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Traffic Operations Analysis and Signal Optimization for a Mixed-Use Development in Tysons Corner, The Boro Boro Project, Fairfax County, VA

Submitted by

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December 20, 2025

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Executive Summary

This project evaluates current and future traffic operations at the roadway network serving a major mixed-use development in Fairfax County, Virginia. As the development builds out, the surrounding intersections must accommodate higher vehicular, transit, and pedestrian activity during the morning and evening commute periods. The purpose of this study is to quantify how well the network operates today and to identify a set of improvements that can maintain acceptable performance as site traffic increases.

Turning-movement counts collected at the study intersections were processed to identify the critical AM and PM peak hours, compute peak-hour volumes, and determine peak-hour factors from the 15-minute count data. These peak-hour demands were coded into a Synchro model representing the existing lane geometry, traffic control, and signal timing at each intersection. Using Highway Capacity Manual–based methods implemented in Synchro, the model provides estimates of control delay, level of service (LOS), volume-to-capacity ratios, and queue lengths for all critical movements in both peak periods.

The existing-condition results are used to diagnose operational issues such as high delays, unstable v/c ratios, and excessive queuing that may affect access to and from the development. Based on these findings, a package of mitigation measures such as signal timing adjustments, phasing changes, and targeted geometric improvements will be developed and tested as a proposed condition scenario in Synchro.

By comparing existing and proposed conditions, the study will quantify the operational benefits of the recommended improvements, demonstrate their effectiveness in reducing delays and queues, and provide clear, data-driven guidance for agencies and stakeholders responsible for managing traffic operations around the site.

Site Location

The study area is located in Fairfax County, Virginia, within the Tysons corner area, and focuses on the roadway network serving The Boro Blocks I, J, K, and L. The Boro is a dense, mixed-use urban development that is integrated into an established regional road system and is expected to generate significant vehicular and pedestrian activity during peak commute periods.

Key bounding and internal roadways in the study area include:

- Leesburg Pike (Route 7) – a major east–west arterial carrying high regional traffic volumes.
- Spring Hill Road – a north–south roadway providing access between Leesburg Pike and surrounding developments.
- Greensboro Drive – an important east–west corridor providing local access to The Boro and adjacent properties.
- Westpark Drive – a north–south roadway serving office and mixed-use developments, with several study driveways and intersections.
- International Drive and Tyco Road, which complete the broader circulation network around the site.

Within this network, multiple signalized and unsignalized intersections and site driveways are included as study intersections. These locations represent the key access points to The Boro and control how site traffic interacts with through traffic on Leesburg Pike, Greensboro Drive, Westpark Drive, and Spring Hill Road. The study area and the numbered study intersections are illustrated in the site diagrams labelled "Site Location" and "Study Area" in the project materials.

Software and Tools

The following software and tools are used in this project:

- Synchro

  Primary analysis tool for evaluating intersection operations, capacity, delay, and LOS under existing and proposed conditions.

  Used to code lane configurations, control types, traffic signal phasing, and timing plans for the AM and PM peak hours.

  Provides movement-by-movement and intersection-level performance measures, including control delay, LOS, volume-to-capacity (v/c) ratios, and estimated queues, consistent with HCM-based methodologies.

- Microsoft Excel (or similar spreadsheet software)

  Used to organize the turning-movement count data for each intersection, compute peak-hour volumes (PHV) and peak-hour factors (PHF) from the 15-minute counts, and prepare input summary tables for Synchro.

- Supporting Mapping/Graphics Tools (as needed)

  Basic mapping or CAD-based figures from the project package (e.g., the site location and study area figures) are used to verify intersection layouts, lane configurations, and to prepare figures for the report.

  Together, these tools support a structured workflow: (1) process field data and define peak-hour demand; (2) build and calibrate an existing condition Synchro model; (3) test mitigation strategies; and (4) compare operational performance between existing and proposed conditions.

Chapter 1

Introduction

The Boro (Blocks I, J, K, and L) is a major mixed-use development located in Fairfax County, Virginia. It is embedded within a dense, highly urbanizing roadway network that serves regional through traffic, local commercial activity, and site-generated trips. As the area continues to grow, maintaining acceptable traffic operations at the surrounding intersections is critical for mobility, safety, and access to the development.

This project focuses on the roadway network that provides primary access to The Boro and connects it to the broader Tysons area. The study evaluates how well this network currently operates during the critical morning and evening commuter periods and provides a foundation for developing mitigation measures where operational deficiencies are identified.

This chapter describes the overall background and context for the study. It summarizes the project objectives, outlines the study area and key roadways, discusses the surrounding and on-site land uses, and documents the traffic data and peak periods that will be used in the operational analysis.

1.1 Study Objectives

The primary objectives of this project are as follows:

- To document the existing roadway network serving The Boro and its surrounding area, including key intersections and access points.
- To describe the land use and development context that influences traffic demand patterns in and around the site.
- To summarize the traffic data collection program, including turning-movement counts, peak-hour determination, and peak-hour factor calculations.
- To establish the basis for the existing-condition capacity, delay, level of service (LOS), and queuing analysis presented in Chapter 2.
- To support the development and evaluation of mitigation measures and proposed conditions in later chapters of this report.

1.2 Study Area and Road Network

The study area encompasses the roadway network immediately surrounding The Boro, which is located in Fairfax County, Virginia. The network includes a combination of major arterials, urban streets, and site access driveways that together provide regional and local connectivity. The key facilities in the study area include:

- **Leesburg Pike (Route 7):** A major east–west corridor carrying substantial regional traffic volumes and providing primary access to the Tysons area.
- **Spring Hill Road:** A north–south roadway that connects Leesburg Pike to adjacent developments and helps distribute traffic between the arterial system and local streets.
- **Greensboro Drive:** An important east–west street that fronts portions of The Boro and serves multiple office and commercial developments.
- **Westpark Drive:** A north–south street providing direct access to The Boro and nearby properties, with several study intersections and driveways.
- **International Drive and Tyco Road:** Additional key streets that complete the circulation system and provide alternative routes around the development.

Within this network, multiple signalized and unsignalized intersections and site driveways have been identified as study intersections. These locations represent the critical points where site-generated traffic interacts with background traffic on the surrounding roadway system. The configuration of lanes, control types, and traffic signal operations at these intersections will be modeled and evaluated in subsequent chapters.

1.3 Land Use and Development Context

The Boro is a high-density, mixed-use development intended to function as a vibrant urban district within the Tysons area. The planned and existing development program includes a blend of:

- Multi-family residential units,
- Office space,
- Retail and restaurant uses,
- Entertainment and lifestyle amenities, and
- Structured parking facilities.

This mix of uses is designed to support a live–work–shop environment with significant pedestrian activity and a strong connection to regional transit. The development is oriented toward a walkable street grid, with building frontages and active ground-floor uses along key corridors such as Greensboro Drive and Westpark Drive. As a result, traffic demands in the area are influenced not only by traditional peak-period commuter travel, but also by retail, dining, and entertainment trips throughout the day.

Surrounding The Boro are existing office complexes, commercial properties, and other mixed-use developments that generate additional traffic and contribute to the overall congestion level in the area. Access to and from these land uses is provided via the same network of intersections and driveways included in this study. Understanding the land use context is therefore essential for interpreting traffic patterns and for evaluating the reasonableness of the turning-movement counts and peak-hour conditions used in the analysis.

Figure 1.1: Site with most busy node numbers in red

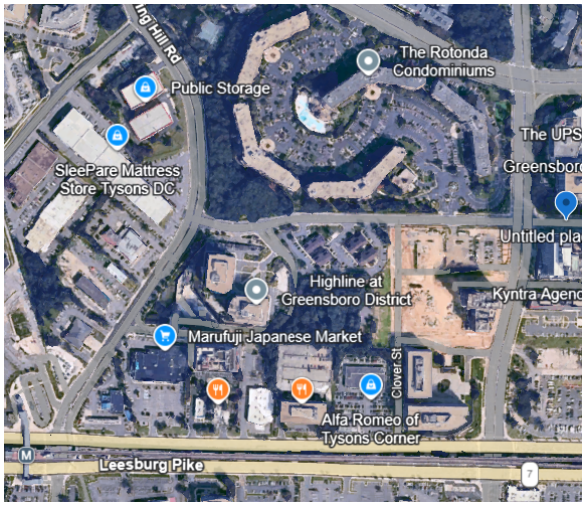


Figure 1.2: Google Map view of the site

1.4 Traffic Data and Peak Period Definition

The operational analysis in this project is based on detailed turning-movement counts collected at the study intersections. For each intersection, 15-minute turning-movement volumes were obtained for the morning and evening commuter periods. The data include movements on all approaches, disaggregated by left turns, through movements, and right turns.

Using these 15-minute counts, the following steps were carried out:

1. **Identification of Peak Hours:** For each intersection and each peak period, the continuous one-hour interval with the highest total entering volume was identified as the peak hour (AM and PM).

2. **Computation of Peak-Hour Volumes (PHV):** For the selected peak hour, the total entering volumes and movement-specific volumes were summed across the four constituent 15-minute intervals.

3. **Calculation of Peak-Hour Factors (PHF):** Peak-hour factors were computed to quantify the variability of traffic within the peak hour and to ensure that peak-period demands were represented appropriately in the capacity analysis.

1.4.1 Analysis of Existing Conditions

Existing Traffic Volumes

The existing traffic volume data used in this study were provided by Professor Alex Faghri, Ph.D., P.E. Based on the 15-minute turning movement counts at each intersection, the AM and PM peak hours were identified as follows:

- **Intersection 1**
  AM Peak Hour: 7:30 AM – 8:30 AM
  PM Peak Hour: 5:15 PM – 6:15 PM

- **Intersection 2**
  AM Peak Hour: 8:00 AM – 9:00 AM
  PM Peak Hour: 4:00 PM – 5:00 PM

- **Intersection 3**
  AM Peak Hour: 8:00 AM – 9:00 AM
  PM Peak Hour: 4:30 PM – 5:30 PM

- **Intersection 4**
  AM Peak Hour: 8:30 AM – 9:30 AM
  PM Peak Hour: 5:00 PM – 6:00 PM

- **Intersection 5**
  AM Peak Hour: 8:00 AM – 9:00 AM
  PM Peak Hour: 4:45 PM – 5:45 PM

- **Intersection 6**
  AM Peak Hour: 8:15 AM – 9:15 AM
  PM Peak Hour: 4:45 PM – 5:45 PM

- **Intersection 8**
  AM Peak Hour: 8:15 AM – 9:15 AM
  PM Peak Hour: 5:00 PM – 6:00 PM

- **Intersection 10**
  AM Peak Hour: 8:30 AM – 9:30 AM
  PM Peak Hour: 5:00 PM – 6:00 PM

- **Intersection 11**
  AM Peak Hour: 7:30 AM – 8:30 AM
  PM Peak Hour: 4:00 PM – 5:00 PM

- **Intersection 12**
  AM Peak Hour: 8:30 AM – 9:30 AM
  PM Peak Hour: 5:00 PM – 6:00 PM

All existing AM and PM peak-hour traffic volumes and turning movement counts for Lee Highway (U.S. 29), as well as the corresponding lane geometry, are presented in Appendix A and Appendix B.

The resulting peak-hour volumes and peak-hour factors for the AM and PM peak periods have been assembled in summary tables and form the input demand for the Synchro model of the existing condition. These data provide the quantitative basis for the capacity, delay, LOS, and queuing analyses that are documented in Chapter 2 and for the evaluation of mitigation measures and proposed conditions in later chapters.

Chapter 2

Existing Conditions

2.1 AM Peak Operations – Existing Conditions

The existing conditions analysis for the AM peak hour was carried out using the Synchro software package. The model represents the lane configurations, traffic control type, and signal timings for each study intersection (Synchro nodes 3, 4, 7, 8, 11, 16, 19, 22, and 29) based on the most recent geometric and operational information available.

Turning-movement count data, processed as described in Chapter 1, were used to identify the AM peak hour for each location and to compute the corresponding peak-hour volumes (PHV) and peak-hour factors (PHF). These peak-hour demands were coded into Synchro for the AM peak scenario. For signalized intersections, Synchro applies Highway Capacity Manual (HCM)–based procedures to estimate:

- Movement and approach volume-to-capacity (v/c) ratios,
- Control delay (s/veh) and level of service (LOS),
- 50th and 95th percentile queue lengths (ft),
- Intersection average delay and LOS, and
- Intersection Capacity Utilization (ICU) and corresponding qualitative ICU LOS.

For unsignalized intersections, Synchro reports ICU values and side-street performance based on gap-acceptance capacity for controlled movements and free-flow conditions on the major approaches.

In the Synchro output used for this chapter, symbols associated with queue estimates have the following meaning:

- "~" (tilde) indicates that the volume exceeds the estimated capacity and that the queue is theoretically unbounded; the reported value is the maximum queue after two cycles.
- "#" (hash) indicates that the 95th percentile demand exceeds capacity and that the 95th percentile queue may extend beyond the reported value.
- "m" indicates that the 95th percentile queue is metered by an upstream signal.

The results presented below focus on movement-level performance for each node, highlighting approaches where v/c ratios exceed 1.00, LOS is E or F, or 95th percentile queues are flagged by Synchro. These critical locations will inform the mitigation measures developed in subsequent chapters.

2.1.1 Intersection-Level Summary of AM Operations

Table 2.1 summarizes the overall AM peak performance for each Synchro node, including control type, maximum movement v/c ratio, intersection average delay and LOS, and Intersection Capacity Utilization.

Table 2.1: AM Peak Existing Conditions Summary by Node

Node	Control Type	Max v/c	Avg Delay (s/veh)	Int. LOS	ICU (%)	ICU LOS
3	Signalized (pretimed)	1.63	66.0	E	75.6	D
4	Signalized (pretimed)	1.06	33.6	C	47.3	A
7	Unsignalized	–	–	–	47.5	A
8	Signalized (pretimed)	1.28	88.5	F	74.0	D
11	Unsignalized	–	–	–	21.7	A
16	Signalized (pretimed)	1.09	18.9	B	68.9	C
19	Unsignalized	–	–	–	36.5	A
22	Signalized (pretimed)	1.14	20.1	C	59.7	B
29	Unsignalized	–	–	–	44.8	A

The table indicates that:

- Nodes 3 and 8 operate with relatively high intersection delays (LOS E and F, respectively) and have movement v/c ratios above 1.00, indicating oversaturated conditions.
- Nodes 4, 16, and 22 achieve acceptable intersection-level LOS (C or better) but contain individual movements with high delay or v/c ratios above 1.00.
- Unsignalized Nodes 7, 11, 19, and 29 have ICU values below 50%, indicating that they operate well within their available capacity under AM conditions.

2.1.2 Node-by-Node Operational Findings

Node 3 – Signalized Intersection

Node 3 is a pretimed signal with a 40 s cycle length. The reported maximum movement v/c ratio is 1.63, and the average intersection control delay is 66.0 s/veh, corresponding to overall LOS E. The ICU is 75.6% (ICU LOS D), indicating that the intersection is using a substantial portion of its capacity.

On the eastbound approach, the through movement carries very high demand (over 2,400 veh/h in the peak hour) and is the primary contributor to the reported maximum v/c ratio. Control delay on the critical eastbound lane group is on the order of several hundred seconds per vehicle (approximately 315 s/veh), resulting in LOS F for that movement. The westbound approach also has relatively heavy volumes but lower v/c ratios and more moderate delays (LOS around B).

Queue estimates show:

- 50th percentile queues in the range of roughly 100–230 ft on the oversaturated approaches.
- 95th percentile queues on the eastbound and westbound critical lane groups flagged with "#", with values up to approximately 300 ft, indicating that queues may extend further than the nominal estimates.

The northbound and southbound approaches experience much lower delays (LOS A/B), reflecting lower volumes and more available green time. Overall, Node 3 is a critical AM

bottleneck with oversaturated eastbound operation and long queues that may cause spillback into upstream links.

Node 4 – Signalized Intersection

Node 4 is also a pretimed signal, operating with a 67.5 s cycle length. The maximum reported v/c ratio is 1.06, and the average intersection delay is 33.6 s/veh (LOS C). ICU is approximately 47.3% (ICU LOS A), implying that, on average, the intersection is not capacity-constrained, although individual movements experience stress.

The westbound left-turn movement is the main critical movement:

- Westbound left-turn v/c ratio is about 1.06.
- Control delay for the westbound approach is around 56.9 s/veh, with the left-turn lane group itself experiencing LOS F (delay approximately 96 s/veh).
- The 95th percentile queue for the westbound left is around 300 ft and flagged with "#", indicating the potential for longer queues under peak conditions.

By contrast, eastbound movements operate at LOS B/C with modest delays (about 12–20 s/veh), while northbound and southbound approaches are at LOS A/B with low delays and relatively short queues.

In summary, Node 4 operates acceptably at the intersection level but has a localized problem on the westbound left-turn movement, which may warrant targeted mitigation (e.g., phasing or green-time adjustments, or geometric improvements).

Node 7 – Unsignalized Intersection

Node 7 is an unsignalized intersection with free-flow control on the major street and stop control on the minor approach. The major movement carries a high northbound through volume (over 2,400 veh/h), while the side-street volumes are very low.

The ICU is 47.5% (ICU LOS A), indicating that the intersection is well within capacity. Because side-street demand is minimal, no significant queuing or delay issues are evident for the minor movements under the AM peak. Node 7 does not appear to be a critical constraint in the AM peak.

Node 8 – Signalized Intersection

Node 8 is a pretimed signal with a 45 s cycle length. It exhibits one of the worst AM peak operations in the network:

- Maximum movement v/c ratio: 1.28.
- Intersection average delay: 88.5 s/veh, corresponding to LOS F.
- ICU: 74.0% (ICU LOS D).

The heaviest volumes are carried on the southbound and eastbound approaches. The Synchro output indicates:

- Southbound approach delay on the order of 139 s/veh (approach LOS F), driven by very high southbound through volumes and v/c ratios exceeding 1.00.
- One or more lane groups on the southbound and/or eastbound approaches with delays above 130 s/veh and LOS F.

- 50th percentile queues on the critical southbound and eastbound movements in the range of 300 ft or more, with 95th percentile queues flagged using "#", suggesting that actual queues may frequently exceed the reported values and extend upstream into adjacent links.

By contrast, the northbound approach operates at about LOS C, and the eastbound and westbound approaches generally show LOS A for non-critical movements. However, the severe congestion on the heaviest movements causes the overall intersection LOS to degrade to F.

Node 8 is therefore a primary candidate for mitigation, likely requiring changes to signal timing, green splits, and possibly geometry (e.g., additional through or turn capacity) to relieve the oversaturated movements.

Node 11 – Unsignalized Intersection

Node 11 is an unsignalized intersection with stop control on minor approaches. AM peak volumes are moderate, with major-street movements operating under free-flow conditions. The reported ICU is 21.7% (ICU LOS A), indicating ample residual capacity. No high v/c ratios or excessive queues are reported. Under existing AM conditions, Node 11 does not present a significant operational constraint.

Node 16 – Signalized Intersection

Node 16 is a pretimed signal operating with a 45 s cycle length. At the intersection level, performance is generally good:

- Maximum movement v/c ratio: 1.09.
- Intersection average delay: 18.9 s/veh (LOS B).
- ICU: 68.9% (ICU LOS C).

Most approaches exhibit low to moderate delays:

- Eastbound and westbound approaches operate around LOS B.
- Northbound approach delay is in the LOS A/B range.

However, one left-turn movement (on a high-demand approach) is oversaturated:

- v/c ratio of about 1.09,
- control delay around 118 s/veh (LOS F),
- 95th percentile queue flagged with "#" and extending to roughly 150 ft.

Even though the intersection-wide LOS is acceptable, this critical left-turn movement may cause localized queuing and occasional spillback, especially under day-to-day variability. Node 16 should therefore be considered for targeted improvements to that specific turning movement.

Node 19 – Unsignalized Intersection

Node 19 is an unsignalized intersection with a mix of free and stop controls. AM volumes include a relatively high right-turn or through movement on the major street, but side-street demands are modest.

The ICU is 36.5% (ICU LOS A), indicating that the intersection is operating comfortably within capacity. Synchro does not report any extreme queues or delays for the stop-controlled movements. Under existing AM conditions, Node 19 functions acceptably and is not a priority for mitigation.

Node 22 – Signalized Intersection

Node 22 is a pretimed signal with a 45 s cycle length. Overall operation is acceptable:

- Maximum movement v/c ratio: 1.14.
- Intersection average delay: 20.1 s/veh (LOS C).
- ICU: 59.7% (ICU LOS B).

The critical movement at this node is the eastbound left-turn:

- v/c ratio of approximately 1.14,
- control delay around 130 s/veh (LOS F),
- 95th percentile queue of about 170 ft, flagged with "#".

Approach-level delays show:

- Eastbound approach average delay around 55 s/veh (approach LOS D),
- Westbound, northbound, and southbound approaches with delays in the range of 8–11 s/veh (LOS A/B).

Thus, Node 22 performs well for most movements, but the oversaturated eastbound left-turn could create queuing issues and occasional blockage of through lanes. This movement should be explicitly addressed in the mitigation phase.

Node 29 – Unsignalized Intersection

Node 29 is an unsignalized intersection with a combination of free-flow and stop-controlled approaches. The heaviest AM movement is a through or left-turn on the major street, with reported peak-hour volumes around 500 veh/h.

The ICU is 44.8% (ICU LOS A), indicating that the intersection is within comfortable capacity limits. No critical delays or excessive queues are reported on the minor approaches. Under existing AM conditions, Node 29 operates satisfactorily and does not require immediate operational changes.

2.1.3 Summary of AM Existing Condition Issues

The AM peak analysis indicates that:

- Nodes 3 and 8 experience significant congestion and oversaturation on key approaches, resulting in high delays, long queues, and poor intersection LOS (E and F).
- Nodes 4, 16, and 22 operate at acceptable overall LOS but contain oversaturated turning movements (primarily left turns) with LOS F and queues flagged by Synchro, suggesting localized operational problems.
- Unsignalized Nodes 7, 11, 19, and 29 show ICU values well below 50% and do not exhibit major delay or queue problems under AM peak conditions.

These findings will guide the development of mitigation strategies in Chapter 4, focusing on relieving oversaturated movements at Nodes 3, 8, 4, 16, and 22, while preserving acceptable operations at the remaining intersections.

2.2 PM Peak Operations – Existing Conditions

The PM peak existing-condition analysis was performed using the same Synchro network and modeling assumptions as the AM peak, with lane configurations, control types, and signal timings coded for each study node. PM peak-hour turning-movement volumes and peak-hour factors were input for Nodes 3, 4, 7, 8, 11, 16, 19, 22, and 29, and Synchro was used to compute volume-to-capacity (v/c) ratios, control delay, level of service (LOS), queue lengths, and Intersection Capacity Utilization (ICU).

As in the AM analysis, Synchro's queue annotations are interpreted as follows: the tilde "~" indicates oversaturated conditions where queues are reported as maximum after two cycles, the "#" symbol indicates that 95th percentile demand exceeds capacity, and "m" indicates a queue metered by an upstream signal.

