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2017 Biennial Master Plan Monitoring Report

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Completed: 8/30/17

Description

Planning Department staff prepares the Biennial Master Plan Monitoring Report every other year for the Planning Board's review and transmittal to the County Council and County Executive. This report addresses the implementation progress of the White Flint Sector Plan, Shady Grove Sector Plan and Great Seneca Science Corridor Master Plan. This is the third Biennial Monitoring Report; the first report was prepared in June 2013.

Staff Recommendation

Transmit the report to the County Council and County Executive.

Summary

The 2017 Biennial Master Plan Monitoring Report provides a comprehensive summary of the efforts to implement the following three plans in the I-270 Corridor area:

- 2010 *White Flint Sector Plan,*
- 2010 *Great Seneca Science Corridor Master Plan,*
- 2006 *Shady Grove Sector Plan.*

This report provides a detailed review of each plan's implementation efforts, including development approvals, public amenities and facilities, transportation, and recommendations to further the implementation of each plan. The *White Flint Sector Plan* and the *Great Seneca Science Corridor Master Plan* require biennial monitoring and reporting to the Council. The *Shady Grove Sector Plan* does not have a reporting requirement, but it has a staging plan that has been included in the two prior reports and significant public infrastructure is required for this plan.

This report seeks to:

- Satisfy the Council's requirements for monitoring and reporting on plan implementation.
- Provide input for the County Executive's next proposed Capital Improvements Program.
- Demonstrate the extent to which the visions in these plans are being realized.
- Demonstrate the extent to which the staging elements in these plans are successfully regulating build-out.
- Ensure transparency regarding plan implementation activities.

All three plans seek to change single-use commercial or industrial areas and auto-oriented areas into a mixed-use and urban environment with complementary public amenities and facilities to support these new communities. Each area has seen some changes based on recommendations in these plans.

The staging requirements have allowed for monitoring and management of development to ensure that current and future infrastructure can support the new development. The Implementation Advisory Committees for the three plan areas have been an important conduit for ongoing public engagement.

To enter stage 2 for each plan, the staging requirements of stage 1 must be completed. None of the plans have advanced from stage 1 to stage 2. In the *White Flint Sector Plan*, a key stage one trigger has been achieved—the NADMS goal of 34 percent—and progress has been made on the realignment of the Old Georgetown Road and Executive Boulevard.

In the *Great Seneca Science Corridor Master Plan*, funding the Corridor Cities Transitway and attaining the Plan's mode share goals are essential next steps. In the *Shady Grove Sector Plan*, priorities include relocating the school bus depot and funding major intersection/interchange improvements.

Attachment:
1. 2017 Biennial Master Plan Monitoring Report with Transportation Appendix

September 2017

Biennial Master Plan Monitoring Report

2010 Great Seneca Science Corridor Master Plan
2006 Shady Grove Sector Plan
2010 White Flint Sector Plan

MontgomeryPlanning.org

ABSTRACT

This report meets the 2010 *White Flint Sector Plan* and 2010 *Great Seneca Science Corridor Master Plan* requirements for monitoring and providing the County Executive and County Council with advance guidance regarding implementation of these Plans for FY2022-2027. This report also includes a review of the 2006 *Shady Grove Sector Plan* and progress on the redevelopment of the Montgomery County Service Park County (CSP) as well as the recommending staging plan.

Source of Copies
The Maryland-National Capital Park and Planning Commission
8787 Georgia Avenue
Silver Spring, MD 20910

Online at

http://montgomeryplanning.org/planning/communities/area-2/great-seneca-science-corridor/

http://montgomeryplanning.org/planning/communities/area-2/white-flint/

http://montgomeryplanning.org/planning/communities/area-2/shady-grove/

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EXECUTIVE SUMMARY

This report provides a comprehensive update on the implementation of three Approved and Adopted Master Plans: the 2010 *White Flint Sector Plan*, the 2010 *Great Seneca Science Corridor Master Plan*, and the 2006 *Shady Grove Sector Plan*. Both the White Flint and Great Seneca plans require monitoring reports, while Shady Grove does not require a reporting requirement. The Shady Grove plan, however, does require significant public investment for new infrastructure and it is a staged plan like White Flint and Great Seneca.

These plans envision new communities that transition from primarily suburban forms and single-use areas, either commercial or industrial, into greater emphasis on mixed-uses; improved street and bikeway connections; new parks and open spaces; and additional public amenities and facilities. It is anticipated that these changes will take many years or decades to be fully implemented. Over time, these changes will contribute towards neighborhoods that are more environmentally sustainable and economically resilient.

This and subsequent reports will provide the Planning Board, County Council and County Executive with guidance towards the public expenditures necessary to support the ongoing infrastructure requirements for each plan area.

Since the 2015 monitoring report, new project approvals have slowed down in White Flint. Pike & Rose has completed its first phase and the second phase is under construction. No other private property is under construction. The implementation of a grid of streets is underway with the first phase of the Western Workaround and a new protected bikeway has been implemented. A new garage is under construction at the North Bethesda Conference Center to replace surface parking displaced by the roadway realignment. In the Great Seneca Science Corridor Master Plan (GSSC) area, progress has been made towards implementing the Life Science Center (LSC) Loop and some plans have been approved that begin to address the jobs-housing imbalance indicated in the Master Plan. Redevelopment in Shady Grove has moved forward with the first phase of Shady Grove Station, Westside, the redevelopment of the Montgomery County Service Park (CSP).

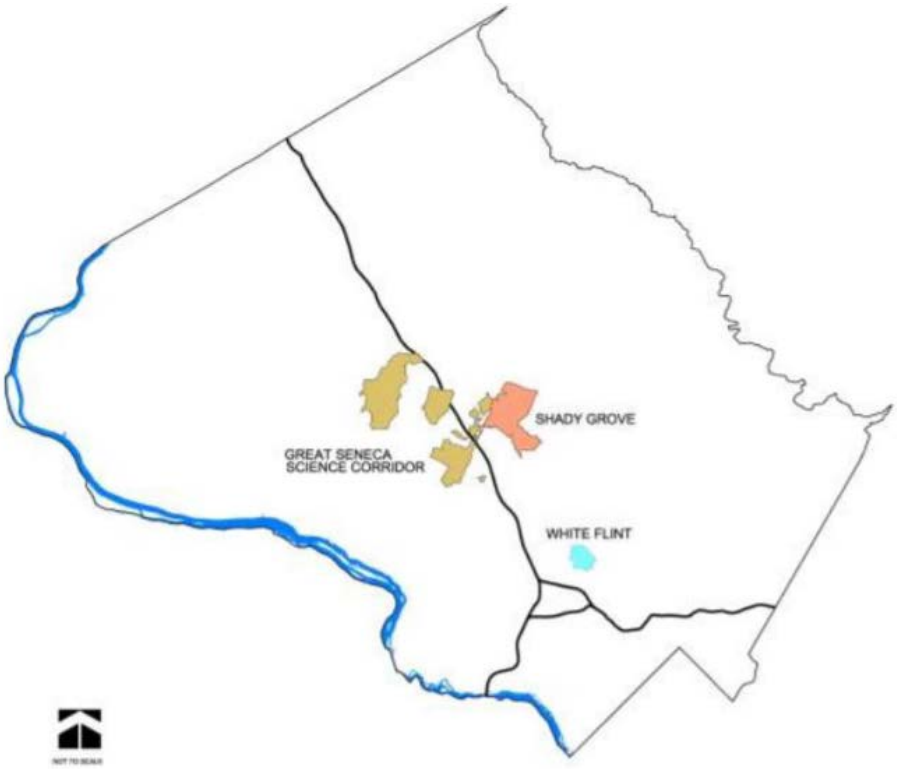
This report shows the staging requirements for each plan area; new development that has been approved since the last monitoring report; updates on public facilities and mobility projects; new policy initiatives; and recommendations from stakeholders.

INTRODUCTION

The *White Flint Sector Plan, Great Seneca Science Corridor Master Plan* and *Shady Grove Sector Plan* are three comprehensive plans that intend to transform either primarily commercial or industrial suburban areas into new mixed-use, transit-oriented and sustainable neighborhoods.

Each plan promotes mixed land uses; new transit options, such as Bus Rapid Transit (BRT); a range of housing options, including affordable housing; and continuous public engagement. The transition from single-use suburban areas to mixed-use neighborhoods is complex and challenging. This report is a required tool to monitor and analyze the progress toward implementation for each plan area.

Map 1: Sector and Master Plan Areas



The vision of each master plan will take many years to be realized since each plan requires significant public infrastructure, such as fully funding the Corridor Cities Transitway (CCT) in Great Seneca and funding the second entrance to the White Flint Metro Station. Currently, some portions of these plan areas have begun to implement

the plan's vision, but most areas still have the low and dispersed building form that is typical of suburban areas.

To ensure an appropriate balance between new development and required public infrastructure, each plan has established staging limits on development with specific triggers that must be implemented before the next phase can begin. This report provides the status of these staging triggers and approved development in each plan area. The perspective from each advisory committee is included to provide a broader viewpoint on the implementation of each plan.

This report's sections each address a master plan, and provide updates since the last monitoring report on development activity, public amenity and facility status, and mobility issues, including bikeways. Finally, this report is intended to provide an overview of implementation of master plan recommendations that achieve each plan's vision.

WHITE FLINT SECTOR PLAN

Background

Plan Overview

The 2010 *White Flint Sector Plan* creates the framework to transform an area with a suburban development pattern and many strip commercial shopping centers into an urban center with mixed uses supported by new public amenities, parks and open spaces, and a new street network. A key mobility recommendation is to turn Rockville Pike (MD 355) into an urban boulevard with Bus Rapid Transit (BRT) options. The plan recommends 9,800 new residential dwelling units and 5.69 million square feet of new non-residential development. The staging plan has three distinct phases, each of which limits the amount of residential and non-residential development that can be built and sets forth the infrastructure required to be built in each phase.

Map 2: White Flint Sector Plan Area

Key Monitoring Updates

Since the 2015 Biennial Monitoring Report (BMR), several projects have been completed or are under construction in the *White Flint Sector Plan* area.

Bikeway and Pedestrian Connections

In 2016, the Montgomery County Department of Transportation (MCDOT) installed a separated bike lane on Nebel Street between Randolph Road and Marinelli Road.

Western Workaround

The White Flint Western Workaround (Phase 1) is under construction, including the realigned segment of Executive Boulevard and Main/Market Street on the Bethesda North Marriott Conference Center property.

Rockville Pike BRT

The Maryland Department of Transportation (MDOT) and Montgomery County Department of Transportation (MCDOT) are conducting a Bus Rapid Transit (BRT) Corridor Planning Study for Rockville Pike (MD 355). The MD 355 study is currently in the detailed analysis phase, the second of several rounds of engineering, ridership forecasting and cost estimation that must be completed before construction of any long-term improvements. In May 2017, the Maryland Transit Administration (MTA) released the Conceptual Alternatives Report, which recommends refined alternatives for detailed study. The next project milestone is the selection of a recommended alternative, which will occur in 2019.

Staging Triggers

All of the *White Flint Sector Plan*'s recommended staging prerequisites have been implemented, including the designation of the plan area as a Bicycle and Pedestrian Priority Area. Phase 1 requires that all of the following must occur:

- Contract for the construction of the realignment of Executive Boulevard and Old Georgetown Road.
- Contract for the construction of Market Street (B-10) in the Conference Center block.
- Fund streetscape improvements, sidewalk improvements and bikeways for substantially all the street frontage within one-quarter mile of the Metrorail station: Old Georgetown Road, Marinelli Road and Nicholson Lane.
- Fund and complete the design study for Rockville Pike to be coordinated with the Maryland State Highway Administration (SHA), Montgomery County Department of Transportation (MCDOT) and Maryland-National Capital Park and Planning Commission (M-NCPPC).
- Achieve 34 percent non-auto driver mode share (NADMS) for the plan area.

- The Montgomery County Planning Board should assess whether the build-out of the White Flint Sector Plan is achieving the plan's housing goals.

Development Approvals

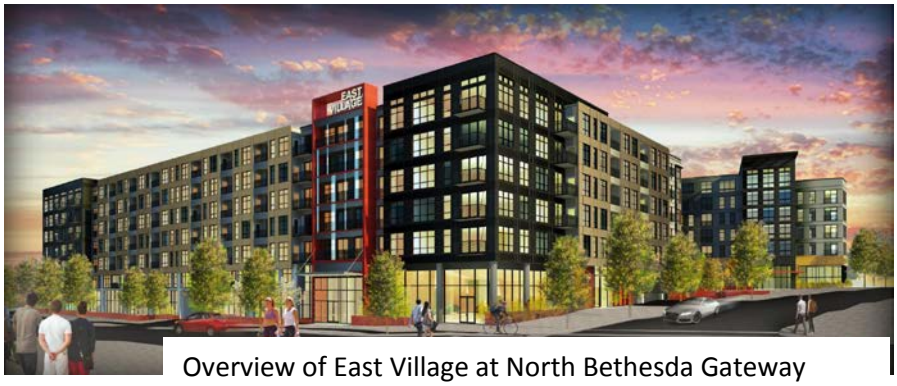
The Planning Board approves Sketch Plans, Preliminary Plans, Site Plans and Staging Allocation Requests for new development in the *White Flint Sector Plan* area.

Sketch Plans

No new Sketch Plans have been submitted since the 2015 Biennial Monitoring Report (BMR). Prior approved Sketch Plans are: Pike & Rose (Mid-Pike Plaza); North Bethesda Gateway; Gables White Flint; North Bethesda Market II; Saul Centers White Flint; and White Flint Mall.

Preliminary and Site Plans

East Village at North Bethesda Gateway and Saul Centers White Flint West are the two new site plans that have been approved since the last BMR. Located at the southeastern quadrant of Huff Court and Nicholson Lane, East Village at North Bethesda Gateway will permit up to 614 residential dwelling units, including 77 moderately priced dwelling units (MPDUs) and up to 34,000 square feet of retail uses on approximately 5.1 acres. This development will be built in two phases.



Overview of East Village at North Bethesda Gateway

Saul Centers White Flint West, which is located west of Rockville Pike, between Nicholson Lane and Marinelli Road, will have up to 655 residential dwelling units and up to 204,000 square feet of non-residential development on approximately 5.48 acres. It is anticipated that the first phase of this development will deliver a residential building with up to 330 residential dwelling units and up to 15,000 square feet of non-residential development.


Overview of Saul Centers West (Building A)

Staging Allocation Request

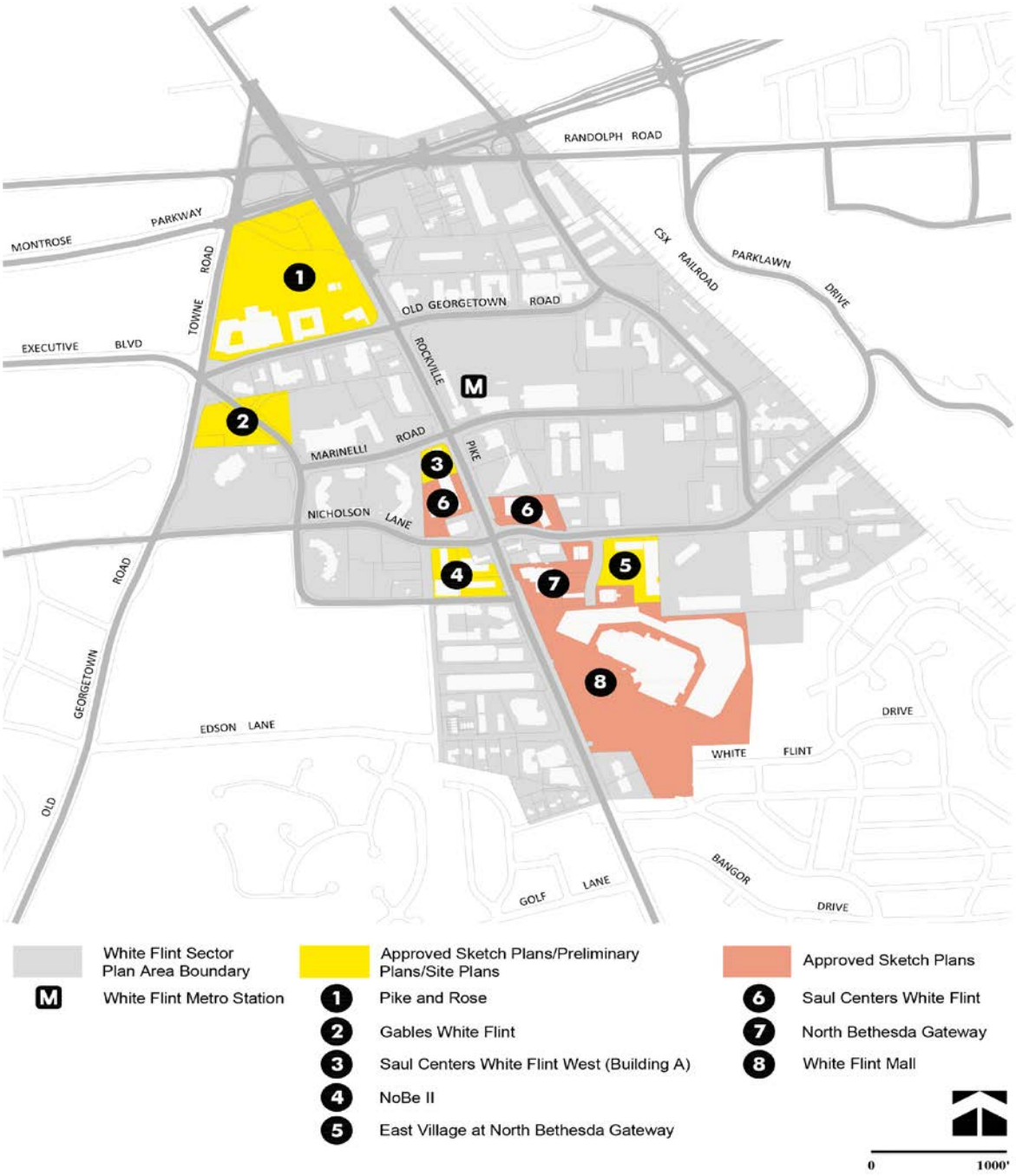
The County Council, via Resolution No. 17-213, gave the Montgomery County Planning Board the authority to allocate development under the Subdivision Staging Policy (SSP) White Flint Alternative Review Procedure. The Planning Department's website tracks all approved residential and non-residential development, including allocated development.

Pike & Rose is the only development that has received allocated development at this point in time.

Table 1: Status of White Flint Staging Development

	Residential Dwelling Units	Non-Residential Square Feet
Sector Plan Phase I	3,000 dwelling units	2.0 million sq. ft.
Allocated Development	861 dwelling units	387,640 sq. ft.
Remaining Phase I Development	2,139 dwelling units	1,612,360 sq. ft.

Map 3: Approved Sketch, Preliminary and Site Plans



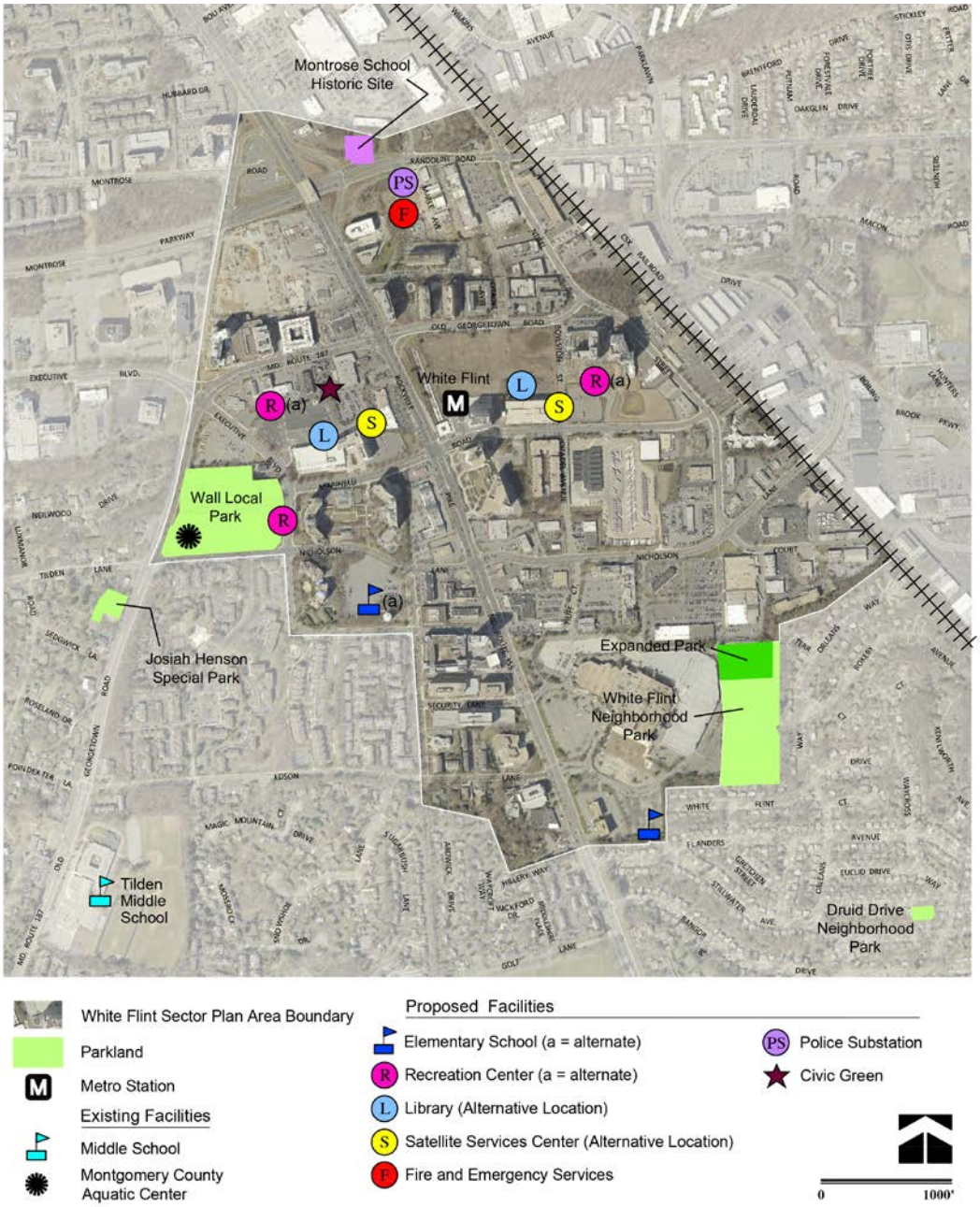
Map 4: Allocated White Flint Development

Public Facilities and Amenities

Plan Recommendations

A civic green, an elementary school, a library, a satellite regional service office and a recreation center are some of the public facilities recommended in the *White Flint Sector Plan*. These facilities are essential to support existing and future residents, demonstrate public investment and ensure a high quality of life.

Map 5: Existing and Proposed White Flint Public Facilities



Fire and Emergency Medical Services Station
The future White Flint Fire Station is the only Sector Plan-recommended public facility that is currently in the design phase in the Capital Improvements Program (CIP), No. P451502. Located at the southeast quadrant of Rockville Pike (MD 355) and Randolph Road, this new Class I fire station will replace the existing Station #23 on Rollins Avenue. The County's Department of General Services (DGS) is working with other public agencies to determine what other public uses, such as offices for the future White Flint Urban District, could co-locate with the fire station. Construction is anticipated by FY 20.

Wall Park and Recreation Center
The County Council has approved $6.5 million to finance a parking garage that will be located on the Gables Residential property, which is adjacent to Wall Local Park. This garage, which will accommodate up to 250 parking spaces provides the opportunity to create a future urban park and other public amenities, including a recreation center at Wall Park.

Public Parks

White Flint Neighborhood Park
The approved White Flint Mall Sketch Plan received public benefit points for the dedication of approximately 2.3 acres for the expansion of the White Flint Neighborhood Park. A future preliminary plan will determine the dedication to the Parks Department for future development and implementation. At this time, the redevelopment of the Mall site has not been able to move forward as a result of a number of legal battles.

Civic Green
The future completion of the Western Workaround, including Main/Market Street and realigned Executive Boulevard (future Grand Park Avenue), will begin to establish the street network surrounding the proposed civic green. No new development proposals have been submitted for properties surrounding the civic green. Property assemblage is anticipated to provide for the potential dedication of a portion or the whole civic green. Public acquisition by the Parks Department is also an alternative for the implementation of the civic green.

Library and Satellite Regional Services Center
There are no active proposals to co-locate these facilities, but it is anticipated that they could be included in future projects. The *White Flint Sector Plan* recommends co-locating the library and satellite regional services center in the Metro West or Metro East districts of the plan area.

Public Schools

School Cluster

The *White Flint Sector Plan* area is located within the Walter Johnson High School cluster. The cluster has experienced significant growth from existing residential turnover and some new development. To address enrollment growth in the cluster, Montgomery County Public Schools (MCPS) has developed a multi-pronged approach including additions at elementary schools; an addition to North Bethesda Middle and revitalization of Tilden Middle. In addition, a working group has been convened to study reopening Woodward High School and to look at non-traditional school facilities.

The 2016-2020 Subdivision Staging Policy (SSP) established new criteria for placing a single elementary or middle school's service area into moratorium. This can occur for any elementary school that has exceeded 120% of its program capacity and has a deficit of at least 110 seats. At the middle school level, a moratorium would be put in place when a school has exceeded 120% of its program capacity and has a deficit of at least 180 seats. At the high school level, only the 120 percent utilization rate is utilized to evaluate school capacity.

Elementary School

The southern portion of the White Flint Mall property is the Sector Plan's preferred elementary school site and the Luttrell property, which is located at the southwest quadrant of Woodglen Drive and Nicholson Lane, is the alternative location. The approved White Flint Mall Sketch Plan shows the recommended elementary school site on the southern area of the property. A future preliminary plan will determine if the elementary school site will be reserved, dedicated or conveyed to the Montgomery County Board of Education, in whole or in part, under the Adequate Public Facilities findings required by the Subdivision Regulations (Chapter 50) and the provisions of the Commercial Residential (CR) zone.

Mobility

Plan Recommendations

The White Flint Sector Plan recommends a transit-focused, multi-modal transportation system that supports the proposed urban center with a street grid and improved pedestrian and bicyclist access within the plan area.

Non-Auto Driver Mode Share

The staging plan for the *White Flint Sector Plan* requires achieving a non-auto driver mode share (NADMS) of 34 percent for the plan area in phase one. The Montgomery County Department of Transportation's (MCDOT) 2015 annual commuter survey of employees working in White Flint indicated the NADMS for the 3-hour peak period was 40.4 with a weighted average of 34.6 percent over a three-year period. The NADMS for White Flint residents commuting to work was approximately 50 percent.

The NADMS rate for employees will fluctuate from year to year due to a number of factors, including the specific employers who will participate in the survey, the amount of turnover and level of participation of employees at those work sites, and changes in the types of transportation demand management (TDM) programs those employers make available to their employees. Moreover, to date, only a small portion of the allowed development has occurred. As more development occurs, the NADMS could change.

To proceed to phase two, the NADMS must be 34 percent for the plan area. The Planning Board's approved *White Flint Sector Plan Implementation Guidelines* (2011) indicated that the overall *White Flint Sector Plan* area mode share (NADMS) is the weighted average of NADMS-R (residents) and NADMS-E (employees).

In 2015, MCDOT released initial strategies for achieving the ultimate staging plan required NADMS goal, 51 percent for employees and 50 percent for residents. A variety of facility, service and policy initiatives are recommended, including:

- Bikeshare and regional transportation infrastructure, such as BRT.
- A circulator and improved bus services in North Bethesda.
- Parking policy changes and transit subsidies.
- Enhanced TDM programs and services.

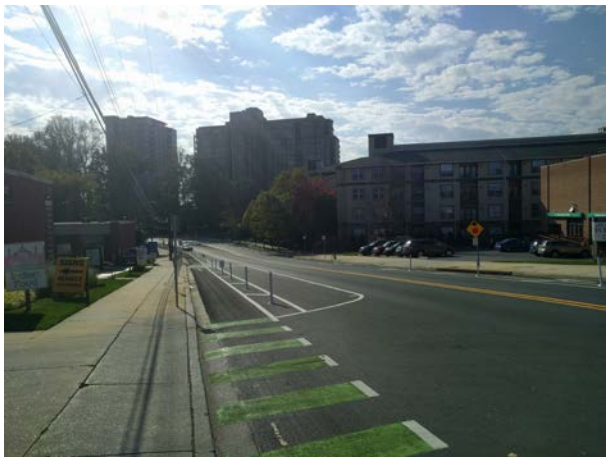
These initiatives could be implemented in the near term, i.e. less than 10 years, while others are more long term, beyond 10 years. MCDOT will finalize its White Flint Transportation Demand Management (TDM) Plan in the future.

Bicycle and Pedestrian Connections

The Department of Transportation has installed several types of bikeways in the plan area, including the County's first separated bike lane along Woodglen Drive and traditional bike lanes on Security Lane and Marinelli Road, between Rockville Pike (MD 355) and Executive Boulevard. In 2016, MCDOT installed additional separated bike lanes on Nebel Street, between Randolph Road and Marinelli Road. Additional bikeways are under study, including Marinelli Road between Executive Boulevard and Nebel Street.

Three new Capital Bikeshare stations are anticipated by summer 2018. The proposed locations are at Woodglen Drive and Executive Boulevard; Citadel Avenue and McGrath Boulevard; and Old Georgetown Road (MD 187) and Rockville Pike (MD 355).

Map 6: New White Flint Bikeways



Nebel Street Protected Bikeway

New Streets

The Sector Plan recommends a variety of new public and private streets to create a new grid of streets. Since the 2015 BMR, three new public streets have been implemented: Chapman Avenue, between Randolph Road and Old Georgetown Road; Rose Avenue, between Old Georgetown Road (MD 187) and Rose Avenue; and Rose Avenue, between Rockville Pike (MD 355) and Towne Road. These new streets are shown below.

Grand Park Avenue

Chapman Avenue

Rose Avenue

Subdivision Staging Policy

The recently approved 2016-2020 Subdivision Staging Policy (SSP) introduced three major changes with respect to the evaluation of the adequacy of transportation facilities:

- Established four policy area categories in Montgomery County based on current land use patterns, the prevalence of modes of travel other than the single occupant vehicle and the planning vision for various parts of the County.

    - Red policy areas include the White Flint Sector Plan area and other Metro Station Policy Areas (MSPAs) and Central Business Districts (CBDs) where greater vehicular traffic congestion is permitted in recognition of greater access to high-quality transit service.
    - Green policy areas are primarily rural areas and in the Agricultural Reserve.
    - Yellow policy areas are traditional suburban areas, such as Olney and Potomac.
    - Orange policy areas are primarily located immediately adjacent to more urbanizing areas along the I-270/MD 355 Corridor or Connecticut Avenue, including Bethesda Chevy Chase and North Bethesda.

- Eliminated the policy area-based transportation adequacy test – Transportation Policy Area Review (TPAR).

- Overhauled the project level transportation test, Local Area Transportation Review (LATR) to create a multi-modal transportation adequacy test. The new process expands the application of delay-based Highway Capacity Manual (HCM) methodology to evaluate the performance of local intersections. In addition, new procedures that evaluate the adequacy of transit, pedestrian and bike facilities for new development have been introduced.

Transportation System Performance Monitoring

The White Flint Special Taxing District (Bill No. 50-10) exempts new White Flint development from Local Area Transportation Review (LATR). Instead of being subject to LATR, the special taxing district, which is an *ad valorem* property tax, funds transportation infrastructure improvements based on the phasing plan and roadway network recommended in the *White Flint Sector Plan*. The 2016-2020 Subdivision Staging Policy confirms this exemption.

Critical Lane Volume

Although applications for new development in the White Flint area are exempt from LATR, this report uses Critical Lane Volume (CLV), which is a traditional measure of an

intersection capacity. The CLV standard for Metro station areas, such as White Flint, is 1,800.

The 2016 Subdivision Staging Policy (SSP) introduces the Highway Capacity Manual delay-based level of service standard for Red and Orange policy areas, which includes White Flint and other Metro station and urban areas. The CLV method is still utilized for Yellow or Green areas, which are more rural and suburban areas in the County.

None of the *White Flint Sector Plan* area intersections exceed the 1,800 CLV threshold. Table 2 shows traffic counts collected since 2014 at selected White Flint plan area intersections. Pedestrian and bike counts at these intersections are also included.

Table 2: White Flint Sector Plan Area Critical Lane Volumes (CLVs)

Intersection	AM CLV	AM V/C Ratio	PM CLV	PM V/C Ratio	2016 SSP Standard	Count Date	Pedestrian Observations[1]	Bicycle Observations
Rockville Pike at Old Georgetown	1206	0.67	1347	0.75	1800	4/1/2015	525	0
Montrose Road at Towne Road	561	0.31	578	0.32	1800	10/1/2014	216	0
Randolph Road at Nebel Street	881	0.49	1110	0.62	1800	10/6/2015	213	4
Rockville Pike at Montrose Parkway Northbound Ramps	672	0.37	640	0.36	1800	9/16/2015	135	0
Montrose Parkway at Towne Road	548	0.30	685	0.38	1800	11/5/2015	95	3
Randolph Road/Montrose Parkway at Maple Avenue	723	0.40	775	0.43	1800	9/17/2015	74	8
Rockville Pike at Marinelli Road	887	0.49	933	0.52	1800	4/16/2015	3147	0
Nicholson Lane at Nebel Street	830	0.46	906	0.50	1800	9/16/2015	178	20
Old Georgetown Road at Nicholson Lane/Tilden Lane	1042	0.58	881	0.49	1800	11/17/2015	54	18
Executive Blvd at Marinelli Road	459	0.26	606	0.34	1800	9/16/2015	297	18
Rockville Pike at Nicholson Lane	1072	0.62	1310	0.73	1800	3/31/2015	387	0
Old Georgetown Road at Executive Blvd	1224	0.68	1019	0.57	1800	9/17/2015	425	25

[1] Between 6:30 a.m. to 10 a.m. and 4 p.m. to 7 p.m.

Map No. 7 compares 2015 and 2017 CLV results at some intersections within the Plan area. None of these intersections in 2015 nor 2017 exceed 1,800 CLV, which is the prior SSP standard for Metro Station and urban areas in the County.

Map 7: Illustrated 2015 and 2017 CLVs at selected intersections

Average Intersection Delay

The methodology used to evaluate transportation system network performance for local intersections is established by the County's Subdivision Staging Policy (SSP). The congestion standards for signalized intersections in the White Flint Metro Station Policy Area (MSPA), Twinbrook MSPA and North Bethesda Policy area are based on the Highway Capacity Manual (HCM) delayed-based analysis methodology as described in the table below.

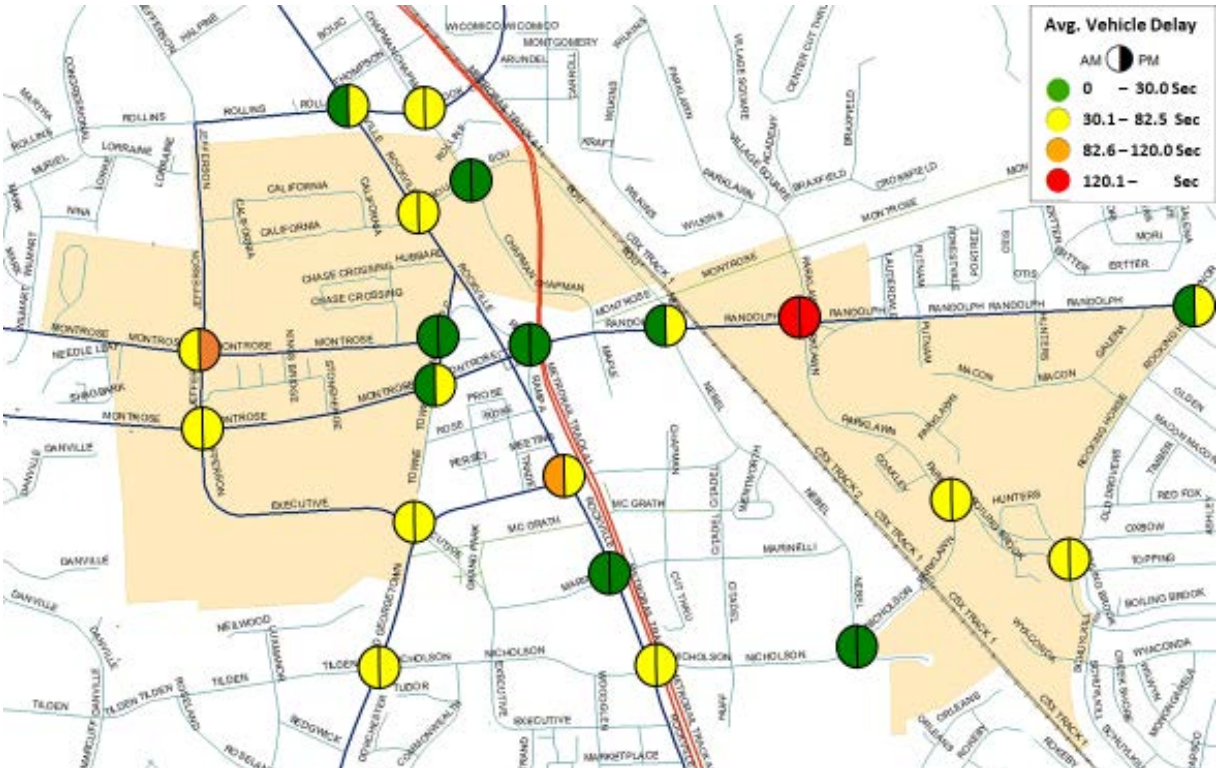
Table 3: 2016-2020 Subdivision Staging Policy Intersection Congestion Standards

HCM Volume-to Capacity Standard	Policy Area	HCM Average Vehicle Delay Equivalent
0.97	North Bethesda	71
1.13	White Flint MSPA	120
1.13	Twinbrook MSPA	120

Transportation information that supports the White Flint 2 Sector Plan included ten selected intersections in the *White Flint Sector Plan* area (see below). Level of service (LOS) is depicted using color-coded "dot maps" utilizing the ranges of intersection delay during AM and PM peak periods. The ranges of delay are the following:

- Green: less than 30 seconds.
- Yellow: between 30 and 82.5 seconds.
- Orange: between 82.6 and 120 seconds.
- Red: greater than 120 seconds.

Figure 1: Average Intersection Delay (2015)-White Flint Sector Plan and White Flint 2 Areas



None of the examined *White Flint Sector Plan* intersections exceed the 120 seconds vehicle delayed standard. Table 4 shows the average intersection delay or observed intersections within the plan area.

Table 4: Observed Intersection Delay-White Flint Sector Plan

			2015 Existing Delay (Seconds)	
Delayed Standard (seconds)	East-West Road	North-South Road	AM	PM
120	Montrose Road	Towne Road	27.7	24.0
120	Montrose Parkway	Towne Road	28.4	40.5
120	Executive Boulevard	Old Georgetown Road	51.6	31.5
120	Nicholson Lane	Old Georgetown Road	33.2	38.2
120	Montrose Parkway	Rockville Pike	19.8	19.0
120	Old Georgetown Road	Rockville Pike	92.4	44.6
120	Marinelli Road	Rockville Pike	25.3	28.0
120	Nicholson Lane	Rockville Pike	38.4	61.5
120	Randolph Road	Nebel Street	22.0	35.3
120	Nicholson Lane	Nebel Street	20.1	16.6

Prior Transportation Impact Studies

Between 2012 and 2014, two traffic impact studies were conducted for the *White Flint Sector Plan* area, and another study was conducted for the Twinbrook area in the City of Rockville. Stantec, working on behalf of Montgomery County Department of Transportation, analyzed future traffic in the plan area based on the Sector Plan's recommended development. This study focused on major state highways, including Old Georgetown Road (MD 187) and Rockville Pike (MD 355), and estimated future traffic conditions in 2022 and 2042 using the critical lane volume (CLV) method and the *Synchro/Highway Capacity Manual* method.

STV Group, Inc., working on behalf of the White Flint Partnership, conducted a multi-modal traffic analysis that used Vissim, which is a traffic simulation software, to evaluate intersections, as well as bicycle and pedestrian travel. This analysis utilized the same land use input as the Stantec study, but it applied a broader roadway network, including public and private streets.

The final study, conducted by Sabra, Wang and Associates, Inc., for the City of Rockville, focused on the area surrounding the Twinbrook Metro Station. This study highlights the transportation impacts between the County and the City of Rockville.

Capital Improvements Program Projects

The Montgomery County Department of Transportation (MCDOT) is managing several White Flint transportation projects that are essential to implementing the public transportation infrastructure, including:

- White Flint District West Workaround (No. 501506).
- White Flint District West: Transportation (No. 501116).
- White Flint District East: Transportation (No. 501204).
- White Flint Traffic Analysis and Mitigation (No. 501202).

Since the 2015 Biennial Monitoring Report (BMR), the Western Workaround has made considerable progress. The first phase of the Western Workaround, including Main/Market Street and realigned Executive Boulevard (future Grand Park Avenue), is under construction at the Bethesda North Conference Center property (Map 8). The continuation of realigned Executive Boulevard between Market Street and Old Georgetown Road (MD 187) is dependent on the dedication of the right-of-way for the roadway.

Phase two of the Western Workaround, which includes the opening of Towne Road and realigned Executive Boulevard and Old Georgetown Road, is projected to start in FY 18.

A new structured parking garage is under construction at the Conference Center to replace surface parking spaces lost because of the new roadways. This project is identified in the CIP as Project No. 781401, under the General Government category. The construction is being managed through a contract with the Maryland Stadium Authority, which built the original Conference Center, and overseen by a Special Projects Manager for the Chief Administrative Officer (CAO).

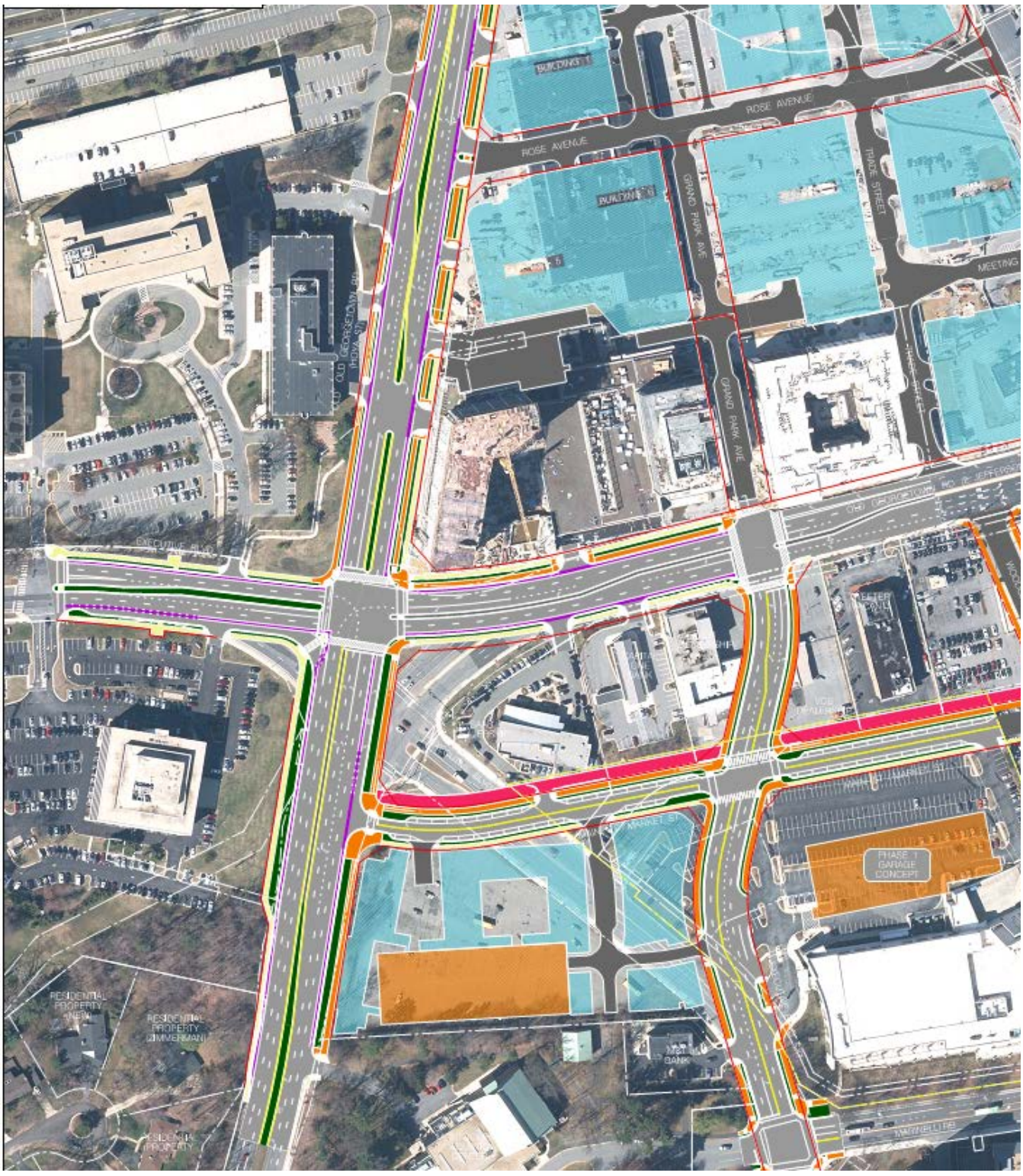
The design of Rockville Pike (MD 355), which is covered under CIP Project No. 501116 (White Flint District West: Transportation) is projected to begin by FY19 to coordinate with the implementation of Bus Rapid Transit (BRT). The current BRT corridor study will frame the design of MD 355.

