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Countywide Transit Corridors Functional Master Plan: Preliminary Staff Recommendations

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Description

This Functional Master Plan addresses how bus rapid transit (BRT) should be integrated into a countywide transit network and where additional rights of way may be needed. Staff will present to the Board our preliminary recommendations on the following items to become part of Countywide Transit Corridors Functional Master Plan:

Major topic: Identify corridors where dedicated lanes are needed to support:

- Bus Rapid Transit as defined by all-day frequent service between activity centers
- Enhanced bus service to accommodate commuter/express service that is needed during peak periods.

Other topics:

- Transit station locations on the recommended corridors
- Phasing for implementation of the recommended transit network.
- Addition of a third track to the Brunswick Line to expand MARC service.
- Designation of Bicycle-Pedestrian Priority Areas (BPPAs) to ensure that adequate access is provided in the area around major proposed stations.

The Board's comments at this presentation will be taken into consideration, along with comments we receive at a series of public meetings in mid-November, as part of the staff draft master plan to be presented to the Planning Board in January.

A significant innovation of this plan is the introduction of performance measures to evaluate optimal operation of the roadway beyond the volume/capacity ratio that has historically been used to measure only driver experience.

Performance measures that adequately reflect the greater capacity of bus lanes to move people and their ability to move transit riders more quickly are essential to the determination of whether greater land use density can be adequately served by transit.

Summary

We believe that an expanded premium transit network offers us a transformational opportunity to guide Montgomery County toward a more sustainable future.

The recommended network of transit corridors will expand our capacity to move people while improving their average level of service. As more of the county's growth will occur in already-developed areas, making higher and better use of our land resources, so too will we need to make better use of our transportation assets.

It has often been said that we cannot build our way out of congestion, and that the best we can do is to buy time before we end up back in the same place. The history of transportation planning around the region confirms this. With every additional major roadway project the County completes, additional traffic moves in to bring congestion levels back up. In this sprawl-inducing paradigm, highway capacity projects encourage people to live farther out, generating even longer trips. Our focus in this Functional Plan effort has been to change that paradigm, looking at ways to increase the attractiveness of transit serving our activity centers in line with County policies of reducing single-occupant vehicle usage to achieve our mode-share goals.

We recommend that existing travel lanes on a number of our major roadways serving the Urban Ring and I-270 Corridor be dedicated to serve prioritized bus service. This is not the solution to every congestion problem, but it is clearly the answer where our 2040 forecast transit ridership shows that we can move more people in a dedicated bus lane than in a general travel lane.

Given our current economic conditions, it may actually be easier to see the most sustainable path forward. When the cost of maintenance of our existing transportation facilities is consuming an ever larger percentage of our budget and when the prospect of substantial additional transportation funding is unsure, we must look for the most cost-effective way to use our existing transportation infrastructure.

The most cost-effective solution – repurposing existing travel lanes as exclusive bus lanes – also has the benefit of having the least impact on property owners and on the environment. Our transportation modeling indicates that it would also lower vehicle-miles-traveled (VMT) and vehicle-hours-traveled (VHT) over the no-build condition (the levels in 2040 that would be experienced without a BRT system).

Our initial lane-repurposing test was only for the area inside the Beltway on four corridors: MD355, MD97, US29, and MD650. Prior to receiving the forecasting results, we anticipated that VMT would be reduced since some people who would otherwise drive would become transit riders. However, our forecasts show that the recommended transit network achieved via lane repurposing would also result in a significant reduction in VHT (overall travel time) with minimal changes to vehicular operating speeds:

- Have fewer cars on the road, e.g. in the Silver Spring area, VMT would be reduced by about 6%.
- Not result in a major decline in travel conditions at the policy area level.

- In Silver Spring, for example, average vehicular speeds would decline by less than 0.5% over the no-build condition, while transit speeds in dedicated lanes would significantly increase.

While our test for lane-repurposing was to determine where forecast ridership would exceed general travel lane capacity, the conversion of existing travel lanes to dedicated bus lanes gives us the ability to move more of our forecast transportation demand in the same space, enabling future growth in areas such as White Oak, where it has been stymied for years because of a lack of transportation capacity.

The corridors recommended in this Functional Plan will support the type of transit-oriented development that Montgomery County needs for a healthy economy and will play an important part in ensuring that our overall transportation network is adequate to accommodate our future growth.

Previous Board action

The Planning Board has discussed the issues involved in this Functional Plan several times since approving the Scope of Work on September 22, 2011. The staff memos for those discussions may be found on: http://www.montgomeryplanning.org/transportation/highways/brt.shtm. Resource documents cited in this memo and highlighted with an asterisk* can also be found on the same website.

Context

The following efforts have preceded this functional plan:

1995: Transit & High-Occupancy Vehicles (HOV) Master Plan Alternatives Report (Reference 1*) stressed the importance of having a transit network that would realize the benefits from the synergy created by having a network rather than individual parts. Although never carried forward as a functional master plan, this report foreshadowed the current functional plan effort.

2008: The Washington Area Metropolitan Transit Authority (WMATA) evaluated a regional Priority Corridor Network (PCN)—consisting of 24 bus routes serving 100 miles that would operate generally in mixed traffic on existing roads with traffic signal priority and queue jumpers, but the report also identified a couple of corridors where exclusive bus lanes would be desirable.

2008: Montgomery County Councilmember Marc Elrich proposed a 120-mile BRT network. To provide a cost-effective premium transit service, Councilmember Elrich proposed operating existing buses in single-lane reversible BRT guideways that would serve the peak demand found along most of the County's major roadways.

August 2011: Montgomery County Department of Transportation delivered their study report on what could be feasibly achieved with a 16-corridor, 150-mile BRT network that required no additional right-of-way.

May 2012: The Rapid Transit Task Force (RTTF) established by County Executive Isiah Leggett delivered its Final Report (Reference 2*) that includes a recommendation for a 162-mile network of dual-lane median guideways. As of this writing, the County Executive has not endorsed this report's recommendations but did request an analysis be performed by the Institute for Transportation and Development Policy (ITDP); their report (Reference 3*) is also posted on our BRT website.

Smart Growth and Sustainable Transportation

Transit can move more people in the same amount of space than private transportation but there has to be sufficient demand to warrant frequent service, indeed to warrant any transit service at all. Sparsely developed areas of the county are generally served only via main routes that connect to small centers like Damascus and Poolesville because it is inefficient to provide comprehensive service – the required subsidies would be too high.

In the more densely developed areas of the county – the downcounty and I-270 corridor – the transit network is more fine-grained, the service more frequent, and the quality higher. In these areas, transit riders may use transit for all or most of their trips or just use it primarily to get to and from work. Expanding the size of the first group by providing more attractive service via BRT is the central goal of this plan. However, expanding the size of the second group – commuters using transit – is an important secondary goal to make better use of our existing roadways and reduce congestion in peak hours of travel.

Both groups of riders use transit on the radial highways that lead to the District of Columbia in the most densely developed area of the county, but frequent all-day transit service on these roads can be provided only where there are multiple activity centers in the corridor that would generate demand for such service. Using transit for all or most your trips can be achieved most easily in areas that have a supporting grid of streets served by transit. Since major highways that connect activity centers are also generally where we experience the highest levels of traffic congestion, they are where the greatest time savings can be achieved by providing dedicated transit facilities.

Our recommended network of transit corridors is intended to serve our existing and planned activity centers; a larger BRT network could be justified by permitting and encouraging denser growth along the corridors, but this Functional Plan cannot change land use. Even if we are to look beyond our 2040 forecast year, we are bound by our current zoning and should prioritize a network that will serve our planned land use. The 1993 General Plan Refinement states,

"Future transportation links will not be used as a justification to change the land use character of an area. This is particularly true for any east-west links which tend to traverse Wedge areas." (p. 37)

While we can change land uses in future area Master Plans to support a more robust network, we believe that any efforts in this regard should be focused on making the corridors in the Functional Plan stronger rather than encouraging a proliferation of weak transit corridors that will require large subsidies in order to provide an adequate level of service.

High-density mixed-use developments create the greatest demand for BRT service but also generate the highest tax return per square foot of land. Correctly pairing land use and transportation results in a more sustainable development pattern.

Attachment 1 shows the relationship of current zoning to the candidate corridors and BRT stations. This information was not used to determine potential ridership, which was based on the COG model for the 2040 forecast year, but demonstrates the relationship of the stations to ultimate land use per our current Master Plans. Note that no zoning is shown on these maps for Prince George's County and the Cities of Rockville and Gaithersburg, which have their own planning authority and which will have to make decisions on any corridors within their jurisdictions as part of a Facility Planning and/or Master Plan process.

Bus Rapid Transit Characteristics

The recommended transit corridor network is intended to facilitate a system that would operate with the following characteristics:

- Exclusive lanes or dedicated busways where possible
- Stops every half-mile to one mile
- Queue jump lanes where appropriate
- Enhanced stations with greater passenger amenities
- Transit signal priority where appropriate
- All-day service
- Higher service frequencies than traditional bus service (i.e., minimum of 10-minute headways during the peak period and 15-minute headways during the off-peak period)
- Real-time passenger information
- Potential for off-board fare collection
- Level boarding and alighting
- High-quality vehicles with amenities such as Wi-Fi service.

The BRT system would emulate light rail operations in terms of the features provided, but would operate on the arterial roadway system in the County using the lower costs of bus technology. Instead of investing in trains and tracks, BRT invests in dedicated busways and exclusive lanes, intersection priority treatments, and low-floor vehicles with off-board fare collection to speed up its transit service. The intent is to create a high-capacity transit system that will be appropriate for the forecasted ridership.

The following four items are the focus of this Functional Plan:

- BRT activities corridors that would benefit from exclusive two-lane runningway enhancements for all-day service
- Express and commuter corridors that would benefit from curb lane operations or single-lane peak-period weekday runningway improvements
- Link corridors that would benefit from runningway enhancements
- Transit station areas

How Bus Rapid Transit Would Fit into Montgomery County's Transit Network

Metrorail is the core of our transit network, providing transit service via the Red Line within Montgomery County but most importantly to the core of downtown Washington, DC. Light rail transit in

the form of the Purple Line will provide the next layer of transit service, connecting our downcounty activity centers. Bus rapid transit would form the next layer of transit service. The MARC Brunswick Line, similar to the Freeway classification, provides more regional service, moving passengers from Frederick and West Virginia to Montgomery County and through the county to Washington, DC.

The recommended transit corridors will serve as feeders to our Metrorail stations and local bus service and shuttles will need to feed into the recommended corridors. Just as the Purple Line will be implemented as LRT and the CCT will be implemented as BRT, each corridor's mode and level of treatment have to be considered separately even as the whole transit network must work together.

Montgomery County has one of the largest suburban bus services in the country, providing thirty million trips per year. Ride-On's extensive network of local routes will continue to provide access to both the BRT and Metrorail systems, as will the Metrobus network. Where curb bus lanes would for the most part be pursued to accommodate commuter/express service to serve the ridership forecast by this Functional Plan, these lanes would greatly improve the operation of local bus service.

What Level of Treatment Should Be Provided?

We have used 1,000 passengers per peak hour in the peak direction (pphpd) as the threshold for warranting dedicated lanes. This is less than the low end of the recommended range for dedicated lanes, which is 1,200 pphpd, but we used a more generous standard to determine the desired accommodation. Corridor segments that fell below the 1,000 pphpd threshold were generally recommended as mixed traffic operations. Corridors with very low forecast ridership were generally not recommended for inclusion in the Functional Plan.

Median busways provide the best accommodation for bus rapid transit and should be constructed where the forecast BRT ridership is high enough to outweigh adverse operation considerations for general traffic. (See the Network and Methodology Report: Reference 4, pp 13-14.) The threshold for warranting consideration of a median busway in the Transit Capacity and Quality of Service Manual is 2,400 pphpd, however some jurisdictions have set that threshold in the range of 1,500-1,700 pphpd for policy reasons. This is a reasonable approach for Montgomery County to consider as well.

The higher the ridership, the more desirable a median busway. A supporting street grid makes a median busway more functional, giving options for parallel routes and turning movements. Future area Master Plan updates, particularly in station areas, could consider ways to enhance the street grid at critical locations.

Corridors with lower forecast BRT ridership but with high combined BRT and local bus ridership are better suited to curb lane operations where local bus service can share the lane with commuter/express bus service. Dedicated curb lanes would provide faster, more dependable bus service for all transit patrons in the corridor.

The Case for Lane Repurposing

After deciding whether dedicated lanes (either in the median or curb lanes) are warranted on a corridor, the next step is to decide how to achieve them, whether to repurpose existing travel lanes, to use the median where it is sufficiently wide to accommodate the desired treatment, or to identify additional right-of-way.

Much of our initial discussion in-house on the issue of lane-repurposing concerned when we could justify taking a lane away from general traffic for use by transit, but that approach favored drivers over transit riders. A more equitable approach is to allocate our existing transportation right-of-way to the mode that can provide the greater capacity, making the best use of our available transportation facilities.

With that approach, we find that many corridors have segments where the forecast bus ridership surpasses, and in some cases far surpasses, the capacity for moving people in a single general traffic lane. ***We should not delay the implementation of necessary and more efficient transit facilities because the demand from single-occupant vehicles is too high.***

The 1993 General Plan Refinement states, *"the General Plan Refinement advocates increased intensity of development in the Urban Ring and the I-270 Corridor to accommodate growth, which preserving the Wedge areas, reducing traffic congestion, and protecting the environment. To achieve this greater intensity, the Refinement supports the development of multi-family housing, higher density employment locations, and* ***alternatives to the single-occupant automobile****."* (emphasis added)

The desire to reduce congestion must be weighed against increasing transit ridership as our highest transportation priority. In addition to language in the General Plan and many of our Master Plans, mode share goals of up to 50% non-SOV travel are already in place in several areas of the county. Superior transit facilities must be in place to achieve these goals and our recommended transit network would serve these areas well.

We should envision the 2040 forecast year as a clean slate with forecast bus ridership and forecast drivers who desire to use the available travel lanes. ***Where bus rapid transit would move people most efficiently in that corridor, the first lane assignment should be dedicated to transit.*** The remaining lanes would be available for general traffic. If congestion is too high in these lanes, the question is then whether we can and should provide an additional general traffic lane. The burden to justify the impacts associated with constructing additional pavement – construction costs, environmental impacts, community impacts, etc. – should be placed on the less efficient mode.

In deciding what we want our transportation facilities to look like and how best to achieve that vision, we must also consider their relationship to the buildings fronting on these roadways. Transit facilities require adequate land use density to justify the capital and operating costs, but they also need a pedestrian-friendly environment to encourage their use.

Transit corridors where it's determined that lane-repurposing cannot be achieved and the road needs to be widened present a challenge in the form of pedestrian accessibility and safety with regard to the length of street crossings at intersections.

The majority of the major north-south corridors that originate in the District of Columbia are being recommended as part of this transit network: MD355, Colesville Road, Georgia Avenue, and New Hampshire Avenue. On October 4, 2012, State Senator Richard Madaleno chaired the Maryland DOT Road Show meeting in Montgomery County, during which he asked why the District's roads were more pedestrian-friendly. Most of the answer lies in the fact that that all of these roads have more full-time travel lanes on the Montgomery County side of the border than they do on the DC side:

- Wisconsin Avenue has six lanes both in DC and in Montgomery County, but DC's curb lane is used for on-street parking most of the day whereas Montgomery County does not except in a couple of segments of the Bethesda CBD where we have on-street parking. Montgomery County also has separate left-turn lanes where DC does not.

- Colesville Road begins as six lanes at Sixteenth Street/Eastern Avenue. Sixteenth Street is only a four-lane divided road in DC that essentially divides into two six-lane divided roads – Sixteenth and Colesville. SHA currently has a project at this intersection to reduce the number of northbound lanes in Montgomery County from three to two on both of these legs.

- Georgia Avenue has four lanes in DC but six in Montgomery County. There is a half-block section of six lanes between Alaska Avenue and Eastern Avenue but that is mostly an intersection issue rather than reflecting a link capacity need.

- New Hampshire Avenue has four lanes in DC but six in Montgomery County.

The additional capacity of these roads in Montgomery County enables higher operating speeds that are not conducive to pedestrian safety. Also, whereas DC marks crosswalks at almost every intersection, crosswalks are generally marked only at signalized intersections in Montgomery County, which are much farther apart.

Much of the discussion about the need for transportation facilities in Montgomery County is about the congestion problem and the need to increase average operating speed. However, in areas where we expect to have large numbers of pedestrians, which is the case with the recommended transit corridors, the focus should be on trying to keep speeds at lower safer levels. Repurposing existing travel lanes to achieve needed transit facilities is the best way to achieve this objective.

The forecast year for this Functional Plan is 2040. In the next 28 years, parts of the county will become more urban and younger residents that have expressed a diminishing desire to drive will become a larger part of our population. This Functional Plan is likely to be implemented over many years, giving residents time to adjust locations to changing traffic patterns and the increasing attractiveness of transit as a transportation option as service levels and on-time reliability increase.

Lane repurposing is the quickest and most cost-effective way to pursue achieving high-quality transit in the near-term. It enables the most pedestrian-friendly environment for transit-oriented development while avoiding unnecessary neighborhood impacts.

Summary of Treatment Considerations

Further information on the topics below may be found in the Network and Methodology Report (see Reference 1) that the Planning Board reviewed on December 15, 2011:

Issue: Lane Repurposing: In general, repurpose a traffic lane to transit-only service if at least one of the following conditions was achieved:

1. Person Throughput: the 2040 forecast transit ridership in a transit-only lane would exceed the traffic capacity of the lane. Both SHA and WMATA are just starting to develop their person-throughput policy. We have worked with both agencies as well as MCDOT on this issue, but in the absence of an official policy, we have used this measure.
2. Traffic volume/lane capacity (V/C) ratio: the V/C ratio for link volumes is less than 0.9 in 2040. (0.9 is the upper limit of Level of Service (LOS) D.)
3. Consistency with road section on the County Line: In several locations, the roadway section drops from six lanes in Montgomery County to four lanes in Washington, DC, including Georgia Ave, and New Hampshire Ave. At these locations, it was considered feasible to repurpose two lanes to exclusive transit use.
4. Parallel roads: parallel roads are available to allow flexibility for drivers to shift to alternative routes for some of the recommended transit corridors (such as Research Blvd and Key West Ave; Randolph Rd and Montrose Pkwy East; Georgia Avenue and Sixteenth Street).

Issue: Median vs. Curb Lane

1. Median busways allow faster transit operating speeds that will attract more riders but generally provide no benefits to local buses that would continue to use general traffic lanes unless they operate within the corridor for a significant distance and have left-side doors also.
2. Median busways require more right-of-way
3. Median busways require restrictions on left turns at unsignalized intersections and into driveways on the opposite side of the road. The lack of a street grid in most areas of the county inhibits the ability to relocate these left turns off the main roadway. Our initial review of the analysis for White Flint VISSIM test of left turn lanes was not conclusive but indicates that there could be significant additional delay.
4. We cannot generally cannot recommend a median vs. curb lane treatment at this level of analysis. Where possible (and when warranted), our ROW recommendation will use the greater requirement for a median busway to provide flexibility for implementing agencies.

Issue: Ongoing BRT Corridor Studies (Georgia Ave Busway, Veirs Mill Rd)

1. Two corridors are currently the focus of ongoing BRT corridor studies: the Georgia Ave Busway and Veirs Mill Road. Since these studies will evaluate the corridors in much greater detail, the

Functional Plan will largely refrain from changing existing master plan recommendations for them. The exception will be locations where BRT is desirable but where the area master plans are silent. For example, while the Glenmont Sector Plan (1997), Aspen Hill Master Plan (1994), and Olney Master Plan (2005) all reference a busway along Georgia Ave, there is no reference in the Kensington/Wheaton Communities Master Plan (1989). Therefore, the Functional Plan will likely recommend the single reversible median lane between Matthew Henson State Park and Weller Rd, recommended in the Aspen Hill Master Plan to the north and the Glenmont Sector Plan to the south.

Issue: One-Lane Reversible Medians

1. Generally recommended for Peak Hour operations in commuter corridors.
2. Recommend only when repurposing is not feasible and when it is difficult to expand ROW to achieve a two-lane facility.
3. The major construction involved in achieving a single-lane median busway will reduce the ability to construct a two-lane facility in the future.

Issues: Key Assumptions

1. Corridor Typology -- two lanes for activity corridors, one lane for commuter corridors
2. Dedicated Lane threshold – 1,000 riders per peak hour
3. Median Lanes Warranted – 1,600 riders per peak hour (as opposed to 2400 in manual)
4. Persons per Vehicle (auto) -- 1.1
5. Vehicle Lane Capacity used to compare to forecast transit ridership -- from COG model

BRT Feasibility

We find that BRT service is feasible in Montgomery County and could become an important part of our transportation network. The recently published ITDP analysis (Reference 3*) included a near-term feasibility assessment for BRT implementation, but our task in the Functional Plan is to look more long-term. Our forecast for 2040 BRT ridership confirms their finding that MD355 is the best candidate corridor for gold standard BRT, with peak ridership in one segment at approximately 2,500 passengers per peak hour in the peak direction (pphpd). Forecast ridership is high to very high throughout **the MD355 corridor from Friendship Heights to Germantown**. The corridor ridership forecasts by segment are shown as Attachment 2.

After MD355, the highest forecast daily ridership corridor is **New Hampshire Avenue from US29 to Eastern Avenue** at the DC line with 1,600 pphpd. These two corridors warrant pursuing dedicated busways where lanes can be repurposed or the necessary right-of-way can be obtained.

Several other corridors have high ridership also warrant having dedicated lanes, most notably **US29 from Silver Spring to Burtonsville**. Whereas ITDP characterized dedicated lanes on US29 as a “lighter improvement”, this issue is the central focus of the Functional Plan because the space for these lanes,

whether by acquisition of right-of-way or by repurposing lanes, is so difficult to achieve in Montgomery County.

"True" BRT is intended to be its users' primary mode of transportation, but most of Montgomery County has a suburban pattern of development that will continue for the foreseeable future even as our activity centers become more urban. We have many heavily travelled commuter-focused corridors that would greatly benefit from having dedicated transit lanes - whether all-day or just during peak hours – to enable more people to get to their destination more quickly even if these corridors do not warrant the highest level of BRT treatment.

Buses in corridors that do not warrant dedicated lanes, either in a dedicated busway or in curb lanes, would operate in mixed traffic but could still warrant queue-jumpers and/or traffic signal priority. These treatments are operational and would be determined by the agency responsible for roads in question (either SHA or MCDOT, in most cases).

Extent and Treatment of the Recommended Network

Our consultant's report on the transit corridors modeled for this phase of our work is shown as Attachment 3. Their recommended treatment differs from staff's recommended treatment on a segment-by-segment basis largely because their decision on lane-repurposing was based mostly on whether a v/c ratio of 0.9 could be maintained for the general travel lanes. Given that many of these roadways will be over capacity in the 2040 forecast year, a broader measure of person-throughput, as discussed above, is needed.

With the exception of the ICC, our recommended network is consistent with the task force's Phase 1 corridors. We recommend a smaller but still quite large network of dedicated transit lanes. The recommended network of corridors is shown as Attachment 4 and the ridership and lane-repurposing tests used to determine the recommended treatment for these corridors is shown in Attachment 5. The corridors and treatments are described as follows:

MD355 South

As stated above, MD355 South has the highest forecast daily ridership with 49,000 riders. The Route 37 MetroExtra bus, which is part of WMATA's move toward BRT, serves the Friendship Heights Metro Station at the southern terminus of this corridor.

1. <u>Friendship Heights Metro Station to White Flint Sector Plan Area Southern Boundary</u>

   Recommendation: Two Dedicated Lanes via Lane Repurposing

   Discussion: Due to the high transit ridership forecast between the Friendship Heights metro station and the southern boundary of the White Flint Sector Plan area, we recommend two dedicated lanes. Since the 2040 peak hour transit ridership forecast exceeds the traffic lane capacity, the transit lanes should be provided by lane repurposing.

2. White Flint Sector Plan Area

   Recommendation: Two Dedicated Lanes

   Discussion: Due to the high transit ridership forecast within the White Flint Sector Plan area, we confirm the White Flint Sector Plan's recommendation of two dedicated transit lanes on Rockville Pike. These lanes are in addition to the proposed traffic lanes in the sector plan.

3. White Flint Sector Plan Northern Boundary to Rockville Metro Station

   Recommendation: Two Dedicated Lanes via Lane Repurposing

   Discussion: Due to the high transit ridership forecast between the northern boundary of the White Flint Sector Plan area and the Rockville Metro Station, we recommend two dedicated lanes. Since the 2040 peak hour transit ridership forecast exceeds the traffic lane capacity, the transit lanes should be provided by lane repurposing.

   The final determination of the planned right-of-way and typical section for the segment of the corridor that passes through the City of Rockville would have to be determined by that jurisdiction.

MD355 North

This corridor has a forecast daily ridership of approximately 35,000 riders.

1. Rockville Metro Station to Shakespeare Boulevard

   Recommendation: Two Dedicated Lanes via Lane Repurposing

   Discussion: Due to the high transit ridership forecast between the Rockville Metro Station and Shakespeare Blvd, we recommend two dedicated lanes. Since the 2040 peak hour transit ridership forecast exceeds the traffic lane capacity, the transit lanes should be provided by lane repurposing. In addition, the V/C ratio between Professional Drive and Shakespeare Blvd is less than 0.9, indicating a low level of congestion.

   The final determination of the planned right-of-way and typical section for the segments of the corridor that pass through the Cities of Rockville and Gaithersburg would have to be determined by those jurisdictions.

2. Shakespeare Boulevard from MD355 to Observation Drive

   Recommendation: Mixed Traffic

   Discussion: North of Shakespeare Boulevard, forecast ridership was insufficient to warrant BRT along MD355. However, we recommend that this transit corridor be extended west along Shakespeare Boulevard and north along Observation Drive to tie into the northern segment of

the Corridor Cities Transitway. More analysis is needed to determine the recommended treatment. We recommend that it be designated as mixed traffic for the time being.

3. Observation Drive from Shakespeare Boulevard to the CCT

   Recommendation: No action.

   Discussion: No action needs to be taken to modify the current Master Plan recommendation, which is an alternative alignment for the CCT, at this time.

US 29

This corridor has a forecast daily ridership of approximately 17,000 riders.

1. Eastern Avenue/Sixteenth Street to Silver Spring Transit Center

   Recommendation: Dedicated Lanes via Lane-Repurposing

   Discussion: Forecast ridership was below the level needed to warrant dedicated lanes however, this segment of Colesville Road is already used by WMATA's S9 MetroExtra route, which is a significant step toward BRT, and is part of their PCN. We believe that actual transit ridership in this corridor would likely be much higher than modeled and because Colesville is currently planned to be narrowed at the DC line, we recommend that dedicated lanes be achieved via lane-repurposing.

2. Silver Spring Transit Center to Lockwood Drive

   Recommendation: Dedicated Lanes via Lane-Repurposing

   Discussion: This segment has the highest existing ridership and has high forecast ridership. While there are limited opportunities for drivers in this corridor who choose not to take transit, our forecast ridership is substantially above what could be carried in lanes with mixed traffic. We believe that dedicated lanes via lane-repurposing is the best treatment purely on a resource-allocation basis, but also because of the major constraints to widening that exist in this corridor, most notably in the Four Corners area.

3. Lockwood Drive from US29 to Stewart Lane and Stewart Lane from Lockwood Drive to US29

   Recommendation: Mixed Traffic

   Discussion: While forecast ridership along this segment of the overall US29 corridor is high, the conflicts with vehicular traffic are low, so mixed traffic is recommended.

4. Stewart Lane to Burtonsville Park and Ride Lot

   Recommendation: Dedicated Lanes via Median Busway

   Discussion: The median is sufficiently wide in this segment to accommodate a two-lane busway because of previous design efforts by SHA in the pursuit of the US29 interchange projects.

Georgia Avenue (MD97)

This corridor has a forecast daily ridership of approximately 25,000 riders.

1. Eastern Avenue to Colesville Road

   Recommendation: Dedicated Lanes via Lane Repurposing

   Discussion: While the ridership forecasts for this segment do not warrant dedicate transit lanes, we believe they are low for two reasons. First, the ridership forecasts do not extend high quality transit into the District of Columbia. Georgia Avenue between downtown DC and Silver Spring is recommended as part of WMATA's Priority Corridor Network (PCN) and is already used by their MetroExtra Route 79. Second, it does not include ridership that would be generated if the District of Columbia's streetcar network was extended from its current terminus at the Takoma Park metro station to the Silver Spring Transit Center. The Montgomery County Council has requested that the DC Government consider extending it up to the Silver Spring Transit Center, which would provide connections to a much greater array of connecting public transit services.

   Given that actual transit ridership in this corridor would likely be much higher than modeled and because Georgia Avenue is only a four-lane road in DC but widens to six lanes in Montgomery County, we recommend that lanes be repurposed for transit, whether that be solely for buses or joint use with the DC streetcar.

2. Colesville Road to Sixteenth Street

   Recommendation: Dedicated Lanes via Lane Repurposing

   Discussion: This segment of Georgia Avenue does not have very high traffic volumes but does have good forecast ridership. Traffic diverted from this roadway because of lane-repurposing can easily use Sixteenth Street, which is a maximum of three blocks away and has ample excess lane capacity. Since the 2040 peak hour transit ridership forecast exceeds the traffic lane capacity, the transit lanes should be provided by lane repurposing.

3. Sixteenth Street to Veirs Mill Road

   Recommendation: Dedicated Lanes via Lane Repurposing

   Discussion: This length of Georgia Avenue has very high traffic volumes but there is sufficient forecast ridership to warrant lane-repurposing. In addition, while dedicated lanes are needed in

this segment, widening of the right-of-way and roadway would have a large impact on the single-family residential homes along Georgia Avenue. We recommend against including such a widening in this Functional Plan as the land use impacts are more appropriately addressed as part of an area Master Plan.

4. Veirs Mill Road to Glenallan Avenue

   Recommendation: Mixed traffic

   Discussion: This segment of Georgia Avenue has a ridership forecast that may be insufficient to warrant dedicated bus lanes.

5. Glenmont Metro Station to Olney

   Recommendation: Dedicated Lanes via Median Busway

   Discussion: Current Master Plan guidance for the Georgia Avenue Busway is mixed:

   - Olney Master Plan: Two-lane median busway
   - Aspen Hill Master Plan: One-lane median busway
   - Kensington-Wheaton Master Plan: No guidance
   - Glenmont Sector Plan: One-lane median busway

   We recommend that a continuous median busway be implemented from Glenallan Avenue to Spartan Road.

   The results of the Georgia Avenue Busway Project Planning study currently being pursued by SHA will likely determine what should be implemented in this corridor. We believe that the existing land use and travel patterns require only a single-lane median busway along this corridor. If this is the preferred alternative selected by the study, we recommend that a median bikeway be constructed in conjunction with the busway. A shared-use path is recommended in the Master Plan to be built on the west side of Georgia Avenue as part of the busway section, but it may be easier to implement a median bikeway that would have fewer conflicts with driveways if only a single-lane busway is needed.