2.2.1 Intersection-Level Summary of PM Operations

Table 2.2 summarizes the intersection-level PM performance for each modeled node.

Table 2.2: PM Peak Existing Conditions Summary by Node

Node	Control Type	Max v/c	Avg Delay (s/veh)	Int. LOS	ICU (%)	ICU LOS
3	Signalized (pretimed)	1.12	42.1	D	85.9	E
4	Signalized (pretimed)	0.65	19.7	B	46.5	A
7	Unsignalized	–	–	–	51.2	A
8	Signalized (pretimed)	0.99	23.5	C	79.6	D
11	Unsignalized	–	–	–	13.3	A
16	Signalized (pretimed)	1.01	21.4	C	73.0	D
19	Unsignalized	–	–	–	39.2	A
22	Signalized (pretimed)	0.45	8.4	A	52.2	A
29	Unsignalized	–	–	–	55.1	B

Overall, the PM peak shows that:

- Node 3 is heavily loaded, with a maximum movement v/c ratio above 1.10, intersection LOS D, and ICU in the mid-80% range.
- Nodes 8 and 16 operate at acceptable intersection LOS (C) but with high ICU values and at least one critical movement with v/c near or above 1.00.
- Node 22 performs very well (intersection LOS A) with relatively low ICU, while Node 4 operates at LOS B and is well within capacity.
- Unsignalized Nodes 7, 11, 19, and 29 all have ICU values below about 55%, indicating that they are not capacity constrained under PM peak conditions.

2.2.2 Node-by-Node Operational Findings (PM Peak)

Node 3 – Signalized Intersection

Node 3 is a pretimed signal with a 40 s cycle length. In the PM peak, the intersection experiences

- Maximum movement v/c ratio of 1.12,
- Average intersection delay of 42.1 s/veh (LOS D),

- ICU of 85.9% (ICU LOS E).

Eastbound and westbound approaches carry very high through volumes (on the order of 2,000 veh/h per direction). The Synchro lane group results show

- The eastbound approach operates at LOS E overall, with the eastbound through movement experiencing delay of roughly 75 s/veh (LOS E).
- The westbound through movement is oversaturated (v/c around 1.10) with control delay exceeding 100 s/veh (LOS F), even though the westbound approach average delay is moderate (LOS B) due to lighter side movements.
- The northbound and southbound approaches have approach delays around 40 s/veh (LOS D) and 26 s/veh (LOS C), respectively, reflecting the effect of high mainline volumes and limited green time.

Queues on the critical eastbound and westbound through movements extend significantly, with 95th percentile queues flagged by Synchro, indicating that actual queues may regularly exceed the nominal estimates and potentially spill back into upstream links. Node 3 is thus a key PM bottleneck in the network, with oversaturation driven by heavy east–west through traffic.

Node 4 – Signalized Intersection

Node 4 operates under pretimed control with a 67.5 s cycle. The PM peak intersection performance is

- Maximum v/c ratio of 0.65,
- Average delay of 19.7 s/veh (LOS B),
- ICU of 46.5% (ICU LOS A).

Approach delays are in the range of approximately 14–23 s/veh, with LOS B on the eastbound approach, LOS C on the westbound and northbound approaches, and LOS A on the southbound approach. No lane group exhibits LOS E or F, and queues are short, with no movements flagged for oversaturation. Node 4 therefore operates comfortably within capacity during the PM peak and does not present a major operational concern.

Node 7 – Unsignalized Intersection

Node 7 is an unsignalized intersection with free-flow operation on the major movement (northwest through) and stop control on minor movements. In the PM peak

- The major movement carries nearly 3,000 veh/h (northwest through), but
- ICU is 51.2% (ICU LOS A).

Despite the heavy major-street flow, the minor-street entering volumes are very low (on the order of fewer than 100 veh/h for side movements), so side-street delay and queueing remain minimal. Node 7 functions adequately and is not a critical constraint in the PM peak.

Node 8 – Signalized Intersection

Node 8 is a pretimed signal with a 45 s cycle. The PM peak intersection summary shows

- Maximum movement v/c ratio of 0.99,
- Average intersection delay of 23.5 s/veh (LOS C),
- ICU of 79.6% (ICU LOS D).

In contrast to the AM peak (where Node 8 performed poorly), the PM peak results indicate that all lane groups operate at LOS A–C:

- Eastbound and westbound approaches have approach delays around 9–10 s/veh (LOS A), with low v/c ratios.
- The southbound approach operates around LOS B, with delay on the order of 18–19 s/veh.
- The northbound approach is the heaviest, with through volumes above 2,400 veh/h and approach delay roughly 32 s/veh (LOS C).

Although the intersection is moderately loaded (ICU close to 80%), the absence of LOS E/F movements suggests that Node 8 is functioning acceptably in the PM peak. It remains, however, a location to monitor due to the high ICU and large northbound through volumes.

Node 11 – Unsignalized Intersection

Node 11 is an unsignalized intersection with low entering volumes on all approaches. The PM peak Synchro output indicates

- ICU of 13.3% (ICU LOS A),

with no significant queuing or delay issues. Node 11 is clearly not capacity constrained in the PM peak and does not require mitigation.

Node 16 – Signalized Intersection

Node 16 is a pretimed signal with a 45 s cycle. The PM peak intersection-level performance is

- Maximum v/c ratio of 1.01,
- Average delay of 21.4 s/veh (LOS C),
- ICU of 73.0% (ICU LOS D).

Most lane groups operate at LOS A–C, but there is a critical oversaturated left-turn movement:

- The eastbound left-turn lane group has v/c of about 1.01 and control delay around 95 s/veh (LOS F).
- The westbound through/left combination experiences LOS D with delay roughly 40 s/veh.
- Northbound and southbound approaches have approach delays under 10–11 s/veh (LOS A).

Queues on the eastbound left are substantial, with 95th percentile queues flagged by Synchro, suggesting the potential for spillback into upstream lanes. While Node 16 is acceptable at the intersection level, the oversaturated eastbound left-turn is a localized problem that should be considered in mitigation planning.

Node 19 – Unsignalized Intersection

Node 19 is an unsignalized intersection with free-flow control on the eastbound/westbound movements and stop control on the minor north–south approaches. The PM peak results show

- Eastbound and westbound mainline volumes around 450–1,150 veh/h,
- ICU of 39.2% (ICU LOS A).

Given the modest side-street volumes, the stop-controlled movements do not experience significant delays or queues. Node 19 operates satisfactorily under PM conditions.

Node 22 – Signalized Intersection

Node 22 is a pretimed signal with a 45 s cycle and performs very well in the PM peak

- Maximum movement v/c ratio of 0.45,
- Average intersection delay of 8.4 s/veh (LOS A),
- ICU of 52.2% (ICU LOS A).

Approach delays are uniformly low (about 7–9 s/veh), with all approaches operating at LOS A and all lane groups at LOS A or B. No queues are flagged as problematic, and none of the movements approach their capacity. Node 22 is not an operational concern in the PM peak and can be treated as a well-functioning control location.

Node 29 – Unsignalized Intersection

Node 29 is an unsignalized intersection where several approaches operate under free control. PM peak volumes on the mainline approaches are moderate, while side-street volumes are low. The Synchro summary reports

- ICU of 55.1% (ICU LOS B).

Although ICU is slightly higher than at other unsignalized locations, it remains well below critical levels, and there is no indication of excessive delay or queuing on the minor approaches. Node 29 operates acceptably in the PM peak.

2.2.3 Summary of PM Existing Condition Issues

The PM peak results can be summarized as follows:

- **Node 3** is the primary PM bottleneck, with high intersection delay (LOS D), ICU approaching 86%, and oversaturated eastbound and westbound through movements producing long queues.
- **Node 16** operates at LOS C overall but has an oversaturated eastbound left-turn (LOS F) with high delay and substantial queues, suggesting a need for targeted mitigation.
- **Node 8** is moderately stressed (ICU near 80%, LOS C) but does not exhibit LOS E/F movements in the PM peak; it remains a secondary location of interest due to heavy northbound through volumes.
- **Node 4** and **Node 22** perform well (LOS B and LOS A, respectively) with ample residual capacity.

- **Nodes 7, 11, 19, and 29** are unsignalized and show no evidence of capacity problems or unacceptable delays under PM conditions.

These PM findings, together with the AM peak analysis, will be used in Chapter 3 to define and prioritize mitigation measures at the most critical locations, particularly Nodes 3, 8, and 16.

Chapter 3

Mitigation Measures

3.1 Overview and Design Constraints

The mitigation phase of this project focused on improving traffic operations at the study intersections using signal timing and phasing adjustments only. No geometric widening, new lanes, or major reconstruction were assumed, consistent with the scope of a planning-level, software-based optimization exercise. All improvements were developed in Synchro 12 for both the AM and PM peak hours using the calibrated existing models described in Chapter 2.

The general strategy was to address movements and approaches that exhibited one or more of the following under existing conditions:

- Volume-to-capacity (v/c) ratios close to or exceeding 1.0 on critical approaches.
- Level of service (LOS) in the D–F range, especially for heavily used left turns and side-street approaches.
- High control delay and long queues that approached or exceeded available storage.
- Imbalances in green time between major-street and minor-street movements.

Mitigation measures were therefore designed to reduce overall delay, improve LOS where feasible, and keep queues within storage limits, while preserving or enhancing safety for turning vehicles and pedestrians.

3.2 Mitigation Objectives

The specific objectives guiding the mitigation plan were:

1. **Reduce intersection-level delay and improve LOS** for both AM and PM peaks, with a target of LOS C or better where practicable for the overall intersection.
2. **Relieve critical movements** (typically left turns and heavy through movements) that showed high v/c ratios and long delays under the existing timing plans.
3. **Maintain operational reliability** by keeping cycle lengths within a reasonable range, avoiding excessive lost time, and ensuring that queues do not spill back to upstream junctions.
4. **Enhance safety** by providing more appropriate left-turn control (e.g., protected or protected–permitted phasing where warranted) and by better managing conflicts between opposing flows.
5. **Use feasible, low-cost changes** that could realistically be implemented in the field by updating controller settings, without requiring major infrastructure investment.

3.3 Signal Timing Optimization Strategy

The mitigation plan relied on a combination of Synchro's optimization tools and engineering judgement. For each signalized intersection, separate mitigation models were developed for the AM and PM peaks. The main elements of the strategy are summarized below.

3.3.1 Cycle Length and Split Adjustments

Existing cycle lengths were first reviewed to identify locations where cycles were either:

- Too short to serve the heavy peak-hour volumes efficiently, leading to high v/c ratios and frequent phase failures; or
- Longer than necessary, causing avoidable delay on minor movements and increasing the proportion of lost time.

Using Synchro, optimized cycle lengths were generated for each intersection and each peak period, taking into account the corridor coordination needs and the HCM-based performance measures. Where beneficial, cycle lengths were increased modestly at oversaturated locations to provide additional effective green time to the most congested approaches. At other locations, cycle lengths were held constant but the distribution of green time among phases (splits) was refined.

Green splits were reallocated to:

- Prioritize heavy through movements on the main corridors.
- Provide more green time to left-turn movements that were previously operating near capacity.
- Avoid over-serving low-volume side-street approaches that did not require large shares of green time.

The final splits represent a balance between efficiency for the major routes and acceptable delay for the side streets.

3.3.2 Phase Sequencing and Left-Turn Phasing

Under existing conditions, several intersections operated with permitted-only left turns or with phase sequences that were not fully aligned with the prevailing traffic patterns. This contributed to higher delay and potential safety concerns, especially where opposing through volumes were high.

As part of the mitigation:

- Selected permitted-only left turns were upgraded to **protected–permitted** operation, providing a dedicated protected interval for left-turn traffic while still allowing permissive operation when gaps are available.
- Phase sequences were adjusted to use **lead/lag left-turn phasing** where appropriate, improving progression and making better use of available green time on the mainline.
- Opposing left-turn phases were reviewed to minimize conflict, reduce lost time, and align with Synchro's recommended phase ordering for efficient operation.

These changes were implemented within the constraints of the existing lane geometry and detector placement, so that they would be realistic for field implementation.

3.3.3 Actuated versus Pretimed Operation and Detector Settings

Another key mitigation lever was the refinement of control type and actuation settings. Some intersections in the existing condition were operating as pretimed signals, while others used actuated-coordinated control. The proposed mitigation emphasized:

- **Greater use of actuated-coordinated control** where detectors are available, so that green time can adapt to fluctuating demand by gap-out and extension rather than being fixed.
- **Adjustment of minimum green, vehicle extension (passage time), and maximum green** values to ensure that each phase serves the observed demand without either terminating too early (causing residual queues) or holding excessively long (wasting green on empty approaches).
- **Retention of pretimed operation** at locations with lower variability and simpler traffic patterns, where pretimed control remains operationally adequate and easier to maintain.

Detector locations and types defined in the Synchro model were left consistent with the field layout, but their timing parameters were tuned so that the actuated phases could operate more efficiently during the peak hours.

3.4 Coordination and Progression Along the Corridor

Because several of the signalized intersections lie along the same primary corridor, coordination was an important component of the mitigation concept. Within Synchro, offsets and phase references were reviewed so that:

- The mainline directions would experience improved **progression**, with platoons released from upstream intersections arriving during green at downstream signals whenever possible.
- Cycle lengths at adjacent intersections were harmonized, or selected as compatible multiples, to support a coordinated system.
- The band of green time for the dominant peak direction was widened where feasible, without imposing excessive delay on the opposing direction.

Coordination was applied separately for the AM and PM peaks, recognizing that the dominant direction of travel can change between the two periods.

3.5 Summary of Mitigation Package

In summary, the mitigation measures developed for this project form a coherent package of low-cost operational improvements that can realistically be implemented by revising controller settings. Across the corridor, the proposed plans include:

- Optimized cycle lengths and green splits for each intersection and peak period.
- Revised left-turn phasing, including protected–permitted operation where warranted and improved phase sequencing.
- Expanded and better-tuned use of actuated-coordinated control, with refined detector timing parameters.
- Corridor-level coordination through appropriate offsets and compatible cycle lengths.

The expected effect of this mitigation package is to reduce delay, improve LOS, and keep queues within available storage at the most critical locations during both the AM and PM peaks. The quantitative performance of the proposed timing plans is evaluated in detail in Chapter 4, where the Synchro results for the proposed conditions are presented and compared with the existing conditions.

Chapter 4

Proposed Conditions

4.1 Overview of Proposed Operational Plans

The proposed conditions represent the performance of the study intersections after implementing the signal timing and phasing mitigation measures described in Chapter 3. The physical geometry, lane configurations, and peak-hour traffic volumes are unchanged from the existing conditions; only controller settings (cycle length, splits, phase sequence, left-turn phasing, and actuation parameters) were modified.

For both the AM and PM peak hours, Synchro models were updated to reflect:

- Optimized cycle lengths and green splits at signalized intersections,
- Revised left-turn control (e.g., protected–permitted operation and lead/lag phasing) where warranted,
- Increased use of actuated-coordinated operation with tuned minimum green and vehicle extension settings,
- Corridor-level coordination through compatible cycles and offsets.

The same peak-hour volumes and peak-hour factors used in the existing-condition analysis were applied to the proposed scenarios. Therefore, any differences in delay, LOS, or queueing are attributable solely to the operational changes, not to changes in demand.

4.2 AM Peak Operations – Proposed Conditions

Under the proposed timing plans, AM peak performance improves substantially at the critical signalized intersections, especially Nodes 3, 4, and 8. Intersection-level results from Synchro are summarized below.

Node 3

At Node 3, the proposed AM timing significantly improves east–west operations:

- The maximum movement volume-to-capacity ratio decreases from 1.63 to 1.01, bringing the intersection away from oversaturated conditions.
- Average intersection control delay is reduced from 66.0 s/veh (LOS E) to 25.4 s/veh (LOS C).
- Intersection Capacity Utilization (ICU) remains around 76%, indicating that the intersection still operates at a relatively high, but now manageable, utilization level.

With lower v/c ratios and reduced delays, the previously long and unstable queues on the eastbound and westbound through movements are brought under control, substantially reducing the risk of spillback into upstream links during the AM peak.

Node 4

For Node 4, the AM proposed plan primarily benefits the westbound left-turn movement and overall westbound approach:

- Maximum v/c decreases from 1.06 to 0.76, indicating that the critical movement is now operating comfortably below capacity.
- Intersection average delay drops from 33.6 s/veh (LOS C) to 16.6 s/veh (LOS B).

These improvements reflect the combined effect of revised splits (more green allocated to the congested movement) and more appropriate left-turn control. Queues on the westbound approach are shortened and far less likely to exceed available storage.

Node 8

Node 8 shows the most dramatic AM improvement:

- Maximum v/c is reduced from 1.28 to 0.82.
- Intersection average delay decreases from 88.5 s/veh (LOS F) to 14.9 s/veh (LOS B).

Under the existing timing, Node 8 operated in severe oversaturation, with very long queues and LOS F. The proposed timings allocate green time much more efficiently to the dominant movements and refine the left-turn phasing, resulting in a well-balanced intersection with short queues and acceptable delays on all approaches.

Node 16

Node 16 was already operating at LOS B in the AM peak. The proposed timing provides a modest refinement:

- Maximum v/c decreases from 1.09 to 0.82.
- Average delay decreases from 18.9 s/veh (LOS B) to 12.7 s/veh (LOS B).

The intersection remains in good operating condition, with critical movements now comfortably below capacity and queues further reduced.

Node 22

At Node 22, the AM proposed plan focuses on smoothing left-turn operations without major change in total demand:

- Maximum v/c remains at 1.14, reflecting that the critical left-turn remains demanding.
- Intersection average delay decreases slightly from 20.1 s/veh (LOS C) to 19.6 s/veh (LOS B).

The adjustments improve signal efficiency just enough to upgrade the overall LOS from C to B, while critical movements remain closely monitored from a capacity perspective.

4.3 PM Peak Operations – Proposed Conditions

In the PM peak, the proposed timing plans primarily benefit Nodes 4 and 8, with more modest changes at the other locations. Because PM congestion patterns differ from the AM, some intersections show larger improvements than others.

Node 3

At Node 3 in the PM peak:

- Maximum v/c improves slightly, from 1.12 to 1.07.
- Average intersection delay changes from 42.1 s/veh to 47.3 s/veh, remaining at LOS D.
- ICU remains in the mid-80% range (from 85.9% to 86.3%), indicating a highly utilized intersection.

The proposed PM timing maintains similar overall performance, with a small trade-off in average delay in order to coordinate and balance conditions across the corridor. Node 3 remains a key PM constraint but is not substantially worsened by the timing changes.

Node 4

Node 4 benefits clearly from the proposed PM plan:

- Maximum v/c is reduced from 0.65 to 0.56.
- Average delay is reduced from 19.7 s/veh (LOS B) to 9.6 s/veh (LOS A).

This indicates a very efficient operation with short queues and minimal risk of spillback during the PM peak.

Node 8

At Node 8, the PM proposed timing improves operations while keeping utilization high:

- Maximum v/c decreases from 0.99 to 0.91.
- Intersection average delay reduces from 23.5 s/veh (LOS C) to 16.1 s/veh (LOS B).

Given the heavy northbound through volume, these improvements show that the refined splits and phase sequencing have made the intersection more efficient without changing the geometry.

Node 16

Node 16 in the PM peak experiences only minor changes:

- Maximum v/c decreases from 1.01 to 0.94.
- Average delay changes from 21.4 s/veh to 24.1 s/veh, remaining at LOS C.

The intersection stays in acceptable operating conditions. Slightly higher average delay reflects the balancing of green time between multiple competing movements and the broader coordination strategy.

Node 22

Node 22 continues to operate very well in the PM peak:

- Maximum v/c remains at 0.45.
- Average delay changes modestly from 8.4 s/veh to 9.2 s/veh, both LOS A.

This intersection serves as a stable, well-functioning location under both existing and proposed timings.

4.4 Comparison of Existing and Proposed Conditions

Tables 4.1 and 4.2 summarize the change in key intersection-level performance measures (maximum v/c, average delay, and LOS) between existing and proposed conditions for all signalized nodes. The delay change column is defined as:

$$\Delta\text{Delay} = \text{Existing Delay} - \text{Proposed Delay}$$

so that a positive value indicates an improvement (reduction in delay).

Table 4.1: Comparison of existing and proposed AM peak performance (signalized intersections)

Node	**Max v/c**		**Delay (s/veh)**		**LOS**		**Δ Delay**
	Existing	Proposed	Existing	Proposed	Existing	Proposed	(s/veh)
3	1.63	1.01	66.0	25.4	E	C	40.6
4	1.06	0.76	33.6	16.6	C	B	17.0
8	1.28	0.82	88.5	14.9	F	B	73.6
16	1.09	0.82	18.9	12.7	B	B	6.2
22	1.14	1.14	20.1	19.6	C	B	0.5

In the AM peak, the largest benefits occur at Nodes 3, 4, and especially 8, where intersection average delay is reduced by approximately 41 s/veh, 17 s/veh, and 74 s/veh, respectively, and LOS improves from E/F to C/B. Even at intersections that were already performing reasonably well (Nodes 16 and 22), modest reductions in delay and v/c ratios are observed.

Table 4.2: Comparison of existing and proposed PM peak performance (signalized intersections)

Node	**Max v/c**		**Delay (s/veh)**		**LOS**		**Δ Delay**
	Existing	Proposed	Existing	Proposed	Existing	Proposed	(s/veh)
3	1.12	1.07	42.1	47.3	D	D	-5.2
4	0.65	0.56	19.7	9.6	B	A	10.1
8	0.99	0.91	23.5	16.1	C	B	7.4
16	1.01	0.94	21.4	24.1	C	C	-2.7
22	0.45	0.45	8.4	9.2	A	A	-0.8

In the PM peak, the proposed plans provide clear improvements at Nodes 4 and 8 (lower delay, lower v/c, better LOS), while maintaining broadly similar performance at Nodes 3, 16, and 22. Small increases in average delay at some intersections reflect the trade-offs inherent in coordinating signals along the corridor to support smoother progression overall.

Overall, the proposed conditions demonstrate that relatively low-cost operational measures focused on timing, phasing, and coordination can substantially improve AM peak performance at the most congested intersections and deliver targeted PM benefits, without any changes in physical geometry or traffic demand.

Chapter 5

Conclusions

This project evaluated the AM and PM peak-hour operations of a network of intersections serving a major mixed-use development in Fairfax County, Virginia. Using Synchro, existing conditions were modeled based on observed turning-movement counts, peak-hour factors, and current lane configurations and signal timings. The analysis identified where delay, level of service (LOS), and queuing were most problematic and then tested low-cost operational improvements focused on timing and phasing changes.

The existing-condition results showed that a small number of intersections dominated the congestion picture. In the AM peak, Nodes 3 and 8 operated with high volume-to-capacity (v/c) ratios and poor intersection LOS (E and F), with long queues on heavy east–west approaches. Nodes 4, 16, and 22 had acceptable overall LOS but contained individual turning movements, mainly left turns, that were near or over capacity and experienced LOS F and long queues. Unsignalized intersections generally operated well within capacity in both AM and PM peaks. In the PM peak, Node 3 remained a key bottleneck with high utilization and oversaturated through movements, while Node 16 had a critical left turn operating near capacity.

