



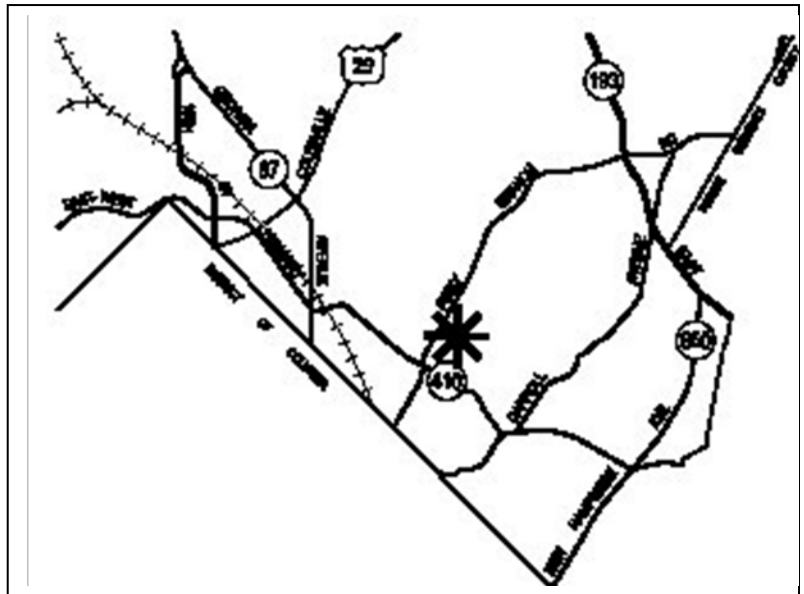
Takoma Park Middle School, Mandatory Referral, MR2018036

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Completed: 8-31-18

Description

- Mandatory Referral for two additions to the middle school to accommodate increasing enrollment;
- Mandatory Referral will add 59,662 square feet to the existing school;
- Current use: public school;
- Located at 7611 Piney Branch Road, Takoma Park, Maryland;
- 18.10-acre site zoned R-60 in the 2000 *Takoma Park Master Plan* area;
- Applicant: Montgomery County Public Schools;
- Acceptance Date: June 13, 2018.



Summary

- **Staff Recommendation: Approval to Transmit Comments**
- The review of this Mandatory Referral includes a **Preliminary/Final Forest Conservation Plan** discussed in a separate staff report
- The Applicant is proposing to add and renovate to the existing Middle School to address the space and core deficiencies increasing capacity by 410 seats.
- The proposal includes two additions to the existing Middle School. One to the northeast side of the school, the other to the southeastern corner of the existing building.
- New ADA compliant ramps for access to the building and field on the western, north, and north-eastern sides of the building.
- Construct new bioretention systems to treat stormwater runoff.

Recommendations

Staff recommends approval to transmit the following comments to Montgomery County Public Schools:

1. Any mandatory referral submission for future school improvements at the subject school must include an updated traffic study if those improvements will increase the school's student core capacity to 1,306 students.
2. The Planning Board accepts the recommendations of the Montgomery County Department of Transportation ("MCDOT") in its letters dated August 30, 2018, and hereby incorporates them as conditions of the Mandatory Referral approval with the exception of comments 4 and 5. The Applicant must comply with the other recommendations as set forth in the letter, which may be amended by MCDOT provided that the amendments do not conflict with other conditions of the Mandatory Referral approval.
3. The Planning Board accepts the recommendations of the Maryland Department of Transportation ("MDSHA") in its letter dated April 13th, 2018, and hereby incorporates them as conditions of the Mandatory Referral approval. The Applicant must comply with each of the recommendations as set forth in the letter, which may be amended by MDSHA provided that the amendments do not conflict with other conditions of the Mandatory Referral approval.
4. MCPS should restripe the existing crosswalks on site and paint a new crosswalk pavement marking across the school driveway on Grant Avenue (opposite Chestnut Avenue).
5. As determined by the City of Takoma Park, MCPS should install crossing improvements for pedestrians at the Grant Avenue driveway. Improvements could include new pedestrian queuing areas on the northeast and southeast corners of the intersection. A high-visibility crosswalk pavement marking should be considered on the eastern leg of the intersection. MCPS should also coordinate with the City of Takoma Park, as this improvement is recommended as part of a Safe Routes to School improvement plan.
6. Additional and improved short-term bicycle parking capacity is recommended on the school site. Inverted-U Racks are the preferred bicycle parking type, as per the Planning Department Bicycle Parking Guidelines.
7. Crosswalks are recommended for installation along the following side streets that intersect with Piney Branch Road (MD 320) to improve pedestrian safety: Gist Avenue, Potomac Avenue, and Mississippi Avenue.
8. MCPS should work with MCDOT to install the 10-foot sidepath along the school's frontage on Piney Branch Road, as recommended in the 2018 Planning Board Draft of the *Bicycle Master Plan*.
9. MCPS should work with the school to assure ballfield access and use aligns with the periods of highest use and/or priorities of the middle school.
10. Should subdivision be required the property must dedicate right of way along Piney Branch Road such that there is 40' of dedicated width between the site and centerline.
11. The proposed development must comply with the Final Forest Conservation Plan MR2018036.

Introduction

This report consists of staff review of the Mandatory Referral for the proposed construction of two additions to the Takoma Park Middle School. The Montgomery County Public Schools (MCPS) submitted the application pursuant to Section 7-112 of the Regional District Act. In conjunction with the plan, a Preliminary Forest Conservation Plan has been reviewed. A Final Forest Conservation Plan must be submitted for staff review and approved prior to any clearing, grading, or demolition on the property. The Planning Board action on a Mandatory Referral is advisory, but the Board decision on the related Forest Conservation Plan is regulatory and binding.

Background

The existing school and site improvements were constructed in 1997-1998. The current capacity of the school is 939 students. Present enrollment is 1,090 students with a projected student population of 1,101 in the calendar year of 2018-2019. The school is deficient in classroom space and functionality. The Applicant is requesting to add two additions onto the existing building. Minor modifications to the external pedestrian circulation patterns are proposed including the construction of an ADA ramp on the eastern side of the school for access to the ballfields. The existing basketball court will be relocated to the southeastern corner of the school. Stormwater management will be provided on the eastern side of both additions. There will be minimal forest clearing and reforestation on the site.

Site Description

The Takoma Park Middle School at 7611 Piney Branch Road is seated on 18.10-acres owned by the Montgomery County Board of Education. The site contains an existing school, associated parking lots, athletic fields, play areas, and a portion of a linear stream valley park and forest. The site is in a residential neighborhood with single family residential (R60) properties on three sides. Two connecting parks abut the school. To the south adjacent to the tennis courts the City of Takoma Park owns a 2.29-acre parcel called Hefner Park. To the southeast is Takoma-Piney Branch Park owned by the Maryland National Capital Park and Planning Commission. Access roads to the school are Piney Branch Road to the north and Grant Avenue to the southwest. Travis Drive, a paper road runs along the south side of the property.

The student drop off, bus loop, and parking lot are located on the southwestern side of the site with access from both Grant Avenue and Piney Branch Road. Service entry occurs from the bus loop.



Figure 1: Vicinity Map



Figure 2: View of School from Piney Branch Road

Proposal

Montgomery County Public Schools (MCPS or Applicant) is proposing to expand the existing Takoma Park Middle School by adding two additions. Current enrollment is 1,090 students which is 151 beyond the capacity of what the school was constructed for (939 students). When completed, the new facility capacity will be 1,306 seats. There will be 6 shell space classrooms allowing for a total programmatic capacity of 1,500 seats. The project will be constructed in two phases to reduce impacts on the community, the student body, and reduce construction time. Walkway routes and athletic fields will be maintained to the extent possible during construction.

Phase I will be a 3-story extension on the northeast side of the school adjacent to Piney Branch Road. It will be a steel-framed structure with brick veneer over concrete masonry. The floor footprint of the addition will be 16,778 square feet, and the total square footage of the all three floors will be 48,076 square feet. The addition will house two science rooms, 14 classrooms, corridor connections, and six shell spaces for future growth. It will enclose a new courtyard allowing natural light into the new and existing building.

Phase II will include a 11,586 square foot addition on the southeastern side of the school. The addition will contain an auxiliary gymnasium, fitness weight room, health classroom, and a relocated music classroom.

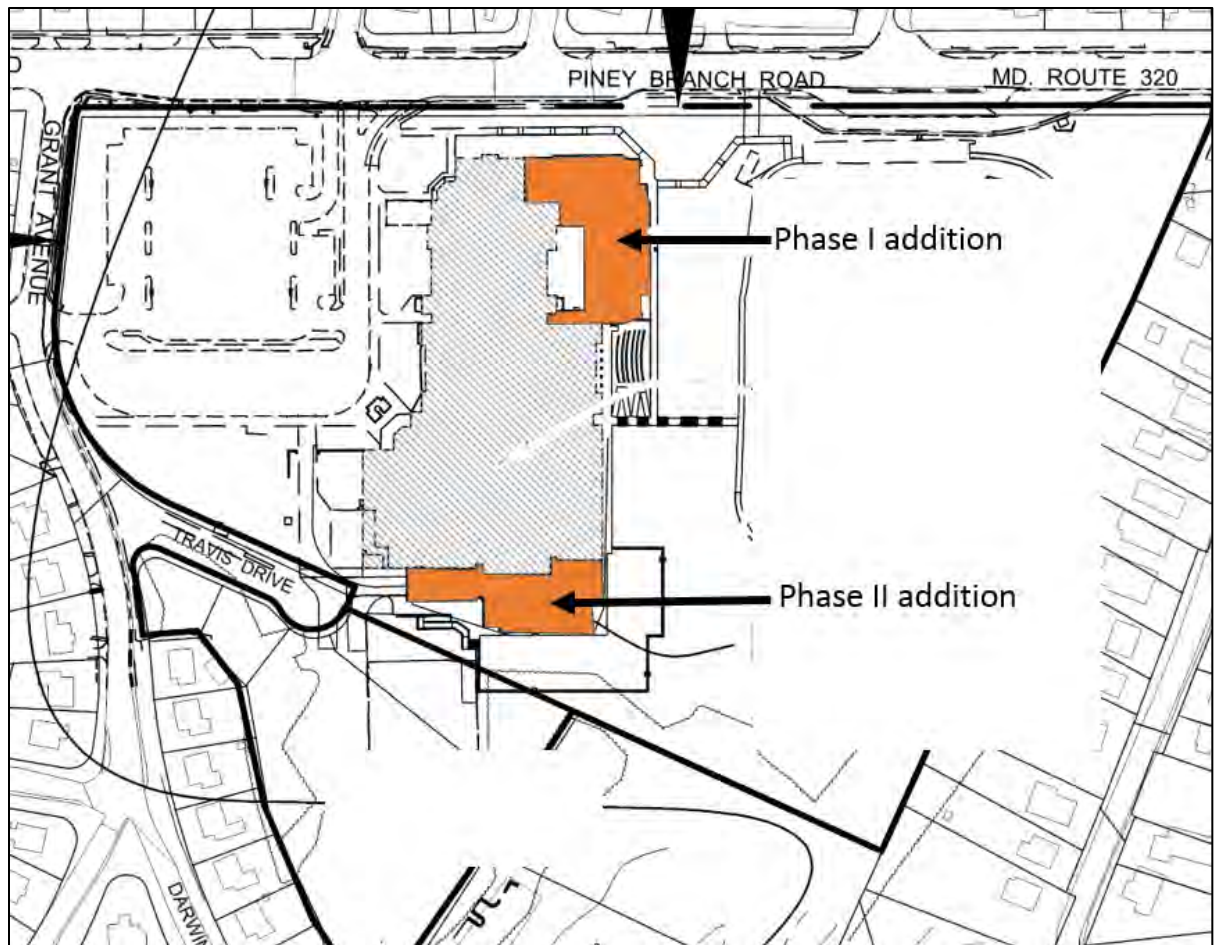


Figure 3: Proposed new additions

A public concern with of this project is related to the slopes between the eastern side of the school and the multi-purpose fields. They have been used by the community for decades for special events such as the Takoma Park Folk Festival and the Fourth of July fireworks. Notably, the slope is one the of region's favorite sledding spot. To address this, MCPS preserved two portions of the slope on both sides of the stairway to the ballfields (figure 4). North of the stairs built in raised terraced bleachers will be constructed into the slope. They will be accessible from the new ADA walkway. The bleacher seating area will be approximately 3,000 square feet. South of the stairway will be an open sledding area approximately 17,845 square feet, or 0.4 acres.

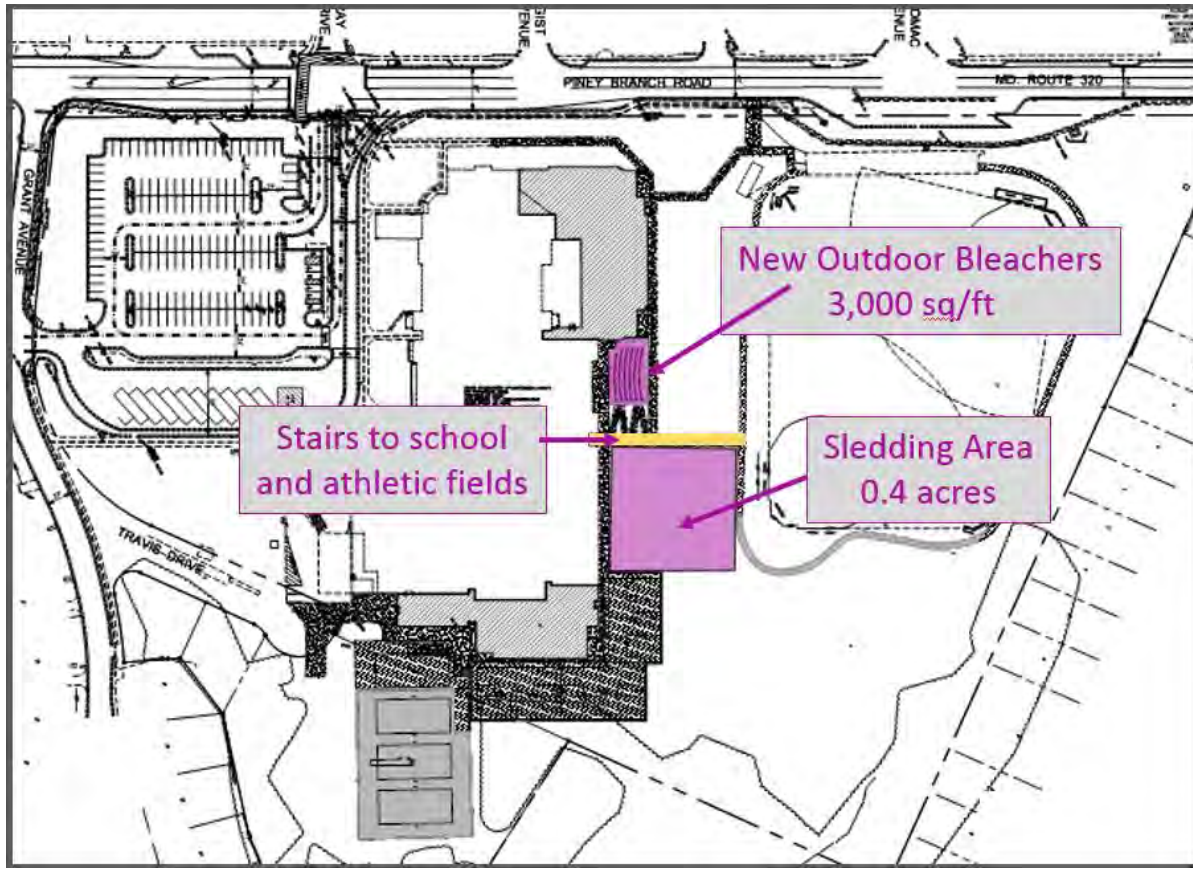


Figure 4: Retained public open space for community activities

Building Design

The proposed building height of 52 feet exceeds the maximum height allowable in the zone by 17 feet. However, it is the same height of the existing school and is compatible with the community. The school is screened on both the school property with landscaping and the properties across the street are lined with mature trees. Classroom windows arranged in groups relate to the residential scale of single family homes. A variety of masonry veneer colors, textures, and sizes are cohesive with the existing facades and support the massing of the design as an interaction of smaller building elements.

The proposed building on the northeastern corner of the school will be a three-story, steel-framed structure with brick veneer over concrete masonry block exterior walls. On each level corridor connections will create a circulation loop around a new courtyard space. The addition contains 14 classrooms, two science rooms and support spaces. It will also include a six-classroom shell space for future growth.

The second phase will include a one-story addition located on the southeastern side of the property. It will be steel-framed with brick veneer over concrete block exterior walls. Two existing corridors run parallel to the existing gymnasium will and will connect with the new addition to create new circulation around the existing gymnasium. The corridors will link with the addition which will contain an auxiliary gymnasium, a fitness weight room, a health classroom, and a relocated music room. The building will allow for the expansion of the cafeteria and instrumental music room. On the exterior, new basketball courts will be located to the east of the one-story addition.



Figure 5: Conceptual Elevations



Figure 6: Northeastern view of proposed addition from Piney Branch Road



Figure 7: Southeastern view of proposed addition



Figure 8: View west from the ballfields

Community Outreach

The Applicant notified adjoining and confronting properties as well as homeowner and civic associations within a half-mile radius of the school. The most recent public meetings conducted by the Montgomery County Public Schools related to the schematic designs held on October 5, 2017 and October 19th, 2017.

According to MCDPS, the Division of Construction sent public meeting notifications to neighbors, and civic and homeowner's associations near the school. Participants included: Alicia Deeny, the Principal of Takoma Park Middle School and other school representatives; Kacy Kostiuik, City Council; Montgomery County Public Schools representatives; Roz Gigsby, Community Development Manager for the City of Takoma Park; representatives from SEI Architects; and a few community members.

Additional community meetings included:

Feasibility Meetings:

- September 10, 2015 Facility Advisory Meeting (Public Work Session)
- September 16, 2015 Facility Advisory Meeting (Public Work Session)
- October 13, 2015 PTA Meeting (Public Work Session)

Design Meetings:

- September 20, 2017 Pre-design meeting with City of Takoma Park
- October 5, 2017 Facility Advisory Meeting (Public Work Session)
- October 19, 2017 Facility Advisory Meeting (Public Work Session)
- January 9, 2018 MCPS BOE mtg for preliminary plans presentation (public access)
- February 8, 2018 Mtg with City of Takoma Park
- August 2, 2018 Mtg with City of Takoma Park

Future public interaction planned:

- September 5, 2018 Mtg with City of Takoma Park

Analysis

Master Plan Conformance

The Site is located within the boundaries of the 2000 *Takoma Park Master Plan* area. The proposed addition is in conformance with the Master Plan. The Master Plan's Community Facilities and Needs recommendations state: "Renovate existing facilities and provide new facilities and recreational programs for a wide range of ages, backgrounds, and interests" (p 8) and "Provide community facilities at appropriate locations to meet the human service, recreational, security, educational, and other needs of the diverse community" (p 71).

The Master Plan does not contain specific recommendations for this property, though it is included on the map of existing community facilities (p70).

Zoning Requirements

The intent of the R-60 Zone is to provide designated areas of the County for moderate density residential uses. The predominant use is residential detached houses. A limited number of other building types may be allowed under the optional method of development. The proposed project meets the use and development standards for the zone except the allowed maximum building height (See *Table 1: Conformance with R-60 Zone Development Standards*). The R-60 Zone Standard Method Development Standards Section 4.4.9.B.3 specify that the building height maximum is 35 feet. The proposed building height is 52 feet.

Table 1: Conformance with R-60 Zone Development Standards

	Required	Proposed
Minimum Lot Area	6,000 sf	789,114 sf
Minimum Main Building Setback from Street	25 feet	69.9 feet
Side Setback – Minimum	8 feet	73 feet
Side Setback – Sum of Side Setbacks	18 feet	175.8 feet
Rear Setback	20 feet	571.4 feet
Maximum Building Height	35 feet	52 feet
Maximum Lot Coverage	35%	14.3%

Design and Visual Impact

The proposed building height of 52 ft exceeds the maximum height allowable in the zone by 17 feet. However, the proposed addition design at three-stories is the same height of the existing school structure. The front of the building has a large setback of 69.9 feet, the side setbacks exceed the required setbacks by over 65 feet. There is some variation and modulation of the front façade to break down the overall mass, and mature trees provide screening both on this property and to the confronting properties across Piney Branch Road.

Transportation

School Location and Vehicular Access Points

The existing school is located on the east side of Piney Branch Road (MD 320), just east of the intersection of Piney Branch Road and Philadelphia Avenue (MD 410). The site has three vehicle access points; two on Piney Branch Road and one on Grant Avenue, opposite Chestnut Avenue. Staff and visitor parking is accessed from the southern driveway on Piney Branch Road. The bus loop is accessed from Grant Avenue. Grant Avenue also provides access to the staff and visitor parking lot. All onsite traffic exits the site via the northern driveway on Piney Branch Road. No egress movements are permitted on Grant Avenue. No changes the site access points are proposed as part of this expansion.

Master-Planned Roadways and Bikeways

In accordance with the 2000 *Takoma Park Master Plan*, the 2018 Planning Board Draft of the *Bicycle Master Plan*, and the 2018 *Master Plan of Highways and Transitways*, the master-planned transportation facilities are designated below:

1. Piney Branch Road is recommended to be a two-lane arterial street, A-311, with an 80-foot wide right-of-way. Piney Branch Road along the school frontage varies currently from 56 to 61 feet of right-of-way. The posted speed limit on Piney Branch Road is 30 MPH. Buffered sidewalks are present on both sides of the roadway. A 10-foot wide sidepath is recommended on Piney Branch Road along the school frontage in the 2018 Planning Board Draft of the *Bicycle Master Plan*.
2. Grant Avenue is a secondary residential street with a 50-foot wide right-of-way. It has one lane in each direction. Buffered sidewalks are present on the school side (north) of the roadway. The posted speed limit on the road is 25 MPH.
3. Sligo Avenue is a master-plan recommended minor arterial with a 50-foot wide right-of-way in the 2018 *Master Plan of Highways and Transitways*. Sidewalks are present on both sides of the street. The posted speed limit is 30 MPH.

4. Ray Drive is a secondary residential street with a 50-foot wide right of way. Buffered sidewalks are present on the south side of the street. The posted speed limit is 25 MPH.

Public Transit Service

Montgomery County RideOn bus provides transit service along Piney Branch Road. Routes 14 and 24 service the bus stop directly in front of the school in the northbound direction. The southbound bus stop of the pair is located just north of Ray Drive on the west side of the street.

Pedestrian and Bicycle Facilities

The existing sidewalks are as follows:

- Along Piney Branch Road buffered sidewalks exist on both sides. On the east (school) side, the sidewalks are 4ft in width and are buffered by a five-foot grass panel. The west side of the street has three-foot wide sidewalks with a grass panel that varies in width from 8-9ft.
- Along Grant Avenue, sidewalks are present only on the north (school) side. Between Piney Branch Road and the school driveway the sidewalks are 4ft in width and are buffered by a two-foot grass panel. East of the school driveway the sidewalks widen to 8ft and do not have a buffer.
- Ray Drive, immediately opposite the school's driveways on Piney Branch Road has sidewalks on the south side of the road. The sidewalks are 3.5ft in width and the buffer is approximately 2ft in width.

MCPS should replace the sidewalks along the school frontage on Piney Branch Road, an arterial street, with a 10-foot sidepath to implement the sidepath recommended in the 2018 Planning Board Draft of the *Bicycle Master Plan*. MCPS should work with MCDOT for the specific design elements.

The pedestrian counts performed for the transportation impact study recorded several pedestrians crossing at the intersection of Grant Avenue, Chestnut Avenue, and the school's southern driveway. Twenty-nine pedestrians entered the intersection in the morning peak hour and 22 in the afternoon peak hour. The east crossing is most crucial because it connects Chestnut Avenue to the school's sidewalk leading into the building entrance. Sixteen pedestrians crossed at this leg in the morning peak hour and 2 in the afternoon peak hour. This crossing is currently unmarked and does not provide ADA accessible curb ramps or pedestrian queuing space on either corner. The City of Takoma Park conducted a pedestrian safety audit for students walking to the school and made recommendations for sidewalks on Chestnut Avenue and crossing improvements on the eastern leg of the intersection. For that reason, Staff recommends MCPS work with the City of Takoma Park to improve this crossing for student safety. MCPS has committed to striping a new crosswalk across the driveway (northern crossing) to improve visibility of pedestrians and remind both pedestrians and motorist they are entering a potential conflict area.

MCPS proposed the following pedestrian and bicycle improvements:

- Forty new bicycle racks, which increases the current parking capacity from 40 to 80 total spaces.
 - 16 new spaces at the school entrance,
 - 16 new spaces at the ball fields, and;
 - 8 new spaces at the tennis courts.

- Several crosswalks across the school driveways are faded. MCPS has indicated they will restripe the crosswalks on site.
- MCPS will paint a new crosswalk across the southern driveway, this is also the northern leg of the intersection of Grant Avenue and Chestnut Avenue.

According to the Bicycle Stress Map, the stress level for bicyclists is “moderate high” along Piney Branch Road between Eastern Avenue and Sligo Creek Parkway. The local streets that connect to Piney Branch Road have “very low” stress ratings. For 2016-2020 Subdivision Staging policy (SSP), bikeway improvements are required if the school generated 50 or more bicycle trips and within a quarter mile of an educational institute that have a Level of Traffic Stress/Stress Tolerance Level (LTS) worse than LTS-2 or “low”. MCPS should work with MCDOT and MDSHA regarding bicycle infrastructure improvements to improve the off-site bicycle impact for cyclists along the substandard (higher than “low”) bikeway segments along Piney Branch Road.

Local Area Transportation Review

A Transportation Impact Study was conducted on behalf of MCPS by Street Traffic Studies, Ltd. The study was first submitted on March 13, 2018 and later revised and accepted June 5, 2018. The number of peak-hour trips generated by the proposed expanded middle school is based on trip-generation rates derived from the traffic data counted and analyzed at the existing Takoma Park Middle School with its current enrollment. The table below shows the additional trips generated by the expanded school within the weekday morning peak period and the afternoon dismissal peak hour of the school. The morning peak hour was between 7:30 and 8:30 AM and the afternoon peak hour was between 3:00 and 4:00 PM.

Table 1: Trips Generated

Number of Students		Peak Hour Vehicle Trips	
		Morning	Afternoon
Current Enrollment	1,098	584	188
Trip Generation Rate		0.53	0.17
Change in enrollment to be studied	402	214	69

Source: Street Traffic Studies Transportation Impact Study prepared for MCPS.

The current enrollment of Takoma Park Middle School is 1,098 students, and expansion will increase the capacity of the school to up to 1,500 students. Therefore, this transportation study analyzed the potential impact of adding 402 students to the school.

Under the 2016-2020 Subdivision Staging Policy (SSP), a traffic study was required because the number of morning or afternoon additional person trips exceed the new standard of 50 or more-person trips within the weekday peak hours.

Based on the traffic study results, the Highway Capacity Manual's (HCM) average intersection delay values (in seconds per vehicle) at the studied intersections are shown in the table below for the following traffic conditions:

1. Existing: Existing traffic conditions.
2. Background: The existing condition plus the trips generated from approved but unbuilt nearby developments.
3. Total: The existing condition plus the site-generated trips generated by the proposed school expansion to a core capacity of 1,500 students.

Table 2: Traffic Condition

Studied Intersection	Avg. Vehicle Delay Standard (sec.)	Traffic Condition					
		Avg. Vehicle Delay (sec.)					
		Existing		Background		Total	
		AM	PM	AM	PM	AM	PM
MD 320 and Wessex Rd	80	21.4	23.4	21.4	23.4	21.9	22.0
MD 320 and Park Valley Rd	80	18.6	43.1	18.6	43.1	18.6	43.0
M 320 and Ray Dr	80	18.0	6.7	18.0	6.7	21.1	9.5
MD 320 and MD 410	80	25.5	24.3	25.8	24.5	25.8	24.6
Grant Ave and Chestnut Ave	80	4.6	3.3	4.6	3.3	5.5	3.9
Grant Ave and Holly Ave	80	7.3	7.3	7.3	7.3	7.4	7.4

Source: Street Traffic Studies Transportation Impact Study prepared for MCPS.

To satisfy, the LATR test under the 2016-2020 SSP:

- For the vehicular impact with 50 or more morning peak-hour vehicle trips at all studied intersections, the HCM delay values in the table above do not exceed the applicable standard of an overall intersection delay of 80 seconds/vehicle for the Silver Spring/Takoma Park Policy Area. Thus, no intersection improvements or other mitigation strategies are required.
- Fewer than 50 transit trips are estimated to be generated by the proposed project and therefore transit adequacy analysis was not required.
- Fewer than 50 bicycle trips estimated to be generated by the proposed project and therefore bicycle adequacy analysis was not required.
- Fewer than 50 pedestrian trips estimated to be generated by the proposed project and therefore pedestrian adequacy analysis was not required.

Policy Area Review

Under the *2016-2020 Subdivision Staging Policy*, the transportation impact tax would be zero because the Montgomery County Office of the County Executive, County Register does not require the development impact tax for public schools.

ENVIRONMENT

Natural Resources Inventory

A Natural Resources Inventory and Forest Stand Delineation (420180710) was approved on December 1, 2017. The site is located within the Lower Sligo Creek watershed, a USE I-P designation, which drains to the Mainstem of Sligo Creek before entering the Anacostia River, then the Potomac River.

Forest Conservation Plan

The Application meets the requirements of Chapter 22A of the Montgomery County Forest Conservation Law. See the Forest Conservation staff report (Part B) for a complete analysis.

Sustainable Design

The proposed additions are not required to be registered for Leadership in Energy & Environmental Design (LEED) certification, however, the addition will be designed in accordance with the 2014 MCPS Environmental Sustainability Management Plan. The following sustainable aspects of the project include:

- Using highly-reflective roof surfaces to reduce heat island effect and heat gain to the building
- Installing water conserving, low-flow plumbing fixtures
- Optimizing the energy performance of the building by providing a highly energy-efficient building envelope, a low energy consuming lighting system, and a heating, ventilation, and air conditioning (HVAC) system utilizing a water source heat pump coupled with a dedicated energy recovery outdoor air system
- Optimizing equipment selection, installation, and operation of HVAC equipment through enhanced commissioning of the building energy system
- Providing a high level of occupant control over individual lighting and thermal comfort to promote an enhanced indoor environment
- Using construction materials that are recycled and regionally manufactured
- Maximizing daylight in classrooms

Stormwater Management

On May 24, 2018 the Takoma Park Department of Public Works deemed the Stormwater Management Concept Application as “generally acceptable” with recommendations to address computations regarding Reduced Curve Numbers (RCN), stream channel protection (CPv), and groundwater recharge (Rev) volumes.

The project proposes 37,154 square feet of new impervious, however is providing stormwater treatment for 58,804 square feet of impervious area. No increases to the peak rate discharge from the property will occur for any storms up to and including the 100-YR storm. In addition to providing stormwater management for project, an existing erosion problem-a headcut forming on the north-east side of the property and outfall maintenance will be undertaken to reduce sediment laden runoff leaving the site.

Four micro-bioretenction facilities, will be constructed to meet ESD to the maximum extent possible. Outfall maintenance is proposed to reduce sediment laden runoff leaving the site.



Figure 9 Proposed bioretention areas along the western slope

Noise

As noted in the plans submittal MCPS will comply with Montgomery County's noise ordinance, Section 31 (b) of the County Code which is consistent with the Montgomery County Department of Park and Planning Noise Guidelines.

Conclusion

Based on analysis of the proposal, Staff recommends approval to transmit the recommendations listed at the beginning of this report to MCPS.

Attachments

- A. Proposed site plans
- B. Traffic Study
- C. Circulation Plan
- D. Landscape Plans
- E. Photometric Plan
- F. City of Takoma Park Department of Public Works stormwater management application

**LOCAL AREA TRANSPORTATION REVIEW
TAKOMA PARK MIDDLE SCHOOL
MONTGOMERY COUNTY, MARYLAND**

**Prepared For:
Montgomery County Public Schools**

March 13, 2018

Revised: June 5, 2018

**Project Manager: David A. Nelson, P.E., P.T.O.E.
Mike Nalepa - Street Traffic Studies, Ltd.**

STS Job No.: 6598

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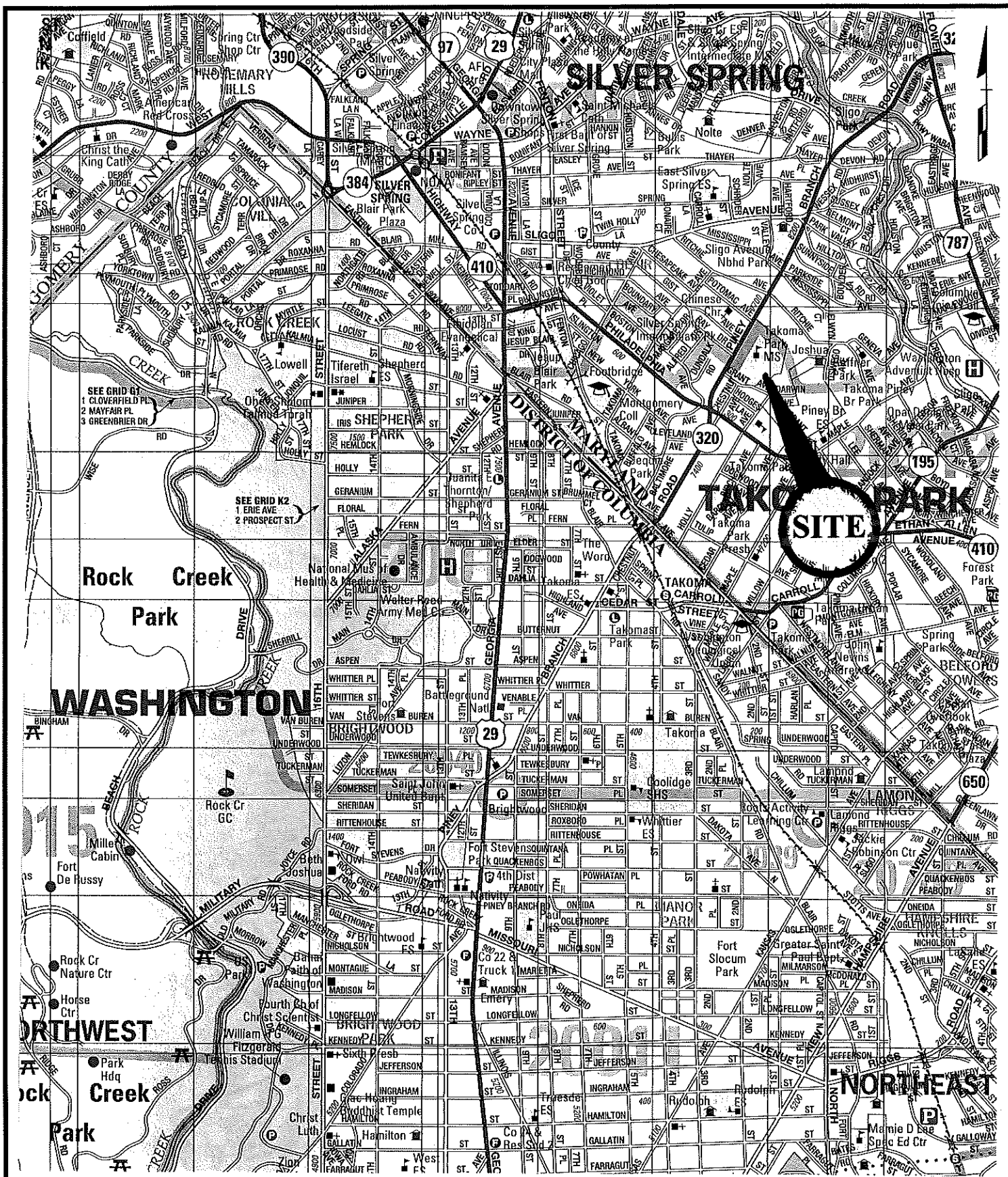
INTRODUCTION

Montgomery County Public Schools (MCPS) is proposing to expand the existing Takoma Park Middle School located at 7611 Piney Branch Road. The existing school has an enrollment of 1,098 students, for the current 2017-18 academic year, and the proposed expansion will result in a school with a core capacity of 1,500 students at completion, a 402 student increase. The site is located in the northeast quadrant of the Piney Branch Road/Grant Avenue intersection as shown on Exhibit 1.

Street Traffic Studies, Ltd. has been retained to undertake the required traffic study under the provisions of the *Local Area Transportation Review and Transportation Policy Area Review Guidelines* for a site generating more than 50 peak hour person trips.

The purpose of the traffic study is to evaluate the adequacy of the transportation facilities that are available to serve the site in accordance with the procedures outlined in the *Local Area Transportation Review and Transportation Policy Area Review Guidelines* as adopted by the Planning Board. Current traffic data was acquired at six (6) intersections of public streets in the vicinity of the site. For purposes of this analysis, data collected at the existing Takoma Park Middle School was used to determine the trip generation characteristics for this school. The Silver Spring/Takoma Park policy area is within the Orange category and consequently the Highway Capacity Manual and Critical Lane Volume procedures were used to evaluate intersection levels of service. The Traffic Study Scope of Work Agreement is contained in Appendix A.

Since this project is being built solely as a public facility by the Montgomery County government it is not required to pay a transportation impact tax.



SCALE: 1" = 2000'

EXISTING CONDITIONS

Roadway System Elements

The existing Takoma Park Middle School is located in the northeast quadrant of the Piney Branch Road/Grant Avenue intersection. The site is currently served by two (2) full movement access points. One is located at the Piney Branch Road/Ray Drive signalized intersection and the second is located at the Grant Avenue/Chestnut Avenue intersection. All school buses enter the site via the Grant Avenue access and exit via the Piney Branch Road access. The proposed expansion will not change the access points for the school.

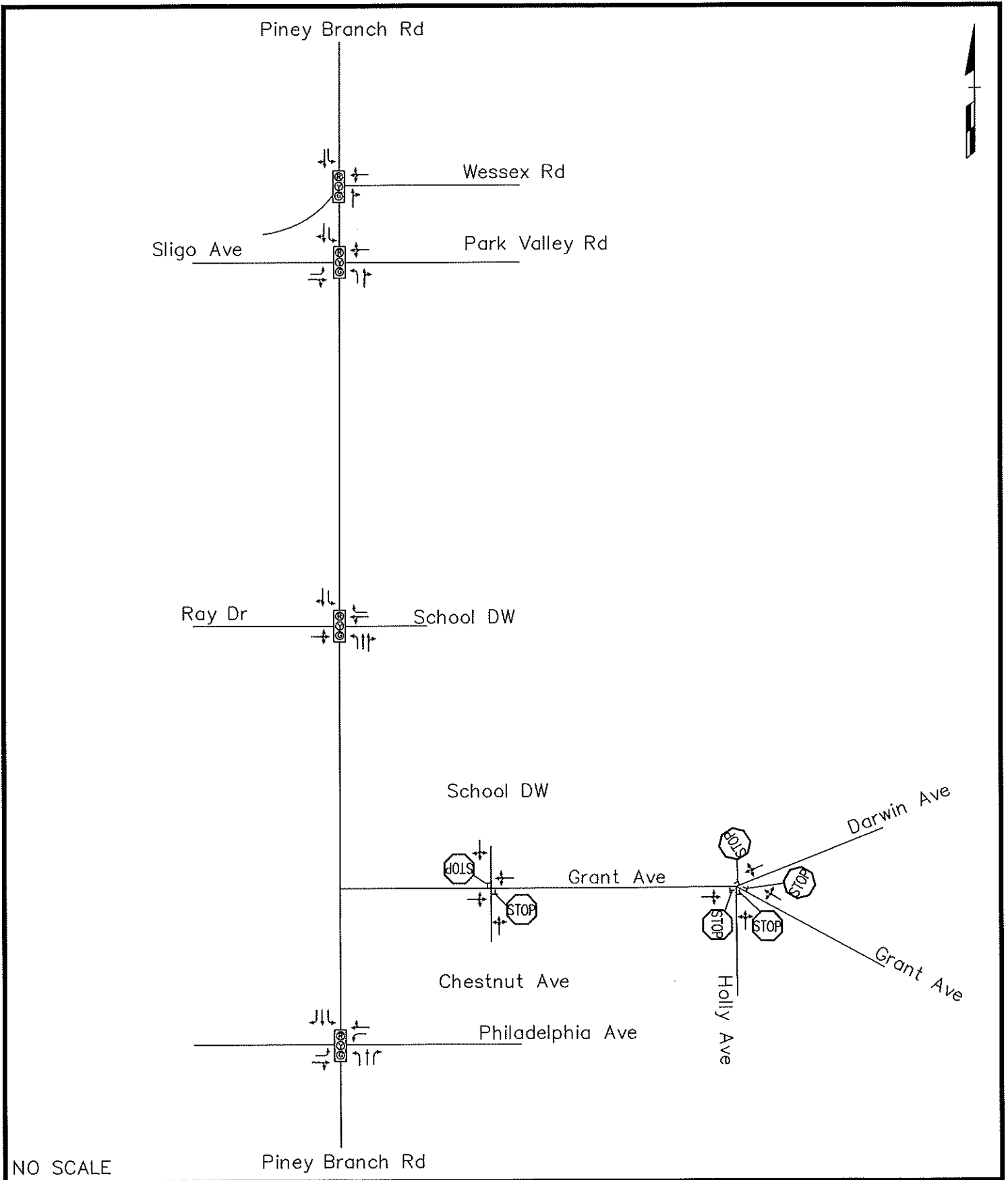
The approach lanes and traffic controls at the intersections analyzed as the basis for this study are shown in Exhibit 2.

Piney Branch Road (MD 320) is a north-south roadway. It is a two lane undivided road with exclusive left turn lanes at most intersections within the study area and has a posted speed limit of 30 MPH. Continuous concrete sidewalks are provided along both sides of MD 320 in this area. It is classified as an Arterial.

Sligo Avenue Sligo Avenue is an east-west roadway. It is a two lane undivided road and has a posted speed limit of 30 MPH. Continuous concrete sidewalks are provided along both sides of Sligo Avenue in this area. It is classified as an Arterial.

Ray Drive is an east-west residential roadway. It is a two lane undivided open section roadway and has a posted speed limit of 25 MPH. There is continuous concrete sidewalk along the south side of Ray Drive in this area.

Grant Avenue is an east-west residential roadway. It is a two lane undivided open section roadway and has a posted speed limit of 25 MPH. There is continuous concrete sidewalk along the north side of Grant Avenue in this area.



NO SCALE

Piney Branch Rd

EXHIBIT 2
EXISTING LANE USE

Existing Traffic Volumes

Manual turning movement traffic counts were conducted by Street Traffic Studies, Ltd. in February 2018 at the intersections that were agreed upon with staff. The counts were conducted between 6:30 AM and 9:30 AM in the morning and between 2:00 PM and 5:00 PM in the evening. The summarized data for these intersections are included in Appendix B.

Based on the counts conducted at the existing Takoma Park Middle School the peak hour for the school in the morning was between 7:30 and 8:30 AM; the evening peak hour for the school was between 3:00 and 4:00 PM. Therefore the peak one hour traffic flows at the study intersections during these hours are shown in Exhibit 3.

The peak hour traffic volumes shown in Exhibit 3 were subjected to a capacity analysis procedure using the Highway Capacity Manual technique and the Critical Lane Volume technique as described in M-NCPPC's *LATR/TPAR Guidelines*. The results of the analysis are set forth in Tables I and 2 and the worksheets and signal timing sheets from which they are derived are in Appendix C.

TABLE 1
HCM CAPACITY ANALYSES RESULTS
(EXISTING PEAK HOUR VOLUMES)

<u>INTERSECTION</u>	<u>MORNING PEAK HOUR</u>	<u>AFTERNOON PEAK HOUR</u>	<u>CONGESTION STANDARD</u>
MD 320 @ Wessex Rd	(21.4)	(23.4)	80 sec/veh
MD 320 @ Park Valley Rd	(18.6)	(43.1)	80 sec/veh
MD 320 @ Ray Dr	(18.0)	(6.7)	80 sec/veh
MD 320 @ MD 410	(25.5)	(24.3)	80 sec/veh
Grant Ave @ Chestnut Ave	(4.6)	(3.3)	80 sec/veh
Grant Ave @ Holly Ave	(7.3)	(7.3)	80 sec/veh

(0000) - (Delay in sec/veh)

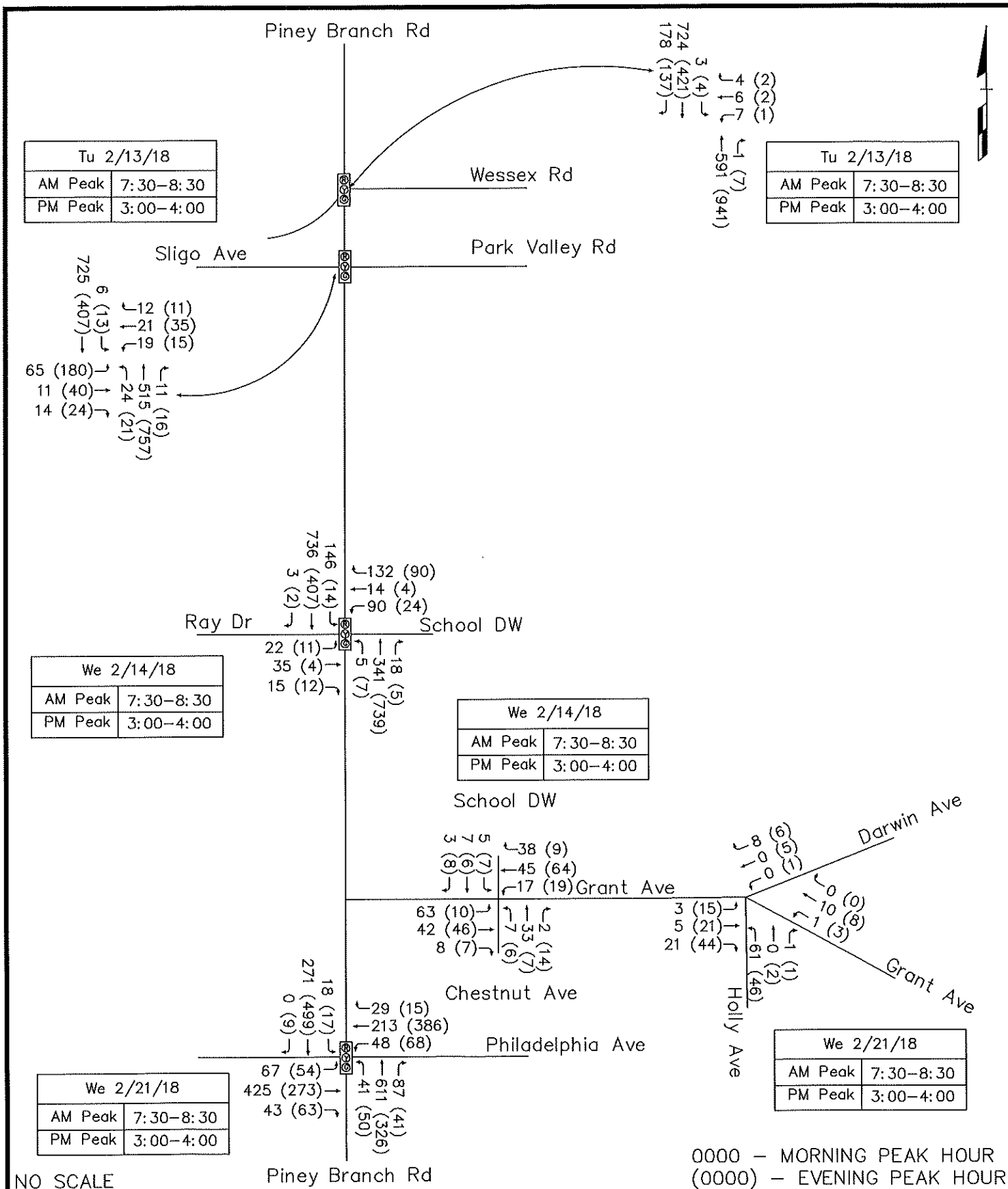


EXHIBIT 3
6 EXISTING TRAFFIC VOLUMES

TABLE 2
CLV CAPACITY ANALYSES RESULTS
(EXISTING PEAK HOUR VOLUMES)

<u>INTERSECTION</u>	<u>MORNING PEAK HOUR</u>	<u>AFTERNOON PEAK HOUR</u>	<u>CONGESTION STANDARD</u>
MD 320 @ Wessex Rd	(919)	(957)	1600
MD 320 @ Park Valley Rd	(866)	(1027)	1600
MD 320 @ Ray Dr	(908)	(468)	1600
MD 320 @ MD 410	(1145)	(1004)	1600
Grant Ave @ Chestnut Ave	(212)	(138)	1600
Grant Ave @ Holly Ave	(99)	(141)	1600

(0000) - (Critical Lane Volume)

As shown in Tables 1 and 2, all of the critical intersections currently operate within acceptable levels during both the morning and evening peak hours.