Three new roadway segments, including Executive Boulevard extended, from Rockville Pike to Huff Court, and then from Huff Court to Nebel Street extended, are included in the White Flint District East project. A new bridge over the Metrorail tracks from Rockville Pike onto the North Bethesda Center property is also included in this project.

Roadway design for Executive Boulevard Extended has been delayed due to limited development activity for properties in this area and the lack of the dedicated right-of-way necessary for the project. Similarly, the bridge over the Metro tracks has been delayed due to the on-going discussions between LCOR, the developer of the North

Bethesda Center, MCDOT and the Washington Metropolitan Area Transit Authority (WMATA).

Map 8: Western Workaround



White Flint Sector Plan Advisory Committee

As required by the Sector Plan, the Planning Board has appointed an advisory committee that consists of property owners, civic and homeowners' and other stakeholders from the White Flint area. Executive Branch staff are also represented on the Committee, including Ms. Dee Metz, the County Executive's White Flint Implementation Coordinator. The committee has reviewed all public and private development proposed for the plan area.

Advisory Committee Comments

The White Flint Sector Plan Implementation Advisory Committee has received the draft of this report. Two committee members submitted comments on the draft document, including the White Flint Partnership.

Recommendations

Pike & Rose, Gables White Flint and other approved development plans represent the type of urban and mixed-use development envisioned in the White Flint Sector Plan. Several CIP projects, including the Western Workaround and the Conference Center Garage, indicate the County's commitment to successfully implementing the infrastructure recommendations in the White Flint Sector Plan. As development moves forward, the following items should be addressed to ensure successful implementation.

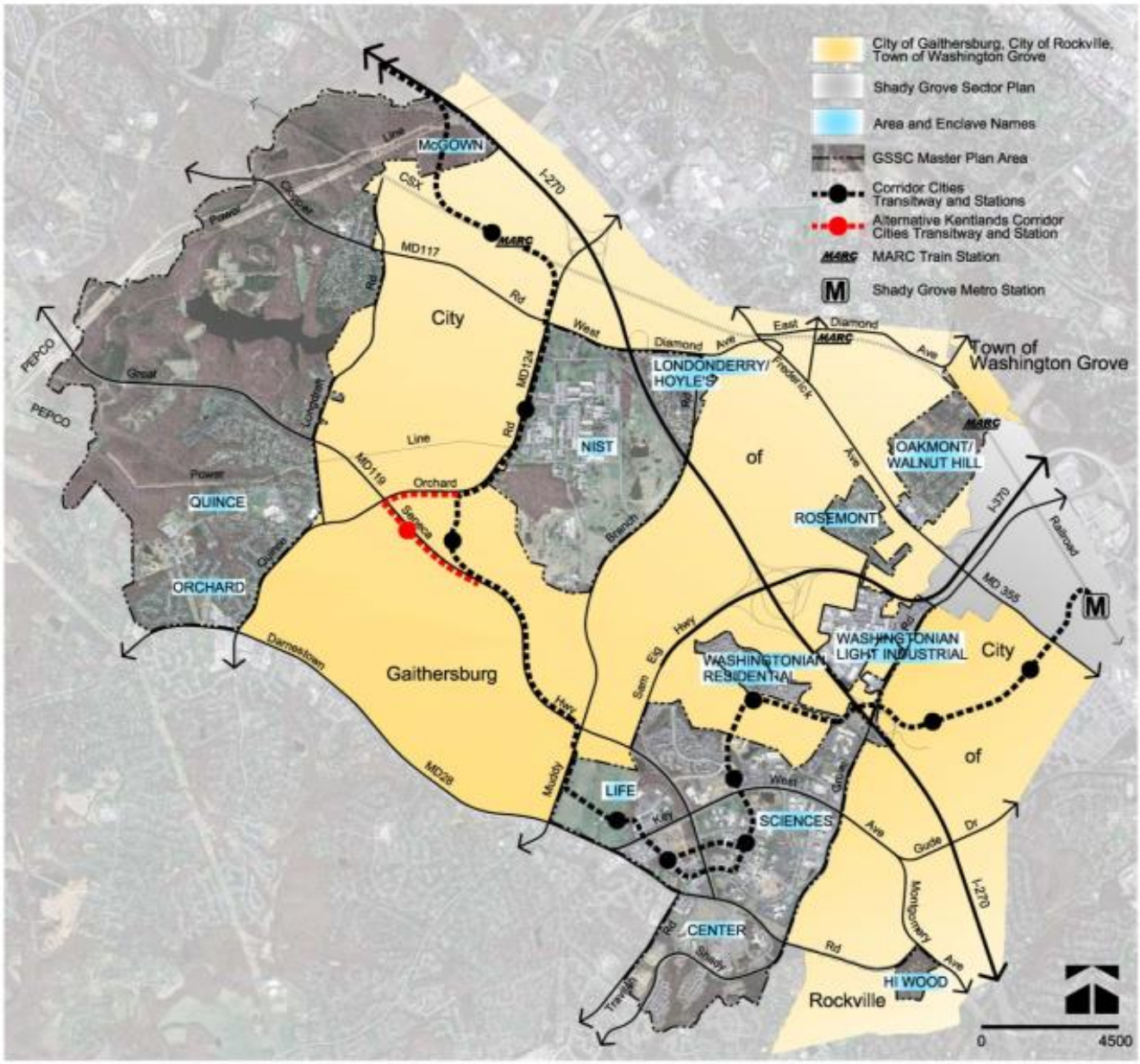
Transportation

- Per phase one staging requirements, the streetscape and bikeways improvements within a ¼ mile of Metro Station needs to be programmed.
- The Nebel Street protected bikeway should extend to Nicholson Lane, to further implement the White Flint Sector Plan-recommended bikeway network.

Public Facilities and Amenities

- The Department of General Services (DGS) should consider incorporating a police sub-station within the new Fire Station 23.

Map 9: Great Seneca Science Corridor Master Plan Area



GREAT SENECA SCIENCE CORRIDOR MASTER PLAN

Background

Plan Goals

The 2010 *Great Seneca Science Corridor Master Plan* (GSSC) envisions "a dynamic and sustainable science and medical hub" (GSSC Master Plan, page 9) and, to achieve that goal, presents key recommendations for the pace and pattern of development, public facilities and transportation, phased to the provision of public amenities.

Staging Triggers

Staging capacity in the science and medical hub, called the Life Sciences Center (LSC), is allocated at preliminary plan approval. Stage one made available 400,000 square feet of new commercial development and 2,500 new residential units. The last of the new commercial capacity in stage one was allocated by Planning Board approval of a preliminary plan on November 10, 2011. Stage one is, therefore, closed to approval of new commercial capacity. As of April 2017, 311 new residential units have been allocated by preliminary plan approval, leaving a capacity for 2,189 new residential units available in stage one.

Before stage two begins, the remaining staging triggers must be met:

- Fully fund construction of the Corridor Cities Transitway (CCT) from the Shady Grove Metrorail Station to Metropolitan Grove within the first six years of Montgomery County's Capital Improvements Program (CIP) or the State of Maryland's Consolidated Transportation Program (CTP).
- Fund the LSC Loop trail in the County's six-year CIP and/or through developer contributions as part of plan approvals.
- Attain an 18 percent non-auto driver mode share (NADMS).

Key Staging Updates

Since the 2015 Biennial Master Plan Monitoring Report (BMR) for the GSSC Master Plan area, five major staging updates have occurred.

1. Corridor Cities Transitway (CCT)

The GSSC Master Plan calls the CCT "the centerpiece of the Plan's vision for the LSC." More than any other element, the development of this transitway is critical for connecting areas within the plan area and implementing the plan recommendations. There has been extensive coordination between the Maryland Transit Administration (MTA), Montgomery County Department of Transportation (MCDOT), Maryland-National Capital Park and Planning Commission (M-NCPPC), applicable advisory committees and GSSC residents and stakeholders regarding the advancement of the CCT from 15 percent to 30 percent since the 2015 BMR. The 30 percent design was completed in October 2015. Currently, MTA is working to wrap up the Environmental Assessment for

the CCT. This assessment would complete the first major step of the National Environmental Policy Act (NEPA) process.

Funding the CCT is critical to implementing the GSSC Master Plan, and this project suffered a setback in fall 2016 when Maryland Governor Larry Hogan postponed funding for the CCT in the state's Consolidated Transportation Program (CTP). Subsequent to the funding postponement, $5 million was restored to the CCT in the FY18 CTP. This amount may help wrap up some current planning efforts; however, it does little to advance attainment of the full funding goal. The MTA is considering options that will reduce up-front costs and facilitate earlier implementation of the system. These options have not been made public, therefore we do not know the full impact to the system of any proposed changes and how these changes will address design concerns to ensure an effective transit system that meets existing and future development goals.

An additional challenge to construction of the CCT across the Belward Campus of the Johns Hopkins University has arisen due to the historic site designation of a farm in this location. As long as the historic setting of the farmhouse and outbuildings remains undisturbed, the Maryland Historic Trust (MHT) will not grant a permit for construction of the CCT across the Belward Campus. This decision may change in the future as other development on the property will likely change the character of the historic setting. At that time, MHT will reevaluate the granting of a construction permit for the CCT. Until that time, the 30 percent design plans for the CCT show the facility running along Darnestown Road and Muddy Branch Road, rather than across the Belward property as originally envisioned.

2. Life Sciences Center (LSC) Loop

In July 2014, the Planning Department hired Alexandria, Virginia-based consultant Rhodeside & Harwell to develop a design for the LSC Loop with funding from the Metropolitan Washington Council of Governments (MWCOG) through its Transportation-Land Use Connection Program. The total grant was for $60,000, with $40,000 allocated for developing a unified trail design and $20,000 allocated for developing an implementation and funding strategy to be produced by the end of June 2015. Planning staff believes these documents were a necessary step toward securing the funding necessary for the LSC Loop, which is identified in the GSSC Master Plan as "the organizing element of the open space plan to connect districts and destinations, incorporate natural features, and provide opportunities for recreation and non-motorized transportation." As such, funding of the LSC Loop is also critical to implementing the GSSC Master Plan. Since the 2015 Biennial Monitoring Report, the initial design for the LSC Loop was completed and approved by the Planning Board as an amendment to the Urban Design Guidelines for the GSSC Master Plan. Through continued outreach and advocacy for the Loop Trail, funding for facility planning of the trail was included in MCDOT's CIP for FY 2017. MCDOT began work on the facility plan in November 2016. The completion of the preliminary design is anticipated in spring 2018.

3. Bicycle Master Plan (BMP)
At the request of the GSSC Implementation Advisory Committee and residents and stakeholders, and in consultation with the Montgomery County Department of Transportation, the Planning Department commenced the BMP with an early focus on the LSC. Due to the rapid pace of change in the Life Sciences Center area, the Planning Department has advanced work in this area so that meaningful opportunities to construct segments of the preferred bike network were not lost before the Bicycle Master Plan could be completed. This effort will enable the Planning Department to coordinate bicycle facility planning with development approvals and the design of the Corridor Cities Transitway (CCT).

4. Public Safety Training Academy (PSTA) relocation
The new PSTA at the Montgomery County Multi-Agency Service Park (MCMASP) opened in November 2016 and the former PSTA on Great Seneca Highway was vacated.

The GSSC Master Plan states that the new LSC West community to be constructed on the PSTA site should include a new public elementary school, if needed. The need for the school has not yet been established by Montgomery County Public Schools (MCPS). Planning for redevelopment of the PSTA is being coordinated by the Montgomery County Department of General Services (MCDGS). The MCDGS will coordinate planning for the park/school site with MCPS and the Montgomery County Department of Parks.

5. Non-Auto Driver Mode Share (NADMS)
NADMS is the percent of work trips via transit (bus or rail), walking, biking or carpooling during the peak travel periods of a typical weekday. MCDOT's FY 2016 commuter survey identifies this figure at 13.4 percent in the GSSC, while an 18 percent NADMS is needed to open stage two.

Development Approvals

Since the 2015 Biennial Master Plan Monitoring Report, the Planning Board has approved a Preliminary Plan and Site Plan Amendment for Travilah Grove to convert the previously approved multi-family units to townhomes, and a Site Plan Amendment for Shady Grove Life Sciences Center Parcel N/Q – 9905 Medical Center Drive to reconfigure a previously approved office building.

Certain owners of properties in the GSSC Master Plan area must submit a concept plan for Planning Board approval:

- This master plan requirement is unique to the GSSC Master Plan (see page 34).
- The concept plan must demonstrate how a site will achieve the GSSC Master Plan's vision at full build-out.

- These rules apply only to owners of properties comprising 20 acres or more, including the Johns Hopkins University (JHU) Belward Campus, JHU Montgomery County Medical Center, Shady Grove Adventist HealthCare, DANAC Stiles campus and the Public Safety Training Academy (PSTA).

All applicable properties have approved concept plans except the PSTA site.

Conversions
The GSSC Master Plan allows existing commercial plan approvals to be converted to residential unit approvals without counting against the residential unit capacity available in a development stage, provided that the change in development will not increase the number of vehicle trips. There have been no conversions since the 2015 Biennial Master Plan Monitoring Report; however, to date, three preliminary plans (Hanover Shady Grove, Mallory Square and Camden Shady Grove) have converted a total of 387,751 square feet of existing commercial capacity approvals to 1,212 new residential units.

Combined Preliminary and Site Plans
Regulatory reviews for Preliminary Plans and Site Plans by the Planning Board include required findings to be made before plans are approved. Each project undergoing regulatory review since the 2015 Biennial Monitoring Report listed below is summarized to describe how the amendment addressed conformance to the GSSC Master Plan's goals, objectives and recommendations to make the required finding.

Since the 2015 BMR, the Planning Board has granted combined preliminary and site plan amendment approvals for:

- Decoverly Hall South

Limited Preliminary Plan and Site Plan Amendments for Decoverly Hall South (Nos. 11999033A and 81999014C) were approved by the Planning Board for a change in use at Lot 1 of two lots. One condition of approval required the Applicant to install an interim eight-foot wide shared-use-path, LB-4, within the existing public right-of-way of Blackwell Road between Medical Center Drive and the western property line of the Subject Property.

The amendments will implement the goals and objectives of the GSSC Master Plan and make a critical connection to the LSC Loop with installation of shared use path LB-4.

- Travilah Grove

The Preliminary Plan and Site Plan Amendments for Travilah Grove (Nos. 12012029A & 82013020A), the former Rickman property, were approved by the Planning Board to convert the 300 multi-family units previously approved to 131 townhomes.

The applicant minimized imperviousness onsite in the Piney Branch Special Protection Area (SPA). Because the applicant addressed the GSSC Master Plan's goals, guidelines and recommendations, the required finding was made that the proposal was in general conformance with the Master Plan.

Travilah Grove

- Travilah Square

The Travilah Square Shopping Center (No. 12011034B and 82013007A) currently is improved with 61,496-square feet of commercial, office and retail space. Although the site is zoned Commercial-Residential (CR), the standard method of development for this proposal did not require approval of a sketch plan and the site is not subject to staging limitations in the Master Plan.

The current property owner proposes a Trader Joe's grocery store in a 14,300-square foot unit and a second, smaller unit contains 2,000-square feet. The applicant addressed the GSSC Master Plan's goals, guidelines and recommendations; in the Board's approval, the required finding was made that the proposal is in general conformance with the Master Plan.

Mandatory Referrals

The Planning Board's review of mandatory referral (MR) applications is advisory and is stipulated in Section 7-112 of the Regional District Act. Although the Planning Board does not have to make required findings in the review of MR applications, the Planning Department's practice has been to include an analysis of a MR application's proposal and its relationship to a master or sector plan governing the site.

In December 2015, the Planning Board reviewed and transmitted comments in support of Mandatory Referral MR2016008 for the Universities at Shady Grove. The applicant proposes construction of a 220,000-square foot, six-story, state-of-the-art academic building and anticipates construction of this structure will result in an associated increase in enrollment from 2,500 to 4,000 students.

The campus is inside the Piney Branch SPA and the academic building's stormwater management concept plan substantially exceeded the minimum requirements; through removal of a portion of an existing parking lot and inclusion of new landscaped areas, the impervious areas on the project site were reduced by 0.19-acres.

The academic building was found to be consistent with GSSC Master Plan recommendations that will result in job creation and enhanced life sciences opportunities. At the Planning Board's review of the application, Planning Board members recognized the applicant's stellar efforts to include sustainability in the building's interior and exterior design and environmental protection of the Piney Branch SPA.

New academic building, Universities at Shady Grove

Site Plans

An administrative site plan amendment was approved for Shady Grove Technology Center (No. 81984058A), which allowed for reconfiguration of a driveway access point to accommodate the Mallory Square development and future construction of master-planned road B-10.

A site plan amendment was approved for Shady Grove Life Sciences Center Parcel N/Q – 9905 Medical Center Drive (No. 81997005A) to allow for the reconfiguration of an approved/unbuilt office building. This project will provide a more modern building layout and a design in conformance with the GSSC Master Plan and Urban Design Guidelines.

A site plan amendment and final water quality plan were approved for 9800 Medical Center Drive (No. 81995045D) to allow 117-additional surface parking spaces in an expansion with stormwater management and landscape planting improvements. The Board determined that the proposal is in general conformance with the GSSC Master Plan's goals and recommendations for additional tree canopy planting and protection of the Piney Branch SPA.

9905 Medical Center Drive

Public Facilities and Amenities

Plan Recommendations

The GSSC Master Plan identifies several community facilities to serve the Life Sciences Center and make "great places to live, work and play. The LSC's proposed redevelopment offers an opportunity to enhance public facilities, amenities and recreational options. This plan recommends using urban design, parks and trails to create an open space network for the LSC that will provide a range of experiences and a sense of place, integrating the built and natural environments and passive and active spaces" (GSSC Master Plan, page 30).

Community Recreation Center

As envisioned by the GSSC Master Plan, the Nancy H. Dacek North Potomac Recreation Center has been completed and was dedicated on October 22, 2016.

Public Parks

Traville Local Park in the LSC South District is a candidate for inclusion in the M-NCPPC Montgomery County Department of Parks FY19-24 CIP.

For references to public park sizes and descriptions, see the 2012 Park, Recreation and Open Space (PROS) Plan. The PROS Plan was updated in 2017. http://www.montgomeryparks.org/PPSD/ParkPlanning/Projects/pros_2012/documents/2012.PROS.Plan-final.10.19.12.pdf

Most of the other formal open spaces in the LSC are associated with development plans that are still in their early stages. The other significant open spaces (see the GSSC Master Plan, page 31) are:

- An extensive open space network on the Belward Campus with a variety of passive, active and cultural experiences.
- Completion of the Muddy Branch Trail corridor along the western edge of the Belward property.
- Civic greens at each CCT station.
- The shared park/school site in the LSC West District as well as a public civic green.
- Development of Traville Local Park in the LSC South District.
- Green corridors between and through major blocks linked by the LSC Loop to connect destinations and integrate passive and active spaces.

Fire Station

A new fire station (Travilah Fire Station 32) opened in February 2014 in the northwest quadrant of the intersection of Shady Grove and Darnestown Roads.

Library

The GSSC Master Plan (page 31) notes that, "As the LSC grows into a major hub for life sciences research and development, a library specializing in science and medical research may be desirable. A publicly accessible specialized library could be funded through private sector development contributions to an amenity fund and could be located at the Johns Hopkins University Belward Campus or the Johns Hopkins University-Montgomery County Medical Center site, or another appropriate location in LSC Central." Consideration should be given for such a facility as the potential sites mentioned move toward site plan approvals.

Schools

Elementary School

The GSSC Master Plan specifies that a new public elementary school be included in LSC West District, if needed. The Plan goes on to recommend that if a "new elementary school is needed, it could be combined with a local park on the northern portion of LSC West District. If the school is needed and if the northern area is chosen, the proposed

local street (see B-5 on Map 29 in the GSSC Master Plan, page 54) should be eliminated to create adequate space for a park/school site." Additionally, the Master Plan states that "if the school is not needed, a local public park for active recreation should be provided" (GSSC Master Plan, page 38). The County is continuing to plan the redevelopment of the PSTA site and details about the school site will be considered as part of the regulatory process.

School Clusters

The Life Sciences Center is served by two school clusters: the Gaithersburg Cluster and Thomas S. Wootton Cluster. Based on the results of the school test for FY17, the Gaithersburg Cluster is more than 105 percent of capacity at all three school levels. To address capacity needs, developers of residential projects within the Gaithersburg Cluster boundary are required to make a school facility payment for any building permit approved before March 1, 2017.

On November 15, 2016, the County Council approved the 2016 Subdivision Staging Policy (SSP). Under the new SSP, school adequacy is tested at the cluster level and at the individual school level. As under the prior SSP if, at any school level (elementary, middle or high), projected enrollment exceeds 120 percent of projected capacity, the Planning Board cannot approve additional residential development.

The 2016 SSP added an individual school test at the elementary and middle school levels. For elementary schools, if projected enrollment exceeds projected capacity by 120 percent and the deficit is greater than 110 student seats, then the Planning Board cannot approve additional residential development within the applicable elementary school service area. For middle schools, if projected enrollment exceeds projected capacity by 120 percent and the deficit is greater than 180 student seats, then the Planning Board cannot approve additional residential development within the applicable middle school service area.

Preliminary results of the FY18 Annual School Test indicate that Rosemont Elementary School (ES), Strawberry Knoll ES and Summit Hall ES (all within the Gaithersburg Cluster) are each over the 120 percent threshold, and have a student seat deficit in excess of 110 student seats. This outcome means that the school service area for each of these elementary schools will be in moratorium for approval of additional residential development.

Private Development Amenities

Public Use Space

The GSSC Master Plan "recommends a series of open spaces provided through a combination of public and private efforts. Both residential and commercial development projects should provide recreational facilities, open spaces and trail

connections that shape the public realm, help implement the Plan recommendations, and serve existing and future employees and residents" (GSSC Master Plan, page 31).

Public use space requirements for development approvals vary by zone, but all contribute to fulfilling the open space needs of the employees and residents of the LSC. The following public use spaces have been, or will be, contributed by developments in the LSC:

- Camden Shady Grove: 21 percent of the net lot is approved as enhanced streetscape and pedestrian/cyclist facilities, landscaping and the master-planned CCT urban plaza.
- Travilah Grove: The 10 percent requirement will be exceeded with three areas of public use space in 2.0 acres. These public open spaces provide passive and active recreation opportunities and the largest of the three areas will include landscaped seating with park benches on brick pavers, a pergola, barbeque grills and picnic facilities, a fire pit, a bocce ball court and a grass-surface open play area, all in a linear park-like design.
- Mallory Square: 20 percent of the net lot is approved for enhanced pedestrian/cyclist amenities, urban plazas, landscaping and a pocket park.
- National Cancer Institute: 37 percent of the net lot is approved for open space for employees and visitors.
- Hanover Shady Grove: 19 percent of the net lot is approved for an urban pocket park and for enhanced streetscapes and passive recreation areas.
- Johns Hopkins University (JHU) Belward Campus: 20 percent of the net lot is approved for small pocket parks, enhanced pedestrian/cyclist amenities, streetscapes and a large, active recreation park.
- JHU Montgomery County Medical Center: 20 percent of the site is approved for improved landscaping, pocket parks and enhanced pedestrian/cyclist amenities.
- 9800 Medical Center Drive: 20 percent of the net lot is approved for open space for employees and visitors.
- Travilah Square: The10 percent public use space requirement is to be met with a 7,500-square foot area on the west side of the proposed new building. The space is at the required 10 percent and will create a focal point/sitting area with a trellis feature, native plant landscaping and shade trees for canopy coverage. The public use space will activate the public realm as a gathering place for patrons and employees at the shopping center.
- Shady Grove Adventist Hospital: 20 percent of the net lot is approved for an enhanced streetscape and pedestrian/cyclist facilities, landscaping and the master-planned CCT urban plaza.
- Shady Grove Parcel N/Q: 47.3 percent of the Site will be provided as public use space, well in excess of the 20 percent required in the LSC zone.

Public Amenity and Benefit Summary

For the Life Sciences Center zone, public facilities and amenities are defined as "those facilities and amenities of a type and scale necessary to provide an appropriate environment or to satisfy public needs resulting from the development of a particular project." The following are the public amenities that were approved prior to the 2013 BMR. Facilities and amenities may include, but are not limited to:

a. Green area or open space that exceeds the minimum required, with appropriate landscaping and pedestrian circulation.
b. Streetscapes that include elements such as plantings, special pavers, bus shelters, benches and decorative lighting.
c. Public space designed for performances, events, vending or recreation.
d. New or improved pedestrian walkways, tunnels or bridges.
e. Features that improve pedestrian access to transit stations.
f. Dedicated spaces open to the public, such as museums, art galleries, cultural arts, community rooms, recreation areas.
g. Day care for children or senior adults and persons with disabilities.
h. Public art.

In the Commercial Residential (CR) zones, public facilities and amenities are based on public use space and public benefits related to set categories and a point system, as described in the County's 2014 Zoning Ordinance and the White Flint public benefits section of this document.

In either case, these facilities and amenities are typically identified at the time of sketch plan approval for CR-zoned properties or at site plan approval. The following facilities and amenities will be provided through plan approvals in the GSSC Master Plan area:

Hanover Shady Grove (820120190) was approved with:

- Additional green space.
- Streetscapes.
- Public space.
- Pedestrian improvements.
- Bikeshare station.
- Enhanced tree canopy.

Camden Shady Grove (320120050) was approved with:

- Additional green space.
- Streetscapes.
- Public space.
- Pedestrian improvements.
- Pedestrian access to transit.
- CCT station plaza.
- Enhanced tree canopy.

Mallory Square (820120130) was approved with:

- Additional green space.
- Streetscapes.
- Public space.
- Pedestrian improvements.
- Bikeshare station.
- Enhanced tree canopy.
- Public art payment.

Transportation

Plan Recommendations

The GSSC Master Plan recommends "a comprehensive transportation network for all modes of travel, including bicycle and pedestrian routes, and constructing the CCT [Corridor Cities Transitway] through the LSC." It proposes a local street network that "will create a finer grid and improve vehicular and pedestrian connections between the districts." The LSC Loop is intended to unify the pedestrian and bicycle circulation systems with sidewalks, bikeways, trails and paths that provide mobility and recreation options (GSSC Master Plan, page 53).

The Plan also recommends managing parking supply and demand, and defining "public garage sites at preliminary plan for publicly-owned properties in LSC Central and LSC West," as well as achieving an ultimate NADMS of 30 percent for LSC employees (GSSC Master Plan, page 55).

Steps taken toward implementation of these goals include the provision of local road B-9 and dedication of right-of-way for B-10 as part of the Mallory Square development approval; a condition of approval in the Decoverly Hall South amendments requiring any increase in square footage beyond the existing square footage, or reconfiguration of the existing building footprint, may require a Preliminary Plan Amendment to address, among other elements, the dedications for Master Plan recommended Business District Streets B-9 and B-10; bikeshare stations near or adjacent to proposed bikeways at Hanover Shady Grove and Mallory Square; and the dedications of CCT stations at Camden Shady Grove and Shady Grove Adventist Hospital.

Corridor Cities Transitway

Since the GSSC Master Plan's adoption in June 2010, the State of Maryland has announced the locally preferred alternative for the CCT, establishing the alignment and determining that the transit mode will be bus rapid transit (BRT). This decision sets the stage for facility planning, including development of cost estimates for construction. Cost estimates must be developed to enable inclusion of construction money in either the County CIP or the state CTP, as required for the opening of stage two of the GSSC Master Plan.

As noted at the beginning of this report, the 30 percent design milestone was reached in October 2015. One of the challenges that has surfaced during the review of the CCT is the cross-section and alignment of the CCT, automobile travel lanes and bike and pedestrian facilities that are to be co-located in the right-of-way of Muddy Branch Road. The co-location is necessary due to limited space available at the intersection of Muddy Branch Road and Great Seneca Highway. This challenge has required extensive coordination between MTA, MCDOT, Montgomery County Planning Department, Washingtonian Woods and Mission Hills communities, and various individual property owners.

Bicycle and Pedestrian Connections

The GSSC Master Plan proposes a network of trails for pedestrians and bicycles that offers transportation and recreation options within the LSC and connects to the larger countywide network. Significant portions of the pedestrian and bicycle network will be implemented in association with construction of the CCT and as part of larger development projects, including the PSTA and Belward Farm properties.

Sidewalks that meet current standards are being built as part of the Hanover Shady Grove, Mallory Square, Camden Shady Grove, Travilah Grove, Travilah Square, Shady Grove Adventist and the Universities at Shady Grove developments. As stated previously, Decoverly Hall South will provide an offsite extension of a shared-use path to Medical Center Drive and the LSC Loop. As intervening areas redevelop, sidewalk systems will become connected and provide links to destinations within the LSC.

The LSC Loop

The LSC Loop trail will provide both non-auto transportation links throughout the LSC and opportunities for recreation. Portions of the LSC Loop will be constructed as part of large developments, such as the PSTA and JHU Belward Campus. Gaps will need to be identified and funding included (if necessary) in the County's biennial Capital Improvements Program. As discussed earlier in this report, significant progress has been made in planning the LSC Loop, with a facility plan currently underway within the Montgomery County Department of Transportation.

Non-Auto Driver Mode Share (NADMS)

The plan area is within the Greater Shady Grove Transportation Management District (TMD), established in 2011. The TMD will continue to work with GSSC employers to provide guidance and promote incentives that encourage commuters to travel to work by means other than single-occupant vehicles. The TMD's work will be important in helping meet the NADMS goals. As identified at the beginning of this report, the most current commuter survey identifies a mode share of 13.4 percent in GSSC, while an 18 percent NADMS is needed to open stage two.

Transportation System Performance Monitoring

With the elimination of TPAR, the determination of transportation system adequacy is focused on the multi-modal LATR test described above. However, at this point, a limited amount of transportation system performance data pertaining to the Research and Development Village Policy Area is available that is directly relevant to the newly adopted SSP (e.g., HCM-based delay at intersections).

In lieu of relying on metrics directly relevant to SSP, the performance of selected elements of the transportation system located in and within the immediate vicinity of the Research and Development Village Policy Area has been observed utilizing other readily available transportation system metrics. The results of this exercise, drawing primarily on information derived from the 2017 *Mobility Assessment Report*, which are detailed in the appendix of this report.

Traffic Studies with Municipalities

In October 2012, a memorandum of understanding for the Coordination of Traffic Impact Studies for Proposed Development Projects was signed by representatives of the City of Gaithersburg, City of Rockville and Montgomery County Planning Department to improve review of inter-jurisdictional traffic impacts from development in the region. The provisions of this memorandum are retained in the 2017 *Local Area Transportation Guidelines* approved by the Planning Board on May 25, 2017.

Capital Improvements Program Projects

Three Capital Improvements Program projects identified in the GSSC Master Plan have been completed:

- Travilah Fire Station 32 has been constructed and is operating.
- North Potomac Recreation Center has been constructed and is operating.
- PSTA relocation is funded and the new PSTA facilities at the Multi Agency Service Park have been completed and are operating.

As noted earlier, funding for the CCT in the State Consolidated Transportation Program (CTP) has been severely curtailed. Three CIP projects identified in the GSSC Master Plan have been completed. Fourteen additional CIP projects identified in the GSSC Master Plan are not currently funded. Five CIP/CTP projects are tied to staging, with two projects (full funding for CCT construction from the Shady Grove Metrorail Station to Metropolitan Grove and full funding of the LSC Loop trail) required for the opening of stage two of the GSSC Master Plan. In addition to these critical needs, Planning Department staff suggests funding for a facility planning study for potential improvements to the intersections of Great Seneca Highway with Sam Eig Highway and Muddy Branch Road.

Table 5: Great Seneca Science Corridor Capital Improvements Program Public Facility Projects

Tied to staging	Project name	Project number (if assigned)	Location/ limits	Coordinating agency	Project status
No	Travilah Fire Station 32	450504	Northwest corner of Darnestown Rd and Shady Grove Rd	DGS	Constructed and operating.
no	North Potomac Community Recreation Center	720102	13860 Travilah Rd	DGS	Constructed and operating.
Yes (Stage 2)	PSTA relocation	471102	LSC West: Key West Ave. and Great Seneca Hwy.	DGS	New PSTA constructed and operating. Relocation is complete.
Yes (Stage 2)	LSC Recreation Loop		Throughout LSC	Various (public and private)	Facility planning underway. Construction not funded.
No	Civic green		LSC West/PSTA	DGS and M-NCPPC	Not funded.
No	Park (with school)		LSC West/PSTA	DGS and M-NCPPC	Not funded.

Tied to staging	Project name	Project number (if assigned)	Location/ limits	Coordinating agency	Project status
No	Elementary school		LSC West/PSTA	DGS, M-NCPPC, and MCPS	Not funded.
No	Traville Local Park		LSC South	M-NCPPC	Candidate for funding in Department of Parks FY2019-2024 CIP.
No	Local park		Quince Orchard	M-NCPPC	Not funded.
No	Muddy Branch Trail Connector		LSC Belward	M-NCPPC and private	Not funded.

Table 6: Great Seneca Science Corridor Capital Improvements Program Transportation Projects

Tied to staging	Project name	Project number (if assigned)	Location/ limits	Coordinating agency	Project status
Yes (Stage 2)	CCT funded		Shady Grove Metro Station and Metropolitan Grove	MSHA/MTA	Funding in the State CTP reduced to $5 million. No construction funding is allocated.
Yes (Stage 3)	CCT under construction		Shady Grove Metro Station and Metropolitan Grove	MSHA/MTA	Not funded.
Yes (Stage 4)	CCT operating		Full length	MSHA/MTA	Not funded.
No	Sam Eig Hwy./Great Seneca Hwy.		Intersection interchange	DOT/SHA	Not funded.
No	Shady Grove Rd./Key West Ave.		Intersection interchange	DOT/SHA	Not funded.
No	Great Seneca Hwy./Muddy Branch Rd.		Intersection interchange	DOT/SHA	Not funded.

Challenges

There are several challenges to implementing the GSSC Master Plan:

Staging

Meeting prerequisites for opening stage two of the GSSC Master Plan will require significant effort:

- Fully fund the CCT construction from the Shady Grove Metrorail Station to Metropolitan Grove. The tight economy and greater government austerity are limiting funding for major transit projects such as the CCT, which will be competing with other transit projects for a shrinking pool of money.
- Fund the LSC Loop trail in the County's six-year CIP and/or through developer contributions as part of plan approvals. Again, fiscal constraints and limitations will most likely make this important staging trigger difficult to meet.
- Reaching 18 percent NADMS before the CCT is constructed will be difficult, given the plan area was created as an auto-centric suburban office park with abundant free parking. The task is made harder by the obstacles to creating a walkable, bikeable community and market challenges to mixed-use development, as discussed above.

Corridor Cities Transitway (CCT)

Efforts are planned to identify strategies by which to reduce the cost of constructing and implementing the Corridor Cities Transitway, including identifying an alternate, equivalent mass transit system. Approaches may include delaying acquisition and construction of sections of dedicated right-of-way and eliminating grade separations that were originally envisioned at certain intersections, as well as other changes to the original vision for the CCT. Based on current and projected funding constraints, these shifts raise open questions as to whether the CCT can and will function as originally planned in 2010. Due to the uncertainty of CCT funding, there was consensus among the committee members at the May 30, 2017 meeting regarding the need to rethink what the CCT really is and how it may function in the foreseeable future.

PSTA

The GSSC Master Plan identifies the current PSTA site in the LSC West District as the predominant residential community in the Life Sciences Center. The site's redevelopment is part of Montgomery County's Smart Growth Initiative, which focuses transit-supported commercial and residential development to areas planned for transit service by relocating public facilities. The County's Department of General Services is facilitating a comprehensive plan for redevelopment of the PSTA, which is envisioned to include 2,000 dwelling units, ancillary retail uses, an elementary school if needed, a public park and civic green, a CCT station and a portion of the LSC loop trail. Redevelopment of this site in LSC West District will be a much needed catalyst to spurring development in the LSC.

Land use

The GSSC Master Plan envisions mixed-use development to enable LSC employees and residents to access basic services without a car. The development of the nearby Crown Farm's retail center and the Plan's staging restriction on non-residential uses is causing developers to shy away from providing basic commercial services in their developments. As a result, new developments tend to be single-use-focused and may not generate sufficient foot traffic to support ground-level retail uses.

The GSSC Master Plan envisioned that redevelopment of the PSTA site in the LSC West District would be a key factor in establishing a critical mass of residents to support neighborhood-serving retail and restaurants in the LSC. Due to the constraint on new non-residential development capacity in stage one of the Master Plan, creating an active mixed-use center in the PSTA redevelopment will be difficult.

Pedestrian and bicycle connectivity and safety

The Plan aspires to re-create GSSC from an auto-centric suburban business park bisected by arterial roads into a walkable, bikeable community. However, existing roads work against knitting the GSSC districts together and against walking and biking between the districts. Some success is being achieved creating more pedestrian and bicycle connections within districts through conditions in approved development plans, but connectivity between districts remains challenging.

Advisors

GSSC Implementation Advisory Committee

The GSSC Implementation Advisory Committee (IAC) was established by the Montgomery County Planning Board on September 30, 2010 to "evaluate the assumptions made regarding congestion levels, transit use and parking. The committee's responsibilities should include monitoring the Plan recommendations, monitoring the Capital Improvements Program and the Subdivision Staging Policy, and recommending action by the Planning Board and County Council to address issues that may arise, including, but not limited to, community impacts and design, and the status and location of public facilities and open space" (GSSC Master Plan, page 79).

The committee members represent local property owners and residents, including residents of neighborhoods in the adjoining jurisdictions of the City of Rockville and the City of Gaithersburg, as well as representatives from the County Executive's office, the City of Rockville and the City of Gaithersburg.

The GSSC IAC has reviewed and provided comments and guidance to applicants, Planning Department staff and applicable agencies on a variety of topics, including the LSC Loop; the advancement of the CCT from 15 percent to 30 percent design; the Bicycle Master Plan; and sketch, preliminary and site plans of developments in the area. The committee's participation and input has improved GSSC Master Plan implementation.

GSSC IAC Recommendations

The GSSC IAC shares staff's concerns in the challenges for the GSSC Master Plan area, and agrees that the LSC is unlikely to transform from a suburban office park model to the dynamic, mixed-use community envisioned by the GSSC Master Plan unless the staging triggers adopted by the County Council are made a priority. Therefore, the GSSC IAC makes the following recommendations:

- Complete the facility planning process for the LSC Loop trail. Results of the facility plan should be used to determine costs and funding strategies to construct the project. Put appropriate funding for the LSC Loop trail in the County's six-year CIP and/or through developer contributions as part of plan approvals.
- Fully fund CCT construction from the Shady Grove Metrorail Station to Metropolitan Grove. As a part of this process, re-visit the CCT to see if the design, as evolving, will continue to provide the transit system needed to support the envisioned development of the LSC and whether creative funding strategies can be developed to facilitate development of the system.

Recommendations

The LSC is unlikely to transform from a suburban office park model to the dynamic, mixed-use community envisioned by the GSSC Master Plan unless these three goals are achieved:

- Fully fund CCT construction from the Shady Grove Metrorail Station to Metropolitan Grove.
- Fully fund the LSC Loop trail in the County's six-year CIP and/or through developer contributions as part of plan approvals.
- Redevelop the PSTA site.

Planning Department staff believes these three goals are paramount to implementing the vision of the GSSC Master Plan.

Corridor Cities Transitway (CCT)

The process to advance funding and construction of the CCT should include a re-examination of the original vision for this public transit facility, and a look at how it is evolving, to make certain that the CCT functions as intended to provide a feasible alternative to automobile travel in the LSC. The IAC recognizes the CCT's original design is evolving primarily due to funding constraints and developers' inability to provide mixed-use developments that attract sufficient foot-traffic to make non-residential uses viable. The process should also identify opportunities for public review and comment regarding proposed changes to the system.

Non-Auto Driver Mode Share (NADMS)

The latest NADMS measurement has fallen from the previous mark. There are several factors that may contribute to this reduction, including a lower cost for gasoline over the past couple of years, concerns about the reliability of public transportation systems and variations in employer participation in the Annual Commuter Survey. Implementation planning should include a more focused effort on achieving the NADMS goals for the Life Sciences Center.

Public Facilities and Amenities

Public facilities and amenities are specifically defined in the County's new zoning code, enacted in October 2014, and recommended in the GSSC Master Plan; they are provided by both public funding and private development, and are publicly accessible or enhance the public environment. Public CIP projects are discussed below. In order to augment public CIP projects, non-CIP facilities should be provided as part of larger developments, such as the Johns Hopkins University's Belward Campus and the PSTA.

Capital Improvements Program

Partial funding is provided in the state CTP for initial planning of the CCT. Fourteen additional CIP projects identified in the Plan are not currently funded. Five CIP/CTP projects are tied to staging, with two projects (full funding for CCT construction from the Shady Grove Metrorail Station to Metropolitan Grove and full funding of the LSC Loop

trail) required for the opening of stage two of the Master Plan. In addition to these critical needs, Planning Department staff suggests funding for a facility planning study for potential improvements to the intersections of Great Seneca Highway with Sam Eig Highway and Muddy Branch Road.

Transportation

- Advance the Bicycle Master Plan, in order to more effectively coordinate with MCDOT, Maryland SHA and Montgomery County Planning Department to create a plan to improve pedestrian and bicycle connections between the five districts of the Life Sciences Center, the neighboring jurisdictions of Rockville and Gaithersburg, and the County bike network as a whole. This plan will comprehensively examine the proposed road system and make recommendations to create an efficient multi-modal transportation system throughout the LSC.
- Coordinate a study of existing transit service and create a plan to increase NADMS and reduce bus headways to acceptable levels prior to completion of the CCT. Continue to work with applicants during development review to bring mixed uses into LSC developments.
- Coordinate a comprehensive study of parking needs and strategies for the LSC.

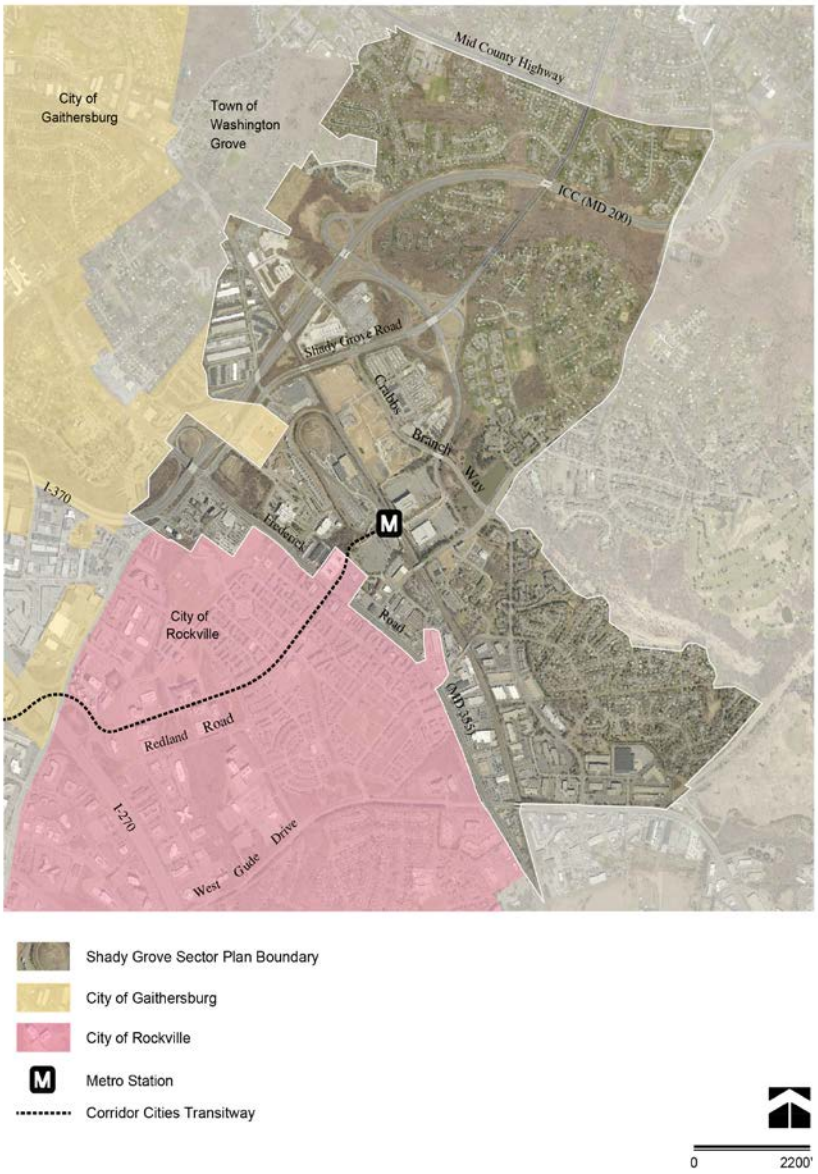
SHADY GROVE SECTOR PLAN

Background

Plan Goals

The 2006 *Shady Grove Sector Plan* envisions an urban village surrounding the Shady Grove Metrorail Station with an array of new public facilities, parks and open spaces, bikeways and a new street network. The Plan recommends the redevelopment of the Montgomery County Service Park (CSP) with residential and non-residential development, and public facilities, including an elementary school site and a public park. The Sector Plan's residential and non-residential recommendations are linked with required infrastructure for each stage.

