

**WELLS + ASSOCIATES**



**NEW CULTURAL CENTER  
TRAFFIC IMPACT STUDY  
HOWARD COUNTY, MARYLAND**

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**October 21, 2016  
*Revised December 19, 2016***

**Transportation Consultants**  
INNOVATION + SOLUTIONS

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# NEW CULTURAL CENTER (NCC)

## Section 1 INTRODUCTION

### Purpose

This report presents the results of an updated transportation impact study conducted and submitted on behalf of Orchard Development Corporation (the Applicant), in conjunction with its proposed development of the New Cultural Center (NCC) in Howard County, Maryland. The subject parcel is located on the west side of the South Entrance Road within the Crescent Neighborhood of Downtown Columbia, as identified on Figure 1-1.

This updated report is based on comments provided by Howard County staff regarding the previously submitted traffic study dated July 27, 2016. The specific responses to individual comments are being provided under a separate cover. All of the comments and responses have been incorporated into this updated report.

The purpose of this transportation study was to determine the impacts of the proposed development program on the surrounding road network. It represents a portion of the planned redevelopment of the downtown area as a result of the General Plan Amendment that was approved by the Howard County Council in 2010.

### Project Description and Phasing

The New Cultural Center would redevelop and expand the existing Toby's Dinner Theater and was assumed to be complete by 2020 to coincide with road network improvements planned within the Crescent Neighborhood.

The existing site is improved with a building of approximately 11,000 S.F. and 172 surface parking spaces. It is planned to be razed and redeveloped with a building consisting of 342,402 S.F. that includes approximately 112,346 S.F. of cultural uses, 211,591 S.F. of residential apartments (202 units) and 18,465 S.F. of service space. It will be served by approximately 750 structured parking spaces.

A number of uses will be "accessory" uses within the building and will include classroom space, art galleries, art studios, conference space, a gift shop, and cafe. These uses are expected to function outside of commuter peak hours and are not expected to generate weekday AM and PM peak hour trips.

The following uses are expected to generate peak hour trips and were included for evaluation in this traffic study:

Dinner Theater:	360 seats (288 existing)
Black Box Theater:	450 total seats (two theaters)
General Office:	4,695 S.F.
Residential Apartments:	202 D.U.

The densities used in this study are conservative. The final location and density will be defined at the Site Development Plan (SDP) stage. In addition, this study assumes buildout conditions in 2020 since the construction phasing of the project has not yet been defined. Any interim phases of construction will be defined and analyzed at the SDP stage.

### Study Objectives

The objectives of this study were to: (1) analyze existing transportation conditions, (2) analyze future transportation conditions without and with the proposed development in year 2020, (3) identify site-transportation impacts and appropriate improvements required to mitigate those impacts, and (4) recommend transportation demand management strategies to offset the impacts of the proposed project.

### Downtown Columbia Generalized Traffic Study

A traffic impact study for the revitalization of Downtown Columbia was prepared by Wells + Associates in September 2008 that reflected a comprehensive review of the buildout within downtown. Portions of relevant traffic data from this study were utilized in the preparation of this report.

In addition, over the last several years, other traffic studies have been prepared, submitted, reviewed, and approved for development within Downtown Columbia. The recently prepared traffic study for the Crescent Area 3 development, dated August 10, 2016 was used in the preparation of this study.

## Study Methodology

This traffic study follows the methodology for traffic impact studies in Downtown Columbia outlined in Chapter 4 of the Howard County Design Manual: Adequate Transportation Facilities Test Evaluation Requirements (County Council Bill No. 47-2010).

Utilizing a four-step process, intersections are evaluated in terms of levels of service and then appropriate mitigation measures are identified to remediate any associated unacceptable traffic impacts. The four-step planning process consists of trip generation, trip distribution, a determination of mode split, and traffic assignment.

Tasks undertaken in this study included the following:

1. A review of the revised design concept plans and other background materials including the proposed applicable street grid and network.
2. A field reconnaissance of existing roadway and intersection geometrics, traffic controls, traffic signal phasings/timings, and speed limits.
3. Vehicle and pedestrian movement counts at the eight (8) study intersections during the weekday AM and PM peak periods.
4. Analysis of existing levels of service at the study intersections.
5. Estimation of the number of AM and PM peak hour trips that would be generated by the background developments in the study area, as well as the proposed development at full buildout.
6. Development of traffic forecasts for 2020 without and with the proposed development.
7. Analysis of future levels of service at the study intersections, without and with the proposed project.
8. Analysis of queue lengths without and with the proposed project.
9. Pedestrian and bicycle analyses for the roadway segments immediately adjacent to the site.
10. Identification of potential transportation demand management measures.

## Impact Area

The impact area was selected based on the number of net new peak hour trips. As discussed later in this report, the development of the New Cultural Center is expected to generate between 101 and 500 net new peak hour trips. As a result, Chapter 4 defines the study area as two (2) signalized intersections in each direction from site driveways within the Downtown Columbia cordon.

In addition to the required intersections (as denoted by the asterix \* below), based on comments provided by Howard County, additional intersections were added for consistency with the recently approved Crescent Area 3 traffic report. These study intersections are shown on Figure 1-2.

*(Note that the numbering system shown on the graphics in this report reflect the numbering system established in previously prepared studies as requested by Howard County.)*

7. Broken Land Parkway/Little Patuxent Parkway.
8. Broken Land Parkway/Hickory Ridge Road Extended.
9. Mall Access Road/Little Patuxent Parkway.\*
10. South Entrance Road/Little Patuxent Parkway.\*
11. Little Patuxent Parkway/Moore Road.\*
22. Merriweather Drive/Little Patuxent Parkway.
25. Divided Sky Lane/Little Patuxent Parkway.
27. Merriweather Drive/Hickory Ridge Road Extended.
29. Merriweather Drive/Area 1 Driveway.
30. Broken Land Parkway/Route 29 Off-Ramp.
31. North-South Connector/Area 3 North Driveway.
32. North-South Connector/Crescent West.
33. North-South Connector/South Entrance Road.\*
34. Merriweather Drive/Prism Way.
35. Merriweather Drive/Dove Sail Lane.
40. North-South Connector/Mango Tree Road.
41. Merriweather Drive/Area 3 Right-in/Right-out.\*
42. South Entrance Road/Site Driveway (existing).\*
43. Symphony Woods Road/North Site Driveway (existing).\*
44. Symphony Woods Road/Middle Site Driveway (existing).\*
45. Symphony Woods Road/South Site Driveway (existing).\*
46. South Entrance Road/Site Driveway (future).\*

\*Intersection required for APFO purposes.

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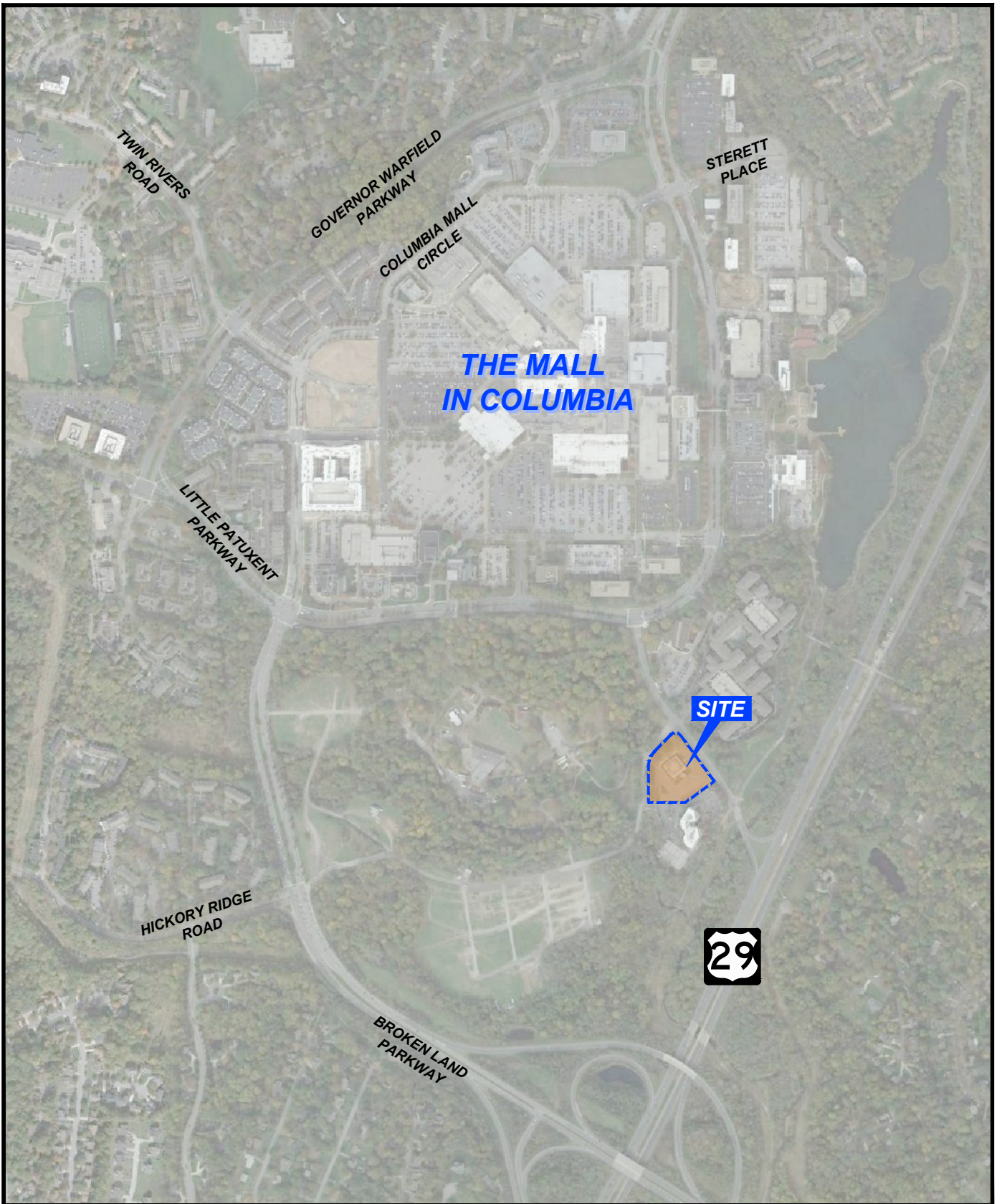


Figure 1-1  
Site Location

New Cultural Center  
Howard County, Maryland

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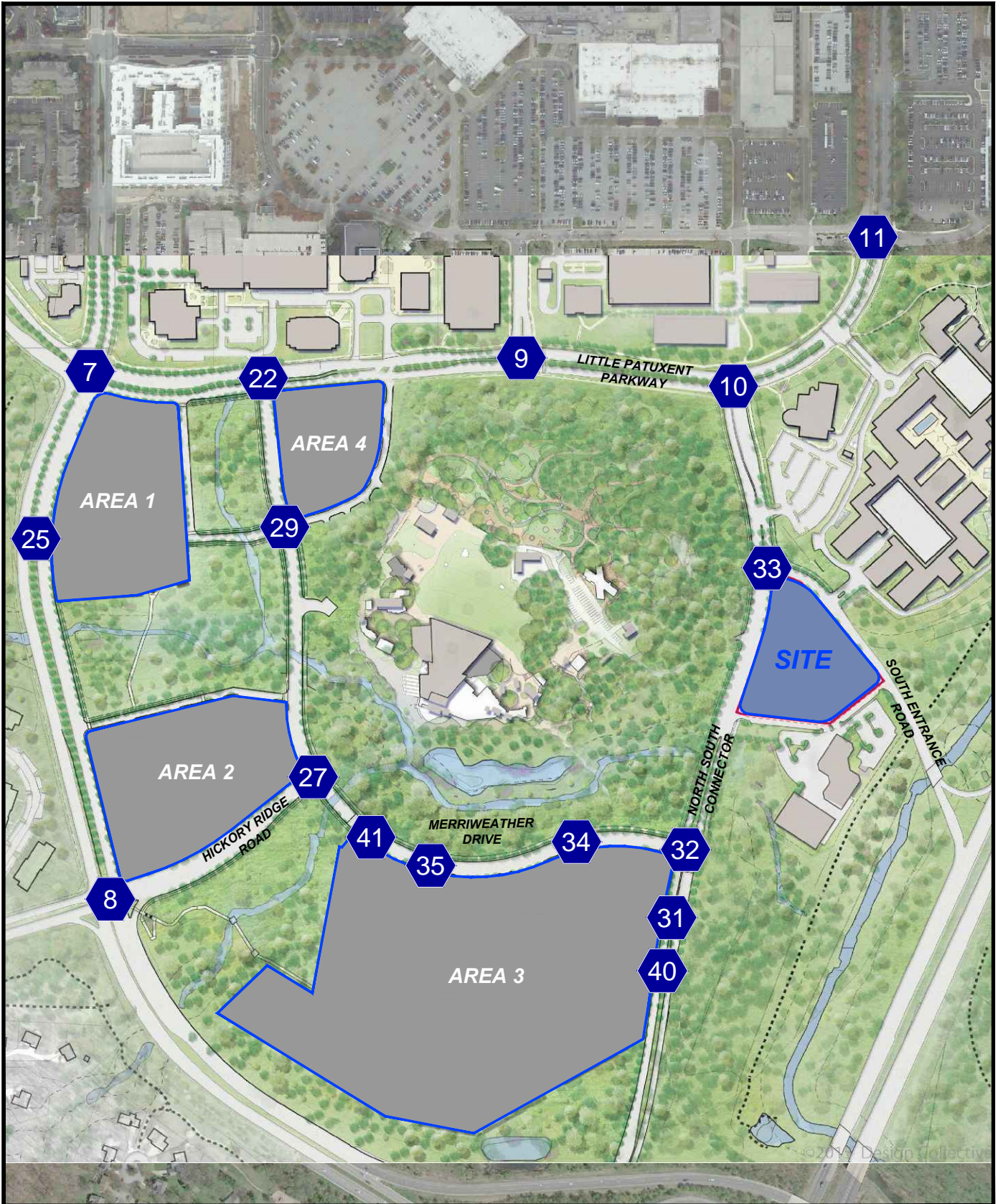


Figure 1-2  
Study Area

New Cultural Center  
Howard County, Maryland



## SECTION 2 DOWNTOWN COLUMBIA PLAN

### Overview

The Howard County Council formally adopted the Downtown Columbia Plan (Council Bill No. 58-2009) and Resolution No. 138-2010 with the specific purpose of revitalizing and redeveloping Downtown Columbia.

The area in Downtown Columbia was delineated into six well defined “Neighborhoods”, Symphony Overlook, Merriweather, The Crescent, Warfield, The Lakefront, and The Mall, as shown on Figure 2-1 that would be “framed” by a new fine-grained, connected street network.

The phasing of development for the New Cultural Center was assumed to occur in a single phase, by year 2020. The final location and density will be defined at the Site Development Plan (SDP) stage and an updated traffic impact study will be prepared at that time. Accordingly, the timing of specific roadway improvements will be provided to meet the needs of each development area.

The vision for Downtown Columbia is to provide for a high-quality, diverse, compact, mixed-use, pedestrian- and transit-friendly place that transforms traditional suburban development to a more urban form.

The New Cultural Center is intended to revitalize the existing Toby’s Dinner Theater and create a cultural center for Downtown Columbia. It will take advantage of the vehicular, pedestrian, and bicycle infrastructure planned in and around downtown. The site will be located opposite Merriweather Post Pavilion and Merriweather Park.

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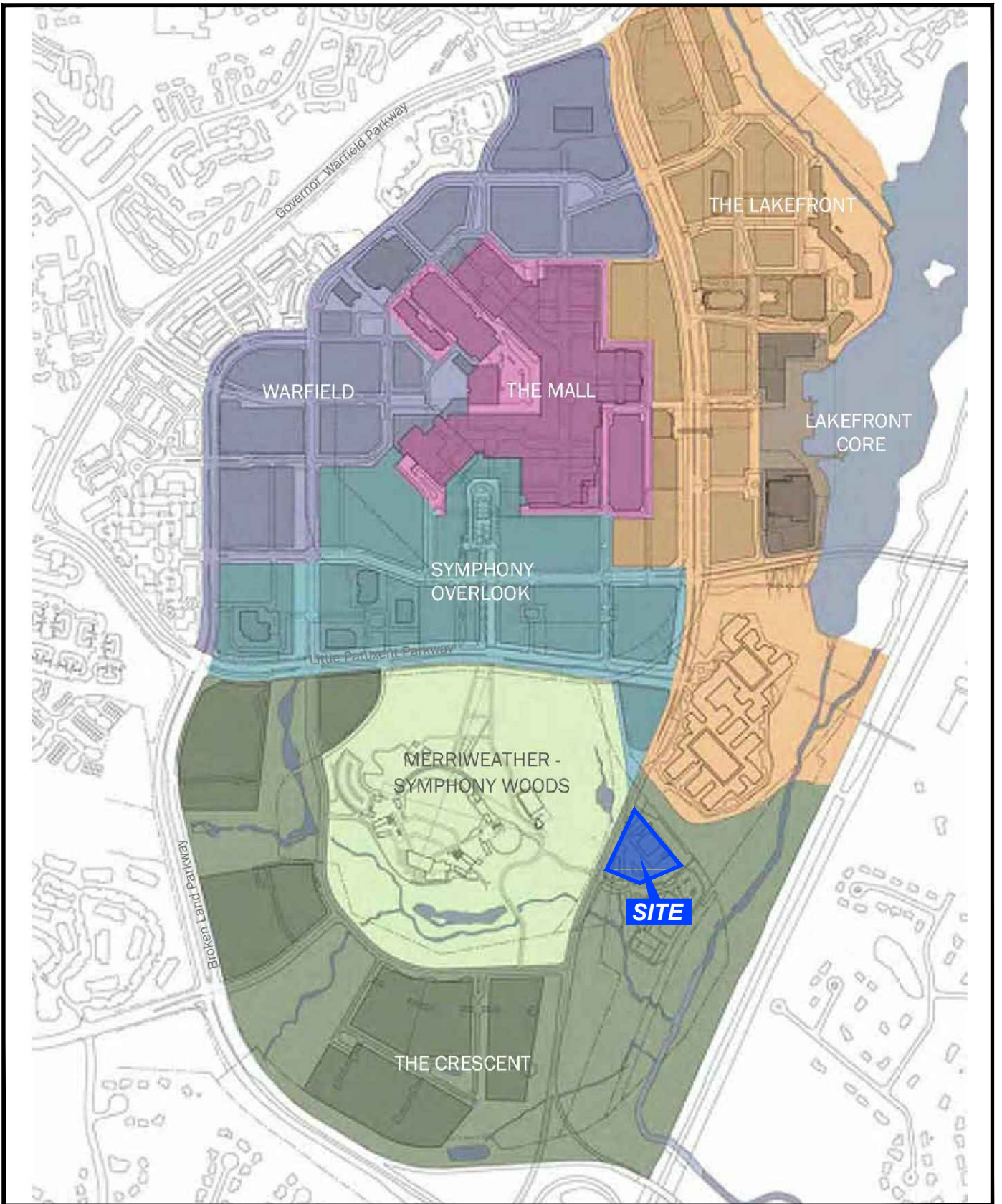


Figure 2-1  
Downtown Columbia Neighborhoods

New Cultural Center  
Howard County, Maryland



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## Street Design

### Overview

The Crescent Design Guidelines envision a pedestrian-oriented, mixed-use community that includes walkable blocks within The Crescent. The street network is planned to create “Complete Streets” that accommodate the needs of pedestrians, bicycles, vehicles, and transit vehicles.

### Street Framework Plan and Typology

The Downtown Columbia Plan indicates that the New Cultural Center will include Parkways, Boulevards, Avenue Type 3, and Streets, as shown on Figure 2-2.

The “Complete Streets” principle was used to achieve a balance between pedestrian safety, bicycles, and vehicle mobility within the proposed street design.

The design elements planned within the Crescent Neighborhood and adjacent to the Cultural Arts Center will include typical features used in Complete Streets design. Sidewalks will be constructed along with a shared use path to create an interconnected network for pedestrians and cyclists.

It is anticipated that as the site and surrounding areas of the Crescent are developed, the owner would coordinate with Howard County Transit to provide accessible transit stops in key locations.

All of the street sections would conform to the Downtown Columbia Plan and are outlined below:

Little Patuxent Parkway. This facility is currently designated as a Boulevard (Minor Arterial) that provides four (4) general travel lanes, a median, and sidewalks on both sides. Separate left turn lanes are provided at major intersections.

North-South Connector Road. This new facility is planned to replace existing Symphony Woods Drive and a portion of the South Entrance Road as a four-lane Avenue Type 3 that has been modified to include a median. The design of this roadway has been studied separately and is part of the overall strategy for vehicular access to Downtown Columbia, and would provide direct access to and from US 29 via Broken Land Parkway under ultimate conditions. The ultimate right-of-way alignment is depicted as shown on the Downtown Columbia Plan. Interim alignments (by others) may occur in the field until the

ultimate right-of-way is constructed. In this regard, a portion of this new roadway (north of existing South Entrance Road) would require the relocation (by others) of the existing library north of the site to ultimately connect to Little Patuxent Parkway. Under Phase 2 conditions and for purposes of this study, the North-South Connector was assumed to be constructed from the South Entrance Road to just south of Merriweather Drive.

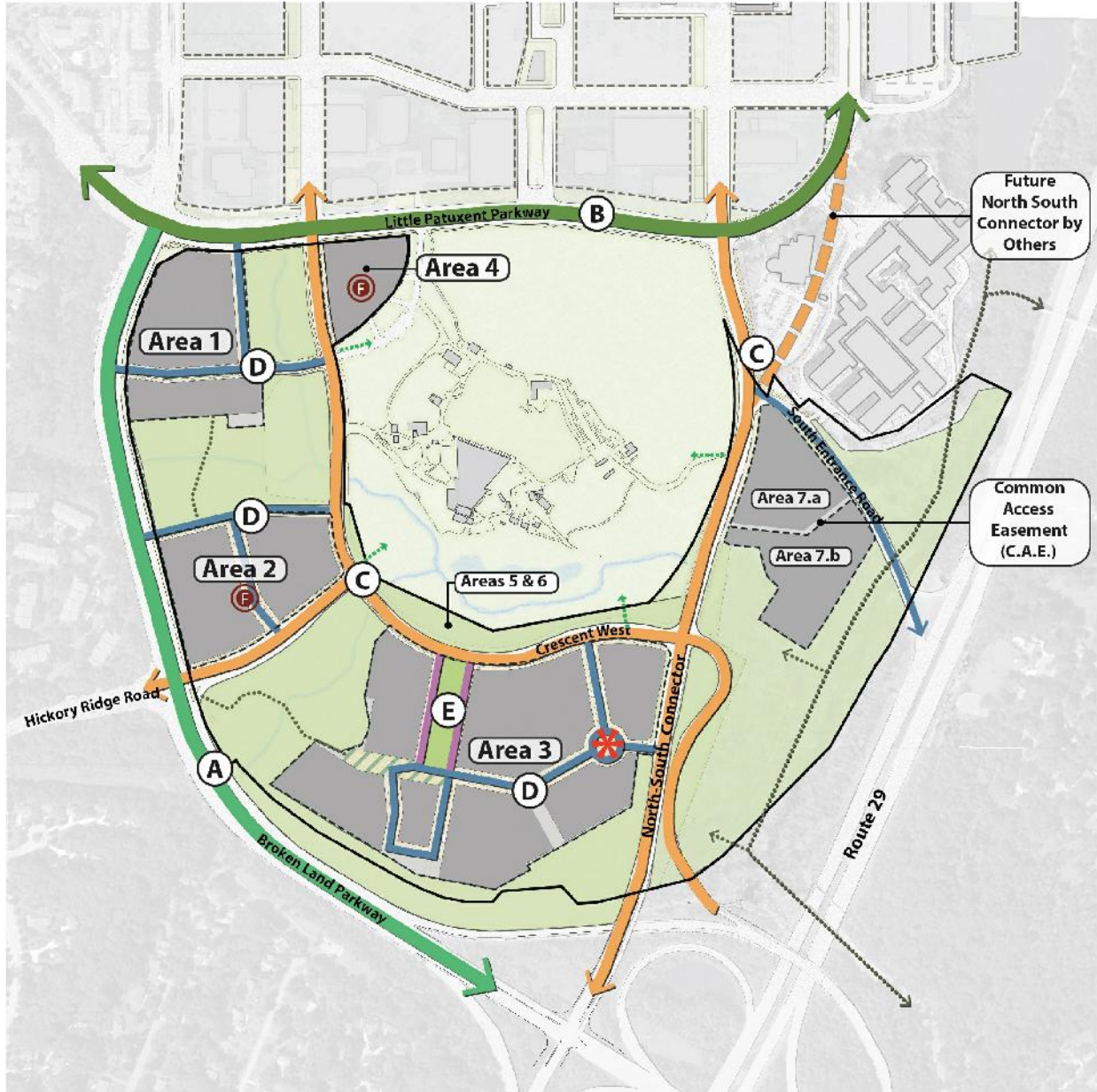
Merriweather Drive. This new roadway is planned to as an Avenue Type 3 (Major Collector/Minor Collector/Local Street) that provides four (4) general travel lanes, limited or no curb parking, buildings on one side, and adjacent to open space. This roadway would be built between Little Patuxent Parkway and the North-South Connector Road. A shared use path for pedestrians and bicyclists would be provided on the east and north sides of the roadway adjacent to the open space and Merriweather Post. A sidewalk would be provided on the west and south sides.

Hickory Ridge Road Extended. This new roadway is also planned to as an Avenue Type 3 (Major Collector/Minor Collector/Local Street) that provides four (4) general travel lanes, no parking, buildings on one side, and adjacent to open spaces. Dedicated bike lanes will be provided on both sides of the street. A sidewalk will be provided on the north side that connects to the existing sidewalk on Hickory Ridge Road to the west and the sidewalk and shared use path on Merriweather Drive.

South Entrance Road. This roadway is a two-lane facility with direct access to and from southbound U.S. Route 29. It has a posted speed limit of 35 mph and separate turn lanes are provided at the Symphony Woods Road intersection. The southbound off-ramp from U.S. Route 29 has a reduced ramp speed of 15 mph. This roadway is not designated in the downtown Columbia Plan, but is being designed as a Street Type 3 (Major Collector/Minor Collector/Local Street).

A diagram of the roadway sections are shown on Figure 2-3.

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Crescent Neighborhood Street Framework Plan

**KEY**

- (A)** PARKWAY - Intermediate Arterial/Minor Arterial (4 LANES W/ MEDIAN\*)
- (B)** BOULEVARD - Minor Arterial/ Major Collector (4 LANES W/ MEDIAN\*)
- (C)** AVENUE TYPE 3 - Major Collector/ Minor Collector/ Local Street (4 LANES\*, PARALLEL PARKING (Optional), DEDICATED BIKE LANES/SHARED-USE PATH)
- (D)** STREET TYPE 3 - Minor Collector/ Local Street (2 LANES\*, PARALLEL PARKING (Optional))
- (E)** STREET TYPE 4 - Minor Collector/ Local Street (1 LANE\*, PARALLEL PARKING (Optional))



**POTENTIAL FIRE STATION LOCATIONS**  
A site within either Area 2 or Area 4 may be provided for a new fire station in accordance with CEPPA 9



MERRIWEATHER-SYMPHONY WOODS CONNECTIONS



PROPOSED TRAIL/PATHWAY



PROPOSED FOCAL POINT

\* Additional lanes may be added to accommodate traffic volume and turning movements, as determined by a traffic study at the SDP phase.

\*\*Alleys, Common Access Easements (CAE), or private streets may be placed within blocks for internal circulation, servicing, and parking. Final locations of these roadways will be proposed at the SDP phase.

See Urban Design for further criteria on alleys, pages 15 and 23.

Figure 2-2  
Street Framework Diagram

New Cultural Center  
Howard County, Maryland



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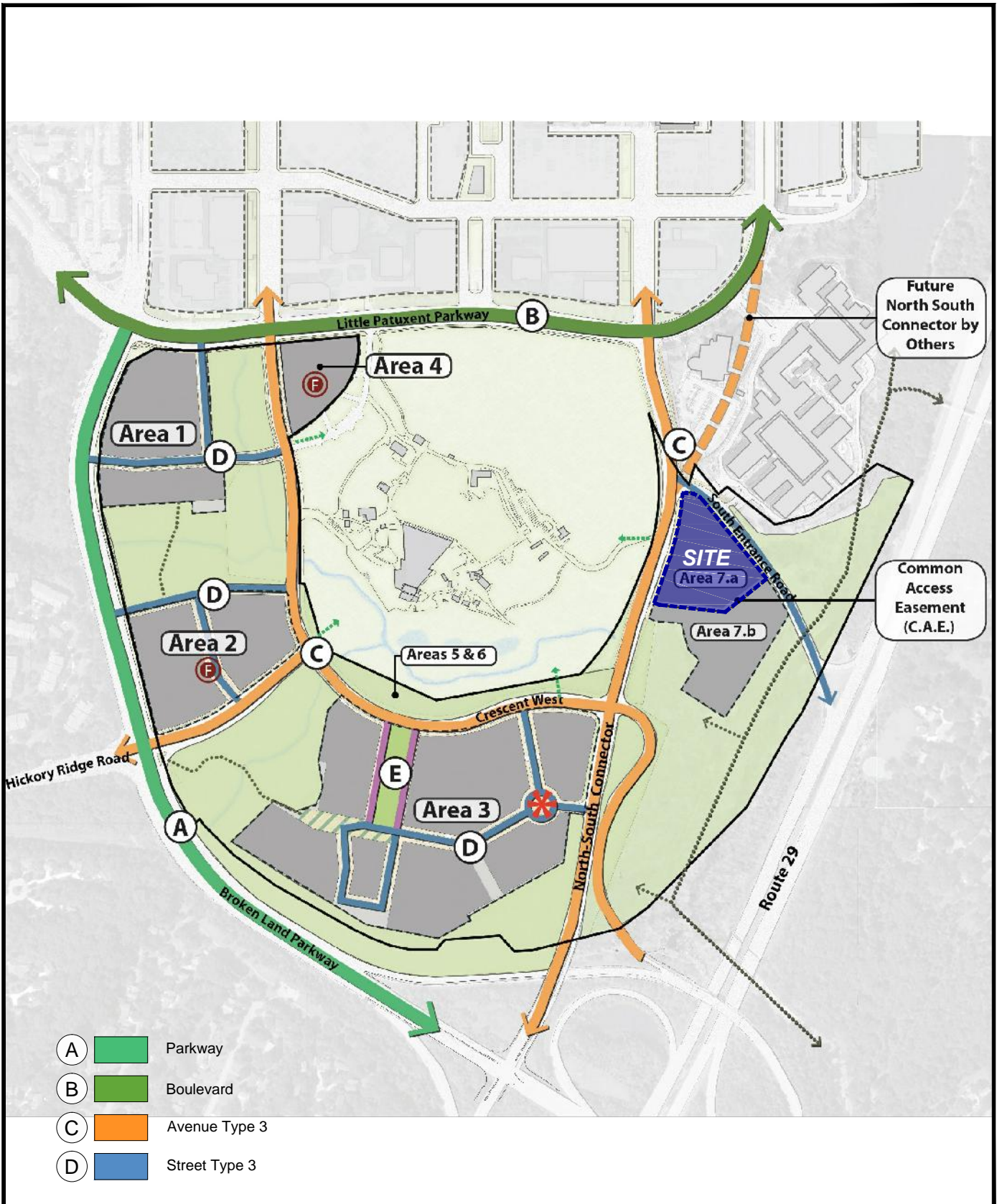


Figure 2-3  
Proposed Crescent Neighborhood Road Network Plan

New Cultural Center  
Howard County, Maryland



## Public Transportation Facilities

### Overview

This section presents a description of the village-to-Downtown Columbia bus service operated by Howard Transit, commuter bus service offered by the Maryland Transit Administration (MTA), Columbia-to-Laurel service operated by the Central Maryland Regional Transit (CMRT); and regional transit initiatives being studied by the MTA, Washington Metropolitan Area Transit Authority (WMATA), and others.

Transit Hub. A central transit hub is located northwest the New Cultural Center near Sears at The Mall at Columbia as shown on Figure 2-2. It is located within approximately one-half mile of the redevelopment properties.

Existing Services. Howard Transit operates entirely within Howard County. Howard Transit offers regularly scheduled bus service and specialized service.

Bus stops with signs currently exist on Little Patuxent Parkway at the South Entrance Road intersection and serve the Red line bus. The stops are located east of the intersection and a shelter is provided on the eastbound side.

*Howard Transit, Regularly Scheduled Bus Service.* Downtown Columbia is served by Howard Transit. Howard Transit's contract manager, Central Maryland Regional Transit (CMRT), presently operates 240 bus-trips during weekdays, 156 bus-trips during Saturdays, and 60 bus-trips during Sundays, on eight radial lines that converge at the transit hub at The Mall at Columbia. These are summarized in Appendix A.

The Howard Transit bus routes that link the various villages in Columbia and beyond to Downtown Columbia are shown on the system map on Figure 2-4. Specific bus routes and stops adjacent to the site are shown on Figure 2-5. The potential for new stops would be determined through discussions with Howard County Transit as part of the redevelopment plans for the New Cultural Center.

Howard Transit also provides the HT Ride service is offered to individuals with disabilities who are eligible under the Americans with Disabilities Act (ADA) and General Services for eligible Howard County residents who have a disability and are age 60 and over.

*Central Maryland Regional Transit.* CMRT provides a fixed route community-based bus service in the mid Baltimore/Washington suburban area. Connect-A-Ride Route E – Laurel/Savage/Owen Brown/Columbia serves Laurel Mall and Columbia Mall on weekdays

at one-hour headways from 7 AM to 7 PM, and on Saturdays at two-hour headways from 10 AM to 6 PM.

*Howard Commuter Solutions.* Howard Commuter Solutions is a web-based guide to commuter and transit services in Howard County, including carpool and vanpool programs, park-and-ride lot locations, and transit services.

### **Downtown Transit Initiatives**

The Symphony Overlook Neighborhood, just north of the New Cultural Center and Crescent Neighborhood, has been identified as a potential location for the Downtown Columbia Future Transit Center. As outlined in the Downtown Community Enhancements, Programs and Public Amenities (CEPPAs) implementation document, a separate study was prepared to identify the transit hub location and the route and frequency of a future downtown circulator shuttle bus service.

The transit center study evaluates short-term and long-term goals, local and regional operations, and details of the building design and operation through the various stages of the Downtown Plan and redevelopment. The shuttle bus study includes the feasibility of providing service both short-term and long-term, locally and regionally. It includes proposed routes, stops, and vehicle types, and evaluates costs and funding opportunities. The recommended location for the long-term transit center is shown on Figure 2-5. The outcome of these studies will ultimately identify the appropriate location and design for these services.

### **Bicycle/Pedestrian Facilities**

The Downtown Columbia Plan specified desirable locations for major bicycle and pedestrian facilities. Primary bicycle and pedestrian routes adjacent to the New Cultural Center include the shared-use path that will be located along the east side of the future North-South Connector Road as shown on Figure 2-6. This facility connects the site to other areas within Downtown via connections to Little Patuxent Parkway to the north and the future Merriweather Drive to the south.

Sidewalks will be provided on the east side of the site that will connect to the existing residential community on the east side of the South Entrance Road and the office parcel to the south.

### Pedestrian Facilities

A 10-foot wide shared use path has recently been constructed along Little Patuxent Parkway between Broken Land Parkway and the South Entrance Road. This path has recently been extended to the south along the east side of the South Entrance Road with a connection to the pedestrian bridge over U.S. Route 29.

As part of the Crescent development, a shared use path would be constructed along the east side of Merriweather Drive and the east side of the North-South Connector Road along the Cultural Arts Center site frontage.

A 10-foot wide shared use path will also be provided along the east side of the New Cultural Center frontage on the South Entrance Road. This off-road facility can be used by both pedestrians and cyclists, and is planned to ultimately connect to the Patuxent Trail shared use path to the south.

These pedestrian and bicycle facilities will provide a connected network surrounding the site and access to other adjacent non-auto facilities.

# LEGEND

## Connect-A-Ride Routes

- A Route: Hospital/Braff Linnel
- B Route: Maryland City
- C Route: Laurel/Whiskey Bottom
- D Route: Laurel/Dunwoylie
- E Route: Laurel/Columbia
- F Route: North Commons
- G Route: Laurel/Greenbelt (Weekend)
- H Route: Laurel/Glen Burnie
- I Route: Laurel/Millersville
- J Route: Laurel/Glen Burnie
- K Route: Arundel/Millersville

Connect-A-Ride routes not shown on this map:  
 Laurel Loop: Late Evening/Sunday service from Laurel Mall to  
 Whiskey Bottom  
 MTA: Shuttle between Odenton MARC station and  
 Millersville parking

## Howard Transit Routes

- Blue Route: Columbia Mall/Chesapeake
- Brown Route: Columbia Mall/Oldfield Mills/Owen Brown/Williams Center
- Red Route: Columbia Mall/1200 Rock/C&I Crossing/Dobson/DSS Gateway
- Silver Route: Columbia Mall/Snowden Sq/MJ Food Center/Arundel Mill (B/W)
- Yellow Route: Columbia Mall/Centers Park Drive/Local City
- Green Route: Columbia Mall/Chesapeake Mill/Laurel/Brown/MD Food Center
- Purple Route: Laurel Mall/Rte 1 Industrial/Conrad Food Center/Elbridge
- Orange Route: Columbia Mall/Hospital/HCC/Holby Ridge/Kings Contrivance

- Hospital
- Park & Ride Lot
- Metro Rail Station
- MARC Train Rail Station
- MTA Light Rail Station
- Airport
- Transfer Hub

For more information  
 Connect-A-Ride:  
 service of MD D.O.T. and MD MTA: 800-270-9553  
 www.comdotransit.com

Howard Transit:  
 service of Howard County Government: 800-270-9553  
 www.howardtransit.com

Metro Bus & Metro Rail:  
 services of WMATA: 202-637-7000  
 www.metrobus.com

MTA Bus, Commuter Bus, Light Rail, MARC Rail:  
 services of MD MTA: 869-743-3682  
 www.mta.com

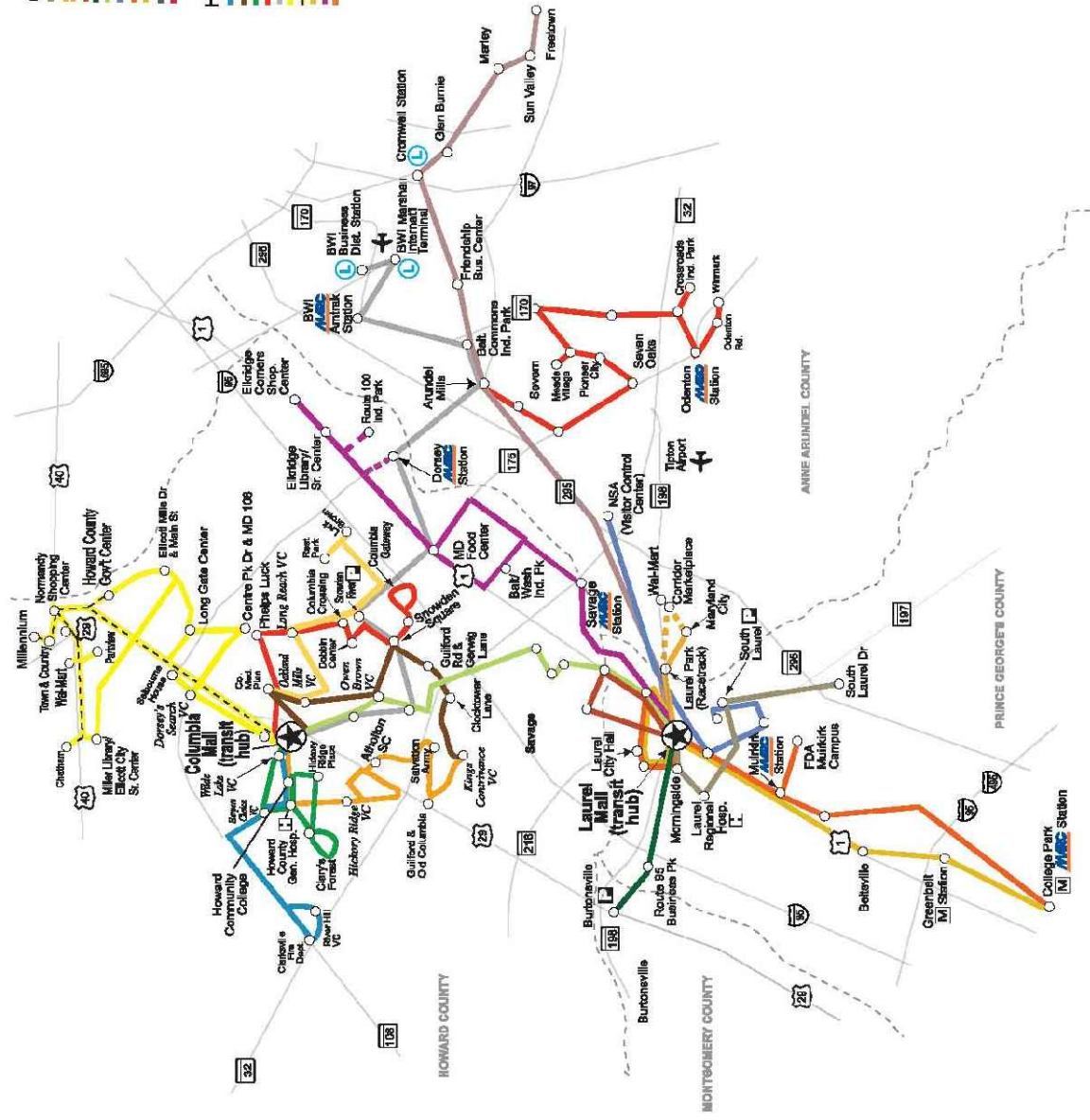
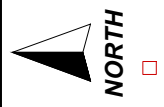


Figure 2-4  
 Howard Transit System Map

New Cultural Center  
 Howard County, Maryland



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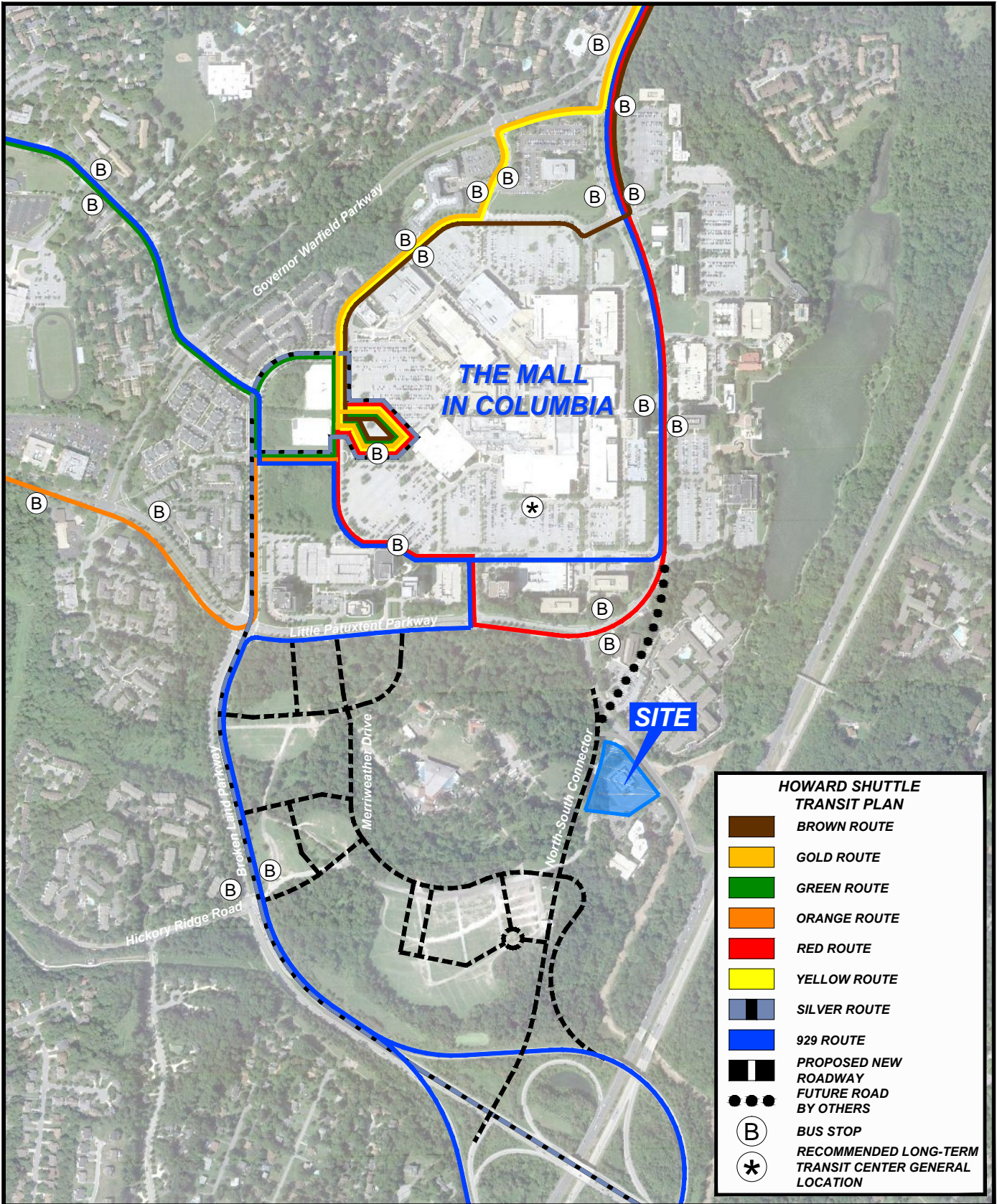


Figure 2-5  
Existing Bus Routes and Stops

New Cultural Center  
Howard County, Maryland



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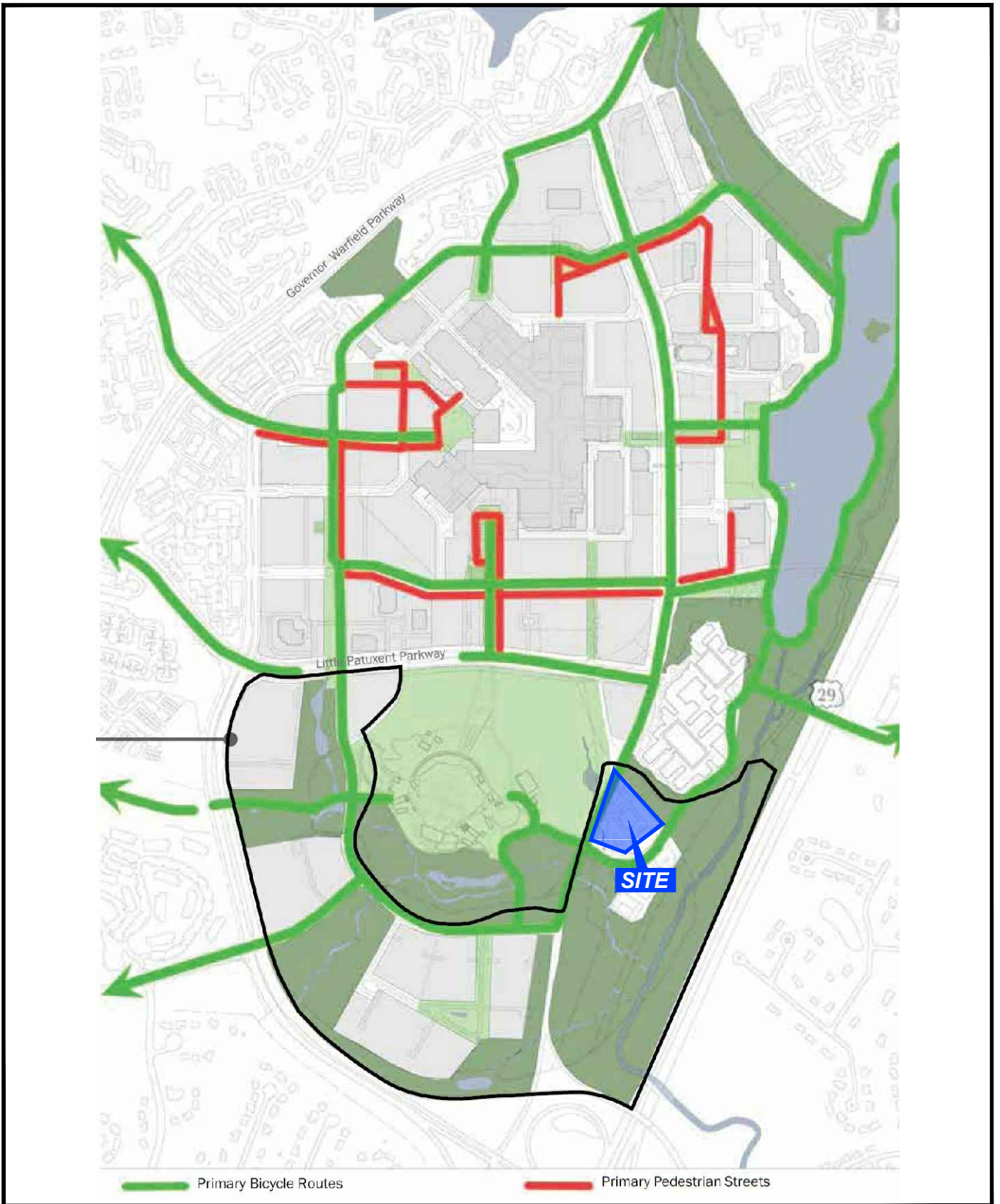


Figure 2-6  
Bicycle and Pedestrian Circulation Plan

New Cultural Center  
Howard County, Maryland



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## Modal Split

In order to support the level of development planned with Downtown Columbia, a non-auto mode split of 15 percent was used in the aforementioned Generalized Traffic Impact Study.

Census data and information contained in the American Community Survey suggests a non-auto mode share of between 10 and 15 percent is currently realized within Howard County. However, consistent with recent studies, a conservative five (5.0) percent non-auto mode share was assumed for this study consistent with previously prepared analyses for 2020 conditions. Census information is included in Appendix B.

## Intersection Standard

The Critical Lane Volume (CLV) and Highway Capacity Manual (HCM) techniques were used to evaluate levels of service at the study intersections during the AM and PM peak hours. The CLV standard for signalized intersections within the Downtown Columbia cordon is 1,600. These intersections are subject to the transitional requirement as outlined in Chapter 4 of the Howard County Design Manual. The transition phase to CLV of 1,600 specifies that all downtown intersection testing and mitigation is subject to the following:

*The intersection standard within the Cordon Line, as defined in section 4.9.5, shall not exceed 1,600 for the overall intersection. This standard is subject to a transitional requirement. During the transition phase to 1,600, all Downtown intersection testing and mitigation will be subject to the following:*

- A. *All Downtown intersections must be evaluated and, if necessary, mitigated per section 4.9.2 using an initial CLV of 1,500.*
  1. *In the event the sum of existing and projected background traffic volumes (Total Projected Background Traffic) result in a CLV exceeding 1,500 before the addition of site generated net peak hour trips, then the acceptable CLV standard for mitigation at the subject intersection will be the CLV as determined by Total Projected Background Traffic.*
  2. *If it is determined by DPZ/DPW that:*
    - I. *An intersection cannot be improved to the applicable CLV standard as described above or,*

- II. *The proposed improvement to attain the applicable CLV standard does not satisfy the design balance as further discussed in Section 4.9.2 or*
- III. *Mitigation of the intersection to the applicable CLV standard would require the construction of an improvement which DPZ, in consultation with DPW, finds not to be necessary to maintain an intersection CLV of no more than 1,600 at the time of full buildout of the Downtown Columbia Plan,*

*Then, the applicable CLV standard will increase by increments of 50 until the conditions identified in both (I) and (II) above are no longer true.*

*Thereafter, the adjusted intersection CLV will then become the new accepted CLV standard for that intersection and will be used as the initial CLV for subsequent evaluations of that intersection under paragraphs (A)(1) and (2) of this subsection, 4.9.1.B.3.*

*B. In no case shall the incremental adjustment of the intersection CLV exceed 1,600.*

The HCM method (using Synchro) was used at unsignalized locations in accordance with Howard County standards. Levels of service descriptions for unsignalized conditions are included in Appendix C. The Howard County methodology for the evaluation of pedestrian and bicycle facilities was also used in this study as outlined in Chapter 4 of the Howard County Design Manual.

## SECTION 3 ROADWAY NETWORK, IMPROVEMENTS, AND SITE ACCESS

### Overview

The following sections describe the existing and future road network, the proposed redevelopment plans, and the site access and circulation.

### Roadway Network

#### Existing Roadway network

The following describes the roadways adjacent to the site:

U.S. Route 29 (Columbia Pike) provides regional access to Columbia from Baltimore, Washington, and beyond. The Howard County General Plan classifies Route 29 as a principal arterial roadway. The controlled-access, median-divided roadway provides two to three lanes in each direction. Grade-separated interchanges at MD Route 32, Seneca Drive, Broken Land Parkway, MD Route 175, and MD Route 108 serve greater Columbia. South Entrance Road provides right-in/right-out only access on southbound Route 29.

Little Patuxent Parkway is a four- to six-lane divided roadway with separate left and right turn lanes at major intersections. The section of Little Patuxent Parkway between the two intersections with Governor Warfield Parkway is classified by the Howard County General Plan as a minor arterial roadway. East and west of Governor Warfield Parkway, Little Patuxent Parkway is classified by the Howard County General Plan as an intermediate arterial.

South Entrance Road provides access to and from southbound U.S. Route 29. This roadway provides two travel lanes with separate turn lanes at Symphony Woods Road, the library, and Little Patuxent Parkway. It has a posted speed limit of 35 mph.

Symphony Woods Road is a two-lane local road that serves the existing Toby's Dinner Theater and Merriweather Post Pavilion on the west and an existing Columbia Town Center residential community on the east.

The existing lane use and traffic controls for the study intersections are depicted on Figure 3-1.

## Planned and Programmed Improvements

The Maryland Consolidated Transportation Program (CTP) includes a project, jointly funded by the MSHA and Howard County, to widen northbound Route 29 by one lane from MD 32 north to MD 175.

Road network and intersection improvements planned by others by 2020 are identified as follows:

### Road Network Improvements

Modifications to the road network include the extension of Hickory Ridge Road from Broken Land Parkway to Merriweather Drive, Merriweather Drive from Little Patuxent Parkway to the North-South Connector, and the North-South Connector from Merriweather Drive to Little Patuxent Parkway. The construction of Merriweather Drive and the North-South Connector from Merriweather Drive to Little Patuxent Parkway replaces existing Symphony Woods Road. These improvements are associated with the Phase 2 program for Crescent Neighborhood development and were assumed to be complete by 2020.

### Intersection Improvements

#### 10. South Entrance Road (N-S Connector Road)/Little Patuxent Parkway

- Construct a second westbound left on Little Patuxent Parkway.
- Construct a second northbound left on the North-South Connector Road.

#### 27. Merriweather Drive/Hickory Ridge Road Extended (future)

- Construct new intersection and traffic signal.

#### 32. Merriweather Drive/North-South Connector Road (future)

- Construct new intersection and traffic signal.

#### 33. Symphony Woods Road/South Entrance Road (N-S Connector/South Entrance Road – future condition)

- Realign intersection.
- Signalize intersection to control southbound left turn and northbound through traffic.
- Restrict westbound South Entrance Road traffic to right turn only.

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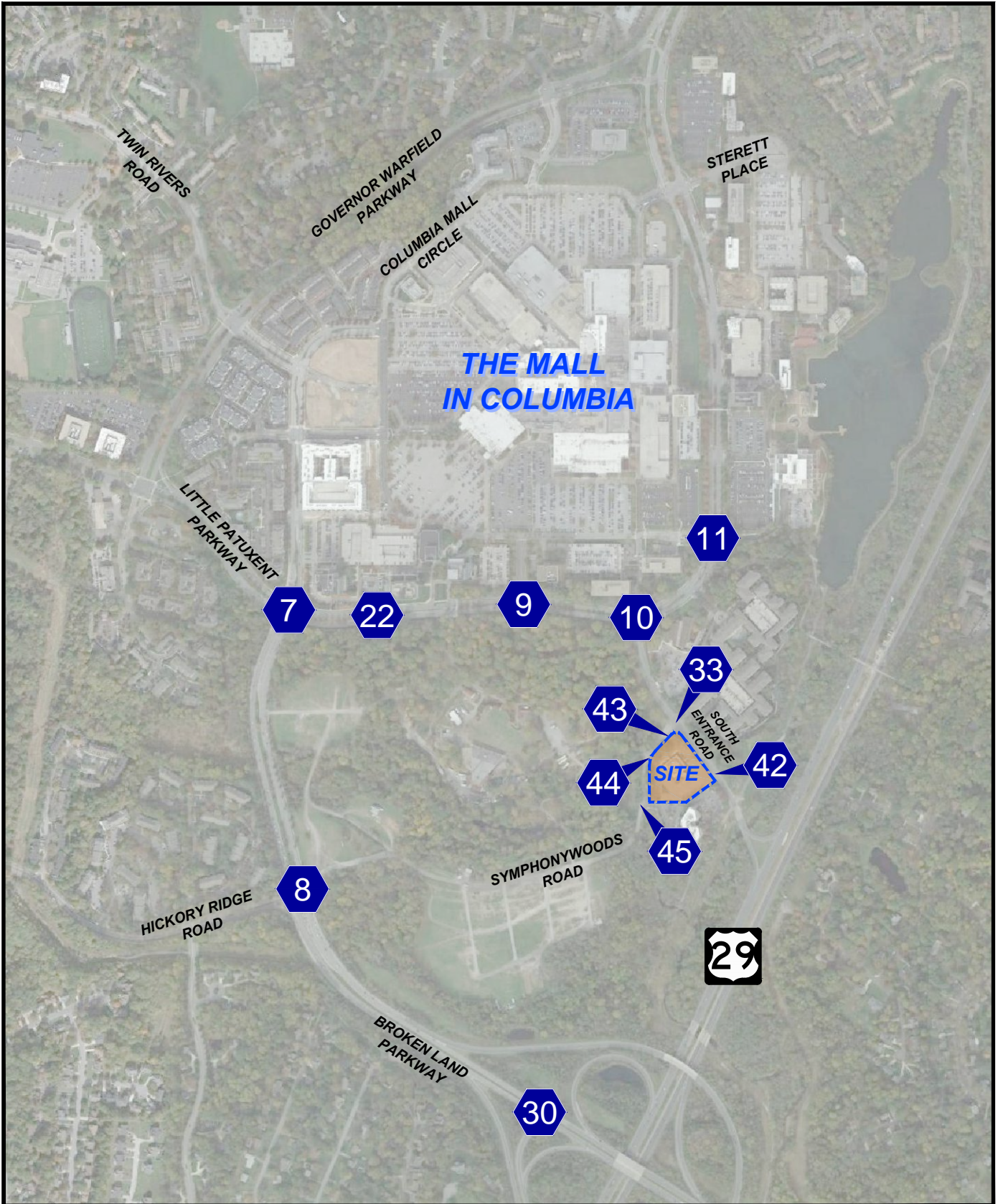


Figure 3-1  
Existing Intersection Map

New Cultural Center  
Howard County, Maryland



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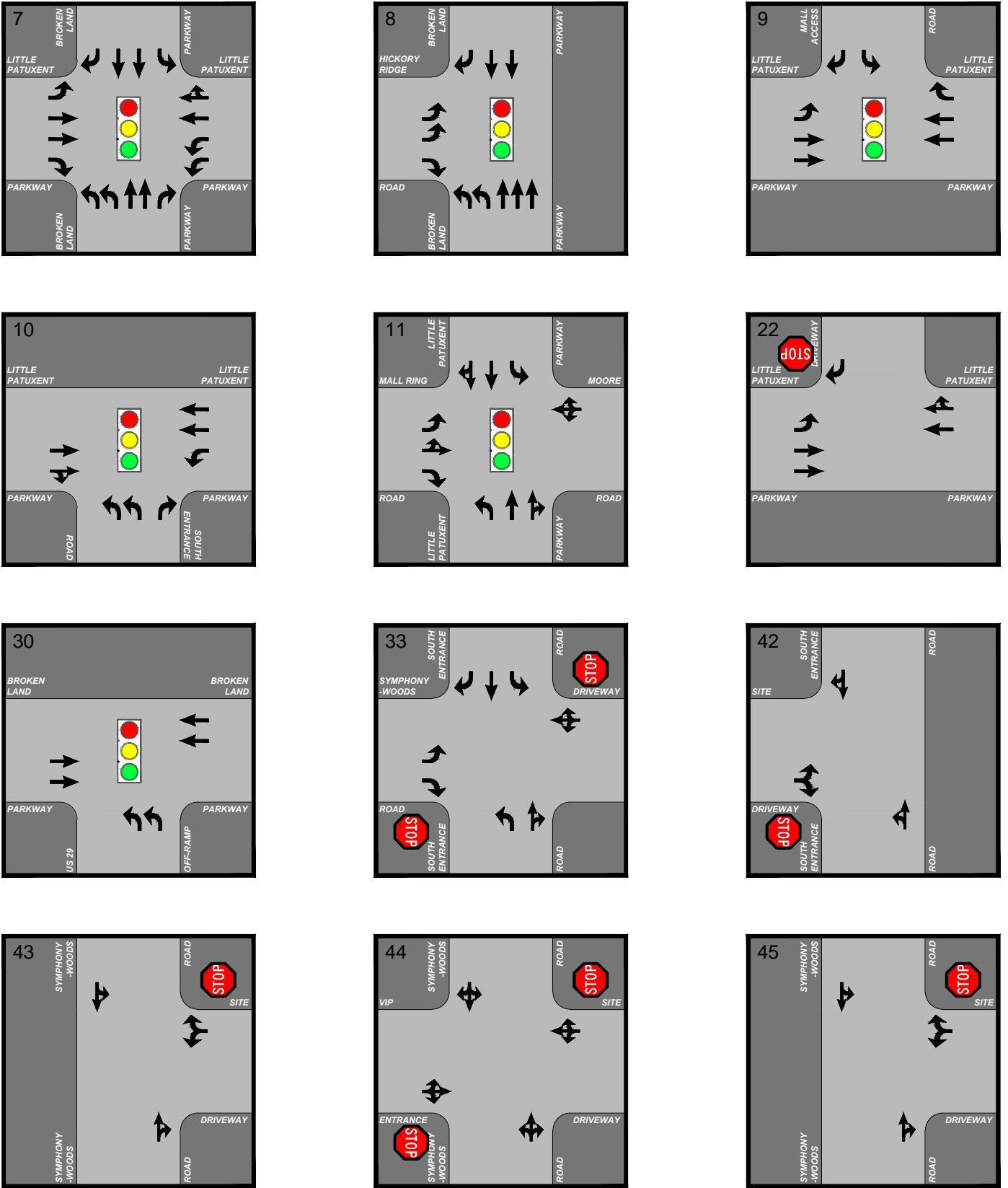





Figure 3-1A  
Existing Lane Use and Traffic Controls

New Cultural Center  
Howard County, Maryland

-  Represents One Travel Lane
-  Signalized Intersection
-  Stop Sign



### Site Access and Circulation

The existing property is served by one (1) driveway on the South Entrance Road and two (2) driveways on existing Symphony Woods Road that all provide full-movement access. A third driveway on Symphony Woods Road primarily serves the office building but has been used by the Toby's Dinner Theater during events. The internal access between the office and theater parking areas was previously separated by movable guardrails, but has recently been modified to include bollards.

These driveways will be modified or consolidated with the site redevelopment. When complete, a new driveway will be constructed on the South Entrance Road that will provide direct access to the ground level of the structured parking garage and allow for full turning movements. This driveway will provide three (3) lanes, with a reversible center lane to provide two (2) inbound lanes during the AM peak hour and two (2) outbound lanes during the PM peak hour. It will also be used during events to manage surges of inbound and outbound traffic.

A shared drop-off/pick-up zone will be provided along the northbound North-South Connector Road to provide convenient access to the west side of the building. This will be for loading and unloading of patrons.

A one-way westbound service drive will be provided along the southern boundary of the site and will be restricted for use by buses and vehicles exiting the garage only. This is planned as a private drive that will be controlled by a gate or similar device and no access to the existing office building to the south is proposed. The service drive would allow buses to circulate around the building and access the drop-off/pick-up zone.

An exit only from the parking garage onto the service drive is planned that would be open in the evenings (during non-peak hours) to allow patrons to exit the garage during peak events. Vehicles traveling westbound on the service drive would be restricted to right turn only onto the northbound North-South Connector Road. Temporary bus storage would be provided along the service drive east of the garage exit.

Loading is anticipated to occur from the South Entrance Road just north of the parking garage driveway.

The exact location of these driveways and service/loading facilities will be finalized at the Site Development Plan (SDP) stage.

A diagram illustrating the anticipated site access and circulation is shown on Figure 3-2.

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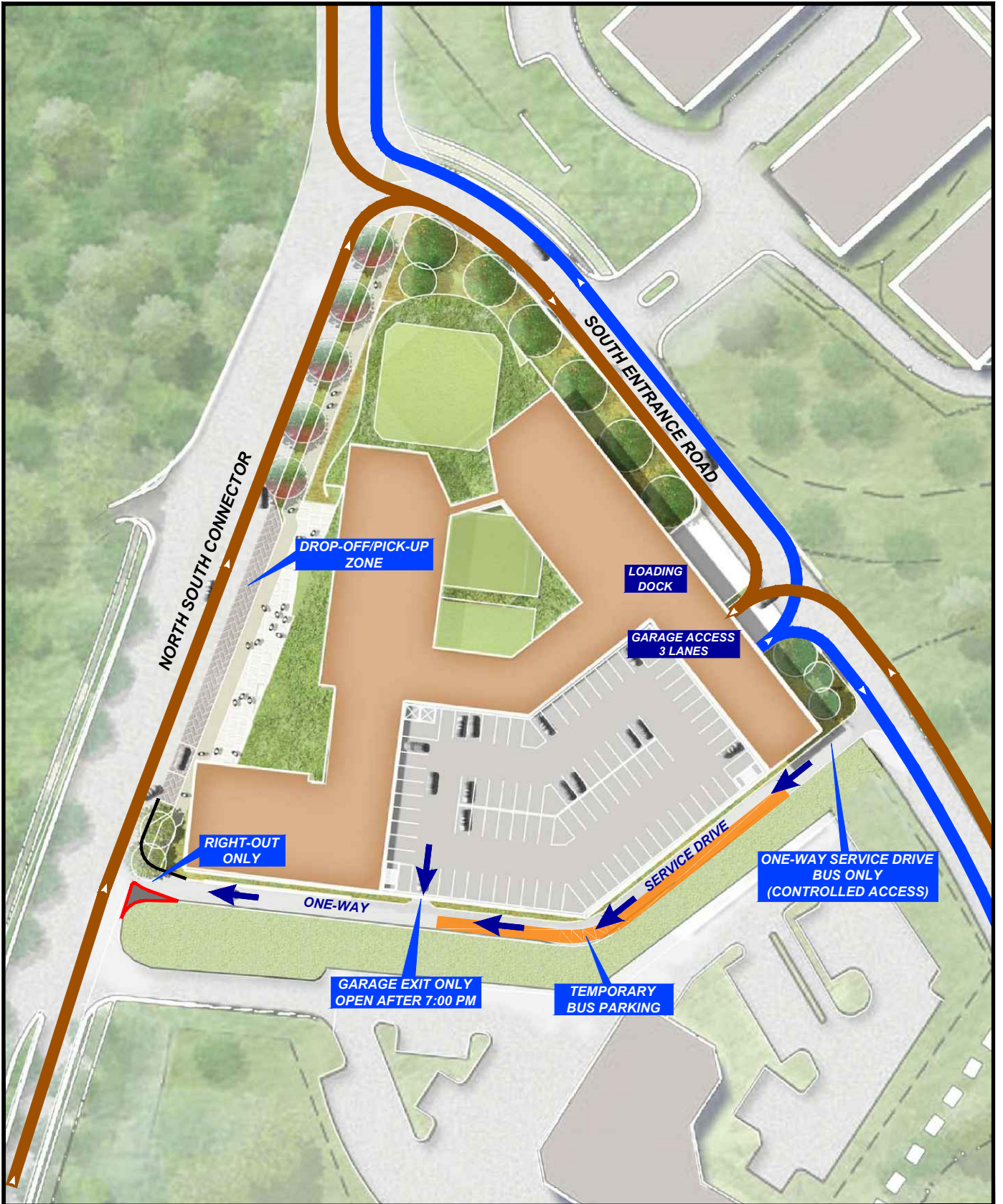


Figure 3-2  
Site Access and Circulation Plan

New Cultural Center  
Howard County, Maryland

PLAN PROVIDED BY  
DESIGN COLLECTIVE, INC.



JCF

## SECTION 4 EXISTING (BASELINE) CONDITIONS ANALYSIS

### Overview

This section presents an assessment of existing baseline traffic conditions within the study area.

### Existing Vehicular and Pedestrian Traffic Counts

Previously collected weekday AM and PM peak hour vehicular and pedestrian traffic counts collected by Wells + Associates in 2011 were used for this study and augmented with updated traffic data collected on Thursday, March 10, 2016 at the intersections immediately adjacent to the site and each of the existing site driveways.

As described in previous studies, the 2011 counts were used since previously approved development that is currently under construction has altered travel patterns in the area and this new development has not yet been occupied. Detailed information is included in Appendix D.

The peak hour traffic counts indicate that the AM peak hour generally occurs between 8:00 AM and 9:00 AM and the PM peak hour occurs between 5:00 PM and 6:00 PM. Copies of the count data are contained in Appendix D.

A summary of the vehicular and pedestrian traffic counts are shown on Figures 4-1 and 4-2.

### Capacity Analysis

Capacity/level of service (LOS) analyses were conducted at the study intersections based on the existing lane use and traffic controls shown on Figure 3-1, baseline traffic counts shown on Figure 4-1, and the Howard County methodology for both signalized and unsignalized intersections.

The results are presented in Appendix E and summarized in Table 4-1, and indicate that all of the signalized intersections currently operate within acceptable standards (initial CLV of 1,500) during both the AM and PM peak hours. In addition, all of the movements at the unsignalized Symphony Woods Road/South Entrance Road intersection and site driveways currently operate at acceptable levels of service during both the AM and PM peak hours.

## Queue Analysis

A queuing analysis was conducted for existing 2011 conditions at the study intersections to establish a datum to compare future conditions. The analysis is based on the Howard County methodology and traffic signal timings provided by Howard County contained in Appendix F.

The results and detailed calculations contained in Appendix F and indicate that there are critical locations where existing queues exceed turn lane bays or the link distance between intersections is exceeded (80 percent for intersections spaced greater than 300 feet apart and 90 percent for intersections spaced less than 300 feet apart) under existing baseline conditions.

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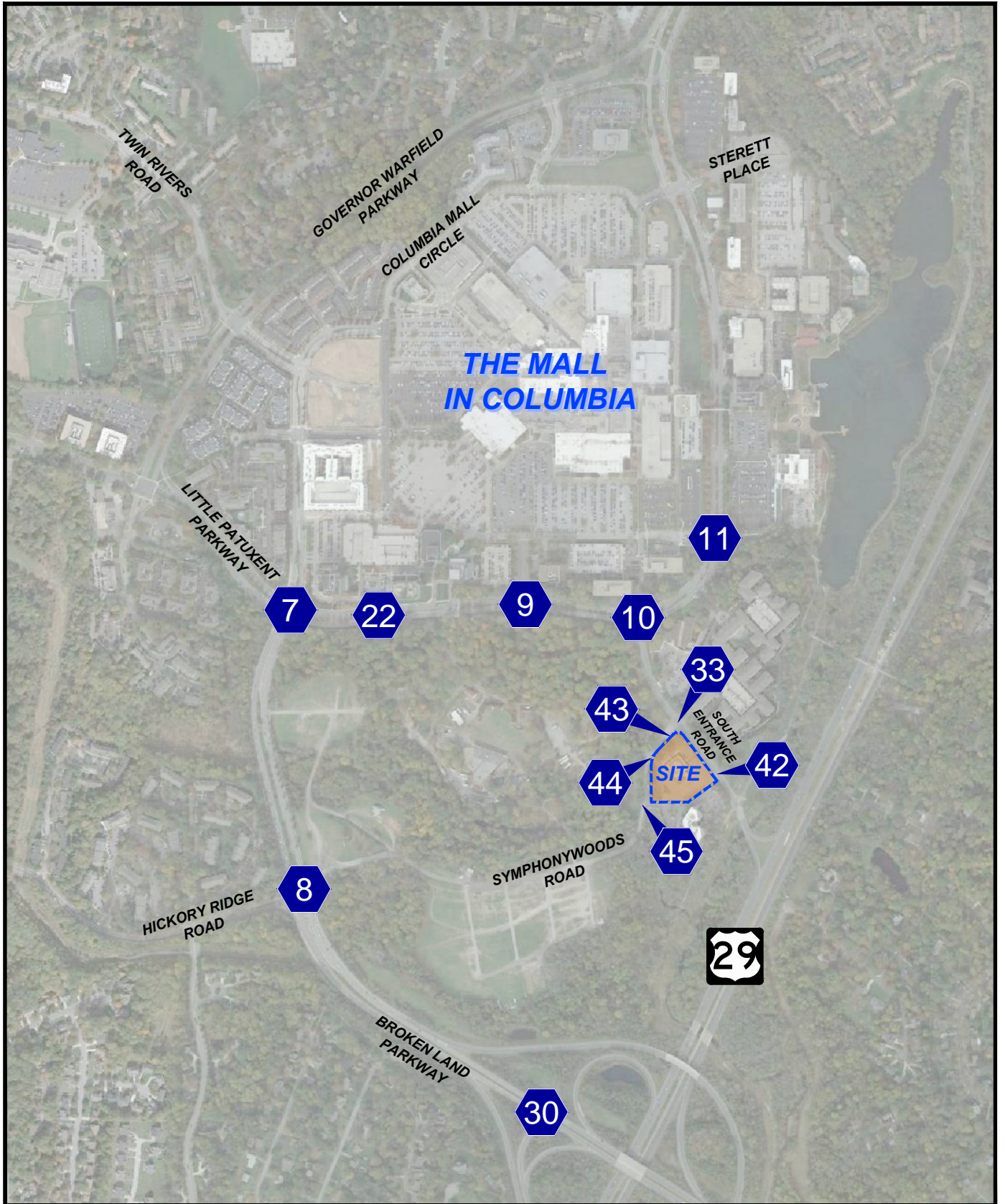


Figure 4-1  
Existing Intersection Map

New Cultural Center  
Howard County, Maryland



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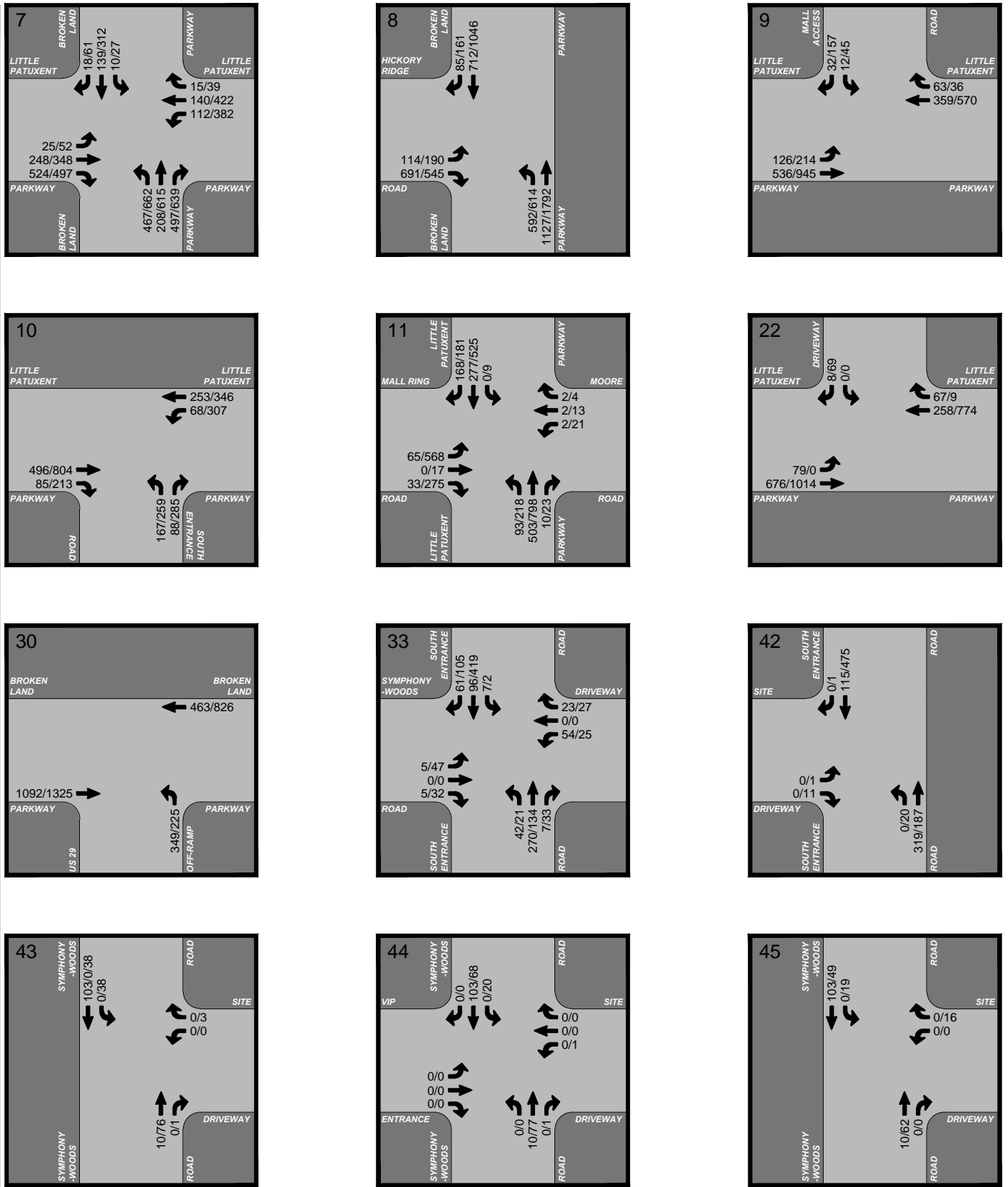
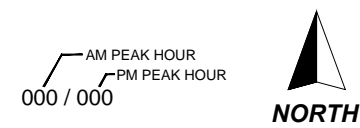


Figure 4-1A Existing (Baseline) Peak Hour Vehicular Traffic Counts

New Cultural Center  
Howard County, Maryland



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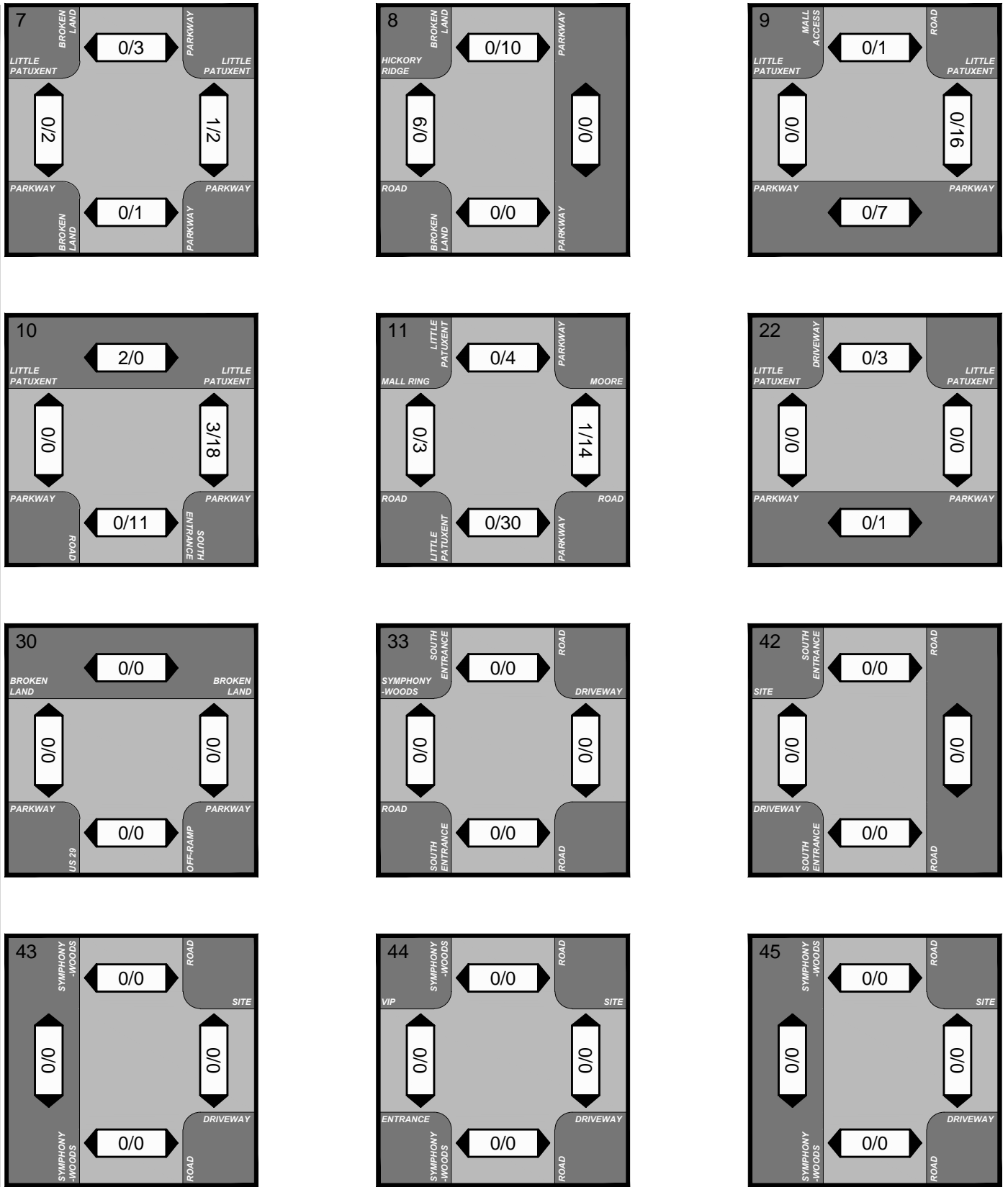


Figure 4-2  
Existing (Baseline) Peak Hour Pedestrian Counts

New Cultural Center  
Howard County, Maryland



Table 4-1  
 New Cultural Center  
 Existing Levels of Service (1) (2) (3) (4)

Intersection	Control	Movement	Existing	
			AM	PM
7: Little Patuxent Parkway & Broken Land Parkway	Signal	CLV	A (817)	B (1002)
8: Hickory Ridge Road & Broken Land Parkway	Signal	CLV	A (742)	A (965)
9: Little Patuxent Parkway & Mall Access Road	Signal	CLV	A (335)	A (573)
10: Little Patuxent Parkway & South Entrance Road (North South Connector)	Signal	CLV	A (488)	B (1021)
11: Moore Road & Little Patuxent Parkway	Signal	CLV	A (383)	A (995)
22: Little Patuxent Parkway & Merriweather Drive	Stop N/S	EBL WBL NBR SBR	A [8.2] - - A [9.4]	A [0.0] - - B [12.2]
25: Broken Land Parkway & Divided Sky Lane	Stop W	WBR	B [14.7]	C [17.0]
30: Broken Land Parkway & US 29 Off-Ramp	Signal	CLV	A (810)	A (864)
33: South Entrance Road & Symphonywoods Road (North South Connector)/Driveway	Stop E/W	EBLT WBLTR NBL SBL SBT	B [13.5] B [13.4] A [7.6] A [7.9] A [0.0]	C [17.2] B [13.4] A [8.7] A [7.6] A [0.0]
42: South Entrance Road & Driveway East	Stop E	EBLR NBLT	A [0.0] A [0.0]	B [11.9] A [1.0]
43: Symphony Woods Road (North South Connector) & Driveway North	Stop W	WBLR SBLT	A [0.0] A [7.5]	A [8.7] A [2.4]
44: Symphony Woods Road (North South Connector) & Driveway Middle	Stop W	WBLR SBLT	A [0.0] A [0.0]	A [9.7] A [1.8]
45: Symphony Woods Road (North South Connector) & Driveway South	Stop W	WBLR SBLT	A [0.0] A [0.0]	A [8.7] A [2.2]

Notes:

- (1) Unsignalized analysis performed using Synchro software, version 9.
- (2) Values in parenthesis, ( ), represent CLV totals
- (3) Values in brackets, [ ], represent unsignalized delay in seconds
- (4) [\*] Unsignalized delay exceeds 999 seconds.