School Traffic Circulation and Queuing

Existing operations at the Takoma Park Middle School operate smoothly and efficiently with the exception of an approximately 15 minute time frame during the morning arrival and afternoon dismissal periods.

Adult crossing guards are stationed at the MD 320/Ray Drive-School Access and MD 320/MD 410 intersections during both the morning and afternoon peak periods.

A copy of the Proposed Concept Plan and school boundary map are contained in Appendix D.

BACKGROUND TRAFFIC ANALYSIS

As indicated in the scoping agreement, there are three background developments in the general vicinity of the site that needed to be analyzed as a part of this study. The details regarding each of these developments are discussed below.

Planned Developments

In accordance with procedures established by the LATR guidelines, the analysis of the traffic impact of proposed development must include traffic projections for other planned developments in the "vicinity" of the site. The listing of planned developments are shown in Table 3.

TABLE 3
BACKGROUND DEVELOPMENT

<u>DEVELOPMENT</u>	<u>LAND USE</u>	<u>DENSITY</u>
1. Gilbert & Wood	Retail	12,532 s.f
	Office	540 s.f.
	Restaurant	7,073 s.f.
2. 6413 Orchard Ave	Warehouse	7956 s.f.
3. 6450 New Hampshire Ave	Laundry	2,442 s.f.
	Office	2,515 s.f.

Trip Generation

To determine the traffic associated with each of the background developments, trip generation rates were taken from the ITE Trip Generation publication, 9th Edition.

The trips generated are shown in Table 4.

TABLE 4
BACKGROUND TRIP GENERATION

<u>DEVELOPMENT</u>	<u>MORNING PEAK HOUR</u>			<u>EVENING PEAK HOUR</u>		
	<u>IN</u>	<u>OUT</u>	<u>TOTAL</u>	<u>IN</u>	<u>OUT</u>	<u>TOTAL</u>
Gilbert & Rose						
Trips/12,532 sf retail	27	17	44	72	77	149
Passby				51	55	106
New Trips	27	17	44	21	22	43
Trips/540 sf office	3	0	3	0	1	1
Trips/7,073 sf rest.	42	34	76	42	28	70
Passby				18	12	30
New Trips	<u>42</u>	<u>34</u>	<u>76</u>	<u>24</u>	<u>16</u>	<u>40</u>
Total New Trips	72	51	123	45	39	84
6413 Orchard Ave						
Trips/7,956 sf warehouse	1	1	2	2	1	3
6450 New Hampshire Ave						
Trips/2,442 s.f. retail	3	1	4	8	9	17
Trips/2,515 s.f. office	<u>3</u>	<u>0</u>	<u>3</u>	<u>1</u>	<u>5</u>	<u>6</u>
Total Trips	6	1	7	9	14	23

Trip Distribution

The trip distribution for the planned projects was developed using information provided by the M-NCPPC for the Silver Spring/Takoma Park Policy Area. The total trips generated by the planned developments are shown in Exhibit 4. Adding these trips to the Existing Traffic Volumes yield the Background Traffic Volumes as shown in Exhibit 5.

The peak hour traffic volumes shown in Exhibit 5 were subjected to the same capacity analysis procedures as applied to the existing conditions traffic flows. Since the only intersection impacted by the trips generated by planned developments was the MD 320/MD 410 intersection, only that intersection was analyzed under Background Traffic Volumes.

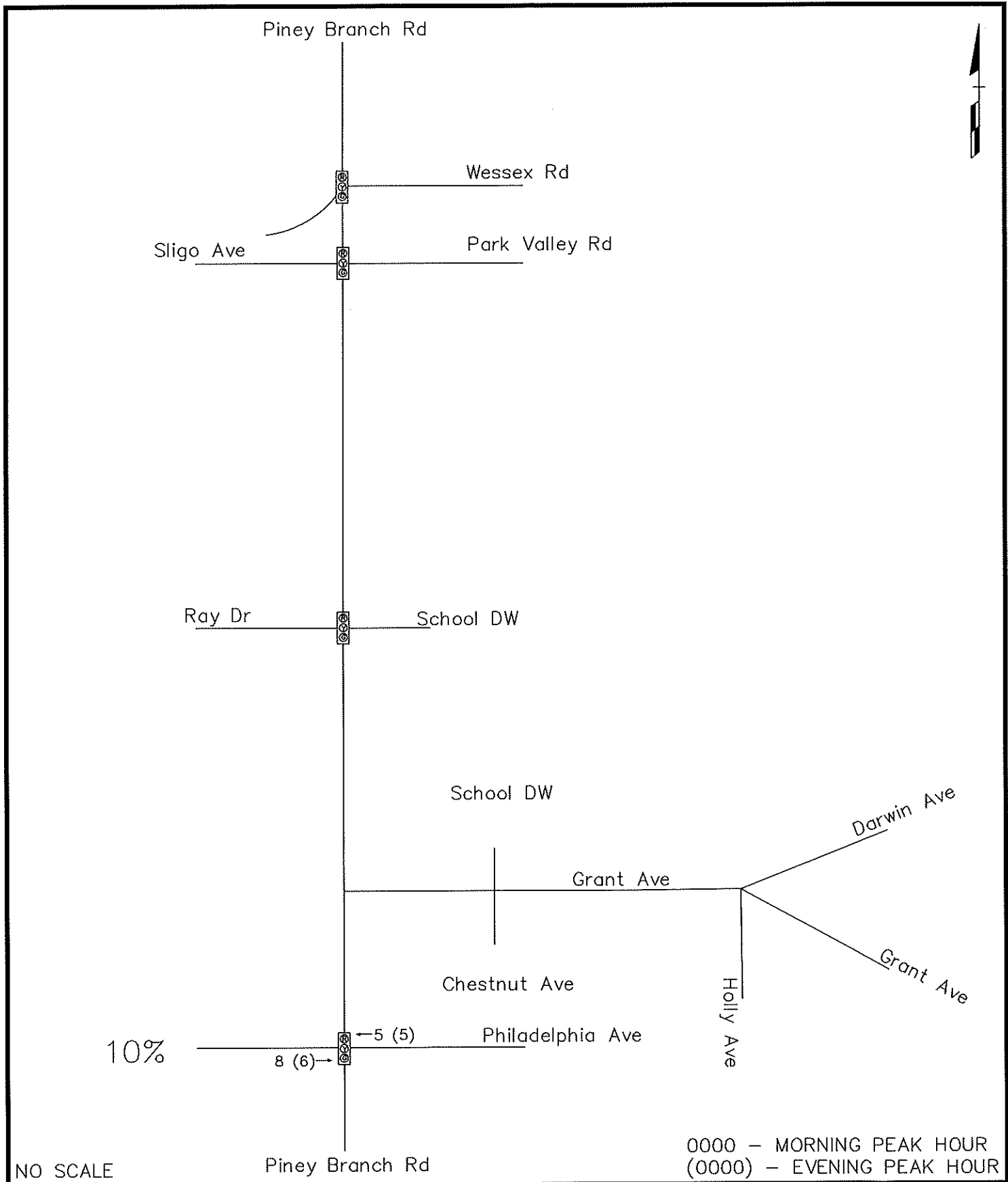


EXHIBIT 4
TRIPS GENERATED BY PLANNED DEVELOPMENTS

The results of the analysis are set forth in Tables 5 and 6 and the worksheets from which they are derived are in Appendix E. As shown by the data in Tables 5 and 6, the MD 320/MD 410 intersection is projected to continue to operate within the congestion standards for the Silver Spring/Takoma Park Policy Area during both peak hours.

TABLE 5
HCM CAPACITY ANALYSES RESULTS
(BACKGROUND PEAK HOUR VOLUMES)

<u>INTERSECTION</u>	<u>MORNING PEAK HOUR</u>	<u>AFTERNOON PEAK HOUR</u>	<u>CONGESTION STANDARD</u>
MD 320 @ MD 410	(25.8)	(24.5)	80 sec/veh

(0000) - (Delay in sec/veh)

TABLE 6
CLV CAPACITY ANALYSES RESULTS
(BACKGROUND PEAK HOUR VOLUMES)

<u>INTERSECTION</u>	<u>MORNING PEAK HOUR</u>	<u>AFTERNOON PEAK HOUR</u>	<u>CONGESTION STANDARD</u>
MD 320 @ MD 410	(1153)	(1009)	1600

(0000) - (Critical Lane Volume)

SITE TRAFFIC ANALYSIS

Montgomery County Public Schools (MCPS) is proposing to expand the existing Takoma Park Middle School located at 7611 Piney Branch Road. The existing school has an enrollment of 1,098 students, for the current 2017-18 academic year, and the proposed expansion will result in a school with a core capacity of 1,500 students at completion, a 402 student increase. The site is located in the northeast quadrant of the Piney Branch Road/Grant Avenue intersection in the Silver Spring/Takoma Park Policy Area.

Access to the site is currently provided via a full movement access point on MD 320 and a full movement access on Grant Avenue and this will not change with the proposed expansion.

Trip Generation Analysis

Counts were conducted at the existing Takoma Park Middle School driveways as part of this study. The counts are contained in Appendix B and were used to develop trip generation rates for the proposed increase in students resulting from the expansion.

The trips generated by the existing and proposed school are shown in Table 7.

TABLE 7
TRIP GENERATION
EXISTING TAKOMA PARK MIDDLE SCHOOL

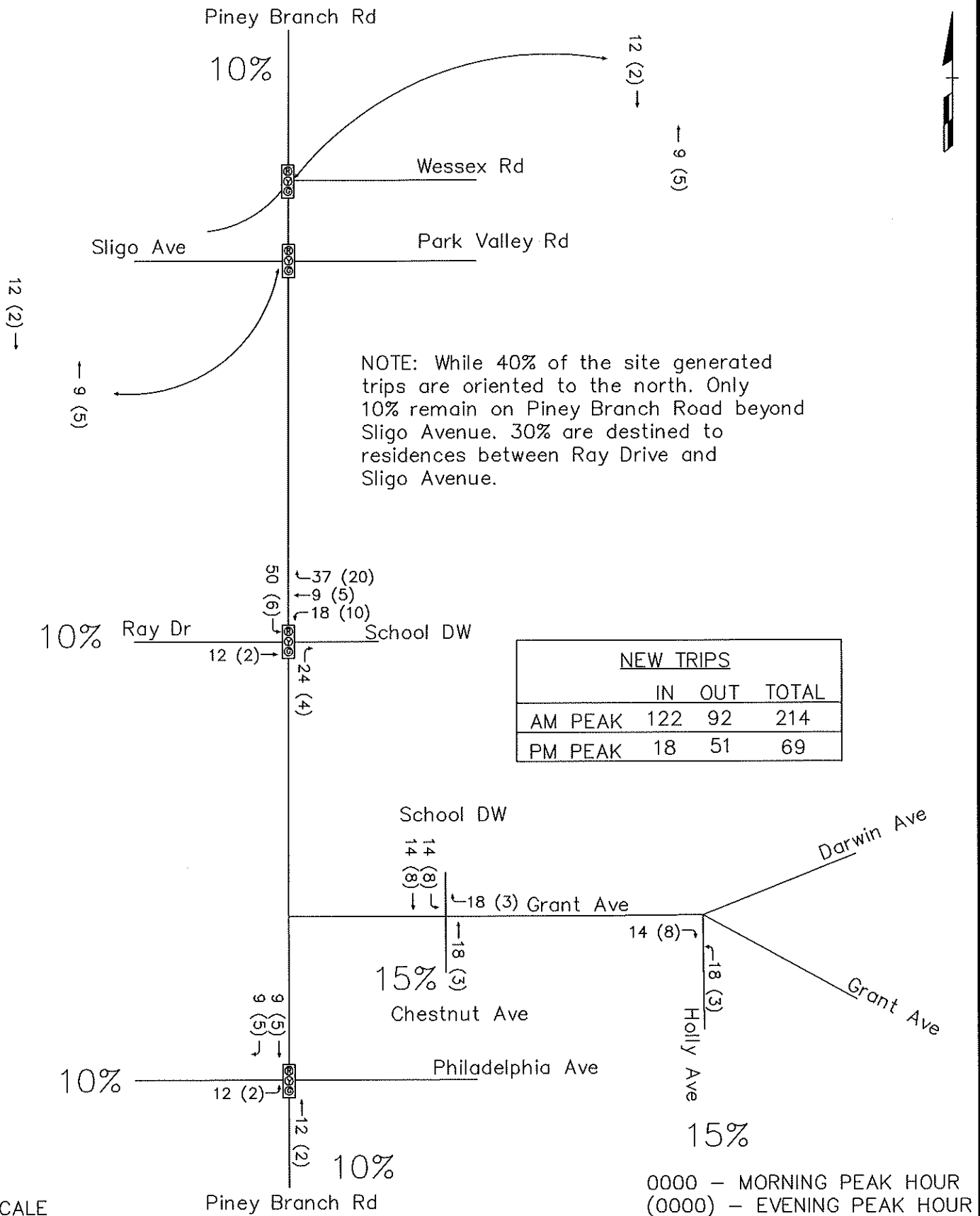
<u>LAND USE</u>	<u>MORNING PEAK HOUR</u>			<u>AFTERNOON PEAK HOUR</u>		
	<u>IN</u>	<u>OUT</u>	<u>TOTAL</u>	<u>IN</u>	<u>OUT</u>	<u>TOTAL</u>
Existing Trips						
Trips/1,098 Students	333	251	584	49	139	188
Trips/Student	0.30	0.23	0.53	0.04	0.13	0.17
Trips/402 Students	122	92	214	18	51	69

The above trips were generated during the peak hours analyzed for this use, 7:30 to 8:30 AM and 3:00 to 4:00 PM.

Trips were assigned to the road network based on the existing school boundary and the new trips are shown in Exhibit 6. These trips were then combined with the Background Traffic Volumes resulting in the Total Traffic Volumes as shown in Exhibit 7. The total traffic volumes were then evaluated using the same methodology as for the previous step. The results of the analyses are shown in Tables 8 and 9.

TABLE 8
HCM CAPACITY ANALYSES RESULTS
(TOTAL PEAK HOUR VOLUMES)

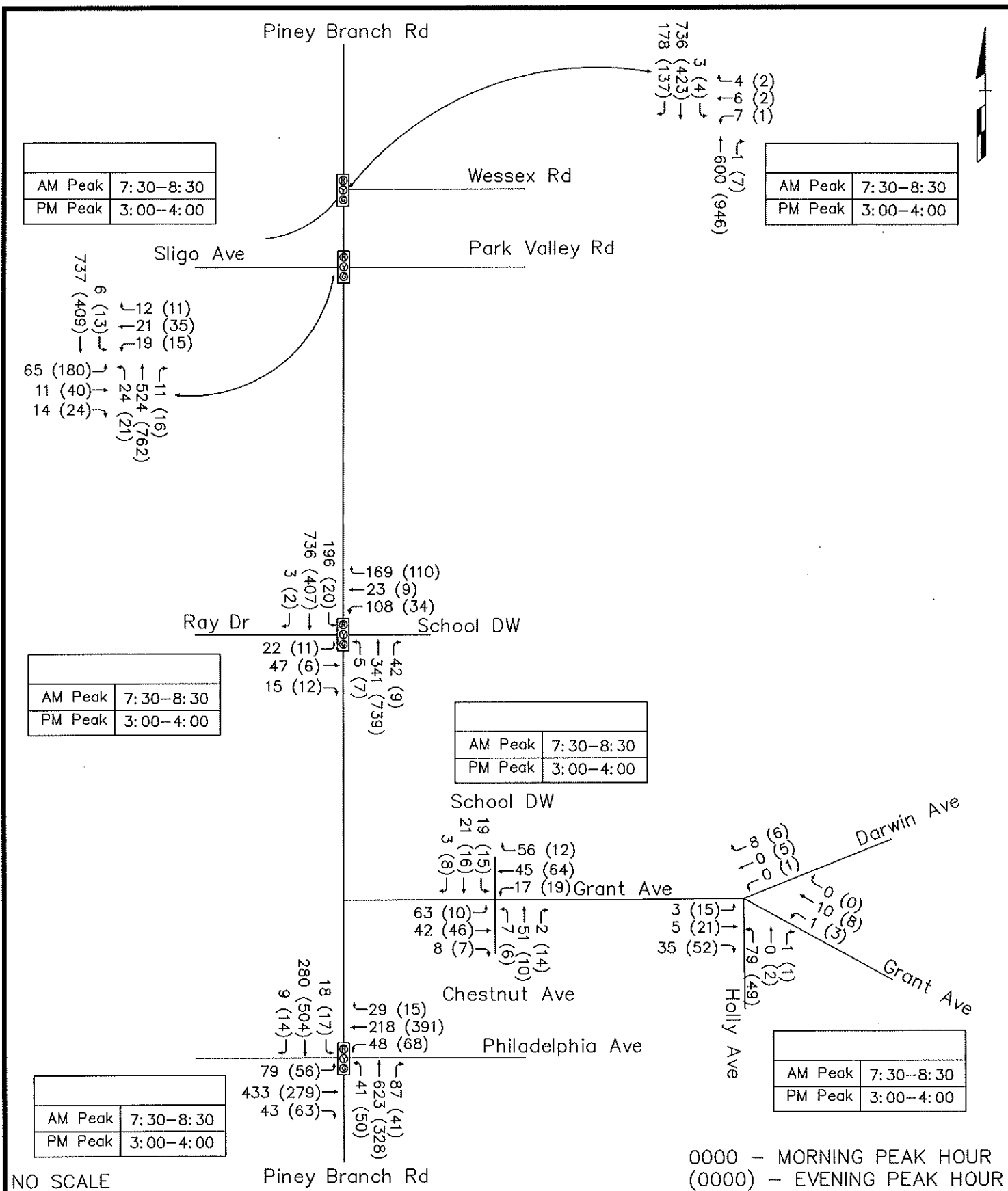
<u>INTERSECTION</u>	<u>MORNING PEAK HOUR</u>	<u>AFTERNOON PEAK HOUR</u>	<u>CONGESTION STANDARD</u>
MD 320 @ Wessex Rd	(21.9)	(22.0)	80 sec/veh
MD 320 @ Park Valley Rd	(18.6)	(43.0)	80 sec/veh
MD 320 @ Ray Dr	(21.1)	(9.5)	80 sec/veh
MD 320 @ MD 410	(25.8)	(24.6)	80 sec/veh
Grant Ave @ Chestnut Ave	(5.5)	(3.9)	80 sec/veh
Grant Ave @ Holly Ave	(7.4)	(7.4)	80 sec/veh
(0000) - (Delay in sec/veh)			



NO SCALE

EXHIBIT 6

SITE GENERATED TRIPS



NO SCALE

TABLE 9
CLV CAPACITY ANALYSES RESULTS
(TOTAL PEAK HOUR VOLUMES)

<u>INTERSECTION</u>	<u>MORNING PEAK HOUR</u>	<u>AFTERNOON PEAK HOUR</u>	<u>CONGESTION STANDARD</u>
MD 320 @ Wessex Rd	(931)	(962)	1600
MD 320 @ Park Valley Rd	(878)	(1032)	1600
MD 320 @ Ray Dr	(938)	(480)	1600
MD 320 @ MD 410	(1165)	(1016)	1600
Grant Ave @ Chestnut Ave	(262)	(152)	1600
Grant Ave @ Holly Ave	(131)	(152)	1600

(0000) - (Critical Lane Volume)

The capacity worksheets are contained in Appendix F.

As shown in Tables 8 and 9, all of the critical intersections are projected to operate within acceptable levels with the addition of the trips generated by the Takoma Park Middle School expansion.

In addition to the vehicular capacity analyses shown in Tables 8 and 9, crosswalk levels of service at the critical intersections needed to be evaluated to ensure that the crosswalk level of service was D or higher. The results of the crosswalk level of service evaluations are shown in Table 10.

TABLE 10
CROSSWALK EVALUATION

<u>INTERSECTION</u>	<u>MORNING PEAK HOUR</u>	<u>EVENING PEAK HOUR</u>
MD 320 @ Wessex Rd		
WB	A	A
EB	A	A
NB	B	B
SB	B	B
MD 320 @ Park Valley Rd		
EB	B	B
WB	A	A
NB	B	B
SB	B	B
MD 320 @ Ray Dr		
EB	A	A
WB	B	A
NB	B	B
SB	B	B
MD 320 @ MD 410		
EB	B	B
WB	B	B
NB	B	B
SB	B	B
Grant Ave @ Chestnut Ave		
EB	A	A
WB	A	A

Since the Grant Avenue/Holly Avenue-Darwin Avenue intersection is controlled as an ALL WAY STOP, crosswalk evaluations are not provided by the Highway Capacity Manual and none are shown.

The capacity worksheets are contained in Appendix G.

TRANSIT SYSTEM ADEQUACY

The peak number of new trips generated by this proposal is 214 trips during the morning peak hour. Since these volumes were based on actual counts at the driveways no trip generation adjustment factor was applied. The school is in Policy Area 33 and the results of the mode splits are shown below in Table 11.

TABLE 11
MODE SPLIT ADJUSTMENTS FOR POLICY AREA 33

Total Person Trips	Auto Driver	Auto Passenger	Transit	Pedestrian (Transit + Non-Motorized)	Bicycle (Non-motorized)
100%	63.8%	10.5%	14.0%	14.0%+11.6%	11.6%
335	214	35	47	86	39

Transit System Adequacy - Since the number of transit trips is less than the threshold of 50 a quantitative transit analysis is not required.

PEDESTRIAN SYSTEM ADEQUACY

Pedestrian System Adequacy - The number of non-motorized trips (39) plus the number of transit trips (47 from above) totals 86 and is more than the threshold of 50 so a quantitative pedestrian/bicycle analyses are required. This analyses requires that non-compliance ADA issues within 500 feet of the site boundary be fixed or funded, and ensure that a LOS D for crosswalk pedestrian delays for crosswalks within 500 feet of the sites boundary.

The intersections within 500 feet of the site are the as follows:

- o MD 320 @ Ritchie Avenue
- o MD 320 @ Potomac Avenue
- o MD 320 @ Gist Avenue
- o MD 320 @ Ray Drive-School Driveway
- o MD 320 @ Grant Avenue
- o Grant Avenue @ Chestnut Avenue-School Driveway
- o Grant Avenue @ Darwin Avenue-Holly Avenue
- o Chestnut Avenue @ Hodges Lane

MD 320/Ritchie Avenue is a four leg intersection controlled with Stop signs on the Ritchie Avenue approaches. Marked pedestrian crosswalks are provided on south, east and west legs of the intersection. All ramps at this intersection are ADA compliant. Sidewalks are provided along both sides of MD 320 and along the north side of Ritchie Avenue east of MD 320 and along the south side of Ritchie Avenue west of MD 320. No improvements are recommended at this time.

MD 320/Potomac Avenue is a T type intersection controlled with a Stop sign on the Potomac Avenue approach. There are no marked crosswalks at this intersection. The ramps in the northwest and southwest corners are ADA compliant. Sidewalks are provided along both sides of MD 320 and no sidewalk is provided along Potomac Avenue. No improvements are recommended at this time.

MD 320/Gist Avenue intersection is a T type intersection controlled with a Stop sign on the Gist Avenue approach. There are no marked crosswalks at this intersection. The ramps in the northwest and southwest corners are ADA compliant. Sidewalks are provided along both sides of MD 320 and no sidewalk is provided along Gist Avenue. No improvements are recommended at this time.

MD 320/Ray Drive-School Driveway is a four leg intersection controlled with signalization with marked pedestrian crosswalks on the south, east and west legs. All of the marked crosswalks are supplemented with pedestrian signals with Audible Pedestrian Countdown heads. The ramps at the intersection are ADA compliant and an adult crossing guard is present during peak pedestrian activity in the morning and evening peak periods. Sidewalk is provided along both sides of MD 320 and along the south side of Ray Drive and leading into the school. No improvements are recommended at this time.

MD 320/Grant Avenue is a T type intersection controlled with a Stop sign on the Grant Avenue approach. There are no marked crosswalks at this intersection. The only ramp at this intersection is located in the northeast corner and it is ADA compliant. Sidewalks are provided along both sides of MD 320 north of Grant Avenue, along the west side of MD 320 south of Grant Avenue and along the north side of Grant Avenue. No sidewalk is provided along the east side of MD 320 south of Grant Avenue or along the south side of Grant Avenue. No improvements are recommended at this time.

Grant Avenue/Chestnut Avenue-School Driveway is a four leg intersection controlled with Stop signs on the Chestnut Avenue-School Driveway approaches. ADA compliant ramps are provided in both the northeast and northwest corners of this intersection; however no marked pedestrian crosswalks are provided. Sidewalk is provided along the north side of Grant Avenue. No sidewalks are provided along either Chestnut Avenue or the School Driveway. A lead in sidewalk to the school is provided just east of this intersection which is how pedestrians from the east access the school. No improvements are recommended at this time.

Grant Avenue/Darwin Avenue-Holly Avenue is a four leg intersection is controlled with ALL WAY STOP signs. Crosswalks are provided across the north (Darwin Avenue) and east (Grant Avenue) approaches. The ramps at the crosswalks are ADA compliant. Sidewalk is provided along the north side of Grant Avenue and the east side of Holly Avenue. No improvements are recommended at this time.

Chestnut Avenue/Hodges Lane is a four leg intersection controlled with ALL WAY STOP signs. There are no pedestrian features at this intersection. No improvements are recommended at this times.

In accordance with the *Local Area Transportation Review Guidelines* the results of the pedestrian and bicycle counts that were gathered as a part of the base data collection process are included in Appendix B. These counts show low pedestrian and bicycle volumes at all of the study intersections. Exhibit 8 shows the peak hour pedestrian and bicycle volumes recorded at the critical intersections as well as the existing bus stops.

It is expected that this proposed expansion of Takoma Park Middle School will generate significant pedestrian volumes. Continuous concrete sidewalks are provided along the primary roads within the study area. Table 12 below shows the results of the pedestrian crossing timing analysis at the signalized intersection.

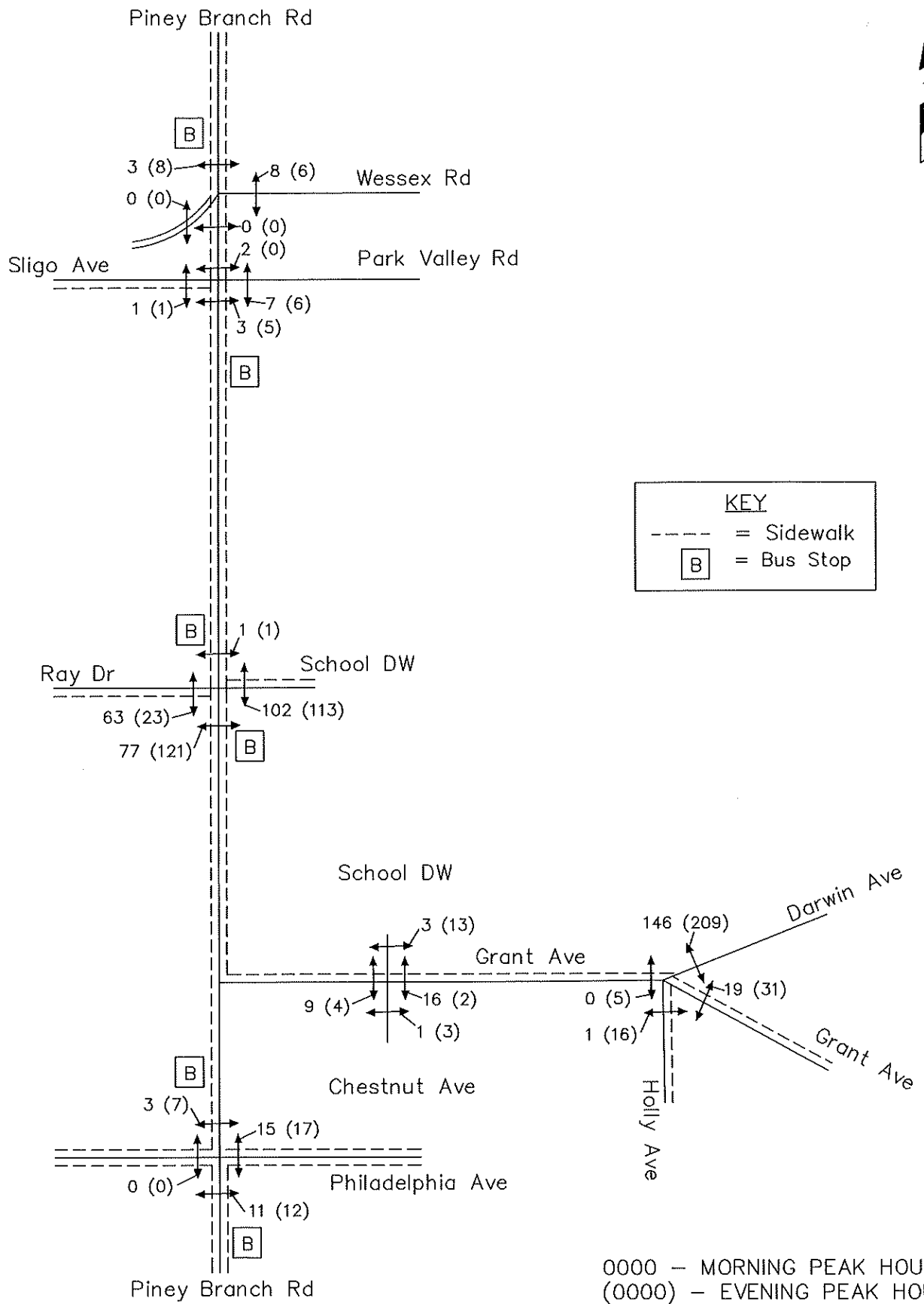


EXHIBIT 8 PEDESTRIAN VOLUMES AND FEATURES

TABLE 12
PEDESTRIAN CROSSING TIMING EVALUATION

<u>INTERSECTION</u>	<u>WIDTH</u>	<u>AVAILABLE TIME</u>	<u>DESIRED TIME</u>
MD 320 @ Wessex Rd			
N leg of MD 320	40 feet	28.0	11.4
E leg of Wessex Rd	42 feet	31.0	12.0
W leg of Sligo Ave	15 feet	31.0	4.3
MD 320 @ Sligo Ave			
S leg of MD 320	40 feet	28.0	11.4
E leg of Park Valley Rd	48 feet	31.0	13.7
W leg of Sligo Ave	45 feet	31.0	12.9
MD 320 @ Ray Dr			
S leg of MD 320	49 feet	28.0	14.0
E leg of School DW	42 feet	31.0	12.0
W leg of Ray Dr	30 feet	31.0	8.6
MD 320 @ MD 410			
N leg of MD 320	58 feet	28.0	16.6
S leg of MD 320	62 feet	28.0	17.7
E leg of MD 410	50 feet	31.0	14.3
W leg of MD 410	40 feet	31.0	11.4

The pedestrian crossing timing analyses shows that the available signal timings are adequate.

The following pedestrian/bicyclist features are present at the study intersections:

MD 320 @ Wessex Road - crosswalks are provided across the north, east and west legs of this intersection. The crosswalk across the north leg of MD 320 is supplemented with pedestrian signals with count down displays. ADA compliant handicap ramps are present at each crosswalk location. Five (5) foot wide continuous sidewalks are provided along both sides of MD 320 and four (4) foot continuous sidewalks are provided along both sides of Sligo Avenue.

MD 320 @ Sligo Avenue - crosswalks are provided across the south, east and west legs of this intersection. The crosswalk across the south leg of MD 320 is supplemented with pedestrian signals with count down displays. ADA compliant handicap ramps are present at each crosswalk location. Five (5) foot wide continuous sidewalks are provided along both sides of MD 320 and four (4) foot wide continuous sidewalks are provided along both sides of Sligo Avenue.

MD 320 @ Ray Drive-School Driveway - crosswalks are provided across the south, east and west legs of this intersection. All crosswalks are supplemented with audible pedestrian signals with count down displays. ADA compliant handicap ramps are present at each crosswalk location. Five (5) foot wide continuous sidewalks are provided along both sides of MD 320 at the intersection. These narrow to four (4) foot wide sidewalks away from the intersection. A four (4) foot wide sidewalk is provided along the south side of Ray Drive and lead in sidewalk is provided along the north side of the school driveway.

MD 320 @ MD 410 - crosswalks are provided across all legs of this intersection. All crosswalks are supplemented with audible pedestrian signals with count down displays. ADA compliant handicap ramps are present at each crosswalk location. Five (5) foot wide sidewalks are provided at the approach to the intersection; however they narrow to four (4) foot wide sidewalks leaving the intersection area. No sidewalk is provided along the east side of MD 320 north of MD 410.

BICYCLE SYSTEM ADEQUACY

Bicycle System Adequacy - Since this proposed expansion will not generate 50 or more bicycle peak hour trips a bicycle analysis was not required.

CONCLUSIONS

A traffic impact study was prepared in accordance with the guidelines published by M-NCPPC for Mandatory Referrals, for projects undertaken by public agencies. The proposed expansion of the Takoma Park Middle School falls within the parameters of these guidelines.

After collecting current traffic count data at six (6) intersections, it was determined that under existing traffic volumes all of the intersections that were analyzed as part of the LATR study operate within the Congestion Standard for the Silver Spring/Takoma Park Policy Area of 80 seconds of vehicle delay or less during the peak hours of school traffic.

The analysis then proceeded to generate trips for planned developments and the trips generated by the additional 402 students at Takoma Park Middle School. The new morning and afternoon peak hour trips were assigned to the intersections included in the study and the capacity analyses were rerun using the procedures set forth in the *LATR/TPAR Guidelines*. The results demonstrate, as shown in Tables 8 and 9, that all of the critical intersections are projected to continue to operate within the 80 second threshold permitted by the Congestion Standard for the Policy Area during the peak hours.

As required by the *LATR/TPAR Guidelines*, pedestrian facilities in the area were also evaluated. The area in which the school is located is a mature neighborhood with continuous sidewalks along the majority of the area roadways to encourage pedestrian traffic to the school. The signalized intersections in the study area are equipped with push-button controlled pedestrian signals to cross the major roadways. ADA compliant crossings are provided at all of the study intersections.

APPENDIX A

TRAFFIC STUDY SCOPE OF WORK AGREEMENT

Local Area Transportation Review

TRANSPORTATION IMPACT STUDY SCOPE OF WORK AGREEMENT

Contact Information				
Transportation Consultant (company, contact name, email, and phone number)	Mike Nalepa Street Traffic Studies mnalepa@streettrafficstudies.com 410 590 5500			
Name of Applicant / Developer	Montgomery County Public Schools			
Project Information <i>Include Tables/Graphics, As Needed</i>				
Project Name (include plan no. if known)	Takoma Park Middle School			
Project Location (include address if known)	7611 Piney Branch Road			
Policy Area(s) (subdivision staging policy map)	Silver Spring/Takoma Park	Master Plan(s) / Sector Plan Area(s)		
Application Type(s)	<input type="checkbox"/> Preliminary Plan	<input type="checkbox"/> Site Plan	<input type="checkbox"/> Sketch/Concept/Pre-Preliminary (Optional)	<input type="checkbox"/> Amendment
	<input type="checkbox"/> Conditional Use (formerly special exception)	<input type="checkbox"/> Local Map Amendment	<input type="checkbox"/> APF at Building Permit	<input checked="" type="checkbox"/> Other: <u>MR</u>
Project Description & Previous Approvals (proposed land uses, zoning, no. of units, square footage, construction phasing, prior approvals and proposals, existing uses, site operations, year built, status of Adequate Public Facilities [APF], other relevant info)	<p style="background-color: yellow;">This proposal with revitalize and expand the existing Takoma Park Middle School located at 7611 Piney Branch Road. Current enrollment is 1,098 students. This proposal would increase the core capacity of the school to 1,500 students, a 402 student increase.</p> <p style="background-color: yellow;">Currently the school is served by full movement access points onto Piney Branch Road and Grant Avenue. This proposal would not change the access points.</p>			
1.Site Access (proposed access location(s), existing/adjacent/opposite curb cuts, interparcel connections, access configurations and restrictions, internal circulation, private roads, parking/loading areas, other relevant info)	The existing school is served by a full movement signalized access onto Piney Branch Road and a full movement access onto Grant Avenue opposite Chestnut Avenue. No changes will be made to the existing access.			

2. Transportation Analysis Requirement	<input type="checkbox"/> Transportation Impact Study Generates <u>50 or more</u> total weekday peak hour person trips (vehicular, transit, bicycle, and/or pedestrian) with no reductions other than a credit for existing developments over 12 years old, <u>AND</u> is outside of the White Flint and White Oak Policy Areas. Fill out remainder of this form and include in transportation impact study appendix.		<input type="checkbox"/> Transportation Study Exemption Statement Generates <u>49 or fewer</u> total weekday peak hour person trips (vehicular, transit, bicycle, and/or pedestrian) with no reductions other than a credit for existing developments over 12 years old, <u>OR</u> within White Flint and White Oak Policy Areas. Fill out PAR and trip generation sections below, and include with exemption statement.														
3. Policy Area Review (PAR) Only for projects filed before 1/1/17	<input type="checkbox"/> TPAR (1/1/13 – 12/31/16) 0, 25, 50%: _____ (TPAR = Transportation Policy Area Review)	<input type="checkbox"/> PAMR (11/15/07 - 12/31/12) 0-50%: _____ (PAMR = Policy Area Mobility Review)	<input type="checkbox"/> Exempt (no square footage increase or fewer than 3 new trips) or 1/1/17 or later) <input type="checkbox"/> No PAR (7/1/03 – 11/14/07) <input type="checkbox"/> PATR (before 6/30/03) (PATR = Policy Area Transportation Review)														
4. Transportation Mitigation Agreement (TMAg) Required?	<input type="checkbox"/> No	<input type="checkbox"/> Yes (25+ Employees and in Transportation Management District [TMD])		<input type="checkbox"/> Amend Existing TMAg													
5. Established Transportation Management District (TMD)?	<input type="checkbox"/> No	<input type="checkbox"/> Yes TMD Name: _____															
Transportation Impact Study Assumptions <i>Include Tables/Graphics, As Needed</i>																	
6. Study Years / Phases	Existing Year: 2018		Phases / Build-out Year(s): 2021														
7. Study Periods	<input checked="" type="checkbox"/> AM <input checked="" type="checkbox"/> PM <input type="checkbox"/> Mid-day <input type="checkbox"/> Saturday <input type="checkbox"/> Sunday <input type="checkbox"/> Other: _____																
8. Study Intersections (For projects generating 50 or more person trips, list all signalized & significant unsignalized intersections, and site driveways traffic counts must be collected within 12-months of completed and accepted application)	# of tiers of intersections to study (refer current LATR Guidelines): _____ <i>For the purpose of determining the number of tiers of study intersections, trip calculation for the subject site should also include nearby unbuilt properties in common ownership. No trip reductions should be taken in this calculation other than a credit for existing developments over 12 years old.</i> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 60%;">1) Piney Branch Rd @ Ray Dr-Site Access</td> <td style="width: 40%;">7)</td> </tr> <tr> <td>2) Piney Branch Rd @ Philadelphia Ave</td> <td>8)</td> </tr> <tr> <td>3) Piney Branch Rd @ Sligo Ave-Park Valley Rd</td> <td>9)</td> </tr> <tr> <td>4) Piney Branch Rd @ Sligo Ave-Wessex Rd</td> <td>10)</td> </tr> <tr> <td>5) Grant Ave @ Chestnut Ave-Site Access</td> <td>11)</td> </tr> <tr> <td>6) Grant Ave @ Holley Ave-Darwin Ave</td> <td>add more rows if necessary</td> </tr> </table>					1) Piney Branch Rd @ Ray Dr-Site Access	7)	2) Piney Branch Rd @ Philadelphia Ave	8)	3) Piney Branch Rd @ Sligo Ave-Park Valley Rd	9)	4) Piney Branch Rd @ Sligo Ave-Wessex Rd	10)	5) Grant Ave @ Chestnut Ave-Site Access	11)	6) Grant Ave @ Holley Ave-Darwin Ave	add more rows if necessary
1) Piney Branch Rd @ Ray Dr-Site Access	7)																
2) Piney Branch Rd @ Philadelphia Ave	8)																
3) Piney Branch Rd @ Sligo Ave-Park Valley Rd	9)																
4) Piney Branch Rd @ Sligo Ave-Wessex Rd	10)																
5) Grant Ave @ Chestnut Ave-Site Access	11)																
6) Grant Ave @ Holley Ave-Darwin Ave	add more rows if necessary																
9. Trip Generation (clearly cite sources and methodology including use of average rates vs. equation; include trip generation for existing site, current approvals, proposed uses, and net changes)	Total Person Trips SEE NOTE	Vehicle Trips* (Auto Driver)	Transit Trips*	Walking Trips* (non-motorized + transit)	Bicycling Trips* (non-motorized)												

NOTE: SEE THE ATTACHED COUNT SHEETS AND TRIP TABLES.

	<p><i>* Only required if total peak hour person trips are 50 or more in either the AM or PM peak hour. Sum of all vehicle, transit, and non-motorized trips shall be the equivalent of total person trips. Use table at the end of the form to show all calculations and assumptions for mode breakout.</i></p>
<p>10.Trip Reductions</p> <p>(include justification and supporting documentation for internal capture, pass-by, diverted, Transportation Demand Management)</p>	<p>None</p>
<p>11.Trip Distribution %</p> <p>(include a map of the proposed project in addition to a list or table)</p>	<p>Based on the existing volumes and the attached service area map for Takoma Park Middle School, we propose the following trip distributions:</p> <ul style="list-style-type: none"> 15% to the South along Chestnut Ave 15 % to the East along Grant Ave 10% to the West along Philadelphia Ave 10% to the South along Piney Branch Rd 10% to the West along Ray Dr 40% to the North along Piney Branch Rd <p>NOTE: it is assumed the 30% of this volume would access the neighborhoods south of Sligo Ave and only 10% would continue north on Piney Branch Road beyond Sligo Ave.</p>
<p>12.Pipeline Developments to be considered as background traffic</p> <p>(include name, plan #, land uses, and sizes for approved but unbuilt developments or concurrently pending applications; info can be obtained from the M-NCPPC Pipeline website: - website is updated quarterly)</p>	<p>Gilbert & Wood (820070110) 12,532 sf retail, 540 sf office 7,073 sf restaurant</p> <p>6413 Orchard Ave (820120160) 7,956 sf warehouse</p> <p>6450 New Hampshire Ave (820130080) 2,442 sf retail (laundry), 2,515 sf office</p>
<p>13.Pipeline Transportation Projects to be considered as background condition</p> <p>(fully funded for construction in County Capital Improvement Program, State Consolidated Transportation Program, developer projects, etc. within the next 6 years)</p>	<p>None</p>

Preliminary Mitigation Analysis		<i>*Refer to the LATR Guidelines for details on how to mitigate</i>	
14.Vehicular Analysis	<input checked="" type="checkbox"/> Vehicular Analysis Anticipated (Vehicular mitigation to be determined after study)	<ul style="list-style-type: none"> TEST: HCM Analysis is required to be provided for all intersections analyzed in studies for: 1) "Red & Orange" policy areas, and 2) intersections with a CLV of more than 1,350 in "Yellow & Green" policy areas. 3) CLV analysis required for all intersections regardless of policy area. CLV assessment and signal timing worksheets are to be included in the study appendix. MITIGATION: Required if HCM delay analyses exceed policy area standard 	
15.Pedestrian Analysis	<input checked="" type="checkbox"/> Pedestrian Mitigation Anticipated	<ul style="list-style-type: none"> TEST: If the plan generates 50 or more pedestrian peak hour trips, mitigation of surrounding pedestrian conditions is required MITIGATION: Required if ADA non-compliance issues within 500 foot radius of site boundary and if pedestrian crosswalk delay at LATR intersections within 500 feet of site boundary is lower than Level of Service (LOS) D 	
16.Bicycle Analysis	<input type="checkbox"/> Bicycle Mitigation Anticipated	<ul style="list-style-type: none"> TEST: If the plan generates 50 or more bicycle peak hour trips and is within 0.25 miles of an existing educational institution or existing/planned bikeshare station, mitigation of surrounding bicycle conditions is required MITIGATION: Required to make improvements to provide a low Level of Traffic Stress to any existing similar facility within 750 feet of the site boundary; Alternatively, project may provide a master planned improvement that provides an equivalent improvement in the level of traffic stress for cyclists 	
17.Transit Analysis	<input type="checkbox"/> Transit Mitigation Anticipated	<ul style="list-style-type: none"> TEST: If the plan generates 50 or more transit peak hour trips and the peak load of bus routes at bus stops within 1,000 feet of site boundary exceeds (or is worse than) peak load of LOS D (1.25 transit riders per seat during the peak period in the peak direction), mitigation of transit conditions is required MITIGATION: Required to provide or fund improvements that would mitigate the trips exceeding the standard that are attributable to the development 	
Additional Analysis or Software Required	<input type="checkbox"/> Queuing Analysis <input type="checkbox"/> Signal Warrant Analysis <input type="checkbox"/> Weaving/Merge Analysis	<input type="checkbox"/> Accident Analysis <input type="checkbox"/> Synchro <input type="checkbox"/> SIDRA	<input type="checkbox"/> VISSIM <input type="checkbox"/> CORSIM <input type="checkbox"/> Other _____

M-NCPPC Clarifications

- Transportation impact study will comply with all other requirements of the LATR Guidelines not listed on this form.
- If physical improvements are proposed as mitigation, the transportation impact study will demonstrate feasibility with regards to right-of-way and utility relocation (at a minimum).
- In the event that the development proposal significantly changes after this transportation impact study scope has been agreed to, the Applicant will work with M-NCPPC staff to amend the scope to accurately reflect the new proposal.
- A receipt from MCDOT showing that the transportation impact study review fee has been paid will be provided to M-NCPPC DARC at the time the development application is submitted.
- Minimum of seven paper copies (more if near the County line or an incorporated City) and two PDF copies of the transportation impact study and appendices will be provided.

Additional Assumptions / Special Circumstances for Discussion

Site Trip Generation Estimate Worksheet				
Step 1: Vehicle Trips				
ITE Land use Code	NA			
Development Size	+402 students			
ITE trip generation estimate formula/rate* AM	214	Total AM Vehicle Trips	798	
ITE Trip generation estimate formula/rate* PM	69	Total PM Vehicle Trips	257	
Step 2: Policy Area Conversion				
Policy Area # & Name	33	Trip Adjustment Factor	84 %	
Applied Policy Area Adjusted Value AM				
Applied Policy Area Adjusted Value PM				
Step 3: Mode Split			AM	PM
Auto Driver	63.8 %	Results		
Auto Passenger	10.5 %	Results		
Transit	14.0 %	Results		
Walking (transit + non-motorized)	25.6 %	Results		
Bicycling (non-motorized)	11.6 %	Results		

Complete one of these tables for EACH use included in the application. Enter results into "Transportation Impacts Analysis" section of the form.