New Hampshire Avenue (MD650)

This corridor has a forecast daily ridership of approximately 22,000 riders.

1. Eastern Avenue to Adelphi Road

Recommendation: Dedicated Lanes via Lane Repurposing

Discussion: New Hampshire Avenue has the second highest forecast daily ridership with 22,000 daily riders. Forecast ridership is very high south of University Boulevard but still high as far north as Northampton Drive. Adelphi Road was chosen as the limit of the dedicated lanes because north of this point, the average daily traffic volume for general traffic jumps by about 80% headed toward the Beltway but the forecast transit ridership drops. At the southern limit of this corridor, New Hampshire Avenue is only a four-lane road in DC line but widens to six lanes at the Montgomery County line, as noted above. The V/C ratio between Eastern Avenue and Ethan Allen Avenue is below 0.9, indicating low levels of congestion even if lanes are repurposed.

The segment of this corridor between the DC line and East-West Highway borders Prince George's County; the segment of this corridor between University Boulevard and Fox Street (south of Adelphi Road) are completely within the limits of Prince George's County. The final determination of the planned right-of-way and typical section for these corridor segments would have to be determined by Prince George's County.

2. Adelphi Road to US29

Recommendation: Mixed Traffic

Discussion: The modeling test for additional density in the White Oak Science Gateway is not yet complete. It is possible that the higher forecast transit ridership resulting from this test may warrant an extension to the north of Adelphi Road. We will address this issue in the Staff Draft of the Functional Plan. For the time being, we recommend that it be designated as mixed traffic.

Veirs Mill Road (MD586)

This corridor has a forecast daily ridership of 12,000 to 15,000 riders.

1. MD355 to Twinbrook Parkway

Recommendation: Dedicated Lanes via Lane Repurposing

Discussion: The peak-hour forecast ridership in this segment is sufficient to warrant lane-repurposing. This corridor segment is completely within the City of Rockville and the final determination of the planned right-of-way and typical section would have to be determined by the City.

2. Twinbrook Parkway to Georgia Avenue

Recommendation: Dedicated lanes via Median Transitway

Discussion: While only the short segment within the Wheaton CBD Sector Plan area is currently recommended for BRT, the whole length of Veirs Mill Road from the Wheaton Metro Station to MD355 is currently under study by SHA. The results of that study will likely determine what should be implemented in this corridor.

The ridership pattern is less clear here than most corridors and our forecast ridership is not sufficient to warrant dedicated lanes via lane-repurposing. However, since Veirs Mill Road is an important corridor that serves both east-west and north-south functions, we recommend that a one-lane median busway for this segment for the purposes of this Master Plan.

University Boulevard (MD193)

This corridor has a forecast daily ridership of 14,000 to 18,000 riders.

1. Veirs Mill Road to US29

   Recommendation: Dedicated Lanes via Lane Repurposing

   Discussion: The peak-hour forecast ridership in this segment is sufficient to warrant lane-repurposing.

2. Wheaton Metro Station to Takoma-Langley Crossroads Purple Line Station

   Recommendation: Mixed Traffic

   Discussion: This segment requires more analysis. The forecast ridership east of Gilbert Street is not sufficient to warrant dedicated lanes. The forecast ridership west of Gilbert Street warrants dedicated lanes via lane repurposing, which may not be desirable but additional right-of-way appears difficult to obtain.

Rockville Metro Station to the Life Sciences Center

This corridor has a forecast daily ridership of 10,000 to 12,000 riders.

1. East Middle Lane from MD355 to North Washington Street; North Washington Street from East Middle Lane to MD28; and MD28 from East Middle Lane to I-270

   Recommendation: Mixed Traffic

   Discussion: This corridor segment has high enough forecast ridership to warrant dedicated bus lanes but achieving along these roads would be difficult, much of which passes through the Rockville Historic District. We recommend that it be designated as mixed traffic for the time being and that the City of Rockville determine the final treatment as part of Facility Planning or their Master Plan process.

2. MD28 from I-270 to Research Boulevard and Research Boulevard to Omega Drive

Recommendation: Dedicated Lanes via Lane Repurposing

Discussion: This corridor has sufficient forecast ridership to warrant dedicated lanes. Only the segment of Research Boulevard west of Shady Grove Road is in the unincorporated section of Montgomery County. Most of this corridor segment is within the City of Rockville, who would have to determine the final treatment as part of Facility Planning or their Master Plan process.

Our forecasting results show a significant ridership drop-off after the intersection with Omega Drive that is likely because of competition with the CCT. The relationship of this corridor to the CCT should be considered as part of Facility Planning. It may be that service on the CCT could alternate between serving the Shady Grove and Rockville Metro Stations.

Randolph Road

This corridor has a forecast daily ridership of 16,000 to 20,000 riders.

1. White Flint Metro Station to Prince George's County line

   Recommendation: Mixed Traffic

   Discussion: In general, the forecast ridership is marginal to poor for warranting dedicated lanes. However, the modeling test for additional density in the White Oak Science Gateway is not yet complete. It is possible that the higher forecast transit ridership resulting from this test may increase the forecast ridership on this corridor.

   While the ridership on the western end of this corridor – from White Flint Metro Station to Veirs Mill Road – is the highest, further consideration needs to be given to the desirability of using the Master Plan-recommended transitway on Montrose Parkway East as an alternative. There is also a discontinuity in the current Master Plan recommendations for Randolph since the segment west of Rock Creek is four lanes in the North Bethesda-Garrett Park Master Plan and the segment east of Rock Creek is six lanes in the Kensington-Wheaton Master Plan.

   We recommend that it be included in the network as a mixed traffic operation, but with additional information, this recommendation may change.

Corridor Cities Transitway (CCT)

1. Shady Grove Metro Station to Clarksburg

   Recommendation: Dedicated lanes via Median or Side Transitway

   Discussion: No action needs to be taken to modify the current Master Plan recommendation at this time. The results of the CCT Project Planning study currently being pursued by MTA will likely determine what should be implemented between Shady Grove Metro Station to Metropolitan Grove MARC Station.

North Bethesda Transitway

This corridor has a forecast daily ridership of 8,000 to 10,000 riders.

1. Grosvenor Metro Station to Rock Spring

   Recommendation: Dedicated lanes via Median or Side Transitway

   Discussion: A transitway from Montgomery Mall to the Grosvenor Metro Station is recommended in the Bethesda-Chevy Chase Master. Most of the right-of-way for its future construction has been dedicated as developments have been approved along its alignment. However, the right-of-way is not yet available along a short segment of Old Georgetown Road. Further analysis is needed to determine whether dedicated lanes are needed for the segment and how they should be achieved. WMATA is currently including this transitway in its study of a transit connection between Tysons Corner and Grosvenor.

   While ridership forecasts for this corridor are below the threshold for warranting dedicated lanes, that is likely because the forecasts included a corridor on Old Georgetown Road corridors. If the Old Georgetown Road is removed because of low ridership, ridership on the North Bethesda Transitway will likely increase.

Corridors Tested but Not Recommended for Inclusion in the Functional Plan

Several additional corridors were modeled but had low ridership volumes that did not warrant dedicated lanes. These included:

- Muddy Branch Road from Life Sciences to Lakeforest Transit Center
- Connecticut Avenue and Jones Bridge Road from Medical Center Metro Station to Bel Pre Road
- Old Georgetown Road South from Bethesda Metro Station to Montgomery Mall
- Old Georgetown Road North from Montgomery Mall to White Flint Metro Station
- Norbeck Road from Rockville Metro Station to ICC Park and Ride Lot; and
- ICC: The ICC has a low forecast daily ridership but is different from the others in regard to its Master Plan status since there is already a transitway recommended along its entire length. The Master Plan recommendation for a transitway along the ICC is no longer necessary however, since the toll structure of this road guarantees a congestion-free facility. We recommend that the corridor be deleted.

Phasing Implementation of the Network

The Rapid Transit Task Force phasing plan attempted to strike a balance of what they saw as important and physically constructible in terms of the maximum disruption that could occur in any one area of the

county at one time. Our recommended network and treatment are less than that recommended by the task force so the potential conflicts between the construction on individual corridors would be less. However, more importantly, our view toward accommodating the forecast ridership is far different.

Rather than attracting "*a completely new universe of riders",* as the task force stated in their report, we concur with ITDP's analysis of the task force report that our current transit ridership will constitute a large proportion of our forecast ridership for the proposed transit network in its initial phases. It is therefore very important to focus our initial efforts on where our existing ridership is strongest. Those areas are generally downcounty, closest to the District of Columbia.

The US29 corridor south of Lockwood Drive has major constraints to expansion, most notably in Four Corners, but has the highest existing peak hour ridership at about 800 riders. Currently there are 43 scheduled buses in the peak hour, about one bus every minute-and-a-half. US29 also has the second highest forecast peak hour ridership with more than 1,900 passengers in 2040. We believe that lane-repurposing in this segment is the best use of our transportation facilities and that it would provide the best trial of achieving dedicated bus lanes via this method.

Given the particulars of this segment of US29, lane-repurposing could be implemented in stages. It could start as a peak-hour exercise only, when there is the greatest justification for prioritizing the movement of mass transit. In addition, it could start in the reversible section south of Sligo Creek Parkway, with the curb bus lane taking up one of the four lanes in the peak direction. As we gain experience with prioritized transit, we could expand the dedicated lanes to the north as well as the period of service. This could begin within a relatively short period of time because no major construction would be required.

The construction of pavement always takes longer and the construction of a median busway on MD355 would take longer still. While MD355 is the best candidate for "true" BRT, the pursuit of a median busway will have to be in concert with Master Plan changes, both to ensure that the impacts caused by any roadway widening are offset by beneficial land use changes and to ensure that the latter provide greater ridership for the transit facility. In the meantime, MCDOT and SHA should evaluate which segments of MD355 are most ready for lane-repurposing and implement dedicated curb lanes as an interim solution.

Right-of-Way Impacts

The corridors and treatments recommended above largely rely on working within our existing roadway pavement. One major exception to this is the Veirs Mill Road corridor where we expect that we will need some additional right-of-way to achieve a one-lane reversible busway. In general, however, we have not yet completed an analysis of the ROW impacts of the recommended treatments. Even where lanes are proposed to be repurposed, additional ROW may be needed to provide adequate sidewalks, bike facilities, and green space for landscaping and stormwater management. The ROW impacts of the recommended corridors and treatments will be included in our Staff Draft of the Functional Plan.

Transit Stations

The transit station locations used in the ridership forecasting are shown on the maps of each corridor (Attachment 1) and are listed in Attachment 6. We have developed right-of-way envelopes for the various station types needed for the recommended network and originally anticipated that we would identify specific locations that they would be applied. Our thinking now is that the final location of these stations should be determined during Facility Planning when the operating agencies will have a service plan in place that can guide whether these stations should be on the near or far side of the intersection, for example.

The Staff Draft of this Functional Plan will identify the intersections at which stations will be located and will identify the appropriate station type with an associated right-of-way. Any proposed developments that occur in the vicinity of the planned station can then be reviewed in that context.

MARC Brunswick Line Expansion

As noted above, MARC commuter rail provides the broadest regional transportation function of our transit network. With the relocation of the MARC Station to the Silver Spring Transit Center (SSTC), the similarly anticipated relocation of long-distance bus facilities to the SSTC, and the planned establishment of new MARC stations at the Shady Grove Metro Station and in White Flint, there will be a greater integration of public transportation facilities and the opportunity for greater synergy between transit modes.

Several Master Plans recommend expanded MARC service yet two of the County's Master Plans – Shady Grove and Great Seneca Science Corridor – and the Town of Washington Grove Master Plan deleted a recommendation for a fifty-foot-wide transit easement along the tracks. The July 2004 Planning Board Draft for the Shady Grove plan included retention of the easement, but this was removed by the County Council in their approval of the final plan in early 2006. The Town of Washington Grove and Great Seneca Science Corridor subsequently repeated the recommendation to remove the recommended easement from the areas covered by those plans.

MARC service cannot be significantly increased without reducing the conflicts with freight service on the CSX tracks. Existing conflicts between MARC service and CSX freight service last year resulted in a MTA proposal to reduce service to some stations in order to provide better on-time performance. Additional rail capacity is the only feasible way to significantly reduce those conflicts and expand MARC service.

In 2007, the Maryland Transit Administration (MTA) published their Growth and Investment Plan for MARC service. Their proposed MARC expansion on the Brunswick Line would include all-day service and one-seat rides to Northern Virginia. To accomplish this, they proposed adding a third track between Point of Rocks in Frederick County and Kensington, in addition to acquiring additional rolling stock.

MTA's forecast shows that MARC Brunswick Line ridership would increase from our current daily ridership of 7,000 to 26,000 under their investment plan, an increase of 19,000 riders per day that would rank it fairly high among the BRT corridors studied.

MTA is currently updating their Growth and Investment Plan but we have confirmed that they intend to retain the proposed expansion of the Brunswick Line. We recommend that this expansion be included in the Master Plan of Highways and Transitways to allow the project to be considered as one of our priorities for State transportation projects to begin Project Planning. Since the necessary right-of-way would only be identified during that planning, we recommend that the expansion be included in Phase 2 of the Functional Plan.

As to the extent of the expansion, we believe that it would be more difficult to accomplish this east of Metropolitan Grove Station because of the potential impacts to adjacent development. It may turn out during Project Planning that this is achievable, but at this time, we recommend that only the segment between the Frederick County Line and Metropolitan Grove Station be included in the Functional Plan. Once Project Planning has been completed, the extent of the expansion and the right-of-way can be assessed at the same time for future inclusion in a Master Plan update.

Bicycle-Pedestrian Priority Areas

Our Scope of Work includes recommending the designation of Bicycle-Pedestrian Priority Areas (BPPAs) around BRT stations. Many of the stations on the proposed BRT corridors are already existing or Master Planned transit stations, or transit centers. While good bicycle and pedestrian access is needed to all BRT stations, we are not recommending that every BRT station be designated as a BPPA.

The White Flint Sector Plan area was designated by the Maryland State Highway Administration (SHA) as Maryland's first BPPA in January 2011, confirming the prior designation in the White Flint Sector Plan. It exemplifies the intent of the legislation, which was to provide the highest level of accommodation for pedestrians and bicyclists in the areas where they are most prevalent. That is certainly true of a transit-oriented development area; it would not be necessarily true of a BRT station that is located at a park-and-ride lot. We will recommend that safe access be provided to all BRT stations, but believe that the BPPA designation should be limited to those areas that are established or developing activity centers.

In addition to White Flint Sector Plan area, the recently adopted Wheaton Sector Plan designates the Sector Plan area as a BPPA. The Planning Board Draft of the Takoma-Langley Crossroads Sector Plan also designates that Sector Plan area as a BPPA.

On June 21, 2012, the Board gave its tentative approval of the list of candidate BPPAs shown in our report. Since that time, we have consulted with State Highway Administration staff who have given their initial concurrence on this list, pending the finalization of their guidelines for designation.

The Staff Draft of this Functional Plan will include draft boundaries for these areas. Following the adoption of the Master Plan, SHA's concurrence is needed on the designation of the BPPAs is needed in

order for the requirement of a plan of improvements to take effect per the Annotated Code of Maryland.

Bike Accommodation

All of our "Preferred" typical sections include on-road bike lanes but it is not yet clear to what extent we can achieve the preferred section. Where constraints pre-empt the ability to achieve bike lanes, we will identify as part of our next phase of work the recommended bike accommodation for each corridor.

Next Steps

We anticipate rerunning the model with the revised network and will determine rights-of-way for each corridor based on typical sections for each recommendation.

Outreach

Two public meetings to discuss this Functional Plan were held last fall and three additional public meetings are scheduled for 6:30-9 p.m. on the following evenings:

- Tuesday, November 13: Blair HS
- Wednesday, November 14: Shady Grove Training Facility
- Thursday, November 15: Wheaton Library

Schedule

Our current schedule is as follows:

- January 8, 2013: Board approval to publish Staff Draft as Public Hearing Draft
- February 2013: Public Hearings
- February-April 2013: Worksessions
- May 2013: Transmit Planning Board Draft to County Council

Conclusion

Staff has considered a wealth of information in preparing our recommendations, which we believe balance the Board's desire for an aspirational transit network with the constraints posed by our planned land uses.

We would like to receive the Board's comments on our recommendations in advance of our scheduled public meetings the following week.

Attachments

Attachment 1: Corridor maps

Attachment 2: Ridership forecasts by segment

Attachment 3: Consultant's report

Attachment 4: Map of Recommended Corridors

Attachment 5: Summary of Ridership and Lane-Repurposing Tests by Corridor Segment

Attachment 6: List of station locations

References (can be found in the Quick Links on our BRT web page: http://www.montgomeryplanning.org/transportation/highways/brt.shtm)

Reference 1: Transitway & High-Occupancy Vehicle Network Master Plan Alternatives Report
Reference 2: Rapid Transit Task Force Report
Reference 3: ITDP Report
Reference 4: Network and Methodology Report:

Montgomery County BRT Study
Right of Way Assessment

Corridor Assessment
Route 3 - MD 586/Veirs Mill Road

- Proposed BRT Stations
- Master Plan Right Of Way
- Higher Density Residential, Commercial, Office and Mixed Use Zoning
- R-60 Zoning

N

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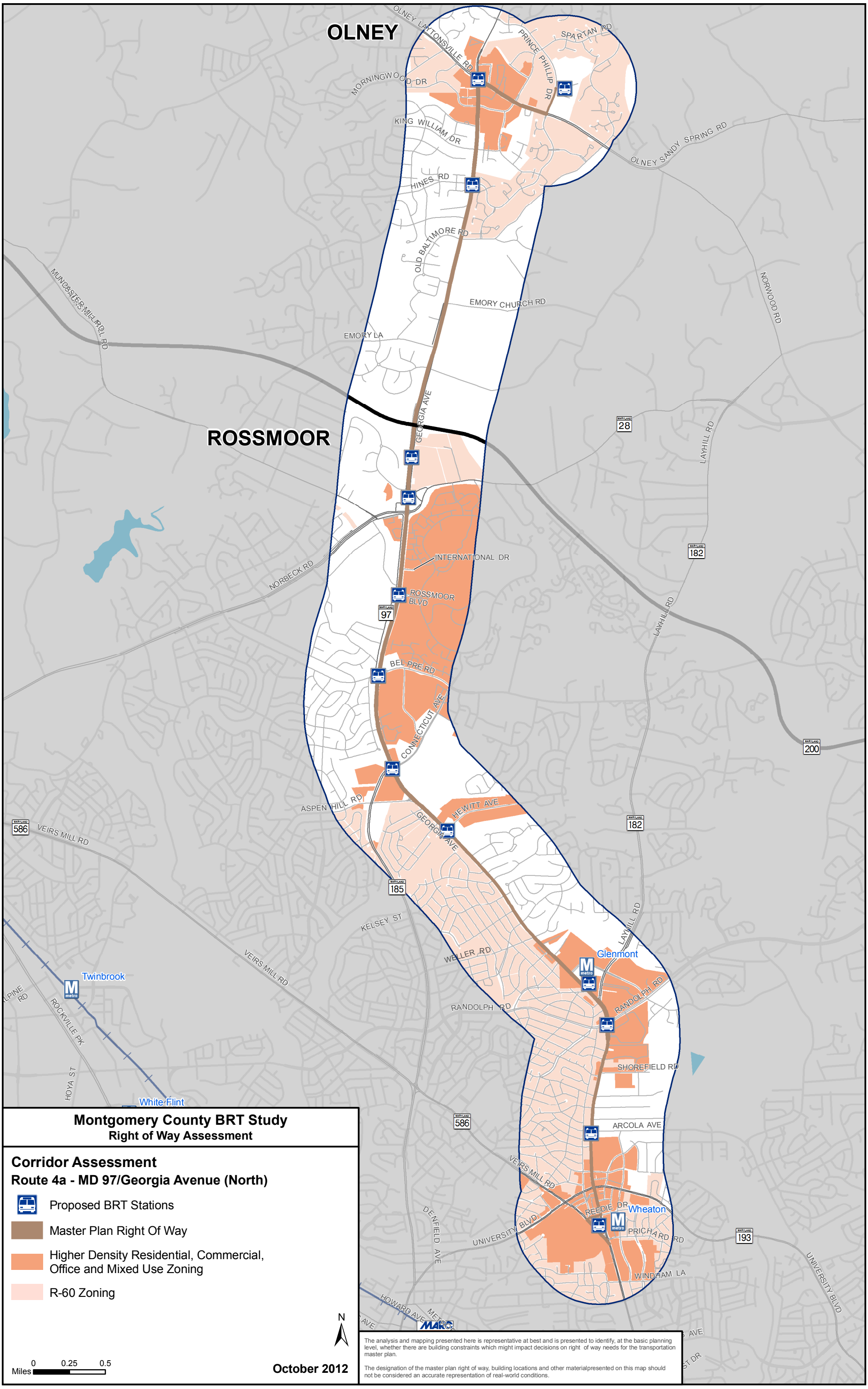
Miles

October 2012

The analysis and mapping presented here is representative at best and is presented to identify, at the basic planning level, whether there are building constraints which might impact decisions on right of way needs for the transportation master plan.

The designation of the master plan right of way, building locations and other materialpresented on this map should not be considered an accurate representation of real-world conditions.

ATTACHMENT 1:
Corridor maps


OLNEY
OLNEY LAYTONSVILLE RD
SPARTAN RD
PRINCE PHILLIP DR
MORNINGWOOD DR
KING WILLIAM DR
OLNEY SANDY SPRING RD
HINES RD
OLD BALTIMORE RD
EMORY CHURCH RD
EMORY LA
MUNCASTER MILL RD
NORWOOD RD
ROSSMOOR
GEORGIA AVE
MARYLAND 28
LAYHILL RD
INTERNATIONAL DR
NORBECK RD
ROSSMOOR BLVD
MARYLAND 97
MARYLAND 182
BEL PRE RD
CONNECTICUT AVE
MARYLAND 200
ASPEN HILL RD
HEWITT AVE
MARYLAND 586
VEIRS MILL RD
MARYLAND 185
KELSEY ST
WELLER RD
Glenmont
RANDOLPH RD
Twinbrook
ROCKVILLE PK
HOYA ST
SHOREFIELD RD
White Flint
ARCOLA AVE
REEDIE DR
Wheaton
DENFIELD AVE
UNIVERSITY BLVD
PRICHARD RD
MARYLAND 193
WINDHAM LA
HOWARD AVE
METRO
MAKO
Montgomery County BRT Study
Right of Way Assessment
Corridor Assessment
Route 4a - MD 97/Georgia Avenue (North)
Proposed BRT Stations
Master Plan Right Of Way
Higher Density Residential, Commercial, Office and Mixed Use Zoning
R-60 Zoning
N
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Miles
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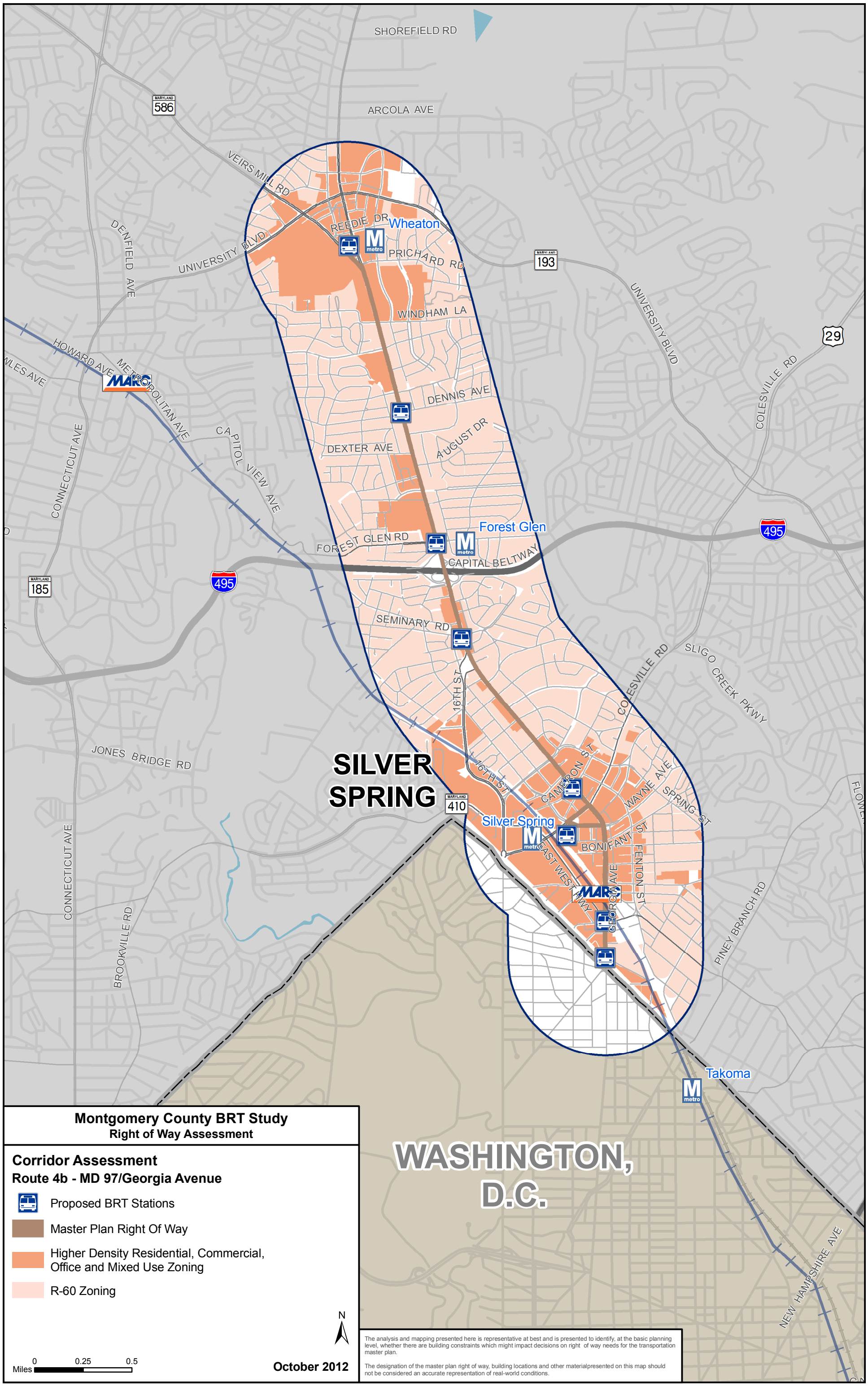

Montgomery County BRT Study
Right of Way Assessment

Corridor Assessment
Route 4b - MD 97/Georgia Avenue

- Proposed BRT Stations
- Master Plan Right Of Way
- Higher Density Residential, Commercial, Office and Mixed Use Zoning
- R-60 Zoning

N

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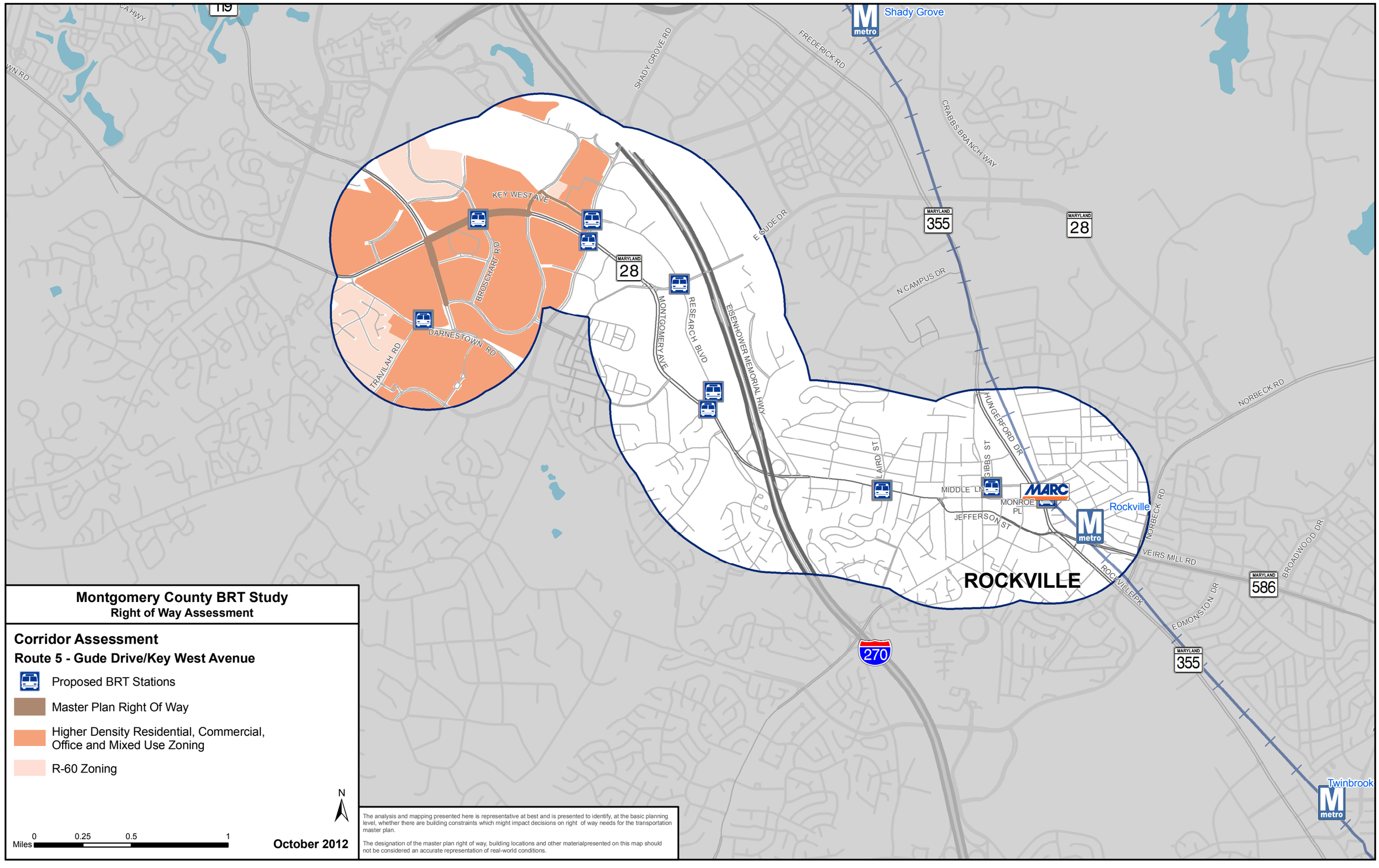

Montgomery County BRT Study
Right of Way Assessment

Corridor Assessment
Route 5 - Gude Drive/Key West Avenue

- Proposed BRT Stations
- Master Plan Right Of Way
- Higher Density Residential, Commercial, Office and Mixed Use Zoning
- R-60 Zoning