## SECTION 5 ANALYSIS OF FUTURE CONDITIONS WITHOUT PROPOSED DEVELOPMENT

### Overview

For the purposes of this analysis, it was assumed that the proposed development would be constructed by 2020. In order to develop background traffic forecasts without the proposed development, a composite of existing traffic, increases in traffic associated with regional growth, and increases in traffic associated with other approved but not yet constructed (pipeline) developments was used.

### Regional Growth

Consistent with previously approved studies in downtown, a 1.0 percent annually compounded growth rate was applied to the existing traffic volumes in the study area. This rate was applied to all turning movements at all intersections for each of the horizon year of 2020. The resultant regional growth volumes for these conditions are shown in Appendix G.

### Pipeline Projects

Pipeline projects for inclusion in this traffic study include: (1) an unrecorded previously approved development and (2) a recorded previously approved development.

Seven (7) pipeline projects have been assumed in this study to be built and occupied by 2020:

1. Howard Community College Expansion.
2. Warfield Parcels W-1, W-2, and W-5.
3. The Mall in Columbia Expansion.
4. Rouse Company Building Renovation (Whole Foods).
5. Plaza Residences.
6. Wilde Lake Village Center.
7. Crescent Neighborhood development (Phase 2 development program).

The Community College is anticipated to expand by 1,346 students. The Plaza Residences include 155 units in a new residential tower in the northeast quadrant of the Little Patuxent Parkway/Wincopin Circle North intersection.

The recently approved development programs for Warfield parcels W-1, W-2, and W-5, the Mall in Columbia Expansion, the Rouse Company Building Renovation to include the Whole Foods store, the Wilde Lake Village Center redevelopment, and the Crescent Area 3 Final Development Plan (FDP) development (Phase 2 program) were included as pipeline development for this traffic study. Traffic from the previously discussed seven (7) pipeline developments were determined to forecast background traffic. *It is noted that the background traffic assumptions are assumed to be conservative since they assume the maximum development program for phase 2 of the Crescent development.*

Based on Institute of Transportation Engineers (ITE) Trip Generation manual, Eighth Edition rates, these projects are expected to generate a total of 3,127 new AM peak hour trips and 3,828 new PM peak hour trips, as summarized on Table 5-1. These projects were assumed to be fully built and occupied by 2020.

Pipeline trips were assigned to the road network based on previously approved traffic studies. The isolated traffic assignments for these projects are shown in Appendix H.

### Adjustments to Existing Traffic

Adjustments to existing traffic were made in order to reflect the construction of the future roadway network within the Crescent Neighborhood. These adjustments include the anticipated diversion of downtown through traffic (consistent with previous studies) and the re-orientation of existing traffic to reflect the modified road network. The traffic adjustments for 2020 are contained in Appendix I.

### Background Traffic Forecasts

The existing volumes shown on Figure 4-1 were combined with the regional growth volumes and the pipeline site trips contained in Appendices I and J, which result in the background traffic forecasts without the development as shown on Figure 5-1.

### Capacity Analysis

Capacity analyses were prepared for the study intersections using the existing lane use and traffic controls shown on Figure 3-1 and the 2020 background traffic forecasts (without the proposed development) shown on Figure 5-1.

The analyses include improvements planned by others as noted on Figure 5-2 and are discussed below:

### Signalized Intersections

All of the existing signalized intersections would continue to operate within acceptable standards (CLV of below 1,500) during both the AM and PM peak hours. The maximum CLV would be realized at the Little Patuxent Parkway/South Entrance Road intersection (#10), with an AM peak hour CLV of 687 and a PM peak hour CLV of 1,334 under 2020 conditions.

All of the future intersections planned for new traffic signals and/or lane improvements by others would operate within acceptable CLV's during the AM and PM peak hours under future conditions.

### Unsignalized Intersections

All of the turning movements at the stop controlled site driveways serving the existing Toby's Dinner Theater are forecasted to operate at acceptable levels of service (LOS "D" or better) during both the AM and PM peak hours.

The capacity analysis worksheets are contained in Appendix J.

### **Queue Analysis**

Queuing analysis were conducted for all of the future conditions without the proposed development at key critical intersections. The results for the background conditions are summarized in Appendix K.

The results are consistent with those reported in the Crescent Area 3 August 2016 traffic study for 2020 conditions. These results indicated that selected movements were projected to exceed the available storage at various intersections during the AM and/or PM peak hours, and that the link storage along Merriweather Drive at Hickory Ridge Road (intersection #27) (northbound) and the West Driveway (intersection #35) (eastbound). However, the simulated traffic results contained in the appendix show that these movements would be adequately accommodated.

Table 5-1  
Columbia Cultural Arts Center  
Pipeline Development Trip Generation Analysis <sup>(1)</sup>

Pipeline Development	Development/Land Use	Land Use			Weekday AM Peak Hour			PM Pass-By/Diverted %	Weekday PM Peak Hour		
		Code	Amount	Unit	In	Out	Total		In	Out	Total
<b>1. Howard Community College Expansion</b>	Community College	540	1,346	Students	306	67	373		279	157	436
<b>2. Warfield Parcels W-1, W-2, &amp; W-5 <sup>(2)</sup></b>	Retail	820	57,678	S.F.	36	22	58		113	108	221
<b>Phase 3, Year 2016 (Buildout) (Cumulative Total)</b>	Restaurant	932	18,420	S.F.	61	53	114		52	34	86
	Subtotal		76,098	S.F.	97	75	172		165	142	307
	Residential	220	817	DU	67	300	367		254	126	380
Warfield Parcels W-1, W-2, & W-5 Total Net New External Trips - Phase 3					164	375	539		419	268	687
<b>3. The Mall in Columbia Lifestyle Expansion <sup>(2)</sup></b>											
Total Trips	Retail	820	43,500	S.F.	9	5	14		38	39	77
Pass-By Trips	Retail	820			0	0	0	19%	7	7	15
Net New Trips	Retail	820			9	5	14		31	32	62
<b>4. Rouse Building</b>											
<u>Existing Condition</u>	Office	710	151,772	SF	231	31	262		42	207	249
<u>Proposed Conditions</u>	Grocery Store	850	46,720	S.F.	102	66	168		276	266	542
	Internal Trips to Office <sup>(2)</sup>				-	-	-		(6)	(5)	(11)
	External Grocery Trips				102	66	168		270	261	531
	Non-Auto mode share adjustment <sup>(4)</sup>	5%			(5)	(3)	(8)		(14)	(13)	(27)
	New Vehicle Trips				97	63	160		256	248	504
	Pass-By Reduction <sup>(6)</sup>				-	-	-		(92)	(89)	(181)
	New External Vehicle Trips				97	63	160	36%	164	159	323
	Fitness Center	492	28,385	S.F.	18	21	39		57	43	100
	Internal Trips to Office <sup>(2)</sup>				-	-	-		(1)	(1)	-
	External Fitness Center Trips				18	21	39		56	42	100
	Non-Auto mode share adjustment <sup>(4)</sup>	5%			(1)	(1)	(2)		(3)	(2)	(5)
	New External Vehicle Trips				17	20	37		53	40	95
	Office	710	19,008	S.F.	44	6	50		17	83	100
	Internal Trips to Fitness Center <sup>(2)</sup>				-	-	-		(1)	(1)	(2)
	Internal Trips to Grocery Store <sup>(2)</sup>				-	-	-		(6)	(5)	(13)
	External Office Trips				44	6	50		10	77	85
	Non-Auto mode share adjustment <sup>(4)</sup>	5%			(2)	-	(3)		(1)	(4)	(4)
	New External Vehicle Trips				42	6	47		9	73	81
Total Trips (Proposed)			94,113	S.F.	156	89	244		226	272	499
Rouse Building Net New External Trips					(75)	58	(18)		184	65	250
<b>5. Plaza Residence</b>	Condos	230	155	DU	12	61	73		58	28	86
<b>6. Wilde Lake Village Center</b>											
<u>Existing Program <sup>(5)</sup></u>	Retail/Restaurant - Total Trips	820	51,650	SF	63	41	104		200	209	409
	Retail/Restaurant - Pass-By/Diverted Trips <sup>(6)</sup>				-	-	-	34%	68	71	139
	Retail/Restaurant - Net New Trips				63	41	104		132	138	270
<u>Proposed Program</u>	Retail/Restaurant - Total Trips	820	61,213	SF	70	45	115		224	234	458
	Internal with Residential				3	3	6		28	20	48
	Internal with Office				-	-	-		4	6	10
	External Retail Trips				67	42	109		192	208	400
	Retail/Restaurant - Pass-By/Diverted Trips <sup>(6)</sup>				-	-	-	34%	65	71	136
	Retail/Restaurant - Net New Trips				67	42	109		127	137	264
	General Office Building - New Trips	710	29,779	SF	62	9	71		19	94	113
	Internal with Residential				-	-	-		-	2	2
	Internal with Retail				-	-	-		6	4	10
	External Office Trips				62	9	71		13	88	101
	Apartments - New Trips	220	250	DU	26	101	127		102	54	156
	Internal with Office				-	-	-		2	-	2
	Internal with Retail				3	3	6		20	28	48
	External Residential Trips				23	98	121		80	26	106
	Total Generated Trips				158	155	313		345	382	727
	Total Internal Trips				6	6	12		60	60	120
	Total Pass-By/Diverted Trips				-	-	-		65	71	136
	Total Net New Trips				152	149	301		220	251	471
	<u>Proposed Program vs. Existing Conditions</u>										
	Net New Generated Trips				95	114	209		145	173	318
	New Internal Trips				6	6	12		60	60	120
	Net New Pass-By/Diverted Trips				-	-	-		(3)	(0)	(3)
Wilde Lake Center Net New External Trips					89	108	197		88	113	201
<b>7. The Crescent Neighborhood <sup>(7)</sup></b>											
Total Net New External Vehicle Trips (Phase 2)					1,317	633	1,949		797	1,309	2,106
<b>Total Pipeline Development Trip Generation</b>					<b>1,822</b>	<b>1,307</b>	<b>3,127</b>		<b>1,856</b>	<b>1,972</b>	<b>3,828</b>

Notes:

- Vehicle trips generated using Institute of Transportation Engineers (ITE) Trip Generation, Eighth Edition.
- "The Mall in Columbia Lifestyle Expansion Traffic Impact Study", prepared by Wells + Associates, May 11, 2012.
- "Warfield Parcels W-1, W-2 & W-5 Traffic Impact Study", prepared by Wells + Associates, March 16, 2012.
- Non-Auto mode share adjustment based on other approved studies in Downtown Columbia.
- Occupied SF when counts were collected in May 2012. Total of 98,817 SF available.
- Reflects average passby trip rate.
- Trip Generation estimate details for "The Crescent Neighborhood" are located in the appendix.

Table S-2  
 New Cultural Center  
 Background Levels of Service (1) (2) (3) (4)

Intersection	Control	Movement	Existing		Background	
			AM	PM	AM	PM
7: Little Patuxent Parkway & Broken Land Parkway	Signal	CLV	A (817)	B (1002)	A (962)	C (1210)
8: Hickory Ridge Road & Broken Land Parkway	Signal	CLV	A (742)	A (965)	-	-
<i>Phase I Improvements: Based on Planned Lane Use</i>			-	-	A (983)	D (1348)
<i>Westbound: Provide Dual Lefts, a Through-Left, and a Right-Turn</i>						
<i>Southbound: Construct New SBL and Convert SBR to SBTR</i>						
<i>Eastbound: Reflects Existing Conditions</i>						
9: Little Patuxent Parkway & Mall Access Road	Signal	CLV	A (335)	A (573)	A (529)	A (699)
10: Little Patuxent Parkway & South Entrance Road (North South Connector)	Signal	CLV	A (488)	B (1021)	-	-
<i>Improvements: Install Second WBL Turn Lane</i>			-	-	A (739)	D (1339)
11: Moore Road & Little Patuxent Parkway	Signal	CLV	A (383)	A (995)	A (482)	C (1287)
22: Little Patuxent Parkway & Merriweather Drive	Stop N/S	EBL WBL NBR SBR	A [8.2] - - A [9.4]	A [0.0] - - B [12.2]	A [7.9] B [11.5] B [11.9] A [9.0]	A [0.0] C [17.1] C 16.1 B [11.6]
25: Broken Land Parkway & Divided Sky Lane	Stop W	WBR	B [14.7]	C [17.0]	A [9.6]	B [12.4]
27: Merriweather Drive & Hickory Ridge Road	Signal	CLV	FUTURE INTERSECTION		A (972)	A (966)
29: Merriweather Drive & Divided Sky Lane	Stop EW	EBL WBLTR	FUTURE INTERSECTION		B [11.5] A [9.5]	B [14.7] B [14.0]
30: Broken Land Parkway & US 29 Off-Ramp	Signal	CLV	A (810)	A (864)	B (1121)	C (1175)
31: North-South Connector & Site Driveway	Stop E	EBLR	FUTURE INTERSECTION		A [9.2]	A [9.4]
32: North-South Connector & Merriweather Drive	Signal	CLV	FUTURE INTERSECTION		C (277)	A (345)
33: South Entrance Road & Symphonywoods Road (North South Connector)/Driveway	Stop EW	EBLT WBLTR NBL SBL SBT	B [13.5] B [13.4] A [7.6] A [7.9] A [0.0]	C [17.2] B [13.4] A [8.7] A [7.6] A [0.0]	- - - - -	- - - - -
<i>Improvements: Install New Traffic Signal</i>			FUTURE CONDITION		A (765)	A (808)
34: Merriweather Drive & Prism Way	Stop N	WBL NBL	FUTURE INTERSECTION		A [8.8] C [15.4]	A [8.5] C [19.4]
35: Merriweather Drive & Dove Lane	Signal	CLV	FUTURE INTERSECTION		A (687)	A (648)
41: South Entrance Road & Driveway East	Stop N	NBR	FUTURE INTERSECTION		B [11.8]	B [11.6]
42: South Entrance Road & Driveway East	Stop E	EBLR NBLT	A [0.0] A [0.0]	B [11.9] A [1.0]	A [0.0] A [0.0]	C [15.7] A [9.6]
43: Symphony Woods Road (North South Connector) & Driveway North	Stop W	WBLR SBLT	A [0.0] A [7.5]	A [8.7] A [2.4]	A [0.0] A [0.0]	B [10.1] A [4.5]
44: Symphony Woods Road (North South Connector) & Driveway Middle	Stop W	WBLR SBLT	A [0.0] A [0.0]	A [9.7] A [1.8]	A [0.0] A [0.0]	B [14.4] A [3.5]
45: Symphony Woods Road (North South Connector) & Driveway South	Stop W	WBLR SBLT	A [0.0] A [0.0]	A [8.7] A [2.2]	A [0.0] A [0.0]	B [10.2] A [3.8]
46: South Entrance Road & New Site Driveway	Stop E	EBL EBR NBL	FUTURE INTERSECTION		FUTURE INTERSECTION	

Notes:  
 (1) Unsignalized analysis performed using Synchro software, version 9.  
 (2) Values in parenthesis, ( ), represent CLV totals  
 (3) Values in brackets, [ ], represent unsignalized delay in seconds  
 (4) [\*] Unsignalized delay exceeds 999 seconds.

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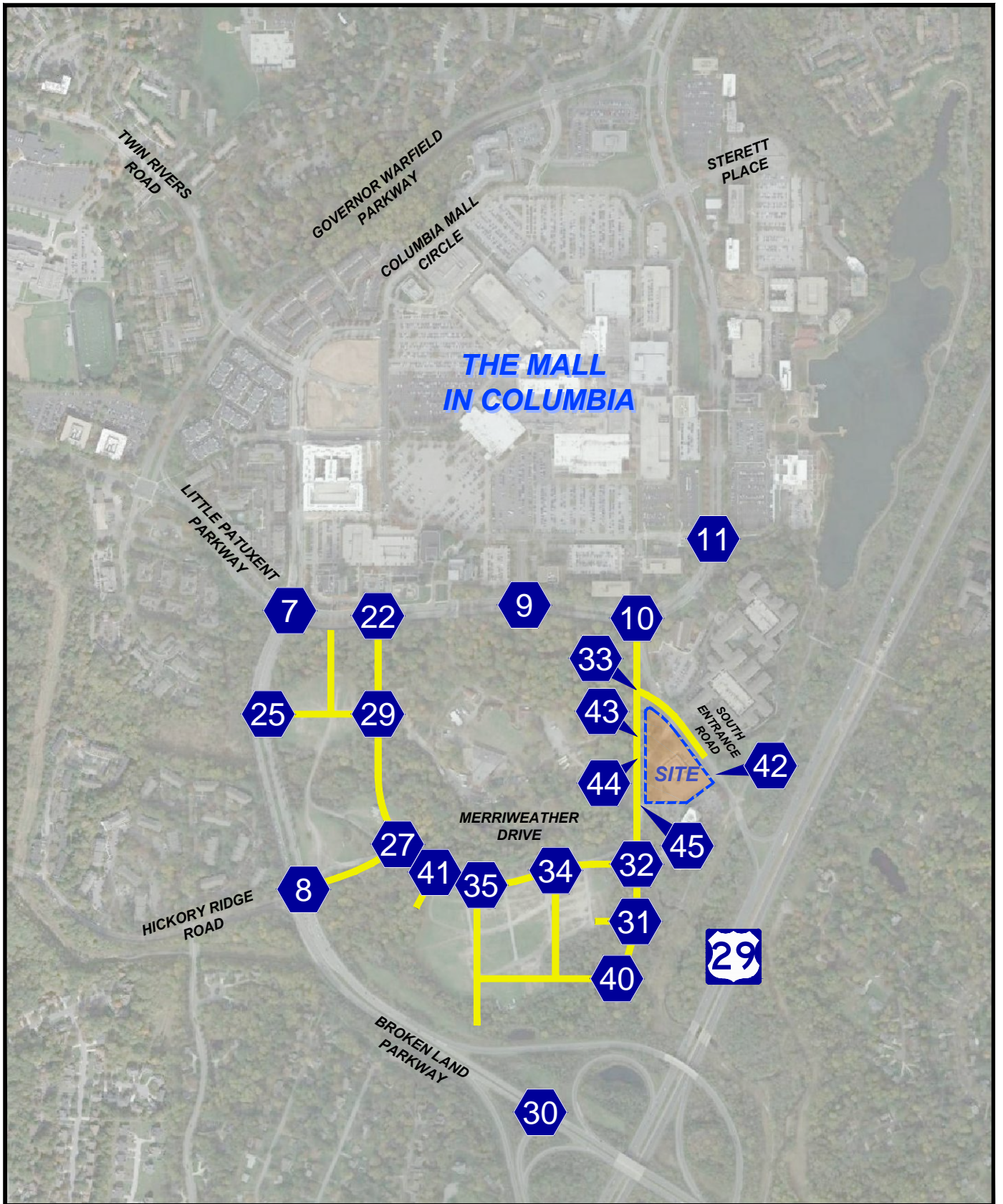


Figure 5-1  
Background Intersection Map

New Cultural Center  
Howard County, Maryland



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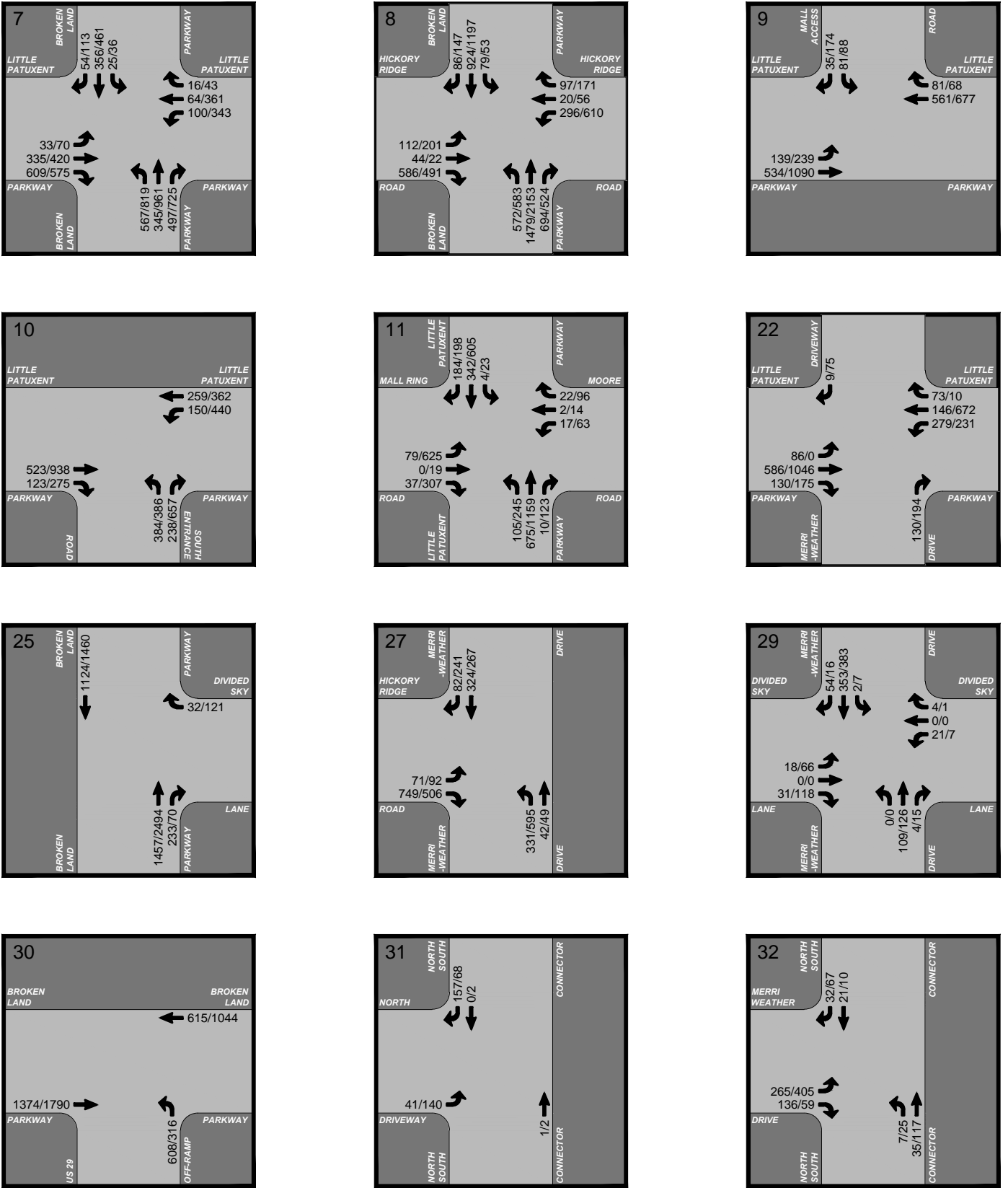
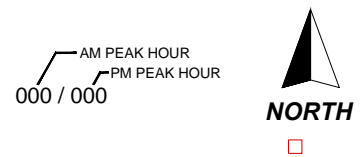


Figure 5-1A  
2020 Background Traffic Forecasts

New Cultural Center  
Howard County, Maryland



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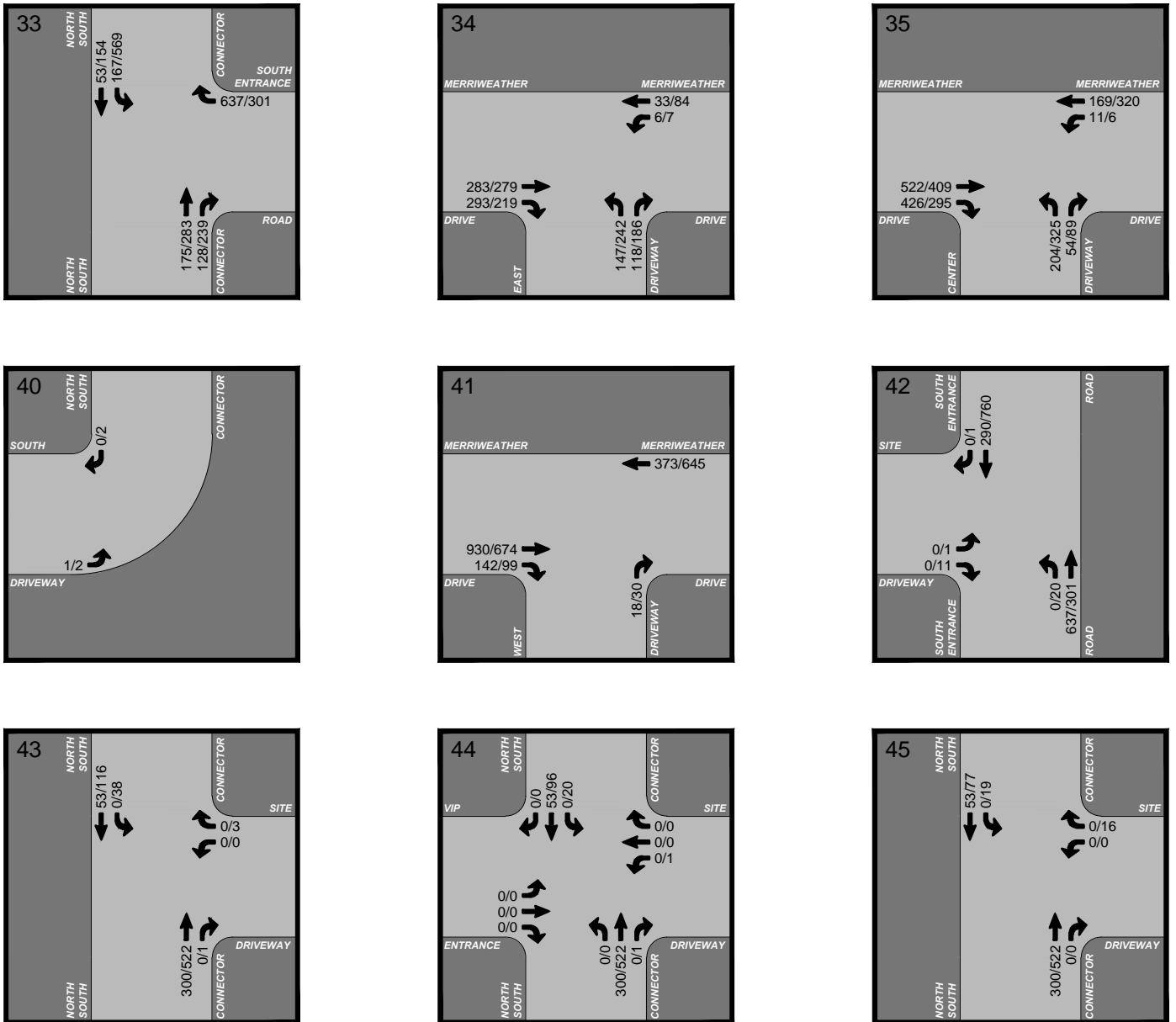
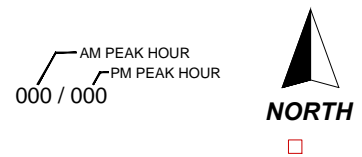


Figure 5-1B  
2020 Background Traffic Forecasts

New Cultural Center  
Howard County, Maryland



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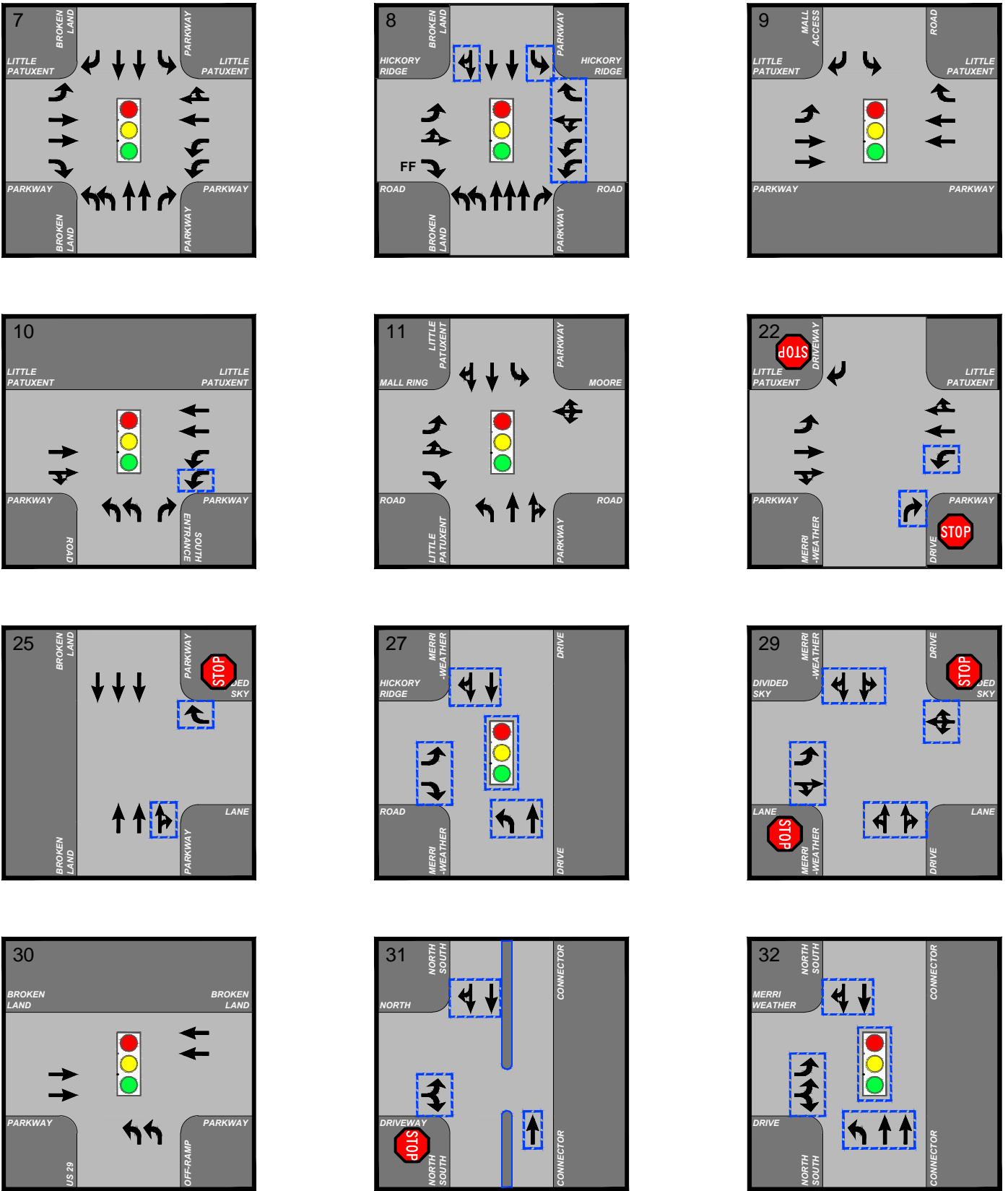


Figure 5-2A  
2020 Background Lane Use and Traffic Controls

New Cultural Center  
Howard County, Maryland

- ← Represents One Travel Lane
- ⬆️ Signalized Intersection
- ⛔ Stop Sign
- ▭ Proposed Improvement



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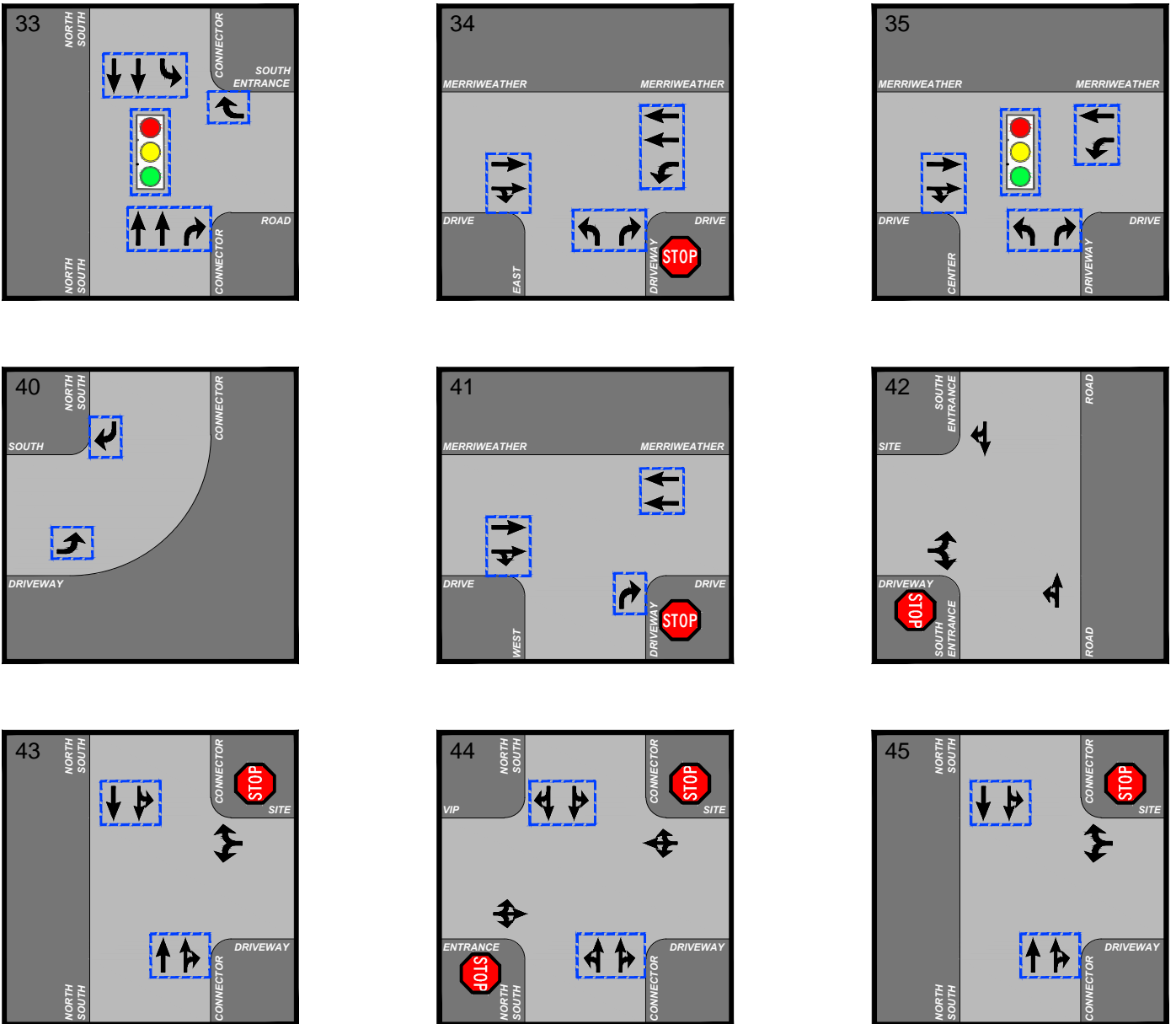


Figure 5-2B  
2020 Background Lane Use and Traffic Controls

New Cultural Center  
Howard County, Maryland

- Represents One Travel Lane
- Signalized Intersection
- Stop Sign
- Improvement by Others



## SECTION 6

### TRIP GENERATION, DISTRIBUTION, AND ASSIGNMENT

#### Overview

This section summarizes the vehicle trip generation and traffic distribution analyses for the project at buildout in 2020.

#### Development Program

The New Cultural Center is proposed to be developed with a mix of land uses that includes the following.

Dinner Theater:	360 seats (288 existing)
Black Box Theater:	450 seats (two theaters)
General Office:	4,695 S.F.
Residential Apartments:	202 D.U.

Other uses that include classroom space, art galleries, art studios, conference space, a gift shop, and cafe are proposed. These uses are anticipated to function outside of commuter peak hours and would not generate weekday AM and PM peak hour trips.

#### Methodology

The number of trips that would be generated by the total development was estimated based on observed data and the Institute of Transportation Engineers' (ITE), Trip Generation, 9<sup>th</sup> Edition manual.

Traffic counts at the existing site driveways serving the Toby's Dinner Theater were collected on Thursday, March 10, 2016 when a show occurred. The existing theater includes a total of 288 seats and the show was sold out when the count was collected. The theater did not generate any trips during the AM peak hour. During the PM peak hour, the site generated a total of 116 trips (100 in and 16 out), as shown on Table 6-1.

The theater is planned to be expanded to 360 seats with the site redevelopment. Accordingly, the observed rates were applied to the proposed seats and result in a total of 138 PM peak hour trips (119 in and 19 out) assuming a five (5) percent non-auto mode share.

Trips for the Black Box Theater were calculated based on ITE 9<sup>th</sup> Edition rates using the Movie Theater with Matinee land use code. Two theaters with 225 each are proposed with the site development.

The office and residential trips were computed using standard ITE trip generation rates for land use codes 710 (General Office) and 220 (Apartment).

As noted previously, a five (5) percent non-auto mode share was applied to each of the uses consistent with other studies in downtown Columbia. No other adjustments for internal trips were made.

The results indicate that the site would generate a total of 105 AM peak hour trips (26 in and 79 out) and 298 PM peak hour trips (211 in and 87 out) subsequent to the redevelopment. When accounting for existing traffic generated by the Toby’s Dinner Theater, the site would generate 105 net new AM peak hour trips and 182 net new PM peak hour trips when complete.

**Site Trip Distribution and Assignment**

The distribution of peak hour trips generated by the proposed development program utilized existing and projected travel patterns in the area, previously approved traffic studies in downtown Columbia, and the Generalized Traffic Study. The distributions utilized are summarized below and represent the overall distribution of trips on the road network:

Roadway	Direction	Residential	Retail/Office
US Route 29	North	26%	30%
MD Route 175	East	10%	12%
Broken Land Pkwy	East	15%	10%
US Route 29	South	41%	32%
Little Pat. Pkwy	West	5%	6%
Hickory Ridge Rd	West	2%	5%
Twin Rivers Rd	West	1%	4%
Windstream Dr.	West	0%	1%
<b>TOTAL</b>		<b>100%</b>	<b>100%</b>

The total new site-generated traffic assignments reflect the new roadway connections as described previously in this report, and is shown on Figure 6-1. Detailed trip assignments individual uses are contained in Appendix L.



Table 6-1  
Columbia Cultural Arts Center

Site Trip Generation Analysis Summary

Land Use	Land Use Code	Amount	Unit	Weekday Trip Generation						
				AM Peak Hour			PM Peak Hour			
				In	Out	Total	In	Out	Total	
<b>Existing Uses</b>										
Toby's Theatre & Cultural Center (1)	Observed	288	Seats	0	0	0	100	16	116	
<i>Rate per seat</i>				<i>0.00</i>	<i>0.00</i>	<i>0.00</i>	<i>0.35</i>	<i>0.06</i>	<i>0.40</i>	
<b>Proposed Uses</b>										
Toby's Dinner Theatre (1)	Rate	360	Seats	0	0	0	125	20	145	
<i>5 % Transit/Non-Auto Reduction</i>				<i>0</i>	<i>0</i>	<i>0</i>	<i>-6</i>	<i>-1</i>	<i>-7</i>	
Toby's Dinner Theatre with Adjustments				0	0	0	119	19	138	
Black Box Theatre (Movie Theatre w/ Matinee) (2)	444	450	Seats	0	0	0	12	20	32	
<i>5 % Transit/Non-Auto Reduction</i>				<i>0</i>	<i>0</i>	<i>0</i>	<i>-1</i>	<i>-1</i>	<i>-2</i>	
Movie Theatre with Adjustments				0	0	0	11	19	30	
General Office Totals (2)	710	4,695	GFA	6	1	7	1	6	7	
<i>5 % Transit/TDM Reduction</i>				<i>0</i>	<i>0</i>	<i>0</i>	<i>0</i>	<i>0</i>	<i>0</i>	
General Office with Adjustments				6	1	7	1	6	7	
Residential (Apartments) (2)	220	202	D.U	21	82	103	84	45	129	
<i>5 % Transit/TDM Reduction</i>				<i>-1</i>	<i>-4</i>	<i>-5</i>	<i>-4</i>	<i>-2</i>	<i>-6</i>	
Residential with Adjustments				20	78	98	80	43	123	
<b>Summary</b>										
Total New Proposed Site Trips without Adjustments				27	83	110	222	91	313	
<i>5 % Transit/TDM Reduction/Non-Auto Reduction</i>				<i>-1</i>	<i>-4</i>	<i>-5</i>	<i>-11</i>	<i>-4</i>	<i>-15</i>	
Proposed Site Trips with Adjustments				26	79	105	211	87	298	
<b>Total Net New External Vehicle Trips (Proposed - Existing)</b>				<b>26</b>	<b>79</b>	<b>105</b>	<b>111</b>	<b>71</b>	<b>182</b>	

Notes:

- (1) Vehicle trips generated using traffic count volumes collected by W+A on Thursday, March 10, 2016.
- (2) Vehicle trips generated using Institute of Transportation Engineers (ITE) Trip Generation, 9th Edition.

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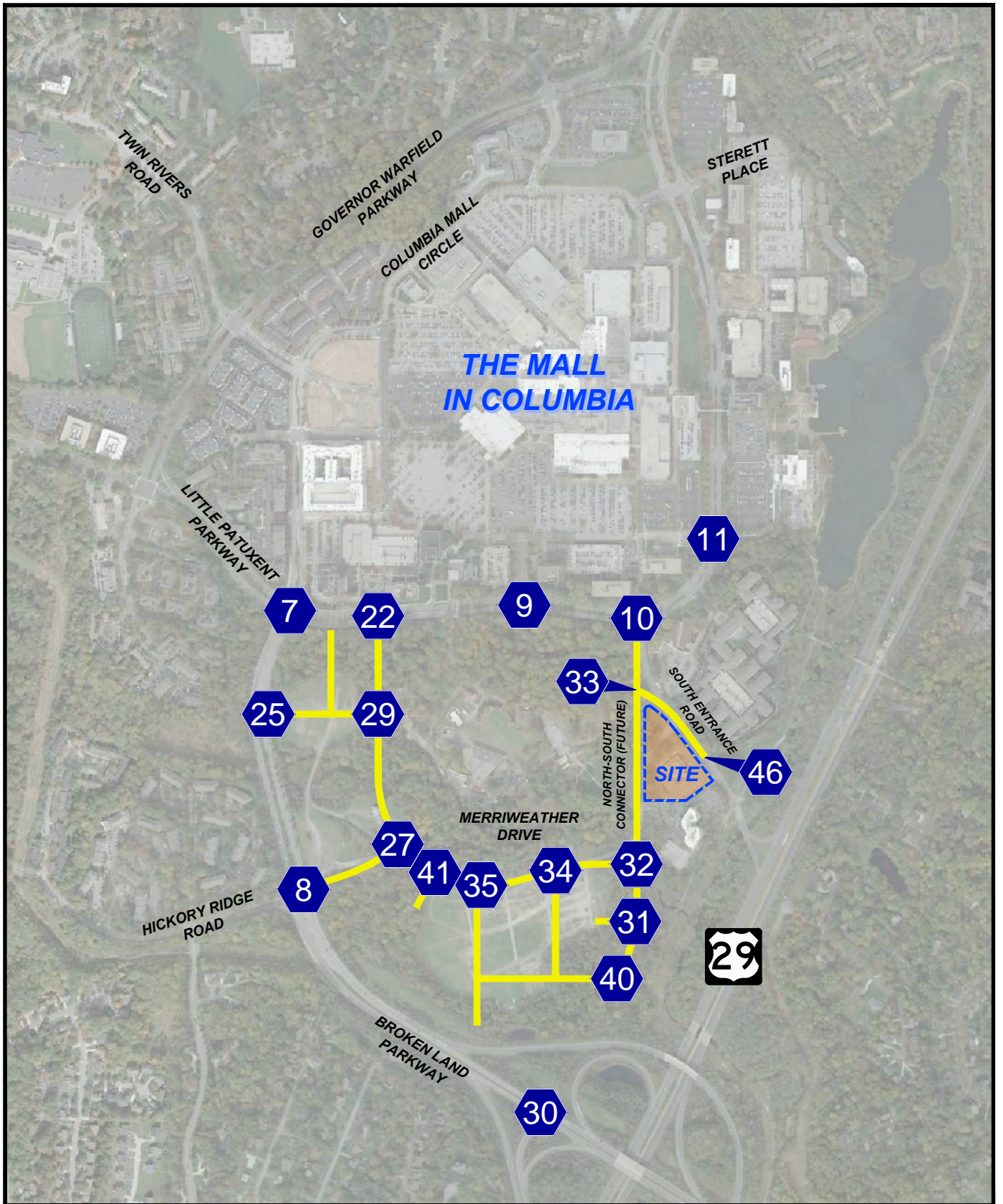


Figure 6-1  
Total Future Intersection Map

New Cultural Center  
Howard County, Maryland



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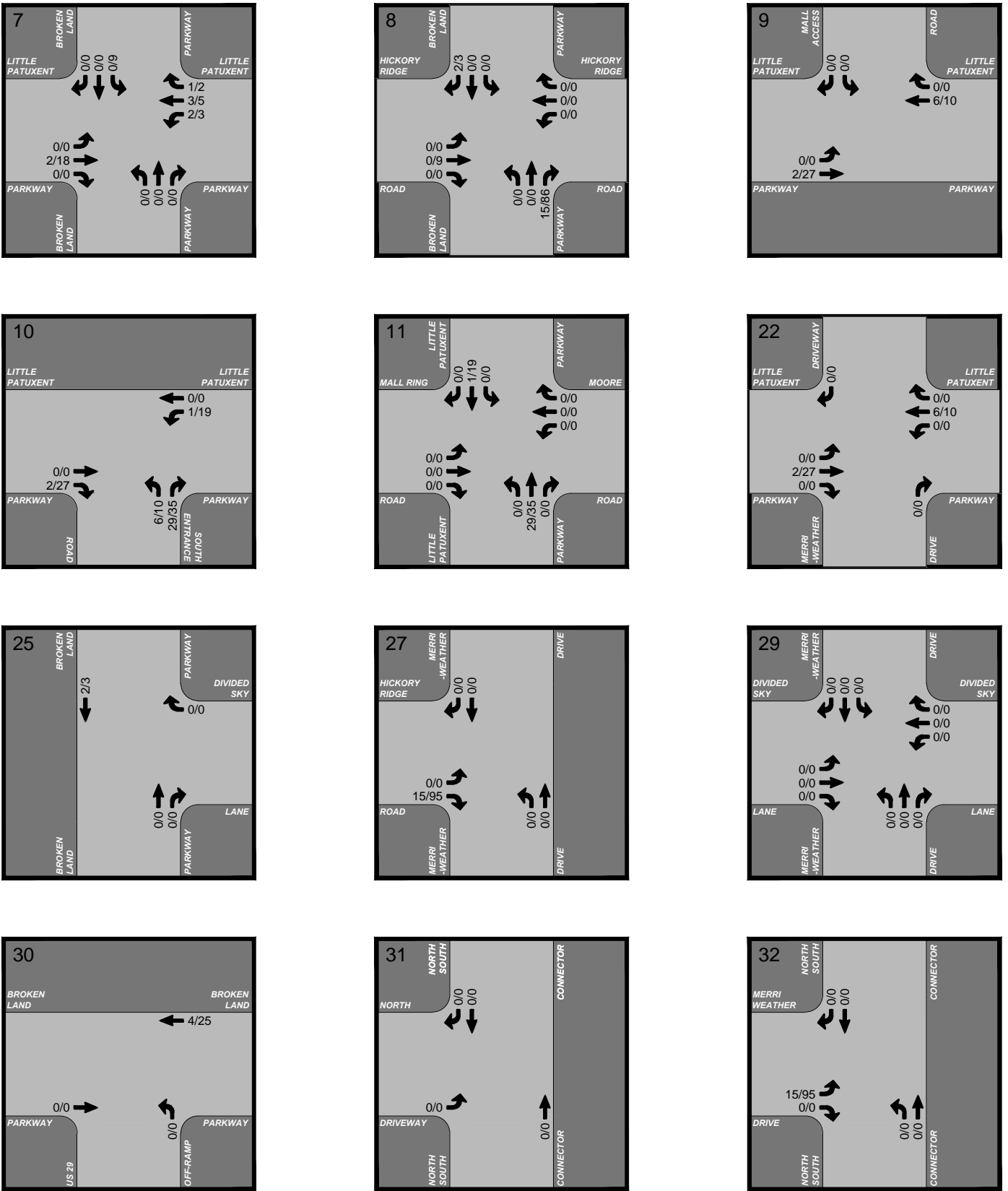
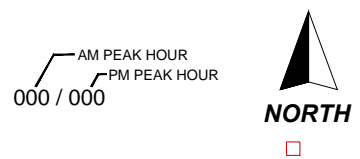


Figure 6-1A  
2020 New Site Generated Trip Assignment

New Cultural Center  
Howard County, Maryland



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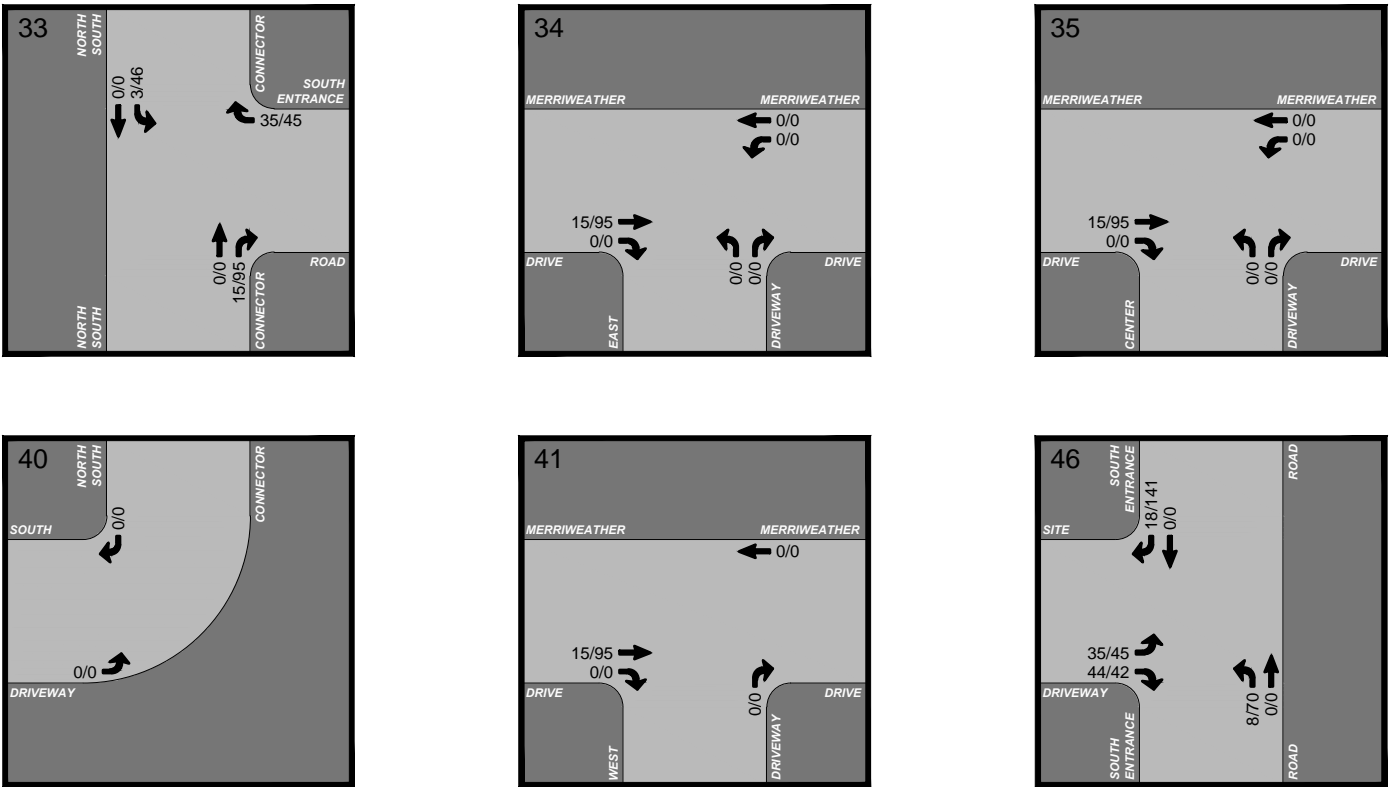


Figure 6-1B  
2020 New Site Generated Trip Assignment

New Cultural Center  
Howard County, Maryland

AM PEAK HOUR  
PM PEAK HOUR  
000 / 000



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## SECTION 7 ANALYSIS OF FUTURE CONDITIONS WITH PROPOSED DEVELOPMENT

### Overview

This section presents an assessment of future conditions in 2020 with the development of the New Cultural Center and the anticipated traffic mitigation measures required to accommodate the new site-generated vehicle trips.

### Traffic Forecasts

Total future traffic forecasts for future conditions were developed by adding the background traffic forecasts to the net new site-generated trip assignments. These yield total future volumes shown on Figure 7-1. The planned lane use and traffic control is shown on Figure 7-2. *(It is noted that in order to provide a conservative estimate, no reductions in existing or background traffic were made to account for the existing traffic currently generated by the site.)*

The development for the New Cultural Center was assumed to occur by 2020 for traffic study purposes. The final location and density will be defined at the Site Development Plan (SDP) stage. Accordingly, the timing of specific roadway improvements will be provided to meet the needs of each development area.

### Capacity Analysis

Capacity analyses were prepared for the study intersections using the total future traffic forecasts and the future lane use and traffic control shown discussed previously. The results are summarized on Table 7-1 and discussed in the following sections. Capacity analysis summaries are contained in Appendix M.

The results of the total future analysis indicate that all of the off-site signalized intersections would continue to operate at acceptable levels of service (with CLV's less than 1,500) during both the AM and PM peak hours, assuming planned improvements by others are installed.

All of the turning movements at the site driveway on the South Entrance Road (#46) would operate at acceptable levels of service during both the AM and PM peak hours operating under stop sign control, with the exception of eastbound left turn movement that would operate at LOS "E" during the PM peak hour. While this movement is forecasted to operate at capacity, it is anticipated that gaps in through traffic along the South Entrance Road

would be created by the planned traffic signal at the North-South Connector Road intersection, allowing vehicles to exit efficiently as shown in the traffic simulation. In addition, separate lanes would be provided for left and right turn exiting traffic, minimizing delays. If necessary, the garage exit on the service drive could be opened in the late afternoon (rather than during the evening) on a daily basis to provide another means of egress.

A separate northbound left turn lane would be required at the site driveway and would require widening of the South Entrance Road. The left turn lane warrant analysis is included in Appendix N.

### Queue Analysis

Queuing analyses were prepared for total future conditions with the proposed development for all intersections within the study area. The results are summarized in Appendix O.

The results of the queuing analyses are similar to those reported under background conditions, with slight increases in overall queues at some locations. As identified under background conditions, selected movements and links would continue to exceed the available storage at various intersections during the AM and/or PM peak hours based on the standard APFO criteria. However, the simulated analyses for the intersections along Merriweather Drive show that queues between the intersections would continue to be accommodated without exceeding the link storage distance.

The queues at the site driveway would be adequately accommodated by the planned left turn lane on the South Entrance Road.

During the SDP stage, each of these locations would be further evaluated for both potential traffic signal timing adjustments and/or the need for further improvements. In addition and as noted previously in this report, these analyses are assumed to be conservative since they assume that the maximum development program for phase 2 of the Crescent property is in place.

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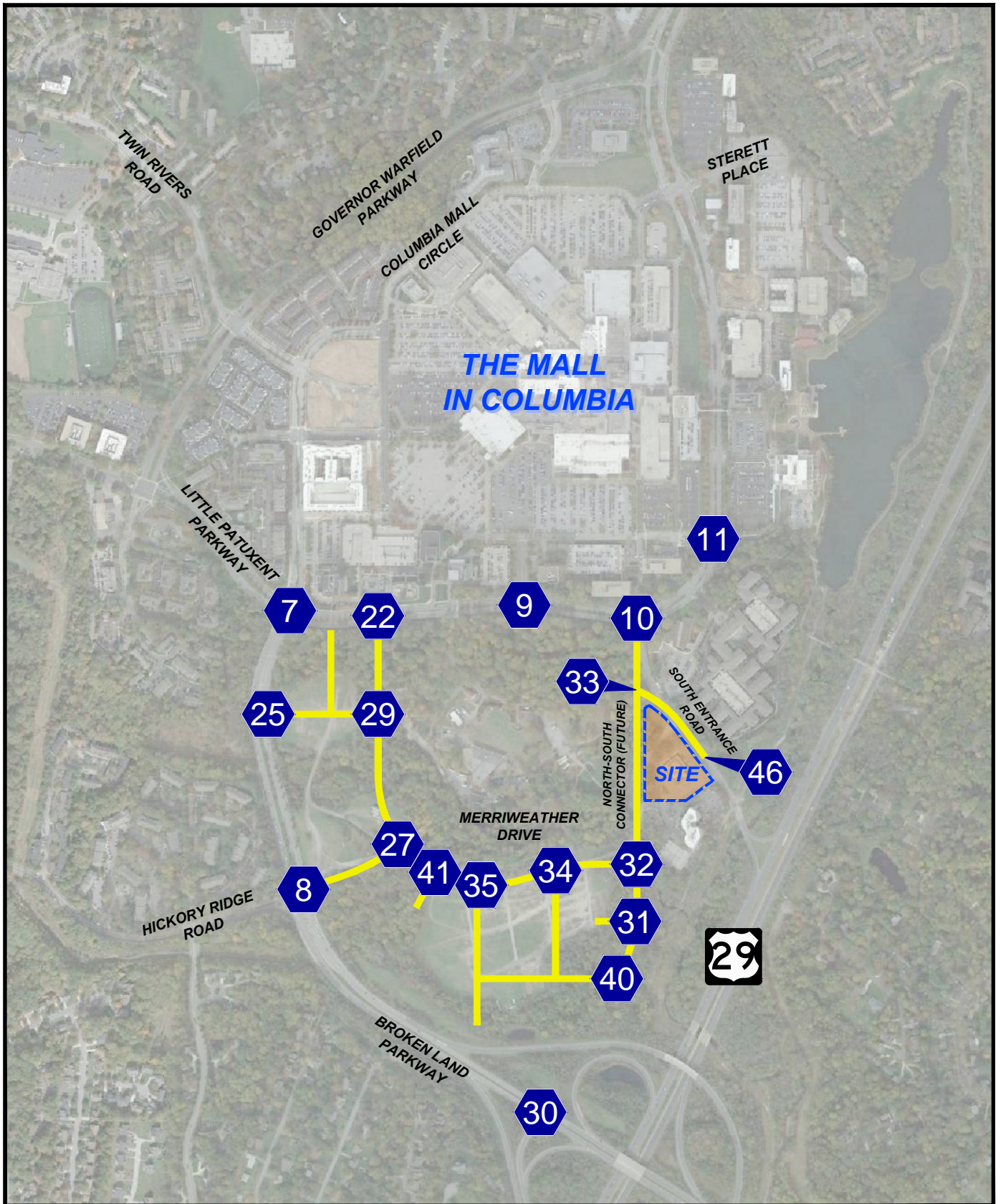


Figure 7-1  
Total Future Intersection Map

New Cultural Center  
Howard County, Maryland



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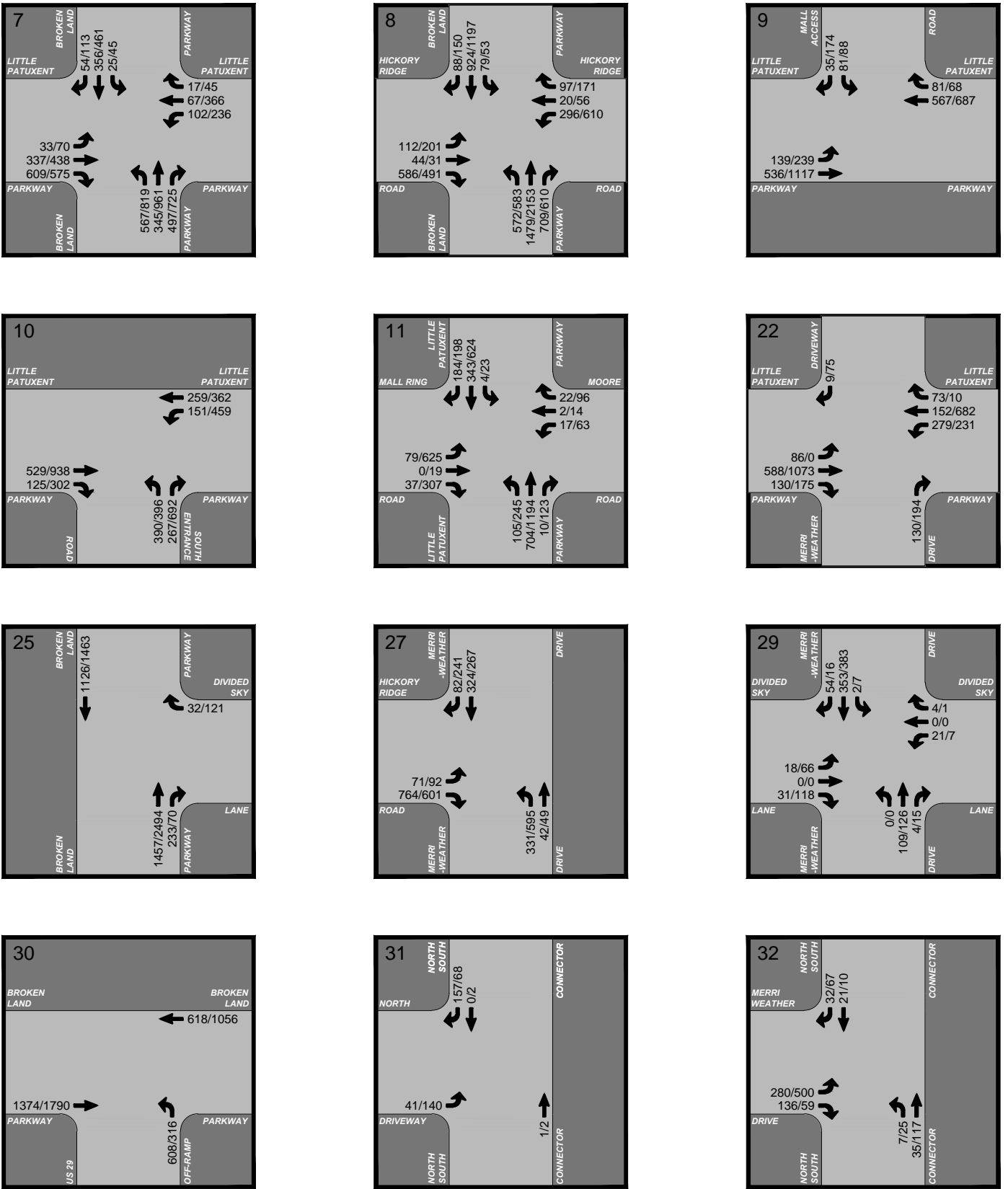
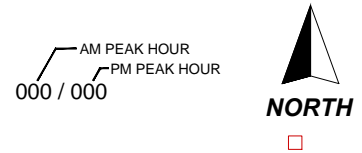


Figure 7-1A  
2020 Total Future Traffic Forecasts

New Cultural Center  
Howard County, Maryland



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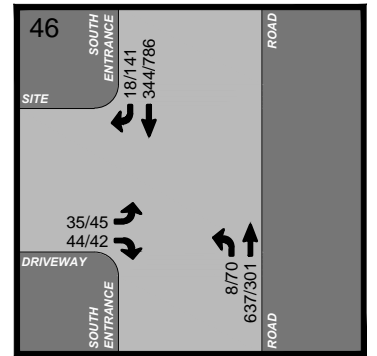
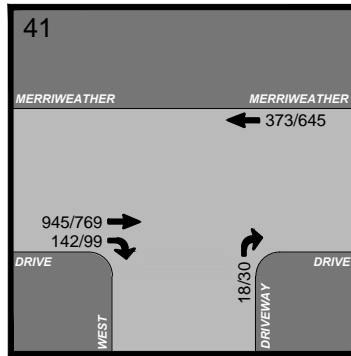
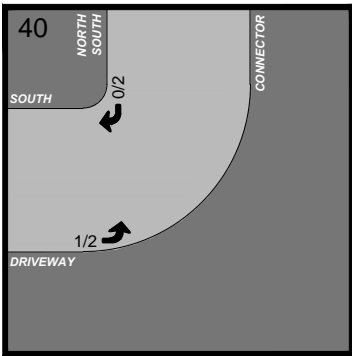
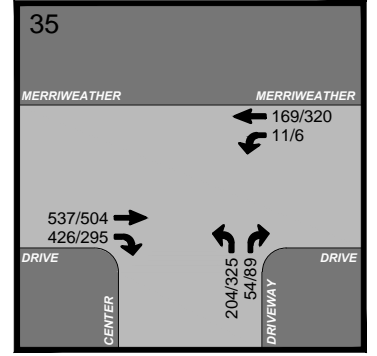
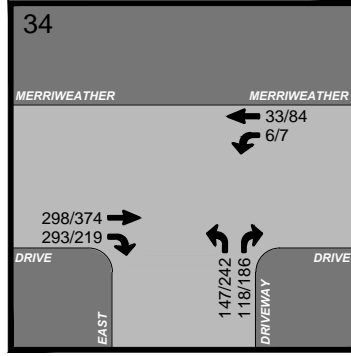
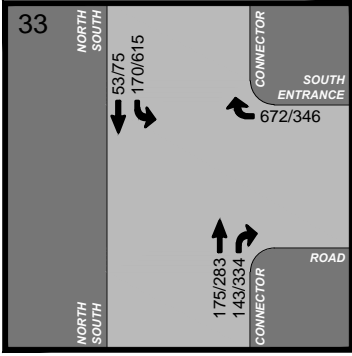


Figure 7-1B  
2020 Total Future Traffic Forecasts

New Cultural Center  
Howard County, Maryland

AM PEAK HOUR  
PM PEAK HOUR  
000 / 000



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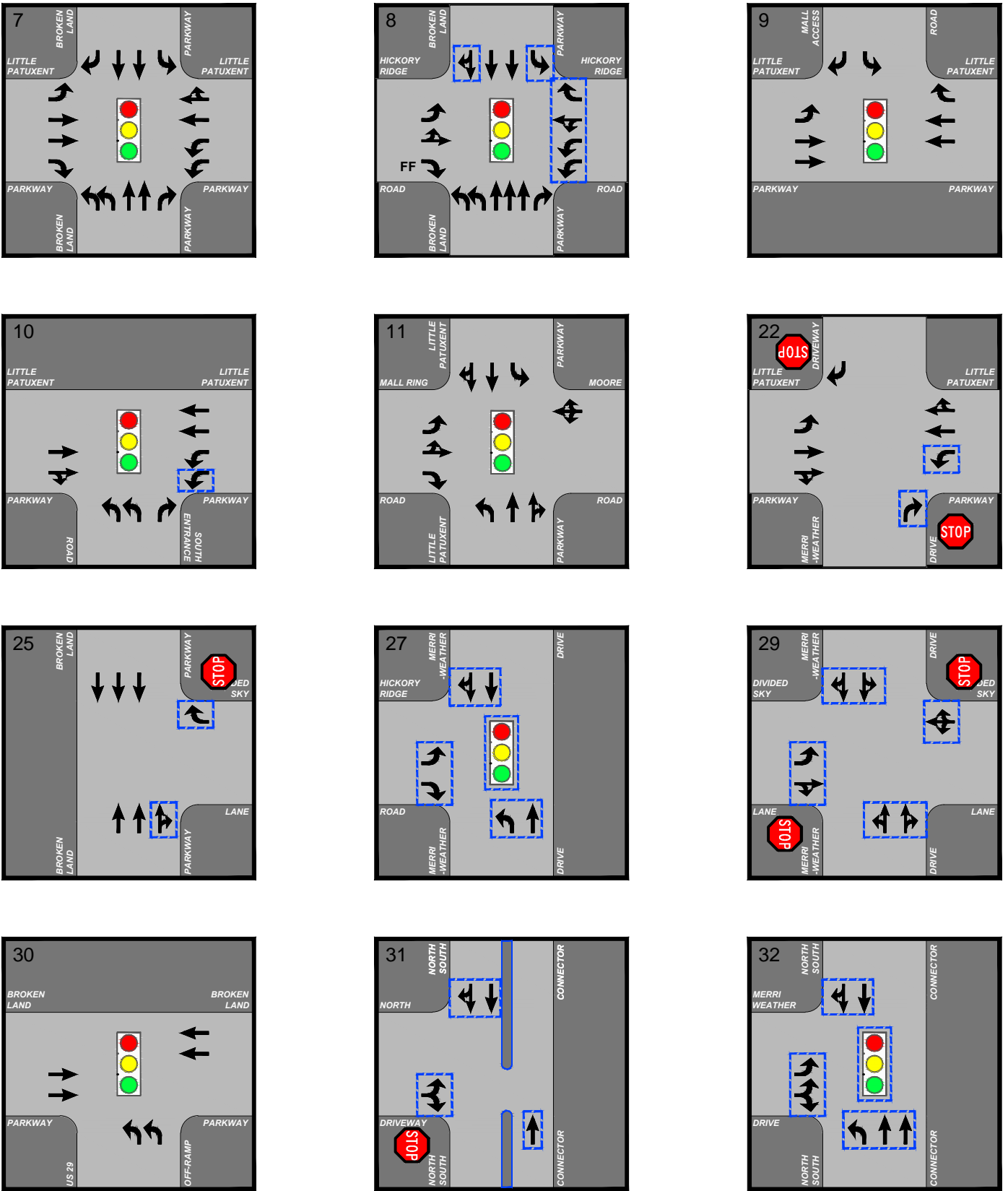


Figure 7-2A  
2020 Total Future Lane Use and Traffic Controls

New Cultural Center  
Howard County, Maryland

- Represents One Travel Lane
- Signalized Intersection
- Stop Sign
- Proposed Improvement
- Improvement by Others



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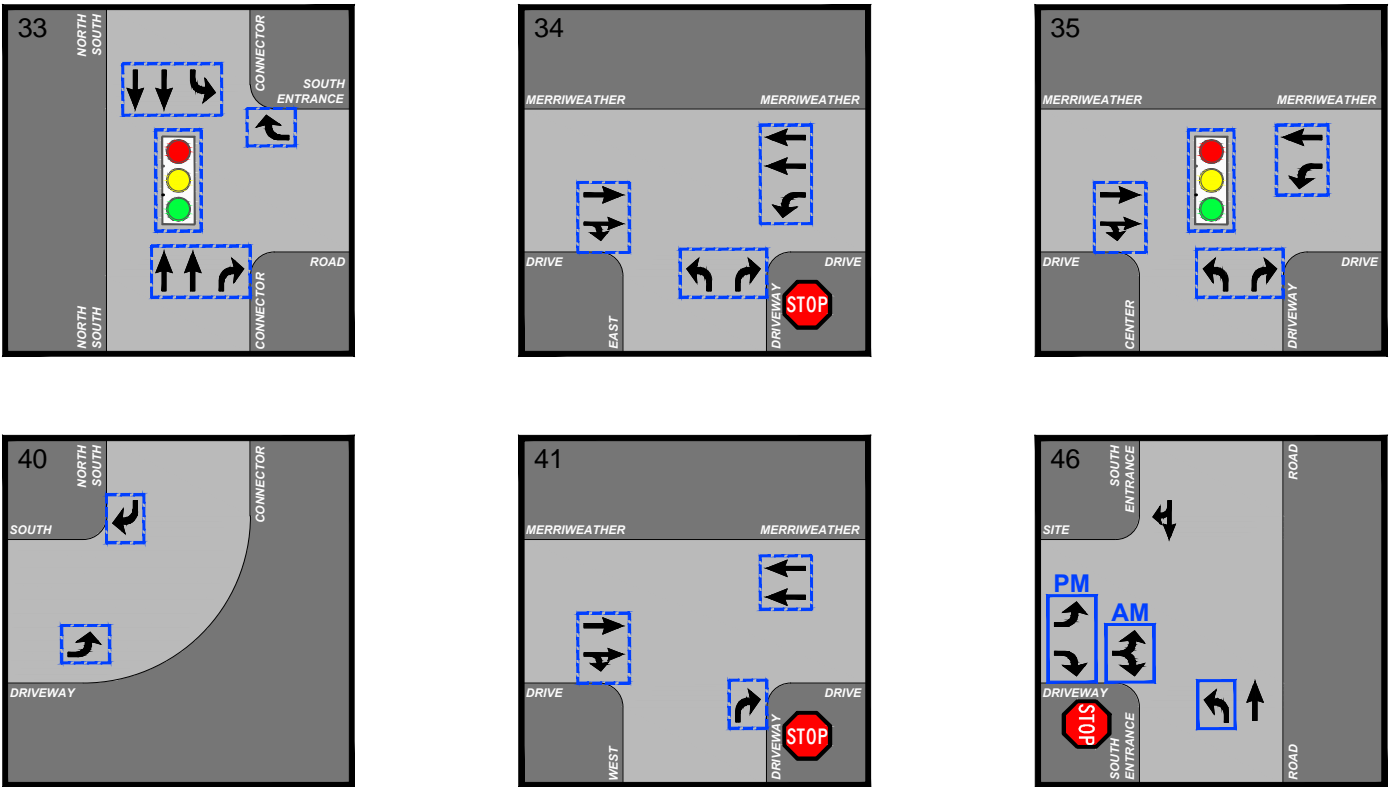


Figure 7-2B  
2020 Total Future Lane Use and Traffic Controls

New Cultural Center  
Howard County, Maryland

- ← Represents One Travel Lane
- ⬆ Signalized Intersection
- ⛔ Stop Sign
- Proposed Improvement
- Improvement by Others



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Table 7-1  
 New Cultural Center  
 Total Future Levels of Service (1) (2) (3) (4)

Intersection	Control	Movement	Existing		Background		Total Future	
			AM	PM	AM	PM	AM	PM
7: Little Patuxent Parkway & Broken Land Parkway	Signal	CLV	A (817)	B (1002)	A (962)	C (1210)	A (962)	C (1220)
8: Hickory Ridge Road & Broken Land Parkway	Signal	CLV	A (742)	A (965)	-	-	-	-
<i>Phase I Improvements: Based on Planned Lane Use</i>			-	-	A (983)	D (1348)	A (984)	D (1353)
<i>Westbound: Provide Dual Lefts, a Through-Left, and a Right-Turn</i>								
<i>Southbound: Construct New SBL and Convert SBR to SBTR</i>								
<i>Eastbound: Reflects Existing Conditions</i>								
9: Little Patuxent Parkway & Mall Access Road	Signal	CLV	A (335)	A (573)	A (529)	A (699)	A (532)	A (705)
10: Little Patuxent Parkway & South Entrance Road (North South Connector)	Signal	CLV	A (488)	B (1021)	-	-	-	-
<i>Improvements: Install Second WBL Turn Lane</i>			-	-	A (739)	D (1339)	A (745)	D (1379)
11: Moore Road & Little Patuxent Parkway	Signal	CLV	A (383)	A (995)	A (482)	C (1287)	A (485)	D (1306)
22: Little Patuxent Parkway & Merriweather Drive	Stop N/S	EBL WBL NBR SBR	A [8.2] - - A [9.4]	A [0.0] - - B [12.2]	A [7.9] B [11.5] B [11.9] A [9.0]	A [0.0] C [17.1] C [16.1] B [11.6]	A [7.9] B [11.5] B [11.9] A [9.0]	A [0.0] C [17.6] C [16.2] B [11.7]
25: Broken Land Parkway & Divided Sky Lane	Stop W	WBR	B [14.7]	C [17.0]	A [9.6]	B [12.4]	A [9.6]	B [10.1]
27: Merriweather Drive & Hickory Ridge Road	Signal	CLV	FUTURE INTERSECTION		A (972)	A (966)	A (987)	A (966)
29: Merriweather Drive & Divided Sky Lane	Stop E/W	EBL WBLTR	FUTURE INTERSECTION		B [11.5] A [9.5]	B [14.7] B [14.0]	B [13.1] A [9.6]	B [14.7] B [14.0]
30: Broken Land Parkway & US 29 Off-Ramp	Signal	CLV	A (810)	A (864)	B (1121)	C (1175)	B (1121)	C (1175)
31: North-South Connector & Site Driveway	Stop E	EBLR	FUTURE INTERSECTION		A [9.2]	A [9.4]	A [9.2]	A [9.4]
32: North-South Connector & Merriweather Drive	Signal	CLV	FUTURE INTERSECTION		C (277)	A (345)	A (286)	A (402)
33: South Entrance Road & Symphonywoods Road (North South Connector) Driveway	Stop E/W	EBLT WBLTR NBL SBL SBT	B [13.5] B [13.4] A [7.6] A [7.9] A [0.0]	C [17.2] B [13.4] A [8.7] A [7.6] A [0.0]	- - - - -	- - - - -	- - - - -	- - - - -
<i>Improvements: Install New Traffic Signal</i>			FUTURE CONDITION		A (765)	A (808)	A (815)	A (949)
34: Merriweather Drive & Prism Way	Stop N	WBL NBL	FUTURE INTERSECTION		A [8.8] C [15.4]	A [8.5] C [19.4]	A [8.9] C [16.4]	B [8.2] B [13.4]
35: Merriweather Drive & Dove Lane	Signal	CLV	FUTURE INTERSECTION		A (687)	A (648)	A (696)	A (694)
41: South Entrance Road & Driveway East	Stop N	NBR	FUTURE INTERSECTION		B [11.8]	B [11.6]	B [12.2]	B [10.0]
42: South Entrance Road & Driveway East	Stop E	EBLR NBLT	A [0.0] A [0.0]	B [11.9] A [1.0]	A [0.0] A [0.0]	C [15.7] A [9.6]	Driveway Closed	
43: Symphony Woods Road (North South Connector) & Driveway North	Stop W	WBLR SBLT	A [0.0] A [7.5]	A [8.7] A [2.4]	A [0.0] A [0.0]	B [10.1] A [4.5]	Driveway Closed	
44: Symphony Woods Road (North South Connector) & Driveway Middle	Stop W	WBLR SBLT	A [0.0] A [0.0]	A [9.7] A [1.8]	A [0.0] A [0.0]	B [14.4] A [3.5]	Driveway Closed	
45: Symphony Woods Road (North South Connector) & Driveway South	Stop W	WBLR SBLT	A [0.0] A [0.0]	A [8.7] A [2.2]	A [0.0] A [0.0]	B [10.2] A [3.8]	Driveway Closed	
46: South Entrance Road & New Site Driveway	Stop E	EBL EBR NBL	FUTURE INTERSECTION		FUTURE INTERSECTION		C [17.8] - A [8.1]	E [46.2] C [18.0] B [10.9]

Notes:  
 (1) Unsignalized analysis performed using Synchro software, version 9.  
 (2) Values in parenthesis, ( ), represent CLV totals  
 (3) Values in brackets, [ ], represent unsignalized delay in seconds  
 (4) [\*] Unsignalized delay exceeds 999 seconds.

## SECTION 8

### TOTAL FUTURE PEDESTRIAN AND BICYCLE ANALYSIS WITH DEVELOPMENT

#### Overview

This section presents an assessment of pedestrian and bicycle facilities within the New Cultural Center.

#### Methodology

Pedestrian and bicycle levels of service were calculated for the roadway segments within the New Cultural Center using the methodology specified by the Howard County Guidelines.

The analyses account for traffic volume, lane widths, presence of curbside parking, dedicated or on-street bicycle lanes and widths, buffer and landscape area, and sidewalk widths. Per the guidelines, a Pedestrian Level of Service (PLOS) and Bicycle Level of Service (BLOS) of no less than LOS “C” must be maintained for any study segment identified as a bicycle route on the Bicycle and Pedestrian Circulation Plan in the Downtown Columbia Plan or a County Approved Bicycle Plan.

The following roadway segments were evaluated:

- Little Patuxent Parkway
- Merriweather Drive
- North-South Connector Road
- South Entrance Road

Each of the analysis locations are shown on Figure 8-1.

#### Capacity Analysis

The results of the pedestrian analysis are summarized on Table 8-1.

The pedestrian analyses show that all of the roadway segments within the New Cultural Center study area on Little Patuxent Parkway, Merriweather Drive, the North-South Connector Road, and the South Entrance Road would operate within acceptable standards (at LOS “C” or better) under total future conditions with the full buildout of the site. Thus, the proposed pedestrian facilities are adequate.

Note that bicycle analyses were not prepared for these facilities since bicycles would be accommodated via the shared use path that is an off-street facility.