APPENDIX B

VEHICLE TURNING MOVEMENT COUNTS

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VEHICLE TURNING MOVEMENT COUNT - SUMMARY

Intersection of: Piney Branch Road
and: Sligo Avenue-Wessex Road
Counted by: MN/GH

STSLTD STSLTD STSLTD STSLTD STSLTD STSLTD

Location : Montgomery County
Date : 02/13/18
Weather : Clear
Entered by MN

Day: Tuesday

STREET
TRAFFIC
STUDIES
LTD

TIME	TRAFFIC FROM NORTH on: Piney Branch Rd				TRAFFIC FROM SOUTH on: Piney Branch Rd				TRAFFIC FROM WEST on: Sligo Ave				TRAFFIC FROM EAST on: Wessex Rd				TOTAL N + S + E + W
	RIGHT	THRU	LEFT	TOTAL	LEFT	THRU	RIGHT	TOTAL	RIGHT	THRU	LEFT	TOTAL	LEFT	THRU	RIGHT	TOTAL	
AM																	
06:30-45	50	167	0	217	0	52	0	52	0	0	0	0	1	1	1	3	272
45-00	54	180	0	234	0	57	0	57	0	0	0	0	0	1	1	2	293
07:00-15	52	167	0	219	0	79	0	79	0	0	0	0	2	3	2	7	305
15-30	38	182	0	220	0	106	1	107	0	0	0	0	2	0	1	3	330
30-45	40	185	0	225	0	122	0	122	0	0	0	0	0	0	2	2	349
45-00	46	179	2	227	0	149	0	149	0	0	0	0	4	2	2	8	384
08:00-15	43	179	0	222	0	195	1	196	0	0	0	0	1	2	0	3	421
15-30	49	181	1	231	0	125	0	125	0	0	0	0	2	2	0	4	360
30-45	55	181	0	236	0	132	2	134	0	0	0	0	0	1	1	2	372
45-00	58	154	1	213	0	120	0	120	0	0	0	0	3	3	2	8	341
09:00-15	66	149	2	217	0	141	0	141	0	0	0	0	2	2	0	4	362
15-30	62	161	2	225	0	120	1	121	0	0	0	0	1	1	0	2	348
AM 3 HOUR TOTALS	613	2065	8	2686	0	1398	5	1403	0	0	0	0	18	18	12	48	4137
1 HOUR TOTALS																	
630-730	194	696	0	890	0	294	1	295	0	0	0	0	5	5	5	15	1200
645-745	184	714	0	898	0	364	1	365	0	0	0	0	4	4	6	14	1277
07-08	176	713	2	891	0	456	1	457	0	0	0	0	8	5	7	20	1368
715-815	167	725	2	894	0	572	2	574	0	0	0	0	7	4	5	16	1484
730-830	178	724	3	905	0	591	1	592	0	0	0	0	7	6	4	17	1514
745-845	193	720	3	916	0	601	3	604	0	0	0	0	7	7	3	17	1537
08-09	205	695	2	902	0	572	3	575	0	0	0	0	6	8	3	17	1494
815-915	228	665	4	897	0	518	2	520	0	0	0	0	7	8	3	18	1435
830-930	241	645	5	891	0	513	3	516	0	0	0	0	6	7	3	16	1423
PEAK HOUR 745-845	193	720	3	916	0	601	3	604	0	0	0	0	7	7	3	17	1537
PM																	
02:00-15	32	92	1	125	0	135	1	136	0	0	0	0	1	0	1	2	263
15-30	34	97	0	131	0	196	0	196	0	0	0	0	3	1	1	5	332
30-45	32	86	1	119	0	195	3	198	0	0	0	0	0	0	1	1	318
45-00	37	107	0	144	0	171	0	171	0	0	0	0	1	2	0	3	318
03:00-15	39	103	1	143	0	198	2	200	0	0	0	0	0	0	1	1	344
15-30	35	99	0	134	0	235	1	236	0	0	0	0	1	0	0	1	371
30-45	29	114	1	144	0	253	4	257	0	0	0	0	0	0	0	0	401
45-00	34	105	2	141	0	255	0	255	0	0	0	0	0	2	1	3	399
04:00-15	33	111	4	148	0	264	2	266	0	0	0	0	0	0	1	1	415
15-30	32	123	3	158	0	256	2	258	0	0	0	0	1	1	3	5	421
30-45	33	113	0	146	0	264	1	265	0	0	0	0	2	1	0	3	414
45-00	37	100	1	138	0	266	1	267	0	0	0	0	0	0	2	2	407
PM 3 HOUR TOTALS	407	1250	14	1671	0	2688	17	2705	0	0	0	0	9	7	11	27	4403
1 HOUR TOTALS																	
02-03	135	382	2	519	0	697	4	701	0	0	0	0	5	3	3	11	1231
215-315	142	393	2	537	0	760	5	765	0	0	0	0	4	3	3	10	1312
230-330	143	395	2	540	0	799	6	805	0	0	0	0	2	2	2	6	1351
245-345	140	423	2	565	0	857	7	864	0	0	0	0	2	2	1	5	1434
03-04	137	421	4	562	0	941	7	948	0	0	0	0	1	2	2	5	1515
315-415	131	429	7	567	0	1007	7	1014	0	0	0	0	1	2	2	5	1586
330-430	128	453	10	591	0	1028	8	1036	0	0	0	0	1	3	5	9	1636
345-445	132	452	9	593	0	1039	5	1044	0	0	0	0	3	4	5	12	1649
04-05	135	447	8	590	0	1050	6	1056	0	0	0	0	3	2	6	11	1657
PEAK HOUR 04-05	135	447	8	590	0	1050	6	1056	0	0	0	0	3	2	6	11	1657

PHF
0.90

PHF
0.94

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STSLTD STSLTD STSLTD STSLTD STSLTD STSLTD
 VEHICLE TURNING MOVEMENT COUNT - SUMMARY
 Intersection of: Piney Branch Road
 and: Sligo Avenue-Wessex Road
 Counted by: MN/GH

STSLTD STSLTD STSLTD STSLTD STSLTD STSLTD
 Location : Montgomery County
 Date : 02/13/18
 Weather : Clear
 Entered by MN
 Bikes Only

STSLTD STSLTD STSLTD STSLTD STSLTD
 STREET
 TRAFFIC
 STUDIES
 LTD
 Day: Tuesday

TIME	TRAFFIC FROM NORTH on: Piney Branch Rd				TRAFFIC FROM SOUTH on: Piney Branch Rd				TRAFFIC FROM WEST on: Sligo Ave				TRAFFIC FROM EAST on: Wessex Rd				TOTAL N + S + E + W
	RIGHT	THRU	LEFT	TOTAL	LEFT	THRU	RIGHT	TOTAL	RIGHT	THRU	LEFT	TOTAL	LEFT	THRU	RIGHT	TOTAL	
AM																	
06:30-45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
45-00	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
07:00-15	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
15-30	0	2	0	2	0	0	0	0	0	0	0	0	0	0	0	0	2
30-45	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
45-00	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
08:00-15	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1
15-30	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
30-45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
45-00	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
09:00-15	0	2	0	2	0	0	0	0	0	0	0	0	0	0	0	0	2
15-30	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
AM 3 HOUR TOTALS	1	10	0	11	0	0	0	0	0	0	0	0	1	0	0	1	12
1 HOUR TOTALS																	
630-730	0	4	0	4	0	0	0	0	0	0	0	0	0	0	0	0	4
645-745	1	4	0	5	0	0	0	0	0	0	0	0	0	0	0	0	5
07-08	1	4	0	5	0	0	0	0	0	0	0	0	0	0	0	0	5
715-815	1	3	0	4	0	0	0	0	0	0	0	0	1	0	0	1	5
730-830	1	2	0	3	0	0	0	0	0	0	0	0	1	0	0	1	4
745-845	0	2	0	2	0	0	0	0	0	0	0	0	1	0	0	1	3
08-09	0	2	0	2	0	0	0	0	0	0	0	0	1	0	0	1	3
815-915	0	4	0	4	0	0	0	0	0	0	0	0	0	0	0	0	4
830-930	0	4	0	4	0	0	0	0	0	0	0	0	0	0	0	0	4
PEAK HOUR 645-745	1	4	0	5	0	0	0	0	0	0	0	0	0	0	0	0	5
PM																	
02:00-15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15-30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
30-45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
45-00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
03:00-15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15-30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
30-45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
45-00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:00-15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15-30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
30-45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
45-00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PM 3 HOUR TOTALS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1 HOUR TOTALS																	
02-03	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
215-315	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
230-330	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
245-345	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
03-04	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
315-415	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
330-430	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
345-445	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04-05	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PEAK HOUR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

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Company Name Street Traffic Studies
 Location Piney Branch Rd @ Wessex Rd
 Date 13-Feb-18

Crosswalk	Piney Branch North Leg	Piney Branch South Leg	Wessex Rd East Leg	Sligo Ave West Leg
Hour				
06:30	0	0	0	0
06:45	1	0	3	0
07:00	1	0	1	0
07:15	1	0	0	0
07:30	0	0	1	0
07:45	1	0	4	0
08:00	0	0	0	0
08:15	2	0	3	0
08:30	0	0	2	0
08:45	1	0	4	0
09:00	0	0	1	0
09:15	0	0	0	0
14:00	0	0	0	0
14:15	0	0	1	0
14:30	0	0	0	0
14:45	1	0	0	0
15:00	7	0	0	0
15:15	0	0	1	0
15:30	0	0	2	0
15:45	1	0	3	0
16:00	2	0	0	0
16:15	0	0	1	0
16:30	0	0	0	0
16:45	0	0	0	0
TOTAL	18	0	27	0
AM Peak Vol	3	0	8	0
PM Peak Vol	8	0	6	0

STSLTD STSLTD STSLTD STSLTD STSLTD STSLTD
 VEHICLE TURNING MOVEMENT COUNT - SUMMARY
 Intersection of: Piney Branch Road
 and: Sligo Avenue-Park Valley Road
 Counted by: MN/GH

STSLTD STSLTD STSLTD STSLTD STSLTD STSLTD
 Location : Montgomery County
 Date : 02/13/18
 Weather : Clear
 Entered by MN

STSLTD STSLTD STSLTD STSLTD STSLTD
 STREET
 TRAFFIC
 STUDIES
 LTD

TIME	TRAFFIC FROM NORTH on: Piney Branch Rd				TRAFFIC FROM SOUTH on: Piney Branch Rd				TRAFFIC FROM WEST on: Sligo Ave				TRAFFIC FROM EAST on: Park Valley Rd				TOTAL N + S + E + W
	RIGHT	THRU	LEFT	TOTAL	LEFT	THRU	RIGHT	TOTAL	RIGHT	THRU	LEFT	TOTAL	LEFT	THRU	RIGHT	TOTAL	
AM																	
06:30-45	0	168	0	168	2	42	0	44	6	2	8	16	0	2	2	4	232
45-00	1	179	0	180	4	52	2	58	0	3	5	8	1	1	0	2	248
07:00-15	0	167	2	169	4	67	0	71	1	3	11	15	0	6	1	7	262
15-30	0	183	1	184	1	91	0	92	3	1	15	19	5	3	1	9	304
30-45	0	183	2	185	4	107	2	113	3	3	15	21	2	6	0	8	327
45-00	0	182	1	183	4	126	1	131	4	0	19	23	6	4	4	14	351
08:00-15	0	178	2	180	11	180	5	196	1	3	14	18	5	7	2	14	408
15-30	0	182	1	183	5	102	3	110	6	5	17	28	6	4	6	16	337
30-45	0	179	2	181	5	104	0	109	6	7	26	39	2	6	4	12	341
45-00	0	153	4	157	4	97	4	105	9	3	20	32	2	4	3	9	303
09:00-15	0	148	3	151	8	114	3	125	5	7	25	37	2	0	2	4	317
15-30	0	158	4	162	4	93	6	103	8	5	26	39	2	8	2	12	316
AM 3 HOUR TOTALS	1	2060	22	2083	56	1175	26	1257	52	42	201	295	33	51	27	111	3746
1 HOUR TOTALS																	
630-730	1	697	3	701	11	252	2	265	10	9	39	58	6	12	4	22	1046
645-745	1	712	5	718	13	317	4	334	7	10	46	63	8	16	2	26	1141
07-08	0	715	6	721	13	391	3	407	11	7	60	78	13	19	6	38	1244
715-815	0	726	6	732	20	504	8	532	11	7	63	81	18	20	7	45	1390
730-830	0	725	6	731	24	515	11	550	14	11	65	90	19	21	12	52	1423
745-845	0	721	6	727	25	512	9	546	17	15	76	108	19	21	16	56	1437
08-09	0	692	9	701	25	483	12	520	22	18	77	117	15	21	15	51	1389
815-915	0	662	10	672	22	417	10	449	26	22	88	136	12	14	15	41	1298
830-930	0	638	13	651	21	408	13	442	28	22	97	147	8	18	11	37	1277
PEAK HOUR 745-845	0	721	6	727	25	512	9	546	17	15	76	108	19	21	16	56	1437
PM																	
02:00-15	0	90	3	93	1	103	2	106	2	6	31	39	2	6	2	10	248
15-30	0	99	1	100	3	156	2	161	6	6	38	50	5	10	2	17	328
30-45	0	82	4	86	3	146	4	153	4	7	46	57	4	5	6	15	311
45-00	0	103	5	108	5	126	3	134	3	9	42	54	2	0	3	5	301
03:00-15	0	100	3	103	7	151	6	164	4	11	46	61	5	8	3	16	344
15-30	0	97	3	100	4	196	0	200	6	7	38	51	3	6	2	11	362
30-45	1	108	5	114	8	202	4	214	7	13	52	72	3	9	3	15	415
45-00	1	102	2	105	2	208	6	216	7	9	44	60	4	12	3	19	400
04:00-15	0	110	1	111	2	215	0	217	7	6	48	61	2	12	3	17	406
15-30	0	120	4	124	3	206	3	212	11	6	48	65	2	7	4	13	414
30-45	0	113	2	115	4	204	1	209	4	6	57	67	3	8	4	15	406
45-00	0	97	3	100	4	199	1	204	3	11	64	78	5	8	4	17	399
PM 3 HOUR TOTALS	2	1221	36	1259	46	2112	32	2190	64	97	554	715	40	91	39	170	4334
1 HOUR TOTALS																	
02-03	0	374	13	387	12	531	11	554	15	28	157	200	13	21	13	47	1188
215-315	0	384	13	397	18	579	15	612	17	33	172	222	16	23	14	53	1284
230-330	0	382	15	397	19	619	13	651	17	34	172	223	14	19	14	47	1318
245-345	1	408	16	425	24	675	13	712	20	40	178	238	13	23	11	47	1422
03-04	2	407	13	422	21	757	16	794	24	40	180	244	15	35	11	61	1521
315-415	2	417	11	430	16	821	10	847	27	35	182	244	12	39	11	62	1583
330-430	2	440	12	454	15	831	13	859	32	34	192	258	11	40	13	64	1635
345-445	1	445	9	455	11	833	10	854	29	27	197	253	11	39	14	64	1626
04-05	0	440	10	450	13	824	5	842	25	29	217	271	12	35	15	62	1625
PEAK HOUR 330-430	2	440	12	454	15	831	13	859	32	34	192	258	11	40	13	64	1635

PAF
0.87

PAF
0.92

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 VEHICLE TURNING MOVEMENT COUNT - SUMMARY
 Intersection of: Piney Branch Road
 and: Sligo Avenue-Park Valley Road
 Counted by: MN/GH

STSLTD STSLTD STSLTD STSLTD STSLTD STSLTD
 Location : Montgomery County
 Date : 02/13/18
 Weather : Clear
 Entered by MN
 Bikes Only

STSLTD STSLTD STSLTD STSLTD STSLTD
 Day: Tuesday
 STREET
 TRAFFIC
 STUDIES
 LTD

TIME	TRAFFIC FROM NORTH on: Piney Branch Rd				TRAFFIC FROM SOUTH on: Piney Branch Rd				TRAFFIC FROM WEST on: Sligo Ave				TRAFFIC FROM EAST on: Park Valley Rd				TOTAL N + S + E + W
	RIGHT	THRU	LEFT	TOTAL	LEFT	THRU	RIGHT	TOTAL	RIGHT	THRU	LEFT	TOTAL	LEFT	THRU	RIGHT	TOTAL	
AM																	
06:30-45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
45-00	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
07:00-15	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
15-30	0	2	0	2	0	0	0	0	0	0	0	0	0	0	0	0	2
30-45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
45-00	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
08:00-15	0	2	0	2	0	0	0	0	0	0	0	0	0	0	0	0	2
15-30	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
30-45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
45-00	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
09:00-15	0	2	0	2	0	0	0	0	0	0	0	0	0	0	0	0	2
15-30	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
AM 3 HOUR TOTALS	0	12	0	12	0	0	0	0	0	0	0	0	0	0	0	0	12
1 HOUR TOTALS																	
630-730	0	4	0	4	0	0	0	0	0	0	0	0	0	0	0	0	4
645-745	0	4	0	4	0	0	0	0	0	0	0	0	0	0	0	0	4
07-08	0	4	0	4	0	0	0	0	0	0	0	0	0	0	0	0	4
715-815	0	5	0	5	0	0	0	0	0	0	0	0	0	0	0	0	5
730-830	0	4	0	4	0	0	0	0	0	0	0	0	0	0	0	0	4
745-845	0	4	0	4	0	0	0	0	0	0	0	0	0	0	0	0	4
08-09	0	4	0	4	0	0	0	0	0	0	0	0	0	0	0	0	4
815-915	0	4	0	4	0	0	0	0	0	0	0	0	0	0	0	0	4
830-930	0	4	0	4	0	0	0	0	0	0	0	0	0	0	0	0	4
PEAK HOUR 715-815	0	5	0	5	0	0	0	0	0	0	0	0	0	0	0	0	5
PM																	
02:00-15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15-30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
30-45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
45-00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
03:00-15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15-30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
30-45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
45-00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:00-15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15-30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
30-45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
45-00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PM 3 HOUR TOTALS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1 HOUR TOTALS																	
02-03	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
215-315	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
230-330	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
245-345	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
03-04	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
315-415	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
330-430	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
345-445	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04-05	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PEAK HOUR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

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Company Name Street Traffic Studies
 Location Piney Branch Rd @ Sligo Ave
 Date 13-Feb-18

Crosswalk	Piney Branch North Leg	Piney Branch South Leg	Park Valley East Leg	Sligo Ave West Leg
Hour				
06:30	0	0	1	0
06:45	0	3	4	1
07:00	0	0	2	1
07:15	0	3	0	1
07:30	0	1	0	0
07:45	1	2	5	0
08:00	0	0	0	0
08:15	1	0	2	1
08:30	0	0	1	0
08:45	0	2	0	0
09:00	0	2	1	0
09:15	0	0	0	0
14:00	0	1	0	0
14:15	0	1	1	0
14:30	0	0	0	0
14:45	0	0	2	0
15:00	0	2	2	0
15:15	0	1	1	0
15:30	0	0	2	0
15:45	0	2	1	1
16:00	0	3	0	1
16:15	0	0	1	0
16:30	0	4	0	0
16:45	0	0	1	1
TOTAL	2	27	27	7
AM Peak Vol	2	3	7	1
PM Peak Vol	0	5	6	1

d(MD320) & Silgo Ave & Park Valley RD & Wessex RD
 EB-Pinney Branch SB-Silgo Ave NB-Park Valley/Wessex
 WB-Pinney Branch SB-Southlawn La

[illegible]

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VEHICLE TURNING MOVEMENT COUNT - SUMMARY

Intersection of: Piney Branch Road
and: Ray Drive-School DW
Counted by: MN

STSLTD STSLTD STSLTD STSLTD STSLTD STSLTD

Location : Montgomery County
Date : 02/14/18
Weather : Clear
Entered by MN

STSLTD STSLTD STSLTD STSLTD STSLTD

Day: Wednesday

STREET
TRAFFIC
STUDIES
LTD

TIME	TRAFFIC FROM NORTH on: Piney Branch Rd				TRAFFIC FROM SOUTH on: Piney Branch Rd				TRAFFIC FROM WEST on: Ray Dr				TRAFFIC FROM EAST on: School DW				TOTAL N + S + E + W
	RIGHT	THRU	LEFT	TOTAL	LEFT	THRU	RIGHT	TOTAL	RIGHT	THRU	LEFT	TOTAL	LEFT	THRU	RIGHT	TOTAL	
AM																	
06:30-45	0	171	1	172	0	44	1	45	2	0	0	2	0	0	0	0	219
45-00	0	178	6	184	0	45	0	45	1	0	2	3	0	0	0	0	232
07:00-15	0	166	7	173	0	52	0	52	0	0	4	4	3	0	0	3	232
15-30	0	199	10	209	0	78	3	81	3	2	7	12	3	0	5	8	310
30-45	0	185	34	219	1	95	5	101	2	12	4	18	11	3	21	35	373
45-00	1	179	65	245	1	71	9	81	3	13	3	19	29	2	50	81	426
08:00-15	0	171	38	209	2	92	3	97	8	8	10	26	44	7	53	104	436
15-30	2	201	9	212	1	83	1	85	2	2	5	9	6	2	8	16	322
30-45	0	171	0	171	1	74	0	75	4	0	2	6	1	0	3	4	256
45-00	1	185	3	189	1	73	0	74	6	0	2	8	1	0	1	2	273
09:00-15	0	186	4	190	5	135	0	140	7	1	6	14	0	1	5	6	350
15-30	0	184	2	186	2	98	1	101	5	0	1	6	2	1	1	4	297
AM 3 HOUR TOTALS	4	2176	179	2359	14	940	23	977	43	38	46	127	100	16	147	263	3726
1 HOUR TOTALS																	
630-730	0	714	24	738	0	219	4	223	6	2	13	21	6	0	5	11	993
645-745	0	728	57	785	1	270	8	279	6	14	17	37	17	3	26	46	1147
07-08	1	729	116	846	2	296	17	315	8	27	18	53	46	5	76	127	1341
715-815	1	734	147	882	4	336	20	360	16	35	24	75	87	12	129	228	1545
730-830	3	736	146	885	5	341	18	364	15	35	22	72	90	14	132	236	1557
745-845	3	722	112	837	5	320	13	338	17	23	20	60	80	11	114	205	1440
08-09	3	728	50	781	5	322	4	331	20	10	19	49	52	9	65	126	1287
815-915	3	743	16	762	8	365	1	374	19	3	15	37	8	3	17	28	1201
830-930	1	726	9	736	9	380	1	390	22	1	11	34	4	2	10	16	1176
PEAK HOUR 730-830	3	736	146	885	5	341	18	364	15	35	22	72	90	14	132	236	1557
PM																	
02:00-15	2	73	1	76	2	116	0	118	1	3	2	6	0	0	2	2	202
15-30	0	106	2	108	0	108	1	109	4	0	0	4	1	0	4	5	226
30-45	2	124	5	131	2	135	0	137	3	1	4	8	1	0	5	6	282
45-00	3	98	13	114	2	146	4	152	3	1	5	9	3	0	0	3	278
03:00-15	1	94	6	101	3	178	3	184	2	1	7	10	12	1	59	72	367
15-30	0	106	1	107	1	169	1	171	3	1	0	4	5	1	14	20	302
30-45	1	108	3	112	0	195	1	196	3	1	2	6	2	0	9	11	325
45-00	0	99	4	103	3	197	0	200	4	1	2	7	5	2	8	15	325
04:00-15	2	106	5	113	3	224	2	229	1	1	5	7	1	0	12	13	362
15-30	2	103	7	112	1	190	1	192	2	2	4	8	5	2	32	39	351
30-45	1	134	1	136	3	199	0	202	5	0	7	12	4	1	11	16	366
45-00	2	131	4	137	1	206	1	208	2	1	3	6	0	1	4	5	356
PM 3 HOUR TOTALS	16	1282	52	1350	21	2063	14	2098	33	13	41	87	39	8	160	207	3742
1 HOUR TOTALS																	
02-03	7	401	21	429	6	505	5	516	11	5	11	27	5	0	11	16	988
215-315	6	422	26	454	7	567	8	582	12	3	16	31	17	1	68	86	1153
230-330	6	422	25	453	8	628	8	644	11	4	16	31	21	2	78	101	1229
245-345	5	406	23	434	6	688	9	703	11	4	14	29	22	2	82	106	1272
03-04	2	407	14	423	7	739	5	751	12	4	11	27	24	4	90	118	1319
315-415	3	419	13	435	7	785	4	796	11	4	9	24	13	3	43	59	1314
330-430	5	416	19	440	7	806	4	817	10	5	13	28	13	4	61	78	1363
345-445	5	442	17	464	10	810	3	823	12	4	18	34	15	5	63	83	1404
04-05	7	474	17	498	8	819	4	831	10	4	19	33	10	4	59	73	1435
PEAK HOUR 04-05	7	474	17	498	8	819	4	831	10	4	19	33	10	4	59	73	1435

PHF
0.89

PHF
0.90

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VEHICLE TURNING MOVEMENT COUNT - SUMMARY

Intersection of: Piney Branch Road
and: Ray Drive-School DW
Counted by: MN

STSLTD STSLTD STSLTD STSLTD STSLTD STSLTD

Location : Montgomery County
Date : 02/14/18
Weather : Clear
Entered by MN
Bikes Only

STSLTD STSLTD STSLTD STSLTD STSLTD STSLTD

Day: Wednesday
STREET
TRAFFIC
STUDIES
LTD

TIME	TRAFFIC FROM NORTH on: Piney Branch Rd				TRAFFIC FROM SOUTH on: Piney Branch Rd				TRAFFIC FROM WEST on: Ray Dr				TRAFFIC FROM EAST on: School DW				TOTAL N + S + E + W
	RIGHT	THRU	LEFT	TOTAL	LEFT	THRU	RIGHT	TOTAL	RIGHT	THRU	LEFT	TOTAL	LEFT	THRU	RIGHT	TOTAL	
AM																	
06:30-45	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	1
45-00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:00-15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15-30	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
30-45	0	1	0	1	0	0	0	0	0	1	0	1	0	0	0	0	2
45-00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:00-15	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
15-30	0	1	0	1	0	0	0	0	0	0	0	0	0	1	0	1	2
30-45	0	2	0	2	0	0	0	0	0	0	1	1	0	1	0	1	4
45-00	0	1	0	1	0	0	0	0	0	0	0	0	0	1	0	1	2
09:00-15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15-30	0	2	0	2	0	0	0	0	0	0	0	0	0	0	0	0	2
AM 3 HOUR TOTALS	0	9	1	10	0	0	0	0	0	1	1	2	0	3	0	3	15
1 HOUR TOTALS																	
630-730	0	1	1	2	0	0	0	0	0	0	0	0	0	0	0	0	2
645-745	0	2	0	2	0	0	0	0	0	1	0	1	0	0	0	0	3
07-08	0	2	0	2	0	0	0	0	0	1	0	1	0	0	0	0	3
715-815	0	3	0	3	0	0	0	0	0	1	0	1	0	0	0	0	4
730-830	0	3	0	3	0	0	0	0	0	1	0	1	0	1	0	1	5
745-845	0	4	0	4	0	0	0	0	0	0	1	1	0	2	0	2	7
08-09	0	5	0	5	0	0	0	0	0	0	1	1	0	3	0	3	9
815-915	0	4	0	4	0	0	0	0	0	0	1	1	0	3	0	3	8
830-930	0	5	0	5	0	0	0	0	0	0	1	1	0	2	0	2	8
PEAK HOUR 08-09	0	5	0	5	0	0	0	0	0	0	1	1	0	3	0	3	9
PM																	
02:00-15	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	1
15-30	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	1
30-45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
45-00	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
03:00-15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15-30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
30-45	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	1
45-00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:00-15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15-30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
30-45	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	1
45-00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PM 3 HOUR TOTALS	0	1	0	1	0	2	0	2	1	1	0	2	0	0	0	0	5
1 HOUR TOTALS																	
02-03	0	1	0	1	0	1	0	1	1	0	0	1	0	0	0	0	3
215-315	0	1	0	1	0	1	0	1	0	0	0	0	0	0	0	0	2
230-330	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
245-345	0	1	0	1	0	1	0	1	0	0	0	0	0	0	0	0	2
03-04	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	1
315-415	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	1
330-430	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	1
345-445	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	1
04-05	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	1
PEAK HOUR 02-03	0	1	0	1	0	1	0	1	1	0	0	1	0	0	0	0	3

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Company Name Street Traffic Studies
 Location Piney Branch Rd @ Ray Dr
 Date 14-Feb-18

Crosswalk	Piney Branch North Leg	Piney Branch South Leg	School DW East Leg	Ray Dr West Leg
Hour				0
06:30	0	0	0	2
06:45	0	0	0	3
07:00	0	1	3	5
07:15	0	1	2	0
07:30	0	16	15	7
07:45	0	27	24	28
08:00	0	34	63	25
08:15	1	0	0	3
08:30	0	3	0	1
08:45	0	3	2	5
09:00	0	3	1	2
09:15	0	3	0	3
14:00	0	3	0	4
14:15	0	1	2	2
14:30	0	2	2	4
14:45	0	0	0	0
15:00	0	105	98	16
15:15	1	11	10	5
15:30	0	0	3	1
15:45	0	5	2	1
16:00	0	11	6	3
16:15	0	30	24	6
16:30	0	10	6	6
16:45	0	3	1	2
TOTAL	2	272	264	134
AM Peak Vol	1	77	102	63
PM Peak Vol	1	121	113	23

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VEHICLE TURNING MOVEMENT COUNT - SUMMARY

Intersection of: Piney Branch Road
and: Philadelphia Ave
Counted by: SN

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Location : Montgomery County
Date : 02/21/18
Weather : Clear
Entered by SN

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Day: Wednesday

STREET
TRAFFIC
STUDIES
LTD

	TRAFFIC FROM NORTH on: Piney Branch Rd				TRAFFIC FROM SOUTH on: Piney Branch Rd				TRAFFIC FROM WEST on: Philadelphia Ave				TRAFFIC FROM EAST on: Philadelphia				TOTAL N + S + E + W
TIME	RIGHT	THRU	LEFT	TOTAL	LEFT	THRU	RIGHT	TOTAL	RIGHT	THRU	LEFT	TOTAL	LEFT	THRU	RIGHT	TOTAL	
AM																	
06:30-45	0	26	4	30	2	159	10	171	7	101	17	125	1	17	1	19	345
45-00	0	35	5	40	4	162	8	174	4	119	19	142	4	37	1	42	398
07:00-15	0	30	6	36	6	181	9	196	9	107	15	131	5	33	3	41	404
15-30	4	41	4	49	2	165	9	176	7	112	20	139	4	56	10	70	434
30-45	0	79	3	82	4	148	9	161	14	125	16	155	11	45	4	60	458
45-00	0	68	2	70	14	152	23	189	10	96	15	121	16	54	9	79	459
08:00-15	0	65	8	73	13	140	33	186	13	94	20	127	16	66	8	90	476
15-30	0	59	5	64	10	171	22	203	6	110	16	132	5	48	8	61	460
30-45	0	50	7	57	12	128	22	162	15	109	20	144	12	56	4	72	435
45-00	0	52	11	63	12	124	31	167	7	111	17	135	6	50	13	69	434
09:00-15	0	54	10	64	12	116	13	141	9	80	13	102	15	62	2	79	386
15-30	0	50	8	58	11	108	9	128	7	82	11	100	11	58	1	70	356
AM 3 HOUR TOTALS	4	609	73	686	102	1754	198	2054	108	1246	199	1553	106	582	64	752	5045
1 HOUR TOTALS																	
630-730	4	132	19	155	14	667	36	717	27	439	71	537	14	143	15	172	1581
645-745	4	185	18	207	16	656	35	707	34	463	70	567	24	171	18	213	1694
07-08	4	218	15	237	26	646	50	722	40	440	66	546	36	188	26	250	1755
715-815	4	253	17	274	33	605	74	712	44	427	71	542	47	221	31	299	1827
730-830	0	271	18	289	41	611	87	739	43	425	67	535	48	213	29	290	1853
745-845	0	242	22	264	49	591	100	740	44	409	71	524	49	224	29	302	1830
08-09	0	226	31	257	47	563	108	718	41	424	73	538	39	220	33	292	1805
815-915	0	215	33	248	46	539	88	673	37	410	66	513	38	216	27	281	1715
830-930	0	206	36	242	47	476	75	598	38	382	61	481	44	226	20	290	1611
PEAK HOUR 730-830	0	271	18	289	41	611	87	739	43	425	67	535	48	213	29	290	1853
PM																	
02:00-15	1	80	4	85	10	72	6	88	17	82	11	110	12	65	8	85	368
15-30	3	100	6	109	7	86	7	100	8	66	17	91	13	87	5	105	405
30-45	0	107	4	111	3	86	11	100	10	75	16	101	25	80	12	117	429
45-00	2	89	5	96	5	65	9	79	13	67	13	93	14	86	3	103	371
03:00-15	0	117	4	121	19	72	11	102	20	51	17	88	16	67	3	86	397
15-30	7	100	3	110	9	73	10	92	15	72	18	105	11	104	2	117	424
30-45	1	138	6	145	14	89	10	113	7	69	11	87	22	114	5	141	486
45-00	1	144	4	149	8	92	10	110	21	81	8	110	19	101	5	125	494
04:00-15	0	156	0	156	13	97	9	119	16	87	15	118	24	77	10	111	504
15-30	1	147	6	154	11	85	16	112	21	65	9	95	16	89	6	111	472
30-45	2	172	10	184	12	103	13	128	13	62	18	93	12	117	5	134	539
45-00	1	175	11	187	7	89	16	112	15	91	16	122	15	102	3	120	541
PM 3 HOUR TOTALS	19	1525	63	1607	118	1009	128	1255	176	868	169	1213	199	1089	67	1355	5430
1 HOUR TOTALS																	
02-03	6	376	19	401	25	309	33	367	48	290	57	395	64	318	28	410	1573
215-315	5	413	19	437	34	309	38	381	51	259	63	373	68	320	23	411	1602
230-330	9	413	16	438	36	296	41	373	58	265	64	387	66	337	20	423	1621
245-345	10	444	18	472	47	299	40	386	55	259	59	373	63	371	13	447	1678
03-04	9	499	17	525	50	326	41	417	63	273	54	390	68	386	15	469	1801
315-415	9	538	13	560	44	351	39	434	59	309	52	420	76	396	22	494	1908
330-430	3	585	16	604	46	363	45	454	65	302	43	410	81	381	26	488	1956
345-445	4	619	20	643	44	377	48	469	71	295	50	416	71	384	26	481	2009
04-05	4	650	27	681	43	374	54	471	65	305	58	428	67	385	24	476	2056
PEAK HOUR 04-05	4	650	27	681	43	374	54	471	65	305	58	428	67	385	24	476	2056

PMF
0.97

PMF
0.91

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VEHICLE TURNING MOVEMENT COUNT - SUMMARY

Intersection of: Piney Branch Road
and: Philadelphia Ave
Counted by: SN

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Location : Montgomery County
Date : 02/21/18
Weather : Clear
Entered by SN

Bikes Only

STSLTD STSLTD STSLTD STSLTD STSLTD STSLTD

STREET
TRAFFIC
STUDIES
LTD

TIME	TRAFFIC FROM NORTH on: Piney Branch Rd				TRAFFIC FROM SOUTH on: Piney Branch Rd				TRAFFIC FROM WEST on: Philadelphia Ave				TRAFFIC FROM EAST on: Philadelphia Ave				TOTAL N + S + E + W
	RIGHT	THRU	LEFT	TOTAL	LEFT	THRU	RIGHT	TOTAL	RIGHT	THRU	LEFT	TOTAL	LEFT	THRU	RIGHT	TOTAL	
AM																	
06:30-45	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1
45-00	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	1
07:00-15	0	0	0	0	0	1	0	1	0	0	0	0	0	1	0	1	2
15-30	0	1	0	1	0	0	0	0	0	1	0	1	0	2	0	2	4
30-45	0	1	0	1	0	1	0	1	0	0	0	0	0	0	0	0	2
45-00	0	0	0	0	0	0	0	0	0	0	1	1	0	1	0	1	2
08:00-15	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	1
15-30	0	1	0	1	0	4	0	4	0	0	1	1	0	0	0	0	6
30-45	0	0	0	0	0	3	0	3	0	0	0	0	0	0	0	0	3
45-00	0	1	0	1	0	2	0	2	0	0	0	0	0	0	0	0	3
09:00-15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15-30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
AM																	
3 HOUR																	
TOTALS	0	4	0	4	0	12	0	12	0	2	2	4	0	5	0	5	25
1 HOUR																	
TOTALS																	
630-730	0	1	0	1	0	1	0	1	0	2	0	2	0	4	0	4	8
645-745	0	2	0	2	0	2	0	2	0	2	0	2	0	3	0	3	9
07-08	0	2	0	2	0	2	0	2	0	1	1	2	0	4	0	4	10
715-815	0	2	0	2	0	2	0	2	0	1	1	2	0	3	0	3	9
730-830	0	2	0	2	0	6	0	6	0	0	2	2	0	1	0	1	11
745-845	0	1	0	1	0	8	0	8	0	0	2	2	0	1	0	1	12
08-09	0	2	0	2	0	10	0	10	0	0	1	1	0	0	0	0	13
815-915	0	2	0	2	0	9	0	9	0	0	1	1	0	0	0	0	12
830-930	0	1	0	1	0	5	0	5	0	0	0	0	0	0	0	0	6
PEAK HOUR																	
08-09	0	2	0	2	0	10	0	10	0	0	1	1	0	0	0	0	13
PM																	
02:00-15	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1
15-30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
30-45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
45-00	0	0	0	0	0	1	1	2	0	0	0	0	0	0	0	0	2
03:00-15	0	0	0	0	0	3	0	3	0	0	0	0	0	0	0	0	3
15-30	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
30-45	0	0	0	0	0	1	0	1	0	1	0	1	0	0	0	0	2
45-00	0	1	0	1	0	1	0	1	0	1	0	1	0	0	0	0	3
04:00-15	0	0	0	0	0	1	0	1	0	2	0	2	0	0	0	0	3
15-30	0	0	0	0	0	1	0	1	0	0	0	0	0	1	0	1	2
30-45	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	1
45-00	0	0	0	0	0	2	0	2	0	0	0	0	0	0	0	0	2
PM																	
3 HOUR																	
TOTALS	0	2	0	2	0	10	1	11	1	4	0	5	0	2	0	2	20
1 HOUR																	
TOTALS																	
02-03	0	0	0	0	0	1	1	2	0	0	0	0	0	1	0	1	3
215-315	0	0	0	0	0	4	1	5	0	0	0	0	0	0	0	0	5
230-330	0	1	0	1	0	4	1	5	0	0	0	0	0	0	0	0	6
245-345	0	1	0	1	0	5	1	6	0	1	0	1	0	0	0	0	8
03-04	0	2	0	2	0	5	0	5	0	2	0	2	0	0	0	0	9
315-415	0	2	0	2	0	3	0	3	0	4	0	4	0	0	0	0	9
330-430	0	1	0	1	0	4	0	4	0	4	0	4	0	1	0	1	10
345-445	0	1	0	1	0	3	0	3	1	3	0	4	0	1	0	1	9
04-05	0	0	0	0	0	4	0	4	1	2	0	3	0	1	0	1	8
PEAK HOUR																	
330-430	0	1	0	1	0	4	0	4	0	4	0	4	0	1	0	1	10

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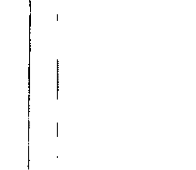
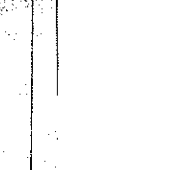
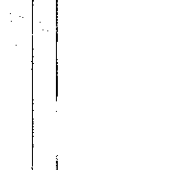
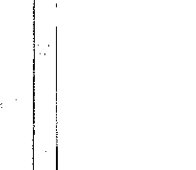
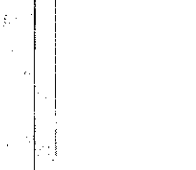
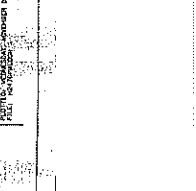
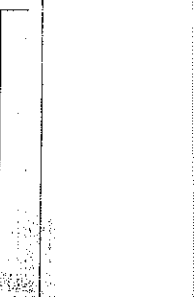
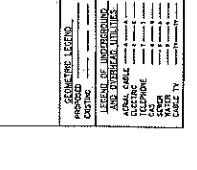
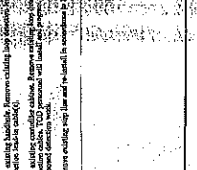
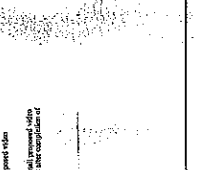
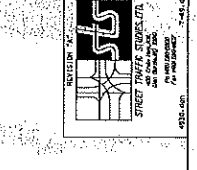
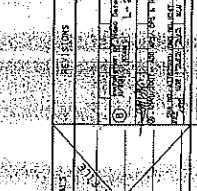
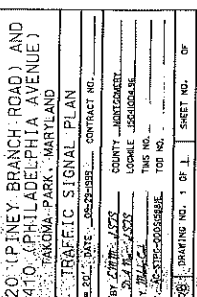
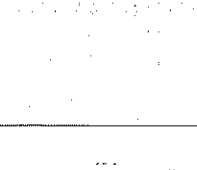
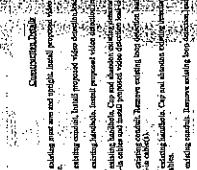
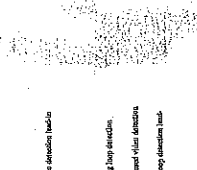
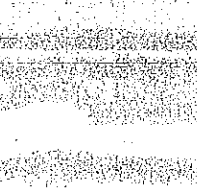
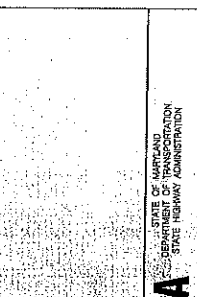
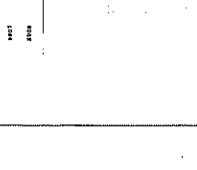
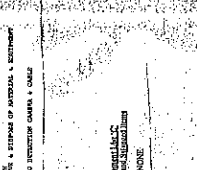
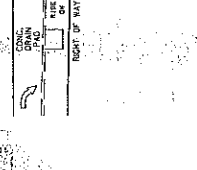
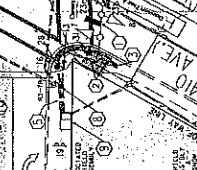
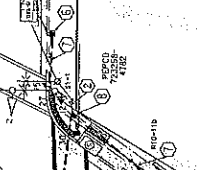
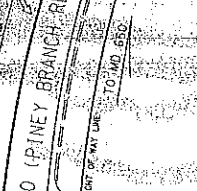
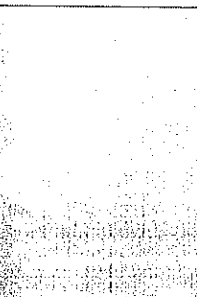
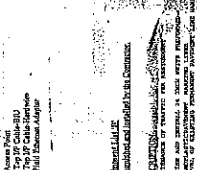
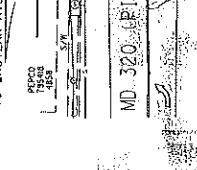
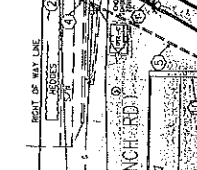
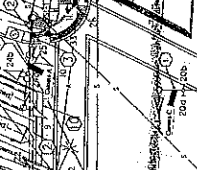
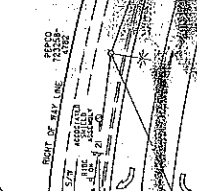
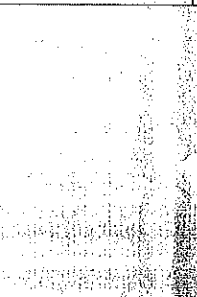
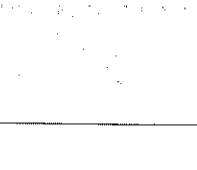
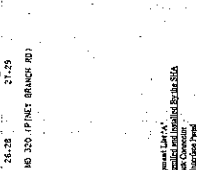
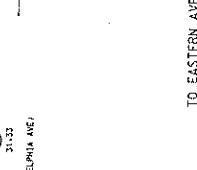
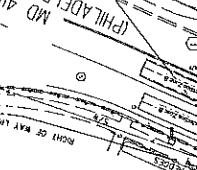
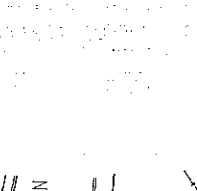
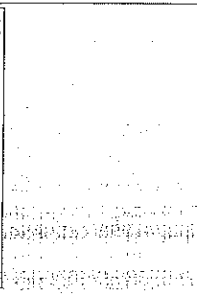
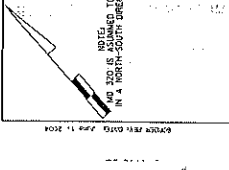
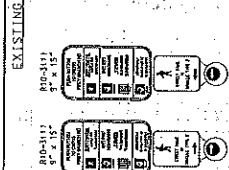
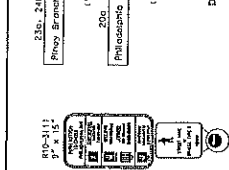
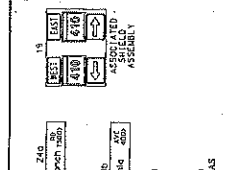
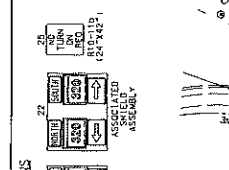
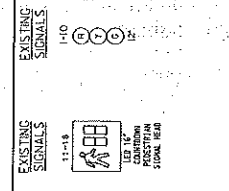
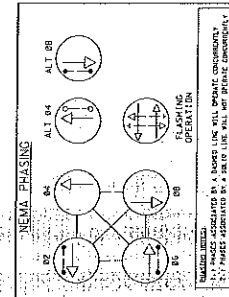
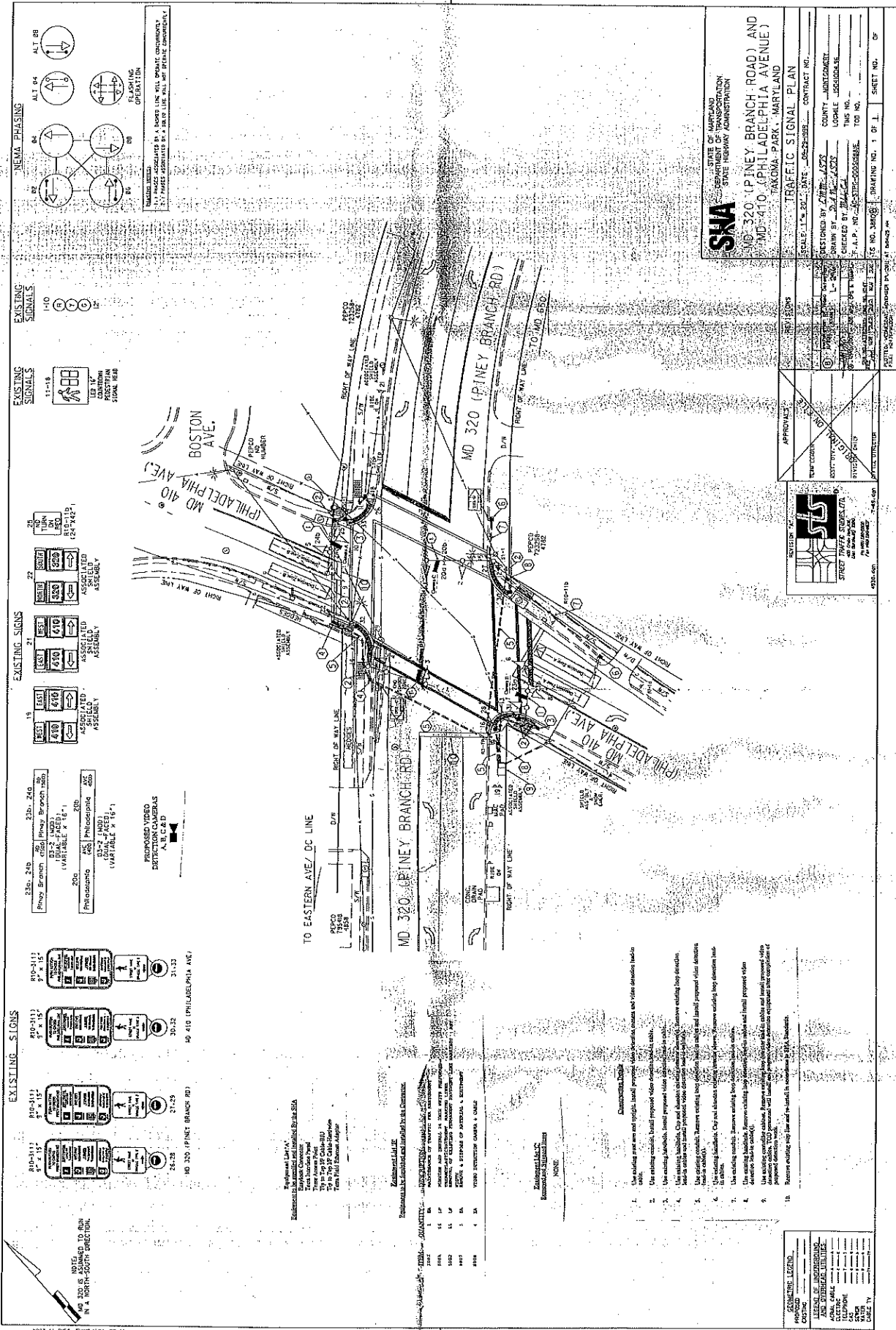
Company Name Street Traffic Studies
 Location Piney Branch Rd @ Philadelphia Ave
 Date 21-Feb-18