Map 10: Shady Grove Sector Plan Area and Surrounding Areas



Key Monitoring Updates

Since the 2015 BMR, two projects are either under construction or about to be studied for the *Shady Grove Sector Plan* area.

Shady Grove Station (Westside and Jeremiah Park)

Shady Grove Station is the redevelopment of the Montgomery County Service Park (CSP). Phase one, known as Shady Grove Station, Westside, is under construction and will deliver 124 townhouses and 334 multifamily residential units in 2017. As of this report, 44 townhouses are completed and occupied. The first multifamily building, the Daley, will be completed in fall 2017. Associated with the development, the following infrastructure projects will be implemented:

- The reconstruction of Crabbs Branch Way into an urban boulevard with bikeways and streetscape will be completed in fall 2017.
- A new roadway that provides a linkage to the Shady Grove Metro Station is complete.
- A trail around the stormwater management pond at Redland Road and Crabbs Branch Way will be implemented in 2017.
- Two new 11-dock Capital Bikeshare Stations will be installed in 2017.

Townhouses and the first multifamily building at Shady Grove Station-Westside

Jeremiah Park
The Montgomery County Department of General Services (DGS) has announced that the agency will be conducting a districtwide study of Montgomery County Public Schools (MCPS) bus parking needs. Until the buses can be relocated, the redevelopment of Jeremiah Park (Shady Grove Station, Eastside) has been delayed.

Development Approvals

Since the 2015 BMR, the Planning Board has approved no new development in the Shady Grove Plan area. Prior approved developments include the Townes at Shady Grove and Shady Grove Station.

Townes at Shady Grove
The Townes at Shady Grove, located at Redland Road and Yellowstone Way, is partially completed. Developed by Comstock Homes, all the townhouses and single-family residential units have been built; the multifamily building will be built in the future.

Shady Grove Station, Montgomery County Service Park redevelopment
Shady Grove Station is the redevelopment of the Montgomery County Service Park (CSP) as a joint venture between Montgomery County and private developer EYA. Located south of Shady Grove Road and northeast of the Shady Grove Metro Station, Shady Grove Station is divided into two segments: Shady Grove Station, Westside and Jeremiah Park (Shady Grove Station, Eastside). Crabbs Branch Way is the roadway between the two areas.

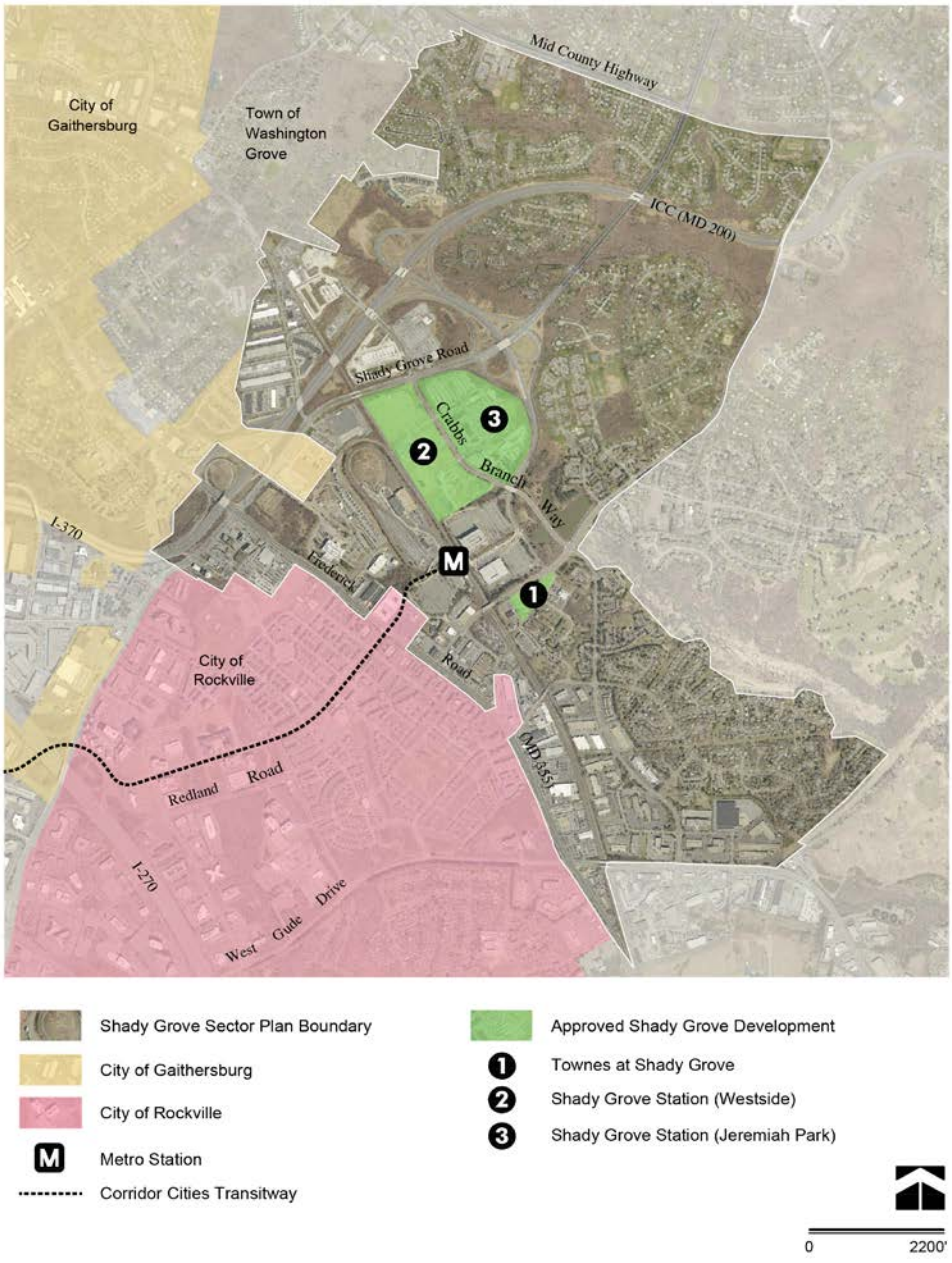
<u>Shady Grove Station Westside</u>
Shady Grove Station, Westside (Phase I) is under construction with 124 residential townhouses and 334 multifamily residential units. When completed, Shady Grove Station, Westside will deliver 1,521 residential dwelling units, including 407 townhouses, 1,114 multi-family residential dwelling units, 41,828 square feet of retail and space for a public library. A significant amount of affordable housing, including 211 moderately priced dwelling units (MPDUs) and 116 workforce housing (WF) units, are included in this portion of the development.

<u>Jeremiah Park</u>
The Montgomery County Parks Department Training and Maintenance Center and the Montgomery County Public Schools (MCPS) Bus Depot are the existing public uses on the eastern portion of the CSP. The Parks Department Maintenance Center has moved to the new Multi-Agency Service Park at 8301 Snouffer School Road.

The County Code requires the County Council to approve a Declaration of No Further Need before the County Executive can dispose of real property that has more than nominal value. The Council has extended the time for its review before voting on the Declaration of No Further Need.

In 2015, DGS entered into a development agreement with LCOR and NVR to redevelop Jeremiah Park. DGS has recently indicated that the agency will be working with Montgomery County Public Schools (MCPS) on a countywide parking study for school buses. There are no current timetables as to when the study will begin, and it is unknown when the potential redevelopment may begin.

Map 11: Approved Shady Grove Development



Staging

The *Shady Grove Sector Plan* is a three-level staged plan that limits residential and non-residential development and requires infrastructure for each stage. Stage one is limited to 2,540 residential dwelling units and 1,570 jobs with the redevelopment of the County Service Park (CSP). All stage-one trigger requirements have been implemented, including the establishment of a transportation management district. Table 6 shows the approved and remaining development in stage one.

Table 7: Shady Grove Staging Development

	Residential Dwelling Units (DUS)	Non-Residential (Jobs)
Sector Plan Stage 1 Limit	2,540	1,570
Shady Grove Station	2,210	630[1]
Townes at Shady Grove	156	NA
Total Approved Development	2,366	630
Remaining Stage 1 Development	174	940

Unlike recent master plans, such as the 2010 *White Flint Sector Plan*, the timing for the allocation of development density was not specified in the *Shady Grove Sector Plan*; therefore, both Shady Grove Station and Townes at Shady Grove developments were allocated at the preliminary plan stage.

The *Shady Grove Sector Plan* does not include a reporting requirement to the Council or a development allocation policy, but significant public investments are associated with the redevelopment of the CSP and the ability to move into stage two. To begin stage two, several important transportation triggers must be implemented, including the following:

- The Planning Board must consider the aggregate performance of Transportation Mitigation Agreements in the Shady Grove Policy Area before deciding to move to stage two. If the total vehicle trips from all participating sites exceeds the sum of the allowed trip caps, then the plan should not be considered ready to move to the subsequent stage.
- Each of the plan area's major intersections must operate at or better than its respective Subdivision Staging Policy Local Area Transportation Review (LATR) level of service standard or congestion level at the time of the plan's adoption, whichever is greater. Traffic will be measured from existing and approved development on a network programmed for completion four years later.

[1] This number was derived by using the Planning Department's typical square-foot allocation for a retail job, 400 square feet, and 250 square feet for an office job.

- The Metro Access Road partial interchange must be funded for completion within the first four years of the CIP to ensure adequate access to the Metrorail station.
- The Frederick Road/Gude Drive interchange must be funded for completion within the first four years of the CTP, the CIP or completed through other transit or transportation improvements that would bring the intersection to an acceptable level. "Acceptable" is defined as the applicable intersection congestion standard in the County's Subdivision Staging Policy.

Shady Grove Station, Westside and Townes at Shady Grove have approved Transportation Mitigation Agreements (TMAgs) with the Montgomery County Department of Transportation (MCDOT) and the Planning Board. However, since each project is only partially completed, the evaluation of the aggregate performance of TMAgs has not been conducted.

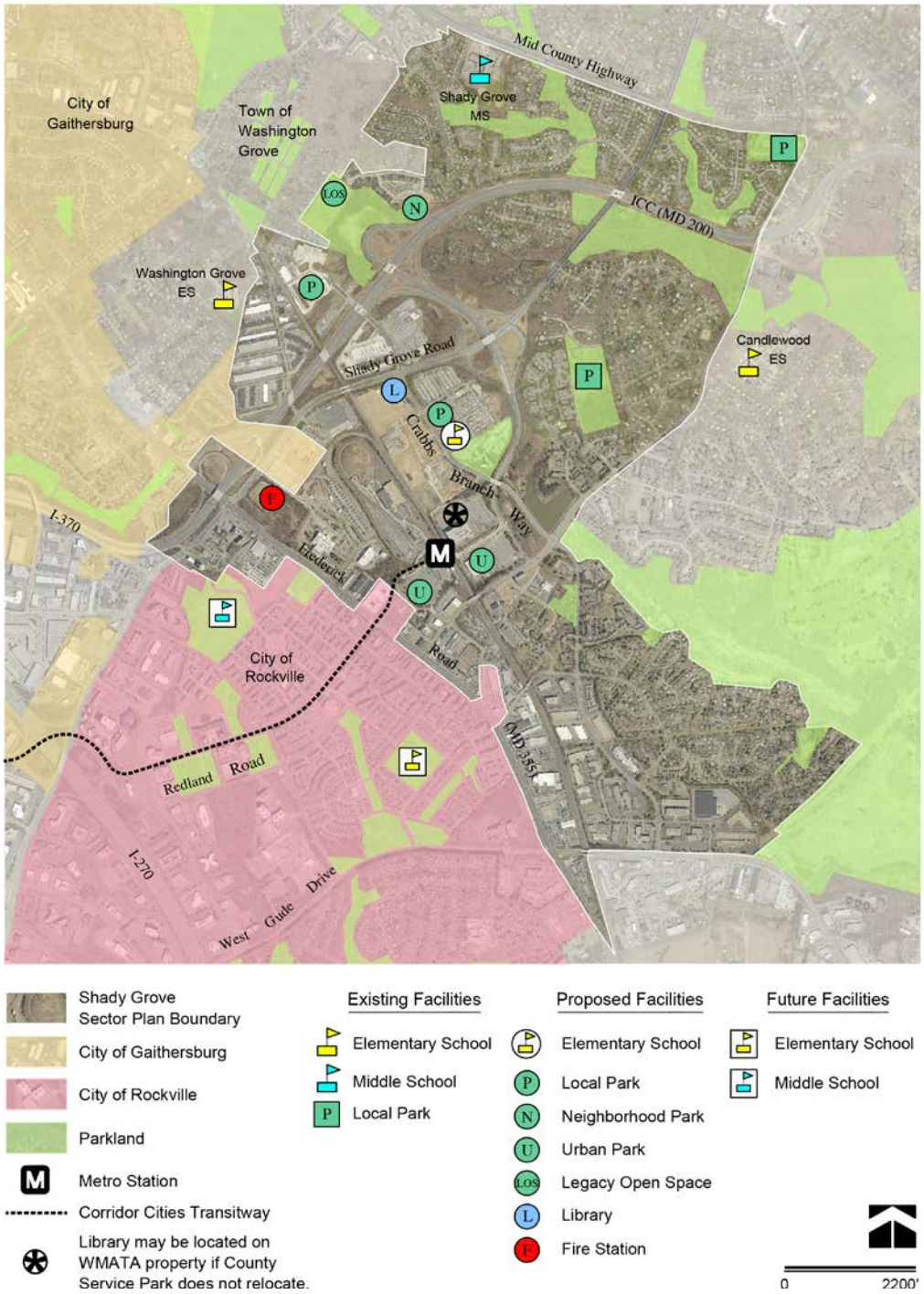
The Metro Access Road, which will impact the east side of Shady Grove Station, is not included in the County's Capital Improvements Program (CIP). Likewise, the Gude Drive and Frederick Road (MD 355) interchange is not listed in the state's Consolidated Transportation Program (CTP) as a priority for construction. The proposed interchange is listed in the CTP as a priority for development and evaluation.

Public Facilities and Amenities

Plan Recommendations

An elementary school, library, new parks and open spaces, including a large public park (Jeremiah Park), and a fire and EMS station are recommended Sector Plan public facilities to support the existing and future communities.

Map 12: Existing and Recommended Public Facilities



Shady Grove Existing and Proposed Public Facilities

Library

An urban library is included as part of the Shady Grove Station, Westside development. The Department of General Services (DGS) has entered into a library lease agreement with EYA that gives Montgomery County Public Libraries (MCPL) the right to lease space, beginning with EYA's acquisition of the land for multifamily Building D. EYA will provide approximately 6,859 square feet as an unfinished retail bay in Building B to MCPL.

Fire and EMS Station

No proposals have been made regarding a fire and EMS station.

Recreation Center

No proposals have been made regarding a recreation center.

Public Parks

No new public parks proposals have been implemented since the 2015 Biennial Monitoring Report. In 2008, the Parks Department acquired approximately 9.77 acres of the Shady Grove Crossing property, near the Town of Washington Grove, for a future local park. However, there is no public road access to this future park, either via Crabbs Branch Way extended or Amity Drive extended. The future of Jeremiah Park, a four-acre local park that is part of the Shady Grove Station development, is unknown given the DGS delay.

Schools

School Clusters

The Magruder, Richard Montgomery and Gaithersburg high school clusters serve the *Shady Grove Sector Plan* area. Montgomery County Public Schools (MCPS) Division of Long-Range Planning is currently conducting a boundary study that aims to reassign portions of the Sector Plan area to the Magruder Cluster schools, including areas east of Interstate 370 currently in the Washington Grove Elementary School, Forest Oak Middle School, and Gaithersburg High School attendance areas.

According to the approved 2016-2020 SSP, Gaithersburg, Magruder and Richard Montgomery clusters are adequate at the cluster level through the 2022 school year. However, in the Gaithersburg Cluster, Rosemont, Strawberry Knoll and Summit Hall Elementary Schools and their associated service areas are in a moratorium because the utilization rate is above 120 percent and each has seat deficits greater than 110 seats. No middle or high schools are above the utilization rate or seat deficit thresholds for all three school clusters.

Elementary School

The Shady Grove Station preliminary plan approval has a dedicated elementary school site at Jeremiah Park. The future implementation of the elementary school is dependent on the relocation of the Montgomery County Public Schools (MCPS) bus depot.

Shady Grove Station is within the Gaithersburg Cluster, and Washington Grove Elementary School is the elementary school service area for the development. The Townes at Shady Grove, which is south of Redland Road, is within the Magruder Cluster and in the Candlewood Elementary School service area.

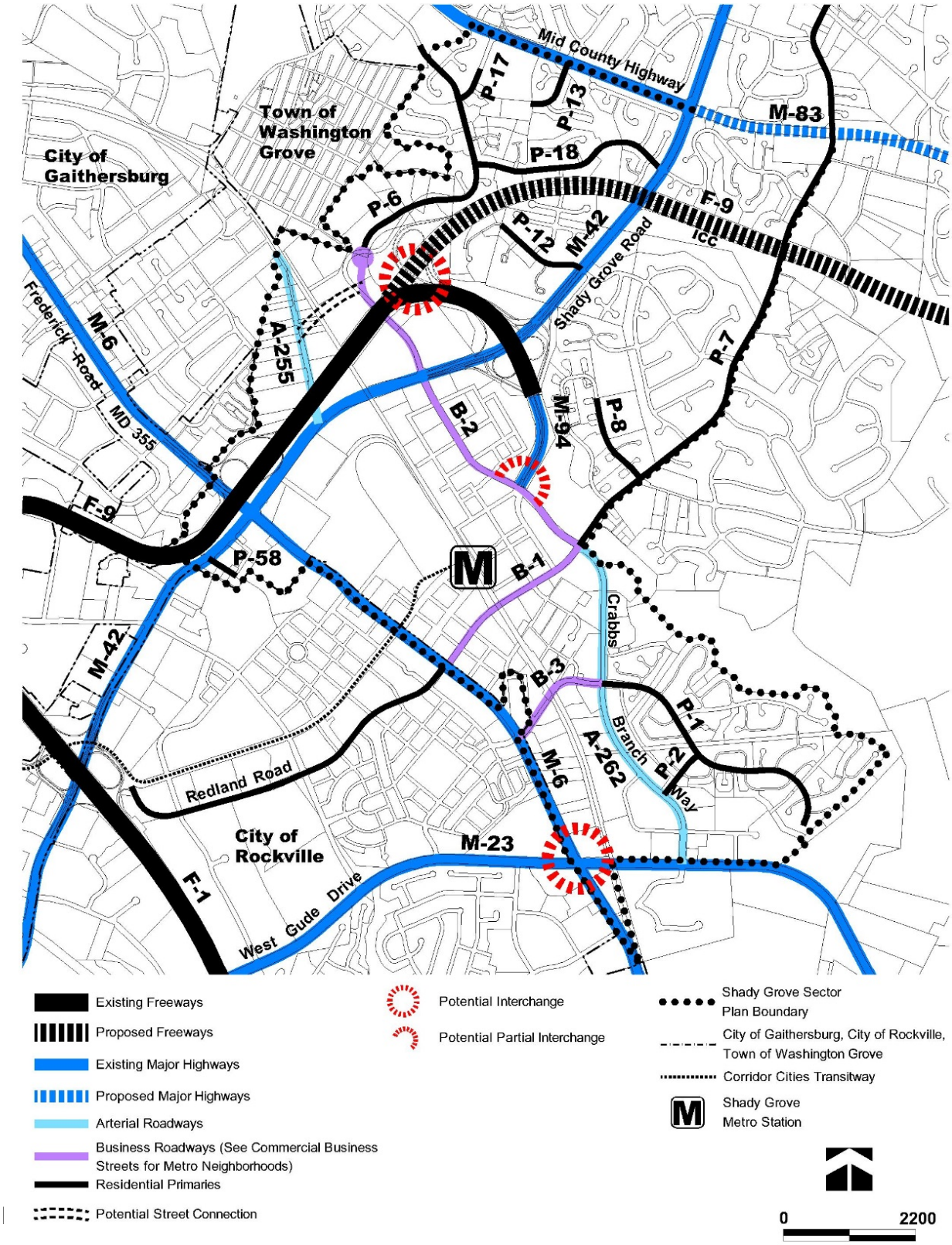
Transportation

Most of the Sector Plan's future development is located within the Shady Grove Metro Station Policy Area (MSPA), including the Metro West and Metro South neighborhoods, where a 120 second average vehicle delay is the standard set by the Highway Capacity Manual (HCM) and the volume-to-capacity (V/C) standard is 1.13. Properties north of Shady Grove Road and the existing residential communities, such as Old Derwood and Parkside Estates, are in the Derwood Policy Area where the HCM standard is 55 seconds average vehicle delay and the V/C standard is 0.92.

The 2017 Mobility Assessment Report indicated that several of the intersections within the Derwood Policy Area and within the plan area, including Shady Grove Road at Midcounty Highway, Shady Grove Road at Tupelo Drive and Epsilon Drive, and Redland Road at Needwood Road, exceed the former critical lane volume (CLV) standard. These intersections were also identified in the 2015 BMR and 2014 Mobility Assessment Report as exceeding the applicable CLV standard.

The *Shady Grove Sector Plan* area is within the Shady Grove Transportation Management District (TMD). In the Shady Grove Metro Station Policy Area, the goal is transit ridership of 35 percent for residents, 25 percent for residents elsewhere in the Sector Plan area and 12.5 percent for employees of office developments traveling to work.

Map 13: Shady Grove Existing and Proposed Transportation Network



Since the 2015 Biennial Monitoring Report, the cities of Rockville and Gaithersburg have not annexed any new properties from the *Shady Grove Sector Plan* area. Prior annexations included the Reed Brothers Dodge and Carmax properties, both at the intersection of King Farm Boulevard and Frederick Avenue (MD 355), to the City of Rockville and the former Sears/Great Indoors store property at 16331 Shady Grove Road to the City of Gaithersburg.

Advisors

Shady Grove Sector Plan Advisory Committee

As required by the *Shady Grove Sector Plan* and its associated Implementation Plan, the Planning Board appointed an advisory committee that consists of property owners and civic and homeowners' representatives. The committee has reviewed all public and private development proposed for the *Shady Grove Sector Plan* area.

Advisory Committee Comments

The *Shady Grove Sector Plan* Advisory Committee has expressed the following concerns regarding development implementation:

- The Montgomery County Board of Education, County Executive and County Council should explore all alternatives to remove school buses from the County Service Park, including parking buses at high schools.

Recommendations

As indicated in the two prior Biennial Monitoring Reports, relocating the Montgomery County Public School (MCPS) school buses and ensuring that the infrastructure triggers are implemented remain critical for the successful implementation of the Sector Plan's recommendations.

The Parks Department Maintenance and Training Center has relocated to the new Multi-Agency Service Park at 8301 Snouffer School Road in Gaithersburg. The Department of General Services (DGS) recent announcement to initiate a parking study for MCPS buses may delay the near-term implementation of Jeremiah Park.

The partial interchange along Crabbs Branch Way is linked to the future development of the eastern side of the CSP, and it must be funded prior to the opening of stage two. Another major transportation requirement is the funding of the Frederick Road/ Gude Drive interchange or other transportation improvements to achieve an acceptable level of service. Neither infrastructure item is included in the County's CIP or the state's Consolidated Transportation Program (CTP) for construction. The Gude Drive Interchange is listed as the fourth priority in the CTP for development and evaluation.

The following areas should be addressed to further the successful implementation of the Sector Plan.

County Service Park

- Relocate the County school bus depot to fully implement the Shady Grove Station development.

Public Amenities and Facilities

- Begin programming the new library in Shady Grove Station, Westside.

Transportation

- Fund the Crabbs Branch Way partial interchange and the Frederick Road/Gude interchange to allow stage two development to move forward and complete redevelopment of the County Service Park. The Crabbs Branch Way interchange must be placed in the County's CIP and the Frederick/Gude interchange must be included in the state's Consolidated Transportation Program for construction.
- Establish public roadway access to the future public park on the Shady Grove Crossing property via either Crabbs Branch Way extended or Amity Drive extended.
- Establish a shared use path along Crabbs Branch Way extended to Brown Street in the Town of Washington Grove.
- Provide a sidewalk along Redland Road between MD 200 and Briardale Road.

Biennial Monitoring Report Transportation Appendix

White Flint Sector Plan

This appendix provides additional transportation information for the White Flint, Great Seneca and Shady Grove plan areas, including congestion ranking for each plan area and its associated vicinity that is derived from the *2017 Mobility Assessment* Report. The full 2017 mobility report is available here-
http://montgomeryplanning.org/wp-content/uploads/2017/02/2017MobilityAssessmentReport_web.pdf
The Planning Board and the Council's Transportation and Environment (T& E) Committee have reviewed the mobility report.

Congestion Ranking

INRIX peak period travel speed information for selected arterial roadway segments within and in the immediate vicinity of the White Flint Sector Plan area was collected during 2016. Using this information, these roadway segments were ranked by a congestion percentage index defined as the Travel Time Index (TTI) -1. The TTI is an indicator of congestion calculated as the ratio of observed travel time relative to free flow travel time. A TTI of 1.00 implies free flow travel without any delays. A TTI of 1.30 indicates that drivers must spend 30 percent more time to travel along a roadway segment relative to free flow travel conditions. This congestion ranking information is reported in Table 1 below. Comparable year 2013 information is also provided.

Table 1: White Flint Sector Plan Area and Vicinity Arterial Congestion Ranking

Road	2016 Congestion	2013 Congestion	2016 Average Speed	2013 Average Speed	Direction	Peak Period
RANDOLPH RD	73.4%	28.1%	16.3	23.2	EASTBOUND	PM Peak
MD-187	48.1%	32.6%	18.0	28.0	SOUTHBOUND	PM Peak
MD-187	44.2%	21.4%	19.2	29.3	NORTHBOUND	AM Peak
RANDOLPH RD	44.1%	16.8%	18.0	27.1	WESTBOUND	PM Peak
MD-187	41.3%	32.9%	19.6	28.7	SOUTHBOUND	AM Peak
MD-187	31.6%	32.9%	20.2	27.3	NORTHBOUND	PM Peak
MD-355	27.5%	34.8%	23.5	26.5	SOUTHBOUND	PM Peak
MD-355	26.9%	27.3%	23.1	27.6	NORTHBOUND	PM Peak
EXECUTIVE BLVD	24.8%	10.5%	14.9	24.5	NORTHBOUND	PM Peak
EXECUTIVE BLVD	23.7%	12.2%	17.0	24.5	SOUTHBOUND	AM Peak
EXECUTIVE BLVD	21.9%	8.5%	17.1	25.2	SOUTHBOUND	PM Peak
E JEFFERSON ST	20.3%	9.6%	17.2	24.7	NORTHBOUND	AM Peak
RANDOLPH RD	20.2%	9.8%	22.8	26.7	EASTBOUND	Off Peak
EXECUTIVE BLVD	20.1%	18.5%	15.2	22.9	NORTHBOUND	AM Peak
MONTROSE RD	19.7%	11.7%	21.9	28.9	WESTBOUND	AM Peak
MD-187	19.5%	13.7%	22.2	32.9	SOUTHBOUND	Off Peak
EXECUTIVE BLVD	19.1%	6.1%	17.9	25.7	SOUTHBOUND	Off Peak
MONTROSE RD	18.7%	10.0%	17.1	26.7	EASTBOUND	AM Peak
E JEFFERSON ST	18.5%	8.3%	17.2	25.0	NORTHBOUND	PM Peak
MONTROSE RD	18.2%	13.7%	17.0	25.7	EASTBOUND	PM Peak
RANDOLPH RD	17.6%	16.2%	25.7	25.7	EASTBOUND	AM Peak
RANDOLPH RD	16.7%	17.8%	21.7	27.6	WESTBOUND	AM Peak
MD-187	16.1%	12.0%	23.2	31.6	NORTHBOUND	Off Peak
MONTROSE RD	15.8%	9.6%	22.4	29.1	WESTBOUND	PM Peak
MD-355	15.6%	19.5%	25.9	29.5	NORTHBOUND	AM Peak
RANDOLPH RD	15.1%	10.0%	22.7	28.8	WESTBOUND	Off Peak
MONTROSE RD	14.1%	7.3%	17.7	27.3	EASTBOUND	Off Peak
EXECUTIVE BLVD	13.4%	9.6%	16.8	25.2	NORTHBOUND	Off Peak
MD-355	11.2%	16.1%	27.2	31.2	SOUTHBOUND	Off Peak
MD-355	10.0%	12.6%	27.6	31.2	NORTHBOUND	Off Peak
MONTROSE RD	9.9%	7.5%	24.0	29.9	WESTBOUND	Off Peak
E JEFFERSON ST	9.1%	4.2%	19.2	26.0	NORTHBOUND	Off Peak
MD-355	8.2%	15.4%	28.3	31.6	SOUTHBOUND	AM Peak

Utilizing the year 2016 INRIX travel speed information reported in Table 1 above, mapping depicting AM and PM peak period speeds is provided below in Figures 1 and 2, respectively.

Figure 1-White Flint Sector Plan Area and Vicinity AM Peak Period Arterial Speeds

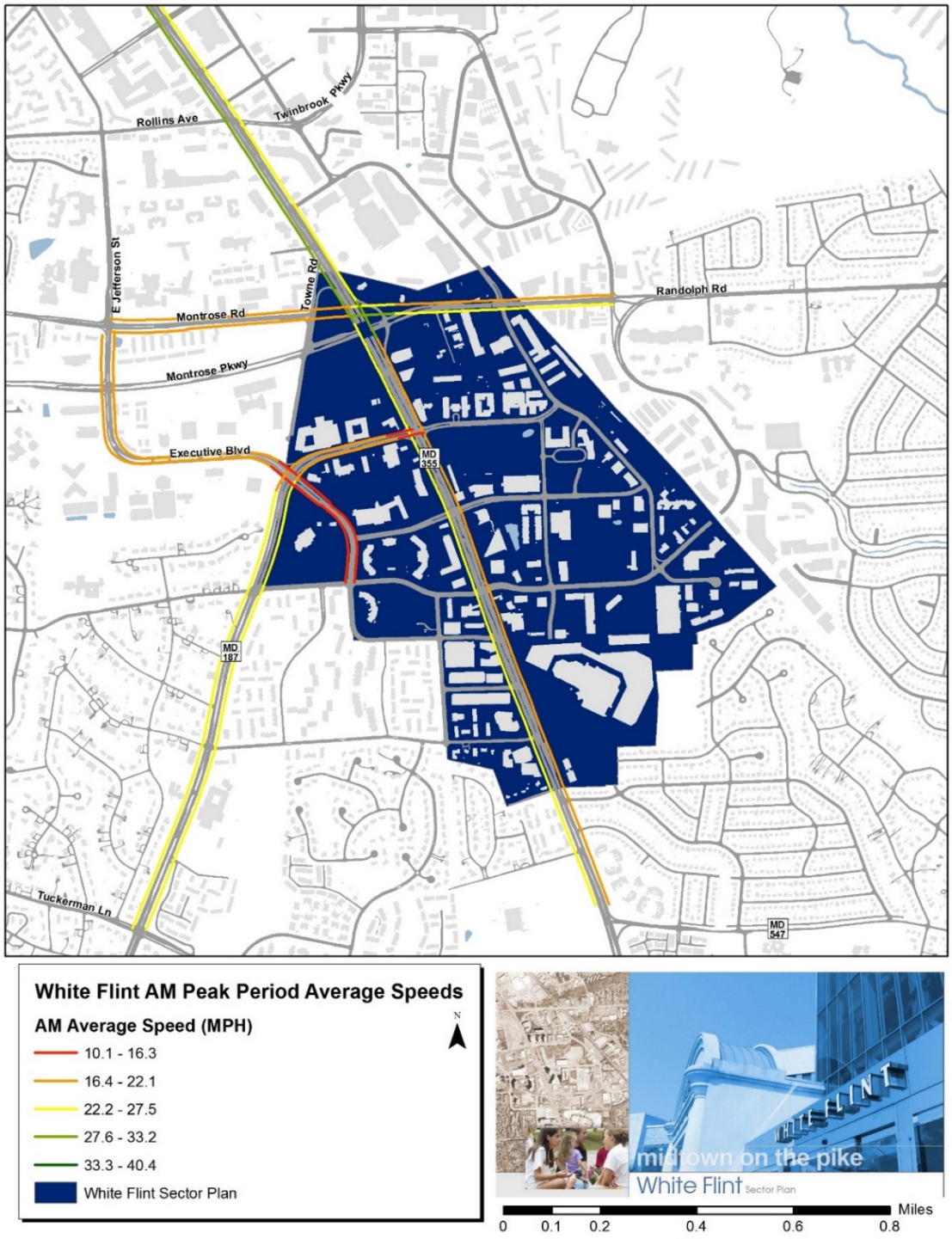
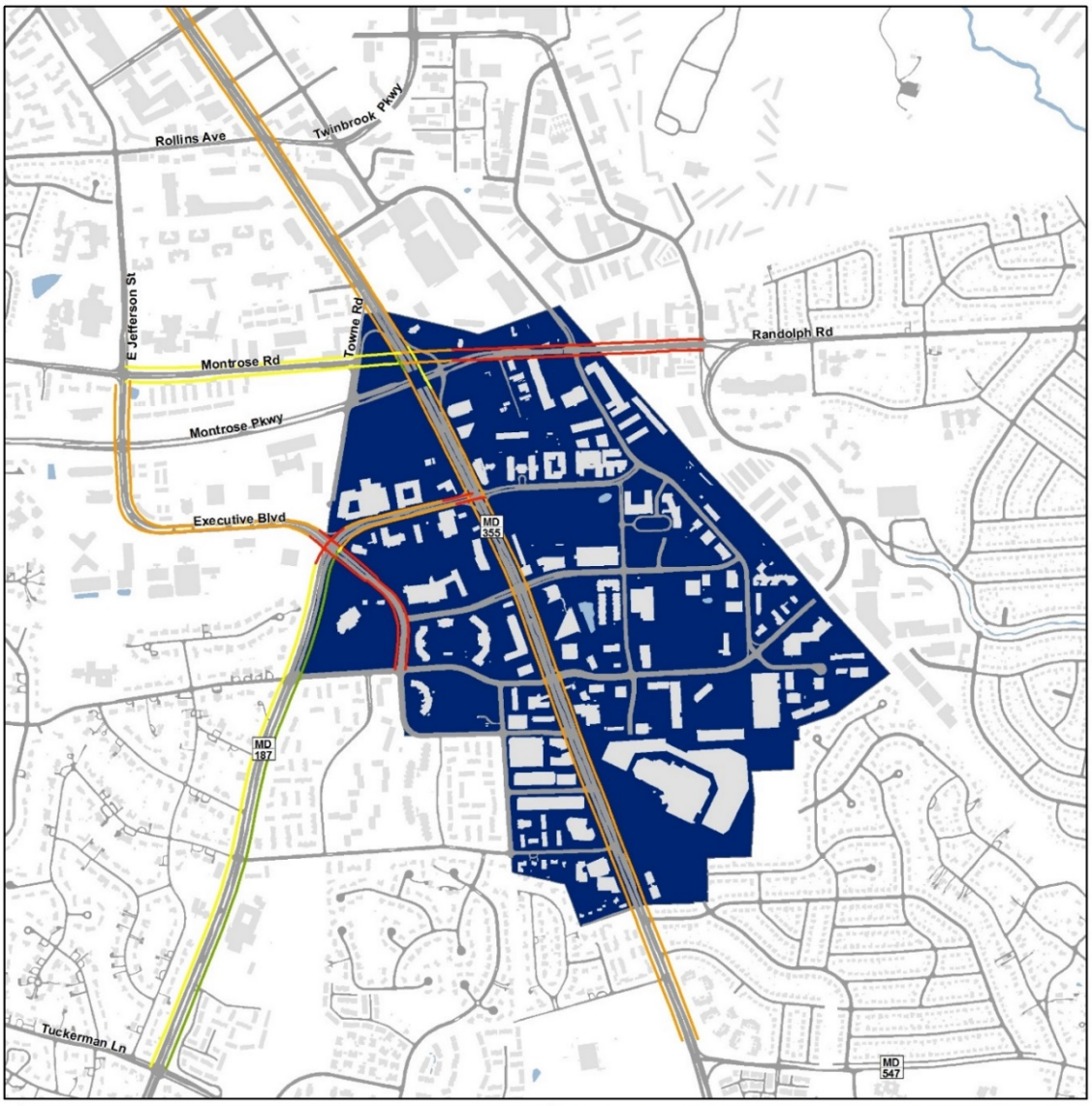


Figure 2-White Flint Sector Plan Area and Vicinity PM Peak Period Arterial Speeds



Arterial Speed Profiles

Utilizing observed year 2016 INRIX travel speed data, 24-hour, Monday through Sunday, directional speed profiles for the following roadways located within and in the immediate vicinity of the White Flint Sector Plan Area are reported in Figures 3– 12 below:

- Randolph Road
- Montrose Road
- Rockville Pike (MD 355)
- Old Georgetown Road (MD 187)
- Executive Boulevard