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Figure 8-1  
Bicycle and Pedestrian Analysis Locations

New Cultural Center  
Howard County, Maryland



Table 8-1  
 New Cultural Center  
 Total Future Conditions Pedestrian and Bicycle Levels of Service Summary

Functional Classification		Pedestrian and Bicycle LOS Location			
Level of Service Criteria		PLOS/BLOS Score			
A		<= 1.5			
B		> 1.5 and <= 2.5			
C		> 2.5 and <= 3.5			
D		> 3.5 and <= 4.5			
E		> 4.5 and <= 5.5			
F		> 5.5			
<b>Little Patuxent Parkway</b>		Between Intersections 9/10 (Segment E)	Between Intersections 10/11 (Segment Y)		
Width of outside lane	W <sub>ol</sub>	12	12		
Shoulder width	W <sub>l</sub>	0	0		
Percent on-street parking	%OSP	0	0		
Buffer width	W <sub>b</sub>	7	7		
Side walk presence	f <sub>sw</sub>	4.2	4.2		
Sidewalk width	W <sub>s</sub>	6	6		
Peak 15-min volume	Vol <sub>15</sub>	336	445		
Number of thru lanes	L	2	2		
Ave. running speed	SPD	35	35		
<b>Pedestrian Level Of Service (PLOS)</b>		<b>2.77 C</b>	<b>3.27 C</b>		
<b>Merriweather Drive (Shared Path)</b>		Between Intersections 27/32 (Segment N)			
Width of outside lane	W <sub>ol</sub>	11			
Shoulder width	W <sub>l</sub>	0			
Percent on-street parking	%OSP	0			
Buffer width	W <sub>b</sub>	6			
Side walk presence	f <sub>sw</sub>	3			
Sidewalk width	W <sub>s</sub>	10			
Peak 15-min volume	Vol <sub>15</sub>	28			
Number of thru lanes	L	2			
Ave. running speed	SPD	25			
<b>Pedestrian Level Of Service (PLOS)</b>		<b>1.15 A</b>			
<b>Merriweather Drive (Sidewalk)</b>		Between Intersections 27/32 (Segment O)			
Width of outside lane	W <sub>ol</sub>	11			
Shoulder width	W <sub>l</sub>	0			
Percent on-street parking	%OSP	0			
Buffer width	W <sub>b</sub>	7			
Side walk presence	f <sub>sw</sub>	4.2			
Sidewalk width	W <sub>s</sub>	6			
Peak 15-min volume	Vol <sub>15</sub>	159			
Number of thru lanes	L	2			
Ave. running speed	SPD	25			
<b>Pedestrian Level Of Service (PLOS)</b>		<b>1.74 B</b>			
<b>North South Connector</b>		Between Intersections 10/33 (Segment R)	Between Intersections 10/33 (Segment S)	Between Intersections 33/32 (Segment P)	Between Intersections 33/32 (Segment Q)
Width of outside lane	W <sub>ol</sub>	11	11	11	11
Shoulder width	W <sub>l</sub>	0	0	0	0
Percent on-street parking	%OSP	0	0	0	0
Buffer width	W <sub>b</sub>	6	7	6	7
Side walk presence	f <sub>sw</sub>	3	4.2	3	4.2
Sidewalk width	W <sub>s</sub>	10	6	10	6
Peak 15-min volume	Vol <sub>15</sub>	296	181	151	24
Number of thru lanes	L	2	2	2	2
Ave. running speed	SPD	25	25	25	25
<b>Pedestrian Level Of Service (PLOS)</b>		<b>2.37 B</b>	<b>1.84 B</b>	<b>1.71 B</b>	<b>1.12 A</b>
<b>South Entrance Road</b>		East Side S. Entrance Raod (Segment Z)	West Side S. Entrance Road (Segment AA)		
Width of outside lane	W <sub>ol</sub>	12	12		
Shoulder width	W <sub>l</sub>	0	0		
Percent on-street parking	%OSP	0	0		
Buffer width	W <sub>b</sub>	6	3		
Side walk presence	f <sub>sw</sub>	3	4.2		
Sidewalk width	W <sub>s</sub>	10	10		
Peak 15-min volume	Vol <sub>15</sub>	87	222		
Number of thru lanes	L	1	1		
Ave. running speed	SPD	25	25		
<b>Pedestrian Level Of Service (PLOS)</b>		<b>1.80 B</b>	<b>3.10 C</b>		

## SECTION 9 TRANSPORTATION DEMAND MANAGEMENT STATEMENT

### Overview

As required by the Howard County guidelines, to further mitigate potential impacts of the proposed redevelopment, a key component of the Cultural Arts Center project would be the implementation of a comprehensive and state-of-the-art Transportation Demand Management (TDM) program for residents and employees of the facility. The following TDM Statement is provided to satisfy these requirements. Specifics of the TDM program will be finalized at the Site Development Plan (SDP) stage.

### TDM Statement

In an effort to decrease reliance on the personal automobile and encourage the use of transit, ridesharing, bicycling, and walking, the Applicant will implement a Transportation Demand Management (TDM) Program. “TDM is a general term for strategies that result in more efficient use of transportation resources. There are many different TDM strategies with a variety of impacts. Some improve the transportation options available to consumers, while others provide an incentive to choose more efficient travel patterns. Some reduce the need for physical travel through mobility substitutes or more efficient land use. TDM strategies can change travel timing, route, destination, or mode.”

These strategies will be tailored to each user group within the building.

The following initial strategies may include:

- A. Designate a Transportation Management Coordinator (TMC) as part of the establishment of a Transportation Management Association (TMA) as described in the sustainability guidelines (and Council Bill No. 58-2009). The TMC would implement the TDM program and advise residents, tenants, and employees of the availability and location of the TDM coordinator and program. The position may be part of other duties assigned to the individual. Duties of the Transportation Management Coordinator would include the following:
  1. Assist residents and tenants in making effective and efficient commuting choices.
  2. Disseminate bus, ridesharing, bicycle route maps, trail maps, and other relevant transit options to new residents and tenants.
  3. Solicit support from the Central Maryland Regional Transit, Maryland Transit Authority, Metropolitan Washington Council of Governments (MWCOC) Commuter

Connections program, the Washington Metropolitan Area Transit Authority (WMATA), the Howard County government, and others.

4. Provide on-site assistance to residents and tenants in forming and maintaining carpools and vanpools.
5. Disseminate park-and-ride lot information to prospective carpoolers and vanpoolers.
6. Register carpool/vanpool participants, transit users, bicyclists, and walkers in the Guaranteed Ride Home (GRH) program.
7. Encourage residents and tenants to ride bikes or walk to work (see Howard County Pedestrian Plan: <http://www.howardcountymd.gov/displayprimary.aspx?id=4294968176#pedestrian>).
8. Market and promote the TDM Program among residents and tenants through printed materials and web sites (if available).

#### B. Commuter Center

1. Designate a centralized space on-site (within one or more buildings) as a Commuter Center where TMC functions would take place.
2. Install display racks and/or an electronic display that would provide information on the various aspects of the TDM Program.
3. Sell transit fare media, such as Howard County bus passes, SmarTrip cards, Metro fare cards, and Metrobus passes.
4. Allow residents and tenants to purchase transit fare media.
5. Install signage with trail maps including Downtown Columbia Bike and Pedestrian Routes, as well as regional connectors.
6. Install bike storage.

#### C. Incentives to use transit or alternatives to automobiles, including:

1. Provide information on Howard Transit, MARC service, Connect-a-Ride, Light Rail, Metrorail, Metrobus, Trail Access, and other public transportation facilities, services, routes, schedules, and fares.
2. Encourage tenants and employers to include facilities like showers in building programming.
3. Disseminate information to transit users regarding free guaranteed rides home in cases of emergency.
4. Provide safe, convenient, comfortable, and attractive pedestrian connections on and off-site.

D. Carpool programs, including:

1. Provide personalized assistance and ride-matching services among residents and other tenants through the Commuter Center and TMC.
2. Provide ride-matching assistance and services among the Center's residents and tenants and other area residents and employees through the Commuter Connections program of MWCOG.
3. Disseminate information to carpoolers regarding free guaranteed rides home in cases of emergency.

E. Vanpool programs, including:

1. Assist groups of residents or tenants in leasing a van from a vanpool vendor(s)
2. Provide personalized assistance and ride-matching services among residents and tenants through the Commuter Center and TMC.
3. Provide ride-matching assistance and services among the Center's residents and tenants and other area residents and employees through the Commuter Connections program of MWCOG.
4. Disseminate information to vanpoolers regarding free guaranteed rides home in cases of emergency.

F. Parking management, including:

1. Reserve at least one conveniently-located, first-level, free parking space for Zip cars.
2. Provide secure bicycle parking for residents and employees.

G. Pedestrian and Bicycle Programming and Support, including:

1. Provide bicycle storage.
2. Provide pedestrian trails with adequate facilities for rest and comfort.
3. Make signage and trail mapping readily available both on the ground and as digital resources.
4. Encourage the provision of showers or other facilities for commuters utilizing bicycle or pedestrian options.
5. Consider a Bikeshare program (see Capital Bikeshare example).

H. Revisions to the TMP

1. The TMP is designed to be flexible and responsive to future evaluations in prescribing the TDM strategies. The combination of size, scale of buildings, mixed-uses, phasing of development, and transportation infrastructure requires that the TMP has flexibility to respond to the various challenges posed by changes in tenant

mix, supply of parking, transit system capacity, transit fares, construction staging and traffic, fuel prices, regional transportation policies and projects, changes in travel behavior, telework and flexible work hours, and changes in surrounding developments.



## Section 10 CONCLUSIONS AND RECOMMENDATIONS

The following summarizes the results of this traffic impact study:

1. The proposed New Cultural Center development would renovate and expand the existing Toby's Dinner Theater from 288 seats to 360 seats, and construct a cultural arts center for Downtown Columbia. This would include a Black Box theater, office space, 202 residential apartments, classroom space, art galleries, art studios, conference space, a gift shop, and a café. Many of these uses would operate outside of the weekday AM and PM commuting hours. The site development is planned to be complete by 2020.
2. The existing intersections surrounding the site currently operate within acceptable capacity thresholds during both the weekday AM and PM peak hours. The stop controlled movements serving the existing Toby's Dinner Theater currently operate at acceptable levels of service during peak periods.
3. Assuming road network and intersection improvements planned by others are built, all of the study area intersections would continue to operate at acceptable levels of service during both the AM and PM peak hours in future year 2020 conditions.
4. The proposed site is anticipated to generate a total of 105 AM peak hour trips and 298 PM peak hour trips subsequent to the redevelopment. When accounting for existing traffic generated by the Toby's Dinner Theater, the site would generate 105 net new AM peak hour trips and 182 net new PM peak hour trips when complete.
5. The results of the future capacity analyses indicate that all of the study intersections would continue to operate within acceptable thresholds during both the AM and PM peak hours, assuming road network and intersection improvements by others are implemented. A separate left turn lane is required at the proposed site driveway on the South Entrance Road to adequately accommodate the new site-generate trips.
6. It is anticipated that a Transportation Demand Management (TDM) program would be implemented at the development in order to reduce peak hour trips and in accordance with the recommendations in the Downtown Columbia Plan.

**APPENDIX A**  
**TRANSIT INFORMATION**



# BROWN ROUTE



**EFFECTIVE JULY 15, 2010  
SERVICE TO:**

- Columbia Mall
- Oakland Mills Village Center
- Owen Brown Village Center
- Snowden Square
- Clocktower Lane
- Kings Contrivance Village Center

**SERVICE DAYS  
MONDAY-SUNDAY**



Customer Service: 1-800-270-9553  
www.howardtransit.com



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People who are deaf, hard of hearing or have a speech disability, please use Relay or 7-1-1.

## WELCOME TO HOWARD TRANSIT

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## FARE INFORMATION

Howard Transit has a Fare Compliance Policy in effect at all times. Full fare must be paid to ride the bus. Exact fare is required. Please have the fare, pass or valid transfer ready when boarding the bus. No cash refunds. MTA Charm Card is accepted at six designated transfer points only. Reduced fare of \$1.00 with the WMATA SMART TRIP CARD at shared transfer points only. Monthly and 10-ride tickets are available.

Regular Fare (Per Trip)	\$2.00
Bus Transfer (2 Hours)	FREE
Senior Fare (60 & Over)	\$1.00
Student Fare (w/valid student ID)	\$1.00
Person w/Disability	\$1.00
Medicare Card Holder	\$1.00
Children Under 5	FREE

## TRANSFER POLICY

Transfers are good for 2 hours and will be collected when making the transfer. Transfers are used for a continuation of a one way trip.

## INCLEMENT WEATHER POLICY

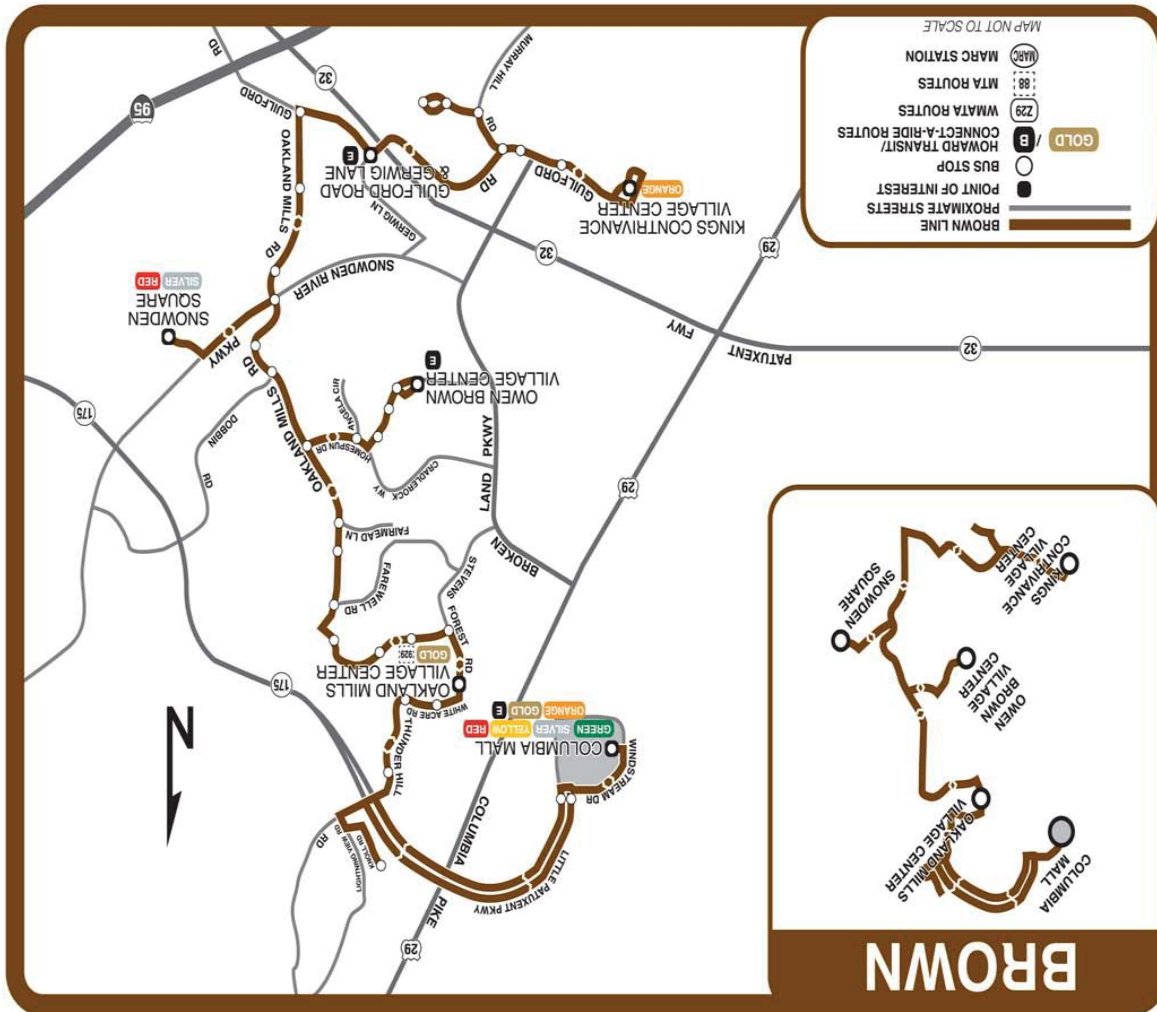
Contact Customer Service at 1-800-270-9553. Schedule changes can be found on Howard County Government Cable Channel 99, select radio/television stations and www.howardtransit.com.

## HOLIDAY SCHEDULE

New Year's Day	.....NO SERVICE
Martin Luther King, Jr. Day	.....REGULAR
President's Day	.....REGULAR
Memorial Day	.....SUNDAY
Independence Day	.....SUNDAY
Labor Day	.....SUNDAY
Columbus Day	.....REGULAR
Veterans Day	.....REGULAR
Thanksgiving Day	.....NO SERVICE
Christmas Day	.....NO SERVICE

## TITLE VI INFORMATION

Howard Transit fully complies with Title VI of the Civil Rights Act of 1964. For the full policy, please visit www.CMRTransit.org.



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# GREEN ROUTE



**EFFECTIVE JULY 15, 2010**  
**SERVICE TO:**

- Columbia Mall
- Wilde Lake
- Harper's Choice
- Howard County General Hospital
- Hickory Ridge Place
- Howard Community College
- Clary's Forest

**SERVICE DAYS**  
**MONDAY-SUNDAY**



Customer Service: 1-800-270-9553  
[www.howardtransit.com](http://www.howardtransit.com)



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Children Under 5	FREE

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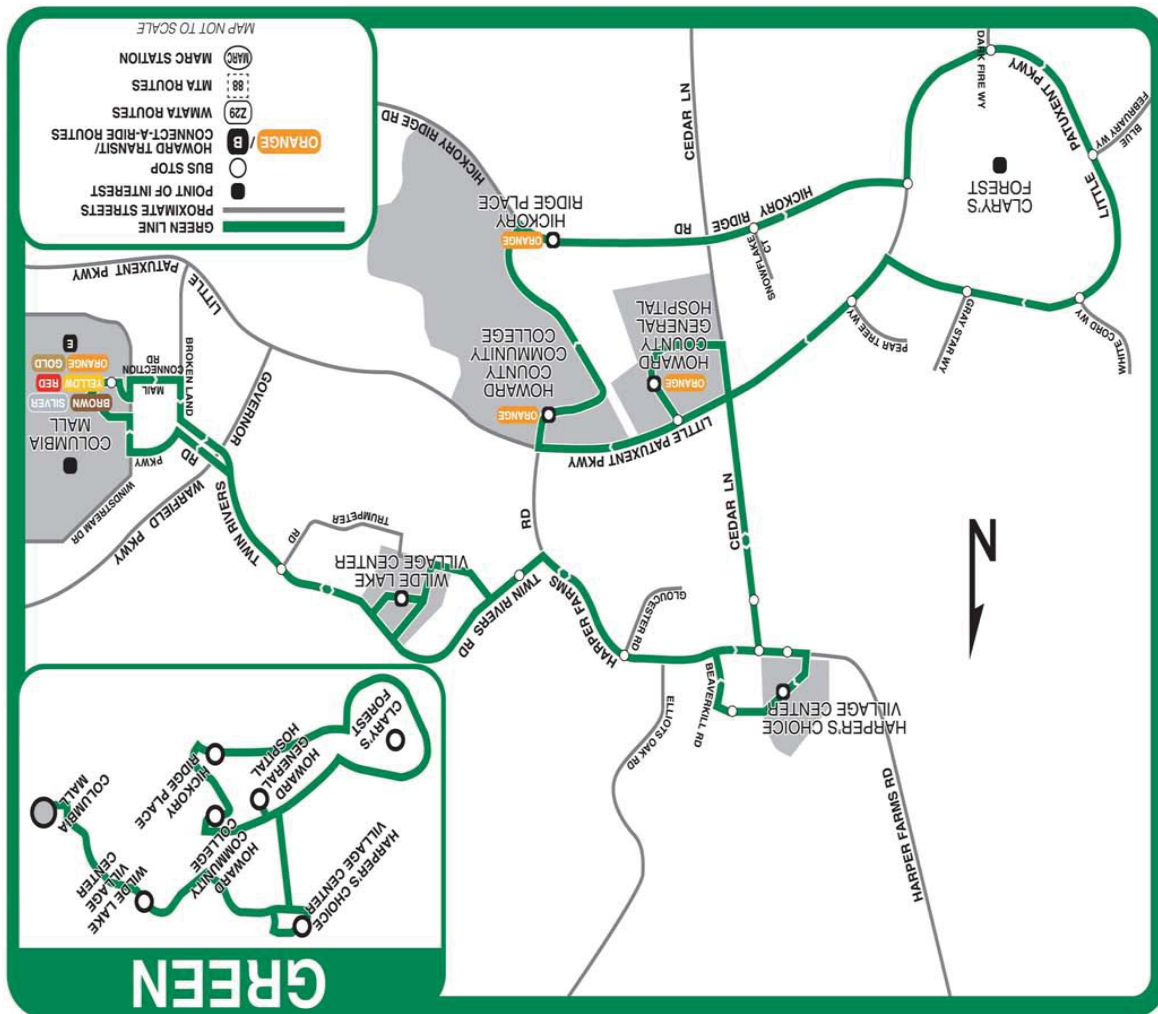
Contact Customer Service at 1-800-270-9553. Schedule changes can be found on Howard County Government Cable Channel 99, select radio/television stations and [www.howardtransit.com](http://www.howardtransit.com).

## HOLIDAY SCHEDULE

New Year's Day	.....NO SERVICE
Martin Luther King, Jr. Day	.....REGULAR
President's Day	.....REGULAR
Memorial Day	.....SUNDAY
Independence Day	.....SUNDAY
Labor Day	.....SUNDAY
Columbus Day	.....REGULAR
Veterans Day	.....REGULAR
Thanksgiving Day	.....NO SERVICE
Christmas Day	.....NO SERVICE

## TITLE VI INFORMATION

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**TO HICKORY RIDGE  
MONDAY THROUGH FRIDAY**

	COLUMBIA MALL	WILDE LAKE	HARPER'S CHOICE	HOWARD COUNTY GENERAL HOSPITAL	HOWARD COMMUNITY COL.	HICKORY RIDGE PLACE
<b>AM</b>						
6:00	6:05	6:10	6:14	6:18	6:25	6:25
6:30	6:35	6:40	6:44	6:48	6:55	6:55
7:00	7:05	7:10	7:14	7:18	7:25	7:25
7:30	7:35	7:40	7:44	7:48	7:55	7:55
8:00	8:05	8:10	8:14	8:18	8:25	8:25
8:30	8:35	8:40	8:44	8:48	8:55	8:55
9:00	9:05	9:10	9:14	9:18	9:25	9:25
9:30	9:35	9:40	9:44	9:48	9:55	9:55
10:00	10:05	10:10	10:14	10:18	10:25	10:25
11:00	11:05	11:10	11:14	11:18	11:25	11:25
<b>PM</b>						
12:00	12:05	12:10	12:14	12:18	12:25	12:25
1:00	1:05	1:10	1:14	1:18	1:25	1:25
2:00	2:05	2:10	2:14	2:18	2:25	2:25
2:30	2:35	2:40	2:44	2:48	2:55	2:55
3:00	3:05	3:10	3:14	3:18	3:25	3:25
3:30	3:35	3:40	3:44	3:48	3:55	3:55
4:00	4:05	4:10	4:14	4:18	4:25	4:25
4:30	4:35	4:40	4:44	4:48	4:55	4:55
5:00	5:05	5:10	5:14	5:18	5:25	5:25
5:30	5:35	5:40	5:44	5:48	5:55	5:55
6:00	6:05	6:10	6:14	6:18	6:25	6:25
7:00	7:05	7:10	7:14	7:18	7:25	7:25
8:00	8:05	8:10	8:14	8:18	8:25	8:25
9:00	9:05	9:10	9:14	9:18	9:25	9:25
10:00	10:05	10:10	10:14	10:18	10:25	10:25
11:00	11:05	11:10				

**TO COLUMBIA MALL  
MONDAY THROUGH FRIDAY**

	HICKORY RIDGE PLACE	HICKORY RIDGE RD & LITTLE PATUXENT GENERAL HOSPITAL	HARPER'S CHOICE	WILDE LAKE	COLUMBIA MALL
<b>AM</b>					
6:25	6:28	6:36	6:40	6:46	6:52
6:55	6:58	7:06	7:10	7:16	7:22
7:25	7:28	7:36	7:40	7:46	7:52
7:55	7:58	8:06	8:10	8:16	8:22
8:25	8:28	8:36	8:40	8:46	8:52
8:55	8:58	9:06	9:10	9:16	9:22
9:25	9:28	9:36	9:40	9:46	9:52
9:55	9:58	10:06	10:10	10:16	10:22
10:25	10:28	10:36	10:40	10:46	10:52
11:25	11:28	11:36	11:40	11:46	11:52
<b>PM</b>					
12:25	12:28	12:36	12:40	12:46	12:52
1:25	1:28	1:36	1:40	1:46	1:52
2:25	2:28	2:36	2:40	2:46	2:52
2:55	2:58	3:06	3:10	3:16	3:22
3:25	3:28	3:36	3:40	3:46	3:52
3:55	3:58	4:06	4:10	4:16	4:22
4:25	4:28	4:36	4:40	4:46	4:52
4:55	4:58	5:06	5:10	5:16	5:22
5:25	5:28	5:36	5:40	5:46	5:52
5:55	5:58	6:06	6:10	6:16	6:22
6:25	6:28	6:36	6:40	6:46	6:52
7:25	7:28	7:36	7:40	7:46	7:52
8:25	8:28	8:36	8:40	8:46	8:52
9:25	9:28	9:36	9:40	9:46	9:52
10:25	10:28	10:36	10:40	10:46	10:52

**TO HICKORY RIDGE  
SATURDAY**

	COLUMBIA MALL	WILDE LAKE	HARPER'S CHOICE	HOWARD COUNTY GENERAL HOSPITAL	HOWARD COMMUNITY COL.	HICKORY RIDGE PLACE
<b>AM</b>						
8:00	8:05	8:10	8:14	8:18	8:25	8:25
9:00	9:05	9:10	9:14	9:18	9:25	9:25
10:00	10:05	10:10	10:14	10:18	10:25	10:25
11:00	11:05	11:10	11:14	11:18	11:25	11:25
<b>PM</b>						
12:00	12:05	12:10	12:14	12:18	12:25	12:25
1:00	1:05	1:10	1:14	1:18	1:25	1:25
2:00	2:05	2:10	2:14	2:18	2:25	2:25
3:00	3:05	3:10	3:14	3:18	3:25	3:25
4:00	4:05	4:10	4:14	4:18	4:25	4:25
5:00	5:05	5:10	5:14	5:18	5:25	5:25
6:00	6:05	6:10	6:14	6:18	6:25	6:25
7:00	7:05	7:10	7:14	7:18	7:25	7:25
8:00	8:05	8:10	8:14	8:18	8:25	8:25
9:00	9:05	9:10	9:14	9:18	9:25	9:25
10:00	10:05	10:10				
<b>SUNDAY</b>						
<b>AM</b>						
9:00	9:05	9:10	9:14	9:18	9:25	9:25
10:00	10:05	10:10	10:14	10:18	10:25	10:25
11:00	11:05	11:10	11:14	11:18	11:25	11:25
<b>PM</b>						
12:00	12:05	12:10	12:14	12:18	12:25	12:25
1:00	1:05	1:10	1:14	1:18	1:25	1:25
2:00	2:05	2:10	2:14	2:18	2:25	2:25
3:00	3:05	3:10	3:14	3:18	3:25	3:25
4:00	4:05	4:10	4:14	4:18	4:25	4:25
5:00	5:05	5:10	5:14	5:18	5:25	5:25
6:00	6:05	6:10	6:14	6:18	6:25	6:25

**TO COLUMBIA MALL  
SATURDAY**

	HICKORY RIDGE PLACE	HICKORY RIDGE RD & LITTLE PATUXENT GENERAL HOSPITAL	HOWARD COUNTY GENERAL HOSPITAL	HARPER'S CHOICE	WILDE LAKE	COLUMBIA MALL
<b>AM</b>						
8:25	8:28	8:36	8:40	8:46	8:52	8:52
9:25	9:28	9:36	9:40	9:46	9:52	9:52
10:25	10:28	10:36	10:40	10:46	10:52	10:52
11:25	11:28	11:36	11:40	11:46	11:52	11:52
<b>PM</b>						
12:25	12:28	12:36	12:40	12:46	12:52	12:52
1:25	1:28	1:36	1:40	1:46	1:52	1:52
2:25	2:28	2:36	2:40	2:46	2:52	2:52
3:25	3:28	3:36	3:40	3:46	3:52	3:52
4:25	4:28	4:36	4:40	4:46	4:52	4:52
5:25	5:28	5:36	5:40	5:46	5:52	5:52
6:25	6:28	6:36	6:40	6:46	6:52	6:52
7:25	7:28	7:36	7:40	7:46	7:52	7:52
8:25	8:28	8:36	8:40	8:46	8:52	8:52
9:25	9:28	9:36	9:40	9:46	9:52	9:52
10:00						
<b>SUNDAY</b>						
<b>AM</b>						
9:25	9:28	9:36	9:40	9:46	9:52	9:52
10:25	10:28	10:36	10:40	10:46	10:52	10:52
11:25	11:28	11:36	11:40	11:46	11:52	11:52
<b>PM</b>						
12:25	12:28	12:36	12:40	12:46	12:52	12:52
1:25	1:28	1:36	1:40	1:46	1:52	1:52
2:25	2:28	2:36	2:40	2:46	2:52	2:52
3:25	3:28	3:36	3:40	3:46	3:52	3:52
4:25	4:28	4:36	4:40	4:46	4:52	4:52
5:25	5:28	5:36	5:40	5:46	5:52	5:52
6:25	6:28	6:36	6:40	6:46	6:52	6:52

**HOW TO RIDE A BUS**

Check schedule for timepoint nearest your location. Wait at the green HT bus stop sign. Arrive 10 minutes before scheduled time. Have exact fare ready (drivers do not make change).

- Not all stops are listed on a timetable
- Ask the bus driver or use our websites: [www.howardtransit.com](http://www.howardtransit.com) or [www.nextbus.com](http://www.nextbus.com)
- No eating, drinking, or smoking.
- Electronic devices may be played with earphones only.

**HOW TO READ A TIMETABLE**

1. Find the schedule for the day of the week and the direction of travel.
2. Find the timepoints closest to your origin and destination.
3. Your nearest bus stop may be between timepoints.

**GUARANTEED RIDE HOME PROGRAM**

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# GOLD ROUTE



**EFFECTIVE JULY 15, 2010  
SERVICE TO:**

- Columbia Mall
- Oakland Mills Village Center
- Long Reach Village Center
- Gateway Overlook
- Benson Drive (Restaurant Park)
- MD Food Center

**SERVICE DAYS  
MONDAY-SATURDAY**



Customer Service: 1-800-270-9553  
www.howardtransit.com



If you need this document in an alternative format, please call 240-581-5770 or email corporate@cmrtransit.org.

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## WELCOME TO HOWARD TRANSIT

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## FARE INFORMATION

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Regular Fare (Per Trip)	\$2.00
Bus Transfer (2 Hours)	FREE
Senior Fare (60 & Over)	\$1.00
Student Fare (w/valid student ID)	\$1.00
Person w/Disability	\$1.00
Medicare Card Holder	\$1.00
Children Under 5	FREE

## TRANSFER POLICY

Transfers are good for 2 hours and will be collected when making the transfer. Transfers are used for a continuation of a one way trip.

## INCLEMENT WEATHER POLICY

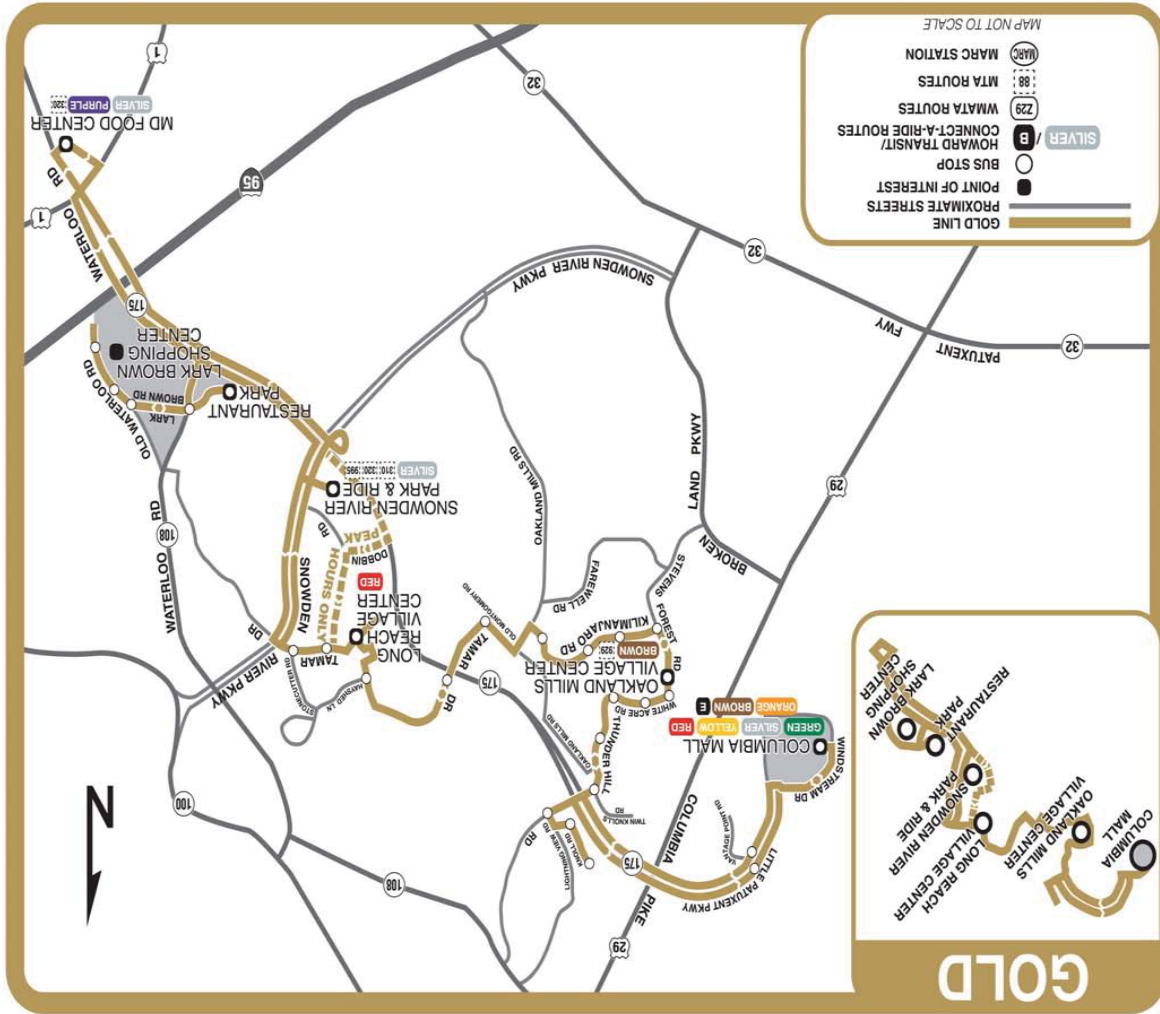
Contact Customer Service at 1-800-270-9553. Schedule changes can be found on Howard County Government Cable Channel 99, select radio/television stations and www.howardtransit.com.

## HOLIDAY SCHEDULE

New Year's Day	.....NO SERVICE
Martin Luther King, Jr. Day	.....REGULAR
President's Day	.....REGULAR
Memorial Day	.....SUNDAY
Independence Day	.....SUNDAY
Labor Day	.....SUNDAY
Columbus Day	.....REGULAR
Veterans Day	.....REGULAR
Thanksgiving Day	.....NO SERVICE
Christmas Day	.....NO SERVICE

## TITLE VI INFORMATION

Howard Transit fully complies with Title VI of the Civil Rights Act of 1964. For the full policy, please visit www.CMRTransit.org.



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Medicare Card Holder	\$1.00
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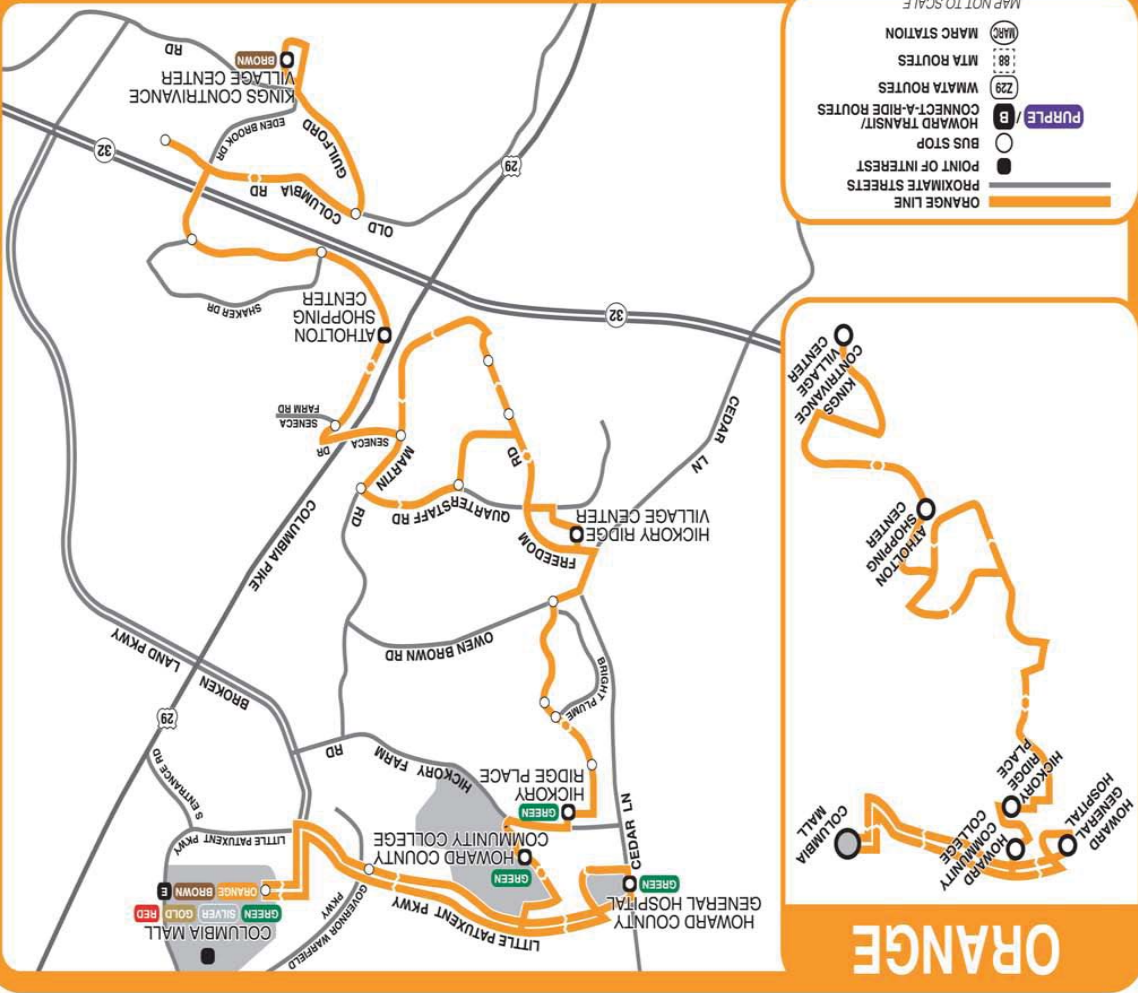
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**HOLIDAY SCHEDULE**

New Year's Day.....	NO SERVICE
Martin Luther King, Jr. Day.....	REGULAR
President's Day.....	REGULAR
Memorial Day.....	SUNDAY
Independence Day.....	SUNDAY
Labor Day.....	SUNDAY
Columbus Day.....	REGULAR
Veterans Day.....	REGULAR
Thanksgiving Day.....	NO SERVICE
Christmas Day.....	NO SERVICE

**TITLE VI INFORMATION**

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**ORANGE ROUTE**



**EFFECTIVE JULY 15, 2010  
SERVICE TO:**

- Columbia Mall
- Howard County General Hospital
- Howard Community College
- Hickory Ridge Village Center
- Atholton Shopping Center
- Kings Contrivance Village Center

**SERVICE DAYS  
MONDAY-SUNDAY**



Customer Service: 1-800-270-9553  
www.howardtransit.com



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**TO KINGS CONTRIVANCE**

**MONDAY THROUGH FRIDAY**

COLUMBIA MALL	6:00	6:09	6:13	6:28	6:36	6:40	6:50
HOWARD COUNTY GENERAL HOSPITAL	7:00	7:09	7:13	7:28	7:36	7:40	7:50
HOWARD COMM. COLLEGE	8:00	8:09	8:13	8:28	8:36	8:40	8:50
HICKORY RIDGE VILLAGE CENTER	9:00	9:08	9:12	9:27	9:32	9:37	9:45
ATHOLTON SHOPPING CENTER	10:00	10:08	10:12	10:27	10:32	10:37	10:45
SALVATION ARMY VILLAGE CENTER	11:00	11:08	11:12	11:27	11:32	11:37	11:45
				<b>PM</b>			
KINGS CONTRIVANCE	12:00	12:08	12:12	12:27	12:32	12:37	12:45
VILLAGE CENTER	1:00	1:08	1:12	1:27	1:32	1:37	1:45
ATHOLTON SHOPPING CENTER	2:00	2:08	2:12	2:27	2:32	2:37	2:45
HICKORY RIDGE VILLAGE CENTER	3:00	3:09	3:13	3:29	3:36	3:42	3:52
HOWARD COUNTY GENERAL HOSPITAL	4:00	4:09	4:13	4:29	4:36	4:42	4:52
HOWARD COMM. COLLEGE	5:00	5:09	5:13	5:29	5:36	5:42	5:52
SALVATION ARMY VILLAGE CENTER	6:00	6:09	6:13	6:29	6:36	6:42	6:52
ATHOLTON SHOPPING CENTER	8:00	8:08	8:12	8:27	8:32	8:37	8:45
COLUMBIA MALL	10:00	10:08	10:12	10:27			

**TO COLUMBIA MALL**

**MONDAY THROUGH FRIDAY**

KINGS CONTRIVANCE VILLAGE CENTER	6:09	6:15	6:19	6:28	6:41	6:46	6:54
SALVATION ARMY VILLAGE CENTER	7:00	7:06	7:10	7:19	7:32	7:38	7:46
ATHOLTON SHOPPING CENTER	8:00	8:06	8:10	8:19	8:32	8:38	8:46
HICKORY RIDGE VILLAGE CENTER	9:00	9:05	9:10	9:19	9:31	9:36	9:41
HOWARD COUNTY GENERAL HOSPITAL	10:00	10:05	10:10	10:19	10:31	10:36	10:41
HOWARD COMM. COLLEGE	11:00	11:05	11:10	11:19	11:31	11:36	11:41
				<b>PM</b>			
COLUMBIA MALL	12:00	12:05	12:10	12:19	12:31	12:36	12:41
ATHOLTON SHOPPING CENTER	1:00	1:05	1:10	1:19	1:31	1:36	1:41
HICKORY RIDGE VILLAGE CENTER	2:00	2:05	2:10	2:19	2:31	2:36	2:41
HOWARD COUNTY GENERAL HOSPITAL	3:00	3:05	3:11	3:21	3:36	3:43	3:51
HOWARD COMM. COLLEGE	4:00	4:05	4:11	4:21	4:36	4:43	4:51
SALVATION ARMY VILLAGE CENTER	5:00	5:05	5:11	5:21	5:36	5:43	5:51
ATHOLTON SHOPPING CENTER	7:00	7:05	7:10	7:21	7:31	7:36	7:41
COLUMBIA MALL	9:00	9:05	9:10	9:21	9:31	9:35	9:41

**TO KINGS CONTRIVANCE**

**SATURDAY**

COLUMBIA MALL	8:00	8:09	8:11	8:23	8:30	8:35	8:40
HOWARD COUNTY GENERAL HOSPITAL	9:00	9:09	9:11	9:23	9:30	9:35	9:40
HOWARD COMM. COLLEGE	10:00	10:09	10:11	10:23	10:30	10:35	10:40
HICKORY RIDGE VILLAGE CENTER	11:00	11:09	11:11	11:23	11:30	11:35	11:40
				<b>PM</b>			
KINGS CONTRIVANCE VILLAGE CENTER	12:00	12:09	12:11	12:23	12:30	12:35	12:40
ATHOLTON SHOPPING CENTER	1:00	1:09	1:11	1:23	1:30	1:35	1:40
SALVATION ARMY VILLAGE CENTER	2:00	2:09	2:11	2:23	2:30	2:35	2:40
HOWARD COUNTY GENERAL HOSPITAL	3:00	3:09	3:11	3:23	3:30	3:35	3:40
HOWARD COMM. COLLEGE	4:00	4:09	4:11	4:23	4:30	4:35	4:40
HICKORY RIDGE VILLAGE CENTER	5:00	5:09	5:11	5:23	5:30	5:35	5:40
ATHOLTON SHOPPING CENTER	6:00	6:09	6:11	6:23	6:30	6:35	6:40
KINGS CONTRIVANCE VILLAGE CENTER	8:00	8:09	8:11	8:23			
				<b>SUNDAY</b>			
				<b>AM</b>			
	10:00	10:09	10:11	10:23	10:30	10:35	10:40
				<b>PM</b>			
	12:00	12:09	12:11	12:23	12:30	12:35	12:40
	2:00	2:09	2:11	2:23	2:30	2:35	2:40
	4:00	4:09	4:11	4:23	4:30	4:35	4:40
	6:00	6:09	6:11	6:23	6:30	6:35	6:40

**TO COLUMBIA MALL**

**SATURDAY**

KINGS CONTRIVANCE VILLAGE CENTER	8:00	8:06	8:11	8:19	8:31	8:34	8:42
SALVATION ARMY VILLAGE CENTER	9:00	9:06	9:11	9:19	9:31	9:34	9:42
ATHOLTON SHOPPING CENTER	10:00	10:06	10:11	10:19	10:31	10:34	10:42
HOWARD COUNTY GENERAL HOSPITAL	11:00	11:06	11:11	11:19	11:31	11:34	11:42
				<b>PM</b>			
HOWARD COMM. COLLEGE	12:00	12:06	12:11	12:19	12:31	12:34	12:42
HICKORY RIDGE VILLAGE CENTER	1:00	1:06	1:11	1:19	1:31	1:34	1:42
ATHOLTON SHOPPING CENTER	2:00	2:06	2:11	2:19	2:31	2:34	2:42
HOWARD COUNTY GENERAL HOSPITAL	3:00	3:06	3:11	3:19	3:31	3:34	3:42
HOWARD COMM. COLLEGE	4:00	4:06	4:11	4:19	4:31	4:34	4:42
SALVATION ARMY VILLAGE CENTER	5:00	5:06	5:11	5:19	5:31	5:34	5:42
ATHOLTON SHOPPING CENTER	7:00	7:06	7:11	7:19	7:31	7:34	7:42
				<b>SUNDAY</b>			
				<b>AM</b>			
	9:00	9:06	9:11	9:19	9:31	9:34	9:42
	11:00	11:06	11:11	11:19	11:31	11:34	11:42
				<b>PM</b>			
	1:00	1:06	1:11	1:19	1:31	1:34	1:42
	3:00	3:06	3:11	3:19	3:31	3:34	3:42
	5:00	5:06	5:11	5:19	5:31	5:34	5:42

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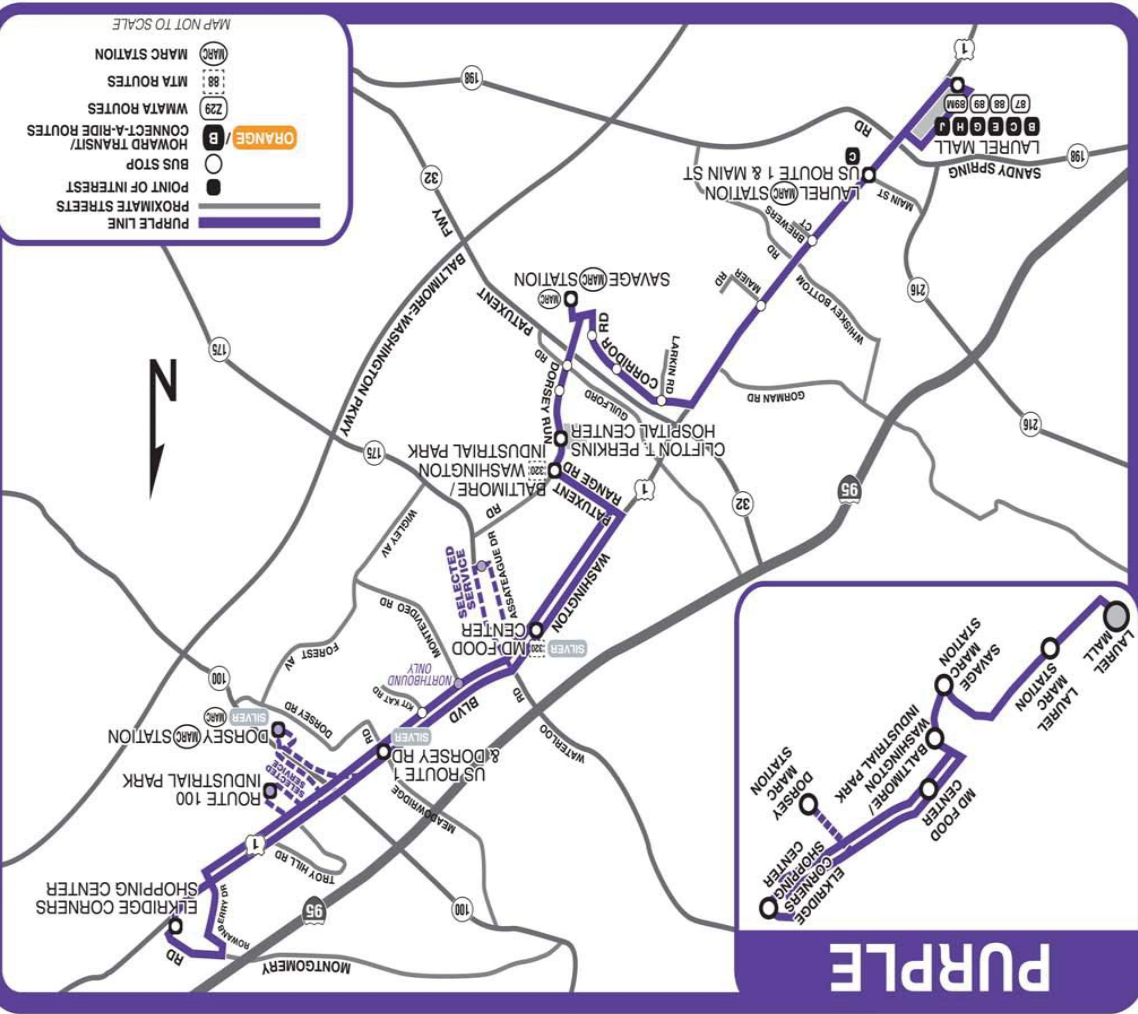
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**HOLIDAY SCHEDULE**

New Year's Day	.....NO SERVICE
Martin Luther King, Jr. Day	.....REGULAR
President's Day	.....REGULAR
Memorial Day	.....SUNDAY
Independence Day	.....SUNDAY
Labor Day	.....SUNDAY
Columbus Day	.....REGULAR
Veterans Day	.....REGULAR
Thanksgiving Day	.....NO SERVICE
Christmas Day	.....NO SERVICE

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**PURPLE ROUTE**



**EFFECTIVE JULY 15, 2010  
SERVICE TO:**

- Laurel Mall
- US Route 1
- Savage MARC Station
- MD Food Center
- Dorsey MARC Station
- Elkridge Corners Shopping Center

**SERVICE DAYS  
MONDAY-SATURDAY**



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**TO ELKRIDGE**  
MONDAY THROUGH FRIDAY

LAUREL MALL	US ROUTE 1 & BREWERS COURT	SARGE MARC STATION	MD FOOD CENTER	DORSEY MARC STATION	ROUTE 100 INDUSTRIAL PARK	ELKRIDGE CORNERS SHOPPING CENTER
6:00	6:09	6:18	6:33	-----	-----	6:50
7:00	7:09	7:18	7:33	-----	-----	7:50
8:00	8:09	8:18	8:33	-----	-----	8:50
9:00	9:09	9:18	9:33	-----	-----	9:50
11:00	11:09	11:18	11:33	-----	-----	11:50
			<b>AM</b>			
			<b>PM</b>			
1:00	1:09	1:18	1:33	-----	-----	1:50
2:00	2:09	2:18	2:33	2:44	2:48	2:57
3:00	3:09	3:18	3:33	3:44	3:48	3:57
4:00	4:09	4:18	4:33	4:44	4:48	4:57
5:00	5:09	5:18	5:33	5:44	5:48	5:57
6:00	6:09	6:18	6:33	6:44	6:48	6:57
8:00	8:09	8:18	8:33	8:44	8:48	8:57

**TO LAUREL MALL**  
MONDAY THROUGH FRIDAY

ELKRIDGE CORNERS SHOPPING CENTER	ROUTE 100 INDUSTRIAL PARK	DORSEY MARC STATION	MD FOOD CENTER	SARGE MARC STATION	US ROUTE 1 & BREWERS COURT	LAUREL MALL
7:00	7:08	7:14	7:27	7:39	7:47	7:55
8:00	8:08	8:14	8:27	8:39	8:47	8:55
9:00	9:08	9:14	9:27	9:39	9:47	9:55
10:00	10:08	10:14	10:27	10:39	10:47	10:55
12:00	12:08	12:14	12:27	12:39	12:47	12:55
2:05	-----	-----	2:28	2:32	2:41	2:50
3:05	-----	-----	3:28	3:32	3:41	3:50
4:05	-----	-----	4:28	4:32	4:41	4:50
5:05	-----	-----	5:28	5:32	5:41	5:50
6:05	-----	-----	6:28	6:32	6:41	6:50
7:05	-----	-----	7:28	7:32	7:41	7:50
9:05	-----	-----	9:28	9:32	9:41	9:50

**TO ELKRIDGE**  
SATURDAY

LAUREL MALL	US ROUTE 1 & BREWERS COURT	BALTWASH INDUSTRIAL PARK	MD FOOD CENTER	US 1 & DORSEY	ROUTE 100 INDUSTRIAL PARK	ELKRIDGE CORNERS SHOPPING CENTER
9:00	9:07	9:18	9:27	9:31	9:36	9:46
11:00	11:07	11:18	11:27	11:31	11:36	11:46
			<b>AM</b>			
			<b>PM</b>			
1:00	1:07	1:18	1:27	1:31	1:36	1:46
3:00	3:07	3:18	3:27	3:31	3:36	3:46
5:00	5:07	5:18	5:27	5:31	5:36	5:46
7:00	7:07	7:18	7:27	7:31	7:36	7:46
9:00	9:07	9:18	9:27	9:31	9:36	9:46

**TO LAUREL MALL**  
SATURDAY

ELKRIDGE CORNERS SHOPPING CENTER	ROUTE 100 INDUSTRIAL PARK	US 1 & MEADOWRIDGE	MD FOOD CENTER	BALTWASH INDUSTRIAL PARK	US ROUTE 1 & BREWERS COURT	LAUREL MALL
10:00	10:07	10:13	10:20	10:24	10:36	10:42
12:00	12:07	12:13	12:20	12:24	12:36	12:42
2:00	2:07	2:13	2:20	2:24	2:36	2:42
4:00	4:07	4:13	4:20	4:24	4:36	4:42
6:00	6:07	6:13	6:20	6:24	6:36	6:42
8:00	8:07	8:13	8:20	8:24	8:36	8:42

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# RED ROUTE



**EFFECTIVE JULY 15, 2010**  
**SERVICE TO:**

Columbia Mall  
Long Reach Village Center  
Columbia Crossing  
Dobbin Center  
Department of Social Services  
Snowden Square

**SERVICE DAYS**  
**MONDAY-SUNDAY**



Customer Service: 1-800-270-9553  
www.howardtransit.com



If you need this document in an alternative format, please call 240-581-5770 or email corporate@cmrtransit.org.

People who are deaf, hard of hearing or have a speech disability, please use Relay or 7-1-1.

## WELCOME TO HOWARD TRANSIT

Howard Transit, Howard County's fixed-route service, is managed by Central Maryland Regional Transit. For ADA paratransit service, please call HT Ride at 1-800-270-9553.

## FARE INFORMATION

Howard Transit has a Fare Compliance Policy in effect at all times. Full fare must be paid to ride the bus. Exact fare is required. Please have the fare, pass or valid transfer ready when boarding the bus. No cash refunds. MTA Charm Card is accepted at six designated transfer points only. Reduced fare of \$1.00 with the WMATA SMART TRIP CARD at shared transfer points only. Monthly and 10-ride tickets are available.

Regular Fare (Per Trip)	\$2.00
Bus Transfer (2 Hours)	FREE
Senior Fare (60 & Over)	\$1.00
Student Fare (w/valid student ID)	\$1.00
Person w/Disability	\$1.00
Medicare Card Holder	\$1.00
Children Under 5	FREE

## TRANSFER POLICY

Transfers are good for 2 hours and will be collected when making the transfer. Transfers are used for a continuation of a one way trip.

## INCLEMENT WEATHER POLICY

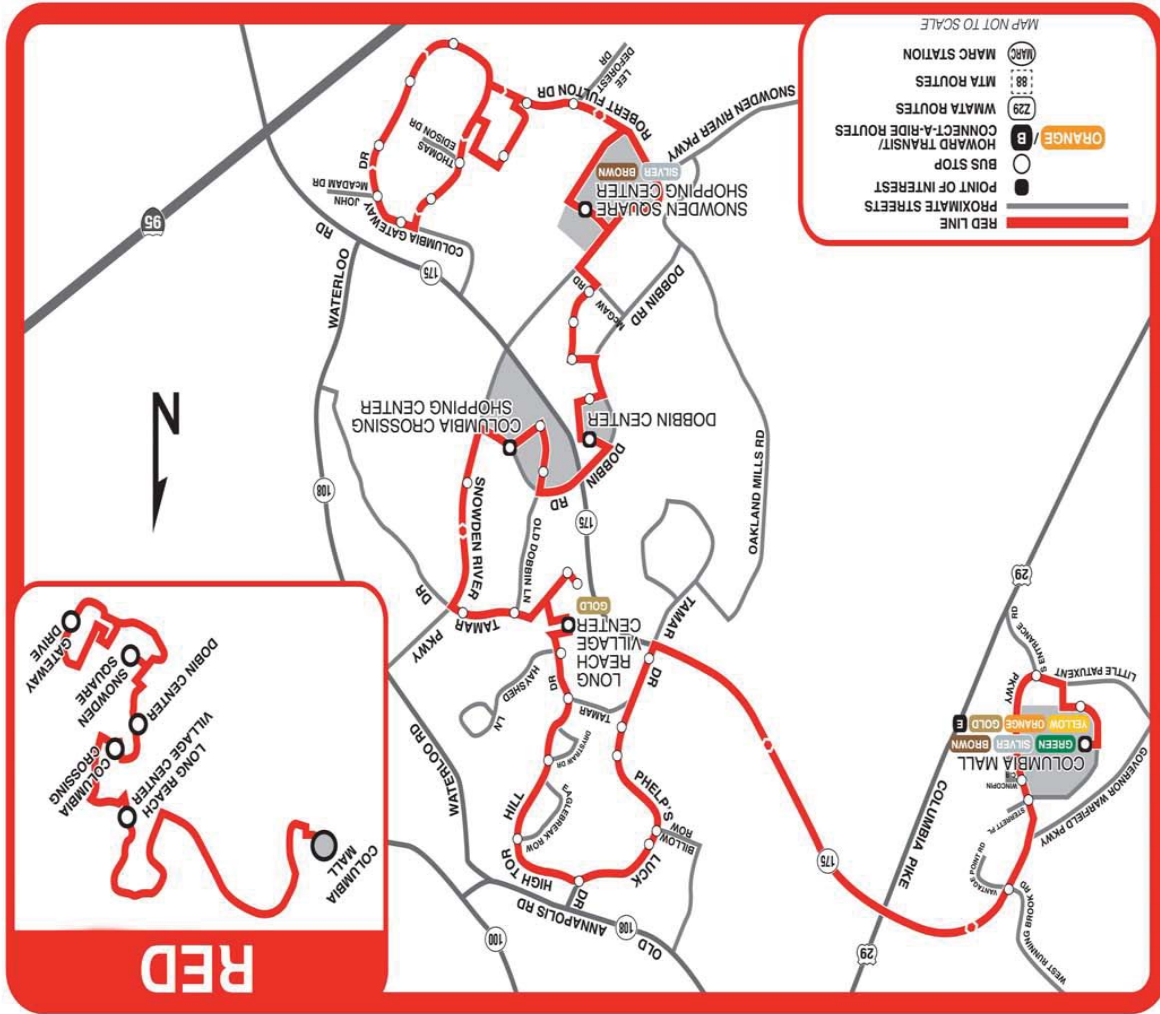
Contact Customer Service at 1-800-270-9553. Schedule changes can be found on Howard County Government Cable Channel 99, select radio/television stations and www.howardtransit.com.

## HOLIDAY SCHEDULE

New Year's Day.....NO SERVICE  
Martin Luther King, Jr. Day.....REGULAR  
President's Day.....REGULAR  
Memorial Day.....SUNDAY  
Independence Day.....SUNDAY  
Labor Day.....SUNDAY  
Columbus Day.....REGULAR  
Veterans Day.....REGULAR  
Thanksgiving Day.....NO SERVICE  
Christmas Day.....NO SERVICE

## TITLE VI INFORMATION

Howard Transit fully complies with Title VI of the Civil Rights Act of 1964. For the full policy, please visit www.CMRTransit.org.



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# SILVER ROUTE



EFFECTIVE JULY 15, 2010

SERVICE TO:

- Columbia Mall
- Snowden Square
- MD Food Center
- Dorsey MARC Station
- Arundel Mills

Dorsey Road & Candlewood Road  
 BWI Thurgood Marshall Airport

SERVICE DAYS  
**MONDAY-SUNDAY**



Customer Service: 1-800-270-9553  
[www.howardtransit.com](http://www.howardtransit.com)



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 please call 240-581-5770 or email  
[corporate@cmrtransit.org](mailto:corporate@cmrtransit.org).

People who are deaf, hard of hearing or have a  
 speech disability, please use Relay or 7-1-1.

## WELCOME TO HOWARD TRANSIT

Howard Transit, Howard County's fixed-route service, is managed by Central Maryland Regional Transit. For ADA paratransit service, please call HT Ride at 1-800-270-9553.

## FARE INFORMATION

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Regular Fare (Per Trip)	\$2.00
Bus Transfer (2 Hours )	FREE
Senior Fare (60 & Over )	\$1.00
Student Fare (w/valid student ID)	\$1.00
Person w/Disability	\$1.00
Medicare Card Holder	\$1.00
Children Under 5	FREE

## TRANSFER POLICY

Transfers are good for 2 hours and will be collected when making the transfer. Transfers are used for a continuation of a one way trip.

## INCREMENT WEATHER POLICY

Contact Customer Service at 1-800-270-9553. Schedule changes can be found on Howard County Government Cable Channel 99, select radio/television stations and [www.howardtransit.com](http://www.howardtransit.com).

## HOLIDAY SCHEDULE

New Year's Day.....	NO SERVICE
Martin Luther King, Jr. Day.....	REGULAR
President's Day.....	REGULAR
Memorial Day.....	SUNDAY
Independence Day.....	SUNDAY
Labor Day.....	SUNDAY
Columbus Day.....	REGULAR
Veterans Day.....	REGULAR
Thanksgiving Day.....	NO SERVICE
Christmas Day.....	NO SERVICE

## TITLE VI INFORMATION

Howard Transit fully complies with Title VI of the Civil Rights Act of 1964. For the full policy, please visit [www.CMRTransit.org](http://www.CMRTransit.org).



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# YELLOW ROUTE



**EFFECTIVE JULY 15, 2010**  
**SERVICE TO:**

- Columbia Mall
- Long Gate
- Ellicott City
- Normandy Shopping Center
- Walmart

Miller Library/Ellicott City Senior Center

**SERVICE DAYS**  
**MONDAY-SATURDAY**



Customer Service: 1-800-270-9553  
www.howardtransit.com



If you need this document in an alternative format, please call 240-581-5770 or email corporate@cmrtransit.org.

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## WELCOME TO HOWARD TRANSIT

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## FARE INFORMATION

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Regular Fare (Per Trip)	\$2.00
Bus Transfer (2 Hours)	FREE
Senior Fare (60 & Over)	\$1.00
Student Fare (w/valid student ID)	\$1.00
Person w/Disability	\$1.00
Medicare Card Holder	\$1.00
Children Under 5	FREE

## TRANSFER POLICY

Transfers are good for 2 hours and will be collected when making the transfer. Transfers are used for a continuation of a one way trip.

## INCLEMENT WEATHER POLICY

Contact Customer Service at 1-800-270-9553. Schedule changes can be found on Howard County Government Cable Channel 99, select radio/television stations and www.howardtransit.com.

## HOLIDAY SCHEDULE

New Year's Day	NO SERVICE
Martin Luther King, Jr. Day	REGULAR
President's Day	REGULAR
Memorial Day	SUNDAY
Independence Day	SUNDAY
Labor Day	SUNDAY
Columbus Day	REGULAR
Veterans Day	REGULAR
Thanksgiving Day	NO SERVICE
Christmas Day	NO SERVICE

## TITLE VI INFORMATION

Howard Transit fully complies with Title VI of the Civil Rights Act of 1964. For the full policy, please visit www.CMRTransit.org.

## GUARANTEED RIDE HOME PROGRAM

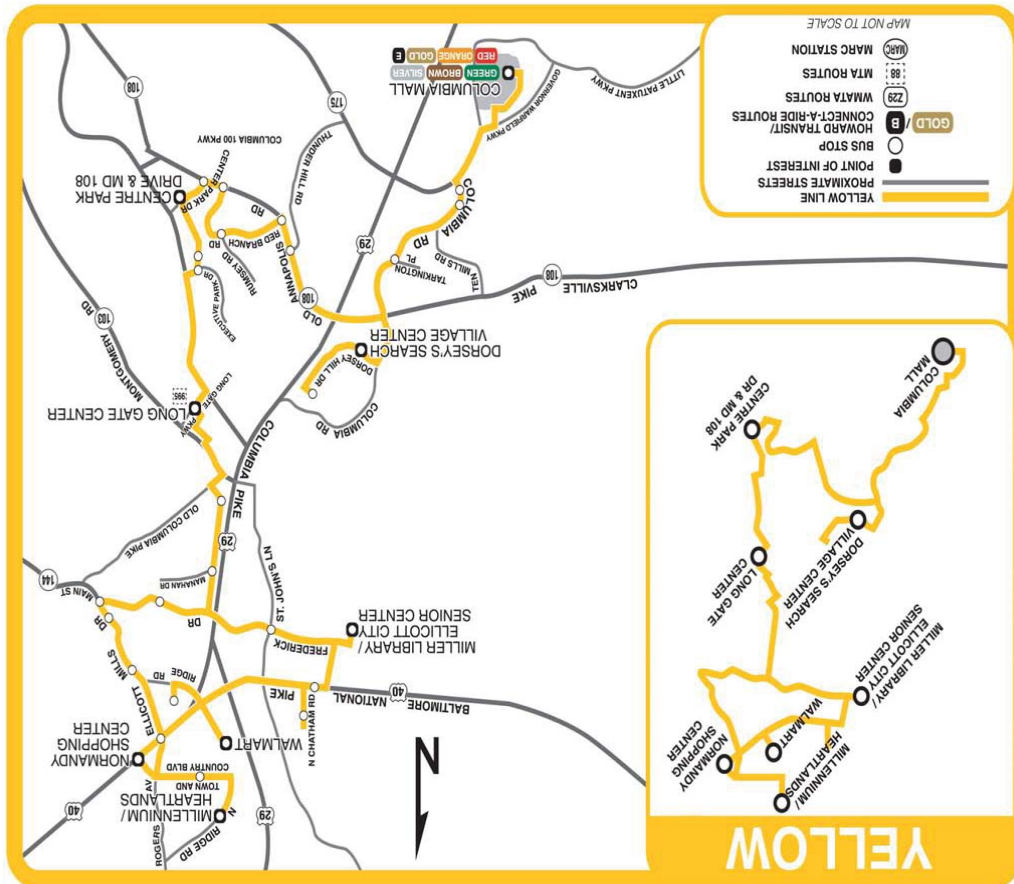
When you take Howard Transit to work and you have an emergency, you are eligible for the Guaranteed Ride Home Program through Commuter Connections. To register, call 1-800-745-RIDE (7433).

## HOW TO READ A TIMETABLE

1. Find the schedule for the day of the week and the direction of travel.
2. Find the timepoints closest to your origin and destination.
3. Your nearest bus stop may be between timepoints.

## HOW TO RIDE A BUS

- Check schedule for timepoint nearest your location. Wait at the green HT bus stop sign. Arrive 10 minutes before scheduled time. Have exact fare ready (drivers do not make change).
- Not all stops are listed on a timetable.
- Ask the bus driver or use our websites: www.howardtransit.com or www.nextbus.com
- No eating, drinking or smoking.
- Electronic devices may be played with earphones only.



This schedule is printed on recycled paper using recycled ink.



TO ELLICOTT CITY-LOOP A MONDAY - FRIDAY												
COLUMBIA MALL	DORSEY'S SEARCH VILLAGE CENTER	CENTRE PARK DR & MD ROUTE 108	LONG GATE	ELLICOTT MILLS DRIVE & MAIN ST	MILLENNIUM/ HEARTLANDS	NORMANDY SHOP CENTER	NORMANDY SHOP CENTER	WAL-MART	PARK VIEW	NORTH CHATHAM	MILLER LIBRARY/ EC SENIOR CITY	LONG GATE
6:00	6:12	6:25	6:30	6:39	6:48	6:54	7:00	7:04	--	7:11	7:15	7:24
8:00	8:12	8:25	8:30	8:39	8:48	8:54	9:00	9:04	9:07	9:16	9:19	9:24
10:00	10:11	10:26	10:30	10:37	10:44	10:49	10:55	11:00	11:03	11:12	11:15	11:22
12:00	12:11	12:26	12:30	12:37	12:44	12:49	12:55	1:00	1:03	1:12	1:15	1:22
2:00	2:11	2:26	2:30	2:37	2:44	2:49	2:55	3:00	3:03	3:12	3:15	3:22
4:00	4:15	4:28	4:38	4:45	4:55	5:01	5:04	5:08	--	5:16	5:20	5:29
6:00	6:15	6:28	6:35	6:45	6:55	7:01	7:01	7:06	7:09	7:16	7:19	7:26
8:00	8:11	8:26	8:30	8:40	8:47	8:52	8:58	9:03	9:06	9:15	9:18	9:25
10:00	10:11											

TO ELLICOTT CITY-LOOP B MONDAY - FRIDAY												
COLUMBIA MALL	DORSEY'S SEARCH VILLAGE CENTER	CENTRE PARK DR & MD ROUTE 108	LONG GATE	ELLICOTT MILLS MILLER LIBRARY/ EC SENIOR CENTER	LONG GATE	WAL-MART	NORMANDY SHOPPING CENTER	NORMANDY SHOPPING CENTER	PARK VIEW	NORTH CHATHAM	MILLER LIBRARY/ EC SENIOR CITY	LONG GATE
7:00	7:12	7:25	7:30	7:40	7:46	--	7:54	8:01	8:05	8:11	8:21	8:28
9:00	9:11	9:26	9:30	9:39	9:45	9:52	9:56	10:00	10:05	10:11	10:17	10:23
11:00	11:11	11:26	11:30	11:39	11:45	11:52	11:56					
1:00	1:11	1:26	1:30	1:39	1:45	1:52	1:56	2:00	2:05	2:11	2:17	2:23
3:00	3:11	3:26	3:30	3:41	3:48	--	3:54	4:01	4:04	4:10	4:19	4:27
5:00	5:15	5:28	5:38	5:52	5:59	6:06	6:12	6:19	--	6:25		

TO COLUMBIA-LOOP A MONDAY - FRIDAY												
LONG GATE	CENTRE PARK DR & MD ROUTE 108	DORSEY'S SEARCH VILLAGE CENTER	COLUMBIA MALL									
7:24	7:28	7:38	7:52									
9:24	9:31	9:40	9:54									
11:22	11:31	11:40	11:54									
1:22	1:31	1:40	1:54									
3:22	3:27	3:37	3:51									
5:29	5:34	5:44	5:55									
7:26	7:31	7:40	7:53									
9:25	9:30	9:40	9:53									

TO COLUMBIA-LOOP B MONDAY - FRIDAY												
LONG GATE	CENTRE PARK DR & MD ROUTE 108	DORSEY'S SEARCH VILLAGE CENTER	COLUMBIA MALL									
6:28	6:32	6:42	6:52									
8:28	8:32	8:42	8:56									
10:23	10:30	10:39	10:53									
12:23	12:30	12:39	12:53									
2:23	2:30	2:39	2:53									
4:27	4:32	4:42	4:53									

TO ELLICOTT CITY-LOOP A SATURDAY												
COLUMBIA MALL	DORSEY'S SEARCH VILLAGE CENTER	CENTRE PARK DR & MD ROUTE 108	LONG GATE	ELLICOTT MILLS DRIVE & MAIN ST	MILLENNIUM/ HEARTLANDS	NORMANDY SHOP CENTER	NORMANDY SHOP CENTER	WAL-MART	PARK VIEW	NORTH CHATHAM	MILLER LIBRARY/ EC SENIOR CITY	LONG GATE
8:00	8:11	8:25	8:29	8:37	8:46	8:51	8:55	9:00	9:07	9:14	9:18	9:26
10:00	10:11	10:25	10:29	10:37	10:46	10:51	10:55	11:00	11:07	11:14	11:18	11:26
12:00	12:11	12:25	12:29	12:37	12:46	12:51	12:55	1:00	1:07	1:14	1:18	1:26
2:00	2:11	2:25	2:29	2:37	2:46	2:51	2:55	3:00	3:07	3:14	3:18	3:26
4:00	4:11	4:25	4:29	4:37	4:46	4:51	4:55	5:00	5:07	5:14	5:18	5:26
6:00	6:11	6:25	6:29	6:37	6:46	6:51	6:55	7:00	7:07	7:14	7:18	7:26
8:00	8:11											

TO ELLICOTT CITY-LOOP B SATURDAY												
COLUMBIA MALL	DORSEY'S SEARCH VILLAGE CENTER	CENTRE PARK DR & MD ROUTE 108	LONG GATE	ELLICOTT MILLS MILLER LIBRARY/ EC SENIOR CENTER	LONG GATE	WAL-MART	NORMANDY SHOPPING CENTER	NORMANDY SHOPPING CENTER	PARK VIEW	NORTH CHATHAM	MILLER LIBRARY/ EC SENIOR CITY	LONG GATE
9:00	9:11	9:25	9:29	9:37	9:45	9:51	9:55	10:02	10:05	10:11	10:19	10:26
11:00	11:11	11:25	11:29	11:37	11:45	11:51	11:55					
1:00	1:11	1:25	1:29	1:37	1:45	1:51	1:55	2:02	2:05	2:11	2:19	2:26
3:00	3:11	3:25	3:29	3:37	3:45	3:51	3:55	4:02	4:05	4:11	4:19	4:26
5:00	5:11	5:25	5:29	5:37	5:45	5:51	5:55	6:02	6:05	6:11		

TO COLUMBIA-LOOP A SATURDAY												
LONG GATE	CENTRE PARK DR & MD ROUTE 108	DORSEY'S SEARCH VILLAGE CENTER	COLUMBIA MALL									
9:26	9:32	9:40	9:55									
11:26	11:32	11:40	11:55									
1:26	1:32	1:40	1:55									
3:26	3:32	3:40	3:55									
5:26	5:32	5:40	5:55									
7:26	7:32	7:40	7:55									

TO COLUMBIA-LOOP B SATURDAY												
LONG GATE	CENTRE PARK DR & MD ROUTE 108	DORSEY'S SEARCH VILLAGE CENTER	COLUMBIA MALL									
8:26	8:32	8:40	8:55									
10:26	10:32	10:40	10:55									
12:26	12:32	12:40	12:55									
2:26	2:32	2:40	2:55									
4:26	4:32	4:40	4:55									

## Fares

- From Columbia To Baltimore is Zone 2.

	<u>Zone 2</u>
One-Way Full Fare	\$3.50
Senior/Disability Fare	\$2.45
Ten-Trip Ticket	\$31.50
Sen./Dis. Ten-Trip	\$24.50
Monthly Pass	\$119.00

- Exact fare is required. No change will be given if you over-pay.
- One-way fares and ten-trip tickets may be purchased on the bus. Contact the MTA to purchase monthly passes.
- MTA Commuter Choice Maryland Vouchers and WMATA SmartBenefit Vouchers are accepted on this service.
- Reduced fares are available for senior citizens (65+), persons with disabilities, and Medicare Cardholders. To be eligible, you must show one of the following; a valid MTA Senior/Disability photo ID card, or any valid government issued photo ID with proof of age, or a valid disability ID from another transit agency with any valid government issued photo ID, or a Medicare card with any valid government photo ID.

## Wheelchair Accessible Service

- All coaches are wheelchair accessible.

## MTA Telephone Numbers

Information (410) 539-5000 or 1 (866) RIDE-MTA  
Internet Address [www.mta.maryland.gov](http://www.mta.maryland.gov)  
E-Mail Comment Line [commuterbus@mta.maryland.gov](mailto:commuterbus@mta.maryland.gov)  
TTY (hearing/speech impaired) (410) 539-3497  
Directory Assistance 1 (888) 218-2267  
Monthly Pass Credit Card Sales (410) 767-3439  
Commuter Choice Maryland Info. (410) 767-8755

## Other Telephone Numbers

Dillon's Bus Service, Inc. 1 (800) 827-3490  
Howard Transit 1 (800) 270-9553

MARYLAND TRANSIT ADMINISTRATION  
MARYLAND DEPARTMENT OF TRANSPORTATION  
6 St. Paul Street  
Baltimore, Maryland 21202-1614

This timetable is printed on recycled paper.  
This document is available in alternate format upon request.

## COMMUTER BUS SERVICE

Effective September 1, 2009

# BUS ROUTE NO. 310



## COLUMBIA, HOWARD COUNTY DOWNTOWN BALTIMORE JOHNS HOPKINS HOSPITAL



**EXPRESS SERVICE VIA I-95 TO:**  
The Mall in Columbia  
Snowden River Park & Ride  
Univ. of MD at Baltimore  
Charles Center  
Johns Hopkins Hospital



[www.mta.maryland.gov](http://www.mta.maryland.gov)  
410-539-5000 • 1-866-RIDE-MTA

Operated under a service contract with  
Dillon's Bus Service, Inc. • 1-800-827-3490



NO SMOKING



NO EATING,  
OR DRINKING



NO LOUD TALKING  
OR PROFANITY



NO RADIOS WITHOUT  
HEADPHONES

NO. 310 LINE NORTHBOUND FROM COLUMBIA TO BALTIMORE (A.M.)					
Trip No.	1	2	3	4	5
<b>HOWARD COUNTY</b>					
Columbia Mall Ring Road (at Park Square Bldg.)	--	6:52	--	7:32	--
Little Patuxent Pkwy. opp. Gov. Warfield Pkwy.	--	6:54	--	7:34	--
Little Patuxent Pkwy. & Vantage Point Rd.	--	6:55	--	7:35	--
Snowden River Park & Ride	6:50	7:10	7:30	7:50	8:10
<b>DOWNTOWN BALTIMORE</b>					
Baltimore St. & Pine St.	7:12	7:32	7:52	8:12	8:32
Baltimore St. & Greene St. (UMAB)	7:13	7:33	7:53	8:13	8:33
Baltimore St. & Eutaw St.	7:14	7:34	7:54	8:14	8:34
Baltimore St. & Howard St. (Baltimore Arena) <b>L</b>	7:15	7:35	7:55	8:15	8:35
Baltimore St. & Charles St. <b>M</b>	7:16	7:36	7:56	8:16	8:36
Baltimore St. & St. Paul St.	7:17	7:37	7:57	8:17	8:37
Baltimore St. & Calvert St.	7:18	7:38	7:58	8:18	8:38
Gay St. & Saratoga St. (City Hall)	7:20	7:40	8:00	8:20	8:40
Monument St. & Broadway	7:25	7:45	8:05	8:25	8:45
Wolfe St. & Monument St. (Johns Hopkins Hosp.) <b>M</b>	7:27	7:47	8:07	8:27	8:47

NO. 310 LINE SOUTHBOUND FROM BALTIMORE TO COLUMBIA (P.M.)					
Trip No.	6	7	8	9	10
<b>DOWNTOWN BALTIMORE</b>					
Wolfe St. & Monument St. (Johns Hopkins Hosp.) <b>M</b>	3:55	4:15	4:35	4:55	5:35
Fayette St. & Gay St. (City Hall)	4:01	4:21	4:41	5:02	5:42
St. Paul St. & Fayette St. <b>M</b>	4:05	4:25	4:45	5:07	5:47
Light St. & Redwood St.	4:07	4:27	4:47	5:09	5:49
Lombard St. & Charles St.	4:09	4:29	4:49	5:11	5:51
Lombard St. & Hopkins Pl.	4:10	4:30	4:50	5:12	5:52
Lombard St. & Howard St. <b>L</b>	4:12	4:32	4:52	5:14	5:54
Lombard St. & Eutaw St.	4:13	4:33	4:53	5:15	5:55
Lombard St. & Greene St. (UMAB)	4:14	4:34	4:54	5:16	5:56
<b>HOWARD COUNTY</b>					
Snowden River Park & Ride	4:35	4:55	5:15	5:37	6:07
Little Patuxent Pkwy. opp. Vantage Point Rd.	4:47	--	5:27	--	6:19
Little Patuxent Pkwy. & Gov. Warfield Pkwy.	4:48	--	5:28	--	6:20
Columbia Mall Ring Road (at Park Square Bldg.)	4:50	--	5:30	--	6:22

NOTE: For Limited Service days ONLY, PM service will terminate at Snowden River Park & Ride.

**Connecting Transit Services**

- M** MTA Metro Subway on Baltimore at Charles and at St. Paul (Charles Center); Monument and Broadway (Johns Hopkins Hospital).
- L** MTA Light Rail at Howard and Baltimore (University Center/Baltimore St.).
- MTA Local Buses at all Downtown Baltimore stops
- Howard Transit at The Mall in Columbia
- CTC Route E at The Mall in Columbia and at other stops in Columbia.

**Weather & Emergency Plan**

In the event that adverse weather conditions necessitate a change or deviation in the morning schedule, announcements will be made on radio stations WBAL (1090 AM Baltimore). If the morning service does not operate, then the afternoon service will not operate.

Should the MTA be motivated by inclement weather or miscellaneous events to conduct earlier than regular service, the Commuter Bus division will determine if coaches are available to depart according to a modified schedule.

Commuters should understand that the MTA requires sufficient advance notice in order to mobilize coaches for earlier runs or necessary detours with individual service providers.

The MTA will generate e-notices and post announcements on the Commuter Bus Service Update Center online, once changes in service occur.

**Standee Policy**

For the safety of our riders, the MTA prohibits standees on commuter buses except under the following circumstances:

- If the last evening bus has a full seated load;
- To accommodate passengers from another bus that has become disabled en-route; or
- In emergency situations, such as severe inclement weather or civil defense events.

Please note that a patron's need to reach his or her destination by a certain time is not considered an "emergency" for these purposes. Drivers are required to enforce this policy and to deny boarding to additional passengers once the bus has achieved a full seated load.