Crosswalk	Piney Branch Rd North Leg	Piney Branch Rd South Leg	Philadelphia Ave East Leg	Philadelphia Ave West Leg
Hour				0
06:30	1	3	0	0
06:45	0	0	1	1
07:00	0	0	0	0
07:15	0	2	4	0
07:30	1	2	2	0
07:45	0	1	6	0
08:00	1	7	5	0
08:15	1	1	2	0
08:30	0	4	3	0
08:45	2	28	14	0
09:00	0	32	9	0
09:15	0	0	0	0
14:00	0	0	0	0
14:15	0	2	1	1
14:30	1	2	0	0
14:45	1	5	2	0
15:00	0	1	6	0
15:15	2	0	4	0
15:30	3	4	1	0
15:45	2	7	6	0
16:00	2	17	5	1
16:15	3	5	7	0
16:30	1	6	3	3
16:45	4	2	2	1
TOTAL	25	131	83	7
AM Peak Vol	3	11	15	0
PM Peak Vol	7	12	17	0

885 Piney Branch Rd(MD320) & Philadelphia Ave

PHASE	1	2	3	4	5	6	7	8
MIN GRN	0	30	0	8	5	30	0	8
BK MGRN	0	0	0	0	0	0	0	0
CS MGRN	0	0	0	0	0	0	0	0
DLY GRN	0	0	0	0	0	0	0	0
WALK	0	10	0	7	0	10	0	0
WALK2	0	0	0	0	0	0	0	0
WLK MAX	0	0	0	0	0	0	0	0
PED CLR	0	15	0	15	0	15	0	0
PB CLR2	0	0	0	0	0	0	0	0
PC MAX	0	0	0	0	0	0	0	0
PED CO	0	0	0	0	0	0	0	0
VEH EXT	0	0	0	4	4	0	0	4
VH EXT2	0	0	0	0	0	0	0	0
MAX1	0	50	0	45	35	50	0	45
MAX2	0	50	0	45	35	50	0	45
MAX3	0	0	0	0	0	0	0	0
DTM MAX	0	0	0	0	0	0	0	0
DYM STP	0	0	0	0	0	0	0	0
YELLOW	3	4	3	4	4	4	3	4
RED CLR	0	2	0	2	1	2	0	2
RED MAX	0	0	0	0	0	0	0	0
RED RYT	5	5	5	5	5	5	5	5
ACT B4	0	0	0	0	0	0	0	0
SEC/ACT	0	0	0	0	0	0	0	0
MAX INT	0	0	0	0	0	0	0	0
TIME B4	0	0	0	0	0	0	0	0
CARS WT	0	0	0	0	0	0	0	0
STPIDUC	0	0	0	0	0	0	0	0
TTREDUC	0	0	0	0	0	0	0	0
MIN GAP	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0

[illegible]



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 VEHICLE TURNING MOVEMENT COUNT - SUMMARY
 Intersection of: Grant Avenue
 and: Chestnut Avenue-School DW
 Counted by: NG

STSLTD STSLTD STSLTD STSLTD STSLTD STSLTD
 Location : Montgomery County
 Date : 02/14/18
 Weather : Clear
 Entered by MN

STSLTD STSLTD STSLTD STSLTD STSLTD
 STREET
 TRAFFIC
 STUDIES
 LTD
 Day: Wednesday

TIME	TRAFFIC FROM NORTH on: School DW				TRAFFIC FROM SOUTH on: Chestnut Ave				TRAFFIC FROM WEST on: Grant Ave				TRAFFIC FROM EAST on: Grant Ave				TOTAL N + S + E + W
	RIGHT	THRU	LEFT	TOTAL	LEFT	THRU	RIGHT	TOTAL	RIGHT	THRU	LEFT	TOTAL	LEFT	THRU	RIGHT	TOTAL	
AM																	
06:30-45	0	0	0	0	2	0	0	2	0	0	1	1	0	1	1	2	5
45-00	0	0	0	0	1	1	0	2	1	2	0	3	0	1	1	2	7
07:00-15	0	0	0	0	0	3	0	3	1	2	0	3	0	8	0	8	14
15-30	0	0	0	0	1	0	0	1	2	2	4	8	0	7	5	12	21
30-45	0	1	0	1	1	3	0	4	3	3	5	11	5	9	8	22	38
45-00	1	3	0	4	1	10	1	12	2	11	33	46	4	17	9	30	92
08:00-15	1	2	3	6	2	18	0	20	1	19	24	44	8	10	20	38	108
15-30	1	1	2	4	3	2	1	6	2	9	1	12	0	9	1	10	32
30-45	0	0	0	0	0	0	2	2	2	11	1	14	0	13	3	16	32
45-00	2	0	1	3	2	0	0	2	2	17	3	22	2	12	0	14	41
09:00-15	0	0	0	0	1	0	3	4	4	29	2	35	13	56	3	72	111
15-30	0	0	0	0	1	0	1	2	0	20	3	23	8	29	2	39	64
AM 3 HOUR TOTALS	5	7	6	18	15	37	8	60	20	125	77	222	40	172	53	265	565
1 HOUR TOTALS																	
630-730	0	0	0	0	4	4	0	8	4	6	5	15	0	17	7	24	47
645-745	0	1	0	1	3	7	0	10	7	9	9	25	5	25	14	44	80
07-08	1	4	0	5	3	16	1	20	8	18	42	68	9	41	22	72	165
715-815	2	6	3	11	5	31	1	37	8	35	66	109	17	43	42	102	259
730-830	3	7	5	15	7	33	2	42	8	42	63	113	17	45	38	100	270
745-845	3	6	5	14	6	30	4	40	7	50	59	116	12	49	33	94	264
08-09	4	3	6	13	7	20	3	30	7	56	29	92	10	44	24	78	213
815-915	3	1	3	7	6	2	6	14	10	66	7	83	15	90	7	112	216
830-930	2	0	1	3	4	0	6	10	8	77	9	94	23	110	8	141	248
PEAK HOUR 730-830	3	7	5	15	7	33	2	42	8	42	63	113	17	45	38	100	270
PM																	
02:00-15	1	0	0	1	2	0	2	4	2	2	1	5	1	3	2	6	16
15-30	0	0	0	0	0	1	2	3	3	7	6	16	0	2	0	2	21
30-45	0	1	1	2	2	2	1	5	2	8	4	14	0	6	0	6	27
45-00	0	0	1	1	3	2	0	5	1	10	10	21	1	3	0	4	31
03:00-15	7	1	1	9	3	1	0	4	2	12	2	16	5	6	1	12	41
15-30	0	1	3	4	1	0	2	3	3	6	3	12	0	4	1	5	24
30-45	0	2	2	4	0	3	8	11	1	9	3	13	1	7	0	8	36
45-00	1	2	1	4	2	3	4	9	1	19	2	22	13	47	7	67	102
04:00-15	1	1	2	4	2	3	1	6	2	13	3	18	7	34	9	50	78
15-30	2	1	4	7	3	2	0	5	1	4	7	12	0	7	2	9	33
30-45	2	0	1	3	2	1	1	4	1	7	2	10	1	10	0	11	28
45-00	0	0	1	1	2	1	0	3	2	11	0	13	1	12	3	16	33
PM 3 HOUR TOTALS	14	9	17	40	22	19	21	62	21	108	43	172	30	141	25	196	470
1 HOUR TOTALS																	
02-03	1	1	2	4	7	5	5	17	8	27	21	56	2	14	2	18	95
215-315	7	2	3	12	8	6	3	17	8	37	22	67	6	17	1	24	120
230-330	7	3	6	16	9	5	3	17	8	36	19	63	6	19	2	27	123
245-345	7	4	7	18	7	6	10	23	7	37	18	62	7	20	2	29	132
03-04	8	6	7	21	6	7	14	27	7	46	10	63	19	64	9	92	203
315-415	2	6	8	16	5	9	15	29	7	47	11	65	21	92	17	130	240
330-430	4	6	9	19	7	11	13	31	5	45	15	65	21	95	18	134	249
345-445	6	4	8	18	9	9	6	24	5	43	14	62	21	98	18	137	241
04-05	5	2	8	15	9	7	2	18	6	35	12	53	9	63	14	86	172
PEAK HOUR 330-430	4	6	9	19	7	11	13	31	5	45	15	65	21	95	18	134	249

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VEHICLE TURNING MOVEMENT COUNT - SUMMARYIntersection of: Grant Avenue
and: Chestnut Avenue-School DW
Counted by: NG

STSLTD STSLTD STSLTD STSLTD STSLTD STSLTD

Location : Montgomery County

Date : 02/14/18

Weather : Clear

Entered by MN

Day: Wednesday

STSLTD STSLTD STSLTD STSLTD STSLTD

STREET
TRAFFIC
STUDIES
LTD

Bikes Only

TIME	TRAFFIC FROM NORTH on: School DW				TRAFFIC FROM SOUTH on: Chestnut Ave				TRAFFIC FROM WEST on: Grant Ave				TRAFFIC FROM EAST on: Grant Ave				TOTAL N + S + E + W
	RIGHT	THRU	LEFT	TOTAL	LEFT	THRU	RIGHT	TOTAL	RIGHT	THRU	LEFT	TOTAL	LEFT	THRU	RIGHT	TOTAL	
AM																	
06:30-45	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	1
45-00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:00-15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15-30	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	1
30-45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
45-00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:00-15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15-30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1
30-45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1
45-00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1
09:00-15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15-30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
AM 3 HOUR TOTALS	0	0	1	1	0	0	0	0	0	1	0	1	0	0	3	3	5
1 HOUR TOTALS																	
630-730	0	0	1	1	0	0	0	0	0	1	0	1	0	0	0	0	2
645-745	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	1
07-08	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	1
715-815	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	1
730-830	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1
745-845	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	2	2
08-09	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	3	3
815-915	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	3	3
830-930	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	2	2
PEAK HOUR 08-09	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	3	3
PM																	
02:00-15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15-30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
30-45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
45-00	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	1
03:00-15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15-30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
30-45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
45-00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:00-15	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1
15-30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
30-45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
45-00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PM 3 HOUR TOTALS	0	0	0	0	0	0	0	0	0	1	0	1	0	1	0	1	2
1 HOUR TOTALS																	
02-03	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	1
215-315	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	1
230-330	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	1
245-345	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	1
03-04	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
315-415	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1
330-430	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1
345-445	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1
04-05	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1
PEAK HOUR 02-03	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	1

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Company Name Street Traffic Studies
 Location Grant Ave @ Chestnut Ave
 Date 14-Feb-18

Crosswalk	School DW North Leg	Chestnut Ave South Leg	Grant Ave East Leg	Grant Ave West Leg
Hour				0
06:30	0	0	3	0
06:45	0	0	0	0
07:00	0	0	1	0
07:15	0	0	0	1
07:30	2	0	3	1
07:45	0	1	9	6
08:00	1	0	2	1
08:15	0	0	2	1
08:30	0	0	0	3
08:45	1	0	0	0
09:00	2	0	3	0
09:15	2	0	2	0
14:00	0	0	1	0
14:15	0	0	2	0
14:30	0	1	1	2
14:45	0	0	1	0
15:00	10	3	1	4
15:15	0	0	0	0
15:30	1	0	1	0
15:45	2	0	0	0
16:00	0	0	2	0
16:15	4	0	4	0
16:30	1	1	0	0
16:45	0	0	0	0
TOTAL	26	6	38	19
AM Peak Vol	3	1	16	9
PM Peak Vol	13	3	2	4

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VEHICLE TURNING MOVEMENT COUNT - SUMMARY

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Intersection of: Grant Ave
and: Darwin Ave and Holly Ave
Counted by: NG/LG

Location : Montgomery County
Date : 02/21/18
Weather : Clear
Entered by SN

Day: Wednesday

STREET
TRAFFIC
STUDIES
LTD

TIME	TRAFFIC FROM NORTH on: Darwin Ave				TRAFFIC FROM SOUTH on: Holly Ave				TRAFFIC FROM WEST on: Grant Ave				TRAFFIC FROM EAST on: Grant Ave				TOTAL N + S + E + W
	RIGHT	THRU	LEFT	TOTAL	LEFT	THRU	RIGHT	TOTAL	RIGHT	THRU	LEFT	TOTAL	LEFT	THRU	RIGHT	TOTAL	
AM																	
06:30-45	0	0	0	0	0	0	0	0	0	2	0	2	0	1	0	1	3
45-00	0	0	0	0	3	0	0	3	1	0	0	1	1	1	0	2	6
07:00-15	1	0	0	1	5	0	0	5	2	0	0	2	0	1	0	1	9
15-30	0	0	0	0	6	0	0	6	2	0	0	2	1	1	0	2	10
30-45	1	0	0	1	5	0	0	5	2	0	0	2	0	0	0	0	8
45-00	2	0	0	2	23	0	1	24	3	1	0	4	0	3	0	3	33
08:00-15	3	0	0	3	23	0	0	23	9	4	2	15	1	2	0	3	44
15-30	2	0	0	2	10	0	0	10	7	0	1	8	0	5	0	5	25
30-45	2	0	0	2	6	2	0	8	8	2	0	10	0	0	1	1	21
45-00	1	3	0	4	3	2	0	5	7	3	2	12	2	5	0	7	28
09:00-15	3	1	0	4	51	1	1	53	23	6	2	31	2	5	1	8	96
15-30	2	1	0	3	33	2	1	36	17	4	0	21	2	3	2	7	67
AM 3 HOUR TOTALS	17	5	0	22	168	7	3	178	81	22	7	110	9	27	4	40	350
1 HOUR TOTALS																	
630-730	1	0	0	1	14	0	0	14	5	2	0	7	2	4	0	6	28
645-745	2	0	0	2	19	0	0	19	7	0	0	7	2	3	0	5	33
07-08	4	0	0	4	39	0	1	40	9	1	0	10	1	5	0	6	60
715-815	6	0	0	6	57	0	1	58	16	5	2	23	2	6	0	8	95
730-830	8	0	0	8	61	0	1	62	21	5	3	29	1	10	0	11	110
745-845	9	0	0	9	62	2	1	65	27	7	3	37	1	10	1	12	123
08-09	8	3	0	11	42	4	0	46	31	9	5	45	3	12	1	16	118
815-915	8	4	0	12	70	5	1	76	45	11	5	61	4	15	2	21	170
830-930	8	5	0	13	93	7	2	102	55	15	4	74	6	13	4	23	212
PEAK HOUR 830-930	8	5	0	13	93	7	2	102	4	13	6	23	4	15	55	74	212
PM																	
02:00-15	0	0	0	0	5	0	0	5	2	0	0	2	0	1	0	1	8
15-30	0	0	0	0	1	0	2	3	1	0	0	1	0	1	0	1	5
30-45	2	0	1	3	3	1	1	5	4	1	1	6	0	0	0	0	14
45-00	0	0	0	0	4	1	3	8	2	0	0	2	0	0	0	0	10
03:00-15	1	0	0	1	4	1	0	5	13	2	2	17	1	0	0	1	24
15-30	2	3	0	5	7	0	0	7	7	2	4	13	0	0	0	0	25
30-45	1	1	0	2	4	1	0	5	16	9	5	30	0	1	0	1	38
45-00	2	1	1	4	31	0	1	32	8	8	4	20	2	7	0	9	65
04:00-15	4	0	0	4	24	2	2	28	7	1	1	9	0	10	0	10	51
15-30	1	0	0	1	15	1	2	18	13	0	2	15	1	2	0	3	37
30-45	2	0	0	2	5	0	1	6	7	1	4	12	0	1	0	1	21
45-00	0	1	0	1	3	1	0	4	7	0	1	8	0	2	0	2	15
PM 3 HOUR TOTALS	15	6	2	23	106	8	12	126	87	24	24	135	4	25	0	29	313
1 HOUR TOTALS																	
02-03	2	0	1	3	13	2	6	21	9	1	1	11	0	2	0	2	37
215-315	3	0	1	4	12	3	4	25	20	3	3	26	1	1	0	2	53
230-330	5	3	1	9	18	3	4	25	26	5	7	38	1	0	0	1	73
245-345	4	4	0	8	19	3	3	25	38	13	11	62	1	1	0	2	97
03-04	6	5	1	12	46	2	1	49	44	21	15	80	3	8	0	11	152
315-415	9	5	1	15	66	3	3	72	38	20	14	72	2	18	0	20	179
330-430	8	2	1	11	74	4	5	83	44	18	12	74	3	20	0	23	191
345-445	9	1	1	11	75	3	6	84	35	10	11	56	3	20	0	23	174
04-05	7	1	0	8	47	4	5	56	34	2	8	44	1	15	0	16	124
PEAK HOUR 04-05	4	650	27	681	43	374	54	471	65	305	58	428	67	385	24	476	2056

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VEHICLE TURNING MOVEMENT COUNT - SUMMARY

Intersection of: Grant Ave
and: Darwin Ave and Holly Ave
Counted by: NG/LG

Bikes Only

STSLTD STSLTD STSLTD STSLTD STSLTD STSLTD

Location : Montgomery County
Date : 02/21/18
Weather : Clear
Entered by SN

Day: Wednesday

STSLTD STSLTD STSLTD STSLTD STSLTD
STREET
TRAFFIC
STUDIES
LTD

TIME	TRAFFIC FROM NORTH on: Darwin Ave				TRAFFIC FROM SOUTH on: Holly Ave				TRAFFIC FROM WEST on: Grant Ave				TRAFFIC FROM EAST on: Grant Ave				TOTAL N+S + E+W
	RIGHT	THRU	LEFT	TOTAL	LEFT	THRU	RIGHT	TOTAL	RIGHT	THRU	LEFT	TOTAL	LEFT	THRU	RIGHT	TOTAL	
AM																	
06:30-45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
45-00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:00-15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15-30	0	0	0	0	0	0	0	0	0	2	0	2	0	1	0	1	3
30-45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
45-00	0	0	0	0	2	0	0	2	0	7	0	7	0	0	0	0	9
08:00-15	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	2	2
15-30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
30-45	0	0	0	0	0	0	0	0	0	5	0	5	0	0	0	0	5
45-00	0	0	0	0	0	0	0	0	0	0	0	0	2	0	1	3	3
09:00-15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15-30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
AM																	
3 HOUR																	
TOTALS	0	0	0	0	2	0	0	2	0	14	0	14	2	3	1	6	22
1 HOUR																	
TOTALS	0	0	0	0	0	0	0	0	0	2	0	2	0	1	0	1	3
630-730	0	0	0	0	0	0	0	0	0	2	0	2	0	1	0	1	3
645-745	0	0	0	0	2	0	0	2	0	9	0	9	0	1	0	1	12
07-08	0	0	0	0	2	0	0	2	0	9	0	9	0	3	0	3	14
715-815	0	0	0	0	2	0	0	2	0	7	0	7	0	2	0	2	11
730-830	0	0	0	0	2	0	0	2	0	7	0	7	0	2	0	2	16
745-845	0	0	0	0	0	0	0	0	0	12	0	12	0	2	0	2	10
08-09	0	0	0	0	0	0	0	0	0	5	0	5	2	2	1	5	8
815-915	0	0	0	0	0	0	0	0	0	5	0	5	2	0	1	3	8
830-930	0	0	0	0	0	0	0	0	0	5	0	5	2	0	1	3	8
PEAK HOUR																	
745-845	0	0	0	0	2	0	0	2	0	12	0	12	0	2	0	2	16
PM																	
02:00-15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15-30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
30-45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
45-00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
03:00-15	0	0	0	0	0	0	0	0	0	0	0	0	5	2	0	7	7
15-30	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	2	2
30-45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
45-00	0	0	3	3	0	0	0	0	0	0	0	0	0	4	0	4	7
04:00-15	0	0	0	0	1	0	0	1	0	4	0	4	0	1	0	1	6
15-30	0	0	0	0	0	0	0	0	0	1	0	1	0	2	0	2	3
30-45	0	0	0	0	0	0	0	0	0	1	0	1	0	1	0	1	2
45-00	0	0	0	0	2	0	0	2	0	1	0	1	0	0	0	0	3
PM																	
3 HOUR																	
TOTALS	0	0	3	3	3	0	0	3	0	7	0	7	5	12	0	17	30
1 HOUR																	
TOTALS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
02-03	0	0	0	0	0	0	0	0	0	0	0	0	5	2	0	7	7
215-315	0	0	0	0	0	0	0	0	0	0	0	0	5	4	0	9	9
230-330	0	0	0	0	0	0	0	0	0	0	0	0	5	4	0	9	9
245-345	0	0	0	0	0	0	0	0	0	0	0	0	5	8	0	13	16
03-04	0	0	3	3	0	0	0	0	0	4	0	4	0	7	0	7	15
315-415	0	0	3	3	1	0	0	1	0	5	0	5	0	7	0	7	16
330-430	0	0	3	3	1	0	0	1	0	6	0	6	0	8	0	8	18
345-445	0	0	3	3	3	0	0	3	0	7	0	7	0	4	0	4	14
04-05	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PEAK HOUR																	
345-445	0	0	3	3	1	0	0	1	0	6	0	6	0	8	0	8	18

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Company Name Street Traffic Studies
 Location Grant Ave @ Darwin Ave @ Holly Ave
 Date 21-Feb-18

Crosswalk	Darwin Ave North Leg	Darwin Ave South Leg	Grant Ave East Leg	Grant Ave West Leg
Hour				0
06:30	0	0	0	0
06:45	0	0	0	0
07:00	2	2	3	0
07:15	2	0	0	0
07:30	16	0	3	0
07:45	94	1	6	0
08:00	34	0	4	0
08:15	2	0	6	0
08:30	3	0	2	0
08:45	3	0	1	0
09:00	22	0	16	0
09:15	1	1	2	0
14:00	0	0	1	1
14:15	0	0	0	0
14:30	0	0	1	1
14:45	2	1	6	0
15:00	167	4	5	2
15:15	6	4	0	0
15:30	8	2	0	1
15:45	28	6	26	2
16:00	20	0	18	0
16:15	56	1	11	0
16:30	15	0	5	0
16:45	0	0	1	0
TOTAL	481	22	117	7
AM Peak Vol	146	1	19	0
PM Peak Vol	209	16	31	5

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VEHICLE TURNING MOVEMENT COUNT - SUMMARY

Intersection of: Piney Branch Road
and: Ray Drive-School DW
Counted by: MN

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Location : Montgomery County
Date : 02/14/18
Weather : Clear
Entered by MN

School Trips Only

Day: Wednesday

STREET
TRAFFIC
STUDIES
LTD

TIME	TRAFFIC FROM NORTH on: Piney Branch Rd				TRAFFIC FROM SOUTH on: Piney Branch Rd				TRAFFIC FROM WEST on: Ray Dr				TRAFFIC FROM EAST on: School DW				TOTAL N + S + E + W
	RIGHT	THRU	LEFT	TOTAL	LEFT	THRU	RIGHT	TOTAL	RIGHT	THRU	LEFT	TOTAL	LEFT	THRU	RIGHT	TOTAL	
AM																	
06:30-45	0	0	1	1	0	0	1	1	0	0	0	0	0	0	0	0	2
45-00	0	0	6	6	0	0	0	0	0	0	0	0	0	0	0	0	6
07:00-15	0	0	7	7	0	0	0	0	0	0	0	0	3	0	0	3	10
15-30	0	0	10	10	0	0	3	3	0	2	0	2	3	0	5	8	23
30-45	0	0	34	34	0	0	5	5	0	12	0	12	11	3	21	35	86
45-00	0	0	65	65	0	0	9	9	0	13	0	13	29	2	50	81	168
08:00-15	0	0	38	38	0	0	3	3	0	8	0	8	44	7	53	104	153
15-30	0	0	9	9	0	0	1	1	0	2	0	2	6	2	8	16	28
30-45	0	0	0	0	0	0	0	0	0	0	0	0	1	0	3	4	4
45-00	0	0	3	3	0	0	0	0	0	0	0	0	1	0	1	2	5
09:00-15	0	0	4	4	0	0	0	0	0	1	0	1	0	1	5	6	11
15-30	0	0	2	2	0	0	1	1	0	0	0	0	2	1	1	4	7
AM 3 HOUR TOTALS	0	0	179	179	0	0	23	23	0	38	0	38	100	16	147	263	503
1 HOUR TOTALS																	
630-730	0	0	24	24	0	0	4	4	0	2	0	2	6	0	5	11	41
645-745	0	0	57	57	0	0	8	8	0	14	0	14	17	3	26	46	125
07-08	0	0	116	116	0	0	17	17	0	27	0	27	46	5	76	127	287
715-815	0	0	147	147	0	0	20	20	0	35	0	35	87	12	129	228	430
730-830	0	0	146	146	0	0	18	18	0	35	0	35	90	14	132	236	435
745-845	0	0	112	112	0	0	13	13	0	23	0	23	80	11	114	205	353
08-09	0	0	50	50	0	0	4	4	0	10	0	10	52	9	65	126	190
815-915	0	0	16	16	0	0	1	1	0	3	0	3	8	3	17	28	48
830-930	0	0	9	9	0	0	1	1	0	1	0	1	4	2	10	16	27
PEAK HOUR 730-830	0	0	146	146	0	0	18	18	0	35	0	35	90	14	132	236	435
PM																	
02:00-15	0	0	1	1	0	0	0	0	0	3	0	3	0	0	2	2	6
15-30	0	0	2	2	0	0	1	1	0	0	0	0	1	0	4	5	8
30-45	0	0	5	5	0	0	0	0	0	1	0	1	1	0	5	6	12
45-00	0	0	13	13	0	0	4	4	0	1	0	1	3	0	0	3	21
03:00-15	0	0	6	6	0	0	3	3	0	1	0	1	12	1	59	72	82
15-30	0	0	1	1	0	0	1	1	0	1	0	1	5	1	14	20	23
30-45	0	0	3	3	0	0	1	1	0	1	0	1	2	0	9	11	16
45-00	0	0	4	4	0	0	0	0	0	1	0	1	5	2	8	15	20
04:00-15	0	0	5	5	0	0	2	2	0	1	0	1	1	0	12	13	21
15-30	0	0	7	7	0	0	1	1	0	2	0	2	5	2	32	39	49
30-45	0	0	1	1	0	0	0	0	0	0	0	0	4	1	11	16	17
45-00	0	0	4	4	0	0	1	1	0	1	0	1	0	1	4	5	11
PM 3 HOUR TOTALS	0	0	52	52	0	0	14	14	0	13	0	13	39	8	160	207	286
1 HOUR TOTALS																	
02-03	0	0	21	21	0	0	5	5	0	5	0	5	5	0	11	16	47
215-315	0	0	26	26	0	0	8	8	0	3	0	3	17	1	68	86	123
230-330	0	0	25	25	0	0	8	8	0	4	0	4	21	2	78	101	138
245-345	0	0	23	23	0	0	9	9	0	4	0	4	22	2	82	106	142
03-04	0	0	14	14	0	0	5	5	0	4	0	4	24	4	90	118	141
315-415	0	0	13	13	0	0	4	4	0	4	0	4	13	3	43	59	80
330-430	0	0	19	19	0	0	4	4	0	5	0	5	13	4	61	78	106
345-445	0	0	17	17	0	0	3	3	0	4	0	4	15	5	63	83	107
04-05	0	0	17	17	0	0	4	4	0	4	0	4	10	4	59	73	98
PEAK HOUR 245-345	0	0	23	23	0	0	9	9	0	4	0	4	22	2	82	106	142

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VEHICLE TURNING MOVEMENT COUNT - SUMMARY

Intersection of: Grant Avenue
and: Chestnut Avenue-School DW
Counted by: NG

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School Trips Only

Location : Montgomery County
Date : 02/14/18
Weather : Clear
Entered by MN

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Day: Wednesday

STREET
TRAFFIC
STUDIES
LTD

TIME	TRAFFIC FROM NORTH on: School DW				TRAFFIC FROM SOUTH on: Chestnut Ave				TRAFFIC FROM WEST on: Grant Ave				TRAFFIC FROM EAST on: Grant Ave				TOTAL N + S + E + W
	RIGHT	THRU	LEFT	TOTAL	LEFT	THRU	RIGHT	TOTAL	RIGHT	THRU	LEFT	TOTAL	LEFT	THRU	RIGHT	TOTAL	
AM																	
06:30-45	0	0	0	0	0	0	0	0	0	0	1	1	0	0	1	1	2
45-00	0	0	0	0	0	1	0	1	0	0	0	0	0	0	1	1	2
07:00-15	0	0	0	0	0	3	0	3	0	0	0	0	0	0	0	0	3
15-30	0	0	0	0	0	0	0	0	0	0	4	4	0	0	5	5	9
30-45	0	1	0	1	0	3	0	3	0	0	5	5	0	0	8	8	17
45-00	1	3	0	4	0	10	0	10	0	0	33	33	0	0	9	9	56
08:00-15	1	2	3	6	0	18	0	18	0	0	24	24	0	0	20	20	68
15-30	1	1	2	4	0	2	0	2	0	0	1	1	0	0	1	1	8
30-45	0	0	0	0	0	0	0	0	0	0	1	1	0	0	3	3	4
45-00	2	0	1	3	0	0	0	0	0	0	3	3	0	0	0	0	6
09:00-15	0	0	0	0	0	0	0	0	0	0	2	2	0	0	3	3	5
15-30	0	0	0	0	0	0	0	0	0	0	3	3	0	0	2	2	5
AM 3 HOUR TOTALS	5	7	6	18	0	37	0	37	0	0	77	77	0	0	53	53	185
1 HOUR TOTALS																	
630-730	0	0	0	0	0	4	0	4	0	0	5	5	0	0	7	7	16
645-745	0	1	0	1	0	7	0	7	0	0	9	9	0	0	14	14	31
07-08	1	4	0	5	0	16	0	16	0	0	42	42	0	0	22	22	85
715-815	2	6	3	11	0	31	0	31	0	0	66	66	0	0	42	42	150
730-830	3	7	5	15	0	33	0	33	0	0	63	63	0	0	38	38	149
745-845	3	6	5	14	0	30	0	30	0	0	59	59	0	0	33	33	136
08-09	4	3	6	13	0	20	0	20	0	0	29	29	0	0	24	24	86
815-915	3	1	3	7	0	2	0	2	0	0	7	7	0	0	7	7	23
830-930	2	0	1	3	0	0	0	0	0	0	9	9	0	0	8	8	20
PEAK HOUR 715-815	2	6	3	11	0	31	0	31	0	0	66	66	0	0	42	42	150
PM																	
02:00-15	1	0	0	1	0	0	0	0	0	0	1	1	0	0	2	2	4
15-30	0	0	0	0	0	1	0	1	0	0	6	6	0	0	0	0	7
30-45	0	1	1	2	0	2	0	2	0	0	4	4	0	0	0	0	8
45-00	0	0	1	1	0	2	0	2	0	0	10	10	0	0	0	0	13
03:00-15	7	1	1	9	0	1	0	1	0	0	2	2	0	0	1	1	13
15-30	0	1	3	4	0	0	0	0	0	0	3	3	0	0	1	1	8
30-45	0	2	2	4	0	3	0	3	0	0	3	3	0	0	0	0	10
45-00	1	2	1	4	0	3	0	3	0	0	2	2	0	0	7	7	16
04:00-15	1	1	2	4	0	3	0	3	0	0	3	3	0	0	9	9	19
15-30	2	1	4	7	0	2	0	2	0	0	7	7	0	0	2	2	18
30-45	2	0	1	3	0	1	0	1	0	0	2	2	0	0	0	0	6
45-00	0	0	1	1	0	1	0	1	0	0	0	0	0	0	3	3	5
PM 3 HOUR TOTALS	14	9	17	40	0	19	0	19	0	0	43	43	0	0	25	25	127
1 HOUR TOTALS																	
02-03	1	1	2	4	0	5	0	5	0	0	21	21	0	0	2	2	32
215-315	7	2	3	12	0	6	0	6	0	0	22	22	0	0	1	1	41
230-330	7	3	6	16	0	5	0	5	0	0	19	19	0	0	2	2	42
245-345	7	4	7	18	0	6	0	6	0	0	18	18	0	0	2	2	44
03-04	8	6	7	21	0	7	0	7	0	0	10	10	0	0	9	9	47
315-415	2	6	8	16	0	9	0	9	0	0	11	11	0	0	17	17	53
330-430	4	6	9	19	0	11	0	11	0	0	15	15	0	0	18	18	63
345-445	6	4	8	18	0	9	0	9	0	0	14	14	0	0	18	18	59
04-05	5	2	8	15	0	7	0	7	0	0	12	12	0	0	14	14	48
PEAK HOUR 330-430	4	6	9	19	0	11	0	11	0	0	15	15	0	0	18	18	63

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APPENDIX C

CAPACITY WORKSHEETS - EXISTING CONDITIONS

Lanes, Volumes, Timings
3: Sligo Ave & MD 320 & Wessex Rd

Morning Peak Hour

Existing Traffic Volumes

	<div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div>											
Lane Group	WBL2	WBL	WBR	NBL	NBT	NBR	SBL	SBT	SBR	NEL	NER	Ø4
Lane Configurations												
Traffic Volume (vph)	7	6	4	0	591	1	3	724	178	0	0	
Future Volume (vph)	7	6	4	0	591	1	3	724	178	0	0	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Storage Length (ft)		0	0	0		0	110		0	0	0	
Storage Lanes		1	0	0		0	1		0	0	0	
Taper Length (ft)		25		25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt		0.972						0.970				
Flt Protected		0.962					0.950					
Satd. Flow (prot)	0	1742	0	0	1863	0	1770	1807	0	0	0	
Flt Permitted		0.962					0.315					
Satd. Flow (perm)	0	1742	0	0	1863	0	587	1807	0	0	0	
Right Turn on Red			Yes			Yes			Yes			
Satd. Flow (RTOR)		65						16				
Link Speed (mph)		30			30			30		30		
Link Distance (ft)		749			186			555		157		
Travel Time (s)		17.0			4.2			12.6		3.6		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	
Adj. Flow (vph)	8	7	4	0	642	1	3	787	193	0	0	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	19	0	0	643	0	3	980	0	0	0	
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Right	
Median Width(ft)		12			12			12		0		
Link Offset(ft)		0			0			0		0		
Crosswalk Width(ft)		16			16			16		16		
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Turning Speed (mph)	15	15	9	15		9	15		9	15	9	
Turn Type	Prot	Prot			NA		Perm	NA				
Protected Phases	8	8			2			6				4
Permitted Phases							6					
Minimum Split (s)	24.0	24.0			24.0		24.0	24.0				24.0
Total Split (s)	24.0	24.0			102.0		102.0	102.0				48.0
Total Split (%)	16.0%	16.0%			68.0%		68.0%	68.0%				32%
Maximum Green (s)	18.0	18.0			96.0		96.0	96.0				42.0
Yellow Time (s)	4.0	4.0			4.0		4.0	4.0				4.0
All-Red Time (s)	2.0	2.0			2.0		2.0	2.0				2.0
Lost Time Adjust (s)		0.0			0.0		0.0	0.0				
Total Lost Time (s)		6.0			6.0		6.0	6.0				
Lead/Lag	Lag	Lag										
Lead-Lag Optimize?	Yes	Yes										
Walk Time (s)	7.0	7.0			7.0		7.0	7.0				7.0
Flash Dont Walk (s)	11.0	11.0			11.0		11.0	11.0				11.0
Pedestrian Calls (#/hr)	0	0			0		0	0				0
Act Effct Green (s)		18.0			96.0		96.0	96.0				
Actuated g/C Ratio		0.12			0.64		0.64	0.64				
v/c Ratio		0.07			0.54		0.01	0.84				

Baseline














Lanes, Volumes, Timings
3: Sligo Ave & MD 320 & Wessex Rd

Morning Peak Hour
Existing Traffic Volumes

Lane Group	Ø7
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Ideal Flow (vphpl)	
Storage Length (ft)	
Storage Lanes	
Taper Length (ft)	
Lane Util. Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Right Turn on Red	
Satd. Flow (RTOR)	
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Peak Hour Factor	
Adj. Flow (vph)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Enter Blocked Intersection	
Lane Alignment	
Median Width(ft)	
Link Offset(ft)	
Crosswalk Width(ft)	
Two way Left Turn Lane	
Headway Factor	
Turning Speed (mph)	
Turn Type	
Protected Phases	7
Permitted Phases	
Minimum Split (s)	24.0
Total Split (s)	24.0
Total Split (%)	16%
Maximum Green (s)	18.0
Yellow Time (s)	4.0
All-Red Time (s)	2.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	Lead
Lead-Lag Optimize?	Yes
Walk Time (s)	7.0
Flash Dont Walk (s)	11.0
Pedestrian Calls (#/hr)	0
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	

Lanes, Volumes, Timings
3: Sligo Ave & MD 320 & Wessex Rd

Morning Peak Hour
Existing Traffic Volumes

													
Lane Group	WBL2	WBL	WBR	NBL	NBT	NBR	SBL	SBT	SBR	NEL	NER	Ø4	
Control Delay		0.5			10.0		10.0	29.3					
Queue Delay		0.0			0.1		0.0	0.0					
Total Delay		0.5			10.2		10.0	29.3					
LOS		A			B		A	C					
Approach Delay		0.5			10.2			29.2					
Approach LOS		A			B			C					

Intersection Summary

Area Type: Other

Cycle Length: 150

Actuated Cycle Length: 150

Offset: 0 (0%), Referenced to phase 2:NBT, Start of Green, Master Intersection

Natural Cycle: 110

Control Type: Pretimed

Maximum v/c Ratio: 0.84

Intersection Signal Delay: 21.4






Intersection LOS: C

Intersection Capacity Utilization 63.1%

ICU Level of Service B

Analysis Period (min) 15

Splits and Phases: 3: Sligo Ave & MD 320 & Wessex Rd
















			
102 s		48 s	
			
102 s		24 s	24 s

Lane Group	Ø7
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	
Intersection Summary	

Lanes, Volumes, Timings
3: Sligo Ave & MD 320 & Wessex Rd

Evening Peak Hour

Existing Traffic Volumes

												
Lane Group	WBL2	WBL	WBR	NBL	NBT	NBR	SBL	SBT	SBR	NEL	NER	Ø4
Lane Configurations												
Traffic Volume (vph)	1	2	2	0	941	7	4	421	137	0	0	
Future Volume (vph)	1	2	2	0	941	7	4	421	137	0	0	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Storage Length (ft)		0	0	0		0	110		0	0	0	
Storage Lanes		1	0	0		0	1		0	0	0	
Taper Length (ft)		25		25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt		0.946			0.999			0.963				
Flt Protected		0.971					0.950					
Satd. Flow (prot)	0	1711	0	0	1861	0	1770	1794	0	0	0	
Flt Permitted		0.971					0.090					
Satd. Flow (perm)	0	1711	0	0	1861	0	168	1794	0	0	0	
Right Turn on Red			Yes			Yes			Yes			
Satd. Flow (RTOR)		65			1			22				
Link Speed (mph)		30			30			30		30		
Link Distance (ft)		749			186			555		157		
Travel Time (s)		17.0			4.2			12.6		3.6		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	
Adj. Flow (vph)	1	2	2	0	1023	8	4	458	149	0	0	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	5	0	0	1031	0	4	607	0	0	0	
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Right	
Median Width(ft)		12			12			12		0		
Link Offset(ft)		0			0			0		0		
Crosswalk Width(ft)		16			16			16		16		
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Turning Speed (mph)	15	15	9	15		9	15		9	15	9	
Turn Type	Prot	Prot			NA		Perm	NA				
Protected Phases	8	8			2			6				4
Permitted Phases							6					
Minimum Split (s)	24.0	24.0			24.0		24.0	24.0				24.0
Total Split (s)	24.0	24.0			102.0		102.0	102.0				48.0
Total Split (%)	16.0%	16.0%			68.0%		68.0%	68.0%				32%
Maximum Green (s)	18.0	18.0			96.0		96.0	96.0				42.0
Yellow Time (s)	4.0	4.0			4.0		4.0	4.0				4.0
All-Red Time (s)	2.0	2.0			2.0		2.0	2.0				2.0
Lost Time Adjust (s)		0.0			0.0		0.0	0.0				
Total Lost Time (s)		6.0			6.0		6.0	6.0				
Lead/Lag	Lag	Lag										
Lead-Lag Optimize?	Yes	Yes										
Walk Time (s)	7.0	7.0			7.0		7.0	7.0				7.0
Flash Dont Walk (s)	11.0	11.0			11.0		11.0	11.0				11.0
Pedestrian Calls (#/hr)	0	0			0		0	0				0
Act Effct Green (s)		18.0			96.0		96.0	96.0				
Actuated g/C Ratio		0.12			0.64		0.64	0.64				
v/c Ratio		0.02			0.87		0.04	0.53				

Baseline

Synchro 9 Report
Page 1

Lanes, Volumes, Timings
3: Sligo Ave & MD 320 & Wessex Rd












Evening Peak Hour
Existing Traffic Volumes

Lane Group	Ø7
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Ideal Flow (vphpl)	
Storage Length (ft)	
Storage Lanes	
Taper Length (ft)	
Lane Util. Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Right Turn on Red	
Satd. Flow (RTOR)	
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Peak Hour Factor	
Adj. Flow (vph)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Enter Blocked Intersection	
Lane Alignment	
Median Width(ft)	
Link Offset(ft)	
Crosswalk Width(ft)	
Two way Left Turn Lane	
Headway Factor	
Turning Speed (mph)	
Turn Type	
Protected Phases	7
Permitted Phases	
Minimum Split (s)	24.0
Total Split (s)	24.0
Total Split (%)	16%
Maximum Green (s)	18.0
Yellow Time (s)	4.0
All-Red Time (s)	2.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	Lead
Lead-Lag Optimize?	Yes
Walk Time (s)	7.0
Flash Dont Walk (s)	11.0
Pedestrian Calls (#/hr)	0
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	

Baseline

Lanes, Volumes, Timings
3: Sligo Ave & MD 320 & Wessex Rd

Evening Peak Hour
Existing Traffic Volumes

												
Lane Group	WBL2	WBL	WBR	NBL	NBT	NBR	SBL	SBT	SBR	NEL	NER	Ø4
Control Delay		0.2			27.8		11.2	16.0				
Queue Delay		0.0			0.0		0.0	0.1				
Total Delay		0.2			27.8		11.2	16.1				
LOS		A			C		B	B				
Approach Delay		0.2			27.8			16.1				
Approach LOS		A			C			B				

Intersection Summary

Area Type: Other

Cycle Length: 150

Actuated Cycle Length: 150

Offset: 0 (0%), Referenced to phase 2:NBT, Start of Green, Master Intersection

Natural Cycle: 110

Control Type: Prelimed

Maximum v/c Ratio: 0.87

Intersection Signal Delay: 23.4






Intersection LOS: C

Intersection Capacity Utilization 64.1%

ICU Level of Service C

Analysis Period (min) 15




















Splits and Phases: 3: Sligo Ave & MD 320 & Wessex Rd

			
102 s		48 s	
			
102 s		24 s	24 s

Lane Group	Ø7
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	
Intersection Summary	

Lanes, Volumes, Timings
6: MD 320 & Park Valley Rd

Morning Peak Hour
Existing Traffic Volumes













												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	65	11	14	19	21	12	24	515	11	6	725	0
Future Volume (vph)	65	11	14	19	21	12	24	515	11	6	725	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		0	100		0	65		0
Storage Lanes	1		0	0		0	1		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frnt		0.917			0.969			0.997				
Flt Protected	0.950				0.982		0.950			0.950		
Satd. Flow (prot)	1770	1708	0	0	1773	0	1770	1857	0	1770	1863	0
Flt Permitted	0.950				0.982		0.230			0.360		
Satd. Flow (perm)	1770	1708	0	0	1773	0	428	1857	0	671	1863	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		15			8			1				
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		563			524			2298			186	
Travel Time (s)		12.8			11.9			52.2			4.2	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	71	12	15	21	23	13	26	560	12	7	788	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	71	27	0	0	57	0	26	572	0	7	788	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Prot	NA		Split	NA		Perm	NA		Perm	NA	
Protected Phases	7	4		8	8			2			6	
Permitted Phases							2			6		
Minimum Split (s)	24.0	24.0		24.0	24.0		24.0	24.0		24.0	24.0	
Total Split (s)	24.0	48.0		24.0	24.0		102.0	102.0		102.0	102.0	
Total Split (%)	16.0%	32.0%		16.0%	16.0%		68.0%	68.0%		68.0%	68.0%	
Maximum Green (s)	18.0	42.0		18.0	18.0		96.0	96.0		96.0	96.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	0.0	0.0			0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.0	6.0			6.0		6.0	6.0		6.0	6.0	
Lead/Lag	Lead			Lag	Lag							
Lead-Lag Optimize?	Yes			Yes	Yes							
Walk Time (s)	7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	11.0	11.0		11.0	11.0		11.0	11.0		11.0	11.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0		0	0	
Act Effct Green (s)	18.0	42.0			18.0		96.0	96.0		96.0	96.0	
Actuated g/C Ratio	0.12	0.28			0.12		0.64	0.64		0.64	0.64	
v/c Ratio	0.33	0.06			0.26		0.10	0.48		0.02	0.66	

Baseline

Synchro 9 Report
Page 1

Lanes, Volumes, Timings
6: MD 320 & Park Valley Rd

Morning Peak Hour
Existing Traffic Volumes

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Control Delay	65.4	23.3			54.8		11.5	15.7		2.0	3.4	
Queue Delay	0.8	0.0			120.2		0.0	0.0		0.0	1.8	
Total Delay	66.2	23.3			175.1		11.5	15.8		2.0	5.2	
LOS	E	C			F		B	B		A	A	
Approach Delay		54.3			175.1			15.6			5.2	
Approach LOS		D			F			B			A	

Intersection Summary

Area Type: Other

Cycle Length: 150

Actuated Cycle Length: 150

Offset: 0 (0%), Referenced to phase 2:NBT, Start of Green, Master Intersection

Natural Cycle: 110

Control Type: Pretimed

Maximum v/c Ratio: 0.84

Intersection Signal Delay: 18.6

Intersection LOS: B






Intersection Capacity Utilization 57.7%

ICU Level of Service B

Analysis Period (min) 15





















! Phase conflict between lane groups.

Splits and Phases: 6: MD 320 & Park Valley Rd

			
102 s		48 s	
			
102 s		24 s	24 s

Lanes, Volumes, Timings
6: MD 320 & Park Valley Rd

Evening Peak Hour
Existing Traffic Volumes


												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	180	40	24	15	35	11	21	757	16	13	407	0
Future Volume (vph)	180	40	24	15	35	11	21	757	16	13	407	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		0	100		0	65		0
Storage Lanes	1		0	0		0	1		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.943			0.975			0.997				
Flt Protected	0.950				0.988		0.950			0.950		
Satd. Flow (prot)	1770	1757	0	0	1794	0	1770	1857	0	1770	1863	0
Flt Permitted	0.950				0.988		0.445			0.200		
Satd. Flow (perm)	1770	1757	0	0	1794	0	829	1857	0	373	1863	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		20			6			1				
Link Speed (mph)		30			30			30				30
Link Distance (ft)		563			524			2298				186
Travel Time (s)		12.8			11.9			52.2				4.2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	196	43	26	16	38	12	23	823	17	14	442	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	196	69	0	0	66	0	23	840	0	14	442	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12				12
Link Offset(ft)		0			0			0				0
Crosswalk Width(ft)		16			16			16				16
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Prot	NA		Split	NA		Perm	NA		Perm	NA	
Protected Phases	7	4		8	8			2			6	
Permitted Phases							2			6		
Minimum Split (s)	24.0	24.0		24.0	24.0		24.0	24.0		24.0	24.0	
Total Split (s)	24.0	48.0		24.0	24.0		102.0	102.0		102.0	102.0	
Total Split (%)	16.0%	32.0%		16.0%	16.0%		68.0%	68.0%		68.0%	68.0%	
Maximum Green (s)	18.0	42.0		18.0	18.0		96.0	96.0		96.0	96.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	0.0	0.0			0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.0	6.0			6.0		6.0	6.0		6.0	6.0	
Lead/Lag	Lead			Lag	Lag							
Lead-Lag Optimize?	Yes			Yes	Yes							
Walk Time (s)	7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	11.0	11.0		11.0	11.0		11.0	11.0		11.0	11.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0		0	0	
Act Effct Green (s)	18.0	42.0			18.0		96.0	96.0		96.0	96.0	
Actuated g/C Ratio	0.12	0.28			0.12		0.64	0.64		0.64	0.64	
v/c Ratio	0.92	0.14			0.30		0.04	0.71		0.06	0.37	

Baseline

Synchro 9 Report
Page 1

Lanes, Volumes, Timings
6: MD 320 & Park Valley Rd

Evening Peak Hour
Existing Traffic Volumes

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Control Delay	109.3	29.7			58.7		10.3	21.9		2.2	2.6	
Queue Delay	69.0	0.0			152.7		0.0	0.2		0.0	0.4	
Total Delay	178.2	29.7			211.4		10.3	22.1		2.2	2.9	
LOS	F	C			F		B	C		A	A	
Approach Delay		139.6			211.4			21.8			2.9	
Approach LOS		F			F			C			A	

Intersection Summary

Area Type: Other

Cycle Length: 150

Actuated Cycle Length: 150

Offset: 0 (0%), Referenced to phase 2:NBT, Start of Green, Master Intersection

Natural Cycle: 110

Control Type: Pretimed

Maximum v/c Ratio: 0.92

Intersection Signal Delay: 43.1

Intersection LOS: D


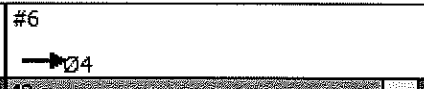

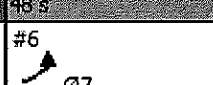

Intersection Capacity Utilization 67.4%

ICU Level of Service C

Analysis Period (min) 15




















! Phase conflict between lane groups.