Figure 3: Randolph Road Arterial Speeds - Eastbound

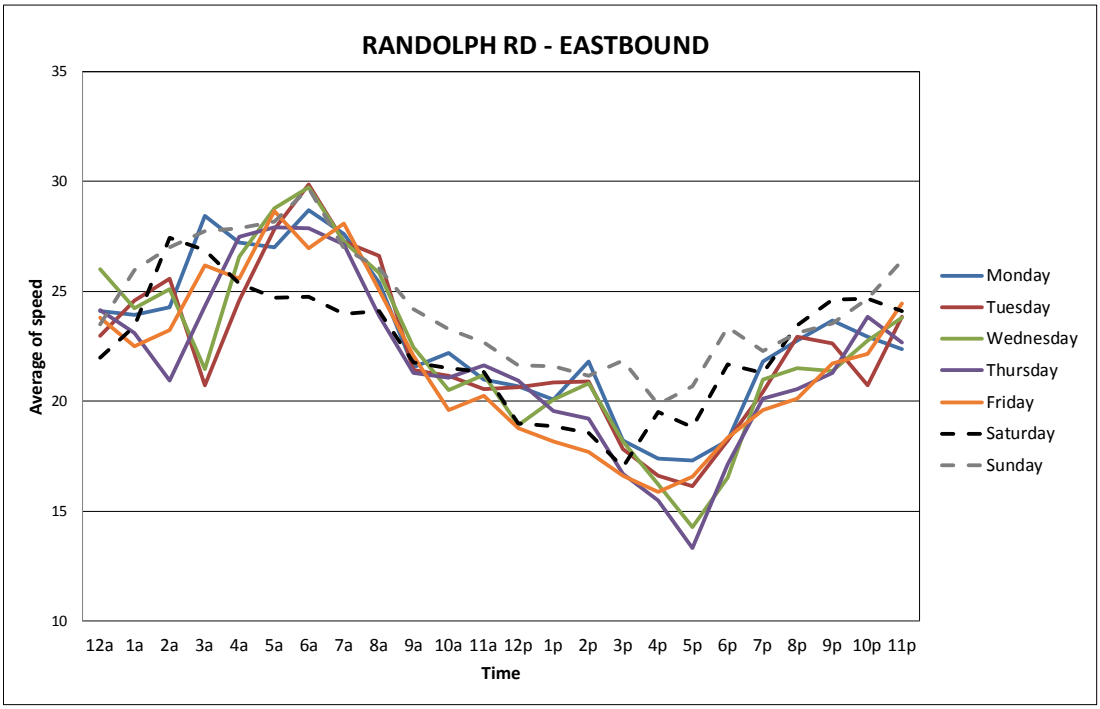


Figure 4: Randolph Road Arterial Speeds – Westbound

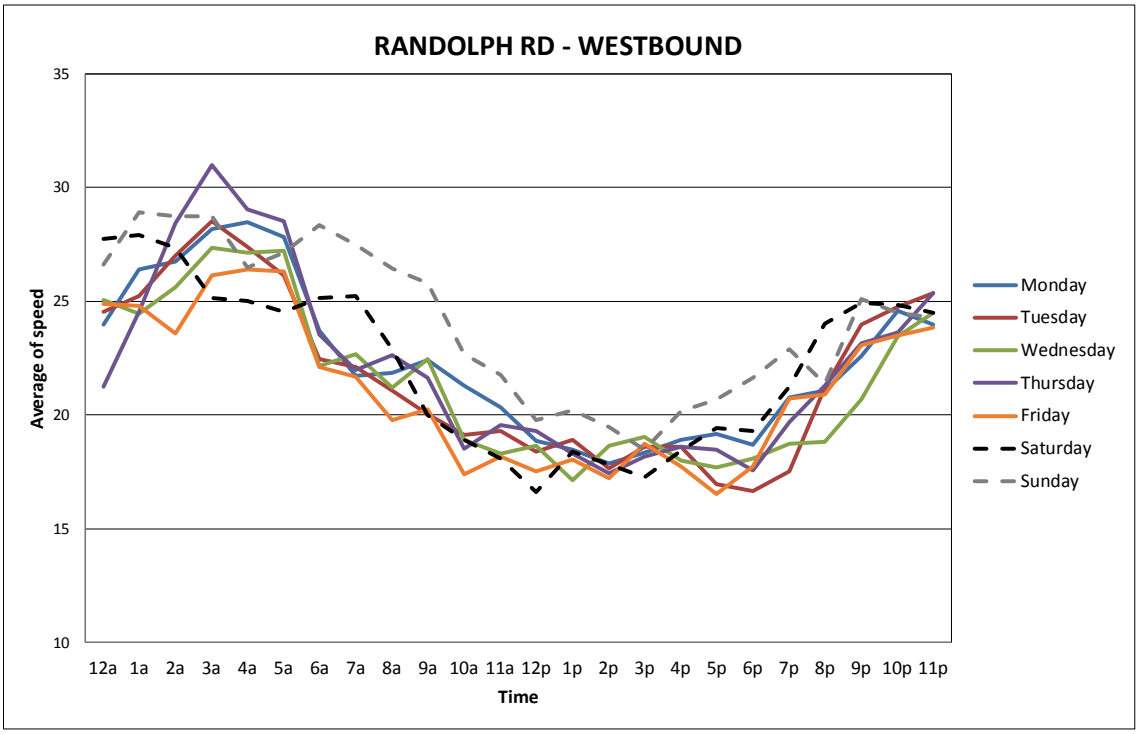


Figure 5: Montrose Road Arterial Speeds - Eastbound

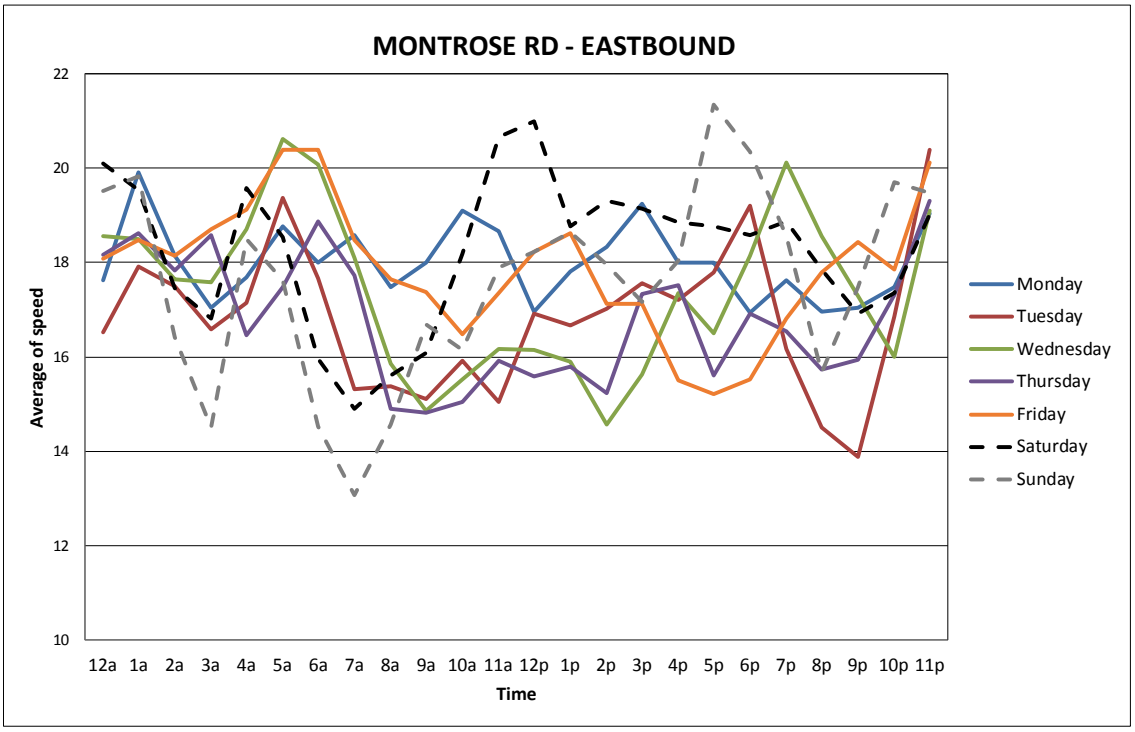


Figure 6: Montrose Road Arterial Speeds – Westbound

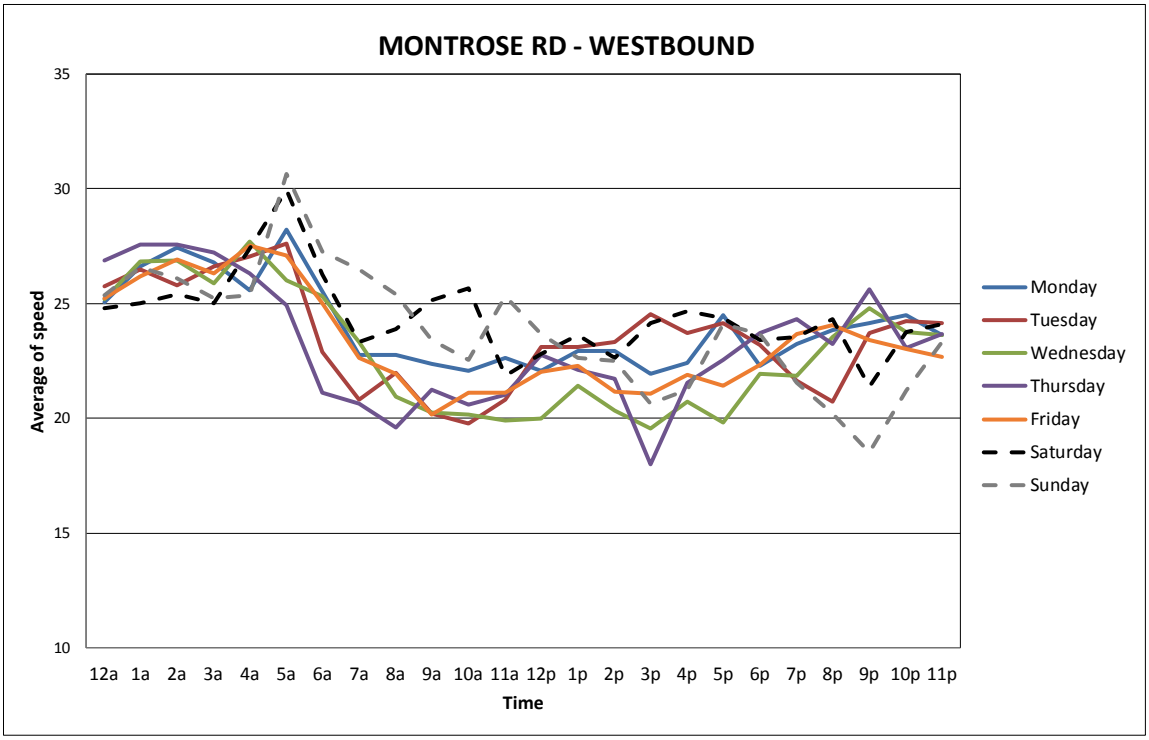


Figure 7: Rockville Pike Arterial Speeds - Northbound

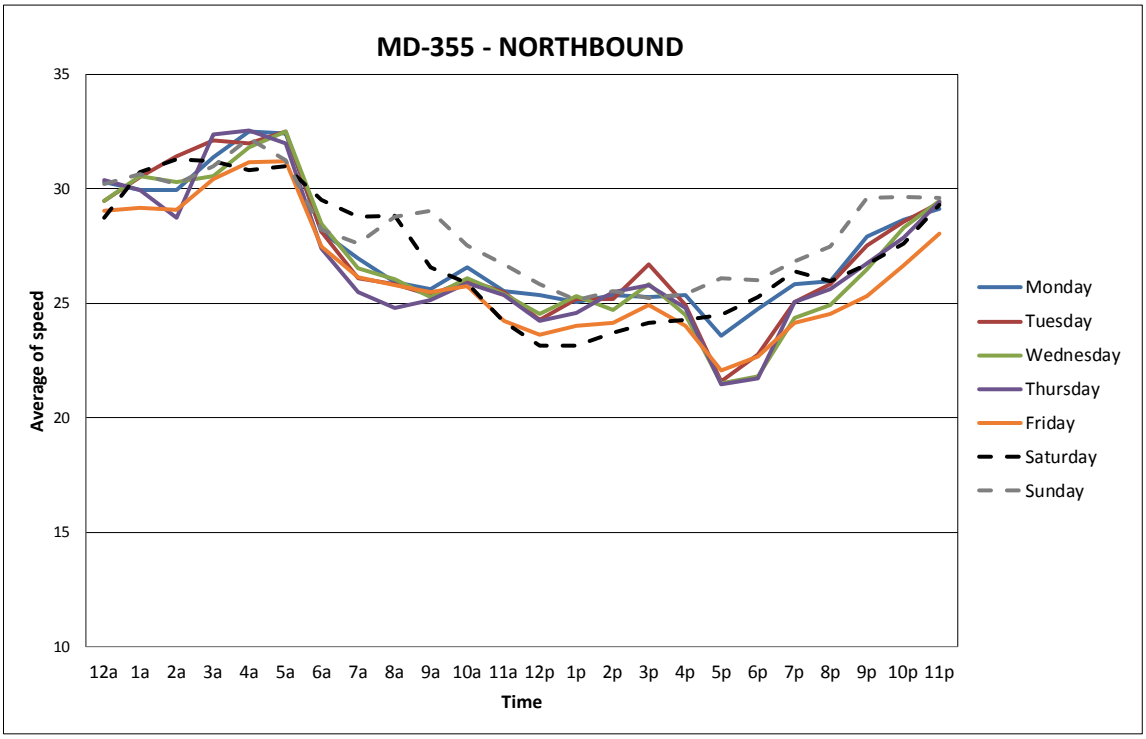


Figure 8: Rockville Pike Arterial Speeds – Southbound

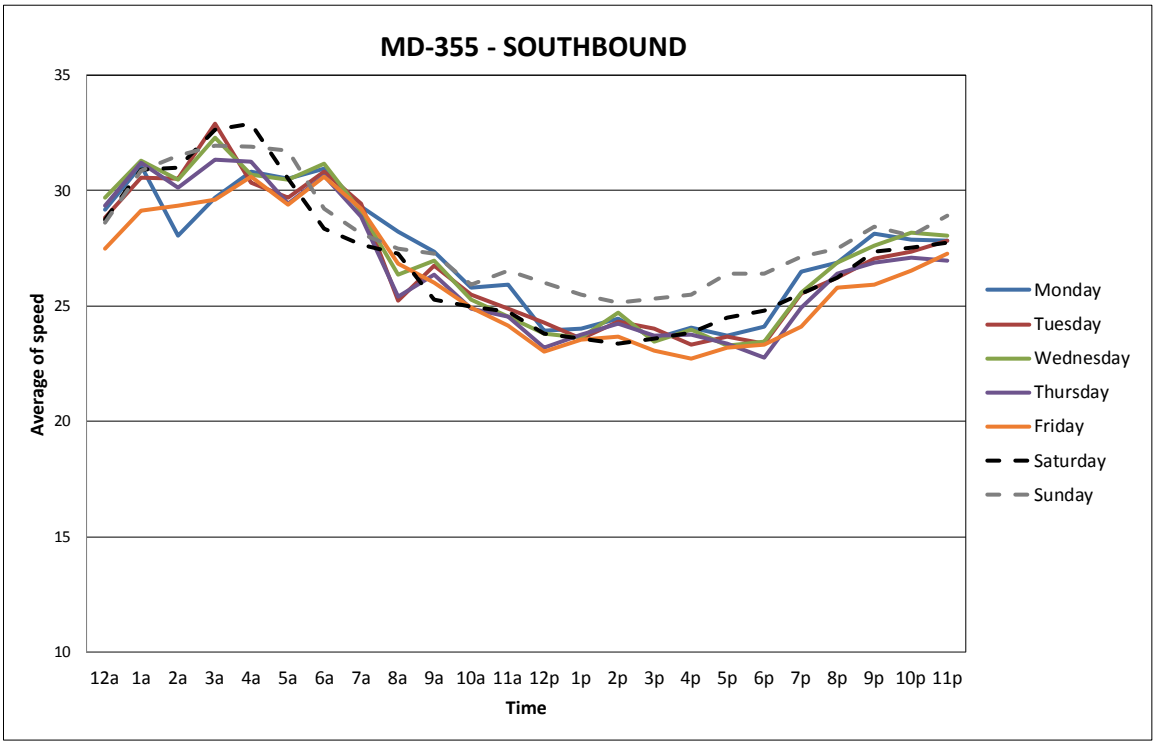


Figure 9: Old Georgetown Road Arterial Speeds – Northbound

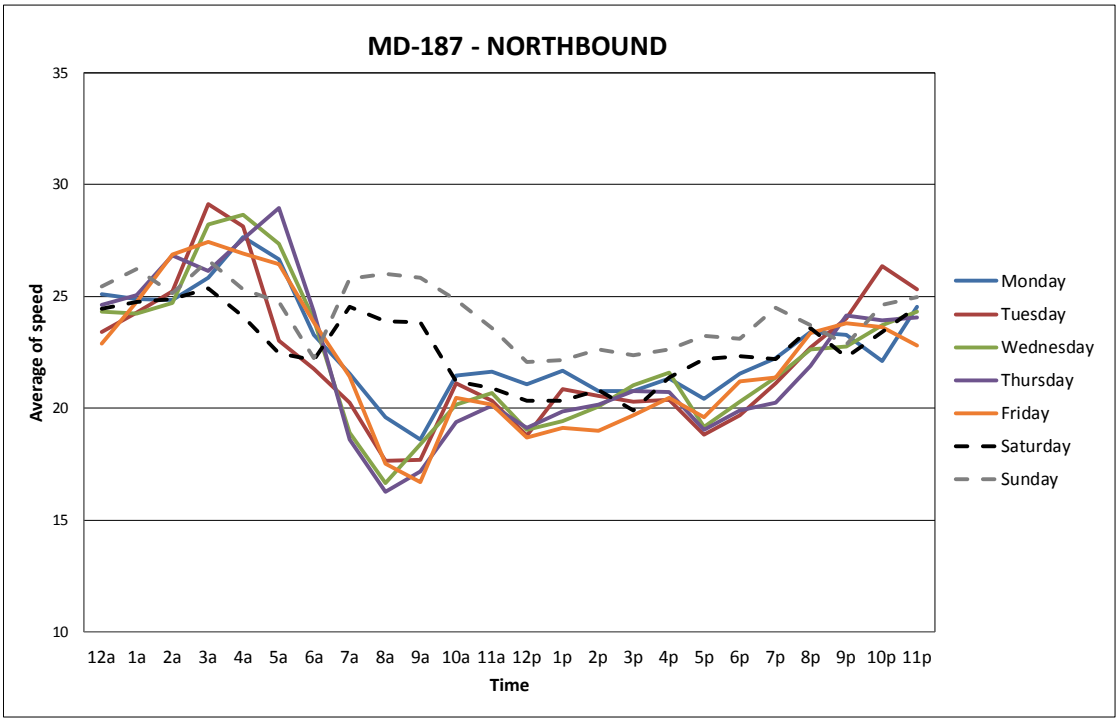


Figure 10: Old Georgetown Road Arterial Speeds - Southbound

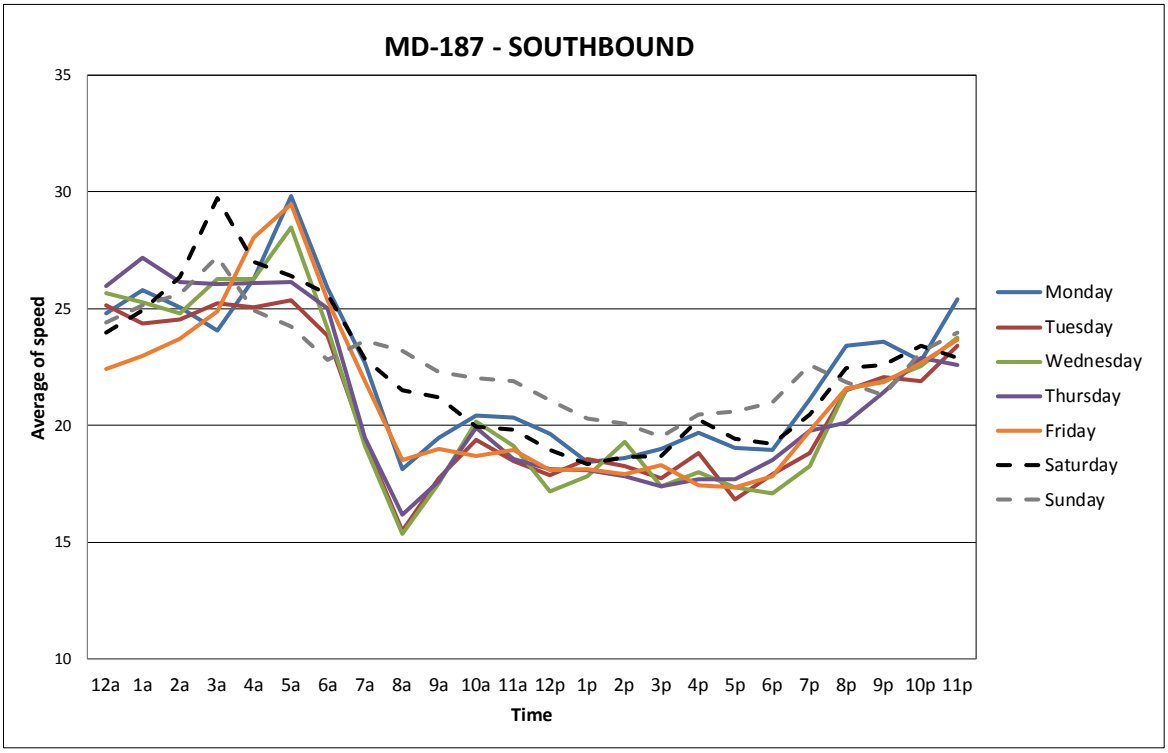


Figure 11: Executive Boulevard Arterial Speeds - Northbound

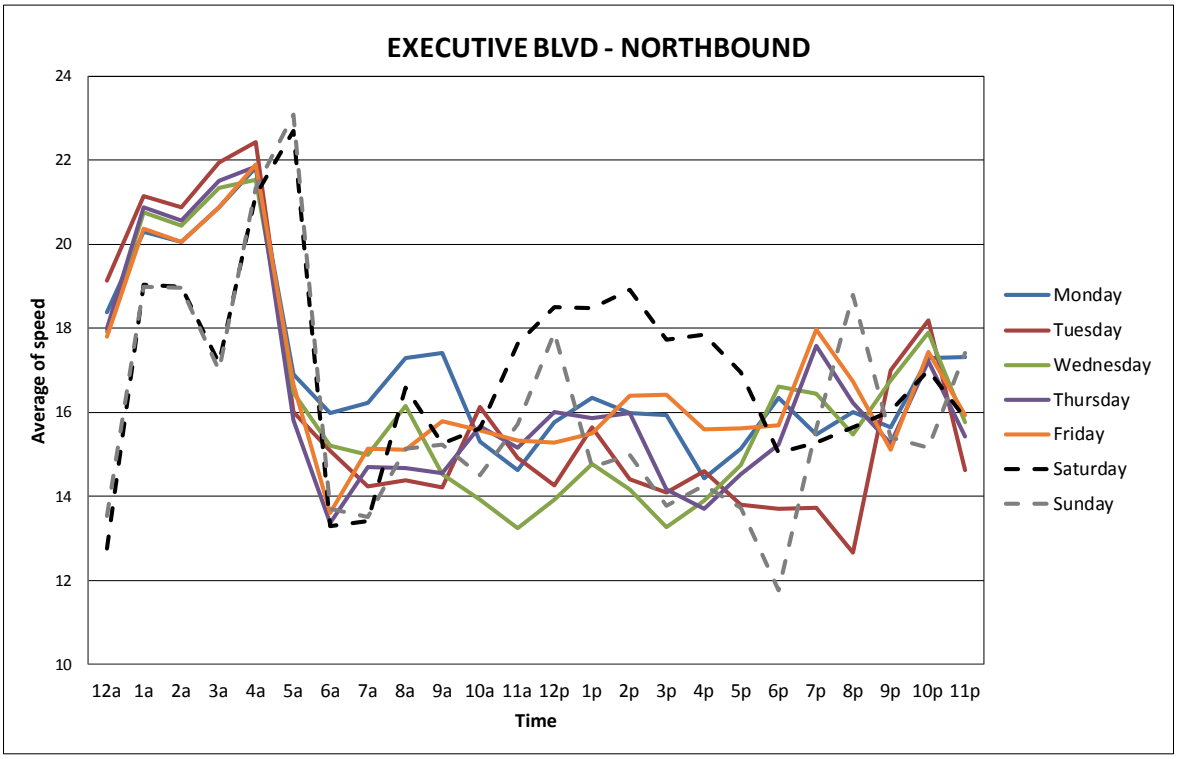
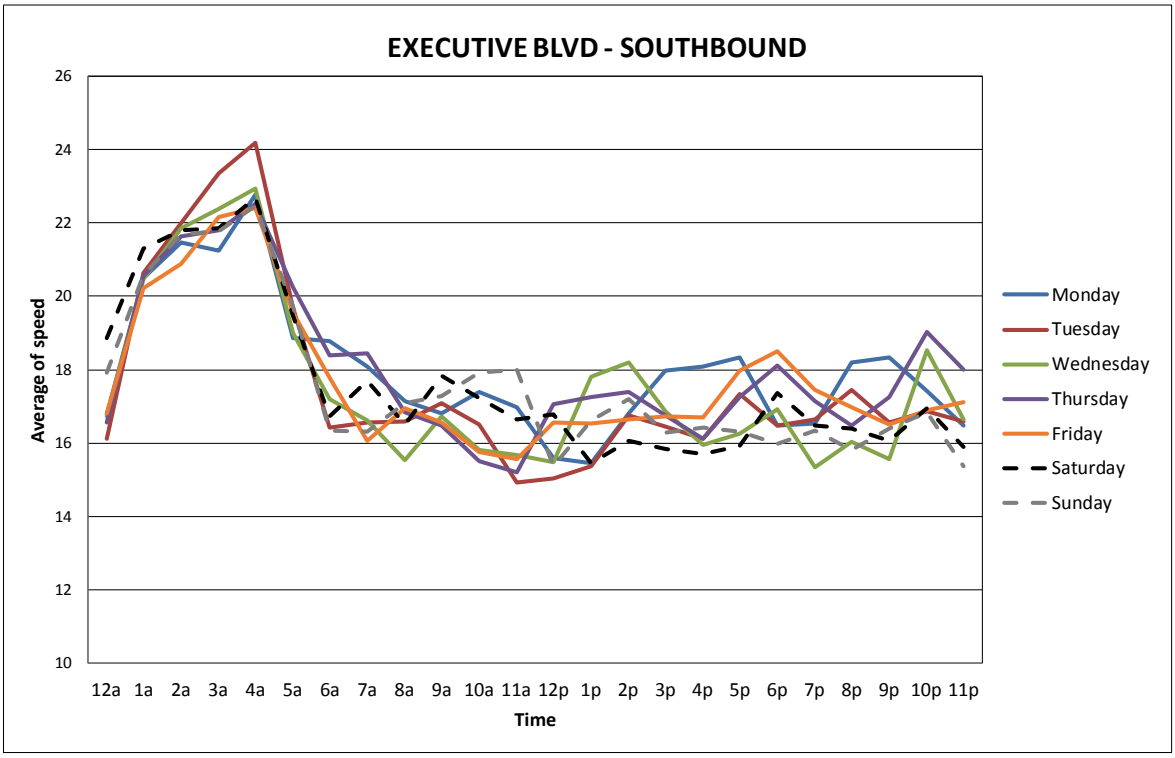


Figure 12: Executive Boulevard Arterial Speeds - Southbound



Points of Recurring Congestion

The intensity of a point of traffic recurring traffic congestion is evaluated using an impact factor metric defined as the product of the duration of the point of congestion, average maximum length of the point of congestion along a roadway segment, and the number of occurrences of congestion within a specified timeframe.

These points of recurring congestion observed during the period March 1st through May 31st, 2016 in the White Flint Sector Plan area are ranked using the impact factor metric described above and reported in the table below.

Several intersections in the table below are from the greater North Bethesda area that are beyond the immediate vicinity of the White Flint Sector Plan area. The most intense points of congestion occur along Rockville Pike (MD 355), and the most severe point of congestion was observed in the southbound direction, along MD 355 approaching the intersection with Montrose Road/Randolph Road.

Table 2: White Flint Sector Plan Area and Vicinity Points of Recurring Congestion*

Rank	Location	Direction	Impact factor	Average max length (miles)	Average duration	Occurrences*	All Events/Incidents
1	MD-355 S @ MONTROSE RD/RANDOLPH RD	SOUTHBOUND	19,292.51	1.71	36 m	313	0
2	MD-355 N @ 1ST ST/WOOTTON PKWY	NORTHBOUND	9,798.79	2.03	34 m	142	2
3	RANDOLPH RD W @ MD-355/ROCKVILLE PIKE	WESTBOUND	9,632.41	0.4	42 m	572	0
4	RANDOLPH RD E @ PARKLAWN DR	EASTBOUND	9,589.89	0.51	41 m	456	0
5	MD-187 S @ TUCKERMAN LN	SOUTHBOUND	9,361.64	1.06	49 m	180	2
6	MD-355 N @ MONTROSE RD/RANDOLPH RD	NORTHBOUND	8,749.76	1.02	34 m	252	1
7	MD-355 S @ MD-547/STRATHMORE AVE	SOUTHBOUND	7,284.90	2.04	38 m	94	3
8	MD-355 S @ GROSVENOR LN	SOUTHBOUND	6,821.34	3.34	51 m	40	3
9	MD-187 N @ MD-355/ROCKVILLE PIKE	NORTHBOUND	5,577.10	0.26	36 m	607	0
10	MD-187 N @ EXECUTIVE BLVD	NORTHBOUND	4,646.65	0.48	35 m	278	0
11	E JEFFERSON ST N @ MONTROSE RD	NORTHBOUND	3,105.32	0.59	35 m	150	0
12	MONTROSE RD W @ E JEFFERSON ST	WESTBOUND	2,762.55	0.39	42 m	169	0
13	MD-187 S @ EXECUTIVE BLVD	SOUTHBOUND	2,677.11	0.14	34 m	561	2
14	EXECUTIVE BLVD S @ MD-187/OLD GEORGETOWN RD	SOUTHBOUND	2,170.39	0.15	36 m	394	0
15	MD-187 S @ I-270	SOUTHBOUND	2,141.41	1.35	1 h 28 m	18	3
16	EXECUTIVE BLVD N @ MD-187/OLD GEORGETOWN RD	NORTHBOUND	1,676.31	0.15	38 m	297	0
17	MONTROSE RD E @ MD-355/ROCKVILLE PIKE	EASTBOUND	1,400.16	0.1	1 h 03 m	229	0
18	MONTROSE RD W @ TOWER OAKS BLVD	WESTBOUND	771.1	1.66	1 h 56 m	4	0
19	EXECUTIVE BLVD S @ NICHOLSON LN	SOUTHBOUND	759.58	0.31	38 m	64	0
20	MD-187 S @ MD-188/ST ELMO AVE/WILSON LN	SOUTHBOUND	751.31	4.79	2 h 37 m	1	11
21	MD-355 N @ GUDE DR	NORTHBOUND	686.58	4.4	1 h 18 m	2	3
22	MD-187 S @ DEMOCRACY BLVD	SOUTHBOUND	438.2	1.84	1 h 59 m	2	4
23	MD-187 S @ CHESHIRE DR	SOUTHBOUND	418.81	1.94	1 h 48 m	2	4
24	MD-355 N @ MD-28/VEIRS MILL RD/E JEFFERSON ST	NORTHBOUND	369.51	2.37	39 m	4	1
25	RANDOLPH RD E @ MD-355/ROCKVILLE PIKE	EASTBOUND	359.33	0.05	29 m	237	0
26	MD-355 N @ N WASHINGTON ST	NORTHBOUND	350.94	3.25	1 h 48 m	1	1
27	RANDOLPH RD E @ ROCKING HORSE RD/GAYNOR RD	EASTBOUND	308.81	1.19	52 m	5	0
28	MD-187 S @ MD-355/ROCKVILLE PIKE	SOUTHBOUND	244.83	0.06	28 m	145	0
29	MD-187 S @ ROCK SPRING DR	SOUTHBOUND	236.36	1.59	2 h 29 m	1	3
30	MONTROSE RD W @ I-270	WESTBOUND	68.69	1.72	40 m	1	0
31	MONTROSE RD W @ MD-355/ROCKVILLE PIKE	WESTBOUND	65.89	0.03	51 m	40	0

*** Between March 1, and May 31st, 2016**

Shady Grove Sector Plan Transportation

Congestion Ranking

INRIX peak period travel speed information for selected arterial roadway segments within and in the immediate vicinity of the Shady Grove sector plan area was collected during 2016. Using this information, these roadway segments were ranked by a congestion percentage index defined as the Travel Time Index (TTI) -1. The TTI is an indicator of congestion calculated as the ratio of observed travel time relative to free flow travel time. A TTI of 1.00 implies free flow travel without any delays. A TTI of 1.30 indicates that drivers must spend 30 percent more time to travel along a roadway segment relative to free flow travel conditions. This congestion ranking information is reported in Table 1.B below. Comparable year 2013 information is also provided.

Table 1: Shady Grove Sector Plan Area and Vicinity Arterial Congestion Ranking

Road	2016 Congestion	2013 Congestion	2016 Average Speed	2013 Average Speed	Direction	Peak Period
MD-355	66.6%	34.9%	21.3	29.6	SOUTHBOUND	PM Peak
GUDE DR	60.0%	51.4%	16.8	22.9	WESTBOUND	AM Peak
CRABBS BRANCH WAY	48.1%	20.1%	19.2	28.3	SOUTHBOUND	AM Peak
MD-355	44.4%	65.6%	23.2	26.1	SOUTHBOUND	AM Peak
GUDE DR	44.1%	26.9%	19.8	29.3	EASTBOUND	AM Peak
SHADY GROVE RD	43.2%	41.0%	24.5	29.0	SOUTHBOUND	PM Peak
MD-355	43.0%	50.7%	24.1	27.6	NORTHBOUND	PM Peak
SHADY GROVE RD	42.7%	39.6%	23.8	29.2	NORTHBOUND	AM Peak
MD-355	39.0%	33.4%	25.8	31.2	NORTHBOUND	AM Peak
CRABBS BRANCH WAY	38.0%	16.8%	19.2	29.4	NORTHBOUND	PM Peak
REDLAND BLVD	35.4%	28.3%	15.6	22.4	NORTHBOUND	PM Peak
GUDE DR	34.1%	30.1%	19.7	24.9	WESTBOUND	PM Peak
SHADY GROVE RD	32.0%	46.0%	26.6	28.2	SOUTHBOUND	AM Peak
REDLAND BLVD	31.0%	18.7%	16.4	24.7	NORTHBOUND	AM Peak
GUDE DR	28.3%	21.9%	21.5	30.0	EASTBOUND	PM Peak
E GUDE DR	28.0%	21.7%	29.7	35.0	WESTBOUND	AM Peak
MD-355	27.3%	20.5%	26.2	33.9	SOUTHBOUND	Off Peak
MIDCOUNTY HWY	26.0%	20.6%	26.6	31.6	EASTBOUND	AM Peak
GUDE DR	25.4%	15.3%	20.2	28.3	WESTBOUND	Off Peak
REDLAND BLVD	25.2%	19.6%	17.4	23.5	SOUTHBOUND	AM Peak
CRABBS BRANCH WAY	24.4%	14.3%	20.6	30.1	NORTHBOUND	AM Peak
E GUDE DR	21.0%	23.3%	30.6	34.3	WESTBOUND	PM Peak
REDLAND RD	19.4%	14.2%	28.9	34.3	SOUTHBOUND	AM Peak
MIDCOUNTY HWY	19.0%	9.5%	28.5	34.5	EASTBOUND	PM Peak
MD-355	17.9%	18.5%	29.5	34.6	NORTHBOUND	Off Peak
CRABBS BRANCH WAY	17.7%	9.3%	21.7	30.7	SOUTHBOUND	PM Peak
REDLAND RD	17.1%	13.7%	25.4	31.2	NORTHBOUND	AM Peak
SHADY GROVE RD	17.0%	27.8%	29.4	32.3	NORTHBOUND	PM Peak
MIDCOUNTY HWY	16.6%	18.7%	31.0	31.8	WESTBOUND	PM Peak
SHADY GROVE RD	16.5%	15.8%	29.7	34.7	SOUTHBOUND	Off Peak
SHADY GROVE RD	16.2%	13.7%	28.9	35.4	NORTHBOUND	Off Peak
REDLAND BLVD	16.2%	10.2%	17.4	25.9	NORTHBOUND	Off Peak
REDLAND BLVD	16.1%	15.1%	17.0	24.7	SOUTHBOUND	PM Peak
MIDCOUNTY HWY	16.1%	7.0%	28.5	35.4	EASTBOUND	Off Peak
GUDE DR	16.0%	8.2%	23.2	33.8	EASTBOUND	Off Peak
REDLAND RD	14.9%	19.4%	26.2	29.8	NORTHBOUND	PM Peak
E GUDE DR	13.5%	23.8%	30.3	33.5	EASTBOUND	AM Peak
E GUDE DR	13.0%	15.8%	31.0	35.7	EASTBOUND	PM Peak
CRABBS BRANCH WAY	11.2%	5.4%	23.4	32.1	NORTHBOUND	Off Peak
CRABBS BRANCH WAY	11.1%	6.8%	23.2	32.1	SOUTHBOUND	Off Peak
MIDCOUNTY HWY	10.4%	7.8%	33.1	35.1	WESTBOUND	AM Peak
REDLAND BLVD	10.1%	7.6%	18.0	26.0	SOUTHBOUND	Off Peak
W GUDE DR	9.6%	21.1%	30.0	34.3	WESTBOUND	AM Peak
W GUDE DR	9.0%	13.6%	30.0	36.2	WESTBOUND	PM Peak
MIDCOUNTY HWY	8.5%	8.4%	33.9	35.2	WESTBOUND	Off Peak
E GUDE DR	8.2%	8.4%	34.9	39.1	WESTBOUND	Off Peak
REDLAND RD	7.3%	11.3%	31.1	34.7	SOUTHBOUND	PM Peak
E GUDE DR	7.0%	6.7%	32.6	38.3	EASTBOUND	Off Peak
REDLAND RD	4.9%	5.5%	28.3	33.4	NORTHBOUND	Off Peak
REDLAND RD	4.9%	4.7%	31.6	36.9	SOUTHBOUND	Off Peak
W GUDE DR	4.3%	5.5%	32.3	39.1	WESTBOUND	Off Peak

Utilizing the year 2016 INRIX travel speed information reported in Table 1 above, mapping depicting AM and PM peak period speeds is provided below in Figures 1 and 2 respectively.

Figure 1: Shady Grove Sector Plan Area and Vicinity AM Peak Period Arterial Speeds

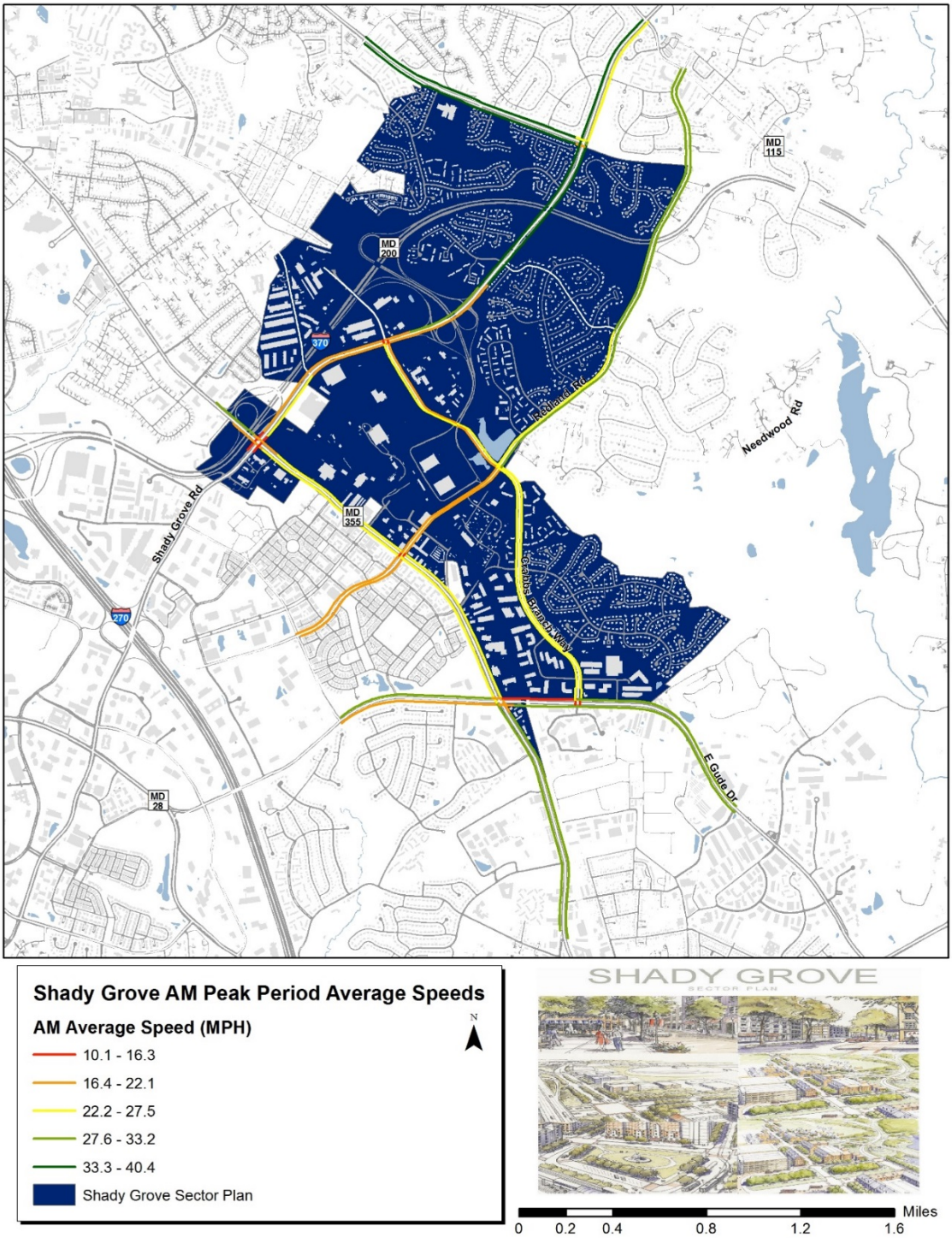
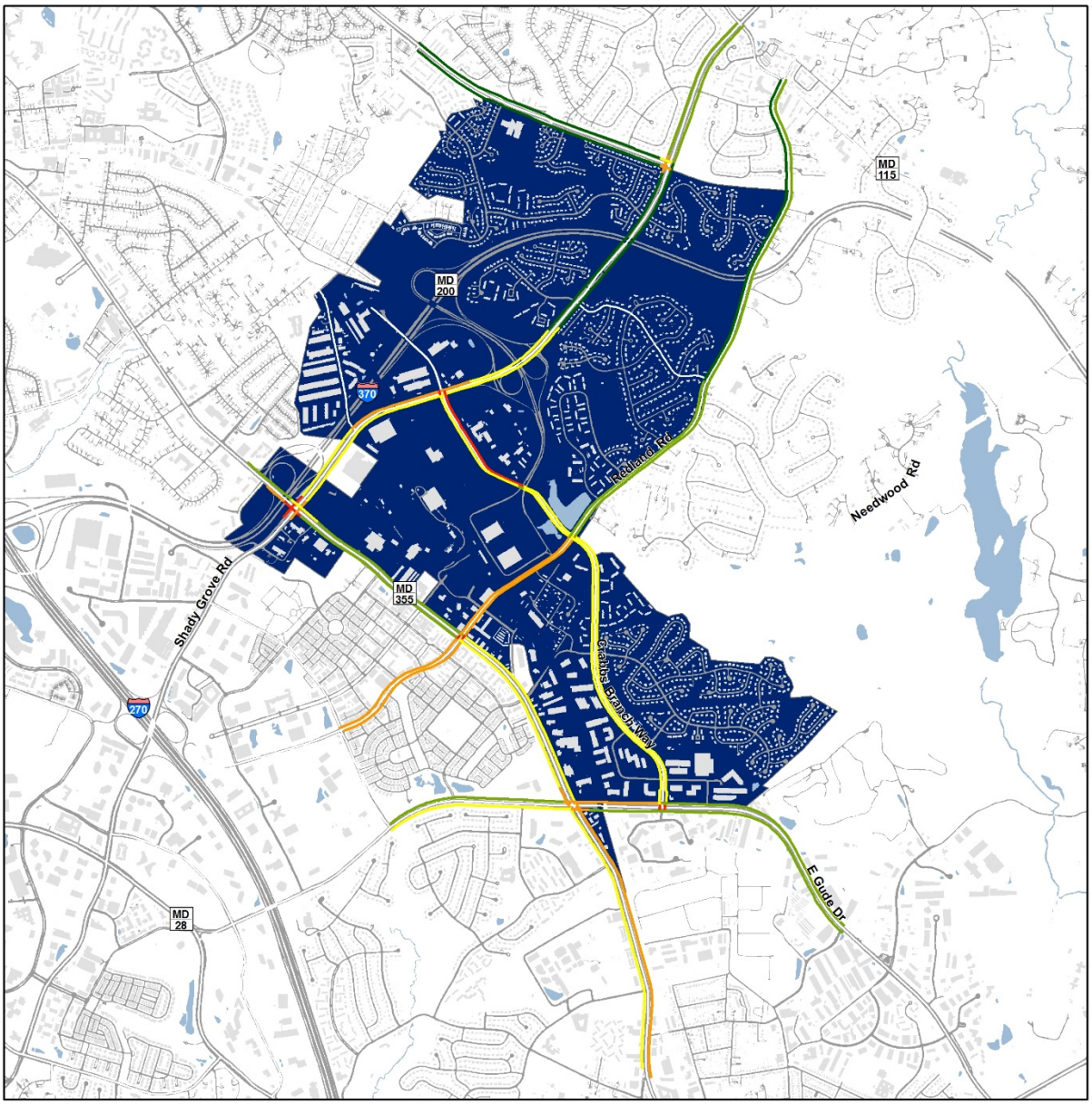


Figure 2: Shady Grove Sector Plan Area and Vicinity PM Peak Period Arterial Speeds



Arterial Speed Profiles

Utilizing observed year 2016 INRIX travel speed data, 24-hour, Monday through Sunday, directional speed profiles for the following roadways located within and in the immediate vicinity of the Shady Grove Sector Plan Area are reported in Figures 3 – 16 below:

- Frederick Road (MD 355)
- West Gude Drive
- East Gude Drive
- Midcounty Highway
- Redland Boulevard
- Redland Road
- Shady Grove Road