**Days of Operation**

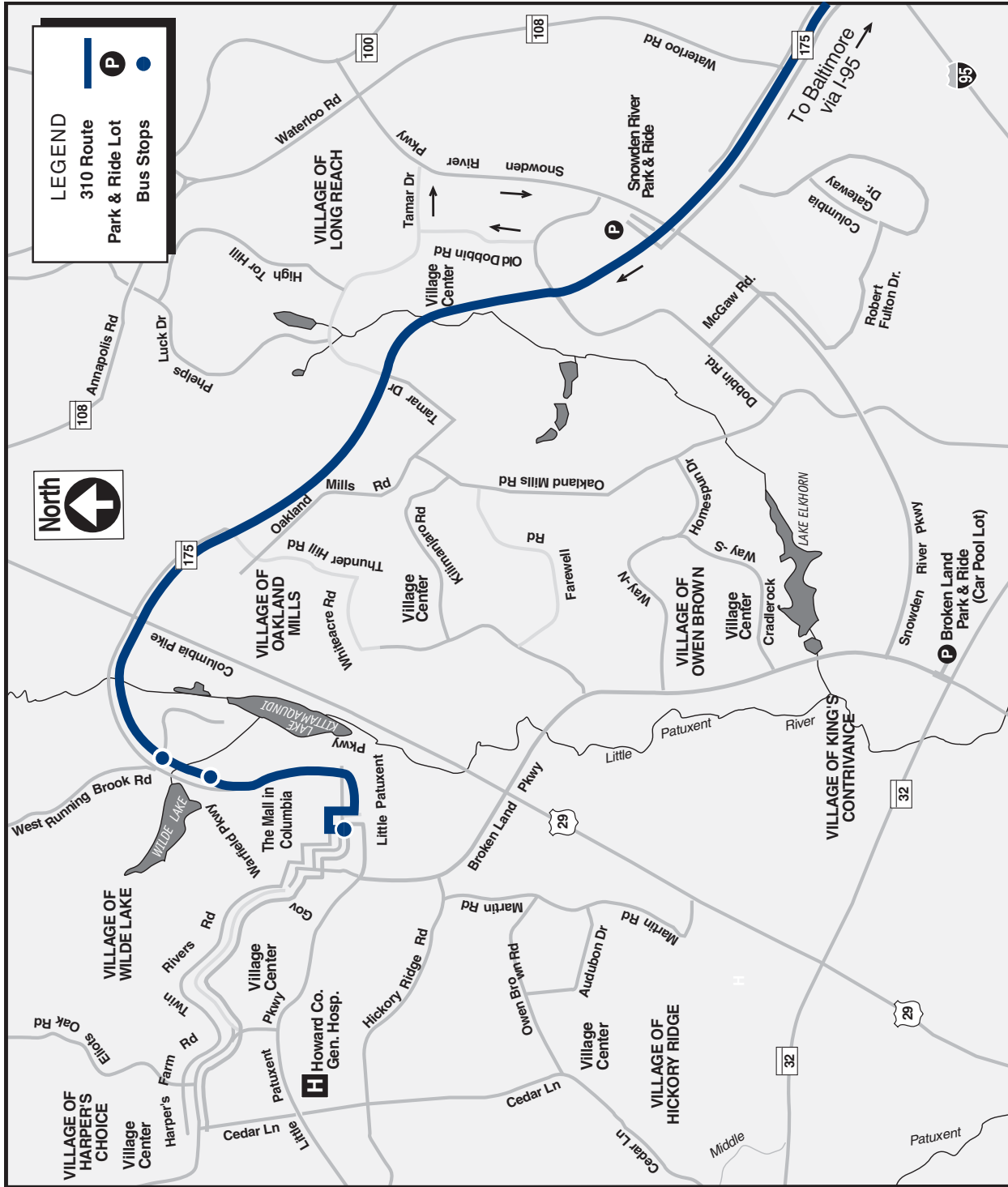
The No. 310 line operates Monday through Friday. It does not operate on Saturdays, Sunday, and the following observed holidays:

New Year's Day, Martin Luther King Day, President's Day, Memorial Day, Independence Day, Labor Day, Columbus Day, Veteran's Day, Thanksgiving Day, Friday after Thanksgiving and Christmas Day.

Periodically, the MTA will operate Commuter Bus Services on reduced schedules in an effort to accommodate fewer riders when demand for these buses is significantly lower.

Trips marked with "L" denote the "Limited Service Schedule." On Limited Service Days only, those trips designated with the "L" will operate.





**Additional Service**

- Howard Transit Silver Express Route** operates throughout the day, 7 days a week, between Columbia and BWI Airport. Connections to Baltimore are available via MTA Light Rail.
- No. 150** line operates between Ellicott City and Baltimore.
- No. 320** line operates between Jessup, Columbia and Baltimore
- MARC Camden Line** operates between Laurel, Jessup, Dorsey and Baltimore

## Fares

- From Downtown Baltimore to all stops between Levering Avenue and Port Capital Drive/Montevideo Road is Zone 1. From Downtown Baltimore to all stops between Assateague Drive (Food Center) and Columbia is Zone 2.

	Zone 1	Zone 2
One-Way Full Fare	\$2.75	\$3.50
Senior/Disability Fare	\$1.70	\$2.45
Ten-Trip Ticket	\$24.75	\$31.50
Sen./Dis. Ten-Trip Ticket	\$17.00	\$24.50
Monthly Pass	\$93.50	\$119.00

- Exact fare is required. No change will be given if you overpay.
- One-way fares and ten-trip tickets may be purchased on the bus. Contact the MTA to purchase monthly passes.
- MTA Commuter Choice Maryland Vouchers and WMATA SmartBenefit Vouchers are accepted on this service.
- Reduced fares are available for senior citizens (65+), persons with disabilities, and Medicare Cardholders. To be eligible, you must show one of the following: a valid MTA Senior/Disability photo ID card, or any valid government issued photo ID with proof of age, or a valid disability ID from another transit agency with any valid government issued photo ID, or a Medicare card with any valid government photo ID.

## Wheelchair Accessible Service

- All coaches are wheelchair accessible.

## MTA Telephone Numbers

MTA Information (410) 539-5000 or 1 (866) RIDE-MTA  
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 E-Mail Comment Line [commuterbus@mta.maryland.gov](mailto:commuterbus@mta.maryland.gov)  
 TTY (hearing/speech impaired) (410) 539-3497  
 Directory Assistance 1 (888) 218-2267  
 Monthly Pass Credit Card Sales (410) 767-3439  
 Commuter Choice Maryland Info. (410) 767-8755

## Other Telephone Numbers

Dillon's Bus Service, Inc. 1 (800) 827-3490  
 Howard Transit (800) 270-9553  
 MARC Train Information 1 (800) 325-RAIL  
 Connect-a-Ride 1 (800) 270-9553

MARYLAND TRANSIT ADMINISTRATION  
 MARYLAND DEPARTMENT OF TRANSPORTATION  
 6 St. Paul Street  
 Baltimore, Maryland 21202-1614

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## COMMUTER BUS SERVICE

Effective September 1, 2009



# BUS ROUTE NO. 320

**COLUMBIA, HOWARD COUNTY  
 JESSUP, HOWARD COUNTY  
 DOWNTOWN BALTIMORE  
 JOHNS HOPKINS HOSPITAL**



**EXPRESS SERVICE VIA U.S. 1 and I-95 TO:**

Jessup  
 Maryland Wholesale Food Center  
 Elkridge  
 Camden Yards  
 Convention Center  
 First Mariner Arena  
 Johns Hopkins Hospital



[www.mta.maryland.gov](http://www.mta.maryland.gov)  
 410-539-5000 • 1-866-RIDE-MTA  
 Operated under a service contract with  
 Dillon's Bus Service, Inc. • 1-800-827-3490



NO SMOKING



NO EATING,  
OR DRINKING



NO LOUD TALKING  
OR PROFANITY



NO RADIOS WITHOUT  
HEADPHONES

NO. 320 LINE SOUTHBOUND FROM BALTIMORE TO JESSUP/COLUMBIA (A.M.)								
Trip No.	1		2		3		4	
	L	L	L	L	L	L	L	L
<b>DOWNTOWN BALTIMORE</b>								
Wolfe St. & Monument St. (Johns Hopkins Hosp.)	5:35	6:15	6:55	7:35				
Cathedral St. & Mulberry St.	5:41	6:21	7:01	7:41				
Cathedral St. & Saratoga St.	5:42	6:22	7:02	7:42				
Liberty St. & Lexington St.	5:43	6:23	7:03	7:43				
Hopkins Pl. & Baltimore St. (Arena)	5:45	6:25	7:05	7:45				
Howard St. & Camden St. (Convention Center)	5:47	6:27	7:07	7:47				
<b>HOWARD COUNTY</b>								
U.S. 1 & Levering Ave.	6:02	6:42	7:22	8:02				
U.S. 1 & Montgomery Rd.	6:04	6:44	7:24	8:04				
U.S. 1 & Hunt Club Rd.	6:05	6:45	7:25	8:05				
U.S. 1 & Troy Hill Dr. (Troy Hill Corporate Ctr.)	6:06	6:46	7:26	8:06				
U.S. 1 opp. Amberton Dr. (Route 100 Ind. Park)	6:07	6:47	7:27	8:07				
U.S. 1 & Meadowridge Rd. (Meadowridge Bus. Pk.)	6:09	6:49	7:29	8:09				
U.S. 1 & Port Capital Dr.	6:11	6:51	7:31	8:11				
Assateague Dr. & U.S. 1	6:14	6:54	7:34	8:14				
Assateague Dr. & Conowingo Ave. (Food Center)	6:16	6:56	7:36	8:16				
Assateague Dr. & Oceano Ave.	6:17	6:57	7:37	8:17				
Patuxent Range Rd. & Dorsey Run Rd.	6:20	7:00	--	--				
Patuxent Range Rd. opp. Stayton Dr.	6:21	7:01	--	--				
Gateway Dr. & Eli Whitney Dr.	6:28	7:08	7:44	8:24				
Gateway Dr. opp. John McAdams Dr.	6:29	7:09	7:45	8:25				
Gateway Dr. opp. Ben Franklin Dr.	6:30	7:10	7:46	8:26				
Gateway Dr. & Albert Einstein Dr.	6:31	7:11	7:47	8:27				
Gateway Dr. opp. Samuel Morse Dr.	6:32	7:12	7:48	8:28				
Robert Fulton Dr. & Gateway Dr.	6:33	7:13	7:49	8:29				
Robert Fulton Dr. opp. Lee Deforest Rd.	6:34	7:14	7:50	8:30				
Robert Fulton Dr. opp. Solar Walk	6:35	7:15	7:51	8:31				
McGaw Rd. & Stanford Blvd.	--	--	7:54	8:34				
Dobbin Rd. opp. Dobbin Center Way	--	--	7:56	8:36				
Snowden River Park & Ride	6:39	7:19	8:00	--				
Little Patuxent Pkwy. opp. Vantage Point Rd.	--	--	--	8:44				
Little Patuxent Pkwy. & Gov. Warfield Pkwy.	--	--	--	8:45				
Columbia Mall Ring Road (at Park Square Bldg.)	--	--	--	8:47				

**Connecting Transit Services**

- MARC Camden Line** at Howard St. & Conway St. (Camden Yards) and at Main St. near U.S. 1 (Laurel).
- MTA Metro Subway** at Charles St. & Baltimore St. (Charles Center) and at Eutaw St. & Preston St. (State Center).
- MTA Light Rail** at Howard St. & Pratt St. (Convention Center), Howard St. & Baltimore St. (Arena), and Howard St. & Preston St. (Cultural Center).
- MTA Local Buses** at all Downtown Baltimore stops.
- Howard Transit Red Express and Purple Routes** at Maryland Wholesale Food Center and selected other stops on U.S. 1.
- Connect-a-Ride** at Laurel stops and selected other stops on U.S. 1.

NO. 320 LINE NORTHBOUND FROM COLUMBIA/JESSUP TO BALTIMORE (P.M.)								
Trip No.	5		6		7		8	
	L	L	L	L	L	L	L	L
<b>HOWARD COUNTY</b>								
Columbia Mall Ring Road (at Park Square Bldg.)	--	--	--	--	--	--	--	5:10
Little Patuxent Pkwy. opp. Gov. Warfield Pkwy.	--	--	--	--	--	--	--	5:12
Little Patuxent Pkwy. & Vantage Point Rd.	--	--	--	--	--	--	--	5:13
Snowden River Park & Ride	2:57	3:37	4:17	--	--	--	--	--
Dobbin Rd. & Dobbin Center Way	--	--	4:21	5:21				
McGaw Rd. opp. Stanford Blvd.	--	--	4:24	5:24				
Robert Fulton Dr. & Solar Walk	3:01	3:41	4:26	5:26				
Robert Fulton Dr. & Lee Deforest Rd.	3:02	3:42	4:27	5:27				
Robert Fulton Dr. & Gateway Dr.	3:03	3:43	4:28	5:28				
Gateway Dr. & Samuel Morse Dr.	3:04	3:44	4:29	5:29				
Gateway Dr. opp. Albert Einstein Dr.	3:05	3:45	4:30	5:30				
Gateway Dr. & Ben Franklin Dr.	3:06	3:46	4:31	5:31				
Gateway Dr. & John McAdams Dr.	3:07	3:47	4:32	5:32				
Gateway Dr. opp. Eli Whitney Dr.	3:08	3:48	4:33	5:33				
Patuxent Range Rd. & Stayton Dr.	3:15	3:55	--	--				
Patuxent Range Rd. & Dorsey Run Rd.	3:16	3:56	--	--				
Oceano Ave. & Assateague Dr.	3:19	3:59	4:39	5:39				
Assateague Dr. opp. Conowingo Ave. (Food Center)	3:21	4:01	4:41	5:41				
Assateague Dr. & U.S. 1	3:22	4:02	4:42	5:42				
U.S. 1 & Montevideo Rd.	3:25	4:05	4:45	5:45				
U.S. 1 & Kit Kat Rd.	3:26	4:06	4:46	5:46				
U.S. 1 opp. Meadowridge Rd. (Meadowridge Bus. Pk.)	3:28	4:08	4:48	5:48				
U.S. 1 & Amberton Dr. (Route 100 Ind. Park)	3:30	4:10	4:50	5:50				
U.S. 1 opp. Troy Hill Dr.	3:31	4:11	4:51	5:51				
U.S. 1 opp. Hunt Club Rd.	3:32	4:12	4:52	5:52				
U.S. 1 & Montgomery Rd.	3:33	4:13	4:53	5:53				
U.S. 1 & Levering Ave.	3:35	4:15	4:55	5:55				
<b>DOWNTOWN BALTIMORE</b>								
Howard St. & Pratt St. (Convention Center)	3:50	4:30	5:10	6:10				
Howard St. & Lombard St.	3:51	4:31	5:11	6:11				
Howard St. & Redwood St. (Arena)	3:52	4:32	5:12	6:12				
Howard St. bet. Baltimore St. & Fairmount Ave.	3:53	4:33	5:13	6:13				
Howard St. bet. Fayette St. & Marion St.	3:54	4:34	5:14	6:14				
Howard St. bet. Lexington St. & Clay St.	3:55	4:35	5:15	6:15				
Howard St. bet. Saratoga St. & Mulberry St.	3:56	4:36	5:16	6:16				
Wolfe St. & Monument St. (Johns Hopkins Hosp.)	4:02	4:42	5:22	6:22				

**Days of Operation**

The No. 320 line operates Monday through Friday. It does not operate on Saturdays, Sundays, and the following observed holidays:  
 New Year's Day, Martin Luther King Day, President's Day, Memorial Day, Independence Day, Labor Day, Columbus Day, Veteran's Day, Thanksgiving Day, Friday after Thanksgiving and Christmas Day.  
 Periodically, the MTA will operate Commuter Bus Services on reduced schedules in an effort to accommodate fewer riders when demand for these buses is significantly lower.

Trips marked with "L" denote the "Limited Service Schedule." On Limited Service Days only, those trips designated with the "L" will operate.

## Weather & Emergency Plan

In the event that adverse weather conditions necessitate a change or deviation in the morning schedule, announcements will be made on radio station WBAL (1090 AM). If the morning service does not operate, then the afternoon service will not operate.

Should the MTA be motivated by inclement weather or miscellaneous events to conduct earlier than regular service, the Commuter Bus division will determine if coaches are available to depart according to a modified schedule.

Commuters should understand that the MTA requires sufficient advance notice in order to mobilize coaches for earlier runs or necessary detours with individual service providers.

The MTA will generate e-notices and post announcements on the Commuter Bus Service Update Center online, once changes in service occur.

### Standee Policy

For the safety of our riders, the MTA prohibits standees on commuter buses except under the following circumstances:

- If the last evening bus has a full seated load;
- To accommodate passengers from another bus that has become disabled en-route; or
- In emergency situations, such as severe inclement weather or civil defense events.

Please note that a patron's need to reach his or her destination by a certain time is not considered an "emergency" for these purposes. Drivers are required to enforce this policy and to deny boarding to additional passengers once the bus has achieved a full seated load.

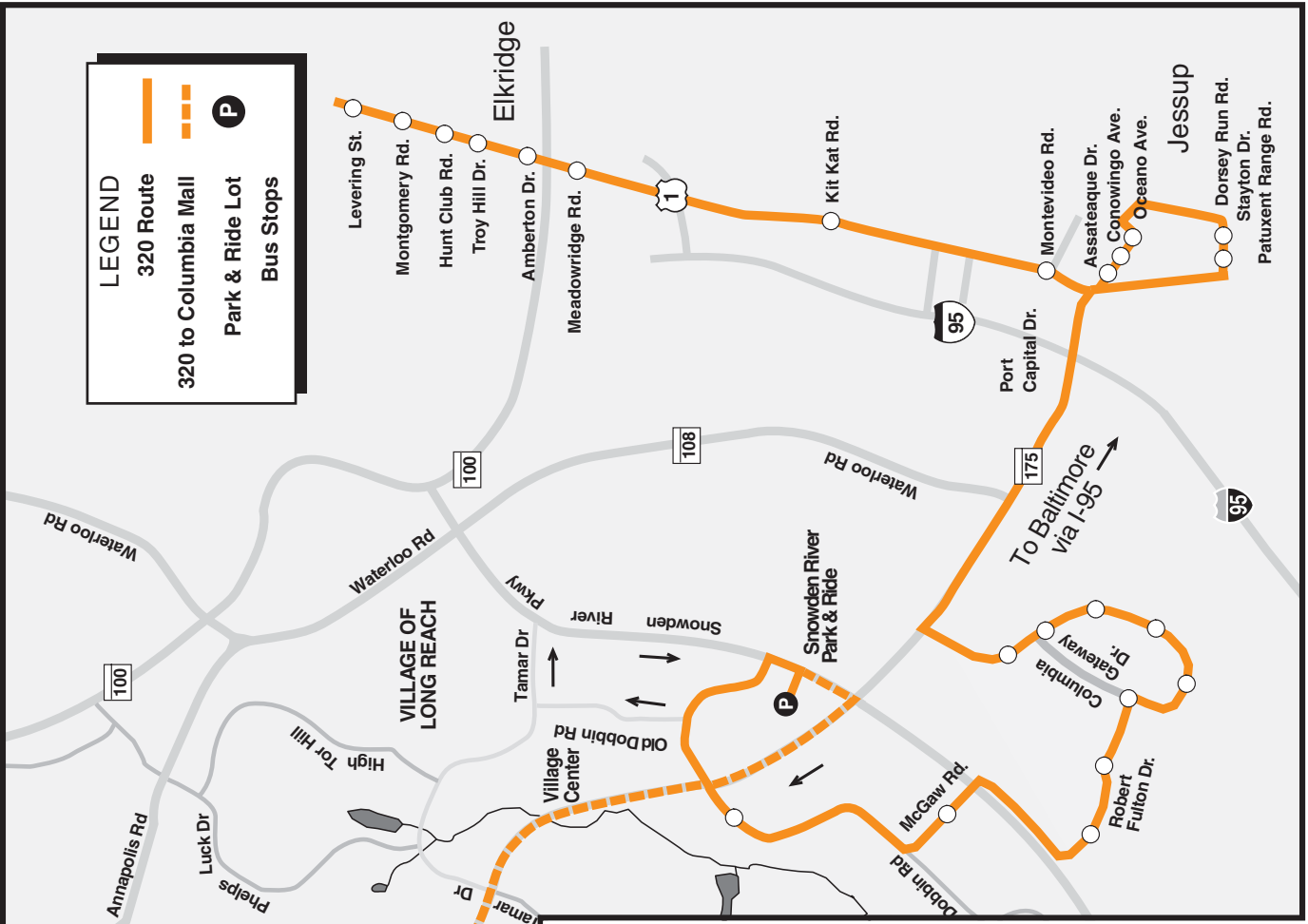
## Additional Service

**Howard Transit Silver Express Route** operates between Columbia and BWI Airport via the Maryland Wholesale Food Center and selected other stops along U.S. 1 in the Jessup area.

**Howard Transit Purple Route** operates along U.S. 1 between Elkridge and Laurel.

**MARC Camden Line** operates between Laurel, Jessup, Dorsey, and Baltimore

**Bus Route No. 310** operates between Columbia and Baltimore.



## Fares

- From Columbia, Scaggsville, and Burtonsville to Silver Spring is Zone 2; from Columbia, Scaggsville, and Burtonsville to Washington, D.C. is Zone 3.

	Zone 2	Zone 3
One-Way Full Fare	\$3.50	\$4.25
One-Way Senior/Disability Fare	\$2.45	\$3.20
Ten-Trip Ticket	\$31.50	\$38.25
Sen./Dis. Ten-Trip	\$24.50	\$32.00
Monthly Pass	\$119.00	\$144.50
Transit Link Card	\$216.00	\$241.50

- Exact fare is required. No change will be given if you overpay.
- One-way fares and ten-trip tickets may be purchased on the bus. Contact the MTA to purchase monthly passes.
- MTA Commuter Choice Maryland Vouchers and WMATA SmartBenefit Vouchers are accepted on this service.
- Reduced fares are available for senior citizens (65+), persons with disabilities, and Medicare Cardholders. To be eligible, you must show one of the following; a valid MTA Senior/Disability photo ID card, or any valid government issued photo ID with proof of age, or a valid disability ID from another transit agency with any valid government issued photo ID, or a Medicare card with any valid government photo ID.
- Transit Link Cards allow for unlimited use of MTA Commuter Bus (up to the indicated zone), Metrorail, Metrobus, and Ride-On during the indicated month.
- Free connections, between MTA Commuter Buses only, are available at The Mall in Columbia and at Broken Land Park & Ride.

## MTA Telephone Numbers

Information (410) 539-5000 or 1 (866) RIDE-MTA  
 Internet Address [www.mta.maryland.gov](http://www.mta.maryland.gov)  
 E-Mail Comment Line [commuterbus@mta.maryland.gov](mailto:commuterbus@mta.maryland.gov) (410) 539-3497  
 TTY (hearing/speech impaired) (410) 539-3497  
 Directory Assistance 1 (888) 218-2267  
 Monthly Pass Credit Card Sales (410) 767-3439  
 Commuter Choice Maryland Info. (410) 767-8755

## Other Telephone Numbers

Dillon's Bus Service, Inc. 1 (800) 827-3490  
 WMATA Metrorail and Metrobus (202) 637-7000  
 Montgomery County Ride-On (240) 777-7433  
 Howard Transit 1 (800) 270-9553  
 Commuter Solutions of Howard County (410) 313-3130

MARYLAND TRANSIT ADMINISTRATION  
 MARYLAND DEPARTMENT OF TRANSPORTATION  
 6 St. Paul Street  
 Baltimore, Maryland 21202-1614

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EFFECTIVE MAY 31,  
 2011

# 915

## COMMUTER BUS

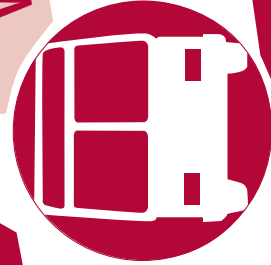
MARYLAND TRANSIT ADMINISTRATION  
 OPERATED UNDER A SERVICE CONTRACT WITH:  
**DILLON'S BUS SERVICE (800) 827-3490**

**COLUMBIA AND SILVER SPRING  
 TO WASHINGTON D.C.**

**WEEKDAY PEAK SERVICE  
 5:10 A.M. TO 8:07 P.M.**

EXPRESS SERVICE VIA U.S. 29 TO:

**LOTTE PLAZA  
 THE MALL IN COLUMBIA  
 BROKEN LAND P&R  
 SCAGGSVILLE P&R  
 BURTONSVILLE P&R  
 SILVER SPRING  
 METRO STATION  
 WASHINGTON D.C.**



tel: 410-539-5000  
 1-866-RIDE-MTA (743-3682)  
[mta.maryland.gov](http://mta.maryland.gov)

**YOUR RIDE IS HERE.**

NO. 915 LINE SOUTHBOUND FROM COLUMBIA TO SILVER SPRING / WASHINGTON, D.C. (A.M.)												
Trip No.	S	1	2	3	4	5	6	7	8	9	10	11
<b>HOWARD COUNTY</b>												
Lotte Plaza (U.S. 40 & U.S. 29, Ellicott City)	--	--	--	--	--	6:12	--	--	--	--	--	7:05
Harper's Farm Rd. & Cedar Lane (Village Center)	5:10	5:25	5:40	5:55	--	6:15	6:23	6:42	7:00	--	--	7:22
Little Patuxent Pkwy. & Gray Star Way	5:13	5:28	5:43	5:58	--	6:18	6:26	6:45	7:03	--	--	7:25
Little Patuxent Pkwy. & White Cord Way	5:14	5:29	5:44	5:59	--	6:19	6:27	6:46	7:04	--	--	7:26
Little Patuxent Pkwy. & Bright Passage	5:15	5:30	5:45	6:00	--	6:20	6:28	6:47	7:05	--	--	7:27
Little Patuxent Pkwy. & Hickory Ridge Rd.	5:16	5:31	5:46	6:01	--	6:21	6:29	6:48	7:06	--	--	7:28
Little Patuxent Pkwy. & Cedar Lane	5:17	5:32	5:47	6:02	--	6:22	6:30	6:49	7:07	--	--	7:29
Little Patuxent Pkwy. opp. Harper's Farm Rd.	5:18	5:33	5:48	6:03	--	6:23	6:31	6:50	7:08	--	--	7:30
The Mall in Columbia (South Ring Rd.)	5:23	5:38	5:53	6:08	6:22	6:28	6:36	6:55	7:13	7:15	7:35	7:35
Little Patuxent Pkwy. opp. Gov. Warfield Pkwy.	--	--	--	--	--	6:30	--	--	7:15	--	--	--
Little Patuxent Pkwy. & Vantage Point Rd.	--	--	--	--	--	6:31	--	--	7:16	--	--	--
Broken Land Pkwy. & Hickory Ridge Rd.	5:26	5:41	5:56	6:11	6:25	--	6:39	6:58	--	7:18	7:38	7:38
Broken Land Park & Ride (East Lot)	5:35	5:50	6:05	6:20	6:35	--	6:50	7:10	--	7:30	7:50	7:50
Scaggsville Park & Ride	5:47	6:02	6:17	6:32	6:47	--	7:02	7:22	--	7:42	8:02	8:02
<b>MONTGOMERY COUNTY</b>												
Burtonsville Park & Ride	5:55	6:10	6:25	6:40	6:55	--	7:10	7:30	--	7:50	8:10	8:10
Beyond this point, buses discharge passengers only and may depart stops ahead of schedule.												
Colesville Rd. & Fenton St.	6:14	6:29	6:46	7:02	7:19	7:04	7:36	7:59	8:00	8:18	8:38	8:38
Silver Spring Metrorail Station (M)	6:16	6:31	6:48	7:04	7:21	7:06	7:38	8:01	8:02	8:20	8:40	8:40
<b>WASHINGTON D.C.</b>												
Walter Reed Hospital (16th St., N.W.)	6:20	6:35	6:52	7:09	7:26	7:11	7:44	8:07	8:08	8:26	8:46	8:46
16th St. & P St., N.W.	6:31	6:46	7:03	7:21	7:40	7:24	8:00	8:23	8:24	8:42	9:02	9:02
16th St. & M St., N.W.	6:33	6:48	7:05	7:23	7:42	7:26	8:02	8:25	8:26	8:44	9:04	9:04
K St. & 16th St., N.W.	6:35	6:50	7:07	7:25	7:44	7:28	8:04	8:27	8:28	8:46	9:06	9:06
K St. & 14th St., N.W. (McPherson Square M)	6:37	6:52	7:09	7:27	7:46	7:30	8:06	8:29	8:30	8:48	9:08	9:08
13th St. & H St., N.W. (Metro Center)	6:38	6:54	7:11	7:29	7:48	7:32	8:08	8:31	8:32	8:49	9:10	9:10
Pennsylvania Ave. & 12th St., N.W. (M)	6:40	6:57	7:14	7:32	7:51	7:35	8:11	8:34	8:35	8:51	9:12	9:12
Constitution Ave. & 10th St., N.W. (Dept. of Justice)	6:42	6:59	7:16	7:34	7:53	7:37	8:13	8:36	8:37	8:53	9:14	9:14
7th St. & Constitution Ave., N.W. (Archives M)	6:43	7:01	7:18	7:36	7:55	7:39	8:15	8:38	8:39	8:55	9:16	9:16
Independence Ave. bet. 7th & 6th Sts., S.W. (L'Enfant Plaza M)	6:45	7:03	7:20	7:38	7:58	7:42	8:18	8:41	8:42	8:57	9:18	9:18
Independence Ave. bet. 4th & 3rd Sts., S.W. (HHS)	6:47	7:05	7:22	7:40	8:00	7:44	8:20	8:43	8:44	8:59	9:20	9:20
M St. & 1st St., S.E. (Navy Yard M)	6:51	7:10	7:27	7:45	8:05	7:49	8:27	8:50	8:51	9:04	9:25	9:25
M St. & 4th St., S.E. (Southeast Federal Center)	6:53	7:12	7:29	7:47	8:07	7:51	8:29	8:52	8:53	9:06	9:27	9:27
M St. & Isaac Hull Ave. (6th St.), S.E.	6:54	7:13	7:30	7:48	8:08	7:52	8:30	8:53	8:54	9:07	9:28	9:28
M St. & 9th St., S.E. (Washington Navy Yard)	6:55	7:15	7:32	7:50	8:10	7:54	8:32	8:55	8:56	9:09	9:30	9:30

Effective May 31, 2011

		NO. 915 LINE NORTHBOUND FROM WASHINGTON, D.C. / SILVER SPRING TO COLUMBIA (P.M.)												
		S	S	S	S	S	S	S	S	S	S	S	S	S
Trip No.		12	13	14	15	16	17	18	19	20	21	22	23	
<b>WASHINGTON D.C.</b>														
M St. & 8th St., S.E. (Washington Navy Yard)	2:40	3:15	3:45	4:00	4:20	4:30	4:35	4:55	5:00	5:15	5:35	6:05		
M St. opp. Isaac Hull Ave. (6th St.), S.E.	2:41	3:16	3:46	4:01	4:21	4:31	4:36	4:56	5:01	5:16	5:36	6:06		
M St. & 4th St., S.E. (Southeast Federal Center)	2:43	3:17	3:48	4:02	4:22	4:32	4:37	4:58	5:03	5:18	5:38	6:08		
M St. & New Jersey Ave., S.E. (Navy Yard <b>M</b> )	2:45	3:19	3:50	4:04	4:24	4:34	4:39	5:00	5:05	5:20	5:40	6:10		
Independence Ave. & 4th St., S.W. (HHS)	2:53	3:26	3:58	4:11	4:31	4:41	4:46	5:08	5:13	5:28	5:48	6:18		
7th St. & Independence Ave., S.W. (L'Enfant Plaza <b>M</b> )	2:56	3:29	4:01	4:14	4:34	4:44	4:49	5:11	5:16	5:31	5:51	6:21		
Constitution Ave. & 9th St., N.W. (Dept. of Justice)	3:00	3:32	4:05	4:17	4:37	4:47	4:52	5:15	5:20	5:35	5:55	6:25		
12th St. & E St., N.W.	3:03	3:35	4:09	4:20	4:40	4:50	4:55	5:19	5:24	5:39	5:59	6:29		
12th St. & G St., N.W. (Metro Center <b>M</b> )	3:05	3:37	4:11	4:22	4:42	4:52	4:57	5:21	5:26	5:41	6:01	6:31		
K St. & 14th St., N.W. (McPherson Square <b>M</b> )	3:09	3:41	4:15	4:26	4:46	4:56	5:01	5:25	5:30	5:45	6:05	6:35		
15th St. bet. M St. & Massachusetts Ave., N.W.	3:13	3:45	4:20	4:30	4:50	5:00	5:05	5:30	5:35	5:50	6:10	6:40		
Walter Reed Hospital (16th St., N.W.)	3:27	3:59	4:35	4:45	5:05	5:15	5:23	5:45	5:50	6:05	6:25	6:55		
<b>MONTGOMERY COUNTY</b>														
Silver Spring Metrorail Station ( <b>M</b> )	3:34	4:06	4:42	4:52	5:12	5:22	5:33	5:53	5:58	6:13	6:33	7:03		
Colesville Rd. & Fenton St.	3:37	4:09	4:45	4:55	5:15	5:25	5:36	5:56	6:01	6:16	6:36	7:06		
Beyond this point, buses may depart stops ahead of schedule. Passengers may board or alight buses at Burtonsville, Broken Land, and the Mall in Columbia; all other stops are discharge only on request.														
Burtonsville Park & Ride	3:59	4:34	5:06	5:20	5:40	--	6:00	6:20	--	6:38	6:57	7:27		
<b>HOWARD COUNTY</b>														
Scaggsville Park & Ride	4:07	4:43	5:14	5:30	5:51	--	6:10	6:30	--	6:47	7:05	7:35		
Broken Land Park & Ride (East lot)	4:16	4:53	5:24	5:41	6:02	--	6:19	6:39	--	6:56	7:14	7:43		
Broken Land Pkwy. opp. Hickory Ridge Rd.	4:25	5:03	5:34	5:51	6:13	--	6:28	6:48	--	7:05	7:23	7:52		
Little Patuxent Pkwy. opp. Vantage Point Rd.	--	--	--	--	--	6:05	--	--	6:38	--	--	--		
Little Patuxent Pkwy. & Gov. Warfield Pkwy.	--	--	--	--	--	6:06	--	--	6:39	--	--	--		
The Mall in Columbia (South Ring Rd.)	4:28	5:06	5:37	5:54	6:16	6:08	6:31	6:51	6:41	7:08	7:26	7:55		
Little Patuxent Pkwy. & Harper's Farm Rd.	4:32	5:10	--	5:58	6:20	6:12	--	6:55	6:45	7:12	7:30	7:59		
Little Patuxent Pkwy. & Cedar Lane	4:33	5:11	--	5:59	6:21	6:13	--	6:56	6:46	7:13	7:31	8:00		
Little Patuxent Pkwy. opp. Hickory Ridge Rd.	4:34	5:12	--	6:00	6:22	6:14	--	6:57	6:47	7:14	7:32	8:01		
Little Patuxent Pkwy. opp. Bright Passage	4:35	5:13	--	6:01	6:23	6:15	--	6:58	6:48	7:15	7:33	8:02		
Little Patuxent Pkwy. opp. White Cord Way	4:36	5:14	--	6:02	6:24	6:16	--	6:59	6:49	7:16	7:34	8:03		
Little Patuxent Pkwy. opp. Gray Star Way	4:37	5:15	--	6:03	6:25	6:17	--	7:00	6:50	7:17	7:35	8:04		
Harper's Farm Rd. opp. Cedar Lane (Village Center)	4:40	5:18	--	6:06	6:28	6:20	--	7:03	6:53	7:20	7:38	8:07		
Lotte Plaza (U.S. 40 & U.S. 29, Ellicott City)	--	--	5:47	--	--	--	6:41	--	--	--	--	--		

## Days of Operation

The No. 915 line operates Monday thru Friday. It does not operate on Saturdays, Sundays, and the following observed holidays:

New Year's Day, Martin Luther King Day, President's Day, Memorial Day, Independence Day, Labor Day, Columbus Day, Veteran's Day, Thanksgiving Day, Friday after Thanksgiving and Christmas Day.

Periodically, the MTA will operate Commuter Bus Services on reduced schedules in an effort to accommodate fewer riders when demand for these buses is significantly lower.

Trips marked with "S" denote the "Special Service Schedule." On Special Service Days only, those trips designated with the "S" will operate.

## Connecting Transit Services

- M** Metro Red Line at Silver Spring and at 12th and F (Metro Center)
- M** Metro Blue and Orange Lines at 14th & I (McPherson Square) and at 7th & Maryland (L'Enfant Plaza)
- M** Metro Green and Yellow Lines at 7th & Pennsylvania (Archives) and at 7th & Maryland (L'Enfant Plaza)
- M** Metrobus at Burtonsville, Silver Spring, and most Washington stops
- Ride-On** at Burtonsville and Silver Spring

## Wheelchair Accessible Service

- All coaches are wheelchair accessible

## Additional Service

No. 929 and 995 lines operate between Columbia and Washington. No. 929 line also serves Scaggsville, Burtonsville and Silver Spring. Nos. 929 and 995 lines operate during peak hours; the No. 929 line also operates during the midday and early evening hours.

**Metrobus** operates between Burtonsville and Silver Spring with connections to Downtown Washington via **Metro Red Line**.

**Guaranteed Ride Home** program is available for personal emergencies and unscheduled overtime. Participants must register with Commuter Connections at (800) 745-7433 to use this service.

## Weather & Emergency Plan

In the event that adverse weather conditions necessitate a change or deviation in the morning schedule, announcements will be made on radio stations WBAL (1090 AM Baltimore), WMAL (630 AM Washington), and WSMD (98.3 Star FM). If the morning service does not operate, then the afternoon service will not operate.

Should the U.S. Office of Personnel Management authorize an early release of federal workers due to inclement weather or miscellaneous events, the MTA will determine if coaches are available to depart according to a modified schedule.

Commuters should understand that the MTA requires sufficient advance notice in order to mobilize coaches for early departures with individual service providers.

If the early release is:

- Before 1:00 p.m., coaches will depart at 1:00, 1:15, 1:30, 1:45, 2:00 (LP), 2:15, 2:30, 2:45, 3:30, 4:30 (LP), 5:10 and 6:05 p.m.
- Before 2:00 p.m., coaches will depart at 2:00, 2:15, 2:30, 2:45, 3:00 (LP), 3:15, 3:30, 3:45, 4:00, 4:30 (LP), 5:10 and 6:05 p.m.
- After 2:00 p.m., coaches will operate on their regular schedules.

(LP) trip operates to Lotte Plaza

All trips will make all stops from the Washington Navy Yard to The Mall in Columbia. "LP" trips will continue to Lotte Plaza; all other trips will continue on the regular route to the Harper's Choice Village Center.

Buses will not make the stops on Little Patuxent Pkwy. at Vantage Point Rd. and at Gov. Warfield Pkwy. Use the No. 929 line to get to these stops.

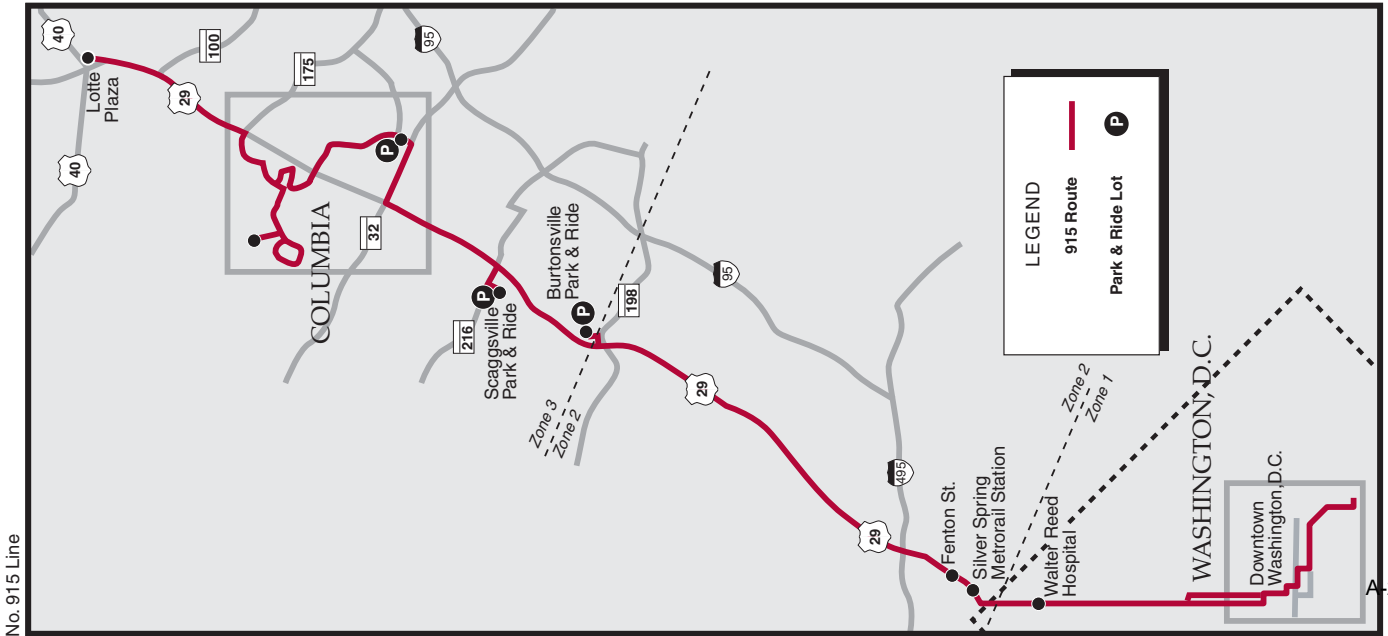
The MTA will generate e-notices and post announcements on the Commuter Bus Service Update Center online once changes in service occur.

## Standee Policy

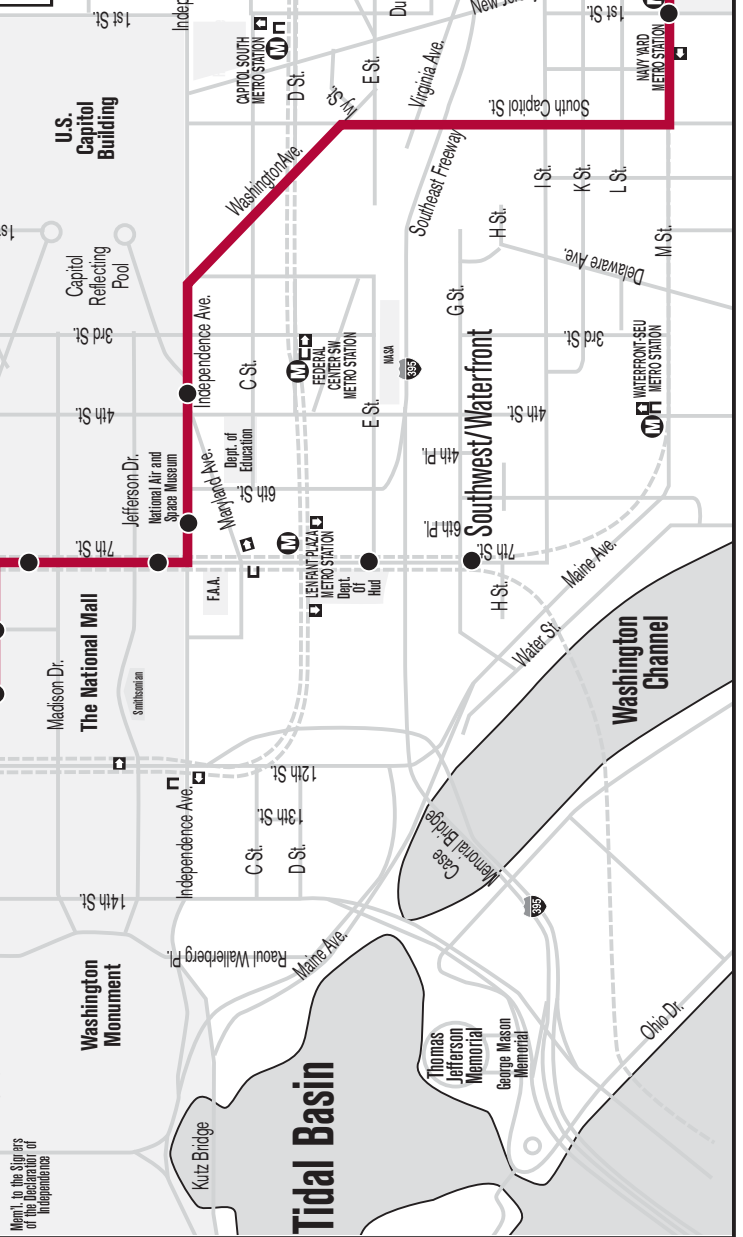
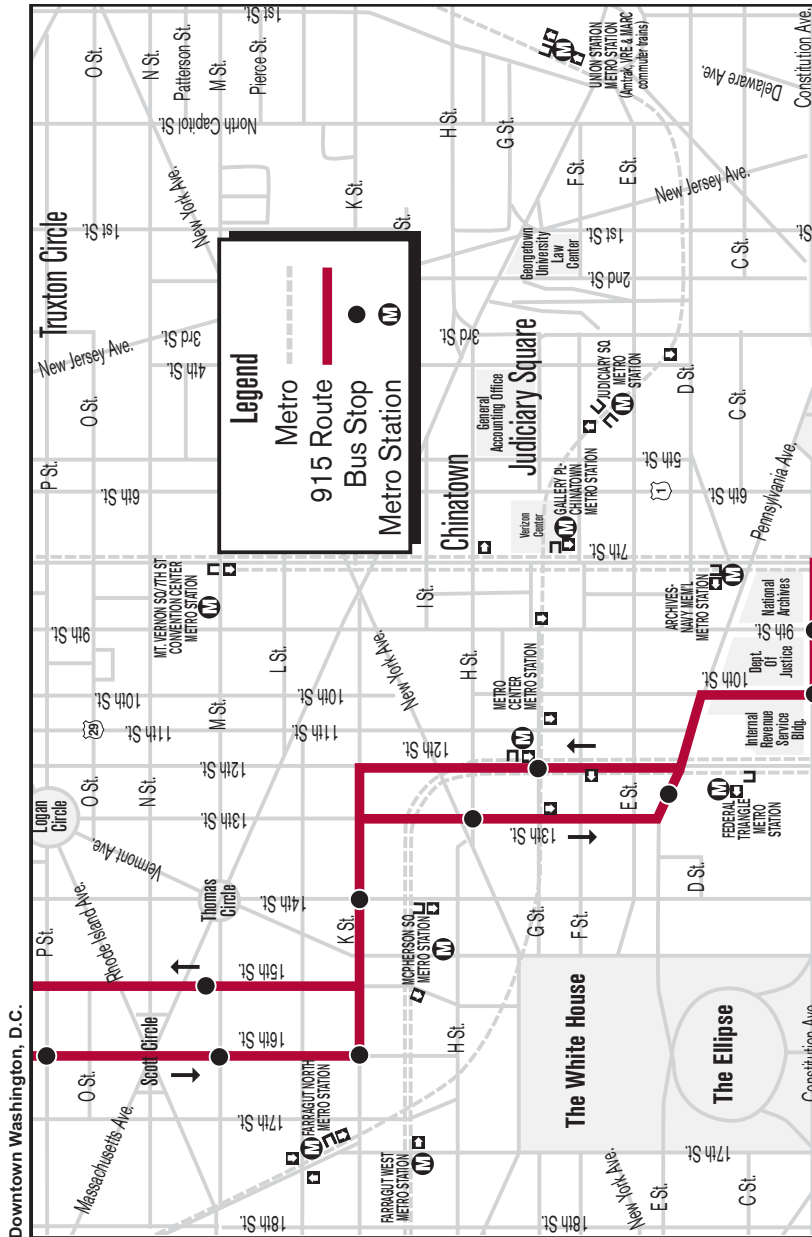
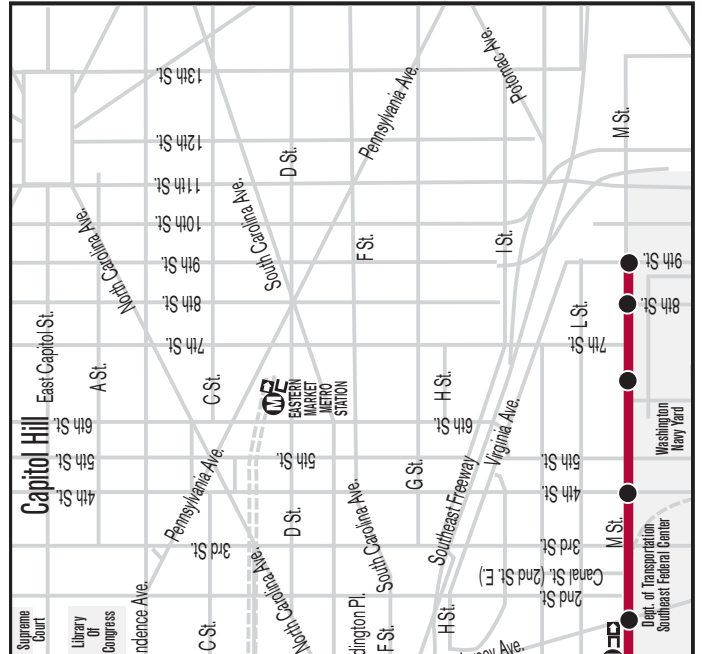
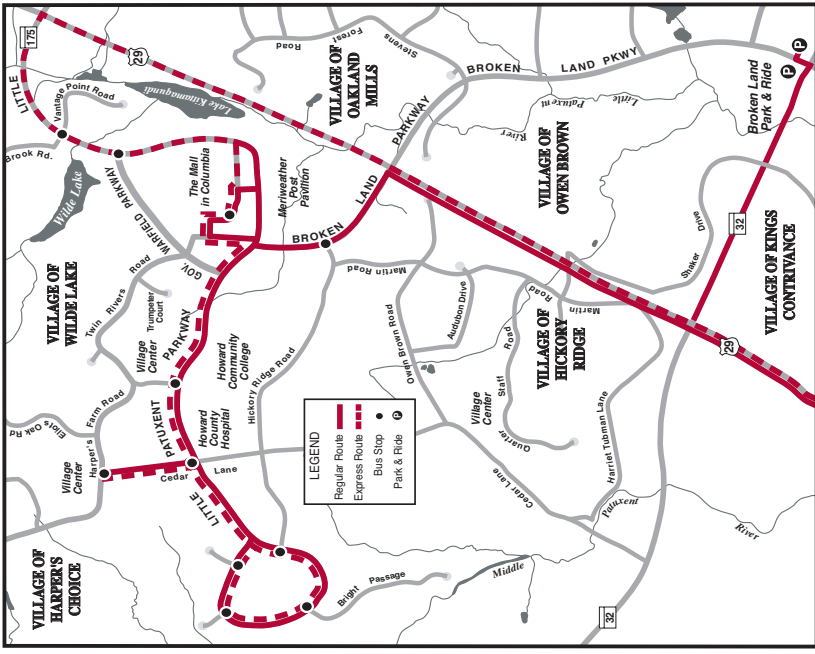
For the safety of our riders, the MTA prohibits standees on commuter buses except under the following circumstances:

- If the last evening bus has a full seated load;
- To accommodate passengers from another bus that has become disabled en-route; or
- In emergency situations, such as severe inclement weather or civil defense events.

Please note that a patron's need to reach his or her destination by a certain time is not considered an "emergency" for these purposes. Drivers are required to enforce this policy and to deny boarding to additional passengers once the bus has achieved a full seated load.



No. 915 Line



Map 1 to the Streets of the District of Columbia

## Fares

- From Columbia, Scaggsville, and Burtonsville to Silver Spring is Zone 2; from Columbia, Scaggsville, and Burtonsville to Washington, D.C. is Zone 3.

	<u>Zone 2</u>	<u>Zone 3</u>
One-Way Full Fare	\$3.50	\$4.25
One-Way Senior/Disability Fare	\$2.45	\$3.20
Ten-Trip Ticket	\$31.50	\$38.25
Sen./Dis. Ten-Trip Ticket	\$24.50	\$32.00
Monthly Pass	\$119.00	\$144.50
Transit Link Card	\$216.00	\$241.50

- Commuter Bus Ticket Sales**  
Phone: 410-454-7973  
Email: [transitstore@mta.maryland.gov](mailto:transitstore@mta.maryland.gov)
- Exact fare is required. No change will be given if you overpay.
- One-way fares and ten-trip tickets may be purchased on the bus. Contact the MTA to purchase monthly passes.
- MTA Commuter Choice Maryland Vouchers are accepted on this service.
- Reduced fares are available for senior citizens (65+), persons with disabilities, and Medicare Cardholders. To be eligible, you must show one of the following: a valid MTA Senior/Disability photo ID card, or any valid government issued photo ID with proof of age, or a valid disability ID from another transit agency with any valid government issued photo ID, or a Medicare card with any valid government photo ID.
- Transit Link Cards allow for unlimited use of MTA Commuter Bus (up to the indicated zone), Metrorail, Metrobus, and Ride-On during the indicated month.
- Free connections, between MTA Commuter Buses **only**, are available at The Mall in Columbia and at Broken Land Park & Ride.

## Wheelchair Accessible Service

- All coaches are wheelchair accessible.

## MTA Telephone Numbers

Information (410) 539-5000 or 1 (866) RIDE-MTA  
 Internet Address [www.mta.maryland.gov](http://www.mta.maryland.gov)  
 E-Mail Comment Line [commuterbus@mta.maryland.gov](mailto:commuterbus@mta.maryland.gov)  
 TTY (hearing/speech impaired) (410) 539-3497  
 Directory Assistance 1 (888) 218-2267  
 Commuter Choice Maryland Info. (410) 767-8755

## Other Telephone Numbers

Dillon's Bus Service, Inc. 1 (800) 827-3490  
 WMATA Metrorail and Metrobus (202) 637-7000  
 Montgomery County Ride-On (240) 777-7433  
 Howard Transit 1 (800) 270-9553  
 Commuter Solutions of Howard County (410) 313-3130

MARYLAND TRANSIT ADMINISTRATION  
 MARYLAND DEPARTMENT OF TRANSPORTATION  
 6 St. Paul Street  
 Baltimore, Maryland 21202-1614

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 This document is available in alternate format upon request.

EFFECTIVE MAY 31,  
 2011

# 929

## COMMUTER BUS

MARYLAND TRANSIT ADMINISTRATION  
 OPERATED UNDER A SERVICE CONTRACT WITH:

**DILLON'S BUS SERVICE (800) 827-3490**  
**COLUMBIA AND SILVER SPRING  
 TO WASHINGTON D.C.**

**WEEKDAY PEAK SERVICE  
 4:45 A.M. TO 8:54 P.M.**

EXPRESS SERVICE VIA U.S. 29 TO:  
**THE MALL IN COLUMBIA  
 BROKEN LAND P&R  
 SCAGGSVILLE P&R  
 BURTONSVILLE P&R  
 SILVER SPRING  
 METRO STATION  
 WASHINGTON D.C.**



Maryland Department  
 of Transportation

tel: 410-539-5000  
 1-866-RIDE-MTA (743-3682)  
[mta.maryland.gov](http://mta.maryland.gov)

**YOUR RIDE IS HERE.**

NO. 929 LINE SOUTHBOUND FROM COLUMBIA TO SILVER SPRING / WASHINGTON, D.C. (A.M.)													
Trip No.	L/S	1	2	3	4	5	6	7	8	9	10	11	L/S
	<b>HOWARD COUNTY</b>												
Harper's Farm Rd. & Cedar Lane (Village Center)	4:45	5:20	5:25	5:45	6:10	6:15	6:35	6:40	6:55	7:15	7:44	7:45	7:45
Harper's Farm Rd. opp. Elliotts Oak Rd.	4:46	5:21	5:26	5:46	6:11	6:16	6:36	6:41	6:56	7:16	7:45	7:46	7:46
Twin Rivers Rd. & Harper's Farm Rd.	4:47	5:22	5:27	5:47	6:12	6:17	6:37	6:42	6:57	7:17	7:46	7:47	7:48
Twin Rivers Rd. opp. Jason Ln.	4:48	5:23	5:28	5:48	6:13	6:18	6:38	6:43	6:58	7:18	7:47	7:48	7:48
Twin Rivers Rd. & Trumpeter Rd.	4:50	5:25	5:30	5:50	6:15	6:20	6:40	6:45	7:00	7:20	7:49	7:50	7:50
The Mall in Columbia (South Ring Rd.)	4:52	5:28	5:32	5:52	6:18	6:22	6:42	6:48	7:02	7:22	7:51	7:52	7:52
Broken Land Pkwy. & Hickory Ridge Rd.	--	5:31	--	--	6:21	--	--	6:51	--	--	7:54	--	--
Little Patuxent Pkwy. opp. Gov. Warfield Pkwy.	4:54	--	5:34	5:54	--	6:24	6:44	--	7:04	7:24	--	7:54	--
Little Patuxent Pkwy. & Vantage Point Rd.	4:55	--	5:35	5:55	--	6:25	6:45	--	7:05	7:25	--	7:55	--
Thunder Hill Rd. & Oakland Mills Rd.	4:57	--	5:37	5:57	--	6:27	6:47	--	7:07	7:27	--	7:57	--
White Acre Rd. & Thunder Hill Rd.	4:59	--	5:39	5:59	--	6:29	6:49	--	7:09	7:29	--	7:59	--
Oakland Mills Village Center	5:01	--	5:41	6:01	--	6:31	6:51	--	7:11	7:31	--	8:01	--
Stevens Forest opp. Killmanjaro Rd.	5:02	--	5:42	6:02	--	6:32	6:52	--	7:12	7:32	--	8:02	--
Stevens Forest opp. Farewell Rd.	5:03	--	5:43	6:03	--	6:33	6:53	--	7:13	7:33	--	8:03	--
Stevens Forest & Soft Shade Way	5:04	--	5:44	6:04	--	6:34	6:54	--	7:14	7:34	--	8:04	--
Broken Land opp. Cradlerock Way N.	5:06	--	5:46	6:06	--	6:36	6:56	--	7:16	7:36	--	8:06	--
Broken Land opp. Cradlerock Way S.	5:07	--	5:47	6:07	--	6:37	6:57	--	7:17	7:37	--	8:07	--
Broken Land opp. Snowden River Pkwy.	5:08	--	5:48	6:08	--	6:38	6:58	--	7:18	7:38	--	8:08	--
Broken Land Park & Ride (east lot)	5:10	--	5:50	6:10	--	6:40	7:00	--	7:20	7:40	--	8:10	--
Scaggsville Park & Ride	5:22	5:42	6:02	6:22	--	6:52	7:12	--	7:32	7:52	8:07	8:22	8:22
<b>MONTGOMERY COUNTY</b>													
Burtonsville Park & Ride	5:30	5:50	6:10	6:30	--	7:00	7:20	--	7:40	8:00	8:15	8:30	8:30
Beyond this point, buses discharge passengers only and may depart stops ahead of schedule.													
Colesville Rd. & Fenton St.	5:48	6:08	6:28	6:51	6:53	7:26	7:49	7:27	8:11	8:31	8:46	9:04	9:04
Silver Spring Metrorail Station (M)	5:50	6:10	6:30	6:53	6:55	7:28	7:51	7:29	8:13	8:33	8:48	9:06	9:06
<b>WASHINGTON D.C.</b>													
Walter Reed Hospital (16th St., N.W.)	5:54	6:14	6:34	6:57	7:00	7:34	7:58	7:36	8:21	8:42	8:56	9:14	9:14
16th St. & Harvard St., N.W.	6:01	6:21	6:41	7:05	7:10	7:46	8:10	7:48	8:35	8:55	9:08	9:26	9:26
New Hampshire Ave. & Dupont Cir., N.W. (M)	6:06	6:26	6:46	7:10	7:15	7:52	8:17	7:55	8:42	9:02	9:15	9:33	9:33
19th St. & M St., N.W.	6:08	6:28	6:48	7:12	7:18	7:55	8:20	7:58	8:45	9:06	9:19	9:37	9:37
19th St. & K St., N.W. (M)	6:10	6:30	6:50	7:14	7:20	7:57	8:22	8:00	8:47	9:09	9:22	9:40	9:40
19th St. bet. Penn. Ave. & H St., N.W.	6:11	6:31	6:51	7:15	7:22	7:59	8:24	8:02	8:49	9:11	9:24	9:42	9:42
19th St. & E St., N.W.	6:13	6:33	6:53	7:17	7:24	8:01	8:27	8:05	8:52	9:14	9:27	9:45	9:45
Constitution Ave. & 14th St., N.W.	6:18	6:38	6:58	7:22	7:29	8:07	8:33	8:11	8:58	9:20	9:33	9:51	9:51
Constitution Ave. opp. 10th St., N.W.	6:20	6:40	7:00	7:24	7:31	8:09	8:35	8:13	9:00	9:22	9:35	9:54	9:54
7th St. & Constitution Ave., N.W. (M)	6:21	6:41	7:01	7:25	7:32	8:11	8:38	8:16	9:03	9:24	9:37	9:56	9:56
Independence Ave. bet. 7th & 6th Sts., S.W. (M)	6:23	6:43	7:03	7:27	7:34	8:13	8:41	8:19	9:06	9:27	9:40	9:59	9:59
Independence Ave. bet. 4th & 3rd Sts., S.W.	6:25	6:45	7:05	7:29	7:36	8:15	8:43	8:21	9:08	9:29	9:42	10:02	10:02
Independence Ave. & 1st St., S.E.	6:28	6:48	7:08	7:32	7:39	8:18	8:46	8:24	9:11	9:32	9:45	10:05	10:05

**Days of Operation**

The No. 929 line operates Monday thru Friday. It does not operate on Saturdays, Sundays and the following observed Holidays: New Year's Day, Martin Luther King Day, President's Day, Memorial Day, Independence Day, Labor Day, Columbus Day, Veteran's Day, Thanksgiving Day, Friday after Thanksgiving and Christmas Day.

Periodically, the MTA will operate Commuter Bus Services on reduced schedules in an effort to accommodate fewer riders when demand for these buses is significantly lower.

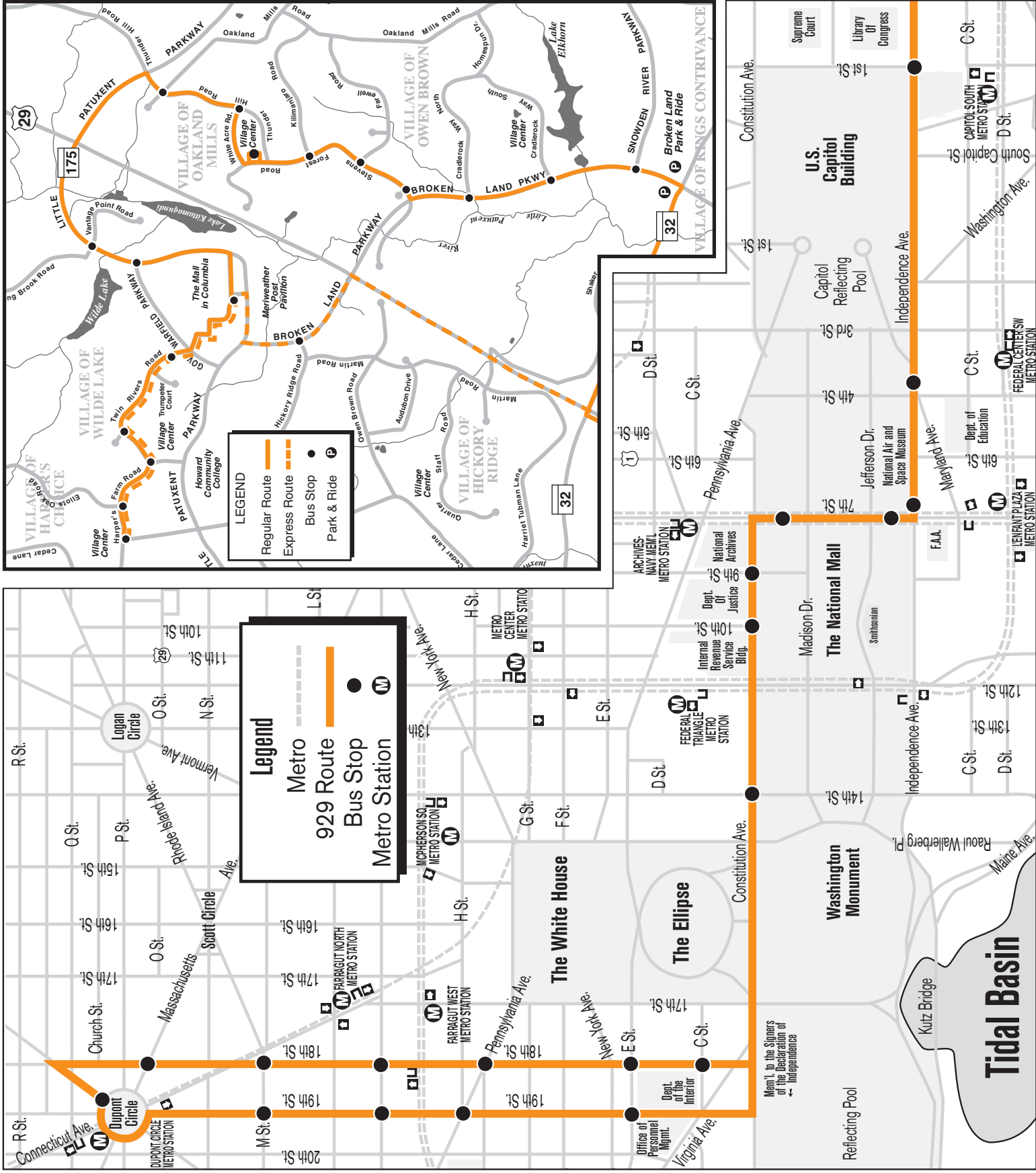
Trips marked with "L" denote the "Limited Service Schedule. On Limited Service Days only, those trips designated with the "L" will operate.

Trips marked with "S" denote the "Special Service Schedule. On Special Service Days only, those trips designated with the "S" will operate.

NO. 929 LINE NORTHBOUND FROM WASHINGTON, D.C. / SILVER SPRING TO COLUMBIA (P.M.)																								
Trip No.	L/S	L/S	L/S	L/S	L/S	L/S	L/S	L/S	L/S	L/S	L/S	L/S	L/S	L/S	L/S	L/S	L/S	L/S	L/S	L/S	L/S	L/S	L/S	L/S
	13	14	15	16	17	18	19	20	21	22	23	24	25											
<b>WASHINGTON D.C.</b>																								
Independence Ave. & 1st St., S.E.	1:00	3:00	3:20	3:40	4:00	4:15	4:20	4:40	4:45	5:05	5:25	5:50	7:00											
Independence Ave. & 4th St., S.W.	1:03	3:03	3:23	3:43	4:03	4:18	4:23	4:43	4:48	5:08	5:28	5:53	7:03											
7th St. & Independence Ave., S.W. (M)	1:05	3:06	3:26	3:46	4:06	4:21	4:26	4:46	4:51	5:11	5:31	5:56	7:06											
Constitution Ave. & 9th St., N.W.	1:09	3:10	3:30	3:50	4:10	4:25	4:30	4:50	4:55	5:15	5:35	6:00	7:10											
Constitution Ave. bet. 14th & 15th Sts., N.W.	1:11	3:13	3:34	3:54	4:14	4:29	4:34	4:54	4:59	5:19	5:39	6:04	7:13											
18th St. & C St., N.W.	1:14	3:16	3:38	3:58	4:19	4:34	4:39	4:59	5:04	5:24	5:43	6:07	7:16											
18th St. & E St., N.W.	1:16	3:18	3:40	4:00	4:21	4:36	4:41	5:01	5:06	5:26	5:45	6:09	7:18											
18th St. & Pennsylvania Ave., N.W.	1:18	3:20	3:42	4:02	4:23	4:39	4:44	5:04	5:09	5:29	5:48	6:12	7:21											
18th St. & K St., N.W. (M)	1:20	3:22	3:44	4:04	4:25	4:41	4:46	5:06	5:11	5:31	5:50	6:14	7:23											
18th St. & M St., N.W.	1:22	3:24	3:46	4:06	4:27	4:43	4:48	5:08	5:13	5:33	5:52	6:16	7:25											
18th St. & Massachusetts Ave., N.W. (M)	1:24	3:26	3:48	4:08	4:29	4:45	4:50	5:10	5:15	5:35	5:54	6:18	7:27											
16th St. & Harvard St., N.W.	1:29	3:31	3:54	4:14	4:36	4:53	4:58	5:18	5:23	5:43	6:02	6:25	7:33											
Waiter Reed Hospital (16th St., N.W.)	1:38	3:40	4:03	4:23	4:45	5:02	5:08	5:28	5:33	5:53	6:13	6:36	7:44											
<b>MONTGOMERY COUNTY</b>																								
Silver Spring Metrorail Station (M)	1:45	3:47	4:10	4:30	4:52	5:09	5:16	5:36	5:41	6:01	6:23	6:45	7:53											
Colesville Rd. & Fenton St.	1:47	3:50	4:13	4:33	4:55	5:12	5:19	5:39	5:44	6:04	6:26	6:48	7:55											
Beyond this point, buses may depart stops ahead of schedule. Passengers may board or alight buses at Burtonsville, Broken Land, and The Mall in Columbia; all other stops are discharge only on request.																								
Burtonsville Park & Ride	2:07	4:11	4:34	4:57	5:19	--	5:45	6:05	--	6:28	6:49	7:09	8:13											
<b>HOWARD COUNTY</b>																								
Scaggsville Park & Ride	2:15	4:20	4:43	5:06	5:28	--	5:54	6:14	--	6:37	6:58	7:18	8:21											
Broken Land Park & Ride (east lot)	2:25	4:31	--	5:17	5:39	--	6:05	6:25	--	6:48	7:09	7:28	8:29											
Broken Land Pkwy. & Snowden River Pkwy.	2:27	4:33	--	5:19	5:41	--	6:07	6:27	--	6:50	7:11	7:30	8:31											
Broken Land Pkwy. & Cradlerock Way S.	2:28	4:34	--	5:20	5:42	--	6:08	6:28	--	6:51	7:12	7:31	8:32											
Broken Land Pkwy. & Cradlerock Way N.	2:29	4:35	--	5:21	5:43	--	6:09	6:29	--	6:52	7:13	7:32	8:33											
Stevens Forest Rd. opp. Soft Shade Way	2:31	4:37	--	5:23	5:45	--	6:11	6:31	--	6:54	7:15	7:34	8:35											
Stevens Forest Rd. & Farewell Rd.	2:32	4:38	--	5:24	5:46	--	6:12	6:32	--	6:55	7:16	7:35	8:36											
Stevens Forest Rd. & Kilimanjaro Rd.	2:33	4:39	--	5:25	5:47	--	6:13	6:33	--	6:56	7:17	7:36	8:37											
Oakland Mills Village Center	2:35	4:41	--	5:27	5:49	--	6:15	6:35	--	6:58	7:19	7:38	8:39											
White Acre Rd. & Thunder Hill Rd.	2:36	4:42	--	5:28	5:50	--	6:16	6:36	--	6:59	7:20	7:39	8:40											
Thunder Hill Rd. & Oakland Mills Rd	2:38	4:44	--	5:30	5:52	--	6:18	6:38	--	7:01	7:22	7:41	8:42											
Little Patuxent Pkwy. opp. Vantage Point Rd.	2:41	4:47	--	5:33	5:55	--	6:21	6:41	--	7:04	7:25	7:44	8:45											
Little Patuxent Pkwy. & Gov. Warfield Pkwy.	2:42	4:48	--	5:34	5:56	--	6:22	6:42	--	7:05	7:26	7:45	8:46											
Broken Land Pkwy. opp. Hickory Ridge Rd.	--	--	4:53	--	--	5:54	--	--	6:24	--	--	--	--											
The Mall in Columbia (South Ring Rd.)	2:44	4:50	4:56	5:36	5:58	5:57	6:24	6:44	6:27	7:07	7:28	7:47	8:48											
Twin Rivers Rd. opp. Trumpeter Rd.	2:46	4:52	4:58	5:38	6:00	5:59	6:26	6:46	6:29	7:09	7:30	7:49	8:50											
Twin Rivers Rd. & Jason Ln.	2:47	4:53	4:59	5:39	6:01	6:00	6:27	6:47	6:30	7:10	7:31	7:50	8:51											
Twin Rivers Rd. & Harper's Farm Rd.	2:48	4:54	5:00	5:40	6:02	6:01	6:28	6:48	6:31	7:11	7:32	7:51	8:52											
Harper's Farm Rd. & Eliots Oak Rd.	2:49	4:55	5:01	5:41	6:03	6:02	6:29	6:49	6:32	7:12	7:33	7:52	8:53											
Harper's Farm Rd. opp. Cedar Ln. (Village Center)	2:50	4:56	5:02	5:42	6:04	6:03	6:30	6:50	6:33	7:13	7:34	7:53	8:54											

**Connecting Transit Services**

- M** Metro Red Line at Silver Spring at 19th & Connecticut (Dupont Circle), and at Connecticut & K (Farragut North)
- M** Metro Blue and Orange Lines at 18th & I (Farragut West) and at 7th & Maryland (L'Enfant Plaza)
- M** Metro Green and Yellow Lines at 7th & Pennsylvania (Archives) and at 7th & Maryland (L'Enfant Plaza)
- Metrobus at Burtonsville and Silver Spring, and most Washington stops
- Ride-On at Burtonsville and Silver Spring
- Howard Transit at The Mall in Columbia and at other stops in Columbia.



## Weather & Emergency Plan

In the event that adverse weather conditions necessitate a change or deviation in the morning schedule, announcements will be made on radio stations WBAL (1090 AM Baltimore), WMAL (630 AM Washington), and WSMJ (98.3 Star FM). If the morning service does not operate, then the afternoon service will not operate.

Should the U.S. Office of Personnel Management authorize an early release of federal workers due to inclement weather or miscellaneous events, the MTA will determine if coaches are available to depart according to a modified schedule.

Commuters should understand that the MTA requires sufficient advance notice in order to mobilize coaches for early departures with individual service providers.

If the early release is:

- Before 1:00 p.m., buses will depart at 1:00, 1:15, 1:30, 1:45, 2:00, 2:15, 2:30, 3:00, 3:30, 4:00, 5:00, 5:50 and 7:00 p.m.
- Before 2:00 p.m., buses will depart at 2:00, 2:15, 2:30, 2:45, 3:00, 3:15, 3:30, 4:00, 4:30, 5:00, 5:30 and 7:00 p.m.
- After 2:00 p.m., buses will operate on their regular schedules.

All trips will make all stops from 1st & Independence, S.E. to the Harper's Choice Village Center.

Buses will not make the stop at Broken Land Pkwy. & Hickory Ridge Rd. Use the No. 915 line to the stop one block away at Martin Rd. & Hickory Ridge Rd.

All southbound buses will operate on their regular schedules.

Should the MTA be motivated by inclement weather or miscellaneous events to conduct earlier than regular service, the Commuter Bus division will determine if coaches are available to depart according to a modified schedule.

The MTA will generate e-notices and post announcements on the Commuter Bus Service Update Center online, once changes in service occur.

### Standee Policy

For the safety of our riders, the MTA prohibits standees on commuter buses except under the following circumstances:

- If the last evening bus has a full seated load;
- To accommodate passengers from another bus that has become disabled en-route; or
- In emergency situations, such as severe inclement weather or civil defense events.

Please note that a patron's need to reach his or her destination by a certain time is not considered an "emergency" for these purposes. Drivers are required to enforce this policy and to deny boarding to additional passengers once the bus has achieved a full seated load.

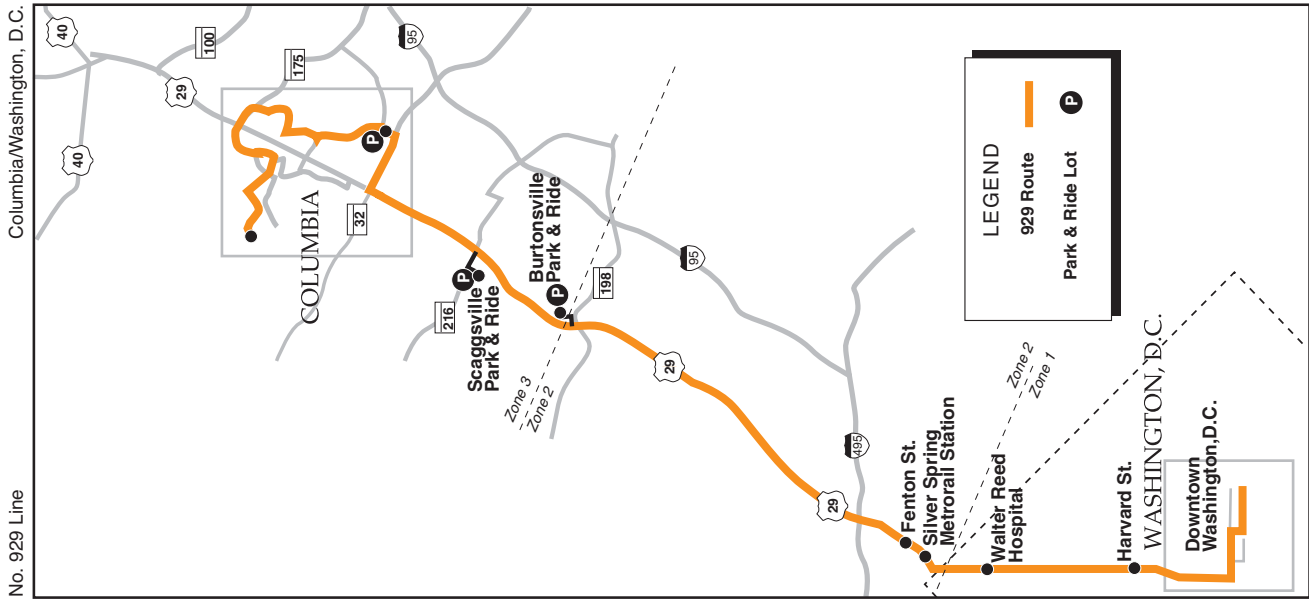
### Additional Service

**No. 201** line operates from the Burtonville P&R to BWI Airport.

**Nos. 915** and **995** lines operate between Columbia and Washington. **No. 915** line also serves Scaggsville, Burtonville, and Silver Spring.

**Metrobus** operates between Burtonville and Silver Spring with connections to Downtown Washington via **Metro Red Line**.

**Guaranteed Ride Home** program is available for personal emergencies and unscheduled overtime. Participants must register with Commuter Connections at (800) 745-7433 to use this service.



## Fares

- From Clarksville, Ellicott City, and Columbia to Washington, D.C. is Zone 3.
- |                                 | Zone 3   |
|---------------------------------|----------|
| One-Way Full Fare               | \$4.25   |
| One-Way Senior/Disability Fare  | \$3.20   |
| Ten-Trip Ticket                 | \$38.25  |
| Sen./Dis. Ten-Trip Monthly Pass | \$32.00  |
| Transit Link Card               | \$144.50 |
|                                 | \$241.50 |

- Exact fare is required. No change will be given if you overpay.
- One-way fares and ten-trip tickets may be purchased on the bus. Contact the MTA to purchase monthly passes.
- MTA Commuter Choice Maryland Vouchers and WMATA SmartBenefit Vouchers are accepted on this service.
- Reduced fares are available for senior citizens (65+), persons with disabilities, and Medicare Cardholders. To be eligible, you must show one of the following: a valid MTA Senior/Disability photo ID card, or any valid government issued photo ID with proof of age, or a valid disability ID from another transit agency with any valid government issued photo ID, or a Medicare card with any valid government photo ID.
- Transit Link Cards allow for unlimited use of MTA Commuter Bus (up to the indicated zone), Metrorail, Metrobus, and Ride-On during the indicated month.
- Free connections, between MTA Commuter Buses only, are available at The Mall in Columbia, Snowden River Park & Ride, and at Broken Land Park & Ride.

## Wheelchair Accessible Service

- All coaches are wheelchair accessible

## MTA Telephone Numbers

Information (410) 539-5000 or 1 (866) RIDE-MTA  
Internet Address [www.mta.maryland.gov](http://www.mta.maryland.gov)  
E-Mail Comment Line [commuterbus@mta.maryland.gov](mailto:commuterbus@mta.maryland.gov)  
TTY (hearing/speech impaired) (410) 539-3497  
Directory Assistance 1 (888) 218-2267  
Monthly Pass Credit Card Sales (410) 767-3439  
Commuter Choice Maryland Info. (410) 767-8755

## Other Telephone Numbers

Dillon's Bus Service, Inc. 1 (800) 827-3490  
WMATA Metrorail and Metrobus (202) 637-7000  
Howard Transit 1 (800) 270-9553  
Commuter Solutions of Howard County (410) 313-3130

MARYLAND TRANSIT ADMINISTRATION  
MARYLAND DEPARTMENT OF TRANSPORTATION  
6 St. Paul Street  
Baltimore, Maryland 21202-1614

This timetable is printed on recycled paper.  
This document is available in alternate format upon request.

EFFECTIVE MAY 31,  
2011

# 995

## COMMUTER BUS

MARYLAND TRANSIT ADMINISTRATION  
OPERATED UNDER A SERVICE CONTRACT WITH:  
DILLON'S BUS SERVICE (800) 827-3490

**CLARKSVILLE / ELLICOTT CITY /  
COLUMBIA TO WASHINGTON D.C.**  
**WEEKDAY PEAK SERVICE**  
**5:00 A.M. TO 7:35 P.M.**

EXPRESS SERVICE VIA I-95 TO:

**TEN OAKS BALLROOM**

**LONG GATE P&R**

**SNOWDEN RIVER P&R**

**BROKEN LAND P&R**

**WASHINGTON D.C.**



tel: 410-539-5000  
1-866-RIDE-MTA (743-3682)  
[mta.maryland.gov](http://mta.maryland.gov)

**YOUR RIDE IS HERE.**

Effective May 31, 2011

NO. 995 LINE SOUTHBOUND FROM CLARKSVILLE/ELLCOTT CITY/COLUMBIA TO WASHINGTON, D.C. (A.M.)													
Trip No.	1	2	3	4	5	6	7	8	9	10	11	12	13
<b>HOWARD COUNTY</b>													
Clarksville Park & Ride (Ten Oaks Ballroom)	--	5:28	--	5:48	--	6:08	--	6:28	--	6:48	--	7:13	--
Long Gate Park & Ride	5:00	--	5:20	--	5:40	--	6:00	--	6:20	--	6:40	--	7:10
Columbia 100 Pkwy. & Executive Park Dr.	5:03	--	5:23	--	5:43	--	6:03	--	6:23	--	6:43	--	7:13
Phelps Luck Dr. opp. High Tor Hill	5:07	--	5:27	--	5:47	--	6:07	--	6:27	--	6:47	--	7:17
Phelps Luck Dr. opp. Thurso Ct.	5:09	--	5:29	--	5:49	--	6:09	--	6:29	--	6:49	--	7:19
Phelps Luck Dr. & Sheerock Ct.	5:10	--	5:30	--	5:50	--	6:10	--	6:30	--	6:50	--	7:20
Tamar Dr. opp. Sweetwind Pl.	5:11	--	5:32	--	5:52	--	6:12	--	6:32	--	6:52	--	7:22
Tamar Dr. & Cloudleap Ct. (Long Reach Village Ctr.)	5:13	--	5:33	--	5:53	--	6:13	--	6:33	--	6:53	--	7:23
Snowden River Park & Ride	5:18	--	5:38	--	5:58	--	6:18	--	6:38	--	6:58	--	7:28
Snowden River Pkwy. & Oakland Mills Rd	5:23	--	5:43	--	6:03	--	6:23	--	6:43	--	7:03	--	7:33
Broken Land Park & Ride (west lot)	5:30	5:40	5:50	6:00	6:10	6:20	6:30	6:40	6:50	7:00	7:10	7:25	7:40
<b>WASHINGTON D.C.</b>													
Independence Ave. & 1st St., S.E.	6:07	6:17	6:27	6:38	6:49	7:01	7:13	7:30	7:40	7:56	8:06	8:28	8:43
Independence Ave. & 4th St., S.W. (M)	6:10	6:20	6:30	6:41	6:52	7:04	7:16	7:33	7:43	7:59	8:09	8:31	8:46
7th St. & Independence Ave., S.W. (L'Enfant Plaza M)	6:12	6:22	6:32	6:43	6:54	7:06	7:18	7:35	7:45	8:01	8:11	8:33	8:48
Constitution Ave. & 9th St., N.W.	6:16	6:26	6:36	6:47	6:58	7:10	7:22	7:39	7:49	8:05	8:15	8:37	8:52
Constitution Ave. bet. 14th & 15th Sts., N.W.	6:18	6:28	6:38	6:49	7:00	7:12	7:24	7:41	7:51	8:07	8:17	8:39	8:54
18th St. & C St., N.W.	6:21	6:31	6:41	6:52	7:03	7:15	7:27	7:44	7:54	8:10	8:20	8:42	8:57
18th St. & E St., N.W.	6:23	6:33	6:43	6:54	7:05	7:17	7:29	7:46	7:56	8:12	8:22	8:44	8:59
18th St. & Pennsylvania Ave., N.W.	6:24	6:34	6:44	6:55	7:06	7:18	7:30	7:47	7:57	8:13	8:23	8:45	9:00
18th St. & K St., N.W. (Farragut M)	6:25	6:35	6:45	6:56	7:07	7:19	7:31	7:48	7:58	8:14	8:24	8:46	9:01
18th St. & M St., N.W.	6:26	6:36	6:46	6:57	7:08	7:20	7:32	7:49	7:59	8:15	8:25	8:47	9:02

**Connecting Transit Services**

- M Metro Red Line** at Connecticut & K (Farragut North)
- M Metro Blue and Orange Lines** at 7th & Maryland (L'Enfant Plaza) and 18th & I (Farragut West)
- M Metro Green and Yellow Lines** at 7th & Maryland (L'Enfant Plaza) and 7th & Pennsylvania (Archives)
- Metrobus** at most Downtown Washington stops.
- Howard Transit** at the Long Reach Village Center, the Oakland Mills Village Center, and at other stops in Columbia.