Splits and Phases: 6: MD 320 & Park Valley Rd

			
102 s		48 s	
			
102 s		24 s	24 s













Lanes, Volumes, Timings
9: MD 320 & Ray Dr/School DW

Morning Peak Hour
Existing Traffic Volumes

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	22	35	15	90	14	132	5	341	18	146	736	3
Future Volume (vph)	22	35	15	90	14	132	5	341	18	146	736	3
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		0	50		135	60		0
Storage Lanes	1		0	0		0	1		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	1.00	1.00
Frt		0.956			0.925			0.992			0.999	
Flt Protected	0.950				0.981		0.950			0.950		
Satd. Flow (prot)	1770	1781	0	0	1690	0	1770	3511	0	1770	1861	0
Flt Permitted	0.472				0.851		0.308			0.487		
Satd. Flow (perm)	879	1781	0	0	1466	0	574	3511	0	907	1861	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		16			53			9				
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		309			285			326			2298	
Travel Time (s)		7.0			6.5			7.4			52.2	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	24	38	16	98	15	143	5	371	20	159	800	3
Shared Lane Traffic (%)												
Lane Group Flow (vph)	24	54	0	0	256	0	5	391	0	159	803	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (ft)	20	100		20	100		20	100		20	100	
Trailing Detector (ft)	0	0		0	0		0	0		0	0	
Detector 1 Position(ft)	0	0		0	0		0	0		0	0	
Detector 1 Size(ft)	20	6		20	6		20	6		20	6	
Detector 1 Type	CI+Ex	CI+Ex		CI+Ex	CI+Ex		CI+Ex	CI+Ex		CI+Ex	CI+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		CI+Ex			CI+Ex			CI+Ex			CI+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA		Perm	NA		pm+pt	NA	
Protected Phases		4			8			2		1	6	
Permitted Phases	4			8			2			6		

Lanes, Volumes, Timings
9: MD 320 & Ray Dr/School DW

Morning Peak Hour
Existing Traffic Volumes

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	4	4		8	8		2	2		1	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	24.0	24.0		24.0	24.0		24.0	24.0		9.5	24.0	
Total Split (s)	30.0	30.0		30.0	30.0		70.0	70.0		9.5	70.0	
Total Split (%)	27.4%	27.4%		27.4%	27.4%		63.9%	63.9%		8.7%	63.9%	
Maximum Green (s)	24.0	24.0		24.0	24.0		64.0	64.0		5.0	64.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		3.5	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		1.0	2.0	
Lost Time Adjust (s)	0.0	0.0			0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.0	6.0			6.0		6.0	6.0		4.5	6.0	
Lead/Lag							Lag	Lag		Lead		
Lead-Lag Optimize?							Yes	Yes		Yes		
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		Max	Max		None	Max	
Walk Time (s)	7.0	7.0		7.0	7.0		7.0	7.0			7.0	
Flash Dont Walk (s)	11.0	11.0		11.0	11.0		11.0	11.0			11.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0			0	
Act Effct Green (s)	19.1	19.1			19.1		64.2	64.2		75.2	73.7	
Actuated g/C Ratio	0.18	0.18			0.18		0.61	0.61		0.72	0.70	
v/c Ratio	0.15	0.16			0.83		0.01	0.18		0.23	0.61	
Control Delay	37.5	27.8			54.3		9.6	9.5		6.1	11.5	
Queue Delay	0.0	0.0			0.0		0.0	0.5		0.0	0.0	
Total Delay	37.5	27.8			54.3		9.6	10.0		6.1	11.5	
LOS	D	C			D		A	A		A	B	
Approach Delay		30.8			54.3			10.0			10.6	
Approach LOS		C			D			A			B	

Intersection Summary

Area Type: Other

Cycle Length: 109.5

Actuated Cycle Length: 104.8

Natural Cycle: 60

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.83

Intersection Signal Delay: 18.0






Intersection LOS: B

Intersection Capacity Utilization 78.6%

ICU Level of Service D




















Analysis Period (min) 15

Splits and Phases: 9: MD 320 & Ray Dr/School DW

 Ø1	 Ø2	 Ø4
9.5 s	70 s	30 s
 Ø6		 Ø8
70 s		30 s


Lanes, Volumes, Timings
9: MD 320 & Ray Dr/School DW

Evening Peak Hour
Existing Traffic Volumes

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	11	4	12	24	4	90	7	739	5	14	407	2
Future Volume (vph)	11	4	12	24	4	90	7	739	5	14	407	2
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		0	50		135	60		0
Storage Lanes	1		0	0		0	1		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	1.00	1.00
Frt		0.885			0.897			0.999			0.999	
Flt Protected	0.950				0.990		0.950			0.950		
Satd. Flow (prot)	1770	1649	0	0	1654	0	1770	3536	0	1770	1861	0
Flt Permitted	0.527				0.925		0.506			0.316		
Satd. Flow (perm)	982	1649	0	0	1546	0	943	3536	0	589	1861	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		13			98			1				
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		309			285			326			2298	
Travel Time (s)		7.0			6.5			7.4			52.2	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	12	4	13	26	4	98	8	803	5	15	442	2
Shared Lane Traffic (%)												
Lane Group Flow (vph)	12	17	0	0	128	0	8	808	0	15	444	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (ft)	20	100		20	100		20	100		20	100	
Trailing Detector (ft)	0	0		0	0		0	0		0	0	
Detector 1 Position(ft)	0	0		0	0		0	0		0	0	
Detector 1 Size(ft)	20	6		20	6		20	6		20	6	
Detector 1 Type	CI+Ex	CI+Ex		CI+Ex	CI+Ex		CI+Ex	CI+Ex		CI+Ex	CI+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		CI+Ex			CI+Ex			CI+Ex			CI+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA		Perm	NA		pm+pt	NA	
Protected Phases		4			8			2		1	6	
Permitted Phases	4			8			2			6		

Lanes, Volumes, Timings
9: MD 320 & Ray Dr/School DW

Evening Peak Hour
Existing Traffic Volumes

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	4	4		8	8		2	2		1	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	24.0	24.0		24.0	24.0		24.0	24.0		9.5	24.0	
Total Split (s)	30.0	30.0		30.0	30.0		70.0	70.0		9.5	70.0	
Total Split (%)	27.4%	27.4%		27.4%	27.4%		63.9%	63.9%		8.7%	63.9%	
Maximum Green (s)	24.0	24.0		24.0	24.0		64.0	64.0		5.0	64.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		3.5	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		1.0	2.0	
Lost Time Adjust (s)	0.0	0.0			0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.0	6.0			6.0		6.0	6.0		4.5	6.0	
Lead/Lag							Lag	Lag		Lead		
Lead-Lag Optimize?							Yes	Yes		Yes		
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		Max	Max		None	Max	
Walk Time (s)	7.0	7.0		7.0	7.0		7.0	7.0			7.0	
Flash Dont Walk (s)	11.0	11.0		11.0	11.0		11.0	11.0			11.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0			0	
Act Effect Green (s)	8.1	8.1			8.1		68.8	68.8		72.1	70.6	
Actuated g/C Ratio	0.09	0.09			0.09		0.76	0.76		0.79	0.78	
v/c Ratio	0.14	0.11			0.57		0.01	0.30		0.03	0.31	
Control Delay	40.2	22.6			22.8		4.6	4.4		2.6	3.8	
Queue Delay	0.0	0.0			0.0		0.0	0.6		0.0	0.0	
Total Delay	40.2	22.6			22.8		4.6	5.0		2.6	3.8	
LOS	D	C			C		A	A		A	A	
Approach Delay		29.9			22.8			5.0			3.8	
Approach LOS		C			C			A			A	

Intersection Summary

Area Type: Other

Cycle Length: 109.5

Actuated Cycle Length: 90.7

Natural Cycle: 60

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.57

Intersection Signal Delay: 6.7






Intersection LOS: A

Intersection Capacity Utilization 45.3%

ICU Level of Service A























Analysis Period (min) 15

Splits and Phases: 9: MD 320 & Ray Dr/School DW

 Ø1	 Ø2	 Ø4
9.5 s	70 s	30 s
 Ø6		 Ø8
70 s		30 s













Lanes, Volumes, Timings
14: MD 320 & MD 410

Morning Peak Hour
Existing Traffic Volumes

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	67	425	43	48	213	29	41	611	87	18	271	0
Future Volume (vph)	67	425	43	48	213	29	41	611	87	18	271	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	85		0	70		0	140		175	160		160
Storage Lanes	1		0	1		0	1		1	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Fr't		0.986			0.982				0.850			
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	1837	0	1770	1829	0	1770	1863	1583	1770	1863	1863
Flt Permitted	0.506			0.187			0.554			0.258		
Satd. Flow (perm)	943	1837	0	348	1829	0	1032	1863	1583	481	1863	1863
Right Turn on Red			Yes			No			No			Yes
Satd. Flow (RTOR)		6										
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		606			656			1086			555	
Travel Time (s)		13.8			14.9			24.7			12.6	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	73	462	47	52	232	32	45	664	95	20	295	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	73	509	0	52	264	0	45	664	95	20	295	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2		1	2	1	1	2	1
Detector Template	Left	Thru		Left	Thru		Left	Thru	Right	Left	Thru	Right
Leading Detector (ft)	20	100		20	100		20	100	20	20	100	20
Trailing Detector (ft)	0	0		0	0		0	0	0	0	0	0
Detector 1 Position(ft)	0	0		0	0		0	0	0	0	0	0
Detector 1 Size(ft)	20	6		20	6		20	6	20	20	6	20
Detector 1 Type	CI+Ex	CI+Ex		CI+Ex	CI+Ex		CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		CI+Ex			CI+Ex			CI+Ex			CI+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	Perm	NA	Perm
Protected Phases		4			8			2		2	6	
Permitted Phases	4			8			2		2	6		6

Lanes, Volumes, Timings
14: MD 320 & MD 410

Morning Peak Hour
Existing Traffic Volumes

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	4	4		8	8		2	2	2	6	6	6
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	24.0	24.0		24.0	24.0		24.0	24.0	24.0	24.0	24.0	24.0
Total Split (s)	45.0	45.0		45.0	45.0		55.0	55.0	55.0	55.0	55.0	55.0
Total Split (%)	45.0%	45.0%		45.0%	45.0%		55.0%	55.0%	55.0%	55.0%	55.0%	55.0%
Maximum Green (s)	39.0	39.0		39.0	39.0		49.0	49.0	49.0	49.0	49.0	49.0
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0		6.0	6.0		6.0	6.0	6.0	6.0	6.0	6.0
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None		None	None		Max	Max	Max	Max	Max	Max
Walk Time (s)	7.0	7.0		7.0	7.0		7.0	7.0	7.0	7.0	7.0	7.0
Flash Dont Walk (s)	11.0	11.0		11.0	11.0		11.0	11.0	11.0	11.0	11.0	11.0
Pedestrian Calls (#/hr)	0	0		0	0		0	0	0	0	0	0
Act Effect Green (s)	29.9	29.9		29.9	29.9		49.3	49.3	49.3	49.3	49.3	49.3
Actuated g/C Ratio	0.33	0.33		0.33	0.33		0.54	0.54	0.54	0.54	0.54	0.54
v/c Ratio	0.24	0.84		0.46	0.44		0.08	0.66	0.11	0.08	0.29	0.29
Control Delay	23.6	41.2		37.9	26.0		12.9	20.6	12.6	13.7	13.8	13.8
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	23.6	41.2		37.9	26.0		12.9	20.6	12.6	13.7	13.8	13.8
LOS	C	D		D	C		B	C	B	B	B	B
Approach Delay		39.0			28.0			19.2			13.8	
Approach LOS		D			C			B			B	

Intersection Summary

Area Type: Other

Cycle Length: 100

Actuated Cycle Length: 91.3

Natural Cycle: 60

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.84

Intersection Signal Delay: 25.5



Intersection LOS: C

Intersection Capacity Utilization 78.2%

ICU Level of Service D























Analysis Period (min) 15

Splits and Phases: 14: MD 320 & MD 410

 Ø2	 Ø4
55 s	45 s
 Ø6	 Ø8
55 s	45 s













Lanes, Volumes, Timings
14: MD 320 & MD 410

Evening Peak Hour
Existing Traffic Volumes

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	54	273	63	68	386	15	50	326	41	17	499	9
Future Volume (vph)	54	273	63	68	386	15	50	326	41	17	499	9
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	85		0	70		0	140		175	160		160
Storage Lanes	1		0	1		0	1		1	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.972			0.994				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	1811	0	1770	1852	0	1770	1863	1583	1770	1863	1583
Flt Permitted	0.242			0.342			0.365			0.513		
Satd. Flow (perm)	451	1811	0	637	1852	0	680	1863	1583	956	1863	1583
Right Turn on Red			Yes			No			No			Yes
Satd. Flow (RTOR)		14										33
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		606			656			1086			555	
Travel Time (s)		13.8			14.9			24.7			12.6	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	59	297	68	74	420	16	54	354	45	18	542	10
Shared Lane Traffic (%)												
Lane Group Flow (vph)	59	365	0	74	436	0	54	354	45	18	542	10
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2		1	2	1	1	2	1
Detector Template	Left	Thru		Left	Thru		Left	Thru	Right	Left	Thru	Right
Leading Detector (ft)	20	100		20	100		20	100	20	20	100	20
Trailing Detector (ft)	0	0		0	0		0	0	0	0	0	0
Detector 1 Position(ft)	0	0		0	0		0	0	0	0	0	0
Detector 1 Size(ft)	20	6		20	6		20	6	20	20	6	20
Detector 1 Type	CI+Ex	CI+Ex		CI+Ex	CI+Ex		CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		CI+Ex			CI+Ex			CI+Ex			CI+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	Perm	NA	Perm
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2		2	6		6

Lanes, Volumes, Timings
14: MD 320 & MD 410

Evening Peak Hour
Existing Traffic Volumes

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	4	4		8	8		2	2	2	6	6	6
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	24.0	24.0		24.0	24.0		24.0	24.0	24.0	24.0	24.0	24.0
Total Split (s)	45.0	45.0		45.0	45.0		55.0	55.0	55.0	55.0	55.0	55.0
Total Split (%)	45.0%	45.0%		45.0%	45.0%		55.0%	55.0%	55.0%	55.0%	55.0%	55.0%
Maximum Green (s)	39.0	39.0		39.0	39.0		49.0	49.0	49.0	49.0	49.0	49.0
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0		6.0	6.0		6.0	6.0	6.0	6.0	6.0	6.0
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None		None	None		Max	Max	Max	Max	Max	Max
Walk Time (s)	7.0	7.0		7.0	7.0		7.0	7.0	7.0	7.0	7.0	7.0
Flash Dont Walk (s)	11.0	11.0		11.0	11.0		11.0	11.0	11.0	11.0	11.0	11.0
Pedestrian Calls (#/hr)	0	0		0	0		0	0	0	0	0	0
Act Effct Green (s)	25.9	25.9		25.9	25.9		49.3	49.3	49.3	49.3	49.3	49.3
Actuated g/C Ratio	0.30	0.30		0.30	0.30		0.56	0.56	0.56	0.56	0.56	0.56
v/c Ratio	0.44	0.67		0.39	0.79		0.14	0.34	0.05	0.03	0.52	0.01
Control Delay	35.4	31.8		30.3	39.2		12.6	12.8	11.0	11.4	15.4	0.2
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.4	0.0
Total Delay	35.4	31.8		30.3	39.2		12.6	12.8	11.0	11.4	15.8	0.2
LOS	D	C		C	D		B	B	B	B	B	A
Approach Delay		32.3			37.9			12.6			15.4	
Approach LOS		C			D			B			B	

Intersection Summary

Area Type: Other

Cycle Length: 100

Actuated Cycle Length: 87.3

Natural Cycle: 50

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.79

Intersection Signal Delay: 24.3





Intersection LOS: C

Intersection Capacity Utilization 75.8%

ICU Level of Service D

Analysis Period (min) 15

Splits and Phases: 14: MD 320 & MD 410

 Ø2	 Ø4
55 s	45 s
 Ø6	 Ø8
55 s	45 s

Intersection												
Int Delay, s/veh	4.6											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↕			↕			↕			↕		
Traffic Vol, veh/h	63	42	8	17	45	38	7	33	2	5	7	3
Future Vol, veh/h	63	42	8	17	45	38	7	33	2	5	7	3
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	68	46	9	18	49	41	8	36	2	5	8	3

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	90	0	0	54	0	0	299	314	50	313	298	70
Stage 1	-	-	-	-	-	-	187	187	-	107	107	-
Stage 2	-	-	-	-	-	-	112	127	-	206	191	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1505	-	-	1551	-	-	653	601	1018	640	614	993
Stage 1	-	-	-	-	-	-	815	745	-	898	807	-
Stage 2	-	-	-	-	-	-	893	791	-	796	742	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1505	-	-	1551	-	-	616	566	1018	581	578	993
Mov Cap-2 Maneuver	-	-	-	-	-	-	616	566	-	581	578	-
Stage 1	-	-	-	-	-	-	777	710	-	856	797	-
Stage 2	-	-	-	-	-	-	871	782	-	719	707	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	4.2	1.2	11.7	10.8
HCM LOS	B		B	

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	586	1505	-	-	1551	-	-	632
HCM Lane V/C Ratio	0.078	0.046	-	-	0.012	-	-	0.026
HCM Control Delay (s)	11.7	7.5	0	-	7.3	0	-	10.8
HCM Lane LOS	B	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	0.3	0.1	-	-	0	-	-	0.1

$$(42 \times 11.7) + (15 \times 10.8) + (63 \times 7.5) + (7 \times 7.3) / 270$$

$$491.4 + 162 + 472.5 + 124.1 / 270$$

$$1250 / 270 = 4.6 \text{ sec/veh}$$

HCM 2010 TWSC
17: Chestnut Ave/School DW & Grant Ave

Evening Peak Hour
Existing Traffic Volumes

Intersection												
Int Delay, s/veh	3.3											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↕			↕			↕			↕		
Traffic Vol, veh/h	10	46	7	19	64	9	6	7	14	7	6	8
Future Vol, veh/h	10	46	7	19	64	9	6	7	14	7	6	8
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	11	50	8	21	70	10	7	8	15	8	7	9

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	79	0	0	58	0	0	199	197	54	203	195	74
Stage 1	-	-	-	-	-	-	76	76	-	116	116	-
Stage 2	-	-	-	-	-	-	123	121	-	87	79	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1519	-	-	1546	-	-	760	699	1013	755	700	988
Stage 1	-	-	-	-	-	-	933	832	-	889	800	-
Stage 2	-	-	-	-	-	-	881	796	-	921	829	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1519	-	-	1546	-	-	736	684	1013	726	685	988
Mov Cap-2 Maneuver	-	-	-	-	-	-	736	684	-	726	685	-
Stage 1	-	-	-	-	-	-	926	826	-	883	789	-
Stage 2	-	-	-	-	-	-	854	785	-	893	823	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	1.2	1.5	9.5	9.7
HCM LOS			A	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	838	1519	-	-	1546	-	-	793
HCM Lane V/C Ratio	0.035	0.007	-	-	0.013	-	-	0.029
HCM Control Delay (s)	9.5	7.4	0	-	7.4	0	-	9.7
HCM Lane LOS	A	A	A	-	A	A	-	A
HCM 95th %tile Q(veh)	0.1	0	-	-	0	-	-	0.1

$$(27 \times 9.5) + (21 \times 9.7) + (10 \times 7.4) + (19 \times 7.4) / 203$$

$$256.5 + 203.7 + 74 + 140.6 / 203$$

$$674.8 / 203 = 3.3$$

Intersection	
Intersection Delay, s/veh	7.3
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔			↔			↔			↔		
Traffic Vol, veh/h	3	5	21	1	10	0	61	0	1	0	0	8
Future Vol, veh/h	3	5	21	1	10	0	61	0	1	0	0	8
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	3	5	23	1	11	0	66	0	1	0	0	9
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	6.8	7.2	7.6	6.5
HCM LOS	A	A	A	A

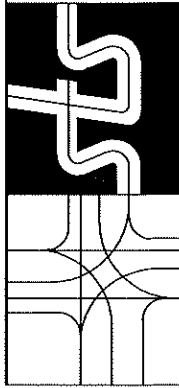
Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	98%	10%	9%	0%
Vol Thru, %	0%	17%	91%	0%
Vol Right, %	2%	72%	0%	100%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	62	29	11	8
LT Vol	61	3	1	0
Through Vol	0	5	10	0
RT Vol	1	21	0	8
Lane Flow Rate	67	32	12	9
Geometry Grp	1	1	1	1
Degree of Util (X)	0.079	0.032	0.014	0.008
Departure Headway (Hd)	4.204	3.662	4.109	3.461
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	855	973	868	1032
Service Time	2.218	1.702	2.15	1.49
HCM Lane V/C Ratio	0.078	0.033	0.014	0.009
HCM Control Delay	7.6	6.8	7.2	6.5
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	0.3	0.1	0	0

Intersection	
Intersection Delay, s/veh	7.3
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	15	21	44	3	8	0	46	2	1	1	5	6
Future Vol, veh/h	15	21	44	3	8	0	46	2	1	1	5	6
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	16	23	48	3	9	0	50	2	1	1	5	7
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	7.2	7.3	7.6	7
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	94%	19%	27%	8%
Vol Thru, %	4%	26%	73%	42%
Vol Right, %	2%	55%	0%	50%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	49	80	11	12
LT Vol	46	15	3	1
Through Vol	2	21	8	5
RT Vol	1	44	0	6
Lane Flow Rate	53	87	12	13
Geometry Grp	1	1	1	1
Degree of Util (X)	0.063	0.091	0.014	0.014
Departure Headway (Hd)	4.292	3.766	4.17	3.863
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	833	948	854	921
Service Time	2.327	1.804	2.218	1.91
HCM Lane V/C Ratio	0.064	0.092	0.014	0.014
HCM Control Delay	7.6	7.2	7.3	7
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	0.2	0.3	0	0

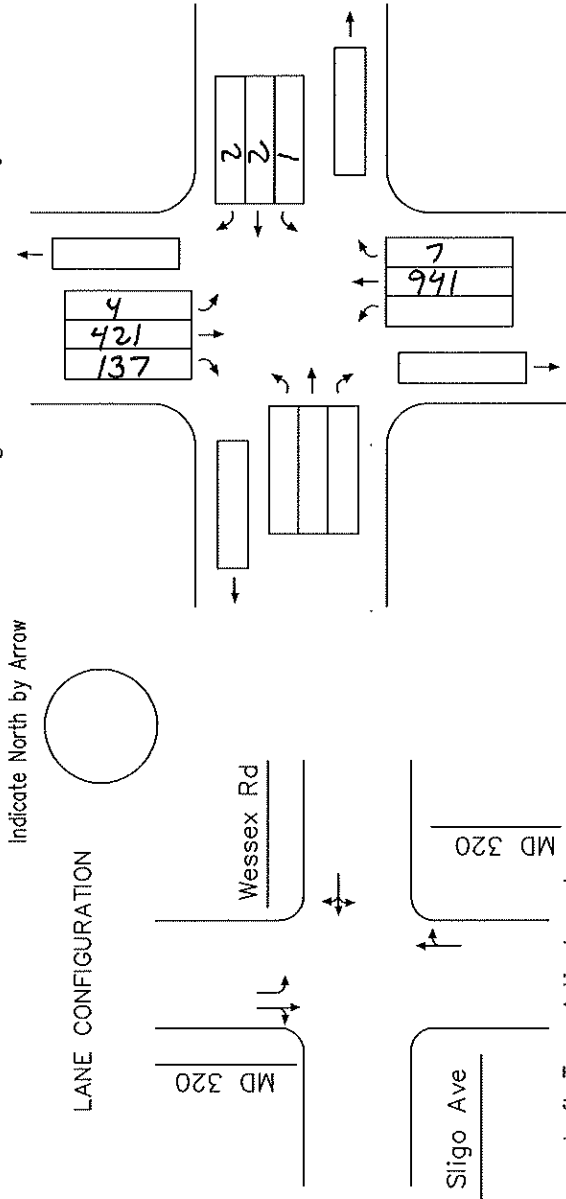
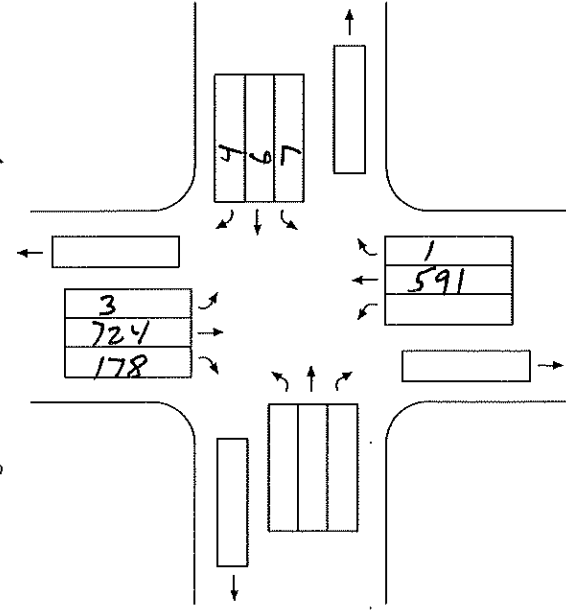


TURNING MOVEMENT SUMMARY AND LEVEL OF SERVICE

Count Date: Tu 2/13/18 Location: MD 320 @ Wessex Rd
Conditions/ Existing Traffic Volumes
Design Year: _____
Computed By: MN Date: _____

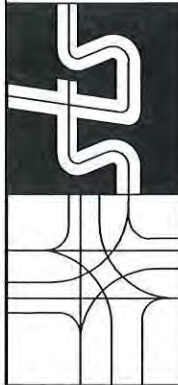
Morning Peak Hour 7:30/8:30 AM

Evening Peak Hour 3:00/4:00 PM



Left Turn Adjustments

Phasing	Ø	Movement	Volume(1)	Lane Use Factor(2)	Lane Volume (1)x(2)	Key	Opposing Through and Right-Turn Volume	Passenger Car Equivalent	Ø	Movement	Volume(1)	Lane Use Factor(2)	Lane Volume (1)x(2)	Service Level	Critical Lane Vol. Tot.	Ø	Movement	Volume(1)	Lane Use Factor(2)	Lane Volume (1)x(2)	Opposing Lefts	Critical Lane Volume	*
		NB	591+1	1.0	592	1	0 to 199	1.1		NB	941+7	1.0	948	A	1000 or Less						4	952	✓
		SB	724+178	1.0	902	2	200 to 599	2.0		SB	421+137	1.0	558	B	1000 to 1150						0	558	
		WB	7+6+4	1.0	17	3	600 to 799	3.0		WB	1+2+2	1.0	5	C	1150 to 1300						-	5	✓
						4	800 to 999	4.0						D	1300 to 1450								
						5	1000+	5.0						E	1450 to 1600								
														F	Greater than 1600								
Remarks:																* critical volume		TOTAL		LEVEL OF SERVICE		V/C	
																919		957		V/C		V/C	

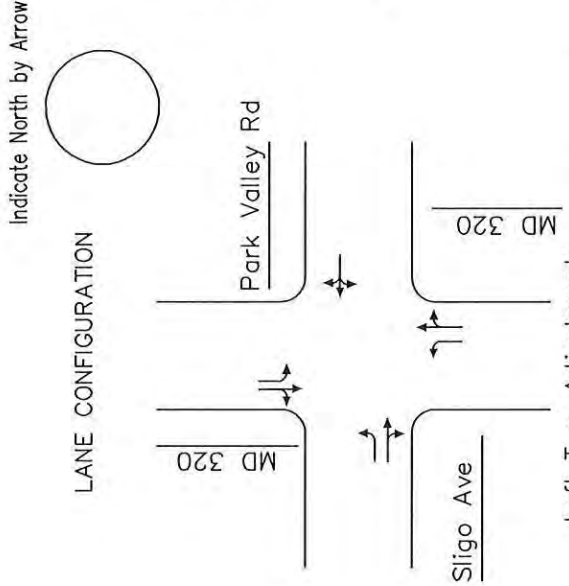
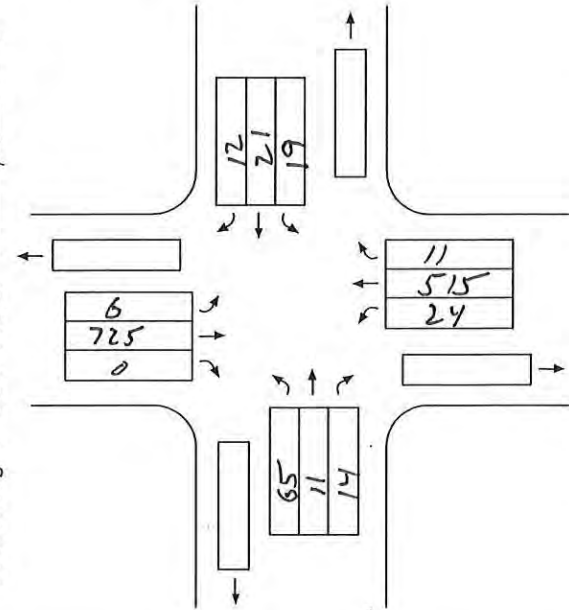


TURNING MOVEMENT SUMMARY
AND
LEVEL OF SERVICE

Count Date: TL 2/13/18 Location: MD 320 @ Sligo Ave
Conditions/ Existing Traffic Volumes
Design Year: _____
Computed By: MN Date: _____

Morning Peak Hour 7:30/8:30 AM

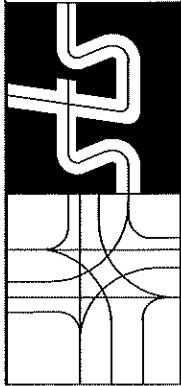
Evening Peak Hour 3:00/4:00 PM



Phasing ☒ Split ϕ E/W

Left Turn Adjustments

Ø	Movement	Volume(1)	Lane Use Factor(2)	Lane Volume (1)x(2)	Key	Opposing Through and Right-Turn Volume		Ø	Movement	Volume(1)	Lane Use Factor(2)	Lane Volume (1)x(2)	Service Level	Critical Lane Vol. Tot.	Critical Lane Volume *
						Opposing Lefts	Opposing Right-Turn Volume								
	NB	515+11	1.0	526	1	6	532		NB	757+16	1.0	773	A = 1000 or Less	786	✓
	SB	725	1.0	725	2	24	749		SB	407	1.0	407	B = 1000 to 1150	428	
	EB	65	1.0	65	3	4	65		EB	180	1.0	180	C = 1150 to 1300	180	✓
	WB	19+21+12	1.0	52	4	-	52		WB	15+35+11	1.0	61	D = 1300 to 1450	61	✓
					5								E = 1450 to 1600		
													F = Greater than 1600		
Remarks:															
										* critical volume		LEVEL OF SERVICE			
										TOTAL		TOTAL			
										866		1027			
										V/C		V/C			

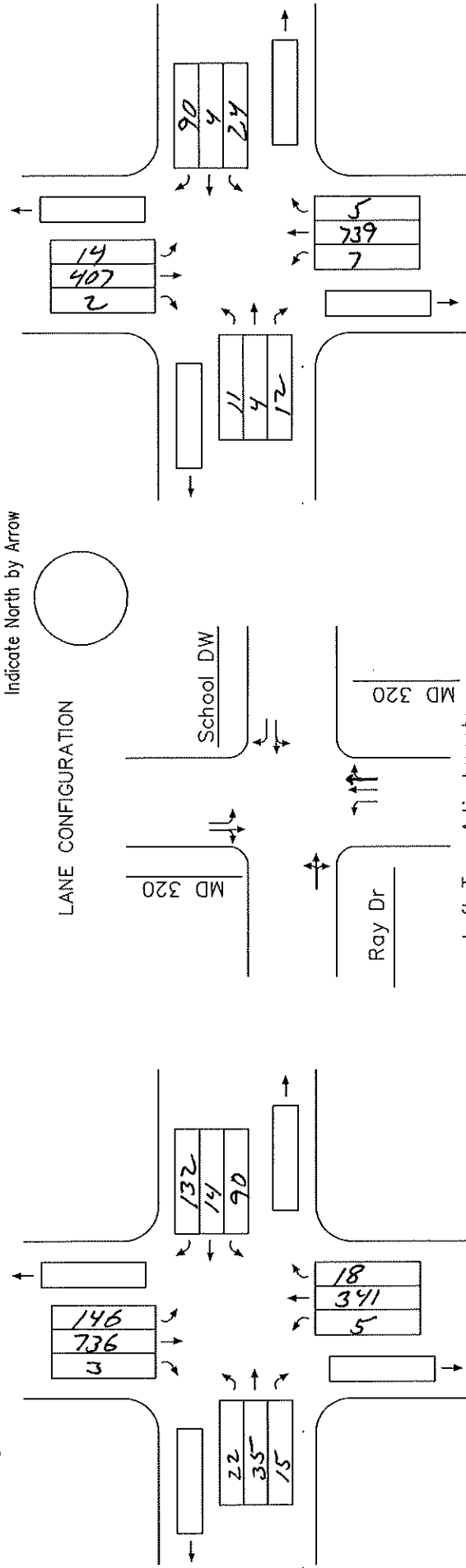


TURNING MOVEMENT SUMMARY AND LEVEL OF SERVICE

Count Date: WJ 2/14/18 Location: MD 320 @ Ray Dr
 Conditions/ Design Year: Existing Traffic Volumes
 Computed By: MN Date: _____

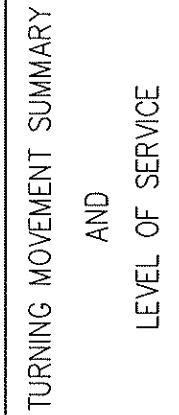
Morning Peak Hour 7:30 / 8:30 AM

Evening Peak Hour 3:00 / 4:00 PM



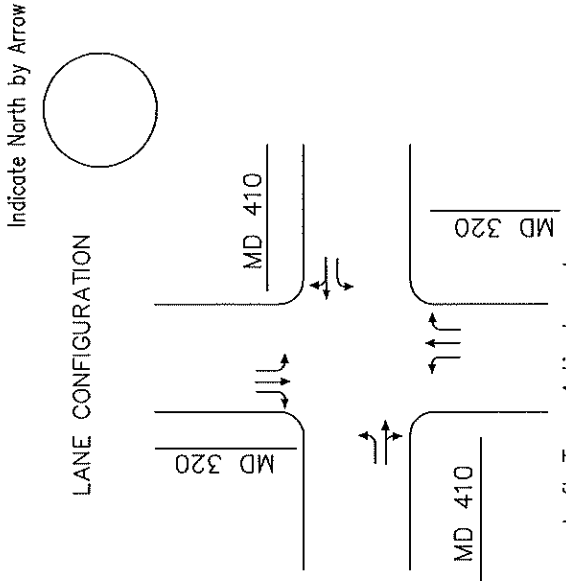
Left Turn Adjustments

Phasing <input checked="" type="checkbox"/>	Opposing Through and Right-Turn Volume		Key	Passenger Car Equivalent		No. of Lanes		Lane Use Factor	Service Level	Critical Lane Vol. Tot.
	Opposing Lefts	Opposing Volume		1.1	2.0	3.0	4.0			
	0 to 199	200 to 599	600 to 799	800 to 999	1000+	1 = 1.00	2 = .53	3 = .37	4 = .29	A = 1000 or Less B = 1000 to 1150 C = 1150 to 1300 D = 1300 to 1450 E = 1450 to 1600 F = Greater than 1600
Ø	Movement	Volume(1)	Lane Use Factor(2)	Lane Volume (1)x(2)	Volume(1)	Lane Use Factor(2)	Lane Volume (1)x(2)	Opposing Lefts	Critical Lane Volume	*
	NB	341+18	0.53	243	146	289	✓	14	408	
	SB	736+3	1.0	739	5	744	✓	7	416	✓
	EB	24+35+15	1.0	74	90	164	✓	24	52	✓
	WB	99+14	1.0	113	22	135		11	41	
Remarks:										
* critical volume				908	TOTAL		LEVEL OF SERVICE			
* critical volume				908	TOTAL		LEVEL OF SERVICE			
Remarks:				V/C	TOTAL		LEVEL OF SERVICE			
* critical volume				908	TOTAL		LEVEL OF SERVICE			
Remarks:				V/C	TOTAL		LEVEL OF SERVICE			



Computed By: MN Date:

Evening Peak Hour ~~3:00/4:00 PM~~



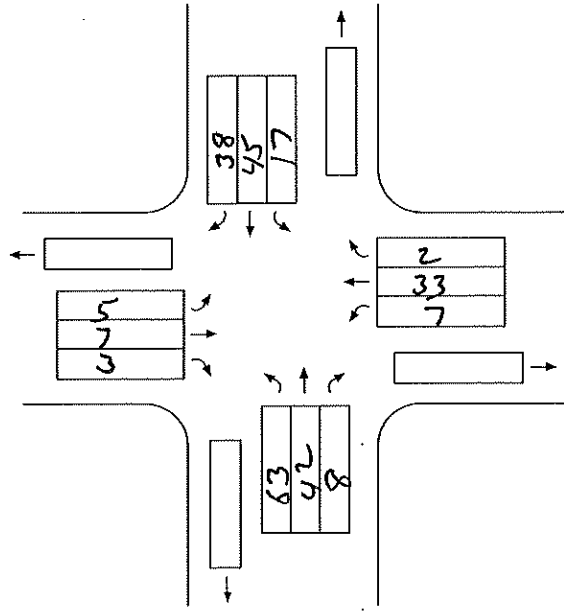
Left Turn Adjustments

[illegible]

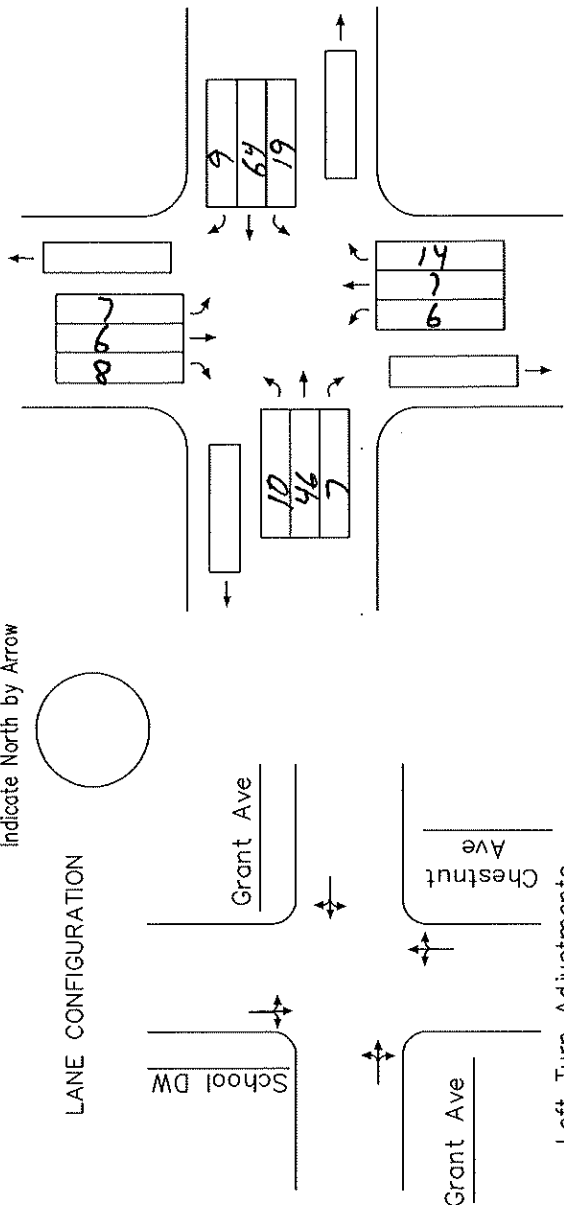


Count Date: Wcd 2/14/18 Location: Grant Ave @ Chestnut Ave
 Conditions/
 Design Year: Existing Traffic Volumes
 Computed By: MN Date: _____

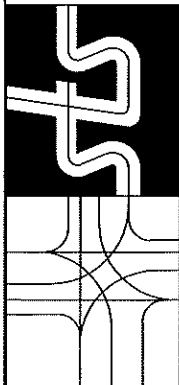
Morning Peak Hour 7:30/8:30 AM



Evening Peak Hour 3:00 / 4:00 PM



Phasing <input checked="" type="checkbox"/>		Opposing Through and Right-Turn Volume			Passenger Car Equivalent	No. of Lanes	Lane Use Factor	Service Level	Critical Lane Vol. Tot.
Key		0 to 199			1.1	1	1.00	A = 1000 or Less	
1		200 to 599			2.0	2	.53	B = 1000 to 1150	
2		600 to 799			3.0	3		C = 1150 to 1300	
3		800 to 999			4.0	4		D = 1300 to 1450	
4		1000+			5.0	5		E = 1450 to 1600	
5								F = Greater than 1600	
ϕ	Movement	Volume(1)	Lane Use Factor(2)	Lane Volume (1)x(2)	Opposing Lefts	Critical Lane Volume	*		
	NB	7133+2	1.0	42	5	47	<input checked="" type="checkbox"/>		
	SB	5+7+3	1.0	15	7	22			
	EB	69+46+8	1.0	119	17	136			
	WB	19+45+38	1.0	102	63	165	<input checked="" type="checkbox"/>		
Remarks:		* critical volume				TOTAL		V/C	
						LEVEL OF SERVICE			
Remarks:		* critical volume				TOTAL		V/C	
						LEVEL OF SERVICE			



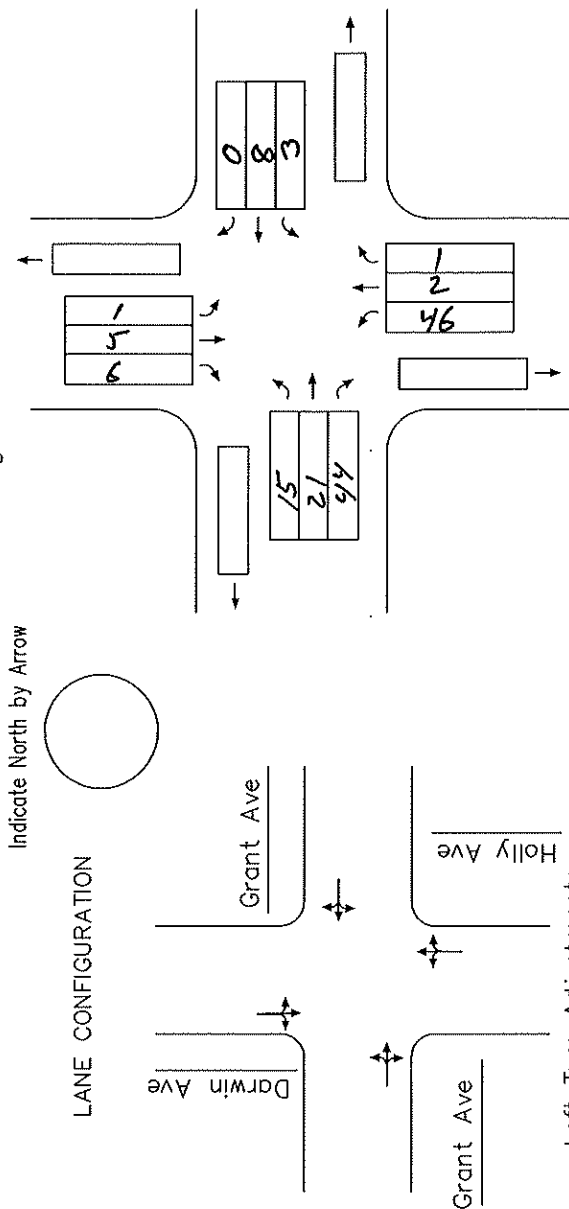
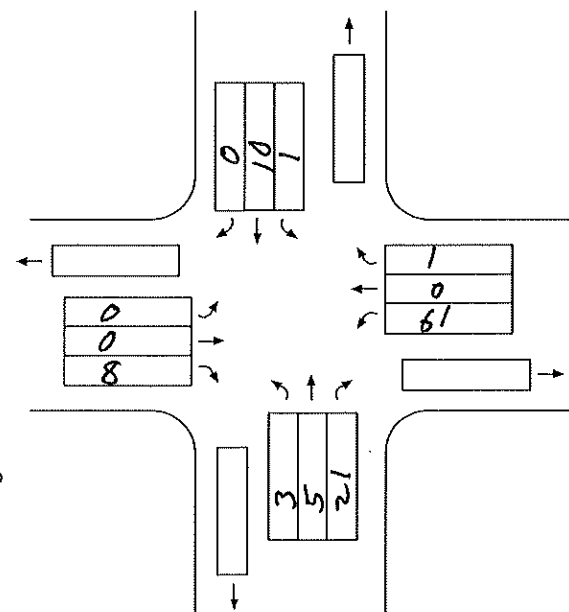
TURNING MOVEMENT SUMMARY AND LEVEL OF SERVICE

Count Date: Wed 2/21/18
Conditions/ Existing Traffic Volumes
Design Year: _____
Computed By: MN Date: _____