Figure 3: Frederick Road Arterial Speeds - Northbound

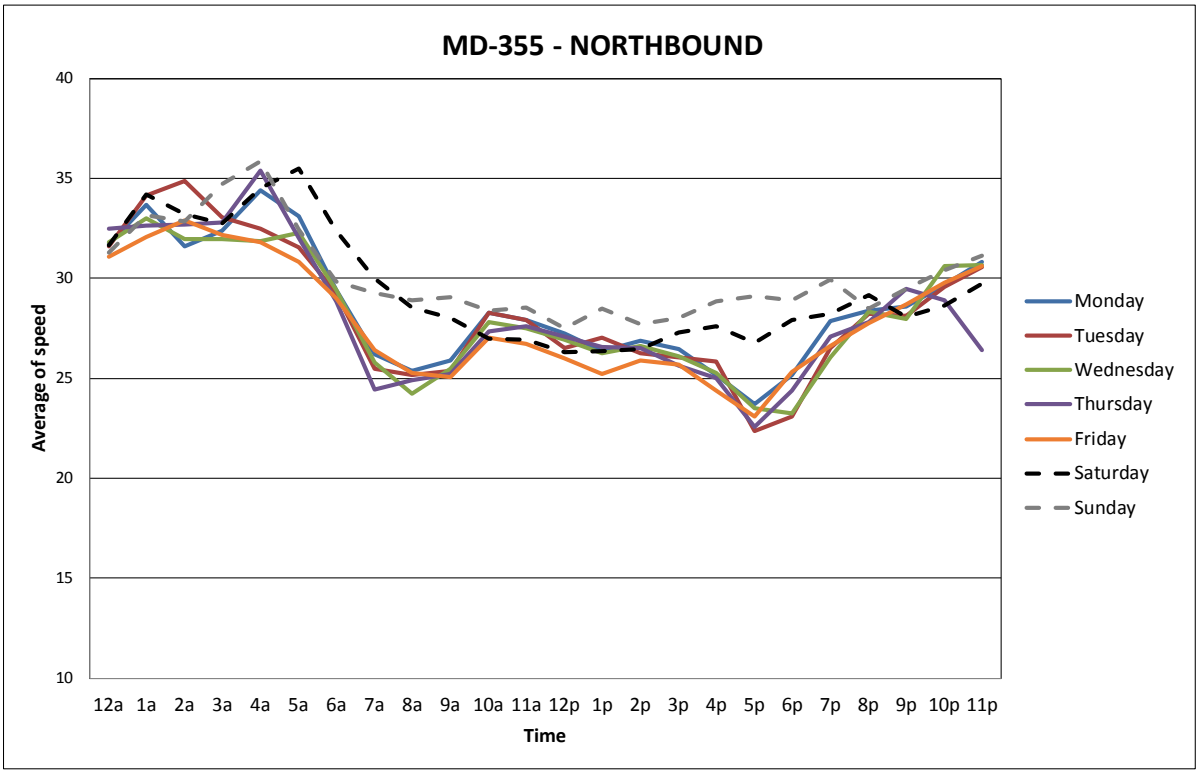


Figure 4: Frederick Road Arterial Speeds - Southbound

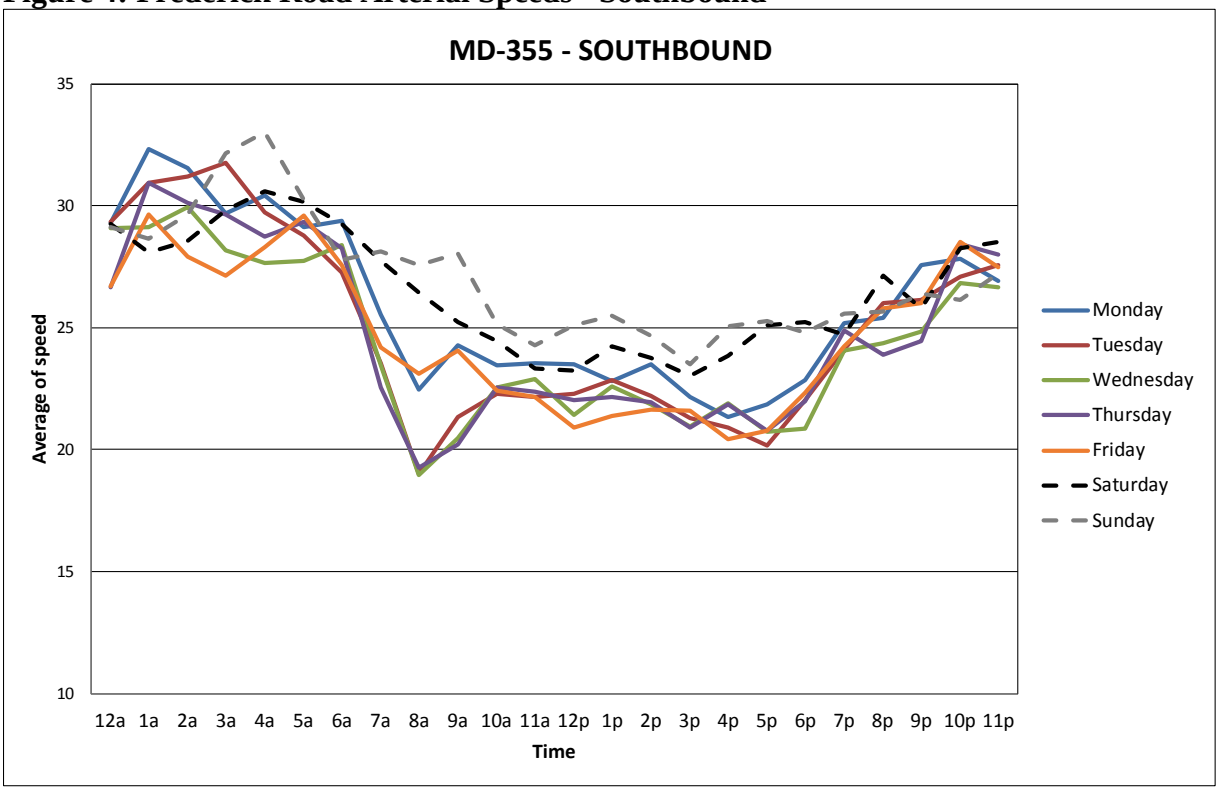


Figure 5: Gude Drive Arterial Speeds - Eastbound

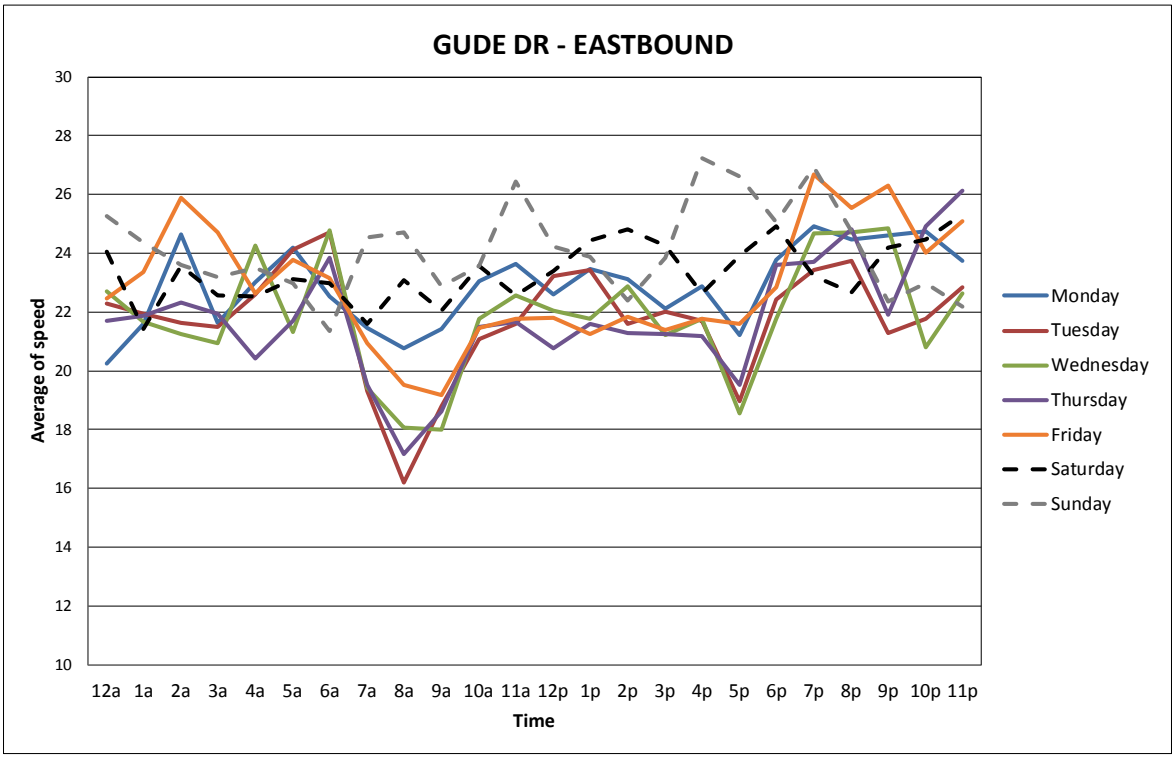


Figure 6: Gude Drive Arterial Speeds - Westbound

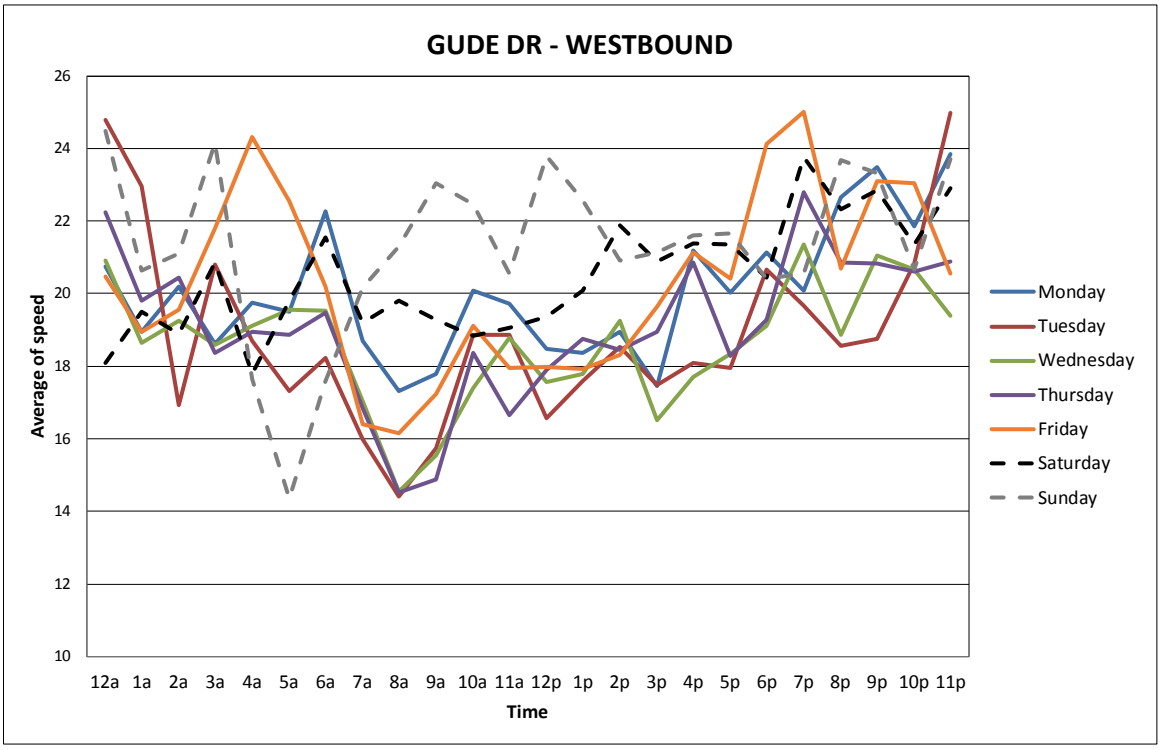


Figure 7: East Gude Drive Arterial Speeds - Eastbound

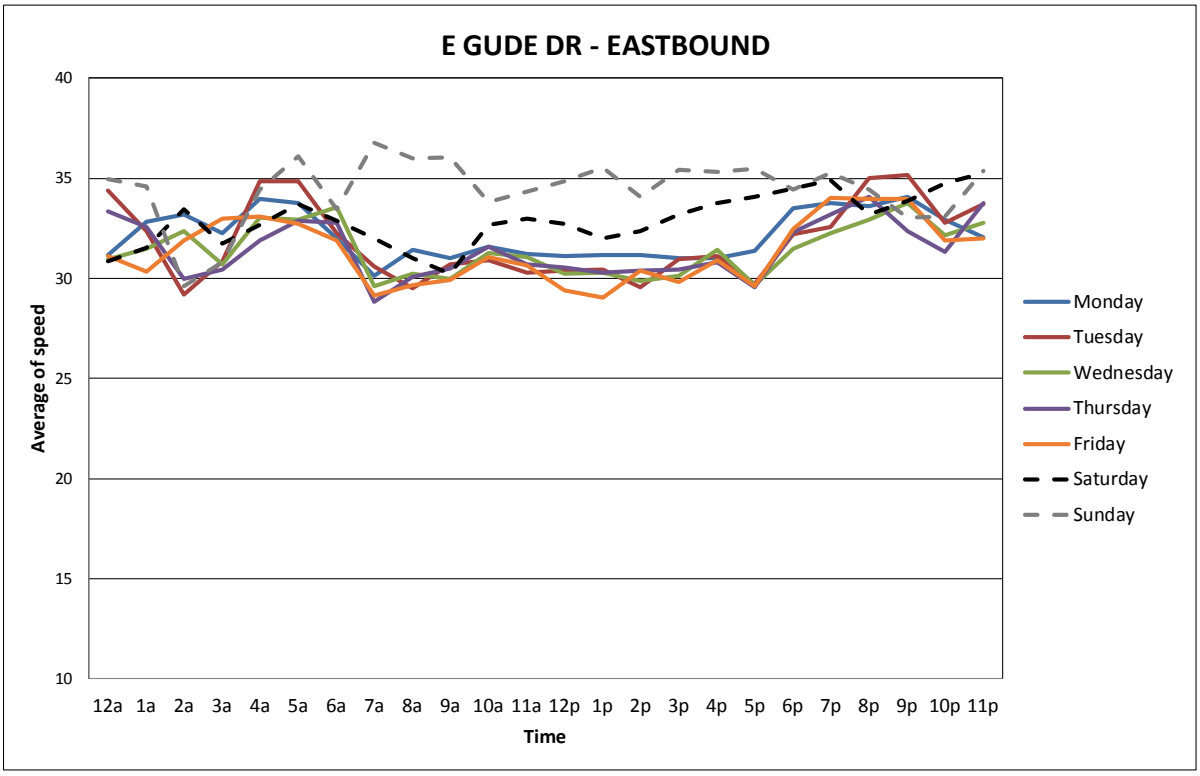


Figure 8: East Gude Drive Arterial Speeds - Westbound

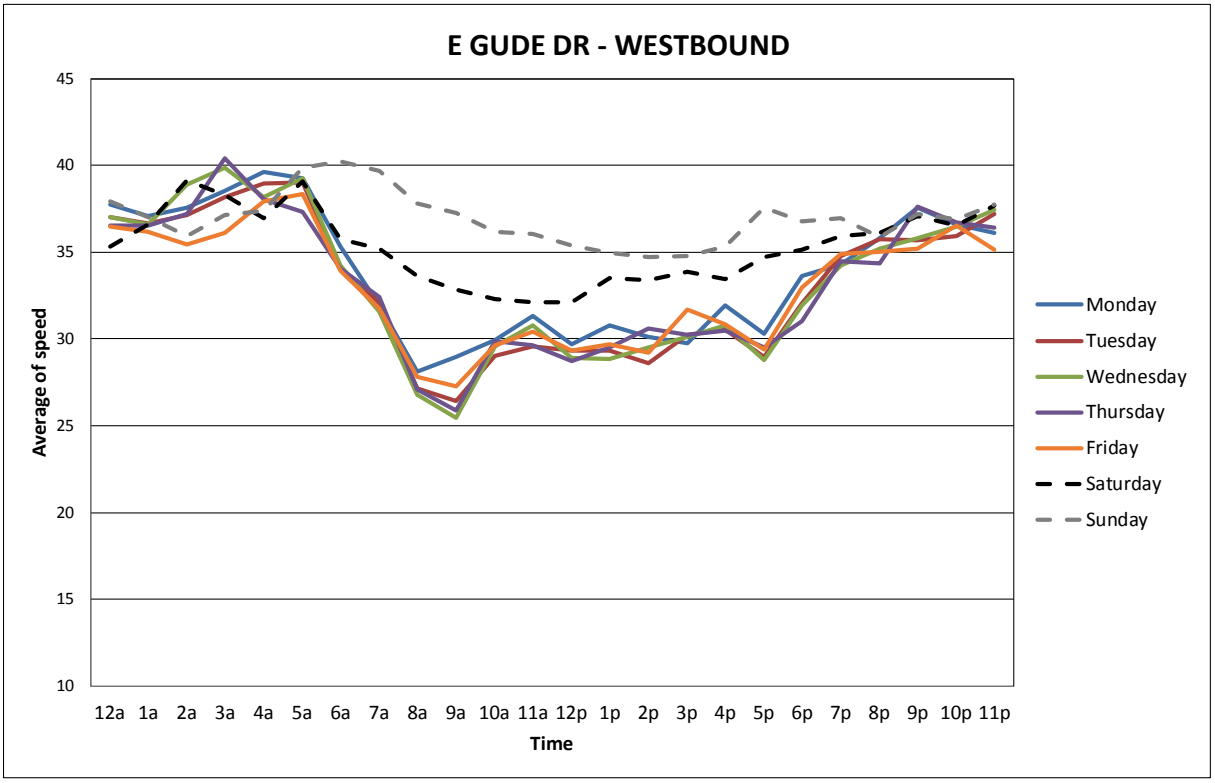


Figure 9: Midcounty Highway Arterial Speeds - Eastbound

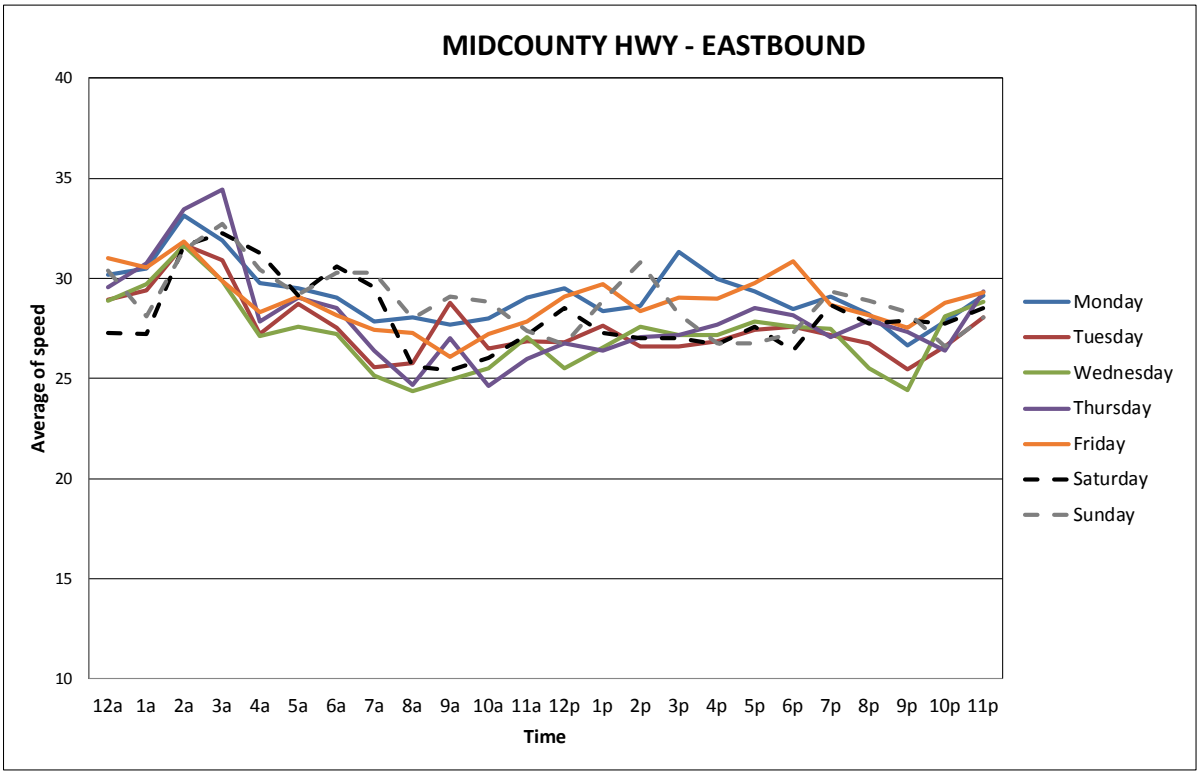


Figure 10: Midcounty Highway Arterial Speeds - Westbound

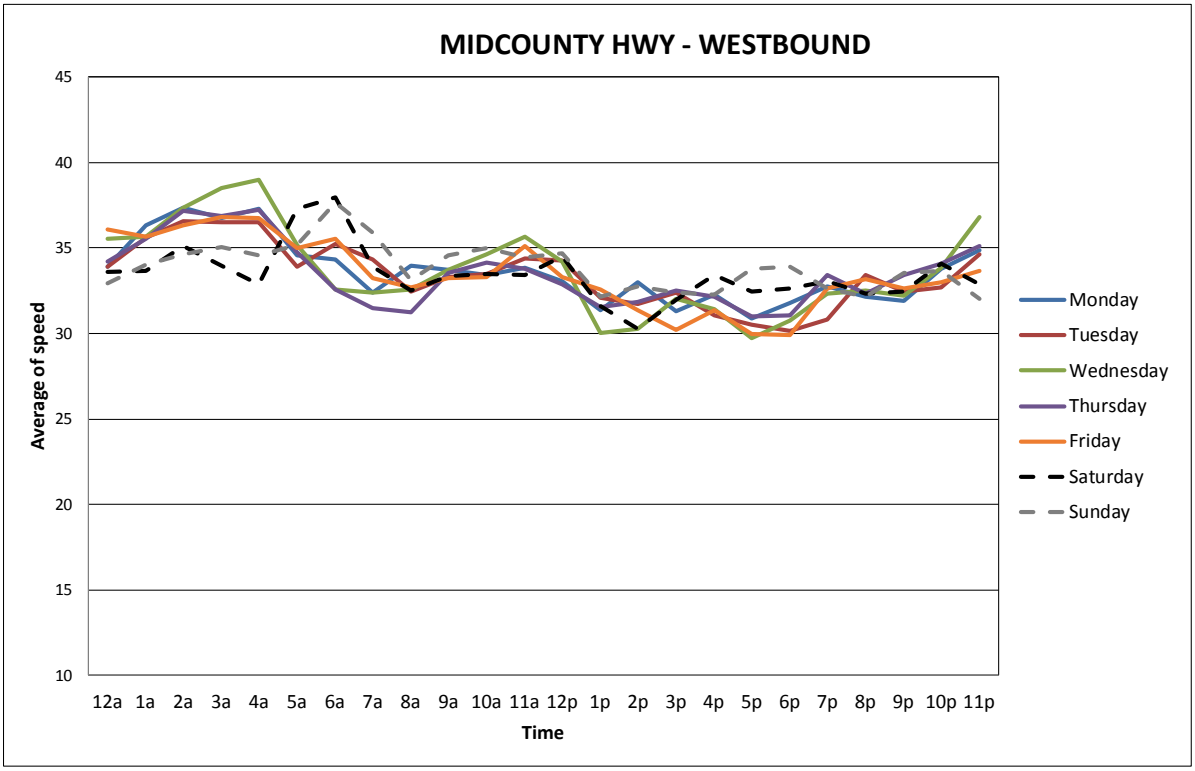


Figure 11: Redland Boulevard Arterial Speeds - Northbound

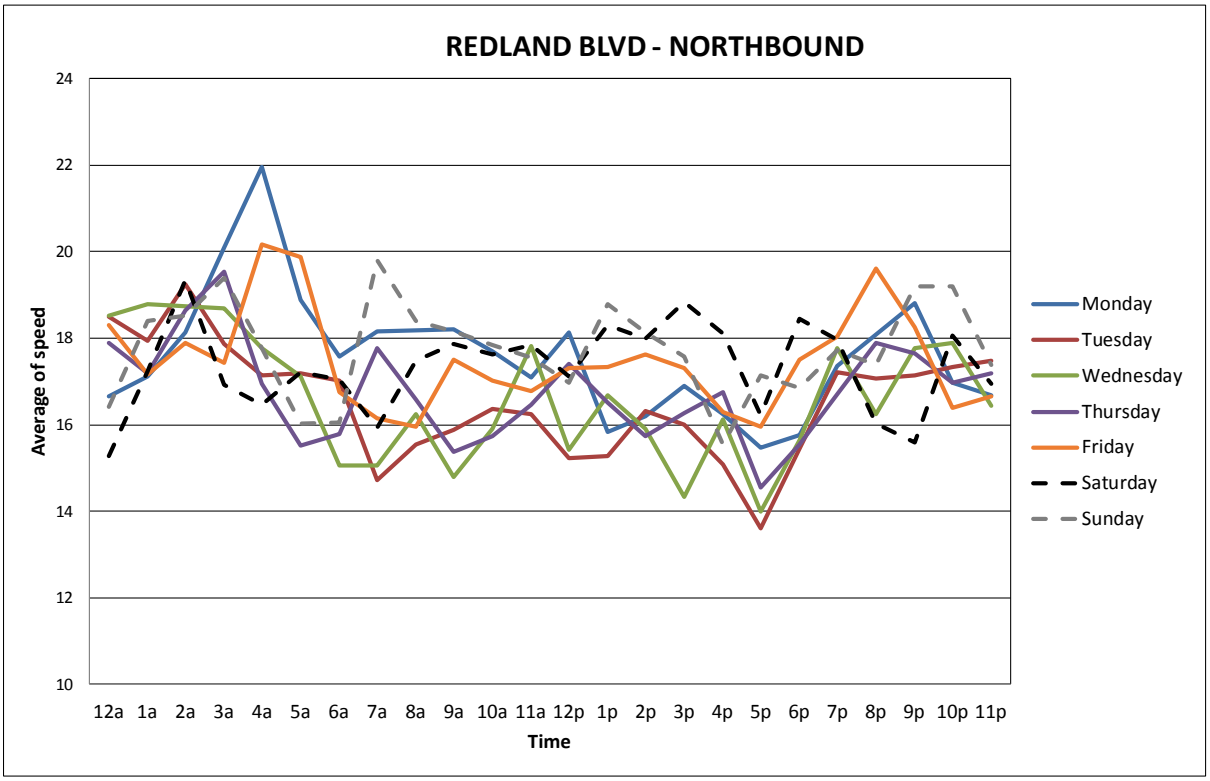


Figure 12: Redland Boulevard Arterial Speeds – Southbound

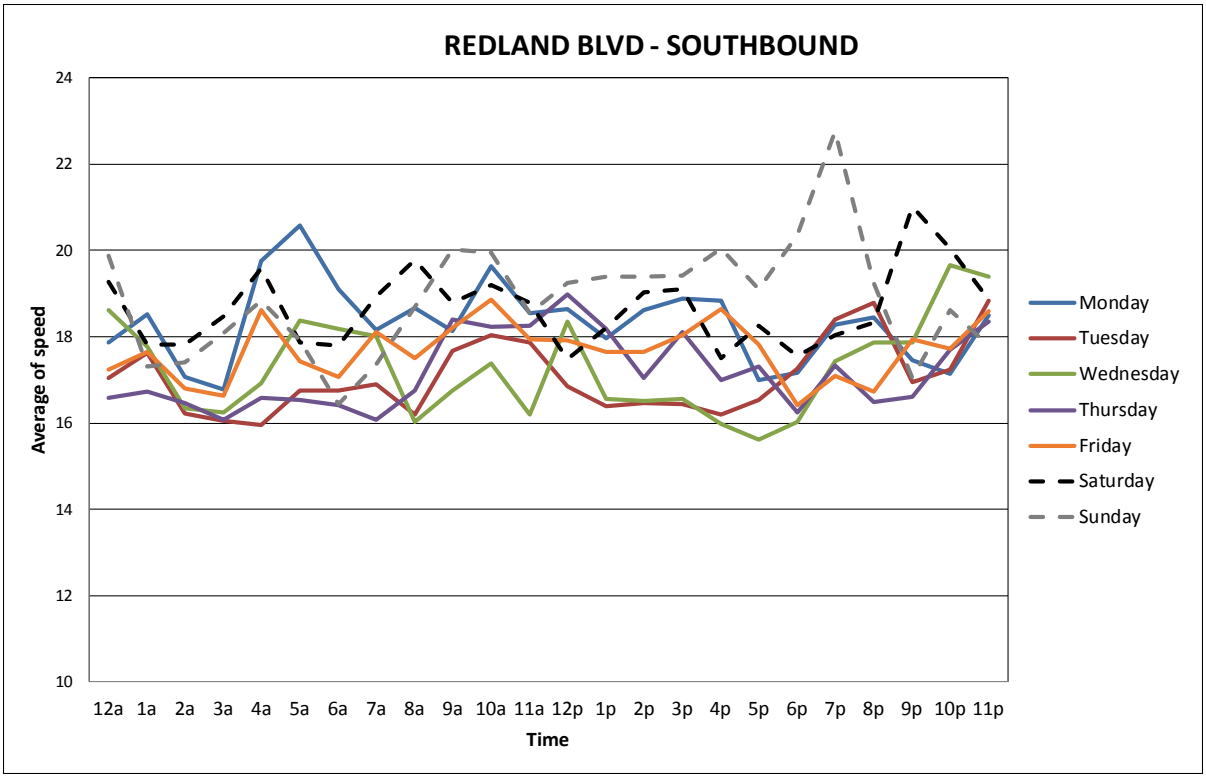


Figure 13: Redland Road Arterial Speeds - Northbound

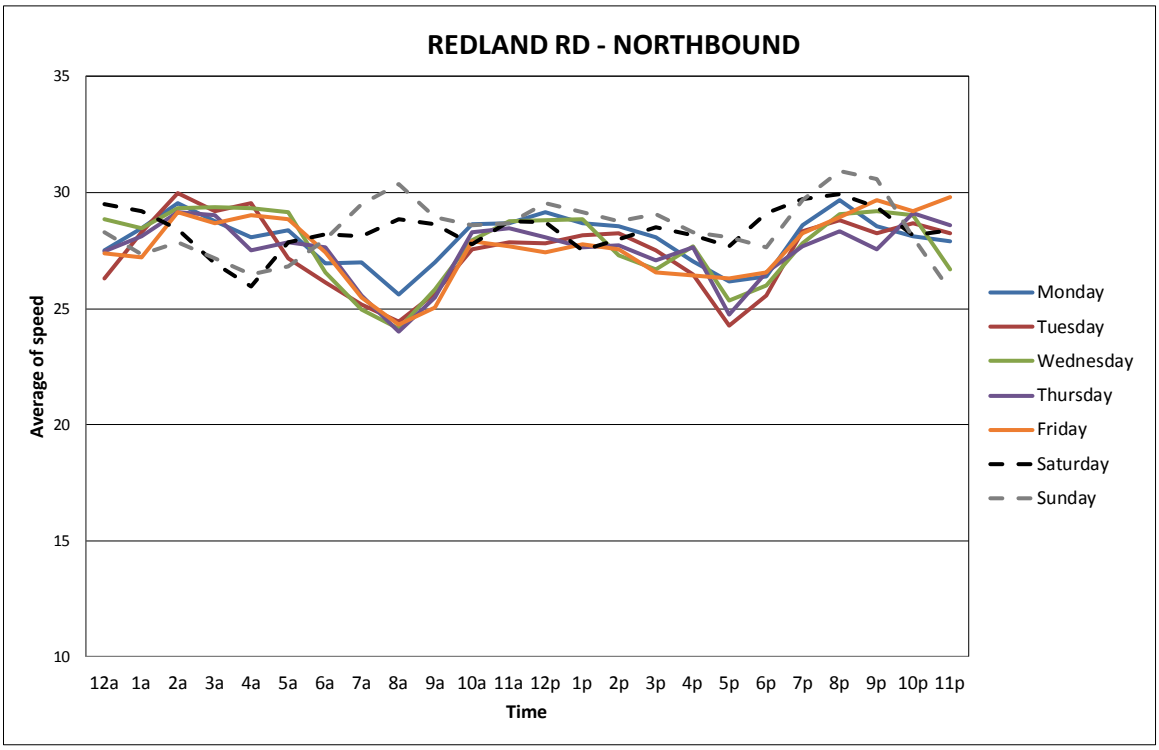


Figure 14: Redland Road Arterial Speeds – Southbound

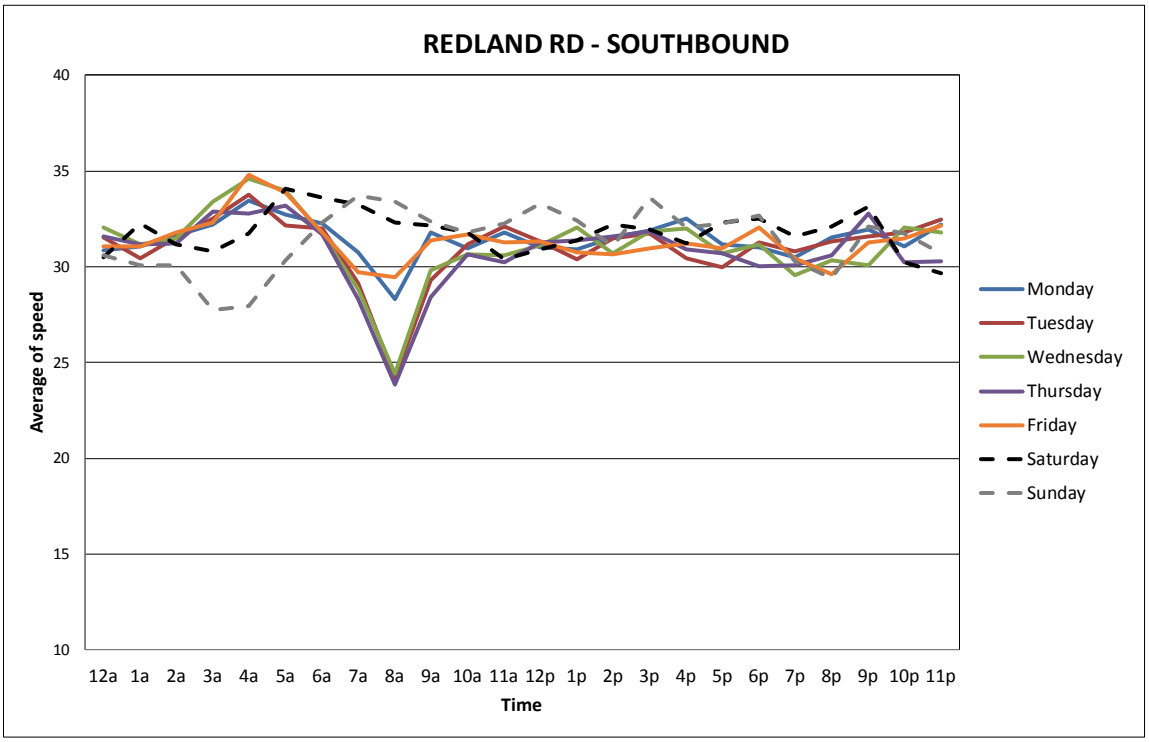


Figure 15: Shady Grove Road Arterial Speeds - Northbound

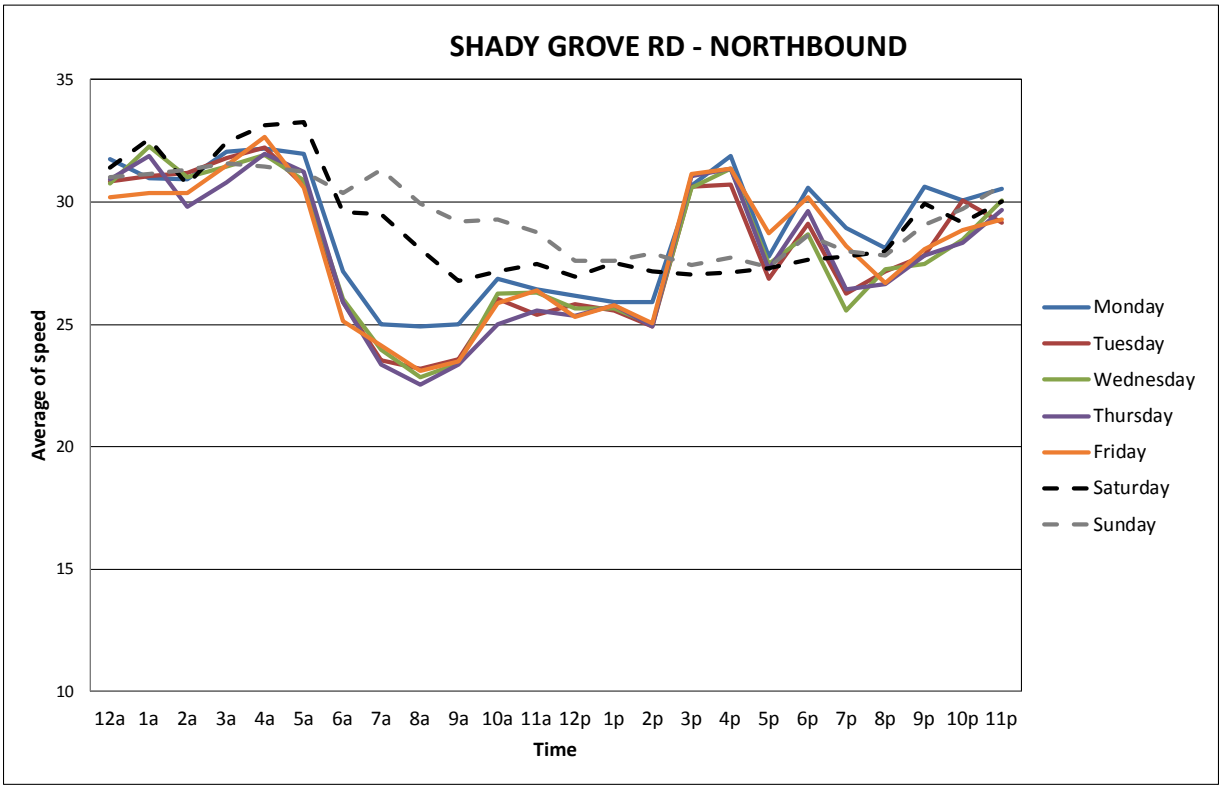
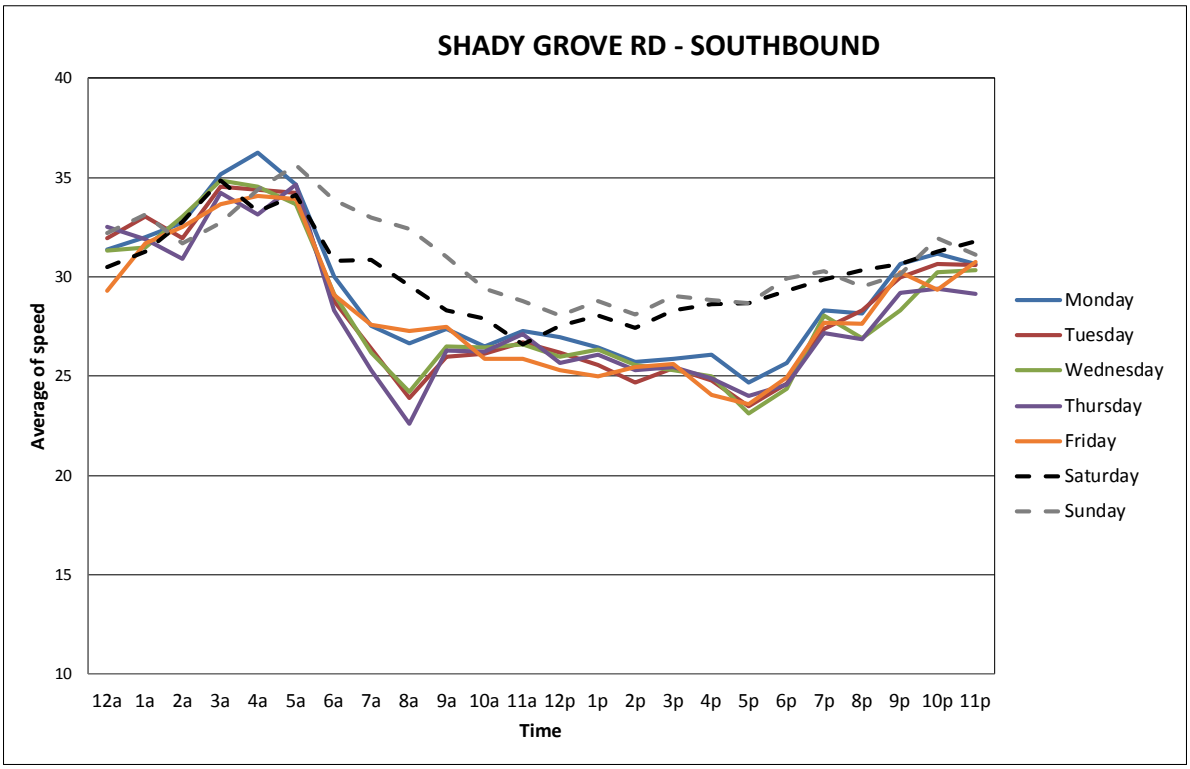


Figure 16: Shady Grove Road Arterial Speeds – Southbound



Points of Recurring Congestion

The intensity of a point of recurring congestion is evaluated using an impact factor metric defined as the product of the duration of the point of congestion, average maximum length of the point of congestion along a roadway segment, and the number of occurrences of congestion within a specified timeframe.

These points of recurring congestion observed during the period March 1st through May 31st, 2016 in the Shady Grove Sector Plan Area are ranked using the impact factor metric described above and reported in Table 2 below. Generally, the most intense points of congestion occur in the northbound direction along Fredrick Road (MD 355) and Shady Grove Road.

Table 2: Shady Grove Sector Plan Area and Vicinity Points of Recurring Congestion*

Rank	Location	Direction	Impact factor	Average max length (miles)	Average duration	Occurrences*	All Events/Incidents
1	SHADY GROVE RD S @ I-270	SOUTHBOUND	22798.81	1.22	1 h 19 m	237	0
2	SHADY GROVE RD N @ MD-115/MUNCASTER MILL RD	NORTHBOUND	12712.01	0.62	47 m	438	0
3	MD-355 N @ REDLAND RD	NORTHBOUND	10483.72	1.09	48 m	200	1
4	SHADY GROVE RD N @ I-370	NORTHBOUND	10473.21	0.48	31 m	702	1
5	MD-355 S @ GUDE DR	SOUTHBOUND	8227.82	0.3	36 m	751	0
6	SHADY GROVE RD S @ MD-355/FREDERICK RD	SOUTHBOUND	6299.83	0.36	36 m	487	0
7	GUDE DR E @ MD-355/FREDERICK RD	EASTBOUND	5315.04	0.28	30 m	626	0
8	MD-355 S @ REDLAND RD	SOUTHBOUND	4561.25	0.89	45 m	114	0
9	SHADY GROVE RD S @ OAKMONT AVE	SOUTHBOUND	4505.53	0.51	27 m	328	0
10	GUDE DR W @ MD-355/FREDERICK RD	WESTBOUND	4494.35	0.17	32 m	837	0
11	MD-355 N @ GUDE DR	NORTHBOUND	4476.18	0.25	31 m	588	1
12	SHADY GROVE RD N @ OAKMONT AVE	NORTHBOUND	4392.42	0.5	32 m	277	0
13	SHADY GROVE RD N @ MD-355/FREDERICK RD	NORTHBOUND	4090.51	0.31	33 m	405	0
14	MD-355 N @ SHADY GROVE RD	NORTHBOUND	3963.52	0.34	28 m	411	0
15	SHADY GROVE RD S @ I-370	SOUTHBOUND	3641.67	0.38	26 m	371	0
16	MIDCOUNTY HWY W @ WOODFIELD RD	WESTBOUND	3594.99	1.36	49 m	54	0
17	MD-355 S @ N WASHINGTON ST	SOUTHBOUND	3403.25	1.28	50 m	53	1
18	SHADY GROVE RD S @ MIDCOUNTY HWY	SOUTHBOUND	3350.06	0.2	33 m	519	0
19	MD-355 S @ SHADY GROVE RD	SOUTHBOUND	3341.74	0.13	36 m	715	0
20	CRABBS BRANCH WAY N @ SHADY GROVE RD	NORTHBOUND	3180.87	0.42	31 m	247	0
21	MIDCOUNTY HWY W @ MD-124/WASHINGTON GROVE LN	WESTBOUND	2556.73	1	23 m	111	0
22	REDLAND RD S @ CRABBS BRANCH WAY	SOUTHBOUND	2412.11	0.84	26 m	111	0
23	MD-355 S @ MD-28/VEIRS MILL RD/E JEFFERSON ST	SOUTHBOUND	2364.66	2.25	1 h 10 m	15	1
24	CRABBS BRANCH WAY S @ REDLAND RD	SOUTHBOUND	2332.01	0.28	27 m	305	0
25	SHADY GROVE RD S @ MD-28/KEY WEST AVE	SOUTHBOUND	2261.69	1.87	1 h 50 m	11	0
26	E GUDE DR E @ DOVER RD	EASTBOUND	2079.79	0.92	25 m	90	0
27	E GUDE DR W @ CRABBS BRANCH WAY/CECIL ST	WESTBOUND	2044.84	1.07	28 m	68	0
28	SHADY GROVE RD N @ MIDCOUNTY HWY	NORTHBOUND	1944.62	0.21	30 m	309	0
29	REDLAND BLVD S @ MD-355/FREDERICK RD	SOUTHBOUND	1942.2	0.24	32 m	257	0
30	MD-355 N @ I-370	NORTHBOUND	1835.25	0.18	29 m	358	0
31	CRABBS BRANCH WAY N @ REDLAND RD	NORTHBOUND	1761.87	1.13	41 m	38	0
32	REDLAND BLVD N @ MD-355/FREDERICK RD	NORTHBOUND	1752.62	0.13	31 m	431	0
33	CRABBS BRANCH WAY S @ E GUDE DR	SOUTHBOUND	1688.92	0.19	48 m	183	0
34	REDLAND RD N @ MD-115/MUNCASTER MILL RD	NORTHBOUND	1501.24	1.2	24 m	52	0
35	REDLAND RD N @ CRABBS BRANCH WAY	NORTHBOUND	1221.88	0.56	23 m	95	0
36	MIDCOUNTY HWY E @ SHADY GROVE RD	EASTBOUND	1130.06	0.1	48 m	246	0
37	MD-355 N @ S SUMMIT AVE	NORTHBOUND	1061.52	1.51	47 m	15	1
38	E GUDE DR E @ MD-28/NORBECK RD	EASTBOUND	905.09	1.83	38 m	13	0
39	E GUDE DR E @ CRABBS BRANCH WAY/CECIL ST	EASTBOUND	838.73	0.22	34 m	114	0
40	REDLAND RD S @ BRIARDALE RD	SOUTHBOUND	691.68	1.2	23 m	25	0
41	REDLAND BLVD S @ GAITHER RD	SOUTHBOUND	494.25	0.61	28 m	29	0
42	CRABBS BRANCH WAY N @ I-370	NORTHBOUND	412.09	0.22	27 m	68	0
43	CRABBS BRANCH WAY S @ I-370	SOUTHBOUND	394.71	0.15	26 m	102	0
44	REDLAND RD N @ BRIARDALE RD	NORTHBOUND	374.78	0.82	24 m	19	0
45	W GUDE DR W @ GAITHER RD	WESTBOUND	355.3	0.67	23 m	23	0
46	MD-355 S @ MONTROSE RD/RANDOLPH RD	SOUTHBOUND	347.75	4.29	1 h 21 m	1	2
47	W GUDE DR W @ MD-28/W MONTGOMERY AVE	WESTBOUND	220.82	1.5	49 m	3	0
48	MD-355 S @ I-370	SOUTHBOUND	217.13	0.17	24 m	52	2
49	MD-355 S @ 1ST ST/WOOTTON PKWY	SOUTHBOUND	208.66	2.4	1 h 27 m	1	1
50	CRABBS BRANCH WAY N @ E GUDE DR	NORTHBOUND	132.34	0.01	49 m	242	0
51	MIDCOUNTY HWY W @ GOSHEN RD	WESTBOUND	110.99	2.47	45 m	1	0
52	CRABBS BRANCH WAY S @ SHADY GROVE RD	SOUTHBOUND	87.35	0.01	42 m	171	0
53	MD-355 N @ MD-117/W DIAMOND AVE/OLDE TOWNE AVE	NORTHBOUND	57.81	1.52	38 m	1	0
54	W GUDE DR W @ PICCARD DR	WESTBOUND	55.11	1.08	51 m	1	0
55	W GUDE DR W @ I-270/DWIGHT D EISENHOWER HWY	WESTBOUND	33.83	0.79	43 m	1	0
56	MIDCOUNTY HWY W @ SHADY GROVE RD	WESTBOUND	12.88	0.04	38 m	9	0

*** Between March 1, and May 31st, 2016**

Critical Lane Volume Intersection

Critical lane volume (CLV) is a measure of intersection capacity traditionally used in Montgomery County. Using observed traffic counts collected since 2014 at selected intersections in the Shady Grove Sector Plan area, CLVs at these locations are reported in Table 3 below. Pedestrian and bike counts at these intersections are also provided.

Table 3: Critical Lane Volumes[1] – Shady Grove Sector Plan Area

Intersection	AM CLV	AM V/C Ratio	PM CLV	PM V/C Ratio	2016 LATR Standard	Pedestrian Observations	Bicycle Observations	Count Date
Frederick Road (MD 355) at Ridgemont Avenue	1178	0.65	1029	0.57	1800	94	0	9/23/2014
Frederick Road (MD 355) at King Farm Blvd	1145	0.64	1209	0.67	1800	391	26	9/15/2016
Frederick Road (MD 355) at Indianola Drive/Watkins Pond Blvd	1434	0.96	1073	0.72	1500[2]	52	0	10/21/2014
Frederick Road (MD 355) at Shady Grove Road	1765	0.98	1411	0.78	1800	141	0	10/1/2014
Hungerford Drive at College Parkway	1311	0.87	870	0.58	1500	83	0	10/2/2014
Redland Road at Somerville Drive	671	0.37	1046	0.58	1800	259	0	10/9/2014
Frederick Road/S. Frederick Avenue (MD 355) at Oneill Drive/I-370	1501	1.02	1012	0.69	1475	39	0	10/1/2014
Entrance to Shady Grove Metro at Redland Road	1026	0.57	796	0.44	1800	191	0	10/9/2014

[1] Between 6:30 a.m. to 10 a.m. and 4 p.m. to 7 p.m.

[2] Within the City of Rockville

Hungerford Lane (Md 355) at Gude Drive	1533	1.02	1258	0.84	1500	62	0	10/1/2014
East Gude Drive at Calhoun Drive	892	0.60	0	0.00	1475	65	20	6/3/2015

Great Seneca Science Corridor Master Plan Transportation

Congestion Ranking

INRIX peak period travel speed information for selected arterial roadway segments within and in the immediate vicinity of the Great Seneca Science Center master plan area was collected during 2016. Using this information, these roadway segments were ranked by a congestion percentage index defined as the Travel Time Index (TTI) -1. The TTI is an indicator of congestion calculated as the ratio of observed travel time relative to free flow travel time. A TTI of 1.00 implies free flow travel without any delays. A TTI of 1.30 indicates that drivers must spend 30 percent more time to travel along a roadway segment relative to free flow travel conditions. This congestion ranking information is reported in Tables 1 and 2 below. Comparable year 2013 information is also provided.