**Additional Service**

**No. 915** and **929** lines operate between Columbia and Washington during peak hours. In addition, the No. 929 line also operates during the midday.

**Guaranteed Ride Home Program** is available for personal emergencies and unscheduled overtime. Participants must register with Commuter Connections at (800) 745-7433 to use this service.

Effective May 31, 2011

NO. 995 LINE NORTHBOUND FROM WASHINGTON, D.C. TO COLUMBIA/ELLIOTT CITY/CLARKSVILLE (P.M.)																	
Trip No.	14	L/S	15	S	16	17	18	19	20	21	22	23	L/S	24	25	L/S	26
<b>WASHINGTON D.C.</b>																	
19th St. & M St., N.W.	3:00	3:15	3:30	3:45	3:55	4:05	4:15	4:25	4:35	4:45	4:55	5:05	5:15	5:25	5:35	5:45	5:55
19th St. & K St., N.W. (Farragut <b>M</b> )	3:02	3:17	3:32	3:47	3:57	4:07	4:17	4:27	4:37	4:47	4:57	5:07	5:17	5:27	5:37	5:47	5:57
19th St. bet. Pennsylvania Ave. & H St., N.W.	3:04	3:19	3:34	3:49	3:59	4:09	4:19	4:29	4:39	4:49	4:59	5:09	5:19	5:29	5:39	5:49	5:59
19th St. & E St., N.W.	3:06	3:21	3:36	3:51	4:01	4:11	4:21	4:32	4:42	4:52	5:02	5:12	5:22	5:32	5:42	5:52	6:02
Constitution Ave. & 14th St., N.W.	3:13	3:28	3:43	3:58	4:08	4:18	4:28	4:40	4:50	5:00	5:10	5:20	5:30	5:40	5:50	6:00	6:10
Constitution Ave. & 10th St., N.W.	3:16	3:31	3:46	4:01	4:11	4:21	4:31	4:43	4:53	5:03	5:13	5:23	5:33	5:43	5:53	6:03	6:13
7th St. & Constitution Ave., N.W. (Archives <b>M</b> )	3:19	3:34	3:49	4:04	4:14	4:24	4:34	4:46	4:56	5:06	5:16	5:26	5:36	5:46	5:56	6:06	6:16
Ind. Ave. bet. 7th & 6th Sts., S.W. (L'Enfant Plaza <b>M</b> )	3:22	3:37	3:52	4:07	4:17	4:27	4:37	4:49	4:59	5:09	5:19	5:29	5:39	5:49	5:59	6:09	6:19
Independence Ave. bet. 4th & 3rd Sts., S.W.	3:25	3:40	3:55	4:10	4:20	4:30	4:40	4:52	5:02	5:12	5:22	5:32	5:42	5:52	6:02	6:12	6:22
Independence Ave. & 1st St., S.E.	3:28	3:43	3:58	4:13	4:23	4:33	4:43	4:56	5:06	5:16	5:26	5:36	5:46	5:56	6:06	6:16	6:26
<b>HOWARD COUNTY</b>																	
Broken Land Park & Ride (west lot)	4:20	4:35	4:50	5:05	5:15	5:25	5:35	5:51	6:01	6:11	6:21	6:31	6:41	6:51	7:01	7:11	7:21
Snowden River Pkwy. & Oakland Mills Rd	4:25	--	4:55	--	5:20	--	5:40	--	6:05	--	6:30	--	6:55	--	7:20	--	7:45
Snowden River Park & Ride	4:30	--	5:00	--	5:25	--	5:45	--	6:10	--	6:35	--	7:00	--	7:25	--	7:50
Dobbin Rd. & MD. 175	4:32	--	5:02	--	5:27	--	5:47	--	6:12	--	6:37	--	7:02	--	7:27	--	7:52
Tamar Dr. opp. Cloudleap Ct. (Long Reach Village Ctr.)	4:35	--	5:05	--	5:30	--	5:50	--	6:15	--	6:40	--	7:05	--	7:30	--	7:55
Tamar Dr. & Sweetwind Pl.	4:36	--	5:06	--	5:31	--	5:51	--	6:16	--	6:41	--	7:06	--	7:31	--	7:56
Phelps Luck Dr. opp. Sheerock Ct.	4:37	--	5:07	--	5:32	--	5:52	--	6:17	--	6:42	--	7:07	--	7:32	--	7:57
Phelps Luck Dr. & Thurso Ct.	4:39	--	5:09	--	5:34	--	5:54	--	6:19	--	6:44	--	7:09	--	7:34	--	7:59
Phelps Luck Dr. & High Tor Hill	4:40	--	5:10	--	5:35	--	5:55	--	6:20	--	6:45	--	7:10	--	7:35	--	8:00
Columbia 100 Pkwy. & Executive Park Dr.	4:44	--	5:14	--	5:39	--	5:59	--	6:24	--	6:49	--	7:14	--	7:39	--	8:04
Long Gate Park & Ride	4:47	--	5:17	--	5:42	--	6:02	--	6:27	--	6:52	--	7:17	--	7:42	--	8:07
Clarksville Park & Ride (Ten Oaks Ballroom)	--	4:45	--	5:15	--	5:35	--	6:01	--	6:21	--	6:41	--	7:01	--	7:21	--

**Days of Operation**

The No. 995 line operates Monday thru Friday. It does not operate on Saturdays, Sundays, and the following observed holidays:  
 New Year's Day, Martin Luther King Day, President's Day, Memorial Day, Independence Day, Labor Day, Columbus Day, Veteran's Day, Thanksgiving Day, Friday after Thanksgiving and Christmas Day.  
 Periodically, the MTA will operate Commuter Bus Services on reduced schedules in an effort to accommodate fewer riders when demand for these buses is significantly lower.  
 Trips marked with "L" denote the "Limited Service Schedule." On Limited Service Days only, those trips designated with the "L" will operate.  
 Trips marked with "S" denote the "Special Service Schedule." On Special Service Days only, those trips designated with the "S" will operate.

# Weather & Emergency Plan

In the event that adverse weather conditions necessitate a change or deviation in the morning schedule, announcements will be made on radio stations WBAL (1090 AM Baltimore), WMAL (630 AM Washington), and WSMO (98.3 Star FM). If the morning service does not operate, then the afternoon service will not operate.

Should the U.S. Office of Personnel Management authorize an early release of federal workers due to inclement weather or miscellaneous events, the MTA will determine if coaches are available to depart according to a modified schedule.

Commuters should understand that the MTA requires sufficient advance notice in order to mobilize coaches for early departures with individual service providers.

If the early release is:

- Before 1:00 p.m., buses will depart at 1:00(LG), 1:15(C), 1:30(LG), 1:45(C), 2:00(LG), 2:15(C), 2:30(LG), 3:00(C), 3:30(LG), 4:00(C), 4:30(LG), 5:00(C), and 5:30(LGC) p.m.
- Before 2:00 p.m., buses will depart at 2:00(LG), 2:15(C), 2:30(LG), 2:45(C), 3:00(LG), 3:15(C), 3:30(LG), 3:45(C), 4:00(LG), 4:15(C), 4:30(LG), 5:00(C), and 5:30(LGC) p.m.
- After 2:00 p.m., buses will operate on their regular schedules.

All trips operate via Broken Land Park & Ride (LG) trip operates to Long Gate via Snowden River Park & Ride (C) trip operates to Clarksville (LGC) trip operates to Long Gate via Snowden River Park & Ride and then continues to Clarksville on request.

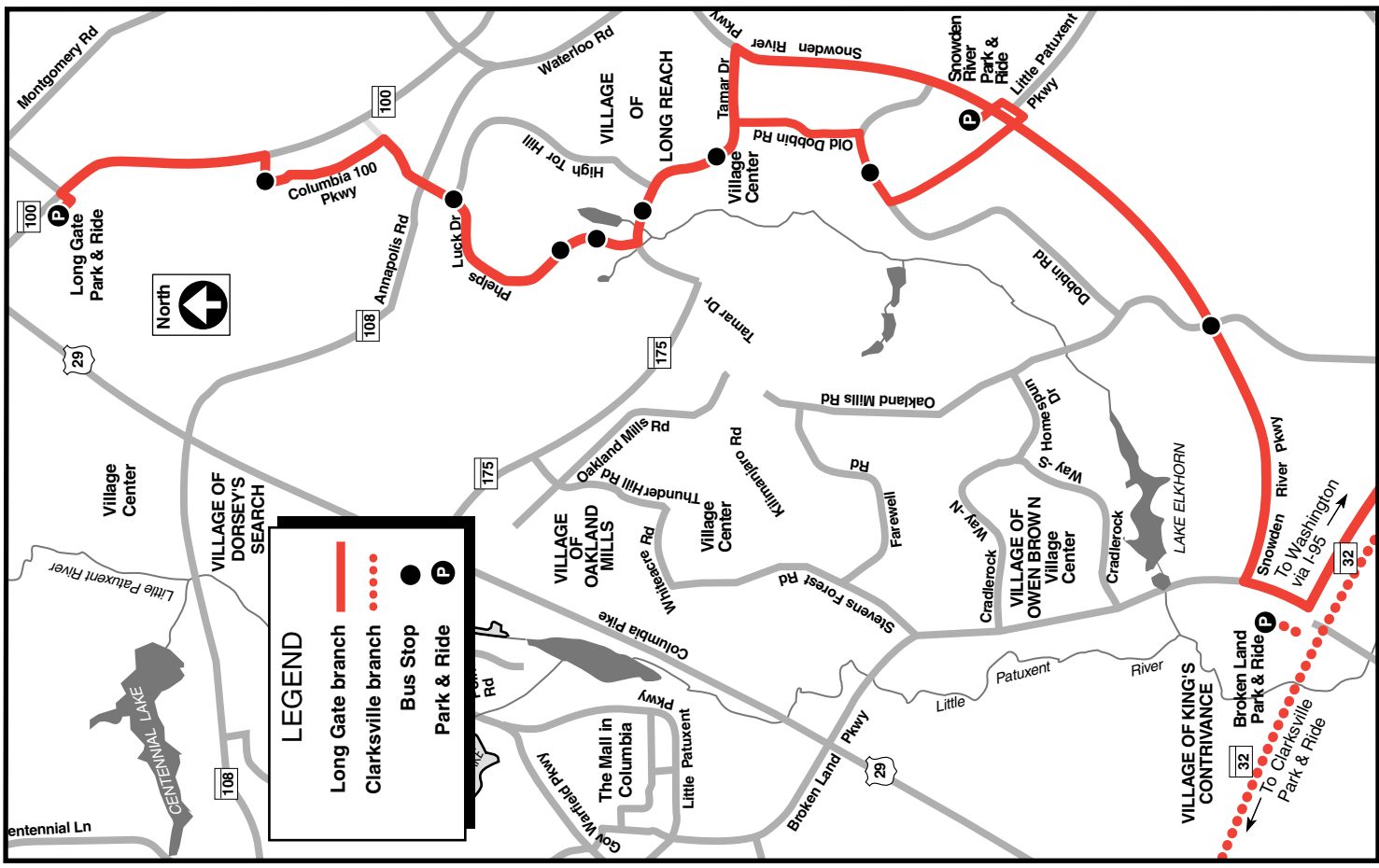
The MTA will generate e-notices and post announcements on the Commuter Bus Service Update Center online once changes in service occur.

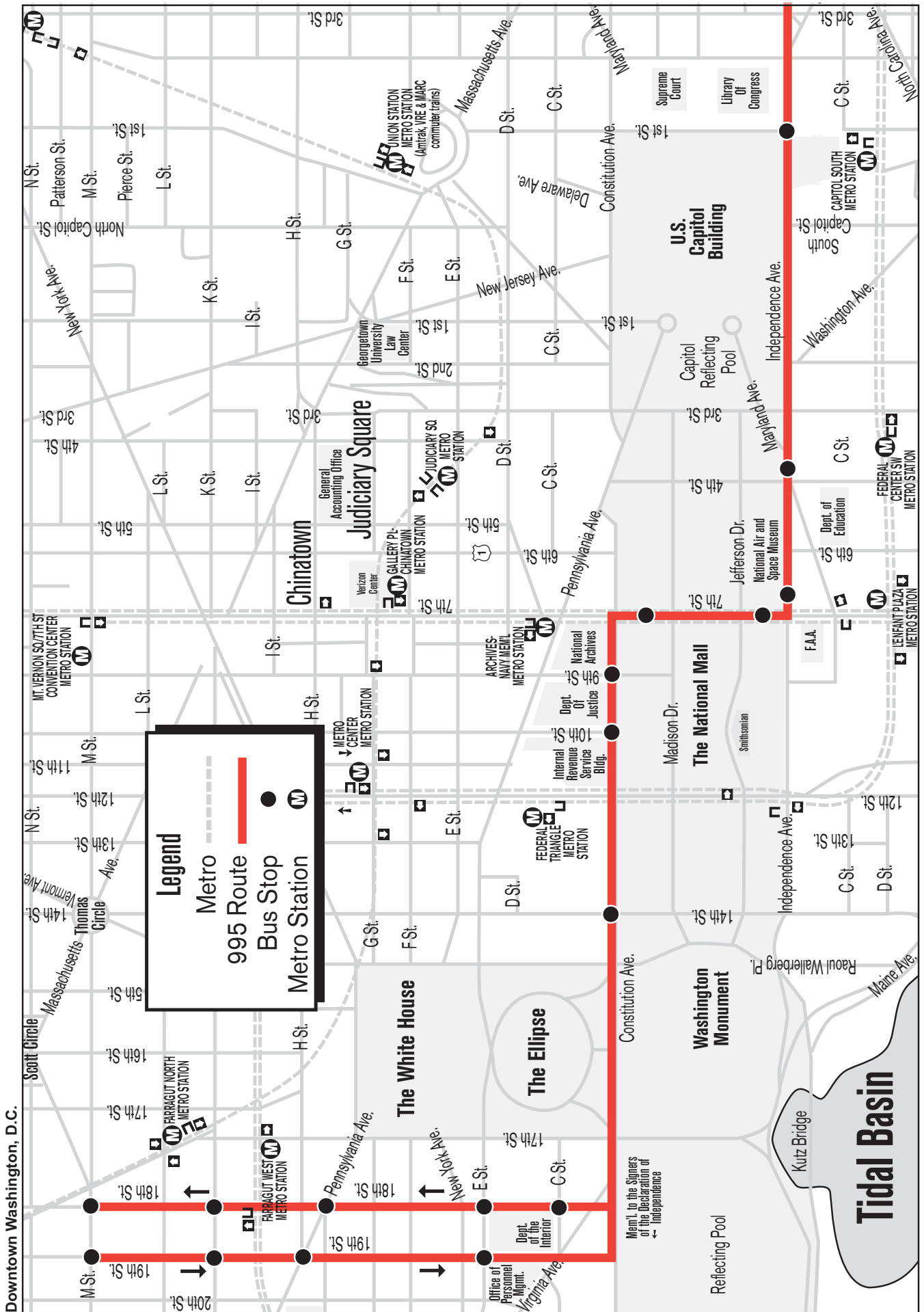
## Standee Policy

For the safety of our riders, the MTA prohibits standees on commuter buses except under the following circumstances:

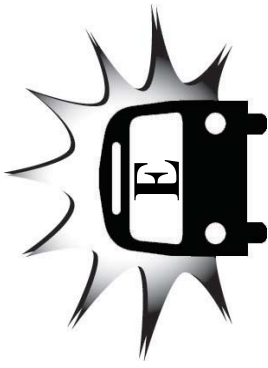
- If the last evening bus has a full seated load;
- To accommodate passengers from another bus that has become disabled en-route; or
- In emergency situations, such as severe inclement weather or civil defense events.

Please note that a patron's need to reach his or her destination by a certain time is not considered an "emergency" for these purposes. Drivers are required to enforce this policy and to deny boarding to additional passengers once the bus has achieved a full seated load.





# E ROUTE



**EFFECTIVE JULY 1, 2010  
SERVICE TO:**

- Laurel Mall
- 4th Street & Main Street
- Us Route 1 & Maier Road
- Savage
- Guilford Road & Gerwig Lane
- Owen Brown Village Center
- Columbia Mall

**SERVICE DAYS  
MONDAY - SATURDAY**



Customer Service  
800-270-9553  
www.cmtransit.org



If you need this document in an alternative format, please call 240-581-5770 or email corporate@cmtransit.org.

People who are deaf, hard of hearing or have a speech disability, please use Relay or 7-1-1.

## WELCOME TO CONNECT-A-RIDE

Connect-A-Ride (CAR), which serves Anne Arundel County, Prince George's County and the City of Laurel, is managed by Central Maryland Regional Transit. For ADA paratransit service, please call MetroAccess at 301-562-5360.

## FARE INFORMATION

Connect-A-Ride has a Fare Compliance Policy in effect at all times. Full fare must be paid to ride the bus. Exact fare is required. Please have the fare, pass or valid transfer ready when boarding the bus. No cash refunds. Reduced fare of \$1.00 with the WMATA SMART TRIP CARD at shared transfer points only. Monthly and 10-ride tickets are available.

Regular Fare (Per Trip)	\$1.50
Senior Fare (60 & Over)	\$0.75
Person w/Disability	\$0.75
Medicare Card Holder	\$0.75
Children Under 5	FREE

## INCLEMENT WEATHER POLICY

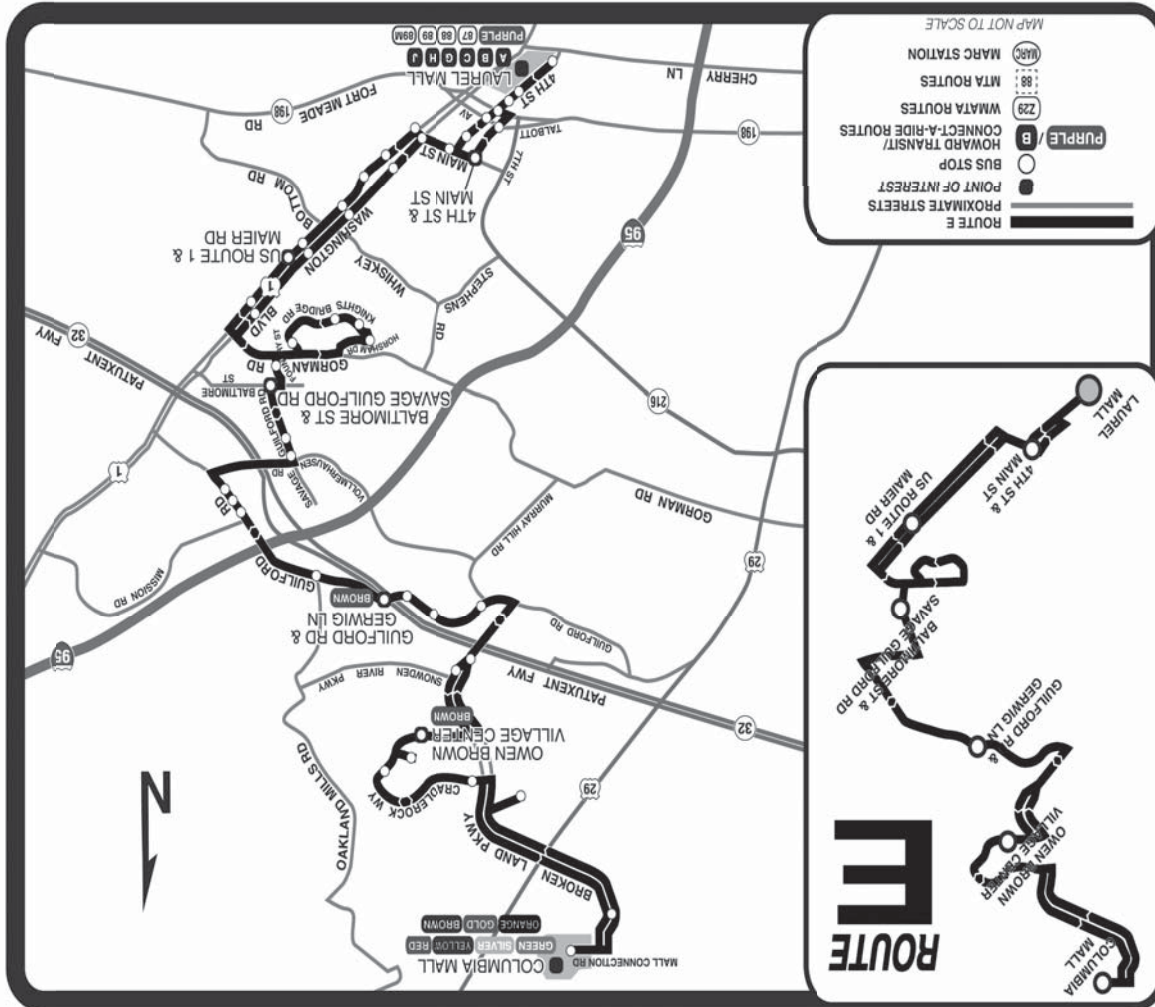
Contact Customer Service at 1-800-270-9553. Schedule changes can be found on select radio/television stations and www.cmtransit.org.

## HOLIDAY SCHEDULE

New Year's Day	NO SERVICE
Martin Luther King, Jr. Day	REGULAR
President's Day	REGULAR
Memorial Day	SUNDAY
Independence Day	SUNDAY
Labor Day	SUNDAY
Columbus Day	REGULAR
Veterans Day	REGULAR
Thanksgiving Day	NO SERVICE
Christmas Day	NO SERVICE

## TITLE VI INFORMATION

Connect-A-Ride fully complies with Title VI of the Civil Rights Act of 1964. For the full policy, please visit www.CMRTransit.org.



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<b>TO COLUMBIA MALL</b>		<b>MONDAY THROUGH FRIDAY</b>															
		<b>SATURDAY</b>															
LAUREL MALL	4th STREET & MAIN STREET	6:00	6:05	6:09	6:21	6:27	6:37	6:48	LAUREL MALL	4th STREET & MAIN STREET	7:00	7:10	7:21	7:27	7:39	7:43	7:48
VILLAGE CENTER	GERWIG LANE	7:00	7:05	7:09	7:21	7:27	7:37	7:48	LAUREL MALL	4th STREET & MAIN STREET	8:00	8:10	8:21	8:27	8:39	8:43	8:48
OWEN BROWN	GERWIG LANE	8:00	8:05	8:09	8:21	8:27	8:37	8:48	LAUREL MALL	4th STREET & MAIN STREET	9:00	9:10	9:21	9:27	9:39	9:43	9:48
US ROUTE 1 & MAIER ROAD	BALTIMORE ST. & SAVAGE-GUILFORD RD.	9:00	9:05	9:09	9:21	9:27	9:37	9:48	LAUREL MALL	4th STREET & MAIN STREET	10:00	10:10	10:21	10:27	10:39	10:43	10:48
4th STREET & MAIN STREET	US ROUTE 1 & MAIER ROAD	10:00	10:05	10:09	10:21	10:27	10:37	10:48	LAUREL MALL	4th STREET & MAIN STREET	11:00	11:10	11:21	11:27	11:39	11:43	11:48
GERWIG LANE	US ROUTE 1 & MAIER ROAD	11:00	11:05	11:09	11:21	11:27	11:37	11:48	LAUREL MALL	4th STREET & MAIN STREET	12:00	12:10	12:21	12:27	12:39	12:43	12:48
OWEN BROWN	BALTIMORE ST. & SAVAGE-GUILFORD RD.								LAUREL MALL	4th STREET & MAIN STREET	1:00	1:10	1:21	1:27	1:39	1:43	1:48
VILLAGE CENTER	GERWIG LANE								LAUREL MALL	4th STREET & MAIN STREET	2:00	2:10	2:21	2:27	2:39	2:43	2:48
COLUMBIA MALL	GERWIG LANE								LAUREL MALL	4th STREET & MAIN STREET	3:00	3:10	3:21	3:27	3:39	3:43	3:48
	GERWIG LANE								LAUREL MALL	4th STREET & MAIN STREET	4:00	4:10	4:21	4:27	4:39	4:43	4:48
	GERWIG LANE								LAUREL MALL	4th STREET & MAIN STREET	5:00	5:10	5:21	5:27	5:39	5:43	5:48
	GERWIG LANE								LAUREL MALL	4th STREET & MAIN STREET	6:00	6:10	6:21	6:27	6:39	6:43	6:48
	GERWIG LANE								LAUREL MALL	4th STREET & MAIN STREET	7:00	7:10	7:21	7:27	7:39	7:43	7:48

<b>TO COLUMBIA MALL</b>		<b>MONDAY THROUGH FRIDAY</b>															
		<b>SATURDAY</b>															
LAUREL MALL	4th STREET & MAIN STREET	9:00	9:05	9:09	9:21	9:27	9:37	9:48	LAUREL MALL	4th STREET & MAIN STREET	10:00	10:05	10:09	10:21	10:27	10:37	10:48
VILLAGE CENTER	GERWIG LANE	11:00	11:05	11:09	11:21	11:27	11:37	11:48	LAUREL MALL	4th STREET & MAIN STREET	1:00	1:05	1:09	1:21	1:27	1:37	1:48
OWEN BROWN	GERWIG LANE	1:00	1:05	1:09	1:21	1:27	1:37	1:48	LAUREL MALL	4th STREET & MAIN STREET	2:00	2:05	2:09	2:21	2:27	2:37	2:48
US ROUTE 1 & MAIER ROAD	BALTIMORE ST. & SAVAGE-GUILFORD RD.	3:00	3:05	3:09	3:21	3:27	3:37	3:48	LAUREL MALL	4th STREET & MAIN STREET	3:00	3:05	3:09	3:21	3:27	3:37	3:48
4th STREET & MAIN STREET	US ROUTE 1 & MAIER ROAD	4:00	4:05	4:09	4:21	4:27	4:37	4:48	LAUREL MALL	4th STREET & MAIN STREET	4:00	4:05	4:09	4:21	4:27	4:37	4:48
GERWIG LANE	US ROUTE 1 & MAIER ROAD	5:00	5:05	5:09	5:21	5:27	5:37	5:48	LAUREL MALL	4th STREET & MAIN STREET	5:00	5:05	5:09	5:21	5:27	5:37	5:48
OWEN BROWN	BALTIMORE ST. & SAVAGE-GUILFORD RD.	6:00	6:05	6:09	6:21	6:27	6:37	6:48	LAUREL MALL	4th STREET & MAIN STREET	6:00	6:05	6:09	6:21	6:27	6:37	6:48
VILLAGE CENTER	GERWIG LANE	7:00	7:05	7:09	7:21	7:27	7:37	7:48	LAUREL MALL	4th STREET & MAIN STREET	7:00	7:05	7:09	7:21	7:27	7:37	7:48

<b>TO LAUREL MALL</b>		<b>MONDAY THROUGH FRIDAY</b>															
		<b>SATURDAY</b>															
COLUMBIA MALL	OWEN BROWN	10:00	10:10	10:21	10:27	10:39	10:43	10:48	COLUMBIA MALL	OWEN BROWN	12:00	12:10	12:21	12:27	12:39	12:43	12:48
VILLAGE CENTER	GERWIG LANE	12:00	12:10	12:21	12:27	12:39	12:43	12:48	COLUMBIA MALL	OWEN BROWN	2:00	2:10	2:21	2:27	2:39	2:43	2:48
4th STREET & MAIN STREET	GERWIG LANE	2:00	2:10	2:21	2:27	2:39	2:43	2:48	COLUMBIA MALL	OWEN BROWN	4:00	4:10	4:21	4:27	4:39	4:43	4:48
GERWIG LANE	GERWIG LANE	4:00	4:10	4:21	4:27	4:39	4:43	4:48	COLUMBIA MALL	OWEN BROWN	6:00	6:10	6:21	6:27	6:39	6:43	6:48
US ROUTE 1 & MAIER ROAD	BALTIMORE ST. & SAVAGE-GUILFORD RD.	6:00	6:10	6:21	6:27	6:39	6:43	6:48	COLUMBIA MALL	OWEN BROWN							
4th STREET & MAIN STREET	US ROUTE 1 & MAIER ROAD								COLUMBIA MALL	OWEN BROWN							
GERWIG LANE	US ROUTE 1 & MAIER ROAD								COLUMBIA MALL	OWEN BROWN							
OWEN BROWN	BALTIMORE ST. & SAVAGE-GUILFORD RD.								COLUMBIA MALL	OWEN BROWN							
VILLAGE CENTER	GERWIG LANE								COLUMBIA MALL	OWEN BROWN							
LAUREL MALL	GERWIG LANE								COLUMBIA MALL	OWEN BROWN							

**HOW TO RIDE A BUS**

Check schedule for timetable; nearest your location. Arrive 10 minutes before scheduled time. Have exact fare ready (drivers do not make change).

- Not all stops are listed on a timetable
- Ask the bus driver or use our websites: [www.cmtransit.org](http://www.cmtransit.org) or [www.nextbus.com](http://www.nextbus.com)
- No eating, drinking, or smoking.
- Electronic devices may be played with earphones only.

**HOW TO READ A TIMETABLE**

1. Find the schedule for the day of the week and the direction of travel.
2. Find the timepoints closest to your origin and destination.
3. Your nearest bus stop may be between timepoints.

**GUARANTEED RIDE HOME PROGRAM**

When you take Connect-A-Ride to work and you have an emergency, you are eligible for the Guaranteed Ride Home Program through Commuter Connections. To register, call 1-800-745-RIDE (7433).



**APPENDIX B**  
**CENSUS INFORMATION**



**B08141. MEANS OF TRANSPORTATION TO WORK BY VEHICLES AVAILABLE  
WORKERS 16 YEARS AND OVER IN HOUSEHOLDS**

Data Set: 2008-2012 American Community Survey 5-Year Estimates  
Survey: American Community Survey  
Census Tract 6054.02, Howard County, Maryland

Estimate	
Total:	3,712
Car, truck, or van - drove alone:	2,959
Car, truck, or van - carpooled:	221
Public transportation (excluding taxicab):	133
Walked:	259
Taxicab, motorcycle, bicycle, or other means:	23
Worked at home:	117
<b>Non-auto Mode Share:</b>	<b>14.3%</b>

Estimate	
Total:	3,932
Car, truck, or van - drove alone:	3,121
Car, truck, or van - carpooled:	213
Public transportation (excluding taxicab):	257
Walked:	11
Taxicab, motorcycle, bicycle, or other means:	40
Worked at home:	290
<b>Non-auto Mode Share:</b>	<b>15.2%</b>

Estimate	
Total:	4,208
Car, truck, or van - drove alone:	3,182
Car, truck, or van - carpooled:	574
Public transportation (excluding taxicab):	279
Walked:	13
Taxicab, motorcycle, bicycle, or other means:	69
Worked at home:	91
<b>Non-auto Mode Share:</b>	<b>10.7%</b>

**B08301. MEANS OF TRANSPORTATION TO WORK - Universe: WORKERS 16 YEARS AND OVER**

Data Set: 2008-2012 American Community Survey 5-Year Estimates  
Survey: American Community Survey  
Census Tract 6054.02, Howard County, Maryland

Estimate	
Total:	3,723
Car, truck, or van:	3,191
Drove alone	2,959
Carpooled:	232
Public transportation (excluding taxicab):	133
Bus or trolley bus	50
Streetcar or trolley car	0
Subway or elevated	0
Railroad	83
Ferryboat	0
Taxicab	23
Motorcycle	0
Bicycle	0
Walked	259
Other means	0
Worked at home	117
<b>Non-auto Mode Share:</b>	<b>14.3%</b>

Estimate	
Total:	3,932
Car, truck, or van:	3,334
Drove alone	3,121
Carpooled:	213
Public transportation (excluding taxicab):	257
Bus or trolley bus	203
Streetcar or trolley car	0
Subway or elevated	28
Railroad	26
Ferryboat	0
Taxicab	0
Motorcycle	0
Bicycle	0
Walked	11
Other means	40
Worked at home	290
<b>Non-auto Mode Share:</b>	<b>15.2%</b>

Estimate	
Total:	4,234
Car, truck, or van:	3,782
Drove alone	3,182
Carpooled:	600
Public transportation (excluding taxicab):	279
Bus or trolley bus	243
Streetcar or trolley car	0
Subway or elevated	0
Railroad	36
Ferryboat	0
Taxicab	24
Motorcycle	0
Bicycle	13
Walked	13
Other means	32
Worked at home	91
<b>Non-auto Mode Share:</b>	<b>10.7%</b>



**APPENDIX C**  
**LEVEL OF SERVICE DESCRIPTIONS**



<b>VEHICLE LEVEL OF SERVICE</b>	<b>SIGNALIZED INTERSECTION DELAY (SECONDS)</b>
A	$\leq 10$
B	$>10$ AND $\leq 20$
C	$>20$ AND $\leq 35$
D	$>35$ AND $\leq 55$
E	$>55$ AND $\leq 80$
F	$>80$

<b>VEHICLE LEVEL OF SERVICE</b>	<b>UNSIGNALIZED INTERSECTION DELAY (SECONDS)</b>
A	$\leq 10$
B	$>10$ AND $\leq 15$
C	$>15$ AND $\leq 25$
D	$>25$ AND $\leq 35$
E	$>35$ AND $\leq 50$
F	$>50$

<b>VEHICLE LEVEL OF SERVICE</b>	<b>CRITICAL LANE VOLUME (CLV)</b>
A	$\leq 1,000$
B	$>1,000$ AND $\leq 1,150$
C	$>1,150$ AND $\leq 1,300$
D	$>1,300$ AND $\leq 1,450$
E	$>1,450$ AND $\leq 1,600$
F	$>1,600$

<b>PEDESTRIAN AND BICYCLE LEVEL OF SERVICE</b>	<b>PLOS/BLOS SCORE</b>
A	$\leq 1.5$
B	$>1.5$ AND $\leq 2.5$
C	$>2.5$ AND $\leq 3.5$
D	$>3.5$ AND $\leq 4.5$
E	$>4.5$ AND $\leq 5.5$
F	$>5.5$

**APPENDIX D**  
**EXISTING TRAFFIC COUNTS**



# Wells + Associates, Inc.

McLean, Virginia

## Turning Movement Count - All Vehicles

PROJECT: Columbia Town Center	DATE: 6/1/2011	SOUTHBOUND ROAD: Mall Access Road
W+A JOB NO: 5167	DAY: Wednesday	NORTHBOUND ROAD: 0
INTERSECTION: Little Patuxent Pkwy. & Mall Access	WEATHER: clear	WESTBOUND ROAD: Little Patuxent Parkway
LOCATION: Howard County, MD	COUNTED BY: Nick & Jannie	EASTBOUND ROAD: Little Patuxent Parkway
	INPUTED BY: agan	

Time Period	Southbound Mall Access Road					Westbound Little Patuxent Parkway					Northbound 0					Eastbound Little Patuxent Parkway					North & South	East & West	Total
	Right	Thru	Left	Total	PHF	Right	Thru	Left	Total	PHF	Right	Thru	Left	Total	PHF	Right	Thru	Left	Total	PHF			
<b>AM 15 Minute Volumes</b>																							
6:30 AM - 6:45 AM	8	0	0	8		3	19	0	22		0	0	0	0		0	27	16	43		8	65	73
6:45 AM - 7:00 AM	7	0	0	7		4	90	0	94		0	0	0	0		0	38	22	60		7	154	161
7:00 AM - 7:15 AM	10	0	1	11		9	128	0	137		0	0	0	0		0	55	15	70		11	207	218
7:15 AM - 7:30 AM	5	0	0	5		5	108	0	113		0	0	0	0		0	64	19	83		5	196	201
7:30 AM - 7:45 AM	4	0	0	4		4	112	0	116		0	0	0	0		0	80	16	96		4	212	216
7:45 AM - 8:00 AM	4	0	1	5		15	44	0	59		0	0	0	0		0	99	24	123		5	182	187
8:00 AM - 8:15 AM	5	0	1	6		13	63	0	76		0	0	0	0		0	79	24	103		6	179	185
8:15 AM - 8:30 AM	9	0	0	9		8	78	0	86		0	0	0	0		0	126	26	152		9	238	247
8:30 AM - 8:45 AM	8	0	1	9		12	87	0	99		0	0	0	0		0	132	26	158		9	257	266
8:45 AM - 9:00 AM	4	0	5	9		21	84	0	105		0	0	0	0		0	153	41	194		9	299	308
9:00 AM - 9:15 AM	10	0	2	12		14	105	0	119		0	0	0	0		0	117	36	153		12	272	284
9:15 AM - 9:30 AM	10	0	4	14		16	83	0	99		0	0	0	0		0	134	23	157		14	256	270
<b>Total</b>	<b>84</b>	<b>0</b>	<b>15</b>	<b>99</b>		<b>124</b>	<b>1001</b>	<b>0</b>	<b>1125</b>		<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>		<b>0</b>	<b>1104</b>	<b>288</b>	<b>1392</b>		<b>99</b>	<b>2517</b>	<b>2616</b>
<b>AM One Hour Volumes</b>																							
6:30 AM - 7:30 AM	30	0	1	31	0.70	21	345	0	366	0.67	0	0	0	0	0.00	0	184	72	256	0.77	31	622	653
6:45 AM - 7:45 AM	26	0	1	27	0.61	22	438	0	460	0.84	0	0	0	0	0.00	0	237	72	309	0.80	27	769	796
7:00 AM - 8:00 AM	23	0	2	25	0.57	33	392	0	425	0.78	0	0	0	0	0.00	0	298	74	372	0.76	25	797	822
7:15 AM - 8:15 AM	18	0	2	20	0.83	37	327	0	364	0.78	0	0	0	0	0.00	0	322	83	405	0.82	20	769	789
7:30 AM - 8:30 AM	22	0	2	24	0.67	40	297	0	337	0.73	0	0	0	0	0.00	0	384	90	474	0.78	24	811	835
7:45 AM - 8:45 AM	26	0	3	29	0.81	48	272	0	320	0.81	0	0	0	0	0.00	0	436	100	536	0.85	29	856	885
8:00 AM - 9:00 AM	26	0	7	33	0.92	54	312	0	366	0.87	0	0	0	0	0.00	0	490	117	607	0.78	33	973	1006
8:15 AM - 9:15 AM	31	0	8	39	0.81	55	354	0	409	0.86	0	0	0	0	0.00	0	528	129	657	0.85	39	1066	1105
8:30 AM - 9:30 AM	32	0	12	44	0.79	63	359	0	422	0.89	0	0	0	0	0.00	0	536	126	662	0.85	44	1084	1128
<b>Total</b>	<b>439</b>	<b>0</b>	<b>139</b>	<b>578</b>		<b>92</b>	<b>1449</b>	<b>0</b>	<b>1541</b>		<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>		<b>0</b>	<b>2490</b>	<b>586</b>	<b>3076</b>		<b>578</b>	<b>4617</b>	<b>5195</b>
<b>PM 15 Minute Volumes</b>																							
4:00 PM - 4:15 PM	42	0	7	49		5	102	0	107		0	0	0	0		0	175	50	225		49	332	381
4:15 PM - 4:30 PM	36	0	11	47		8	97	0	105		0	0	0	0		0	180	32	212		47	317	364
4:30 PM - 4:45 PM	42	0	13	55		8	107	0	115		0	0	0	0		0	216	42	258		55	373	428
4:45 PM - 5:00 PM	34	0	11	45		8	132	0	140		0	0	0	0		0	204	57	261		45	401	446
5:00 PM - 5:15 PM	43	0	28	71		5	106	0	111		0	0	0	0		0	217	40	257		71	368	439
5:15 PM - 5:30 PM	36	0	13	49		11	132	0	143		0	0	0	0		0	222	45	267		49	410	459
5:30 PM - 5:45 PM	42	0	16	58		9	118	0	127		0	0	0	0		0	216	45	261		58	388	446
5:45 PM - 6:00 PM	33	0	8	41		7	140	0	147		0	0	0	0		0	242	56	298		41	445	486
6:00 PM - 6:15 PM	46	0	8	54		9	180	0	189		0	0	0	0		0	265	68	333		54	522	576
6:15 PM - 6:30 PM	20	0	7	27		9	126	0	135		0	0	0	0		0	156	42	198		27	333	360
6:30 PM - 6:45 PM	36	0	12	48		6	96	0	102		0	0	0	0		0	194	73	267		48	369	417
6:45 PM - 7:00 PM	29	0	5	34		7	113	0	120		0	0	0	0		0	203	36	239		34	359	393
<b>Total</b>	<b>439</b>	<b>0</b>	<b>139</b>	<b>578</b>		<b>92</b>	<b>1449</b>	<b>0</b>	<b>1541</b>		<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>		<b>0</b>	<b>2490</b>	<b>586</b>	<b>3076</b>		<b>578</b>	<b>4617</b>	<b>5195</b>
<b>PM One Hour Volumes</b>																							
4:00 PM - 5:00 PM	154	0	42	196	0.89	29	438	0	467	0.83	0	0	0	0	0.00	0	775	181	956	0.92	196	1423	1619
4:15 PM - 5:15 PM	155	0	63	218	0.77	29	442	0	471	0.84	0	0	0	0	0.00	0	817	171	988	0.95	218	1459	1677
4:30 PM - 5:30 PM	155	0	65	220	0.77	32	477	0	509	0.89	0	0	0	0	0.00	0	859	184	1043	0.98	220	1552	1772
4:45 PM - 5:45 PM	155	0	68	223	0.79	33	488	0	521	0.91	0	0	0	0	0.00	0	859	187	1046	0.98	223	1567	1790
5:00 PM - 6:00 PM	154	0	65	219	0.77	32	496	0	528	0.90	0	0	0	0	0.00	0	897	186	1083	0.91	219	1611	1830
5:15 PM - 6:15 PM	157	0	45	202	0.87	36	570	0	606	0.80	0	0	0	0	0.00	0	945	214	1159	0.87	202	1765	1967
5:30 PM - 6:30 PM	141	0	39	180	0.78	34	564	0	598	0.79	0	0	0	0	0.00	0	879	211	1090	0.82	180	1688	1868
5:45 PM - 6:45 PM	135	0	35	170	0.79	31	542	0	573	0.76	0	0	0	0	0.00	0	857	239	1096	0.82	170	1669	1839
6:00 PM - 7:00 PM	131	0	32	163	0.75	31	515	0	546	0.72	0	0	0	0	0.00	0	818	219	1037	0.78	163	1583	1746

# Wells + Associates, Inc.

McLean, Virginia

## Pedestrian Volume Survey

<p><b>PROJECT:</b> Columbia Town Center  <b>W+A JOB NO:</b> 5167  <b>INTERSECTION:</b> Little Patuxent Pkwy. &amp; Mall Access  <b>LOCATION:</b> Howard County, MD  <b>DATE:</b> 6/1/2011  <b>DAY:</b> Wednesday  <b>WEATHER:</b> clear  <b>COUNTED BY:</b> Nick  <b>INPUTED BY:</b> agan</p>	
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Time Period	Movement								1+2	3+4	5+6	7+8	Total
	1	2	3	4	5	6	7	8					
<b>AM 15 Minute Volumes</b>													
6:30 AM - 6:45 AM						1							
6:45 AM - 7:00 AM													
7:00 AM - 7:15 AM													
7:15 AM - 7:30 AM						1							
7:30 AM - 7:45 AM													
7:45 AM - 8:00 AM		1											
8:00 AM - 8:15 AM					1								
8:15 AM - 8:30 AM													
8:30 AM - 8:45 AM													
8:45 AM - 9:00 AM													
9:00 AM - 9:15 AM													
9:15 AM - 9:30 AM													
<b>Total</b>	0	1	0	0	1	2	0	0					
<b>AM One Hour Volumes</b>													
6:30 AM - 7:30 AM	0	0	0	0	0	2	0	0	0	0	2	0	2
6:45 AM - 7:45 AM	0	0	0	0	0	1	0	0	0	0	1	0	1
7:00 AM - 8:00 AM	0	1	0	0	0	1	0	0	1	0	1	0	2
7:15 AM - 8:15 AM	0	1	0	0	1	1	0	0	1	0	2	0	3
7:30 AM - 8:30 AM	0	1	0	0	1	0	0	0	1	0	1	0	2
7:45 AM - 8:45 AM	0	1	0	0	1	0	0	0	1	0	1	0	2
8:00 AM - 9:00 AM	0	0	0	0	1	0	0	0	0	0	1	0	1
8:15 AM - 9:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30 AM - 9:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>Total</b>	0	3	0	0	3	3	0	0	3	0	3	0	6
<b>PM 15 Minute Volumes</b>													
4:00 PM - 4:15 PM					3								
4:15 PM - 4:30 PM													
4:30 PM - 4:45 PM				1	1				3				
4:45 PM - 5:00 PM	2	1	1		1	2							
5:00 PM - 5:15 PM	1	2											
5:15 PM - 5:30 PM			1		2	2							
5:30 PM - 5:45 PM			1		2	1							
5:45 PM - 6:00 PM		1	7										
6:00 PM - 6:15 PM			7										
6:15 PM - 6:30 PM													
6:30 PM - 6:45 PM	1	1		2									
6:45 PM - 7:00 PM					2	1							
<b>Total</b>	4	5	17	3	11	6	0	3					
<b>PM One Hour Volumes</b>													
4:00 PM - 5:00 PM	2	1	1	1	5	2	0	3	3	2	7	3	15
4:15 PM - 5:15 PM	3	3	1	1	2	2	0	3	6	2	4	3	15
4:30 PM - 5:30 PM	3	3	2	1	4	4	0	3	6	3	8	3	20
4:45 PM - 5:45 PM	3	3	3	0	5	5	0	0	6	3	10	0	19
5:00 PM - 6:00 PM	1	3	9	0	4	3	0	0	4	9	7	0	20
5:15 PM - 6:15 PM	0	1	16	0	4	3	0	0	1	16	7	0	24
5:30 PM - 6:30 PM	0	1	15	0	2	1	0	0	1	15	3	0	19
5:45 PM - 6:45 PM	1	2	14	2	0	0	0	0	3	16	0	0	19
6:00 PM - 7:00 PM	1	1	7	2	2	1	0	0	2	9	3	0	14

# Wells + Associates, Inc.

McLean, Virginia

## Turning Movement Count - All Vehicles

PROJECT: Columbia Town Center	DATE: 6/1/2011	SOUTHBOUND ROAD: Windstream Drive
W+A JOB NO: 5167	DAY: Wednesday	NORTHBOUND ROAD: Windstream Drive
INTERSECTION: Windstream Dr.& Mall Connection Rd.	WEATHER: clear	WESTBOUND ROAD: 0
LOCATION: Howard County,MD	COUNTED BY: Josh	EASTBOUND ROAD: Mall Connection Road
	INPUTED BY: agan	

Time Period	Southbound Windstream Drive					Westbound 0					Northbound Windstream Drive					Eastbound Mall Connection Road					North & South	East & West	Total
	Right	Thru	Left	Total	PHF	Right	Thru	Left	Total	PHF	Right	Thru	Left	Total	PHF	Right	Thru	Left	Total	PHF			
<b>AM 15 Minute Volumes</b>																							
6:30 AM - 6:45 AM	2	8	0	10		0	0	0	0		0	4	1	5		10	0	4	14		15	14	29
6:45 AM - 7:00 AM	4	1	0	5		0	0	0	0		0	4	1	5		14	0	8	22		10	22	32
7:00 AM - 7:15 AM	4	5	0	9		0	0	0	0		0	3	6	9		24	0	1	25		18	25	43
7:15 AM - 7:30 AM	5	1	0	6		0	0	0	0		0	2	2	4		11	0	10	21		10	21	31
7:30 AM - 7:45 AM	8	2	0	10		0	0	0	0		0	1	2	3		9	0	9	18		13	18	31
7:45 AM - 8:00 AM	5	3	0	8		0	0	0	0		0	7	5	12		13	0	16	29		20	29	49
8:00 AM - 8:15 AM	7	7	0	14		0	0	0	0		0	5	2	7		12	0	5	17		21	17	38
8:15 AM - 8:30 AM	6	8	0	14		0	0	0	0		0	1	0	1		8	0	11	19		15	19	34
8:30 AM - 8:45 AM	9	5	0	14		0	0	0	0		0	6	2	8		9	0	10	19		22	19	41
8:45 AM - 9:00 AM	5	11	0	16		0	0	0	0		0	10	4	14		14	0	14	28		30	28	58
9:00 AM - 9:15 AM	8	8	0	16		0	0	0	0		0	11	11	22		18	0	10	28		38	28	66
9:15 AM - 9:30 AM	4	8	0	12		0	0	0	0		0	9	5	14		19	0	22	41		26	41	67
<b>Total</b>	<b>67</b>	<b>67</b>	<b>0</b>	<b>134</b>		<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>		<b>0</b>	<b>63</b>	<b>41</b>	<b>104</b>		<b>161</b>	<b>0</b>	<b>120</b>	<b>281</b>		<b>238</b>	<b>281</b>	<b>519</b>
<b>AM One Hour Volumes</b>																							
6:30 AM - 7:30 AM	15	15	0	30	0.75	0	0	0	0	0.00	0	13	10	23	0.64	59	0	23	82	0.82	53	82	135
6:45 AM - 7:45 AM	21	9	0	30	0.75	0	0	0	0	0.00	0	10	11	21	0.58	58	0	28	86	0.86	51	86	137
7:00 AM - 8:00 AM	22	11	0	33	0.83	0	0	0	0	0.00	0	13	15	28	0.58	57	0	36	93	0.80	61	93	154
7:15 AM - 8:15 AM	25	13	0	38	0.68	0	0	0	0	0.00	0	15	11	26	0.54	45	0	40	85	0.73	64	85	149
7:30 AM - 8:30 AM	26	20	0	46	0.82	0	0	0	0	0.00	0	14	9	23	0.48	42	0	41	83	0.72	69	83	152
7:45 AM - 8:45 AM	27	23	0	50	0.89	0	0	0	0	0.00	0	19	9	28	0.58	42	0	42	84	0.72	78	84	162
8:00 AM - 9:00 AM	27	31	0	58	0.91	0	0	0	0	0.00	0	22	8	30	0.54	43	0	40	83	0.74	88	83	171
8:15 AM - 9:15 AM	28	32	0	60	0.94	0	0	0	0	0.00	0	28	17	45	0.51	49	0	45	94	0.84	105	94	199
8:30 AM - 9:30 AM	26	32	0	58	0.91	0	0	0	0	0.00	0	36	22	58	0.66	60	0	56	116	0.71	116	116	232
<b>Total</b>	<b>525</b>	<b>210</b>	<b>0</b>	<b>735</b>		<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>		<b>0</b>	<b>303</b>	<b>266</b>	<b>569</b>		<b>401</b>	<b>0</b>	<b>632</b>	<b>1033</b>		<b>1304</b>	<b>1033</b>	<b>2337</b>
<b>PM 15 Minute Volumes</b>																							
4:00 PM - 4:15 PM	52	15	0	67		0	0	0	0		0	16	11	27		22	0	36	58		94	58	152
4:15 PM - 4:30 PM	45	19	0	64		0	0	0	0		0	28	17	45		32	0	39	71		109	71	180
4:30 PM - 4:45 PM	47	19	0	66		0	0	0	0		0	17	22	39		23	0	39	62		105	62	167
4:45 PM - 5:00 PM	40	17	0	57		0	0	0	0		0	27	19	46		38	0	34	72		103	72	175
5:00 PM - 5:15 PM	50	16	0	66		0	0	0	0		0	19	24	43		32	0	66	98		109	98	207
5:15 PM - 5:30 PM	32	16	0	48		0	0	0	0		0	18	16	34		19	0	55	74		82	74	156
5:30 PM - 5:45 PM	44	18	0	62		0	0	0	0		0	31	20	51		22	0	63	85		113	85	198
5:45 PM - 6:00 PM	50	12	0	62		0	0	0	0		0	28	26	54		40	0	47	87		116	87	203
6:00 PM - 6:15 PM	48	19	0	67		0	0	0	0		0	33	31	64		50	0	78	128		131	128	259
6:15 PM - 6:30 PM	33	22	0	55		0	0	0	0		0	30	22	52		34	0	62	96		107	96	203
6:30 PM - 6:45 PM	33	13	0	46		0	0	0	0		0	33	29	62		48	0	55	103		108	103	211
6:45 PM - 7:00 PM	51	24	0	75		0	0	0	0		0	23	29	52		41	0	58	99		127	99	226
<b>Total</b>	<b>525</b>	<b>210</b>	<b>0</b>	<b>735</b>		<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>		<b>0</b>	<b>303</b>	<b>266</b>	<b>569</b>		<b>401</b>	<b>0</b>	<b>632</b>	<b>1033</b>		<b>1304</b>	<b>1033</b>	<b>2337</b>
<b>PM One Hour Volumes</b>																							
4:00 PM - 5:00 PM	184	70	0	254	0.95	0	0	0	0	0.00	0	88	69	157	0.85	115	0	148	263	0.91	411	263	674
4:15 PM - 5:15 PM	182	71	0	253	0.96	0	0	0	0	0.00	0	91	82	173	0.94	125	0	178	303	0.77	426	303	729
4:30 PM - 5:30 PM	169	68	0	237	0.90	0	0	0	0	0.00	0	81	81	162	0.88	112	0	194	306	0.78	399	306	705
4:45 PM - 5:45 PM	166	67	0	233	0.88	0	0	0	0	0.00	0	95	79	174	0.85	111	0	218	329	0.84	407	329	736
5:00 PM - 6:00 PM	176	62	0	238	0.90	0	0	0	0	0.00	0	96	86	182	0.84	113	0	231	344	0.88	420	344	764
5:15 PM - 6:15 PM	174	65	0	239	0.89	0	0	0	0	0.00	0	110	93	203	0.79	131	0	243	374	0.73	442	374	816
5:30 PM - 6:30 PM	175	71	0	246	0.92	0	0	0	0	0.00	0	122	99	221	0.86	146	0	250	396	0.77	467	396	863
5:45 PM - 6:45 PM	164	66	0	230	0.86	0	0	0	0	0.00	0	124	108	232	0.91	172	0	242	414	0.81	462	414	876
6:00 PM - 7:00 PM	165	78	0	243	0.81	0	0	0	0	0.00	0	119	111	230	0.90	173	0	253	426	0.83	473	426	899

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McLean, Virginia

## Pedestrian Volume Survey

<p><b>PROJECT:</b> Columbia Town Center  <b>W+A JOB NO:</b> 5167  <b>INTERSECTION:</b> Windstream Dr. &amp; Mall Connection Rd.  <b>LOCATION:</b> Howard County, MD  <b>DATE:</b> 6/1/2011  <b>DAY:</b> Wednesday  <b>WEATHER:</b> clear  <b>COUNTED BY:</b> Josh  <b>INPUTED BY:</b> agan</p>	<p style="font-size: small;">Windstream Drive Mall Connection Road North</p>
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Time Period	Movement								1+2	3+4	5+6	7+8	Total
	1	2	3	4	5	6	7	8					
<b>AM 15 Minute Volumes</b>													
6:30 AM - 6:45 AM		2		1									
6:45 AM - 7:00 AM	1	2		1									
7:00 AM - 7:15 AM													
7:15 AM - 7:30 AM		1											
7:30 AM - 7:45 AM		1											
7:45 AM - 8:00 AM		1											
8:00 AM - 8:15 AM		3											
8:15 AM - 8:30 AM													
8:30 AM - 8:45 AM	2	1											
8:45 AM - 9:00 AM													
9:00 AM - 9:15 AM		1											
9:15 AM - 9:30 AM		2											
<b>Total</b>	3	14	0	2	0	0	0	0	0				
<b>AM One Hour Volumes</b>													
6:30 AM - 7:30 AM	1	5	0	2	0	0	0	0	6	2	0	0	8
6:45 AM - 7:45 AM	1	4	0	1	0	0	0	0	5	1	0	0	6
7:00 AM - 8:00 AM	0	3	0	0	0	0	0	0	3	0	0	0	3
7:15 AM - 8:15 AM	0	6	0	0	0	0	0	0	6	0	0	0	6
7:30 AM - 8:30 AM	0	5	0	0	0	0	0	0	5	0	0	0	5
7:45 AM - 8:45 AM	2	5	0	0	0	0	0	0	7	0	0	0	7
8:00 AM - 9:00 AM	2	4	0	0	0	0	0	0	6	0	0	0	6
8:15 AM - 9:15 AM	2	2	0	0	0	0	0	0	4	0	0	0	4
8:30 AM - 9:30 AM	2	4	0	0	0	0	0	0	6	0	0	0	6
<b>Total</b>	17	21	0	0	1	4	0	0	10	0	3	0	13
<b>PM 15 Minute Volumes</b>													
4:00 PM - 4:15 PM	1	2					1						
4:15 PM - 4:30 PM	3				1								
4:30 PM - 4:45 PM	2												
4:45 PM - 5:00 PM	1	1					1						
5:00 PM - 5:15 PM	1	2											
5:15 PM - 5:30 PM	1	5					1						
5:30 PM - 5:45 PM		3											
5:45 PM - 6:00 PM	3	4											
6:00 PM - 6:15 PM		4											
6:15 PM - 6:30 PM	2												
6:30 PM - 6:45 PM	2												
6:45 PM - 7:00 PM	1						1						
<b>Total</b>	17	21	0	0	1	4	0	0	10	0	3	0	13
<b>PM One Hour Volumes</b>													
4:00 PM - 5:00 PM	7	3	0	0	1	2	0	0	10	0	3	0	13
4:15 PM - 5:15 PM	7	3	0	0	1	1	0	0	10	0	2	0	12
4:30 PM - 5:30 PM	5	8	0	0	0	2	0	0	13	0	2	0	15
4:45 PM - 5:45 PM	3	11	0	0	0	2	0	0	14	0	2	0	16
5:00 PM - 6:00 PM	5	14	0	0	0	1	0	0	19	0	1	0	20
5:15 PM - 6:15 PM	4	16	0	0	0	1	0	0	20	0	1	0	21
5:30 PM - 6:30 PM	5	11	0	0	0	0	0	0	16	0	0	0	16
5:45 PM - 6:45 PM	7	8	0	0	0	0	0	0	15	0	0	0	15
6:00 PM - 7:00 PM	5	4	0	0	0	1	0	0	9	0	1	0	10

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## Turning Movement Count - All Vehicles

Time Period		Southbound 0					Westbound Little Patuxent Parkway					Northbound South Entrance Road					Eastbound Little Patuxent Parkway					North & South	East & West	Total
		Right	Thru	Left	Total	PHF	Right	Thru	Left	Total	PHF	Right	Thru	Left	Total	PHF	Right	Thru	Left	Total	PHF			
<b>AM 15 Minute Volumes</b>																								
6:30 AM - 6:45 AM		0	0	0	0	0	0	20	12	32		3	0	5	8		7	20	0	27		8	59	67
6:45 AM - 7:00 AM		0	0	0	0	0	0	21	7	28		13	0	71	84		5	36	0	41		84	69	153
7:00 AM - 7:15 AM		0	0	0	0	0	0	28	4	32		24	0	107	131		10	46	0	56		131	88	219
7:15 AM - 7:30 AM		0	0	0	0	0	0	50	6	56		21	0	59	80		7	56	0	63		80	119	199
7:30 AM - 7:45 AM		0	0	0	0	0	0	32	8	40		22	0	75	97		10	69	0	79		97	119	216
7:45 AM - 8:00 AM		0	0	0	0	0	0	46	12	58		15	0	27	42		13	98	0	111		42	169	211
8:00 AM - 8:15 AM		0	0	0	0	0	0	55	4	59		19	0	35	54		8	84	0	92		54	151	205
8:15 AM - 8:30 AM		0	0	0	0	0	0	52	20	72		21	0	34	55		17	113	0	130		55	202	257
8:30 AM - 8:45 AM		0	0	0	0	0	0	56	22	78		25	0	40	65		23	113	0	136		65	214	279
8:45 AM - 9:00 AM		0	0	0	0	0	0	55	9	64		23	0	52	75		23	150	0	173		75	237	312
9:00 AM - 9:15 AM		0	0	0	0	0	0	79	21	100		26	0	40	66		17	113	0	130		66	230	296
9:15 AM - 9:30 AM		0	0	0	0	0	0	63	16	79		14	0	35	49		22	120	0	142		49	221	270
<b>Total</b>		0	0	0	0	0	0	557	141	698		226	0	580	806		162	1018	0	1180		806	1878	2684
<b>AM One Hour Volumes</b>																								
6:30 AM - 7:30 AM		0	0	0	0	0.00	0	119	29	148	0.66	61	0	242	303	0.58	29	158	0	187	0.74	303	335	638
6:45 AM - 7:45 AM		0	0	0	0	0.00	0	131	25	156	0.70	80	0	312	392	0.75	32	207	0	239	0.76	392	395	787
7:00 AM - 8:00 AM		0	0	0	0	0.00	0	156	30	186	0.80	82	0	268	350	0.67	40	269	0	309	0.70	350	495	845
7:15 AM - 8:15 AM		0	0	0	0	0.00	0	183	30	213	0.90	77	0	196	273	0.70	38	307	0	345	0.78	273	558	831
7:30 AM - 8:30 AM		0	0	0	0	0.00	0	185	44	229	0.80	77	0	171	248	0.64	48	364	0	412	0.79	248	641	889
7:45 AM - 8:45 AM		0	0	0	0	0.00	0	209	58	267	0.86	80	0	136	216	0.83	61	408	0	469	0.86	216	736	952
8:00 AM - 9:00 AM		0	0	0	0	0.00	0	218	55	273	0.88	88	0	161	249	0.83	71	460	0	531	0.77	249	804	1053
8:15 AM - 9:15 AM		0	0	0	0	0.00	0	242	72	314	0.79	95	0	166	261	0.87	80	489	0	569	0.82	261	883	1144
8:30 AM - 9:30 AM		0	0	0	0	0.00	0	253	68	321	0.80	88	0	167	255	0.85	85	496	0	581	0.84	255	902	1157
<b>PM 15 Minute Volumes</b>																								
4:00 PM - 4:15 PM		0	0	0	0		0	96	58	154		29	0	16	45		54	130	0	184		45	338	383
4:15 PM - 4:30 PM		0	0	0	0		0	81	41	122		28	0	34	62		54	142	0	196		62	318	380
4:30 PM - 4:45 PM		0	0	0	0		0	73	68	141		37	0	37	74		47	172	0	219		74	360	434
4:45 PM - 5:00 PM		0	0	0	0		0	110	69	179		31	0	26	57		36	187	0	223		57	402	459
5:00 PM - 5:15 PM		0	0	0	0		0	84	92	176		51	0	37	88		63	176	0	239		88	415	503
5:15 PM - 5:30 PM		0	0	0	0		0	91	91	182		39	0	45	84		39	203	0	242		84	424	508
5:30 PM - 5:45 PM		0	0	0	0		0	85	88	173		46	0	42	88		48	181	0	229		88	402	490
5:45 PM - 6:00 PM		0	0	0	0		0	87	66	153		70	0	66	136		64	203	0	267		136	420	556
6:00 PM - 6:15 PM		0	0	0	0		0	83	62	145		130	0	106	236		62	217	0	279		236	424	660
6:15 PM - 6:30 PM		0	0	0	0		0	101	60	161		76	0	46	122		51	151	0	202		122	363	485
6:30 PM - 6:45 PM		0	0	0	0		0	81	46	127		21	0	24	45		55	161	0	216		45	343	388
6:45 PM - 7:00 PM		0	0	0	0		0	81	48	129		28	0	30	58		66	146	0	212		58	341	399
<b>Total</b>		0	0	0	0		0	1053	789	1842		586	0	509	1095		639	2069	0	2708		1095	4550	5645
<b>PM One Hour Volumes</b>																								
4:00 PM - 5:00 PM		0	0	0	0	0.00	0	360	236	596	0.83	125	0	113	238	0.80	191	631	0	822	0.92	238	1418	1656
4:15 PM - 5:15 PM		0	0	0	0	0.00	0	348	270	618	0.86	147	0	134	281	0.80	200	677	0	877	0.92	281	1495	1776
4:30 PM - 5:30 PM		0	0	0	0	0.00	0	358	320	678	0.93	158	0	145	303	0.86	185	738	0	923	0.95	303	1601	1904
4:45 PM - 5:45 PM		0	0	0	0	0.00	0	370	340	710	0.98	167	0	150	317	0.90	186	747	0	933	0.96	317	1643	1960
5:00 PM - 6:00 PM		0	0	0	0	0.00	0	347	337	684	0.94	206	0	190	396	0.73	214	763	0	977	0.91	396	1661	2057
5:15 PM - 6:15 PM		0	0	0	0	0.00	0	346	307	653	0.90	285	0	259	544	0.58	213	804	0	1017	0.91	544	1670	2214
5:30 PM - 6:30 PM		0	0	0	0	0.00	0	356	276	632	0.91	322	0	260	582	0.62	225	752	0	977	0.88	582	1609	2191
5:45 PM - 6:45 PM		0	0	0	0	0.00	0	352	234	586	0.91	297	0	242	539	0.57	232	732	0	964	0.86	539	1550	2089
6:00 PM - 7:00 PM		0	0	0	0	0.00	0	346	216	562	0.87	255	0	206	461	0.49	234	675	0	909	0.81	461	1471	1932

# Wells + Associates, Inc.

McLean, Virginia

## Pedestrian Volume Survey

<p><b>PROJECT:</b> Columbia Town Center  <b>W+A JOB NO:</b> 5167  <b>INTERSECTION:</b> Little Patuxent Pkwy. &amp; S. Entrance Rd.  <b>LOCATION:</b> Howard County, MD  <b>DATE:</b> 6/1/2011  <b>DAY:</b> Wednesday  <b>WEATHER:</b> clear  <b>COUNTED BY:</b> Majda  <b>INPUTED BY:</b> agan</p>	<p style="font-size: small;">Diagram description: A T-junction where South Entrance Road (horizontal) meets Little Patuxent Parkway (vertical). South Entrance Road has movements 1 (left), 2 (right), 3 (down), and 4 (up). Little Patuxent Parkway has movements 5 (left), 6 (right), 7 (down), and 8 (up). A north arrow is shown to the right.</p>
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Time Period	Movement								1+2	3+4	5+6	7+8	Total
	1	2	3	4	5	6	7	8					
<b>AM 15 Minute Volumes</b>													
6:30 AM - 6:45 AM			1					1					
6:45 AM - 7:00 AM								1					
7:00 AM - 7:15 AM													
7:15 AM - 7:30 AM	2			2									
7:30 AM - 7:45 AM								2					
7:45 AM - 8:00 AM			1		1								
8:00 AM - 8:15 AM	1		1		1	2		2					
8:15 AM - 8:30 AM								1					
8:30 AM - 8:45 AM													
8:45 AM - 9:00 AM	1			1		1							
9:00 AM - 9:15 AM	1			1									
9:15 AM - 9:30 AM													
<b>Total</b>	5	2	7	3	4	3	0	0					
<b>AM One Hour Volumes</b>													
6:30 AM - 7:30 AM	2	0	3	0	1	1	0	0	2	3	2	0	7
6:45 AM - 7:45 AM	2	0	2	0	1	2	0	0	2	2	3	0	7
7:00 AM - 8:00 AM	2	1	3	0	0	2	0	0	3	3	2	0	8
7:15 AM - 8:15 AM	3	2	4	2	2	2	0	0	5	6	4	0	15
7:30 AM - 8:30 AM	1	2	2	2	3	2	0	0	3	4	5	0	12
7:45 AM - 8:45 AM	1	2	2	2	3	0	0	0	3	4	3	0	10
8:00 AM - 9:00 AM	2	1	2	3	3	0	0	0	3	5	3	0	11
8:15 AM - 9:15 AM	2	0	2	1	1	0	0	0	2	3	1	0	6
8:30 AM - 9:30 AM	2	0	2	1	0	0	0	0	2	3	0	0	5
<b>PM 15 Minute Volumes</b>													
4:00 PM - 4:15 PM			2	8			2						
4:15 PM - 4:30 PM			2										
4:30 PM - 4:45 PM	1		3	1	1	2							
4:45 PM - 5:00 PM			2	1	1								
5:00 PM - 5:15 PM			3	2									
5:15 PM - 5:30 PM			4	1	1	2							
5:30 PM - 5:45 PM			2	2	2	1							
5:45 PM - 6:00 PM		1	5		1	3							
6:00 PM - 6:15 PM		5	3	1		1							
6:15 PM - 6:30 PM			2	1									
6:30 PM - 6:45 PM			1	1	1								
6:45 PM - 7:00 PM	1	3	2	4		1							
<b>Total</b>	2	9	31	22	7	12	0	0					
<b>PM One Hour Volumes</b>													
4:00 PM - 5:00 PM	1	0	9	10	2	4	0	0	1	19	6	0	26
4:15 PM - 5:15 PM	1	0	10	4	2	2	0	0	1	14	4	0	19
4:30 PM - 5:30 PM	1	0	12	5	3	4	0	0	1	17	7	0	25
4:45 PM - 5:45 PM	0	0	11	6	4	3	0	0	0	17	7	0	24
5:00 PM - 6:00 PM	0	1	14	5	4	6	0	0	1	19	10	0	30
5:15 PM - 6:15 PM	0	6	14	4	4	7	0	0	6	18	11	0	35
5:30 PM - 6:30 PM	0	6	12	4	3	5	0	0	6	16	8	0	30
5:45 PM - 6:45 PM	0	6	11	3	2	4	0	0	6	14	6	0	26
6:00 PM - 7:00 PM	1	8	8	7	1	2	0	0	9	15	3	0	27

# Wells + Associates, Inc.

McLean, Virginia

## Turning Movement Count - All Vehicles

Time Period		Southbound South Entrance Road					Westbound Swift Stream Place					Northbound South Entrance Road					Eastbound Symphony Woods Road					North & South	East & West	Total
		Right	Thru	Left	Total	PHF	Right	Thru	Left	Total	PHF	Right	Thru	Left	Total	PHF	Right	Thru	Left	Total	PHF			
<b>AM 15 Minute Volumes</b>																								
6:30 AM - 6:45 AM		2	13	0	15		0	0	11	11		0	14	8	22		0	0	0	0		37	11	48
6:45 AM - 7:00 AM		5	15	1	21		1	0	19	20		0	15	7	22		1	0	2	3		43	23	66
7:00 AM - 7:15 AM		7	17	1	25		6	0	16	22		1	25	6	32		0	0	1	1		57	23	80
7:15 AM - 7:30 AM		7	16	2	25		6	0	13	19		0	26	7	33		2	0	2	4		58	23	81
7:30 AM - 7:45 AM		4	29	1	34		4	0	17	21		0	37	4	41		2	0	0	2		75	23	98
7:45 AM - 8:00 AM		9	24	6	39		5	0	13	18		1	39	12	52		0	0	0	0		91	18	109
8:00 AM - 8:15 AM		7	13	6	26		4	0	14	18		1	40	11	52		0	0	0	0		78	18	96
8:15 AM - 8:30 AM		14	24	2	40		8	0	16	24		2	53	16	71		2	0	2	4		111	28	139
8:30 AM - 8:45 AM		11	18	0	29		3	0	12	15		3	66	11	80		1	0	1	2		109	17	126
8:45 AM - 9:00 AM		23	28	1	52		5	0	16	21		2	77	9	88		1	0	0	1		140	22	162
9:00 AM - 9:15 AM		13	26	4	43		7	0	10	17		0	74	6	80		1	0	2	3		123	20	143
9:15 AM - 9:30 AM		10	32	3	45		3	0	7	10		1	59	10	70		2	0	2	4		115	14	129
<b>Total</b>		<b>112</b>	<b>255</b>	<b>27</b>	<b>394</b>		<b>52</b>	<b>0</b>	<b>164</b>	<b>216</b>		<b>11</b>	<b>525</b>	<b>107</b>	<b>643</b>		<b>12</b>	<b>0</b>	<b>12</b>	<b>24</b>		<b>1037</b>	<b>240</b>	<b>1277</b>
<b>AM One Hour Volumes</b>																								
6:30 AM - 7:30 AM		21	61	4	86	0.86	13	0	59	72	0.82	1	80	28	109	0.83	3	0	5	8	0.50	195	80	275
6:45 AM - 7:45 AM		23	77	5	105	0.77	17	0	65	82	0.93	1	103	24	128	0.78	5	0	5	10	0.63	233	92	325
7:00 AM - 8:00 AM		27	86	10	123	0.79	21	0	59	80	0.91	2	127	29	158	0.76	4	0	3	7	0.44	281	87	368
7:15 AM - 8:15 AM		27	82	15	124	0.79	19	0	57	76	0.90	2	142	34	178	0.86	4	0	2	6	0.38	302	82	384
7:30 AM - 8:30 AM		34	90	15	139	0.87	21	0	60	81	0.84	4	169	43	216	0.76	4	0	2	6	0.38	355	87	442
7:45 AM - 8:45 AM		41	79	14	134	0.84	20	0	55	75	0.78	7	198	50	255	0.80	3	0	3	6	0.38	389	81	470
8:00 AM - 9:00 AM		55	83	9	147	0.71	20	0	58	78	0.81	8	236	47	291	0.83	4	0	3	7	0.44	438	85	523
8:15 AM - 9:15 AM		61	96	7	164	0.79	23	0	54	77	0.80	7	270	42	319	0.91	5	0	5	10	0.63	483	87	570
8:30 AM - 9:30 AM		57	104	8	169	0.81	18	0	45	63	0.75	6	276	36	318	0.90	5	0	5	10	0.63	487	73	560
<b>Total</b>		<b>12</b>	<b>0</b>	<b>12</b>	<b>24</b>		<b>55</b>	<b>0</b>	<b>58</b>	<b>113</b>		<b>102</b>	<b>335</b>	<b>33</b>	<b>470</b>		<b>88</b>	<b>0</b>	<b>120</b>	<b>208</b>		<b>494</b>	<b>321</b>	<b>815</b>
<b>PM 15 Minute Volumes</b>																								
4:00 PM - 4:15 PM		0	0	0	0		4	0	2	6		13	23	1	37		8	0	4	12		37	18	55
4:15 PM - 4:30 PM		1	0	2	3		3	0	1	4		8	22	2	32		7	0	12	19		35	23	58
4:30 PM - 4:45 PM		0	0	1	1		4	0	5	9		4	29	0	33		9	0	13	22		34	31	65
4:45 PM - 5:00 PM		2	0	2	4		2	0	4	6		12	34	2	48		10	0	13	23		52	29	81
5:00 PM - 5:15 PM		2	0	0	2		9	0	9	18		8	33	0	41		11	0	13	24		43	42	85
5:15 PM - 5:30 PM		0	0	0	0		5	0	2	7		7	35	4	46		7	0	10	17		46	24	70
5:30 PM - 5:45 PM		0	0	0	0		4	0	5	9		10	38	8	56		9	0	15	24		56	33	89
5:45 PM - 6:00 PM		2	0	2	4		9	0	9	18		8	28	9	45		5	0	9	14		49	32	81
6:00 PM - 6:15 PM		1	0	1	2		3	0	6	9		8	28	4	40		9	0	9	18		42	27	69
6:15 PM - 6:30 PM		1	0	0	1		3	0	5	8		8	22	2	32		8	0	8	16		33	24	57
6:30 PM - 6:45 PM		1	0	2	3		7	0	3	10		8	21	0	29		2	0	7	9		32	19	51
6:45 PM - 7:00 PM		2	0	2	4		2	0	7	9		8	22	1	31		3	0	7	10		35	19	54
<b>Total</b>		<b>12</b>	<b>0</b>	<b>12</b>	<b>24</b>		<b>55</b>	<b>0</b>	<b>58</b>	<b>113</b>		<b>102</b>	<b>335</b>	<b>33</b>	<b>470</b>		<b>88</b>	<b>0</b>	<b>120</b>	<b>208</b>		<b>494</b>	<b>321</b>	<b>815</b>
<b>PM One Hour Volumes</b>																								
4:00 PM - 5:00 PM		3	0	5	8	0.50	13	0	12	25	0.69	37	108	5	150	0.78	34	0	42	76	0.83	158	101	259
4:15 PM - 5:15 PM		5	0	5	10	0.63	18	0	19	37	0.51	32	118	4	154	0.80	37	0	51	88	0.92	164	125	289
4:30 PM - 5:30 PM		4	0	3	7	0.44	20	0	20	40	0.56	31	131	6	168	0.88	37	0	49	86	0.90	175	126	301
4:45 PM - 5:45 PM		4	0	2	6	0.38	20	0	20	40	0.56	37	140	14	191	0.85	37	0	51	88	0.92	197	128	325
<b>5:00 PM - 6:00 PM</b>		<b>4</b>	<b>0</b>	<b>2</b>	<b>6</b>	<b>0.38</b>	<b>27</b>	<b>0</b>	<b>25</b>	<b>52</b>	<b>0.72</b>	<b>33</b>	<b>134</b>	<b>21</b>	<b>188</b>	<b>0.84</b>	<b>32</b>	<b>0</b>	<b>47</b>	<b>79</b>	<b>0.82</b>	<b>194</b>	<b>131</b>	<b>325</b>
5:15 PM - 6:15 PM		3	0	3	6	0.38	21	0	22	43	0.60	33	129	25	187	0.83	30	0	43	73	0.76	193	116	309
5:30 PM - 6:30 PM		4	0	3	7	0.44	19	0	25	44	0.61	34	116	23	173	0.77	31	0	41	72	0.75	180	116	296
5:45 PM - 6:45 PM		5	0	5	10	0.63	22	0	23	45	0.63	32	99	15	146	0.81	24	0	33	57	0.79	156	102	258
6:00 PM - 7:00 PM		5	0	5	10	0.63	15	0	21	36	0.90	32	93	7	132	0.83	22	0	31	53	0.74	142	89	231

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McLean, Virginia

## Pedestrian Volume Survey

<p><b>PROJECT:</b> Toby's Theatre Redevelopment  <b>W+A JOB NO:</b> 6738  <b>INTERSECTION:</b> S.Entrance Rd. &amp;Symphony Woods Rd.  <b>LOCATION:</b> Howard County,MD  <b>DATE:</b> 3/10/2016  <b>DAY:</b> Thursday  <b>WEATHER:</b> clear  <b>COUNTED BY:</b> Dzemo  <b>INPUTED BY:</b> agan</p>	
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Time Period	Movement								1+2	3+4	5+6	7+8	Total	
	1	2	3	4	5	6	7	8						
<b>AM 15 Minute Volumes</b>														
6:30 AM - 6:45 AM														
6:45 AM - 7:00 AM								1						
7:00 AM - 7:15 AM								1						
7:15 AM - 7:30 AM														
7:30 AM - 7:45 AM								1						
7:45 AM - 8:00 AM		1						1						
8:00 AM - 8:15 AM														
8:15 AM - 8:30 AM														
8:30 AM - 8:45 AM														
8:45 AM - 9:00 AM														
9:00 AM - 9:15 AM														
9:15 AM - 9:30 AM														
<b>Total</b>	0	1	0	0	0	0	0	3	1					
<b>AM One Hour Volumes</b>														
6:30 AM - 7:30 AM	0	0	0	0	0	0	0	1	1	0	0	0	2	2
6:45 AM - 7:45 AM	0	0	0	0	0	0	0	2	1	0	0	0	3	3
7:00 AM - 8:00 AM	0	1	0	0	0	0	0	3	0	1	0	0	3	4
7:15 AM - 8:15 AM	0	1	0	0	0	0	0	2	0	1	0	0	2	3
7:30 AM - 8:30 AM	0	1	0	0	0	0	0	2	0	1	0	0	2	3
7:45 AM - 8:45 AM	0	1	0	0	0	0	0	1	0	1	0	0	1	2
8:00 AM - 9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15 AM - 9:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30 AM - 9:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>Total</b>	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>PM 15 Minute Volumes</b>														
4:00 PM - 4:15 PM														
4:15 PM - 4:30 PM								5						
4:30 PM - 4:45 PM														
4:45 PM - 5:00 PM						2								
5:00 PM - 5:15 PM														
5:15 PM - 5:30 PM														
5:30 PM - 5:45 PM				1										
5:45 PM - 6:00 PM														
6:00 PM - 6:15 PM														
6:15 PM - 6:30 PM														
6:30 PM - 6:45 PM														
6:45 PM - 7:00 PM														
<b>Total</b>	0	0	0	1	2	0	5	0						
<b>PM One Hour Volumes</b>														
4:00 PM - 5:00 PM	0	0	0	0	2	0	5	0	0	0	2	5	7	7
4:15 PM - 5:15 PM	0	0	0	0	2	0	5	0	0	0	2	5	7	7
4:30 PM - 5:30 PM	0	0	0	0	2	0	0	0	0	0	2	0	2	2
4:45 PM - 5:45 PM	0	0	0	1	2	0	0	0	0	0	1	2	0	3
<b>5:00 PM - 6:00 PM</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>1</b>
5:15 PM - 6:15 PM	0	0	0	1	0	0	0	0	0	0	1	0	0	1
5:30 PM - 6:30 PM	0	0	0	1	0	0	0	0	0	0	1	0	0	1
5:45 PM - 6:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:00 PM - 7:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0

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## Turning Movement Count - Total Vehicles