Location: Grant Ave @ Holly Ave

Morning Peak Hour 7:30 / 8:30 AM

Evening Peak Hour 3:00 / 4:00 PM



Phasing ☒ ALL WAY STOP

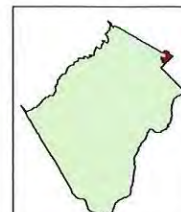
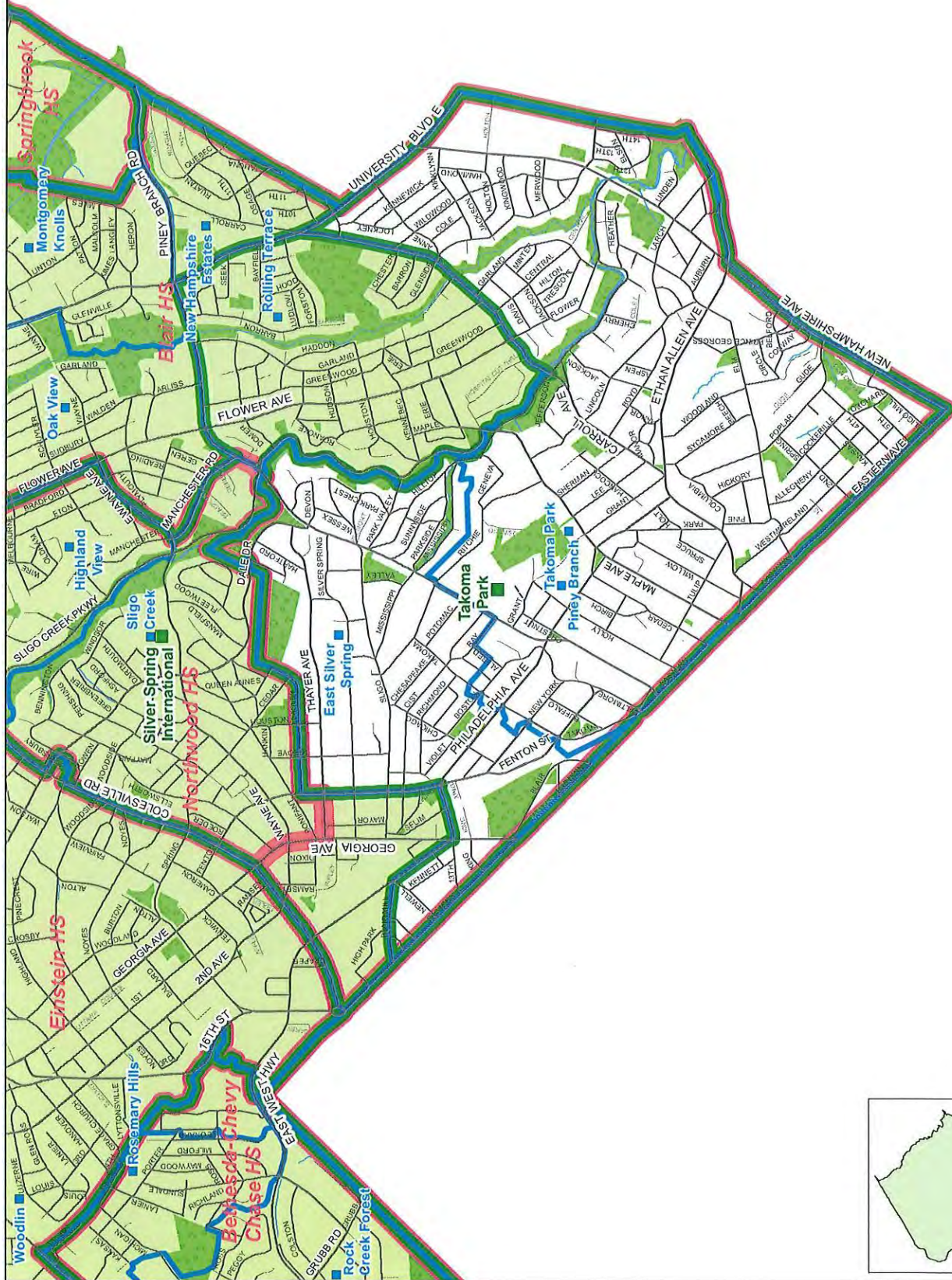
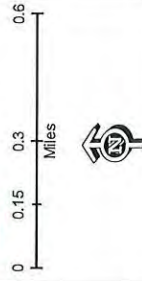
Ø	Movement	Volume(1)	Lane Use Factor(2)	Lane Volume (1)x(2)	Key	Opposing Through and Right-Turn Volume	Passenger Car Equivalent	Ø	Movement	Volume(1)	Lane Use Factor(2)	Lane Volume (1)x(2)	Service Level	Critical Lane Vol. Tot.	Opposing Lefts	Critical Lane Volume	*
	NB	61+1	1.0	62	1	0 to 199	1.1		NB	46+2+1	1.0	49	A	1000 or Less	1	50	
	SB	8	1.0	8	2	200 to 599	2.0		SB	1+5+6	1.0	12	B	1000 to 1150	46	58	✓
	EB	3+5+21	1.0	29	3	600 to 799	3.0		EB	15+21+44	1.0	80	C	1150 to 1300	3	83	✓
	WB	1+1+0	1.0	11	4	800 to 999	4.0		WB	3+8	1.0	11	D	1300 to 1450	15	26	
					5	1000+	5.0						E	1450 to 1600			
													F	Greater than 1600			
Remarks:																	
										* critical volume		TOTAL		LEVEL OF SERVICE			
										99		141		V/C			

APPENDIX D

EXISTING AND PROPOSED SITE PLANS AND SCHOOL BOUNDARY

**Thomas W. Pyle MS
2017-2018 Service Area**

- Elementary School
- Middle School
- High School
- Special School
- Elementary School Boundary
- Middle School Boundary
- High School Boundary

























APPENDIX E

CAPACITY CALCULATIONS - BACKGROUND CONDITIONS













Lanes, Volumes, Timings
14: MD 320 & MD 410

Morning Peak Hour
Background Traffic Volumes

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	67	433	43	48	218	29	41	611	87	18	271	0
Future Volume (vph)	67	433	43	48	218	29	41	611	87	18	271	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	85		0	70		0	140		175	160		160
Storage Lanes	1		0	1		0	1		1	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.986			0.982				0.850			
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	1837	0	1770	1829	0	1770	1863	1583	1770	1863	1863
Flt Permitted	0.500			0.180			0.553			0.256		
Satd. Flow (perm)	931	1837	0	335	1829	0	1030	1863	1583	477	1863	1863
Right Turn on Red			Yes			No			No			Yes
Satd. Flow (RTOR)		6										
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		606			656			1086			555	
Travel Time (s)		13.8			14.9			24.7			12.6	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	73	471	47	52	237	32	45	664	95	20	295	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	73	518	0	52	269	0	45	664	95	20	295	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2		1	2	1	1	2	1
Detector Template	Left	Thru		Left	Thru		Left	Thru	Right	Left	Thru	Right
Leading Detector (ft)	20	100		20	100		20	100	20	20	100	20
Trailing Detector (ft)	0	0		0	0		0	0	0	0	0	0
Detector 1 Position(ft)	0	0		0	0		0	0	0	0	0	0
Detector 1 Size(ft)	20	6		20	6		20	6	20	20	6	20
Detector 1 Type	CI+Ex	CI+Ex		CI+Ex	CI+Ex		CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		CI+Ex			CI+Ex			CI+Ex			CI+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	Perm	NA	Perm
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2		2	6		6

Lanes, Volumes, Timings
14: MD 320 & MD 410

Morning Peak Hour
Background Traffic Volumes

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	4	4		8	8		2	2	2	6	6	6
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	24.0	24.0		24.0	24.0		24.0	24.0	24.0	24.0	24.0	24.0
Total Split (s)	45.0	45.0		45.0	45.0		55.0	55.0	55.0	55.0	55.0	55.0
Total Split (%)	45.0%	45.0%		45.0%	45.0%		55.0%	55.0%	55.0%	55.0%	55.0%	55.0%
Maximum Green (s)	39.0	39.0		39.0	39.0		49.0	49.0	49.0	49.0	49.0	49.0
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0		6.0	6.0		6.0	6.0	6.0	6.0	6.0	6.0
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None		None	None		Max	Max	Max	Max	Max	Max
Walk Time (s)	7.0	7.0		7.0	7.0		7.0	7.0	7.0	7.0	7.0	7.0
Flash Dont Walk (s)	11.0	11.0		11.0	11.0		11.0	11.0	11.0	11.0	11.0	11.0
Pedestrian Calls (#/hr)	0	0		0	0		0	0	0	0	0	0
Act Effct Green (s)	30.3	30.3		30.3	30.3		49.3	49.3	49.3	49.3	49.3	49.3
Actuated g/C Ratio	0.33	0.33		0.33	0.33		0.54	0.54	0.54	0.54	0.54	0.54
v/c Ratio	0.24	0.85		0.47	0.44		0.08	0.66	0.11	0.08	0.29	0.29
Control Delay	23.6	41.7		39.1	26.0		13.0	20.9	12.7	13.8	14.0	14.0
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	23.6	41.7		39.1	26.0		13.0	20.9	12.7	13.8	14.0	14.0
LOS	C	D		D	C		B	C	B	B	B	B
Approach Delay		39.4			28.2			19.5			14.0	
Approach LOS		D			C			B			B	

Intersection Summary

Area Type: Other

Cycle Length: 100

Actuated Cycle Length: 91.7

Natural Cycle: 60

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.85

Intersection Signal Delay: 25.8





Intersection LOS: C

Intersection Capacity Utilization 78.6%

ICU Level of Service D























Analysis Period (min) 15

Splits and Phases: 14: MD 320 & MD 410

 Ø2	 Ø4
55 s	45 s
 Ø6	 Ø8
55 s	45 s













Lanes, Volumes, Timings
14: MD 320 & MD 410

Evening Peak Hour
Background Traffic Volumes

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	54	279	63	68	391	15	50	326	41	17	499	9
Future Volume (vph)	54	279	63	68	391	15	50	326	41	17	499	9
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	85		0	70		0	140		175	160		160
Storage Lanes	1		0	1		0	1		1	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.973			0.995				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	1812	0	1770	1853	0	1770	1863	1583	1770	1863	1583
Flt Permitted	0.238			0.336			0.364			0.512		
Satd. Flow (perm)	443	1812	0	626	1853	0	678	1863	1583	954	1863	1583
Right Turn on Red			Yes			No			No			Yes
Satd. Flow (RTOR)		13										33
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		606			656			1086			555	
Travel Time (s)		13.8			14.9			24.7			12.6	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	59	303	68	74	425	16	54	354	45	18	542	10
Shared Lane Traffic (%)												
Lane Group Flow (vph)	59	371	0	74	441	0	54	354	45	18	542	10
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2		1	2	1	1	2	1
Detector Template	Left	Thru		Left	Thru		Left	Thru	Right	Left	Thru	Right
Leading Detector (ft)	20	100		20	100		20	100	20	20	100	20
Trailing Detector (ft)	0	0		0	0		0	0	0	0	0	0
Detector 1 Position(ft)	0	0		0	0		0	0	0	0	0	0
Detector 1 Size(ft)	20	6		20	6		20	6	20	20	6	20
Detector 1 Type	CI+Ex	CI+Ex		CI+Ex	CI+Ex		CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		CI+Ex			CI+Ex			CI+Ex			CI+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	Perm	NA	Perm
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2		2	6		6

Lanes, Volumes, Timings
14: MD 320 & MD 410

Evening Peak Hour
Background Traffic Volumes

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	4	4		8	8		2	2	2	6	6	6
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	24.0	24.0		24.0	24.0		24.0	24.0	24.0	24.0	24.0	24.0
Total Split (s)	45.0	45.0		45.0	45.0		55.0	55.0	55.0	55.0	55.0	55.0
Total Split (%)	45.0%	45.0%		45.0%	45.0%		55.0%	55.0%	55.0%	55.0%	55.0%	55.0%
Maximum Green (s)	39.0	39.0		39.0	39.0		49.0	49.0	49.0	49.0	49.0	49.0
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0		6.0	6.0		6.0	6.0	6.0	6.0	6.0	6.0
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None		None	None		Max	Max	Max	Max	Max	Max
Walk Time (s)	7.0	7.0		7.0	7.0		7.0	7.0	7.0	7.0	7.0	7.0
Flash Dont Walk (s)	11.0	11.0		11.0	11.0		11.0	11.0	11.0	11.0	11.0	11.0
Pedestrian Calls (#/hr)	0	0		0	0		0	0	0	0	0	0
Act Effct Green (s)	26.2	26.2		26.2	26.2		49.3	49.3	49.3	49.3	49.3	49.3
Actuated g/C Ratio	0.30	0.30		0.30	0.30		0.56	0.56	0.56	0.56	0.56	0.56
v/c Ratio	0.45	0.67		0.40	0.80		0.14	0.34	0.05	0.03	0.52	0.01
Control Delay	35.7	32.1		30.4	39.3		12.7	12.9	11.1	11.5	15.5	0.2
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.4	0.0
Total Delay	35.7	32.1		30.4	39.3		12.7	12.9	11.1	11.5	16.0	0.2
LOS	D	C		C	D		B	B	B	B	B	A
Approach Delay		32.6			38.0			12.7			15.6	
Approach LOS		C			D			B			B	

Intersection Summary

Area Type: Other

Cycle Length: 100

Actuated Cycle Length: 87.6

Natural Cycle: 50

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.80

Intersection Signal Delay: 24.5





Intersection LOS: C

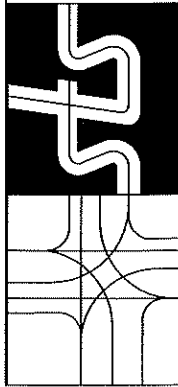
Intersection Capacity Utilization 76.1%

ICU Level of Service D

Analysis Period (min) 15

Splits and Phases: 14: MD 320 & MD 410

 Ø2	 Ø4
55 s	45 s
 Ø6	 Ø8
55 s	45 s



TURNING MOVEMENT SUMMARY AND LEVEL OF SERVICE

Count Date: NA
Conditions/ Background Traffic Volumes
Design Year: _____
Computed By: MN Date: _____

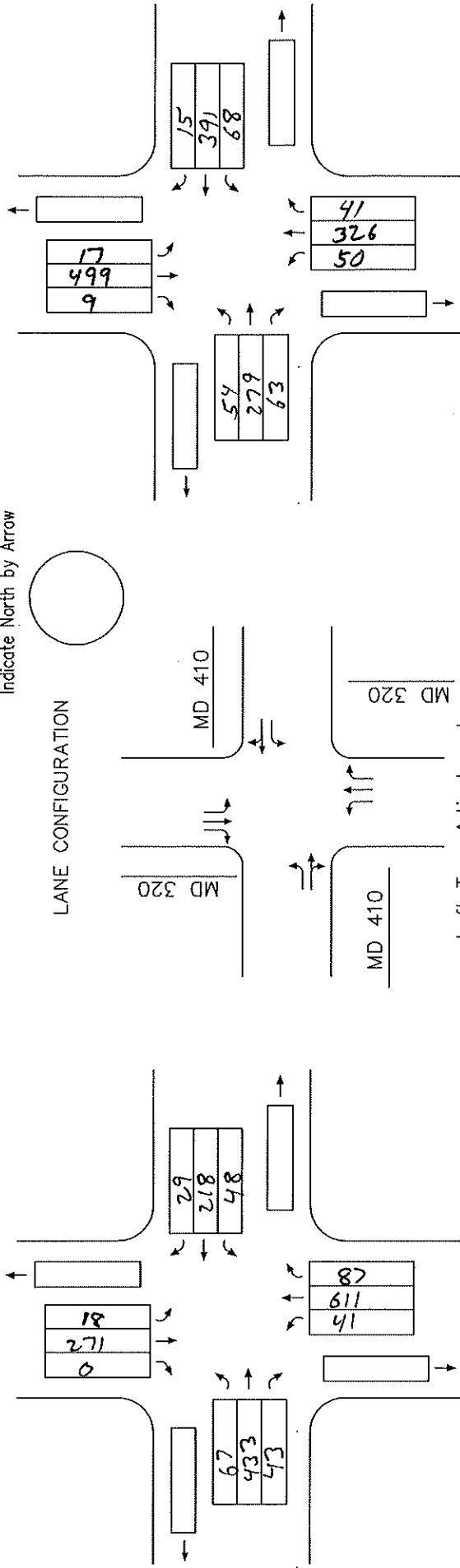
Location: MD 320 @ MD 410

Morning Peak Hour _____

Evening Peak Hour _____

Indicate North by Arrow

LANE CONFIGURATION



Left Turn Adjustments

Phasing <input checked="" type="checkbox"/>		Opposing Through and Right-Turn Volume		Passenger Car Equivalent	No. of Lanes	Lane Use Factor	Service Level	Critical Lane Vol. Tot.
				1.1	1	1.00	A =	1000 or Less
				2.0	2	.53	B =	1000 to 1150
				3.0	3	.37	C =	1150 to 1300
				4.0	4	.29	D =	1300 to 1450
				5.0			E =	1450 to 1600
				1000+			F =	Greater than 1600

Ø	Movement	Volume(1)	Lane Use Factor(2)	Lane Volume (1)x(2)	Opposing Lefts	Critical Lane Volume	*	Ø	Movement	Volume(1)	Lane Use Factor(2)	Lane Volume (1)x(2)	Opposing Lefts	Critical Lane Volume	*
	NB	611	1.0	611	18	629	✓		NB	326	1.0	326	17	343	
	SB	271	1.0	271	41	312			SB	499	1.0	499	50	549	✓
	EB	433+43	1.0	476	48	524	✓		EB	279+63	1.0	342	68	410	
	WB	218+29	1.0	247	67	314			WB	391+15	1.0	406	54	460	✓

















Remarks:	* critical volume		TOTAL	V/C	Remarks:	* critical volume		TOTAL	V/C
			LEVEL OF SERVICE					LEVEL OF SERVICE	
								1009	

APPENDIX F

CAPACITY CALCULATIONS - TOTAL CONDITIONS

Lanes, Volumes, Timings
3: Sligo Ave & MD 320 & Wessex Rd

Morning Peak Hour
Total Traffic Volumes

												
Lane Group	WBL2	WBL	WBR	NBL	NBT	NBR	SBL	SBT	SBR	NEL	NER	Ø4
Lane Configurations												
Traffic Volume (vph)	7	6	4	0	600	1	3	736	178	0	0	
Future Volume (vph)	7	6	4	0	600	1	3	736	178	0	0	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Storage Length (ft)		0	0	0		0	110		0	0	0	
Storage Lanes		1	0	0		0	1		0	0	0	
Taper Length (ft)		25		25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Ped Bike Factor		0.99			1.00							
Frt		0.972						0.971				
Flt Protected		0.962					0.950					
Satd. Flow (prot)	0	1730	0	0	1863	0	1770	1809	0	0	0	
Flt Permitted		0.962					0.309					
Satd. Flow (perm)	0	1730	0	0	1863	0	576	1809	0	0	0	
Right Turn on Red			Yes			Yes			Yes			
Satd. Flow (RTOR)		65						16				
Link Speed (mph)		30			30			30		30		
Link Distance (ft)		749			186			555		157		
Travel Time (s)		17.0			4.2			12.6		3.6		
Confl. Peds. (#/hr)			3			8	8					
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	
Adj. Flow (vph)	8	7	4	0	652	1	3	800	193	0	0	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	19	0	0	653	0	3	993	0	0	0	
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Right	
Median Width(ft)		12			12			12		0		
Link Offset(ft)		0			0			0		0		
Crosswalk Width(ft)		16			16			16		16		
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Turning Speed (mph)	15	15	9	15		9	15		9	15	9	
Turn Type	Prot	Prot			NA		Perm	NA				
Protected Phases	8	8			2			6				4
Permitted Phases							6					
Minimum Split (s)	24.0	24.0			24.0		24.0	24.0				24.0
Total Split (s)	24.0	24.0			102.0		102.0	102.0				48.0
Total Split (%)	16.0%	16.0%			68.0%		68.0%	68.0%				32%
Maximum Green (s)	18.0	18.0			96.0		96.0	96.0				42.0
Yellow Time (s)	4.0	4.0			4.0		4.0	4.0				4.0
All-Red Time (s)	2.0	2.0			2.0		2.0	2.0				2.0
Lost Time Adjust (s)		0.0			0.0		0.0	0.0				
Total Lost Time (s)		6.0			6.0		6.0	6.0				
Lead/Lag	Lag	Lag										
Lead-Lag Optimize?	Yes	Yes										
Walk Time (s)	7.0	7.0			7.0		7.0	7.0				7.0
Flash Dont Walk (s)	11.0	11.0			11.0		11.0	11.0				11.0
Pedestrian Calls (#/hr)	0	0			0		8	8				0
Act Effct Green (s)		18.0			96.0		96.0	96.0				

Baseline












Lanes, Volumes, Timings
3: Sligo Ave & MD 320 & Wessex Rd

Morning Peak Hour
Total Traffic Volumes

Lane Group	Ø7
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Ideal Flow (vphpl)	
Storage Length (ft)	
Storage Lanes	
Taper Length (ft)	
Lane Util. Factor	
Ped Bike Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Right Turn on Red	
Satd. Flow (RTOR)	
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Confl. Peds. (#/hr)	
Peak Hour Factor	
Adj. Flow (vph)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Enter Blocked Intersection	
Lane Alignment	
Median Width(ft)	
Link Offset(ft)	
Crosswalk Width(ft)	
Two way Left Turn Lane	
Headway Factor	
Turning Speed (mph)	
Turn Type	
Protected Phases	7
Permitted Phases	
Minimum Split (s)	24.0
Total Split (s)	24.0
Total Split (%)	16%
Maximum Green (s)	18.0
Yellow Time (s)	4.0
All-Red Time (s)	2.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	Lead
Lead-Lag Optimize?	Yes
Walk Time (s)	7.0
Flash Dont Walk (s)	11.0
Pedestrian Calls (#/hr)	0
Act Effct Green (s)	

Lanes, Volumes, Timings
3: Sligo Ave & MD 320 & Wessex Rd

Morning Peak Hour
Total Traffic Volumes

												
Lane Group	WBL2	WBL	WBR	NBL	NBT	NBR	SBL	SBT	SBR	NEL	NER	Ø4
Actuated g/C Ratio		0.12			0.64		0.64	0.64				
v/c Ratio		0.07			0.55		0.01	0.85				
Control Delay		0.5			10.0		10.0	30.1				
Queue Delay		0.0			0.1		0.0	0.0				
Total Delay		0.5			10.1		10.0	30.1				
LOS		A			B		A	C				
Approach Delay		0.5			10.1			30.0				
Approach LOS		A			B			C				

Intersection Summary

Area Type: Other

Cycle Length: 150

Actuated Cycle Length: 150

Offset: 0 (0%), Referenced to phase 2:NBT, Start of Green, Master Intersection

Natural Cycle: 110

Control Type: Pretimed

Maximum v/c Ratio: 0.85

Intersection Signal Delay: 21.9





Intersection LOS: C

Intersection Capacity Utilization 74.6%

ICU Level of Service D

Analysis Period (min) 15

















Splits and Phases: 3: Sligo Ave & MD 320 & Wessex Rd

			
102 s		48 s	
			
102 s		24 s	

Lane Group	Ø7
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	
Intersection Summary	

Lanes, Volumes, Timings
3: Sligo Ave & MD 320 & Wessex Rd

Evening Peak Hour
Total Traffic Volumes

	<div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div>											
Lane Group	WBL2	WBL	WBR	NBL	NBT	NBR	SBL	SBT	SBR	NEL	NER	Ø4
Lane Configurations												
Traffic Volume (vph)	1	2	2	0	946	7	4	423	137	0	0	
Future Volume (vph)	1	2	2	0	946	7	4	423	137	0	0	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Storage Length (ft)		0	0	0		0	110		0	0	0	
Storage Lanes		1	0	0		0	1		0	0	0	
Taper Length (ft)		25		25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Ped Bike Factor		0.98			1.00							
Frt		0.946			0.999			0.963				
Flt Protected		0.971					0.950					
Satd. Flow (prot)	0	1675	0	0	1860	0	1770	1794	0	0	0	
Flt Permitted		0.971					0.087					
Satd. Flow (perm)	0	1675	0	0	1860	0	162	1794	0	0	0	
Right Turn on Red			Yes			Yes			Yes			
Satd. Flow (RTOR)		65			1			22				
Link Speed (mph)		30			30			30		30		
Link Distance (ft)		749			186			555		157		
Travel Time (s)		17.0			4.2			12.6		3.6		
Confl. Peds. (#/hr)			8			6	6					
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	
Adj. Flow (vph)	1	2	2	0	1028	8	4	460	149	0	0	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	5	0	0	1036	0	4	609	0	0	0	
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Right	
Median Width(ft)		12			12			12		0		
Link Offset(ft)		0			0			0		0		
Crosswalk Width(ft)		16			16			16		16		
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Turning Speed (mph)	15	15	9	15		9	15		9	15	9	
Turn Type	Prot	Prot			NA		Perm	NA				
Protected Phases	8	8			2			6				4
Permitted Phases							6					
Minimum Split (s)	24.0	24.0			24.0		24.0	24.0				24.0
Total Split (s)	24.0	24.0			102.0		102.0	102.0				48.0
Total Split (%)	16.0%	16.0%			68.0%		68.0%	68.0%				32%
Maximum Green (s)	18.0	18.0			96.0		96.0	96.0				42.0
Yellow Time (s)	4.0	4.0			4.0		4.0	4.0				4.0
All-Red Time (s)	2.0	2.0			2.0		2.0	2.0				2.0
Lost Time Adjust (s)		0.0			0.0		0.0	0.0				
Total Lost Time (s)		6.0			6.0		6.0	6.0				
Lead/Lag	Lag	Lag										
Lead-Lag Optimize?	Yes	Yes										
Walk Time (s)	7.0	7.0			7.0		7.0	7.0				7.0
Flash Dont Walk (s)	11.0	11.0			11.0		11.0	11.0				11.0
Pedestrian Calls (#/hr)	0	0			0		6	6				0
Act Effect Green (s)		18.0			96.0		96.0	96.0				

Baseline

Lane Group	Ø7
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Ideal Flow (vphpl)	
Storage Length (ft)	
Storage Lanes	
Taper Length (ft)	
Lane Util. Factor	
Ped Bike Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Right Turn on Red	
Satd. Flow (RTOR)	
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Confl. Peds. (#/hr)	
Peak Hour Factor	
Adj. Flow (vph)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Enter Blocked Intersection	
Lane Alignment	
Median Width(ft)	
Link Offset(ft)	
Crosswalk Width(ft)	
Two way Left Turn Lane	
Headway Factor	
Turning Speed (mph)	
Turn Type	
Protected Phases	7
Permitted Phases	
Minimum Split (s)	24.0
Total Split (s)	24.0
Total Split (%)	16%
Maximum Green (s)	18.0
Yellow Time (s)	4.0
All-Red Time (s)	2.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	Lead
Lead-Lag Optimize?	Yes
Walk Time (s)	7.0
Flash Dont Walk (s)	11.0
Pedestrian Calls (#/hr)	0
Act Effect Green (s)	

Lanes, Volumes, Timings
3: Sligo Ave & MD 320 & Wessex Rd

Evening Peak Hour
Total Traffic Volumes

	WBL2	WBL	WBR	NBL	NBT	NBR	SBL	SBT	SBR	NEL	NER	Ø4
Actuated g/C Ratio		0.12			0.64		0.64	0.64				
v/c Ratio		0.02			0.87		0.04	0.53				
Control Delay		0.2			24.9		11.2	16.1				
Queue Delay		0.0			0.7		0.0	0.0				
Total Delay		0.2			25.6		11.2	16.1				
LOS		A			C		B	B				
Approach Delay		0.2			25.6			16.0				
Approach LOS		A			C			B				

Intersection Summary

Area Type: Other

Cycle Length: 150

Actuated Cycle Length: 150

Offset: 0 (0%), Referenced to phase 2:NBT, Start of Green, Master Intersection

Natural Cycle: 110

Control Type: Pretimed

Maximum v/c Ratio: 0.92

Intersection Signal Delay: 22.0

Intersection LOS: C

Intersection Capacity Utilization 75.2%

ICU Level of Service D

Analysis Period (min) 15




















Splits and Phases: 3: Sligo Ave & MD 320 & Wessex Rd

#3 #6 ↑ ↑ Ø2 (R) 102 s	#6 → Ø4 48 s	
#3 #6 ↓ ↓ Ø6 102 s	#6 ↘ Ø7 24 s	#3 #6 ↘ ↘ Ø8 24 s

Lane Group	Ø7
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	
Intersection Summary	

Lanes, Volumes, Timings
6: MD 320 & Park Valley Rd

Morning Peak Hour
Total Traffic Volumes













												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	65	11	14	19	21	12	24	524	11	6	737	0
Future Volume (vph)	65	11	14	19	21	12	24	524	11	6	737	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		0	100		0	65		0
Storage Lanes	1		0	0		0	1		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.99	0.98			0.99			1.00				
Frt		0.917			0.969			0.997				
Flt Protected	0.950				0.982		0.950			0.950		
Satd. Flow (prot)	1770	1678	0	0	1761	0	1770	1855	0	1770	1863	0
Flt Permitted	0.950				0.982		0.222			0.353		
Satd. Flow (perm)	1756	1678	0	0	1753	0	414	1855	0	658	1863	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		15			8			1				
Link Speed (mph)		30			30			30				30
Link Distance (ft)		563			524			2298				186
Travel Time (s)		12.8			11.9			52.2				4.2
Confl. Peds. (#/hr)	2		3	3		2	1		7	7		1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	71	12	15	21	23	13	26	570	12	7	801	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	71	27	0	0	57	0	26	582	0	7	801	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12				12
Link Offset(ft)		0			0			0				0
Crosswalk Width(ft)		16			16			16				16
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Prot	NA		Split	NA		Perm	NA		Perm	NA	
Protected Phases	7	4		8	8			2				6
Permitted Phases							2			6		
Minimum Split (s)	24.0	24.0		24.0	24.0		24.0	24.0		24.0	24.0	
Total Split (s)	24.0	48.0		24.0	24.0		102.0	102.0		102.0	102.0	
Total Split (%)	16.0%	32.0%		16.0%	16.0%		68.0%	68.0%		68.0%	68.0%	
Maximum Green (s)	18.0	42.0		18.0	18.0		96.0	96.0		96.0	96.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	0.0	0.0			0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.0	6.0			6.0		6.0	6.0		6.0	6.0	
Lead/Lag	Lead			Lag	Lag							
Lead-Lag Optimize?	Yes			Yes	Yes							
Walk Time (s)	7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	11.0	11.0		11.0	11.0		11.0	11.0		11.0	11.0	
Pedestrian Calls (#/hr)	2	3		3	3		1	1		7	7	
Act Effct Green (s)	18.0	42.0			18.0		96.0	96.0		96.0	96.0	

Baseline

Synchro 9 Report
Page 1

Lanes, Volumes, Timings
6: MD 320 & Park Valley Rd

Morning Peak Hour
Total Traffic Volumes

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Actuated g/C Ratio	0.12	0.28			0.12		0.64	0.64		0.64	0.64	
v/c Ratio	0.33	0.06			0.26		0.10	0.49		0.02	0.67	
Control Delay	65.4	23.3			54.9		11.6	15.9		2.0	3.5	
Queue Delay	0.8	0.0			120.2		0.0	0.1		0.0	1.9	
Total Delay	66.2	23.3			175.1		11.6	15.9		2.0	5.3	
LOS	E	C			F		B	B		A	A	
Approach Delay		54.4			175.1			15.7			5.3	
Approach LOS		D			F			B			A	

Intersection Summary

Area Type: Other

Cycle Length: 150

Actuated Cycle Length: 150

Offset: 0 (0%), Referenced to phase 2:NBT, Start of Green, Master Intersection

Natural Cycle: 110

Control Type: Pretimed

Maximum v/c Ratio: 0.85

Intersection Signal Delay: 18.6

Intersection LOS: B






Intersection Capacity Utilization 63.8%

ICU Level of Service B

Analysis Period (min) 15




















! Phase conflict between lane groups.

Splits and Phases: 6: MD 320 & Park Valley Rd

 <p>#3 #6 Ø2 (R) 102 s</p>	 <p>#6 Ø4 48 s</p>
 <p>#3 #6 Ø6 102 s</p>	  <p>#6 Ø7 #3 #6 Ø8 24 s 24 s</p>













Lanes, Volumes, Timings
6: MD 320 & Park Valley Rd

Evening Peak Hour
Total Traffic Volumes

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	180	40	24	15	35	11	21	762	16	13	409	0
Future Volume (vph)	180	40	24	15	35	11	21	762	16	13	409	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		0	100		0	65		0
Storage Lanes	1		0	0		0	1		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor		0.98			1.00		1.00	1.00				
Frt		0.943			0.975			0.997				
Flt Protected	0.950				0.988		0.950			0.950		
Satd. Flow (prot)	1770	1730	0	0	1794	0	1770	1855	0	1770	1863	0
Flt Permitted	0.950				0.988		0.443			0.197		
Satd. Flow (perm)	1770	1730	0	0	1786	0	824	1855	0	367	1863	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		20			6			1				
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		563			524			2298			186	
Travel Time (s)		12.8			11.9			52.2			4.2	
Confl. Peds. (#/hr)			5	5			1		6	6		1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	196	43	26	16	38	12	23	828	17	14	445	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	196	69	0	0	66	0	23	845	0	14	445	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Prot	NA		Split	NA		Perm	NA		Perm	NA	
Protected Phases	7	4l		8l	8			2			6	
Permitted Phases							2			6		
Minimum Split (s)	24.0	24.0		24.0	24.0		24.0	24.0		24.0	24.0	
Total Split (s)	24.0	48.0		24.0	24.0		102.0	102.0		102.0	102.0	
Total Split (%)	16.0%	32.0%		16.0%	16.0%		68.0%	68.0%		68.0%	68.0%	
Maximum Green (s)	18.0	42.0		18.0	18.0		96.0	96.0		96.0	96.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	0.0	0.0			0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.0	6.0			6.0		6.0	6.0		6.0	6.0	
Lead/Lag	Lead			Lag	Lag							
Lead-Lag Optimize?	Yes			Yes	Yes							
Walk Time (s)	7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	11.0	11.0		11.0	11.0		11.0	11.0		11.0	11.0	
Pedestrian Calls (#/hr)	0	0		5	5		1	1		6	6	
Act Effct Green (s)	18.0	42.0			18.0		96.0	96.0		96.0	96.0	

Lanes, Volumes, Timings
6: MD 320 & Park Valley Rd

Evening Peak Hour
Total Traffic Volumes

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Actuated g/C Ratio	0.12	0.28			0.12		0.64	0.64		0.64	0.64	
v/c Ratio	0.92	0.14			0.30		0.04	0.71		0.06	0.37	
Control Delay	109.3	29.8			58.7		10.3	22.1		2.2	2.6	
Queue Delay	69.0	0.0			152.7		0.0	0.2		0.0	0.4	
Total Delay	178.2	29.8			211.4		10.3	22.3		2.2	2.9	
LOS	F	C			F		B	C		A	A	
Approach Delay		139.6			211.4			22.0			2.9	
Approach LOS		F			F			C			A	

Intersection Summary

Area Type: Other

Cycle Length: 150

Actuated Cycle Length: 150

Offset: 0 (0%), Referenced to phase 2:NBT, Start of Green, Master Intersection

Natural Cycle: 110

Control Type: Pretimed

Maximum v/c Ratio: 0.92

Intersection Signal Delay: 43.0

Intersection LOS: D






Intersection Capacity Utilization 67.7%

ICU Level of Service C

Analysis Period (min) 15





















! Phase conflict between lane groups.

Splits and Phases: 6: MD 320 & Park Valley Rd

Lanes, Volumes, Timings
9: MD 320 & Ray Dr/School DW

Morning Peak Hour
Total Traffic Volumes

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	22	47	15	108	23	169	5	341	42	196	736	3
Future Volume (vph)	22	47	15	108	23	169	5	341	42	196	736	3
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		0	50		135	60		0
Storage Lanes	1		0	0		0	1		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	1.00	1.00
Ped Bike Factor	1.00	0.97			0.95		0.96	0.97		0.87	1.00	
Frt		0.964			0.924			0.983			0.999	
Flt Protected	0.950				0.982		0.950			0.950		
Satd. Flow (prot)	1770	1737	0	0	1669	0	1770	3365	0	1770	1860	0
Flt Permitted	0.460				0.854		0.297			0.455		
Satd. Flow (perm)	856	1737	0	0	1390	0	533	3365	0	737	1860	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		16			67			17				
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		309			285			326			2298	
Travel Time (s)		7.0			6.5			7.4			52.2	
Confl. Peds. (#/hr)	1		77	77		1	63		102	102		63
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	24	51	16	117	25	184	5	371	46	213	800	3
Shared Lane Traffic (%)												
Lane Group Flow (vph)	24	67	0	0	326	0	5	417	0	213	803	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (ft)	20	100		20	100		20	100		20	100	
Trailing Detector (ft)	0	0		0	0		0	0		0	0	
Detector 1 Position(ft)	0	0		0	0		0	0		0	0	
Detector 1 Size(ft)	20	6		20	6		20	6		20	6	
Detector 1 Type	CI+Ex	CI+Ex		CI+Ex	CI+Ex		CI+Ex	CI+Ex		CI+Ex	CI+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		CI+Ex			CI+Ex			CI+Ex			CI+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA		Perm	NA		pm+pt	NA	

Lanes, Volumes, Timings
9: MD 320 & Ray Dr/School DW

Morning Peak Hour
Total Traffic Volumes

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Protected Phases		4			8			2		1	6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2		1	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	24.0	24.0		24.0	24.0		24.0	24.0		9.5	24.0	
Total Split (s)	36.0	36.0		36.0	36.0		49.6	49.6		14.4	64.0	
Total Split (%)	36.0%	36.0%		36.0%	36.0%		49.6%	49.6%		14.4%	64.0%	
Maximum Green (s)	30.0	30.0		30.0	30.0		43.6	43.6		9.9	58.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		3.5	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		1.0	2.0	
Lost Time Adjust (s)	0.0	0.0			0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.0	6.0			6.0		6.0	6.0		4.5	6.0	
Lead/Lag							Lag	Lag		Lead		
Lead-Lag Optimize?							Yes	Yes		Yes		
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		Max	Max		None	Max	
Walk Time (s)	7.0	7.0		7.0	7.0		7.0	7.0			7.0	
Flash Dont Walk (s)	11.0	11.0		11.0	11.0		11.0	11.0			11.0	
Pedestrian Calls (#/hr)	36	36		36	36		36	36			36	
Act Effect Green (s)	22.2	22.2			22.2		44.8	44.8		59.8	58.3	
Actuated g/C Ratio	0.24	0.24			0.24		0.48	0.48		0.65	0.63	
v/c Ratio	0.12	0.16			0.85		0.02	0.25		0.37	0.69	
Control Delay	27.7	22.1			46.8		16.0	15.2		9.6	16.4	
Queue Delay	0.0	0.0			0.0		0.0	0.0		0.0	0.0	
Total Delay	27.7	22.1			46.8		16.0	15.2		9.6	16.4	
LOS	C	C			D		B	B		A	B	
Approach Delay		23.6			46.8			15.2			15.0	
Approach LOS		C			D			B			B	

Intersection Summary

Area Type: Other

Cycle Length: 100

Actuated Cycle Length: 92.5

Natural Cycle: 60

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.85

Intersection Signal Delay: 21.1

Intersection LOS: C

Intersection Capacity Utilization 82.4%

ICU Level of Service E




















Analysis Period (min) 15

Splits and Phases: 9: MD 320 & Ray Dr/School DW

Ø1	Ø2	Ø4
14.4 s	49.6 s	36 s
Ø6	Ø8	
64 s	36 s	













Lanes, Volumes, Timings
9: MD 320 & Ray Dr/School DW

Evening Peak Hour
Total Traffic Volumes

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	11	6	12	34	9	110	7	739	9	20	407	2
Future Volume (vph)	11	6	12	34	9	110	7	739	9	20	407	2
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		0	50		135	60		0
Storage Lanes	1		0	0		0	1		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	1.00	1.00
Ped Bike Factor	1.00	0.86			0.94		0.97	1.00		0.94	1.00	
Frt		0.902			0.903			0.998			0.999	
Flt Protected	0.950				0.989		0.950			0.950		
Satd. Flow (prot)	1770	1451	0	0	1636	0	1770	3518	0	1770	1860	0
Flt Permitted	0.520				0.918		0.506			0.299		
Satd. Flow (perm)	967	1451	0	0	1453	0	910	3518	0	524	1860	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		13			120			2				
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		309			285			326			2298	
Travel Time (s)		7.0			6.5			7.4			52.2	
Confl. Peds. (#/hr)	1		121	121		1	23		113	113		23
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	12	7	13	37	10	120	8	803	10	22	442	2
Shared Lane Traffic (%)												
Lane Group Flow (vph)	12	20	0	0	167	0	8	813	0	22	444	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (ft)	20	100		20	100		20	100		20	100	
Trailing Detector (ft)	0	0		0	0		0	0		0	0	
Detector 1 Position(ft)	0	0		0	0		0	0		0	0	
Detector 1 Size(ft)	20	6		20	6		20	6		20	6	
Detector 1 Type	CI+Ex	CI+Ex		CI+Ex	CI+Ex		CI+Ex	CI+Ex		CI+Ex	CI+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		CI+Ex			CI+Ex			CI+Ex			CI+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA		Perm	NA		pm+pt	NA	

Lanes, Volumes, Timings
9: MD 320 & Ray Dr/School DW

Evening Peak Hour
Total Traffic Volumes

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Protected Phases		4			8			2		1	6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2		1	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	24.0	24.0		24.0	24.0		24.0	24.0		9.5	24.0	
Total Split (s)	34.0	34.0		34.0	34.0		54.0	54.0		12.0	66.0	
Total Split (%)	34.0%	34.0%		34.0%	34.0%		54.0%	54.0%		12.0%	66.0%	
Maximum Green (s)	28.0	28.0		28.0	28.0		48.0	48.0		7.5	60.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		3.5	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		1.0	2.0	
Lost Time Adjust (s)	0.0	0.0			0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.0	6.0			6.0		6.0	6.0		4.5	6.0	
Lead/Lag							Lag	Lag		Lead		
Lead-Lag Optimize?							Yes	Yes		Yes		
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		Max	Max		None	Max	
Walk Time (s)	7.0	7.0		7.0	7.0		7.0	7.0			7.0	
Flash Dont Walk (s)	11.0	11.0		11.0	11.0		11.0	11.0			11.0	
Pedestrian Calls (#/hr)	36	36		36	36		36	36			36	
Act Effct Green (s)	13.0	13.0			13.0		59.4	59.4		65.1	63.6	
Actuated g/C Ratio	0.15	0.15			0.15		0.67	0.67		0.73	0.72	
v/c Ratio	0.09	0.09			0.53		0.01	0.34		0.05	0.33	
Control Delay	30.9	19.2			17.3		8.9	8.5		4.7	6.3	
Queue Delay	0.0	0.0			0.0		0.0	0.7		0.0	0.0	
Total Delay	30.9	19.2			17.3		8.9	9.2		4.7	6.3	
LOS	C	B			B		A	A		A	A	
Approach Delay		23.6			17.3			9.2			6.2	
Approach LOS		C			B			A			A	

Intersection Summary

Area Type: Other

Cycle Length: 100

Actuated Cycle Length: 88.6

Natural Cycle: 60

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.53

Intersection Signal Delay: 9.5






Intersection LOS: A

Intersection Capacity Utilization 47.4%

ICU Level of Service A























Analysis Period (min) 15

Splits and Phases: 9: MD 320 & Ray Dr/School DW

 Ø1	 Ø2	 Ø4
12 s	54 s	34 s
 Ø6		 Ø8
66 s		34 s













Lanes, Volumes, Timings
14: MD 320 & MD 410

Morning Peak Hour
Total Traffic Volumes

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	79	433	43	48	218	29	41	623	87	18	280	9
Future Volume (vph)	79	433	43	48	218	29	41	623	87	18	280	9
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	85		0	70		0	140		175	160		160
Storage Lanes	1		0	1		0	1		1	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	1.00	1.00			1.00				0.94			
Frt		0.986			0.982				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	1828	0	1770	1823	0	1770	1863	1583	1770	1863	1583
Flt Permitted	0.501			0.182			0.544			0.245		
Satd. Flow (perm)	929	1828	0	339	1823	0	1013	1863	1487	456	1863	1583
Right Turn on Red			Yes			No			No			Yes
Satd. Flow (RTOR)		6										33
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		606			656			1086			555	
Travel Time (s)		13.8			14.9			24.7			12.6	
Confl. Peds. (#/hr)	3		11	11		3			15	15		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	86	471	47	52	237	32	45	677	95	20	304	10
Shared Lane Traffic (%)												
Lane Group Flow (vph)	86	518	0	52	269	0	45	677	95	20	304	10
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2		1	2	1	1	2	1
Detector Template	Left	Thru		Left	Thru		Left	Thru	Right	Left	Thru	Right
Leading Detector (ft)	20	100		20	100		20	100	20	20	100	20
Trailing Detector (ft)	0	0		0	0		0	0	0	0	0	0
Detector 1 Position(ft)	0	0		0	0		0	0	0	0	0	0
Detector 1 Size(ft)	20	6		20	6		20	6	20	20	6	20
Detector 1 Type	CI+Ex	CI+Ex		CI+Ex	CI+Ex		CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		CI+Ex			CI+Ex			CI+Ex			CI+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	Perm	NA	Perm

Lanes, Volumes, Timings
14: MD 320 & MD 410

Morning Peak Hour
Total Traffic Volumes

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2		2	6		6
Detector Phase	4	4		8	8		2	2	2	6	6	6
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	24.0	24.0		24.0	24.0		24.0	24.0	24.0	24.0	24.0	24.0
Total Split (s)	45.0	45.0		45.0	45.0		55.0	55.0	55.0	55.0	55.0	55.0
Total Split (%)	45.0%	45.0%		45.0%	45.0%		55.0%	55.0%	55.0%	55.0%	55.0%	55.0%
Maximum Green (s)	39.0	39.0		39.0	39.0		49.0	49.0	49.0	49.0	49.0	49.0
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0		6.0	6.0		6.0	6.0	6.0	6.0	6.0	6.0
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None		None	None		Max	Max	Max	Max	Max	Max
Walk Time (s)	7.0	7.0		7.0	7.0		7.0	7.0	7.0	7.0	7.0	7.0
Flash Dont Walk (s)	11.0	11.0		11.0	11.0		11.0	11.0	11.0	11.0	11.0	11.0
Pedestrian Calls (#/hr)	36	36		36	36		36	36	36	36	36	36
Act Effct Green (s)	30.5	30.5		30.5	30.5		49.3	49.3	49.3	49.3	49.3	49.3
Actuated g/C Ratio	0.33	0.33		0.33	0.33		0.54	0.54	0.54	0.54	0.54	0.54
v/c Ratio	0.28	0.85		0.46	0.44		0.08	0.68	0.12	0.08	0.30	0.01
Control Delay	24.4	41.9		38.4	26.0		13.1	21.4	12.9	14.0	14.2	0.2
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	24.4	41.9		38.4	26.0		13.1	21.4	12.9	14.0	14.2	0.2
LOS	C	D		D	C		B	C	B	B	B	A
Approach Delay		39.4			28.0			19.9			13.7	
Approach LOS		D			C			B			B	

Intersection Summary

Area Type: Other

Cycle Length: 100

Actuated Cycle Length: 91.9

Natural Cycle: 60

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.85

Intersection Signal Delay: 25.8





Intersection LOS: C

Intersection Capacity Utilization 78.7%

ICU Level of Service D























Analysis Period (min) 15

Splits and Phases: 14: MD 320 & MD 410

 Ø2	 Ø4
55 s	45 s
 Ø6	 Ø8
55 s	45 s













Lanes, Volumes, Timings
14: MD 320 & MD 410

Evening Peak Hour
Total Traffic Volumes

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	56	279	63	68	391	15	50	328	41	17	504	14
Future Volume (vph)	56	279	63	68	391	15	50	328	41	17	504	14
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	85		0	70		0	140		175	160		160
Storage Lanes	1		0	1		0	1		1	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.99	0.99		0.99	1.00				0.93	0.98		
Frt		0.973			0.995				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	1795	0	1770	1851	0	1770	1863	1583	1770	1863	1583
Flt Permitted	0.238			0.336			0.359			0.509		
Satd. Flow (perm)	440	1795	0	617	1851	0	669	1863	1478	926	1863	1583
Right Turn on Red			Yes			No			No			Yes
Satd. Flow (RTOR)		13										33
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		606			656			1086			555	
Travel Time (s)		13.8			14.9			24.7			12.6	
Confl. Peds. (#/hr)	7		12	12		7			17	17		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	61	303	68	74	425	16	54	357	45	18	548	15
Shared Lane Traffic (%)												
Lane Group Flow (vph)	61	371	0	74	441	0	54	357	45	18	548	15
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2		1	2	1	1	2	1
Detector Template	Left	Thru		Left	Thru		Left	Thru	Right	Left	Thru	Right
Leading Detector (ft)	20	100		20	100		20	100	20	20	100	20
Trailing Detector (ft)	0	0		0	0		0	0	0	0	0	0
Detector 1 Position(ft)	0	0		0	0		0	0	0	0	0	0
Detector 1 Size(ft)	20	6		20	6		20	6	20	20	6	20
Detector 1 Type	CI+Ex	CI+Ex		CI+Ex	CI+Ex		CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		CI+Ex			CI+Ex			CI+Ex			CI+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	Perm	NA	Perm

Lanes, Volumes, Timings
14: MD 320 & MD 410

Evening Peak Hour
Total Traffic Volumes

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2		2	6		6
Detector Phase	4	4		8	8		2	2	2	6	6	6
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	24.0	24.0		24.0	24.0		24.0	24.0	24.0	24.0	24.0	24.0
Total Split (s)	45.0	45.0		45.0	45.0		55.0	55.0	55.0	55.0	55.0	55.0
Total Split (%)	45.0%	45.0%		45.0%	45.0%		55.0%	55.0%	55.0%	55.0%	55.0%	55.0%
Maximum Green (s)	39.0	39.0		39.0	39.0		49.0	49.0	49.0	49.0	49.0	49.0
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0		6.0	6.0		6.0	6.0	6.0	6.0	6.0	6.0
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None		None	None		Max	Max	Max	Max	Max	Max
Walk Time (s)	7.0	7.0		7.0	7.0		7.0	7.0	7.0	7.0	7.0	7.0
Flash Dont Walk (s)	11.0	11.0		11.0	11.0		11.0	11.0	11.0	11.0	11.0	11.0
Pedestrian Calls (#/hr)	36	36		36	36		36	36	36	36	36	36
Act Effct Green (s)	26.2	26.2		26.2	26.2		49.3	49.3	49.3	49.3	49.3	49.3
Actuated g/C Ratio	0.30	0.30		0.30	0.30		0.56	0.56	0.56	0.56	0.56	0.56
v/c Ratio	0.47	0.68		0.40	0.80		0.14	0.34	0.05	0.03	0.52	0.02
Control Delay	36.7	32.4		30.7	39.4		12.7	12.9	11.1	11.5	15.7	1.7
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.5	0.0
Total Delay	36.7	32.4		30.7	39.4		12.7	12.9	11.1	11.5	16.1	1.7
LOS	D	C		C	D		B	B	B	B	B	A
Approach Delay		33.0			38.1			12.7			15.6	
Approach LOS		C			D			B			B	