Table 1: Great Seneca Science Corridor Master Plan Area and Vicinity Arterial Congestion Ranking

Road	2016 Congestion	2013 Congestion	2016 Average Speed	2013 Average Speed	Direction	Peak Period
MD-28	55.6%	26.5%	25.8	32.8	EASTBOUND	PM Peak
MD-117	54.9%	39.4%	21.0	28.8	WESTBOUND	PM Peak
SAM EIG HWY	54.7%	27.0%	21.3	33.0	SOUTHBOUND	AM Peak
MD-117	42.9%	24.3%	22.7	30.1	EASTBOUND	PM Peak
MD-124	41.9%	26.9%	19.5	26.4	NORTHBOUND	PM Peak
LONGDRAFT RD	39.2%	19.9%	18.8	27.9	SOUTHBOUND	AM Peak
MD-28	38.8%	19.4%	27.6	34.7	WESTBOUND	AM Peak
LONGDRAFT RD	38.3%	11.0%	18.5	29.6	NORTHBOUND	PM Peak
GREAT SENECA HWY	36.5%	22.4%	26.1	35.5	NORTHBOUND	PM Peak
LONGDRAFT RD	36.5%	12.8%	18.7	29.7	NORTHBOUND	AM Peak
MD-28	36.1%	23.7%	28.9	33.8	EASTBOUND	AM Peak
SAM EIG HWY	35.0%	26.4%	20.8	32.6	SOUTHBOUND	PM Peak
MD-28	33.8%	20.1%	28.4	34.6	WESTBOUND	PM Peak
GREAT SENECA HWY	33.4%	21.2%	27.4	35.8	NORTHBOUND	AM Peak
GREAT SENECA HWY	32.5%	23.5%	26.2	34.2	SOUTHBOUND	PM Peak
SHADY GROVE RD	32.2%	34.2%	23.8	26.9	SOUTHBOUND	AM Peak
MD-124	31.0%	19.7%	22.8	28.6	SOUTHBOUND	AM Peak
FIELDS RD	30.8%	10.5%	23.8	33.4	EASTBOUND	PM Peak
MD-355	30.8%	50.9%	23.1	26.1	SOUTHBOUND	AM Peak
SHADY GROVE RD	30.7%	26.6%	23.4	27.2	SOUTHBOUND	PM Peak
MUDDY BRANCH RD	30.5%	12.7%	21.3	31.9	NORTHBOUND	PM Peak
MUDDY BRANCH RD	30.4%	8.9%	21.1	32.9	NORTHBOUND	AM Peak
MUDDY BRANCH RD	29.5%	9.8%	23.6	31.7	SOUTHBOUND	AM Peak
MUDDY BRANCH RD	28.5%	9.0%	23.3	31.7	SOUTHBOUND	PM Peak
MD-124	27.9%	16.8%	20.5	28.4	NORTHBOUND	AM Peak
FIELDS RD	27.4%	13.8%	23.1	34.2	WESTBOUND	PM Peak
GAITHER RD	26.6%	17.0%	15.5	23.0	NORTHBOUND	AM Peak
KENTLANDS BLVD	26.2%	#N/A	15.7	#N/A	EASTBOUND	AM Peak
DARNESTOWN RD	25.4%	17.6%	22.8	30.2	EASTBOUND	PM Peak
MD-117	25.2%	25.9%	25.9	31.5	WESTBOUND	AM Peak
GREAT SENECA HWY	25.1%	20.0%	28.9	35.5	SOUTHBOUND	AM Peak
GAITHER RD	24.4%	3.1%	16.2	24.7	SOUTHBOUND	PM Peak
DARNESTOWN RD	24.1%	13.9%	22.4	30.6	WESTBOUND	PM Peak
SAM EIG HWY	24.0%	17.2%	28.5	36.1	NORTHBOUND	PM Peak
OMEGA DR	23.9%	23.9%	22.1	27.1	SOUTHBOUND	AM Peak
SHADY GROVE RD	23.9%	24.9%	22.4	27.6	NORTHBOUND	PM Peak
MD-28	23.3%	10.5%	30.8	36.8	EASTBOUND	Off Peak
DARNESTOWN RD	23.1%	25.9%	23.8	29.1	EASTBOUND	AM Peak
MD-355	23.0%	40.3%	25.0	28.7	NORTHBOUND	PM Peak
MD-124	23.0%	16.1%	22.9	28.7	SOUTHBOUND	PM Peak
DARNESTOWN RD	22.7%	20.5%	22.2	29.4	WESTBOUND	AM Peak
OMEGA DR	22.0%	27.5%	21.5	26.6	SOUTHBOUND	PM Peak
MD-117	21.4%	21.7%	26.0	30.9	EASTBOUND	AM Peak
SAM EIG HWY	20.3%	9.3%	25.2	37.2	SOUTHBOUND	Off Peak
WASHINGTONIAN BLVD	19.2%	9.7%	16.1	23.3	WESTBOUND	PM Peak
LONGDRAFT RD	18.4%	2.6%	22.1	31.7	SOUTHBOUND	PM Peak
MD-117	18.3%	11.8%	27.5	34.1	WESTBOUND	Off Peak
GAITHER RD	17.6%	15.9%	16.8	23.3	SOUTHBOUND	AM Peak
GREAT SENECA HWY	17.1%	9.5%	29.2	38.2	SOUTHBOUND	Off Peak

Table 2: Great Seneca Science Corridor Plan Area and Vicinity Arterial Congestion Ranking

Road	2016 Congestion	2013 Congestion	2016 Average Speed	2013 Average Speed	Direction	Peak Period
SHADY GROVE RD	17.1%	16.6%	25.2	29.9	SOUTHBOUND	Off Peak
MUDDY BRANCH RD	17.1%	5.4%	24.6	33.1	SOUTHBOUND	Off Peak
SHADY GROVE RD	16.7%	22.7%	23.9	27.6	NORTHBOUND	AM Peak
MUDDY BRANCH RD	15.9%	6.4%	22.8	33.7	NORTHBOUND	Off Peak
OMEGA DR	15.7%	13.6%	24.0	29.4	NORTHBOUND	AM Peak
FIELDS RD	15.6%	8.9%	26.1	33.2	EASTBOUND	AM Peak
OMEGA DR	15.6%	10.8%	21.9	30.0	SOUTHBOUND	Off Peak
GREAT SENECA HWY	15.2%	9.4%	30.2	39.4	NORTHBOUND	Off Peak
MD-124	15.2%	7.1%	24.4	31.2	SOUTHBOUND	Off Peak
LONGDRAFT RD	15.1%	5.7%	22.2	31.6	NORTHBOUND	Off Peak
FIELDS RD	14.7%	14.0%	25.3	33.9	WESTBOUND	AM Peak
WASHINGTONIAN BLVD	14.5%	8.6%	16.6	23.6	WESTBOUND	Off Peak
LONGDRAFT RD	14.3%	5.7%	22.1	31.7	SOUTHBOUND	Off Peak
GAITHER RD	14.1%	6.8%	16.5	24.5	NORTHBOUND	Off Peak
MD-28	14.1%	8.1%	32.2	38.0	WESTBOUND	Off Peak
FIELDS RD	13.7%	9.9%	25.7	33.2	EASTBOUND	Off Peak
SHADY GROVE RD	13.5%	11.3%	23.6	30.3	NORTHBOUND	Off Peak
MD-124	13.4%	9.2%	22.8	30.3	NORTHBOUND	Off Peak
MD-355	13.2%	22.5%	26.4	31.2	SOUTHBOUND	PM Peak
MD-355	12.9%	29.5%	27.7	31.1	NORTHBOUND	AM Peak
DARNESTOWN RD	12.8%	8.9%	24.3	32.8	WESTBOUND	Off Peak
MD-117	12.7%	8.6%	28.0	34.2	EASTBOUND	Off Peak
KENTLANDS BLVD	12.6%	#N/A	16.5	#N/A	EASTBOUND	Off Peak
GAITHER RD	12.2%	15.4%	17.2	22.9	NORTHBOUND	PM Peak
DARNESTOWN RD	11.5%	9.9%	25.9	32.8	EASTBOUND	Off Peak
GAITHER RD	11.5%	5.3%	17.4	24.8	SOUTHBOUND	Off Peak
OMEGA DR	11.1%	11.0%	24.5	30.6	NORTHBOUND	Off Peak
SAM EIG HWY	10.7%	30.2%	32.3	33.1	NORTHBOUND	AM Peak
FIELDS RD	10.3%	8.5%	25.8	35.0	WESTBOUND	Off Peak
WASHINGTONIAN BLVD	9.4%	9.9%	16.9	21.8	EASTBOUND	PM Peak
OMEGA DR	9.0%	9.2%	26.0	30.6	NORTHBOUND	PM Peak
WASHINGTONIAN BLVD	9.0%	7.8%	17.2	22.5	EASTBOUND	Off Peak
MD-355	8.5%	15.3%	29.8	35.3	NORTHBOUND	Off Peak
QUINCE ORCHARD RD	8.4%	2.1%	29.4	32.3	NORTHBOUND	Off Peak
MD-355	7.8%	15.4%	28.5	33.6	SOUTHBOUND	Off Peak
SAM EIG HWY	7.7%	9.9%	33.6	38.7	NORTHBOUND	Off Peak
QUINCE ORCHARD RD	7.7%	5.3%	29.9	33.3	SOUTHBOUND	PM Peak
WASHINGTONIAN BLVD	7.6%	7.8%	18.0	23.7	WESTBOUND	AM Peak
KENTLANDS BLVD	7.6%	#N/A	19.7	#N/A	EASTBOUND	PM Peak
TRAVILAH RD	7.2%	8.5%	31.3	32.3	WESTBOUND	AM Peak
TRAVILAH RD	6.7%	4.2%	30.8	33.7	EASTBOUND	Off Peak
TRAVILAH RD	6.4%	3.2%	31.5	34.0	WESTBOUND	Off Peak
TRAVILAH RD	6.0%	8.0%	30.4	32.4	EASTBOUND	PM Peak
QUINCE ORCHARD RD	5.9%	3.1%	30.7	34.0	SOUTHBOUND	Off Peak
QUINCE ORCHARD RD	5.6%	7.0%	30.1	30.9	NORTHBOUND	AM Peak
TRAVILAH RD	5.5%	16.8%	31.1	30.2	EASTBOUND	AM Peak
WASHINGTONIAN BLVD	4.9%	6.7%	18.5	22.8	EASTBOUND	AM Peak
QUINCE ORCHARD RD	4.5%	5.2%	31.2	33.3	SOUTHBOUND	AM Peak
QUINCE ORCHARD RD	3.4%	4.5%	30.8	31.6	NORTHBOUND	PM Peak
TRAVILAH RD	2.5%	4.4%	33.3	33.5	WESTBOUND	PM Peak

Utilizing the year 2016 INRIX travel speed information reported in Tables 1 and 2 above, mapping depicting AM and PM peak period speeds is provided below in Figures 1and 2, respectively.

Figure 1: Great Seneca Science Corridor Plan Area and Vicinity AM Peak Period Arterial Speeds

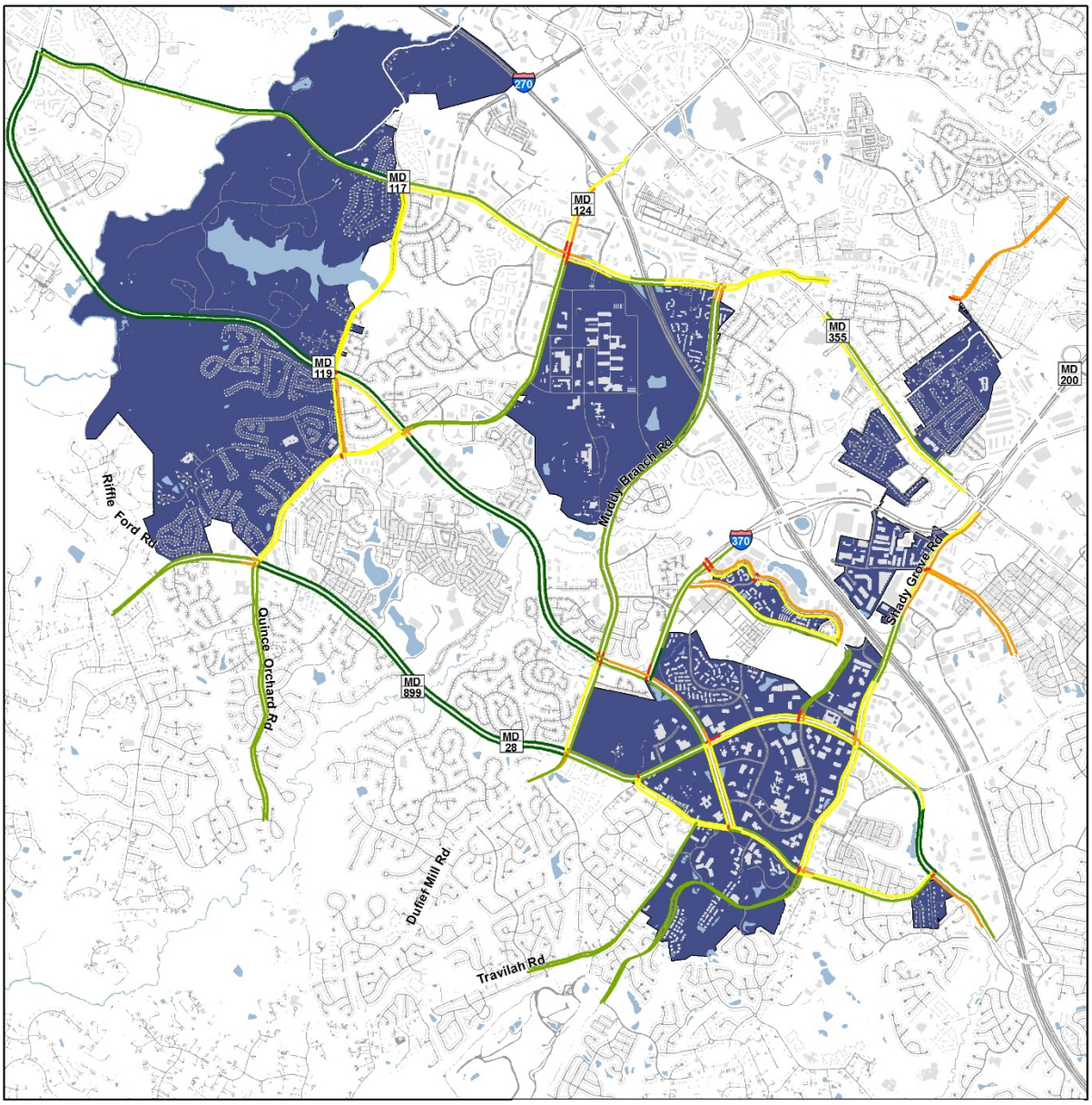
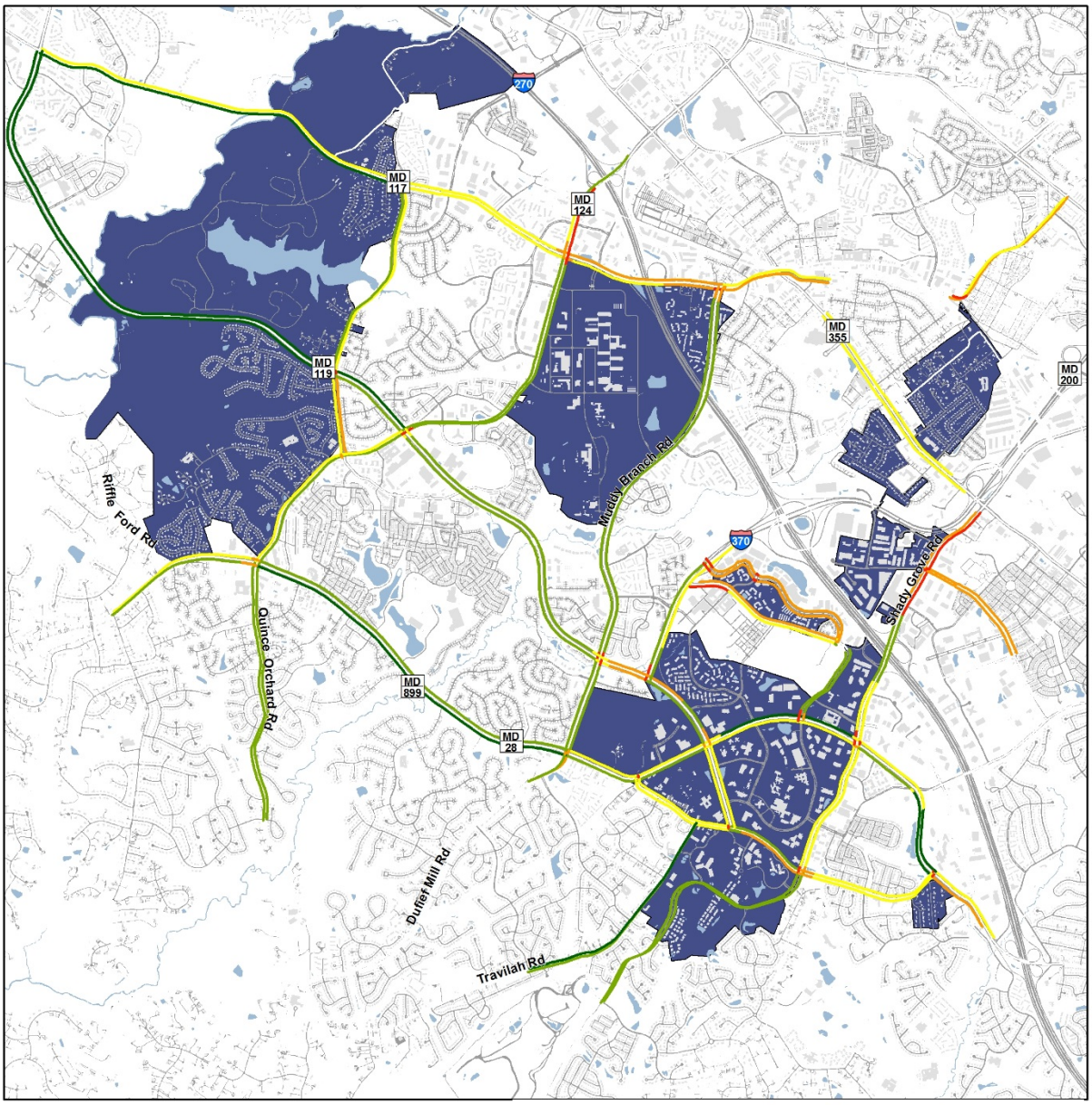


Figure 2: Great Seneca Science Corridor Plan Area and Vicinity PM Peak Period Arterial Speeds



Arterial Speed Profiles

Utilizing observed year 2016 INRIX travel speed data, 24-hour directional speed profiles for the following roadways located within and in the immediate vicinity of the Great Seneca Science Corridor Master Plan Area are reported in Figures 3, below:

- Clopper Road (MD 117)
- Montgomery Village Avenue (MD 124)
- Key West Avenue (MD 28)
- Frederick Road (MD 355)
- Muddy Branch Road
- Omega Drive
- Quince Orchard Road
- Sam Eig Highway
- Shady Grove Road
- Travilah Road
- Washingtonian Boulevard
- Darnestown Road
- Fields Road
- Gaither Road
- Great Seneca Highway
- Longdraft Road