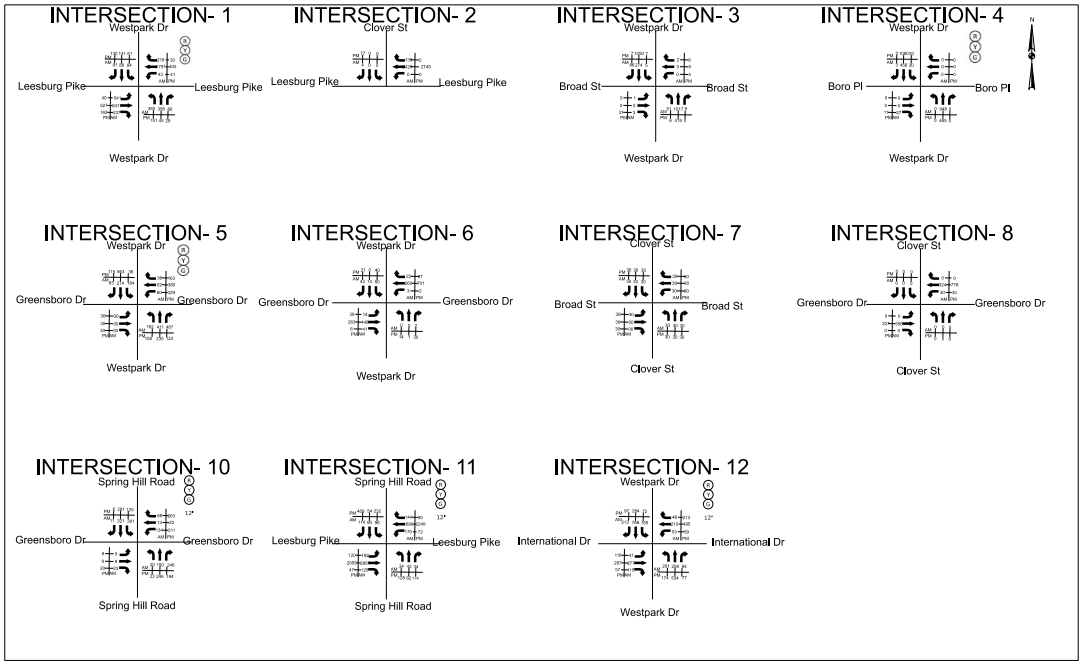
The mitigation strategy relied on changes that are realistic to implement in the field: optimized cycle lengths and splits, revised left-turn phasing (including protected–permitted and lead/lag operation), expanded use and tuning of actuated-coordinated control, and improved progression along the main corridors. No geometric widening or traffic volume changes were assumed, so performance differences between existing and proposed conditions reflect operational changes only.

The proposed AM timing plans produced substantial benefits at the worst locations. At Node 8, average delay dropped from about 88 s/veh (LOS F) to 15 s/veh (LOS B), and the maximum v/c ratio fell well below 1.0. Node 3 improved from LOS E to LOS C, with delay reduced by roughly 40 s/veh and v/c brought close to 1.0. Node 4 also showed a clear reduction in delay and v/c, while Nodes 16 and 22 experienced modest but positive refinements. In the PM peak, improvements were more incremental but still meaningful at Nodes 4 and 8, where delay decreased and LOS improved, while performance at Nodes 3, 16, and 22 remained acceptable and broadly similar to existing conditions.

Overall, the study demonstrates that careful signal timing, phasing optimization, and corridor coordination can substantially improve AM peak performance at critical intersections and provide targeted PM benefits without any physical changes to the roadway. Remaining issues at high-utilization locations such as Node 3 suggest that, in the longer term, geometric enhancements or broader demand-management strategies may be required if traffic volumes continue to grow. As a practical first step, however, implementing the proposed timing plans and monitoring field performance would offer a low-cost, implementable way to reduce delay, control queues, and improve operations around the development.

Appendix A

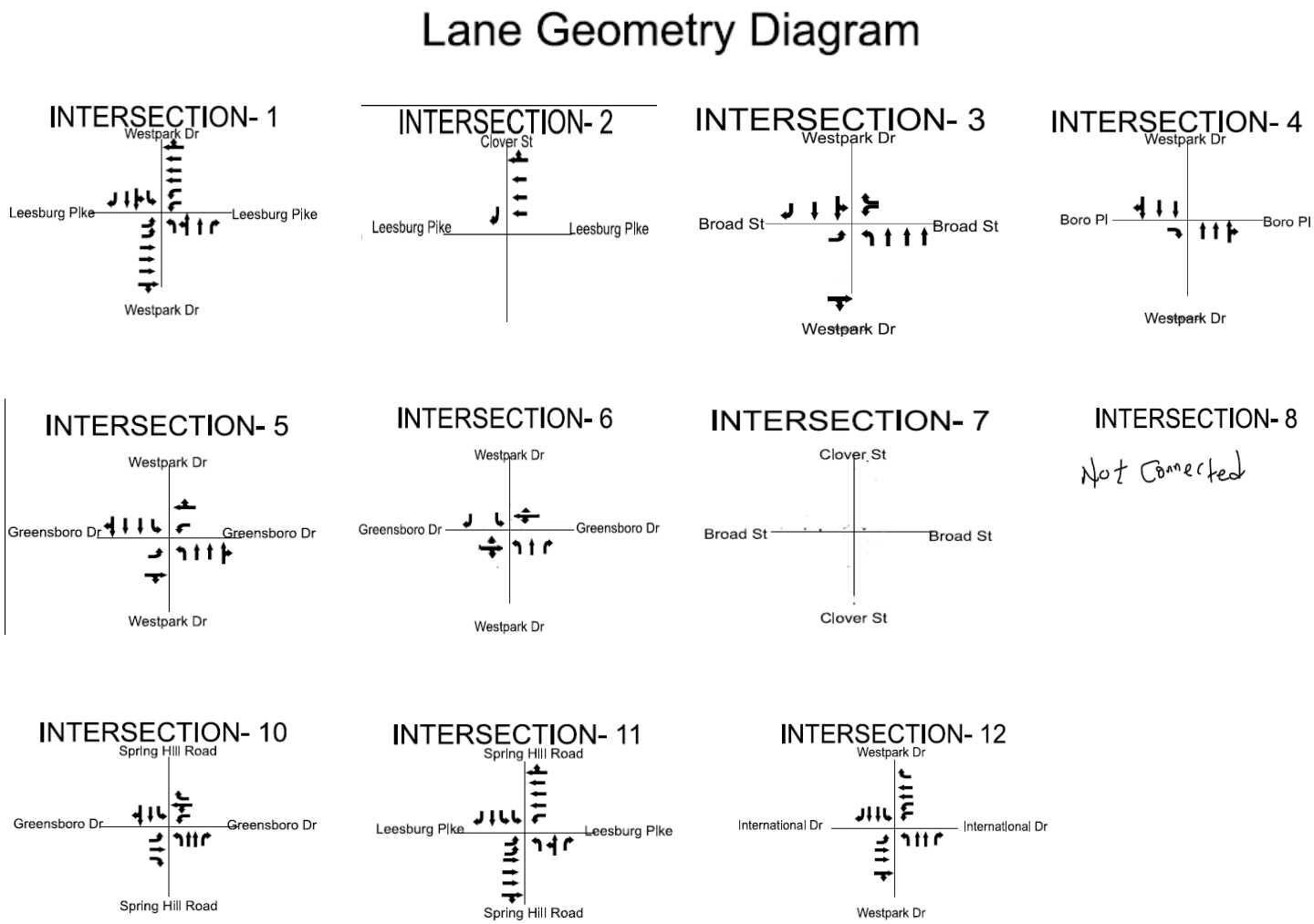
Existing Turning Movement Count (TMC) Diagrams



TMC(Turning Movement Count) Diagram

Appendix B

Lane Geometry Diagram



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Wells + Associates, Inc.

McLean, Virginia

Turning Movement Count - All Vehicles

Appendix C

Peak Hour Factor (PHF) Calculation

PROJECT: The Boro Building B1 and B2
W+A JOB NO: 7625
INTERSECTION: Leesburg Pike & Westpark Dr
LOCATION: Fairfax County, VA

DATE: 9/19/2018
DAY: Tuesday
WEATHER: clear
COUNTED BY: Luz,Vic &
INPUTED BY: agan

SOUTHBOUND ROAD: Westpark Drive
NORTHBOUND ROAD: Westpark Drive
WESTBOUND ROAD: Leesburg Pike - 7
EASTBOUND ROAD: Leesburg Pike - 7

Time Period	Southbound Westpark Drive					Westbound Leesburg Pike - 7					Northbound Westpark Drive					Eastbound Leesburg Pike - 7					North & South	East & West	Total
	Right	Thru	Left	Total	PHF	Right	Thru	Left	Total	PHF	Right	Thru	Left	Total	PHF	Right	Thru	Left	Total	PHF			
AM 15 Minute Volumes																							
6:00 AM - 6:15 AM	5	5	10	20		34	267	10	311		1	11	30	42		20	511	16	547		63	894	957
6:15 AM - 6:30 AM	13	9	10	32		36	279	6	321		10	12	44	66		22	479	49	550		98	871	969
6:30 AM - 6:45 AM	19	15	11	45		34	335	5	374		6	22	39	67		50	514	50	614		112	988	1100
6:45 AM - 7:00 AM	18	7	8	33		53	341	19	413		14	19	58	91		49	629	80	758		124	1171	1295
7:00 AM - 7:15 AM	20	7	16	43		44	429	12	485		9	26	53	88		63	593	65	721		131	1206	1337
7:15 AM - 7:30 AM	18	12	20	50		48	404	9	461		8	44	52	104		78	631	93	802		154	1263	1417
7:30 AM - 7:45 AM	18	20	16	54		36	416	10	462		19	89	100	208		64	737	154	955		262	1417	1679
7:45 AM - 8:00 AM	19	18	13	50		59	450	10	519		10	63	68	141		60	651	124	835		191	1354	1545
8:00 AM - 8:15 AM	23	22	20	65		66	489	12	567		19	89	107	215		50	588	126	764		280	1331	1611
8:15 AM - 8:30 AM	31	28	35	94		57	436	11	504		18	115	105	238		63	441	137	641		332	1145	1477
8:30 AM - 8:45 AM	36	26	27	89		74	438	10	522		13	100	134	247		105	466	188	759		336	1281	1617
8:45 AM - 9:00 AM	36	33	27	96		84	439	10	533		17	95	95	207		91	520	160	771		303	1304	1607
Total	257	202	213	672		625	4723	130	5478		144	685	885	1714		715	6770	1262	8747		2386	14225	16611
AM One Hour Volumes																							
6:00 AM - 7:00 AM	56	36	39	131	0.73	157	1222	46	1425	0.86	31	64	171	266	0.73	141	2143	215	2499	0.82	397	3924	4321
6:15 AM - 7:15 AM	70	38	45	153	0.85	167	1384	42	1593	0.82	39	79	194	312	0.86	184	2215	244	2643	0.87	465	4236	4701
6:30 AM - 7:30 AM	75	41	55	171	0.86	179	1509	45	1733	0.89	37	111	202	350	0.84	240	2367	288	2895	0.90	521	4628	5149
6:45 AM - 7:45 AM	74	46	60	180	0.83	181	1590	50	1821	0.94	50	178	263	491	0.59	254	2590	392	3236	0.85	671	5057	5728
7:00 AM - 8:00 AM	75	57	65	197	0.91	187	1699	41	1927	0.93	46	222	273	541	0.65	265	2612	436	3313	0.87	738	5240	5978
7:15 AM - 8:15 AM	78	72	69	219	0.84	209	1759	41	2009	0.89	56	285	327	668	0.78	252	2607	497	3356	0.88	887	5365	6252
7:30 AM - 8:30 AM	91	88	84	263	0.70	218	1791	43	2052	0.90	66	356	380	802	0.84	237	2417	541	3195	0.84	1065	5247	6312
7:45 AM - 8:45 AM	109	94	95	298	0.79	256	1813	43	2112	0.93	60	367	414	841	0.85	278	2146	575	2999	0.90	1139	5111	6250
8:00 AM - 9:00 AM	126	109	109	344	0.90	281	1802	43	2126	0.94	67	399	441	907	0.92	309	2015	611	2935	0.95	1251	5061	6312
PM 15 Minute Volumes																							
4:00 PM - 4:15 PM	79	77	58	214		20	528	23	571		24	21	110	155		128	415	28	571		369	1142	1511
4:15 PM - 4:30 PM	121	86	50	257		18	538	20	576		31	47	127	205		134	442	44	620		462	1196	1658
4:30 PM - 4:45 PM	118	87	64	269		29	485	31	545		23	41	121	185		129	462	26	617		454	1162	1616
4:45 PM - 5:00 PM	98	78	51	227		53	425	36	514		25	29	133	187		145	483	36	664		414	1178	1592
5:00 PM - 5:15 PM	78	80	65	223		39	541	24	604		30	36	128	194		167	422	33	622		417	1226	1643
5:15 PM - 5:30 PM	146	164	69	379		28	470	34	532		38	39	96	173		181	460	35	676		552	1208	1760
5:30 PM - 5:45 PM	130	141	61	332		30	405	41	476		29	45	151	225		162	527	40	729		557	1205	1762
5:45 PM - 6:00 PM	126	113	70	309		26	492	44	562		31	41	101	173		175	506	35	716		482	1278	1760
6:00 PM - 6:15 PM	157	152	95	404		40	447	28	515		37	35	106	178		137	478	35	650		582	1165	1747
6:15 PM - 6:30 PM	102	93	45	240		27	438	34	499		23	42	158	223		132	461	49	642		463	1141	1604
6:30 PM - 6:45 PM	103	94	42	239		32	410	36	478		35	30	124	189		125	481	44	650		428	1128	1556
6:45 PM - 7:00 PM	76	76	53	205		27	522	18	567		10	39	108	157		117	400	33	550		362	1117	1479
Total	1334	1241	723	3298		369	5701	369	6439		336	445	1463	2244		1732	5537	438	7707		5542	14146	19688
PM One Hour Volumes																							
4:00 PM - 5:00 PM	416	328	223	967	0.90	120	1976	110	2206	0.96	103	138	491	732	0.89	536	1802	134	2472	0.93	1699	4678	6377
4:15 PM - 5:15 PM	415	331	230	976	0.91	139	1989	111	2239	0.93	109	153	509	771	0.94	575	1809	139	2523	0.95	1747	4762	6509
4:30 PM - 5:30 PM	440	409	249	1098	0.72	149	1921	125	2195	0.91	116	145	478	739	0.95	622	1827	130	2579	0.95	1837	4774	6611
4:45 PM - 5:45 PM	452	463	246	1161	0.77	150	1841	135	2126	0.88	122	149	508	779	0.87	655	1892	144	2691	0.92	1940	4817	6757
5:00 PM - 6:00 PM	480	498	265	1243	0.82	123	1908	143	2174	0.90	128	161	476	765	0.85	685	1915	143	2743	0.94	2008	4917	6925
5:15 PM - 6:15 PM	559	570	295	1424	0.88	124	1814	147	2085	0.93	135	160	454	749	0.83	655	1971	145	2771	0.95	2173	4856	7029
5:30 PM - 6:30 PM	515	499	271	1285	0.80	123	1782	147	2052	0.91	120	163	516	799	0.89	606	1972	159	2737	0.94	2084	4789	6873
5:45 PM - 6:45 PM	488	452	252	1192	0.74	125	1787	142	2054	0.91	126	148	489	763	0.86	569	1926	163	2658	0.93	1955	4712	6667
6:00 PM - 7:00 PM	438	415	235	1088	0.67	126	1817	116	2059	0.91	105	146	496	747	0.84	511	1820	161	2492	0.96	1835	4551	6386

Leesburg Pike (VA-7) & Westpark Dr

AM summary (intersection)

Peak Hour: 7:30–8:30 AM — the highest 15-min in AM peak is 1,679 v (7:30–7:45).

PHV: 7:30–8:30 AM = 6,312 veh/h.

PHF: 6,312 / (4 × 1,679) = 0.94.

PM summary (intersection)

Peak Hour: 5:15–6:15 PM — the highest 15-min in PM peak is 1,762 v (5:30–5:45).

PHV: 5:15–6:15 PM = 7,029 veh/h.

PHF: 7,029 / (4 × 1,762) ≈ 0.997 ≈ 1.00.

2

Wells + Associates, Inc.

McLean, Virginia

Turning Movement Count - All Vehicles

PROJECT: NADA Property
W+A JOB NO: 7671
INTERSECTION: Route 7 & Westpark Corporate Center Driveway
LOCATION: Fairfax County,VA

DATE: 5/8/2019
DAY: Wednesday
WEATHER: clear
COUNTED BY: Muris & Mina
INPUTED BY: agan

SOUTHBOUND ROAD: Westpark Corporate Center Driveway
NORTHBOUND ROAD: 0
WESTBOUND ROAD: Leesburg Pike - 7
EASTBOUND ROAD: Leesburg Pike - 7

Time	Southbound Westpark Corporate Center Driveway					Westbound Leesburg Pike - 7					Northbound 0					Eastbound Leesburg Pike - 7					North & South	East & West	Total
Period	Right	Thru	Left	Total	PHF	Right	Thru	Left	Total	PHF	Right	Thru	Left	Total	PHF	Right	Thru	Left	Total	PHF			
AM 15 Minute Volumes																							
6:00 AM - 6:15 AM	0	0	0	0		4	344	0	348		0	0	0	0		0	0	0	0		0	348	348
6:15 AM - 6:30 AM	0	0	0	0		4	370	0	374		0	0	0	0		0	0	0	0		0	374	374
6:30 AM - 6:45 AM	1	0	0	1		1	434	0	435		0	0	0	0		0	0	0	0		1	435	436
6:45 AM - 7:00 AM	1	0	0	1		12	470	0	482		0	0	0	0		0	0	0	0		1	482	483
7:00 AM - 7:15 AM	2	0	0	2		14	492	0	506		0	0	0	0		0	0	0	0		2	506	508
7:15 AM - 7:30 AM	3	0	0	3		17	505	0	522		0	0	0	0		0	0	0	0		3	522	525
7:30 AM - 7:45 AM	0	0	0	0		19	576	0	595		0	0	0	0		0	0	0	0		0	595	595
7:45 AM - 8:00 AM	1	0	0	1		19	632	0	651		0	0	0	0		0	0	0	0		1	651	652
8:00 AM - 8:15 AM	2	0	0	2		36	633	0	669		0	0	0	0		0	0	0	0		2	669	671
8:15 AM - 8:30 AM	0	0	0	0		33	573	0	606		0	0	0	0		0	0	0	0		0	606	606
8:30 AM - 8:45 AM	1	0	0	1		30	598	0	628		0	0	0	0		0	0	0	0		1	628	629
8:45 AM - 9:00 AM	1	0	0	1		39	622	0	661		0	0	0	0		0	0	0	0		1	661	662
9:00 AM - 9:15 AM	3	0	0	3		25	508	0	533		0	0	0	0		0	0	0	0		3	533	536
9:15 AM - 9:30 AM	1	0	0	1		18	543	0	561		0	0	0	0		0	0	0	0		1	561	562
Total	16	0	0	16		271	7300	0	7571		0	0	0	0		0	0	0	0		16	7571	7587
AM One Hour Volumes																							
6:00 AM - 7:00 AM	2	0	0	2	0.50	21	1618	0	1639	0.85	0	0	0	0	0.00	0	0	0	0	0.00	2	1639	1641
6:15 AM - 7:15 AM	4	0	0	4	0.50	31	1766	0	1797	0.89	0	0	0	0	0.00	0	0	0	0	0.00	4	1797	1801
6:30 AM - 7:30 AM	7	0	0	7	0.58	44	1901	0	1945	0.93	0	0	0	0	0.00	0	0	0	0	0.00	7	1945	1952
6:45 AM - 7:45 AM	6	0	0	6	0.50	62	2043	0	2105	0.88	0	0	0	0	0.00	0	0	0	0	0.00	6	2105	2111
7:00 AM - 8:00 AM	6	0	0	6	0.50	69	2205	0	2274	0.87	0	0	0	0	0.00	0	0	0	0	0.00	6	2274	2280
7:15 AM - 8:15 AM	6	0	0	6	0.50	91	2346	0	2437	0.91	0	0	0	0	0.00	0	0	0	0	0.00	6	2437	2443
7:30 AM - 8:30 AM	3	0	0	3	0.38	107	2414	0	2521	0.94	0	0	0	0	0.00	0	0	0	0	0.00	3	2521	2524
7:45 AM - 8:45 AM	4	0	0	4	0.50	118	2436	0	2554	0.95	0	0	0	0	0.00	0	0	0	0	0.00	4	2554	2558
8:00 AM - 9:00 AM	4	0	0	4	0.50	138	2426	0	2564	0.96	0	0	0	0	0.00	0	0	0	0	0.00	4	2564	2568
8:15 AM - 9:15 AM	5	0	0	5	0.42	127	2301	0	2428	0.92	0	0	0	0	0.00	0	0	0	0	0.00	5	2428	2433
8:30 AM - 9:30 AM	6	0	0	6	0.50	112	2271	0	2383	0.90	0	0	0	0	0.00	0	0	0	0	0.00	6	2383	2389
PM 15 Minute Volumes																							
4:00 PM - 4:15 PM	17	0	0	17		0	641	0	641		0	0	0	0		0	0	0	0		17	641	658
4:15 PM - 4:30 PM	12	0	0	12		0	695	0	695		0	0	0	0		0	0	0	0		12	695	707
4:30 PM - 4:45 PM	25	0	0	25		0	725	0	725		0	0	0	0		0	0	0	0		25	725	750
4:45 PM - 5:00 PM	23	0	0	23		2	684	0	686		0	0	0	0		0	0	0	0		23	686	709
5:00 PM - 5:15 PM	18	0	0	18		0	572	0	572		0	0	0	0		0	0	0	0		18	572	590
5:15 PM - 5:30 PM	18	0	0	18		1	664	0	665		0	0	0	0		0	0	0	0		18	665	683
5:30 PM - 5:45 PM	10	0	0	10		4	614	0	618		0	0	0	0		0	0	0	0		10	618	628
5:45 PM - 6:00 PM	13	0	0	13		9	673	0	682		0	0	0	0		0	0	0	0		13	682	695
6:00 PM - 6:15 PM	14	0	0	14		2	544	0	546		0	0	0	0		0	0	0	0		14	546	560
6:15 PM - 6:30 PM	5	0	0	5		0	506	0	506		0	0	0	0		0	0	0	0		5	506	511
6:30 PM - 6:45 PM	4	0	0	4		2	528	0	530		0	0	0	0		0	0	0	0		4	530	534
6:45 PM - 7:00 PM	4	0	0	4		0	596	0	596		0	0	0	0		0	0	0	0		4	596	600
Total	163	0	0	163		20	7442	0	7462		0	0	0	0		0	0	0	0		163	7462	7625
PM One Hour Volumes																							
4:00 PM - 5:00 PM	77	0	0	77	0.77	2	2745	0	2747	0.95	0	0	0	0	0.00	0	0	0	0	0.00	77	2747	2824
4:15 PM - 5:15 PM	78	0	0	78	0.78	2	2676	0	2678	0.92	0	0	0	0	0.00	0	0	0	0	0.00	78	2678	2756
4:30 PM - 5:30 PM	84	0	0	84	0.84	3	2645	0	2648	0.91	0	0	0	0	0.00	0	0	0	0	0.00	84	2648	2732
4:45 PM - 5:45 PM	69	0	0	69	0.75	7	2534	0	2541	0.93	0	0	0	0	0.00	0	0	0	0	0.00	69	2541	2610
5:00 PM - 6:00 PM	59	0	0	59	0.82	14	2523	0	2537	0.93	0	0	0	0	0.00	0	0	0	0	0.00	59	2537	2596
5:15 PM - 6:15 PM	55	0	0	55	0.76	16	2495	0	2511	0.92	0	0	0	0	0.00	0	0	0	0	0.00	55	2511	2566
5:30 PM - 6:30 PM	42	0	0	42	0.75	15	2337	0	2352	0.86	0	0	0	0	0.00	0	0	0	0	0.00	42	2352	2394
5:45 PM - 6:45 PM	36	0	0	36	0.64	13	2251	0	2264	0.83	0	0	0	0	0.00	0	0	0	0	0.00	36	2264	2300
6:00 PM - 7:00 PM	27	0	0	27	0.48	4	2174	0	2178	0.91	0	0	0	0	0.00	0	0	0	0	0.00	27	2178	2205

Route 7 (Leesburg Pike) & Westpark Corporate Center Driveway

AM summary (intersection)

Peak Hour: 8:00–9:00 AM — the highest 15-min in the AM peak is 671 v (8:00–8:15).
PHV: 8:00–9:00 AM = 2,564 veh/h.