Time Period		Southbound				Northbound				Eastbound				North & South		East & West	Total			
		Right	Thru	Left	Total	Right	Thru	Left	Total	Right	Thru	Left	Total	PHF	Total					
<b>PROJECT:</b> Toby's Theatre Redevelopment		<b>DATE:</b> 3/10/2016																		
<b>W-A JOB NO:</b> 6738		<b>DAY:</b> Thursday																		
<b>INTERSECTION:</b> S. Entrance Rd. & Site Driveway		<b>WEATHER:</b> clear																		
<b>LOCATION:</b> Howard County, MD		<b>COUNTED BY:</b> Damir																		
		<b>INPUTED BY:</b> agan																		
		0																		
<b>One Hour Volumes</b>																				
4:00 PM - 5:00 PM	367	367	0.7909					139	7	146	0.869					7	0.4375	513	7	520
4:15 PM - 5:15 PM	397	397	0.8202					148	6	154	0.9167					12	0.6	551	12	563
4:30 PM - 5:30 PM	439	439	0.907					161	5	166	0.9222					12	0.6	605	12	617
4:45 PM - 5:45 PM	457	457	0.8526					182	9	191	0.7702					12	0.6	648	12	660
5:00 PM - 6:00 PM	494	494	0.9216					188	20	208	0.8387					12	0.6	702	12	714
5:15 PM - 6:15 PM	455	456	0.8507					185	28	213	0.8589					9	0.5625	669	9	678
5:30 PM - 6:30 PM	439	440	0.8209					177	34	211	0.8508					5	0.625	651	5	656
5:45 PM - 6:45 PM	370	371	0.7729					150	27	177	0.75					4	0.5	548	4	552
6:00 PM - 7:00 PM	328	329	0.7985					134	16	150	0.7979					3	0.375	479	3	482
6:15 PM - 7:15 PM	312	314	0.7621					119	11	130	0.7558					4	0.25	444	4	448
6:30 PM - 7:30 PM	287	289	0.9263					103	7	110	0.8594					2	0.5	399	2	401
6:45 PM - 7:45 PM	280	282	0.9038					96	7	103	0.8047					2	0.5	385	2	387
7:00 PM - 8:00 PM	259	260	0.8333					81	6	87	0.8056					4	0.3333	347	4	351
7:15 PM - 8:15 PM	254	254	0.8141					70	3	73	0.7935					6	0.5	327	6	333
7:30 PM - 8:30 PM	216	216	0.871					63	63	63	0.75					5	0.4167	279	5	284
7:45 PM - 8:45 PM	210	210	0.8468					55	55	55	0.8594					5	0.4167	265	5	270
8:00 PM - 9:00 PM	209	209	0.8427					54	54	54	0.9					2	0.25	263	2	265
8:15 PM - 9:15 PM	211	211	0.8242					51	51	51	0.85							262		262
8:30 PM - 9:30 PM	217	217	0.8477					47	47	47	0.7833							264		264
8:45 PM - 9:45 PM	194	194	0.7578					42	42	42	0.7							236		236
9:00 PM - 10:00 PM	184	184	0.7188					44	44	44	0.6471					1	0.25	228	1	229
9:15 PM - 10:15 PM	162	162	0.8804					46	46	46	0.6765					1	0.25	208	1	209
9:30 PM - 10:30 PM	136	136	0.7556					45	45	45	0.6618					1	0.25	181	1	182
9:45 PM - 10:45 PM	149	149	0.8278					42	42	42	0.6176					48	0.2534	191	75	266
10:00 PM - 11:00 PM	113	113	0.6726					29	29	29	0.6042					59	0.2905	142	86	228

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## Turning Movement Count - Total Vehicles

Time Period		Southbound Symphony Woods Road				Westbound Site Driveway - North				Northbound Symphony Woods Road				Eastbound 0				North & South		East & West		Total					
		Right	Thru	Left	Total	PHF	Right	Thru	Left	Total	PHF	Right	Thru	Left	Total	PHF	Right	Left	Total	PHF	Right		Left	Total			
<b>PROJECT:</b> Toby's Theatre Redevelopment																											
<b>W+A JOB NO:</b> 6738																											
<b>INTERSECTION:</b> Symphony Woods Rd. & Site Driveway - North																											
<b>LOCATION:</b> Howard County, MD																											
<b>DATE:</b> 3/12/2016																											
<b>DAY:</b> Saturday																											
<b>WEATHER:</b> clear																											
<b>COUNTED BY:</b> Damir																											
<b>INPUTED BY:</b> agn																											
<b>SOUTHBOUND ROAD:</b> Symphony Woods Road																											
<b>NORTHBOUND ROAD:</b> Symphony Woods Road																											
<b>WESTBOUND ROAD:</b> Site Driveway - North																											
<b>EASTBOUND ROAD:</b> 0																											
<b>One Hour Volumes</b>																											
4:00 PM	- 5:00 PM	6	6	6	0.75	7	0.5833	1	1	1	0.25													7	7	14	
4:15 PM	- 5:15 PM	5	5	5	0.625	5	0.625	1	1	1	0.25														6	5	11
4:30 PM	- 5:30 PM	14	14	14	0.3182	3	0.375	2	2	2	0.5														16	3	19
4:45 PM	- 5:45 PM	23	23	23	0.5227	4	0.5	2	2	2	0.5														25	4	29
5:00 PM	- 6:00 PM	38	38	38	0.5588	3	0.75	1	1	1	0.25														39	3	42
5:15 PM	- 6:15 PM	50	50	50	0.7353	3	0.75	1	1	1	0.25														51	3	54
5:30 PM	- 6:30 PM	45	45	45	0.6618	5	0.5																		45	6	51
5:45 PM	- 6:45 PM	39	39	39	0.5735	4	0.4167																		39	5	44
6:00 PM	- 7:00 PM	25	25	25	0.4808	5	0.5																		25	6	31
6:15 PM	- 7:15 PM	13	13	13	0.5417	5	0.5																		13	6	19
6:30 PM	- 7:30 PM	9	9	9	0.75	3	0.375																		9	3	12
6:45 PM	- 7:45 PM	7	7	7	0.5833	5	0.625																		7	5	12
7:00 PM	- 8:00 PM	4	4	4	0.5	3	0.375																		4	3	7
7:15 PM	- 8:15 PM	4	4	4	0.5	3	0.375																		4	3	7
7:30 PM	- 8:30 PM	2	2	2	0.5	4	0.5																		2	4	6
7:45 PM	- 8:45 PM	1	1	1	0.25	2	0.5																		1	2	3
8:00 PM	- 9:00 PM	1	1	1	0.25	2	0.5																		1	2	3
8:15 PM	- 9:15 PM	1	1	1	0.25	1	0.25																		1	1	2
8:30 PM	- 9:30 PM	1	1	1	0.25																				1	1	2
8:45 PM	- 9:45 PM	1	1	1	0.25	1	0.25																		1	1	2
9:00 PM	- 10:00 PM	1	1	1	0.25	4	0.3333																		1	4	5
9:15 PM	- 10:15 PM	2	2	2	0.25	5	0.5																		2	6	8
9:30 PM	- 10:30 PM	2	2	2	0.25	5	0.5																		2	6	8
9:45 PM	- 10:45 PM	2	2	2	0.25	34	0.2903																		2	36	38
10:00 PM	- 11:00 PM	2	2	2	0.25	32	0.2742																		2	34	36

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## Turning Movement Count - Total Vehicles

Time Period		Southbound Symphony Woods Road				Westbound Site Driveway - Middle				Northbound Symphony Woods Road				Eastbound Driveway				North & South		East & West		Total		
		Right	Thru	Left	Total	PHF	Right	Thru	Left	Total	PHF	Right	Thru	Left	Total	PHF	Right	Thru	Left	Total	PHF		Right	Thru
<b>PROJECT:</b> Toby's Theatre Redevelopment																								
<b>W+A JOB NO:</b> 6738																								
<b>INTERSECTION:</b> Symphony Woods Rd. & Site Driveway - Middle																								
<b>LOCATION:</b> Howard County, MD																								
<b>DATE:</b> 3/10/2016																								
<b>DAY:</b> Thursday																								
<b>WEATHER:</b> clear																								
<b>COUNTED BY:</b> Damar																								
<b>INPUTED BY:</b> agn																								
<b>SOUTHBOUND ROAD:</b> Symphony Woods Road																								
<b>NORTHBOUND ROAD:</b> Symphony Woods Road																								
<b>WESTBOUND ROAD:</b> Site Driveway - Middle																								
<b>EASTBOUND ROAD:</b> Driveway																								
<b>One Hour Volumes</b>																								
4:00 PM - 5:00 PM	5	16	4	25	0.7813	3	0.75	3	0.75	3	59	3	62	0.7045	1	9	10	0.8333	87	13	100			
4:15 PM - 5:15 PM	5	17	3	25	0.7813	2	0.5	2	0.5	2	71	2	73	0.8295	10	10	10	0.8333	98	12	110			
4:30 PM - 5:30 PM	6	16	4	26	0.7222	1	2	0.5	2	0.5	69	2	71	0.8068	14	14	14	0.7	97	16	113			
4:45 PM - 5:45 PM	6	19	5	30	0.8333	1	2	0.5	2	0.5	69	1	69	0.8625	1	15	16	0.8	99	18	117			
5:00 PM - 6:00 PM	8	20	20	48	0.5	1	0.25	1	0.25	1	66	1	67	0.8375	1	16	17	0.85	115	18	133			
5:15 PM - 6:15 PM	7	16	29	52	0.5417	1	1	1	0.25	1	62	1	64	0.8	1	14	15	0.75	116	16	132			
5:30 PM - 6:30 PM	3	13	35	51	0.5313	1	1	1	0.25	1	63	1	65	0.8125	2	9	11	0.55	116	12	128			
5:45 PM - 6:45 PM	3	8	31	42	0.4375	2	2	2	0.5	1	49	1	51	0.7969	2	8	10	0.625	93	12	105			
6:00 PM - 7:00 PM	2	2	20	22	0.55	2	2	2	0.5	2	40	1	41	0.6406	2	6	8	0.5	63	10	73			
6:15 PM - 7:15 PM	1	12	13	26	0.4063	2	3	3	0.75	3	32	2	32	0.6154	2	7	9	0.5625	45	12	57			
6:30 PM - 7:30 PM	3	8	11	22	0.4583	1	2	2	0.5	2	23	23	23	0.8214	1	10	11	0.6875	34	13	47			
6:45 PM - 7:45 PM	4	8	12	24	0.5	1	1	1	0.25	1	22	22	22	0.7857	7	7	7	0.5833	34	8	42			
7:00 PM - 8:00 PM	5	4	9	18	0.375	1	2	2	0.5	2	22	22	22	0.7857	5	5	5	0.4167	31	7	38			
7:15 PM - 8:15 PM	7	3	10	20	0.4167	1	1	1	0.25	1	20	20	20	0.8333	4	4	4	0.3333	30	5	35			
7:30 PM - 8:30 PM	4	4	4	12	0.5	1	1	1	0.25	1	18	18	18	0.75	1	1	1	0.25	22	2	24			
7:45 PM - 8:45 PM	3	3	3	9	0.375	1	1	1	0.25	1	15	15	15	0.625	1	1	1	0.25	18	2	20			
8:00 PM - 9:00 PM	2	2	2	6	0.25	1	1	1	0.25	1	10	10	10	0.5	1	1	1	0.25	12	1	13			
8:15 PM - 9:15 PM	1	1	1	3	0.25	1	1	1	0.25	1	5	5	5	0.625	6	6	6	0.625	6	6	12			
8:30 PM - 9:30 PM	1	1	1	3	0.25	1	1	1	0.25	1	4	4	4	0.5	4	4	4	0.5	5	5	10			
8:45 PM - 9:45 PM	1	1	1	3	0.25	1	1	1	0.25	1	5	5	5	0.4167	6	6	6	0.4167	6	6	12			
9:00 PM - 10:00 PM	4	4	4	12	0.3333	1	1	1	0.25	1	4	4	4	0.3333	4	4	4	0.3333	8	1	9			
9:15 PM - 10:15 PM	3	3	3	9	0.5	1	1	1	0.25	1	7	7	7	0.5833	7	7	7	0.5833	13	1	14			
9:30 PM - 10:30 PM	4	4	4	12	0.6667	1	1	1	0.25	1	8	8	8	0.6667	8	8	8	0.6667	16	1	17			
9:45 PM - 10:45 PM	4	6	10	20	0.8333	28	28	28	0.2593	28	5	5	5	0.4167	5	5	5	0.4167	15	28	43			
10:00 PM - 11:00 PM	1	6	7	14	0.5833	29	29	29	0.2685	29	5	5	5	0.4167	5	5	5	0.4167	12	29	41			

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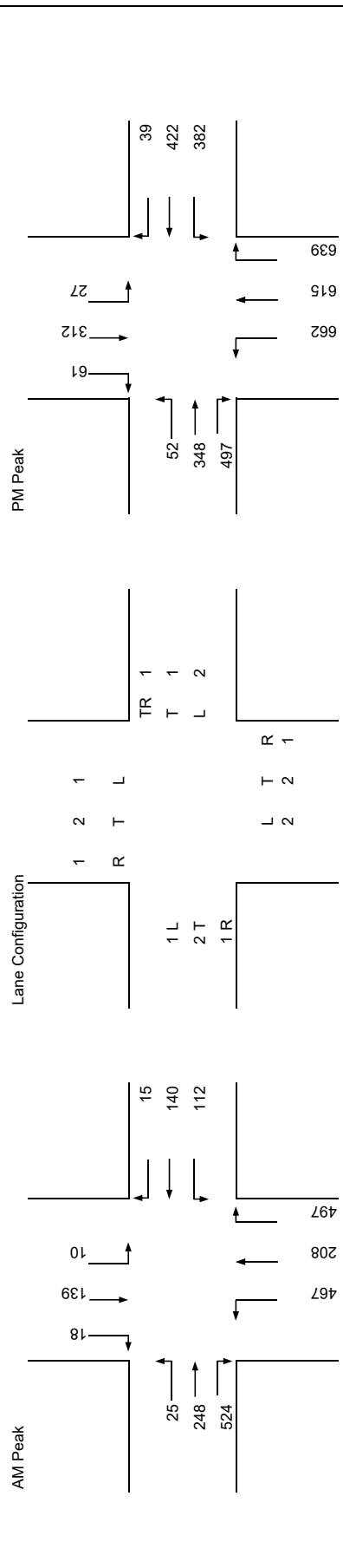
## Turning Movement Count - Total Vehicles

Time Period	Southbound Symphony Woods Road				Westbound Site Driveway - South				Northbound Symphony Woods Road				Eastbound 0				North & South		East & West		Total
	Right	Thru	Left	Total	Right	Thru	Left	Total	Right	Thru	Left	Total	Right	Thru	Left	Total	PHF	Total	PHF	Total	
	PHF				PHF				PHF				PHF								
<b>One Hour Volumes</b>																					
4:00 PM - 5:00 PM	3	14	17	0.85	56	67	77	0.778	6	6	6	0.375					23	56			79
4:15 PM - 5:15 PM	3	14	17	0.85	67	67	93	0.9306	5	5	5	0.3125					22	67			89
4:30 PM - 5:30 PM	4	14	18	0.9	67	67	93	0.9306	4	4	4	0.25					22	67			89
4:45 PM - 5:45 PM	3	17	20	1	68	68	89	0.8947	1	1	1	0.25					21	68			89
5:00 PM - 6:00 PM	3	19	22	0.7857	66	66	86	0.8684	1	1	1	0.25					23	66			89
5:15 PM - 6:15 PM	3	15	18	0.6429	62	62	81	0.8158	1	2	3	0.375					21	62			83
5:30 PM - 6:30 PM	3	11	14	0.5	60	60	78	0.7895	3	2	5	0.625					19	60			79
5:45 PM - 6:45 PM	3	8	11	0.3929	47	47	73	0.7344	3	1	4	0.5					15	47			62
6:00 PM - 7:00 PM	2	2	4	0.5	37	37	66	0.6607	3	1	4	0.5					8	37			45
6:15 PM - 7:15 PM	2	2	4	0.5	30	30	68	0.6818	2	2	2	0.25					6	30			36
6:30 PM - 7:30 PM	1	4	5	0.625	23	23	82	0.8214									5	23			28
6:45 PM - 7:45 PM	4	4	4	0.5	22	22	78	0.7857									4	22			26
7:00 PM - 8:00 PM	5	5	5	0.625	20	20	71	0.7143	1	1	1	0.25					6	20			26
7:15 PM - 8:15 PM	6	6	6	0.75	19	19	79	0.7917	1	1	1	0.25					7	19			26
7:30 PM - 8:30 PM	4	4	4	0.5	16	16	66	0.6667	1	1	1	0.25					5	16			21
7:45 PM - 8:45 PM	3	3	3	0.375	13	13	54	0.5417	1	1	1	0.25					4	13			17
8:00 PM - 9:00 PM	2	2	2	0.25	10	10	41	0.4167	1	1	1	0.25					2	10			12
8:15 PM - 9:15 PM	1	1	1	0.25	4	4	0.5		4	4	4	0.5					1	4			5
8:30 PM - 9:30 PM	1	1	1	0.25	4	4	0.5		4	4	4	0.5					1	4			5
8:45 PM - 9:45 PM	1	1	1	0.25	5	5	41	0.4167	5	5	5	0.4167					1	5			6
9:00 PM - 10:00 PM	1	3	4	0.3333	4	4	33	0.3333	4	4	4	0.3333					4	4			8
9:15 PM - 10:15 PM	3	3	3	0.25	7	7	58	0.5833	7	7	7	0.5833					3	7			10
9:30 PM - 10:30 PM	4	4	4	0.3333	8	8	66	0.6667	8	8	8	0.6667					4	8			12
9:45 PM - 10:45 PM	4	4	4	0.3333	5	5	41	0.4167	5	5	5	0.4167					4	5			9
10:00 PM - 11:00 PM	1	1	1	0.25	5	5	41	0.4167	5	5	5	0.4167					1	5			6

## **APPENDIX E**

### **EXISTING CLV'S AND SYNCHRO REPORTS**





Intersection Control: Signal: X Stop: \_\_\_\_\_  
 Split: N/S Ways: \_\_\_\_\_  
 # of Phases: \_\_\_\_\_  
 Cycle Length: \_\_\_\_\_ sec.

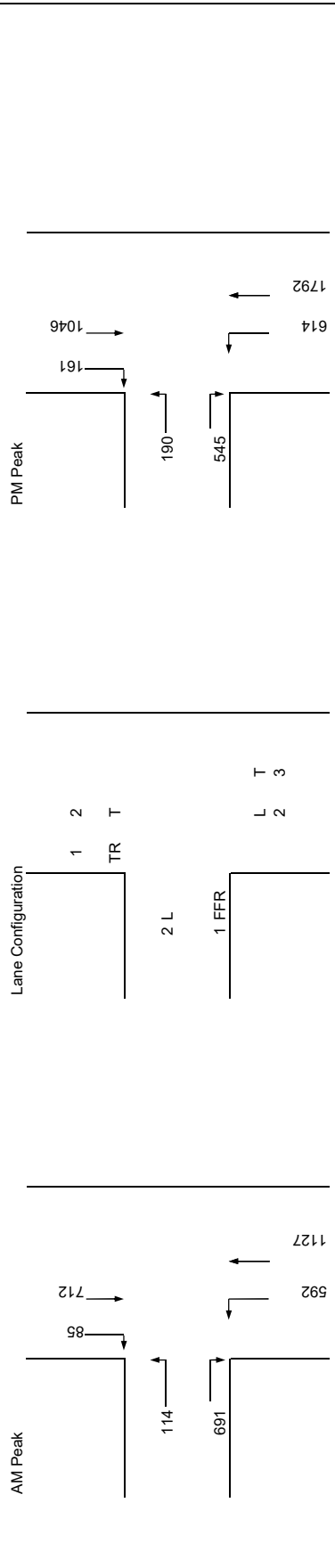
RTOR/Overlap (AM): NB 67.2 SB 18 EB 280 WB 0  
 RTOR/Overlap (PM): NB 229 SB 52 EB 397 WB 0

Signal Phases	1		2		3		4		5		6							
	Phase	Movement	Volume	Lane Use Factor	Lane Volume	Opposing Lefts	Lane Use Factor	Opposing Volume	Phase	Movement	Volume	Lane Use Factor	Lane Volume	Opposing Lefts	Lane Use Factor	Opposing Volume	Critical Lane Volume	
1	EB	R	244	1.00	244	112	0.60	67	EB	T	348	0.55	191	382	0.60	229	420	
	WB	TR	155	0.55	85	25	1.00	25	WB	TR	461	0.55	254	52	1.00	52	306	
	NB	R	430	1.00	430	0		0	NB	R	410	1.00	410	0		0	410	
	SB	T	139	0.55	76	0		0	SB	T	312	0.55	172	0		0	172	
SUM												817		SUM		1002		Critical Lane Volume
												<u>A</u>		<u>B</u>				

**Intersection Control Summary**

Signal: X Split: N/S Ways: \_\_\_\_\_  
 # of Phases: \_\_\_\_\_ Cycle Length: \_\_\_\_\_ sec.

RTOR/Overlap (AM): NB 67.2 SB 18 EB 280 WB 0  
 RTOR/Overlap (PM): NB 229 SB 52 EB 397 WB 0

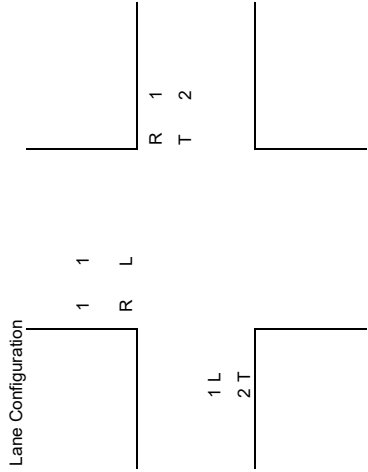
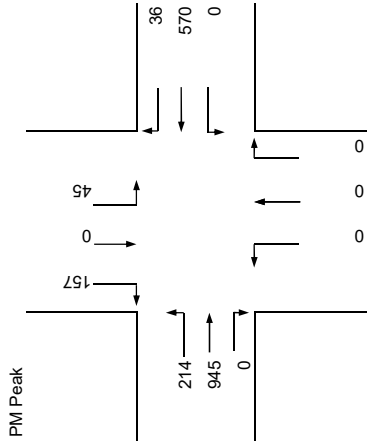


Intersection Control: Signal:   X    
 Split:             
 # of Phases:             
 Cycle Length:            sec.

RTOR/Overlap (AM): NB   0   SB   0   WB   0    
 RTOR/Overlap (PM): NB   0   SB   0   WB   0  

Signal Phases	2			3			4			5			6					
	Phase	Movement	Volume	Lane Use Factor	Lane Volume	Opposing Lefts	Lane Use Factor	Lane Volume	Opposing Volume	Critical Lane Volume *	Phase	Movement	Volume	Lane Use Factor	Lane Volume	Opposing Volume	Critical Lane Volume *	
1	EB	L	114	0.60	68		1.00	68	0	68	EB	L	190	0.60	114	0	114	
	NB	T	1127	0.40	451	0	1.00	451	0	451	NB	T	1792	0.40	717	0	717	
	SB	TR	797	0.40	319	592	0.60	674	355	674	SB	TR	1207	0.40	483	368	851	
SUM																742	A	
SUM																965	A	

New Cultural Center  
 Critical Lane Volume  
 Level of Service Calculations



Intersection Control: Signal: X Stop: \_\_\_\_\_ Ways: \_\_\_\_\_  
 # of Phases: \_\_\_\_\_  
 Cycle Length: \_\_\_\_\_ sec.

RTOR/Overlap (AM): NB 0 SB 32 EB 0 WB 12  
 RTOR/Overlap (PM): NB 0 SB 157 EB 0 WB 45

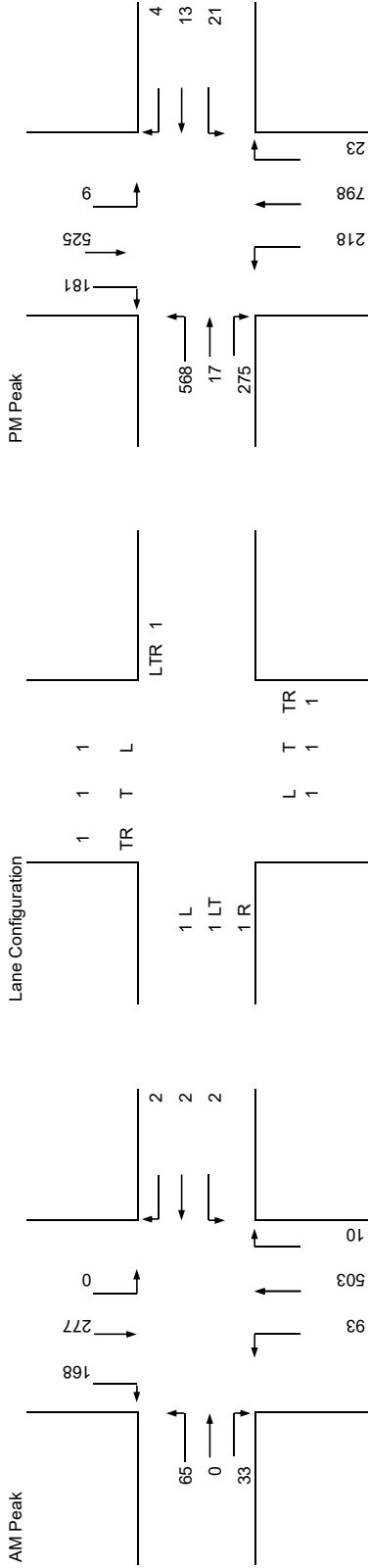
Signal Phases

Phase	Movement	Volume	Lane Use Factor	Lane Volume	Opposing Lefts	Lane Use Factor	Opposing Volume	Phase	Movement	Volume	Lane Use Factor	Lane Volume	Opposing Volume	Critical Lane Volume		
1	EB	536	0.55	295	0	1.00	0	2	T	126	0.55	197	0	295		
	WB	359	0.55	197	126	1.00	126		T	536	0.55	295	126	323		
3	NB	0	1.00	0	0	1.00	0	4	L	12	1.00	12	0	12		
	SB	12	1.00	12	0	1.00	0		L	0	0	1.00	0	0		
SUM												335	A			
5												SUM		573	A	
6												SUM		573	A	



**New Cultural Center  
Critical Lane Volume  
Level of Service Calculations**

Intersection: 11: Little Patuxent Parkway/Moore Road  
County, State: Howard County, Maryland  
Scenario/Design Year: Existing  
Computed by: JAS



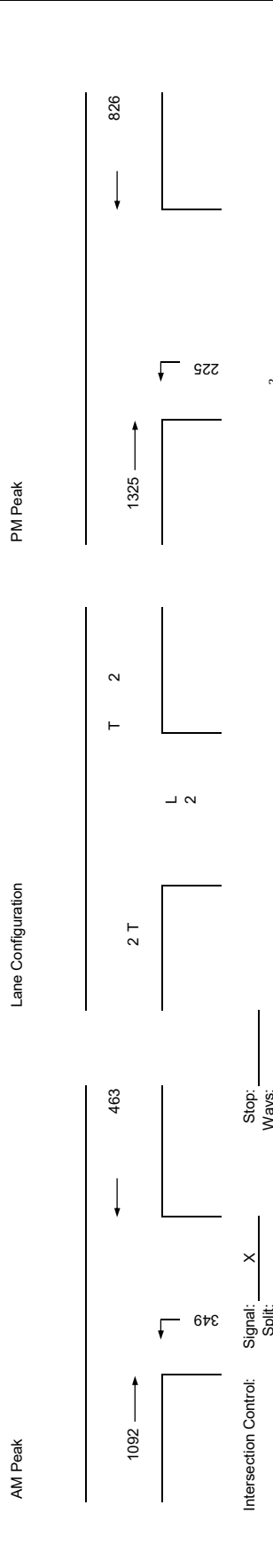
Intersection Control: Signal: X  
Split: E/W  
# of Phases:  
Cycle Length: sec.

RTOR/Overlap (AM): NB 0 SB 0 EB 33 WB 0  
RTOR/Overlap (PM): NB 0 SB 0 EB 218 WB 0

**Signal Phases**

Phase	Movement	Volume	Lane Use Factor	Lane Volume	Opposing Lefts	Lane Use Factor	Opposing Volume	Phase	Movement	Volume	Lane Use Factor	Lane Volume	Opposing Lefts	Opposing Volume	Critical Lane Volume *													
EB	TL	65	0.60	39	0	0.60	0	EB	TL	585	0.60	351	0	0	351													
WB	LTR	6	1.00	6	0	1.00	0	WB	LTR	38	1.00	38	0	0	38													
NB	TR	513	0.55	282	0	0.55	0	NB	TR	821	0.55	452	9	9	461													
SB	TR	445	0.55	245	93	0.55	93	SB	TR	706	0.55	388	218	218	606													
													SUM	383				995										

RTOR/Overlap (AM): NB 0 SB 0 EB 33 WB 0  
RTOR/Overlap (PM): NB 0 SB 0 EB 218 WB 0



Intersection Control: Signal: X Stop: \_\_\_\_\_ Ways: \_\_\_\_\_  
 Split: \_\_\_\_\_  
 # of Phases: \_\_\_\_\_  
 Cycle Length: \_\_\_\_\_ sec.

RTOR/Overlap (AM): NB 0 SB 0 EB 0 WB 0  
 RTOR/Overlap (PM): NB 0 SB 0 EB 0 WB 0

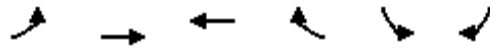
Signal Phases

Phase	Movement	Volume	Lane Use Factor	Opposing		Lane Use Volume	Lane Use Factor	Volume	Movement	Phase	Lane Use Factor	Volume	Opposing Volume	Critical Lane Volume
				Lefts	Right									
EB	T	1092	0.55	0	0	601	0.00	601	T	EB	0.55	729	0	601
WB	T	463	0.55	0	0	255	0.00	255	T	WB	0.55	454	0	339
NB	L	349	0.60	0	0	209	0.60	209	L	NB	0.60	135	0	209
SUM														810
SUM														864

# HCM Unsignalized Intersection Capacity Analysis

## 22: Little Patuxent Parkway & Crescent West

EX AM



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↶	↷	↷			↷
Traffic Volume (veh/h)	79	676	258	67	0	8
Future Volume (Veh/h)	79	676	258	67	0	8
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	86	735	280	73	0	9
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage (veh)						
Upstream signal (ft)		613	849			
pX, platoon unblocked						
vC, conflicting volume	353				856	176
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	353				856	176
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	93				100	99
cM capacity (veh/h)	1202				276	836
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	SB 1
Volume Total	86	368	368	187	166	9
Volume Left	86	0	0	0	0	0
Volume Right	0	0	0	0	73	9
cSH	1202	1700	1700	1700	1700	836
Volume to Capacity	0.07	0.22	0.22	0.11	0.10	0.01
Queue Length 95th (ft)	6	0	0	0	0	1
Control Delay (s)	8.2	0.0	0.0	0.0	0.0	9.4
Lane LOS	A					A
Approach Delay (s)	0.9			0.0		9.4
Approach LOS						A
Intersection Summary						
Average Delay			0.7			
Intersection Capacity Utilization			22.0%		ICU Level of Service	A
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis  
 25: Broken Land Parkway & Area 1 South Driveway

EX AM























Movement	WBL	WBR	NBT	NBR	SBL	SBT	
Lane Configurations		↗	↕↕↕↕			↕↕↕	
Traffic Volume (veh/h)	0	27	1628	148	0	1127	
Future Volume (Veh/h)	0	27	1628	148	0	1127	
Sign Control	Stop		Free			Free	
Grade	0%		0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	
Hourly flow rate (vph)	0	29	1770	161	0	1225	
Pedestrians							
Lane Width (ft)							
Walking Speed (ft/s)							
Percent Blockage							
Right turn flare (veh)							
Median type			None			None	
Median storage (veh)							
Upstream signal (ft)			1240			586	
pX, platoon unblocked							
vC, conflicting volume	2259	670			1931		
vC1, stage 1 conf vol							
vC2, stage 2 conf vol							
vCu, unblocked vol	2259	670			1931		
tC, single (s)	6.8	6.9			4.1		
tC, 2 stage (s)							
tF (s)	3.5	3.3			2.2		
p0 queue free %	100	93			100		
cM capacity (veh/h)	35	399			301		
Direction, Lane #	WB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3
Volume Total	29	708	708	515	408	408	408
Volume Left	0	0	0	0	0	0	0
Volume Right	29	0	0	161	0	0	0
cSH	399	1700	1700	1700	1700	1700	1700
Volume to Capacity	0.07	0.42	0.42	0.30	0.24	0.24	0.24
Queue Length 95th (ft)	6	0	0	0	0	0	0
Control Delay (s)	14.7	0.0	0.0	0.0	0.0	0.0	0.0
Lane LOS	B						
Approach Delay (s)	14.7	0.0			0.0		
Approach LOS	B						
Intersection Summary							
Average Delay			0.1				
Intersection Capacity Utilization			44.7%		ICU Level of Service		A
Analysis Period (min)			15				

# HCM Unsignalized Intersection Capacity Analysis

## 33: South Entrance Road & North South Connector Road

EX AM

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	5	0	5	54	0	23	42	270	7	7	96	61
Future Volume (Veh/h)	5	0	5	54	0	23	42	270	7	7	96	61
Sign Control		Stop			Stop			Free				Free
Grade		0%			0%			0%				0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	5	0	5	59	0	25	46	293	8	8	104	66
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage (veh)												
Upstream signal (ft)											682	
pX, platoon unblocked												
vC, conflicting volume	530	505	104	514	575	297	170			293		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	530	505	104	514	575	297	170			293		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	99	100	99	87	100	97	97			99		
cM capacity (veh/h)	431	451	951	455	412	742	1407			1269		
Direction, Lane #	EB 1	EB 2	WB 1	NB 1	NB 2	SB 1	SB 2	SB 3				
Volume Total	5	5	84	46	301	8	104	66				
Volume Left	5	0	59	46	0	8	0	0				
Volume Right	0	5	25	0	8	0	0	66				
cSH	431	951	514	1407	1700	1269	1700	1700				
Volume to Capacity	0.01	0.01	0.16	0.03	0.18	0.01	0.06	0.04				
Queue Length 95th (ft)	1	0	14	3	0	0	0	0				
Control Delay (s)	13.5	8.8	13.4	7.6	0.0	7.9	0.0	0.0				
Lane LOS	B	A	B	A		A						
Approach Delay (s)	11.1		13.4	1.0		0.4						
Approach LOS	B		B									
Intersection Summary												
Average Delay			2.7									
Intersection Capacity Utilization			32.4%		ICU Level of Service				A			
Analysis Period (min)			15									

# HCM Unsignalized Intersection Capacity Analysis

## 42: South Entrance Road

EX AM



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	0	0	319	115	0
Future Volume (Veh/h)	0	0	0	319	115	0
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	0	0	347	125	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage (veh)						
Upstream signal (ft)					1077	
pX, platoon unblocked						
vC, conflicting volume	472	125	125			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	472	125	125			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	100	100			
cM capacity (veh/h)	551	926	1462			
Direction, Lane #	EB 1	NB 1	SB 1			
Volume Total	0	347	125			
Volume Left	0	0	0			
Volume Right	0	0	0			
cSH	1700	1462	1700			
Volume to Capacity	0.00	0.00	0.07			
Queue Length 95th (ft)	0	0	0			
Control Delay (s)	0.0	0.0	0.0			
Lane LOS	A					
Approach Delay (s)	0.0	0.0	0.0			
Approach LOS	A					
Intersection Summary						
Average Delay			0.0			
Intersection Capacity Utilization			20.1%	ICU Level of Service	A	
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis  
 43: North South Connector Road

EX AM



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Sign Control	Stop		Stop			Stop
Traffic Volume (vph)	0	0	10	0	0	103
Future Volume (vph)	0	0	10	0	0	103
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	0	11	0	0	112

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total (vph)	0	11	112
Volume Left (vph)	0	0	0
Volume Right (vph)	0	0	0
Hadj (s)	0.00	0.03	0.03
Departure Headway (s)	4.2	4.0	3.9
Degree Utilization, x	0.00	0.01	0.12
Capacity (veh/h)	844	875	907
Control Delay (s)	7.2	7.1	7.5
Approach Delay (s)	0.0	7.1	7.5
Approach LOS	A	A	A

Intersection Summary			
Delay		7.5	
Level of Service		A	
Intersection Capacity Utilization	8.8%		ICU Level of Service A
Analysis Period (min)		15	

# HCM Unsignalized Intersection Capacity Analysis

## 44: North South Connector Road

EX AM












Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	0	0	10	0	0	103
Future Volume (Veh/h)	0	0	10	0	0	103
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	0	11	0	0	112
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type						
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	123	11			11	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	123	11			11	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	100			100	
cM capacity (veh/h)	872	1070			1608	
<b>Direction, Lane #</b>	<b>WB 1</b>	<b>NB 1</b>	<b>SB 1</b>			
Volume Total	0	11	112			
Volume Left	0	0	0			
Volume Right	0	0	0			
cSH	1700	1700	1608			
Volume to Capacity	0.00	0.01	0.00			
Queue Length 95th (ft)	0	0	0			
Control Delay (s)	0.0	0.0	0.0			
Lane LOS	A					
Approach Delay (s)	0.0	0.0	0.0			
Approach LOS	A					
<b>Intersection Summary</b>						
Average Delay			0.0			
Intersection Capacity Utilization			8.8%	ICU Level of Service		A
Analysis Period (min)			15			

# HCM Unsignalized Intersection Capacity Analysis

## 45: North South Connector Road

EX AM

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	0	0	10	0	0	103
Future Volume (Veh/h)	0	0	10	0	0	103
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	0	11	0	0	112
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	123	11			11	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	123	11			11	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	100			100	
cM capacity (veh/h)	872	1070			1608	
Direction, Lane #	WB 1	NB 1	SB 1			
Volume Total	0	11	112			
Volume Left	0	0	0			
Volume Right	0	0	0			
cSH	1700	1700	1608			
Volume to Capacity	0.00	0.01	0.00			
Queue Length 95th (ft)	0	0	0			
Control Delay (s)	0.0	0.0	0.0			
Lane LOS	A					
Approach Delay (s)	0.0	0.0	0.0			
Approach LOS	A					
Intersection Summary						
Average Delay			0.0			
Intersection Capacity Utilization			8.8%	ICU Level of Service	A	
Analysis Period (min)			15			



**APPENDIX F**  
**EXISTING QUEUEING INFORMATION**



**Table F-1**

**Existing Queue Calculations  
APFO Methodology**

Movement	Volume	LLUF	Vehicle Length	Surge Factor	Sum	Cycle Length	Cycle/Hr.	Critical Gap	Average Gap	Queue	Available Storage	Difference
7: Broken Land Parkway/Little Patuxent Parkway - Signalized												
AM	25	1.00	25	1.4	875	90	40.0	NA	NA	22	150	128
PM	52	1.00	25	1.4	1820	100	36.0	NA	NA	51	150	99
AM	248	0.55	25	1.4	4774	90	40.0	NA	NA	119	840	721
PM	348	0.55	25	1.4	6699	100	36.0	NA	NA	186	840	654
AM	112	0.60	25	1.4	2352	90	40.0	NA	NA	59	290	231
PM	382	0.60	25	1.4	8022	100	36.0	NA	NA	223	290	67
AM	155	0.55	25	1.4	2984	90	40.0	NA	NA	75	1040	965
PM	461	0.55	25	1.4	8874	100	36.0	NA	NA	247	1040	793
AM	467	0.60	25	1.4	9807	90	40.0	NA	NA	245	475	230
PM	662	0.60	25	1.4	13902	100	36.0	NA	NA	386	475	89
AM	208	0.55	25	1.4	4004	90	40.0	NA	NA	100	1320	1220
PM	615	0.55	25	1.4	11839	100	36.0	NA	NA	329	1320	991
AM	10	1.00	25	1.4	350	90	40.0	NA	NA	9	150	141
PM	27	1.00	25	1.4	945	100	36.0	NA	NA	26	150	124
AM	139	0.55	25	1.4	2676	90	40.0	NA	NA	67	360	293
PM	312	0.55	25	1.4	6006	100	36.0	NA	NA	167	360	193
8: Broken Land Parkway/Hickory Ridge Road - Signalized												
AM	114	0.60	25	1.4	2394	96	37.5	NA	NA	64	464	400
PM	190	0.60	25	1.4	3990	120	30.0	NA	NA	133	464	331
AM	592	0.60	25	1.4	12432	96	37.5	NA	NA	332	700	368
PM	614	0.60	25	1.4	12894	120	30.0	NA	NA	430	700	270
AM	1127	0.30	25	1.4	11834	96	37.5	NA	NA	316	800	484
PM	1792	0.30	25	1.4	18816	120	30.0	NA	NA	627	800	173
AM	712	0.40	25	1.4	9968	96	37.5	NA	NA	266	1320	1054
PM	1046	0.40	25	1.4	14644	120	30.0	NA	NA	488	1320	832

**Table F-2**  
**Existing Queue Calculations**  
**APFO Methodology**

Movement	Volume	LUF	Vehicle Length	Surge Factor	Sum	Cycle Length	Cycle/Hr.	Critical Gap	Average Gap	Queue	Available Storage	Difference
9: Mall Access Road/Little Patuxent Parkway - Signalized												
AM	EBL	1.00	25	1.4	4410	96	37.5	NA	NA	158	160	3
PM	EBL	1.00	25	1.4	7490	100	36.0	NA	NA	268	160	(108)
AM	EBT	0.55	25	1.4	10318	96	37.5	NA	NA	369	672	304
PM	EBT	0.55	25	1.4	18191	100	36.0	NA	NA	650	672	22
AM	WBT	0.55	25	1.4	6911	96	37.5	NA	NA	247	480	233
PM	WBT	0.55	25	1.4	10973	100	36.0	NA	NA	392	480	88
AM	SBL	1.00	25	1.4	420	96	37.5	NA	NA	15	135	120
PM	SBL	1.00	25	1.4	1575	100	36.0	NA	NA	56	135	79
10: Little Patuxent Parkway/South Entrance Road - Signalized												
AM	EBTR	0.55	25	1.4	11184	80	45.0	NA	NA	249	480	231
PM	EBTR	0.55	25	1.4	19377	100	36.0	NA	NA	544	480	(64)
AM	WBL	0.60	25	1.4	1428	80	45.0	NA	NA	32	250	218
PM	WBL	0.60	25	1.4	6447	100	36.0	NA	NA	179	250	71
AM	WBT	0.55	25	1.4	4870	80	45.0	NA	NA	108	496	388
PM	WBT	0.55	25	1.4	6661	100	36.0	NA	NA	185	496	311
AM	NBL	0.60	25	1.4	3507	80	45.0	NA	NA	78	225	147
PM	NBL	0.60	25	1.4	5439	100	36.0	NA	NA	151	225	74
11: Little Patuxent Parkway/Moore Road - Signalized												
AM	EBLT	0.60	25	1.4	1365	80	45.0	NA	NA	30	120	90
PM	EBLT	0.60	25	1.4	12285	100	36.0	NA	NA	341	120	(221)
AM	WBLTR	1.00	25	1.4	210	80	45.0	NA	NA	5	240	235
PM	WBLTR	1.00	25	1.4	1330	100	36.0	NA	NA	37	240	203
AM	NBL	1.00	25	1.4	3255	80	45.0	NA	NA	72	100	28
PM	NBL	1.00	25	1.4	7630	100	36.0	NA	NA	212	100	(112)
AM	NBTR	0.55	25	1.4	9875	80	45.0	NA	NA	219	216	(3)
PM	NBTR	0.55	25	1.4	15804	100	36.0	NA	NA	439	216	(223)
AM	SBL	1.00	25	1.4	0	80	45.0	NA	NA	0	270	270
PM	SBL	1.00	25	1.4	315	100	36.0	NA	NA	9	270	261
AM	SBTR	0.55	25	1.4	8566	80	45.0	NA	NA	190	360	170
PM	SBTR	0.55	25	1.4	13591	100	36.0	NA	NA	378	360	(18)

Table F-3

Existing Queue Calculations

APFO Methodology

Movement	Volume	LUF	Vehicle Length	Surge Factor	Sum	Cycle Length	Cycle/Hr.	Critical Gap	Average Gap	Queue	Available Storage	Difference
<b>22: Merriweather Drive/Little Patuxent Parkway - Unsignalized</b>												
AM	79	1.00	25	1.4	2765	10	360.0	6.0	46	8	215	207
PM	0	1.00	25	1.4	0	10	360.0	6.0	#DIV/0!	0	215	215
<b>30: US 29 SB Ramp (North South Connector)/Broken Land Parkway - Signalized</b>												
AM	167	0.60	25	1.4	3507	90	40.0	NA	NA	88	425	337
PM	259	0.60	25	1.4	5439	120	30.0	NA	NA	181	425	244
<b>33: South Entrance Road/Symphony Woods Road - unsignalized</b>												
AM	5	1.00	25	1.4	175	11	342.9	6.5	720	1	50	49
PM	47	1.00	25	1.4	1645	11	342.9	6.5	77	5	50	45
AM	77	1.00	25	1.4	2695	11	342.9	6.5	47	8	50	42
PM	52	1.00	25	1.4	1820	10	360.0	6.0	69	5	50	45
AM	42	1.00	25	1.4	1470	9	400.0	5.0	86	4	70	66
PM	21	1.00	25	1.4	735	9	400.0	5.0	171	2	70	68
AM	0	1.00	25	1.4	0	9	400.0	5.0	#DIV/0!	0	125	125
PM	9	1.00	25	1.4	315	9	400.0	5.0	400	1	125	124
<b>42: South Entrance Road/Site Driveway - Unsignalized</b>												
AM	0	1.00	25	1.4	0	10	360.0	6.0	#DIV/0!	0	200	200
PM	12	1.00	25	1.4	420	10	360.0	6.0	300	1	200	199
AM	0	1.00	25	1.4	0	9	400.0	5.0	#DIV/0!	0	200	200
PM	20	1.00	25	1.4	700	9	400.0	5.0	180	2	200	198

Table F-4

Existing Queue Calculations

APFO Methodology

Movement	Volume	LUF	Vehicle Length	Surge Factor	Sum	Cycle Length	Cycle/Hr.	Critical Gap	Average Gap	Queue	Available Storage	Difference
<b>43: North South Connector/Site Driveway - Unsignalized</b>												
AM	WBLR	0	1.00	25	1.4	0	360.0	6.0	#DIV/0!	0	200	200
PM	WBLR	3	1.00	25	1.4	105	360.0	6.0	1200	0	200	200
AM	SBL	0	0.55	25	1.4	0	327.3	7.0	#DIV/0!	0	200	200
PM	SBL	38	0.55	25	1.4	732	327.3	7.0	95	2	200	198
<b>44: North South Connector/Site Driveway - Unsignalized</b>												
AM	WBLR	0	1.00	25	1.4	0	360.0	6.0	#DIV/0!	0	200	200
PM	WBLR	1	1.00	25	1.4	35	360.0	6.0	3600	0	200	200
AM	SBL	0	0.55	25	1.4	0	327.3	7.0	#DIV/0!	0	200	200
PM	SBL	20	0.55	25	1.4	385	327.3	7.0	180	1	200	199
<b>45: North South Connector/Site Driveway - Unsignalized</b>												
AM	WBLR	0	1.00	25	1.4	0	360.0	6.0	#DIV/0!	0	200	200
PM	WBLR	16	1.00	25	1.4	560	360.0	6.0	225	2	200	198
AM	SBL	0	0.55	25	1.4	0	327.3	7.0	#DIV/0!	0	200	200
PM	SBL	19	0.55	25	1.4	366	327.3	7.0	189	1	200	199

**APPENDIX G**  
**REGIONAL GROWTH INFORMATION**



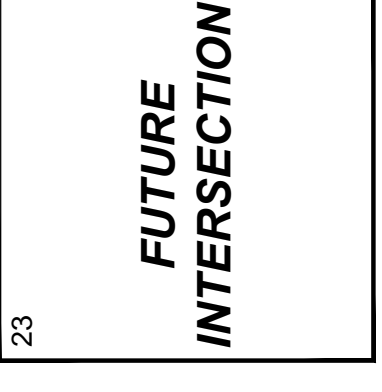
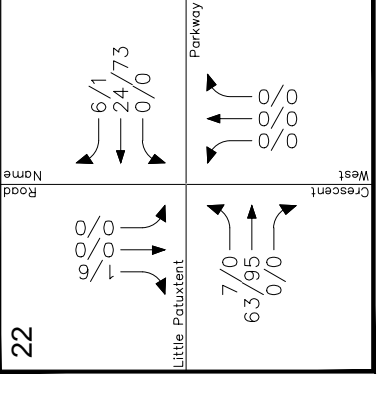
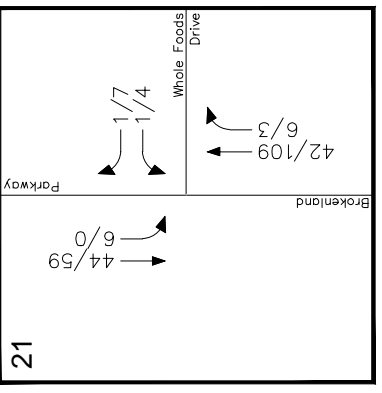
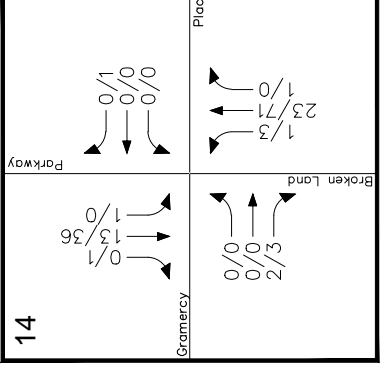
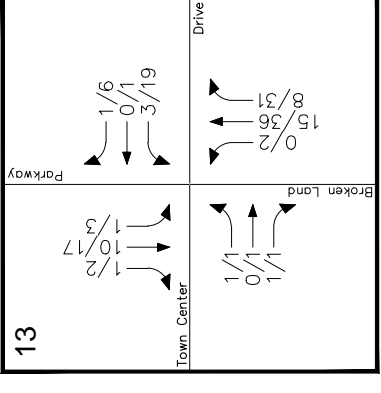
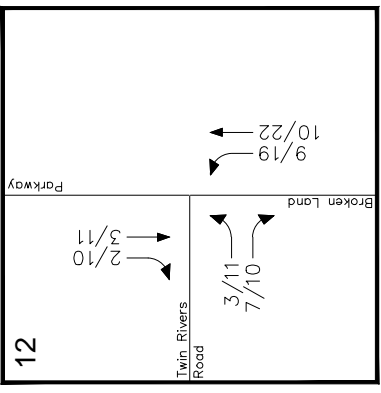
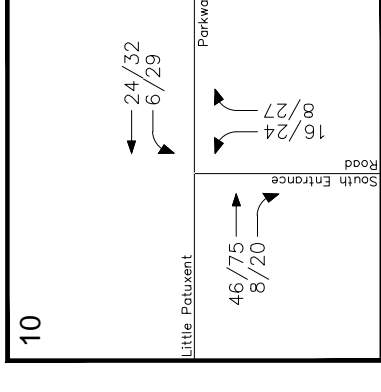
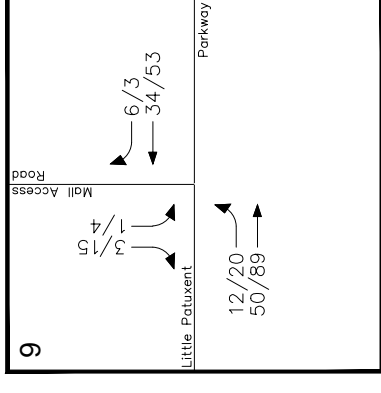
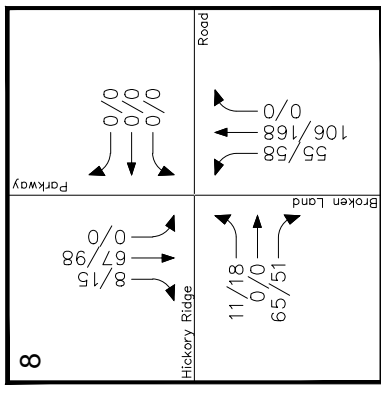
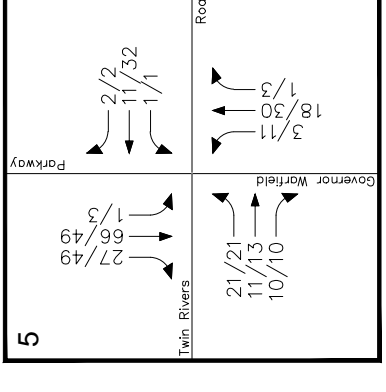
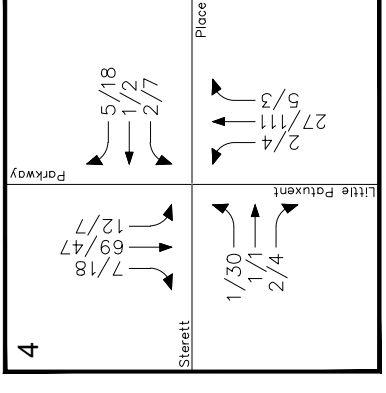
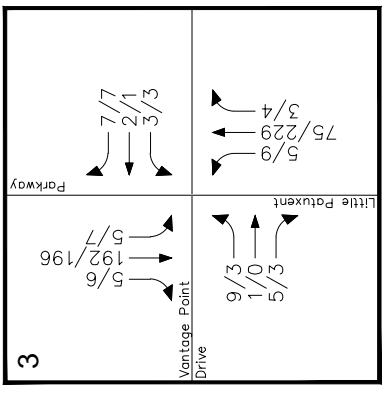
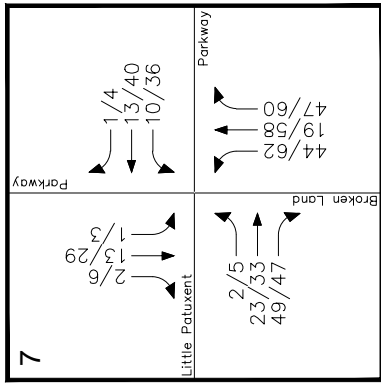
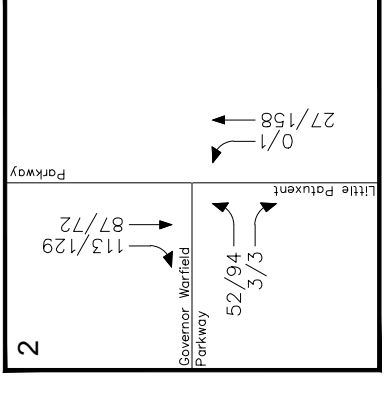
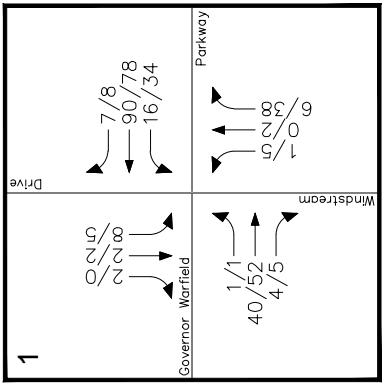
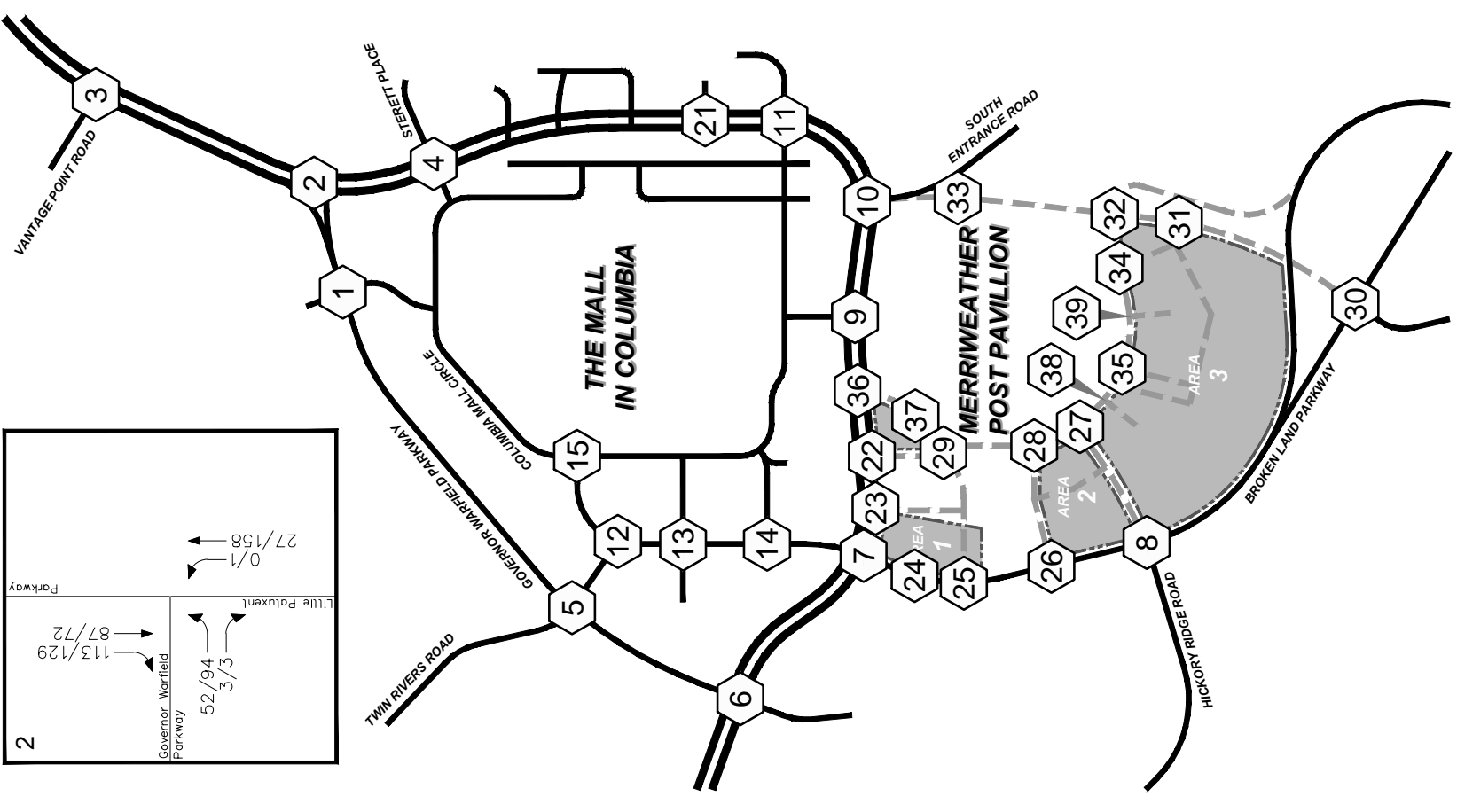


Figure G-1  
2020 Regional Growth Traffic Forecasts

AM PEAK HOUR  
PM PEAK HOUR  
000/000  
North

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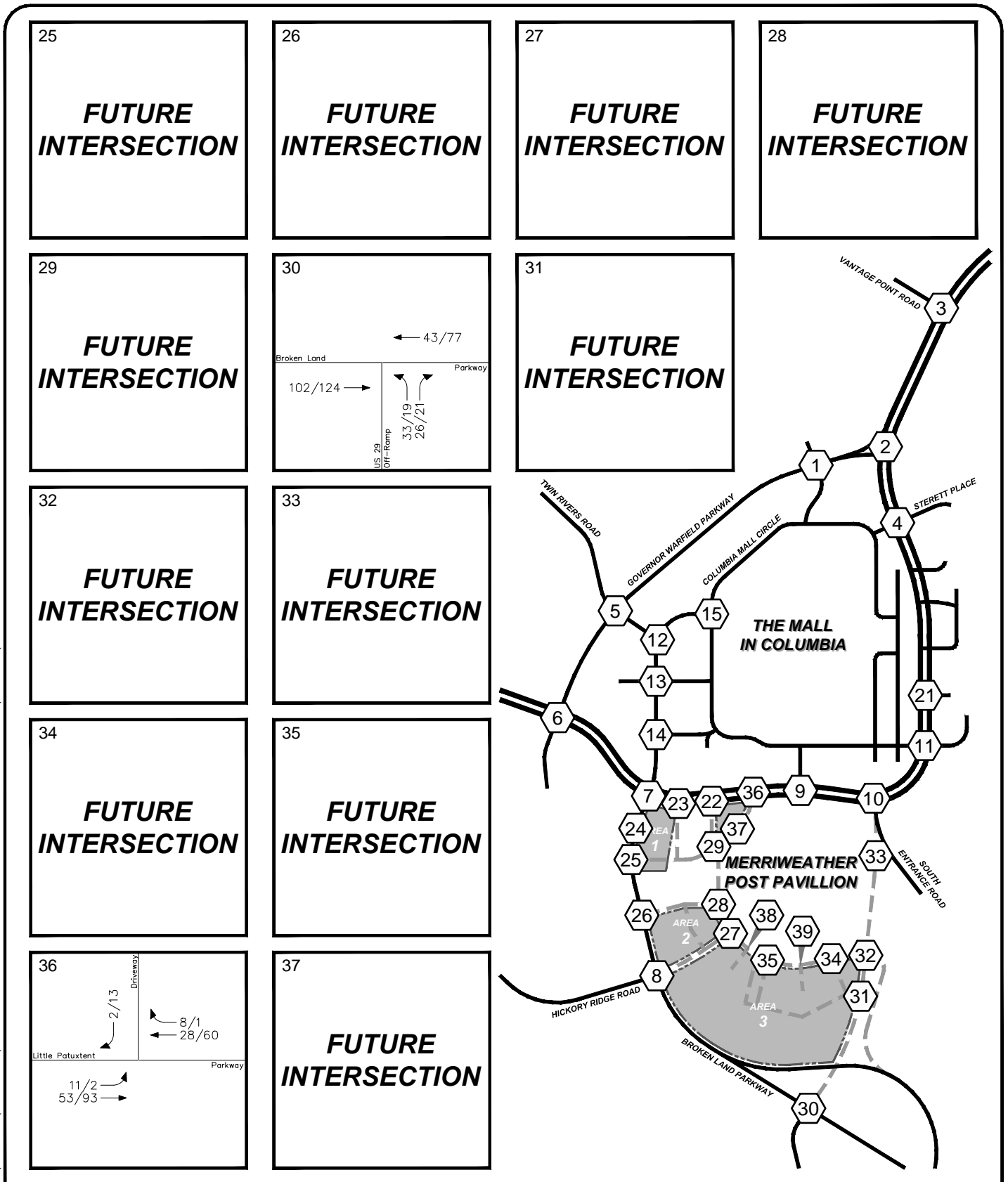


Figure G-2  
2020 Regional Growth Traffic Forecasts



JCP

New Cultural Center  
Howard County, Maryland



**APPENDIX H**  
**PIPELINE TRIP ASSIGNMENTS**



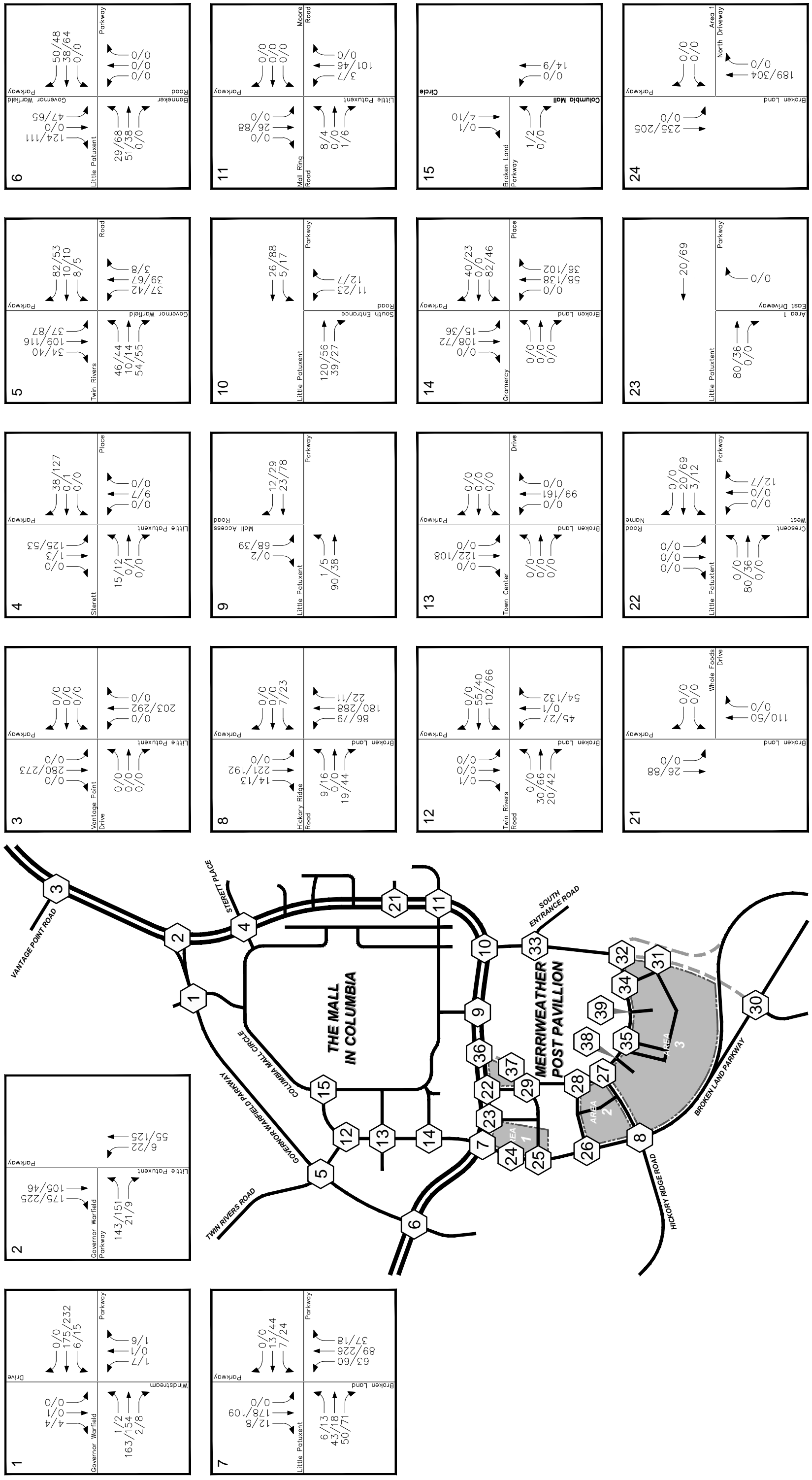


Figure H-1  
2020 Pipeline Trips

North  
AM PEAK HOUR  
PM PEAK HOUR  
000/000

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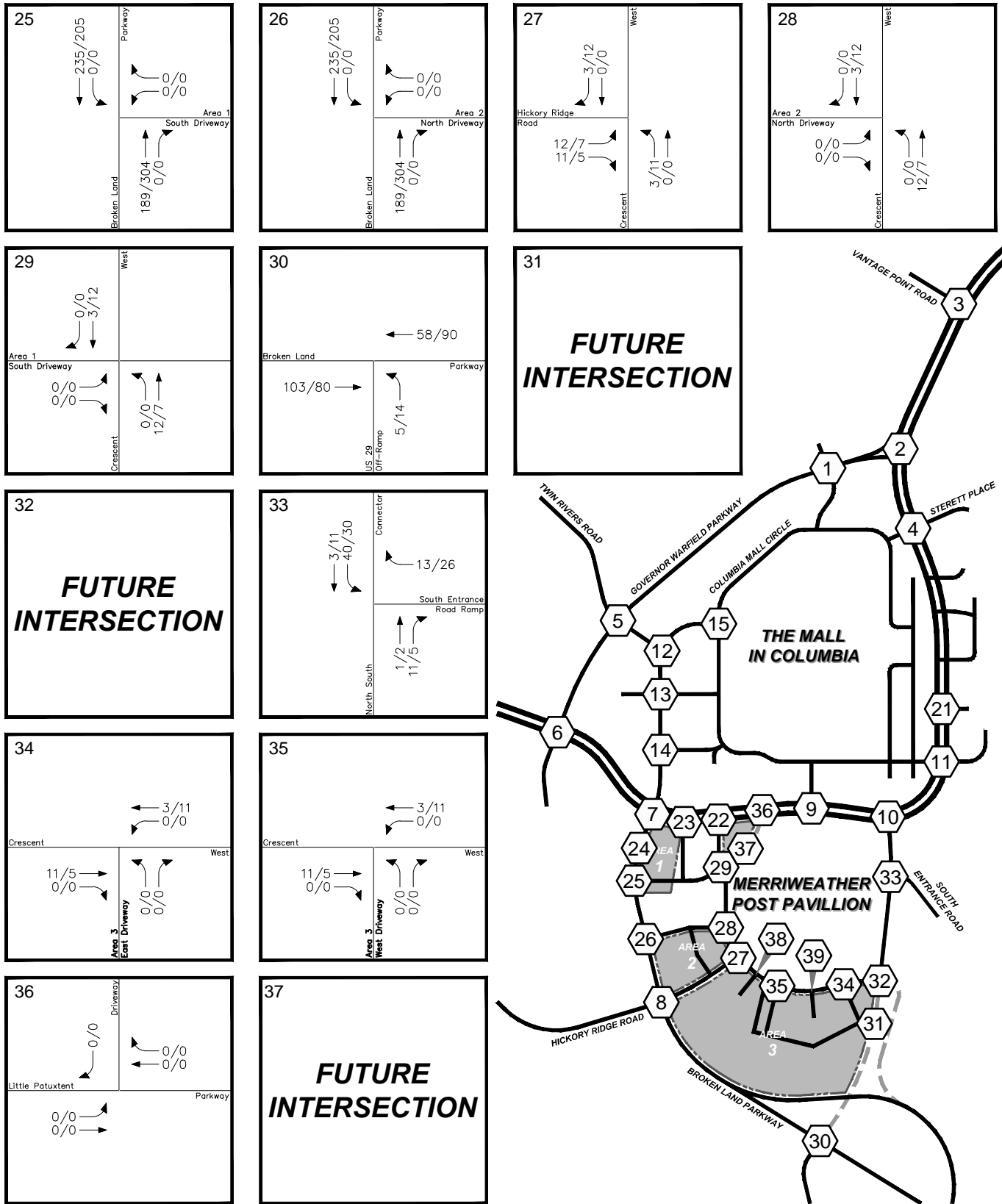


Figure H-2  
2020 Pipeline Trips



New Cultural Center  
Howard County, Maryland



**APPENDIX I**  
**EXISTING TRAFFIC ADJUSTMENTS**





Figure I-1  
2020 and 2024 Traffic Diversions

AM PEAK HOUR  
PM PEAK HOUR  
000/000  
North

O:\PROJECTS\6500-7000\6738\_TCBYS\_COLUMBIA\_CULTURAL\_ARTS\_CENTER\_AND\_ARTIST\_FLATS\GRAPHICS\6738 - APP\_GRAPHICS.DWG

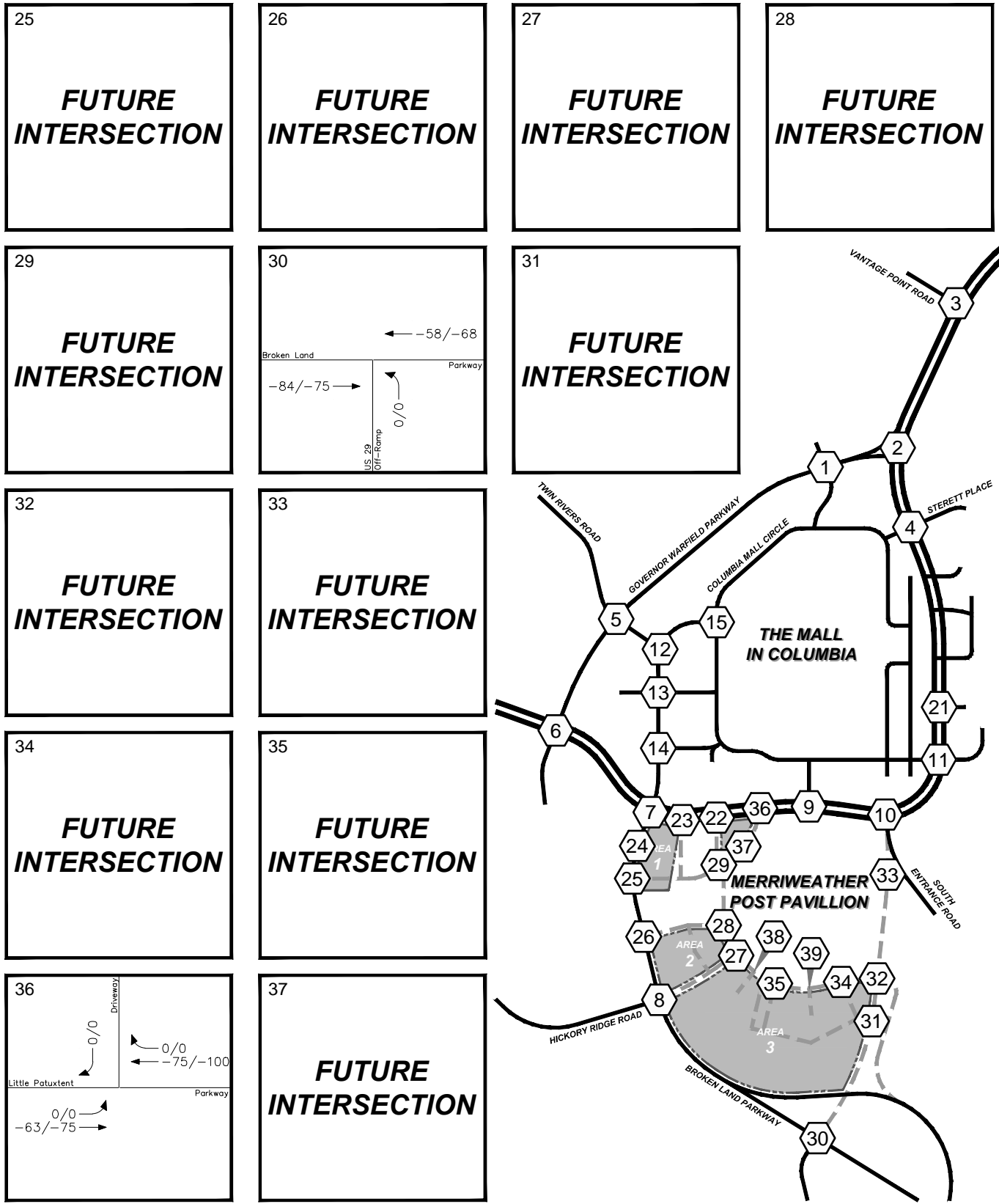


Figure I-2  
2020 and 2024 Traffic Diversions



JCP

New Cultural Center  
Howard County, Maryland



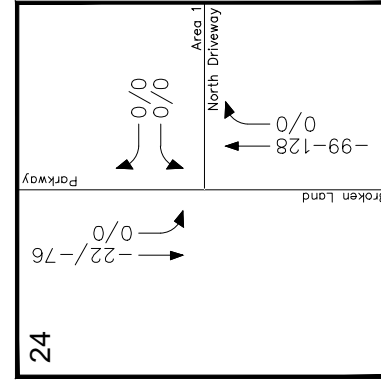
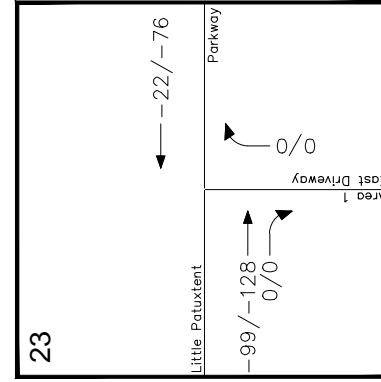
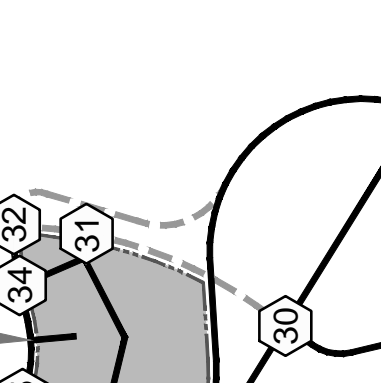
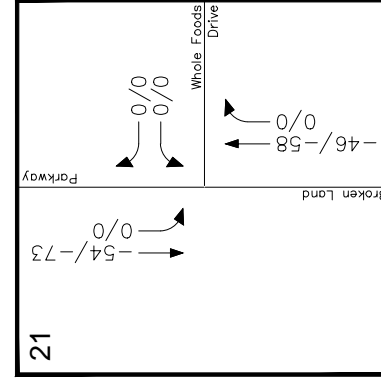
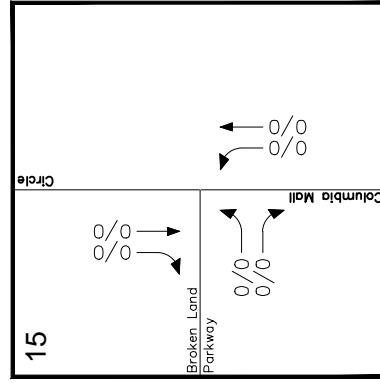
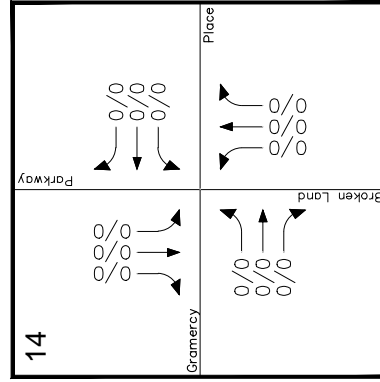
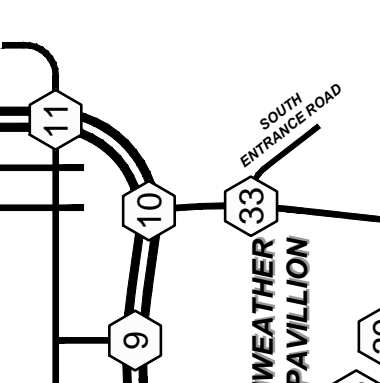
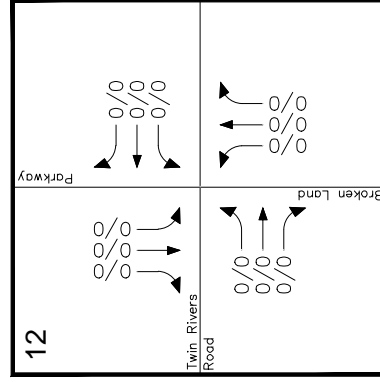
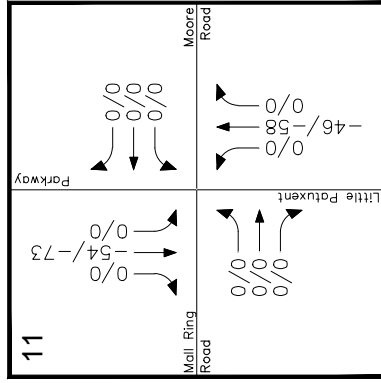
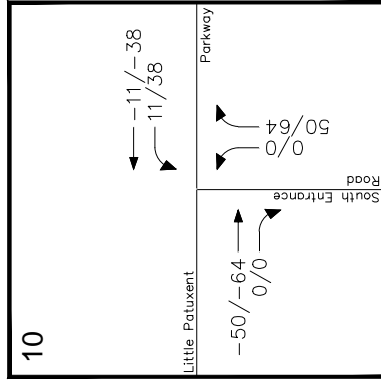
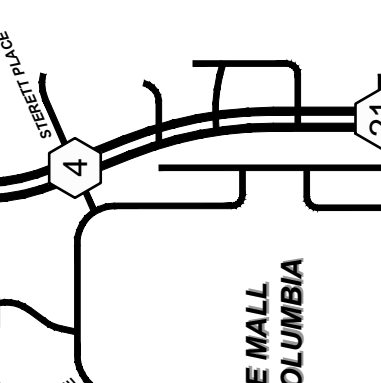
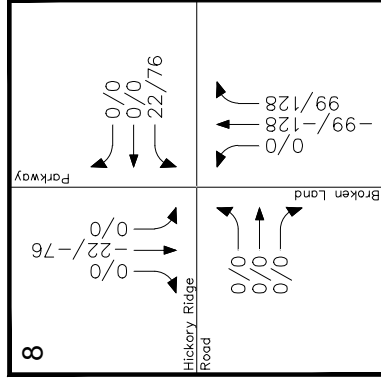
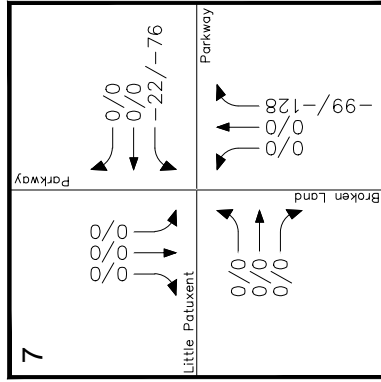
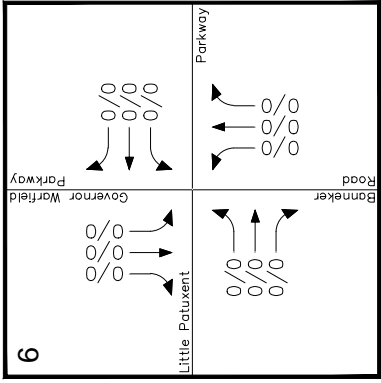
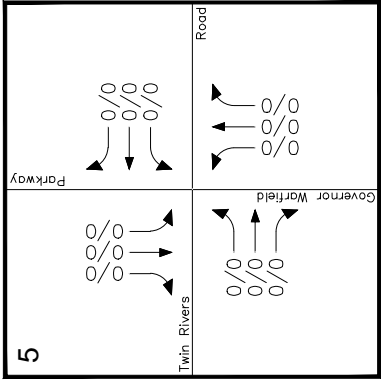
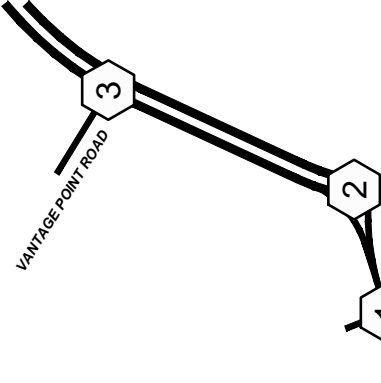
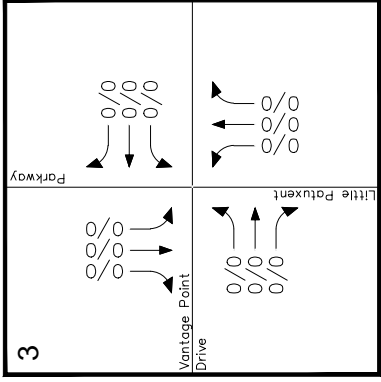
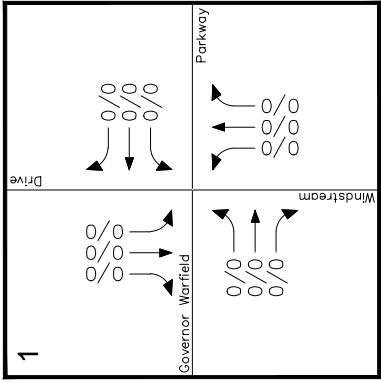
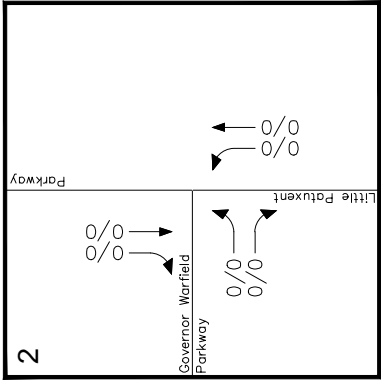
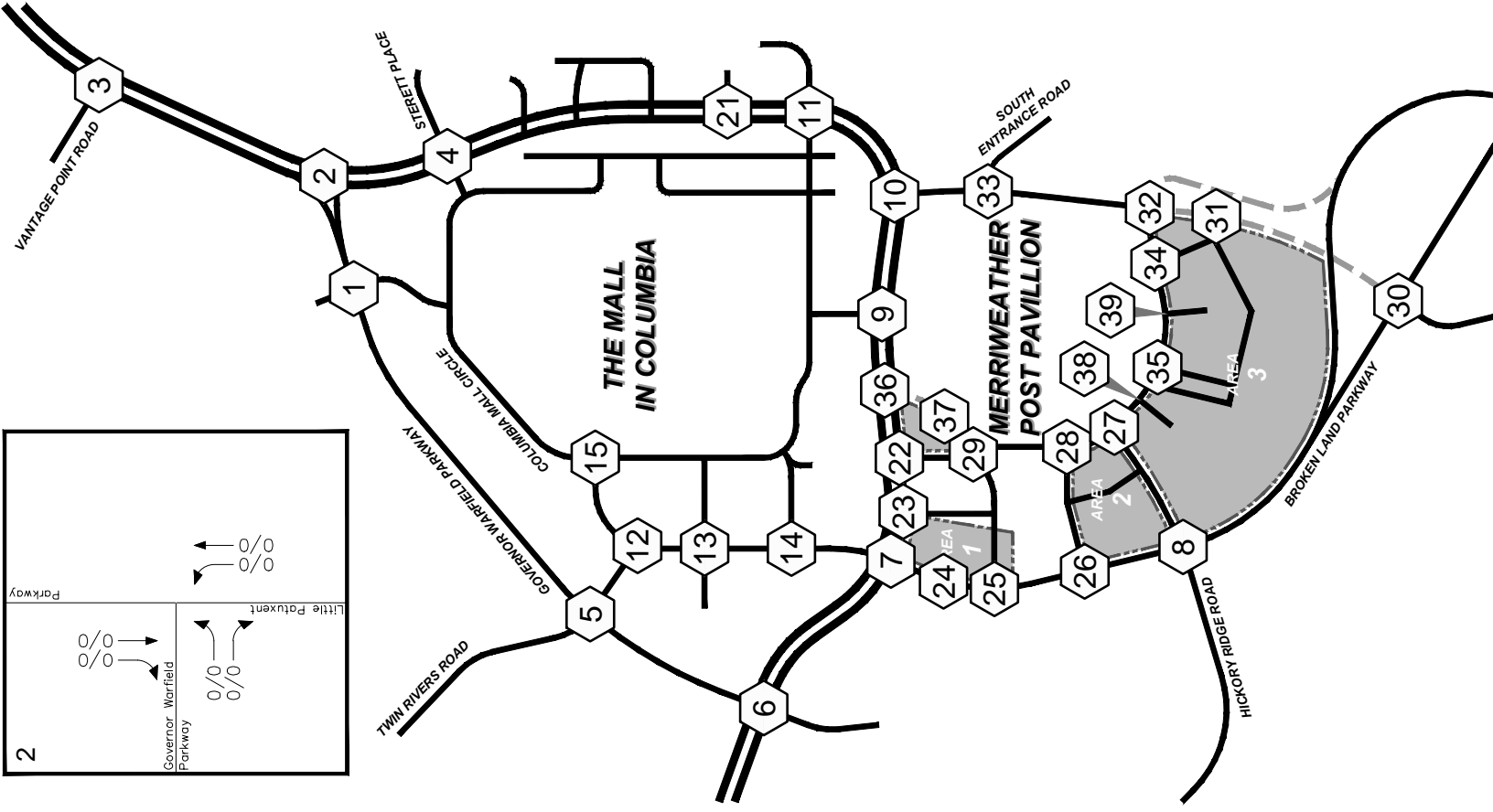


Figure 1-3  
2020 North-South Connector Adjustments

AM PEAK HOUR  
PM PEAK HOUR  
000/000  
North

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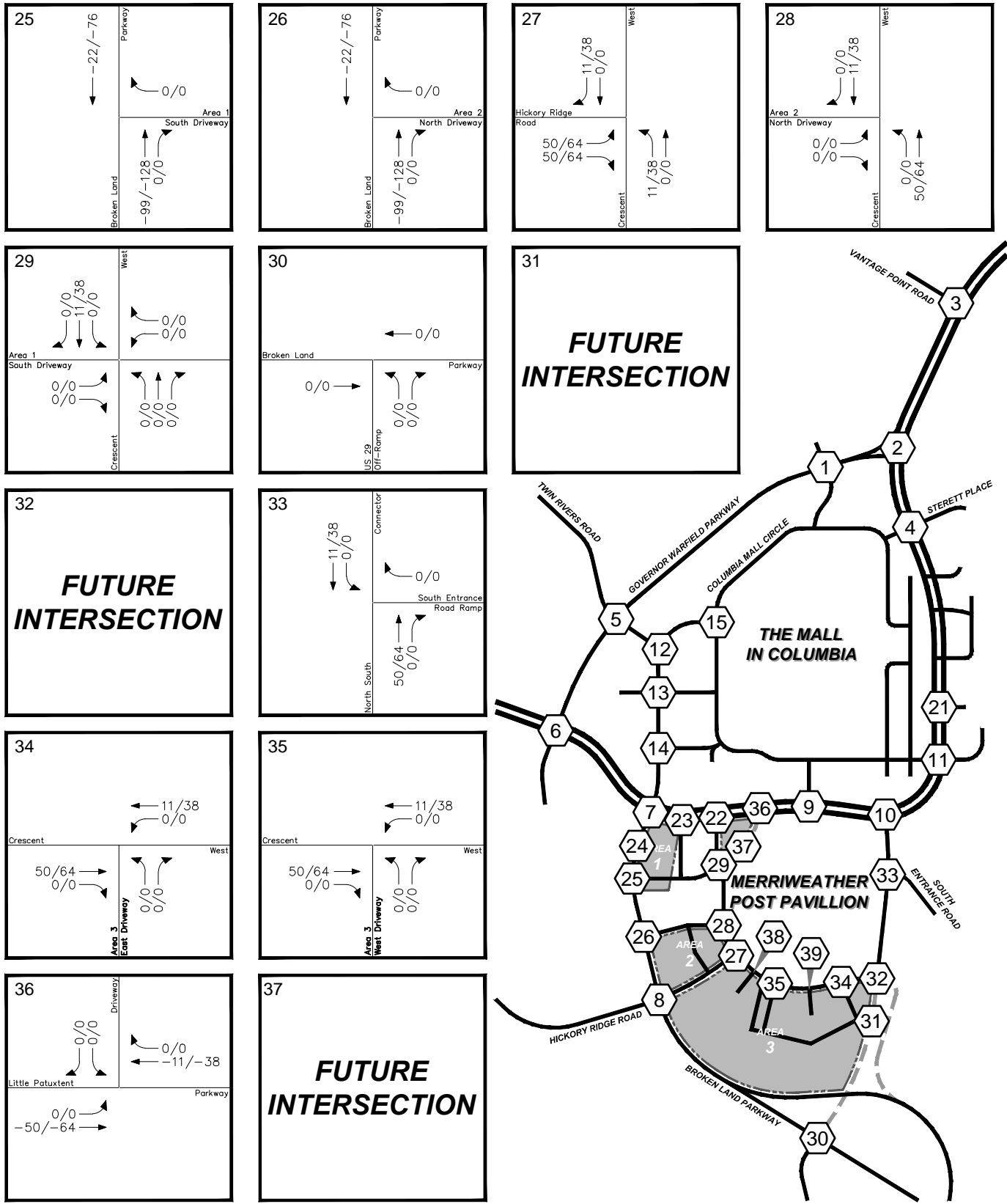


Figure I-4  
2020 North-South Connector Adjustments



JCP

New Cultural Center  
Howard County, Maryland



## **APPENDIX J**

### **BACKGROUND CLV'S AND SYNCHRO REPORTS**

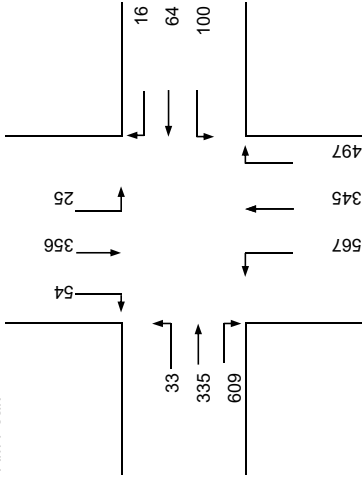


**New Cultural Center  
Critical Lane Volume  
Level of Service Calculations**

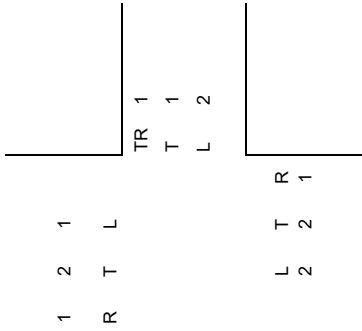
Intersection: 7: Broken Land Parkway/Little Patuxent Parkway  
County, State: Howard County, Maryland  
Scenario/Design Year: Background  
Computed by: JAS



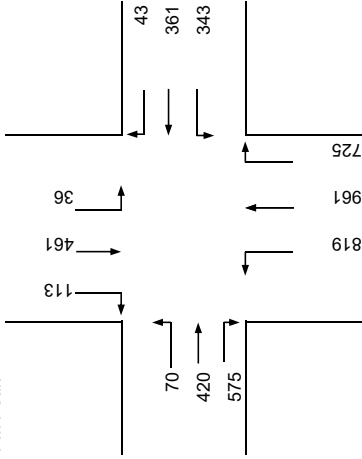
**AM Peak**



**Lane Configuration**



**PM Peak**



Intersection Control: Signal: X Split: N/S Stop: Ways:  
# of Phases: Cycle Length: sec.