N

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Miles

October 2012

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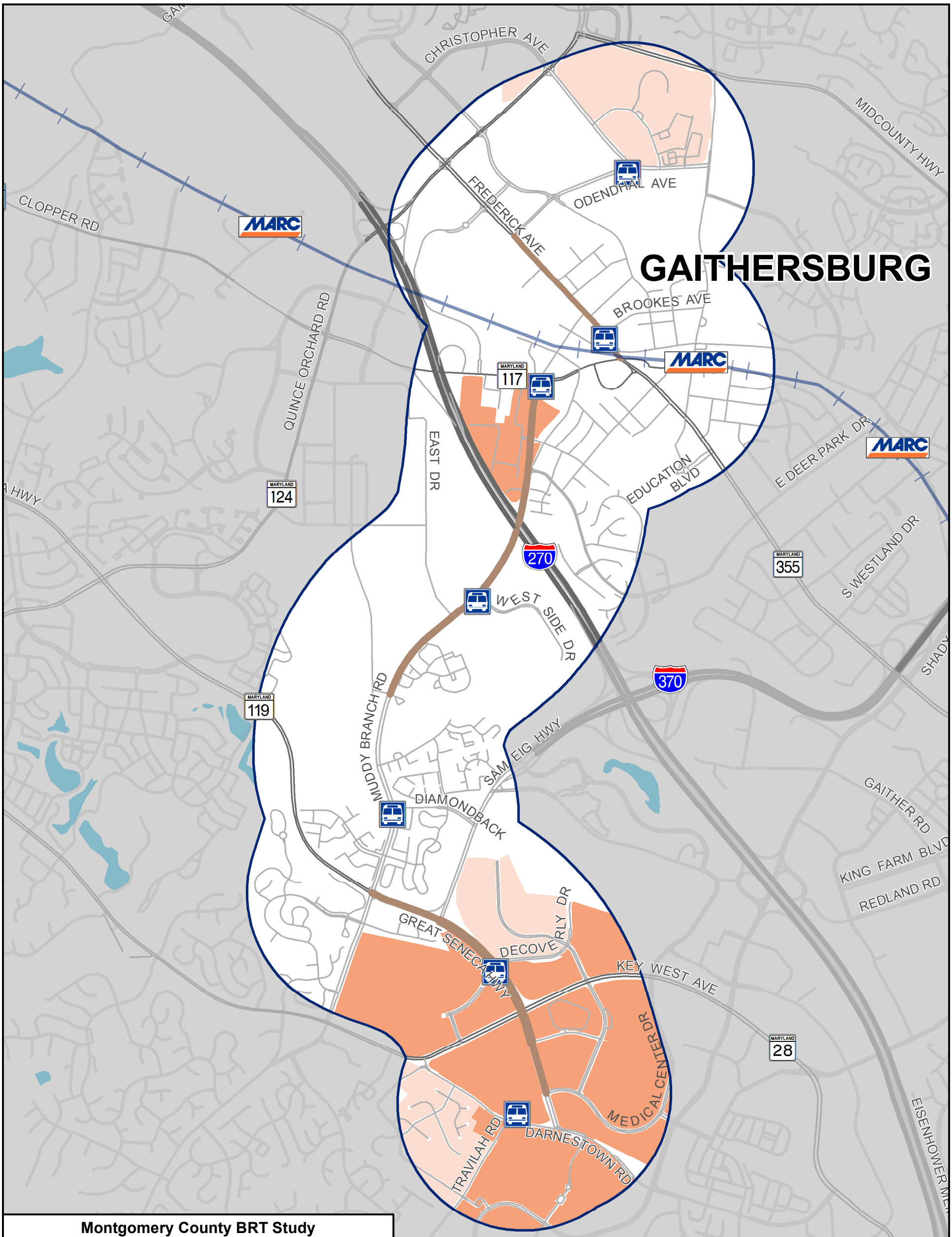

Montgomery County BRT Study
Right of Way Assessment

Corridor Assessment
Route 7 - MD 124/Muddy Branch Road

- Proposed BRT Stations
- Master Plan Right Of Way
- Higher Density Residential, Commercial, Office and Mixed Use Zoning
- R-60 Zoning

N

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Miles

October 2012

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Montgomery County BRT Study
Right of Way Assessment

Corridor Assessment
Route 8 - Connecticut Avenue

- Proposed BRT Stations
- Master Plan Right Of Way
- Higher Density Residential, Commercial, Office and Mixed Use Zoning
- R-60 Zoning

N

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Miles

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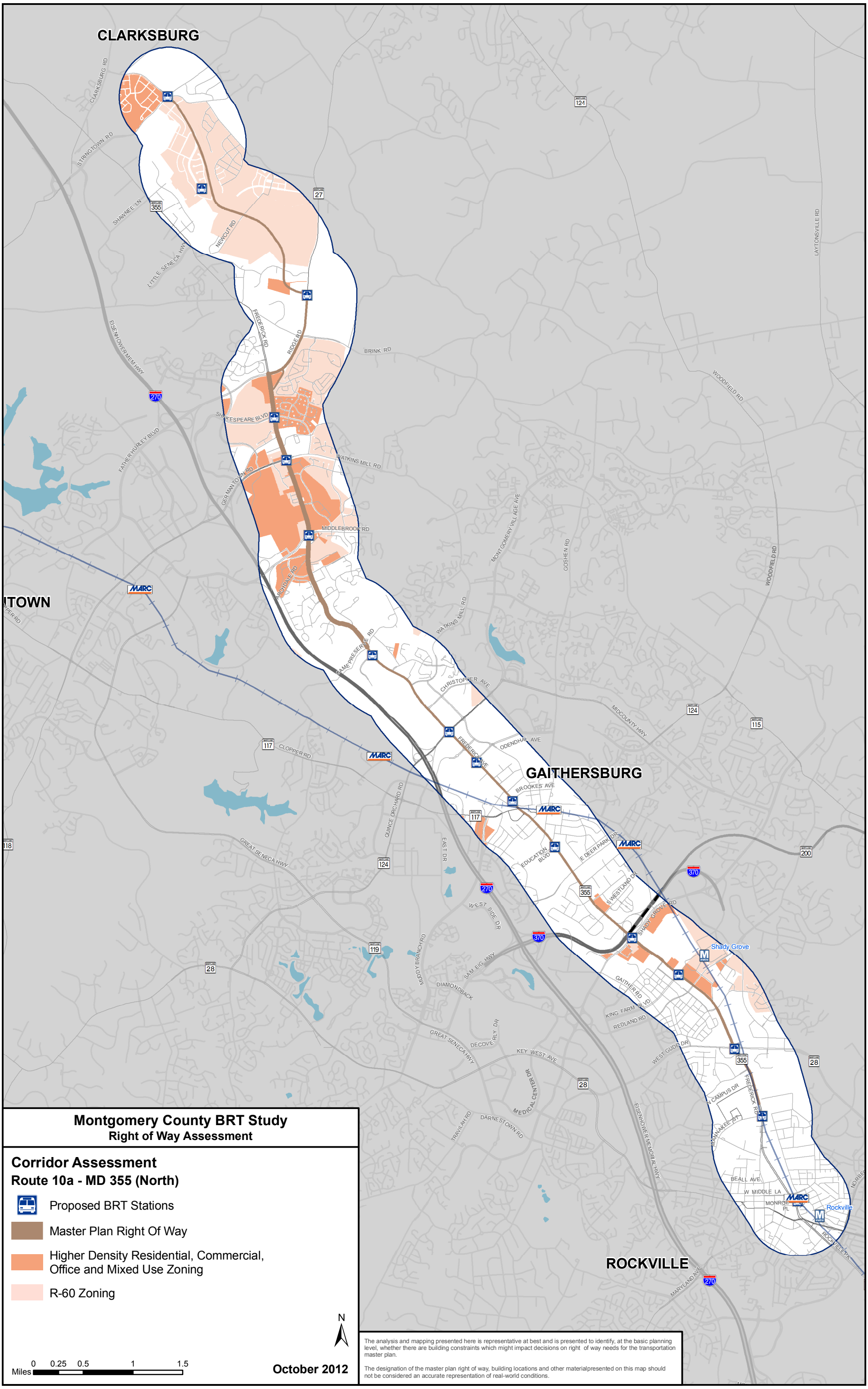

Montgomery County BRT Study
Right of Way Assessment

Corridor Assessment
Route 10a - MD 355 (North)

- Proposed BRT Stations
- Master Plan Right Of Way
- Higher Density Residential, Commercial, Office and Mixed Use Zoning
- R-60 Zoning

N

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Miles

October 2012

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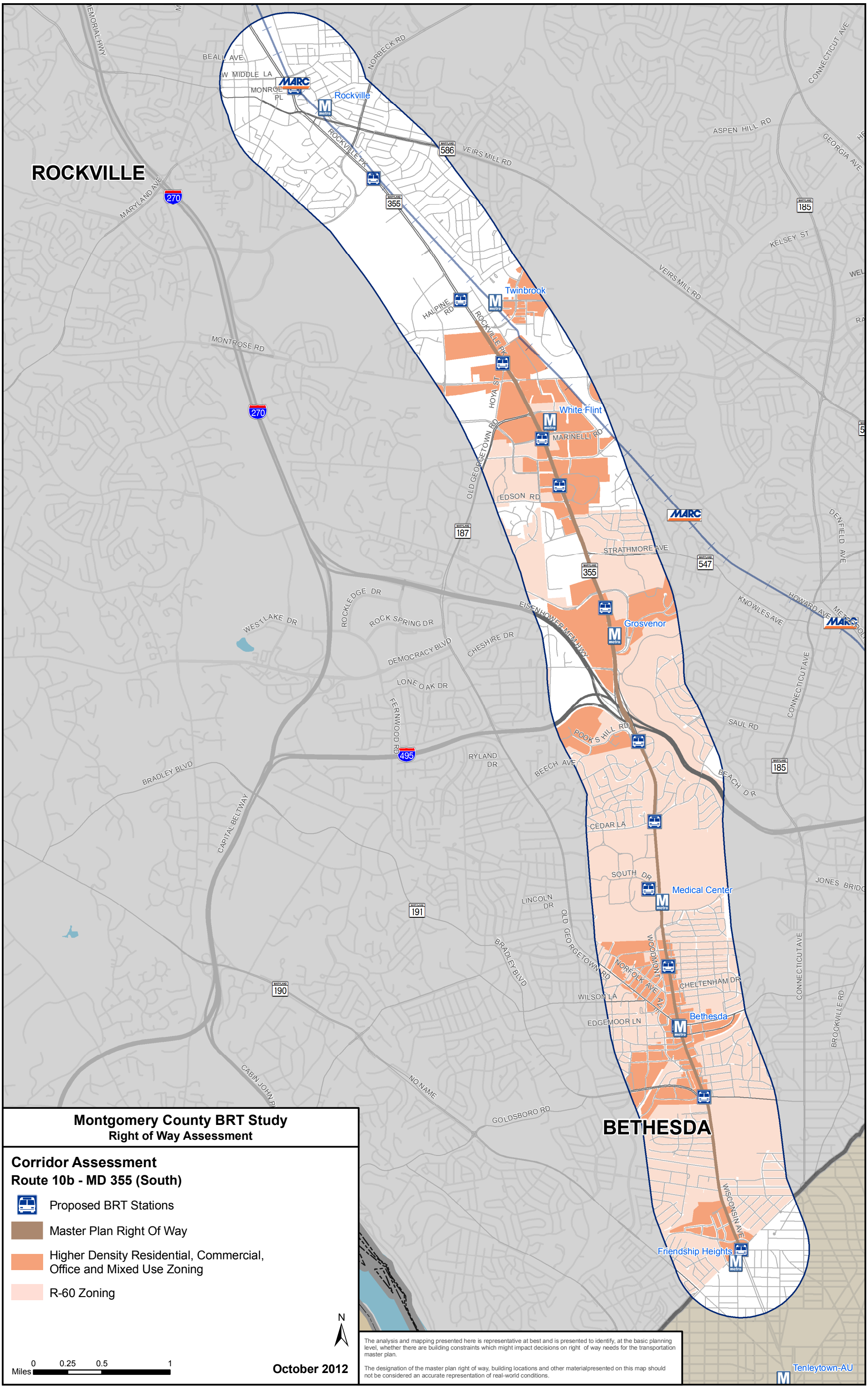

Montgomery County BRT Study
Right of Way Assessment

Corridor Assessment
Route 10b - MD 355 (South)

- Proposed BRT Stations
- Master Plan Right Of Way
- Higher Density Residential, Commercial, Office and Mixed Use Zoning
- R-60 Zoning

N

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Miles

October 2012

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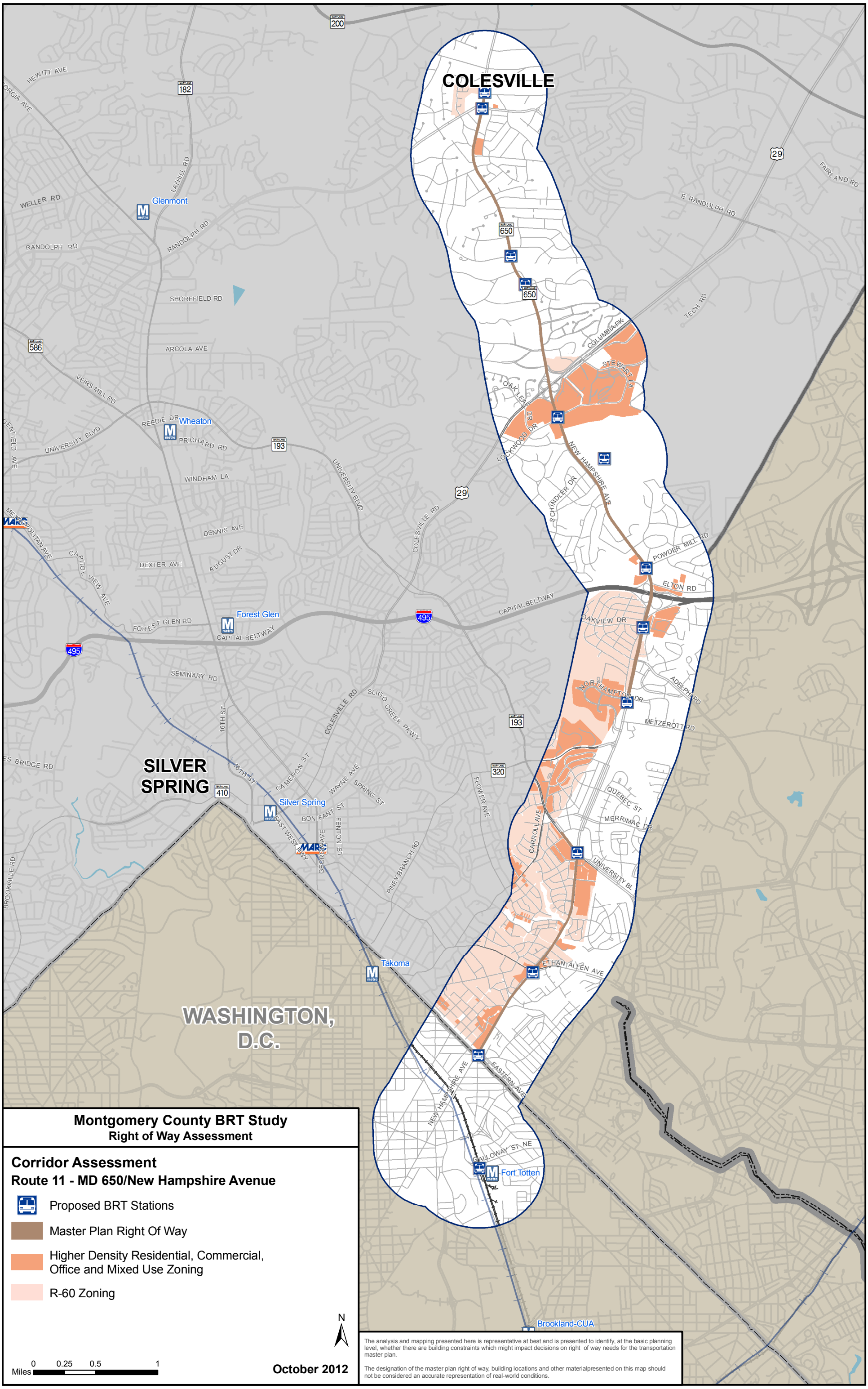
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SILVER SPRING
WASHINGTON, D.C.
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WELLER RD
Glenmont
LAYHILL RD
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RANDOLPH RD
SHOREFIELD RD
ARCOLA AVE
VEIRS MILL RD
REEDIE DR
Wheaton
PRICHARD RD
UNIVERSITY BLVD
WINDHAM LA
DENNIS AVE
AUGUST DR
DEXTER AVE
FOREST GLEN RD
Forest Glen
CAPITAL BELTWAY
SEMINARY RD
16TH ST
COLESVILLE RD
SLIGO CREEK PKWY
CAMERON ST
WAYNE AVE
SPRING ST
Silver Spring
BONIFANT ST
FENTON ST
EAST WEST HWY
GEORGIA AVE
PINEY BRANCH RD
FLOWER AVE
BROOKVILLE RD
Takoma
E RANDOLPH RD
FAIRLAND RD
TECH RD
COLUMBIA PK
STEWART LA
OAKLEAF DR
LOCKWOOD DR
NEW HAMPSHIRE AVE
SCHINDLER DR
POWDER MILL RD
ELTON RD
OAKVIEW DR
NORTHAMPTON DR
ADELPHI RD
METZEROTT RD
QUEBEC ST
MERRIMAC DR
CARROLL AVE
UNIVERSITY BL
ETHAN ALLEN AVE
EASTERN AVE
GALLOWAY ST NE
Fort Totten
Brookland-CUA
200
182
586
410
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650
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29
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495
Montgomery County BRT Study
Right of Way Assessment
Corridor Assessment
Route 11 - MD 650/New Hampshire Avenue
Proposed BRT Stations
Master Plan Right Of Way
Higher Density Residential, Commercial, Office and Mixed Use Zoning
R-60 Zoning
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Miles
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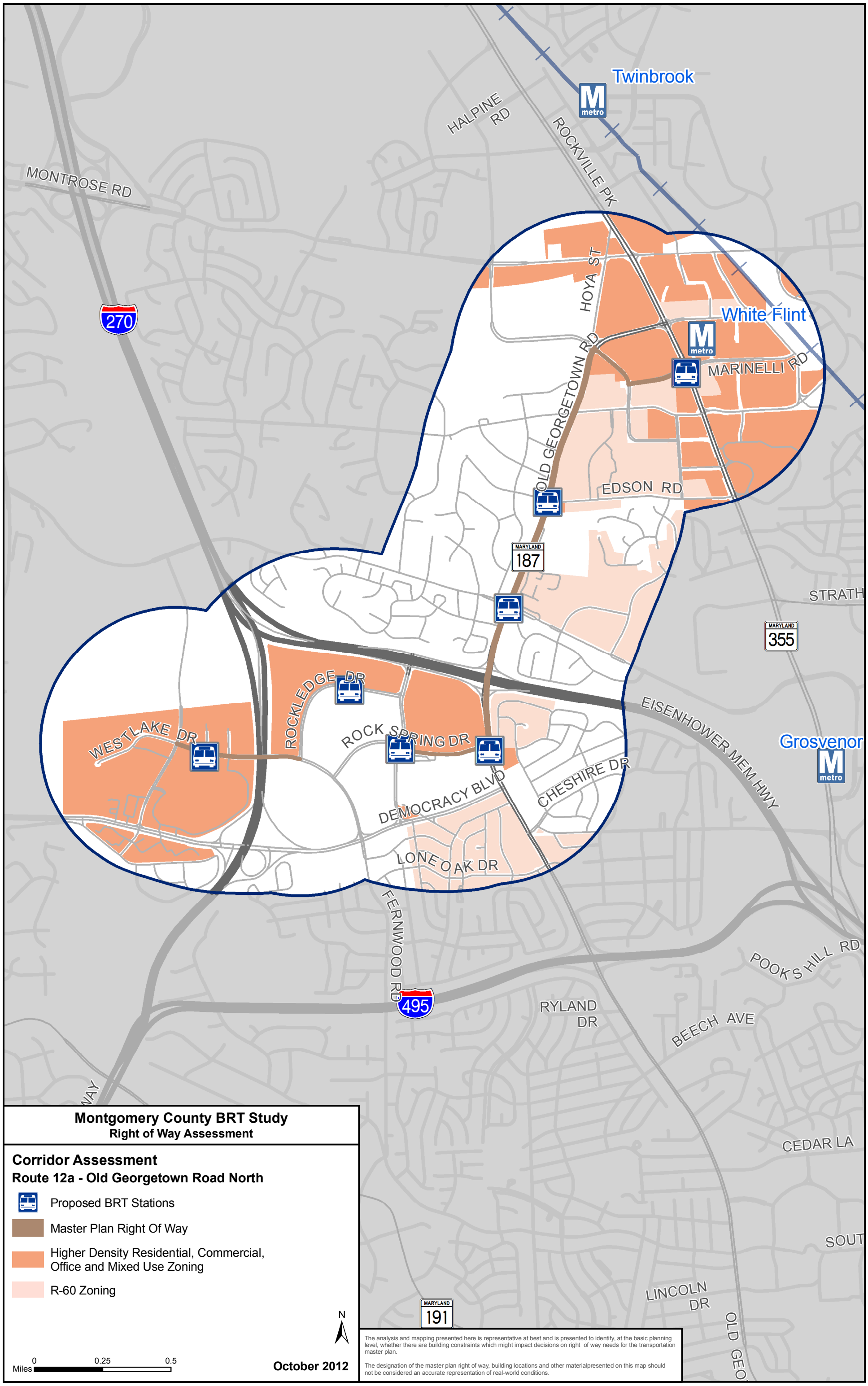
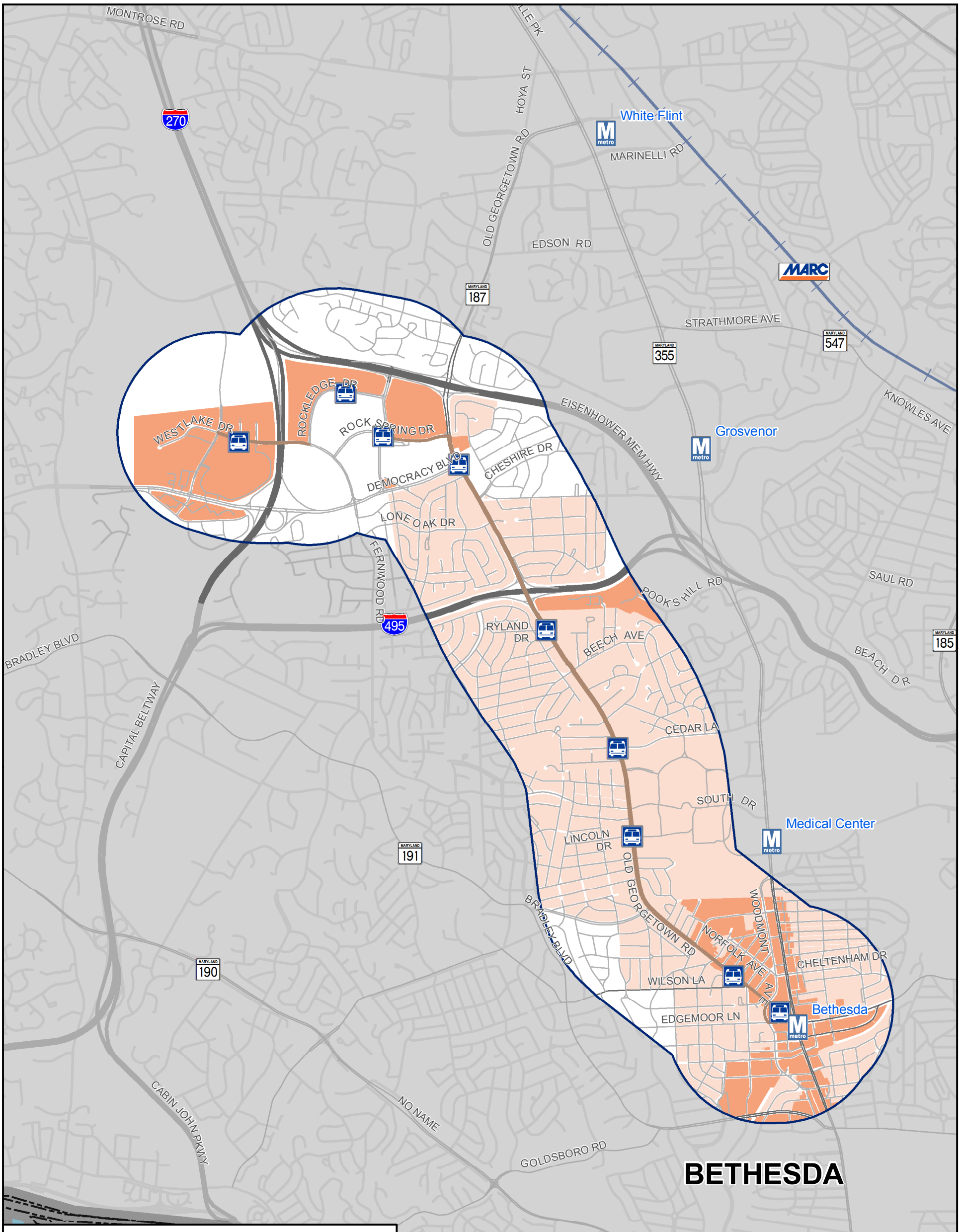

Twinbrook
HALPINE RD
ROCKVILLE PK
MONTROSE RD
270
HOYA ST
White Flint
GEORGETOWN RD
MARINELLI RD
EDSON RD
MARYLAND 187
STRATH
MARYLAND 355
ROCKLEDGE DR
WESTLAKE DR
ROCK SPRING DR
EISENHOWER MEM HWY
Grosvenor
DEMOCRACY BLVD
CHESHIRE DR
LONE OAK DR
FERNWOOD RD
495
POOKS HILL RD
RYLAND DR
BEECH AVE
CEDAR LA
SOUT
LINCOLN DR
MARYLAND 191
OLD GEO
Montgomery County BRT Study
Right of Way Assessment
Corridor Assessment
Route 12a - Old Georgetown Road North
Proposed BRT Stations
Master Plan Right Of Way
Higher Density Residential, Commercial, Office and Mixed Use Zoning
R-60 Zoning
N
0 0.25 0.5
Miles
October 2012
The analysis and mapping presented here is representative at best and is presented to identify, at the basic planning level, whether there are building constraints which might impact decisions on right of way needs for the transportation master plan.
The designation of the master plan right of way, building locations and other materialpresented on this map should not be considered an accurate representation of real-world conditions.