Intersection Summary

Area Type: Other

Cycle Length: 100

Actuated Cycle Length: 87.6

Natural Cycle: 50

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.80

Intersection Signal Delay: 24.6



Intersection LOS: C

Intersection Capacity Utilization 76.4%

ICU Level of Service D

Analysis Period (min) 15

Splits and Phases: 14: MD 320 & MD 410

 Ø2	 Ø4
55 s	45 s
 Ø6	 Ø8
55 s	45 s

HCM 2010 TWSC
17: Chestnut Ave/School DW & Grant Ave

Morning Peak Hour
Total Traffic Volumes

Intersection												
Int Delay, s/veh	5.5											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↕			↕			↕			↕		
Traffic Vol, veh/h	63	42	8	17	45	56	7	51	2	19	21	3
Future Vol, veh/h	63	42	8	17	45	56	7	51	2	19	21	3
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	68	46	9	18	49	61	8	55	2	21	23	3

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	110	0	0	54	0	0	316	334	50	332	307	79
Stage 1	-	-	-	-	-	-	187	187	-	116	116	-
Stage 2	-	-	-	-	-	-	129	147	-	216	191	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1480	-	-	1551	-	-	637	586	1018	621	607	981
Stage 1	-	-	-	-	-	-	815	745	-	889	800	-
Stage 2	-	-	-	-	-	-	875	775	-	786	742	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1480	-	-	1551	-	-	588	552	1018	547	572	981
Mov Cap-2 Maneuver	-	-	-	-	-	-	588	552	-	547	572	-
Stage 1	-	-	-	-	-	-	777	710	-	847	790	-
Stage 2	-	-	-	-	-	-	837	766	-	689	707	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	4.2	1.1	12.2	11.8
HCM LOS	B		B	

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	565	1480	-	-	1551	-	-	577
HCM Lane V/C Ratio	0.115	0.046	-	-	0.012	-	-	0.081
HCM Control Delay (s)	12.2	7.5	0	-	7.3	0	-	11.8
HCM Lane LOS	B	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	0.4	0.1	-	-	0	-	-	0.3

$$(60 \times 12.2) + (43 \times 11.8) + (63 \times 7.5) + (17 \times 7.3) / 334$$

$$732 + 507.4 + 472.5 + 124.1 / 334$$

$$1836 / 334 = 5.5$$

Intersection												
Int Delay, s/veh	4											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	10	46	7	19	64	12	6	10	14	15	16	8
Future Vol, veh/h	10	46	7	19	64	12	6	10	14	15	16	8
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	11	50	8	21	70	13	7	11	15	16	17	9

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	83	0	0	58	0	0	206	200	54	206	196	76
Stage 1	-	-	-	-	-	-	76	76	-	117	117	-
Stage 2	-	-	-	-	-	-	130	124	-	89	79	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1514	-	-	1546	-	-	752	696	1013	752	699	985
Stage 1	-	-	-	-	-	-	933	832	-	888	799	-
Stage 2	-	-	-	-	-	-	874	793	-	918	829	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1514	-	-	1546	-	-	719	681	1013	719	684	985
Mov Cap-2 Maneuver	-	-	-	-	-	-	719	681	-	719	684	-
Stage 1	-	-	-	-	-	-	926	825	-	881	788	-
Stage 2	-	-	-	-	-	-	835	782	-	885	822	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	1.2	1.5	9.6	10.1
HCM LOS			A	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	814	1514	-	-	1546	-	-	745
HCM Lane V/C Ratio	0.04	0.007	-	-	0.013	-	-	0.057
HCM Control Delay (s)	9.6	7.4	0	-	7.4	0	-	10.1
HCM Lane LOS	A	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	0.1	0	-	-	0	-	-	0.2

$$(30 \times 9.6) + (39 \times 10.1) + (10 \times 7.4) + (19 \times 7.4) / 227$$

$$288 + 393.9 + 74 + 140.6 / 227$$

$$896.5 / 227 = 3.9$$

Intersection	
Intersection Delay, s/veh	7.4
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔			↔	
Traffic Vol, veh/h	3	5	35	1	10	0	79	0	1	0	0	8
Future Vol, veh/h	3	5	35	1	10	0	79	0	1	0	0	8
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	3	5	38	1	11	0	86	0	1	0	0	9
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	6.9	7.3	7.7	6.6
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	99%	7%	9%	0%
Vol Thru, %	0%	12%	91%	0%
Vol Right, %	1%	81%	0%	100%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	80	43	11	8
LT Vol	79	3	1	0
Through Vol	0	5	10	0
RT Vol	1	35	0	8
Lane Flow Rate	87	47	12	9
Geometry Grp	1	1	1	1
Degree of Util (X)	0.102	0.047	0.014	0.008
Departure Headway (Hd)	4.235	3.635	4.155	3.503
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	849	977	855	1017
Service Time	2.25	1.686	2.209	1.54
HCM Lane V/C Ratio	0.102	0.048	0.014	0.009
HCM Control Delay	7.7	6.9	7.3	6.6
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	0.3	0.1	0	0

Intersection	
Intersection Delay, s/veh	7.4
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↕			↕			↕			↕		
Traffic Vol, veh/h	15	21	52	3	8	0	49	2	1	1	5	6
Future Vol, veh/h	15	21	52	3	8	0	49	2	1	1	5	6
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	16	23	57	3	9	0	53	2	1	1	5	7
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

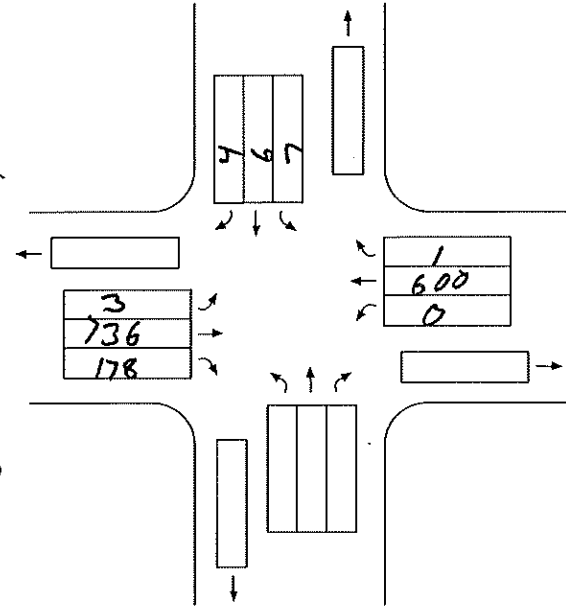
Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	7.2	7.3	7.7	7
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	94%	17%	27%	8%
Vol Thru, %	4%	24%	73%	42%
Vol Right, %	2%	59%	0%	50%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	52	88	11	12
LT Vol	49	15	3	1
Through Vol	2	21	8	5
RT Vol	1	52	0	6
Lane Flow Rate	57	96	12	13
Geometry Grp	1	1	1	1
Degree of Util (X)	0.068	0.099	0.014	0.014
Departure Headway (Hd)	4.309	3.744	4.183	3.881
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	830	953	850	916
Service Time	2.344	1.785	2.235	1.931
HCM Lane V/C Ratio	0.069	0.101	0.014	0.014
HCM Control Delay	7.7	7.2	7.3	7
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	0.2	0.3	0	0

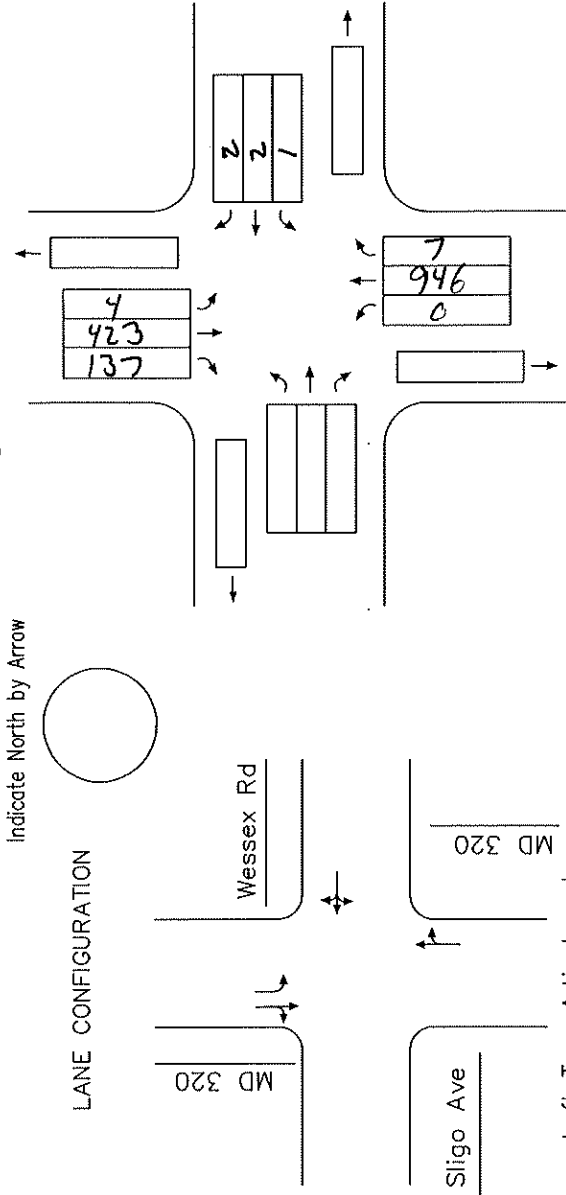
TURNING MOVEMENT SUMMARY
AND
LEVEL OF SERVICE

Count Date: NA
 Conditions/
 Design Year: Total Traffic Volumes
 Computed By: MN Date:
 Location: MD 320 @ Wessex Rd

Morning Peak Hour 7:30/8:30 AM

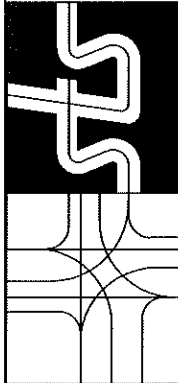


Evening Peak Hour 3:00/4:00 PM



Left Turn Adjustments

Phasing <input checked="" type="checkbox"/>			Opposing Through and Right-Turn Volume			Passenger Car Equivalent	No. of Lanes	Lane Use Factor	Service Level	Critical Lane Vol. Tot.				
						1.1			A = 1000 or Less B = 1000 to 1150 C = 1150 to 1300 D = 1300 to 1450 E = 1450 to 1600 F = Greater than 1600					
						1 = 1.00 2 = .53 3 = .37 4 = .29								
						5.0								
						1000+								
Ø	Movement	Volume(1)	Lane Use Factor(2)	Lane Volume (1)x(2)	Critical Lane Volume *	Ø	Movement	Volume(1)	Lane Use Factor(2)	Lane Volume (1)x(2)	Opposing Lefts	Critical Lane Volume *		
	NB	600+1	1.0	601	604		NB	946+7	1.0	953	4	957	✓	
	SB	236+178	1.0	414	414		SB	423+137	1.0	560	0	560		
	WB	756+4	1.0	760	760		WB	1+2+2	1.0	5	—	5	✓	
Remarks:						Remarks:						TOTAL		V/C
												critical volume		962
												LEVEL OF SERVICE		

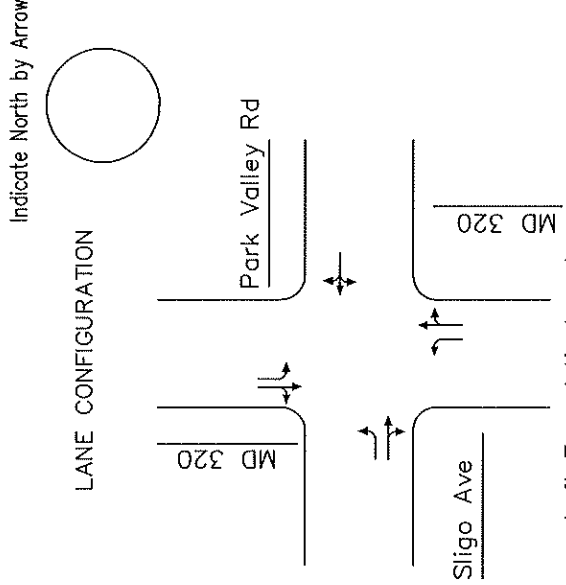
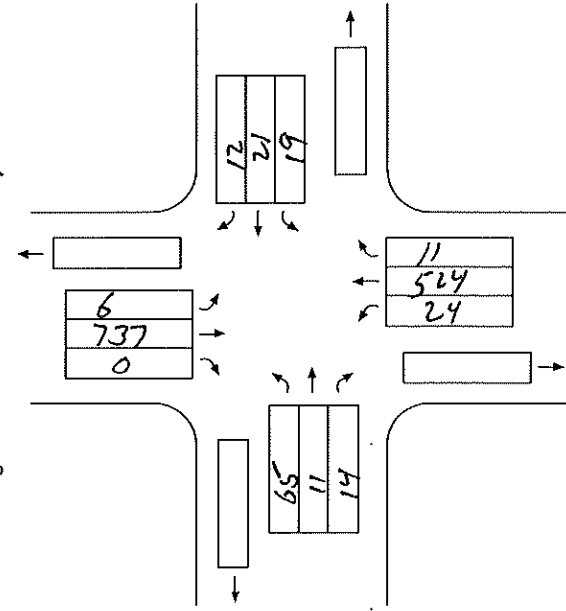


TURNING MOVEMENT SUMMARY
AND
LEVEL OF SERVICE

Count Date: NA Location: MD 320 @ Sligo Ave
Conditions/ Design Year: Total Traffic Volumes
Computed By: MN Date:

Morning Peak Hour 7:30/8:30 AM

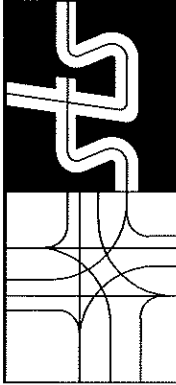
Evening Peak Hour 3:00/4:00 PM



Phasing ☒ Split ☐ E/W

Left Turn Adjustments

Phasing <input checked="" type="checkbox"/> Split <input checked="" type="checkbox"/> E/W		Key		Opposing Through and Right-Turn Volume		Passenger Car Equivalent		No. of Lanes		Lane Use Factor		Service Level		Critical Lane Vol. Tot.						
		1	0 to 199	1.1		1.1		1 = 1.00		A = 1000 or Less										
		2	200 to 599	2.0		2.0		2 = .53		B = 1000 to 1150										
		3	600 to 799	3.0		3.0		3 = .37		C = 1150 to 1300										
		4	800 to 999	4.0		4.0		4 = .29		D = 1300 to 1450										
		5	1000+	5.0		5.0				E = 1450 to 1600										
										F = Greater than 1600										
Ø	Movement	Volume(1)	Lane Use Factor(2)	Lane Volume (1)x(2)	Ø	Movement	Volume(1)	Lane Use Factor(2)	Lane Volume (1)x(2)	Opposing Lefts	Critical Lane Volume	*								
	NB	524+11	1.0	535		NB	782+16	1.0	778	13	791	✓								
	SB	737	1.0	737	✓	SB	409	1.0	409	21	430									
	EB	65	1.0	65	✓	EB	180	1.0	180	-	180	✓								
	WB	19+21+12	1.0	52	✓	WB	1535+11	1.0	61	-	61	✓								
Remarks:													* critical volume		TOTAL		V/C			
															878		1032		1232	
																	LEVEL OF SERVICE		LEVEL OF SERVICE	



TURNING MOVEMENT SUMMARY
AND
LEVEL OF SERVICE

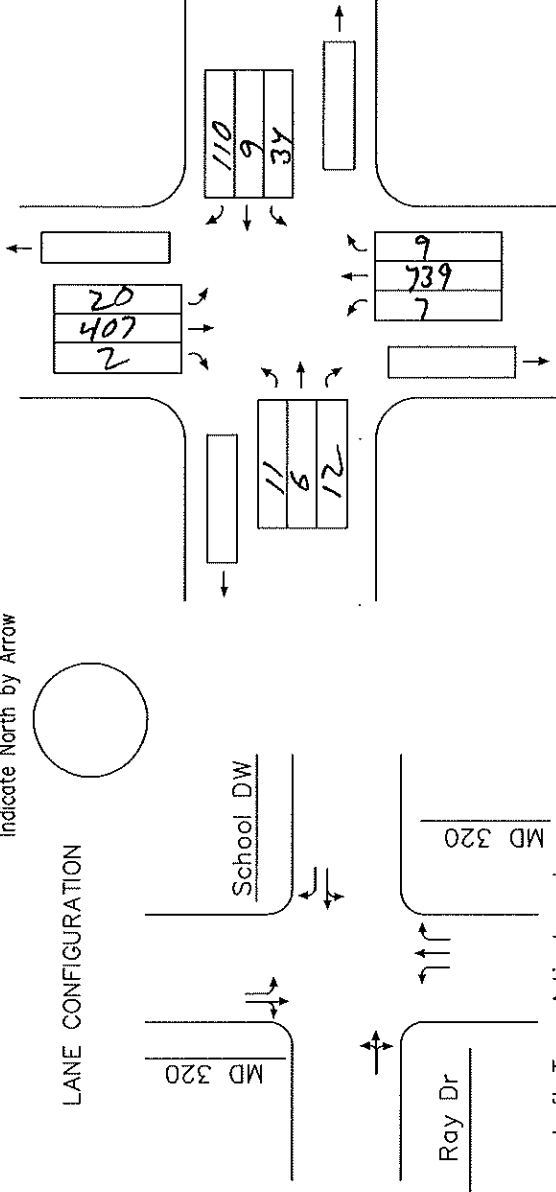
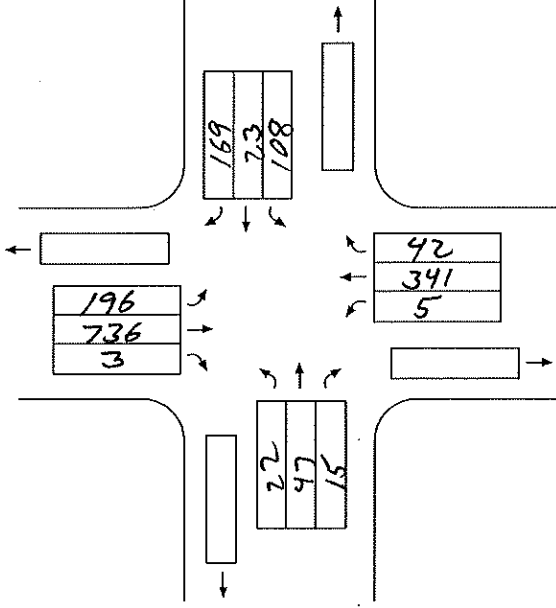
Count Date: NA Location: MD 320 @ Ray Dr
Conditions/ Design Year: Total Traffic Volumes
Computed By: MN Date:

Morning Peak Hour 7:30/8:30 AM

Evening Peak Hour 3:00/4:00 PM

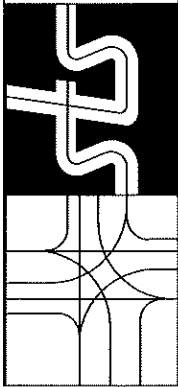
Indicate North by Arrow

LANE CONFIGURATION



Left Turn Adjustments

Phasing <input checked="" type="checkbox"/>		Opposing Through and Right-Turn Volume			Passenger Car Equivalent	No. of Lanes	Lane Use Factor	Service Level	Critical Lane Vol. Tot.				
		Key						A = 1000 or Less B = 1000 to 1150 C = 1150 to 1300 D = 1300 to 1450 E = 1450 to 1600 F = Greater than 1600					
		1	0 to 199		1.1	1	1.00						
		2	200 to 599		2.0	2	.53						
		3	600 to 799		3.0	3	.37						
		4	800 to 999		4.0	4	.29						
		5	1000+		5.0								
Ø	Movement	Volume(1)	Lane Use Factor(2)	Lane Volume (1)x(2)	Ø	Movement	Volume(1)	Lane Use Factor(2)	Lane Volume (1)x(2)	Opposing Lefts	Critical Lane Volume *		
	NB	341+42	0.53	203		NB	739+9	0.53	396	20	416	✓	
	SB	736+3	1.0	739		SB	407+2	1.0	409	7	416		
	EB	24+47+15	1.0	86		EB	12+6+12	1.0	30	34	64	✓	
	WB	119+23	1.0	142		WB	37+9	1.0	46	11	57		
Remarks:													
		* critical volume		TOTAL	938	V/C	Remarks:		* critical volume		TOTAL	480	V/C
		LEVEL OF SERVICE			LEVEL OF SERVICE			LEVEL OF SERVICE			LEVEL OF SERVICE		



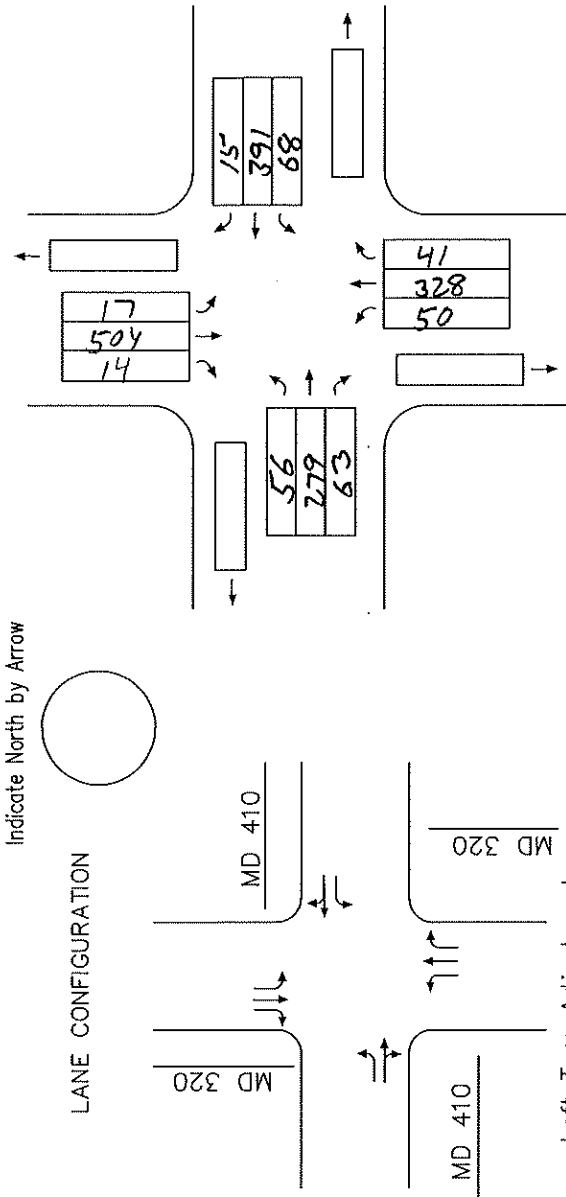
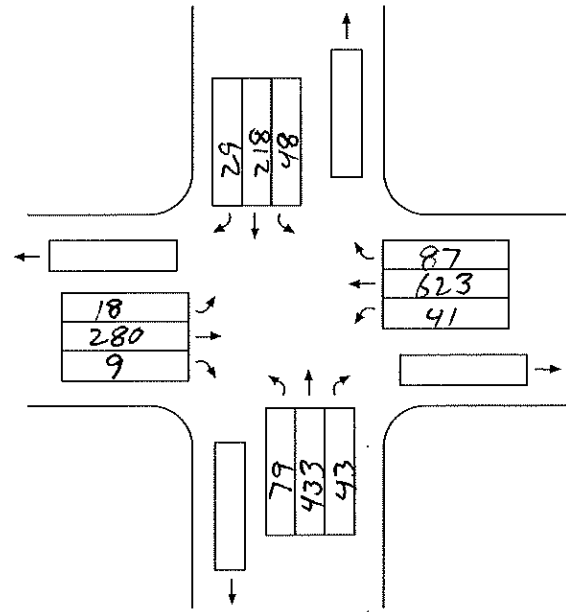
TURNING MOVEMENT SUMMARY AND LEVEL OF SERVICE

Count Date: NA
Conditions/ Design Year: Total Traffic Volumes
Computed By: MN Date:

Location: MD 320 @ MD 410

Morning Peak Hour 7:30/8:30 AM

Evening Peak Hour 3:00/4:00 PM



Left Turn Adjustments

Phasing <input checked="" type="checkbox"/>				Key	Opposing Through and Right-Turn Volume	Passenger Car Equivalent	No. of Lanes	Lane Use Factor	Service Level	Critical Lane Vol. Tot.		
				1	0 to 199	1.1	1	1.00	A	= 1000 or Less		
				2	200 to 599	2.0	2	.53	B	= 1000 to 1150		
				3	600 to 799	3.0	3	.37	C	= 1150 to 1300		
				4	800 to 999	4.0	4	.29	D	= 1300 to 1450		
				5	1000+	5.0			E	= 1450 to 1600		
									F	= Greater than 1600		
Ø	Movement	Volume(1)	Lane Use Factor(2)	Lane Volume (1)x(2)	Ø	Movement	Volume(1)	Lane Use Factor(2)	Lane Volume (1)x(2)	Opposing Lefts	Critical Lane Volume	*
	NB	623	1.0	623		NB	328	1.0	328	17	345	
	SB	280	1.0	280		SB	504	1.0	504	50	554	✓
	EB	433+43	1.0	476		EB	279+63	1.0	342	68	410	
	WB	218+29	1.0	247		WB	391+15	1.0	406	56	462	✓
Remarks:												
* critical volume				TOTAL		1165		V/C		Remarks:		
* critical volume				TOTAL		1016		V/C		LEVEL OF SERVICE		



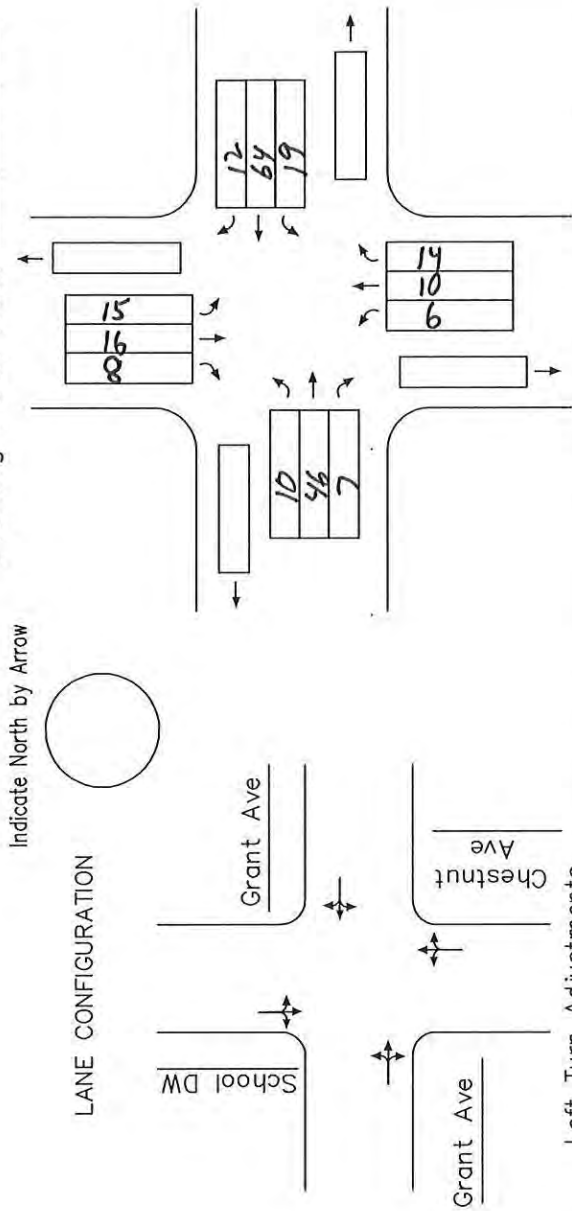
Count Date: NA

Conditions/
Design Year: Total Traffic Volumes

Computed By: MN Date:

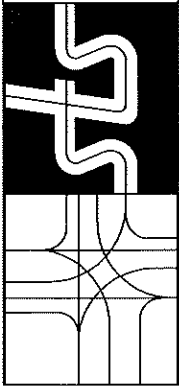
Location: Grant Ave @ Chestnut Ave

Evening Peak Hour 3:00/4:00 PM



Left Turn Adjustments

Phasing ϕ		Key		Opposing Through and Right-Turn Volume		Passenger Car Equivalent		No. of Lanes		Lane Use Factor		Service Level		Critical Lane Vol. Tot.		
				0 to 199 200 to 599 600 to 799 800 to 999 1000+		1.1 2.0 3.0 4.0 5.0		1 = 1.00 2 = .53 3 = .37 4 = .29		A = 1000 or Less B = 1000 to 1150 C = 1150 to 1300 D = 1300 to 1450 E = 1450 to 1600 F = Greater than 1600						
ϕ	Movement	Volume(1)	Lane Use Factor(2)	Lane Volume (1)x(2)	Opposing Lefts	Critical Lane Volume	*	ϕ	Movement	Volume(1)	Lane Use Factor(2)	Lane Volume (1)x(2)	Opposing Lefts	Critical Lane Volume	*	
	NB	7+51+2	1.0	60	19	79	✓		NB	6+10+14	1.0	30	15	45	✓	
	SB	19+21+3	1.0	43	7	50			SB	15+16+8	1.0	39	6	45		
	EB	69+42+8	1.0	119	17	136			EB	11+46+7	1.0	64	19	83		
	WB	19+45+56	1.0	120	63	183	✓		WB	21+64+12	1.0	97	10	107	✓	
Remarks:		* critical volume				TOTAL		V/C	Remarks:		* critical volume				TOTAL	V/C
						262									LEVEL OF SERVICE	LEVEL OF SERVICE



TURNING MOVEMENT SUMMARY AND LEVEL OF SERVICE

Count Date: NA
Conditions/
Design Year: _____
Computed By: MN Date: _____

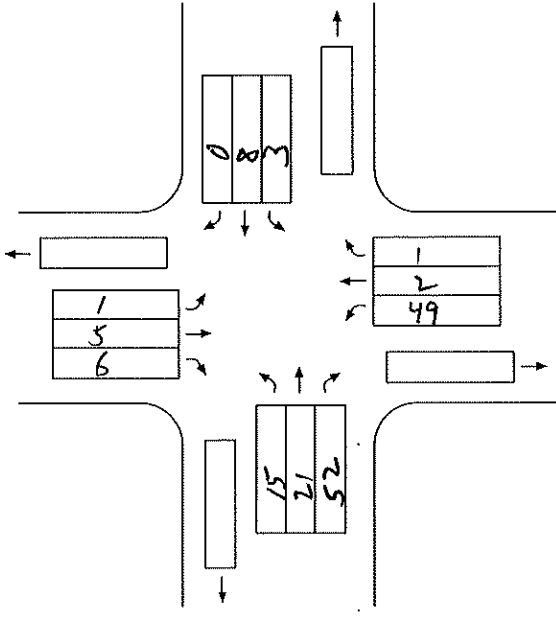
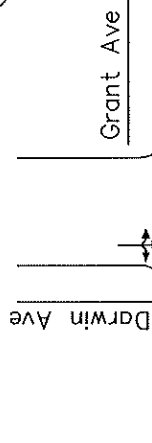
Location: Grant Ave @ Holly Ave

Morning Peak Hour _____

Evening Peak Hour _____

Indicate North by Arrow

LANE CONFIGURATION



Left Turn Adjustments

Phasing ☒ ALL WAY STOP

Key

Opposing Through and Right-Turn Volume

No. of Lanes

Lane Use Factor

Service Level

Critical Lane Vol. Tot.

Critical Lane Volume *

1

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3

4

5

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APPENDIX G
CROSSWALK EVALUATIONS

Approach	WB	NB	SB	NE
Crosswalk Length (ft)	24.0	36.2	36.4	21.2
Crosswalk Width (ft)	12.0	12.0	12.0	12.0
Total Number of Lanes Crossed	2	2	3	1
Number of Right-Turn Islands	0	0	0	0
Type of Control	None	None	None	None
Corresponding Signal Phase	2	0	8	6
Effective Walk Time (s)	0.0	0.0	0.0	0.0
Right Corner Size A (ft)	9.0	9.0	9.0	9.0
Right Corner Size B (ft)	9.0	9.0	9.0	9.0
Right Corner Curb Radius (ft)	0.0	0.0	0.0	0.0
Right Corner Total Area (sq.ft)	81.00	81.00	81.00	81.00
Ped. Left-Right Flow Rate (p/h)	0	0	0	0
Ped. Right-Left Flow Rate (p/h)	0	0	0	0
Ped. R. Sidewalk Flow Rate (p/h)	0	0	0	0
Veh. Perm. L. Flow in Walk (v/h)	0	0	0	0
Veh. Perm. R. Flow in Walk (v/h)	0	0	0	0
Veh. RTOR Flow in Walk (v/h)	0	0	0	0
85th percentile speed (mph)	30	30	30	30
Right Corner Area per Ped (sq.ft)	0.0	0.0	0.0	0.0
Right Corner Quality of Service	-	-	-	-
Ped. Circulation Area (sq.ft)	0.0	0.0	0.0	0.0
Crosswalk Circulation Code	-	-	-	-
Pedestrian Delay (s/p)	75.0	75.0	75.0	75.0
Pedestrian Compliance Code	Poor	Poor	Poor	Poor
Pedestrian Crosswalk Score	1.76	2.46	2.51	1.65
Pedestrian Crosswalk LOS	A	B	B	A

Approach	WB	NB	SB	NE
Crosswalk Length (ft)	24.0	36.2	36.4	21.2
Crosswalk Width (ft)	12.0	12.0	12.0	12.0
Total Number of Lanes Crossed	2	2	3	1
Number of Right-Turn Islands	0	0	0	0
Type of Control	None	None	None	None
Corresponding Signal Phase	2	0	8	6
Effective Walk Time (s)	0.0	0.0	0.0	0.0
Right Corner Size A (ft)	9.0	9.0	9.0	9.0
Right Corner Size B (ft)	9.0	9.0	9.0	9.0
Right Corner Curb Radius (ft)	0.0	0.0	0.0	0.0
Right Corner Total Area (sq.ft)	81.00	81.00	81.00	81.00
Ped. Left-Right Flow Rate (p/h)	0	0	0	0
Ped. Right-Left Flow Rate (p/h)	0	0	0	0
Ped. R. Sidewalk Flow Rate (p/h)	0	0	0	0
Veh. Perm. L. Flow in Walk (v/h)	0	0	0	0
Veh. Perm. R. Flow in Walk (v/h)	0	0	0	0
Veh. RTOR Flow in Walk (v/h)	0	0	0	0
85th percentile speed (mph)	30	30	30	30
Right Corner Area per Ped (sq.ft)	0.0	0.0	0.0	0.0
Right Corner Quality of Service	-	-	-	-
Ped. Circulation Area (sq.ft)	0.0	0.0	0.0	0.0
Crosswalk Circulation Code	-	-	-	-
Pedestrian Delay (s/p)	75.0	75.0	75.0	75.0
Pedestrian Compliance Code	Poor	Poor	Poor	Poor
Pedestrian Crosswalk Score	1.75	2.48	2.50	1.60
Pedestrian Crosswalk LOS	A	B	B	A

Approach	EB	WB	NB	SB
Crosswalk Length (ft)	37.9	35.3	37.0	36.2
Crosswalk Width (ft)	12.0	12.0	12.0	12.0
Total Number of Lanes Crossed	3	2	3	3
Number of Right-Turn Islands	0	0	0	0
Type of Control	None	None	None	None
Corresponding Signal Phase	6	2	4	8
Effective Walk Time (s)	0.0	0.0	0.0	0.0
Right Corner Size A (ft)	9.0	9.0	9.0	9.0
Right Corner Size B (ft)	9.0	9.0	9.0	9.0
Right Corner Curb Radius (ft)	0.0	0.0	0.0	0.0
Right Corner Total Area (sq.ft)	81.00	81.00	81.00	81.00
Ped. Left-Right Flow Rate (p/h)	0	0	0	0
Ped. Right-Left Flow Rate (p/h)	0	0	0	0
Ped. R. Sidewalk Flow Rate (p/h)	0	0	0	0
Veh. Perm. L. Flow in Walk (v/h)	0	0	0	0
Veh. Perm. R. Flow in Walk (v/h)	0	0	0	0
Veh. RTOR Flow in Walk (v/h)	0	0	0	0
85th percentile speed (mph)	30	30	30	30
Right Corner Area per Ped (sq.ft)	0.0	0.0	0.0	0.0
Right Corner Quality of Service	-	-	-	-
Ped. Circulation Area (sq.ft)	0.0	0.0	0.0	0.0
Crosswalk Circulation Code	-	-	-	-
Pedestrian Delay (s/p)	75.0	75.0	75.0	75.0
Pedestrian Compliance Code	Poor	Poor	Poor	Poor
Pedestrian Crosswalk Score	2.02	1.79	2.44	2.45
Pedestrian Crosswalk LOS	B	A	B	B

Approach	EB	WB	NB	SB
Crosswalk Length (ft)	37.9	35.3	37.0	36.2
Crosswalk Width (ft)	12.0	12.0	12.0	12.0
Total Number of Lanes Crossed	3	2	3	3
Number of Right-Turn Islands	0	0	0	0
Type of Control	None	None	None	None
Corresponding Signal Phase	6	2	4	8
Effective Walk Time (s)	0.0	0.0	0.0	0.0
Right Corner Size A (ft)	9.0	9.0	9.0	9.0
Right Corner Size B (ft)	9.0	9.0	9.0	9.0
Right Corner Curb Radius (ft)	0.0	0.0	0.0	0.0
Right Corner Total Area (sq.ft)	81.00	81.00	81.00	81.00
Ped. Left-Right Flow Rate (p/h)	0	0	0	0
Ped. Right-Left Flow Rate (p/h)	0	0	0	0
Ped. R. Sidewalk Flow Rate (p/h)	0	0	0	0
Veh. Perm. L. Flow in Walk (v/h)	0	0	0	0
Veh. Perm. R. Flow in Walk (v/h)	0	0	0	0
Veh. RTOR Flow in Walk (v/h)	0	0	0	0
85th percentile speed (mph)	30	30	30	30
Right Corner Area per Ped (sq.ft)	0.0	0.0	0.0	0.0
Right Corner Quality of Service	-	-	-	-
Ped. Circulation Area (sq.ft)	0.0	0.0	0.0	0.0
Crosswalk Circulation Code	-	-	-	-
Pedestrian Delay (s/p)	75.0	75.0	75.0	75.0
Pedestrian Compliance Code	Poor	Poor	Poor	Poor
Pedestrian Crosswalk Score	2.08	1.81	2.41	2.46
Pedestrian Crosswalk LOS	B	A	B	B

Approach	EB	WB	NB	SB
Crosswalk Length (ft)	38.0	34.6	48.0	36.0
Crosswalk Width (ft)	12.0	12.0	12.0	12.0
Total Number of Lanes Crossed	3	2	4	3
Number of Right-Turn Islands	0	0	0	0
Type of Control	None	None	None	None
Corresponding Signal Phase	6	2	4	8
Effective Walk Time (s)	0.0	0.0	0.0	0.0
Right Corner Size A (ft)	9.0	9.0	9.0	9.0
Right Corner Size B (ft)	9.0	9.0	9.0	9.0
Right Corner Curb Radius (ft)	0.0	0.0	0.0	0.0
Right Corner Total Area (sq.ft)	81.00	81.00	81.00	81.00
Ped. Left-Right Flow Rate (p/h)	0	0	0	0
Ped. Right-Left Flow Rate (p/h)	0	0	0	0
Ped. R. Sidewalk Flow Rate (p/h)	0	0	0	0
Veh. Perm. L. Flow in Walk (v/h)	0	0	0	0
Veh. Perm. R. Flow in Walk (v/h)	0	0	0	0
Veh. RTOR Flow in Walk (v/h)	0	0	0	0
85th percentile speed (mph)	30	30	30	30
Right Corner Area per Ped (sq.ft)	0.0	0.0	0.0	0.0
Right Corner Quality of Service	-	-	-	-
Ped. Circulation Area (sq.ft)	0.0	0.0	0.0	0.0
Crosswalk Circulation Code	-	-	-	-
Pedestrian Delay (s/p)	50.0	50.0	50.0	50.0
Pedestrian Compliance Code	Poor	Poor	Poor	Poor
Pedestrian Crosswalk Score	1.99	2.04	2.48	2.47
Pedestrian Crosswalk LOS	A	B	B	B

Approach	EB	WB	NB	SB
Crosswalk Length (ft)	38.0	34.6	48.0	36.0
Crosswalk Width (ft)	12.0	12.0	12.0	12.0
Total Number of Lanes Crossed	3	2	4	3
Number of Right-Turn Islands	0	0	0	0
Type of Control	None	None	None	None
Corresponding Signal Phase	6	2	4	8
Effective Walk Time (s)	0.0	0.0	0.0	0.0
Right Corner Size A (ft)	9.0	9.0	9.0	9.0
Right Corner Size B (ft)	9.0	9.0	9.0	9.0
Right Corner Curb Radius (ft)	0.0	0.0	0.0	0.0
Right Corner Total Area (sq.ft)	81.00	81.00	81.00	81.00
Ped. Left-Right Flow Rate (p/h)	0	0	0	0
Ped. Right-Left Flow Rate (p/h)	0	0	0	0
Ped. R. Sidewalk Flow Rate (p/h)	0	0	0	0
Veh. Perm. L. Flow in Walk (v/h)	0	0	0	0
Veh. Perm. R. Flow in Walk (v/h)	0	0	0	0
Veh. RTOR Flow in Walk (v/h)	0	0	0	0
85th percentile speed (mph)	30	30	30	30
Right Corner Area per Ped (sq.ft)	0.0	0.0	0.0	0.0
Right Corner Quality of Service	-	-	-	-
Ped. Circulation Area (sq.ft)	0.0	0.0	0.0	0.0
Crosswalk Circulation Code	-	-	-	-
Pedestrian Delay (s/p)	50.0	50.0	50.0	50.0
Pedestrian Compliance Code	Poor	Poor	Poor	Poor
Pedestrian Crosswalk Score	1.97	1.83	2.47	2.41
Pedestrian Crosswalk LOS	A	A	B	B

Approach	EB	WB	NB	SB
Crosswalk Length (ft)	38.1	37.8	48.0	48.7
Crosswalk Width (ft)	12.0	12.0	12.0	12.0
Total Number of Lanes Crossed	3	3	4	4
Number of Right-Turn Islands	0	0	0	0
Type of Control	None	None	None	None
Corresponding Signal Phase	6	2	4	8
Effective Walk Time (s)	0.0	0.0	0.0	0.0
Right Corner Size A (ft)	9.0	9.0	9.0	9.0
Right Corner Size B (ft)	9.0	9.0	9.0	9.0
Right Corner Curb Radius (ft)	0.0	0.0	0.0	0.0
Right Corner Total Area (sq.ft)	81.00	81.00	81.00	81.00
Ped. Left-Right Flow Rate (p/h)	0	0	0	0
Ped. Right-Left Flow Rate (p/h)	0	0	0	0
Ped. R. Sidewalk Flow Rate (p/h)	0	0	0	0
Veh. Perm. L. Flow in Walk (v/h)	0	0	0	0
Veh. Perm. R. Flow in Walk (v/h)	0	0	0	0
Veh. RTOR Flow in Walk (v/h)	0	0	0	0
85th percentile speed (mph)	30	30	30	30
Right Corner Area per Ped (sq.ft)	0.0	0.0	0.0	0.0
Right Corner Quality of Service	-	-	-	-
Ped. Circulation Area (sq.ft)	0.0	0.0	0.0	0.0
Crosswalk Circulation Code	-	-	-	-
Pedestrian Delay (s/p)	50.0	50.0	50.0	50.0
Pedestrian Compliance Code	Poor	Poor	Poor	Poor
Pedestrian Crosswalk Score	2.25	2.25	2.44	2.42
Pedestrian Crosswalk LOS	B	B	B	B

Approach	EB	WB	NB	SB
Crosswalk Length (ft)	38.1	37.8	48.0	48.7
Crosswalk Width (ft)	12.0	12.0	12.0	12.0
Total Number of Lanes Crossed	3	3	4	4
Number of Right-Turn Islands	0	0	0	0
Type of Control	None	None	None	None
Corresponding Signal Phase	6	2	4	8
Effective Walk Time (s)	0.0	0.0	0.0	0.0
Right Corner Size A (ft)	9.0	9.0	9.0	9.0
Right Corner Size B (ft)	9.0	9.0	9.0	9.0
Right Corner Curb Radius (ft)	0.0	0.0	0.0	0.0
Right Corner Total Area (sq.ft)	81.00	81.00	81.00	81.00
Ped. Left-Right Flow Rate (p/h)	0	0	0	0
Ped. Right-Left Flow Rate (p/h)	0	0	0	0
Ped. R. Sidewalk Flow Rate (p/h)	0	0	0	0
Veh. Perm. L. Flow in Walk (v/h)	0	0	0	0
Veh. Perm. R. Flow in Walk (v/h)	0	0	0	0
Veh. RTOR Flow in Walk (v/h)	0	0	0	0
85th percentile speed (mph)	30	30	30	30
Right Corner Area per Ped (sq.ft)	0.0	0.0	0.0	0.0
Right Corner Quality of Service	-	-	-	-
Ped. Circulation Area (sq.ft)	0.0	0.0	0.0	0.0
Crosswalk Circulation Code	-	-	-	-
Pedestrian Delay (s/p)	50.0	50.0	50.0	50.0
Pedestrian Compliance Code	Poor	Poor	Poor	Poor
Pedestrian Crosswalk Score	2.26	2.24	2.42	2.39
Pedestrian Crosswalk LOS	B	B	B	B

Approach

Approach Direction	EB
Median Present?	No
Approach Delay(s)	2.0
Level of Service	A

Crosswalk

Length (ft)	32
Lanes Crossed	2
Veh Vol Crossed	87
Ped Vol Crossed	0
Yield Rate(%)	0
Ped Platooning	No
Critical Headway (s)	12.14
Prob of Delayed X-ing	0.25
Prob of Blocked Lane	0.14
Delay for adq Gap	7.74
Avg Ped Delay (s)	1.97

Approach

Approach Direction	WB
Median Present?	No
Approach Delay(s)	2.0
Level of Service	A

Crosswalk

Length (ft)	32
Lanes Crossed	2
Veh Vol Crossed	87
Ped Vol Crossed	0
Yield Rate(%)	0
Ped Platooning	No
Critical Headway (s)	12.14
Prob of Delayed X-ing	0.25
Prob of Blocked Lane	0.14
Delay for adq Gap	7.74
Avg Ped Delay (s)	1.97

Approach

Approach Direction	EB
Median Present?	No
Approach Delay(s)	2.6
Level of Service	A