PHF: 2,564 / (4 × 671) = 0.96.

PM summary (intersection)

Peak Hour: 4:00–5:00 PM — the highest 15-min in the PM peak is 750 v (4:30–4:45).
PHV: 4:00–5:00 PM = 2,824 veh/h.

PHF: 2,824 / (4 × 750) = 0.94.

3

Wells + Associates, Inc.

McLean, Virginia

Turning Movement Count - All Vehicles

PROJECT: The Boro Building B1 and B2
W+A JOB NO: 7625
INTERSECTION: Westpark Dr. & Site Entr.
LOCATION: Fairfax County,VA

DATE: 9/19/2018
DAY: Tuesday
WEATHER: clear
COUNTED BY: Inita & Jim
INPUTED BY: agan

SOUTHBOUND ROAD: Westpark Drive
NORTHBOUND ROAD: Westpark Drive
WESTBOUND ROAD: Site Entrance
EASTBOUND ROAD: Driveway

Time	Southbound Westpark Drive					Westbound Site Entrance					Northbound Westpark Drive					Eastbound Driveway					North & South	East & West	Total
Period	Right	Thru	Left	Total	PHF	Right	Thru	Left	Total	PHF	Right	Thru	Left	Total	PHF	Right	Thru	Left	Total	PHF			
AM 15 Minute Volumes																							
6:00 AM - 6:15 AM	3	21	8	32		0	0	2	2		27	55	4	86		1	0	1	2		118	4	122
6:15 AM - 6:30 AM	3	26	8	37		1	0	3	4		14	74	4	92		0	0	0	0		129	4	133
6:30 AM - 6:45 AM	4	42	0	46		0	0	0	0		11	84	4	99		0	0	0	0		145	0	145
6:45 AM - 7:00 AM	13	30	5	48		1	0	3	4		6	131	7	144		0	0	0	0		192	4	196
7:00 AM - 7:15 AM	8	44	3	55		2	0	0	2		5	151	12	168		0	0	1	1		223	3	226
7:15 AM - 7:30 AM	12	36	0	48		1	0	0	1		5	159	15	179		0	0	0	0		227	1	228
7:30 AM - 7:45 AM	12	49	2	63		0	0	1	1		3	219	6	228		0	0	0	0		291	1	292
7:45 AM - 8:00 AM	16	51	2	69		1	0	0	1		2	193	22	217		0	0	0	0		286	1	287
8:00 AM - 8:15 AM	19	67	1	87		1	0	0	1		2	202	14	218		3	0	1	4		305	5	310
8:15 AM - 8:30 AM	28	78	1	107		0	0	0	0		2	250	14	266		0	0	0	0		373	0	373
8:30 AM - 8:45 AM	21	60	3	84		0	0	0	0		1	271	19	291		0	0	0	0		375	0	375
8:45 AM - 9:00 AM	18	69	0	87		1	0	0	1		4	294	4	302		0	0	0	0		389	1	390
Total	157	573	33	763		8	0	9	17		82	2083	125	2290		4	0	3	7		3053	24	3077
AM One Hour Volumes																							
6:00 AM - 7:00 AM	23	119	21	163	0.85	2	0	8	10	0.63	58	344	19	421	0.73	1	0	1	2	0.25	584	12	596
6:15 AM - 7:15 AM	28	142	16	186	0.85	4	0	6	10	0.63	36	440	27	503	0.75	0	0	1	1	0.25	689	11	700
6:30 AM - 7:30 AM	37	152	8	197	0.90	4	0	3	7	0.44	27	525	38	590	0.82	0	0	1	1	0.25	787	8	795
6:45 AM - 7:45 AM	45	159	10	214	0.85	4	0	4	8	0.50	19	660	40	719	0.79	0	0	1	1	0.25	933	9	942
7:00 AM - 8:00 AM	48	180	7	235	0.85	4	0	1	5	0.63	15	722	55	792	0.87	0	0	1	1	0.25	1027	6	1033
7:15 AM - 8:15 AM	59	203	5	267	0.77	3	0	1	4	1.00	12	773	57	842	0.92	3	0	1	4	0.25	1109	8	1117
7:30 AM - 8:30 AM	75	245	6	326	0.76	2	0	1	3	0.75	9	864	56	929	0.87	3	0	1	4	0.25	1255	7	1262
7:45 AM - 8:45 AM	84	256	7	347	0.81	2	0	0	2	0.50	7	916	69	992	0.85	3	0	1	4	0.25	1339	6	1345
8:00 AM - 9:00 AM	86	274	5	365	0.85	2	0	0	2	0.50	9	1017	51	1077	0.89	3	0	1	4	0.25	1442	6	1448
PM 15 Minute Volumes																							
4:00 PM - 4:15 PM	3	191	1	195		2	0	11	13		0	78	1	79		6	0	0	6		274	19	293
4:15 PM - 4:30 PM	5	208	0	213		1	0	3	4		0	101	1	102		2	0	0	2		315	6	321
4:30 PM - 4:45 PM	2	240	2	244		2	0	3	5		0	104	1	105		7	0	0	7		349	12	361
4:45 PM - 5:00 PM	4	248	1	253		2	0	0	2		0	112	3	115		11	0	0	11		368	13	381
5:00 PM - 5:15 PM	1	269	4	274		0	0	1	1		0	94	2	96		9	0	0	9		370	10	380
5:15 PM - 5:30 PM	0	293	0	293		1	0	0	1		0	109	0	109		4	0	0	4		402	5	407
5:30 PM - 5:45 PM	3	246	1	250		3	0	1	4		0	97	1	98		6	0	0	6		348	10	358
5:45 PM - 6:00 PM	1	248	0	249		1	0	1	2		0	102	1	103		8	0	0	8		352	10	362
6:00 PM - 6:15 PM	0	246	0	246		1	0	1	2		0	106	0	106		3	0	0	3		352	5	357
6:15 PM - 6:30 PM	1	205	0	206		0	0	1	1		0	88	1	89		3	0	0	3		295	4	299
6:30 PM - 6:45 PM	2	209	0	211		0	0	0	0		0	105	2	107		1	0	0	1		318	1	319
6:45 PM - 7:00 PM	1	176	1	178		0	0	1	1		0	96	0	96		5	0	0	5		274	6	280
Total	23	2779	10	2812		13	0	23	36		0	1192	13	1205		65	0	0	65		4017	101	4118
PM One Hour Volumes																							
4:00 PM - 5:00 PM	14	887	4	905	0.89	7	0	17	24	0.46	0	395	6	401	0.87	26	0	0	26	0.59	1306	50	1356
4:15 PM - 5:15 PM	12	965	7	984	0.90	5	0	7	12	0.60	0	411	7	418	0.91	29	0	0	29	0.66	1402	41	1443
4:30 PM - 5:30 PM	7	1050	7	1064	0.91	5	0	4	9	0.45	0	419	6	425	0.92	31	0	0	31	0.70	1489	40	1529
4:45 PM - 5:45 PM	8	1056	6	1070	0.91	6	0	2	8	0.50	0	412	6	418	0.91	30	0	0	30	0.68	1488	38	1526
5:00 PM - 6:00 PM	5	1056	5	1066	0.91	5	0	3	8	0.50	0	402	4	406	0.93	27	0	0	27	0.75	1472	35	1507
5:15 PM - 6:15 PM	4	1033	1	1038	0.89	6	0	3	9	0.56	0	414	2	416	0.95	21	0	0	21	0.66	1454	30	1484
5:30 PM - 6:30 PM	5	945	1	951	0.95	5	0	4	9	0.56	0	393	3	396	0.93	20	0	0	20	0.63	1347	29	1376
5:45 PM - 6:45 PM	4	908	0	912	0.92	2	0	3	5	0.63	0	401	4	405	0.95	15	0	0	15	0.47	1317	20	1337
6:00 PM - 7:00 PM	4	836	1	841	0.85	1	0	3	4	0.50	0	395	3	398	0.93	12	0	0	12	0.60	1239	16	1255

Westpark Dr & Site Entrance

AM summary (intersection)

Peak Hour: 8:00–9:00 AM — the highest 15-min in AM peak is 390 v (8:45–9:00).

PHV: 8:00–9:00 AM = 1,448 veh/h.

PHF: 1,448 / (4 × 390) = 0.928 ≈ 0.93.

PM summary (intersection)

Peak Hour: 4:30–5:30 PM — the highest 15-min in PM peak is 407 v (5:15–5:30).

PHV: 4:30–5:30 PM = 1,529 veh/h.

PHF: 1,529 / (4 × 407) = 0.939 ≈ 0.94.

4

Wells + Associates, Inc.

McLean, Virginia

Turning Movement Count - All Vehicles

PROJECT: NADA Property
W+A JOB NO: 7671
INTERSECTION: Westpark Dr. & NADA Driveway
LOCATION: Fairfax County,VA

DATE: 5/8/2019
DAY: Wednesday
WEATHER: clear
COUNTED BY: Halid & Sabrina
INPUTED BY: agan

SOUTHBOUND ROAD: Westpark Drive
NORTHBOUND ROAD: Westpark Drive
WESTBOUND ROAD: 0
EASTBOUND ROAD: NADA Driveway

Time	Southbound Westpark Drive					Westbound 0					Northbound Westpark Drive					Eastbound NADA Driveway					North & South	East & West	Total
Period	Right	Thru	Left	Total	PHF	Right	Thru	Left	Total	PHF	Right	Thru	Left	Total	PHF	Right	Thru	Left	Total	PHF			
AM 15 Minute Volumes																							
6:00 AM - 6:15 AM	4	26	0	30		0	0	0	0		0	64	0	64		1	0	0	1		94	1	95
6:15 AM - 6:30 AM	1	28	0	29		0	0	0	0		0	61	0	61		1	0	0	1		90	1	91
6:30 AM - 6:45 AM	0	47	0	47		0	0	0	0		0	88	0	88		0	0	0	0		135	0	135
6:45 AM - 7:00 AM	1	53	0	54		0	0	0	0		0	139	0	139		1	0	0	1		193	1	194
7:00 AM - 7:15 AM	0	53	0	53		0	0	0	0		0	119	0	119		3	0	0	3		172	3	175
7:15 AM - 7:30 AM	0	64	0	64		0	0	0	0		0	126	0	126		1	0	0	1		190	1	191
7:30 AM - 7:45 AM	1	78	0	79		0	0	0	0		0	178	0	178		3	0	0	3		257	3	260
7:45 AM - 8:00 AM	0	69	0	69		0	0	0	0		0	244	0	244		1	0	0	1		313	1	314
8:00 AM - 8:15 AM	0	91	0	91		0	0	0	0		0	217	0	217		1	0	0	1		308	1	309
8:15 AM - 8:30 AM	0	101	0	101		0	0	0	0		0	220	0	220		2	0	0	2		321	2	323
8:30 AM - 8:45 AM	0	105	0	105		0	0	0	0		0	255	0	255		11	0	0	11		360	11	371
8:45 AM - 9:00 AM	0	128	0	128		0	0	0	0		0	216	0	216		7	0	0	7		344	7	351
9:00 AM - 9:15 AM	2	106	0	108		0	0	0	0		0	235	0	235		4	0	0	4		343	4	347
9:15 AM - 9:30 AM	1	119	0	120		0	0	0	0		0	242	0	242		5	0	0	5		362	5	367
Total	10	1068	0	1078		0	0	0	0		0	2404	0	2404		41	0	0	41		3482	41	3523
AM One Hour Volumes																							
6:00 AM - 7:00 AM	6	154	0	160	0.74	0	0	0	0	0.00	0	352	0	352	0.63	3	0	0	3	0.75	512	3	515
6:15 AM - 7:15 AM	2	181	0	183	0.85	0	0	0	0	0.00	0	407	0	407	0.73	5	0	0	5	0.42	590	5	595
6:30 AM - 7:30 AM	1	217	0	218	0.85	0	0	0	0	0.00	0	472	0	472	0.85	5	0	0	5	0.42	690	5	695
6:45 AM - 7:45 AM	2	248	0	250	0.79	0	0	0	0	0.00	0	562	0	562	0.79	8	0	0	8	0.67	812	8	820
7:00 AM - 8:00 AM	1	264	0	265	0.84	0	0	0	0	0.00	0	667	0	667	0.68	8	0	0	8	0.67	932	8	940
7:15 AM - 8:15 AM	1	302	0	303	0.83	0	0	0	0	0.00	0	765	0	765	0.78	6	0	0	6	0.50	1068	6	1074
7:30 AM - 8:30 AM	1	339	0	340	0.84	0	0	0	0	0.00	0	859	0	859	0.88	7	0	0	7	0.58	1199	7	1206
7:45 AM - 8:45 AM	0	366	0	366	0.87	0	0	0	0	0.00	0	936	0	936	0.92	15	0	0	15	0.34	1302	15	1317
8:00 AM - 9:00 AM	0	425	0	425	0.83	0	0	0	0	0.00	0	908	0	908	0.89	21	0	0	21	0.48	1333	21	1354
8:15 AM - 9:15 AM	2	440	0	442	0.86	0	0	0	0	0.00	0	926	0	926	0.91	24	0	0	24	0.55	1368	24	1392
8:30 AM - 9:30 AM	3	458	0	461	0.90	0	0	0	0	0.00	0	948	0	948	0.93	27	0	0	27	0.61	1409	27	1436
PM 15 Minute Volumes																							
4:00 PM - 4:15 PM	0	205	0	205		0	0	0	0		0	99	0	99		1	0	0	1		304	1	305
4:15 PM - 4:30 PM	2	184	0	186		0	0	0	0		0	110	0	110		3	0	0	3		296	3	299
4:30 PM - 4:45 PM	0	214	0	214		0	0	0	0		0	122	0	122		2	0	0	2		336	2	338
4:45 PM - 5:00 PM	1	247	0	248		0	0	0	0		0	109	0	109		4	0	0	4		357	4	361
5:00 PM - 5:15 PM	0	285	0	285		0	0	0	0		0	116	0	116		8	0	0	8		401	8	409
5:15 PM - 5:30 PM	0	283	0	283		0	0	0	0		0	110	0	110		3	0	0	3		393	3	396
5:30 PM - 5:45 PM	0	247	0	247		0	0	0	0		0	122	0	122		0	0	0	0		369	0	369
5:45 PM - 6:00 PM	0	265	0	265		0	0	0	0		0	117	0	117		0	0	0	0		382	0	382
6:00 PM - 6:15 PM	0	240	0	240		0	0	0	0		0	93	0	93		0	0	0	0		333	0	333
6:15 PM - 6:30 PM	1	224	0	225		0	0	0	0		0	105	0	105		1	0	0	1		330	1	331
6:30 PM - 6:45 PM	0	191	0	191		0	0	0	0		0	108	0	108		1	0	0	1		299	1	300
6:45 PM - 7:00 PM	1	189	0	190		0	0	0	0		0	89	0	89		1	0	0	1		279	1	280
Total	5	2774	0	2779		0	0	0	0		0	1300	0	1300		24	0	0	24		4079	24	4103
PM One Hour Volumes																							
4:00 PM - 5:00 PM	3	850	0	853	0.86	0	0	0	0	0.00	0	440	0	440	0.90	10	0	0	10	0.63	1293	10	1303
4:15 PM - 5:15 PM	3	930	0	933	0.82	0	0	0	0	0.00	0	457	0	457	0.94	17	0	0	17	0.53	1390	17	1407
4:30 PM - 5:30 PM	1	1029	0	1030	0.90	0	0	0	0	0.00	0	457	0	457	0.94	17	0	0	17	0.53	1487	17	1504
4:45 PM - 5:45 PM	1	1062	0	1063	0.93	0	0	0	0	0.00	0	457	0	457	0.94	15	0	0	15	0.47	1520	15	1535
5:00 PM - 6:00 PM	0	1080	0	1080	0.95	0	0	0	0	0.00	0	465	0	465	0.95	11	0	0	11	0.34	1545	11	1556
5:15 PM - 6:15 PM	0	1035	0	1035	0.91	0	0	0	0	0.00	0	442	0	442	0.91	3	0	0	3	0.25	1477	3	1480
5:30 PM - 6:30 PM	1	976	0	977	0.92	0	0	0	0	0.00	0	437	0	437	0.90	1	0	0	1	0.25	1414	1	1415
5:45 PM - 6:45 PM	1	920	0	921	0.87	0	0	0	0	0.00	0	423	0	423	0.90	2	0	0	2	0.50	1344	2	1346
6:00 PM - 7:00 PM	2	844	0	846	0.88	0	0	0	0	0.00	0	395	0	395	0.91	3	0	0	3	0.75	1241	3	1244

Westpark Dr & NADA Driveway

AM summary (intersection)

Peak Hour: 8:30–9:30 AM — the highest 15-min in AM peak is 371 v (8:30–8:45).

PHV: 8:30–9:30 AM = 1,436 veh/h.

PHF: 1,436 / (4 × 371) = 0.968 ≈ 0.97.

PM summary (intersection)

Peak Hour: 5:00–6:00 PM — the highest 15-min in PM peak is 409 v (5:00–5:15).

PHV: 5:00–6:00 PM = 1,556 veh/h.

PHF: 1,556 / (4 × 409) = 0.951 ≈ 0.95.

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Wells + Associates, Inc.

McLean, Virginia

Turning Movement Count - All Vehicles

PROJECT: The Boro Building B1 and B2
W+A JOB NO: 7625
INTERSECTION: Westpark Dr. & Greensboro Dr.
LOCATION: Fairfax County,VA

DATE: 9/19/2018
DAY: Tuesday
WEATHER: clear
COUNTED BY: Muha & Teuta
INPUTED BY: agan

SOUTHBOUND ROAD: Westpark Drive
NORTHBOUND ROAD: Westpark Drive
WESTBOUND ROAD: Greensboro Drive
EASTBOUND ROAD: Greensboro Drive

Time	Southbound Westpark Drive					Westbound Greensboro Drive					Northbound Westpark Drive					Eastbound Greensboro Drive					North & South	East & West	Total
Period	Right	Thru	Left	Total	PHF	Right	Thru	Left	Total	PHF	Right	Thru	Left	Total	PHF	Right	Thru	Left	Total	PHF			
AM 15 Minute Volumes																							
6:00 AM - 6:15 AM	4	8	5	17		3	4	17	24		41	11	5	57		5	9	3	17		74	41	115
6:15 AM - 6:30 AM	4	14	4	22		1	5	17	23		54	22	10	86		6	13	7	26		108	49	157
6:30 AM - 6:45 AM	8	30	9	47		4	3	12	19		55	23	8	86		9	14	10	33		133	52	185
6:45 AM - 7:00 AM	6	37	9	52		9	4	17	30		72	56	16	144		9	19	13	41		196	71	267
7:00 AM - 7:15 AM	4	37	22	63		12	13	17	42		78	68	13	159		6	30	19	55		222	97	319
7:15 AM - 7:30 AM	16	38	23	77		6	10	17	33		80	80	14	174		7	41	17	65		251	98	349
7:30 AM - 7:45 AM	15	33	23	71		4	15	23	42		105	73	25	203		13	39	14	66		274	108	382
7:45 AM - 8:00 AM	18	35	26	79		5	12	15	32		102	71	30	203		12	57	24	93		282	125	407
8:00 AM - 8:15 AM	21	52	27	100		9	17	12	38		121	95	29	245		23	62	17	102		345	140	485
8:15 AM - 8:30 AM	17	63	43	123		7	12	16	35		114	87	37	238		22	59	30	111		361	146	507
8:30 AM - 8:45 AM	28	94	66	188		9	17	18	44		134	114	46	294		32	64	24	120		482	164	646
8:45 AM - 9:00 AM	17	65	48	130		11	16	14	41		118	115	50	283		28	86	38	152		413	193	606
Total	158	506	305	969		80	128	195	403		1074	815	283	2172		172	493	216	881		3141	1284	4425
AM One Hour Volumes																							
6:00 AM - 7:00 AM	22	89	27	138	0.66	17	16	63	96	0.80	222	112	39	373	0.65	29	55	33	117	0.71	511	213	724
6:15 AM - 7:15 AM	22	118	44	184	0.73	26	25	63	114	0.68	259	169	47	475	0.75	30	76	49	155	0.70	659	269	928
6:30 AM - 7:30 AM	34	142	63	239	0.78	31	30	63	124	0.74	285	227	51	563	0.81	31	104	59	194	0.75	802	318	1120
6:45 AM - 7:45 AM	41	145	77	263	0.85	31	42	74	147	0.88	335	277	68	680	0.84	35	129	63	227	0.86	943	374	1317
7:00 AM - 8:00 AM	53	143	94	290	0.92	27	50	72	149	0.89	365	292	82	739	0.91	38	167	74	279	0.75	1029	428	1457
7:15 AM - 8:15 AM	70	158	99	327	0.82	24	54	67	145	0.86	408	319	98	825	0.84	55	199	72	326	0.80	1152	471	1623
7:30 AM - 8:30 AM	71	183	119	373	0.76	25	56	66	147	0.88	442	326	121	889	0.91	70	217	85	372	0.84	1262	519	1781
7:45 AM - 8:45 AM	84	244	162	490	0.65	30	58	61	149	0.85	471	367	142	980	0.83	89	242	95	426	0.89	1470	575	2045
8:00 AM - 9:00 AM	83	274	184	541	0.72	36	62	60	158	0.90	487	411	162	1060	0.90	105	271	109	485	0.80	1601	643	2244
PM 15 Minute Volumes																							
4:00 PM - 4:15 PM	26	111	13	150		30	105	72	207		32	45	14	91		26	31	23	80		241	287	528
4:15 PM - 4:30 PM	29	155	8	192		29	93	62	184		20	64	18	102		20	35	18	73		294	257	551
4:30 PM - 4:45 PM	31	123	11	165		30	73	90	193		36	57	25	118		28	30	39	97		283	290	573
4:45 PM - 5:00 PM	22	152	10	184		43	86	54	183		21	63	31	115		27	31	37	95		299	278	577
5:00 PM - 5:15 PM	23	106	10	139		40	107	104	251		39	50	28	117		38	41	47	126		256	377	633
5:15 PM - 5:30 PM	30	176	11	217		46	102	79	227		34	68	25	127		31	39	29	99		344	326	670
5:30 PM - 5:45 PM	40	129	5	174		34	85	92	211		29	54	24	107		28	42	44	114		281	325	606
5:45 PM - 6:00 PM	30	135	7	172		22	91	77	190		25	63	16	104		33	36	32	101		276	291	567
6:00 PM - 6:15 PM	28	179	13	220		25	64	66	155		34	89	10	133		26	28	30	84		353	239	592
6:15 PM - 6:30 PM	30	97	10	137		21	84	81	186		29	60	20	109		24	40	29	93		246	279	525
6:30 PM - 6:45 PM	10	132	5	147		15	45	61	121		26	67	19	112		26	23	27	76		259	197	456
6:45 PM - 7:00 PM	18	110	10	138		16	45	70	131		31	53	19	103		15	26	13	54		241	185	426
Total	317	1605	113	2035		351	980	908	2239		356	733	249	1338		322	402	368	1092		3373	3331	6704
PM One Hour Volumes																							
4:00 PM - 5:00 PM	108	541	42	691	0.90	132	357	278	767	0.93	109	229	88	426	0.90	101	127	117	345	0.89	1117	1112	2229
4:15 PM - 5:15 PM	105	536	39	680	0.89	142	359	310	811	0.81	116	234	102	452	0.96	113	137	141	391	0.78	1132	1202	2334
4:30 PM - 5:30 PM	106	557	42	705	0.81	159	368	327	854	0.85	130	238	109	477	0.94	124	141	152	417	0.83	1182	1271	2453
4:45 PM - 5:45 PM	115	563	36	714	0.82	163	380	329	872	0.87	123	235	108	466	0.92	124	153	157	434	0.86	1180	1306	2486
5:00 PM - 6:00 PM	123	546	33	702	0.81	142	385	352	879	0.88	127	235	93	455	0.90	130	158	152	440	0.87	1157	1319	2476
5:15 PM - 6:15 PM	128	619	36	783	0.89	127	342	314	783	0.86	122	274	75	471	0.89	118	145	135	398	0.87	1254	1181	2435
5:30 PM - 6:30 PM	128	540	35	703	0.80	102	324	316	742	0.88	117	266	70	453	0.85	111	146	135	392	0.86	1156	1134	2290
5:45 PM - 6:45 PM	98	543	35	676	0.77	83	284	285	652	0.86	114	279	65	458	0.86	109	127	118	354	0.88	1134	1006	2140
6:00 PM - 7:00 PM	86	518	38	642	0.73	77	238	278	593	0.80	120	269	68	457	0.86	91	117	99	307	0.83	1099	900	1999

Westpark Dr & Greensboro Dr

AM summary (intersection)

Peak Hour: 8:00–9:00 AM — the highest 15-min in AM peak is 646 v (8:30–8:45).

