Public Information Act request. These records document the following:

Site A, Exxon Gas Station: Owned by Southside Oil, LLC, this facility has had four gasoline fiberglass-reinforced plastic USTs since their installation in May 1979 (three 6000-gallon, one 8000-gallon). Two additional USTs, a 1000-gallon tank for used oil and a 1000-gallon tank for heating oil, were removed from the Exxon site in March 1997. High concentrations of petroleum contamination in soil and groundwater were found in the area near the current USTs, and three monitoring wells were installed in July 1997. Quarterly sampling of these wells found high levels of MTBE and BTEX in groundwater that flowed southward toward the Goldsboro Road/MacArthur Boulevard intersection. Sampling continued until the wells were abandoned in August 1998.

Site E, Kenwood Golf & Country Club: This facility has had four USTs – three 1000-gallon tanks for gasoline (one remaining in operation and two that have been removed from the site), and one 6000-gallon heating oil tank that has also been removed. All tanks were located near the facility's maintenance building, on the east side of the property, away from the project area. Contamination of the groundwater and soil was detected in March 2002, requiring a Geoprobe investigation and the installation of one monitoring well.

Site O, Walt Whitman High School: This facility has had one 20,000-gallon UST for heating oil. It was removed from the ground in June 1990, with low levels of petroleum contamination detected in the soil at the time of removal.

Based on the available information, there is a risk that the proposed project could encounter cost impacts due to subsurface hazardous material contamination emanating from the Exxon gas station at 6729 Goldsboro Road. Due to the potential environmental hazards within and near the subject area the project team recommends that, as design progresses, an assessment of the affected project area near the gas station be conducted, including the collection of soil and groundwater samples for the characterization of the nature and extent of potential contamination within the planned or presumed construction area. The primary contaminants of concern should include common petroleum constituents (such as diesel-range organics and gasoline-range organics), BTEX, MTBE, and hazardous metals. Pending the results of the additional assessment, special soil and groundwater-handling specifications may be required during excavation, for site worker health and safety exposure concerns and environmental protection requirements.

G. Utilities

An inventory of existing utilities in the study area was performed by contacting Miss Utility for a listing of known utilities in the project area, collecting record maps from public and private utilities and through field review. A list of the inventoried utilities and status of records received is presented in **Table 13**.

Table 13 EXISTING UTILITY INVENTORY		
Owner	Utility	Status of Record Plans
PEPCO	Electric	Pending Receipt
Washington Gas	Gas	Received
WSSC	Water & Sewer	Received
USACE	Water (Washington Aqueduct)	Shown on WSSC plans
Verizon	Telecommunications	Received
Comcast	Cable Television	Received
FiberLight	Telecommunications	Received
Century Link (formerly QWEST)	Telecommunications	Received

The following are brief descriptions of utilities in the Goldsboro Road corridor.

PEPCO facilities include overhead power lines along the entire Goldsboro Road corridor. The overhead power line utility poles are typically offset two to four feet behind the back of the existing shoulders, sidewalk, or curb (in some instances also behind guardrail). From MacArthur Boulevard at the western limit of Goldsboro Road to Massachusetts Avenue, the overhead power lines are located on both sides of the roadway. From Massachusetts Avenue to River Road at the eastern limit of the study area, the overhead power lines are located on the south side of the roadway. In addition to distribution, the overhead power lines also feed existing roadway lighting (mounted on utility poles) throughout the corridor.

Washington Gas facilities along Goldsboro Road include:

- 4-inch main along the north side - MacArthur Blvd. to west of Rannoch Rd. (turning at 6701 Goldsboro Rd. toward Rannoch Rd.)
- 4-inch main along the south side - Tulip Hill Terr. to Massachusetts Ave.
- 8-inch main along the south side - Massachusetts Ave. to east of Goldleaf Dr. (crossing the roadway at 6215 Goldsboro Rd.)
- 6-inch main below the center line (approx.) - 6215 Goldsboro Rd. to Redwing Rd.
- 6-inch main along the north side - Redwing Rd. to Blackwood Rd.
- Parallel 2-inch and 8-inch mains along the north side - Blackwood Rd. to Haviland Dr.
- 8-inch main along the north side - Haviland Dr. to east of River Rd.