Crosswalk

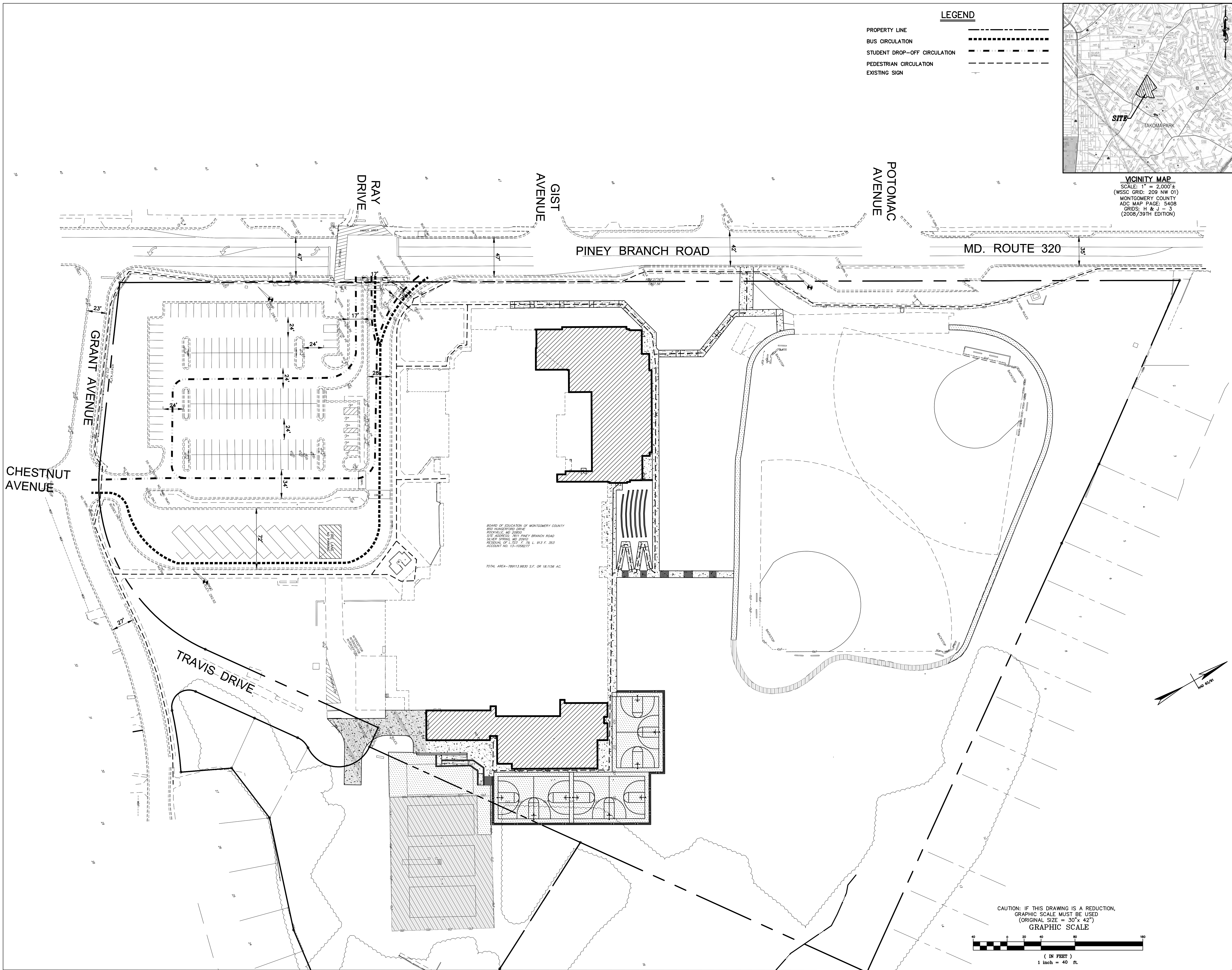
Length (ft)	32
Lanes Crossed	2
Veh Vol Crossed	110
Ped Vol Crossed	0
Yield Rate(%)	0
Ped Platooning	No
Critical Headway (s)	12.14
Prob of Delayed X-ing	0.31
Prob of Blocked Lane	0.17
Delay for adq Gap	8.26
Avg Ped Delay (s)	2.56


Approach

Approach Direction	WB
Median Present?	No
Approach Delay(s)	2.6
Level of Service	A

Crosswalk

Length (ft)	32
Lanes Crossed	2
Veh Vol Crossed	110
Ped Vol Crossed	0
Yield Rate(%)	0
Ped Platooning	No
Critical Headway (s)	12.14
Prob of Delayed X-ing	0.31
Prob of Blocked Lane	0.17
Delay for adq Gap	8.26
Avg Ped Delay (s)	2.56



ARCHITECT

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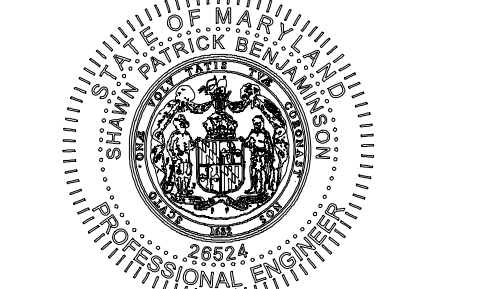
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BALTIMORE, MD 21244
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CONSTRUCTION MANAGER

OWNER/APPLICANT
MONTGOMERY COUNTY
PUBLIC SCHOOLS
45 WEST GUDE DRIVE,
SUITE 4300
ROCKVILLE, MARYLAND
20850-4038
ATTN: ROBBIE S. BADSTIBNER
Robbie_S.Badstibner@mcpsmd.org
TEL: 240.314.1018
FAX: 240.278.3003


I HEREBY CERTIFY THAT THESE DOCUMENTS ARE
PREPARED OR REVIEWED BY ME, AND THAT I AM A
DULY LICENSED PROFESSIONAL ENGINEER UNDER THE
LAWS OF THE STATE OF MARYLAND. 15 JUL 2016

PRINTS ISSUED		
NO.	DESCRIPTION:	DATE:
1	SCHEMATIC DESIGN	01/12/2018
2	35% SUBMISSION	02/05/2018
3	DESIGN DEVELOPMENT	05/01/2018

**TAKOMA PARK
MIDDLE SCHOOL
ADDITION**

**MONTGOMERY
COUNTY PUBLIC
SCHOOLS**

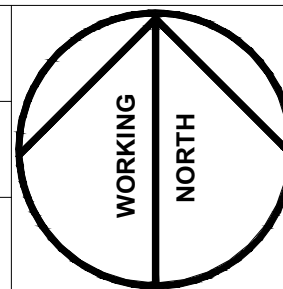
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**CIRCULATION
MAP**

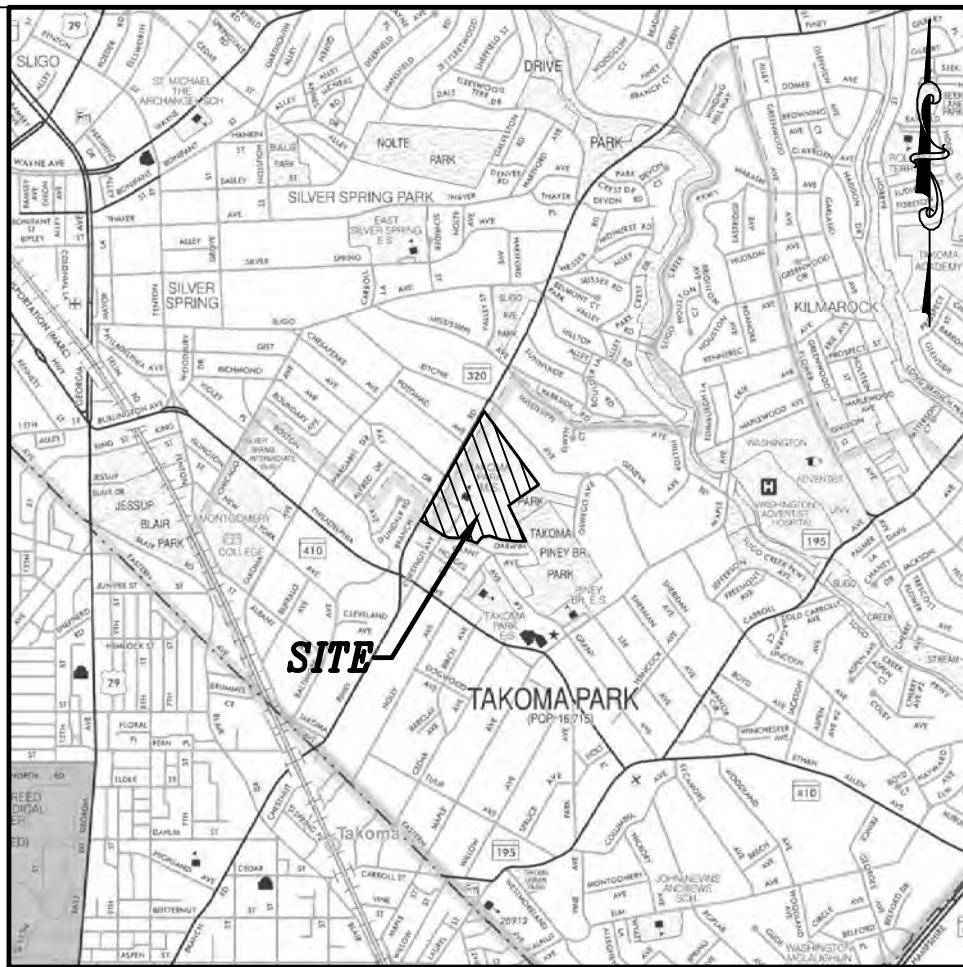
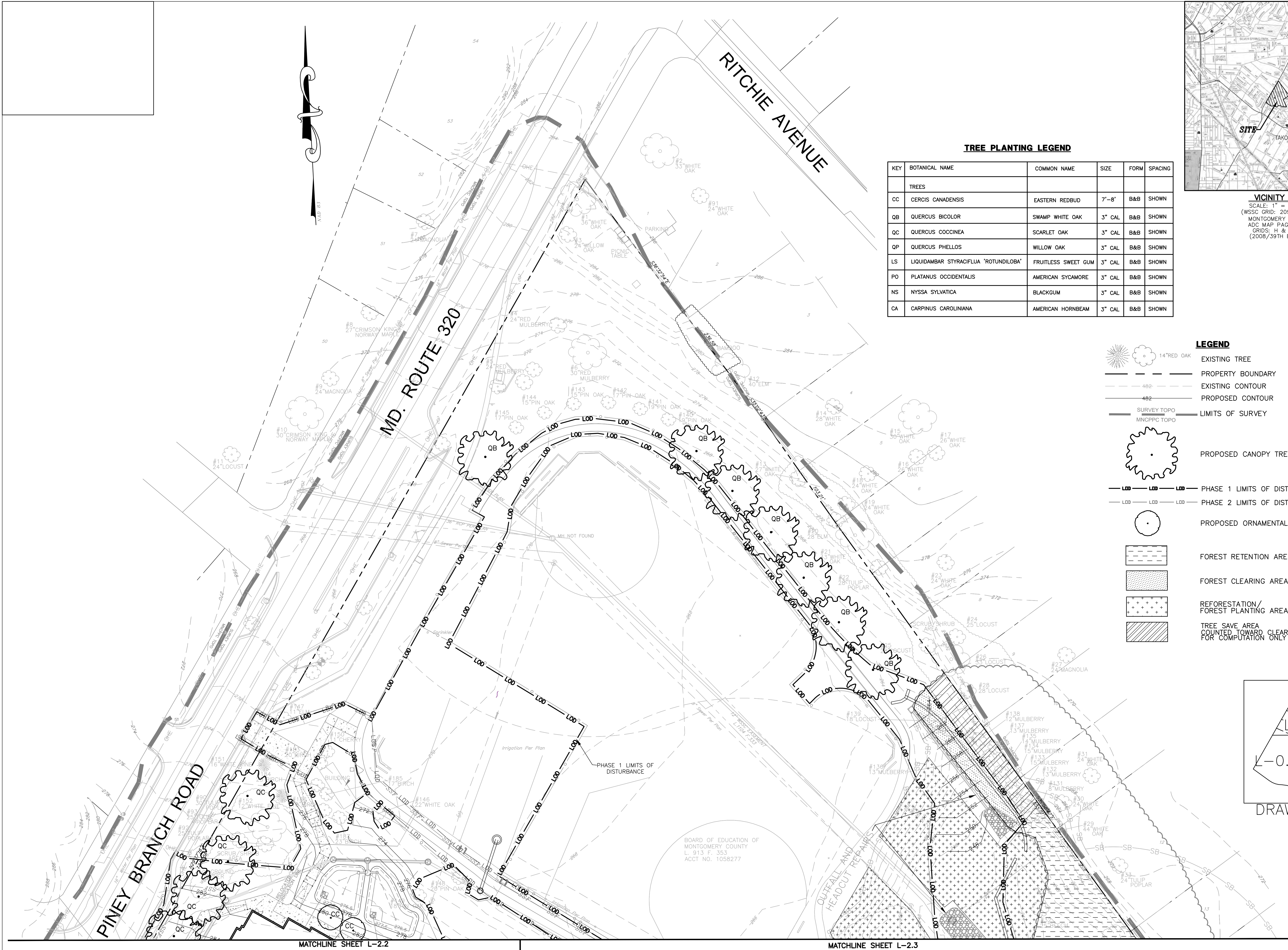
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14017

DATE:

SCALE:

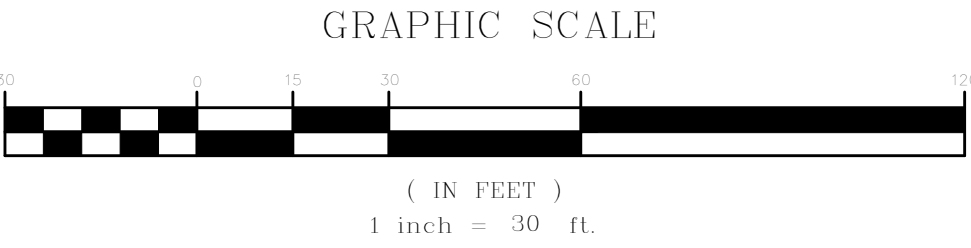
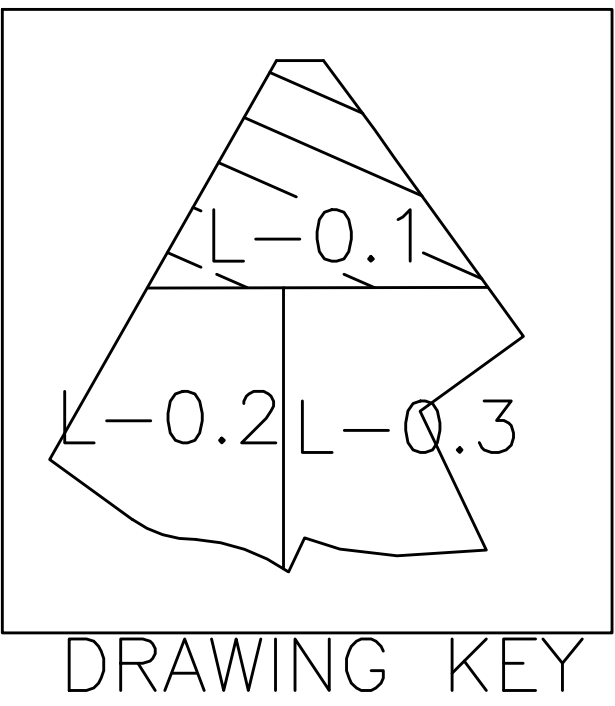
SHEET NO:
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TREE PLANTING LEGEND					
KEY	BOTANICAL NAME	COMMON NAME	SIZE	FORM	SPACING
TREES					
CC	CERCIS CANADENSIS	EASTERN REDBUD	7'-8'	B&B	SHOWN
QB	QUERCUS BICOLOR	SWAMP WHITE OAK	3" CAL	B&B	SHOWN
QC	QUERCUS COCCINEA	SCARLET OAK	3" CAL	B&B	SHOWN
QP	QUERCUS PHELLOS	WILLOW OAK	3" CAL	B&B	SHOWN
LS	LIQUIDAMBAR STYRACIFLUA 'ROTUNDILOBA'	FRUITLESS SWEET GUM	3" CAL	B&B	SHOWN
PO	PLATANUS OCCIDENTALIS	AMERICAN SYCAMORE	3" CAL	B&B	SHOWN
NS	NYSSA SYLVATICA	BLACKGUM	3" CAL	B&B	SHOWN
CA	CARPINUS CAROLINIANA	AMERICAN HORNBEAM	3" CAL	B&B	SHOWN

- LEGEND**
- EXISTING TREE
 - PROPERTY BOUNDARY
 - EXISTING CONTOUR
 - PROPOSED CONTOUR
 - SURVEY TOPO
 - MNCPPC TOPO
 - PROPOSED CANOPY TREE
 - PHASE 1 LIMITS OF DISTURBANCE
 - PHASE 2 LIMITS OF DISTURBANCE
 - PROPOSED ORNAMENTAL TREE
 - FOREST RETENTION AREA
 - FOREST CLEARING AREA
 - REFORESTATION/FOREST PLANTING AREA
 - TREE SAVE AREA COUNTED TOWARD CLEARING FOR COMPUTATION ONLY



NORTON LAND DESIGN
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BALT. 443.542.9199 DC 240.342.2329
ELLIOTT CITY, MD 21042
WWW.NORTONLANDDESIGN.COM

WATER CLASS	USE I, P	WATERSHED	SLIGO CREEK	FEMA FLOODPLAIN	MAP PANEL #
TRIBUTARY	UNNAMED				24031C 0460D
TAX MAP	JN342	200 SHEET	209NW01	ADC MAP	PAGE 37 GRID C-11
SCALE	AS SHOWN	DATE	AUGUST 2018	PROJ. NO.	16-140
				SHEET NO.	L-2.1

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CONSTRUCTION MANAGER



TAKOMA PARK MIDDLE SCHOOL ADDITION

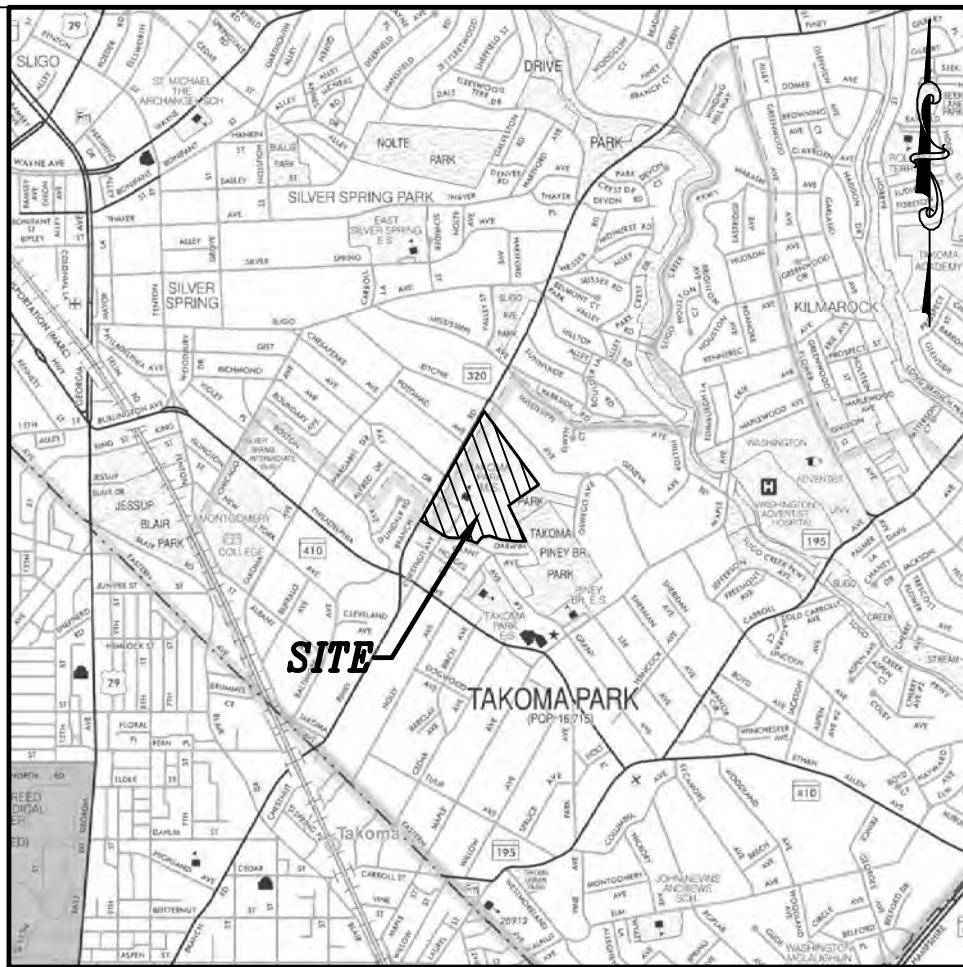
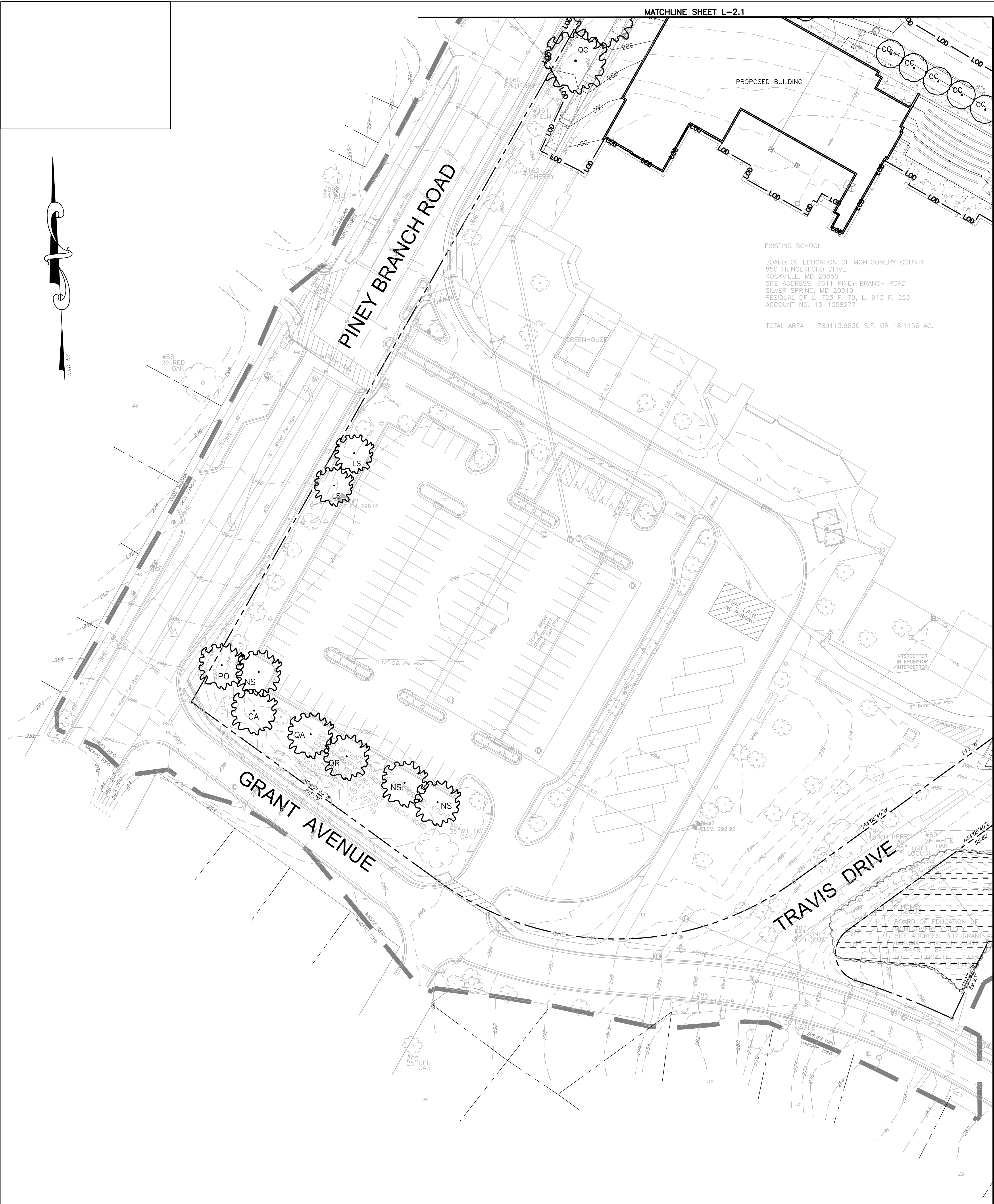
MONTGOMERY COUNTY PUBLIC SCHOOLS

SHEET TITLE:

PRELIMINARY LANDSCAPE PLAN

PROJECT NO: 16-140
DATE: 6/06/2018
SCALE: 1" = 30'-0"
SHEET NO:

L-2.1

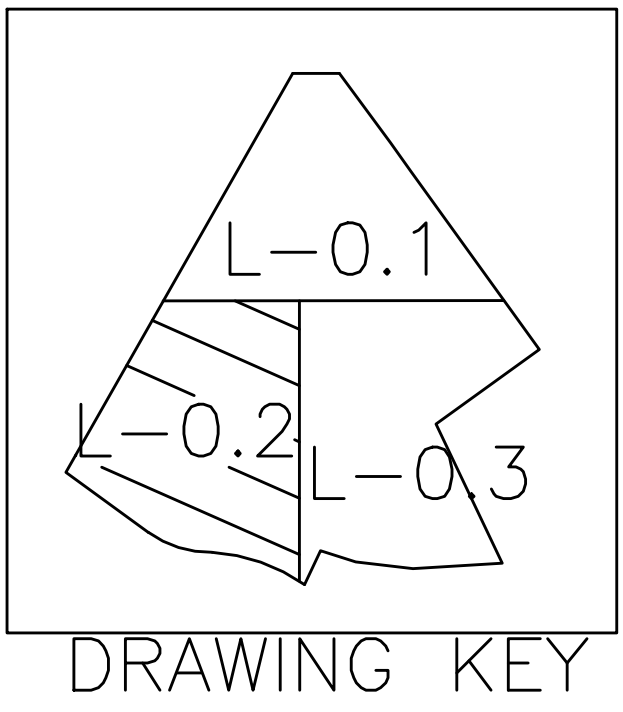
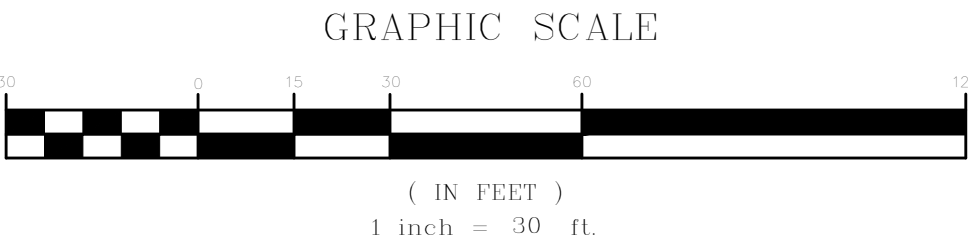


VICINITY MAP
SCALE: 1" = 2,000'
(WSSC GRID: 209 NW 01)
MONTGOMERY COUNTY
ADD MAP PAGE: 5408
GRIDS: H & J - 3
(2008/39TH EDITION)

TREE PLANTING LEGEND

KEY	BOTANICAL NAME	COMMON NAME	SIZE	FORM	SPACING
	TREES				
CC	CERCOIS CANADENSIS	EASTERN REDBUD	7'-8'	B&B	SHOWN
QB	QUERCUS BICOLOR	SWAMP WHITE OAK	3" CAL	B&B	SHOWN
QC	QUERCUS COCCINEA	SCARLET OAK	3" CAL	B&B	SHOWN
QP	QUERCUS PHELLOS	WILLOW OAK	3" CAL	B&B	SHOWN
LS	LIQUIDAMBAR STYRACIFLUA 'ROTUNDILOBA'	FRUITLESS SWEET GUM	3" CAL	B&B	SHOWN
PO	PLATANUS OCCIDENTALIS	AMERICAN SYCAMORE	3" CAL	B&B	SHOWN
NS	NYSSA SYLVATICA	BLACKGUM	3" CAL	B&B	SHOWN
CA	CARPINUS CAROLINIANA	AMERICAN HORNBEAM	3" CAL	B&B	SHOWN

	14" RED OAK	EXISTING TREE
		PROPERTY BOUNDARY
		EXISTING CONTOUR
		PROPOSED CONTOUR
		SURVEY TOPO
		MNCPPC TOPO
		PROPOSED CANOPY TREE
		PHASE 1 LIMITS OF DISTURBANCE
		PHASE 2 LIMITS OF DISTURBANCE
		PROPOSED ORNAMENTAL TREE
		FOREST RETENTION AREA
		FOREST CLEARING AREA
		REFORESTATION/ FOREST PLANTING AREA
		TREE SAVE AREA COUNTED TOWARD CLEARING FOR COMPUTATION ONLY



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BALT. 443.542.9199 DC 240.342.2329 WWW.NORTONLANDDESIGN.COM

WATER CLASS	USE I, P	WATERSHED	SLIGO CREEK	FEMA FLOODPLAIN	MAP PANEL #
TRIBUTARY	UNNAMED			24031C	0460D
TAX MAP	JN342	200 SHEET	209NW01	ADD MAP	PAGE: 37 GRID: C-11
SCALE	AS SHOWN	DATE	AUGUST 2018	PROJ. NO.	16-140
				SHEET NO.	L-2.2

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CONSTRUCTION MANAGER



**TAKOMA PARK
MIDDLE SCHOOL
ADDITION**

**MONTGOMERY
COUNTY PUBLIC
SCHOOLS**

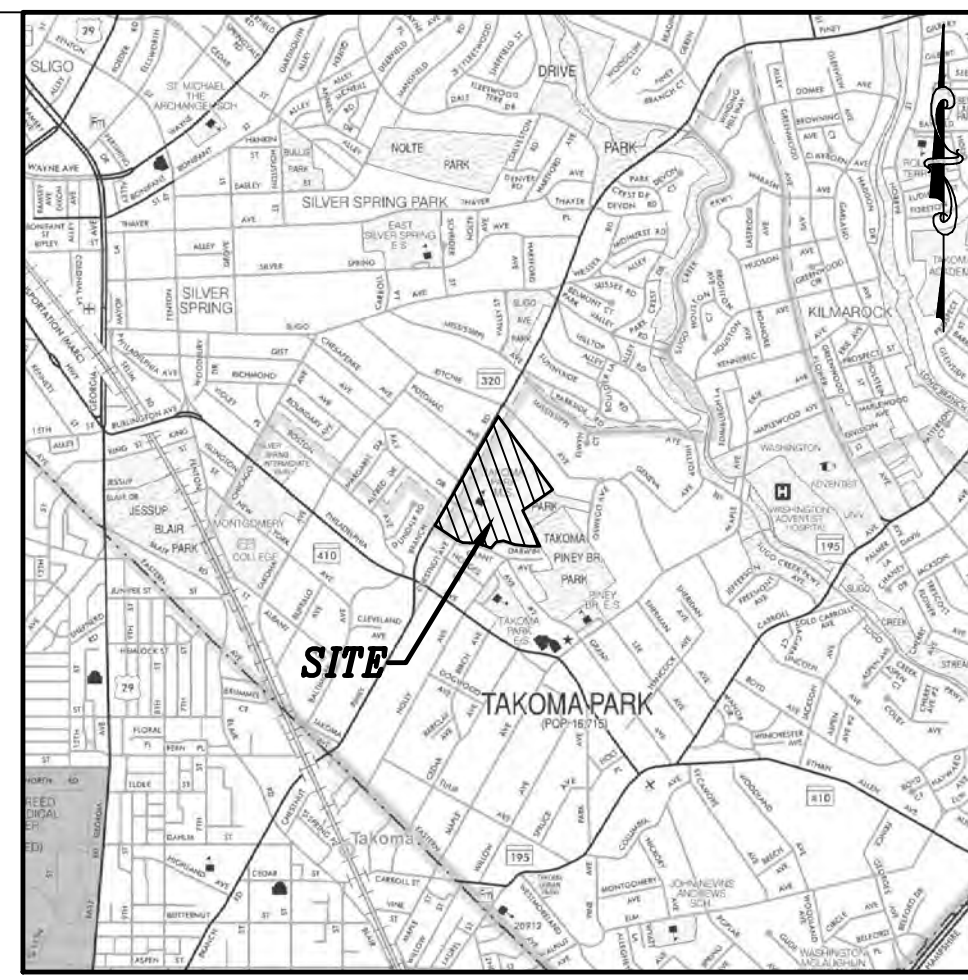
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**PRELIMINARY
LANDSCAPE
PLAN**

PROJECT NO:
16-140

DATE:
6/06/2018

SCALE:
1" = 30'-0"

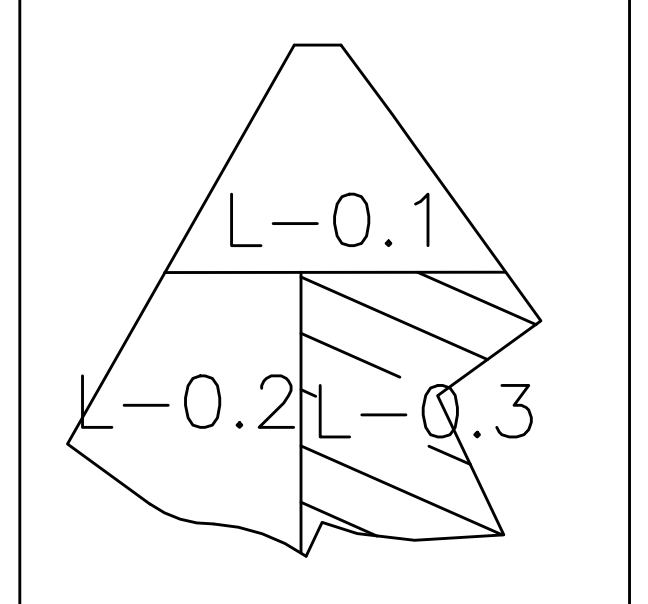
SHEET NO:
L-2.2



VICINITY MAP
SCALE: 1" = 2,000'±
(WSSC GRID: 209 NW 01)
MONTGOMERY COUNTY
ADD MAP PAGE: 5408
GRIDS: H & J - 3
(2008/39TH EDITION)

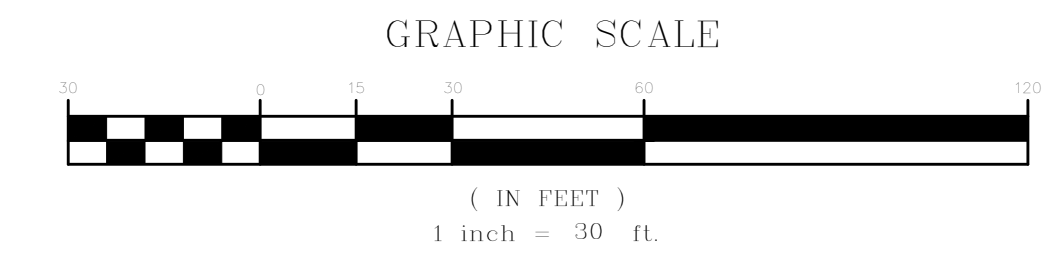
TREE PLANTING LEGEND

KEY	BOTANICAL NAME	COMMON NAME	SIZE	FORM	SPACING
TREES					
CC	CERCIS CANADENSIS	EASTERN REDBUD	7'-8'	B&B	SHOWN
QB	QUERCUS BICOLOR	SWAMP WHITE OAK	3" CAL	B&B	SHOWN
QC	QUERCUS COCCINEA	SCARLET OAK	3" CAL	B&B	SHOWN
QP	QUERCUS PHELLOS	WILLOW OAK	3" CAL	B&B	SHOWN
LS	LIQUIDAMBAR STYRACIFLUA 'ROTUNDILOBA'	FRUITLESS SWEET GUM	3" CAL	B&B	SHOWN
PO	PLATANUS OCCIDENTALIS	AMERICAN SYCAMORE	3" CAL	B&B	SHOWN
NS	NYSSA SYLVATICA	BLACKGUM	3" CAL	B&B	SHOWN
CA	CARPINUS CAROLINIANA	AMERICAN HORNBEAM	3" CAL	B&B	SHOWN



DRAWING KEY

- LEGEND**
- 14" RED OAK
 - EXISTING TREE
 - PROPERTY BOUNDARY
 - EXISTING CONTOUR
 - PROPOSED CONTOUR
 - SURVEY TOPO
 - LIMITS OF SURVEY
 - PROPOSED CANOPY TREE
 - PHASE 1 LIMITS OF DISTURBANCE
 - PHASE 2 LIMITS OF DISTURBANCE
 - PROPOSED ORNAMENTAL TREE
 - FOREST RETENTION AREA
 - FOREST CLEARING AREA
 - REFORESTATION/FOREST PLANTING AREA
 - TREE SAVE AREA
 - COUNTED TOWARD CLEARING FOR COMPUTATION ONLY



NORTON LAND DESIGN
LANDSCAPE ARCHITECTURE + ENVIRONMENTAL PLANNING
5148 DORSEY HALL DRIVE, 2ND FLOOR ELICOTT CITY, MD 21042
BALT. 443.542.9199 DC 240.342.2329 WWW.NORTONLANDDESIGN.COM

WATER CLASS	USE I, P	WATERSHED	FEMA FLOODPLAIN
UNNAMED		SLIGO CREEK	MAP PANEL # 24031C 0460D
TAX MAP	JN342	200 SHEET	209NW01
SCALE	AS SHOWN	DATE	AUGUST 2018
PROJ. NO.	16-140	SHEET NO.	L-2.2

ARCHITECT
SEI SMOLEN + EMR
9211 CORPORATE BLVD, SUITE 340
ROCKVILLE, MD 20850
301-770-0177(P) 301-330-3224(F)

CIVIL
ADTEK ENGINEERS
97 MONOCACY BOULEVARD, UNIT H
FREDERICK, MD 21701
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STRUCTURAL
ADTEK ENGINEERS
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MECH/ELECTRICAL/PLUMBING
JAMES POSEY ASSOCIATES
3112 LORD BALTIMORE DRIVE
BALTIMORE, MD 21244
301-265-6100(P) 301-298-9820(F)

CONSTRUCTION MANAGER

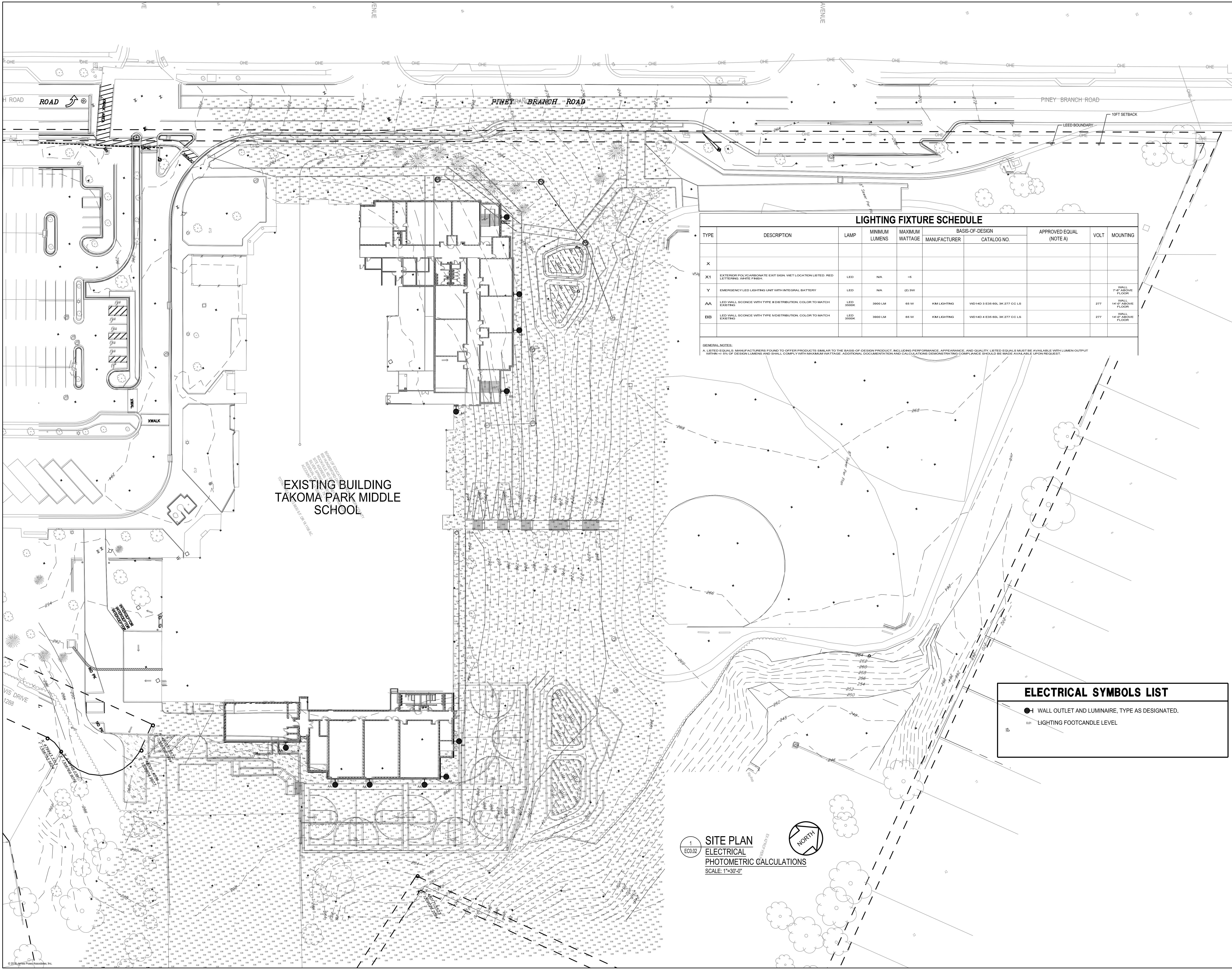
TAKOMA PARK MIDDLE SCHOOL ADDITION

MONTGOMERY COUNTY PUBLIC SCHOOLS

SHEET TITLE:
PRELIMINARY LANDSCAPE PLAN

PROJECT NO: 16-140
DATE: 6/06/2018
SCALE: 1" = 30'-0"
SHEET NO:

L-2.3



EXISTING BUILDING
TAKOMA PARK MIDDLE
SCHOOL

LIGHTING FIXTURE SCHEDULE

TYPE	DESCRIPTION	LAMP	MINIMUM LUMENS	MAXIMUM WATTAGE	BASIS-OF-DESIGN		APPROVED EQUAL (NOTE A)	VOLT	MOUNTING
					MANUFACTURER	CATALOG NO.			
X									
X1	EXTERIOR POLYCARBONATE EXIT SIGN, VET. LOCATION LISTED, RED LETTERING, WHITE FRESH	LED	N/A	15					
Y	EMERGENCY LED LIGHTING UNIT WITH INTEGRAL BATTERY	LED	N/A	(2) 30W					
AA	LED WALL SCONCE WITH TYPE B DISTRIBUTION, COLOR TO MATCH EXISTING	LED, 3500K	3900 LM	65 W	KIM LIGHTING	WD14D 3 E35 60L 3K 277 CC LS		277	WALL, 14" ABOVE FLOOR
BB	LED WALL SCONCE WITH TYPE B DISTRIBUTION, COLOR TO MATCH EXISTING	LED, 3500K	3900 LM	65 W	KIM LIGHTING	WD14D 4 E35 60L 3K 277 CC LS		277	WALL, 14" ABOVE FLOOR

GENERAL NOTES:
A LISTED EQUALS: MANUFACTURERS FOUND TO OFFER PRODUCTS SIMILAR TO THE BASIS-OF-DESIGN PRODUCT, INCLUDING PERFORMANCE, APPEARANCE, AND QUALITY. LISTED EQUALS MUST BE AVAILABLE WITH LUMEN OUTPUT WITHIN +/- 5% OF DESIGN LUMENS AND SHALL COMPLY WITH MAXIMUM WATTAGE. ADDITIONAL DOCUMENTATION AND CALCULATIONS DEMONSTRATING COMPLIANCE SHOULD BE MADE AVAILABLE UPON REQUEST.

ELECTRICAL SYMBOLS LIST

- WALL OUTLET AND LUMINAIRE, TYPE AS DESIGNATED.
- LIGHTING FOOTCANDLE LEVEL

1
EC0.02
SITE PLAN
ELECTRICAL
PHOTOMETRIC CALCULATIONS
SCALE: 1"=30'-0"



ARCHITECT



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MECH/ELECTRICAL/PLUMBING JAMES POSEY ASSOCIATES

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BALTIMORE, MD 21244
410-265-6100(P) 410-298-9820(F)

CONSTRUCTION MANAGER

Professional Certification: I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the state of Maryland. License No. 24861, Expiration date: 02-24-2020.

PROFESSIONAL SEAL:



PRINTS ISSUED

NO.	DESCRIPTION:	DATE:
1	SCHEMATIC DESIGN	1/12/2018
2	35% SUBMISSION	2/5/2018
3	DESIGN DEVELOPMENT	5/1/2018

TAKOMA PARK MIDDLE SCHOOL ADDITION

MONTGOMERY COUNTY PUBLIC SCHOOLS

SHEET TITLE:

SITE PLAN - PHOTOMETRIC CALCULATIONS

PROJECT NO:

14017

DATE:

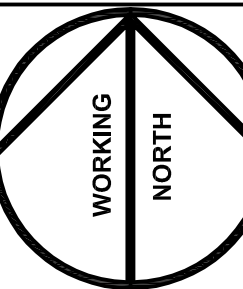
5/1/2018

SCALE:

1/8" = 1'-0"

SHEET NO:

EC0.02





DEPARTMENT OF TRANSPORTATION

Isiah Leggett
County Executive

Al R. Roshdieh
Director

April 16, 2018

Ms. Katie Mencarini, Planner
Area 1 Planning Division
The Maryland-National Capital
Park & Planning Commission
8787 Georgia Avenue
Silver Spring, Maryland 20910-3760

RE: Takoma Park Middle School
Mandatory Referral
Traffic Impact Study Review

Dear Ms. Mencarini:

We have completed our review of the Local Area Transportation Review and Transportation Policy Area Review (TIS) report dated March 13, 2018, and prepared by Street Traffic Studies, Ltd. Total development evaluated by the analysis includes:

- the expansion of the middle school with a core capacity of 1,500 students (additional 402 students).

We offer the following comments:

General Comment:

1. Page 1-Introduction-Second Paragraph: The report states that the traffic study was prepared in accordance with the Local Area Transportation Review and transportation Policy Area Review (LATR) Guidelines for a site generating more than 30 peak hour trips. As per the new LATR guidelines, a traffic study is required for a site generating more than 50 peak hour person trips by the proposed development.
2. We defer to the Maryland State Highway Administration (MDSHA) and City of Takoma Park for comments regarding intersections maintained by MDSHA and City of Takoma Park jurisdictions.

Office of the Director

101 Monroe Street 10th Floor · Rockville Maryland 20850 · 240-777-7170 · 240-777-7178 FAX

www.montgomerycountymd.gov

Located one block west of the Rockville Metro Station

Adequacy Determination

1. The study (page 15) indicates that the subject development will generate at least 50 total weekday peak hour person trips; therefore, the Motor Vehicle Adequacy test is required.
2. The study (page 20) indicates that the proposed development generates fewer than 50 pedestrian, transit and bicycle trips; therefore, these adequacy tests are not required.

Motor Vehicle System Adequacy

1. The subject development is required to meet the Local Area Transportation Review (LATR) test for motor vehicle system adequacy. The LATR test for the Silver Spring/Takoma Park policy area retains the critical lane volume (CLV) with a congestion standard of 1600. In addition, if the CLV is more than 1350, then the new Subdivision Staging Policy (SSP) requires an analysis of the average delay using Highway Capacity Manual (HCM).

Even though the CLV analyses for the total peak hour volumes were less than 1350, the consultant also included the HCM analysis for average delay standard (seconds/vehicle) in the report which was less than the congestion standard of 80 seconds/vehicle for the Silver Spring/Takoma Park policy area.

The consultant studied six (6) intersections during the school's peak period hours (7:30 to 8:30 p.m. and 3:00 to 4:00 p.m.). The consultant concluded that the total future conditions for these intersections will not exceed the congestion standard for the Silver Spring/Takoma Park policy area.

Pedestrian and Bicycle Impact Statement

1. The study indicates that the proposed development generates fewer than 50 pedestrian, transit and bicycle trips; therefore, these adequacy tests are not required.
2. We recommend crosswalks be installed on Gist Avenue, Potomac Avenue and Mississippi Avenue at the intersection of these side streets with Piney Branch Road (MD 320).

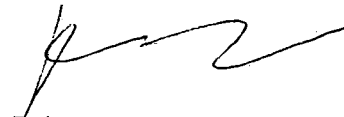
Ms. Mencarini
Takoma Park Middle School
Mandatory Referral
April 16, 2018
Page 3

SUMMARY

1. We concur with the consultant's conclusion that the motor vehicle delay will not exceed the Potomac policy area threshold.
2. We concur with the consultant that the pedestrian, transit and bicycle adequacy tests are not required.

Thank you for the opportunity to review this report. If you have any questions or comments regarding this letter, please contact myself for this project, at deepak.somarajan@montgomerycountymd.gov or (240) 777-7170.

Sincerely,



Rebecca Torma, Acting Manager
Development Review Team
Office of Transportation Policy

[SharePoint/transportation/directors office/development review/Deepak/TIS/ Takoma Park Middle School/ Takoma Park Middle School TIS.docx](#)

cc: David A. Nelson Street Traffic Studies, Ltd.
Mike Nalepa Street Traffic Studies, Ltd.
Preliminary Plan letters notebook

cce: Andre Futrell MDSHA-District 3