PHV: 8:00–9:00 AM = 2,244 veh/h.

PHF: 2,244 / (4 × 646) = 0.87.

PM summary (intersection)

Peak Hour: 4:45–5:45 PM — the highest 15-min in PM peak is 670 v (5:15–5:30).

PHV: 4:45–5:45 PM = 2,486 veh/h.

PHF: 2,486 / (4 × 670) = 0.93.

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Wells + Associates, Inc.

McLean, Virginia

Turning Movement Count - All Vehicles

PROJECT: NADA Property
W+A JOB NO: 7671
INTERSECTION: Greensboro Dr. & NADA Driveway
LOCATION: Fairfax County,VA

DATE: 5/8/2019
DAY: Wednesday
WEATHER: clear
COUNTED BY: Ramiz & Salih
INPUTED BY: agan

SOUTHBOUND ROAD: Rotanda Entrance
NORTHBOUND ROAD: NADA Driveway
WESTBOUND ROAD: Greensboro Drive
EASTBOUND ROAD: Greensboro Drive

Time	Southbound Rotanda Entrance					Westbound Greensboro Drive					Northbound NADA Driveway					Eastbound Greensboro Drive					North & South	East & West	Total
Period	Right	Thru	Left	Total	PHF	Right	Thru	Left	Total	PHF	Right	Thru	Left	Total	PHF	Right	Thru	Left	Total	PHF			
AM 15 Minute Volumes																							
6:00 AM - 6:15 AM	1	0	2	3		5	7	0	12		1	0	0	1		0	14	2	16		4	28	32
6:15 AM - 6:30 AM	5	0	5	10		1	13	0	14		0	0	0	0		0	11	1	12		10	26	36
6:30 AM - 6:45 AM	4	1	9	14		4	17	0	21		0	0	0	0		3	25	1	29		14	50	64
6:45 AM - 7:00 AM	5	1	10	16		5	17	0	22		0	0	1	1		5	40	2	47		17	69	86
7:00 AM - 7:15 AM	9	1	12	22		2	17	2	21		0	0	0	0		3	44	1	48		22	69	91
7:15 AM - 7:30 AM	9	0	18	27		2	30	0	32		1	0	0	1		3	65	2	70		28	102	130
7:30 AM - 7:45 AM	8	1	6	15		3	27	1	31		1	0	0	1		7	78	4	89		16	120	136
7:45 AM - 8:00 AM	9	3	9	21		5	52	0	57		1	0	0	1		9	80	2	91		22	148	170
8:00 AM - 8:15 AM	13	1	22	36		7	31	0	38		0	0	0	0		7	114	6	127		36	165	201
8:15 AM - 8:30 AM	10	2	20	32		4	67	0	71		0	0	0	0		10	110	2	122		32	193	225
8:30 AM - 8:45 AM	12	7	14	33		5	65	2	72		1	0	0	1		14	115	6	135		34	207	241
8:45 AM - 9:00 AM	13	5	16	34		5	56	0	61		1	0	0	1		11	109	3	123		35	184	219
9:00 AM - 9:15 AM	7	0	10	17		8	72	1	81		0	0	0	0		6	114	3	123		17	204	221
9:15 AM - 9:30 AM	6	3	20	29		11	69	0	80		0	0	1	1		7	102	4	113		30	193	223
Total	111	25	173	309		67	540	6	613		6	0	2	8		85	1021	39	1145		317	1758	2075
AM One Hour Volumes																							
6:00 AM - 7:00 AM	15	2	26	43	0.67	15	54	0	69	0.78	1	0	1	2	0.50	8	90	6	104	0.55	45	173	218
6:15 AM - 7:15 AM	23	3	36	62	0.70	12	64	2	78	0.89	0	0	1	1	0.25	11	120	5	136	0.71	63	214	277
6:30 AM - 7:30 AM	27	3	49	79	0.73	13	81	2	96	0.75	1	0	1	2	0.50	14	174	6	194	0.69	81	290	371
6:45 AM - 7:45 AM	31	3	46	80	0.74	12	91	3	106	0.83	2	0	1	3	0.75	18	227	9	254	0.71	83	360	443
7:00 AM - 8:00 AM	35	5	45	85	0.79	12	126	3	141	0.62	3	0	0	3	0.75	22	267	9	298	0.82	88	439	527
7:15 AM - 8:15 AM	39	5	55	99	0.69	17	140	1	158	0.69	3	0	0	3	0.75	26	337	14	377	0.74	102	535	637
7:30 AM - 8:30 AM	40	7	57	104	0.72	19	177	1	197	0.69	2	0	0	2	0.50	33	382	14	429	0.84	106	626	732
7:45 AM - 8:45 AM	44	13	65	122	0.85	21	215	2	238	0.83	2	0	0	2	0.50	40	419	16	475	0.88	124	713	837
8:00 AM - 9:00 AM	48	15	72	135	0.94	21	219	2	242	0.84	2	0	0	2	0.50	42	448	17	507	0.94	137	749	886
8:15 AM - 9:15 AM	42	14	60	116	0.85	22	260	3	285	0.88	2	0	0	2	0.50	41	448	14	503	0.93	118	788	906
8:30 AM - 9:30 AM	38	15	60	113	0.83	29	262	3	294	0.91	2	0	1	3	0.75	38	440	16	494	0.91	116	788	904
PM 15 Minute Volumes																							
4:00 PM - 4:15 PM	5	1	5	11		21	114	0	135		4	0	3	7		2	57	6	65		18	200	218
4:15 PM - 4:30 PM	5	0	5	10		15	109	0	124		8	0	1	9		1	64	13	78		19	202	221
4:30 PM - 4:45 PM	2	0	11	13		16	145	0	161		7	0	2	9		5	72	8	85		22	246	268
4:45 PM - 5:00 PM	6	0	8	14		21	139	1	161		7	0	3	10		2	77	11	90		24	251	275
5:00 PM - 5:15 PM	3	0	8	11		16	178	0	194		13	0	3	16		3	79	9	91		27	285	312
5:15 PM - 5:30 PM	9	0	11	20		13	181	0	194		5	0	5	10		0	67	10	77		30	271	301
5:30 PM - 5:45 PM	3	0	13	16		17	203	1	221		5	1	3	9		1	40	9	50		25	271	296
5:45 PM - 6:00 PM	10	2	12	24		18	149	0	167		2	0	0	2		4	59	10	73		26	240	266
6:00 PM - 6:15 PM	7	0	13	20		15	113	0	128		1	0	1	2		0	57	11	68		22	196	218
6:15 PM - 6:30 PM	1	0	14	15		21	85	1	107		3	1	2	6		0	64	6	70		21	177	198
6:30 PM - 6:45 PM	1	0	5	6		17	56	0	73		4	0	0	4		1	48	5	54		10	127	137
6:45 PM - 7:00 PM	2	0	3	5		25	70	0	95		1	0	0	1		1	43	3	47		6	142	148
Total	54	3	108	165		215	1542	3	1760		60	2	23	85		20	727	101	848		250	2608	2858
PM One Hour Volumes																							
4:00 PM - 5:00 PM	18	1	29	48	0.86	73	507	1	581	0.90	26	0	9	35	0.88	10	270	38	318	0.88	83	899	982
4:15 PM - 5:15 PM	16	0	32	48	0.86	68	571	1	640	0.82	35	0	9	44	0.69	11	292	41	344	0.95	92	984	1076
4:30 PM - 5:30 PM	20	0	38	58	0.73	66	643	1	710	0.91	32	0	13	45	0.70	10	295	38	343	0.94	103	1053	1156
4:45 PM - 5:45 PM	21	0	40	61	0.76	67	701	2	770	0.87	30	1	14	45	0.70	6	263	39	308	0.85	106	1078	1184
5:00 PM - 6:00 PM	25	2	44	71	0.74	64	711	1	776	0.88	25	1	11	37	0.58	8	245	38	291	0.80	108	1067	1175
5:15 PM - 6:15 PM	29	2	49	80	0.83	63	646	1	710	0.80	13	1	9	23	0.58	5	223	40	268	0.87	103	978	1081
5:30 PM - 6:30 PM	21	2	52	75	0.78	71	550	2	623	0.70	11	2	6	19	0.53	5	220	36	261	0.89	94	884	978
5:45 PM - 6:45 PM	19	2	44	65	0.68	71	403	1	475	0.71	10	1	3	14	0.58	5	228	32	265	0.91	79	740	819
6:00 PM - 7:00 PM	11	0	35	46	0.58	78	324	1	403	0.79	9	1	3	13	0.54	2	212	25	239	0.85	59	642	701

Greensboro Dr & NADA Driveway

AM summary (intersection)

Peak Hour: 8:15–9:15 AM — the highest 15-min in AM peak is 241 v (8:30–8:45).

PHV: 8:15–9:15 AM = 906 veh/h.

PHF: 906 / (4 × 241) = 0.94.

PM summary (intersection)

Peak Hour: 4:45–5:45 PM — the highest 15-min in PM peak is 312 v (5:00–5:15).

PHV: 4:45–5:45 PM = 1,184 veh/h.

PHF: 1,184 / (4 × 312) = 0.95.

8

Wells + Associates, Inc.

McLean, Virginia

Turning Movement Count - All Vehicles

PROJECT: NADA Property
W+A JOB NO: 7671
INTERSECTION: Greensboro Dr. & Clover Property Driveway
LOCATION: Fairfax County,VA

DATE: 5/8/2019
DAY: Wednesday
WEATHER: clear
COUNTED BY: Majda
INPUTED BY: agan

SOUTHBOUND ROAD: 0
NORTHBOUND ROAD: Clover Property Driveway
WESTBOUND ROAD: Greensboro Drive
EASTBOUND ROAD: Greensboro Drive

Time	Southbound 0					Westbound Greensboro Drive					Northbound Clover Property Driveway					Eastbound Greensboro Drive					North & South	East & West	Total
Period	Right	Thru	Left	Total	PHF	Right	Thru	Left	Total	PHF	Right	Thru	Left	Total	PHF	Right	Thru	Left	Total	PHF			
AM 15 Minute Volumes																							
6:00 AM - 6:15 AM	0	0	0	0		0	8	0	8		0	0	0	0		0	15	0	15		0	23	23
6:15 AM - 6:30 AM	0	0	0	0		0	17	0	17		0	0	0	0		0	14	0	14		0	31	31
6:30 AM - 6:45 AM	0	0	0	0		0	23	0	23		0	0	0	0		0	32	0	32		0	55	55
6:45 AM - 7:00 AM	0	0	0	0		0	24	0	24		0	0	0	0		0	46	0	46		0	70	70
7:00 AM - 7:15 AM	0	0	0	0		0	26	0	26		0	0	0	0		0	50	0	50		0	76	76
7:15 AM - 7:30 AM	0	0	0	0		0	43	0	43		0	0	0	0		0	68	0	68		0	111	111
7:30 AM - 7:45 AM	0	0	0	0		0	39	0	39		0	0	0	0		0	96	0	96		0	135	135
7:45 AM - 8:00 AM	0	0	0	0		0	64	0	64		1	0	0	1		1	111	0	112		1	176	177
8:00 AM - 8:15 AM	0	0	0	0		0	53	0	53		0	0	0	0		0	127	0	127		0	180	180
8:15 AM - 8:30 AM	0	0	0	0		0	83	0	83		0	0	0	0		0	128	0	128		0	211	211
8:30 AM - 8:45 AM	0	0	0	0		0	81	0	81		0	0	0	0		0	183	0	183		0	264	264
8:45 AM - 9:00 AM	0	0	0	0		0	77	0	77		0	0	0	0		0	124	0	124		0	201	201
9:00 AM - 9:15 AM	0	0	0	0		0	83	0	83		0	0	0	0		0	121	0	121		0	204	204
9:15 AM - 9:30 AM	0	0	0	0		0	81	0	81		0	0	0	0		0	116	0	116		0	197	197
Total	0	0	0	0		0	702	0	702		1	0	0	1		1	1231	0	1232		1	1934	1935
AM One Hour Volumes																							
6:00 AM - 7:00 AM	0	0	0	0	0.00	0	72	0	72	0.75	0	0	0	0	0.00	0	107	0	107	0.58	0	179	179
6:15 AM - 7:15 AM	0	0	0	0	0.00	0	90	0	90	0.87	0	0	0	0	0.00	0	142	0	142	0.71	0	232	232
6:30 AM - 7:30 AM	0	0	0	0	0.00	0	116	0	116	0.67	0	0	0	0	0.00	0	196	0	196	0.72	0	312	312
6:45 AM - 7:45 AM	0	0	0	0	0.00	0	132	0	132	0.77	0	0	0	0	0.00	0	260	0	260	0.68	0	392	392
7:00 AM - 8:00 AM	0	0	0	0	0.00	0	172	0	172	0.67	1	0	0	1	0.25	1	325	0	326	0.73	1	498	499
7:15 AM - 8:15 AM	0	0	0	0	0.00	0	199	0	199	0.78	1	0	0	1	0.25	1	402	0	403	0.79	1	602	603
7:30 AM - 8:30 AM	0	0	0	0	0.00	0	239	0	239	0.72	1	0	0	1	0.25	1	462	0	463	0.90	1	702	703
7:45 AM - 8:45 AM	0	0	0	0	0.00	0	281	0	281	0.85	1	0	0	1	0.25	1	549	0	550	0.75	1	831	832
8:00 AM - 9:00 AM	0	0	0	0	0.00	0	294	0	294	0.89	0	0	0	0	0.00	0	562	0	562	0.77	0	856	856
8:15 AM - 9:15 AM	0	0	0	0	0.00	0	324	0	324	0.98	0	0	0	0	0.00	0	556	0	556	0.76	0	880	880
8:30 AM - 9:30 AM	0	0	0	0	0.00	0	322	0	322	0.97	0	0	0	0	0.00	0	544	0	544	0.74	0	866	866
PM 15 Minute Volumes																							
4:00 PM - 4:15 PM	0	0	0	0		0	134	0	134		0	0	0	0		0	66	0	66		0	200	200
4:15 PM - 4:30 PM	0	0	0	0		0	118	0	118		0	0	0	0		0	72	0	72		0	190	190
4:30 PM - 4:45 PM	0	0	0	0		0	151	0	151		0	0	0	0		0	88	0	88		0	239	239
4:45 PM - 5:00 PM	0	0	0	0		0	154	0	154		0	0	0	0		0	95	0	95		0	249	249
5:00 PM - 5:15 PM	0	0	0	0		0	182	0	182		0	0	0	0		0	103	0	103		0	285	285
5:15 PM - 5:30 PM	0	0	0	0		0	205	0	205		0	0	0	0		0	88	0	88		0	293	293
5:30 PM - 5:45 PM	0	0	0	0		0	217	0	217		0	0	0	0		0	56	0	56		0	273	273
5:45 PM - 6:00 PM	0	0	0	0		0	174	0	174		0	0	0	0		0	80	0	80		0	254	254
6:00 PM - 6:15 PM	0	0	0	0		0	127	0	127		0	0	0	0		0	74	0	74		0	201	201
6:15 PM - 6:30 PM	0	0	0	0		0	87	0	87		0	0	0	0		0	74	0	74		0	161	161
6:30 PM - 6:45 PM	0	0	0	0		0	63	1	64		1	0	0	1		0	65	0	65		1	129	130
6:45 PM - 7:00 PM	0	0	0	0		0	75	0	75		0	0	0	0		0	74	0	74		0	149	149
Total	0	0	0	0		0	1687	1	1688		1	0	0	1		0	935	0	935		1	2623	2624
PM One Hour Volumes																							
4:00 PM - 5:00 PM	0	0	0	0	0.00	0	557	0	557	0.90	0	0	0	0	0.00	0	321	0	321	0.84	0	878	878
4:15 PM - 5:15 PM	0	0	0	0	0.00	0	605	0	605	0.83	0	0	0	0	0.00	0	358	0	358	0.87	0	963	963
4:30 PM - 5:30 PM	0	0	0	0	0.00	0	692	0	692	0.84	0	0	0	0	0.00	0	374	0	374	0.91	0	1066	1066
4:45 PM - 5:45 PM	0	0	0	0	0.00	0	758	0	758	0.87	0	0	0	0	0.00	0	342	0	342	0.83	0	1100	1100
5:00 PM - 6:00 PM	0	0	0	0	0.00	0	778	0	778	0.90	0	0	0	0	0.00	0	327	0	327	0.79	0	1105	1105
5:15 PM - 6:15 PM	0	0	0	0	0.00	0	723	0	723	0.83	0	0	0	0	0.00	0	298	0	298	0.85	0	1021	1021
5:30 PM - 6:30 PM	0	0	0	0	0.00	0	605	0	605	0.70	0	0	0	0	0.00	0	284	0	284	0.89	0	889	889
5:45 PM - 6:45 PM	0	0	0	0	0.00	0	451	1	452	0.65	1	0	0	1	0.25	0	293	0	293	0.92	1	745	746
6:00 PM - 7:00 PM	0	0	0	0	0.00	0	352	1	353	0.69	1	0	0	1	0.25	0	287	0	287	0.97	1	640	641

Greensboro Dr & Clover Property Driveway

AM summary (intersection)

Peak Hour: 8:15–9:15 AM — the highest 15-min in AM peak is 264 v (8:30–8:45).

PHV: 8:15–9:15 AM = 880 veh/h.

PHF: 880 / (4 × 264) = 0.83.

PM summary (intersection)

Peak Hour: 5:00–6:00 PM — the highest 15-min in PM peak is 293 v (5:15–5:30).

PHV: 5:00–6:00 PM = 1,105 veh/h.

PHF: 1,105 / (4 × 293) = 0.94.

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Wells + Associates, Inc.