RTOR/Overlap (AM): NB 60 SB 33 EB 340 WB 0  
RTOR/Overlap (PM): NB 206 SB 70 EB 491 WB 0

**Signal Phases**

Signal	Phase	Movement	Volume	Lane Use Factor	Opposing Lefts	Lane Volume	Lane Use Factor	Volume	Phase	Movement	Lane Volume	Lane Use Factor	Opposing Lefts	Lane Volume	Critical Lane Volume		
1	EB	R	269	1.00	100	269	0.60	60	EB	T	420	0.55	343	231	1,000		
	WB	TR	80	0.55	33	44	1.00	33	WB	TR	404	0.55	70	222	1,150		
	NB	R	437	1.00	0	437	1.00	0	NB	R	519	1.00	0	519	1,300		
	SB	T	356	0.55	0	196	0.55	0	SB	T	461	0.55	0	254	1,450		
												SUM	962				Critical Lane Volume

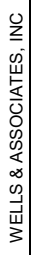
RTOR/Overlap (AM): NB 60 SB 33 EB 340 WB 0

RTOR/Overlap (PM): NB 206 SB 70 EB 491 WB 0

**Signal Phases**

Signal	Phase	Movement	Volume	Lane Use Factor	Opposing Lefts	Lane Volume	Lane Use Factor	Volume	Phase	Movement	Lane Volume	Lane Use Factor	Opposing Lefts	Lane Volume	Critical Lane Volume		
2	EB	R	269	1.00	100	269	0.60	60	EB	T	420	0.55	343	231	1,000		
	WB	TR	80	0.55	33	44	1.00	33	WB	TR	404	0.55	70	222	1,150		
	NB	R	437	1.00	0	437	1.00	0	NB	R	519	1.00	0	519	1,300		
	SB	T	356	0.55	0	196	0.55	0	SB	T	461	0.55	0	254	1,450		
												SUM	962				Critical Lane Volume

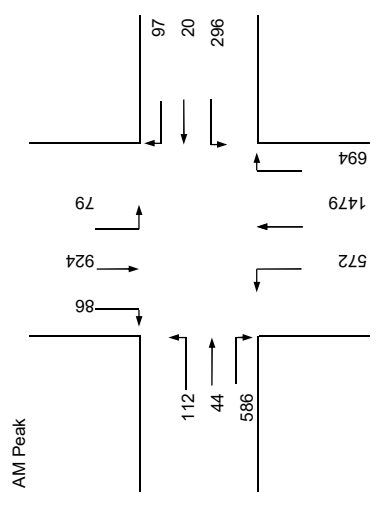
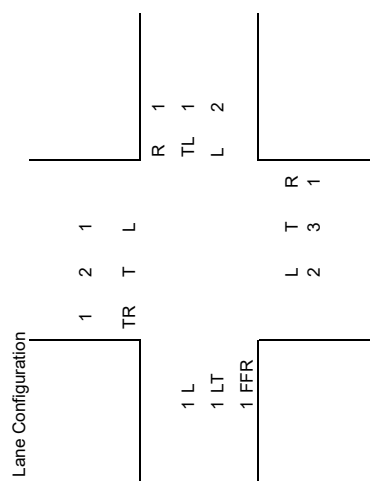
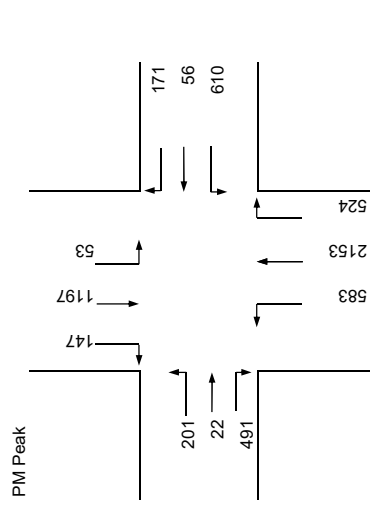
1420 Spring Hill Road, Suite 610, Tysons, Virginia 22102  
 Phone: (703)917-6620 Facsimile: (703)917-0739



**WELLS & ASSOCIATES, INC.**  
 TRANSPORTATION, TRAFFIC, AND PARKING CONSULTANTS  
 1420 Spring Hill Road, Suite 610, Tysons, Virginia 22102  
 Phone: (703)917-6620 Facsimile: (703)917-0739

Intersection: 8: Broken Land Parkway/Hickory Ridge Road  
 County, State: Howard County, Maryland  
 Scenario/Design Year: Background  
 Computed by: JAS

**New Cultural Center**  
**Critical Lane Volume**  
**Level of Service Calculations**



Intersection Control: Signal:  X  
 Split:  X  
 # of Phases: \_\_\_\_\_  
 Cycle Length: \_\_\_\_\_ sec.

RTOR/Overlap (AM): NB 133 SB 0 EB 0 WB 79  
 RTOR/Overlap (PM): NB 275 SB 0 EB 0 WB 171

Signal Phases	2		3		4		5		6	
	Phase	Movement	Volume	Lane Use Factor	Opposing Lefts	Lane Volume	Opposing Volume	Critical Lane Volume *	Phase	Movement
EB	TL	156	0.60	94	0	94	0	94	EB	TL
	T	316	0.45	142	79	142	0	142	WB	TL
	TR	1010	0.40	404	572	404	343	747	NB	T
WB	T	1479	1.00	592	79	671	79	671	SB	TR
	TR	1010	0.40	404	572	404	343	747		
SUM 983										
SUM 1348										

Number of Lanes	Lane Use Factor	Critical Lane Volume
1	1.00	A ≤ 1,000
2	0.55	B ≤ 1,150
3	0.40	C ≤ 1,300
4	0.30	D ≤ 1,450
2 left	0.60	E ≤ 1,600
		F > 1,600

Opposing Lefts	Lane Use Factor	Lane Volume	Opposing Volume	Critical Lane Volume *
0	1.00	134	0	134
0	1.00	300	0	300
53	1.00	861	53	914
583	0.60	538	350	888
SUM 1348				



**New Cultural Center  
Critical Lane Volume  
Level of Service Calculations**

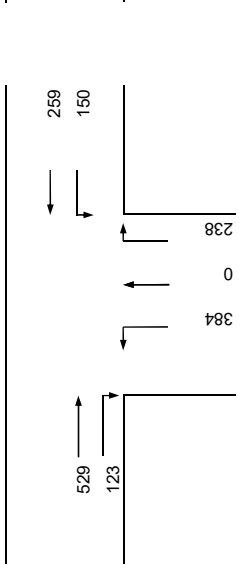
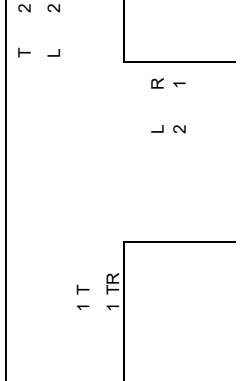
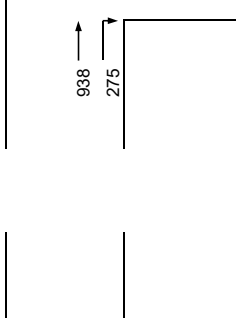
Intersection: 10- Little Patuxent Parkway/South Entrance Road  
County, State: Howard County, Maryland  
Scenario/Design Year: Background  
Computed by: JAS

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TRANSPORTATION, TRAFFIC AND PARKING CONSULTANTS  
1420 Spring Hill Road, Suite 610, Tysons, Virginia 22102  
Phone: (703)917-4626 Fax: (703)917-0739

**AM Peak**

**Lane Configuration**

**PM Peak**



Intersection Control: Signal: X Split: Stop: Ways: # of Phases: Cycle Length: sec.

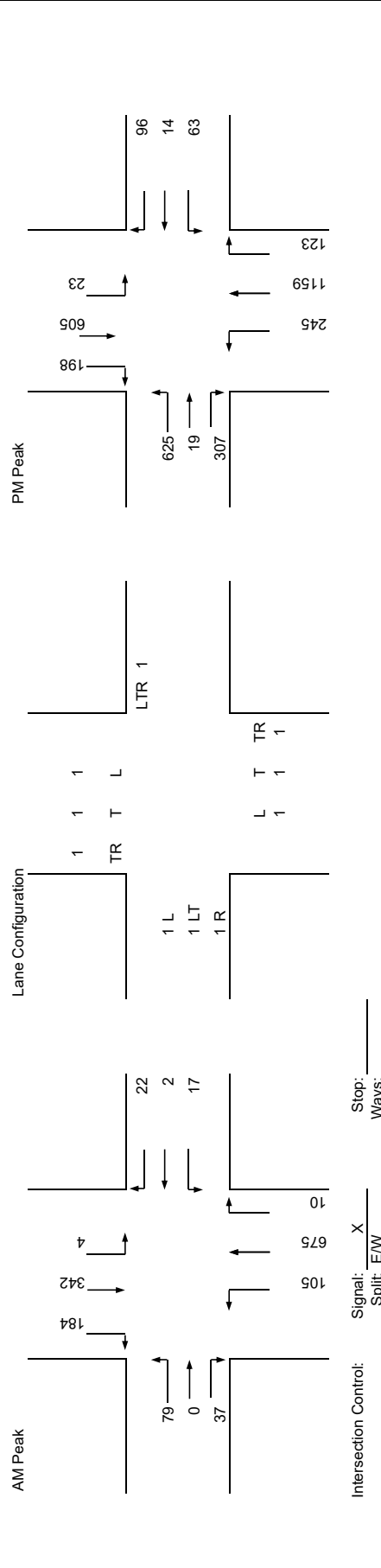
RTOR/Overlap (AM): NB 150 SB 0 EB 0 WB 0  
RTOR/Overlap (PM): NB 440 SB 0 EB 0 WB 0

Signal Phases	1	2	3	4	5	6
Phase	EB	TR	T	L	NB	SB
Movement	TR	T	L	L	L	SB
Volume	652	259	384	359	150	0
Lane Use Factor	0.55	0.55	0.60	1.00	1.00	0.00
Lane Volume	359	142	230	359	150	0
Opposing Lefts	150	0	0	0	0	0
Opposing Volume	150	0	0	0	0	0
Lane Use Factor	0.55	0.60	0.60	0.55	0.60	0.00
Lane Volume	667	264	232	667	440	0
Volume	1213	440	386	1213	440	0
Phase	EB	WB	NB	SB	EB	WB
Movement	TR	L	L	L	TR	L
Volume	440	264	232	440	440	0
Lane Use Factor	1.00	0.00	0.00	1.00	1.00	0.00
Lane Volume	440	0	0	440	440	0
Opposing Lefts	440	0	0	440	440	0
Opposing Volume	440	0	0	440	440	0
Lane Use Factor	1.00	0.00	0.00	1.00	1.00	0.00
Lane Volume	1107	264	232	1107	440	0
Critical Lane Volume	1,000	1,150	1,300	1,450	1,600	1,600
Number of Lanes	1	2	3	4	2 left	2 left
Lane Use Factor	1.00	0.55	0.40	0.30	0.60	0.60
Opposing Lefts	440	0	0	440	440	0
Opposing Volume	440	0	0	440	440	0
Lane Use Factor	1.00	0.00	0.00	1.00	1.00	0.00
Lane Volume	1107	264	232	1107	440	0
Critical Lane Volume	1,000	1,150	1,300	1,450	1,600	1,600
SUM	739	739	739	739	739	739
SUM	1339	1339	1339	1339	1339	1339

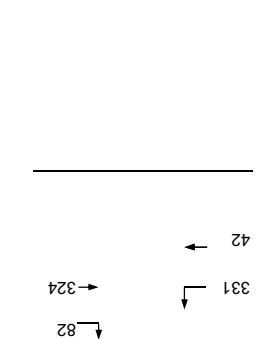
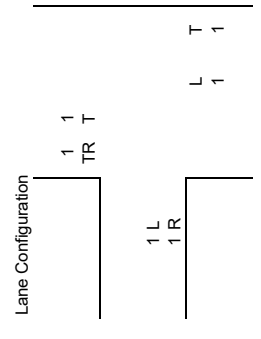
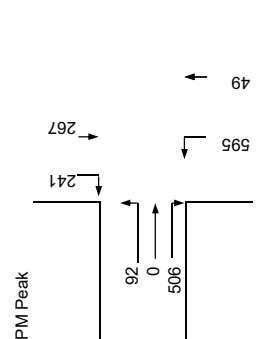
**New Cultural Center**  
**Critical Lane Volume**  
**Level of Service Calculations**

Intersection: 11: Little Patuxent Parkway/Moore Road  
 County, State: Howard County, Maryland  
 Scenario/Design Year: Background  
 Computed by: JAS

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 1420 Spring Hill Road, Suite 610, Tysons, Virginia 22102  
 Phone: (703)917-6620 Facsimile: (703)917-0739



Signal Phases	Phase	Movement	Volume	Lane Use Factor	Opposing Lefts	Lane Use Factor	Lane Volume	Phase	Movement	Volume	Lane Use Factor	Lane Volume	Opposing Volume	Critical Lane Volume *		
															Lane Use Factor	Opposing Volume
1	EB	TL	79	0.60	47	0.60	47	EB	TL	644	0.60	386	0	386		
	WB	LTR	41	1.00	41	1.00	173	WB	LTR	173	1.00	173	0	173		
	NB	TR	685	0.55	377	0.55	705	NB	TR	1282	0.55	705	23	728		
	SB	TR	526	0.55	289	0.55	442	SB	TR	803	0.55	442	245	687		
SUM													482	SUM		1287



Intersection Control: Signal:   X    
Split:             
# of Phases:             
Cycle Length:        sec.

Stop:             
Ways:           

RTOR/Overlap (AM): NB 0 SB 0 EB 331 WB  
RTOR/Overlap (PM): NB 0 SB 0 EB 506 WB

Signal Phases	2		3		4		5		6	
	Phase	Movement	Volume	Lane Use Factor	Opposing Lefts	Lane Use Factor	Opposing Volume	Phase	Movement	Volume
EB	R	418	1.00	0	0.00	0	418	EB	L	92
WB	L	331	1.00	0	0.00	0	331	WB	L	595
SB	TR	406	0.55	331	1.00	331	554	SB	TR	508
SUM										972
Critical Lane Volume										418
Opposing Volume										0
Lane Use Factor										0.00
Critical Lane Volume										418

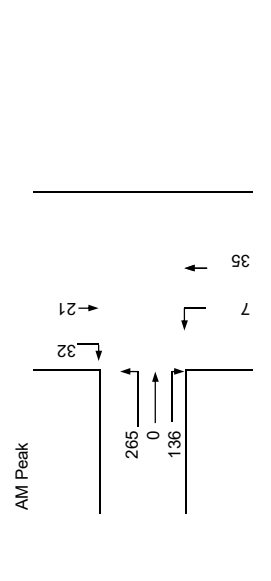
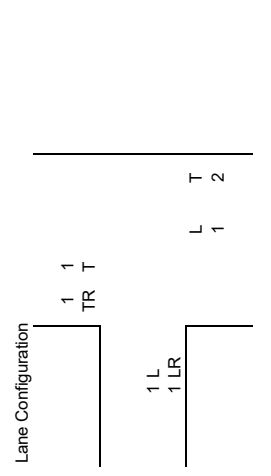
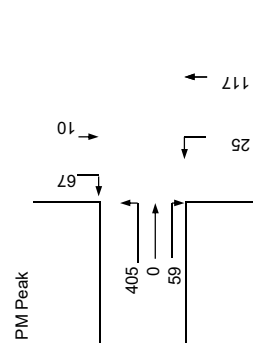
Signal Phases	2		3		4		5		6	
	Phase	Movement	Volume	Lane Use Factor	Opposing Lefts	Lane Use Factor	Opposing Volume	Phase	Movement	Volume
EB	R	418	1.00	0	0.00	0	418	EB	L	92
WB	L	331	1.00	0	0.00	0	331	WB	L	595
SB	TR	406	0.55	331	1.00	331	554	SB	TR	508
SUM										972
Critical Lane Volume										418
Opposing Volume										0
Lane Use Factor										0.00
Critical Lane Volume										418

Signal Phases	2		3		4		5		6	
	Phase	Movement	Volume	Lane Use Factor	Opposing Lefts	Lane Use Factor	Opposing Volume	Phase	Movement	Volume
EB	R	418	1.00	0	0.00	0	418	EB	L	92
WB	L	331	1.00	0	0.00	0	331	WB	L	595
SB	TR	406	0.55	331	1.00	331	554	SB	TR	508
SUM										972
Critical Lane Volume										418
Opposing Volume										0
Lane Use Factor										0.00
Critical Lane Volume										418



Intersection: 32: Merriweather Drive/North-South Connector  
 County, State: Howard County, Maryland  
 Scenario/Design Year: [Background](#)  
 Computed by: JAS

**New Cultural Center**  
**Critical Lane Volume**  
**Level of Service Calculations**



Intersection Control: Signal:   X    
 Split:             
 # of Phases:             
 Cycle Length:        sec.

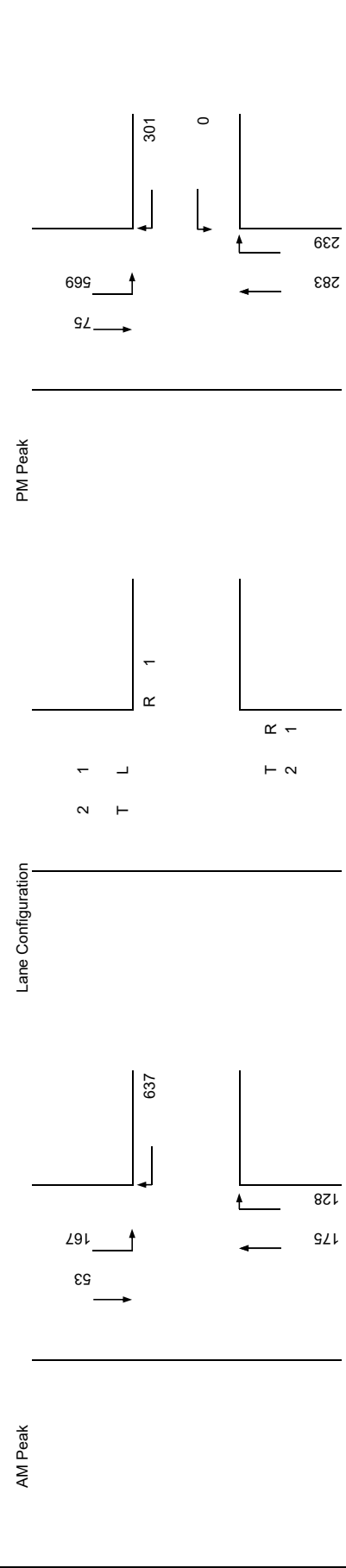
Stop:             
 Ways:           

RTOR/Overlap (AM): NB   0   SB   0   EB   0   WB             
 RTOR/Overlap (PM): NB   0   SB   0   EB   0   WB           

Number of Lanes	Lane Use Factor	Critical Lane Volume
1	1.00	A ≤ 1,000
2	0.55	B ≤ 1,150
3	0.40	C ≤ 1,300
4	0.30	D ≤ 1,450
2 left	0.60	E ≤ 1,600
		F > 1,600

Signal Phases

Phase	Movement	Volume	Lane Use Factor	Opposing Lefts	Lane Volume	Phase	Movement	Volume	Lane Use Factor	Lane Volume	Opposing Lefts	Lane Use Factor	Volume	Critical Lane Volume
EB	LR	401	0.60	0	241	EB	LR	464	0.60	278	0	0.00	278	*
WB	TR	35	0.55	0	19	NB	T	117	0.55	64	0	0.00	64	
SB	TR	53	0.55	7	29	SB	TR	77	0.55	42	25	1.00	67	*
SUM											277		345	A



Signal Phases	Phase	Movement	Volume	Lane Use Factor	Lane Volume	Opposing Lefts	Lane Use Factor	Lane Volume	Phase	Movement	Volume	Lane Use Factor	Lane Volume	Opposing Lefts	Lane Use Factor	Opposing Volume	Critical Lane Volume *		
																		Number of Lanes	Lane Use Factor
1	WB	R	470	1.00	470	0	0.00	0	WB	R	0	1.00	0	0	0.00	0	0		
	NB	R	128	1.00	128	167	1.00	167	NB	R	239	1.00	239	569	1.00	569	808		
	SB	T	53	0.55	29	0	1.00	0	SB	T	75	0.55	41	0	1.00	0	41		
														SUM		765	SUM		808

Intersection: 35. Crescent West/Area 3 West Entrance  
 County/State: Howard County, Maryland  
 Scenario/Design Year: Background  
 Computed by: JAS



















**New Cultural Center**  
**Critical Lane Volume**  
**Level of Service Calculations**

AM Peak		Lane Configuration		PM Peak			
Intersection Control: Signal: X Stop: _____ Ways: _____ Split: _____ # of Phases: _____ sec. Cycle Length: _____							
RTOR/Overlap (AM): NB 0 SB 0 EB 0 WB 0 RTOR/Overlap (PM): NB 0 SB 0 EB 0 WB 0							
Signal Phases: 1 2 3 4 5 6							
Phase	Movement	Volume	Lane Use Factor	Opposing Lefts	Lane Volume	Opposing Volume	Critical Lane Volume
EB	TR	947	0.55	11	521	11	532
WB	T	169	1.00	0	169	0	169
NB	LR	258	0.60	0	155	0	155
SB							
					SUM		687
					SUM		648
							A

# HCM Unsignalized Intersection Capacity Analysis

## 22: Crescent West & Little Patuxent Parkway

BG AM

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	86	586	130	279	146	73	0	0	130	0	0	9
Future Volume (Veh/h)	86	586	130	279	146	73	0	0	130	0	0	9
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	93	637	141	303	159	79	0	0	141	0	0	10
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (ft)		613			849							
pX, platoon unblocked				0.97			0.97	0.97	0.97	0.97	0.97	0.97
vC, conflicting volume	238			778			1589	1738	389	1450	1768	119
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	238			716			1550	1703	317	1407	1734	119
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	93			65			100	100	79	100	100	99
cM capacity (veh/h)	1326			856			51	53	661	52	51	910
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1	SB 1				
Volume Total	93	425	353	303	106	132	141	10				
Volume Left	93	0	0	303	0	0	0	0				
Volume Right	0	0	141	0	0	79	141	10				
cSH	1326	1700	1700	856	1700	1700	661	910				
Volume to Capacity	0.07	0.25	0.21	0.35	0.06	0.08	0.21	0.01				
Queue Length 95th (ft)	6	0	0	40	0	0	20	1				
Control Delay (s)	7.9	0.0	0.0	11.5	0.0	0.0	11.9	9.0				
Lane LOS	A			B			B	A				
Approach Delay (s)	0.8			6.4			11.9	9.0				
Approach LOS							B	A				
Intersection Summary												
Average Delay			3.8									
Intersection Capacity Utilization			42.5%		ICU Level of Service			A				
Analysis Period (min)			15									

# HCM Unsignalized Intersection Capacity Analysis

## 25: Broken Land Parkway & Area 1 South Driveway

BG AM



Movement	WBL	WBR	NBT	NBR	SBL	SBT	
Lane Configurations		↗	↕↕↕↕			↕↕↕	
Traffic Volume (veh/h)	0	32	1457	233	0	1124	
Future Volume (Veh/h)	0	32	1457	233	0	1124	
Sign Control	Stop		Free			Free	
Grade	0%		0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	
Hourly flow rate (vph)	0	35	1584	253	0	1222	
Pedestrians							
Lane Width (ft)							
Walking Speed (ft/s)							
Percent Blockage							
Right turn flare (veh)							
Median type							
Median storage (veh)							
Upstream signal (ft)							
pX, platoon unblocked	0.76	0.76			0.76		
vC, conflicting volume	2118	654			1837		
vC1, stage 1 conf vol							
vC2, stage 2 conf vol							
vCu, unblocked vol	1356	0			985		
tC, single (s)	6.8	6.9			4.1		
tC, 2 stage (s)							
tF (s)	3.5	3.3			2.2		
p0 queue free %	100	96			100		
cM capacity (veh/h)	106	821			528		
Direction, Lane #	WB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3
Volume Total	35	634	634	570	407	407	407
Volume Left	0	0	0	0	0	0	0
Volume Right	35	0	0	253	0	0	0
cSH	821	1700	1700	1700	1700	1700	1700
Volume to Capacity	0.04	0.37	0.37	0.34	0.24	0.24	0.24
Queue Length 95th (ft)	3	0	0	0	0	0	0
Control Delay (s)	9.6	0.0	0.0	0.0	0.0	0.0	0.0
Lane LOS	A						
Approach Delay (s)	9.6	0.0			0.0		
Approach LOS	A						
Intersection Summary							
Average Delay			0.1				
Intersection Capacity Utilization			43.3%		ICU Level of Service		A
Analysis Period (min)			15				

# HCM Unsignalized Intersection Capacity Analysis

## 29: Crescent West & Area 1 South Driveway

BG AM



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	12	27	0	131	280	66
Future Volume (Veh/h)	12	27	0	131	280	66
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	13	29	0	142	304	72
<b>Pedestrians</b>						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage (veh)						
Upstream signal (ft)	844					
<b>pX, platoon unblocked</b>						
vC, conflicting volume	411	188	376			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	411	188	376			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	98	96	100			
cM capacity (veh/h)	569	822	1179			
Direction, Lane #	EB 1	EB 2	NB 1	NB 2	SB 1	SB 2
Volume Total	13	29	47	95	203	173
Volume Left	13	0	0	0	0	0
Volume Right	0	29	0	0	0	72
cSH	569	822	1179	1700	1700	1700
Volume to Capacity	0.02	0.04	0.00	0.06	0.12	0.10
Queue Length 95th (ft)	2	3	0	0	0	0
Control Delay (s)	11.5	9.5	0.0	0.0	0.0	0.0
Lane LOS	B	A				
Approach Delay (s)	10.1	0.0		0.0		
Approach LOS	B					
<b>Intersection Summary</b>						
Average Delay			0.8			
Intersection Capacity Utilization			19.8%	ICU Level of Service	A	
Analysis Period (min)			15			

# HCM Unsignalized Intersection Capacity Analysis

## 31: North South Connector & Area 3 South Driveway 1

BG AM

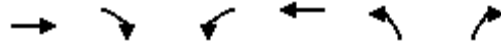


Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	41	0	0	1	0	157
Future Volume (Veh/h)	41	0	0	1	0	157
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	45	0	0	1	0	171
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage (veh)						
Upstream signal (ft)						413
pX, platoon unblocked						
vC, conflicting volume	86	86	171			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	86	86	171			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	95	100	100			
cM capacity (veh/h)	905	956	1404			
Direction, Lane #	EB 1	NB 1	SB 1	SB 2		
Volume Total	45	1	0	171		
Volume Left	45	0	0	0		
Volume Right	0	0	0	171		
cSH	905	1700	1700	1700		
Volume to Capacity	0.05	0.00	0.00	0.10		
Queue Length 95th (ft)	4	0	0	0		
Control Delay (s)	9.2	0.0	0.0	0.0		
Lane LOS	A					
Approach Delay (s)	9.2	0.0	0.0			
Approach LOS	A					
Intersection Summary						
Average Delay			1.9			
Intersection Capacity Utilization			15.1%	ICU Level of Service	A	
Analysis Period (min)			15			

# HCM Unsignalized Intersection Capacity Analysis

## 34: Area 3 East Driveway & Crescent West

BG AM



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑		↵	↑	↵	↵
Traffic Volume (veh/h)	283	293	6	7	147	118
Future Volume (Veh/h)	283	293	6	7	147	118
Sign Control	Free		Free		Stop	
Grade	0%		0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	308	318	7	8	160	128
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None		None			
Median storage (veh)						
Upstream signal (ft)	440		508			
pX, platoon unblocked						
vC, conflicting volume			626		489	313
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			626		489	313
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			99		68	81
cM capacity (veh/h)			952		504	683
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	NB 2
Volume Total	205	421	7	8	160	128
Volume Left	0	0	7	0	160	0
Volume Right	0	318	0	0	0	128
cSH	1700	1700	952	1700	504	683
Volume to Capacity	0.12	0.25	0.01	0.00	0.32	0.19
Queue Length 95th (ft)	0	0	1	0	34	17
Control Delay (s)	0.0	0.0	8.8	0.0	15.4	11.5
Lane LOS			A		C	B
Approach Delay (s)	0.0		4.1		13.7	
Approach LOS	B					
Intersection Summary						
Average Delay			4.3			
Intersection Capacity Utilization			32.0%		ICU Level of Service	A
Analysis Period (min)	15					

# HCM Unsignalized Intersection Capacity Analysis

## 40: North South Connector & Area 3 South Driveway 2

BG AM



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↖					↘
Traffic Volume (veh/h)	1	0	0	0	0	0
Future Volume (Veh/h)	1	0	0	0	0	0
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	1	0	0	0	0	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage (veh)						
Upstream signal (ft)						586
pX, platoon unblocked						
vC, conflicting volume	0	0	0			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	0	0	0			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	100	100			
cM capacity (veh/h)	1023	1085	1623			
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>SB 1</b>				
Volume Total	1	0				
Volume Left	1	0				
Volume Right	0	0				
cSH	1023	1700				
Volume to Capacity	0.00	0.00				
Queue Length 95th (ft)	0	0				
Control Delay (s)	8.5	0.0				
Lane LOS	A					
Approach Delay (s)	8.5	0.0				
Approach LOS	A					
<b>Intersection Summary</b>						
Average Delay			8.5			
Intersection Capacity Utilization			6.7%	ICU Level of Service	A	
Analysis Period (min)			15			

# HCM Unsignalized Intersection Capacity Analysis

## 41: Crescent West

BG AM



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑			↑↑		↗
Traffic Volume (veh/h)	930	142	0	373	0	18
Future Volume (Veh/h)	930	142	0	373	0	18
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	1011	154	0	405	0	20
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None		None			
Median storage (veh)						
Upstream signal (ft)	190			204		
pX, platoon unblocked			0.93	0.93	0.93	0.93
vC, conflicting volume			1165	1290	582	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			1036	1170	412	
tC, single (s)			4.1	6.8	6.9	
tC, 2 stage (s)						
tF (s)			2.2	3.5	3.3	
p0 queue free %			100	100	96	
cM capacity (veh/h)			623	174	550	
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	
Volume Total	674	491	202	202	20	
Volume Left	0	0	0	0	0	
Volume Right	0	154	0	0	20	
cSH	1700	1700	1700	1700	550	
Volume to Capacity	0.40	0.29	0.12	0.12	0.04	
Queue Length 95th (ft)	0	0	0	0	3	
Control Delay (s)	0.0	0.0	0.0	0.0	11.8	
Lane LOS						B
Approach Delay (s)	0.0		0.0		11.8	
Approach LOS						B
Intersection Summary						
Average Delay			0.1			
Intersection Capacity Utilization			40.2%	ICU Level of Service	A	
Analysis Period (min)			15			

# HCM Unsignalized Intersection Capacity Analysis

## 42: South Entrance Road & New Site Driveway

BG AM













Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	0	0	637	290	0
Future Volume (Veh/h)	0	0	0	637	290	0
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	0	0	692	315	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage (veh)						
Upstream signal (ft)					390	
pX, platoon unblocked						
vC, conflicting volume	1007	315	315			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1007	315	315			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	100	100			
cM capacity (veh/h)	267	725	1245			
Direction, Lane #	EB 1	NB 1	NB 2	SB 1		
Volume Total	0	0	692	315		
Volume Left	0	0	0	0		
Volume Right	0	0	0	0		
cSH	1700	1700	1700	1700		
Volume to Capacity	0.00	0.00	0.41	0.19		
Queue Length 95th (ft)	0	0	0	0		
Control Delay (s)	0.0	0.0	0.0	0.0		
Lane LOS	A					
Approach Delay (s)	0.0	0.0		0.0		
Approach LOS	A					
Intersection Summary						
Average Delay			0.0			
Intersection Capacity Utilization			36.9%	ICU Level of Service	A	
Analysis Period (min)			15			

# HCM Unsignalized Intersection Capacity Analysis

## 43: North South Connector Road

BG AM

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	0	0	300	0	0	53
Future Volume (Veh/h)	0	0	300	0	0	53
Sign Control	Stop		Free		Free	
Grade	0%		0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	0	326	0	0	58
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None		None	
Median storage (veh)						
Upstream signal (ft)			761		106	
pX, platoon unblocked						
vC, conflicting volume	355	163			326	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	355	163			326	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %			100		100	
cM capacity (veh/h)			617		853	
1230						
Direction, Lane #	WB 1	NB 1	NB 2	SB 1	SB 2	
Volume Total	0	217	109	19	39	
Volume Left	0	0	0	0	0	
Volume Right	0	0	0	0	0	
cSH	1700	1700	1700	1230	1700	
Volume to Capacity	0.00	0.13	0.06	0.00	0.02	
Queue Length 95th (ft)	0	0	0	0	0	
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	
Lane LOS						
Approach Delay (s)	0.0	0.0		0.0		
Approach LOS						
A						
Intersection Summary						
Average Delay			0.0			
Intersection Capacity Utilization			11.6%		ICU Level of Service	
Analysis Period (min)			15		A	

# HCM Unsignalized Intersection Capacity Analysis

## 44: North South Connector Road

BG AM



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	0	0	300	0	0	53
Future Volume (Veh/h)	0	0	300	0	0	53
Sign Control	Stop		Free		Free	
Grade	0%		0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	0	326	0	0	58
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None		None	
Median storage (veh)						
Upstream signal (ft)			608		259	
pX, platoon unblocked						
vC, conflicting volume	355	163			326	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	355	163			326	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	100			100	
cM capacity (veh/h)	617	853			1230	
Direction, Lane #	WB 1	NB 1	NB 2	SB 1	SB 2	
Volume Total	0	217	109	19	39	
Volume Left	0	0	0	0	0	
Volume Right	0	0	0	0	0	
cSH	1700	1700	1700	1230	1700	
Volume to Capacity	0.00	0.13	0.06	0.00	0.02	
Queue Length 95th (ft)	0	0	0	0	0	
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	
Lane LOS	A					
Approach Delay (s)	0.0	0.0		0.0		
Approach LOS	A					
Intersection Summary						
Average Delay	0.0					
Intersection Capacity Utilization	11.6%		ICU Level of Service		A	
Analysis Period (min)	15					

# HCM Unsignalized Intersection Capacity Analysis

## 45: North South Connector Road



















BG AM



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	0	0	300	0	0	53
Future Volume (Veh/h)	0	0	300	0	0	53
Sign Control	Stop		Free		Free	
Grade	0%		0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	0	326	0	0	58
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None		None	
Median storage (veh)						
Upstream signal (ft)			326		541	
pX, platoon unblocked						
vC, conflicting volume	355	163			326	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	355	163			326	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	100			100	
cM capacity (veh/h)	617	853			1230	
Direction, Lane #	WB 1	NB 1	NB 2	SB 1	SB 2	
Volume Total	0	217	109	19	39	
Volume Left	0	0	0	0	0	
Volume Right	0	0	0	0	0	
cSH	1700	1700	1700	1230	1700	
Volume to Capacity	0.00	0.13	0.06	0.00	0.02	
Queue Length 95th (ft)	0	0	0	0	0	
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	
Lane LOS	A					
Approach Delay (s)	0.0	0.0		0.0		
Approach LOS	A					
Intersection Summary						
Average Delay	0.0					
Intersection Capacity Utilization	11.6%		ICU Level of Service		A	
Analysis Period (min)	15					

HCM Unsignalized Intersection Capacity Analysis  
 22: Crescent West & Little Patuxent Parkway

10/20/2016

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	1046	175	231	672	10	0	0	194	0	0	75
Future Volume (Veh/h)	0	1046	175	231	672	10	0	0	194	0	0	75
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	1137	190	251	730	11	0	0	211	0	0	82
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (ft)		613			849							
pX, platoon unblocked				0.90			0.90	0.90	0.90	0.90	0.90	0.90
vC, conflicting volume	741			1327			2181	2475	664	2017	2564	370
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	741			1147			2093	2418	412	1911	2518	370
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			54			100	100	60	100	100	87
cM capacity (veh/h)	862			546			15	16	532	14	13	627
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1	SB 1				
Volume Total	0	758	569	251	487	254	211	82				
Volume Left	0	0	0	251	0	0	0	0				
Volume Right	0	0	190	0	0	11	211	82				
cSH	1700	1700	1700	546	1700	1700	532	627				
Volume to Capacity	0.00	0.45	0.33	0.46	0.29	0.15	0.40	0.13				
Queue Length 95th (ft)	0	0	0	60	0	0	47	11				
Control Delay (s)	0.0	0.0	0.0	17.1	0.0	0.0	16.1	11.6				
Lane LOS				C			C	B				
Approach Delay (s)	0.0			4.3			16.1	11.6				
Approach LOS							C	B				
Intersection Summary												
Average Delay			3.3									
Intersection Capacity Utilization		54.0%		ICU Level of Service	A							
Analysis Period (min)		15										

HCM Unsignalized Intersection Capacity Analysis  
 25: Broken Land Parkway & Area 1 South Driveway

10/20/2016



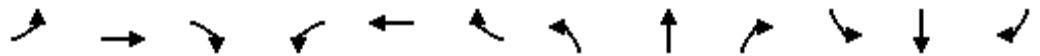
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations		↗	↑↑↑↘			↑↑↑
Traffic Volume (veh/h)	0	121	2494	70	0	1460
Future Volume (Veh/h)	0	121	2494	70	0	1460
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	132	2711	76	0	1587
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage (veh)						
Upstream signal (ft)			1240			586
pX, platoon unblocked	0.59	0.57			0.57	
vC, conflicting volume	3278	942			2787	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1887	0			1495	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	79			100	
cM capacity (veh/h)	37	618			254	

Direction, Lane #	WB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3
Volume Total	132	1084	1084	618	529	529	529
Volume Left	0	0	0	0	0	0	0
Volume Right	132	0	0	76	0	0	0
cSH	618	1700	1700	1700	1700	1700	1700
Volume to Capacity	0.21	0.64	0.64	0.36	0.31	0.31	0.31
Queue Length 95th (ft)	20	0	0	0	0	0	0
Control Delay (s)	12.4	0.0	0.0	0.0	0.0	0.0	0.0
Lane LOS	B						
Approach Delay (s)	12.4	0.0			0.0		
Approach LOS	B						

Intersection Summary							
Average Delay			0.4				
Intersection Capacity Utilization			63.9%		ICU Level of Service		B
Analysis Period (min)			15				

HCM Unsignalized Intersection Capacity Analysis  
 29: Crescent West & Area 1 South Driveway

10/20/2016



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	66	0	118	7	0	1	0	126	15	7	383	16
Future Volume (Veh/h)	66	0	118	7	0	1	0	126	15	7	383	16
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	72	0	128	8	0	1	0	137	16	8	416	17
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage (veh)												
Upstream signal (ft)								844				
pX, platoon unblocked												
vC, conflicting volume	510	594	216	497	594	76	433			153		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	510	594	216	497	594	76	433			153		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	84	100	84	98	100	100	100			99		
cM capacity (veh/h)	444	414	788	380	414	969	1123			1425		
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>EB 2</b>	<b>WB 1</b>	<b>NB 1</b>	<b>NB 2</b>	<b>SB 1</b>	<b>SB 2</b>					
Volume Total	72	128	9	68	84	216	225					
Volume Left	72	0	8	0	0	8	0					
Volume Right	0	128	1	0	16	0	17					
cSH	444	788	408	1123	1700	1425	1700					
Volume to Capacity	0.16	0.16	0.02	0.00	0.05	0.01	0.13					
Queue Length 95th (ft)	14	14	2	0	0	0	0					
Control Delay (s)	14.7	10.5	14.0	0.0	0.0	0.3	0.0					
Lane LOS	B	B	B			A						
Approach Delay (s)	12.0		14.0	0.0		0.2						
Approach LOS	B		B									
<b>Intersection Summary</b>												
Average Delay			3.2									
Intersection Capacity Utilization			30.1%		ICU Level of Service				A			
Analysis Period (min)			15									

HCM Unsignalized Intersection Capacity Analysis  
 31: North-South Connector/North South Connector & North Driveway

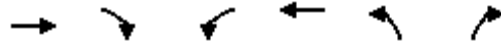
10/20/2016



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↗			↑	↑↑	
Traffic Volume (veh/h)	140	0	0	2	2	68
Future Volume (Veh/h)	140	0	0	2	2	68
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	152	0	0	2	2	74
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh						
Upstream signal (ft)					300	
pX, platoon unblocked						
vC, conflicting volume	41	38	76			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	41	38	76			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	84	100	100			
cM capacity (veh/h)	965	1026	1521			
Direction, Lane #	EB 1	NB 1	SB 1	SB 2		
Volume Total	152	2	1	75		
Volume Left	152	0	0	0		
Volume Right	0	0	0	74		
cSH	965	1700	1700	1700		
Volume to Capacity	0.16	0.00	0.00	0.04		
Queue Length 95th (ft)	14	0	0	0		
Control Delay (s)	9.4	0.0	0.0	0.0		
Lane LOS	A					
Approach Delay (s)	9.4	0.0	0.0			
Approach LOS	A					
Intersection Summary						
Average Delay			6.2			
Intersection Capacity Utilization			17.8%	ICU Level of Service	A	
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis  
 34: Area 3 East Driveway & Crescent West

10/20/2016



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑		↵	↑↑	↵	↵
Traffic Volume (veh/h)	279	219	7	84	242	186
Future Volume (Veh/h)	279	219	7	84	242	186
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	303	238	8	91	263	202
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh						
Upstream signal (ft)	460			436		
pX, platoon unblocked						
vC, conflicting volume	541			484	270	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	541			484	270	
tC, single (s)	4.1			6.8	6.9	
tC, 2 stage (s)						
tF (s)	2.2			3.5	3.3	
p0 queue free %	99			48	72	
cM capacity (veh/h)	1024			508	727	

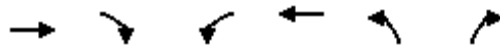
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	WB 3	NB 1	NB 2
Volume Total	202	339	8	46	46	263	202
Volume Left	0	0	8	0	0	263	0
Volume Right	0	238	0	0	0	0	202
cSH	1700	1700	1024	1700	1700	508	727
Volume to Capacity	0.12	0.20	0.01	0.03	0.03	0.52	0.28
Queue Length 95th (ft)	0	0	1	0	0	73	28
Control Delay (s)	0.0	0.0	8.5	0.0	0.0	19.4	11.8
Lane LOS	A			C			B
Approach Delay (s)	0.0		0.7		16.1		
Approach LOS	C						

Intersection Summary			
Average Delay	6.9		
Intersection Capacity Utilization	34.8%	ICU Level of Service	A
Analysis Period (min)	15		

# HCM Unsignalized Intersection Capacity Analysis

## 41: West Driveway & Crescent West

10/20/2016



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑			↑↑		↗
Traffic Volume (veh/h)	674	99	0	645	0	30
Future Volume (Veh/h)	674	99	0	645	0	30
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	733	108	0	701	0	33
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None		None			
Median storage veh						
Upstream signal (ft)	185			187		
pX, platoon unblocked					0.93	
vC, conflicting volume			841		1138 420	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			841		994 420	
tC, single (s)			4.1		6.8 6.9	
tC, 2 stage (s)						
tF (s)			2.2		3.5 3.3	
p0 queue free %			100		100 94	
cM capacity (veh/h)			790		225 582	
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	
Volume Total	489	352	350	350	33	
Volume Left	0	0	0	0	0	
Volume Right	0	108	0	0	33	
cSH	1700	1700	1700	1700	582	
Volume to Capacity	0.29	0.21	0.21	0.21	0.06	
Queue Length 95th (ft)	0	0	0	0	4	
Control Delay (s)	0.0	0.0	0.0	0.0	11.6	
Lane LOS					B	
Approach Delay (s)	0.0		0.0		11.6	
Approach LOS					B	
Intersection Summary						
Average Delay			0.2			
Intersection Capacity Utilization			31.8%		ICU Level of Service A	
Analysis Period (min)	15					

# HCM Unsignalized Intersection Capacity Analysis

## 42: South Entrance Road

10/20/2016



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	1	11	20	301	760	1
Future Volume (Veh/h)	1	11	20	301	760	1
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	1	12	22	327	826	1
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage (veh)						
Upstream signal (ft)					419	
pX, platoon unblocked						
vC, conflicting volume	1198	826	827			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1198	826	827			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	99	97	97			
cM capacity (veh/h)	200	372	804			
Direction, Lane #	EB 1	NB 1	NB 2	SB 1		
Volume Total	13	22	327	827		
Volume Left	1	22	0	0		
Volume Right	12	0	0	1		
cSH	349	804	1700	1700		
Volume to Capacity	0.04	0.03	0.19	0.49		
Queue Length 95th (ft)	3	2	0	0		
Control Delay (s)	15.7	9.6	0.0	0.0		
Lane LOS	C	A				
Approach Delay (s)	15.7	0.6		0.0		
Approach LOS	C					
Intersection Summary						
Average Delay			0.3			
Intersection Capacity Utilization			50.1%	ICU Level of Service		A
Analysis Period (min)			15			

# HCM Unsignalized Intersection Capacity Analysis

## 43: North South Connector Road

10/20/2016



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	0	3	522	1	38	116
Future Volume (Veh/h)	0	3	522	1	38	116
Sign Control	Stop		Free		Free	
Grade	0%		0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	3	567	1	41	126
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None		None	
Median storage (veh)						
Upstream signal (ft)					108	
pX, platoon unblocked						
vC, conflicting volume	712	284			568	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	712	284			568	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	100			96	
cM capacity (veh/h)	352	713			1000	
Direction, Lane #	WB 1	NB 1	NB 2	SB 1	SB 2	
Volume Total	3	378	190	83	84	
Volume Left	0	0	0	41	0	
Volume Right	3	0	1	0	0	
cSH	713	1700	1700	1000	1700	
Volume to Capacity	0.00	0.22	0.11	0.04	0.05	
Queue Length 95th (ft)	0	0	0	3	0	
Control Delay (s)	10.1	0.0	0.0	4.5	0.0	
Lane LOS	B			A		
Approach Delay (s)	10.1	0.0		2.2		
Approach LOS	B					
Intersection Summary						
Average Delay			0.5			
Intersection Capacity Utilization			32.1%		ICU Level of Service	A
Analysis Period (min)			15			

# HCM Unsignalized Intersection Capacity Analysis

## 44: North South Connector Road

10/20/2016



Movement	WBL	WBR	NBR	NBR2	SWL2	SWL
Lane Configurations						
Traffic Volume (veh/h)	1	0	522	1	20	96
Future Volume (Veh/h)	1	0	522	1	20	96
Sign Control	Stop		Free		Free	
Grade	0%		0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	1	0	567	1	22	104
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None		None	
Median storage (veh)						
Upstream signal (ft)			686		292	
pX, platoon unblocked						
vC, conflicting volume		664		284		568
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol		664		284		568
tC, single (s)		6.8		6.9		4.1
tC, 2 stage (s)						
tF (s)		3.5		3.3		2.2
p0 queue free %					100	
cM capacity (veh/h)		385		713		1000
Direction, Lane #	WB 1	NB 1	NB 2	SW 1	SW 2	
Volume Total	1	378	190	57	69	
Volume Left	1	0	0	22	0	
Volume Right	0	0	1	0	0	
cSH	385	1700	1700	1000	1700	
Volume to Capacity	0.00	0.22	0.11	0.02	0.04	
Queue Length 95th (ft)	0	0	0	2	0	
Control Delay (s)	14.4	0.0	0.0	3.5	0.0	
Lane LOS	B			A		
Approach Delay (s)	14.4	0.0		1.6		
Approach LOS	B					
Intersection Summary						
Average Delay			0.3			
Intersection Capacity Utilization			21.6%		ICU Level of Service	
Analysis Period (min)			15			
					A	

# HCM Unsignalized Intersection Capacity Analysis

## 45: North South Connector Road

10/20/2016



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	0	16	522	0	19	77
Future Volume (Veh/h)	0	16	522	0	19	77
Sign Control	Stop		Free		Free	
Grade	0%		0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	17	567	0	21	84
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None		None	
Median storage veh						
Upstream signal (ft)			415			
pX, platoon unblocked						
vC, conflicting volume	651	284			567	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	651	284			567	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	98			98	
cM capacity (veh/h)	393	713			1001	
Direction, Lane #	WB 1	NB 1	NB 2	SB 1	SB 2	
Volume Total	17	378	189	49	56	
Volume Left	0	0	0	21	0	
Volume Right	17	0	0	0	0	
cSH	713	1700	1700	1001	1700	
Volume to Capacity	0.02	0.22	0.11	0.02	0.03	
Queue Length 95th (ft)	2	0	0	2	0	
Control Delay (s)	10.2	0.0	0.0	3.8	0.0	
Lane LOS	B		A			
Approach Delay (s)	10.2	0.0	1.8			
Approach LOS	B					
Intersection Summary						
Average Delay			0.5			
Intersection Capacity Utilization			25.9%		ICU Level of Service	A
Analysis Period (min)			15			



## **APPENDIX K**

### **BACKGROUND QUEUEING INFORMATION**



**Table K-1**

**Background Queue Calculations  
APFO Methodology**

Movement	Volume	LUF	Vehicle Length	Surge Factor	Sum	Cycle Length	Cycle/Hr.	Critical Gap	Average Gap	Queue	Available Storage	Difference
7: Broken Land Parkway/Little Patuxent Parkway - Signalized												
AM EBL	33	1.00	25	1.4	1155	90	40.0	NA	NA	29	150	121
PM EBL	70	1.00	25	1.4	2450	100	36.0	NA	NA	68	150	82
AM EBT	335	0.55	25	1.4	6449	90	40.0	NA	NA	161	840	679
PM EBT	420	0.55	25	1.4	8085	100	36.0	NA	NA	225	840	615
AM WBL	100	0.60	25	1.4	2100	90	40.0	NA	NA	53	290	238
PM WBL	343	0.60	25	1.4	7203	100	36.0	NA	NA	200	290	90
AM WBTR	80	0.55	25	1.4	1540	90	40.0	NA	NA	39	1040	1002
PM WBTR	404	0.55	25	1.4	7777	100	36.0	NA	NA	216	1040	824
AM NBL	567	0.60	25	1.4	11907	90	40.0	NA	NA	298	475	177
PM NBL	819	0.60	25	1.4	17199	100	36.0	NA	NA	478	475	(3)
AM NBT	345	0.55	25	1.4	6641	90	40.0	NA	NA	166	1320	1154
PM NBT	961	0.55	25	1.4	18499	100	36.0	NA	NA	514	1320	806
AM SBL	25	1.00	25	1.4	875	90	40.0	NA	NA	22	150	128
PM SBL	36	1.00	25	1.4	1260	100	36.0	NA	NA	35	150	115
AM SBT	356	0.55	25	1.4	6853	90	40.0	NA	NA	171	360	189
PM SBT	461	0.55	25	1.4	8874	100	36.0	NA	NA	247	360	113
8: Broken Land Parkway/Hickory Ridge Road - Signalized												
AM EBL	112	0.60	25	1.4	2352	96	37.5	NA	NA	63	464	401
PM EBL	201	0.60	25	1.4	4221	120	30.0	NA	NA	141	464	323
AM WBLT	316	0.45	25	1.4	4977	96	37.5	NA	NA	133	560	427
PM WBLT	666	0.45	25	1.4	10490	120	30.0	NA	NA	350	560	210
AM NBL	572	0.60	25	1.4	12012	96	37.5	NA	NA	320	700	380
PM NBL	583	0.60	25	1.4	12243	120	30.0	NA	NA	408	700	292
AM NBT	1479	0.30	25	1.4	15530	96	37.5	NA	NA	414	800	386
PM NBT	2153	0.30	25	1.4	22607	120	30.0	NA	NA	754	800	46
AM SBL	79	1.00	25	1.4	2765	96	37.5	NA	NA	74	350	276
PM SBL	53	1.00	25	1.4	1855	120	30.0	NA	NA	62	350	288
AM SBTR	1010	0.40	25	1.4	14140	96	37.5	NA	NA	377	1320	943
PM SBTR	1344	0.40	25	1.4	18816	120	30.0	NA	NA	627	1320	693
9: Mall Access Road/Little Patuxent Parkway - Signalized												
AM EBL	139	1.00	25	1.4	4865	96	37.5	NA	NA	130	160	30
PM EBL	239	1.00	25	1.4	8365	100	36.0	NA	NA	232	160	(72)
AM EBT	534	0.55	25	1.4	10280	96	37.5	NA	NA	274	672	398
PM EBT	1090	0.55	25	1.4	20983	100	36.0	NA	NA	583	672	89
AM WBT	561	0.55	25	1.4	10799	96	37.5	NA	NA	288	480	192
PM WBT	677	0.55	25	1.4	13032	100	36.0	NA	NA	362	480	118
AM SBL	81	1.00	25	1.4	2835	96	37.5	NA	NA	76	135	59
PM SBL	88	1.00	25	1.4	3080	100	36.0	NA	NA	86	135	49

**Table K-2**

**Background Queue Calculations  
APFO Methodology**

Movement	Volume	LUF	Vehicle Length	Surge Factor	Sum	Cycle Length	Cycle/Hr.	Critical Gap	Average Gap	Queue	Available Storage	Difference
<b>10: Little Patuxent Parkway/South Entrance Road - Signalized</b>												
AM	EBTR	652	0.55	25	1.4	12551	80	45.0	NA	279	480	201
PM	EBTR	1213	0.55	25	1.4	23350	100	36.0	NA	649	480	(169)
AM	WBL	150	0.60	25	1.4	3150	80	45.0	NA	70	250	180
PM	WBL	440	0.60	25	1.4	9240	100	36.0	NA	257	250	(7)
AM	WBT	259	0.55	25	1.4	4986	80	45.0	NA	111	496	385
PM	WBT	362	0.55	25	1.4	6969	100	36.0	NA	194	496	302
AM	NBL	384	0.60	25	1.4	8064	80	45.0	NA	179	225	46
PM	NBL	386	0.60	25	1.4	8106	100	36.0	NA	225	225	(0)
<b>11: Little Patuxent Parkway/Moore Road - Signalized</b>												
AM	EBLT	79	0.60	25	1.4	1659	80	45.0	NA	37	120	83
PM	EBLT	644	0.60	25	1.4	13524	100	36.0	NA	376	120	(256)
AM	WBLTR	41	1.00	25	1.4	1435	80	45.0	NA	32	240	208
PM	WBLTR	173	1.00	25	1.4	6055	100	36.0	NA	168	240	72
AM	NBL	105	1.00	25	1.4	3675	80	45.0	NA	82	100	18
PM	NBL	245	1.00	25	1.4	8575	100	36.0	NA	238	100	(138)
AM	NBTR	685	0.55	25	1.4	13186	80	45.0	NA	293	216	(77)
PM	NBTR	1282	0.55	25	1.4	24679	100	36.0	NA	686	216	(470)
AM	SBL	4	1.00	25	1.4	140	80	45.0	NA	3	270	267
PM	SBL	23	1.00	25	1.4	805	100	36.0	NA	22	270	248
AM	SBTR	526	0.55	25	1.4	10126	80	45.0	NA	225	360	135
PM	SBTR	803	0.55	25	1.4	15458	100	36.0	NA	429	360	(69)
<b>22: Merriweather Drive/Little Patuxent Parkway - Unsignalized</b>												
AM	EBL	86	1.00	25	1.4	3010	10	360.0	6.0	8	215	207
PM	EBL	0	1.00	25	1.4	0	10	360.0	6.0	0	215	215
AM	WBL	279	1.00	25	1.4	9765	10	378.9	5.5	13	250	224
PM	WBL	231	1.00	25	1.4	8085	10	378.9	5.5	16	250	229
AM	NBR	130	1.00	25	1.4	4550	9	400.0	5.0	28	360	349
PM	NBR	194	1.00	25	1.4	6790	9	400.0	5.0	19	360	343

Table K-3

Background Queue Calculations  
APFO Methodology

Movement	Volume	LUF	Vehicle Length	Surge Factor	Sum	Cycle Length	Cycle/Hr.	Critical Gap	Average Gap	Queue	Available Storage	Difference
<b>25: Broken Land Parkway/Area 1 South Driveway - Unsignalized</b>												
AM	32	1.00	25	1.4	1120	9	400.0	5.0	113	3	150	147
PM	121	1.00	25	1.4	4235	9	400.0	5.0	30	11	150	139
<b>27: Merriweather Drive/Hickory Ridge Road Extended - Signalized</b>												
AM	71	1.00	25	1.4	2485	80	45.0	NA	NA	55	680	625
PM	92	1.00	25	1.4	3220	100	36.0	NA	NA	89	680	591
AM	749	1.00	25	1.4	26215	80	45.0	NA	NA	583	680	97
PM	506	1.00	25	1.4	17710	100	36.0	NA	NA	492	680	188
AM	331	1.00	25	1.4	11585	100	36.0	NA	NA	322	320	(2)
PM*	595	1.00	25	1.4	20825	100	36.0	NA	NA	578	320	(258)
AM	42	1.00	25	1.4	1470	100	36.0	NA	NA	41	320	279
PM	49	1.00	25	1.4	1715	100	36.0	NA	NA	48	320	272
* See simulated results												
<b>29: Merriweather Drive/Area 1 South Driveway - Unsignalized</b>												
AM	18	1.00	25	1.4	630	10	360.0	6.0	200	2	325	323
PM	66	1.00	25	1.4	2310	10	360.0	6.0	55	6	325	319
AM	31	1.00	25	1.4	1085	9	400.0	5.0	116	3	325	322
PM	118	1.00	25	1.4	4130	9	400.0	5.0	31	10	325	315
AM	25	1.00	25	1.4	875	10	378.9	5.5	144	2	325	323
PM	8	1.00	25	1.4	280	10	378.9	5.5	450	1	325	324
<b>30: US 29 SB Ramp (North South Connector)/Broken Land Parkway - Signalized</b>												
AM	608	0.60	25	1.4	12768	90	40.0	NA	NA	319	425	106
PM	316	0.60	25	1.4	6636	120	30.0	NA	NA	221	425	204
<b>31: North South Connector/Area 3 South Driveway - Unsignalized</b>												
AM	41	1.00	25	1.4	1435	9	400.0	5.0	88	4	300	296
PM	140	1.00	25	1.4	4900	9	400.0	5.0	26	12	300	288

Table K-4

Background Queue Calculations  
APFO Methodology

Movement	Volume	LUF	Vehicle Length	Surge Factor	Sum	Cycle Length	Cycle/Hr.	Critical Gap	Average Gap	Queue	Available Storage	Difference
<b>32: North South Connector/Merriweather Drive - Signalized</b>												
AM EBLR	401	0.60	25	1.4	8421	100	36.0	NA	NA	234	320	86
PM EBLR	464	0.60	25	1.4	9744	110	32.7	NA	NA	298	320	22
AM NBL	7	1.00	25	1.4	245	100	36.0	NA	NA	7	350	343
PM NBL	25	1.00	25	1.4	875	110	32.7	NA	NA	27	350	323
<b>33: North South Connector/South Entrance Road - Signalized</b>												
AM WBR	637	1.00	25	1.4	22295	100	36.0	NA	NA	619	750	131
PM WBR	301	1.00	25	1.4	10535	110	32.7	NA	NA	322	750	428
<b>34: Merriweather Drive/Area 3 East Driveway - Unsignalized</b>												
AM NBL	147	1.00	25	1.4	5145	10	360.0	6.0	24	14	200	186
PM NBL	242	1.00	25	1.4	8470	10	360.0	6.0	15	24	200	176
AM NBR	118	1.00	25	1.4	4130	10	360.0	6.0	31	11	200	189
PM NBR	186	1.00	25	1.4	6510	10	360.0	6.0	19	18	200	182
<b>35: Merriweather Drive/Area 3 West Driveway - Signalized</b>												
AM NBL	204	0.60	25	1.4	4284	100	36.0	NA	NA	119	200	81
PM NBL	325	0.60	25	1.4	6825	110	32.7	NA	NA	209	200	(9)
AM WBL	11	0.60	25	1.4	231	100	36.0	NA	NA	6	280	274
PM WBL	6	0.60	25	1.4	126	110	32.7	NA	NA	4	280	276
AM WBT	169	0.60	25	1.4	3549	100	36.0	NA	NA	99	280	181
PM WBT	320	0.60	25	1.4	6720	110	32.7	NA	NA	205	280	75
AM EBTR	948	0.60	25	1.4	19908	100	36.0	NA	NA	553	320	(233)
PM EBTR	704	0.60	25	1.4	14784	110	32.7	NA	NA	452	320	(132)
* See simulated results												
<b>41: Merriweather Drive/Area 3 Right-in/Right-out - Unsignalized</b>												
AM NBR	18	1.00	25	1.4	630	9	400.0	5.0	200	2	150	148
PM NBR	30	1.00	25	1.4	1050	9	400.0	5.0	120	3	150	147

Table K-5

Background Queue Calculations

APFO Methodology

Movement	Volume	LUF	Vehicle Length	Surge Factor	Sum	Cycle Length	Cycle/Hr.	Critical Gap	Average Gap	Queue	Available Storage	Difference
<b>42: South Entrance Road/Site Driveway - Unsignalized</b>												
AM	0	1.00	25	1.4	0	10	360.0	6.0	#DNV/0!	0	50	50
PM	12	1.00	25	1.4	420	10	360.0	6.0	300	1	50	49
AM	0	1.00	25	1.4	0	9	400.0	5.0	#DNV/0!	0	0	0
PM	20	1.00	25	1.4	700	9	400.0	5.0	180	2	0	(2)
<b>43: North South Connector/North Site Driveway - Unsignalized</b>												
AM	0	1.00	25	1.4	0	10	360.0	6.0	#DNV/0!	0	50	50
PM	3	1.00	25	1.4	105	10	360.0	6.0	1200	0	50	50
AM	0	0.55	25	1.4	0	11	327.3	7.0	#DNV/0!	0	50	50
PM	38	0.55	25	1.4	732	11	327.3	7.0	95	2	50	48
<b>44: North South Connector/Middle Site Driveway - Unsignalized</b>												
AM	0	1.00	25	1.4	0	10	360.0	6.0	#DNV/0!	0	50	50
PM	1	1.00	25	1.4	35	10	360.0	6.0	3600	0	50	50
AM	0	0.55	25	1.4	0	11	327.3	7.0	#DNV/0!	0	50	50
PM	20	0.55	25	1.4	385	11	327.3	7.0	180	1	50	49
<b>45: North South Connector/Site Driveway - Unsignalized</b>												
AM	0	1.00	25	1.4	0	10	360.0	6.0	#DNV/0!	0	50	50
PM	16	1.00	25	1.4	560	10	360.0	6.0	225	2	50	48
AM	0	0.55	25	1.4	0	11	327.3	7.0	#DNV/0!	0	50	50
PM	19	0.55	25	1.4	366	11	327.3	7.0	189	1	50	49

**Table K-6  
 Simulated Queuing Results for Background Conditions - PM Peak Hour**

<b>27: Merriweather Drive/Hickory Ridge Road Extended - Signalized</b>					
	Upstream Queue	Queue at	Total	Link	Difference
Direction	Intersection 41	Intersection 27	Queue	Length	
NB	205 feet	135 feet	340 feet	400	60
<b>35: Merriweather Drive/Area 3 West Driveway - Signalized</b>					
	Upstream Queue	Queue at	Total	Link	Difference
Direction	Intersection 41	Intersection 35	Queue	Length	
EB	96 feet	192 feet	288 feet	400	112

See traffic simulation sheets. Queue includes intersection 41 right-in/right-out.