Montgomery County BRT Study
Right of Way Assessment

Corridor Assessment
Route 12b - Old Georgetown Road South

- Proposed BRT Stations
- Master Plan Right Of Way
- Higher Density Residential, Commercial, Office and Mixed Use Zoning
- R-60 Zoning

N

0 0.25 0.5 1 Miles

October 2012

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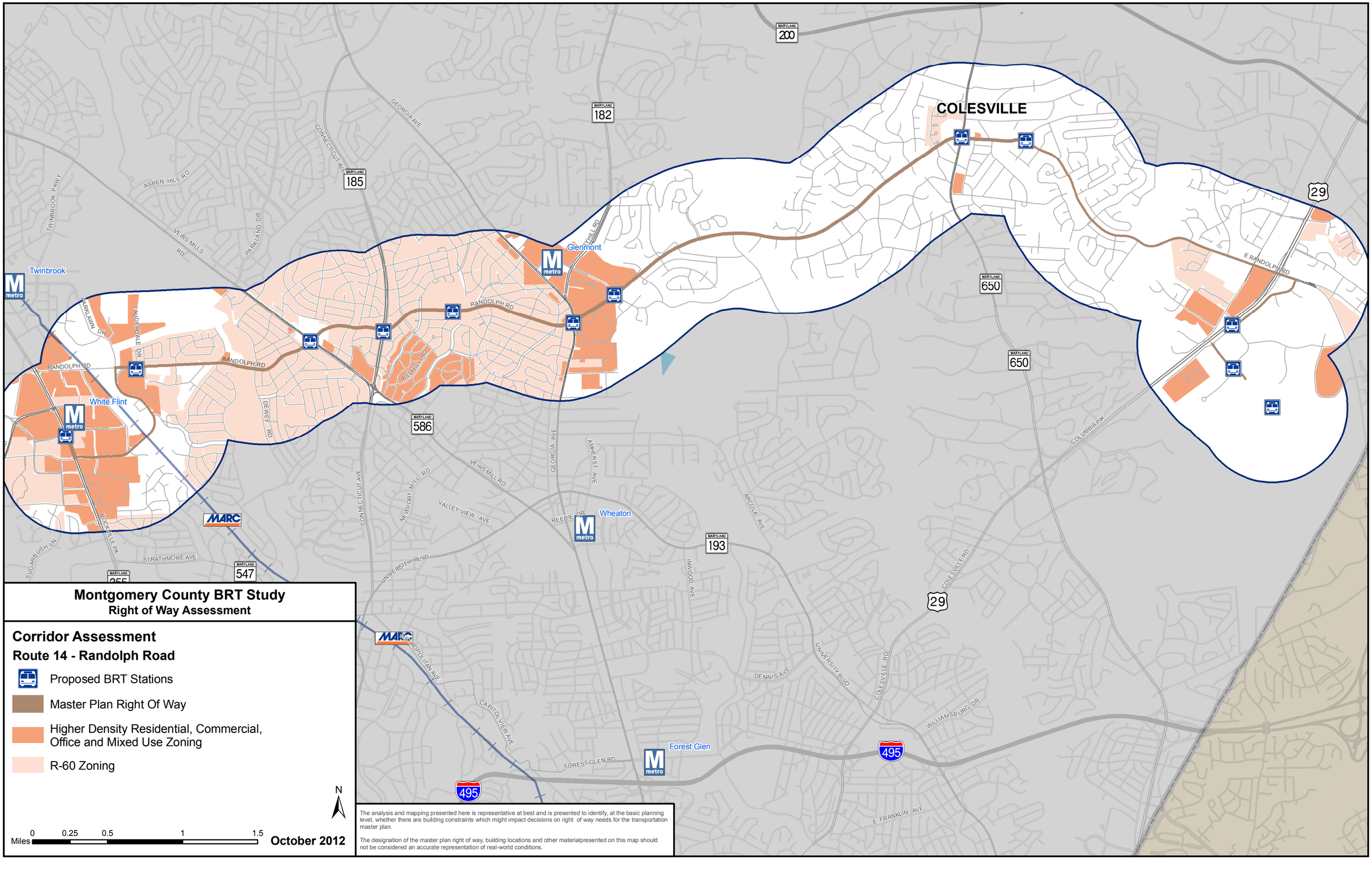

Montgomery County BRT Study
Right of Way Assessment

Corridor Assessment
Route 14 - Randolph Road

- Proposed BRT Stations
- Master Plan Right Of Way
- Higher Density Residential, Commercial, Office and Mixed Use Zoning
- R-60 Zoning

N

0 0.25 0.5 1 1.5 Miles

October 2012

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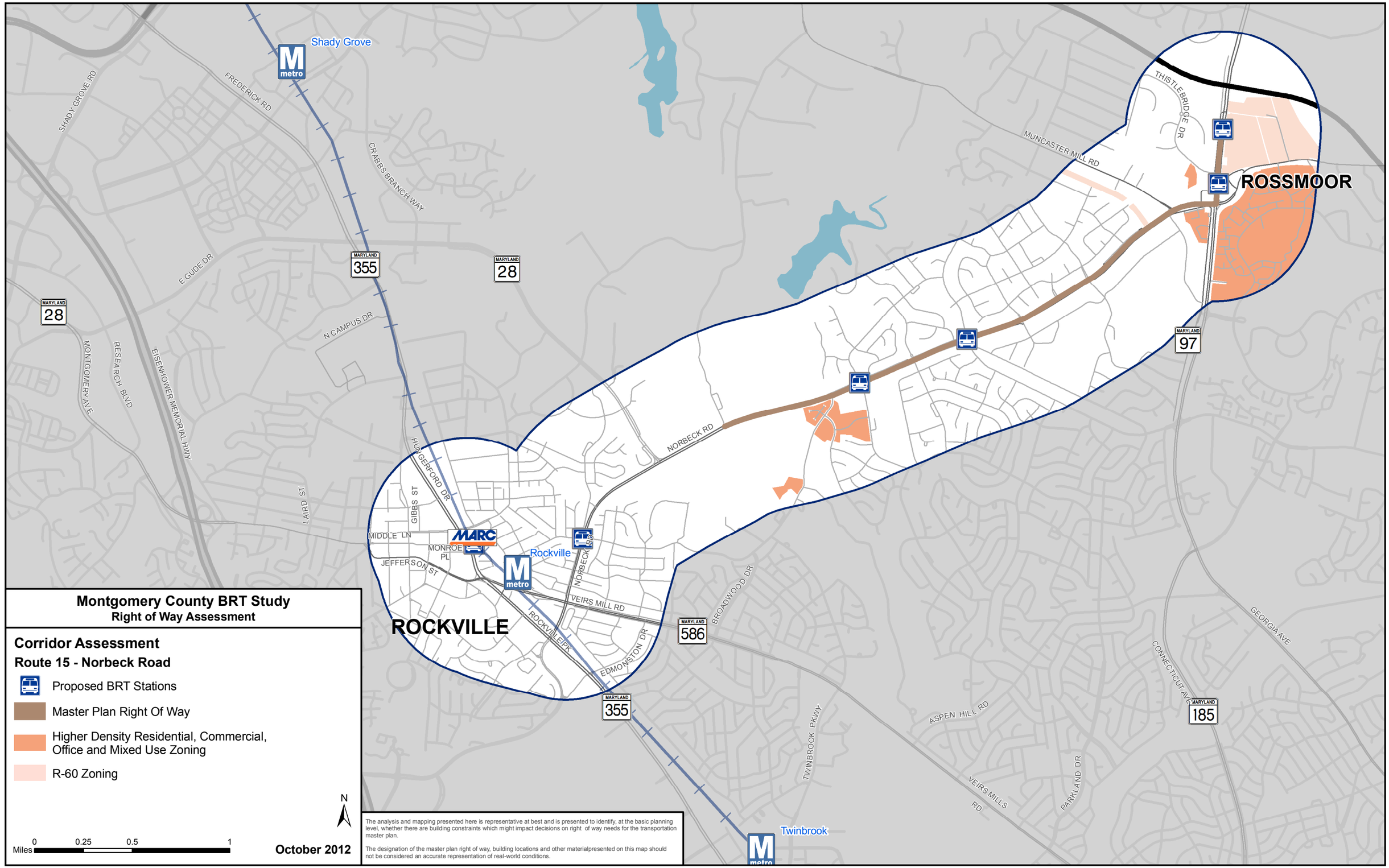

Montgomery County BRT Study
Right of Way Assessment

Corridor Assessment
Route 15 - Norbeck Road

- Proposed BRT Stations
- Master Plan Right Of Way
- Higher Density Residential, Commercial, Office and Mixed Use Zoning
- R-60 Zoning

N

0 0.25 0.5 1 Miles

October 2012

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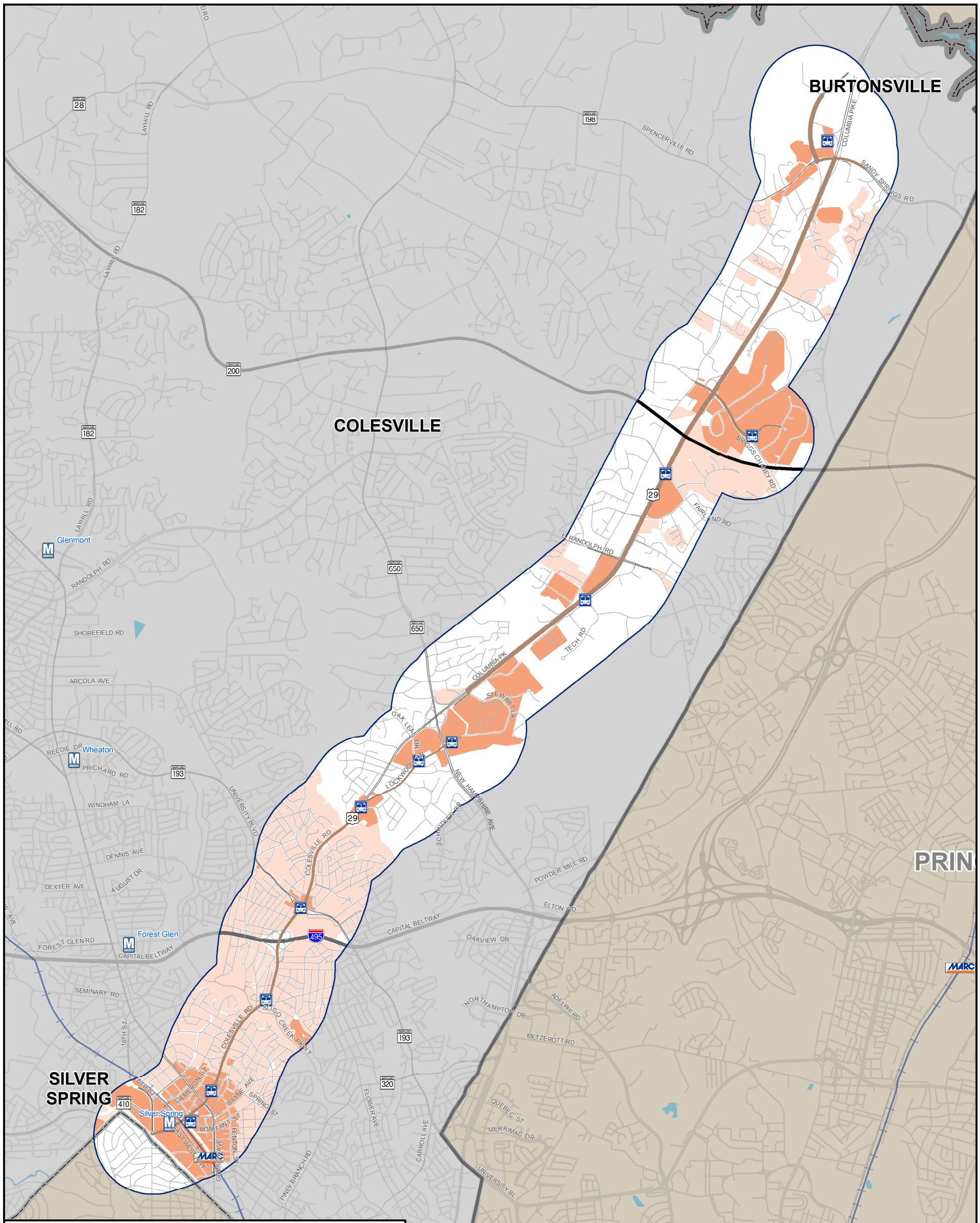


Montgomery County BRT Study
Right of Way Assessment

Corridor Assessment
Route 19 - US 29/Columbia Pike/Colesville Road

- Proposed BRT Stations
- Master Plan Right Of Way
- Higher Density Residential, Commercial, Office and Mixed Use Zoning
- R-60 Zoning

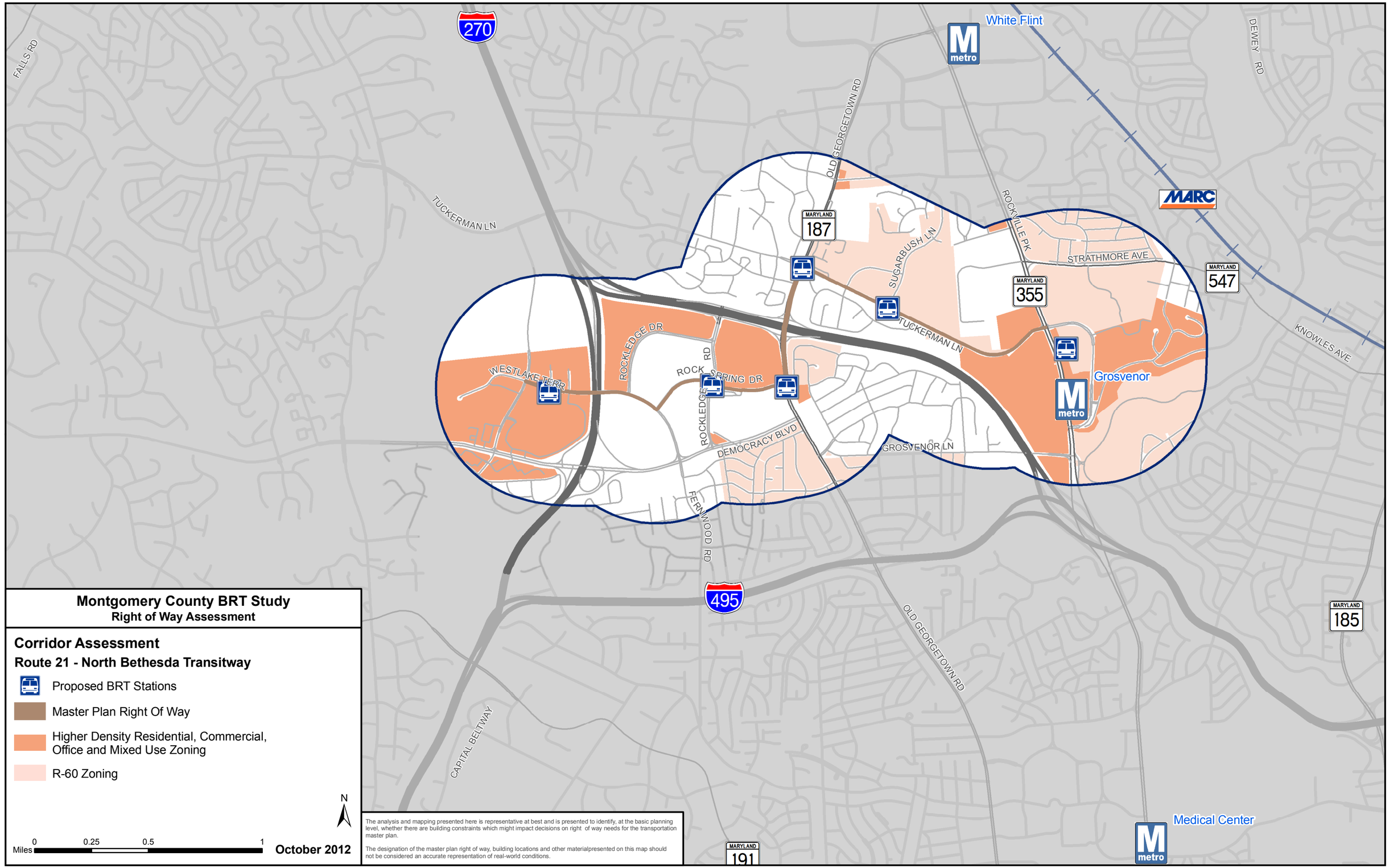
N

0 0.25 0.5 1
Miles

October 2012

The analysis and mapping presented here is representative at best and is presented to identify, at the basic planning level, whether there are building constraints which might impact decisions on right of way needs for the transportation master plan.

The designation of the master plan right of way, building locations and other materialpresented on this map should not be considered an accurate representation of real-world conditions.



Montgomery County BRT Study
Right of Way Assessment

Corridor Assessment
Route 21 - North Bethesda Transitway

- Proposed BRT Stations
- Master Plan Right Of Way
- Higher Density Residential, Commercial, Office and Mixed Use Zoning
- R-60 Zoning

N

0 0.25 0.5 1 Miles

October 2012

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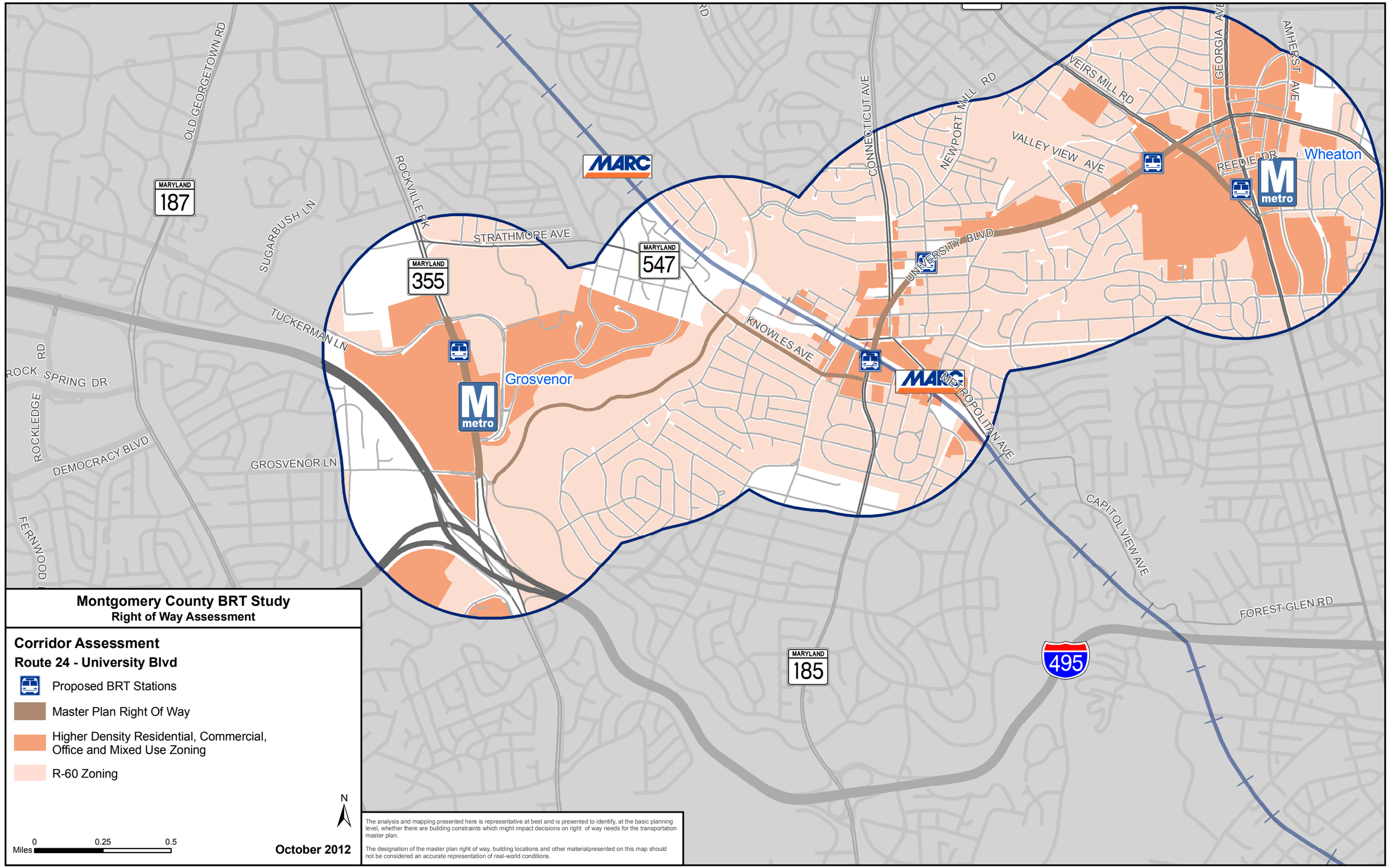
The designation of the master plan right of way, building locations and other materialpresented on this map should not be considered an accurate representation of real-world conditions.



Montgomery County BRT Study
Right of Way Assessment

Corridor Assessment
Route 24 - University Blvd

- Proposed BRT Stations
- Master Plan Right Of Way
- Higher Density Residential, Commercial, Office and Mixed Use Zoning
- R-60 Zoning

N

0 0.25 0.5
Miles

October 2012

The analysis and mapping presented here is representative at best and is presented to identify, at the basic planning level, whether there are building constraints which might impact decisions on right of way needs for the transportation master plan.

The designation of the master plan right of way, building locations and other materialpresented on this map should not be considered an accurate representation of real-world conditions.

Corridor 3: Veirs Mills Road-University Boulevard
Limits: Takoma-Langley Transit Center to Rockville Metrorail Station
Phase I Right-of-Way Recommendations

	Name	Functional Classification	Corridor Typology/Recommendation		Master Plan Assessment			Dedicated Lane Assessment						Resulting ROW Asessment		
			Preferred Runningway Type	Proposed Right-of-Way Width (feet)	Master-Planned Right-of-Way (MPROW) (feet)	Master-Planned Number of Lanes	Meets Preferred ROW Needs?	Peak-Hour BRT Ridership	Peak-Hour Local Bus Ridership	Sum of Peak-Hour Surface Transit Ridership	Auto v/c Ratio	Building Impacts within 5 ft.?	Building Impacts within 15 ft.?	Assessed Runningway Type	Max. Additional ROW Needed (feet)	Discussion
Inside Urban Ring/I-270 Corridor	**Takoma-Langley Transit Center**															
	University Boulevard	Major Highway	*FROM: New Hampshire Avenue* Dual-Lane Median Busway	142	120	6	No	550	110	660	>0.9	Y	Y	**Operational**	**0**	
			TO: Gilbert Street													
	Gilbert Street															
	University Boulevard	Major Highway	*FROM: Gilbert Street* Dual-Lane Median Busway	142	120	6	No	840	170	1,010	>0.9	Y	Y	**Operational**	**0**	
			TO: East Franklin Avenue													
	East Franklin Avenue															
	University Boulevard	Major Highway	*FROM: East Franklin Avenue* Dual-Lane Median Busway	142	120	6	No	900	180	1,080	>0.9	Y	Y	**Operational**	**0**	
			TO: US 29 - Colesville Road													
	US 29 - Colesville Road															
	University Boulevard	Major Highway	*FROM: US 29 - Colesville Road* Dual-Lane Median Busway	142	120	6	No	1,030	210	1,240	>0.9	Y	Y	**Operational**	**0**	Although combined ridership exceeds 1,200-passenger threshold, BRT-only ridership is less than threshold for median busway
			TO: Dennis Avenue													
	Dennis Avenue															
	University Boulevard	Major Highway	*FROM: Dennis Avenue* Dual-Lane Median Busway	142	120	6	No	1,050	210	1,260	>0.9	Y	Y	**Operational**	**0**	Although combined ridership exceeds 1,200-passenger threshold, BRT-only ridership is less than threshold for median busway
			TO: Arcola Avenue													
	Arcola Avenue															
	University Boulevard	Major Highway	*FROM: Arcola Avenue* Dual-Lane Median Busway	142	120	6	No	1,230	250	1,480	>0.9	N	N	**Reversible One-Lane Median Busway**	**9**	Maintain consistent typical section
			TO: Inwood Avenue													
	Inwood Avenue															
	University Boulevard	Major Highway	*FROM: Inwood Avenue* Dual-Lane Median Busway	142	120	6	No	1,280	260	1,540	>0.9	Y	Y	**Reversible One-Lane Median Busway**	**9**	Can conduct refined ROW assessment and modify typical section to accommodate reversible one-lane median busway
			TO: Amherst Avenue													
	Amherst Avenue															
Urban Area	University Boulevard	Major Highway	*FROM: Amherst Avenue* Dedicated Curb Lane	125	120	6	No	1,200	240	1,440	>0.9	Y	Y	**Reversible One-Lane Median Busway**	**9**	Can conduct refined ROW assessment and modify typical section to accommodate reversible one-lane median busway
			TO: Georgia Avenue													
	Georgia Avenue	Major Highway	*FROM: University Boulevard* Dedicated Curb Lane	125	120	6	No					Y	Y	**Reversible One-Lane Median Busway**	**9**	Can conduct refined ROW assessment and modify typical section to accommodate reversible one-lane median busway
			TO: Veirs Mill Road													
	Veirs Mill Road	Major Highway	*FROM: Georgia Avenue* Dedicated Curb Lane	125	120	6	No					Y	Y	**Reversible One-Lane Median Busway**	**9**	Can conduct refined ROW assessment and modify typical section to accommodate reversible one-lane median busway
			TO: Wheaton Metro Entrance													
	Wheaton Metrorail Station															
	Veirs Mill Road	Major Highway	*FROM: Wheaton Metro Entrance* Dedicated Curb Lane	125	120	6	No	920	180	1,100	<0.9	Y	Y	**Dedicated Curb Lane**	**5**	Can conduct refined ROW assessment and modify typical section to accommodate dedicated curb lane
			TO: University Boulevard													
	University Boulevard															
			FROM: University Boulevard													

ATTACHMENT 2:
Ridership forecasts by segment

Inside Urban Ring/I-270 Corridor

Name	Functional Classification	Corridor Typology/Recommendation		Master-Planned Right-of-Way (MPROW) (feet)	Master-Planned Number of Lanes	Meets Preferred ROW Needs?	Peak-Hour BRT Ridership	Peak-Hour Local Bus Ridership	Sum of Peak-Hour Surface Transit Ridership	Auto v/c Ratio	Building Impacts within 5 ft.?	Building Impacts within 15 ft.?	Assessed Runningway Type	Max. Additional ROW Needed (feet)	Discussion
		Preferred Runningway Type	Proposed Right-of-Way Width (feet)												
Veirs Mill Road	Major Highway	Dedicated Curb Lane	125	120	6	No	890	180	1,070	>0.9	Y	Y	**Dedicated Curb Lane**	**5**	Can conduct refined ROW assessment and modify typical section to accommodate dedicated curb lane
TO: Newport Mill Road															
Newport Mill Road															
FROM: Newport Mill Road															
Veirs Mill Road	Major Highway	Reversible One-Lane Median Busway	129	120	6	No	780	160	940	>0.9	Y	Y	**Operational**	**0**	
TO: Connecticut Avenue															
Connecticut Avenue															
FROM: Connecticut Avenue															
Veirs Mill Road	Major Highway	Reversible One-Lane Median Busway	129	120	6	No	770	150	920	>0.9	N	N	**Operational**	**0**	
TO: Randolph Road															
Randolph Road															
FROM: Randolph Road															
Veirs Mill Road	Major Highway	Reversible One-Lane Median Busway	129	120	6	No	830	170	1,000	>0.9	N	N	**Operational**	**0**	
TO: Turkey Branch Parkway															
FROM: Turkey Branch Parkway															
Veirs Mill Road	Major Highway	Reversible One-Lane Median Busway	129	150	6	Yes					N	N	**Operational**	**0**	
TO: Parkland Drive															
Parkland Drive															
FROM: Parkland Drive															
Veirs Mill Road	Major Highway	Reversible One-Lane Median Busway	129	150	6	Yes	840	170	1,010	>0.9	N	N	**Operational**	**0**	
TO: Aspen Hill Road															
Aspen Hill Road															
FROM: Aspen Hill Road															
Veirs Mill Road	Major Highway	Reversible One-Lane Median Busway	129	150	6	Yes	770	150	920	>0.9	N	N	**Operational**	**0**	
TO: Twinbrook Parkway															
Twinbrook Parkway															
FROM: Twinbrook Parkway															
Veirs Mill Road	Major Highway	Reversible One-Lane Median Busway	129	TBD per Rockville Mater Plan Update	N/A	N/A	810	160	970	>0.9	N/A	N/A	**Operational**	**0**	
TO: Broadwood Drive															
Broadwood Drive															
FROM: Broadwood Drive															
Veirs Mill Road	Major Highway	Reversible One-Lane Median Busway	129	TBD per Rockville Mater Plan Update	N/A	N/A	860	170	1,030	>0.9	N/A	N/A	**Operational**	**0**	
TO: Norbeck Road															
Norbeck Road															
FROM: Norbeck Road															
Veirs Mill Road	Major Highway	Reversible One-Lane Median Busway	129	TBD per Rockville Mater Plan Update	N/A	N/A	850	170	1,020	>0.9	N/A	N/A	**Reversible One-Lane Median Busway**	**N/A**	Coordinate ROW assessment with Route 15 : Norbeck Road once City of Rockville finalized transportation master
TO: MD 355															
FROM: Veirs Mill Road															
MD 355	Major Highway	Reversible One-Lane Median Busway	129	TBD per Rockville Mater Plan Update	N/A	N/A					N/A	N/A	**Dual-Lane Median Busway**	**N/A**	Coordinate ROW assessment with Route 10b: MD 355 and Route 15 : Norbeck Road once City of Rockville finalized transportation master plan
TO: Church Street															
Rockville Metrorail Station															

Notes
1: Right-of-way width assumes one exclusive left-turn and zero exclusive right-turn lanes
2: Right-of-way width assumes one exclusive left-turn and one exclusive right-turn lanes

Corridor 4: Georgia Avenue
Limits: Montgomery General Hospital to Eastern Avenue
Phase I Right-of-Way Recommendations

	Name	Functional Classification	Corridor Typology/Recommendation		Master Plan Assessment			Dedicated Lane Assessment						Resulting ROW Needs		
			Preferred Runningway Type	Proposed Right-of-Way Width (feet)	Master-Planned Right-of-Way (MPROW) (feet)	Master-Planned Number of Lanes	Meets Proposed ROW Needs?	Peak-Hour BRT Ridership	Peak-Hour Local Bus Ridership	Sum of Peak-Hour Surface Transit Ridership	Auto v/c Ratio	Building Impacts within 5 feet?	Building Impacts within 15 Feet?	Assessed Runningway Type	Max. Additional ROW Needed (feet)	Discussion
Outside Urban Ring/I-270 Corridor	**Montgomery General Hospital**															
	Prince Phillip Drive	Arterial	*FROM: Brooke Farm Drive*													
			Dedicated Curb Lane	98	80	4	No	10	0	10	<0.9	N	N	**Operational**	**0**	
			TO: Olney-Sandy Spring Road													
	Olney-Sandy Spring Road	Arterial	*FROM: Prince Phillip Drive*													
			Dedicated Curb Lane	98	80	4	No					Y	Y	**Operational**	**0**	
			TO: Georgia Avenue													
	Georgia Avenue and Olney-Sandy Spring Road															
	Georgia Avenue	Major Highway	*FROM: Olney-Sandy Spring Road*													
			Dual-Lane Median Busway	161	150	6	No	140	30	170	>0.9	Y	Y	**Operational**	**0**	
			TO: Hines Road													
	Georgia Avenue and Hines Road															
	Georgia Avenue	Major Highway	*FROM: Hines Road*													
			Dual-Lane Median Busway	161	150	6	No	280	60	340	>0.9	Y	Y	**Operational**	**0**	
			TO: ICC Park-and-Ride Lot													
	Georgia Avenue and ICC Park-and-Ride Lot															
	Georgia Avenue	Major Highway	*FROM: ICC Park-and-Ride Lot*													
			Dual-Lane Median Busway	161	150	6	No	520	100	620	>0.9	N	N	**Operational**	**0**	Although ridership from Route 15: Norbeck Road would add about 170 additional riders, does not meet threshold to consider exclusive facility
			TO: Norbeck Road													
	Georgia Avenue and Norbeck Road Park-and-Ride Lot															
	Georgia Avenue	Major Highway	*FROM: Norbeck Road*													
			Dual-Lane Median Busway	161	150	6	No	660	130	790	>0.9	N	N	**Operational**	**0**	Although ridership from Route 15: Norbeck Road would add about 550 additional riders, segment too short for any runningway treatment
			TO: Rossmoor Boulevard													
	Georgia Avenue and Rossmoor Boulevard															
	Georgia Avenue	Major Highway	*FROM: Rossmoor Boulevard*													
			Dual-Lane Median Busway	161	150	6	No	1,010	200	1,210	>0.9	N	N	**Operational**	o	Although combined ridership exceeds 1,200-passenger threshold, BRT-only ridership is less than threshold for median busway
			TO: Bel Pre Road													
	Georgia Avenue and Bel Pre Road															
	Georgia Avenue	Major Highway	*FROM: Bel Pre Road*													
			Dual-Lane Median Busway	161	150	6	No	930	190	1,120	>0.9	N	Y	**Operational**	o	Although combined ridership (including that from Route 8: Connecticut Avenue) exceeds 1,200-passenger threshold, BRT-only ridership is less than threshold for median busway
			TO: Connecticut Avenue													
	Georgia Avenue and Connecticut Avenue															
	Georgia Avenue	Major Highway	*FROM: Connecticut Avenue*													
			Dual-Lane Median Busway	161	150	6	No	930	190	1,120	>0.9	N	Y	**Operational**	o	Although combined ridership exceeds 1,200-passenger threshold, BRT-only ridership is less than threshold for median busway
			TO: Hewitt Avenue													
	Georgia Avenue and Hewitt Avenue															
	Georgia Avenue	Major Highway	*FROM: Hewitt Avenue*													
			Dual-Lane Median Busway	161	150	6	No	1,150	230	1,380	<0.9	N	N	**Dedicated Curb Lane**	o	
			TO: Turkey Branch													
	Georgia Avenue	Major Highway	*FROM: Turkey Branch*													
			Dual-Lane Median Busway	161	120	6	No					Y	Y	**Dedicated Curb Lane**	**5**	Can conduct refined ROW assessment and modify typical section to accommodate dedicated curb lane
			TO: Weller Road													
	Georgia Avenue	Major Highway	*FROM: Weller Road*													
			Dedicated Curb Lane	125	135-145	6	Yes					N	N	**Dedicated Curb Lane**	**0**	
			TO: Urbana Drive													
Area	**Glenmont Metrorail Station**															
			FROM: Urbana Drive													