McLean, Virginia

Turning Movement Count - All Vehicles

PROJECT: Spring Hill Station Part C
W+A JOB NO: 7069
INTERSECTION: Spring Hill Rd.& Greensboro Dr.
LOCATION: Fairfax County,VA

DATE: 6/6/2017
DAY: Tuesday
WEATHER: clear
COUNTED BY: Majda
INPUTED BY: agan

SOUTHBOUND ROAD: Spring Hill Road
NORTHBOUND ROAD: Spring Hill Road
WESTBOUND ROAD: Greensboro Drive
EASTBOUND ROAD: Driveway

Time	Southbound Spring Hill Road					Westbound Greensboro Drive					Northbound Spring Hill Road					Eastbound Driveway					North & South	East & West	Total
Period	Right	Thru	Left	Total	PHF	Right	Thru	Left	Total	PHF	Right	Thru	Left	Total	PHF	Right	Thru	Left	Total	PHF			
AM 15 Minute Volumes																							
6:30 AM - 6:45 AM	0	17	11	28		3	2	15	20		11	22	3	36		1	0	0	1		64	21	85
6:45 AM - 7:00 AM	0	33	23	56		7	1	17	25		17	40	3	60		0	1	0	1		116	26	142
7:00 AM - 7:15 AM	1	27	25	53		7	2	14	23		29	25	6	60		3	0	2	5		113	28	141
7:15 AM - 7:30 AM	4	71	29	104		6	2	17	25		44	40	6	90		4	3	1	8		194	33	227
7:30 AM - 7:45 AM	1	65	50	116		11	2	24	37		53	46	6	105		4	1	0	5		221	42	263
7:45 AM - 8:00 AM	0	66	76	142		26	7	30	63		40	46	12	98		0	0	0	0		240	63	303
8:00 AM - 8:15 AM	1	50	55	106		17	5	23	45		49	47	6	102		3	0	0	3		208	48	256
8:15 AM - 8:30 AM	1	73	73	147		18	2	24	44		43	52	8	103		9	1	0	10		250	54	304
8:30 AM - 8:45 AM	1	72	82	155		14	3	41	58		61	57	3	121		3	0	2	5		276	63	339
8:45 AM - 9:00 AM	2	83	74	159		15	4	36	55		57	45	7	109		4	3	0	7		268	62	330
9:00 AM - 9:15 AM	4	89	78	171		18	5	33	56		71	49	4	124		5	3	0	8		295	64	359
9:15 AM - 9:30 AM	4	77	67	148		21	1	24	46		57	39	6	102		11	3	3	17		250	63	313
Total	19	723	643	1385		163	36	298	497		532	508	70	1110		47	15	8	70		2495	567	3062
AM One Hour Volumes																							
6:30 AM - 7:30 AM	5	148	88	241	0.58	23	7	63	93	0.93	101	127	18	246	0.68	8	4	3	15	0.47	487	108	595
6:45 AM - 7:45 AM	6	196	127	329	0.71	31	7	72	110	0.74	143	151	21	315	0.75	11	5	3	19	0.59	644	129	773
7:00 AM - 8:00 AM	6	229	180	415	0.73	50	13	85	148	0.59	166	157	30	353	0.84	11	4	3	18	0.56	768	166	934
7:15 AM - 8:15 AM	6	252	210	468	0.82	60	16	94	170	0.67	186	179	30	395	0.94	11	4	1	16	0.50	863	186	1049
7:30 AM - 8:30 AM	3	254	254	511	0.87	72	16	101	189	0.75	185	191	32	408	0.97	16	2	0	18	0.45	919	207	1126
7:45 AM - 8:45 AM	3	261	286	550	0.89	75	17	118	210	0.83	193	202	29	424	0.88	15	1	2	18	0.45	974	228	1202
8:00 AM - 9:00 AM	5	278	284	567	0.89	64	14	124	202	0.87	210	201	24	435	0.90	19	4	2	25	0.63	1002	227	1229
8:15 AM - 9:15 AM	8	317	307	632	0.92	65	14	134	213	0.92	232	203	22	457	0.92	21	7	2	30	0.75	1089	243	1332
8:30 AM - 9:30 AM	11	321	301	633	0.93	68	13	134	215	0.93	246	190	20	456	0.92	23	9	5	37	0.54	1089	252	1341
PM 15 Minute Volumes																							
4:00 PM - 4:15 PM	2	72	23	97		40	5	87	132		46	41	6	93		6	5	1	12		190	144	334
4:15 PM - 4:30 PM	1	74	26	101		49	5	103	157		37	60	7	104		9	3	1	13		205	170	375
4:30 PM - 4:45 PM	1	77	34	112		50	5	122	177		44	55	6	105		6	1	2	9		217	186	403
4:45 PM - 5:00 PM	0	71	20	91		56	6	132	194		32	58	3	93		4	2	2	8		184	202	386
5:00 PM - 5:15 PM	1	53	34	88		66	2	138	206		58	59	4	121		3	0	1	4		209	210	419
5:15 PM - 5:30 PM	3	77	29	109		63	11	130	204		53	60	6	119		5	3	1	9		228	213	441
5:30 PM - 5:45 PM	2	73	27	102		66	6	122	194		44	59	8	111		4	5	5	14		213	208	421
5:45 PM - 6:00 PM	0	78	35	113		68	6	121	195		39	68	5	112		8	1	1	10		225	205	430
6:00 PM - 6:15 PM	0	70	24	94		48	3	109	160		37	60	5	102		6	2	1	9		196	169	365
6:15 PM - 6:30 PM	2	65	22	89		48	8	78	134		30	46	4	80		3	2	0	5		169	139	308
6:30 PM - 6:45 PM	4	55	21	80		13	1	55	69		15	47	3	65		6	4	0	10		145	79	224
6:45 PM - 7:00 PM	1	39	23	63		19	3	57	79		25	39	2	66		9	3	2	14		129	93	222
Total	17	804	318	1139		586	61	1254	1901		460	652	59	1171		69	31	17	117		2310	2018	4328
PM One Hour Volumes																							
4:00 PM - 5:00 PM	4	294	103	401	0.90	195	21	444	660	0.85	159	214	22	395	0.94	25	11	6	42	0.81	796	702	1498
4:15 PM - 5:15 PM	3	275	114	392	0.88	221	18	495	734	0.89	171	232	20	423	0.87	22	6	6	34	0.65	815	768	1583
4:30 PM - 5:30 PM	5	278	117	400	0.89	235	24	522	781	0.95	187	232	19	438	0.90	18	6	6	30	0.83	838	811	1649
4:45 PM - 5:45 PM	6	274	110	390	0.89	251	25	522	798	0.97	187	236	21	444	0.92	16	10	9	35	0.63	834	833	1667
5:00 PM - 6:00 PM	6	281	125	412	0.91	263	25	511	799	0.97	194	246	23	463	0.96	20	9	8	37	0.66	875	836	1711
5:15 PM - 6:15 PM	5	298	115	418	0.92	245	26	482	753	0.92	173	247	24	444	0.93	23	11	8	42	0.75	862	795	1657
5:30 PM - 6:30 PM	4	286	108	398	0.88	230	23	430	683	0.88	150	233	22	405	0.90	21	10	7	38	0.68	803	721	1524
5:45 PM - 6:45 PM	6	268	102	376	0.83	177	18	363	558	0.72	121	221	17	359	0.80	23	9	2	34	0.85	735	592	1327
6:00 PM - 7:00 PM	7	229	90	326	0.87	128	15	299	442	0.69	107	192	14	313	0.77	24	11	3	38	0.68	639	480	1119

Spring Hill Rd & Greensboro Dr

AM summary (intersection)

Peak Hour: 8:30–9:30 AM — the highest 15-min in AM peak is 339 v (8:30–8:45).

PHV: 8:30–9:30 AM = 1,341 veh/h.

PHF: 1,341 / (4 × 339) = 0.99.

PM summary (intersection)

Peak Hour: 5:00–6:00 PM — the four 15-min totals are 419, 441, 421, 430; the highest 15-min is 441 v (5:15–5:30).

PHV: 5:00–6:00 PM = 1,711 veh/h.

PHF: 1,711 / (4 × 441) = 0.97.

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Wells + Associates, Inc.

McLean, Virginia

Turning Movement Count - All Vehicles

PROJECT: Spring Hill Station Part C
W+A JOB NO: 7069
INTERSECTION: Leesburg Pike & Spring Hill Rd.
LOCATION: Fairfax County,VA

DATE: 6/6/2017
DAY: Tuesday
WEATHER: clear
COUNTED BY: Stuarts
INPUTED BY: agan

SOUTHBOUND ROAD: Spring Hill Road
NORTHBOUND ROAD: Spring Hill Road
WESTBOUND ROAD: Leesburg Pike - 7
EASTBOUND ROAD: Leesburg Pike - 7

Time	Southbound Spring Hill Road					Westbound Leesburg Pike - 7					Northbound Spring Hill Road					Eastbound Leesburg Pike - 7					North & South	East & West	Total
Period	Right	Thru	Left	Total	PHF	Right	Thru	Left	Total	PHF	Right	Thru	Left	Total	PHF	Right	Thru	Left	Total	PHF			
AM 15 Minute Volumes																							
6:30 AM - 6:45 AM	17	1	14	32		17	269	16	302		3	2	9	14		10	682	23	715		46	1017	1063
6:45 AM - 7:00 AM	19	10	18	47		30	407	21	458		5	2	2	9		14	704	21	739		56	1197	1253
7:00 AM - 7:15 AM	20	4	17	41		25	349	26	400		4	8	1	13		18	650	36	704		54	1104	1158
7:15 AM - 7:30 AM	23	9	21	53		31	421	29	481		7	6	3	16		19	690	44	753		69	1234	1303
7:30 AM - 7:45 AM	31	15	13	59		31	474	45	550		5	10	4	19		28	805	32	865		78	1415	1493
7:45 AM - 8:00 AM	25	21	25	71		53	442	36	531		3	9	5	17		35	753	46	834		88	1365	1453
8:00 AM - 8:15 AM	26	31	34	91		41	415	46	502		12	12	14	38		32	633	62	727		129	1229	1358
8:15 AM - 8:30 AM	32	23	24	79		19	358	43	420		14	11	11	36		30	690	52	772		115	1192	1307
8:30 AM - 8:45 AM	34	19	22	75		24	407	57	488		9	13	7	29		38	709	47	794		104	1282	1386
8:45 AM - 9:00 AM	34	32	39	105		32	358	35	425		11	15	5	31		37	630	59	726		136	1151	1287
9:00 AM - 9:15 AM	23	25	12	60		34	346	42	422		5	3	5	13		34	585	68	687		73	1109	1182
9:15 AM - 9:30 AM	21	33	37	91		34	325	65	424		16	12	9	37		35	670	54	759		128	1183	1311
Total	305	223	276	804		371	4571	461	5403		94	103	75	272		330	8201	544	9075		1076	14478	15554
AM One Hour Volumes																							
6:30 AM - 7:30 AM	79	24	70	173	0.82	103	1446	92	1641	0.85	19	18	15	52	0.81	61	2726	124	2911	0.97	225	4552	4777
6:45 AM - 7:45 AM	93	38	69	200	0.85	117	1651	121	1889	0.86	21	26	10	57	0.75	79	2849	133	3061	0.88	257	4950	5207
7:00 AM - 8:00 AM	99	49	76	224	0.79	140	1686	136	1962	0.89	19	33	13	65	0.86	100	2898	158	3156	0.91	289	5118	5407
7:15 AM - 8:15 AM	105	76	93	274	0.75	156	1752	156	2064	0.94	27	37	26	90	0.59	114	2881	184	3179	0.92	364	5243	5607
7:30 AM - 8:30 AM	114	90	96	300	0.82	144	1689	170	2003	0.91	34	42	34	110	0.72	125	2881	192	3198	0.92	410	5201	5611
7:45 AM - 8:45 AM	117	94	105	316	0.87	137	1622	182	1941	0.91	38	45	37	120	0.79	135	2785	207	3127	0.94	436	5068	5504
8:00 AM - 9:00 AM	126	105	119	350	0.83	116	1538	181	1835	0.91	46	51	37	134	0.88	137	2662	220	3019	0.95	484	4854	5338
8:15 AM - 9:15 AM	123	99	97	319	0.76	109	1469	177	1755	0.90	39	42	28	109	0.76	139	2614	226	2979	0.94	428	4734	5162
8:30 AM - 9:30 AM	112	109	110	331	0.79	124	1436	199	1759	0.90	41	43	26	110	0.74	144	2594	228	2966	0.93	441	4725	5166
PM 15 Minute Volumes																							
4:00 PM - 4:15 PM	110	13	53	176		27	605	18	650		30	11	27	68		13	486	34	533		244	1183	1427
4:15 PM - 4:30 PM	91	14	59	164		23	635	17	675		35	19	35	89		14	532	30	576		253	1251	1504
4:30 PM - 4:45 PM	136	15	48	199		19	475	23	517		53	14	31	98		9	461	32	502		297	1019	1316
4:45 PM - 5:00 PM	132	12	72	216		21	534	14	569		56	18	35	109		11	580	24	615		325	1184	1509
5:00 PM - 5:15 PM	174	18	62	254		15	446	16	477		102	31	43	176		10	451	32	493		430	970	1400
5:15 PM - 5:30 PM	115	15	55	185		25	422	23	470		69	25	37	131		8	452	42	502		316	972	1288
5:30 PM - 5:45 PM	105	25	69	199		18	449	12	479		64	25	45	134		22	613	32	667		333	1146	1479
5:45 PM - 6:00 PM	107	9	82	198		14	365	16	395		59	29	18	106		16	463	25	504		304	899	1203
6:00 PM - 6:15 PM	117	12	51	180		12	516	25	553		59	20	22	101		7	450	37	494		281	1047	1328
6:15 PM - 6:30 PM	97	7	46	150		16	529	25	570		50	16	30	96		8	535	22	565		246	1135	1381
6:30 PM - 6:45 PM	57	5	48	110		13	574	10	597		30	14	17	61		14	500	30	544		171	1141	1312
6:45 PM - 7:00 PM	42	11	34	87		12	395	8	415		53	16	17	86		11	457	28	496		173	911	1084
Total	1283	156	679	2118		215	5945	207	6367		660	238	357	1255		143	5980	368	6491		3373	12858	16231
PM One Hour Volumes																							
4:00 PM - 5:00 PM	469	54	232	755	0.87	90	2249	72	2411	0.89	174	62	128	364	0.83	47	2059	120	2226	0.90	1119	4637	5756
4:15 PM - 5:15 PM	533	59	241	833	0.82	78	2090	70	2238	0.83	246	82	144	472	0.67	44	2024	118	2186	0.89	1305	4424	5729
4:30 PM - 5:30 PM	557	60	237	854	0.84	80	1877	76	2033	0.89	280	88	146	514	0.73	38	1944	130	2112	0.86	1368	4145	5513
4:45 PM - 5:45 PM	526	70	258	854	0.84	79	1851	65	1995	0.88	291	99	160	550	0.78	51	2096	130	2277	0.85	1404	4272	5676
5:00 PM - 6:00 PM	501	67	268	836	0.82	72	1682	67	1821	0.95	294	110	143	547	0.78	56	1979	131	2166	0.81	1383	3987	5370
5:15 PM - 6:15 PM	444	61	257	762	0.96	69	1752	76	1897	0.86	251	99	122	472	0.88	53	1978	136	2167	0.81	1234	4064	5298
5:30 PM - 6:30 PM	426	53	248	727	0.91	60	1859	78	1997	0.88	232	90	115	437	0.82	53	2061	116	2230	0.84	1164	4227	5391
5:45 PM - 6:45 PM	378	33	227	638	0.81	55	1984	76	2115	0.89	198	79	87	364	0.86	45	1948	114	2107	0.93	1002	4222	5224
6:00 PM - 7:00 PM	313	35	179	527	0.73	53	2014	68	2135	0.89	192	66	86	344	0.85	40	1942	117	2099	0.93	871	4234	5105

Leesburg Pike (VA-7) & Spring Hill Rd

AM summary (intersection)

Peak Hour: 7:30–8:30 AM — the highest 15-min in the AM peak is 1,493 v (7:30–7:45).

PHV: 7:30–8:30 AM = 5,611 veh/h.

PHF: 5,611 / (4 × 1,493) = 0.94.

PM summary (intersection)

Peak Hour: 4:00–5:00 PM — highest 15-min in this hour is 1,509 v (4:45–5:00).

PHV: 4:00–5:00 PM = 5,756 veh/h.

PHF: 5,756 / (4 × 1,509) = 0.95.

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Wells + Associates, Inc.

McLean, Virginia

Turning Movement Count - All Vehicles

PROJECT: NADA Property
W+A JOB NO: 7671
INTERSECTION: International Dr. & Westpark Rd.
LOCATION: Fairfax County,VA

DATE: 9/11/2019
DAY: Wednesday
WEATHER: clear
COUNTED BY: James, Inita & Admir
INPUTED BY: agan

SOUTHBOUND ROAD: International Drive
NORTHBOUND ROAD: International Drive
WESTBOUND ROAD: Westpark Drive
EASTBOUND ROAD: Westpark Drive

Time	Southbound International Drive					Westbound Westpark Drive					Northbound International Drive					Eastbound Westpark Drive					North & South	East & West	Total
Period	Right	Thru	Left	Total	PHF	Right	Thru	Left	Total	PHF	Right	Thru	Left	Total	PHF	Right	Thru	Left	Total	PHF			
AM 15 Minute Volumes																							
6:00 AM - 6:15 AM	2	16	2	20		7	10	5	22		3	19	3	25		5	7	1	13		45	35	80
6:15 AM - 6:30 AM	5	37	3	45		2	8	4	14		3	15	11	29		12	16	5	33		74	47	121
6:30 AM - 6:45 AM	9	44	2	55		7	14	3	24		10	32	6	48		12	12	3	27		103	51	154
6:45 AM - 7:00 AM	17	80	6	103		11	14	6	31		7	31	8	46		19	24	1	44		149	75	224
7:00 AM - 7:15 AM	33	117	6	156		10	15	9	34		6	45	9	60		26	26	8	60		216	94	310
7:15 AM - 7:30 AM	22	146	16	184		12	30	7	49		9	33	24	66		40	43	7	90		250	139	389
7:30 AM - 7:45 AM	27	167	21	215		4	28	4	36		10	62	23	95		29	39	8	76		310	112	422
7:45 AM - 8:00 AM	39	173	19	231		6	53	14	73		15	54	24	93		39	50	9	98		324	171	495
8:00 AM - 8:15 AM	45	160	32	237		9	51	11	71		21	71	38	130		39	59	3	101		367	172	539
8:15 AM - 8:30 AM	70	176	31	277		14	42	7	63		10	59	38	107		42	69	12	123		384	186	570
8:30 AM - 8:45 AM	49	171	35	255		14	51	10	75		20	64	46	130		27	67	12	106		385	181	566
8:45 AM - 9:00 AM	48	183	50	281		10	61	14	85		17	56	51	124		19	80	15	114		405	199	604
9:00 AM - 9:15 AM	45	195	43	283		11	59	16	86		22	73	56	151		32	60	8	100		434	186	620
9:15 AM - 9:30 AM	71	217	27	315		11	39	13	63		25	66	48	139		37	70	6	113		454	176	630
Total	482	1882	293	2657		128	475	123	726		178	680	385	1243		378	622	98	1098		3900	1824	5724
AM One Hour Volumes																							
6:00 AM - 7:00 AM	33	177	13	223	0.54	27	46	18	91	0.73	23	97	28	148	0.77	48	59	10	117	0.66	371	208	579
6:15 AM - 7:15 AM	64	278	17	359	0.58	30	51	22	103	0.76	26	123	34	183	0.76	69	78	17	164	0.68	542	267	809
6:30 AM - 7:30 AM	81	387	30	498	0.68	40	73	25	138	0.70	32	141	47	220	0.83	97	105	19	221	0.61	718	359	1077
6:45 AM - 7:45 AM	99	510	49	658	0.77	37	87	26	150	0.77	32	171	64	267	0.70	114	132	24	270	0.75	925	420	1345
7:00 AM - 8:00 AM	121	603	62	786	0.85	32	126	34	192	0.66	40	194	80	314	0.83	134	158	32	324	0.83	1100	516	1616
7:15 AM - 8:15 AM	133	646	88	867	0.91	31	162	36	229	0.78	55	220	109	384	0.74	147	191	27	365	0.90	1251	594	1845
7:30 AM - 8:30 AM	181	676	103	960	0.87	33	174	36	243	0.83	56	246	123	425	0.82	149	217	32	398	0.81	1385	641	2026
7:45 AM - 8:45 AM	203	680	117	1000	0.90	43	197	42	282	0.94	66	248	146	460	0.88	147	245	36	428	0.87	1460	710	2170
8:00 AM - 9:00 AM	212	690	148	1050	0.93	47	205	42	294	0.86	68	250	173	491	0.94	127	275	42	444	0.90	1541	738	2279
8:15 AM - 9:15 AM	212	725	159	1096	0.97	49	213	47	309	0.90	69	252	191	512	0.85	120	276	47	443	0.90	1608	752	2360
8:30 AM - 9:30 AM	213	766	155	1134	0.90	46	210	53	309	0.90	84	259	201	544	0.90	115	277	41	433	0.95	1678	742	2420
PM 15 Minute Volumes																							
4:00 PM - 4:15 PM	15	70	6	91		35	70	14	119		12	155	58	225		20	26	25	71		316	190	506
4:15 PM - 4:30 PM	18	81	11	110		43	58	15	116		14	141	58	213		35	51	21	107		323	223	546
4:30 PM - 4:45 PM	14	74	14	102		39	90	13	142		12	117	63	192		22	57	47	126		294	268	562
4:45 PM - 5:00 PM	11	82	21	114		45	93	11	149		19	156	86	261		22	52	15	89		375	238	613
5:00 PM - 5:15 PM	23	81	15	119		47	142	22	211		14	127	72	213		17	67	32	116		332	327	659
5:15 PM - 5:30 PM	31	73	20	124		55	104	14	173		22	131	32	185		13	61	24	98		309	271	580
5:30 PM - 5:45 PM	21	58	18	97		56	112	12	180		22	133	20	175		12	72	29	113		272	293	565
5:45 PM - 6:00 PM	22	72	19	113		55	137	11	203		19	143	50	212		15	87	31	133		325	336	661
6:00 PM - 6:15 PM	18	93	14	125		37	96	26	159		24	121	64	209		25	85	17	127		334	286	620
6:15 PM - 6:30 PM	25	109	11	145		23	75	5	103		38	129	81	248		21	76	18	115		393	218	611
6:30 PM - 6:45 PM	11	48	10	69		16	48	3	67		16	140	75	231		17	26	33	76		300	143	443
6:45 PM - 7:00 PM	13	47	10	70		21	44	8	73		10	107	70	187		19	36	27	82		257	155	412
Total	222	888	169	1279		472	1069	154	1695		222	1600	729	2551		238	696	319	1253		3830	2948	6778
PM One Hour Volumes																							
4:00 PM - 5:00 PM	58	307	52	417	0.91	162	311	53	526	0.88	57	569	265	891	0.85	99	186	108	393	0.78	1308	919	2227
4:15 PM - 5:15 PM	66	318	61	445	0.93	174	383	61	618	0.73	59	541	279	879	0.84	96	227	115	438	0.87	1324	1056	2380
4:30 PM - 5:30 PM	79	310	70	459	0.93	186	429	60	675	0.80	67	531	253	851	0.82	74	237	118	429	0.85	1310	1104	2414
4:45 PM - 5:45 PM	86	294	74	454	0.92	203	451	59	713	0.84	77	547	210	834	0.80	64	252	100	416	0.90	1288	1129	2417
5:00 PM - 6:00 PM	97	284	72	453	0.91	213	495	59	767	0.91	77	534	174	785	0.92	57	287	116	460	0.86	1238	1227	2465
5:15 PM - 6:15 PM	92	296	71	459	0.92	203	449	63	715	0.88	87	528	166	781	0.92	65	305	101	471	0.89	1240	1186	2426
5:30 PM - 6:30 PM	86	332	62	480	0.83	171	420	54	645	0.79	103	526	215	844	0.85	73	320	95	488	0.92	1324	1133	2457
5:45 PM - 6:45 PM	76	322	54	452	0.78	131	356	45	532	0.66	97	533	270	900	0.91	78	274	99	451	0.85	1352	983	2335
6:00 PM - 7:00 PM	67	297	45	409	0.71	97	263	42	402	0.63	88	497	290	875	0.88	82	223	95	400	0.79	1284	802	2086

International Dr & Westpark Dr

AM summary (intersection)

Peak Hour: 8:30–9:30 AM — the highest 15-min in AM peak is 630 v (8:45–9:00).

PHV: 8:30–9:30 AM = 2,420 veh/h.

PHF: 2,420 / (4 × 630) = 0.96.

PM summary (intersection)

Peak Hour: 5:00–6:00 PM — the highest 15-min in PM peak is 661 v (5:45–6:00).

PHV: 5:00–6:00 PM = 2,465 veh/h.

PHF: 2,465 / (4 × 661) = 0.93.