Queuing and Blocking Report  
PM Peak Hour

8/10/2016

Intersection: 7: Broken Land Parkway & Little Patuxent Parkway

Movement	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	NB
Directions Served	L	T	T	R	L	L	T	TR	L	L	T	T
Maximum Queue (ft)	134	177	187	315	239	242	306	218	391	489	536	534
Average Queue (ft)	56	102	109	172	186	198	194	124	227	351	423	440
95th Queue (ft)	113	161	169	291	281	281	368	194	339	569	615	602
Link Distance (ft)		989	989				243	243			493	493
Upstream Blk Time (%)					2	19	24	0	0	0	7	16
Queuing Penalty (veh)					0	0	92	0	0	0	57	143
Storage Bay Dist (ft)	150			400	290	290			475	475		
Storage Blk Time (%)	0	1		0	2	19	24		0	1	11	
Queuing Penalty (veh)	1	1		0	4	34	84		0	3	90	

Intersection: 7: Broken Land Parkway & Little Patuxent Parkway

Movement	NB	SB	SB	SB	SB
Directions Served	R	L	T	T	R
Maximum Queue (ft)	533	174	299	317	225
Average Queue (ft)	408	42	169	184	98
95th Queue (ft)	617	127	273	290	222
Link Distance (ft)	493		327	327	
Upstream Blk Time (%)	7		0	1	
Queuing Penalty (veh)	64		2	4	
Storage Bay Dist (ft)		150			200
Storage Blk Time (%)			24	13	0
Queuing Penalty (veh)			9	15	0

Intersection: 10: North South Connector Road & Little Patuxent Parkway

Movement	EB	EB	WB	WB	WB	WB	NB	NB	NB	NB
Directions Served	T	TR	L	L	T	T	L	L	R	R
Maximum Queue (ft)	610	610	252	227	237	138	194	212	220	188
Average Queue (ft)	442	465	147	48	59	54	109	117	123	110
95th Queue (ft)	686	691	240	145	158	102	169	186	191	175
Link Distance (ft)	625	625			568	568		548	548	
Upstream Blk Time (%)	6	8								
Queuing Penalty (veh)	36	45								
Storage Bay Dist (ft)			250	250			225			350
Storage Blk Time (%)			1	0			0	0		
Queuing Penalty (veh)			1	0			0	0		

Intersection: 27: Crescent West & Hickory Ridge Road

Movement	EB	EB	NB	NB	SB	SB
Directions Served	L	R	L	T	T	TR
Maximum Queue (ft)	123	282	123	42	212	236
Average Queue (ft)	52	143	112	6	71	200
95th Queue (ft)	105	248	135	29	179	267
Link Distance (ft)	277	277	110	110	207	207
Upstream Blk Time (%)		1	18		1	26
Queuing Penalty (veh)		2	58		2	90
Storage Bay Dist (ft)						
Storage Blk Time (%)						
Queuing Penalty (veh)						

Intersection: 32: North South Connector/North South Connector Road & Crescent West

Movement	EB	EB	NB	NB	NB	SB	SB
Directions Served	L	LR	L	T	T	T	TR
Maximum Queue (ft)	213	256	52	47	66	12	64
Average Queue (ft)	113	163	11	14	20	1	23
95th Queue (ft)	190	235	40	43	53	8	56
Link Distance (ft)	454	454	372	372	372	428	428
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (ft)							
Storage Blk Time (%)							
Queuing Penalty (veh)							

Intersection: 34: Area 3 East Driveway & Crescent West

Movement	EB	EB	WB	NB	NB
Directions Served	T	TR	L	L	R
Maximum Queue (ft)	4	21	33	169	69
Average Queue (ft)	0	1	5	68	36
95th Queue (ft)	4	10	23	133	60
Link Distance (ft)	357	357	454	369	369
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)					
Storage Blk Time (%)					
Queuing Penalty (veh)					

Intersection: 35: Area 3 West Driveway & Crescent West

Movement	EB	EB	WB	WB	NB	NB
Directions Served	T	TR	L	T	L	R
Maximum Queue (ft)	158	176	31	272	320	151
Average Queue (ft)	62	130	5	104	195	36
95th Queue (ft)	135	192	22	218	306	98
Link Distance (ft)	153	153	357	357	308	308
Upstream Blk Time (%)	0	7		0	2	0
Queuing Penalty (veh)	1	25		0	0	0
Storage Bay Dist (ft)						
Storage Blk Time (%)						
Queuing Penalty (veh)						

Intersection: 41: Crescent West

Movement	EB	EB	WB	NB
Directions Served	T	TR	T	R
Maximum Queue (ft)	87	116	167	58
Average Queue (ft)	6	29	106	20
95th Queue (ft)	44	96	205	49
Link Distance (ft)	110	110	153	160
Upstream Blk Time (%)	0	1	6	
Queuing Penalty (veh)	0	3	21	
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				



**APPENDIX L**  
**INDIVIDUAL SITE TRIP ASSIGNMENTS**



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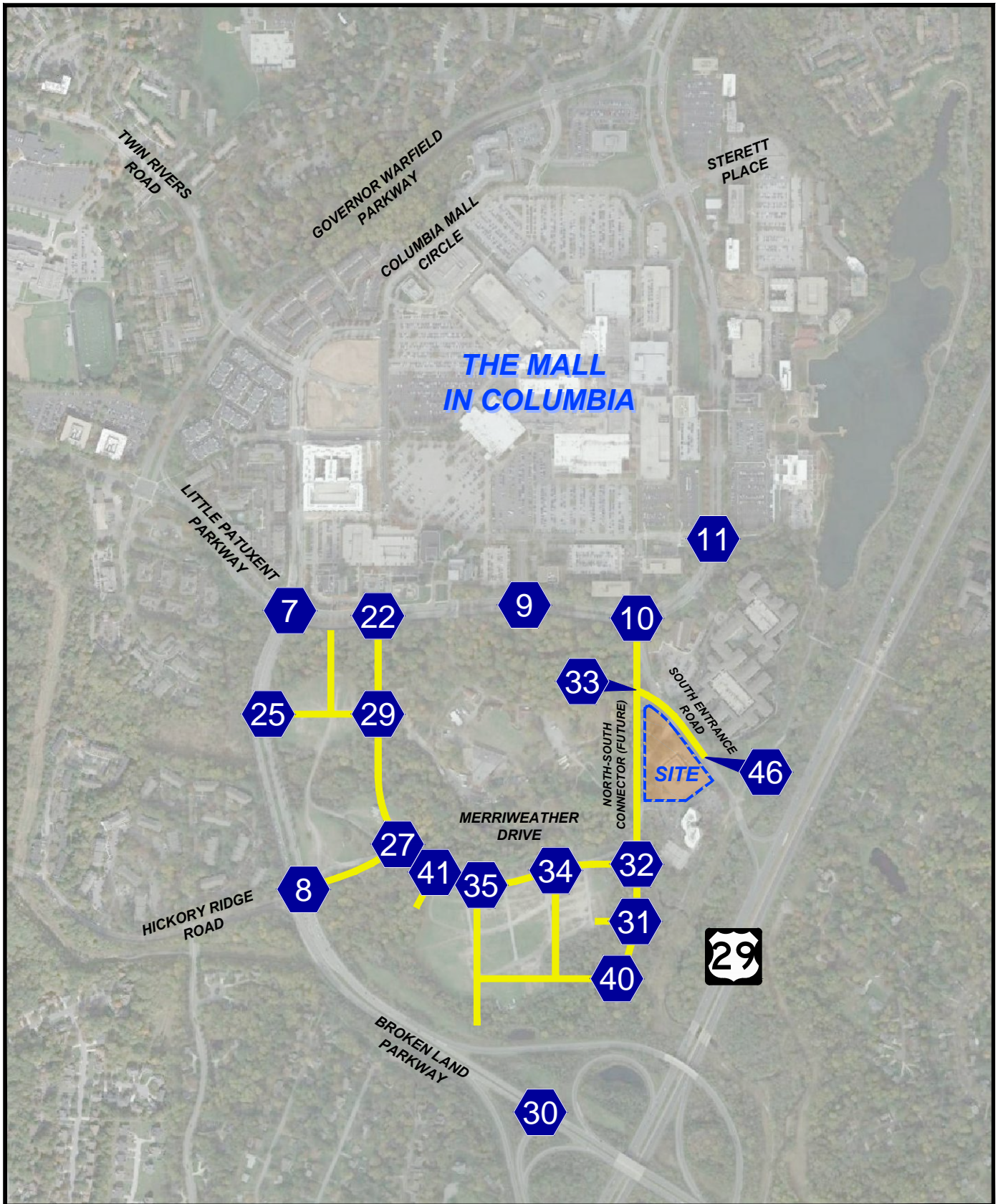


Figure L-1  
Total Future Intersection Map

New Cultural Center  
Howard County, Maryland



JCF

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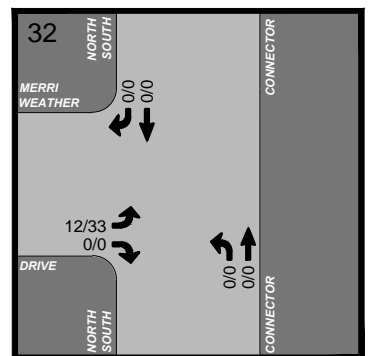
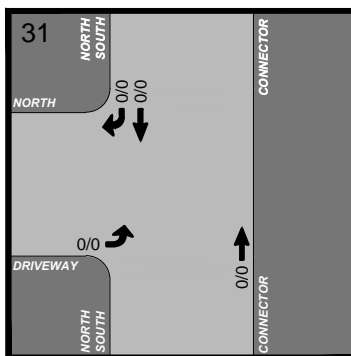
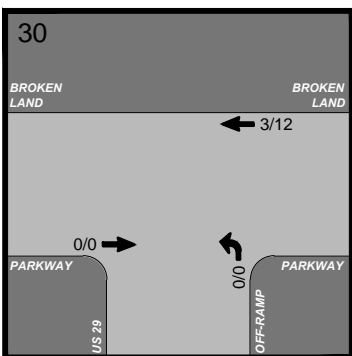
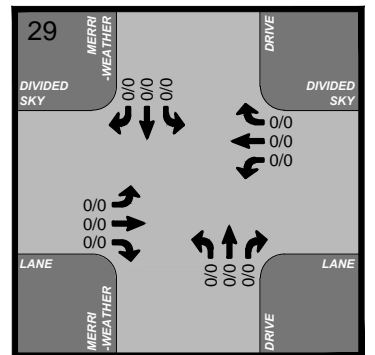
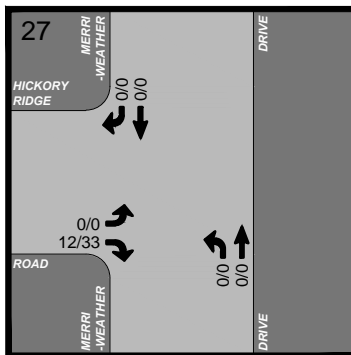
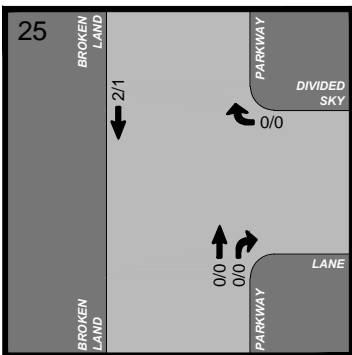
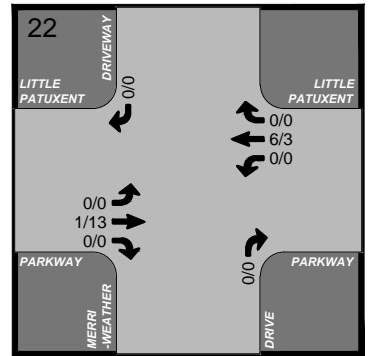
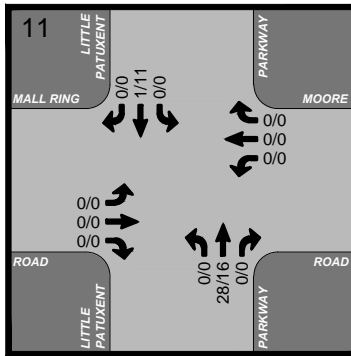
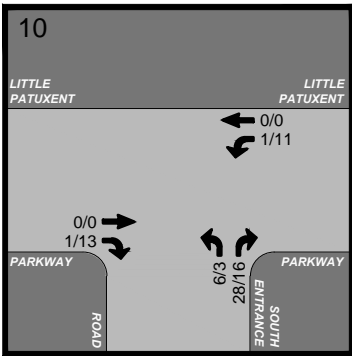
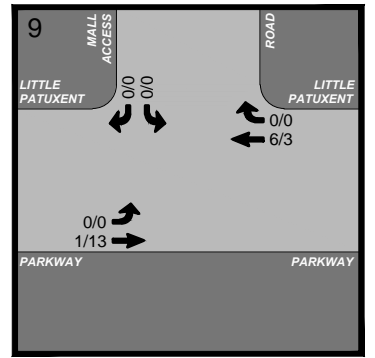
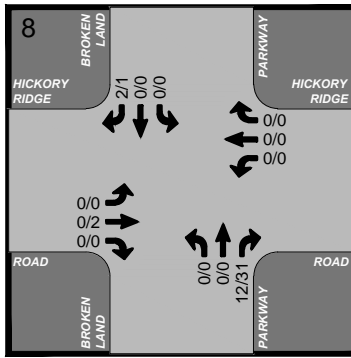
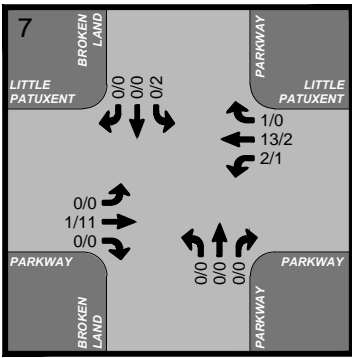
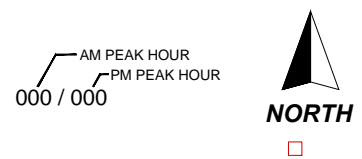


Figure L-1A Residential Site Trips

New Cultural Center  
Howard County, Maryland



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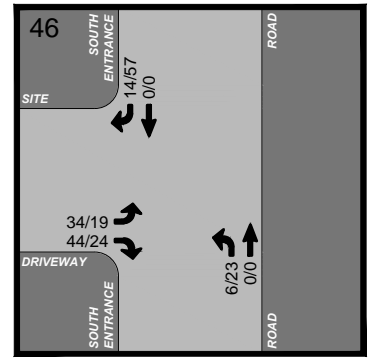
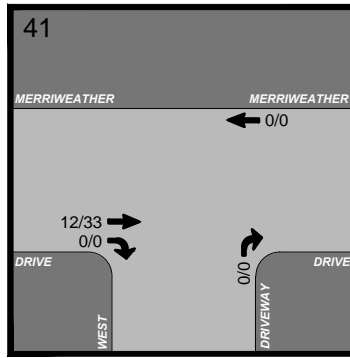
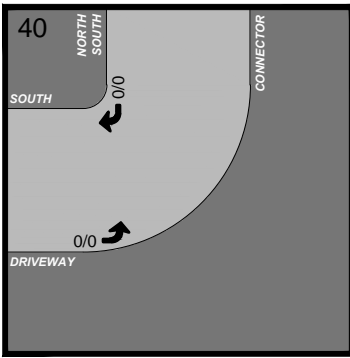
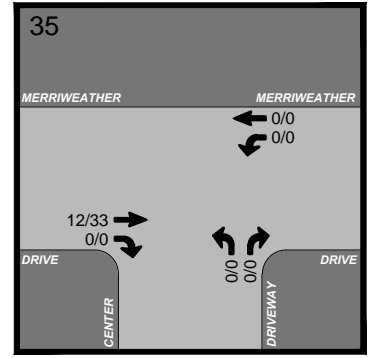
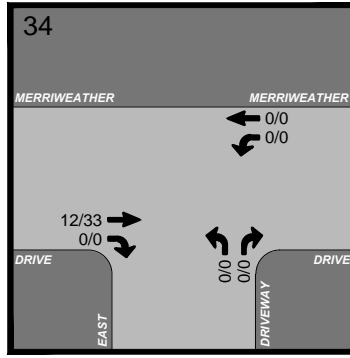
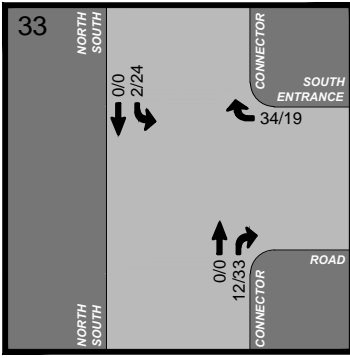


Figure L-1B  
Residential Site Trips

New Cultural Center  
Howard County, Maryland

AM PEAK HOUR  
PM PEAK HOUR  
000 / 000



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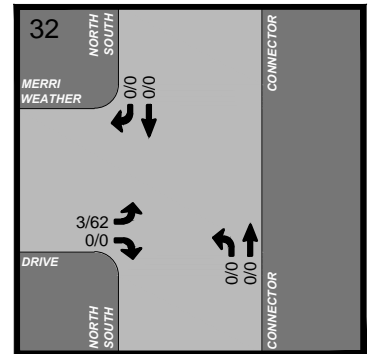
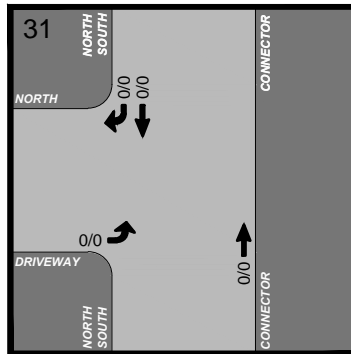
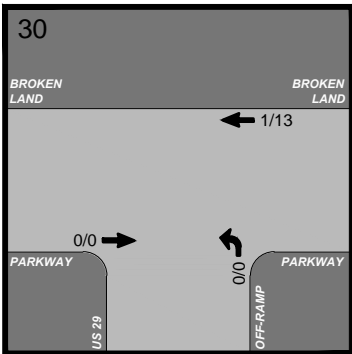
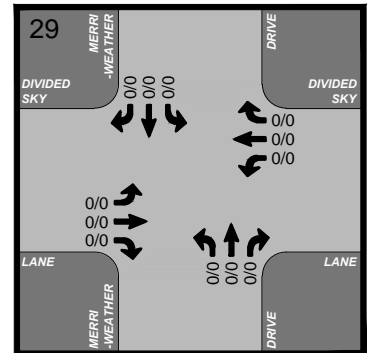
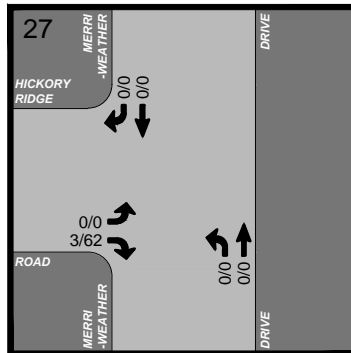
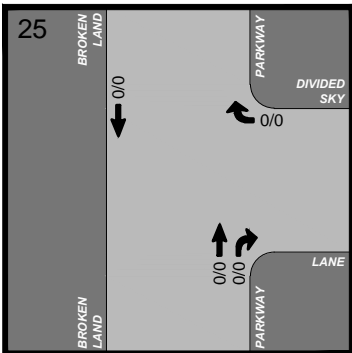
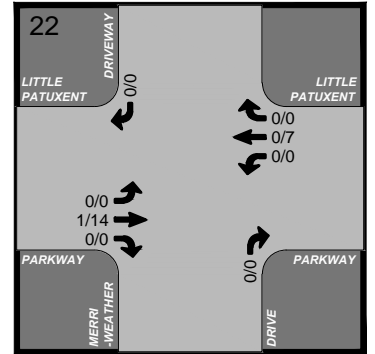
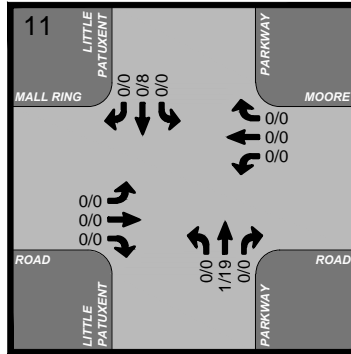
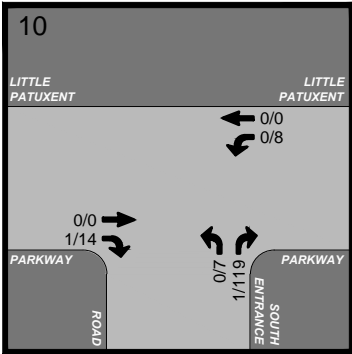
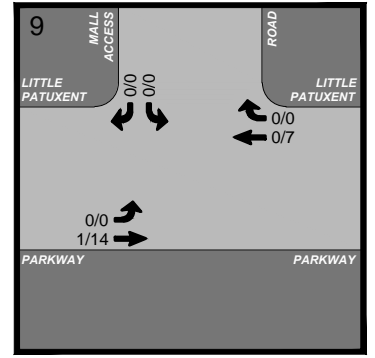
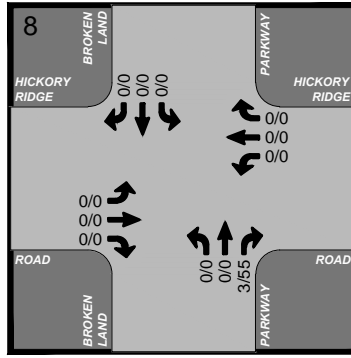
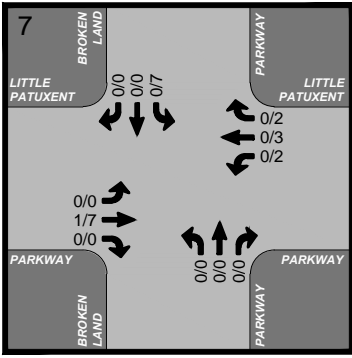


Figure L-2A  
Retail/Office Site Trips

New Cultural Center  
Howard County, Maryland

AM PEAK HOUR  
PM PEAK HOUR  
000 / 000



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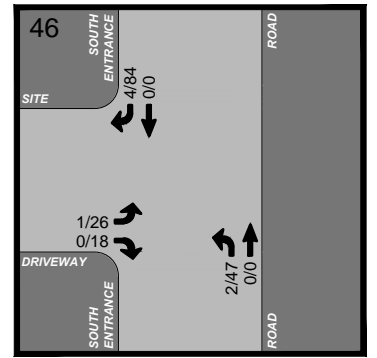
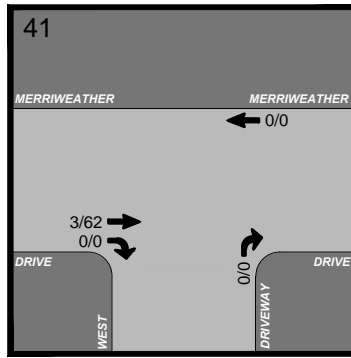
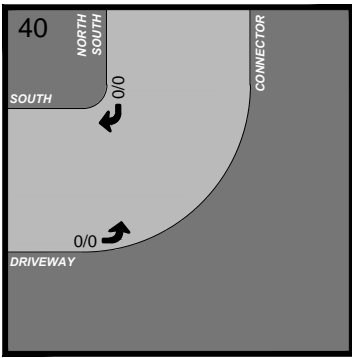
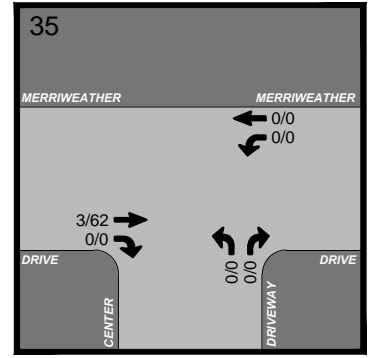
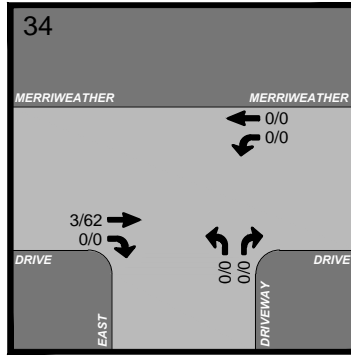
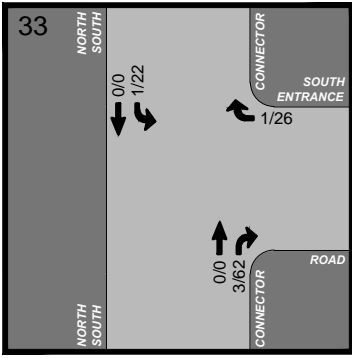


Figure L-2B  
Retail/Office Site Trips

New Cultural Center  
Howard County, Maryland

AM PEAK HOUR  
PM PEAK HOUR  
000 / 000

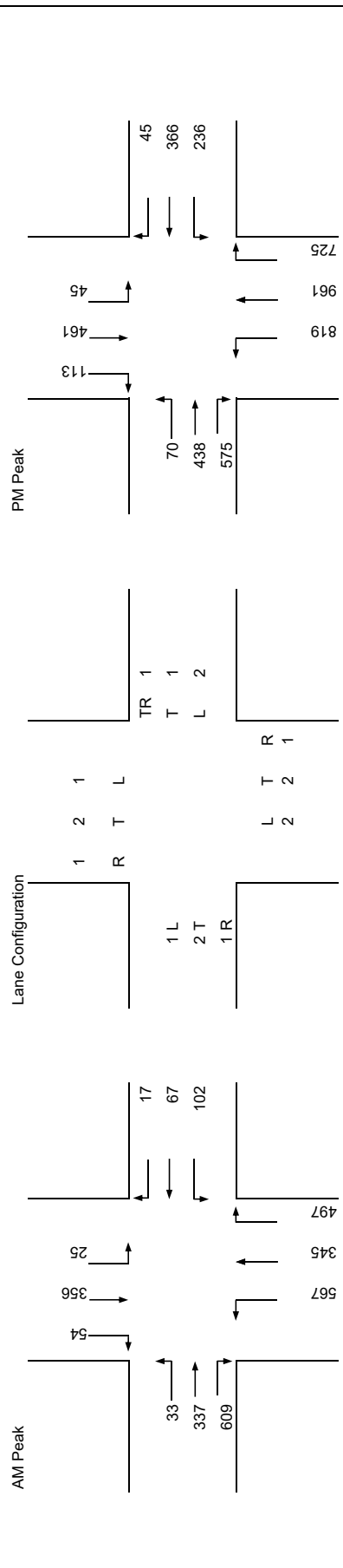




**APPENDIX M**

**TOTAL FUTURE CLV'S AND SYNCHRO REPORTS**





Intersection Control: Signal: X Stop: \_\_\_\_\_ Ways: \_\_\_\_\_  
 Split: N/S  
 # of Phases: \_\_\_\_\_  
 Cycle Length: \_\_\_\_\_ sec.

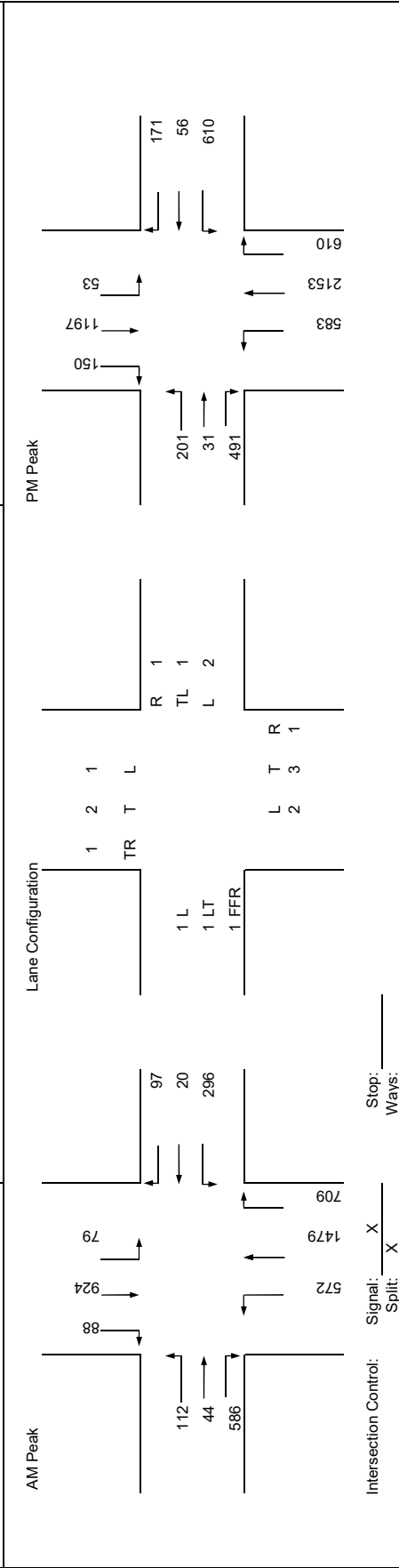
RTOR/Overlap (AM): NB 61.2 SB 33 EB 340 WB 0  
 RTOR/Overlap (PM): NB 142 SB 70 EB 491 WB 0

Signal Phases	4				5				6					
	Movement	Volume	Lane Use Factor	Opposing Lefts	Movement	Volume	Lane Use Factor	Opposing Lefts	Phase	Movement	Volume	Lane Use Factor	Opposing Lefts	
EB	R	269	1.00	102	T	438	0.55	241	EB	T	438	0.55	241	
WB	TR	84	0.55	33	TR	411	0.55	226	WB	TR	411	0.55	226	
NB	R	436	1.00	33	R	583	1.00	583	NB	R	583	1.00	583	
SB	T	356	0.55	0	T	461	0.55	254	SB	T	461	0.55	254	
SUM												962	A	
SUM												1220	C	

**New Cultural Center**  
**Critical Lane Volume**  
**Level of Service Calculations**

Intersection: 8: Broken Land Parkway/Hickory Ridge Road  
 County, State: Howard County, Maryland  
 Scenario/Design Year: Total Future  
 Computed by: JAS

**WELLS & ASSOCIATES, INC.**  
 TRANSPORTATION, TRAFFIC AND PARKING CONSULTANTS  
 1420 ...  
 Phone: (703)917-4620 Fax: (703)917-0739



Intersection Control: Signal:  X  
 Split:  X  
 # of Phases: \_\_\_\_\_  
 Cycle Length: \_\_\_\_\_ sec.

RTOR/Overlap (AM): NB 133 SB 0 EB 0 WB 79  
 RTOR/Overlap (PM): NB 275 SB 0 EB 0 WB 171

Signal Phases	2		3		4		5		6	
	Phase	Movement	Volume	Lane Use Factor	Opposing Lefts	Lane Use Factor	Volume	Phase	Movement	Volume
EB	TL	156	0.60	94	0	1.00	232	EB	TL	232
WB	TL	316	0.45	142	0	1.00	666	WB	TL	666
NB	T	1479	0.40	592	79	1.00	2153	NB	T	2153
SB	TR	1012	0.40	405	572	0.60	1347	SB	TR	1347
SUM										984
SUM										1353

Number of Lanes	Lane Use Factor	Critical Lane Volume	Opposing Lefts	Lane Use Factor	Lane Volume	Opposing Volume	Critical Lane Volume
1	1.00	A ≤ 1,000					
2	0.55	B ≤ 1,150					
3	0.40	C ≤ 1,300					
4	0.30	D ≤ 1,450					
2 left	0.60	E ≤ 1,600					
		F > 1,600					
SUM							1353
SUM							D



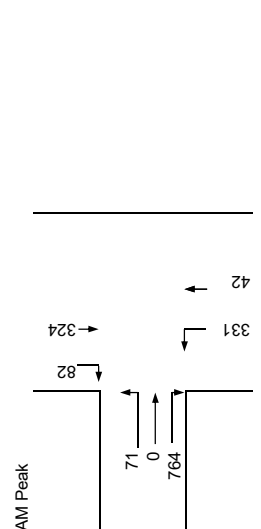
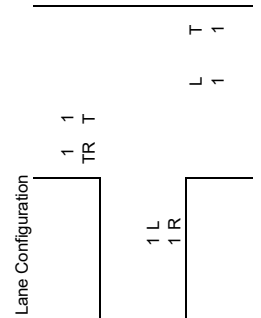
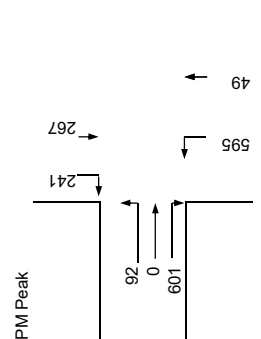




**New Cultural Center  
Critical Lane Volume  
Level of Service Calculations**

Intersection: 27: Crescent West/ Hickory Ridge Road Extended  
County, State: Howard County, Maryland  
Scenario/Design Year: Total Future  
Computed by: JAS

WELLS & ASSOCIATES, INC.  
TRANSPORTATION, TRAFFIC, AND PARKING CONSULTANTS  
1420 Spring Hill Road, Suite 610, Tysons, Virginia 22102  
Phone: (703)917-4020 Facsimile: (703)917-2038



Intersection Control: Signal: X  
Split: \_\_\_\_\_  
# of Phases: \_\_\_\_\_  
Cycle Length: \_\_\_\_\_ sec.

Stop: \_\_\_\_\_  
Ways: \_\_\_\_\_

RTOR/Overlap (AM): NB 0 SB 0 EB 331 WB \_\_\_\_\_  
RTOR/Overlap (PM): NB 0 SB 0 EB 595 WB \_\_\_\_\_

Signal Phases	1	2	3	4	5	6
Phase	EB	R	L	TR	NB	SB
Movement						
Volume	433	433	331	331	595	595
Lane Use Factor	1.00	1.00	0.55	1.00	0.55	1.00
Lane Volume	433	433	331	331	595	595
Opposing Lefts	0	0	0	331	331	595
Opposing Volume	0	0	0	331	331	595
Critical Lane Volume	433	433	331	554	554	874
SUM			987			966

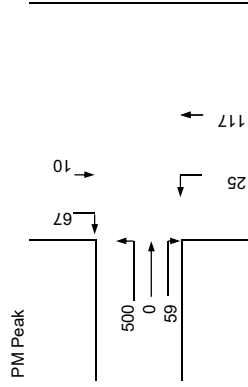
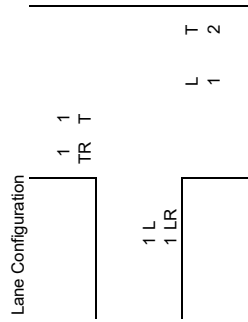
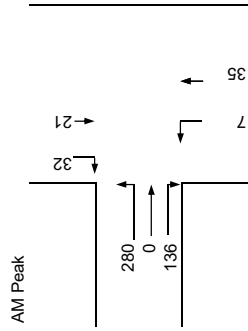
Number of Lanes	1	2	3	4	5	6
1	1	2	3	4	5	6
2	2	3	4	5	6	7
3	3	4	5	6	7	8
4	4	5	6	7	8	9
2 left	2	3	4	5	6	7
Critical Lane Volume	A ≤ 1,000	B ≤ 1,150	C ≤ 1,300	D ≤ 1,450	E ≤ 1,600	F > 1,600



**New Cultural Center  
Critical Lane Volume  
Level of Service Calculations**

Intersection: 32: Merriweather Drive/North-South Connector  
County, State: Howard County, Maryland  
Scenario/Design Year: **Total Future**  
Computed by: JAS

**WELLS & ASSOCIATES, INC.**  
TRANSPORTATION, TRAFFIC, AND PARKING CONSULTANTS  
1420 Spring Hill Road, Suite 610, Tysons, Virginia 22102  
Phone: (703)977-6620 Fax: (703)977-0739



Intersection Control: Signal:   X    
Split:             
# of Phases:             
Cycle Length:        sec.

Stop:             
Ways:             
RTOR/Overlap (AM): NB 0 SB 0 EB 0 WB 0  
RTOR/Overlap (PM): NB 0 SB 0 EB 0 WB 0

**Signal Phases**

Phase	Movement	Volume	Lane Use Factor	Lane Volume	Opposing Lefts	Lane Use Factor	Volume	Movement	Phase	Critical Lane Volume *
EB	LR	416	0.60	250	0	0.00	250	LR	EB	250
WB	TR	35	0.55	19	0	0.00	19	T	NB	19
SB	TR	53	0.55	29	7	1.00	36	TR	SB	36
							SUM			286

Number of Lanes	Lane Use Factor	Critical Lane Volume
1	1.00	A ≤ 1,000
2	0.55	B ≤ 1,150
3	0.40	C ≤ 1,300
4	0.30	D ≤ 1,450
2 left	0.60	E ≤ 1,600
		F > 1,600

Phase	Movement	Volume	Lane Use Factor	Lane Volume	Opposing Lefts	Lane Use Factor	Volume	Movement	Phase	Critical Lane Volume *
EB	LR	559	0.60	335	0	0.00	335	LR	EB	335
WB	T	117	0.55	64	0	0.00	64	T	NB	64
SB	TR	77	0.55	42	25	1.00	67	TR	SB	67
							SUM			402





# HCM Unsignalized Intersection Capacity Analysis

## 22: Crescent West & Little Patuxent Parkway

TF AM



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	86	588	130	279	152	73	0	0	130	0	0	9
Future Volume (Veh/h)	86	588	130	279	152	73	0	0	130	0	0	9
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	93	639	141	303	165	79	0	0	141	0	0	10
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (ft)		613			849							
pX, platoon unblocked				0.97			0.97	0.97	0.97	0.97	0.97	0.97
vC, conflicting volume	244			780			1594	1746	390	1457	1776	122
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	244			718			1555	1710	317	1414	1742	122
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	93			65			100	100	79	100	100	99
cM capacity (veh/h)	1319			855			51	52	660	51	50	906

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1	SB 1
Volume Total	93	426	354	303	110	134	141	10
Volume Left	93	0	0	303	0	0	0	0
Volume Right	0	0	141	0	0	79	141	10
cSH	1319	1700	1700	855	1700	1700	660	906
Volume to Capacity	0.07	0.25	0.21	0.35	0.06	0.08	0.21	0.01
Queue Length 95th (ft)	6	0	0	40	0	0	20	1
Control Delay (s)	7.9	0.0	0.0	11.5	0.0	0.0	11.9	9.0
Lane LOS	A			B			B	A
Approach Delay (s)	0.8			6.4			11.9	9.0
Approach LOS							B	A

Intersection Summary		
Average Delay		3.8
Intersection Capacity Utilization	42.5%	ICU Level of Service
Analysis Period (min)	15	A

# HCM Unsignalized Intersection Capacity Analysis

## 25: Broken Land Parkway & Area 1 South Driveway




















TF AM



Movement	WBL	WBR	NBT	NBR	SBL	SBT	
Lane Configurations		↗	↕↕↕↕			↕↕↕	
Traffic Volume (veh/h)	0	32	1457	233	0	1126	
Future Volume (Veh/h)	0	32	1457	233	0	1126	
Sign Control	Stop		Free			Free	
Grade	0%		0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	
Hourly flow rate (vph)	0	35	1584	253	0	1224	
Pedestrians							
Lane Width (ft)							
Walking Speed (ft/s)							
Percent Blockage							
Right turn flare (veh)							
Median type			None			None	
Median storage (veh)							
Upstream signal (ft)			1240			586	
pX, platoon unblocked	0.76	0.76			0.76		
vC, conflicting volume	2118	654			1837		
vC1, stage 1 conf vol							
vC2, stage 2 conf vol							
vCu, unblocked vol	1356	0			985		
tC, single (s)	6.8	6.9			4.1		
tC, 2 stage (s)							
tF (s)	3.5	3.3			2.2		
p0 queue free %	100	96			100		
cM capacity (veh/h)	106	821			528		
Direction, Lane #	WB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3
Volume Total	35	634	634	570	408	408	408
Volume Left	0	0	0	0	0	0	0
Volume Right	35	0	0	253	0	0	0
cSH	821	1700	1700	1700	1700	1700	1700
Volume to Capacity	0.04	0.37	0.37	0.34	0.24	0.24	0.24
Queue Length 95th (ft)	3	0	0	0	0	0	0
Control Delay (s)	9.6	0.0	0.0	0.0	0.0	0.0	0.0
Lane LOS	A						
Approach Delay (s)	9.6	0.0			0.0		
Approach LOS	A						
Intersection Summary							
Average Delay			0.1				
Intersection Capacity Utilization			43.3%		ICU Level of Service		A
Analysis Period (min)			15				

HCM Unsignalized Intersection Capacity Analysis  
 29: Crescent West & Area 1 South Driveway

TF AM

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	18	0	31	2	0	4	0	109	4	2	353	54
Future Volume (Veh/h)	18	0	31	2	0	4	0	109	4	2	353	54
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	20	0	34	2	0	4	0	118	4	2	384	59
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage (veh)												
Upstream signal (ft)								841				
pX, platoon unblocked												
vC, conflicting volume	480	540	222	350	567	61	443			122		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	480	540	222	350	567	61	443			122		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	96	100	96	100	100	100	100			100		
cM capacity (veh/h)	466	447	782	554	431	991	1113			1463		
Direction, Lane #	EB 1	EB 2	WB 1	NB 1	NB 2	SB 1	SB 2					
Volume Total	20	34	6	59	63	194	251					
Volume Left	20	0	2	0	0	2	0					
Volume Right	0	34	4	0	4	0	59					
cSH	466	782	785	1113	1700	1463	1700					
Volume to Capacity	0.04	0.04	0.01	0.00	0.04	0.00	0.15					
Queue Length 95th (ft)	3	3	1	0	0	0	0					
Control Delay (s)	13.1	9.8	9.6	0.0	0.0	0.1	0.0					
Lane LOS	B	A	A			A						
Approach Delay (s)	11.0		9.6	0.0		0.0						
Approach LOS	B		A									
Intersection Summary												
Average Delay			1.1									
Intersection Capacity Utilization			22.9%	ICU Level of Service	A							
Analysis Period (min)			15									

HCM Unsignalized Intersection Capacity Analysis  
 31: North South Connector & Area 3 South Driveway 1

TF AM

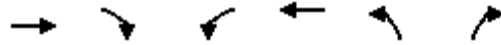


Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↖			↑	↓↗	
Traffic Volume (veh/h)	41	0	0	1	0	157
Future Volume (Veh/h)	41	0	0	1	0	157
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	45	0	0	1	0	171
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage (veh)						
Upstream signal (ft)						452
pX, platoon unblocked						
vC, conflicting volume	86	86	171			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	86	86	171			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	95	100	100			
cM capacity (veh/h)	905	956	1404			
Direction, Lane #	EB 1	NB 1	SB 1	SB 2		
Volume Total	45	1	0	171		
Volume Left	45	0	0	0		
Volume Right	0	0	0	171		
cSH	905	1700	1700	1700		
Volume to Capacity	0.05	0.00	0.00	0.10		
Queue Length 95th (ft)	4	0	0	0		
Control Delay (s)	9.2	0.0	0.0	0.0		
Lane LOS	A					
Approach Delay (s)	9.2	0.0	0.0			
Approach LOS	A					
Intersection Summary						
Average Delay			1.9			
Intersection Capacity Utilization			15.1%	ICU Level of Service	A	
Analysis Period (min)			15			

# HCM Unsignalized Intersection Capacity Analysis

## 34: Area 3 East Driveway & Crescent West

TF AM



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑		↙	↑	↙	↗
Traffic Volume (veh/h)	298	293	6	33	147	118
Future Volume (Veh/h)	298	293	6	33	147	118
Sign Control	Free		Free		Stop	
Grade	0%		0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	324	318	7	36	160	128
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None		None			
Median storage (veh)						
Upstream signal (ft)	435		533			
pX, platoon unblocked						
vC, conflicting volume			642		533	321
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			642		533	321
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			99		66	81
cM capacity (veh/h)			939		473	675
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	NB 2
Volume Total	216	426	7	36	160	128
Volume Left	0	0	7	0	160	0
Volume Right	0	318	0	0	0	128
cSH	1700	1700	939	1700	473	675
Volume to Capacity	0.13	0.25	0.01	0.02	0.34	0.19
Queue Length 95th (ft)	0	0	1	0	37	17
Control Delay (s)	0.0	0.0	8.9	0.0	16.4	11.6
Lane LOS			A		C	B
Approach Delay (s)	0.0		1.4		14.3	
Approach LOS	B					
Intersection Summary						
Average Delay			4.3			
Intersection Capacity Utilization			32.5%		ICU Level of Service	A
Analysis Period (min)	15					

HCM Unsignalized Intersection Capacity Analysis  
 40: North South Connector & Area 3 South Driveway 2

TF AM

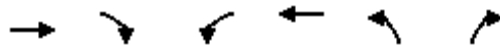


Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↶			↑	↓	↷
Traffic Volume (veh/h)	1	0	0	0	0	0
Future Volume (Veh/h)	1	0	0	0	0	0
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	1	0	0	0	0	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage (veh)						
Upstream signal (ft)					625	
pX, platoon unblocked						
vC, conflicting volume	0	0	0			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	0	0	0			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	100	100			
cM capacity (veh/h)	1023	1085	1623			
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>SB 1</b>				
Volume Total	1	0				
Volume Left	1	0				
Volume Right	0	0				
cSH	1023	1700				
Volume to Capacity	0.00	0.00				
Queue Length 95th (ft)	0	0				
Control Delay (s)	8.5	0.0				
Lane LOS	A					
Approach Delay (s)	8.5	0.0				
Approach LOS	A					
<b>Intersection Summary</b>						
Average Delay			8.5			
Intersection Capacity Utilization			6.7%	ICU Level of Service		A
Analysis Period (min)			15			

# HCM Unsignalized Intersection Capacity Analysis

## 41: West Driveway & Crescent West

TF AM



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑			↑↑		↗
Traffic Volume (veh/h)	945	142	0	373	0	18
Future Volume (Veh/h)	945	142	0	373	0	18
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	1027	154	0	405	0	20
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (ft)	153			240		
pX, platoon unblocked	0.95			0.95	0.95	
vC, conflicting volume	1181			1306	590	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1082			1214	459	
tC, single (s)	4.1			6.8	6.9	
tC, 2 stage (s)						
tF (s)	2.2			3.5	3.3	
p0 queue free %	100			100	96	
cM capacity (veh/h)	607			165	520	
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	
Volume Total	685	496	202	202	20	
Volume Left	0	0	0	0	0	
Volume Right	0	154	0	0	20	
cSH	1700	1700	1700	1700	520	
Volume to Capacity	0.40	0.29	0.12	0.12	0.04	
Queue Length 95th (ft)	0	0	0	0	3	
Control Delay (s)	0.0	0.0	0.0	0.0	12.2	
Lane LOS						B
Approach Delay (s)	0.0		0.0		12.2	
Approach LOS						B
Intersection Summary						
Average Delay	0.2					
Intersection Capacity Utilization	40.6%			ICU Level of Service	A	
Analysis Period (min)	15					

# HCM Unsignalized Intersection Capacity Analysis

## 46: South Entrance Road & New Site Driveway

TF AM



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	35	44	8	637	344	18
Future Volume (Veh/h)	35	44	8	637	344	18
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	38	48	9	692	374	20
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage (veh)						
Upstream signal (ft)					517	
pX, platoon unblocked						
vC, conflicting volume	1094	384	394			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1094	384	394			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	84	93	99			
cM capacity (veh/h)	235	664	1165			
Direction, Lane #	EB 1	NB 1	NB 2	SB 1		
Volume Total	86	9	692	394		
Volume Left	38	9	0	0		
Volume Right	48	0	0	20		
cSH	367	1165	1700	1700		
Volume to Capacity	0.23	0.01	0.41	0.23		
Queue Length 95th (ft)	22	1	0	0		
Control Delay (s)	17.8	8.1	0.0	0.0		
Lane LOS	C	A				
Approach Delay (s)	17.8	0.1		0.0		
Approach LOS	C					
Intersection Summary						
Average Delay			1.4			
Intersection Capacity Utilization			44.8%	ICU Level of Service		A
Analysis Period (min)			15			

# HCM Unsignalized Intersection Capacity Analysis

## 22: Crescent West & Little Patuxent Parkway

TF PM



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	1073	175	231	682	10	0	0	194	0	0	75
Future Volume (Veh/h)	0	1073	175	231	682	10	0	0	194	0	0	75
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	1166	190	251	741	11	0	0	211	0	0	82
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (ft)		613			849							
pX, platoon unblocked				0.90			0.90	0.90	0.90	0.90	0.90	0.90
vC, conflicting volume	752			1356			2216	2515	678	2042	2604	376
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	752			1167			2125	2459	411	1932	2559	376
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			53			100	100	60	100	100	87
cM capacity (veh/h)	853			533			14	14	529	14	12	622
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1	SB 1				
Volume Total	0	777	579	251	494	258	211	82				
Volume Left	0	0	0	251	0	0	0	0				
Volume Right	0	0	190	0	0	11	211	82				
cSH	1700	1700	1700	533	1700	1700	529	622				
Volume to Capacity	0.00	0.46	0.34	0.47	0.29	0.15	0.40	0.13				
Queue Length 95th (ft)	0	0	0	62	0	0	47	11				
Control Delay (s)	0.0	0.0	0.0	17.6	0.0	0.0	16.2	11.7				
Lane LOS				C			C	B				
Approach Delay (s)	0.0			4.4			16.2	11.7				
Approach LOS							C	B				
Intersection Summary												
Average Delay			3.3									
Intersection Capacity Utilization		54.7%		ICU Level of Service	A							
Analysis Period (min)		15										

HCM Unsignalized Intersection Capacity Analysis  
 25: Broken Land Parkway & Area 1 South Driveway

TF PM





















Movement	WBL	WBR	NBT	NBR	SBL	SBT	
Lane Configurations		↗	↑↑↑			↑↑↑	
Traffic Volume (veh/h)	0	121	2494	70	0	1463	
Future Volume (Veh/h)	0	121	2494	70	0	1463	
Sign Control	Stop		Free			Free	
Grade	0%		0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	
Hourly flow rate (vph)	0	132	2711	76	0	1590	
Pedestrians							
Lane Width (ft)							
Walking Speed (ft/s)							
Percent Blockage							
Right turn flare (veh)							
Median type							
Median storage (veh)							
Upstream signal (ft)							
pX, platoon unblocked	0.79	0.77			0.77		
vC, conflicting volume	3279	942			2787		
vC1, stage 1 conf vol							
vC2, stage 2 conf vol							
vCu, unblocked vol	2531	0			2265		
tC, single (s)	6.8	6.9			4.1		
tC, 2 stage (s)							
tF (s)	3.5	3.3			2.2		
p0 queue free %	100	84			100		
cM capacity (veh/h)	18	831			171		
Direction, Lane #	WB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3
Volume Total	132	1084	1084	618	530	530	530
Volume Left	0	0	0	0	0	0	0
Volume Right	132	0	0	76	0	0	0
cSH	831	1700	1700	1700	1700	1700	1700
Volume to Capacity	0.16	0.64	0.64	0.36	0.31	0.31	0.31
Queue Length 95th (ft)	14	0	0	0	0	0	0
Control Delay (s)	10.1	0.0	0.0	0.0	0.0	0.0	0.0
Lane LOS							
Approach Delay (s)	10.1	0.0			0.0		
Approach LOS							
Intersection Summary							
Average Delay							
Intersection Capacity Utilization							
Analysis Period (min)							
0.3							
63.9%							
ICU Level of Service							
15							
B							

# HCM Unsignalized Intersection Capacity Analysis

## 29: Crescent West & Area 1 South Driveway

TF PM

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	66	0	118	7	0	1	0	126	15	7	383	16
Future Volume (Veh/h)	66	0	118	7	0	1	0	126	15	7	383	16
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	72	0	128	8	0	1	0	137	16	8	416	17
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage (veh)												
Upstream signal (ft)								841				
pX, platoon unblocked												
vC, conflicting volume	510	594	216	497	594	76	433			153		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	510	594	216	497	594	76	433			153		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	84	100	84	98	100	100	100			99		
cM capacity (veh/h)	444	414	788	380	414	969	1123			1425		
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>EB 2</b>	<b>WB 1</b>	<b>NB 1</b>	<b>NB 2</b>	<b>SB 1</b>	<b>SB 2</b>					
Volume Total	72	128	9	68	84	216	225					
Volume Left	72	0	8	0	0	8	0					
Volume Right	0	128	1	0	16	0	17					
cSH	444	788	408	1123	1700	1425	1700					
Volume to Capacity	0.16	0.16	0.02	0.00	0.05	0.01	0.13					
Queue Length 95th (ft)	14	14	2	0	0	0	0					
Control Delay (s)	14.7	10.5	14.0	0.0	0.0	0.3	0.0					
Lane LOS	B	B	B			A						
Approach Delay (s)	12.0		14.0	0.0		0.2						
Approach LOS	B		B									
<b>Intersection Summary</b>												
Average Delay			3.2									
Intersection Capacity Utilization			30.1%		ICU Level of Service					A		
Analysis Period (min)			15									

# HCM Unsignalized Intersection Capacity Analysis

## 31: North South Connector & North Driveway

TF PM

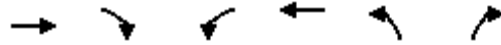


Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↶			↑	↑↑	
Traffic Volume (veh/h)	140	0	0	2	2	68
Future Volume (Veh/h)	140	0	0	2	2	68
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	152	0	0	2	2	74
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage (veh)						
Upstream signal (ft)					429	
pX, platoon unblocked						
vC, conflicting volume	41	38	76			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	41	38	76			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	84	100	100			
cM capacity (veh/h)	965	1026	1521			
Direction, Lane #	EB 1	NB 1	SB 1	SB 2		
Volume Total	152	2	1	75		
Volume Left	152	0	0	0		
Volume Right	0	0	0	74		
cSH	965	1700	1700	1700		
Volume to Capacity	0.16	0.00	0.00	0.04		
Queue Length 95th (ft)	14	0	0	0		
Control Delay (s)	9.4	0.0	0.0	0.0		
Lane LOS	A					
Approach Delay (s)	9.4	0.0	0.0			
Approach LOS	A					
Intersection Summary						
Average Delay			6.2			
Intersection Capacity Utilization		17.8%		ICU Level of Service		A
Analysis Period (min)			15			

# HCM Unsignalized Intersection Capacity Analysis

## 34: Area 3 East Driveway & Crescent West

TF PM



Movement	EBT	EBR	WBL	WBT	NBL	NBR	
Lane Configurations	↑↑		↵	↑↑	↵	↵	
Traffic Volume (veh/h)	374	219	7	84	242	186	
Future Volume (Veh/h)	374	219	7	84	242	186	
Sign Control	Free			Free	Stop		
Grade	0%			0%	0%		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	
Hourly flow rate (vph)	407	238	8	91	263	202	
Pedestrians							
Lane Width (ft)							
Walking Speed (ft/s)							
Percent Blockage							
Right turn flare (veh)							
Median type	None			None			
Median storage (veh)							
Upstream signal (ft)	449			505			
pX, platoon unblocked			0.85		0.85	0.85	
vC, conflicting volume			645		588	322	
vC1, stage 1 conf vol							
vC2, stage 2 conf vol							
vCu, unblocked vol			224		156	0	
tC, single (s)			4.1		6.8	6.9	
tC, 2 stage (s)							
tF (s)			2.2		3.5	3.3	
p0 queue free %			99		62	78	
cM capacity (veh/h)			1139		691	920	
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	WB 3	NB 1	NB 2
Volume Total	271	374	8	46	46	263	202
Volume Left	0	0	8	0	0	263	0
Volume Right	0	238	0	0	0	0	202
cSH	1700	1700	1139	1700	1700	691	920
Volume to Capacity	0.16	0.22	0.01	0.03	0.03	0.38	0.22
Queue Length 95th (ft)	0	0	1	0	0	45	21
Control Delay (s)	0.0	0.0	8.2	0.0	0.0	13.4	10.0
Lane LOS			A			B	B
Approach Delay (s)	0.0		0.7			11.9	
Approach LOS						B	
Intersection Summary							
Average Delay			4.6				
Intersection Capacity Utilization			37.4%	ICU Level of Service		A	
Analysis Period (min)			15				

# HCM Unsignalized Intersection Capacity Analysis

## 40: South Driveway & North South Connector

TF PM

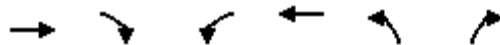


Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↖					↘
Traffic Volume (veh/h)	2	0	0	0	0	2
Future Volume (Veh/h)	2	0	0	0	0	2
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	2	0	0	0	0	2
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage (veh)						
Upstream signal (ft)					615	
pX, platoon unblocked						
vC, conflicting volume	0	0	2			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	0	0	2			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	100	100			
cM capacity (veh/h)	1023	1085	1620			
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>SB 1</b>				
Volume Total	2	2				
Volume Left	2	0				
Volume Right	0	2				
cSH	1023	1700				
Volume to Capacity	0.00	0.00				
Queue Length 95th (ft)	0	0				
Control Delay (s)	8.5	0.0				
Lane LOS	A					
Approach Delay (s)	8.5	0.0				
Approach LOS	A					
<b>Intersection Summary</b>						
Average Delay			4.3			
Intersection Capacity Utilization			6.7%	ICU Level of Service		A
Analysis Period (min)			15			

# HCM Unsignalized Intersection Capacity Analysis

## 41: West Driveway & Crescent West

TF PM



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑			↑↑		↗
Traffic Volume (veh/h)	769	99	0	645	0	30
Future Volume (Veh/h)	769	99	0	645	0	30
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	836	108	0	701	0	33
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None		None			
Median storage veh						
Upstream signal (ft)	176			196		
pX, platoon unblocked					0.94	
vC, conflicting volume			944		1240	472
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			944		1120	472
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	94
cM capacity (veh/h)			722		188	538
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	
Volume Total	557	387	350	350	33	
Volume Left	0	0	0	0	0	
Volume Right	0	108	0	0	33	
cSH	1700	1700	1700	1700	538	
Volume to Capacity	0.33	0.23	0.21	0.21	0.06	
Queue Length 95th (ft)	0	0	0	0	5	
Control Delay (s)	0.0	0.0	0.0	0.0	12.1	
Lane LOS					B	
Approach Delay (s)	0.0		0.0		12.1	
Approach LOS					B	
Intersection Summary						
Average Delay			0.2			
Intersection Capacity Utilization			34.4%		ICU Level of Service	A
Analysis Period (min)	15					

# HCM Unsignalized Intersection Capacity Analysis

## 46: South Entrance Road

TF PM



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	45	42	70	301	789	141
Future Volume (Veh/h)	45	42	70	301	789	141
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	49	46	76	327	858	153
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh						
Upstream signal (ft)					581	
pX, platoon unblocked						
vC, conflicting volume	1414	934	1011			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1414	934	1011			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	64	86	89			
cM capacity (veh/h)	135	322	686			
Direction, Lane #	EB 1	EB 2	NB 1	NB 2	SB 1	
Volume Total	49	46	76	327	1011	
Volume Left	49	0	76	0	0	
Volume Right	0	46	0	0	153	
cSH	135	322	686	1700	1700	
Volume to Capacity	0.36	0.14	0.11	0.19	0.59	
Queue Length 95th (ft)	38	12	9	0	0	
Control Delay (s)	46.2	18.0	10.9	0.0	0.0	
Lane LOS	E	C	B			
Approach Delay (s)	32.5		2.1		0.0	
Approach LOS	D					
Intersection Summary						
Average Delay			2.6			
Intersection Capacity Utilization			67.3%	ICU Level of Service	C	
Analysis Period (min)			15			

## **APPENDIX N**

### **TOTAL FUTURE QUEUEING INFORMATION**



**Table N-1**  
**Total Future Queue Calculations**  
**APFO Methodology**

Movement	Volume	LUF	Vehicle Length	Surge Factor	Sum	Cycle Length	Cycle/Hr.	Critical Gap	Average Gap	Queue	Available Storage	Difference
7: Broken Land Parkway/Little Patuxent Parkway - Signalized												
AM EBL	33	1.00	25	1.4	1155	90	40.0	NA	NA	29	150	121
PM EBL	70	1.00	25	1.4	2450	100	36.0	NA	NA	68	150	82
AM EBT	337	0.55	25	1.4	6487	90	40.0	NA	NA	162	840	678
PM EBT	438	0.55	25	1.4	8432	100	36.0	NA	NA	234	840	606
AM WBL	102	0.60	25	1.4	2142	90	40.0	NA	NA	54	290	236
PM WBL	236	0.60	25	1.4	4956	100	36.0	NA	NA	138	290	152
AM WBTR	84	0.55	25	1.4	1617	90	40.0	NA	NA	40	1040	1000
PM WBTR	411	0.55	25	1.4	7912	100	36.0	NA	NA	220	1040	820
AM NBL	567	0.60	25	1.4	11907	90	40.0	NA	NA	298	475	177
PM NBL	819	0.60	25	1.4	17199	100	36.0	NA	NA	478	475	(3)
AM NBT	345	0.55	25	1.4	6641	90	40.0	NA	NA	166	1320	1154
PM NBT	961	0.55	25	1.4	18499	100	36.0	NA	NA	514	1320	806
AM SBL	25	1.00	25	1.4	875	90	40.0	NA	NA	22	150	128
PM SBL	45	1.00	25	1.4	1575	100	36.0	NA	NA	44	150	106
AM SBT	353	0.55	25	1.4	6795	90	40.0	NA	NA	170	360	190
PM SBT	461	0.55	25	1.4	8874	100	36.0	NA	NA	247	360	113
8: Broken Land Parkway/Hickory Ridge Road - Signalized												
AM EBL	112	0.60	25	1.4	2352	96	37.5	NA	NA	63	464	401
PM EBL	201	0.60	25	1.4	4221	120	30.0	NA	NA	141	464	323
AM WBLT	316	0.45	25	1.4	4977	96	37.5	NA	NA	133	560	427
PM WBLT	666	0.45	25	1.4	10490	120	30.0	NA	NA	350	560	210
AM NBL	572	0.60	25	1.4	12012	96	37.5	NA	NA	320	700	380
PM NBL	583	0.60	25	1.4	12243	120	30.0	NA	NA	408	700	292
AM NBT	1479	0.30	25	1.4	15530	96	37.5	NA	NA	414	800	386
PM NBT	2153	0.30	25	1.4	22607	120	30.0	NA	NA	754	800	46
AM SBL	79	1.00	25	1.4	2765	96	37.5	NA	NA	74	350	276
PM SBL	53	1.00	25	1.4	1855	120	30.0	NA	NA	62	350	288
AM SBTR	1012	0.40	25	1.4	14168	96	37.5	NA	NA	378	1320	942
PM SBTR	1347	0.40	25	1.4	18858	120	30.0	NA	NA	629	1320	691
9: Mall Access Road/Little Patuxent Parkway - Signalized												
AM EBL	139	1.00	25	1.4	4865	96	37.5	NA	NA	174	160	(14)
PM EBL	239	1.00	25	1.4	8365	100	36.0	NA	NA	299	160	(139)
AM EBT	536	0.55	25	1.4	10318	96	37.5	NA	NA	369	672	304
PM EBT	1117	0.55	25	1.4	21502	100	36.0	NA	NA	768	672	(96)
AM WBT	567	0.55	25	1.4	10915	96	37.5	NA	NA	390	480	90
PM WBT	687	0.55	25	1.4	13225	100	36.0	NA	NA	472	480	8
AM SBL	81	1.00	25	1.4	2835	96	37.5	NA	NA	101	135	34
PM SBL	88	1.00	25	1.4	3080	100	36.0	NA	NA	110	135	25

Table N-2

Total Future Queue Calculations  
APFO Methodology

Movement	Volume	LUF	Vehicle Length	Surge Factor	Sum	Cycle Length	Cycle/Hr.	Critical Gap	Average Gap	Queue	Available Storage	Difference
<b>I0: Little Patuxent Parkway/South Entrance Road - Signalized</b>												
AM	EBTR	654	0.55	25	1.4	12590	80	45.0	NA	280	480	200
PM	EBTR	1240	0.55	25	1.4	23870	100	36.0	NA	663	480	(183)
AM	WBL	151	0.60	25	1.4	3171	80	45.0	NA	70	250	180
PM	WBL	459	0.60	25	1.4	9639	100	36.0	NA	268	250	(18)
AM	WBT	259	0.55	25	1.4	4986	80	45.0	NA	111	496	385
PM	WBT	362	0.55	25	1.4	6969	100	36.0	NA	194	496	302
AM	NBL	390	0.60	25	1.4	8190	80	45.0	NA	182	225	43
PM	NBL	396	0.60	25	1.4	8316	100	36.0	NA	231	225	(6)
<b>I1: Little Patuxent Parkway/Moore Road - Signalized</b>												
AM	EBLT	79	0.60	25	1.4	1659	80	45.0	NA	37	120	83
PM	EBLT	644	0.60	25	1.4	13524	100	36.0	NA	376	120	(256)
AM	WBLTR	41	1.00	25	1.4	1435	80	45.0	NA	32	240	208
PM	WBLTR	173	1.00	25	1.4	6055	100	36.0	NA	168	240	72
AM	NBL	105	1.00	25	1.4	3675	80	45.0	NA	82	100	18
PM	NBL	245	1.00	25	1.4	8575	100	36.0	NA	238	100	(138)
AM	NBTR	714	0.55	25	1.4	13745	80	45.0	NA	305	216	(89)
PM	NBTR	1317	0.55	25	1.4	25352	100	36.0	NA	704	216	(488)
AM	SBL	4	1.00	25	1.4	140	80	45.0	NA	3	270	267
PM	SBL	23	1.00	25	1.4	805	100	36.0	NA	22	270	248
AM	SBTR	527	0.55	25	1.4	10145	80	45.0	NA	225	360	135
PM	SBTR	822	0.55	25	1.4	15824	100	36.0	NA	440	360	(80)
<b>22: Merriweather Drive/Little Patuxent Parkway - Unsignalized</b>												
AM	EBL	86	1.00	25	1.4	3010	10	360.0	6.0	8	215	207
PM	EBL	0	1.00	25	1.4	0	10	360.0	6.0	0	215	215
AM	WBL	279	1.00	25	1.4	9765	10	378.9	5.5	13	250	224
PM	WBL	231	1.00	25	1.4	8085	10	378.9	5.5	16	250	229
AM	NBR	130	1.00	25	1.4	4550	9	400.0	5.0	28	360	349
PM	NBR	194	1.00	25	1.4	6790	9	400.0	5.0	19	360	343
<b>25: Broken Land Parkway/Area I South Driveway - Unsignalized</b>												
AM	WBR	32	1.00	25	1.4	1120	9	400.0	5.0	113	150	147
PM	WBR	121	1.00	25	1.4	4235	9	400.0	5.0	30	150	139

Table N-3

Total Future Queue Calculations  
APFO Methodology

Movement	Volume	LUF	Vehicle Length	Surge Factor	Sum	Cycle Length	Cycle/Hr.	Critical Gap	Average Gap	Queue	Available Storage	Difference
<b>27: Merriweather Drive/Hickory Ridge Road Extended - Signalized</b>												
AM EBL	71	1.00	25	1.4	2485	80	45.0	NA	NA	55	680	625
PM EBL	92	1.00	25	1.4	3220	100	36.0	NA	NA	89	680	591
AM EBR	764	1.00	25	1.4	26740	80	45.0	NA	NA	594	680	86
PM EBR	601	1.00	25	1.4	21035	100	36.0	NA	NA	584	680	96
AM NBL	331	1.00	25	1.4	11585	100	36.0	NA	NA	322	320	(2)
PM* NBL	595	1.00	25	1.4	20825	100	36.0	NA	NA	578	320	(258)
AM NBT	42	1.00	25	1.4	1470	100	36.0	NA	NA	41	320	279
PM NBT	49	1.00	25	1.4	1715	100	36.0	NA	NA	48	320	272
* See simulated results												
<b>29: Merriweather Drive/Area 1 South Driveway - Unsignalized</b>												
AM EBL	18	1.00	25	1.4	630	10	360.0	6.0	200	2	325	323
PM EBL	66	1.00	25	1.4	2310	10	360.0	6.0	55	6	325	319
AM EBR	31	1.00	25	1.4	1085	9	400.0	5.0	116	3	325	322
PM EBR	118	1.00	25	1.4	4130	9	400.0	5.0	31	10	325	315
AM WBLTR	25	1.00	25	1.4	875	10	378.9	5.5	144	2	325	323
PM WBLTR	8	1.00	25	1.4	280	10	378.9	5.5	450	1	325	324
<b>30: US 29 SB Ramp (North South Connector)/Broken Land Parkway - Signalized</b>												
AM NBL	608	0.60	25	1.4	12768	90	40.0	NA	NA	319	425	106
PM NBL	316	0.60	25	1.4	6636	120	30.0	NA	NA	221	425	204
<b>31: North South Connector/Area 3 South Driveway - Unsignalized</b>												
AM EBLR	41	1.00	25	1.4	1435	9	400.0	5.0	88	4	300	296
PM EBLR	140	1.00	25	1.4	4900	9	400.0	5.0	26	12	300	288
<b>32: North South Connector/Merriweather Drive - Signalized</b>												
AM EBLR	344	0.60	25	1.4	7224	100	36.0	NA	NA	201	320	119
PM EBLR	559	0.60	25	1.4	11739	110	32.7	NA	NA	359	320	(39)
AM NBL	7	1.00	25	1.4	245	100	36.0	NA	NA	7	350	343
PM NBL	25	1.00	25	1.4	875	110	32.7	NA	NA	27	350	323
<b>33: North South Connector/South Entrance Road - Signalized</b>												
AM WBR	672	1.00	25	1.4	23520	100	36.0	NA	NA	653	750	97
PM WBR	346	1.00	25	1.4	12110	110	32.7	NA	NA	370	750	380

Table N-4

Total Future Queue Calculations  
APFO Methodology

Movement	Volume	LUF	Vehicle Length	Surge Factor	Sum	Cycle Length	Cycle/Hr.	Critical Gap	Average Gap	Queue	Available Storage	Difference	
<b>34: Merriweather Drive/Area 3 East Driveway - Unsignalized</b>													
AM	NBL	147	1.00	25	1.4	5145	10	360.0	6.0	24	14	200	186
PM	NBL	242	1.00	25	1.4	8470	10	360.0	6.0	15	24	200	176
AM	NBR	118	1.00	25	1.4	4130	10	360.0	6.0	31	11	200	189
PM	NBR	186	1.00	25	1.4	6510	10	360.0	6.0	19	18	200	182
<b>35: Merriweather Drive/Area 3 West Driveway - Signalized</b>													
AM	NBL	204	0.60	25	1.4	4284	100	36.0	NA	NA	119	200	81
PM	NBL	325	0.60	25	1.4	6825	110	32.7	NA	NA	209	200	(9)
AM	WBL	11	0.60	25	1.4	231	100	36.0	NA	NA	6	280	274
PM	WBL	6	0.60	25	1.4	126	110	32.7	NA	NA	4	280	276
AM	WBT	169	0.60	25	1.4	3549	100	36.0	NA	NA	99	280	181
PM	WBT	320	0.60	25	1.4	6720	110	32.7	NA	NA	205	280	75
AM	EBTR	963	0.60	25	1.4	20223	100	36.0	NA	NA	562	320	(242)
PM	EBTR	799	0.60	25	1.4	16779	110	32.7	NA	NA	513	320	(193)
* See simulated results													
<b>41: Merriweather Drive/Area 3 Right-in/Right-out - Unsignalized</b>													
AM	NBR	18	1.00	25	1.4	630	9	400.0	5.0	200	2	150	148
PM	NBR	30	1.00	25	1.4	1050	9	400.0	5.0	120	3	150	147
<b>46: South Entrance Road/Site Driveway - Unsignalized</b>													
AM	EBLR	79	1.00	25	1.4	2765	11	342.9	6.5	46	8	50	42
PM	EBL	45	1.00	25	1.4	1575	11	342.9	6.5	80	5	50	45
PM	EBR	42	1.00	25	1.4	1470	10	378.9	5.5	86	4	50	46
AM	NBL	8	1.00	25	1.4	280	9	400.0	5.0	450	1	150	149
PM	NBL	70	1.00	25	1.4	2450	9	400.0	5.0	51	6	150	144

**Table N-5  
Simulated Queuing Results for Total Future Conditions - PM Peak Hour**

<b>27: Merriweather Drive/Hickory Ridge Road Extended - Signalized</b>					
	Upstream Queue	Queue at	Total	Link	Difference
Direction	Intersection 41	Intersection 27	Queue	Length	
NB	181 feet	125 feet	306 feet	400	94
<b>35: Merriweather Drive/Area 3 West Driveway - Signalized</b>					
	Upstream Queue	Queue at	Total	Link	Difference
Direction	Intersection 41	Intersection 35	Queue	Length	
EB	141 feet	192 feet	333 feet	400	67

See traffic simulation sheets. Queue includes intersection 41 right-in/right-out.

**7: Broken Land Parkway & Little Patuxent Parkway Performance by movement**

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Del/Veh (s)	3.1	0.9	3.1	0.0	0.0	0.0	0.0	0.0	0.0	5.4	10.5	8.0
Total Del/Veh (s)	53.9	29.9	12.7	53.3	24.6	24.2	43.2	38.2	24.8	44.4	52.1	15.9

**7: Broken Land Parkway & Little Patuxent Parkway Performance by movement**

Movement	All
Denied Del/Veh (s)	1.7
Total Del/Veh (s)	33.8

**8: Broken Land Parkway & Hickory Ridge Road Performance by movement**

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Del/Veh (s)	0.1	0.3	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Del/Veh (s)	61.6	65.4	3.3	44.7	3.3	19.9	45.2	14.4	4.6	61.2	40.1	40.8

**8: Broken Land Parkway & Hickory Ridge Road Performance by movement**

Movement	All
Denied Del/Veh (s)	0.0
Total Del/Veh (s)	24.3

**9: Little Patuxent Parkway & S. Mall Entr. Performance by movement**

Movement	EBL	EBT	WBT	WBR	SBL	SBR	All
Denied Del/Veh (s)	0.0	0.0	0.0	0.0	3.9	0.4	0.2
Total Del/Veh (s)	8.8	3.1	9.4	2.5	42.2	8.3	7.1

**10: North South Connector Road & Little Patuxent Parkway Performance by movement**

Movement	EBT	EBR	WBL	WBT	NBL	NBR	All
Denied Del/Veh (s)	0.3	0.7	0.0	0.0	0.5	0.1	0.2
Total Del/Veh (s)	57.4	61.8	21.0	5.2	37.6	16.4	33.3

**11: Little Patuxent Parkway & Mall Ring Road/Moore Road Performance by movement**

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Del/Veh (s)	1.5	1.7	3.1	0.2	0.2	0.3	0.0	0.0	0.0	1.4	0.3	0.3
Total Del/Veh (s)	50.3	58.0	21.8	78.2	64.1	64.0	71.6	17.4	16.5	84.7	37.2	15.9

**11: Little Patuxent Parkway & Mall Ring Road/Moore Road Performance by movement**

Movement	All
Denied Del/Veh (s)	0.6
Total Del/Veh (s)	34.0

**22: Crescent West & Little Patuxent Parkway Performance by movement**

Movement	EBT	EBR	WBL	WBT	WBR	NBR	SBR	All
Denied Del/Veh (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0
Total Del/Veh (s)	1.1	0.9	70.7	1.5	0.6	10.4	6.1	8.8

**25: Broken Land Parkway & Area 1 South Driveway Performance by movement**

Movement	WBT	WBR	NBT	NBR	SBT	All
Denied Del/Veh (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Del/Veh (s)	5.3	135.3	4.4	4.9	0.2	7.2

**27: Crescent West & Hickory Ridge Road Performance by movement**

Movement	EBL	EBT	EBR	NBL	NBT	SBT	SBR	All
Denied Del/Veh (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Del/Veh (s)	45.6	3.7	16.9	16.4	4.7	42.2	56.4	26.7

**29: Crescent West & Area 1 South Driveway Performance by movement**

Movement	EBL	EBT	EBR	WBL	WBR	NBT	NBR	SBL	SBT	SBR	All
Denied Del/Veh (s)	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0
Total Del/Veh (s)	9.6	0.6	4.8	5.5	1.9	0.2	0.1	2.7	1.1	0.6	2.1

**30: US 29 Off-Ramp & Broken Land Parkway Performance by movement**

Movement	EBT	WBT	NBL	All
Denied Del/Veh (s)	0.0	0.2	0.1	0.1
Total Del/Veh (s)	10.0	7.3	24.9	10.7

**31: North South Connector & North Driveway Performance by movement**

Movement	EBL	SBT	SBR	All
Denied Del/Veh (s)	0.2	0.0	0.0	0.1
Total Del/Veh (s)	4.6	1.0	0.6	3.3

**32: North South Connector/North South Connector Road & Crescent West Performance by movement**

Movement	EBL	EBT	EBR	NBL	NBT	SBT	SBR	All
Denied Del/Veh (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Del/Veh (s)	7.5	0.1	2.2	16.4	14.8	8.0	3.0	8.1

**33: North South Connector Road & South Entrance Road Performance by movement**

Movement	WBR	NBT	NBR	SBL	SBT	All
Denied Del/Veh (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Del/Veh (s)	4.2	6.9	9.0	24.2	0.5	12.1

**34: Area 3 East Driveway & Crescent West Performance by movement**

Movement	EBT	EBR	WBL	WBT	NBL	NBR	All
Denied Del/Veh (s)	0.0	0.0	0.0	0.0	0.2	0.2	0.1
Total Del/Veh (s)	1.9	2.7	4.3	0.8	13.8	4.9	4.9

**35: Area 3 West Driveway & Crescent West Performance by movement**

Movement	EBT	EBR	WBL	WBT	NBL	NBR	All
Denied Del/Veh (s)	0.0	0.0	0.0	0.0	0.3	0.2	0.1
Total Del/Veh (s)	15.3	10.3	23.4	22.8	25.2	9.3	17.5

**40: South Driveway & North South Connector Performance by movement**

Movement	SBR	All
Denied Del/Veh (s)	0.0	0.0
Total Del/Veh (s)	0.0	0.0

**41: West Driveway & Crescent West Performance by movement**

Movement	EBT	EBR	WBT	NBR	All
Denied Del/Veh (s)	0.0	0.0	0.0	0.1	0.0
Total Del/Veh (s)	3.5	1.6	11.2	22.0	6.4

**46: South Entrance Road Performance by movement**

Movement	EBL	EBR	NBL	NBT	SBT	SBR	All
Denied Del/Veh (s)	0.2	0.1	0.2	0.3	0.0	0.0	0.1
Total Del/Veh (s)	34.7	9.8	25.7	0.3	3.0	1.8	4.5

**Total Zone Performance**

Denied Del/Veh (s)	1.5
Total Del/Veh (s)	266.7

Queuing and Blocking Report  
PM Peak Hour

10/19/2016

Intersection: 7: Broken Land Parkway & Little Patuxent Parkway

Movement	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	NB
Directions Served	L	T	T	R	L	L	T	TR	L	L	T	T
Maximum Queue (ft)	92	196	192	268	166	168	197	197	279	280	335	312
Average Queue (ft)	26	108	73	91	79	108	102	120	223	251	269	270
95th Queue (ft)	62	180	153	198	143	157	170	186	296	314	345	331
Link Distance (ft)		451	451				256	256			280	280
Upstream Blk Time (%)									0	3	12	18
Queuing Penalty (veh)									0	0	105	163
Storage Bay Dist (ft)	250			400	275	275			475	475		
Storage Blk Time (%)									0	3	12	
Queuing Penalty (veh)									2	16	97	

Intersection: 7: Broken Land Parkway & Little Patuxent Parkway

Movement	NB	SB	SB	SB	SB
Directions Served	R	L	T	T	R
Maximum Queue (ft)	296	56	181	133	117
Average Queue (ft)	246	15	130	120	61
95th Queue (ft)	346	41	157	161	98
Link Distance (ft)	280		118	118	
Upstream Blk Time (%)	7		48	26	0
Queuing Penalty (veh)	60		0	0	0
Storage Bay Dist (ft)		170			200
Storage Blk Time (%)			48	26	0
Queuing Penalty (veh)			22	29	0

Queuing and Blocking Report  
PM Peak Hour

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Intersection: 8: Broken Land Parkway & Hickory Ridge Road

Movement	EB	EB	WB	WB	WB	WB	NB	NB	NB	NB	NB	NB
Directions Served	L	LT	L	L	L	TR	L	L	T	T	T	R
Maximum Queue (ft)	180	173	182	200	237	114	268	292	290	309	290	211
Average Queue (ft)	91	88	107	132	136	57	198	214	224	220	220	62
95th Queue (ft)	160	150	163	183	198	102	265	285	283	289	289	167
Link Distance (ft)	650	650	342	342	342	342	689	689	689	689	689	689
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)												
Storage Blk Time (%)												
Queuing Penalty (veh)												

Intersection: 8: Broken Land Parkway & Hickory Ridge Road

Movement	B69	B69	B69	B69	SB	SB	SB	SB
Directions Served	T	T	T	T	L	T	T	TR
Maximum Queue (ft)	464	537	625	479	114	343	369	389
Average Queue (ft)	76	182	182	16	46	247	282	298
95th Queue (ft)	355	579	644	158	91	326	365	388
Link Distance (ft)	464	464	464	464		493	493	493
Upstream Blk Time (%)	0	3	6	0				
Queuing Penalty (veh)	1	29	59	0				
Storage Bay Dist (ft)					330			
Storage Blk Time (%)						0		
Queuing Penalty (veh)						0		

Intersection: 9: Little Patuxent Parkway & S. Mall Entr.

Movement	EB	EB	EB	WB	WB	WB	SB	SB
Directions Served	L	T	T	T	T	R	L	R
Maximum Queue (ft)	132	117	181	246	249	54	118	140
Average Queue (ft)	58	50	75	79	73	19	49	62
95th Queue (ft)	99	105	137	171	162	48	90	99
Link Distance (ft)		387	387	625	625	625		383
Upstream Blk Time (%)								
Queuing Penalty (veh)								
Storage Bay Dist (ft)	200						340	
Storage Blk Time (%)								
Queuing Penalty (veh)								

Queuing and Blocking Report  
PM Peak Hour

10/19/2016

Intersection: 10: North South Connector Road & Little Patuxent Parkway

Movement	EB	EB	WB	WB	WB	WB	NB	NB	NB	NB
Directions Served	T	TR	L	L	T	T	L	L	R	R
Maximum Queue (ft)	492	543	259	116	92	92	182	176	251	261
Average Queue (ft)	353	385	149	31	44	46	109	105	122	102
95th Queue (ft)	470	517	251	74	85	78	179	171	204	184
Link Distance (ft)	625	625			568	568		550	550	
Upstream Blk Time (%)										
Queuing Penalty (veh)										
Storage Bay Dist (ft)			275	275			225			350
Storage Blk Time (%)			0							
Queuing Penalty (veh)			0							

Intersection: 11: Little Patuxent Parkway & Mall Ring Road/Moore Road

Movement	EB	EB	EB	WB	NB	NB	NB	SB	SB	SB
Directions Served	L	LT	R	LTR	L	T	TR	L	T	TR
Maximum Queue (ft)	225	755	225	334	150	501	480	74	331	270
Average Queue (ft)	191	363	174	155	133	194	187	28	220	180
95th Queue (ft)	265	621	290	278	172	379	361	68	324	291
Link Distance (ft)		859		663		568	568		1855	1855
Upstream Blk Time (%)										
Queuing Penalty (veh)										
Storage Bay Dist (ft)	200		200		125			250		
Storage Blk Time (%)	4	22	1		38	5			5	
Queuing Penalty (veh)	23	139	6		212	13			1	

Intersection: 22: Crescent West & Little Patuxent Parkway

Movement	EB	EB	WB	WB	WB	NB	SB
Directions Served	T	TR	L	T	TR	R	R
Maximum Queue (ft)	32	49	240	353	314	94	88
Average Queue (ft)	2	10	171	78	10	58	38
95th Queue (ft)	14	36	281	313	103	93	64
Link Distance (ft)	210	210		340	340	429	438
Upstream Blk Time (%)				5			
Queuing Penalty (veh)				25			
Storage Bay Dist (ft)				215			
Storage Blk Time (%)				20	0		
Queuing Penalty (veh)				70	0		

Queuing and Blocking Report  
PM Peak Hour

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Intersection: 25: Broken Land Parkway & Area 1 South Driveway

Movement	WB	NB	NB	NB
Directions Served	R	T	T	TR
Maximum Queue (ft)	351	414	280	267
Average Queue (ft)	177	65	40	42
95th Queue (ft)	321	264	179	177
Link Distance (ft)	430	576	576	576
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 27: Crescent West & Hickory Ridge Road

Movement	EB	EB	NB	NB	SB	SB
Directions Served	LR	R	L	T	T	TR
Maximum Queue (ft)	288	278	131	30	212	243
Average Queue (ft)	155	147	118	7	116	206
95th Queue (ft)	245	235	125	28	214	263
Link Distance (ft)	278	278	115	115	208	208
Upstream Blk Time (%)	0	0	34		2	53
Queuing Penalty (veh)	1	0	110		6	184
Storage Bay Dist (ft)						
Storage Blk Time (%)						
Queuing Penalty (veh)						

Intersection: 29: Crescent West & Area 1 South Driveway

Movement	EB	EB	WB	SB	SB
Directions Served	L	TR	LTR	LT	TR
Maximum Queue (ft)	72	53	21	29	31
Average Queue (ft)	31	35	5	1	2
95th Queue (ft)	53	49	19	9	15
Link Distance (ft)	246	246	145	429	429
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)					
Storage Blk Time (%)					
Queuing Penalty (veh)					

Queuing and Blocking Report  
PM Peak Hour

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Intersection: 30: US 29 Off-Ramp & Broken Land Parkway

Movement	EB	EB	WB	WB	NB	NB
Directions Served	T	T	T	T	L	L
Maximum Queue (ft)	300	328	202	245	179	145
Average Queue (ft)	179	207	120	114	94	65
95th Queue (ft)	276	323	194	186	143	112
Link Distance (ft)	653	653	901	901	958	958
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)						
Storage Blk Time (%)						
Queuing Penalty (veh)						

Intersection: 31: North South Connector & North Driveway

Movement	EB
Directions Served	L
Maximum Queue (ft)	48
Average Queue (ft)	27
95th Queue (ft)	46
Link Distance (ft)	206
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 32: North South Connector/North South Connector Road & Crescent West

Movement	EB	EB	NB	NB	SB
Directions Served	L	R	L	T	TR
Maximum Queue (ft)	179	55	53	135	79
Average Queue (ft)	96	16	19	53	31
95th Queue (ft)	172	44	45	109	63
Link Distance (ft)	414	414	346	346	432
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)					
Storage Blk Time (%)					
Queuing Penalty (veh)					

Queuing and Blocking Report  
PM Peak Hour

10/19/2016

Intersection: 33: North South Connector Road & South Entrance Road

Movement	WB	NB	NB	B45	SB	SB
Directions Served	R	T	TR	T	L	T
Maximum Queue (ft)	156	197	281	138	324	399
Average Queue (ft)	50	29	99	12	220	13
95th Queue (ft)	111	103	238	75	337	132
Link Distance (ft)	482	200	200	432		550
Upstream Blk Time (%)		0	2			
Queuing Penalty (veh)		0	7			
Storage Bay Dist (ft)					300	
Storage Blk Time (%)					4	
Queuing Penalty (veh)					1	

Intersection: 34: Area 3 East Driveway & Crescent West

Movement	WB	NB	NB
Directions Served	L	L	R
Maximum Queue (ft)	31	133	98
Average Queue (ft)	1	62	34
95th Queue (ft)	10	108	71
Link Distance (ft)	414	362	362
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 35: Area 3 West Driveway & Crescent West

Movement	EB	EB	WB	WB	WB	NB	NB
Directions Served	T	TR	L	T	T	L	LR
Maximum Queue (ft)	171	161	31	262	31	279	112
Average Queue (ft)	107	131	9	131	6	129	44
95th Queue (ft)	183	180	31	218	25	224	93
Link Distance (ft)	137	137	361	361	361	309	309
Upstream Blk Time (%)	8	13					
Queuing Penalty (veh)	31	50					
Storage Bay Dist (ft)							
Storage Blk Time (%)							
Queuing Penalty (veh)							

**Intersection: 40: South Driveway & North South Connector**

**Movement**

Directions Served  
Maximum Queue (ft)  
Average Queue (ft)  
95th Queue (ft)  
Link Distance (ft)  
Upstream Blk Time (%)  
Queuing Penalty (veh)  
Storage Bay Dist (ft)  
Storage Blk Time (%)  
Queuing Penalty (veh)

**Intersection: 41: West Driveway & Crescent West**

Movement	EB	EB	WB	NB
Directions Served	T	TR	T	R
Maximum Queue (ft)	135	133	146	93
Average Queue (ft)	28	60	117	27
95th Queue (ft)	99	141	181	66
Link Distance (ft)	115	115	137	204
Upstream Blk Time (%)	1	5	11	
Queuing Penalty (veh)	6	27	35	
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

**Intersection: 46: South Entrance Road**

Movement	EB	EB	NB	SB
Directions Served	L	R	L	TR
Maximum Queue (ft)	94	52	108	51
Average Queue (ft)	26	29	40	7
95th Queue (ft)	61	50	85	27
Link Distance (ft)	208	208	473	482
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

**Zone Summary**

Zone wide Queuing Penalty: 1529



**APPENDIX O**  
**TURN LANE WARRANTS**



Table O-1  
 New Cultural Center  
 Howard County, MD  
 Left Turn Lane Warrant Analysis

**AM Peak Hour**

<u>Left Turn Lane Warrant</u>		<u>AM Peak Hour Site Buildout</u>
<u>South Entrance Road &amp; Site Driveway</u>		
1. Enter operating speed of 40, 50, or 60 mph >		_____ <u>40</u> mph
2. Enter advancing volumes		Lefts > _____ <u>8</u> vph
		Throughs > _____ <u>637</u> vph
Percent left turns=	1.24%	Rights > _____ <u>0</u> vph
		Total > _____ <u>645</u> vph
3. Enter opposing volume		> _____ <u>344</u> vph
The maximum allowable advancing volume =		> _____ <u>546</u> vph
A left turn lane is	<u>warranted.</u>	

Table 9-23  
 A POLICY ON GEOMETRIC DESIGN OF HIGHWAYS AND STREETS, 2011. (AASHTO)

Opposing Volume	Advancing Volume/Hour			
	5% Left Turns	10% Left Turns	20% Left Turns	30% Left Turns
<u>40-mph Operating Speed (60 km/h)</u>				
800	330	240	180	160
600	410	305	225	200
400	510	380	275	245
200	640	470	350	305
100	720	515	390	340
<u>50-mph Operating Speed (80 km/h)</u>				
800	280	210	165	135
600	350	260	195	170
400	430	320	240	210
200	550	400	300	270
100	615	445	335	295
<u>60-mph Operating Speed (100 km/h)</u>				
800	230	170	125	115
600	290	210	160	140
400	365	270	200	175
200	450	330	250	215
100	505	370	275	240

Table O-1  
 New Cultural Center  
 Howard County, MD  
 Left Turn Lane Warrant Analysis

**PM Peak Hour**

<u>Left Turn Lane Warrant</u>		<u>PM Peak Hour Site Buildout</u>
<u>South Entrance Road &amp; Site Driveway</u>		
1. Enter operating speed of 40, 50, or 60 mph >		_____ <u>40</u> mph
2. Enter advancing volumes		Lefts > _____ <u>70</u> vph
		Throughs > _____ <u>301</u> vph
Percent left turns=	19%	Rights > _____ <u>0</u> vph
		Total > _____ <u>371</u> vph
3. Enter opposing volume		> _____ <u>789</u> vph
The maximum allowable advancing volume =		> _____ <u>189</u> vph
A left turn lane is	<u>warranted.</u>	

Table 9-23  
 A POLICY ON GEOMETRIC DESIGN OF HIGHWAYS AND STREETS, 2011. (AASHTO)

Opposing Volume	Advancing Volume/Hour			
	5% Left Turns	10% Left Turns	20% Left Turns	30% Left Turns
<u>40-mph Operating Speed (60 km/h)</u>				
800	330	240	180	160
600	410	305	225	200
400	510	380	275	245
200	640	470	350	305
100	720	515	390	340
<u>50-mph Operating Speed (80 km/h)</u>				
800	280	210	165	135
600	350	260	195	170
400	430	320	240	210
200	550	400	300	270
100	615	445	335	295
<u>60-mph Operating Speed (100 km/h)</u>				
800	230	170	125	115
600	290	210	160	140
400	365	270	200	175
200	450	330	250	215
100	505	370	275	240