	Name	Functional Classification	Corridor Typology/Recommendation		Master Plan Assessment			Dedicated Lane Assessment						Resulting ROW Needs		
			Preferred Runningway Type	Proposed Right-of-Way Width (feet)	Master-Planned Right-of-Way (MPROW) (feet)	Master-Planned Number of Lanes	Meets Proposed ROW Needs?	Peak-Hour BRT Ridership	Peak-Hour Local Bus Ridership	Sum of Peak-Hour Surface Transit Ridership	Auto v/c Ratio	Building Impacts within 5 feet?	Building Impacts within 15 Feet?	Assessed Runningway Type	Max. Additional ROW Needed (feet)	Discussion
Urban	Georgia Avenue	Major Highway	Dedicated Curb Lane	125	145-170	6	Yes	730	150	880	>0.9	N	N	**Operational**	0	Although can combine with ridership along Route 14: Randolph Road, too short a segment for median facility. Maintain consistent runningway type as that south of Randolph Road.
	TO: Randolph Road															
Inside Urban Ring/I-270 Corridor	**Georgia Avenue and Randolph Road**															
	FROM: Randolph Road															
	Georgia Avenue	Major Highway	Reversible One-Lane Median Busway	129	120	6	No	840	170	1,010	>0.9	Y	Y	**Operational**	0	
	TO: Arcola Avenue															
Urban Area	**Georgia Avenue and Arcola Avenue**															
	FROM: Arcola Avenue															
	Georgia Avenue	Major Highway	Dedicated Curb Lane	125	120	6	No	870	170	1,040	>0.9	Y	Y	**Dedicated Curb Lane**	5	Consider additional ROW for auto lanes, as needed.
	TO: Veirs Mill Road															
	FROM: Georgia Avenue															
	Veirs Mill Road	Major Highway	Dedicated Curb Lane	125	150	6	Yes					N	N	**Dedicated Curb Lane**	0	Consider additional ROW for auto lanes, as needed.
	TO: Wheaton Metro entrance															
	Wheaton Metrorail Station															
	FROM: Wheaton Metro entrance															
	Veirs Mill Road	Major Highway	Dedicated Curb Lane	125	150	6	Yes	1,240	250	1,490	>0.9	N	N	**Dedicated Curb Lane**	0	Consider additional ROW for auto lanes, as needed.
	TO: Georgia Avenue															
	FROM: Georgia Avenue															
	Georgia Avenue	Major Highway	Dedicated Curb Lane	125	120	6	No					N	Y	**Reversible One-Lane Median Busway**	9	
	TO: Windham Lane															
Inside Urban Ring/I-270 Corridor	***FROM: Windham Lane***															
	Georgia Avenue	Major Highway	Reversible One-Lane Median Busway	129	120	6	No					N	Y	**Reversible One-Lane Median Busway**	9	
	TO: Dennis Avenue															
	Georgia Avenue and Dennis Avenue															
	FROM: Dennis Avenue															
	Georgia Avenue	Major Highway	Reversible One-Lane Median Busway	129	110	6	No	1,260	250	1,510	>0.9	N	Y	**Reversible One-Lane Median Busway**	9	Can conduct refined ROW assessment and modify typical section to accommodate reversible one-lane median busway
	TO: Forest Glen Road															
	Georgia Avenue and Forest Glen Road															
	FROM: Forest Glen Road															
	Georgia Avenue	Major Highway	Reversible One-Lane Median Busway	129	110	6	No	1,330	270	1,600	>0.9	N	N	**Reversible One-Lane Median Busway**	9	Can conduct refined ROW assessment and modify typical section to accommodate reversible one-lane median busway
	TO: I-495															
	FROM: I-495															
Urban Area	Georgia Avenue	Major Highway	Dedicated Curb Lane	125	120	6	No					Y	Y	**Reversible One-Lane Median Busway**	9	Can conduct refined ROW assessment and modify typical section to accommodate reversible one-lane median busway
	TO: Seminary Road															
	Georgia Avenue and Seminary Road															
	FROM: Seminary Road															
	Georgia Avenue	Major Highway	Dedicated Curb Lane	125	120	6	No	1,270	250	1,520	>0.9	Y	Y	**Reversible One-Lane Median Busway**	9	Can conduct refined ROW assessment and modify typical section to accommodate reversible one-lane median
	TO: Luzerne Avenue															
Inside Urban Ring/I-270 Corridor	***FROM: Luzerne Avenue***															
	Georgia Avenue	Major Highway	Reversible One-Lane Median Busway	129	120	6	No					Y	Y	**Reversible One-Lane Median Busway**	9	Can conduct refined ROW assessment and modify typical section to accommodate reversible one-lane median
	TO: Spring Street															
	FROM: Spring Street															
	Georgia Avenue	Major Highway	Dedicated Curb Lane	125	126	6	Yes					Y	Y	**Reversible One-Lane Median Busway**	3	Can conduct refined ROW assessment and modify typical section to accommodate reversible one-lane median busway
	TO: Cameron Street															
	Georgia Avenue and Cameron Street															
	FROM: Cameron Street															
	Georgia Avenue	Major Highway	Dedicated Curb Lane	125	126	6	Yes	770	150	920		N	N	**Operational**	0	Maintain consistency with runningway assessment south of Colesville Road
	TO: Colesville Road															
	FROM: Colesville Road															
Urban Area	Georgia Avenue	Major Highway	Dedicated Curb Lane	125	120-140	6	Yes	400	80	480	>0.9	N	N	**Operational**	0	
	TO: CSX Railroad															

					Master Plan Assessment			Dedicated Lane Assessment						Resulting ROW Needs		
Name	Functional Classification	Corridor Typology/Recommendation					Peak-Hour BRT Ridership	Peak-Hour Local Bus Ridership	Sum of Peak-Hour Surface Transit Ridership	Auto v/c Ratio	Building Impacts within 5 feet?	Building Impacts within 15 Feet?	Assessed Runningway Type	Max. Additional ROW Needed (feet)	Discussion
		Preferred Runningway Type	Proposed Right-of-Way Width (feet)	Master-Planned Right-of-Way (MPROW) (feet)	Master-Planned Number of Lanes	Meets Proposed ROW Needs?									
		FROM: CSX Railroad													
Georgia Avenue	Major Highway	Dedicated Curb Lane	125	125	6	Yes					N	N	Operational	0	
		TO: East-West Highway													
East-West Highway															
		FROM: East-West Highway													
Georgia Avenue	Major Highway	Dedicated Curb Lane	125	125	6	Yes	360	70	430	>0.9	N	N	Operational	0	
		TO: Eastern Avenue													
Eastern Avenue															

Notes
1: Right-of-way width assumes one exclusive left-turn and zero exclusive right-turn lanes
2: Right-of-way width assumes one exclusive left-turn and one exclusive right-turn lanes

Corridor 5: Rockville - Life Science Center
Limits: Rockville Metrorail Station to Life Science Center
Phase I Right-of-Way Recommendations

				Master Plan Assessment			Dedicated Lane Assessment						Resulting ROW Assesment		
	Name	Functional Classification	Corridor Typology/Recommendation												
			Preferred Runningway Type	Proposed Right-of-Way Width (feet)	Master-Planned Right-of-Way (MPROW) (feet)	Master-Planned Number of Lanes	Meet Proposed ROW Needs?	Peak-Hour BRT Ridership	Peak-Hour Local Bus Ridership	Sum of Peak-Hour Surface Transit Ridership	Auto v/c Ratio	Building Impacts within 5 feet?	Building Impacts within 15 feet?	Assessed Runningway Type	Max. Additional ROW Needed (feet)	Discussion
Inside Urban Ring/I-270 Corridor	**Rockville Metrorail Station**														
	MD 355	Major Highway	***FROM: Church Street***												
			Reversible One-Lane Median Busway	129	TBD per Rockville Master Plan Update	N/A	N/A	1,220	240	1,460	>0.9	N/A	N/A	**Dual-Lane Median Busway**	**22**	Coordinate runningway treatment with Route 10a: MD 355 North. Work with City of Rockville to develop appropriate typical section for dual-lane median busway
			TO: East Middle Lane												
	East Middle Lane	Arterial	***FROM: MD 355***												
			Reversible One-Lane Median Busway	129	TBD per Rockville Master Plan Update	N/A	N/A					N/A	N/A	**Operational**	**0**	
			TO: Gibbs Street												
	East Middle Lane and Gibbs Street														
	East Middle Lane	Arterial	***FROM: Gibbs Street***												
			Reversible One-Lane Median Busway	109	TBD per Rockville Master Plan Update	N/A	N/A	1,240	250	1,490		N/A	N/A	**Operational**	**0**	
			TO: North Washington Street												
	North Washington Street	Collector	***FROM: East Middle Lane***												
			Reversible One-Lane Median Busway	109	TBD per Rockville Master Plan Update	N/A	N/A				>0.9	N/A	N/A	**Operational**	**0**	
			TO: MD 28												
	MD 28	Arterial/Major Highway	***FROM: North Washington Street***												
			Reversible One-Lane Median Busway	109	TBD per Rockville Master Plan Update	N/A	N/A					N/A	N/A	**Operational**	**0**	
			TO: Laird Street												
	MD 28 and Laird Street														
	MD 28	Major Highway	***FROM: Laird Street***												
			Reversible One-Lane Median Busway	129	TBD per Rockville Master Plan Update	N/A	N/A	1,140	230	1,370	>0.9	N/A	N/A	**Operational**	**0**	
			TO: Research Boulevard												
	MD 28 and Research Boulevard														
	Research Boulevard	Industrial	***FROM: MD 28***												
			Reversible One-Lane Median Busway	129	TBD per Rockville Master Plan Update	N/A	N/A	1,110	220	1,330	<0.9	N/A	N/A	**Operational**	**0**	
			TO: Gude Drive												
	Research Boulevard and Gude Drive														
	Research Boulevard	Industrial	***FROM: Gude Drive***												
			Reversible One-Lane Median Busway	129	TBD per Rockville Master Plan Update	N/A	N/A	790	160	950	<0.9	N/A	N/A	**Operational**	**0**	
			TO: Shady Grove Road												
	Research Boulevard and Shady Grove Road														
Urban Area	Research Boulevard	Industrial	***FROM: Shady Grove Road***												
			Dedicated Curb Lane	N/A	80	2	No	690	140	830		N	N	**Operational**	**0**	
			TO: Omega Drive												
	Omega Drive	Collector	***FROM: Research Boulevard***								<0.9				
			Dedicated Curb Lane	N/A	100	2	No					N	N	**Operational**	**0**	
			TO: MD 28												
	MD 28	Controlled Major Highway	***FROM: Omega Drive***												
			Dedicated Curb Lane	122	200	8	Yes					N	N	**Operational**	**0**	Make consistent with runningway treatment west of Broschart Drive
			TO: Broschart Road												
	MD 28 and Broschart Road														
	MD 28	Controlled Major Highway	***FROM: Broschart Road***												
			Dedicated Curb Lane	122	200	8	Yes	540	110	650		N	N	**Operational**	**0**	
			TO: Great Seneca Highway												
	Great Seneca Highway	Major Highway	***FROM: MD 28***								<0.9				
			Dedicated Curb Lane	122	150	4-6	Yes					N	N	**Dedicated Curb Lane**	**0**	Ridership exceeds 800 passengers when combined with Route7: Muddy Branch Road and Route 20: ICC
			TO: Life Science Center												
	Life Science Center														

Notes
1: Right-of-way width assumes one exclusive left-turn and zero exclusive right-turn lanes
2: Right-of-way width assumes one exclusive left-turn and one exclusive right-turn lanes

Corridor 7: Muddy Branch Road
Limits: Lakeforest Mall Transit Center to Life Science Center

Phase I Right-of-Way Recommendations

	Name	Functional Classification	Corridor Typology/Recommendation		Master Plan Assessment			Dedicated Lane Assessment						Resulting ROW Assessment		
			Preferred Runningway Type	Proposed Right-of-Way Width (feet)	Master-Planned Right-of-Way (MPROW) (feet)	Master-Planned Number of Lanes	Meets Proposed ROW Needs?	Peak-Hour BRT Ridership	Peak-Hour Local Bus Ridership	Sum of Peak-Hour Surface Transit Ridership	Auto v/c Ratio	Building Impacts within 5 feet?	Building Impacts within 15 feet?	Assessed Runningway Type	Max. Additional ROW Needed (feet)	Discussion
Inside Urban Ring/I-270 Corridor	**Lakeforest Mall Transit Center**															
	Odendhal Avenue	Collector	*FROM: Lost Knife Road*													
			Reversible One-Lane Median Busway	129	120 (min.)	4	No	460	90	550	<0.9	N/A	N/A	**Operational**		
			TO: Russell Avenue													
	Odendhal Avenue	Collector	*FROM: Russell Avenue*													
			Reversible One-Lane Median Busway	129	80 (min.)	4	No					N/A	N/A	**Operational**		
			TO: MD 355													
	MD 355	Controlled Major Highway	*FROM: Odendhal Avenue*													
			Dual-Lane Median Busway	142	120 (min.)	6	No					Y	Y	**Dual-Lane Median Busway**	**22**	Ridership exceeds 2,000 passengers when combined with Route 10a: MD 355 North. Work with City of Gaithersburg to develop typical section feasible within constrained ROW along MD 355
			TO: Brookes Avenue													
	MD 355 and Brookes Avenue															
	MD 355	Controlled Major Highway	*FROM: Brookes Avenue*													
			Dual-Lane Median Busway	142	120 (min.)	6	No	550	110	660	>0.9	N	N	**Dual-Lane Median Busway**	**22**	Ridership exceeds 2,000 passengers when combined with Route 10a: MD 355 North. Work with City of Gaithersburg to develop typical section feasible within constrained ROW along MD 355
			TO: West Diamond Avenue													
	West Diamond Avenue	Major Highway	*FROM: MD 355*													
			N/A	N/A	120 (min.)	4	No					N/A	N/A	**Operational**	**0**	
			TO: Muddy Branch Road													
	Muddy Branch Road and West Diamond Avenue															
	Muddy Branch Road	Major Highway	*FROM: West Diamond Avenue*													
			Reversible One-Lane Median Busway	129	120	6	No	610	120	730	>0.9	N	Y	**Operational**	**0**	
			TO: West Side Drive													
	Muddy Branch Road and WestSide Drive															
	Muddy Branch Road	Major Highway	*FROM: West Side Drive*													
			Reversible One-Lane Median Busway	129	120	6	No	560	110	670	>0.9	N	Y	**Operational**	**0**	
			TO: Center Drive													
	Muddy Branch Road	Major Highway	*FROM: Center Drive*													
			Reversible One-Lane Median Busway	129	120	6	No	560	110	670	>0.9	N/A	N/A	**Operational**	**0**	
			TO: Diamondback Drive													
	MD 28 and Diamondback Drive															
	Muddy Branch Road	Major Highway	*FROM: Diamondback Drive*													
			Reversible One-Lane Median Busway	129	120	6	No	570	110	680	>0.9	N/A	N/A	**Operational**	**0**	
			TO: Great Seneca Highway													
	Great Seneca Highway	Major Highway	*FROM: Muddy Branch Road*													
			Reversible One-Lane Median Busway	129	150	4-6	Yes					N	N	**Operational**	**0**	
			TO: Sam Eig Highway													
Urban Area	Great Seneca Highway	Major Highway	*FROM: Sam Eig Highway*													
			Dedicated Curb Lane	122	150	4-6	Yes					N	N	**Operational**	**0**	
			TO: Decoverly Drive													
	Great Seneca Highway and Decoverly Drive															
Urban Area	Great Seneca Highway	Major Highway	*FROM: Decoverly Drive*													
			Dedicated Curb Lane	122	150	4-6	Yes	330	70	400		N	N	**Dedicated Curb Lane**	**0**	Ridership exceeds 800 passengers when combined with Route 20: ICC.
			TO: Key West Avenue													
	Great Seneca Highway	Major Highway	*FROM: Key West Avenue*								<0.9					
			Dedicated Curb Lane	122	150	4-6	Yes					N	N	**Dedicated Curb Lane**	**0**	Ridership exceeds 800 passengers when combined with Route 5: Rockville-LSC and Route 20: ICC.
			TO: Life Science Center													
	Life Science Center															

Notes
1: Right-of-way width assumes one exclusive left-turn and zero exclusive right-turn lanes
2: Right-of-way width assumes one exclusive left-turn and one exclusive right-turn lanes

Corridor 8: Connecticut Avenue
Limits: Bel Pre Road to Medical Center Metrorail Station
Phase I Right-of-Way Recommendations

					Master Plan Assessment			Dedicated Lane Assessment						Resulting ROW Assessment			
	Name	Functional Classification	Corridor Typology/Recommendation														
			Preferred Runningway Type	Proposed Right-of-Way Width (feet)	Master-Planned Right-of-Way (MPROW) (feet)	Master-Planned Number of Lanes	Meets Proposed ROW Needs?	Peak-Hour BRT Ridership	Peak-Hour Local Bus Ridership	Sum of Peak-Hour Surface Transit Ridership	Auto v/c Ratio	Building Impacts within 5 feet?	Building Impacts within 15 feet?	Assessed Runningway Type	Max. Additional ROW Needed (feet)	Discussion	
Outside Urban Ring/I-270 Corridor	**Georgia Avenue and Bel Pre Road**																
	Georgia Avenue	Major Highway	***FROM: Bel Pre Road***														
			Dual-Lane Median Busway	161	150	6	No	140	30	170	>0.9	Y	Y	**Operational**	**0**	Although combined ridership including Route 8: Connecticut Avenue exceeds 1,200-passenger threshold, BRT-only ridership is less than threshold for median busway	
			TO: Connecticut Avenue														
	Georgia Avenue and Connecticut Avenue																
	Connecticut Avenue	Major Highway	***FROM: Georgia Avenue***														
			Phase 2 recommendation	N/A	150	6	N/A	240	50	290	>0.9	N/A	N/A	**Operational**	**0**		
			TO: Turkey Branch - Matthew Henson Trail														
	Connecticut Avenue	Major Highway	***FROM: Turkey Branch - Matthew Henson Trail***														
			Phase 2 recommendation	N/A	120	6	N/A					N/A	N/A	**Operational**	**0**		
			TO: Weller Road														
	Connecticut Avenue and Weller Road																
	Connecticut Avenue	Major Highway	***FROM: Weller Road***														
			Phase 2 recommendation	N/A	120	6	N/A	310	60	370	>0.9	N/A	N/A	**Operational**	**0**		
			TO: Randolph Road														
	Connecticut Avenue and Randolph Road																
	Connecticut Avenue	Major Highway	***FROM: Randolph Road***														
			Phase 2 recommendation	N/A	120	6	N/A	420	80	500	>0.9	N/A	N/A	**Operational**	**0**		
			TO: Veirs Mill Road														
	Connecticut Avenue and Veirs Mill Road																
	Connecticut Avenue	Major Highway	***FROM: Veirs Mill Road***														
			Phase 2 recommendation	N/A	120	6	N/A	460	90	550	>0.9	N/A	N/A	**Operational**	**0**		
			TO: University Boulevard														
	Connecticut Avenue	Major Highway	***FROM: University Boulevard***														
			Reversible One-Lane Median Busway	129	120	6	No					Y	Y	**Operational**	**0**		
			TO: Howard Avenue														
Inside Urban Ring/I-270 Corridor	**Connecticut Avenue and Howard Avenue**																
	Connecticut Avenue	Major Highway	***FROM: Howard Avenue***														
			Reversible One-Lane Median Busway	129	120	6	No	460	90	550	>0.9	Y	Y	**Operational**	**0**		
			TO: Saul Road														
	Connecticut Avenue and Saul Road																
	Connecticut Avenue	Major Highway	***FROM: Saul Road***														
			Reversible One-Lane Median Busway	129	120	6	No	520	100	620		Y	Y	**Operational**	**0**		
			TO: Jones Bridge Road														
	Jones Bridge Road	Arterial	***FROM: Connecticut Avenue***								>0.9						
			Phase 2 recommendation	N/A	80	4	N/A					N/A	N/A	**Operational**	**0**		
			TO: Platt Ridge Road														
	Jones Bridge Road and Platt Ridge Road																
	Jones Bridge Road	Arterial	***FROM: Platt Ridge Road***														
			Phase 2 recommendation	N/A	80	4	N/A	430	90	520	>0.9	N/A	N/A	**Operational**	**0**		
			TO: Glenbrook Parkway														
	Jones Bridge Road and Glenbrook Parkway																
	Jones Bridge Road	Arterial	***FROM: Glenbrook Parkway***														
			Phase 2 recommendation	N/A	80	4	N/A	380	80	460		N/A	N/A	**Operational**	**0**		
			TO: MD 355														
	MD 355	Major Highway	***FROM: Jones Bridge Road***								>0.9						
			Dual-Lane Median Busway	142	120	6	No					Y	Y	**Dual-Lane Median Busway**	**22**	Coordinate treatment with Route 10b: MD 355 South	
			TO: Wood Road/South Drive														
	Medical Center Metrorail Station																

Notes
1: Right-of-way width assumes one exclusive left-turn and zero exclusive right-turn lanes
2: Right-of-way width assumes one exclusive left-turn and one exclusive right-turn lanes

Corridor 8: Connecticut Avenue
Limits: Bel Pre Road to Medical Center Metrorail Station
Phase I Right-of-Way Recommendations

					Master Plan Assessment			Dedicated Lane Assessment						Resulting ROW Assessment			
	Name	Functional Classification	Corridor Typology/Recommendation														
			Preferred Runningway Type	Proposed Right-of-Way Width (feet)	Master-Planned Right-of-Way (MPROW) (feet)	Master-Planned Number of Lanes	Meets Proposed ROW Needs?	Peak-Hour BRT Ridership	Peak-Hour Local Bus Ridership	Sum of Peak-Hour Surface Transit Ridership	Auto v/c Ratio	Building Impacts within 5 feet?	Building Impacts within 15 feet?	Assessed Runningway Type	Max. Additional ROW Needed (feet)	Discussion	
Outside Urban Ring/I-270 Corridor	**Georgia Avenue and Bel Pre Road**																
	Georgia Avenue	Major Highway	***FROM: Bel Pre Road***														
			Dual-Lane Median Busway	161	150	6	No	140	30	170	>0.9	Y	Y	**Operational**	**0**	Although combined ridership including Route 8: Connecticut Avenue exceeds 1,200-passenger threshold, BRT-only ridership is less than threshold for median busway	
			TO: Connecticut Avenue														
	Georgia Avenue and Connecticut Avenue																
	Connecticut Avenue	Major Highway	***FROM: Georgia Avenue***														
			Phase 2 recommendation	N/A	150	6	N/A	240	50	290	>0.9	N/A	N/A	**Operational**	**0**		
			TO: Turkey Branch - Matthew Henson Trail														
	Connecticut Avenue	Major Highway	***FROM: Turkey Branch - Matthew Henson Trail***														
			Phase 2 recommendation	N/A	120	6	N/A					N/A	N/A	**Operational**	**0**		
			TO: Weller Road														
	Connecticut Avenue and Weller Road																
	Connecticut Avenue	Major Highway	***FROM: Weller Road***														
			Phase 2 recommendation	N/A	120	6	N/A	310	60	370	>0.9	N/A	N/A	**Operational**	**0**		
			TO: Randolph Road														
	Connecticut Avenue and Randolph Road																
	Connecticut Avenue	Major Highway	***FROM: Randolph Road***														
			Phase 2 recommendation	N/A	120	6	N/A	420	80	500	>0.9	N/A	N/A	**Operational**	**0**		
			TO: Veirs Mill Road														
	Connecticut Avenue and Veirs Mill Road																
	Connecticut Avenue	Major Highway	***FROM: Veirs Mill Road***														
			Phase 2 recommendation	N/A	120	6	N/A	460	90	550	>0.9	N/A	N/A	**Operational**	**0**		
			TO: University Boulevard														
	Connecticut Avenue	Major Highway	***FROM: University Boulevard***														
			Reversible One-Lane Median Busway	129	120	6	No					Y	Y	**Operational**	**0**		
			TO: Howard Avenue														
Inside Urban Ring/I-270 Corridor	**Connecticut Avenue and Howard Avenue**																
	Connecticut Avenue	Major Highway	***FROM: Howard Avenue***														
			Reversible One-Lane Median Busway	129	120	6	No	460	90	550	>0.9	Y	Y	**Operational**	**0**		
			TO: Saul Road														
	Connecticut Avenue and Saul Road																
	Connecticut Avenue	Major Highway	***FROM: Saul Road***														
			Reversible One-Lane Median Busway	129	120	6	No	520	100	620		Y	Y	**Operational**	**0**		
			TO: Jones Bridge Road														
	Jones Bridge Road	Arterial	***FROM: Connecticut Avenue***								>0.9						
			Phase 2 recommendation	N/A	80	4	N/A					N/A	N/A	**Operational**	**0**		
			TO: Platt Ridge Road														
	Jones Bridge Road and Platt Ridge Road																
	Jones Bridge Road	Arterial	***FROM: Platt Ridge Road***														
			Phase 2 recommendation	N/A	80	4	N/A	430	90	520	>0.9	N/A	N/A	**Operational**	**0**		
			TO: Glenbrook Parkway														
	Jones Bridge Road and Glenbrook Parkway																
	Jones Bridge Road	Arterial	***FROM: Glenbrook Parkway***														
			Phase 2 recommendation	N/A	80	4	N/A	380	80	460		N/A	N/A	**Operational**	**0**		
			TO: MD 355														
	MD 355	Major Highway	***FROM: Jones Bridge Road***								>0.9						
			Dual-Lane Median Busway	142	120	6	No					Y	Y	**Dual-Lane Median Busway**	**22**	Coordinate treatment with Route 10b: MD 355 South	
			TO: Wood Road/South Drive														
	Medical Center Metrorail Station																

Notes
1: Right-of-way width assumes one exclusive left-turn and zero exclusive right-turn lanes
2: Right-of-way width assumes one exclusive left-turn and one exclusive right-turn lanes

Corridor 10a: MD 355 North
Limits: Clarksburg Town Center to Rockville Metrorail Station
Phase I Right-of-Way Recommendations

Inside Urban Ring/I-270 Corridor

Name	Functional Classification	Corridor Typology/Recommendation		Master Plan Assessment			Dedicated Lane Assessment						Resulting ROW Assessment		
		Preferred Runningway Type	Proposed Right-of-Way Width (feet)	Master-Planned Right-of-Way (MPROW) (feet)	Master-Planned Number of Lanes	Meets Proposed ROW Needs?	Peak-Hour BRT Ridership	Peak-Hour Local Bus Ridership	Sum of Peak-Hour Surface Transit Ridership	Auto v/c Ratio	Building Impacts If Ad ROW	Building Impacts If Ad ROW	Assessed Runningway Type	Max. Additional ROW Needed (feet)	Discussion
Clarksburg Town Center (Snowden Farm Parkway and Stringtown Road)															
		FROM: Stringtown Road													
Snowden Farm Parkway	Arterial	Dual-Lane Median Busway	142	120	4	No	170	30	200	<0.9	N	N	**Operational**	**0**	
		TO: Foreman Boulevard													
Snowden Farm Parkway and Foreman Boulevard															
		FROM: Foreman Boulevard													
Snowden Farm Parkway	Arterial	Dual-Lane Median Busway	142	120	4	No	470	90	560	>0.9	N	N	**Operational**	**0**	
		TO: Ridge Road													
Snowden Farm Parkway and Ridge Road															
		FROM: Snowden Farm Parkway													
Ridge Road	Controlled Major Highway/Major Highway	Dual-Lane Median Busway	142	120-150	6	Yes	650	130	780	<0.9	N	N	**Operational**	**0**	
		TO: MD 355													
		FROM: Ridge Road													
MD 355	Controlled Major Highway	Dual-Lane Median Busway	142	250	6	Yes					N	N	**Operational**	**0**	
		TO: Shakespeare Boulevard													
MD 355 and Shakespeare Boulevard															
		FROM: Shakespeare Boulevard													
MD 355	Controlled Major Highway	Dual-Lane Median Busway	142	250	6	Yes	1,240	250	1,490	<0.9	N	N	**Dedicated Curb Lane**	0	
		TO: Germantown Road													
MD 355 and Germantown Road															
		FROM: Germantown Road													
MD 355	Controlled Major Highway	Dual-Lane Median Busway	142	250	6	Yes	1,380	280	1,660	<0.9	N	N	**Dedicated Curb Lane**	0	
		TO: Middlebrook Road													
MD 355 and Middlebrook Road															
		FROM: Middlebrook Road													
MD 355	Controlled Major Highway	Dual-Lane Median Busway	142	250	6	Yes	1,700	340	2,040	<0.9	N	N	**Dedicated Curb Lane**	0	
		TO: Great Seneca Creek - City of Gaithersburg limits													
		FROM: Great Seneca Creek - City of Gaithersburg limits													
MD 355	Controlled Major Highway	Dual-Lane Median Busway	142	120 (min.)	6	No					N	N	**Dedicated Curb Lane**	5	
		TO: Professional Drive													
MD 355 and Professional Drive															
		FROM: Professional Drive													
MD 355	Controlled Major Highway	Dual-Lane Median Busway	142	120 (min.)	6	No	1,870	370	2,240	>0.9	N	N	**Dual-Lane Median Busway**	22	
		TO: Montgomery Village Avenue													
MD 355 and Montgomery Village Avenue															
		FROM: Montgomery Village Avenue													
MD 355	Controlled Major Highway	Dual-Lane Median Busway	142	120 (min.)	6	No	1,930	390	2,320	>0.9	Y	Y	**Dual-Lane Median Busway**	22	
		TO: Odendhal Avenue													
MD 355 and Odendhal Avenue															
		FROM: Odendhal Avenue													
MD 355	Controlled Major Highway	Dual-Lane Median Busway	142	120 (min.)	6	No	2,130	430	2,560	>0.9	Y	Y	**Dual-Lane Median Busway**	**22**	Ridership exceeds 2,500 passengers when combined with Route 7: Muddy Branch Road. Work with City of Gaithersburg to develop typical section feasible within constrained ROW along MD 355
		TO: Brookes Avenue													
MD 355 and Brookes Avenue															
		FROM: Brookes Avenue													
MD 355	Controlled Major Highway	Dual-Lane Median Busway	142	120 (min.)	6	No	1,980	400	2,380	>0.9	Y	Y	**Dual-Lane Median Busway**	**22**	Work with City of Gaithersburg to develop typical section feasible within constrained ROW along MD 355
		TO: Education Boulevard													
MD 355 and Education Boulevard															
		FROM: Education Boulevard													
MD 355	Controlled Major Highway	Dual-Lane Median Busway	142	120 (min.)	6	No	2,330	470	2,800	>0.9	N	Y	**Dual-Lane Median Busway**	**22**	Work with City of Gaithersburg to develop typical section feasible within constrained ROW along MD 355
		TO: Shady Grove Road													
MD 355 and Shady Grove Road															