Appendix D

Synchro Output – Existing AM Peak

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	541	2417	237	43	1791	218	380	356	66	84	88	91
Future Volume (vph)	541	2417	237	43	1791	218	380	356	66	84	88	91
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	150		150	150		150	150		150	150		150
Storage Lanes	2		0	2		0	1		1	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	0.97	0.86	0.86	0.97	0.86	0.86	0.91	0.91	1.00	0.91	0.91	1.00
Frt		0.987			0.984				0.850			0.850
Flt Protected	0.950			0.950			0.950	0.985		0.950	0.985	
Satd. Flow (prot)	3433	6325	0	3433	6305	0	1610	3339	1583	1610	3339	1583
Flt Permitted	0.250			0.250			0.659	0.815		0.412	0.786	
Satd. Flow (perm)	903	6325	0	903	6305	0	1117	2763	1583	698	2665	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		67			89				27			27
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		448			1349			324			554	
Travel Time (s)		10.2			30.7			7.4			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)	588	2627	258	47	1947	237	413	387	72	91	96	99
Shared Lane Traffic (%)							40%			48%		
Lane Group Flow (vph)	588	2885	0	47	2184	0	248	552	72	47	140	99
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)		24			24			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	Perm	NA		Perm	NA		Perm	NA	Perm	Perm	NA	Perm
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2		2	6		6
Minimum Split (s)	20.0	20.0		20.0	20.0		20.0	20.0	20.0	20.0	20.0	20.0
Total Split (s)	20.0	20.0		20.0	20.0		20.0	20.0	20.0	20.0	20.0	20.0
Total Split (%)	50.0%	50.0%		50.0%	50.0%		50.0%	50.0%	50.0%	50.0%	50.0%	50.0%
Maximum Green (s)	16.0	16.0		16.0	16.0		16.0	16.0	16.0	16.0	16.0	16.0
Yellow Time (s)	3.5	3.5		3.5	3.5		3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5		0.5	0.5		0.5	0.5	0.5	0.5	0.5	0.5
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)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag												
Lead-Lag Optimize?												
Walk Time (s)	5.0	5.0		5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0
Flash Don't 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)	16.0	16.0		16.0	16.0		16.0	16.0	16.0	16.0	16.0	16.0
Actuated g/C Ratio	0.40	0.40		0.40	0.40		0.40	0.40	0.40	0.40	0.40	0.40
v/c Ratio	0.67	1.02		0.13	0.85		0.56	0.50	0.11	0.17	0.13	0.15

Educational Use Only

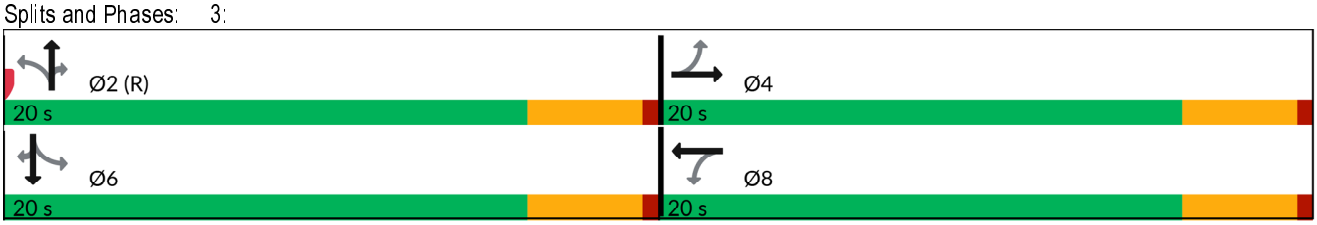
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Control Delay (s/veh)	314.7	76.9		8.8	15.0		15.2	10.9	6.0	9.7	8.1	6.8
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	314.7	76.9		8.8	15.0		15.2	10.9	6.0	9.7	8.1	6.8
LOS	F	E		A	B		B	B	A	A	A	A
Approach Delay (s/veh)		117.2			14.9			11.7			7.9	
Approach LOS		F			B			B			A	
Queue Length 50th (ft)	~105	~232		3	115		43	47	6	6	10	9
Queue Length 95th (ft)	#177	#303		10	#162		102	81	22	24	22	29
Internal Link Dist (ft)		368			1269			244			474	
Turn Bay Length (ft)	150			150			150		150	150		150
Base Capacity (vph)	361	2570		361	2575		446	1105	649	279	1066	649
Starvation Cap Reductn	0	0		0	0		0	0	0	0	0	0
Spillback Cap Reductn	0	0		0	0		0	0	0	0	0	0
Storage Cap Reductn	0	0		0	0		0	0	0	0	0	0
Reduced v/c Ratio	1.63	1.12		0.13	0.85		0.56	0.50	0.11	0.17	0.13	0.15

Intersection Summary	
Area Type: Other	
Cycle Length: 40	
Actuated Cycle Length: 40	
Offset: 8 (20%), Referenced to phase 2:NBTL, Start of Green	
Natural Cycle: 45	
Control Type: Pretimed	
Maximum v/c Ratio: 1.63	
Intersection Signal Delay (s/veh): 66.0	Intersection LOS: E
Intersection Capacity Utilization 75.6%	ICU Level of Service D
Analysis Period (min) 15	

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 3:



Educational Use Only

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	20	190	246	301	321	11	134	13	68	5	9	23
Future Volume (vph)	20	190	246	301	321	11	134	13	68	5	9	23
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	0.95	0.95	0.95	1.00	1.00	1.00	1.00
Frt			0.850		0.995				0.850			0.850
Flt Protected	0.950			0.950			0.950	0.960		0.950		
Satd. Flow (prot)	1770	3539	1583	1770	3522	0	1681	1699	1583	1770	1863	1583
Flt Permitted	0.496			0.622			0.950	0.960		0.702		
Satd. Flow (perm)	924	3539	1583	1159	3522	0	1681	1699	1583	1308	1863	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			267		5				97			97
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		928			519			278			361	
Travel Time (s)		21.1			11.8			6.3			8.2	
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)	22	207	267	327	349	12	146	14	74	5	10	25
Shared Lane Traffic (%)							45%					
Lane Group Flow (vph)	22	207	267	327	361	0	80	80	74	5	10	25
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	Perm	NA	Perm	Perm	NA		Split	NA	Perm	Perm	NA	Perm
Protected Phases		4			8		2	2			6	
Permitted Phases	4		4	8					2	6		6
Minimum Split (s)	22.5	22.5	22.5	22.5	22.5		22.5	22.5	22.5	22.5	22.5	22.5
Total Split (s)	22.5	22.5	22.5	22.5	22.5		22.5	22.5	22.5	22.5	22.5	22.5
Total Split (%)	33.3%	33.3%	33.3%	33.3%	33.3%		33.3%	33.3%	33.3%	33.3%	33.3%	33.3%
Maximum Green (s)	18.0	18.0	18.0	18.0	18.0		18.0	18.0	18.0	18.0	18.0	18.0
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5		3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5		4.5	4.5	4.5	4.5	4.5	4.5
Lead/Lag												
Lead-Lag Optimize?												
Walk Time (s)	7.0	7.0	7.0	7.0	7.0		7.0	7.0	7.0	7.0	7.0	7.0
Flash Don't Walk (s)	11.0	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	0
Act Effct Green (s)	18.0	18.0	18.0	18.0	18.0		18.0	18.0	18.0	18.0	18.0	18.0
Actuated g/C Ratio	0.27	0.27	0.27	0.27	0.27		0.27	0.27	0.27	0.27	0.27	0.27
v/c Ratio	0.09	0.22	0.43	1.06	0.38		0.18	0.18	0.15	0.01	0.02	0.05
Control Delay (s/veh)	19.9	20.0	5.5	96.1	21.4		20.4	20.4	4.0	18.4	18.4	0.2
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	19.9	20.0	5.5	96.1	21.4		20.4	20.4	4.0	18.4	18.4	0.2

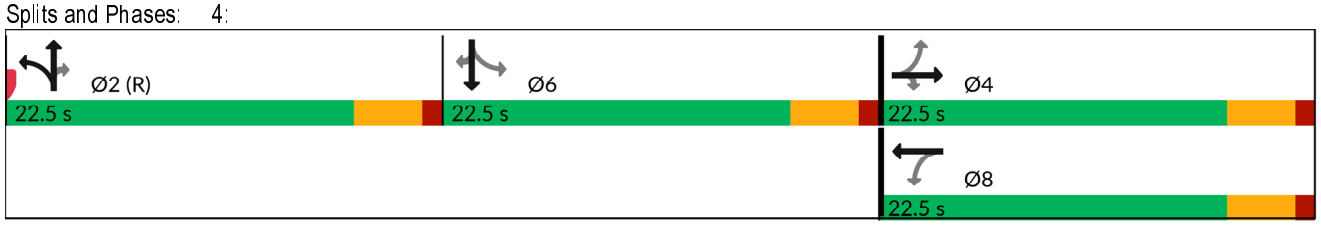
Educational Use Only

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
LOS	B	C	A	F	C		C	C	A	B	B	A
Approach Delay (s/veh)		12.2			56.9			15.2			7.0	
Approach LOS		B			E			B			A	
Queue Length 50th (ft)	7	34	0	~152	63		26	26	0	2	3	0
Queue Length 95th (ft)	23	60	50	#296	98		58	58	20	9	13	0
Internal Link Dist (ft)		848			439			198			281	
Turn Bay Length (ft)												
Base Capacity (vph)	246	943	617	309	942		448	453	493	348	496	493
Starvation Cap Reductn	0	0	0	0	0		0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0		0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0		0	0	0	0	0	0
Reduced v/c Ratio	0.09	0.22	0.43	1.06	0.38		0.18	0.18	0.15	0.01	0.02	0.05

Intersection Summary	
Area Type: Other	
Cycle Length: 67.5	
Actuated Cycle Length: 67.5	
Offset: 0 (0%), Referenced to phase 2:NBTL, Start of Green	
Natural Cycle: 75	
Control Type: Pretimed	
Maximum v/c Ratio: 1.06	
Intersection Signal Delay (s/veh): 33.6	Intersection LOS: C
Intersection Capacity Utilization 47.3%	ICU Level of Service A
Analysis Period (min) 15	

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 4:



Educational Use Only

Lane Group	SEL	SET	NWT	NWR	SWL	SWR
Lane Configurations						
Traffic Volume (vph)	0	0	2426	138	0	4
Future Volume (vph)	0	0	2426	138	0	4
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	0.86	0.86	0.86	1.00	1.00
Frt			0.992			0.865
Flt Protected						
Satd. Flow (prot)	0	6408	6357	0	0	1611
Flt Permitted						
Satd. Flow (perm)	0	6408	6357	0	0	1611
Link Speed (mph)		30	30		30	
Link Distance (ft)		1623	448		540	
Travel Time (s)		36.9	10.2		12.3	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	2637	150	0	4
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	2787	0	0	4
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		24	24		0	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15			9	15	9
Sign Control		Free	Free		Stop	

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	
Intersection Capacity Utilization 47.5%	ICU Level of Service A
Analysis Period (min) 15	

Educational Use Only

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations												
Traffic Volume (vph)	34	42	34	96	90	114	192	2884	125	170	1689	144
Future Volume (vph)	34	42	34	96	90	114	192	2884	125	170	1689	144
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	0.95	0.95	1.00	0.97	1.00	1.00	0.97	0.86	0.86	1.00	0.86	0.86
Frt			0.850			0.850		0.994			0.988	
Flt Protected	0.950	0.996		0.950			0.950			0.950		
Satd. Flow (prot)	1681	1763	1583	3433	1863	1583	3433	6369	0	1770	6331	0
Flt Permitted	0.694	0.985		0.723			0.222			0.222		
Satd. Flow (perm)	1228	1743	1583	2613	1863	1583	802	6369	0	414	6331	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			36			36		22			50	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		694			378			968			1623	
Travel Time (s)		15.8			8.6			22.0			36.9	
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)	37	46	37	104	98	124	209	3135	136	185	1836	157
Shared Lane Traffic (%)	10%											
Lane Group Flow (vph)	33	50	37	104	98	124	209	3271	0	185	1993	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)		24			24			24			24	
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	Perm	NA	Perm	Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		4			8			6			2	
Permitted Phases	4		4	8		8	6			2		
Minimum Split (s)	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5		22.5	22.5	
Total Split (s)	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5		22.5	22.5	
Total Split (%)	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%		50.0%	50.0%	
Maximum Green (s)	18.0	18.0	18.0	18.0	18.0	18.0	18.0	18.0		18.0	18.0	
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5		3.5	3.5	
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0		1.0	1.0	
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)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5		4.5	4.5	
Lead/Lag												
Lead-Lag Optimize?												
Walk Time (s)	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0		7.0	7.0	
Flash Don't 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)	18.0	18.0	18.0	18.0	18.0	18.0	18.0	18.0		18.0	18.0	
Actuated g/C Ratio	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40		0.40	0.40	
v/c Ratio	0.07	0.07	0.06	0.10	0.13	0.19	0.65	1.28		1.12	0.78	
Control Delay (s/veh)	8.9	8.8	4.1	8.8	9.2	7.6	24.4	146.5		130.5	14.1	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay (s/veh)	8.9	8.8	4.1	8.8	9.2	7.6	24.4	146.5		130.5	14.1	

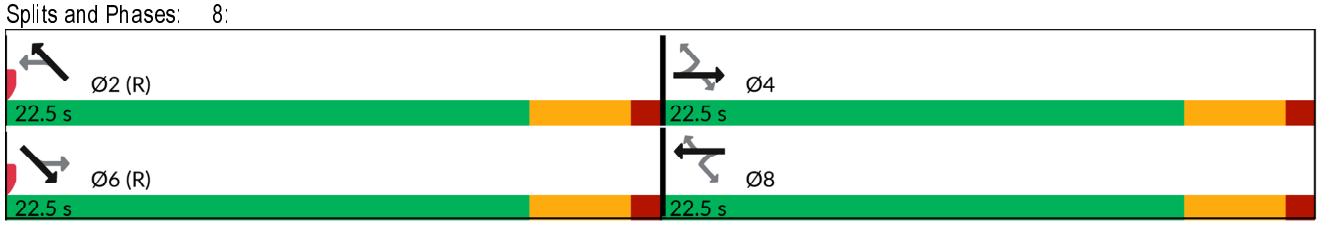
Educational Use Only

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	SEL	SET	SER	NWL	NWT	NWR
LOS	A	A	A	A	A	A	C	F		F	B	
Approach Delay (s/veh)		7.3			8.4			139.2			24.0	
Approach LOS		A			A			F			C	
Queue Length 50th (ft)	5	8	0	8	15	14	21	~334		~58	119	
Queue Length 95th (ft)	17	23	12	19	36	38	#64	#409		#151	157	
Internal Link Dist (ft)		614			298			888			1543	
Turn Bay Length (ft)												
Base Capacity (vph)	491	697	654	1045	745	654	320	2560		165	2562	
Starvation Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Spillback Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Storage Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Reduced v/c Ratio	0.07	0.07	0.06	0.10	0.13	0.19	0.65	1.28		1.12	0.78	

Intersection Summary	
Area Type:	Other
Cycle Length: 45	
Actuated Cycle Length: 45	
Offset: 0 (0%), Referenced to phase 2:NWTL and 6:SETL, Start of Green	
Natural Cycle: 65	
Control Type: Pretimed	
Maximum v/c Ratio: 1.28	
Intersection Signal Delay (s/veh): 88.5	Intersection LOS: F
Intersection Capacity Utilization 74.0%	ICU Level of Service D
Analysis Period (min) 15	

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 8:



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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations												
Traffic Volume (vph)	0	948	0	0	458	3	0	0	27	0	0	0
Future Volume (vph)	0	948	0	0	458	3	0	0	27	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	0.91	0.91	1.00	0.91	0.91	1.00	1.00	1.00	1.00	1.00	1.00
Frt					0.999				0.865			
Flt Protected												
Satd. Flow (prot)	0	5085	0	0	5080	0	0	0	1611	0	0	1863
Flt Permitted												
Satd. Flow (perm)	0	5085	0	0	5080	0	0	0	1611	0	0	1863
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		284			316			426			482	
Travel Time (s)		6.5			7.2			9.7			11.0	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	1030	0	0	498	3	0	0	29	0	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	1030	0	0	501	0	0	0	29	0	0	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)		0			0			0			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	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Free			Free			Stop			Stop	

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	
Intersection Capacity Utilization 21.7%	ICU Level of Service A
Analysis Period (min) 15	

Educational Use Only

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	109	271	105	60	62	36	162	411	487	184	274	83
Future Volume (vph)	109	271	105	60	62	36	162	411	487	184	274	83
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.91	0.91	1.00	0.91	0.91
Frt		0.958			0.945			0.919			0.965	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	1785	0	1770	1760	0	1770	4673	0	1770	4907	0
Flt Permitted	0.689			0.422			0.514			0.247		
Satd. Flow (perm)	1283	1785	0	786	1760	0	957	4673	0	460	4907	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		52			39			421			90	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		324			949			316			728	
Travel Time (s)		7.4			21.6			7.2			16.5	
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)	118	295	114	65	67	39	176	447	529	200	298	90
Shared Lane Traffic (%)												
Lane Group Flow (vph)	118	409	0	65	106	0	176	976	0	200	388	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	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Minimum Split (s)	22.5	22.5		22.5	22.5		22.5	22.5		22.5	22.5	
Total Split (s)	22.5	22.5		22.5	22.5		22.5	22.5		22.5	22.5	
Total Split (%)	50.0%	50.0%		50.0%	50.0%		50.0%	50.0%		50.0%	50.0%	
Maximum Green (s)	18.0	18.0		18.0	18.0		18.0	18.0		18.0	18.0	
Yellow Time (s)	3.5	3.5		3.5	3.5		3.5	3.5		3.5	3.5	
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0		1.0	1.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.5	4.5		4.5	4.5		4.5	4.5		4.5	4.5	
Lead/Lag												
Lead-Lag Optimize?												
Walk Time (s)	7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0	
Flash Don't 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	18.0		18.0	18.0		18.0	18.0		18.0	18.0	
Actuated g/C Ratio	0.40	0.40		0.40	0.40		0.40	0.40		0.40	0.40	
v/c Ratio	0.23	0.55		0.21	0.15		0.46	0.46		1.09	0.19	
Control Delay (s/veh)	10.5	12.4		11.0	6.7		14.9	6.2		117.6	16.1	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay (s/veh)	10.5	12.4		11.0	6.7		14.9	6.2		117.6	16.1	

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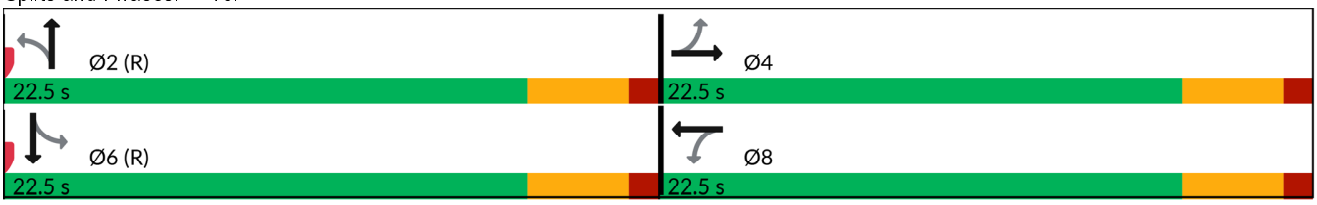
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
LOS	B	B		B	A		B	A		F	B	
Approach Delay (s/veh)		12.0			8.3			7.5			50.6	
Approach LOS		B			A			A			D	
Queue Length 50th (ft)	19	65		10	10		32	33		~60	27	
Queue Length 95th (ft)	45	129		31	31		75	57		m#147	54	
Internal Link Dist (ft)		244			869			236			648	
Turn Bay Length (ft)												
Base Capacity (vph)	513	745		314	727		382	2121		184	2016	
Starvation Cap Reductn	0	0		0	0		0	0		0	0	
Spillback Cap Reductn	0	0		0	0		0	0		0	0	
Storage Cap Reductn	0	0		0	0		0	0		0	0	
Reduced v/c Ratio	0.23	0.55		0.21	0.15		0.46	0.46		1.09	0.19	

Intersection Summary	
Area Type:	Other
Cycle Length: 45	
Actuated Cycle Length: 45	
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green	
Natural Cycle: 55	
Control Type: Pretimed	
Maximum v/c Ratio: 1.09	
Intersection Signal Delay (s/veh): 18.9	Intersection LOS: B
Intersection Capacity Utilization 68.9%	ICU Level of Service C
Analysis Period (min) 15	

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 16:



Educational Use Only

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations												
Traffic Volume (vph)	51	1017	9	5	274	86	3	0	6	0	0	2
Future Volume (vph)	51	1017	9	5	274	86	3	0	6	0	0	2
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	0.91	0.91	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.999			0.964			0.850				0.850
Flt Protected	0.950			0.950			0.950					
Satd. Flow (prot)	1770	5080	0	1770	3412	0	1770	1583	0	1863	0	1583
Flt Permitted	0.950			0.950			0.950					
Satd. Flow (perm)	1770	5080	0	1770	3412	0	1770	1583	0	1863	0	1583
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		554			284			275			473	
Travel Time (s)		12.6			6.5			6.3			10.8	
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
Adj. Flow (vph)	55	1105	10	5	298	93	3	0	7	0	0	2
Shared Lane Traffic (%)												
Lane Group Flow (vph)	55	1115	0	5	391	0	3	7	0	0	0	2
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)		24			24			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
Sign Control		Free			Free			Stop			Stop	

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	
Intersection Capacity Utilization 36.5%	ICU Level of Service A
Analysis Period (min) 15	

Educational Use Only

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL2	NBL	NBR	SEL	SER	SER2
Lane Configurations												
Traffic Volume (vph)	201	259	84	155	766	213	53	210	46	115	277	41
Future Volume (vph)	201	259	84	155	766	213	53	210	46	115	277	41
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	0.97	0.97	1.00	1.00	0.76	1.00
Frt			0.850			0.850			0.850		0.850	
Flt Protected	0.950			0.950			0.950	0.950		0.950		
Satd. Flow (prot)	1770	3539	1583	1770	3539	1583	3433	3433	1583	1770	3610	0
Flt Permitted	0.259			0.579			0.500	0.955		0.612		
Satd. Flow (perm)	482	3539	1583	1079	3539	1583	1807	3451	1583	1140	3610	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			91			232			50		45	
Link Speed (mph)		30			30			30		30		
Link Distance (ft)		728			572			642		887		
Travel Time (s)		16.5			13.0			14.6		20.2		
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)	218	282	91	168	833	232	58	228	50	125	301	45
Shared Lane Traffic (%)												
Lane Group Flow (vph)	218	282	91	168	833	232	58	228	50	125	346	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	Right	Right
Median Width(ft)		12			12			48		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	15	9	15	9	9
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Perm	Perm	Perm	Perm	Prot	
Protected Phases		2			6						4	
Permitted Phases	2		2	6		6	8	8	8	4		
Minimum Split (s)	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	
Total Split (s)	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	
Total Split (%)	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	
Maximum Green (s)	18.0	18.0	18.0	18.0	18.0	18.0	18.0	18.0	18.0	18.0	18.0	
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	
Lead/Lag												
Lead-Lag Optimize?												
Walk Time (s)	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	
Flash Don't Walk (s)	11.0	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	0	
Act Effct Green (s)	18.0	18.0	18.0	18.0	18.0	18.0	18.0	18.0	18.0	18.0	18.0	
Actuated g/C Ratio	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	
v/c Ratio	1.14	0.20	0.13	0.39	0.59	0.30	0.08	0.17	0.08	0.27	0.24	
Control Delay (s/veh)	129.8	12.3	6.4	13.0	12.7	2.9	8.8	9.1	3.7	11.2	8.2	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay (s/veh)	129.8	12.3	6.4	13.0	12.7	2.9	8.8	9.1	3.7	11.2	8.2	