Figure 3: Clopper Road Arterial Speeds - Eastbound

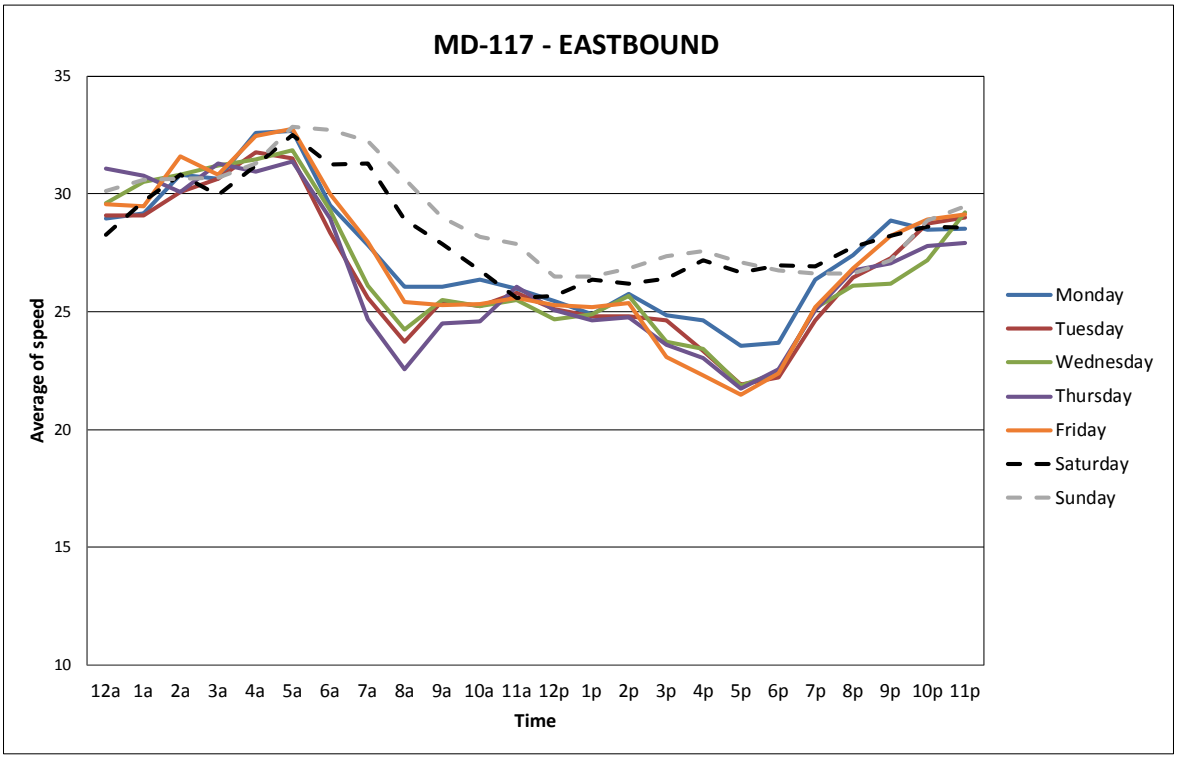


Figure 4: Clopper Road Arterial Speeds - Westbound

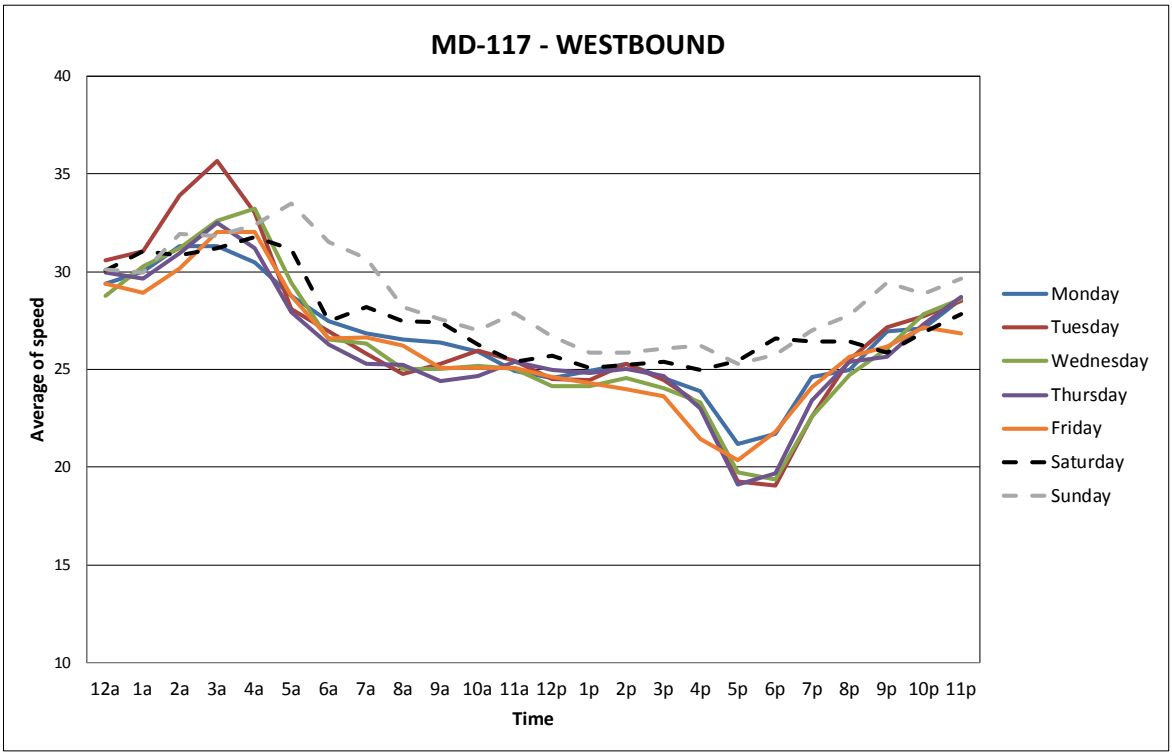


Figure 5: Montgomery Village Avenue Arterial Speeds - Northbound

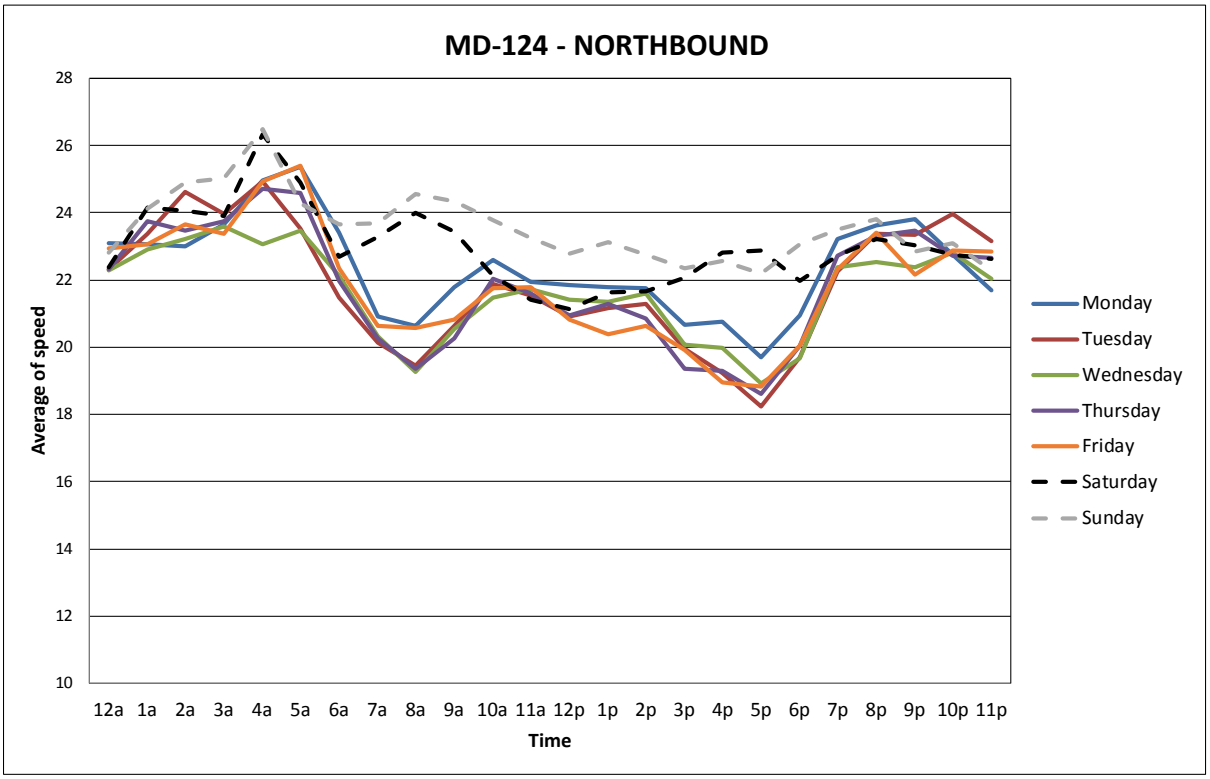


Figure 6: Montgomery Village Avenue Arterial Speeds - Southbound

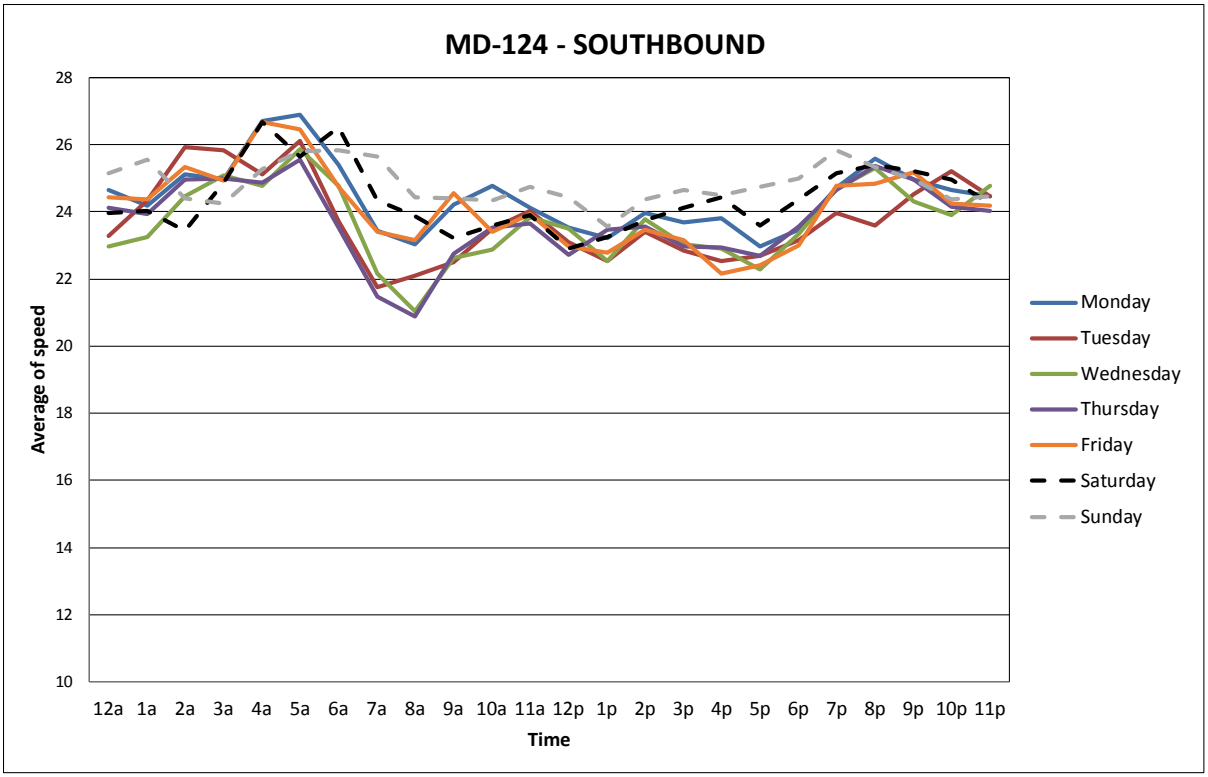


Figure 7: MD 28 Arterial Speeds - Eastbound

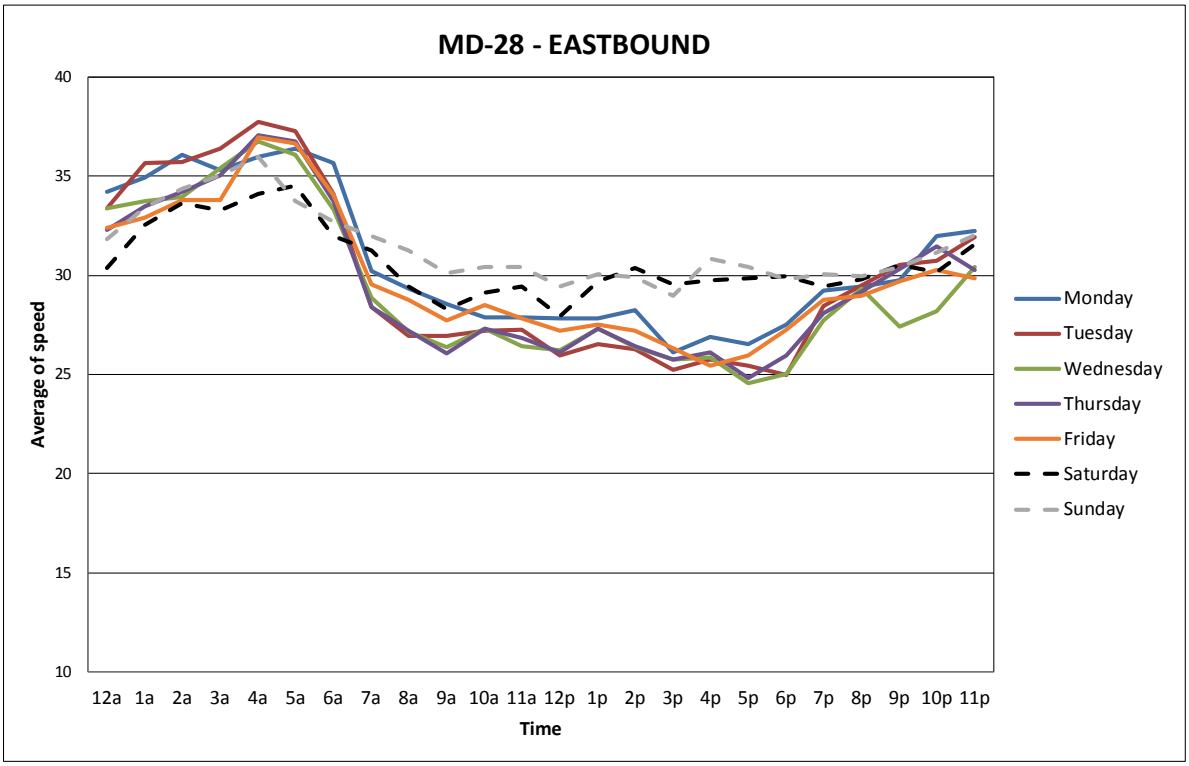


Figure 8: MD 28 Arterial Speeds - Westbound

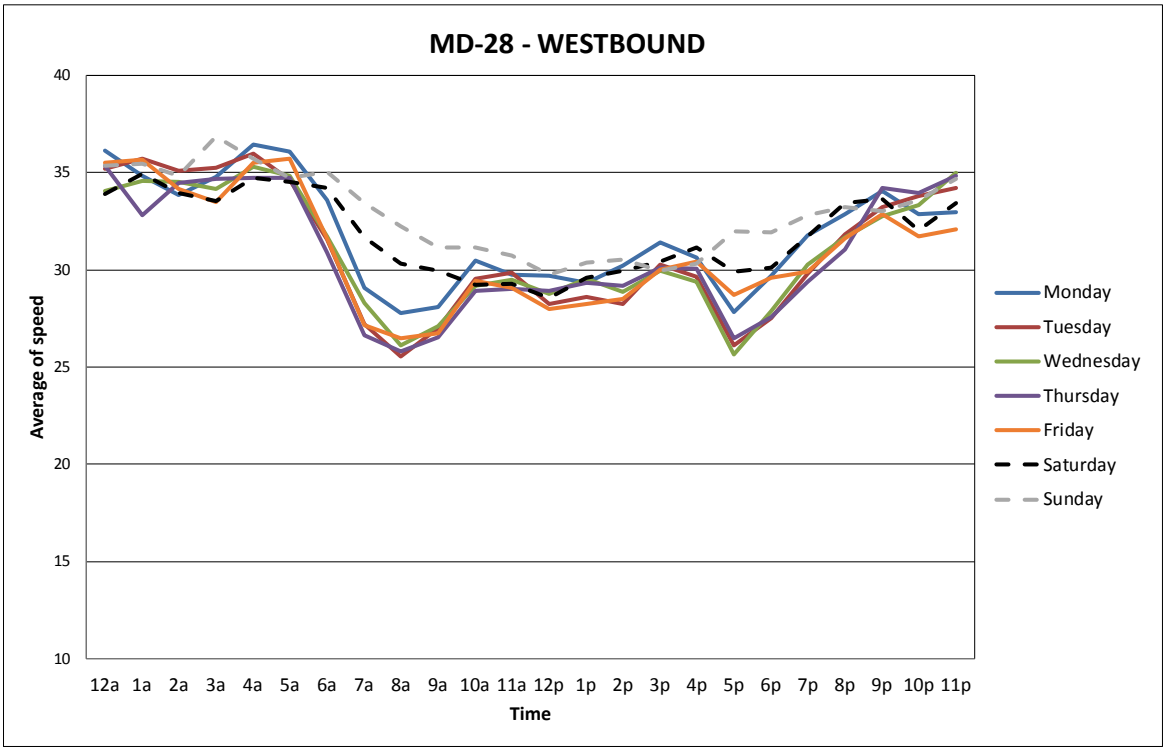


Figure 9: Frederick Road Arterial Speeds - Northbound

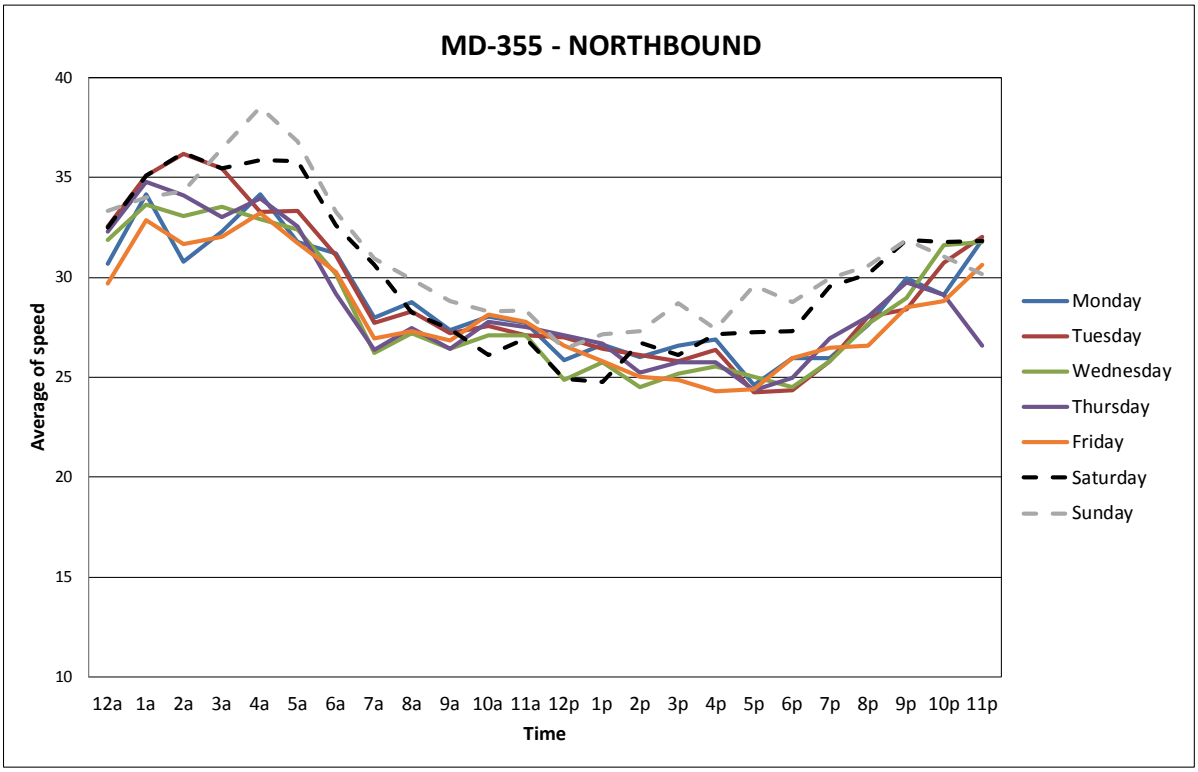


Figure 10: Frederick Road Arterial Speeds - Southbound

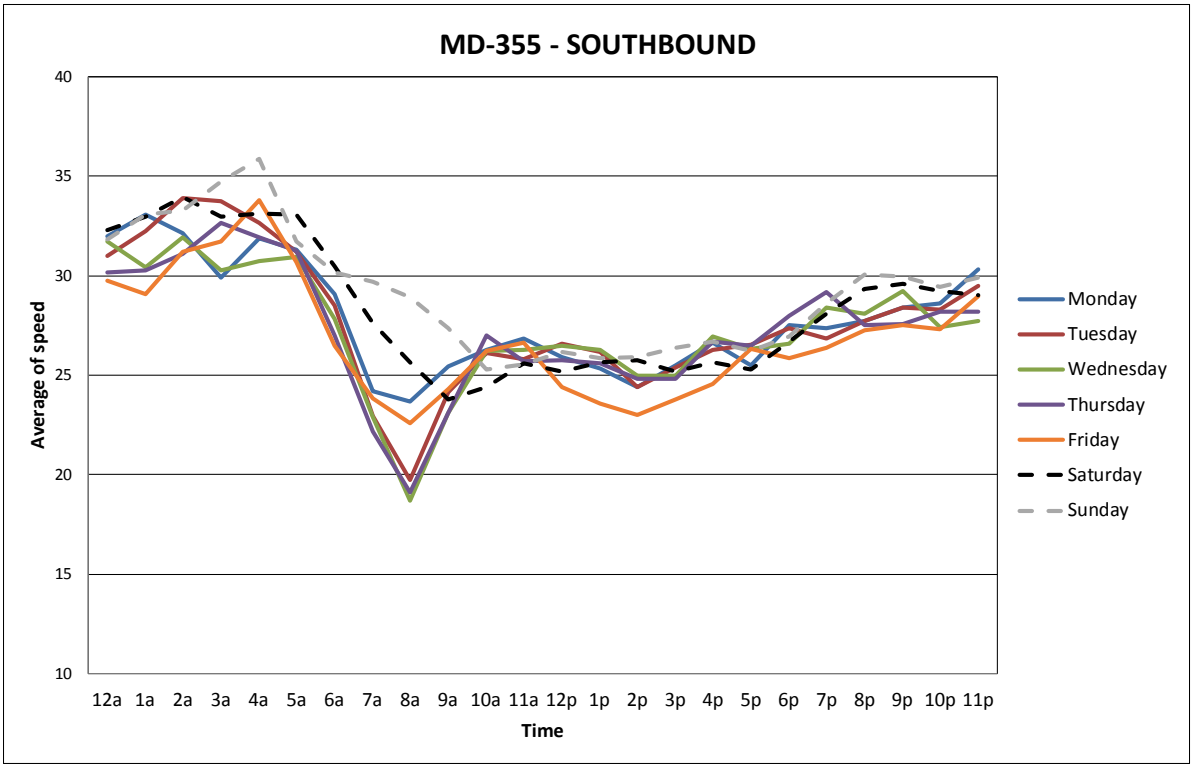


Figure 11: Muddy Branch Road Arterial Speeds - Northbound

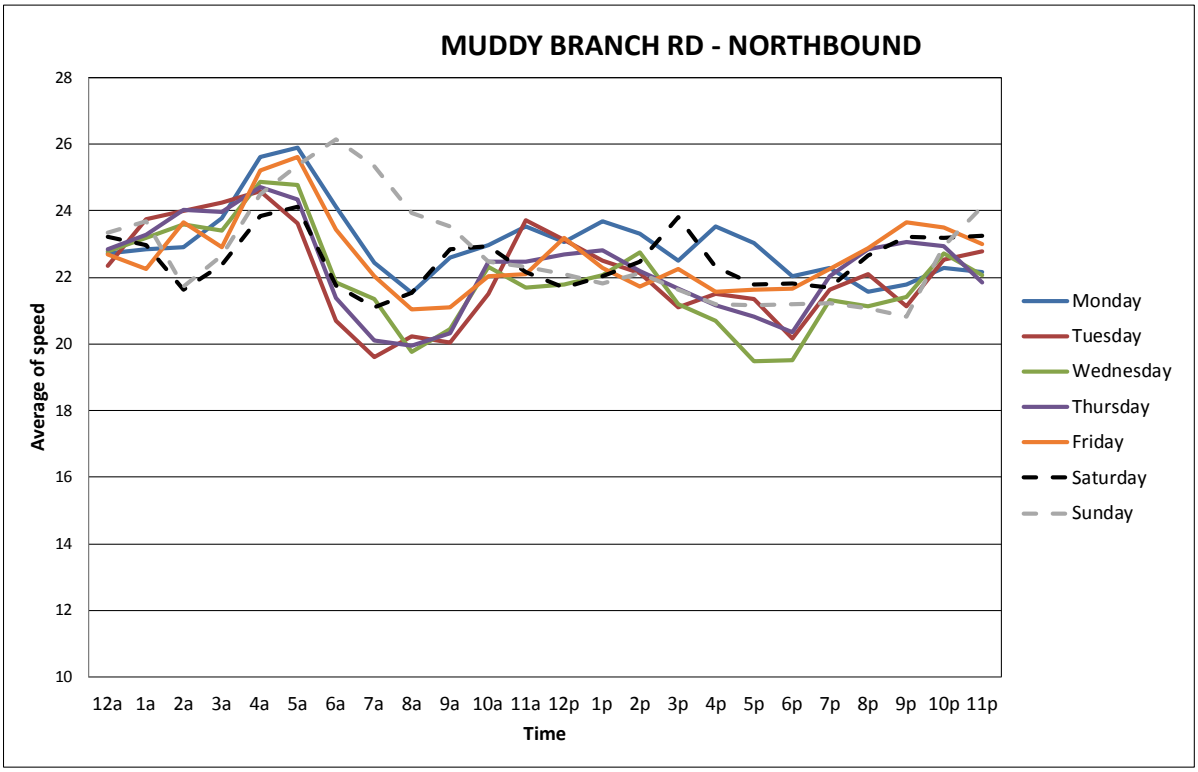


Figure 12: Muddy Branch Road Arterial Speeds - Southbound

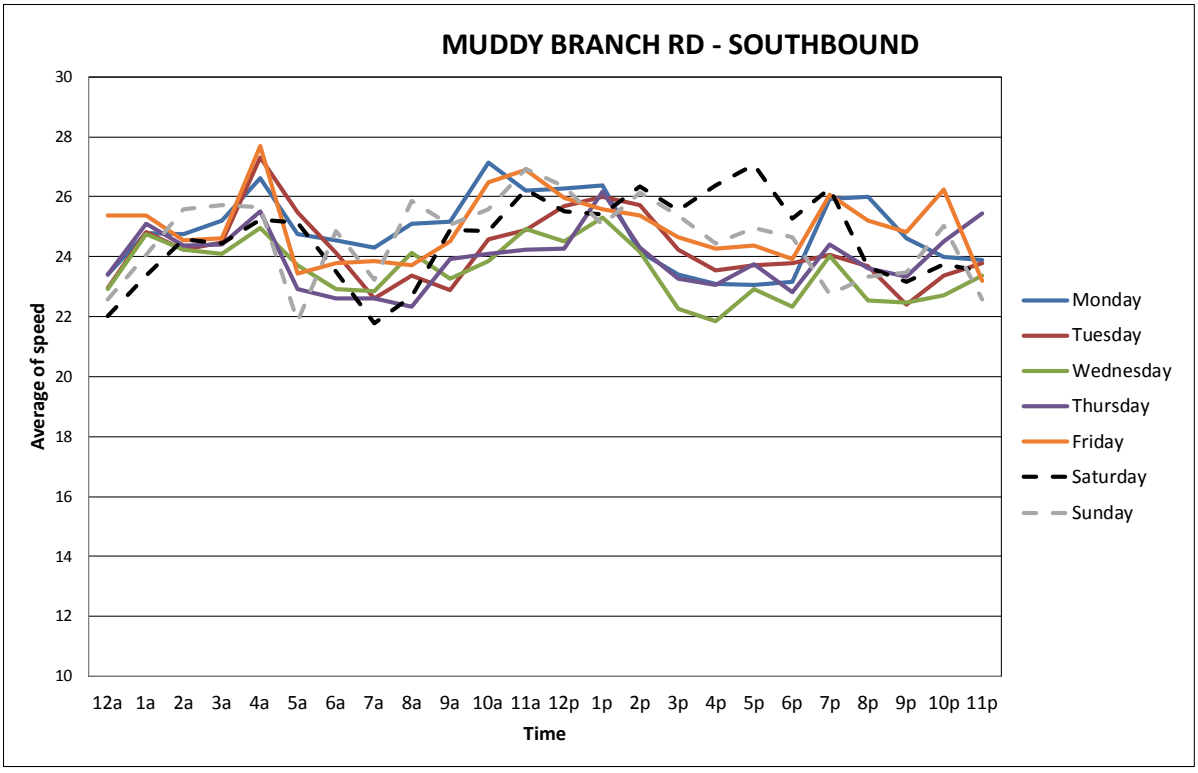


Figure 13: Omega Drive Arterial Speeds - Northbound

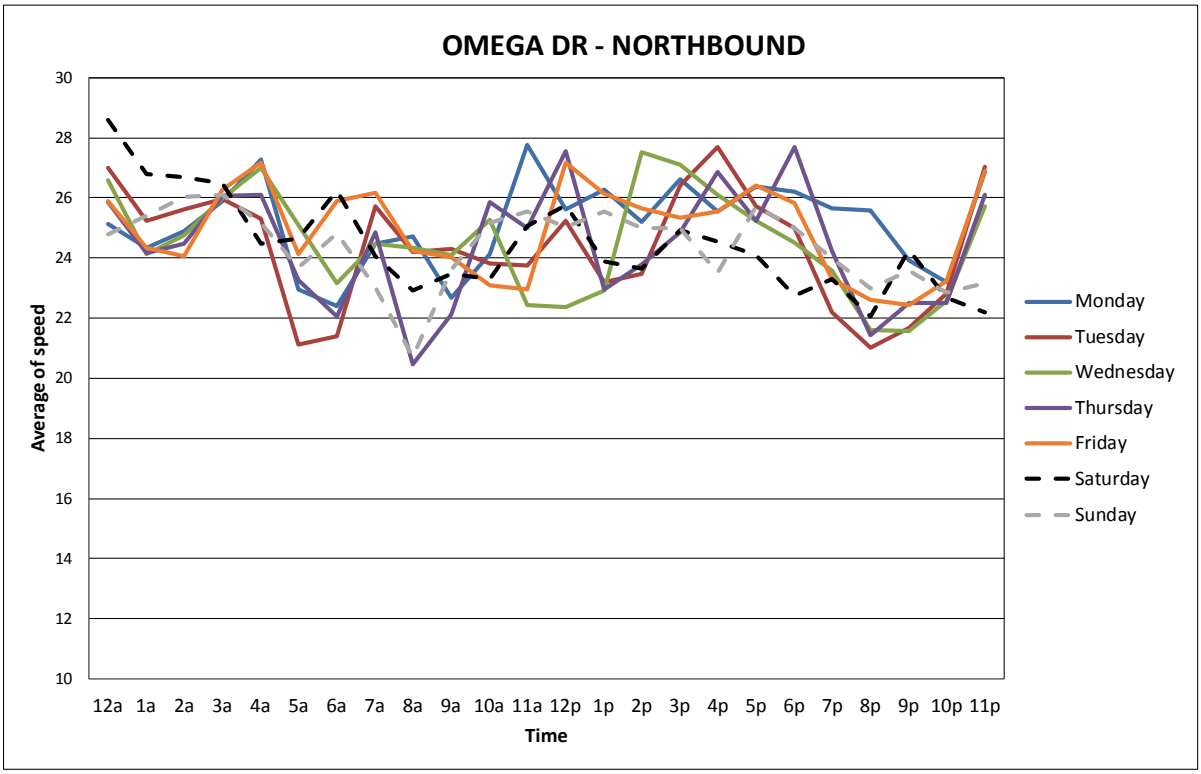


Figure 14: Omega Drive Arterial Speeds - Southbound

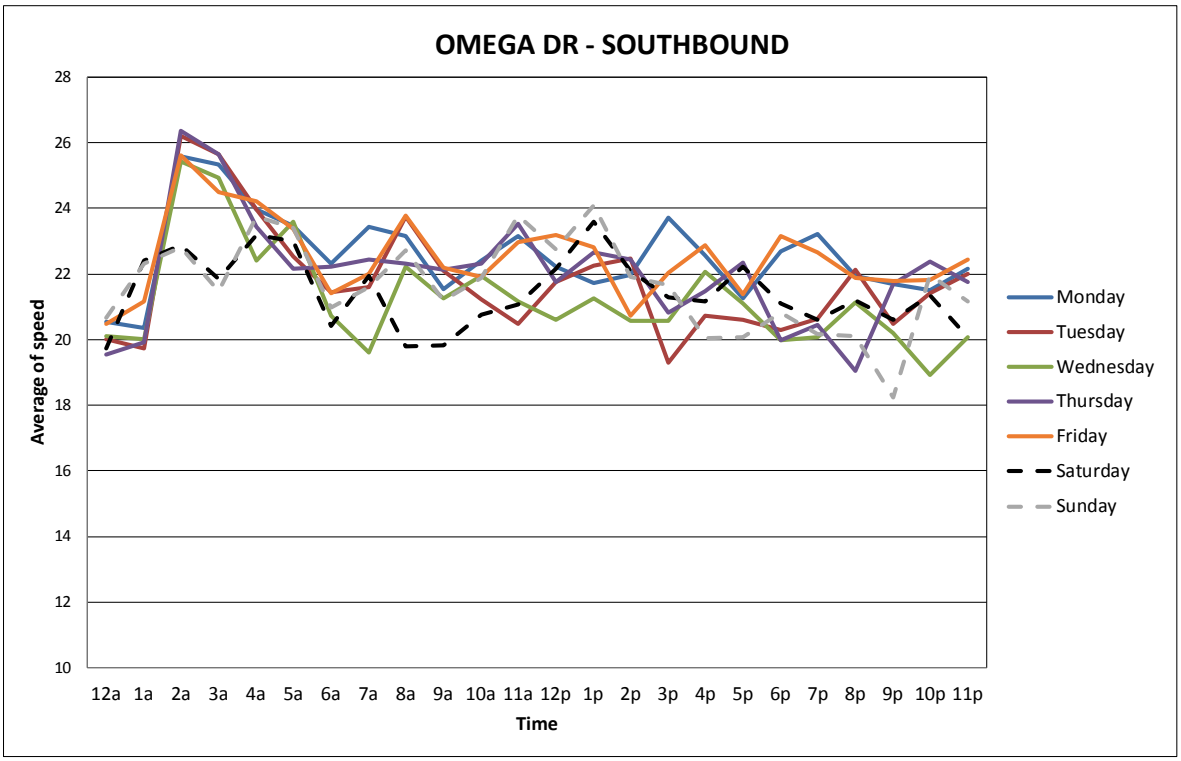


Figure 15: Quince Orchard Road Arterial Speeds - Northbound

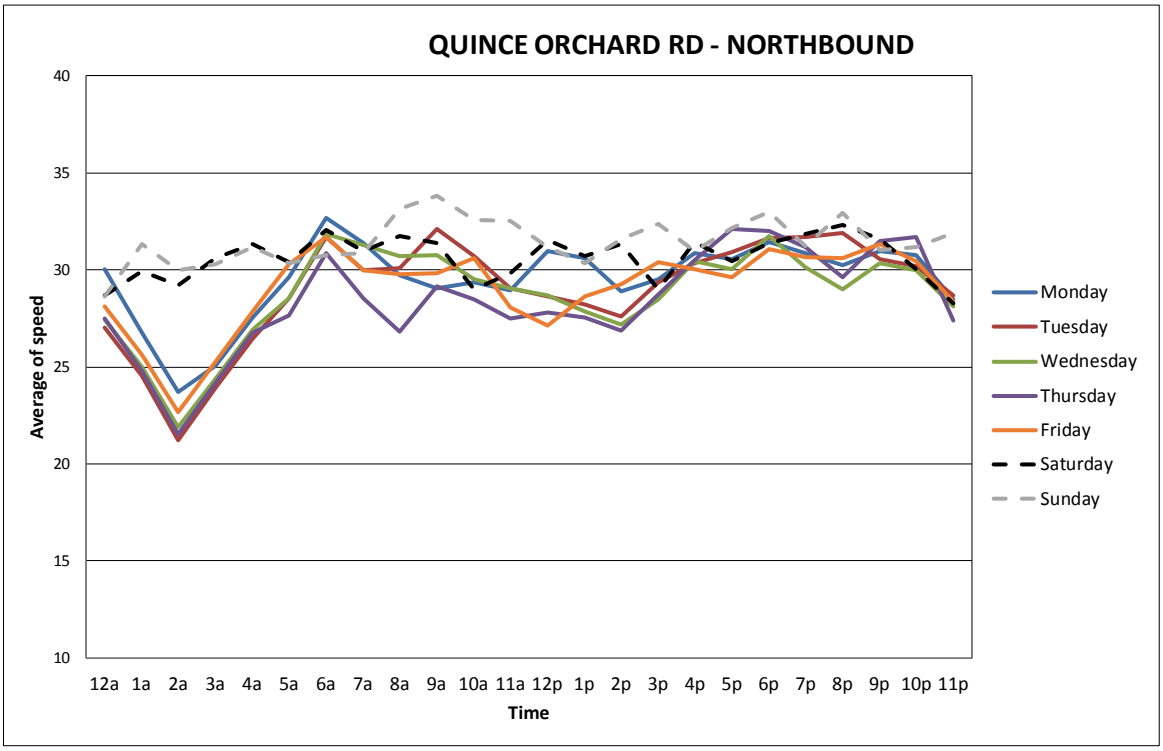


Figure 16: Quince Orchard Road Arterial Speeds - Southbound

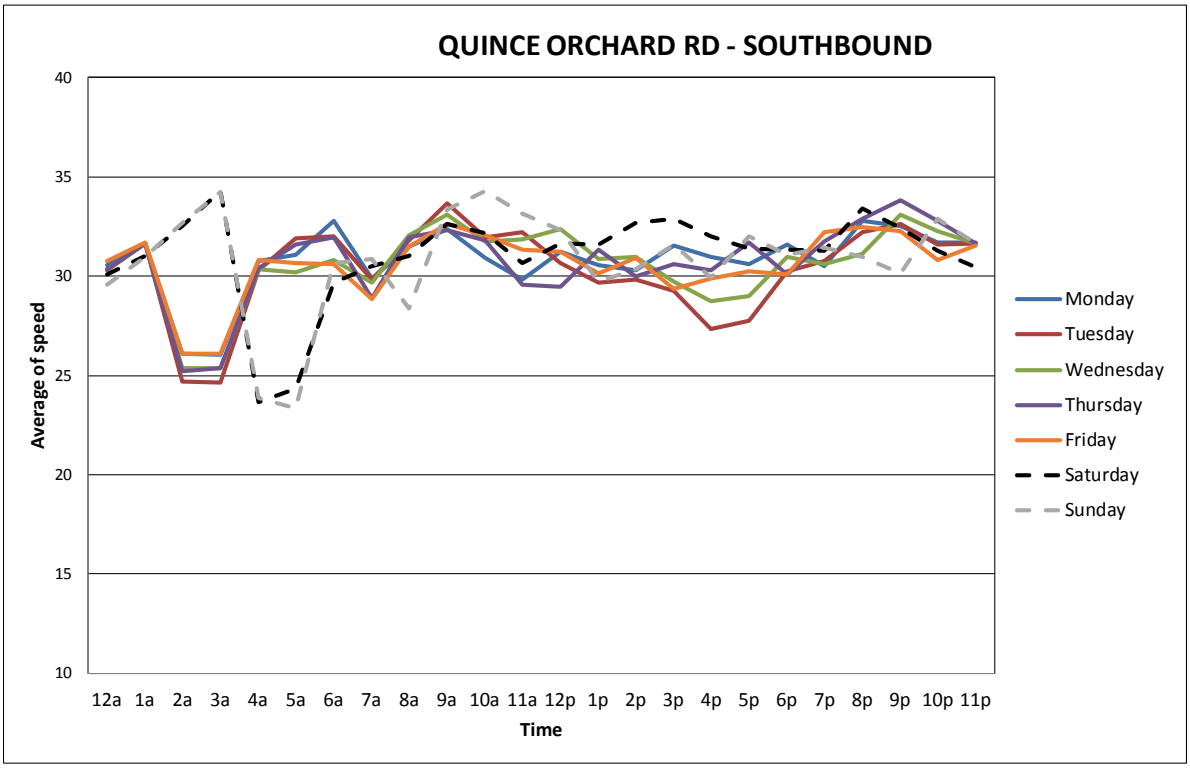


Figure 17: Sam Eig Highway Arterial Speeds - Northbound

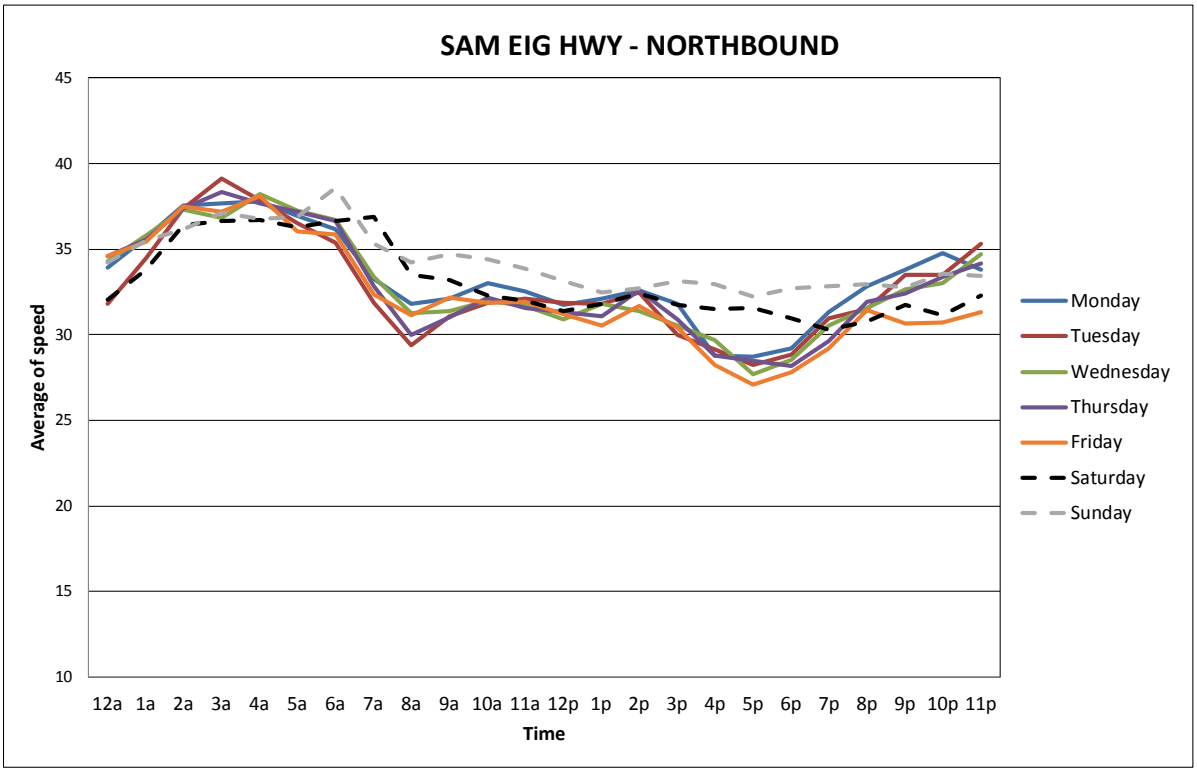


Figure 18: Sam Eig Highway Arterial Speeds - Southbound

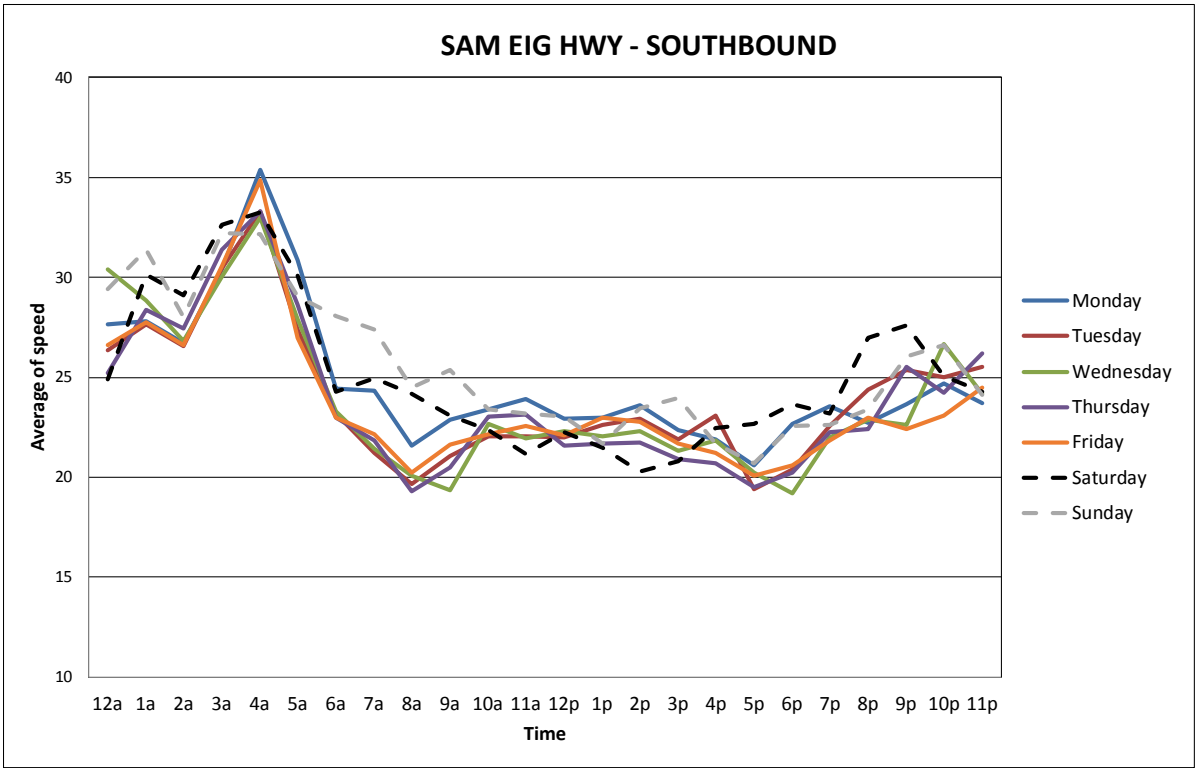


Figure 19: Shady Grove Road Arterial Speeds - Northbound

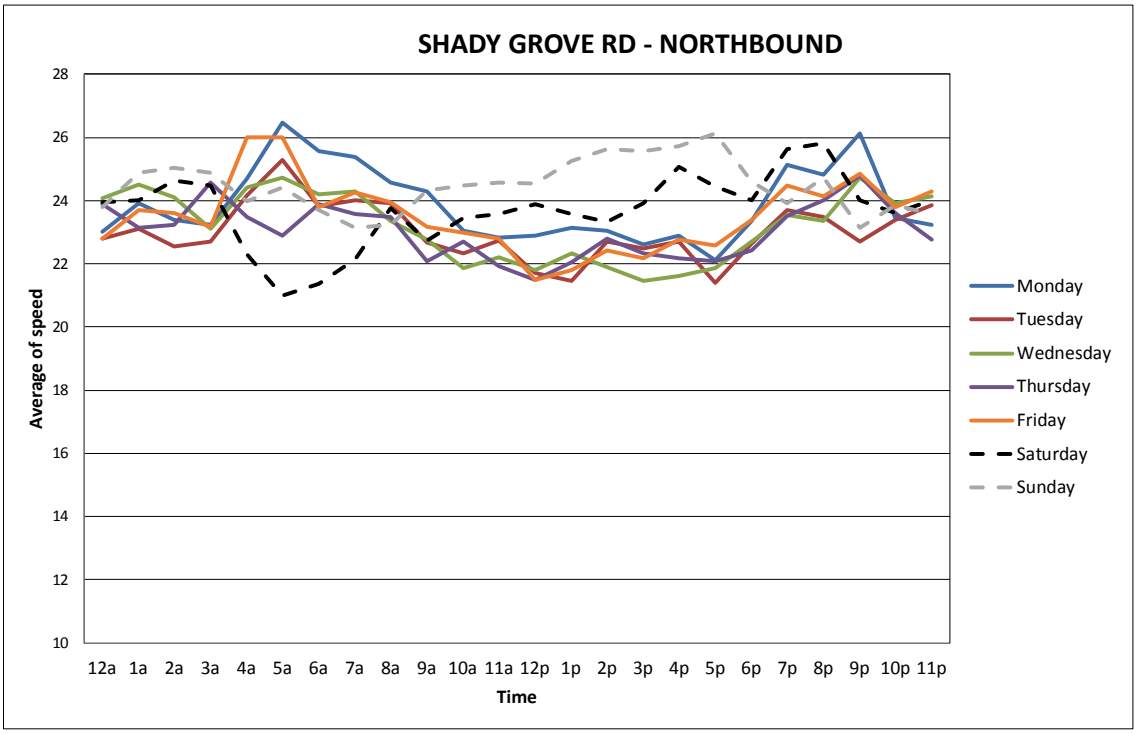


Figure 20: Shady Grove Road Arterial Speeds – Southbound

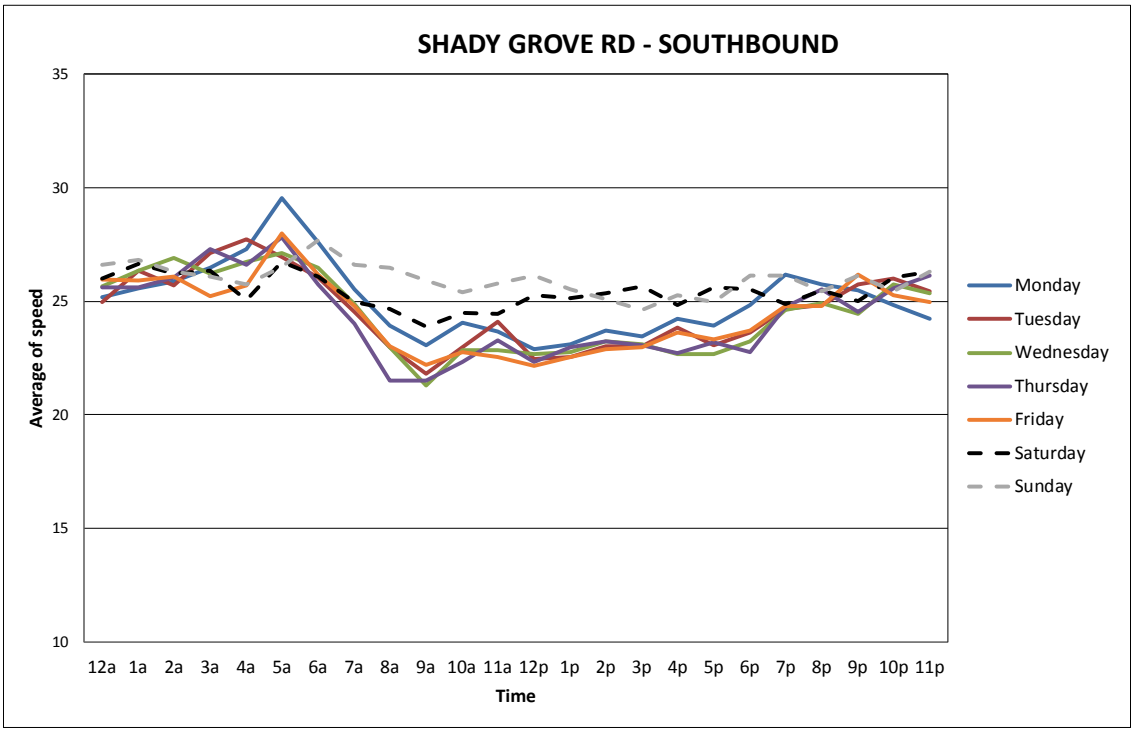


Figure 21: Travilah Road Arterial Speeds - Eastbound

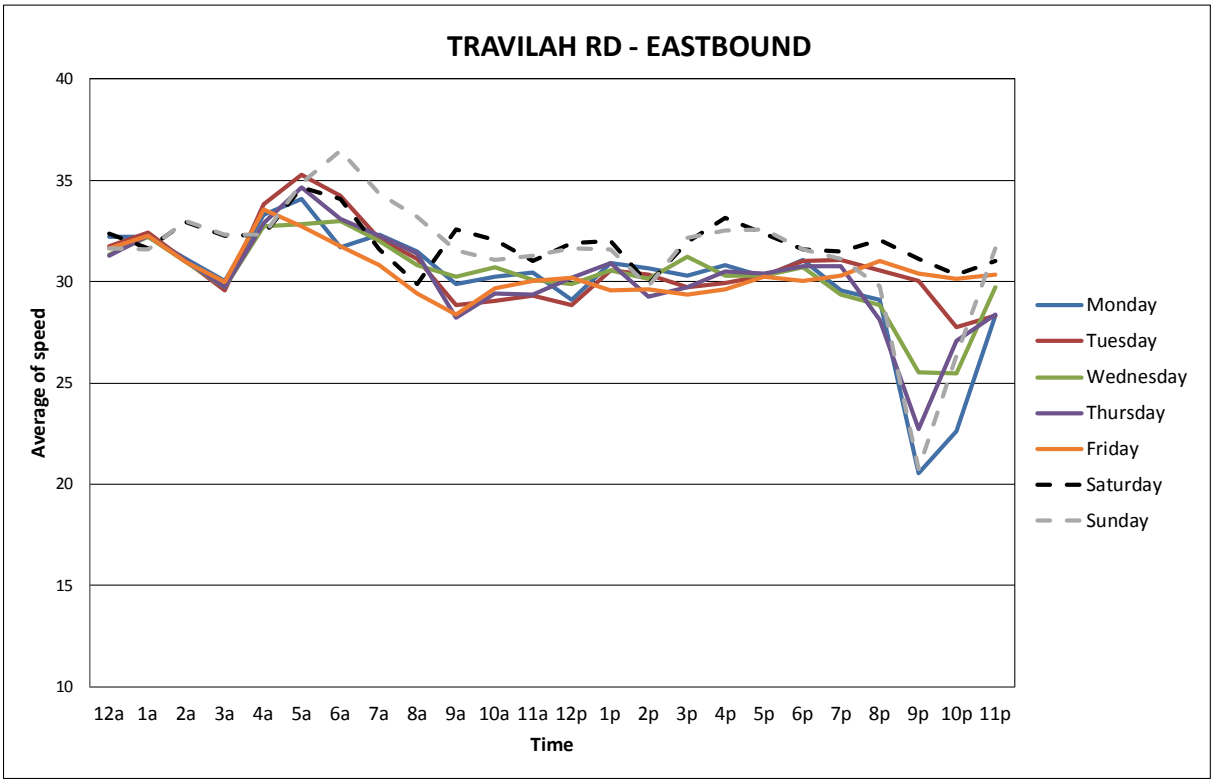


Figure 22: Travilah Road Arterial Speeds - Westbound

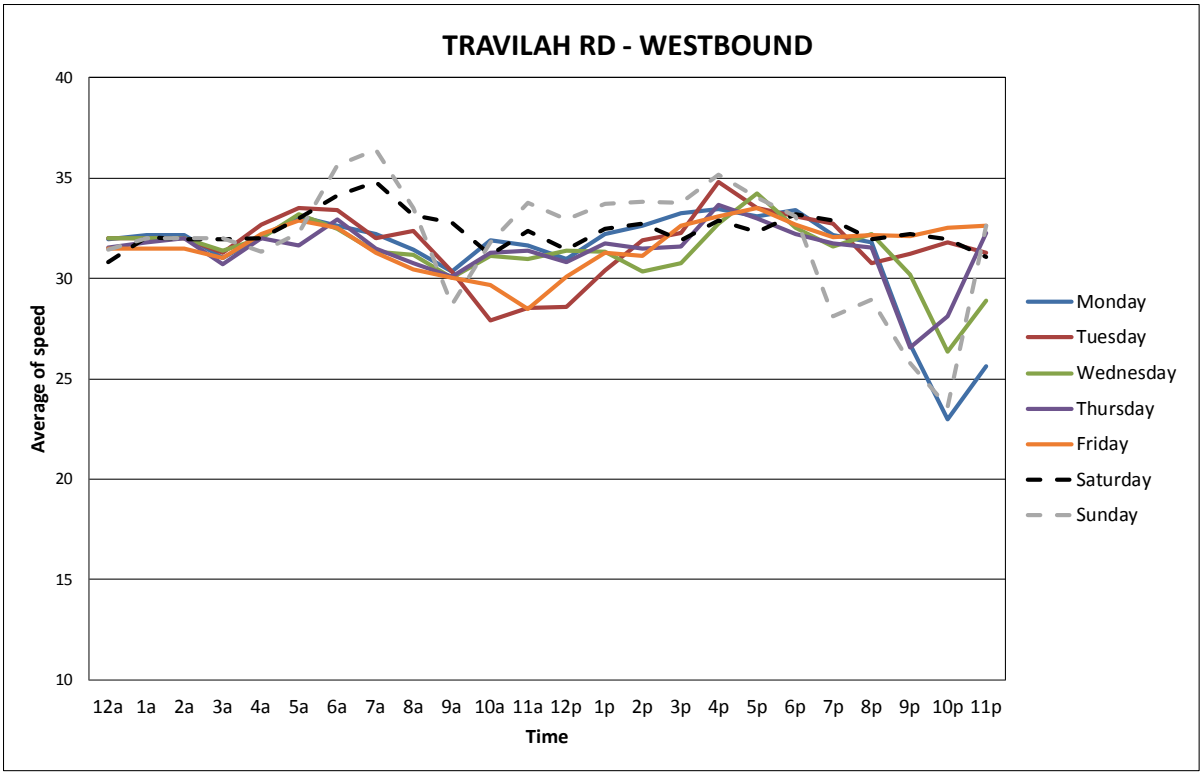


Figure 23: Washingtonian Boulevard Arterial Speeds - Eastbound

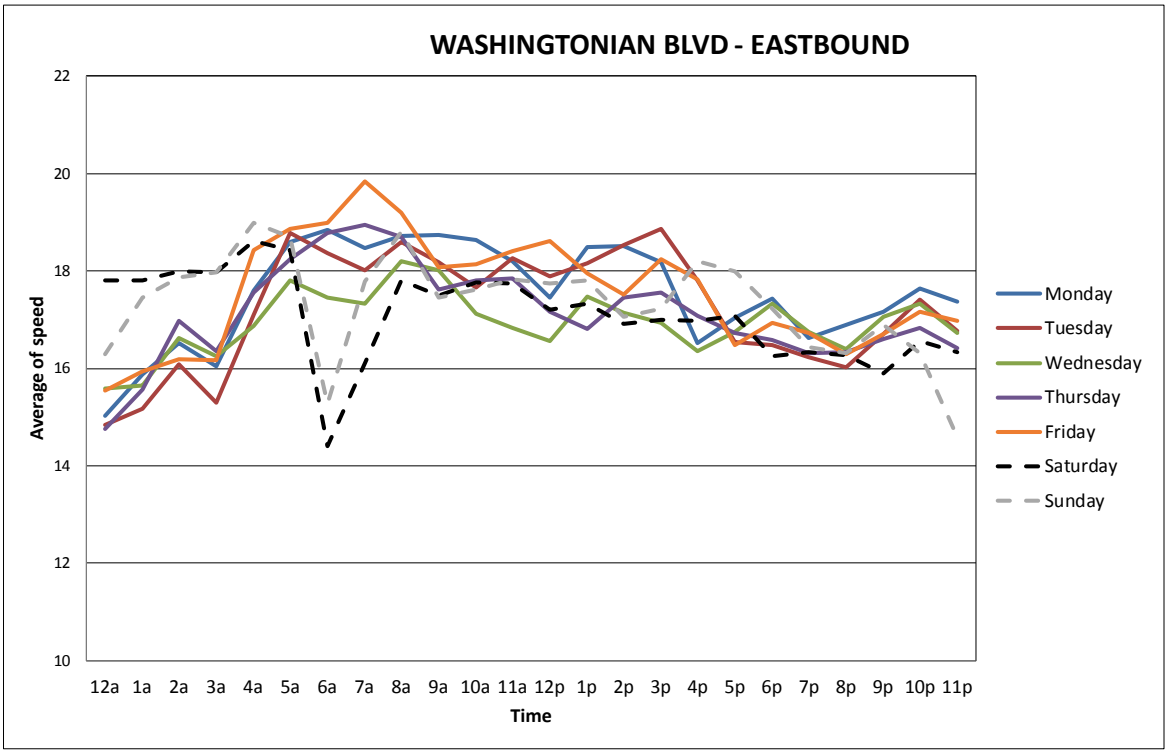


Figure 24: Washingtonian Boulevard Arterial Speeds - Westbound

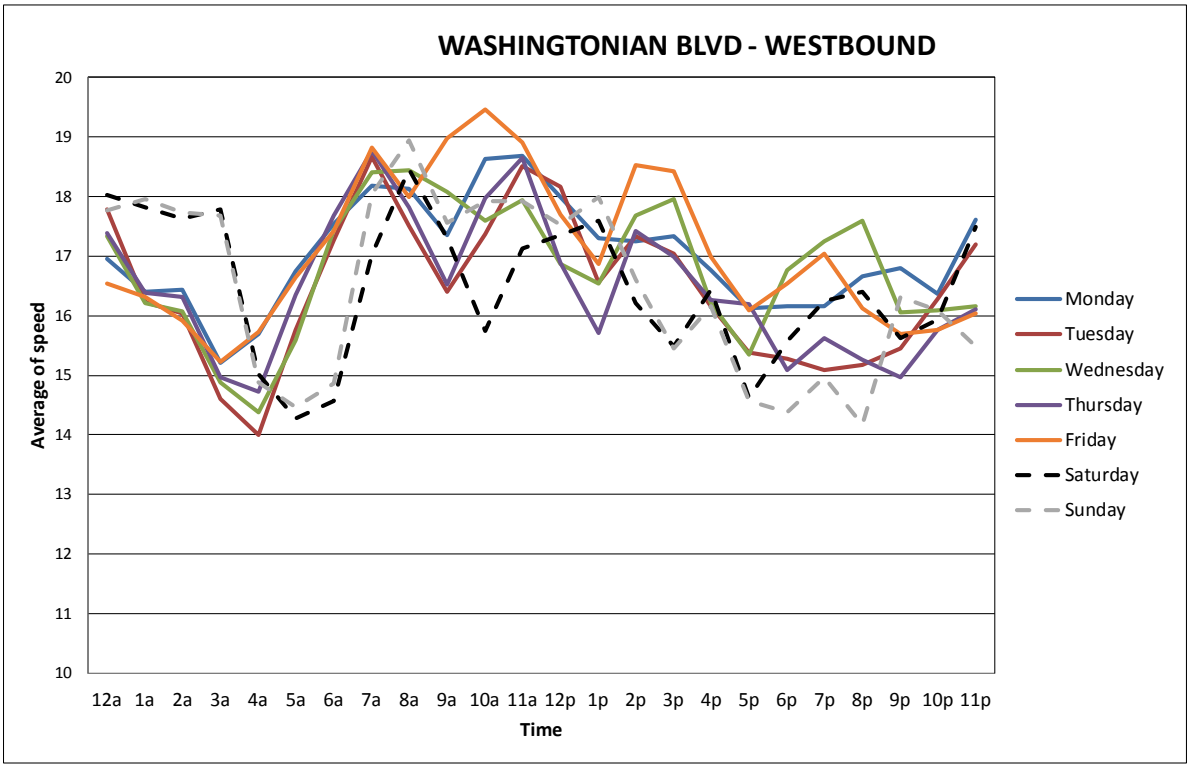


Figure 25: Darnestown Road Arterial Speeds - Eastbound

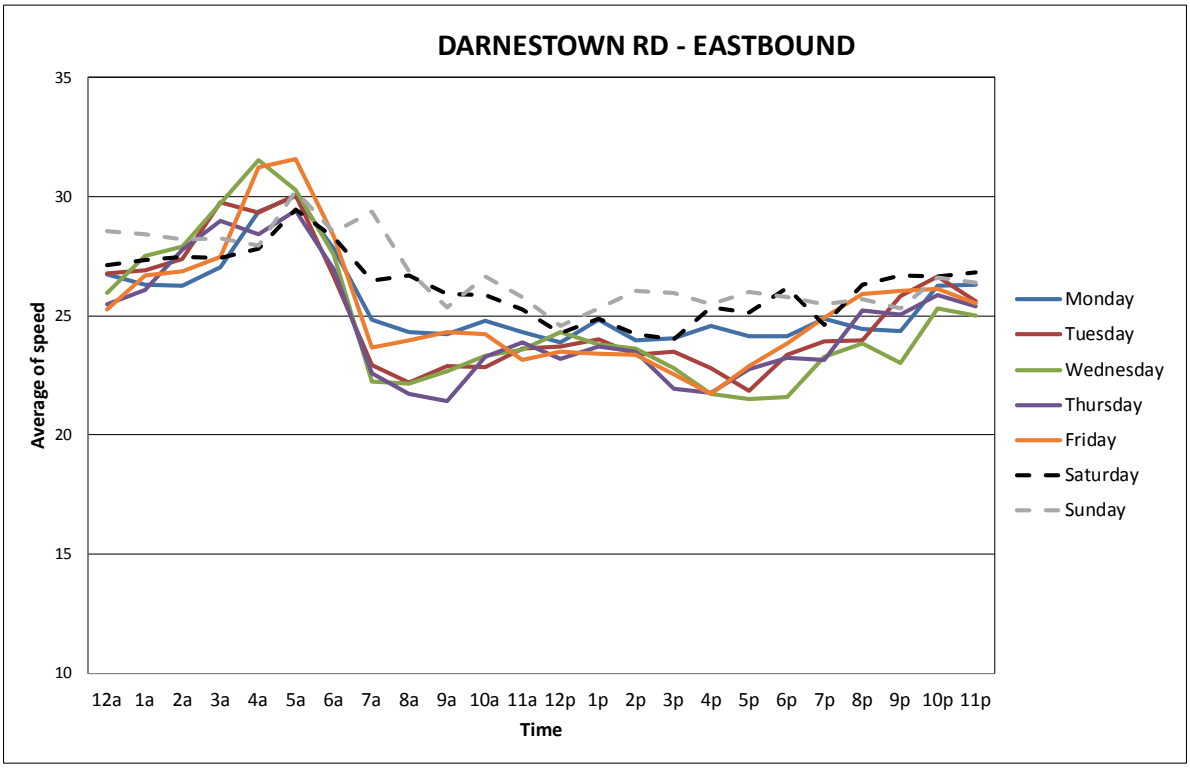


Figure 26: Darnestown Road Arterial Speeds - Westbound

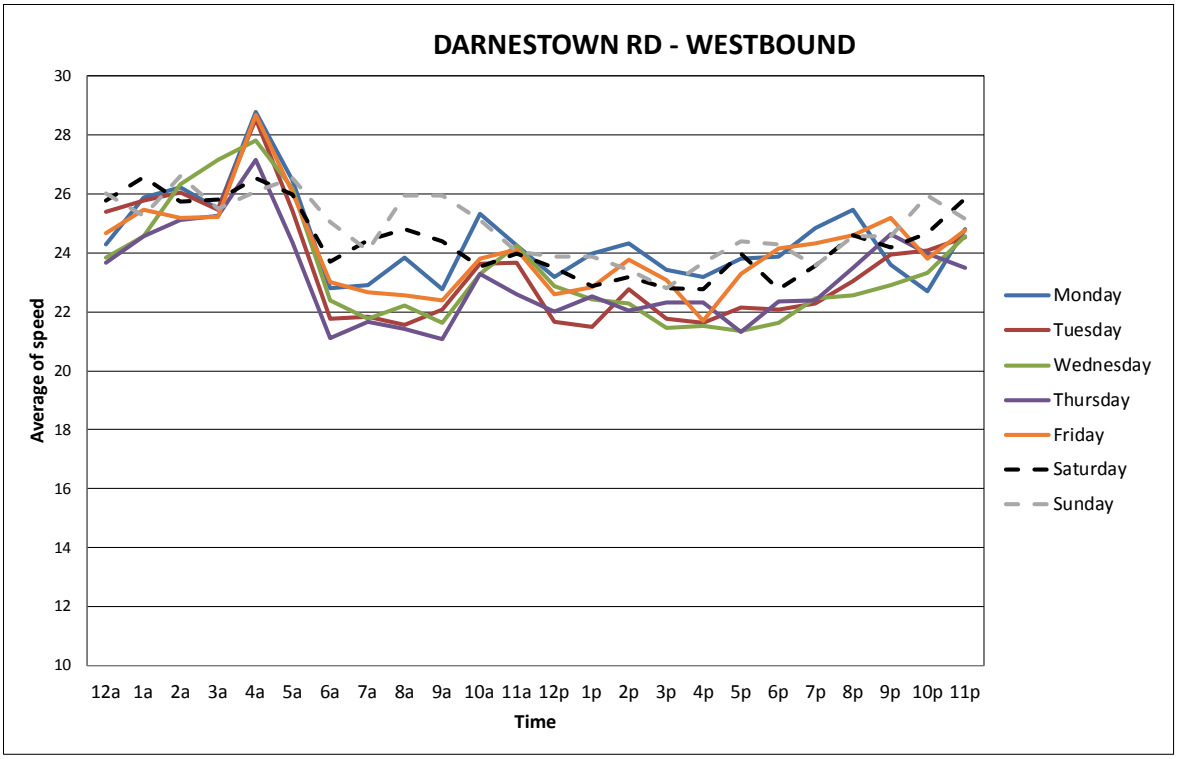


Figure 27: Fields Road Arterial Speeds - Eastbound

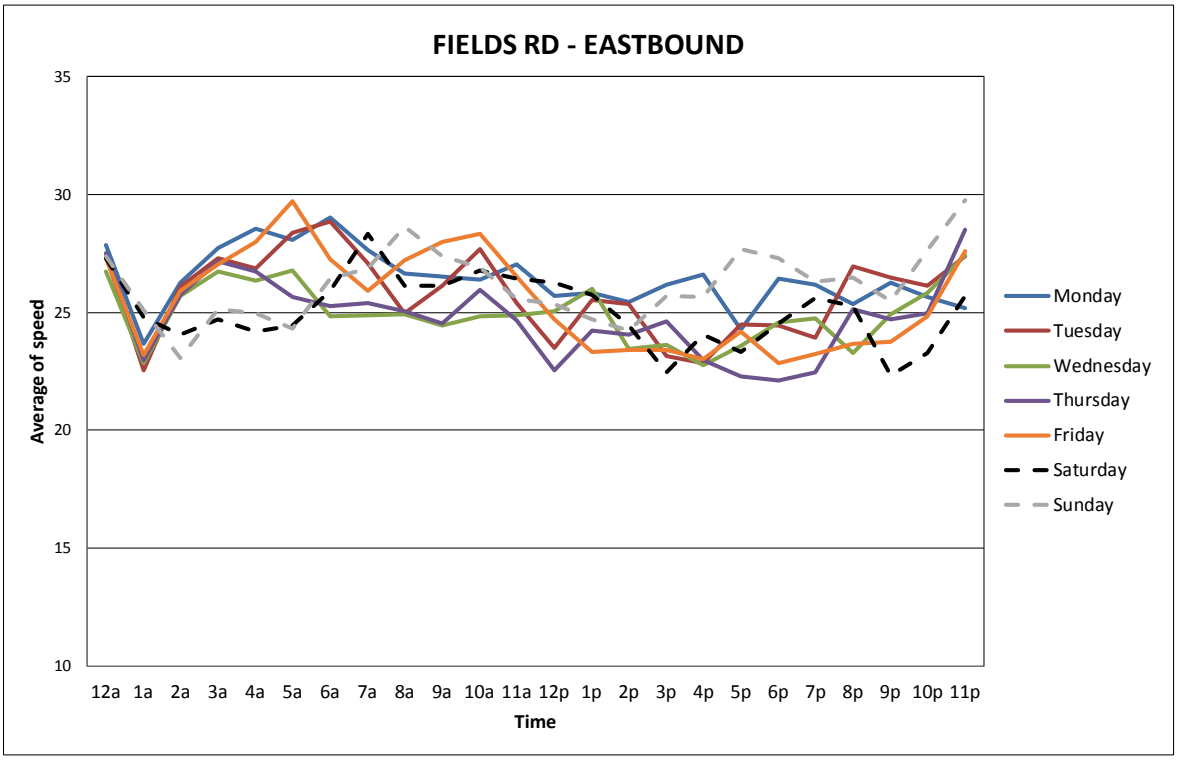


Figure 28: Fields Road Arterial Speeds - Westbound

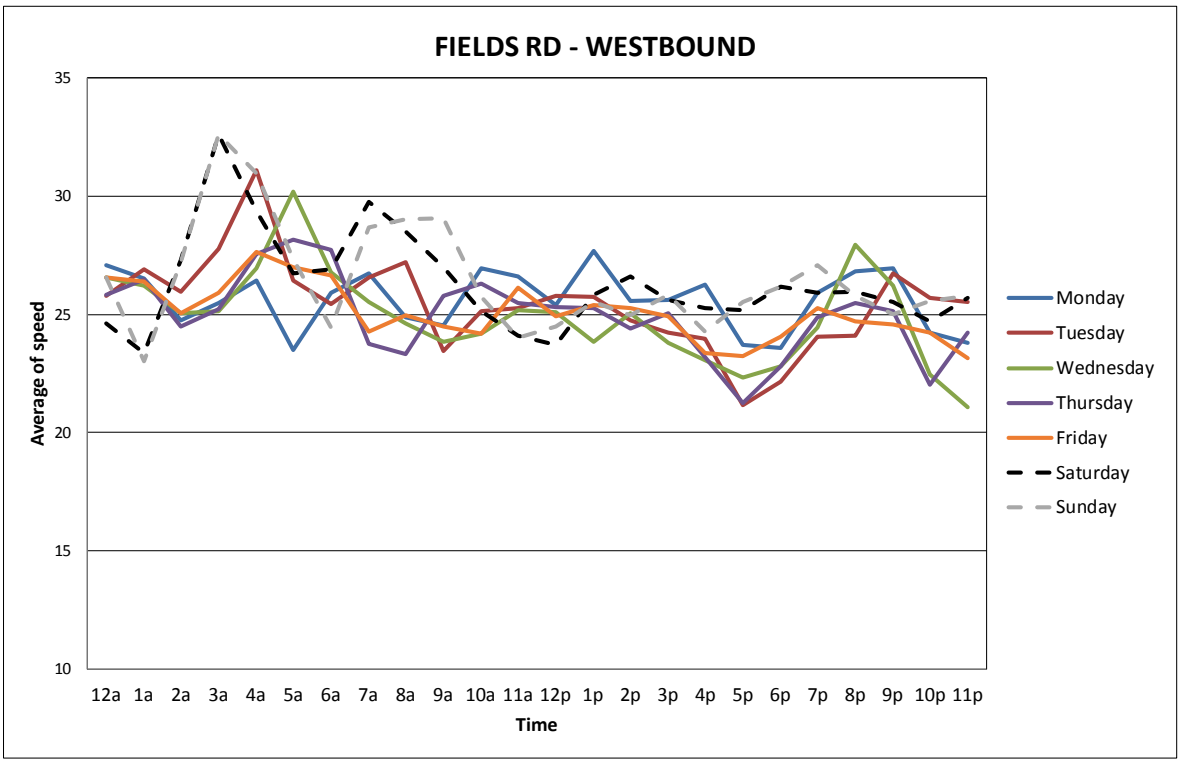


Figure 29: Gaither Road Arterial Speeds - Northbound

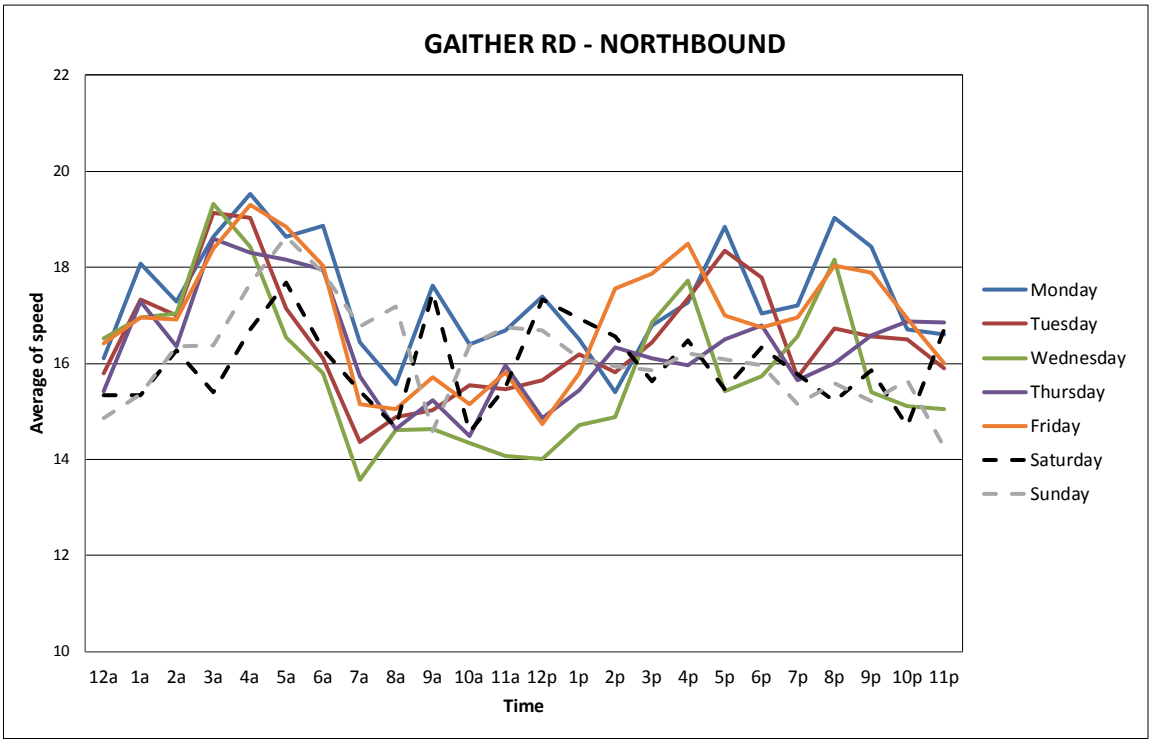


Figure 30: Gaither Road Arterial Speeds - Southbound

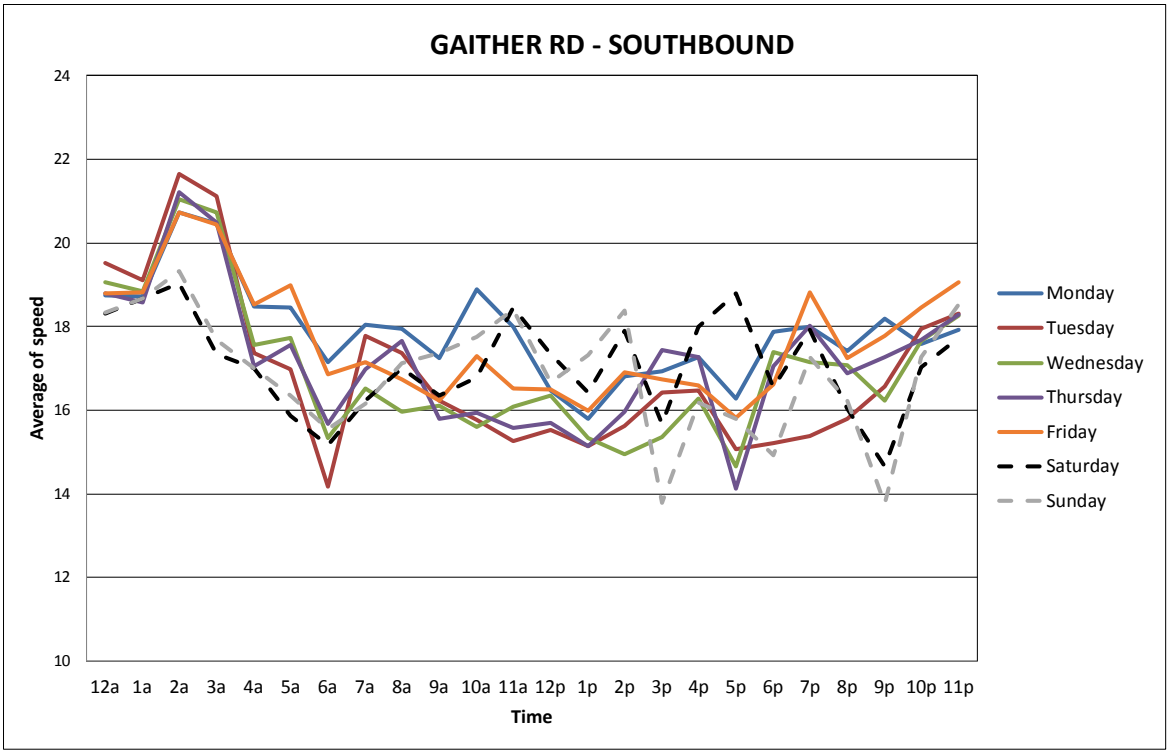


Figure 31: Great Seneca Highway Arterial Speeds - Northbound

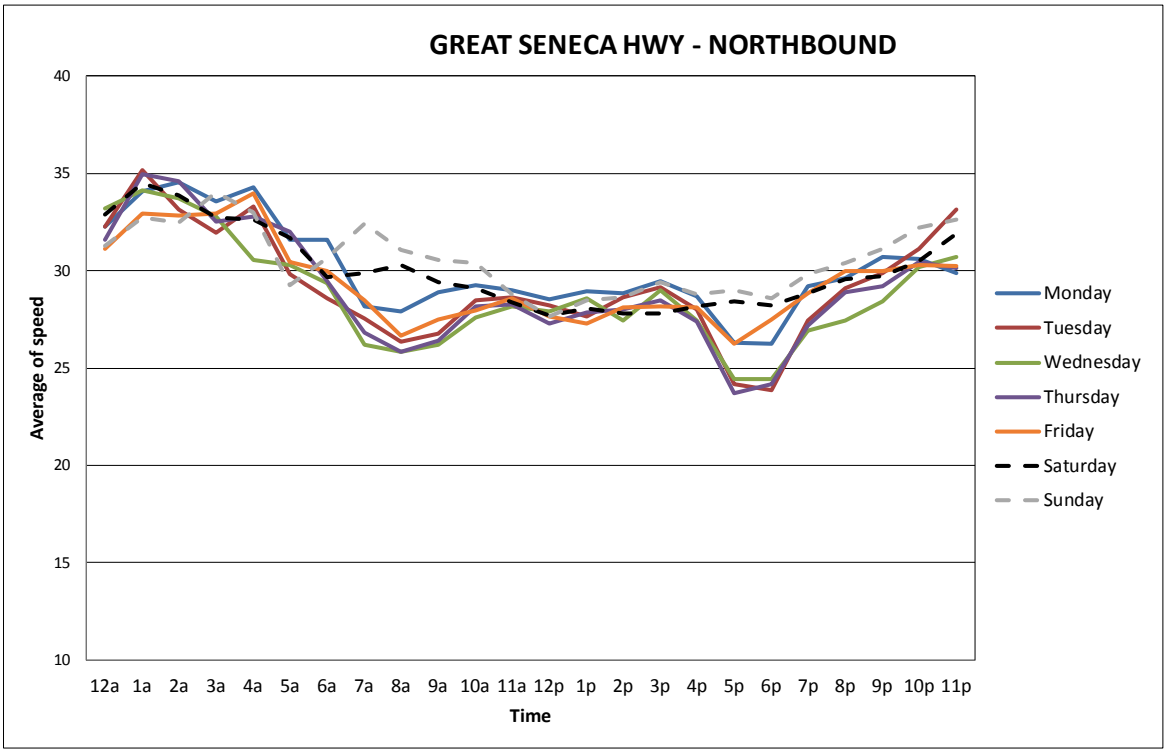


Figure 32: Great Seneca Highway Arterial Speeds - Southbound

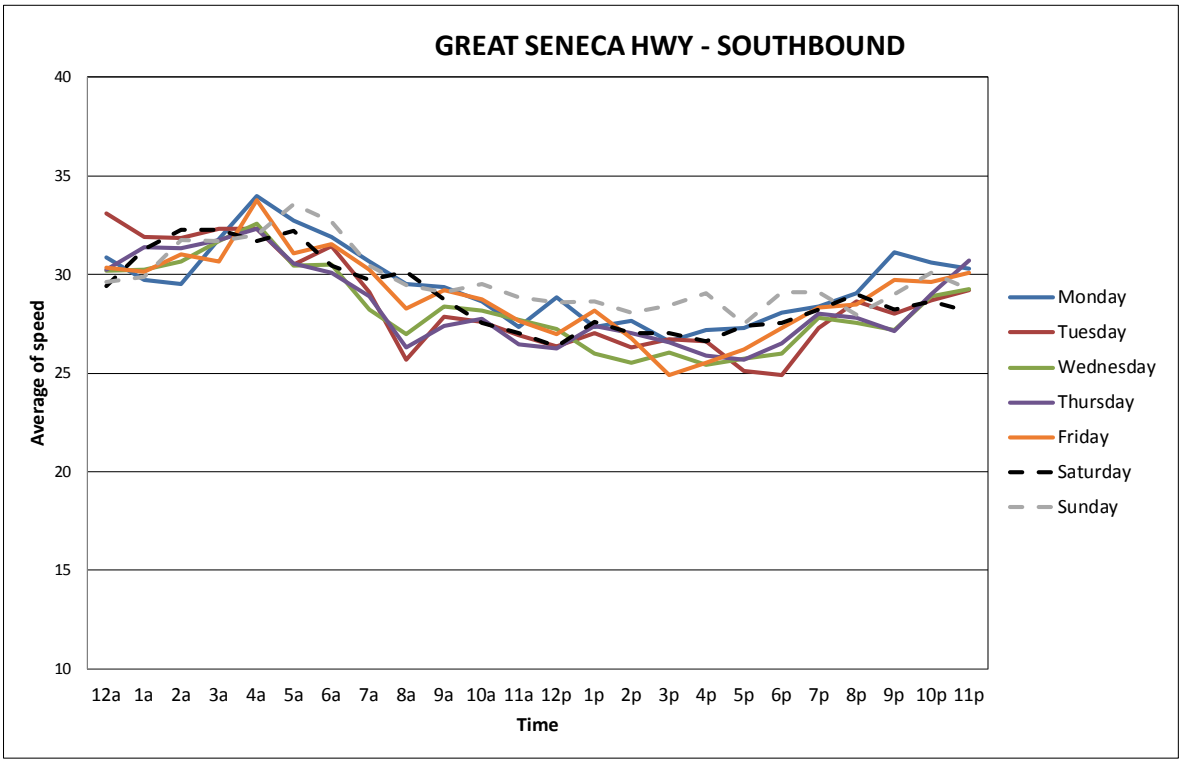


Figure 33: Longdraft Road Arterial Speeds - Northbound

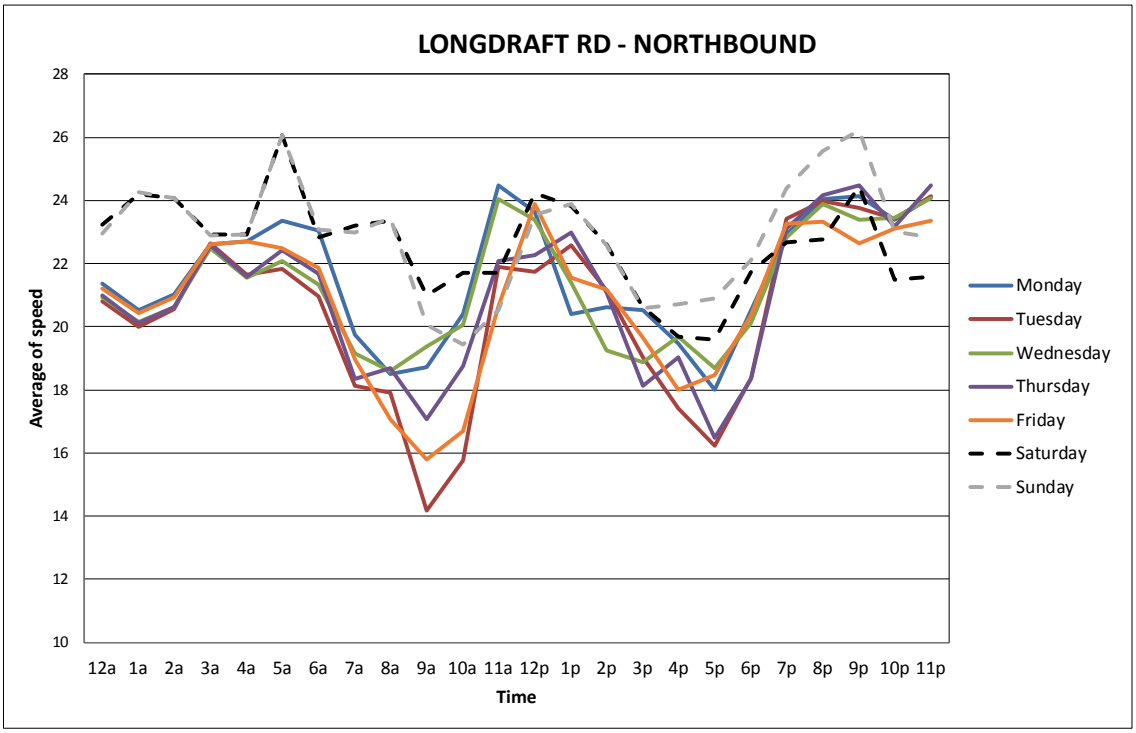
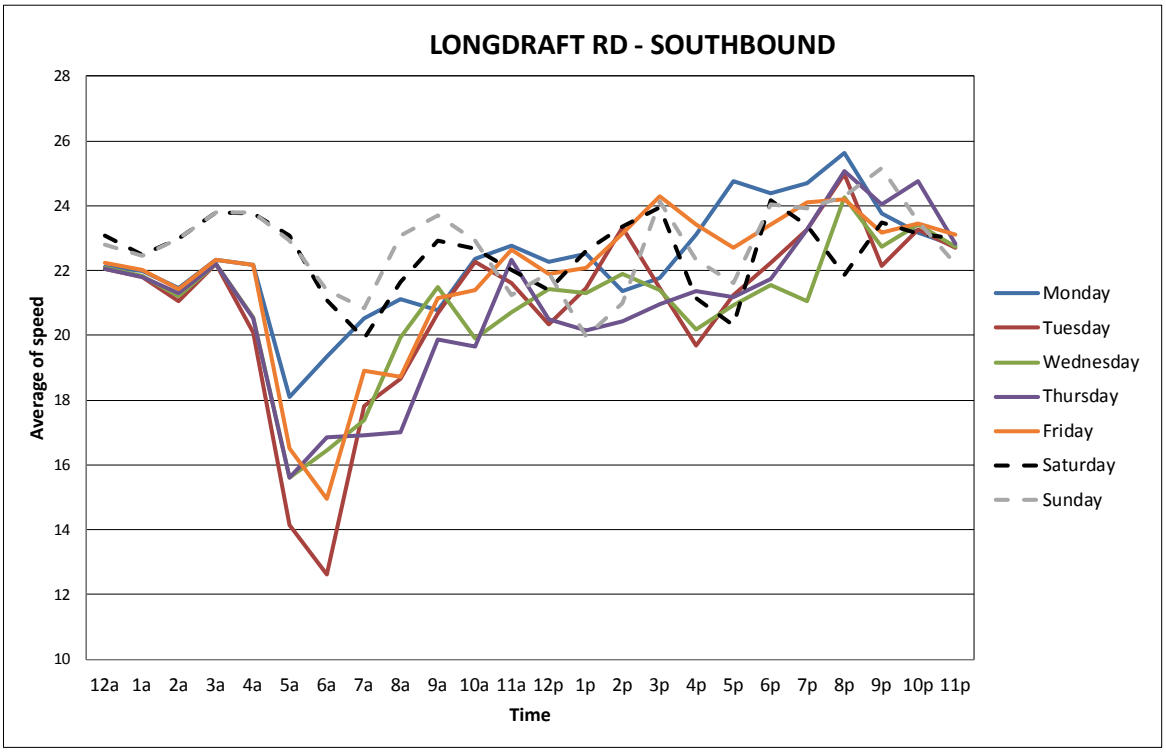


Figure 34: Longdraft Road Arterial Speeds – Southbound



Points of Recurring Congestion

The intensity of a point of recurring congestion is evaluated using an impact factor metric defined as the product of the duration of the point of congestion, average maximum length of the point of congestion along a roadway segment, and the number of occurrences of congestion within a specified timeframe.

These points of recurring congestion observed during the period March 1st through May 31st, 2016 in the Great Seneca Science Corridor Master Plan Area are ranked using the impact factor metric described above and reported in the tables 3 and 4 below. Generally, the most intense points of congestion occur along roadways in the immediate vicinity of I-270.

Table 3:Great Seneca Science Corridor Master Plan Area and Vicinity Points of Recurring Congestion*

Rank	Location	Direction	Impact factor	Average max length (miles)	Average duration	Occurrences*	All Events/Incidents
1	SHADY GROVE RD S @ I-270	SOUTHBOUND	24,576.17	0.95	49 m	529	0
2	SHADY GROVE RD N @ MD-355/FREDERICK RD	NORTHBOUND	12,349.31	0.81	33 m	463	0
3	MD-28 E @ I-270	EASTBOUND	10,964.19	0.51	39 m	553	2
4	LONGDRAFT RD N @ MD-117/CLOPPER RD	NORTHBOUND	8,316.45	0.37	1 h 45 m	216	0
5	MD-124 N @ MD-355/N FREDERICK AVE	NORTHBOUND	7,699.47	0.96	1 h 41 m	79	2
6	GREAT SENECA HWY N @ MUDDY BRANCH RD	NORTHBOUND	7,558.86	0.25	36 m	833	0
7	MD-28 W @ GREAT SENECA HWY	WESTBOUND	7,471.36	0.39	39 m	489	2
8	GREAT SENECA HWY S @ SAM EIG HWY	SOUTHBOUND	7,362.63	0.29	37 m	677	0
9	MD-117 W @ MD-124/QUINCE ORCHARD RD	WESTBOUND	6,899.27	0.28	33 m	758	1
10	MD-28 W @ SHADY GROVE RD	WESTBOUND	6,014.40	0.3	32 m	627	0
11	MD-28 E @ W GUDE DR	EASTBOUND	5,667.55	0.26	38 m	580	0
12	MD-124 S @ MD-117/W DIAMOND AVE	SOUTHBOUND	5,536.98	0.19	38 m	778	0
13	SAM EIG HWY N @ I-270/I-370	NORTHBOUND	5,452.97	0.78	23 m	303	0
14	MD-28 E @ SHADY GROVE RD	EASTBOUND	5,400.98	0.32	35 m	477	0
15	MD-117 E @ I-270	EASTBOUND	5,122.58	0.39	33 m	395	0
16	MD-117 E @ MD-124/QUINCE ORCHARD RD	EASTBOUND	4,977.49	0.48	29 m	358	1
17	MD-28 W @ DARNESTOWN RD	WESTBOUND	4,962.10	0.47	25 m	421	0
18	MD-28 W @ MUDDY BRANCH RD	WESTBOUND	4,652.09	0.92	33 m	153	2
19	SHADY GROVE RD S @ MD-28/KEY WEST AVE	SOUTHBOUND	4,648.31	0.23	31 m	660	0
20	MD-117 W @ GREAT SENECA HWY	WESTBOUND	4,588.41	2.58	48 m	37	0
21	GREAT SENECA HWY S @ MD-28/KEY WEST AVE	SOUTHBOUND	4,579.63	0.25	40 m	458	0
22	SAM EIG HWY S @ GREAT SENECA HWY	SOUTHBOUND	4,564.97	0.26	38 m	471	0
23	MD-124 N @ I-270/WASHINGTON NATIONAL PIKE	NORTHBOUND	4,340.32	0.49	35 m	253	1
24	MD-28 E @ MD-189/GREAT FALLS RD	EASTBOUND	4,264.81	1.66	1 h 39 m	26	2
25	GREAT SENECA HWY N @ MD-28/KEY WEST AVE	NORTHBOUND	4,140.49	0.23	35 m	511	0
26	DARNESTOWN RD E @ SHADY GROVE RD	EASTBOUND	4,124.73	0.3	28 m	497	0
27	LONGDRAFT RD S @ GREAT SENECA HWY	SOUTHBOUND	3,878.69	0.41	1 h 13 m	130	0
28	GREAT SENECA HWY S @ MD-124/QUINCE ORCHARD RD	SOUTHBOUND	3,795.94	0.28	33 m	405	0
29	MD-117 W @ LONGDRAFT RD	WESTBOUND	3,738.95	1.19	50 m	63	1
30	MD-28 W @ JONES LN	WESTBOUND	3,512.26	1.5	45 m	52	0
31	QUINCE ORCHARD RD N @ MD-28/DARNESTOWN RD	NORTHBOUND	3,365.82	1.46	48 m	48	0
32	SHADY GROVE RD N @ OAKMONT AVE	NORTHBOUND	3,284.27	1.2	56 m	49	0
33	GREAT SENECA HWY N @ MD-124/QUINCE ORCHARD RD	NORTHBOUND	3,239.92	0.19	34 m	502	0
34	WASHINGTONIAN BLVD W @ RIO BLVD	WESTBOUND	3,202.27	0.27	56 m	215	0
35	LONGDRAFT RD S @ MD-124/QUINCE ORCHARD RD	SOUTHBOUND	3,197.27	0.28	1 h 19 m	147	0
36	MUDDY BRANCH RD N @ MD-28/DARNESTOWN RD	NORTHBOUND	3,186.68	0.19	38 m	450	0
37	MD-28 E @ MD-124/QUINCE ORCHARD RD	EASTBOUND	3,108.07	0.12	39 m	653	0
38	GREAT SENECA HWY N @ MD-117/CLOPPER RD	NORTHBOUND	3,088.34	3.81	54 m	15	0
39	FIELDS RD E @ RIO BLVD	EASTBOUND	3,028.33	0.19	41 m	394	0
40	SHADY GROVE RD N @ I-270	NORTHBOUND	2,975.01	0.39	29 m	265	0
41	SHADY GROVE RD S @ DARNESTOWN RD	SOUTHBOUND	2,917.45	0.13	39 m	586	0
42	SHADY GROVE RD N @ MD-28/KEY WEST AVE	NORTHBOUND	2,877.48	0.19	32 m	469	0
43	MD-117 E @ CHESTNUT ST/MUDDY BRANCH RD	EASTBOUND	2,837.04	0.21	33 m	403	0
44	TRAVILAH RD E @ DARNESTOWN RD	EASTBOUND	2,803.02	1.73	49 m	33	0
45	GREAT SENECA HWY S @ MUDDY BRANCH RD	SOUTHBOUND	2,621.12	0.46	28 m	202	2
46	MD-117 W @ I-270	WESTBOUND	2,543.73	0.33	25 m	306	0
47	MD-117 W @ MD-118/GERMANTOWN RD	WESTBOUND	2,526.35	3.54	1 h 42 m	7	3
48	DARNESTOWN RD W @ SHADY GROVE RD	WESTBOUND	2,308.36	0.14	31 m	521	0
49	LONGDRAFT RD N @ GREAT SENECA HWY	NORTHBOUND	2,272.45	0.18	1 h 09 m	183	0
50	MUDDY BRANCH RD S @ MD-28/DARNESTOWN RD	SOUTHBOUND	2,219.80	0.15	43 m	349	0
51	MD-355 S @ SHADY GROVE RD	SOUTHBOUND	2,163.30	1.51	1 h 05 m	22	2
52	MUDDY BRANCH RD N @ GREAT SENECA HWY	NORTHBOUND	2,122.51	0.17	34 m	363	0
53	MUDDY BRANCH RD N @ MD-117/W DIAMOND AVE	NORTHBOUND	2,076.97	0.16	41 m	312	0
54	FIELDS RD W @ SAM EIG HWY	WESTBOUND	2,001.74	0.31	31 m	208	0
55	MD-355 N @ S SUMMIT AVE	NORTHBOUND	1,946.07	1.24	29 m	54	0