					Master Plan Assessment			Dedicated Lane Assessment						Resulting ROW Assessment		
	Name	Functional Classification	Corridor Typology/Recommendation													
			Preferred Runningway Type	Proposed Right-of-Way Width (feet)	Master-Planned Right-of-Way (MPROW) (feet)	Master-Planned Number of Lanes	Meets Proposed ROW Needs?	Peak-Hour BRT Ridership	Peak-Hour Local Bus Ridership	Sum of Peak-Hour Surface Transit Ridership	Auto v/c Ratio	Building Impacts If Ad ROW	Building Impacts If Ad ROW	Assessed Runningway Type	Max. Additional ROW Needed (feet)	Discussion
Urban Area	MD 355	Major Highway	*FROM: Shady Grove Road*													
			Dedicated Curb Lane	125	150	6	Yes	2,270	450	2,720	>0.9	N	N	Dual-Lane Median Busway	22	
			TO: Ridgemont Avenue													
	MD 355	Major Highway	*FROM: Ridgemont Avenue*													
			Dedicated Curb Lane	125	120	6	No					Y	Y	Dual-Lane Median Busway	22	Modify typical sections to maintain consistent runningway treatment north and south of segment
			TO: King Farm Boulevard													
	MD 355 and King Farm Boulevard															
	MD 355	Major Highway	*FROM: King Farm Boulevard*													
			Dedicated Curb Lane	125	120	6	No	2,100	420	2,520		N	N	Dual-Lane Median Busway	22	
			TO: Indianola Drive													
Inside Urban Ring/I-270 Corridor			*FROM: Indianola Drive*								>0.9					
	MD 355	Major Highway	Dual-Lane Median Busway	142	150	6	Yes					N	N	Dual-Lane Median Busway	22	
			TO: Gude Drive													
	MD 355 and Gude Drive															
	MD 355	Major Highway	*FROM: Gude Drive*													
			Dual-Lane Median Busway	142	TBD per Rockville Master Plan update	N/A		2,080	420	2,500	>0.9	N/A	N/A	Dual-Lane Median Busway	22	Work with City of Rockville to develop appropriate typical section for dual-lane median busway
			TO: Mannakee Street													
	MD 355 and Mannakee Street															
	MD 355	Major Highway	*FROM: Mannakee Street*													
			Dual-Lane Median Busway	142	TBD per Rockville Master Plan update	N/A		2,160	430	2,590	>0.9	N/A	N/A	Dual-Lane Median Busway	22	Work with City of Rockville to develop appropriate typical section for dual-lane median busway
			TO: Church Street													
	Rockville Metrorail Station															

Notes
1: Right-of-way width assumes one exclusive left-turn and zero exclusive right-turn lanes
2: Right-of-way width assumes one exclusive left-turn and one exclusive right-turn lanes

Corridor 10b: MD 355 South
Limits: Rockville Metrorail Station to Friendship Heights Metrorail Station
Phase I Right-of-Way Recommendations

	Name	Functional Classification	Corridor Typology/Recommendation		Master Plan Assessment			Dedicated Lane Assessment						Resulting ROW Assessment		
			Preferred Runningway Type	Proposed Right-of-Way Width (feet)	Master-Planned Right-of-Way (MPROW) (feet)	Master-Planned Number of Lanes	Meets Proposed ROW Needs?	Peak-Hour BRT Ridership	Peak-Hour Local Bus Ridership	Sum of Peak-Hour Surface Transit Ridership	Auto v/c Ratio	Building Impacts within 5 feet?	Building Impacts within 15 feet?	Assessed Runningway Type	Max. Additional ROW Needed (feet)	Discussion
Inside Urban Ring/I-270 Corridor	**Rockville Metrorail Station**															
			FROM: Church Street													
	MD 355	Major Highway	Dual-Lane Median Busway	142	TBD per Rockville Master Plan Update	N/A	N/A	1,800	360	2,160	>0.9	N/A	N/A	**Dual-Lane Median Busway**	**N/A**	Coordinate ROW assessment with Route 3: Veirs Mill Road-University Boulevard and Route 15 : Norbeck Road once City of Rockville finalized transportation master plan
			TO: Edmonston Drive													
	MD 355 and Edmonston Avenue															
			FROM: Edmonston Drive													
	MD 355	Major Highway	Dual-Lane Median Busway	142	TBD per Rockville Master Plan Update	N/A	N/A	1,820	360	2,180	>0.9	N/A	N/A	**Dual-Lane Median Busway**	**N/A**	Coordinate ROW needs with City of Rockville once it has finalized transportation master plan
			TO: Congressional Lane													
Urban Area			*FROM: Congressionsal Lane*													
	MD 355	Major Highway	Dedicated Curb Lane	125	TBD per Rockville Master Plan Update	N/A	N/A					N/A	N/A	**Dual-Lane Median Busway**	**N/A**	Coordinate ROW needs with City of Rockville once it has finalized transportation master plan
			TO: Halpine Road													
	MD 355 and Halpine Road															
			FROM: Halpine Road													
	MD 355	Major Highway	Dedicated Curb Lane	125	TBD per Rockville Master Plan Update	N/A	N/A	2,090	420	2,510		N/A	N/A	**Dual-Lane Median Busway**	**N/A**	Coordinate ROW needs with City of Rockville once it has finalized transportation master plan
			TO: Rollins Avenue													
			FROM: Rollins Avenue								>0.9					
	MD 355	Major Highway	Dedicated Curb Lane	125	150	6	Yes					N	N	**Dual-Lane Median Busway**	**0**	
			TO: Hubbard Drive													
	MD 355 and Hubbard Drive															
			FROM: Hubbard Drive													
	MD 355	Major Highway	Dedicated Curb Lane	125	150	6	Yes	1,930	390	2,320	>0.9	N	N	**Dual-Lane Median Busway**	**0**	
			TO: Marinelli Road													
	White Flint Metrorail Station															
			FROM: Marinelli Road													
	MD 355	Major Highway	Dedicated Curb Lane	125	150	6	Yes	2,100	420	2,520	>0.9	N	N	**Dual-Lane Median Busway**	**0**	
			TO: Security Lane													
	MD 355 and Security Lane															
			FROM: Security Lane													
	MD 355	Major Highway	Dedicated Curb Lane	125	150	6	Yes	1,880	380	2,260	>0.9	N	N	**Dual-Lane Median Busway**	**0**	
			TO: Hillery Way													
Inside Urban Ring/I-270 Corridor			*FROM: Hillery Way*													
	MD 355	Major Highway	Dual-Lane Median Busway	142	150	6	Yes					N	N	**Dual-Lane Median Busway**	**0**	
			TO: Strathmore Avenue													
Urban Area			*FROM: Strathmore Avenue*													
	MD 355	Major Highway	Dedicated Curb Lane	125	150	6	Yes					N	N	**Dual-Lane Median Busway**	**0**	
			TO: Grosvenor Metrorail Station													
	Grosvenor Metrorail Station															
			FROM: Grosvenor Metrorail Station													
	MD 355	Major Highway	Dedicated Curb Lane	125	150	6	Yes	1,960	390	2,350	>0.9	N	N	**Dual-Lane Median Busway**	**0**	
			TO: Grosvenor Lane													
			FROM: Grosvenor Lane													
	MD 355	Major Highway	Dedicated Curb Lane	125	200	6	Yes					N	N	**Dual-Lane Median Busway**	**0**	
			TO: I-495													
			FROM: I-495													

					Master Plan Assessment			Dedicated Lane Assessment						Resulting ROW Assessment		
	Name	Functional Classification	Corridor Typology/Recommendation											Assessed Runningway Type	Max. Additional ROW Needed (feet)	Discussion
			Preferred Runningway Type	Proposed Right-of-Way Width (feet)	Master-Planned Right-of-Way (MPROW) (feet)	Master-Planned Number of Lanes	Meets Proposed ROW Needs?	Peak-Hour BRT Ridership	Peak-Hour Local Bus Ridership	Sum of Peak-Hour Surface Transit Ridership	Auto v/c Ratio	Building Impacts within 5 feet?	Building Impacts within 15 feet?			
Inside Urban Ring/I-270 Corridor	MD 355	Major Highway	Dual-Lane Median Busway	142	120	6-8	No					N	N	Dual-Lane Median Busway	22	
			TO: Pooks Hill Road													
	MD 355 and Pooks Hill Road															
			FROM: Pooks Hill Road													
	MD 355	Major Highway	Dual-Lane Median Busway	142	120	6-8	No	1,920	380	2,300	>0.9	N	Y	Dual-Lane Median Busway	22	Can conduct refined ROW assessment and modify typical section to accommodate dual-lane median busway
			TO: Cedar Lane													
	MD 355 and Cedar Lane															
			FROM: Cedar Lane													
	MD 355	Major Highway	Dual-Lane Median Busway	142	120	6-8	No	1,830	370	2,200	>0.9	N	N	Dual-Lane Median Busway	22	
			TO: Wood Road/South Drive													
	Medical Center Metrorail Station															
			FROM: Wood Road/South Drive													
	MD 355	Major Highway	Dual-Lane Median Busway	142	120	6-8	No	1,760	350	2,110	>0.9	N	Y	Dual-Lane Median Busway	22	Can conduct refined ROW assessment and modify typical section to accommodate dual-lane median busway
			TO: Chestnut Street													
Urban Area			*FROM: Chestnut Street*													
	MD 355	Major Highway	Dedicated Curb Lane	125	104-120	6-8	No					Y	Y	Dedicated Curb Lane	21	Can conduct refined ROW assessment and/or modify typical section to accommodate dedicated curb lane
			TO: Cordell Avenue													
	MD 355 and Cordell Avenue															
			FROM: Cordell Avenue													
	MD 355	Major Highway	Dedicated Curb Lane	125	104-120	6-8	No	1,700	340	2,040	<0.9	Y	Y	Dedicated Curb Lane	21	Can conduct refined ROW assessment and/or modify typical section to accommodate dedicated curb lane
			TO: Old Georgetown Road/East-West Highway													
	Bethesda Metrorail Station															
			FROM: Old Georgetown Road/East-West Highway													
	MD 355	Major Highway	Dedicated Curb Lane	125	104-120	6-8	No	1,410	280	1,690	<0.9	Y	Y	Dedicated Curb Lane	21	Can conduct refined ROW assessment and/or modify typical section to accommodate dedicated curb lane
			TO: Bradley Lane													
	MD 355 and Bradley Lane															
Inside Urban Ring/I-270 Corridor			*FROM: Bradley Lane*													
	MD 355	Major Highway	Dual-Lane Median Busway	142	120	6	No	1,440	290	1,730	>0.9	N	Y	Reversible One-Lane Median Busway	9	Can conduct refined ROW assessment and modify typical section to accommodate reversible one-lane median busway
			TO: Oliver Street													
Urban Area			*FROM: Oliver Street*													
	MD 355	Major Highway	Dedicated Curb Lane	125	120	6	No					Y	Y	Reversible One-Lane Median Busway	9	Can conduct refined ROW assessment and modify typical section to accommodate reversible one-lane median busway
			TO: Western Avenue													
	Friendship Heights Metrorail Station															

Notes
1: Right-of-way width assumes one exclusive left-turn and zero exclusive right-turn lanes
2: Right-of-way width assumes one exclusive left-turn and one exclusive right-turn lanes

Corridor 11: MD 650 - New Hampshire Avenue
Limits: Colesville Park-and-Ride Lot to Fort Totten Metrorail Station

Phase I Right-of-Way Recommendations

	Name	Functional Classification	Corridor Typology/Recommendation		Master Plan Assessment			Dedicated Lane Assessment						Resulting ROW Assessment		
			Preferred Runningway Type	Proposed Right-of-Way Width (feet)	Master-Planned Right-of-Way (MPROW) (feet)	Master-Planned Number of Lanes	Meets Proposed ROW Needs?	Peak-Hour BRT Ridership	Peak-Hour Local Bus Ridership	Sum of Peak-Hour Surface Transit Ridership	Auto v/c Ratio	Building Impacts within 5 feet?	Building Impacts within 15 feet?	Assessed Runningway Type	Max. Additional ROW Needed (feet)	Discussion
Outside Urban Ring/I-270 Corridor	**Colesville Park-and-Ride Lot**															
	New Hampshire Avenue	Major Highway	***FROM: Midland Road*** Phase 2 recommendation ***TO: Randolph Road***	N/A	120	6	N/A	60	10	70	>0.9	N/A	N/A	**Operational**	**0**	
	New Hampshire Avenue and Randolph Road															
	New Hampshire Avenue	Major Highway	***FROM: Randolph Road*** Phase 2 recommendation ***TO: Valleybrook Drive***	N/A	120	6	N/A	290	60	350	>0.9	N/A	N/A	**Operational**	**0**	
	New Hampshire Avenue and Valleybrook Drive															
	New Hampshire Avenue	Major Highway	***FROM: Valleybrook Drive*** Phase 2 recommendation ***TO: Jackson Road***	N/A	120	6	N/A	280	60	340	>0.9	N/A	N/A	**Operational**	**0**	
	New Hampshire Avenue and Jackson Road															
	New Hampshire Avenue	Major Highway	***FROM: Jackson Road*** Phase 2 recommendation ***TO: US 29***	N/A	120	6	N/A	310	60	370	>0.9	N/A	N/A	**Operational**	**0**	
Inside Urban Ring/I-270 Corridor	New Hampshire Avenue	Major Highway	***FROM: US 29*** Reversible One-Lane Median Busway ***TO: Lockwood Drive***	129	120	6	No					N	N	**Operational**	**0**	
	White Oak Transit Center															
	New Hampshire Avenue	Major Highway	***FROM: Lockwood Drive*** Reversible One-Lane Median Busway ***TO: Mahan Road***	129	120	6	No	550	110	660	<0.9	Y	Y	**Operational**	**0**	
	FDA - White Oak Campus															
	New Hampshire Avenue	Major Highway	***FROM: Mahan Road*** Reversible One-Lane Median Busway ***TO: Powder Mill Road***	129	120	6	No	660	130	790	>0.9	Y	Y	**Operational**	**0**	
	New Hampshire Avenue and Powder Mill Road															
	New Hampshire Avenue	Major Highway	***FROM: Powder Mill Road*** Reversible One-Lane Median Busway ***TO: I-495***	129	120	6	No	730	150	880	>0.9	Y	Y	**Operational**	**0**	
	New Hampshire Avenue	Major Highway	***FROM: I-495*** Reversible One-Lane Median Busway ***TO: Oakview Drive***	129	150	6	Yes					N	N	**Operational**	**0**	
	New Hampshire Avenue and Oakview Drive															
	New Hampshire Avenue	Major Highway	***FROM: Oakview Drive*** Reversible One-Lane Median Busway ***TO: Northampton Drive***	129	150	6	Yes	760	150	910	>0.9	N	N	**Operational**	**0**	
	New Hampshire Avenue and Northampton Drive															
	New Hampshire Avenue	Major Highway	***FROM: Northampton Drive*** Defer to Prince George's County ***TO: University Boulevard***	N/A	N/A	6	N/A	1,030	210	1,240	>0.9	N/A	N/A	**Operational**	**0**	
Inside Urban Ring/I-270 Corridor	**Takoma/Langley Park Transit Center**															
	New Hampshire Avenue	Major Highway	***FROM: University Boulevard*** Reversible One-Lane Median Busway ***TO: Ethan Allen Avenue***	129	100	6	No	1,470	290	1,760	>0.9	N	N	**Operational**	**0**	Runningway treatment reflects recommendations in Takoma/Langley Crossroads Sector Plan (May 2010)
	New Hampshire Avenue and Ethan Allen Avenue															
	New Hampshire Avenue	Major Highway	***FROM: Ethan Allen Avenue*** Reversible One-Lane Median Busway ***TO: Eastern Avenue***	129	100	6	No	1,600	320	1,920	<0.9	Y	Y	**Operational**	**0**	Runningway treatment reflects recommendations in New Hampshire Avenue Corridor Concept Plan
	New Hampshire Avenue and Eastern Avenue															
	New Hampshire Avenue/North Capitol Street/Riggs Road NE/First Place NE	Arterial	***FROM: Eastern Avenue*** Defer to District of Columbia ***TO: Galloway Street NE***	N/A	varies	2-4	N/A	1,490	300	1,790	>0.9	N/A	N/A	**Operational**	**0**	
	Fort Totten Metrorail Station															

Notes
1: Right-of-way width assumes one exclusive left-turn and zero exclusive right-turn lanes
2: Right-of-way width assumes one exclusive left-turn and one exclusive right-turn lanes

Corridor 12a: Old Georgetown Road North
Limits: Montgomery Mall Transit Center to White Flint Metrorail Station
Phase I Right-of-Way Recommendations

					Master Plan Assessment			Dedicated Lane Assessment						Resulting ROW Assessment		
	Name	Functional Classification	Corridor Typology/Recommendation: Preferred Runningway Type	Proposed Right-of-Way Width (feet)	Master-Planned Right-of-Way (MPROW) (feet)	Master-Planned Number of Lanes	Meets Proposed ROW Needs?	Peak-Hour BRT Ridership	Peak-Hour Local Bus Ridership	Sum of Peak-Hour Surface Transit Ridership	Auto v/c Ratio	Building Impacts within 5 feet?	Building Impacts within 15 feet?	Assessed Runningway Type	Max. Additional ROW Needed (feet)	Discussion
Outside Urban Ring/I-270 Corridor	**Montgomery Mall Transit Center**															
			FROM: Auto Park Avenue													
	Westlake Terrace	Arterial	Dual-Lane Median Busway	139	90	4	No	180	40	220	>0.9	N	Y	**Operational**	**0**	Total segement ridership less than 1,200 passengers, including along Route 12b: Old Georgetown Road South and Route 21: North Bethesda Transitway
			TO: I-270													
Inside Urban Ring/I-270 Corridor			***FROM: I-270***													
	Fernwood Drive	Arterial	Dual-Lane Median Busway	122	80	4	No	180	40	220	>0.9	N	N	**Operational**	**0**	Total segement ridership less than 1,200 passengers, including along Route 12b: Old Georgetown Road South and Route 21: North Bethesda Transitway
			TO: Rockledge Drive													
			FROM: Fernwood Drive													
	Rockledge Drive	Local	N/A	N/A	N/A	N/A						N/A	N/A	**Operational**	**0**	Total segement ridership less than 1,200 passengers, including along Route 12b: Old Georgetown Road South
			TO: Rock Spring Drive													
	Rock Spring Drive and Rockledge Drive															
			FROM: Rockledge Drive													
	Rock Spring Drive	Arterial	Dual-Lane Median Busway	122	80	4	No	830	170	1,000	>0.9	N	N	**Dual-Lane Median Busway**	**42**	Total segement ridership greater than 2,000 passengers, including along Route 12b: Old Georgetown Road South and Route 21: North Bethesda Transitway
			TO: Old Georgetown Road													
	Rock Spring Drive and Old Georgetown Road															
			FROM: Rock Spring Drive													
	Old Georgetown Road	Major Highway	Dual-Lane Median Busway	122	120	6	No	840	170	1,010	>0.9	N	N	**Dual-Lane Median Busway**	**2**	Total segement ridership greater than 1,500 passengers, including along Route 21: North Bethesda Transitway
			TO: Tuckerman Lane													
	Old Georgetown Road and Tuckerman Lane															
			FROM: Tuckerman Lane													
	Old Georgetown Road	Major Highway	Dual-Lane Median Busway	142	120	6	No	820	160	980	>0.9	N	N	**Operational**	**0**	
			TO: Edison Lane/Poindexter Lane													
	Old Georgetown Road and Edison Lane/Poindexter Lane															
			FROM: Edison Lane/Poindexter Lane													
	Old Georgetown Road	Major Highway	Dual-Lane Median Busway	142	120	6	No	890	180	1,070	>0.9	N	N	**Operational**	**0**	
			TO: Executive Boulevard													
Urban Area			***FROM: Old Georgetown Road***													
	Executive Boulevard	Business	Dedicated Curb Lane	125	120	4	No					N	N	**Operational**	**0**	
			TO: Marinelli Road													
			FROM: Executive Boulevard													
	Marinelli Road	Business	Dedicated Curb Lane	125	90	4	No					Y	Y	**Operational**	**0**	
			TO: MD 355													
	White Flint Metrorail Station															

Notes
1: Right-of-way width assumes one exclusive left-turn and zero exclusive right-turn lanes
2: Right-of-way width assumes one exclusive left-turn and one exclusive right-turn lanes

Corridor 12b: Old Georgetown Road South
Limits: Montgomery Mall Transit Center to Bethesda Metrorail Station
Phase I Right-of-Way Recommendations

					Master Plan Assessment			Dedicated Lane Assessment						Resulting ROW Assessment		
	Name	Functional Classification	Corridor Typology/Recommendation													
			Preferred Runningway Type	Proposed Right-of-Way Width (feet)	Master-Planned Right-of-Way (MPROW) (feet)	Master-Planned Number of Lanes	Meets Proposed ROW Needs?	Peak-Hour BRT Ridership	Peak-Hour Local Bus Ridership	Sum of Peak-Hour Surface Transit Ridership	Auto v/c Ratio	Building Impacts within 5 feet?	Building Impacts within 15 feet?	Assessed Runningway Type	Max. Additional ROW Needed (feet)	Discussion
Outside Urban Ring/I-270 Corridor	**Montgomery Mall Transit Center**															
			FROM: Auto Park Avenue													
	Westlake Terrace	Arterial	Dual-Lane Median Busway	139	90	4	No	180	40	220	>0.9	N	Y	**Operational**	**0**	Total segement ridership less than 1,200 passengers, including along Route 12a: Old Georgetown Road North and Route 21: North Bethesda Transitway
			TO: I-270													
Inside Urban Ring/I-270 Corridor			***FROM: I-270***													
	Fernwood Drive	Arterial	Dual-Lane Median Busway	122	80	4	No	180	40	220	>0.9	N	N	**Operational**	**0**	Total segement ridership less than 1,200 passengers, including along Route 12a: Old Georgetown Road North and Route 21: North Bethesda Transitway
			TO: Rockledge Drive													
			FROM: Fernwood Drive													
	Rockledge Drive	Local	N/A	N/A	N/A	N/A						N/A	N/A	**Operational**	**0**	Total segement ridership less than 1,200 passengers, including along Route 12a: Old Georgetown Road North
			TO: Rock Spring Drive													
	Rock Spring Drive and Rockledge Drive															
			FROM: Rockledge Drive													
	Rock Spring Drive	Arterial	Dual-Lane Median Busway	122	80	4	No	410	80	490	>0.9	N	N	**Dual-Lane Median Busway**	**42**	Total segement ridership greater than 2,000 passengers, including along Route 12b: Old Georgetown Road South and Route 21: North Bethesda Transitway
			TO: Old Georgetown Road													
			FROM: Rock Spring Drive													
	Old Georgetown Road	Major Highway	Dual-Lane Median Busway	142	120	6	No					N	Y	**Operational**	**0**	
			TO: Democracy Boulevard													
	Old Georgetown Road and Democracy Boulevard															
			FROM: Democracy Boulevard													
	Old Georgetown Road	Major Highway	Dual-Lane Median Busway	142	120	6	No	440	90	530	>0.9	Y	Y	**Operational**	**0**	
			TO: Ryland Drive													
	Old Georgetown Road and Ryland Drive															
			FROM: Ryland Drive													
	Old Georgetown Road	Major Highway	Dual-Lane Median Busway	142	120	6	No	590	120	710	>0.9	Y	Y	**Operational**	**0**	
			TO: West Cedar Lane													
	Old Georgetown Road and West Cedar Lane															
			FROM: West Cedar Lane													
	Old Georgetown Road	Major Highway	Dual-Lane Median Busway	142	120	6	No	590	120	710	>0.9	Y	Y	**Operational**	**0**	
			TO: Lincoln Street													
	Old Georgetown Road and Lincoln Street															
			FROM: Lincoln Street													
	Old Georgetown Road	Major Highway	Dual-Lane Median Busway	122	120	4	No	860	170	1,030	>0.9	Y	Y	**Operational**	**0**	
			TO: Battery Lane													
Urban Area			***FROM: Battery Lane***													
	Old Georgetown Road	Major Highway	Dedicated Curb Lane	125	100	4-6	No					Y	Y	**Operational**	**0**	ROW too constrained for any contiguous runningway treatment
			TO: Del Ray Avenue/Cordell Avenue													
	Old Georgetown Road and Del Ray Avenue/Cordell Avenue															
			FROM: Del Ray Avenue/Cordell Avenue													
	Old Georgetown Road	Major Highway	Dedicated Curb Lane	125	80-86	4-6	No	840	170	1,010	>0.9	Y	Y	**Operational**	**0**	ROW too constrained for any contiguous runningway treatment
			TO: Commerce Lane													
	Bethesda Metrorail Station															

Notes
1: Right-of-way width assumes one exclusive left-turn and zero exclusive right-turn lanes
2: Right-of-way width assumes one exclusive left-turn and one exclusive right-turn lanes

Corridor 15: Norbeck Road
Limits: Rockville Metrorail Station to ICC Park-and-Ride Lot

Phase I Right-of-Way Recommendations

				Master Plan Assessment			Dedicated Lane Assessment				Building Impacts		Resulting ROW Assessment		
	Name	Corridor Typology/Recommendation					Peak-Hour BRT Ridership	Peak-Hour Local Bus Ridership	Sum of Peak-Hour Surface Transit Ridership	Auto v/c Ratio	Building Impacts within 5 feet?	Building Impacts within 15 feet?	Assessed Runningway Type	Max. Additional ROW Needed (feet)	Discussion
		Preferred Runningway Type	Proposed Right-of-Way Width (feet)	Master-Planned Right-of-Way (MPROW) (feet)	Master-Planned Number of Lanes	Meets Proposed ROW Needs?									
	Rockville Metrorail Station														
Inside Urban Ring/I-270 Corridor		***FROM: Church Street***													
	MD 355	Dual-Lane Median Busway	142	TBD per Rockville Mater Plan Update	N/A		610	120	730	>0.9	N/A	N/A	**Dual-Lane Median Busway**	**N/A**	Coordinate ROW assessment with Route 3: Veirs Mill Road-University Boulevard and Route 10b: MD 355 once City of Rockville finalized transportation master plan
		TO: Veirs Mill Road													
		FROM: MD 355													
	Veirs Mill Road	Reversible One-Lane Median Busway	129	TBD per Rockville Mater Plan Update	N/A						N/A	N/A	**Reversible One-Lane Median Busway**	**N/A**	Coordinate ROW assessment with Route 3: Veirs Mill Road-University Boulevard once City of Rockville finalized transportation master plan
		TO: Norbeck Road													
		FROM: Veirs Mill Road													
	Norbeck Road	Phase 2 recommendation	N/A	TBD per Rockville Mater Plan Update	N/A						N/A	N/A	**Operational**	**0**	
		TO: Baltimore Road													
	Norbeck Road and Baltimore Road														
		FROM: Baltimore Road													
	Norbeck Road	Phase 2 recommendation	N/A	TBD per Rockville Mater Plan Update	N/A		610	120	730	>0.9	N/A	N/A	**Operational**	**0**	
		TO: Rockville City limit													
		FROM: Rockville City limit													
	Norbeck Road	Phase 2 recommendation	N/A	150	4						N/A	N/A	**Operational**	**0**	
		TO: Bauer Drive													
	Norbeck Road and Bauer Drive														
		FROM: Bauer Drive													
	Norbeck Road	Phase 2 recommendation	N/A	150	4		520	100	620	>0.9	N/A	N/A	**Operational**	**0**	
		TO: Rocking Spring Drive/Nadine Drive													
		FROM: Rocking Spring Drive/Nadine Drive													
Outside Urban Ring/I-270 Corridor	Norbeck Road	Phase 2 recommendation	N/A	150	4						N/A	N/A	**Operational**	**0**	
		TO: Bel Pre Road													
	Norbeck Road and Bel Pre Road														
		FROM: Bel Pre Road													
	Norbeck Road	Phase 2 recommendation	N/A	150	6		460	90	550	>0.9	N/A	N/A	**Operational**	**0**	
		TO: Georgia Avenue													
		FROM: Norbeck Road													
	Georgia Avenue	Dual-Lane Median Busway	161	150	6	No					N/A	N/A	**Operational**	**0**	Although ridership from Route 4: Georgia Avenue would add about 800 additional riders, segment too short for any runningway treatment
		TO: Norbeck Road Park-and-Ride Lot													
	Georgia Avenue and Norbeck Road Park-and-Ride Lot														
		FROM: Norbeck Road Park-and-Ride Lot													
	Georgia Avenue	Dual-Lane Median Busway	161	150	6	No	140	30	170	>0.9	N/A	N/A	**Operational**	**0**	Although ridership from Route 4: Georgia Avenue would add about 800 additional riders, does not meet threshold to consider exclusive facility
		TO: ICC Park-and-Ride Lot													
	Georgia Avenue and ICC Park-and-Ride Lot														

Notes
1: Right-of-way width assumes one exclusive left-turn and zero exclusive right-turn lanes
2: Right-of-way width assumes one exclusive left-turn and one exclusive right-turn lanes

					Master Plan Assessment			Dedicated Lane Assessment						Resulting ROW Asses
	Name	Functional Classification	Corridor Typology/Recommendation					Peak-Hour BRT Ridership	Peak-Hour Local Bus Ridership (est)	Sum of Peak-Hour Surface Transit Ridership	Auto v/c Ratio	Building Impacts within 5 feet?	Building Impacts within 15 feet?	Assessed Runningway Type
			Preferred Runningway Type	Proposed Right-of-Way Width (feet)	Master-Planned Right-of-Way (MPROW) (feet)	Master-Planned Number of Lanes	Meets Proposed ROW Needs?							
Outside Urban Ring/I-270 Corridor	**Burtonsville Park-and-Ride Lot**													
			FROM: Sandy Spring Road											
	US 29 - Columbia Pike	Controlled Major Highway	Dual-Lane Median Busway	161	100-200	6	Yes	350	70	420	>0.9	N	N	**Operational**
			TO: Briggs Chaney Road											
			FROM: Briggs Chaney Road											
			Dual-Lane Median Busway	161	100-200	6	Yes	930	190	1,120		N	N	**Operational**
			TO: Fairland Road											
	Fairland Road													
			FROM: Fairland Road											
	US 29 - Columbia Pike	Controlled Major Highway	Dual-Lane Median Busway	161	100-200	6	Yes	980	200	1,180	>0.9	N	N	**Operational**
			TO: Tech Road											
	Tech Road													
			FROM: Tech Road											
	US 29 - Columbia Pike	Controlled Major Highway	Dual-Lane Median Busway	161	100-200	6	Yes	1,020	200	1,220	>0.9	N	N	**Operational**
			TO: Stewart Lane											
			FROM: Stewart Lane											
Inside Urban Ring/I-270 Corridor	Lockwood Drive	Arterial	Reversible One-Lane Median Busway	N/A	80	2	No					N	N	**Operational**
			TO: New Hampshire Avenue											
	White Oak Transit Center													
			FROM: New Hampshire Avenue											
	Lockwood Drive	Arterial	Reversible One-Lane Median Busway	N/A	80	2	No	1,080	220	1,300	>0.9	N	Y	**Operational**
			TO: Oak Leaf Drive											
	Oak Leaf Drive													
			FROM: Oak Leaf Drive											
	Lockwood Drive	Arterial	Reversible One-Lane Median Busway	N/A	80	2	No	1,240	250	1,490	<0.9	N	Y	**Operational**
			TO: US 29 - Columbia Pike											
	Hillwood Drive													
			FROM: Hillwood Drive											
	US 29 - Columbia Pike	Major Highway	Reversible One-Lane Median Busway	129	120	6	No	1,260	250	1,510	>0.9	N	N	**Reversible One-Lane Median Busway**
			TO: Northwest Branch											
			FROM: Northwest Branch											
	US 29 - Colesville Road	Major Highway	Reversible One-Lane Median Busway	129	120	6	No					Y	Y	**Reversible One-Lane Median Busway**
			TO: University Boulevard											
	University Boulevard													
			FROM: University Boulevard											