Verizon facilities include overhead and underground telecommunication lines along the Goldsboro Road corridor. Underground telecommunication lines (duct banks / manholes) cross MacArthur Boulevard north of Goldsboro Road; parallel the Glen Echo Shopping Center parking lot (between the traffic circle and parking lot); cross Goldsboro Road east of the traffic circle; extend along Goldsboro Road from MacArthur Boulevard to Massachusetts Avenue; and are also located at the intersection of Goldsboro Road and River Road.

WSSC water facilities include:

- 10-inch main along the south side - MacArthur Blvd. to east of Massachusetts Ave.
- 16-inch main along the north side - east of Massachusetts Ave. to Goldleaf Dr.
- 10-inch main along the south side - Goldleaf Dr. to Haviland Dr.
- Parallel 4-inch (north side) and 10-inch (south side) mains - Haviland Dr. to River Rd.

WSSC sewer facilities include:

- 15-inch main along the north side - MacArthur Blvd. to west of Rannoch Rd.
- 21-inch main along the north side - west of Rannoch Rd. to Goldleaf Dr.
- 18-inch main along the north side - Goldleaf Dr. to Redwing Rd.
- 15-inch main along north side – Redwing Rd. to River Road

The USACE maintains the **Washington Aqueduct**, which is located along MacArthur Boulevard and supplies drinking water to Washington, D.C and parts of Northern Virginia. The Aqueduct is comprised of two conduits, one 9-feet in diameter and one 10-feet x 10-feet 6-inch elliptical. A control station for the Washington Aqueduct is located within the traffic circle at the intersection of MacArthur Boulevard and Goldsboro Road. As noted in this report, the Washington Aqueduct is a National Register Listed National Historic Landmark.

Comcast facilities are primarily located overhead, on PEPCO poles, with some underground cable at the intersection of Goldsboro Road and Goldleaf Lane.

FiberLight and **Century Link** (formerly QWEST) maintain underground fiber optic lines along the east side of River Road and along the south side of Goldsboro Road, east of River Road.

H. Transit Services

The Goldsboro Road project area is served by Ride-On Route 29, which operates from Bethesda Metro Station to Friendship Heights Metro Center. Weekday services for the route are provided from approximately 5:45 AM to 10:00 PM. All buses are wheelchair accessible.

The existing bus route services eight stops on Goldsboro Road between MacArthur Boulevard and River Road, located on the north and south side of the roadway. Also, within the study area, there is one bus stop on MacArthur Boulevard (west side of traffic circle) and one bus stop on River Road (just north of Goldsboro Road). One bus stop on Goldsboro Road, just east of MacArthur Boulevard, and the bus stop on River Road include shelters. Existing bus stops are shown on **Figure 4**.



**Photo 14 - Ride-On Bus 29 at
Goldsboro Rd. / Massachusetts Ave.**

IV. PUBLIC PARTICIPATION

A. Public Outreach

Community feedback is an important aspect of the Facility Planning process. To provide study information to the public and solicit community feedback, MCDOT issued a newsletter, held a public workshop, and posted project data and plans to the county website during the past year. The newsletter was mailed to property owners and civic associations in November 2013 with an invitation to the December 4, 2013 public workshop. The public workshop was held at Walt Whitman High School to provide an overview of the Goldsboro Road Pedestrian and Bicycle Improvements study, present the alternative concepts and obtain public feedback. Approximately forty citizens attended the meeting. A copy of the newsletter and workshop materials is included in **Appendix D**, and posted on MCDOT's website at:

<https://www.montgomerycountymd.gov/dot-dte/projects/goldsboro/index.html>

B. Public Comments

As of April 30, 2013, a total of 66 comments have been received from citizens. Copies of those comments are included in **Appendix E. Table 14** summarizes the opinions and preferences expressed in the public comments.

Table 14		
PUBLIC COMMENT SUMMARY		
Support for Project	62	Supports Project
	4	Opposes / Disagrees with Project
Alternative Preference (If Expressed)	4	Prefer Alternative 1
	8	Prefer Alternative 2
	6	Prefer Alternative 3

Other sentiments and suggestions expressed in the public comments include:

- Bike lanes and sidewalk should be extended east to Bradley Boulevard
- Additional crosswalks and pedestrian signals should be provided for Goldsboro Road crossings:
 - o Wedgewood Road / Redwing Road crosswalk
 - o Tulip Hill Terrace / Rannoch Road crosswalk
 - o Massachusetts Avenue intersection
- Vehicular traffic on Goldsboro is too fast, and traffic calming should be implemented to reduce speeds