56	GREAT SENECA HWY N @ LONGDRAFT RD	NORTHBOUND	1,932.68	0.76	38 m	67	0
57	GREAT SENECA HWY S @ DARNESTOWN RD	SOUTHBOUND	1,918.88	0.22	35 m	244	0
58	MD-117 E @ S SUMMIT AVE	EASTBOUND	1,820.89	0.68	31 m	87	0

*** Between March 1, and May 31st, 2016**

Table 4:Great Seneca Science Corridor Master Plan Area and Vicinity Points of Recurring Congestion*

Rank	Location	Direction	Impact factor	Average max length (miles)	Average duration	Occurrences*	All Events/Incidents
59	DARNESTOWN RD W @ MD-28/KEY WEST AVE	WESTBOUND	1,813.13	0.56	28 m	115	0
60	MD-124 N @ GREAT SENECA HWY	NORTHBOUND	1,770.67	0.13	30 m	438	0
61	MD-28 W @ MD-124/QUINCE ORCHARD RD	WESTBOUND	1,695.36	0.14	33 m	376	0
62	MD-124 N @ MD-117/W DIAMOND AVE	NORTHBOUND	1,683.16	0.15	28 m	390	1
63	FIELDS RD E @ WASHINGTONIAN BLVD	EASTBOUND	1,661.03	0.22	43 m	179	0
64	FIELDS RD W @ RIO BLVD	WESTBOUND	1,636.10	0.67	30 m	81	0
65	GAITHER RD N @ SHADY GROVE RD	NORTHBOUND	1,553.64	0.17	40 m	225	0
66	MUDDY BRANCH RD S @ GREAT SENECA HWY	SOUTHBOUND	1,523.85	0.09	37 m	442	0
67	OMEGA DR S @ MD-28/KEY WEST AVE	SOUTHBOUND	1,522.79	0.14	36 m	304	0
68	DARNESTOWN RD E @ GREAT SENECA HWY	EASTBOUND	1,482.91	0.37	25 m	161	0
69	GREAT SENECA HWY N @ SAM EIG HWY	NORTHBOUND	1,476.82	0.38	29 m	135	0
70	MD-28 E @ GREAT SENECA HWY	EASTBOUND	1,404.63	0.13	32 m	341	0
71	TRAVILAH RD W @ LAKE WINDS WAY	WESTBOUND	1,373.68	1.31	35 m	30	0
72	MD-28 W @ W GUDE DR	WESTBOUND	1,352.84	0.16	27 m	308	0
73	DARNESTOWN RD E @ MD-28/W MONTGOMERY AVE	EASTBOUND	1,222.61	0.78	29 m	54	0
74	DARNESTOWN RD W @ GREAT SENECA HWY	WESTBOUND	1,142.89	0.21	28 m	194	0
75	MD-28 E @ DARNESTOWN RD	EASTBOUND	1,119.34	0.17	32 m	205	0
76	MD-355 S @ I-370	SOUTHBOUND	1,062.84	1.32	31 m	26	2
77	MD-355 S @ REDLAND RD	SOUTHBOUND	1,026.98	2.33	1 h 28 m	5	2
78	MD-124 S @ E DIAMOND AVE/RAILROAD ST	SOUTHBOUND	1,012.34	0.17	32 m	185	2
79	MD-124 N @ MIDCOUNTY HWY	NORTHBOUND	989.55	0.84	37 m	32	0
80	MD-28 E @ MUDDY BRANCH RD	EASTBOUND	988.51	2.26	1 h 13 m	6	0
81	MD-117 E @ LONGDRAFT RD	EASTBOUND	947.2	2.19	27 m	16	0
82	WASHINGTONIAN BLVD E @ FIELDS RD	EASTBOUND	886.11	0.66	42 m	32	0
83	TRAVILAH RD W @ TURKEY FOOT RD	WESTBOUND	881.92	3.06	32 m	9	0
84	MD-117 W @ CHESTNUT ST/MUDDY BRANCH RD	WESTBOUND	825.48	0.07	32 m	357	0
85	MD-124 S @ I-270/WASHINGTON NATIONAL PIKE	SOUTHBOUND	809.32	0.34	26 m	91	1
86	QUINCE ORCHARD RD S @ HORSE CENTER RD/BROUGHAM WAY	SOUTHBOUND	807.94	1.46	24 m	23	0
87	MD-124 S @ GREAT SENECA HWY	SOUTHBOUND	766.44	0.07	35 m	302	1
88	WASHINGTONIAN BLVD W @ SAM EIG HWY	WESTBOUND	735.17	0.29	35 m	72	0
89	MUDDY BRANCH RD S @ DUFIEF MILL RD	SOUTHBOUND	639.45	0.34	32 m	58	0
90	MD-28 W @ MD-112/SENECA RD	WESTBOUND	493.26	3.52	1 h 10 m	2	0
91	MD-28 E @ MD-355/ROCKVILLE PIKE	EASTBOUND	452.8	2.22	1 h 42 m	2	2
92	MD-355 N @ MD-117/W DIAMOND AVE/OLDE TOWNE AVE	NORTHBOUND	396.41	1.34	37 m	8	0
93	GREAT SENECA HWY N @ MIDDLEBROOK RD	NORTHBOUND	390.94	4.34	30 m	3	1
94	GAITHER RD S @ REDLAND BLVD	SOUTHBOUND	375.97	0.7	30 m	18	0
95	WASHINGTONIAN BLVD E @ RIO BLVD	EASTBOUND	312.86	0.08	30 m	131	0
96	SHADY GROVE RD S @ PINEY MEETINGHOUSE RD/CAVANAUGH DR	SOUTHBOUND	303.08	1.6	27 m	7	0
97	MD-124 N @ E DIAMOND AVE/RAILROAD ST	NORTHBOUND	235.72	0.05	31 m	144	0
98	MD-124 S @ MD-28/DARNESTOWN RD	SOUTHBOUND	235.1	1.16	29 m	7	0
99	OMEGA DR N @ MD-28/KEY WEST AVE	NORTHBOUND	187.04	0.03	1 h 02 m	99	0
100	SHADY GROVE RD N @ DARNESTOWN RD	NORTHBOUND	181.35	0.03	34 m	208	0
101	MUDDY BRANCH RD S @ MD-117/W DIAMOND AVE	SOUTHBOUND	164.16	0.03	34 m	145	0
102	OMEGA DR N @ FIELDS RD	NORTHBOUND	163.05	0.47	29 m	12	0
103	MD-124 N @ SNOUFFER SCHOOL RD	NORTHBOUND	120.5	1.91	1 h 03 m	1	0
104	MD-355 N @ ODENDHAL AVE	NORTHBOUND	111.1	2.14	52 m	1	0
105	MD-355 N @ CHESTNUT ST	NORTHBOUND	89.52	1.72	52 m	1	0
106	DARNESTOWN RD W @ MD-28/W MONTGOMERY AVE	WESTBOUND	82.08	0.01	1 h 13 m	89	0
107	GAITHER RD S @ SHADY GROVE RD	SOUTHBOUND	72.04	0.01	40 m	143	0
108	SAM EIG HWY N @ GREAT SENECA HWY	NORTHBOUND	59.04	0.18	25 m	13	0
109	GREAT SENECA HWY S @ LONGDRAFT RD	SOUTHBOUND	58.96	2.95	20 m	1	0
110	LONGDRAFT RD S @ MD-117/CLOPPER RD	SOUTHBOUND	57.04	0.01	1 h 38 m	80	0
111	FIELDS RD W @ WASHINGTONIAN BLVD	WESTBOUND	55.89	0.01	50 m	116	0
112	WASHINGTONIAN BLVD E @ SAM EIG HWY	EASTBOUND	35.19	0.06	26 m	24	0
113	GAITHER RD S @ W GUDE DR	SOUTHBOUND	34.15	1.1	31 m	1	0
114	KENTLANDS BLVD E @ MD-124/QUINCE ORCHARD RD	EASTBOUND	22.75	0.01	1 h 32 m	22	0
115	DARNESTOWN RD E @ MD-28/KEY WEST AVE	EASTBOUND	13.29	0.01	56 m	27	0
116	GREAT SENECA HWY N @ DARNESTOWN RD	NORTHBOUND	3.01	0.02	50 m	3	0

*** Between March 1, and May 31st, 2016**

Critical Lane Volume Intersection Congestion

Critical lane volume (CLV) is a measure of intersection capacity traditionally used in Montgomery County. Using observed traffic counts collected since 2014 at selected intersections in the Great Seneca Science Corridor Master Plan Area and vicinity, CLVs at these locations are reported in Table 5 below. Pedestrian and bike counts at these intersections are also provided.

Table 5: Critical Lane Volumes* – Great Seneca Science Corridor Master Plan Area

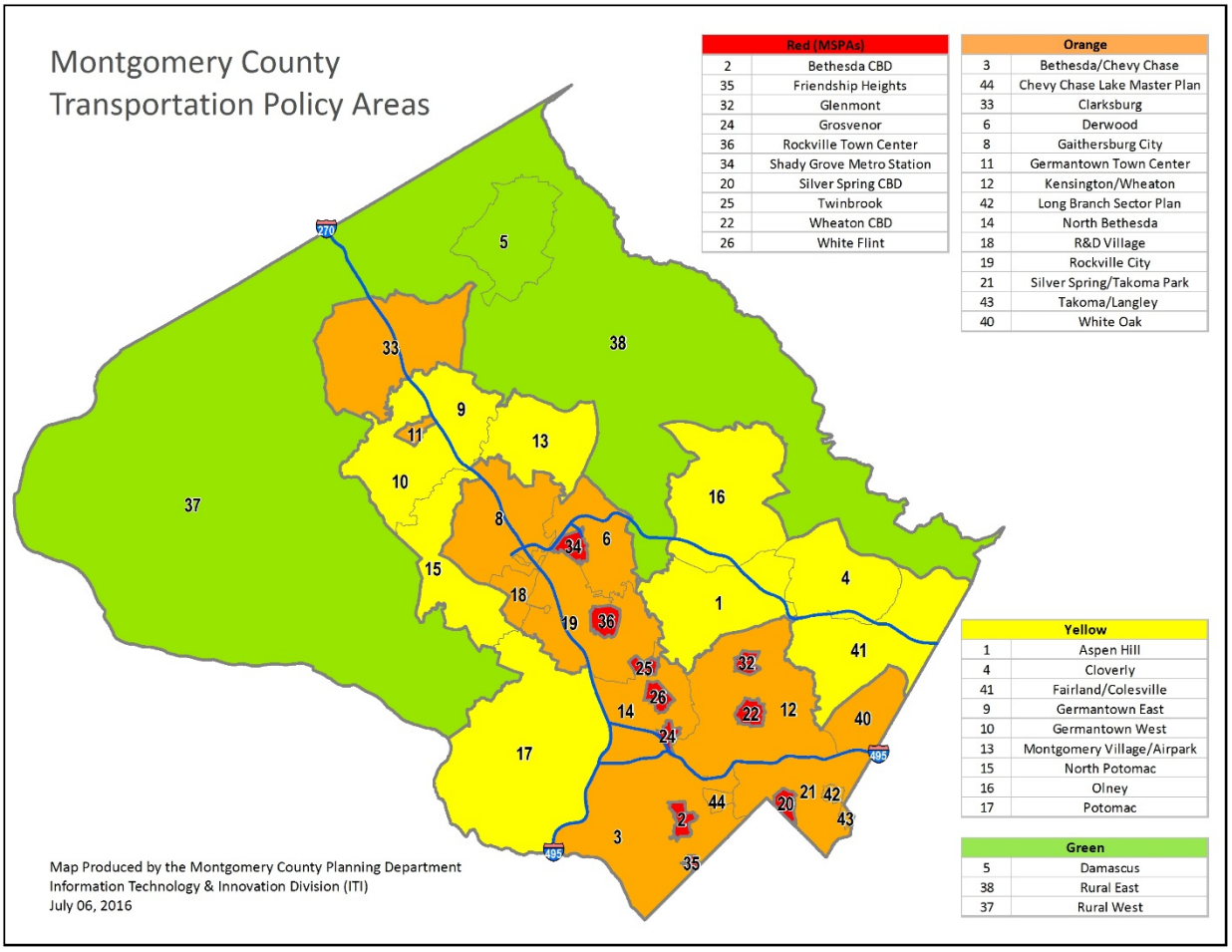
Intersection	AM CLV	AM V/C Ratio	PM CLV	PM V/C Ratio	2012-2016 LATR Standard	Count Date	Pedestrian Observations*	Bicycle Observations*
W Diamond Ave at Perry Pkwy	1267	0.89	1328	0.93	1425	10/8/2015	94	19
Great Seneca Hwy (MD 119) at Sam Eig Hwy	1320	0.91	1779	1.23	1450	2/25/2014	12	0
Darnestown Rd at Muddy Branch Rd	1256	0.87	1330	0.92	1450	10/20/2016	14	11
Shady Grove Rd at I-270 Ramp SB/Fields	1124	0.75	762	0.51	1500	6/2/2015	10	9
Quince Orchard Rd at Quince Orchard Blvd	1220	0.86	1200	0.84	1425	1/21/2015	10	0
Shady Grove Rd at I-270 Ramp NB	822	0.55	642	0.43	1500	5/28/2015	6	5
Clopper Rd at Longdraft Rd	865	0.60	964	0.66	1450	3/22/2016	24	0
Great Seneca Hwy at Key West Ave	1189	0.82	1071	0.74	1450	2/27/2014	16	0
Quince Orchard Rd at Bank St/North Dr	752	0.53	771	0.54	1425	1/21/2015	17	0
Darnestown Rd at Riffle Ford Rd	1188	0.82	1715	1.18	1450	9/10/2015	45	1
MD 355 at S Westland	1146	0.78	879	0.60	1475	9/23/2014	44	0
Key West Ave at Broschart Rd/Diamondback Dr	1019	0.70	1032	0.71	1450	5/5/2015	44	0
W Diamond Ave at Bureau Dr	1146	0.80	1301	0.91	1425	12/4/2014	26	0
Key West Ave at Medical Ctr/Omega Dr	1059	0.73	1178	0.81	1450	9/1/2015	59	13
* Between 6:30 am to 10 am and 4 pm to 7 pm								

2016-2020 Subdivision Staging Policy

The recently adopted 2016-2020 Subdivision Staging Policy (SSP) introduced three major changes with respect to the evaluation of the adequacy of transportation facilities:

- **Established four policy area categories in the County** based on current land use patterns, the prevalence of modes of travel other than the single occupant vehicle, and the planning vision for different parts of the county.
    - Red policy areas, including the Metro Station Policy Areas (MSPAs) and Central Business Districts (CBDs), indicate where greater vehicular traffic congestion is permitted in recognition of greater access to high-quality transit service.
    - Green policy areas are primarily rural areas and the Agricultural Reserve.
    - Yellow policy areas are traditional suburban areas, such as Olney and Potomac.
    - Orange policy areas are primarily located immediately adjacent to more urbanizing areas along the I-270/MD 355 Corridor, including Bethesda-Chevy Chase and North Bethesda.

This categorization is depicted in the map below. The LSC is located within the Research and Development Village Policy area, which categorized as "orange."



- Eliminated the policy area-based transportation adequacy test – Transportation Policy Area Review (TPAR).

- Overhauled the project level transportation test, Local Area Transportation Review (LATR), into a multi-modal transportation adequacy test. The new process expands the application of delay-based Highway Capacity Manual (HCM) methodology to evaluate the performance of local intersections. In addition, new procedures evaluate the adequacy of transit, pedestrian and bike facilities for new development have been introduced.

Biennial Master Plan Monitoring Report