	Name	Functional Classification	Corridor Typology/Recommendation					Peak-Hour BRT Ridership	Peak-Hour Local Bus Ridership (est)	Sum of Peak-Hour Surface Transit Ridership	Auto v/c Ratio	Building Impacts within 5 feet?	Building Impacts within 15 feet?	Assessed Runningway Type
			Preferred Runningway Type	Proposed Right-of-Way Width (feet)	Master-Planned Right-of-Way (MPROW) (feet)	Master-Planned Number of Lanes	Meets Proposed ROW Needs?							
	US 29 - Colesville Road	Major Highway	Reversible One-Lane Median Busway	129	120	6	No	1,270	250	1,520	>0.9	N	Y	Reversible One-Lane Median Busway
			TO: Franklin Avenue											
	Franklin Avenue													
			FROM: Franklin Avenue											
	US 29 - Colesville Road	Major Highway	Reversible One-Lane Median Busway	129	120	5-6	No	1,330	270	1,600	>0.9	Y	Y	Reversible One-Lane Median Busway
			TO: Fenton Street											
Urban Area	**Fenton Street**													
			FROM: Fenton Street											
	Colesville Road	Major Highway	Dedicated Curb Lane	125	100	5-6	No	1,120	220	1,340	>0.9	Y	Y	Dedicated Curb Lane
			TO: Georgia Avenue											
			FROM: Georgia Avenue											
	Colesville Road	Major Highway	Dedicated Curb Lane	125	124	N/A	No					Y	Y	Dedicated Curb Lane
			TO: Wayne Avenue											
	Silver Spring Transit Center													
			FROM: Wayne Avenue											
	Colesville Road	Major Highway	Dedicated Curb Lane	125	124	N/A	No	460	90	550	>0.9	Y	Y	Operational
			TO: East-West Highway											
			FROM: East-West Highway											
	Colesville Road	Major Highway	Dedicated Curb Lane	125	125	N/A	Yes	410	80	490		N	N	Operational
			TO: Eastern Avenue											

Notes
1: Right-of-way width assumes one exclusive left-turn and zero exclusive right-turn lanes
2: Right-of-way width assumes one exclusive left-turn and one exclusive right-turn lanes

					Master Plan Assessment			Dedicated Lane Assessment						Resulting ROW Asses
	Name	Functional Classification	Corridor Typology/Recommendation					Peak-Hour BRT Ridership	Peak-Hour Local Bus Ridership (est)	Sum of Peak-Hour Surface Transit Ridership	Auto v/c Ratio	Building Impacts within 5 feet?	Building Impacts within 15 feet?	Assessed Runningway Type
			Preferred Runningway Type	Proposed Right-of-Way Width (feet)	Master-Planned Right-of-Way (MPROW) (feet)	Master-Planned Number of Lanes	Meets Proposed ROW Needs?							
Outside Urban Ring/I-270 Corridor	**Burtonsville Park-and-Ride Lot**													
			FROM: Sandy Spring Road											
	US 29 - Columbia Pike	Controlled Major Highway	Dual-Lane Median Busway	161	100-200	6	Yes	350	70	420	>0.9	N	N	**Operational**
			TO: Briggs Chaney Road											
			FROM: Briggs Chaney Road											
			Dual-Lane Median Busway	161	100-200	6	Yes	930	190	1,120		N	N	**Operational**
			TO: Fairland Road											
	Fairland Road													
			FROM: Fairland Road											
	US 29 - Columbia Pike	Controlled Major Highway	Dual-Lane Median Busway	161	100-200	6	Yes	980	200	1,180	>0.9	N	N	**Operational**
			TO: Tech Road											
	Tech Road													
			FROM: Tech Road											
	US 29 - Columbia Pike	Controlled Major Highway	Dual-Lane Median Busway	161	100-200	6	Yes	1,020	200	1,220	>0.9	N	N	**Operational**
			TO: Stewart Lane											
			FROM: Stewart Lane											
Inside Urban Ring/I-270 Corridor	Lockwood Drive	Arterial	Reversible One-Lane Median Busway	N/A	80	2	No					N	N	**Operational**
			TO: New Hampshire Avenue											
	White Oak Transit Center													
			FROM: New Hampshire Avenue											
	Lockwood Drive	Arterial	Reversible One-Lane Median Busway	N/A	80	2	No	1,080	220	1,300	>0.9	N	Y	**Operational**
			TO: Oak Leaf Drive											
	Oak Leaf Drive													
			FROM: Oak Leaf Drive											
	Lockwood Drive	Arterial	Reversible One-Lane Median Busway	N/A	80	2	No	1,240	250	1,490	<0.9	N	Y	**Operational**
			TO: US 29 - Columbia Pike											
	Hillwood Drive													
			FROM: Hillwood Drive											
	US 29 - Columbia Pike	Major Highway	Reversible One-Lane Median Busway	129	120	6	No	1,260	250	1,510	>0.9	N	N	**Reversible One-Lane Median Busway**
			TO: Northwest Branch											
			FROM: Northwest Branch											
	US 29 - Colesville Road	Major Highway	Reversible One-Lane Median Busway	129	120	6	No					Y	Y	**Reversible One-Lane Median Busway**
			TO: University Boulevard											
	University Boulevard													
			FROM: University Boulevard											

	Name	Functional Classification	Corridor Typology/Recommendation					Peak-Hour BRT Ridership	Peak-Hour Local Bus Ridership (est)	Sum of Peak-Hour Surface Transit Ridership	Auto v/c Ratio	Building Impacts within 5 feet?	Building Impacts within 15 feet?	Assessed Runningway Type
			Preferred Runningway Type	Proposed Right-of-Way Width (feet)	Master-Planned Right-of-Way (MPROW) (feet)	Master-Planned Number of Lanes	Meets Proposed ROW Needs?							
	US 29 - Colesville Road	Major Highway	Reversible One-Lane Median Busway	129	120	6	No	1,270	250	1,520	>0.9	N	Y	Reversible One-Lane Median Busway
			TO: Franklin Avenue											
	Franklin Avenue													
			FROM: Franklin Avenue											
	US 29 - Colesville Road	Major Highway	Reversible One-Lane Median Busway	129	120	5-6	No	1,330	270	1,600	>0.9	Y	Y	Reversible One-Lane Median Busway
			TO: Fenton Street											
Urban Area	**Fenton Street**													
			FROM: Fenton Street											
	Colesville Road	Major Highway	Dedicated Curb Lane	125	100	5-6	No	1,120	220	1,340	>0.9	Y	Y	Dedicated Curb Lane
			TO: Georgia Avenue											
			FROM: Georgia Avenue											
	Colesville Road	Major Highway	Dedicated Curb Lane	125	124	N/A	No					Y	Y	Dedicated Curb Lane
			TO: Wayne Avenue											
	Silver Spring Transit Center													
			FROM: Wayne Avenue											
	Colesville Road	Major Highway	Dedicated Curb Lane	125	124	N/A	No	460	90	550	>0.9	Y	Y	Operational
			TO: East-West Highway											
			FROM: East-West Highway											
	Colesville Road	Major Highway	Dedicated Curb Lane	125	125	N/A	Yes	410	80	490		N	N	Operational
			TO: Eastern Avenue											

Notes
1: Right-of-way width assumes one exclusive left-turn and zero exclusive right-turn lanes
2: Right-of-way width assumes one exclusive left-turn and one exclusive right-turn lanes

Corridor 21: North Bethesda Transitway
Limits: Montgomery Mall Transit Center to Grosvenor Metrorail Station
Phase I Right-of-Way Recommendations

					Master Plan Assessment			Dedicated Lane Assessment						Resulting ROW Assessment		
	Name	Functional Classification	Corridor Typology/Recommendation													
			Preferred Runningway Type	Proposed Right-of-Way Width (feet)	Master-Planned Right-of-Way (MPROW) (feet)	Master-Planned Number of Lanes	Meets Proposed ROW Needs?	Peak-Hour BRT Ridership	Peak-Hour Local Bus Ridership	Sum of Peak-Hour Surface Transit Ridership	Auto v/c Ratio	Building Impacts within 5 feet?	Building Impacts within 15 feet?	Assessed Runningway Type	Max. Additional ROW Needed (feet)	Discussion
Outside Urban Ring/I-270 Corridor	**Montgomery Mall Transit Center**															
	Westlake Terrace	Arterial	***FROM: Auto Park Avenue***													
			Dual-Lane Median Busway	139	90	4	No	180	40	220	>0.9	N	Y	**Operational**	**0**	
			TO: I-270													
Inside Urban Ring/I-270 Corridor			***FROM: I-270***													
	Fernwood Drive	Arterial	Dual-Lane Median Busway	122	80	4	No	470	90	560	>0.9	N	N	**Operational**	**0**	
			TO: Rock Spring Drive													
			FROM: Fernwood Drive													
	Rock Spring Drive	Arterial	Dual-Lane Median Busway	122	80	4	No					N	N	**Operational**	**0**	
			TO: Rockledge Drive													
	Rock Spring Drive and Rockledge Drive															
			FROM: Rockledge Drive													
	Rock Spring Drive	Arterial	Dual-Lane Median Busway	122	80	4	No	470	90	560	>0.9	N	N	**ROW Already in Master Plan**	**0**	
			TO: Old Georgetown Road													
	Rock Spring Drive and Old Georgetown Road															
			FROM: Rock Spring Drive													
	Old Georgetown Road	Major Highway	Reversible One-Lane MedianBusway	129	120	6	No	470	90	560	>0.9	N	N	**ROW Already in Master Plan**	**0**	
			TO: Tuckerman Lane													
	Old Georgetown Road and Tuckerman Lane															
			FROM: Old Georgetown Road													
	Tuckerman Lane	Arterial	Reversible One-Lane MedianBusway	109	80	4	No	450	90	540	>0.9	N	N	**ROW Already in Master Plan**	**0**	
			TO: Sugarbush Lane													
	Tuckerman Lane and Sugarbush Lane															
			FROM: Sugarbush Lane													
	Tuckerman Lane	Arterial	Reversible One-Lane MedianBusway	109	80	4	No	540	110	650	<0.9	N	N	**ROW Already in Master Plan**	**0**	
			TO: Bethesda Trolley Trail													
Urban Area			***FROM: Bethesda Trolley Trail***													
	Tuckerman Lane	Arterial	Dedicated Curb Lane	98	80	4	No					N	N	**ROW Already in Master Plan**	**0**	
			TO: MD 355													
	Grosvenor Metrorail Station															

Notes
1: Right-of-way width assumes one exclusive left-turn and zero exclusive right-turn lanes
2: Right-of-way width assumes one exclusive left-turn and one exclusive right-turn lanes

Corridor 24: University Boulevard-Grosvenor
Limits: Wheaton Metrorail Station to Grosvenor Metrorail Station
Phase I Right-of-Way Recommendations

					Master Plan Assessment			Dedicated Lane Assessment						Resulting ROW Assessment		
	Name	Functional Classification	Corridor Typology/Recommendation													
			Preferred Runningway Type	Proposed Right-of-Way Width (feet)	Master-Planned Right-of-Way (MPROW) (feet)	Master-Planned Number of Lanes	Meets Proposed ROW Needs?	Peak-Hour BRT Ridership	Peak-Hour Local Bus Ridership	Sum of Peak-Hour Surface Transit Ridership	Auto v/c Ratio	Building Impacts within 5 feet?	Building Impacts within 15 feet?	Assessed Runningway Type	Max. Additional ROW Needed (feet)	Discussion
Urban Area	**Wheaton Metrorail Station**															
	Veirs Mill Road	Major Highway	*FROM: Wheaton Metro Entrance*													
			Phase 2 recommendation	N/A	120	6	N/A	180	40	220	>0.9	N/A	N/A	**Operational**	**0**	
			TO: University Boulevard													
	University Boulevard	Major Highway	*FROM: University Boulevard*													
			Phase 2 recommendation	N/A	120	6	N/A					N/A	N/A	**Operational**	**0**	
			TO: East Avenue													
	University Boulevard and East Avenue															
	University Boulevard	Major Highway	*FROM: East Avenue*													
			Phase 2 recommendation	N/A	120	6	N/A	210	40	250	>0.9	N/A	N/A	**Operational**	**0**	
			TO: Hillside Drive/Drumm Avenue													
Inside Urban Ring/I-270 Corridor	University Boulevard	Major Highway	*FROM: Hillside Drive/Drumm Avenue*													
			Phase 2 recommendation	N/A	120	6	N/A					N/A	N/A	**Operational**	**0**	
			TO: Newport Mill Road													
	University Boulevard and Newport Mill Road															
	University Boulevard	Major Highway	*FROM: Newport Mill Road*													
			Phase 2 recommendation	N/A	120	6	N/A	170	30	200		N/A	N/A	**Operational**	**0**	
			TO: Connecticut Avenue													
	Connecticut Avenue	Major Highway	*FROM: University Boulevard*								>0.9					
			Phase 2 recommendation	N/A	120	6	N/A					N/A	N/A	**Operational**	**0**	
			TO: Howard Avenue													
	Connecticut Avenue and Howard Avenue															
	Connecticut Avenue	Major Highway	*FROM: Howard Avenue*													
			Phase 2 recommendation	N/A	120	6	N/A	160	30	190	>0.9	N/A	N/A	**Operational**	**0**	
			TO: Knowles Avenue													
	Knowles Avenue	Arterial	*FROM: Connecticut Avenue*													
			Phase 2 recommendation	N/A	80	2-4	N/A					N/A	N/A	**Operational**	**0**	
			TO: Beach Drive													
	Beach Drive	Park Road	*FROM: Knowles Avenue*													
			Phase 2 recommendation	N/A	70	2	N/A					N/A	N/A	**Operational**	**0**	
			TO: MD 355													
	MD 355	Major Highway	*FROM: Beach Drive*													
			Phase 2 recommendation	N/A	150	6	N/A					N/A	N/A	**Dual-Lane Median Busway**	**0**	Coordinate treatment with Route 10b: MD 355 South
			TO: Tuckerman Lane (south)													
Urban Area	MD 355	Major Highway	*FROM: Tuckerman Lane (south)*													
			Phase 2 recommendation	N/A	150	6	N/A					N/A	N/A	**Dual-Lane Median Busway**	**0**	Coordinate treatment with Route 10b: MD 355 South
			TO: Tuckerman Lane (north)													
	Grosvenor Metrorail Station															

Notes
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2: Right-of-way width assumes one exclusive left-turn and one exclusive right-turn lanes

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Memorandum

To: Larry Cole

From: Mike Flood / Monique Ellis

Date: November 1, 2012

Subject: Initial Draft Recommendations Memo – Montgomery Count y BRT Master Plan of Transportation

Introduction

Decisions on transit infrastructure are typically made through a combination of technical analysis and policy decisions as communities make choices on the type of transit facility that best fits the goals of a community. Parsons Brinckerhoff staff have completed a range of task specific to generating a detailed understanding of factors to be considered in developing the right of way recommendations for the BRT network as has been discussed throughout project delivery. This has been done to provide decision-makers at the Planning Board with information and recommendations on how to consider right of way needs of implementing the envisioned transitway system. The following pages present technical information used in making decisions on right of way designations associated with design treatments that could be reasonably assumed for corridors forwarded for analysis.

Assumptions for developing recommendations are to identify what may be needed for rights of way. It is not possible in this analysis at the technical level to determine:

- Policies on lane repurposing or operational changes that may be implemented
- Exact levels at which point policy decisions on dedicated lanes may be warranted

It was therefore assumed that if there was a reasonable design option that provided necessary rights of way for all users and provided exclusive lanes for BRT would be the preference, this is an important factor of the work presented here – that is a desire to create separated BRT facilities where possible. It should be noted that cross-sections assumed for this analysis had all components included, including bicycle accommodations, planting strip, sidewalks, stormwater treatment, etc. At some point the decision to address these cross-sections in a way that reduced private property impacts for minor reductions would be considered.

This memorandum presents in the following pages the results of the detailed technical analysis conducted to determine proposed rights of way for the BRT system. The analysis was conducted to accomplish a number of tasks:

1. Determine whether each station to station pair is to be considered viable enough to warrant some type of exclusive lane treatment.
2. Identify a recommended right of way for each corridor based on the following:
    a. Peak hour station to station transit passenger volumes (BRT and local)
    b. Presence of structures near the edge of the existing right of way
    c. Results of conducted lane repurposing test.

The general direction of the project is to identify a right of way based on assumed design parameters that take into account decisions that would typically be made in planning phases and incorporate some general criteria for decision-making. This effort is not intended as a design or even detailed planning exercise, but rather as a method to apply some general guidance for reaching these decisions at the planning level given the extent and complexity of the network.

There were a number of analyses undertaken for this effort, which include:

- Demand forecasting – the demand forecasting model applied on work for the Montgomery County DOT was applied for the purpose of generating ridership estimates. This process determined:
    - Transit ridership – generated to understand values for station to station pairs in terms of passenger volumes
    - Auto system performance – assessing volume/capacity on links to understand implications of mixed-traffic use, as well as system performance in identified geographic districts .
- Basic level GIS analysis – performed using information provided by M-NCPPC Planning staff to understand, in particular, those areas where right of way constraints could limit BRT runningway options due to the presence of structures within areas potentially designated for transportation uses.
- VISSIM Traffic Modeling – conducted to test two conditions in the corridors that may impact decisions on rights of way. These tests included an assessment of a median BRT condition along Route 355 near White Flint and a repurposing lane test along MD 97 between 16th Street and US 29.

The information on the following pages summarizes the planning-level assessments for each of the identified BRT routes. This includes a set of data tables which present the findings of all of the detailed technical analysis as the segment level to better represent all of the factors that were considered leading up to the final right of way recommendations. A series of maps were also complied and present information used in decision making. Given the detailed technical information being presented, it is anticipated that continued dialogue with M-NCPPC staff and primary stakeholders will lead to further clarification of final right-of-way recommendations.

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Theoretical Traffic Lane Capacity

One issue particular to discussion for a network at this level is the number of auto passengers that can pass through a corridor. Theoretical capacity of a single lane of traffic is pertinent to evaluating BRT options that involve either partial or complete repurposing of existing lanes for use as BRT priority lanes. The Highway Capacity Manual (HCM) presents theoretical lane capacities for a number of different types of facilities including freeways and rural highways, however, lane capacity on interrupted-flow facilities (signalized arterial corridors on which the Montgomery County BRT system would predominantly operate) is highly dependent on field conditions, including:

- Total number of lanes of traffic
- Posted speed limit / prevailing speed under low-volume conditions
- Number of access points (driveways, commercial entrances, etc.)
- Degree of traffic signal coordination
- Presence of a divided median
- Width of shoulders

The numerous variables make it difficult to generalize lane capacity. However, it is possible to specify a range of capacities within which a signalized arterial will likely operate based on traffic engineering principles. Key drivers of lane capacity under interrupted-flow conditions along a signalized arterial are **saturation flow rate**, or the maximum rate at which vehicles can pass a given point under stable conditions, and **cycle share**, or the ratio of time during which a signal serves the mainline through movement.

The Maryland SHA defines saturation flow rate as 1600 veh/hr/lane for assigning Level of Service (LOS) thresholds in Critical Lane Analysis (CLA) calculation; CLA values above 1600 vphpl being indicative of over-capacity or LOS “F” conditions. Regarding cycle share, based on signal timings provided by Montgomery County the observed signal timings reflect a split of anywhere between 50% and 75% of the total cycle length being dedicated to the “major street” phases.

The combination of saturation flow rate and cycle share ratio represents an estimated per-lane capacity of between 800 and 1200 vphpl. In validation of this estimate, all observed vehicle throughputs along mainline corridors evaluated in the VISSIM modeling (described later in this memo) effort fell into this range. This range will be important for the purposes of understanding decisions on whether to assign a lane dedicated to transit.

By applying a passenger per vehicle factor of 1.06 supplied by MNCPPC staff it is therefore generalized that person throughput on arterials in Montgomery County would range from 850 to 1275 auto passengers in various areas, with lower volumes

in the more urbanized areas and higher volumes along corridors with more dispersed land uses.

Demand Forecasting

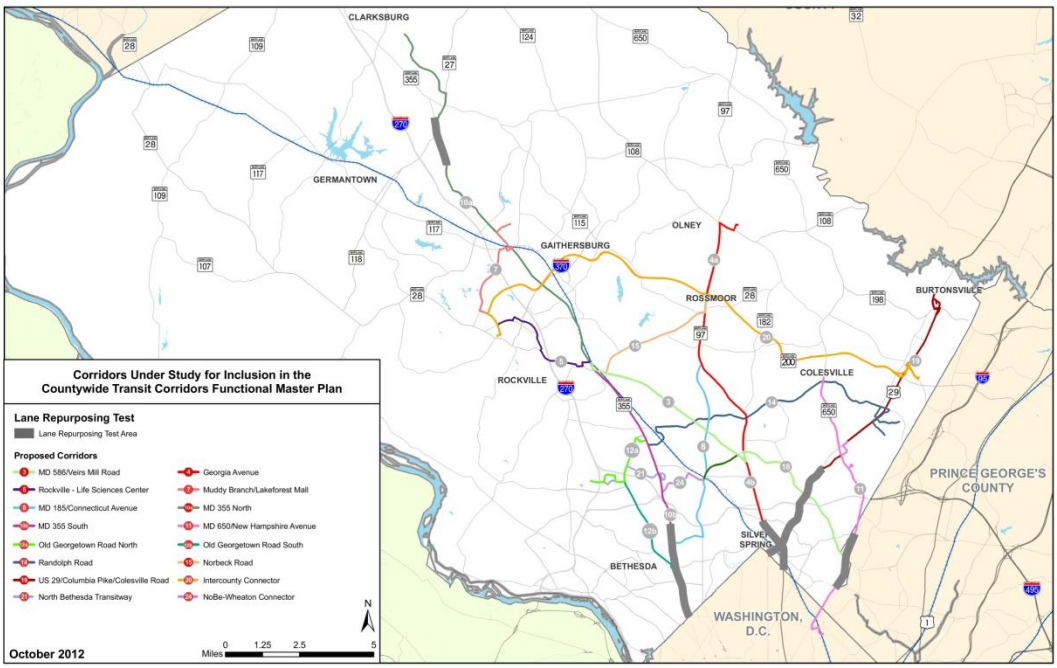
The issue of system viability was an important consideration when planning for a BRT system to an extent as identified for this analysis. A method similar to that employed on the MCDOT BRT study was used: that is, a higher-end system was assumed. For the forecasting analysis a dedicated running way was also assumed, with delays approximated at intersections where BRT vehicles would be crossing other roadways along the corridor. An adjustment to the forecasting process was made for this round of estimates, to better reflect potential future conditions. Those adjustments included the development of a local bus operations plan, as well as the addition of extension segments and new routes forwarded at the request of the County Executive. The planning horizon year used in the forecasting analysis is 2040.

To understand implications of implementing the BRT system, a set of model runs were prepared. These included:

- No Build – the base condition model used to generate an understanding of what the county would look like in the future given reasonable expectations. This model includes land use projected by the M-NCPPC for its MWCOG cooperative forecasting process as well as transportation projects contained in the MWCOG Long Range Transportation Plan. For this purpose the No Build model includes the Purple Line LRT, the Corridor Cities Transitway BRT, and other roadway improvements identified for the region.
- Build 1 – this model developed an understanding of potential ridership for the network under Year 2040 conditions. This model and results assume dedicated busways throughout the system and would be considered an optimum system with desirable attributes like off-board fare collection, sheltered bus stops and other high quality high-capacity BRT system enhancements.
- Build 2 – this model was developed to test the implications of repurposed lanes in certain locations in the region where lanes might make sense given the supporting surrounding network and level of existing transit ridership. These repurposed segments include the following (see figure 1 below):
    - Georgia Avenue: 16th Street to Eastern Avenue – 1.7 miles
    - US 29: Lockwood Drive to Eastern Avenue – 3.5 miles
    - MD 355 North: Ridge Road to Middlebrook Road – 1.7 miles
    - MD 355 South: Cedar Lane to Western Avenue – 2.3 miles
    - New Hampshire Avenue: Piney Branch Road to Ethan Allen Avenue – 2.0 miles

Transit speeds in the repurposed areas were lowered from those identified in the Build 1 model to reflect some interference from automobile travel.

Figure 1 - Lane Repurposing Test Segments



Where Dedicated Lanes Could be Assumed

The discussion of a dedicated lane or facility is dependent on the number or riders on the facility in the peak hour. For our purposes we generally applied guidance found in TCRP Synthesis 83 and the second edition of the Transit Capacity and Quality of Service Manual (TCQSM) to identify those treatments that would potentially be appropriate given conditions along the corridor. The TCQSM provides some guidance on when to consider exclusive lane treatments of any type.

> *"Policy and cost considerations generally set the lower limit for bus volumes that warrant priority treatments on arterials, while bus capacity sets the upper limit."*

> *"A comparison of person volumes on buses operating in mixed traffic with person volumes in other vehicles operating on the street can also be used to help decide when to dedicate one or more lanes to exclusive bus use"*

The document also contains the following table to help guide decisions on when to consider treatment options for differing conditions.

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TCQSM Table on Identified Volumes

Treatment	Min one-way peak hour bus volumes	Min one-way peak hour passenger volumes	Related LU and transportation factors
Bus streets or malls	80-100	3200-4000	Commercially-oriented frontage
CBD curb bus lane, main street	50-80	2000-3200	Commercially-oriented frontage
Curb bus lane, normal flow	30-40	1200-1600	At least 2 lanes available for other traffic in same direction
Median bus lanes	60-90	2400-3600	At least 2 lanes available for other traffic in same direction; ability to separate vehicular turn conflicts from buses

The typical volume identified for a median bus lane above has been set to reflect the level of ridership required to support construction of these types of lanes. The bus volumes identified as a standard result in person throughput on the corridor in the peak hour at multiples of what is possible for an automobile lane, unless one assumes that at least four passengers are in each vehicle in the peak period. Many communities are making decisions to construct median transitways at less than the 2,400 one-way peak hour passenger volumes so different assumptions were used for this analysis.

Minimum Volume Assumptions for Designated Lane Treatments

A methodology was applied based on the volumes identified in literature outlined above while also recognizing that there may be a range of potential outcomes associated with the demand forecasting model. Some flexibility of application was needed so a lower limit of consideration was established for whether a particular link would advance for future consideration. For this purpose a lower limit of 800

passengers per segment in the peak directional period was established as a minimum threshold for providing any type of dedicated lane facility. Part of the reasoning for this decision was that the future forecast year of 2040 is 28 years in the future. If a corridor is not truly viable to and beyond that time frame that it is probably not correct to assume that a decision impacting rights of way will be made within the timeframe of the master plan of transportation. Also forecasting models are not expected to provide an extraordinary level of precision so a set of planning level values had to be identified to use as decision-points for the model. The lower bound for this decision (dedicated lane) was set at 800 passengers per direction in the peak hour.

District Level Analysis

A series of districts was designated to help determine the travel conditions in the county for various build conditions. The intent of this exercise was to generate and understanding of what happens beyond those noticed on the facilities themselves. This helps to better understand how the transportation recommendation will benefit/impact all users of the roadway network.

The map and table on the following pages present the results of the forecasting results for this project. The vehicle miles traveled / vehicle hours traveled (vmt/vht) summaries are presented to depict the impact/benfit of various build assumptions. The differences noted show the potential network effects of the various build conditions for automobiles with vehicle miles traveled being reduced with implementation of the BRT network. Vehicle speeds are also improved in the Build1 model due to fewer vehicles on the roadway.

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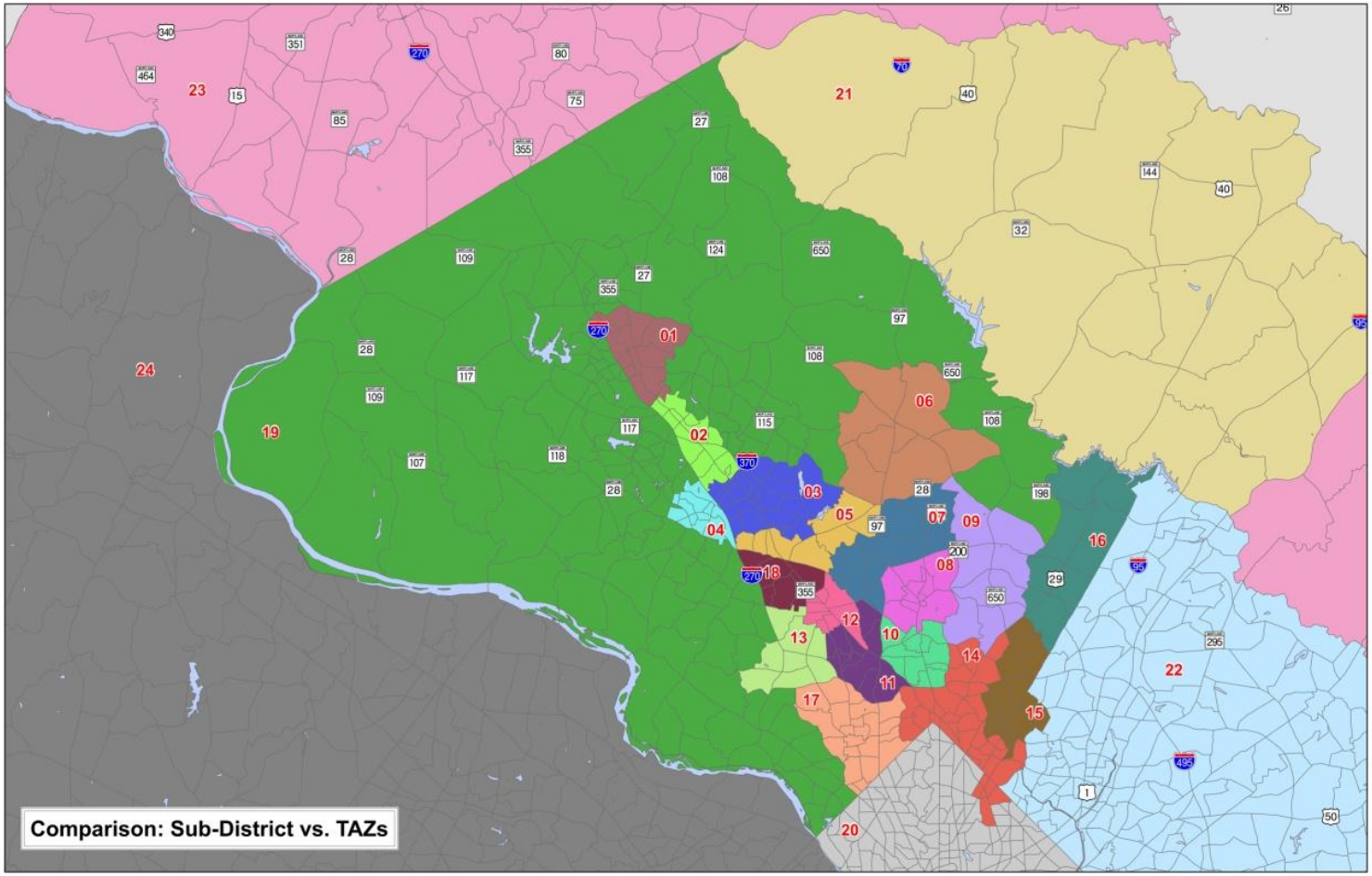

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	NO BUILD (PeakOnly)			BUILD 1 (PeakOnly)			BUILD 2 (PeakOnly)			VMT CHANGE			% SPD CHANGE		
DISTRICT	VMT	VHT	Avg Spd (mph)	VMT	VHT	Avg Spd (mph)	VMT	VHT	Avg Spd (mph)	NB-B1	NB-B2	B1-B2	NB-B1	NB-B2	B1-B2
1	223,006	11,085	20.12	217,623	10,498	20.73	216,816	10,500	20.65	-5,383	-6,190	-807	3.04%	2.64%	-0.39%
2	315,126	40,421	7.80	310,461	37,682	8.24	310,936	37,988	8.19	-4,665	-4,190	475	5.68%	4.99%	-0.65%
3	478,418	45,572	10.50	467,467	41,451	11.28	468,834	41,771	11.22	-10,951	-9,585	1,367	7.43%	6.91%	-0.48%
4	404,441	32,105	12.60	397,441	29,882	13.30	398,692	30,287	13.16	-7,001	-5,750	1,251	5.58%	4.50%	-1.03%
5	245,652	26,990	9.10	239,026	24,384	9.80	239,685	24,700	9.70	-6,626	-5,968	659	7.70%	6.62%	-1.01%
6	370,693	25,016	14.82	365,292	23,711	15.41	367,039	23,872	15.38	-5,402	-3,655	1,747	3.97%	3.76%	-0.20%
7	466,627	35,891	13.00	455,909	32,066	14.22	457,709	32,403	14.13	-10,718	-8,918	1,800	9.36%	8.65%	-0.65%
8	229,622	21,412	10.72	223,809	19,127	11.70	224,140	19,390	11.56	-5,814	-5,482	332	9.11%	7.79%	-1.21%
9	499,310	30,580	16.33	490,504	27,720	17.70	488,848	27,080	18.05	-8,806	-10,462	-1,656	8.37%	10.56%	2.02%
10	529,047	45,836	11.54	520,703	42,226	12.33	521,144	42,667	12.21	-8,344	-7,904	441	6.84%	5.82%	-0.95%
11	338,173	39,191	8.63	329,832	35,523	9.28	328,544	34,745	9.46	-8,341	-9,629	-1,288	7.60%	9.58%	1.84%
12	203,539	28,364	7.18	197,015	25,394	7.76	197,105	25,351	7.78	-6,524	-6,434	90	8.12%	8.35%	0.21%
13	442,873	42,362	10.45	436,006	38,947	11.19	436,442	38,966	11.20	-6,867	-6,431	436	7.08%	7.13%	0.05%
14	765,507	82,844	9.24	752,963	77,570	9.71	720,273	78,309	9.20	-12,544	-45,233	-32,690	5.05%	-0.46%	-5.25%
15	352,545	41,929	8.41	346,733	38,882	8.92	335,443	39,216	8.55	-5,812	-17,103	-11,291	6.06%	1.73%	-4.08%
16	484,507	40,577	11.94	479,512	39,339	12.19	478,281	38,991	12.27	-4,995	-6,226	-1,231	2.08%	2.73%	0.63%
17	591,381	82,236	7.19	581,576	77,489	7.51	567,378	80,089	7.08	-9,804	-24,002	-14,198	4.37%	-1.49%	-5.61%
18	346,735	35,820	9.68	340,474	32,358	10.52	340,972	32,819	10.39	-6,261	-5,763	498	8.70%	7.33%	-1.26%
19	4,784,798	367,167	13.03	4,725,735	351,539	13.44	4,743,219	357,369	13.27	-59,063	-41,579	17,484	3.16%	1.85%	-1.27%
MC Total	12,072,003	1,075,398	11.23	11,878,082	1,005,785	11.81	11,841,499	1,016,514	11.65	-193,921	-230,503	-36,583	5.20%	3.77%	-1.36%

Notes

1. VMT and VHT caluted for Peak period only (i.e. AM and PM, no OP)
2. Avg. Speed (mph) calculated as VMT/VHT
3. Both VMT and VHT are calculated for all non-centroid-connector links (unlike the daily where VHT used centroid connectors also)

Travel Time and Speed for Selected Hwy Corriors from the Model					Travel Time (min)						Avg Speed (mph)					
					No Build			Build2			No Build			Build2		
Corridor	Dir	From	To	Dist	AM	PM	OP	AM	PM	OP	AM	PM	OP	AM	PM	OP
MD 355	NB	Western Ave	Cedar Ln	3.24	10.4	33.6	11.4	11.6	39.3	13.1	18.7	5.8	17.0	16.7	4.9	14.8
	SB	Cedar Ln	Western Ave	3.24	15.5	30.6	11.7	18.4	36.2	13.7	12.6	6.4	16.6	10.6	5.4	14.2
MD 97	NB	Philadelphia Ave	Plyers Mill Rd	3.33	9.5	40.9	11.2	9.6	43.7	11.6	21.1	4.9	17.8	20.8	4.6	17.2
	SB	Plyers Mill Rd	Philadelphia Ave	3.33	20.2	25.5	11.4	21.0	27.0	12.1	9.9	7.8	17.6	9.5	7.4	16.5
US 29	NB	Georgia Ave	Cherry Hill Rd / Randolph Rd	6.09	15.1	69.2	16.8	16.4	71.2	19.1	24.1	5.3	21.7	22.2	5.1	19.2
	SB	Cherry Hill Rd / Randolph Rd	Georgia Ave	6.09	38.9	45.6	18.5	39.8	49.7	20.4	9.4	8.0	19.7	9.2	7.4	17.9
US 29	NB	University Blvd	Stewart Ln	2.39	4.8	22.6	5.2	5.0	23.5	5.8	29.9	6.3	27.5	28.6	6.1	24.9
	SB	Stewart Ln	University Blvd	2.39	13.0	17.8	6.0	13.4	19.4	6.8	11.1	8.0	24.0	10.7	7.4	21.1
MD 650	NB	Ray Rd	Rosemere Ave	7.15	17.9	78.3	18.1	17.9	75.8	18.9	24.0	5.5	23.7	23.9	5.7	22.7
	SB	Rosemere Ave	Ray Rd	7.15	39.6	44.2	19.3	37.4	47.2	20.4	10.8	9.7	22.3	11.5	9.1	21.1

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Travel Time Test for Alternatives

An assessment of travel times along corridors identified for lane repurposing was conducted to determine the potential impacts to travelers remaining on those corridors, recognizing that some drivers would choose alternate routing. The table above presents the results of the travel time test across the models applied for this analysis.

Corridor Maps

A set of corridor Maps were prepared to highlight a few key issues when considering assumed transitway treatments and the implications on roadway rights of way. They are intended to compliment the tables provided. The maps depict two specific conditions:

- the corridors showing the BRT supportive density (at the TAZ level) expected to 2040, station locations and areas of potential building impact beyond the master plan right of way

- existing zoning in the corridors that could be considered supportive to BRT service

The right of way values and building impacts were generalized based on information provided by MNCPPC staff for right of way width for a line file in GIS format. They are not intended to be representative of existing conditions or be at a level that can be used for anything other than this planning level assessment. The effort was undertaken to understand potential constraints posed by existing buildings or structures that might limit the ability to expand the rights of way. Two measures were used to generalize impacts and were based on right of way values contained in the master plan layer. 5 feet (to either side) was used to determine links where very little if any room was available for expansion. 15 feet (to either side) was used as a method to approximate links where limited room was available but not enough to achieve recommended build out conditions.

Corridor Tables

Corridor Tables have been prepared to summarize the findings of the data analysis and identify the recommended right of way considerations. In general the table follows the following methodology:

1. Identify the “Corridor Typology Recommendation” and geographic area within the County through which the route segment would traverse to determine the rights of way needed to accommodate a transit facility. This typology designation was identified in earlier work and is specific to the land uses along

the corridor and the expected trip interactions along the corridor. Example: the cross section of a dual-lane median busway within a constrained urban area is 142 feet.

2. If ROW is available and the link carries viable ridership (based on total surface transit ridership along a route) then use of planned ROW is carried forward.

3. Peak-hour auto v/c ratios are presented to identify whether roadway conditions are such that a facility is needed to provide service to maintain link viability.

4. Property impacts are identified for specific links to identify whether there are buildings in the needed rights of way for corridors. If they are there and no other option exists then "Operational" strategies are recommended which could include lane repurposing, lane controls or mixed traffic operation, not impacting the designated right of way.

Traffic Analysis Results

As noted above a series of VISSIM models were built to test a set of assumptions for BRT operation along two corridors. The first, MD 97, tested the repurposing of a traffic lane to assess the impact on traffic operations at intersections. The second, MD 355, tested median BRT operations along the corridor (with no lane reductions). The analysis results presented below highlight results from this analysis.

Test Corridor 1: MD 97 from Colesville Road (MD 384/US 29) to 16th Street (MD 390)

BRT Alternative:

Repurpose shoulder lane as BRT-only (right turning vehicles allowed to use BRT lane).

Physical Improvements:

None other than striping and signing and modifications to traffic signals to implement Transit Signal Priority.

Level of Service:

	Existing		No Build		Build	
	AM	**PM**	**AM**	**PM**	**AM**	**PM**
MD 97 & 16th Street	B	C	B	C	C	D
MD 97 & Spring Street	D	E	E	E	E	E

	Existing		No Build		Build	
	AM	PM	AM	PM	AM	PM
MD 97 & Cameron Street	C	C	C	D	C	D
MD 97 & Colesville Road	D	D	E	D	E	D

Travel Time (entire study segment, end to end):

	AM SB	AM NB	PM SB	PM NB
Existing (measured)	206	198	160.4	182.8
Existing (modeled)	236.1	294.4	229.4	301.7
No-Build	346.4	285.5	227.8	593.0
Build	594.8	331.9	340.5	649.6
Build BRT	309	310.4	334.3	274.6

Average Vehicle Delay (in seconds)

	AM		PM	
	NoBuild	Build	NoBuild	Build
Cars	105.3	138.7	120.6	136
Trucks	114.8	154.1	128.2	147.5
Busses	143.9	114.3	129	90.1
BRT	-	166.8	-	154.2

- *BRTs have a higher average delay than busses due to the fact that many of the BUS routes are in and out of the model quickly through Colesville Road, while the BRT routes run the entire length of MD 97.*

Test Corridor 2: MD 355 from Security Lane to Old Georgetown Road (MD 187)

BRT Alternative:

Dedicated median guideway including closure of all median crossings except at signalized intersections.

Physical Improvements:

- Add 2nd NB left turn lane at MD 355 / Old Georgetown Road intersection
- Add 2nd SB left turn lane at MD 355 / Nicholson Lane intersection

- Modifications to traffic signals to implement Transit Signal Priority.

Level Of Service:

	Existing		No Build		Build	
	AM	**PM**	**AM**	**PM**	**AM**	**PM**
MD 355 & Old Georgetown Rd.	C	E	C	F	E	F
MD 355 & Marinelli Road	C	E	C	F	D	F
MD 355 & Nicholson Ln.	C	C	C	C	C	D
MD 355 & Security Ln.	B	B	B	C	C	E

Travel Time (entire study segment, end-to-end):

	AM SB	**AM NB**	**PM SB**	**PM NB**
Existing (measured)	97	200.4	148.4	118.4
Existing (modeled)	186.2	181.1	336.2	348
No-Build	367	395.4	306.1	392.3
Build	294.4	276	667.1	520.7
Build BRT	182.3	279.2	171.2	228.8

Average Vehicle Delay (in seconds)

	AM			**PM**		
	Existing	**No Build**	**Build**	**Existing**	**No Build**	**Build**
Cars	SB – 114.4 NB – 106.4	SB –322.5 NB - 293.9	SB – 230.3 NB – 164.2	SB – 263.3 NB – 275.5	SB – 232.8 NB – 319.2	SB – 422.1 NB – 603
Trucks	SB – 110.8 NB – 106.4	SB – 319.3 NB – 294.1	SB – 226.7 NB – 164.6	SB – 263 NB – 273.1	SB – 228 NB – 315.4	SB -419.9 NB – 604.2
Buses	SB – 111.1 NB – 106.3	SB – 321.6 NB – 293.8	SB – 227.6 NB – 163.9	SB – 263.2 NB – 274.4	SB – 230.5 NB – 316.6	SB – 420.8 NB – 601.5
BRT	-	-	SB – 82.6 NB – 177.1	-	-	SB – 67.9 NB – 103.6

One point of note when reviewing this analysis. On both corridors the throughput for traffic was constrained at one end in both peaks for the identified traffic volume. These constraints act as a type of filter to traffic by restricting the amount that could enter the corridor to be analyzed for traffic impacts. Similar conditions would be expected at an intersection or set of intersections prior to these corridors.

Implementing BRT

As local and regional leaders begin to assume the challenge of implementing a BRT system in Montgomery County and discuss the results of this report, it is important to note that there are typical methods for implementing BRT systems. Recent dialogue in the County has been centered on assessing the identified corridors for higher end runningway treatments only. Very few systems nationally and internationally have progressed immediately to higher end design along particular corridors. Most systems working to implement a wider system of improvements have relied on various strategies for implementation.

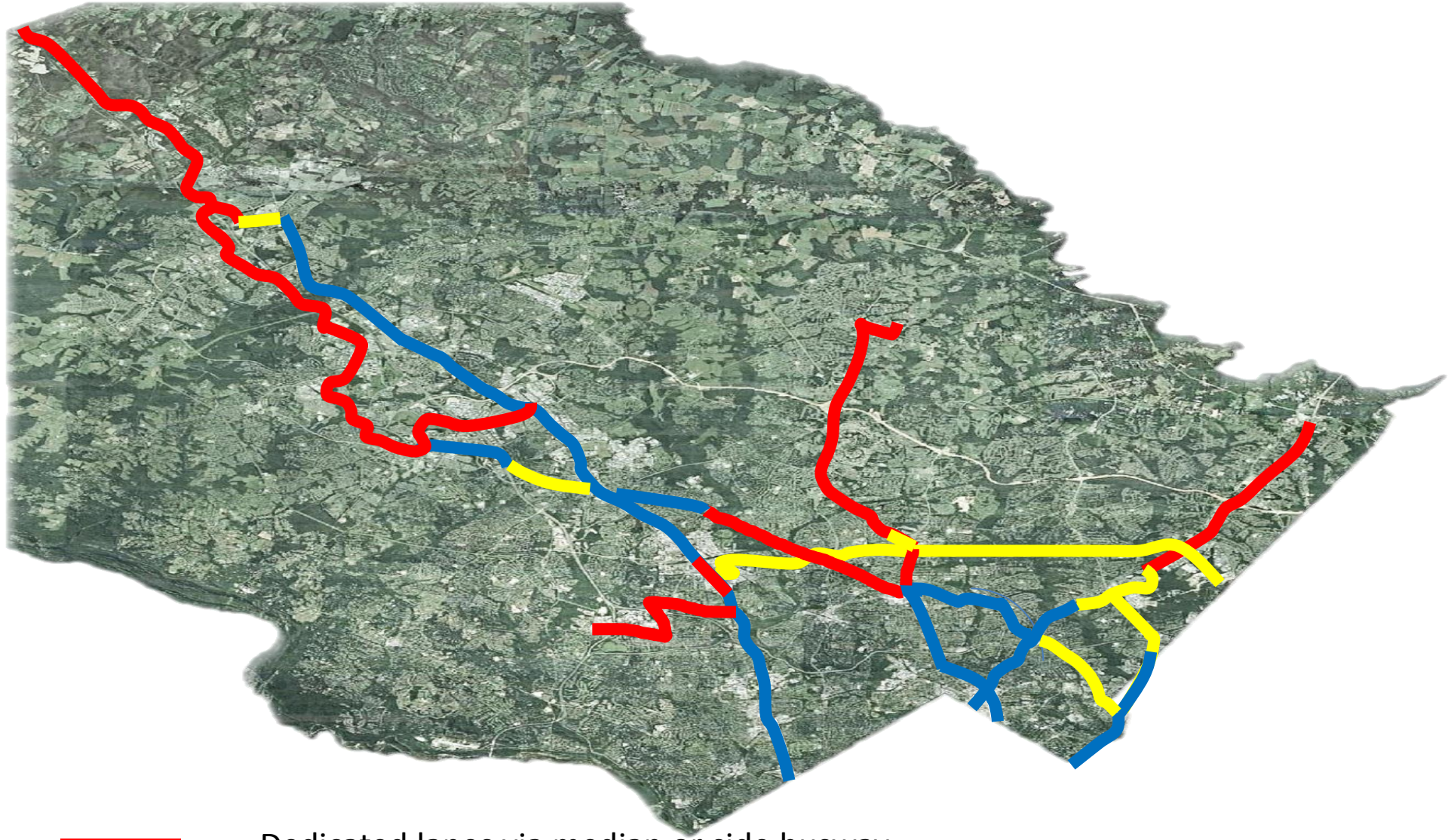
While this document is focused on developing right-of-way assumptions to facilitate BRT operations through the year 2040, readers must realize that the full use of that right-of-way would be expected in many cases in later years when corridor ridership develops to a point where investment decisions would make the most sense, such as when supportive land uses can help sustain higher levels of ridership throughout daily service. Montgomery County officials may want to consider a phased approach to BRT implementation and the coordinated development of corridors and surrounding communities over time. Typical approaches to implementation include the following (not necessarily in order of progression):

- Initial **"BRT-lite"** implementation, which would include vehicle purchases, longer station spacing, branding, stylized stations, "Next Bus" displays and other improvements that would help establish the BRT system as a viable, reliable transit option
- Implementation of spot improvements such as **queue jump lanes and transit signal priority**, which provide additional right-of-way or operational improvements to improve speed and reliability
- Implementation of **peak-period BRT lanes**, which allow BRT vehicles to operate in lanes during the peak period and open those lanes to general-purpose traffic during the off-peak periods when traffic flows more freely
- **Full BRT implementation** for corridors that have viable transit currently and can serve as initial implementation of links in developing an overall network. Refined traffic analysis would have to be undertaken to understand implications of lane conversion for BRT use.

Such an incremental approach to implementing a BRT network will help ensure its success to the end users and the operating agency. Moving toward implementation of transit-only lanes without supportive ridership should only be consider after carefully considering the input from all users of the corridor.. Lanes built to accommodate few riders reduces enthusiasm for future investments and fuel resentment from constituents who either choose to or must drive. More refined corridor planning should be done on any corridor identified for improvement to insure that a benefit/cost assessment points to a viable corridor for implementation.

The system envisioned for Montgomery County assessed for this analysis has corridors considered viable for BRT application, a strategy focused on phased implementation applying the right design for conditions found along the corridors will be critical to its success.

Recommended Transit Corridors Network



Dedicated lanes via median or side busway

Dedicated lanes via lane-repurposing

Mixed traffic

ATTACHMENT 4

Attachment 5: Ridership and Lane Repurposing Test

Corridor	From	To	Transit Ridership per Peak Hour	Traffic Lane Capacity per Hour	Recommendation	Right-of-Way
MD 355 South	Friendship Heights Metro Station	White Flint Sector Plan Area (south)	1,700 to 2,400	1,000	Dedicated Lanes	Lane Repurposing
	White Flint Sector Plan Area (south)	White Flint Sector Plan Area (north)	2,300 to 2,500	1,000	Dedicated Lanes	Additional ROW
	White Flint Sector Plan Area (north)	Rockville Metro Station	2,200 to 2,500	1,000	Dedicated Lanes	Lane Repurposing
MD 355 North	Rockville Metro Station	Shakespeare Blvd	1,500 to 2,800	1,000 to 1,150	Dedicated Lanes	Lane Repurposing
US 29	Eastern Ave	Wayne Ave	500 to 550	950	Dedicated Lanes	Lane Repurposing
	Wayne Ave	Lockwood Dr	1,350 to 1,600	850 to 1,150	Dedicated Lanes	Lane Repurposing
	US 29	US 29	1,200	700 to 850	Mixed Traffic	none
	Stewart Ln	Burtonsville	400 to 1,200	1,000 to 1,200	Dedicated Lanes	Existing Median
Georgia Ave	Eastern Ave	Colesville Rd	400 to 500	950	Dedicated Lanes	Lane Repurposing
	Colesville Rd	16th Street	900 to 1,500	950	Dedicated Lanes	Lane Repurposing
	16th Street	Veirs Mill Rd	1,050 to 1,600	950 to 1,150	Dedicated Lanes	Lane Repurposing
	Veirs Mill Rd	Glenmont Metro Station	900 to 1,050	1,150	Mixed Traffic	none
	Glenmont Metro Station	Olney	50 to 1,400	850 to 1,500	Dedicated Lanes	Existing Median
New Hampshire Ave	DC Line	Adelphi Road	900 to 1,900	950 to 1,150	Dedicated Lanes	Lane Repurposing
	Adelphi Road	US 29	50 to 900	950 to 1,500	Mixed Traffic	none
Veirs Mill Rd	MD 355	Twinbrook Pkwy	950 to 1,050	950	Dedicated Lanes	Lane Repurposing
	Twinbrook Pkwy	Georgia Ave	900 to 1,450	1,150	Dedicated Lanes	Existing Median
University Blvd	Veirs Mill Rd	US 29	1,250 to 1,550	1,150	Dedicated Lanes	Lane Repurposing
	US 29	Takoma / Langley	650 to 1,100	950 to 1,150	Mixed Traffic	none
Rockville / LSC	Rockville Metro Station	I-270	1,350 to 1,500	850 to 950	Mixed Traffic	none
	I-270	LSC	650 to 1,350	750 to 950	Dedicated Lanes	Lane Repurposing
Randolph Rd	MD 355	Prince George's County Line	700 to 1,350	700 to 1,500	Mixed Traffic	none
North Bethesda Transitway	Grosvenor Metro Station	Montgomery Mall	200 to 650	700 to 1,150	Dedicated Lanes	Existing ROW

ATTACHMENT 5

Station N	BRT Station Location	Corridor
3-1	Takoma/Langely Park Transit Center	3
3-2	MD 193 and Gilbert St	3
3-3	MD 193 and E Franklin Ave	3
3-4	US 29 and MD 193	3
3-5	MD 193 and Dennis Ave	3
3-6	MD 193 and Arcola Ave	3
3-7	MD 193 and Inwood Ave	3
3-8	MD 193 and Amherst Avet	3
3-9	Wheaton Metro Station	3
3-10	MD 586 and MD 193	3
3-11	MD 586 and Newport Mill Rd	3
3-12	MD 586 and MD 185	3
3-13	MD 586 and Randolph Rd	3
3-14	MD 586 and Parkland Dr	3
3-15	MD 586 and Aspen Hill Rd	3
3-16	MD 586 and Twinbrook Pkwy	3
3-17	MD 586 and Broadwood Dr	3
3-18	MD 586 and Norbeck Rd	3
3-19	Rockville Metro Station	3
4-1	Montgomery General Hospital	4
4-2	MD 108 and MD 97	4
4-3	MD 97 and Hines Rd	4
4-4	ICC PnR	4
4-5	MD 97 and Rossmoor Blvd	4
4-6	MD 97 and Bel Pre Rd	4
4-7	MD 97 and MD 185	4
4-8	MD 97 and Hewitt Ave	4
4-9	Glenmont Metro Station	4
4-10	MD 97 and Randolph Rd	4
4-11	MD 97 and Arcola Ave	4
4-12	Wheaton Metro Station	4
4-13	MD 97 and Dexter Ave	4
4-14	Forest Glen Metro Station	4
4-15	MD 97 and Seminary Rd	4
4-16	MD 97 and Cameron St	4
4-17	Silver Spring Transit Center	4
4-18	MD 97 and East-West Hwy	4
4-19	MD 97 and Eastern Avenue	4
5-1	Rockville Metro Station	5
5-2	E Middle Ln and Gibbs St	5
5-3	MD 28 and Laird St	5
5-4	MD 28 and Research Blvd	5
5-5	Research Blvd and Gude Drive	5
5-6	Research Blvd and Shady Grove Rd	5
5-7	MD 28 and Broschart Rd	5
5-8	Life Sciences Center	5
7-1	Lakeforest Mall Transit Center	7
7-2	MD 355 and Brookes Ave	7
7-3	Muddy Branch Rd and MD 117	7
7-4	Muddy Branch Rd and West Side Dr	7
7-5	Muddy Branch Rd and Diamondback Dr	7
7-6	MD 119 and Decoverly Dr	7
7-7	Life Sciences Center	7
8-1	MD 97 and Bel Pre Rd	8

ATTACHMENT 6: Station Locations by Corridor

8-2	MD 185 and MD97	8
8-3	MD 185 and Weller Road	8
8-4	MD 185 and Randolph Rd	8
8-5	MD 586 and MD 185	8
8-6	MD 185 and Howard Ave	8
8-7	MD 185 and Saul Rd	8
8-8	Jones Bridge Rd and Platt Ridge Road	8
8-9	Jones Bridge Rd and Glenbrook Pkwy	8
8-10	Medical Center Metro Station	8
10a-1	Snowden Farm Parkway and Stringtown Road	10a
10a-2	Snowden Farm Parkway and Foreman Boulevard	10a
10a-3	Midcounty Highway and Ridge Road	10a
10a-4	MD 355 and Shakespeare Blvd	10a
10a-5	MD 355 and MD 118	10a
10a-6	MD 355 and Middlebrook Rd	10a
10a-7	MD 355 and Game Preserve Rd	10a
10a-8	MD 355 and MD 124	10a
10a-9	MD 355 and Odendhal Ave	10a
10a-10	MD 355 and Brookes Ave	10a
10a-11	MD 355 and Education Blvd	10a
10a-12	MD 355 and Shady Grove Rd	10a
10a-13	MD 355 and King Farm Blvd	10a
10a-14	MD 355 and Gude Dr	10a
10a-15	MD 355 and Mannakee St	10a
10a-16	Rockville Metro Station (west entrance)	10a
10b-1	Rockville Metro Station (west entrance)	10b
10b-2	MD 355 and Wooton Pkwy	10b
10b-3	MD 355 and Halpine Rd	10b
10b-4	MD 355 and Hubbard Dr	10b
10b-5	White Flint Metro Station	10b
10b-6	MD 355 and Edson Ln	10b
10b-7	Grosvenor Metro Station	10b
10b-8	MD 355 and Pooks Hill Rd	10b
10b-9	MD 355 and Cedar Ln	10b
10b-10	Medical Center Metro Station	10b
10b-11	MD 355 and Cordell Ave	10b
10b-12	Bethesda Metro Station	10b
10b-13	Bradley Blvd and MD 355	10b
10b-14	Friendship Heights Metro	10b
11-1	Colesville PnR Lot	11
11-2	MD 650 and Randolph Road	11
11-3	MD 650 and Valleybrook Dr	11
11-4	MD 650 and Jackson Road	11
11-5	White Oak Transit Center	11
11-6	FDA White Oak Campus	11
11-7	MD 650 and Powder Mill Rd	11
11-8	MD 650 and Oakview Dr	11
11-9	MD 650 and Northampton Dr	11
11-10	Takoma/Langely Park Transit Center	11
11-11	MD 650 and MD 410	11
11-12	MD 650 and Eastern Ave	11
11-13	Fort Totten Metro Station	11
12a-1	Montgomery Mall Transit Center	12a
12a-2	Rockledge Dr and Rockledge Center	12a
12a-3	Rockledge Dr and Rock Spring Dr	12a

12a-4	Rock Spring Dr and MD 187	12a
12a-5	MD 187 and Tuckerman Ln	12a
12a-6	MD 187 and Edson Lane/Poindexter Lane	12a
12a-7	White Flint Metro Station	12a
12b-1	Montgomery Mall Transit Center	12b
12b-2	Rockledge Dr and Rockledge Center	12b
12b-3	Rockledge Dr and Rock Spring Dr	12b
12b-4	MD 187 and Democracy Boulevard	12b
12b-5	MD 187 and Ryland Dr	12b
12b-6	MD 187 and W Cedar Ln	12b
12b-7	MD 187 and Lincoln St	12b
12b-8	MD 187 and Del Ray Ave/Cordell Ave	12b
12b-9	Bethesda Metro Station	12b
14-1	White Flint Metro Station	14
14-2	Randolph Rd and Lauderdale Dr	14
14-3	MD 586 and Randolph Rd	14
14-4	MD 185 and Randolph Rd	14
14-5	Randolph Rd and Bluhill Rd	14
14-6	MD 97 and Randolph Rd	14
14-7	Glenmont Metro Station	14
14-8	Glenallan Ave and Randolph Rd	14
14-9	MD 650 and Randolph Road	14
14-10	MD 650 and Fairland Road	14
14-11	US 29 and Tech Rd	14
14-12	Industrial Parkway and Tech Road	14
14-13	Industrial Parkway and Water Tower	14
15-1	Rockville Metro Station (west entrance)	15
15-2	Baltimore Road and MD 28	15
15-3	MD 28 and Bauer Drive	15
15-4	MD 28 and Bel Pre	15
15-5	PnR Lot - MD28 and MD 97	15
15-6	ICC PnR	15
19-1	Burtonsville PnR	19
19-2	Briggs Chaney PnR	19
19-3	US 29 and Fairland Rd	19
19-4	US 29 and Tech Rd	19
19-5	White Oak Transit Center	19
19-6	Lockwood Dr and Oak Leaf Dr	19
19-7	US 29 and Hillwood Dr	19
19-8	US 29 and MD 193	19
19-9	US 29 and Franklin Avenue	19
19-10	US 29 and Fenton St	19
19-11	Silver Spring Transit Center	19
20-1	Life Sciences Center	20
20-2	ICC PnR	20
20-3	Briggs Chaney PnR	20
21-1	Montgomery Mall Transit Center	21
21-2	Rockledge Dr and Rock Spring Dr	21
21-3	Rock Spring Dr and MD 187	21
21-4	MD 187 and Tuckerman Ln	21
21-5	Tuckerman Ln and Sugarbush Ln	21
21-6	Grosvenor Metro Station	21
24-1	Wheaton Metro Station	24
24-2	MD 193 and East Ave	24
24-3	MD 193 and Newport Mill Rd	24