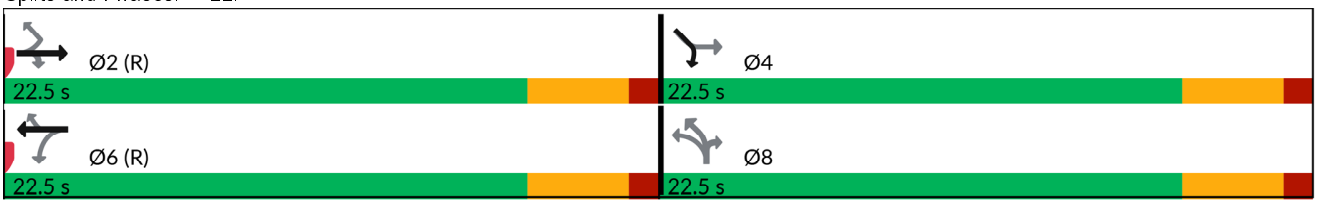
Educational Use Only

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL2	NBL	NBR	SEL	SER	SER2
LOS	F	B	A	B	B	A	A	A	A	B	A	
Approach Delay (s/veh)		54.7			10.9			8.2		9.0		
Approach LOS		D			B			A		A		
Queue Length 50th (ft)	~67	28	0	29	83	0	4	18	0	21	21	
Queue Length 95th (ft)	#172	54	m20	67	127	29	12	34	14	49	38	
Internal Link Dist (ft)		648			492			562		807		
Turn Bay Length (ft)												
Base Capacity (vph)	192	1415	687	431	1415	772	722	1380	663	456	1471	
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	
Reduced v/c Ratio	1.14	0.20	0.13	0.39	0.59	0.30	0.08	0.17	0.08	0.27	0.24	

Intersection Summary	
Area Type:	Other
Cycle Length: 45	
Actuated Cycle Length: 45	
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green	
Natural Cycle: 60	
Control Type: Pretimed	
Maximum v/c Ratio: 1.14	
Intersection Signal Delay (s/veh): 20.1	Intersection LOS: C
Intersection Capacity Utilization 59.7%	ICU Level of Service B
Analysis Period (min) 15	

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 22:



Educational Use Only

Lane Group	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (vph)	14	448	41	3	260	22	0	0	2	60	0	42
Future Volume (vph)	14	448	41	3	260	22	0	0	2	60	0	42
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
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		0.989			0.990				0.865			0.850
Flt Protected		0.999								0.950		
Satd. Flow (prot)	0	1840	0	0	1844	0	0	0	1611	1770	0	1583
Flt Permitted		0.999								0.950		
Satd. Flow (perm)	0	1840	0	0	1844	0	0	0	1611	1770	0	1583
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		954			324			275			312	
Travel Time (s)		21.7			7.4			6.3			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)	15	487	45	3	283	24	0	0	2	65	0	46
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	547	0	0	310	0	0	0	2	65	0	46
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)		0			0			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane		Yes										
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
Sign Control		Free			Free			Free			Free	

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	
Intersection Capacity Utilization 44.8%	ICU Level of Service A
Analysis Period (min) 15	

Educational Use Only

Appendix E

Synchro Output – Existing PM Peak

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	145	1971	655	147	1814	124	454	160	135	295	570	559
Future Volume (vph)	145	1971	655	147	1814	124	454	160	135	295	570	559
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	150		150	150		150	150		150	150		150
Storage Lanes	2		0	2		0	1		1	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	0.97	0.86	0.86	0.97	0.86	0.86	0.91	0.91	1.00	0.91	0.91	1.00
Frt		0.963			0.990				0.850			0.850
Flt Protected	0.950			0.950			0.950	0.972		0.950	0.996	
Satd. Flow (prot)	3433	6171	0	3433	6344	0	1610	3295	1583	1610	3377	1583
Flt Permitted	0.250			0.250			0.330	0.620		0.497	0.893	
Satd. Flow (perm)	903	6171	0	903	6344	0	559	2102	1583	842	3027	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		141			42				27			27
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		448			1349			324			554	
Travel Time (s)		10.2			30.7			7.4			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)	158	2142	712	160	1972	135	493	174	147	321	620	608
Shared Lane Traffic (%)							50%			17%		
Lane Group Flow (vph)	158	2854	0	160	2107	0	246	421	147	266	675	608
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)		24			24			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	Perm	NA		Perm	NA		Perm	NA	Perm	Perm	NA	Perm
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2		2	6		6
Minimum Split (s)	20.0	20.0		20.0	20.0		20.0	20.0	20.0	20.0	20.0	20.0
Total Split (s)	20.0	20.0		20.0	20.0		20.0	20.0	20.0	20.0	20.0	20.0
Total Split (%)	50.0%	50.0%		50.0%	50.0%		50.0%	50.0%	50.0%	50.0%	50.0%	50.0%
Maximum Green (s)	16.0	16.0		16.0	16.0		16.0	16.0	16.0	16.0	16.0	16.0
Yellow Time (s)	3.5	3.5		3.5	3.5		3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5		0.5	0.5		0.5	0.5	0.5	0.5	0.5	0.5
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)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag												
Lead-Lag Optimize?												
Walk Time (s)	5.0	5.0		5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0
Flash Don't 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)	16.0	16.0		16.0	16.0		16.0	16.0	16.0	16.0	16.0	16.0
Actuated g/C Ratio	0.40	0.40		0.40	0.40		0.40	0.40	0.40	0.40	0.40	0.40
v/c Ratio	0.47	1.02		0.41	0.82		1.00	1.06dl	0.23	0.79	0.56	0.94

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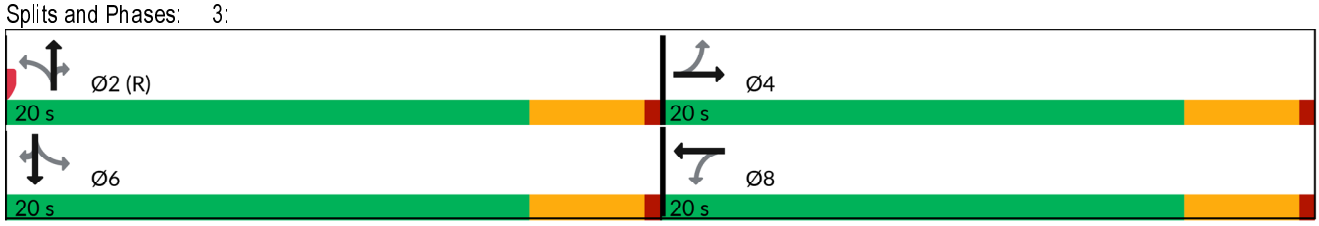
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Control Delay (s/veh)	13.6	74.7		13.7	14.3		113.1	11.6	7.8	33.3	11.5	39.0
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	13.6	74.7		13.7	14.3		113.1	11.6	7.8	33.3	11.5	39.0
LOS	B	E		B	B		F	B	A	C	B	D
Approach Delay (s/veh)		71.5			14.2			41.6			26.0	
Approach LOS		E			B			D			C	

Intersection Summary	
Area Type: Other	
Cycle Length: 40	
Actuated Cycle Length: 40	
Offset: 8 (20%), Referenced to phase 2:NBTL, Start of Green	
Natural Cycle: 55	
Control Type: Pretimed	
Maximum v/c Ratio: 1.12	
Intersection Signal Delay (s/veh): 42.1	Intersection LOS: D
Intersection Capacity Utilization 85.9%	ICU Level of Service E
Analysis Period (min) 15	

dl Defacto Left Lane. Recode with 1 though lane as a left lane.

Splits and Phases: 3:



Educational Use Only

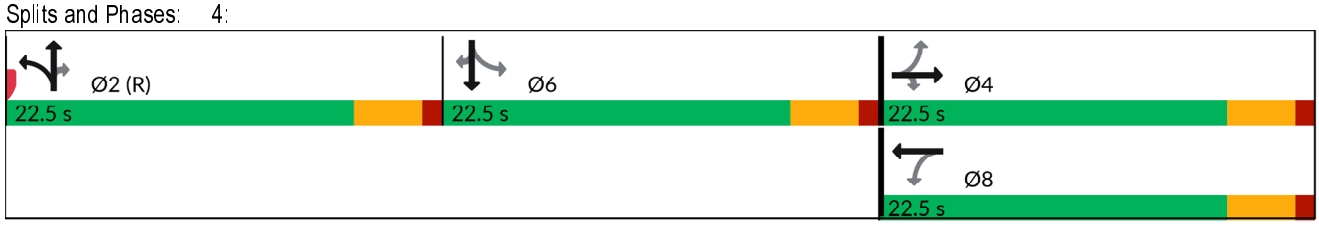
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	23	246	194	125	281	6	511	25	263	8	9	20
Future Volume (vph)	23	246	194	125	281	6	511	25	263	8	9	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	0.95	0.95	0.95	1.00	1.00	1.00	1.00
Frt			0.850		0.997				0.850			0.850
Flt Protected	0.950			0.950			0.950	0.957		0.950		
Satd. Flow (prot)	1770	3539	1583	1770	3529	0	1681	1694	1583	1770	1863	1583
Flt Permitted	0.548			0.587			0.950	0.957		0.573		
Satd. Flow (perm)	1021	3539	1583	1093	3529	0	1681	1694	1583	1067	1863	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			211		3				286			97
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		928			519			278			361	
Travel Time (s)		21.1			11.8			6.3			8.2	
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)	25	267	211	136	305	7	555	27	286	9	10	22
Shared Lane Traffic (%)							48%					
Lane Group Flow (vph)	25	267	211	136	312	0	289	293	286	9	10	22
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	Perm	NA	Perm	Perm	NA		Split	NA	Perm	Perm	NA	Perm
Protected Phases		4			8		2	2			6	
Permitted Phases	4		4	8					2	6		6
Minimum Split (s)	22.5	22.5	22.5	22.5	22.5		22.5	22.5	22.5	22.5	22.5	22.5
Total Split (s)	22.5	22.5	22.5	22.5	22.5		22.5	22.5	22.5	22.5	22.5	22.5
Total Split (%)	33.3%	33.3%	33.3%	33.3%	33.3%		33.3%	33.3%	33.3%	33.3%	33.3%	33.3%
Maximum Green (s)	18.0	18.0	18.0	18.0	18.0		18.0	18.0	18.0	18.0	18.0	18.0
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5		3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5		4.5	4.5	4.5	4.5	4.5	4.5
Lead/Lag												
Lead-Lag Optimize?												
Walk Time (s)	7.0	7.0	7.0	7.0	7.0		7.0	7.0	7.0	7.0	7.0	7.0
Flash Don't Walk (s)	11.0	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	0
Act Effct Green (s)	18.0	18.0	18.0	18.0	18.0		18.0	18.0	18.0	18.0	18.0	18.0
Actuated g/C Ratio	0.27	0.27	0.27	0.27	0.27		0.27	0.27	0.27	0.27	0.27	0.27
v/c Ratio	0.09	0.28	0.37	0.47	0.33		0.65	0.65	0.45	0.03	0.02	0.04
Control Delay (s/veh)	19.8	20.6	5.4	27.0	20.9		29.7	29.8	5.5	18.9	18.4	0.2
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	19.8	20.6	5.4	27.0	20.9		29.7	29.8	5.5	18.9	18.4	0.2

Educational Use Only

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
LOS	B	C	A	C	C		C	C	A	B	B	A
Approach Delay (s/veh)		14.2			22.8			21.8			8.7	
Approach LOS		B			C			C			A	

Intersection Summary	
Area Type:	Other
Cycle Length: 67.5	
Actuated Cycle Length: 67.5	
Offset: 0 (0%), Referenced to phase 2:NBTL, Start of Green	
Natural Cycle: 70	
Control Type: Pretimed	
Maximum v/c Ratio: 0.65	
Intersection Signal Delay (s/veh): 19.7	Intersection LOS: B
Intersection Capacity Utilization 46.5%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 4:



Educational Use Only

Lane Group	SEL	SET	NWT	NWR	SWL	SWR
Lane Configurations						
Traffic Volume (vph)	0	0	2745	2	0	77
Future Volume (vph)	0	0	2745	2	0	77
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	0.86	0.86	0.86	1.00	1.00
Frt						0.865
Flt Protected						
Satd. Flow (prot)	0	6408	6408	0	0	1611
Flt Permitted						
Satd. Flow (perm)	0	6408	6408	0	0	1611
Link Speed (mph)		30	30		30	
Link Distance (ft)		1623	448		540	
Travel Time (s)		36.9	10.2		12.3	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	2984	2	0	84
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	2986	0	0	84
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		24	24		0	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15			9	15	9
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 51.2%		ICU Level of Service A	
Analysis Period (min) 15			

Educational Use Only

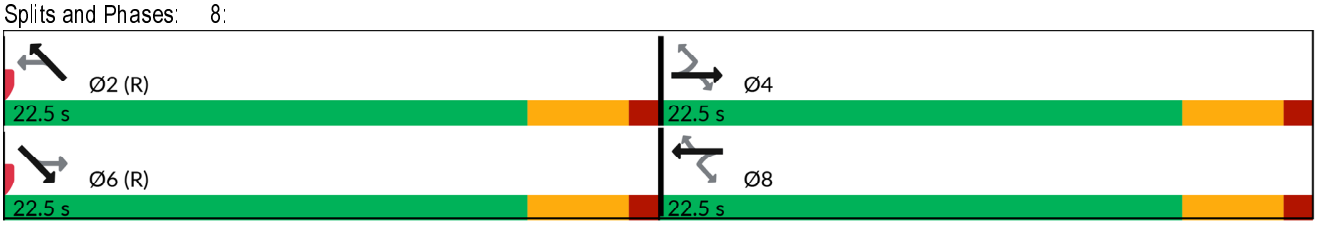
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations												
Traffic Volume (vph)	128	62	174	232	54	469	120	2059	47	72	2249	90
Future Volume (vph)	128	62	174	232	54	469	120	2059	47	72	2249	90
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	0.95	0.95	1.00	0.97	1.00	1.00	0.97	0.86	0.86	1.00	0.86	0.86
Frt			0.850			0.850		0.997			0.994	
Flt Protected	0.950	0.982		0.950			0.950			0.950		
Satd. Flow (prot)	1681	1738	1583	3433	1863	1583	3433	6389	0	1770	6369	0
Flt Permitted	0.719	0.900		0.684			0.222			0.222		
Satd. Flow (perm)	1272	1593	1583	2472	1863	1583	802	6389	0	414	6369	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			36			36		11			20	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		694			378			968			1623	
Travel Time (s)		15.8			8.6			22.0			36.9	
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)	139	67	189	252	59	510	130	2238	51	78	2445	98
Shared Lane Traffic (%)	29%											
Lane Group Flow (vph)	99	107	189	252	59	510	130	2289	0	78	2543	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)		24			24			24			24	
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	Perm	NA	Perm	Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		4			8			6			2	
Permitted Phases	4		4	8		8	6			2		
Minimum Split (s)	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5		22.5	22.5	
Total Split (s)	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5		22.5	22.5	
Total Split (%)	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%		50.0%	50.0%	
Maximum Green (s)	18.0	18.0	18.0	18.0	18.0	18.0	18.0	18.0		18.0	18.0	
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5		3.5	3.5	
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0		1.0	1.0	
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)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5		4.5	4.5	
Lead/Lag												
Lead-Lag Optimize?												
Walk Time (s)	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0		7.0	7.0	
Flash Don't 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)	18.0	18.0	18.0	18.0	18.0	18.0	18.0	18.0		18.0	18.0	
Actuated g/C Ratio	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40		0.40	0.40	
v/c Ratio	0.19	0.17	0.29	0.26	0.08	0.78	0.41	0.89		0.47	0.99	
Control Delay (s/veh)	10.1	9.6	8.9	9.9	8.8	22.3	14.6	19.0		22.8	32.2	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay (s/veh)	10.1	9.6	8.9	9.9	8.8	22.3	14.6	19.0		22.8	32.2	

Educational Use Only

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	SEL	SET	SER	NWL	NWT	NWR
LOS	B	A	A	A	A	C	B	B		C	C	
Approach Delay (s/veh)		9.4			17.6			18.8			31.9	
Approach LOS		A			B			B			C	

Intersection Summary	
Area Type:	Other
Cycle Length: 45	
Actuated Cycle Length: 45	
Offset: 0 (0%), Referenced to phase 2:NWTL and 6:SETL, Start of Green	
Natural Cycle: 55	
Control Type: Pretimed	
Maximum v/c Ratio: 0.99	
Intersection Signal Delay (s/veh): 23.5	Intersection LOS: C
Intersection Capacity Utilization 79.6%	ICU Level of Service D
Analysis Period (min) 15	

Splits and Phases: 8:



Educational Use Only

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations												
Traffic Volume (vph)	0	465	0	0	108	1	0	0	11	0	0	0
Future Volume (vph)	0	465	0	0	108	1	0	0	11	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	0.91	0.91	1.00	0.91	0.91	1.00	1.00	1.00	1.00	1.00	1.00
Frt					0.999				0.865			
Flt Protected												
Satd. Flow (prot)	0	5085	0	0	5080	0	0	0	1611	0	0	1863
Flt Permitted												
Satd. Flow (perm)	0	5085	0	0	5080	0	0	0	1611	0	0	1863
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		284			316			426			482	
Travel Time (s)		6.5			7.2			9.7			11.0	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	505	0	0	117	1	0	0	12	0	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	505	0	0	118	0	0	0	12	0	0	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)		0			0			0			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	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Free			Free			Stop			Stop	

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	
Intersection Capacity Utilization 13.3%	ICU Level of Service A
Analysis Period (min) 15	

Educational Use Only

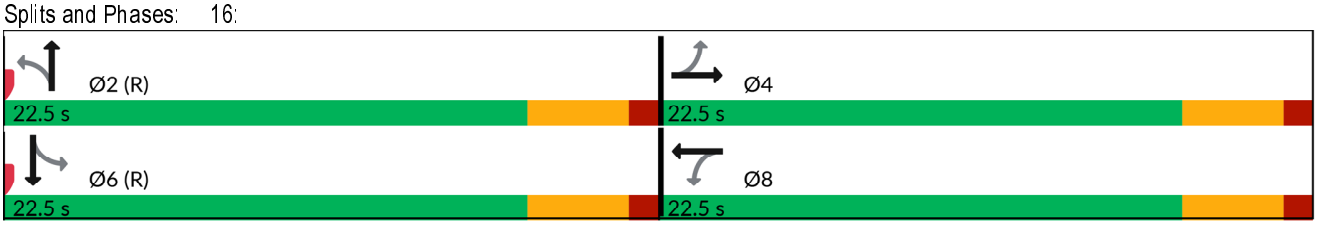
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	157	153	124	329	380	163	108	235	123	36	563	115
Future Volume (vph)	157	153	124	329	380	163	108	235	123	36	563	115
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.91	0.91	1.00	0.91	0.91
Frt		0.933			0.955			0.948			0.975	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	1738	0	1770	1779	0	1770	4821	0	1770	4958	0
Flt Permitted	0.229			0.547			0.355			0.513		
Satd. Flow (perm)	427	1738	0	1019	1779	0	661	4821	0	956	4958	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		108			57			134			115	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		324			949			316			728	
Travel Time (s)		7.4			21.6			7.2			16.5	
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)	171	166	135	358	413	177	117	255	134	39	612	125
Shared Lane Traffic (%)												
Lane Group Flow (vph)	171	301	0	358	590	0	117	389	0	39	737	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	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Minimum Split (s)	22.5	22.5		22.5	22.5		22.5	22.5		22.5	22.5	
Total Split (s)	22.5	22.5		22.5	22.5		22.5	22.5		22.5	22.5	
Total Split (%)	50.0%	50.0%		50.0%	50.0%		50.0%	50.0%		50.0%	50.0%	
Maximum Green (s)	18.0	18.0		18.0	18.0		18.0	18.0		18.0	18.0	
Yellow Time (s)	3.5	3.5		3.5	3.5		3.5	3.5		3.5	3.5	
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0		1.0	1.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.5	4.5		4.5	4.5		4.5	4.5		4.5	4.5	
Lead/Lag												
Lead-Lag Optimize?												
Walk Time (s)	7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0	
Flash Don't 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	18.0		18.0	18.0		18.0	18.0		18.0	18.0	
Actuated g/C Ratio	0.40	0.40		0.40	0.40		0.40	0.40		0.40	0.40	
v/c Ratio	1.01	0.40		0.88	0.79		0.44	0.19		0.10	0.36	
Control Delay (s/veh)	95.1	7.9		40.7	21.4		16.5	5.9		11.6	9.9	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay (s/veh)	95.1	7.9		40.7	21.4		16.5	5.9		11.6	9.9	

Educational Use Only

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
LOS	F	A		D	C		B	A		B	A	
Approach Delay (s/veh)		39.5			28.7			8.4			10.0	
Approach LOS		D			C			A			A	

Intersection Summary	
Area Type:	Other
Cycle Length: 45	
Actuated Cycle Length: 45	
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green	
Natural Cycle: 55	
Control Type: Pretimed	
Maximum v/c Ratio: 1.01	
Intersection Signal Delay (s/veh): 21.4	Intersection LOS: C
Intersection Capacity Utilization 73.0%	ICU Level of Service D
Analysis Period (min) 15	

Splits and Phases: 16:



Educational Use Only

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations												
Traffic Volume (vph)	6	419	1	7	1050	7	1	0	31	4	0	5
Future Volume (vph)	6	419	1	7	1050	7	1	0	31	4	0	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	0.91	0.91	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt					0.999			0.850				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	5085	0	1770	3536	0	1770	1583	0	1770	0	1583
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1770	5085	0	1770	3536	0	1770	1583	0	1770	0	1583
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		554			284			275			473	
Travel Time (s)		12.6			6.5			6.3			10.8	
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
Adj. Flow (vph)	7	455	1	8	1141	8	1	0	34	4	0	5
Shared Lane Traffic (%)												
Lane Group Flow (vph)	7	456	0	8	1149	0	1	34	0	4	0	5
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)		24			24			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
Sign Control		Free			Free			Stop			Stop	

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	
Intersection Capacity Utilization 39.2%	ICU Level of Service A
Analysis Period (min) 15	

Educational Use Only

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL2	NBL	NBR	SEL	SER	SER2
Lane Configurations												
Traffic Volume (vph)	174	534	77	72	284	97	59	495	213	57	287	116
Future Volume (vph)	174	534	77	72	284	97	59	495	213	57	287	116
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	0.97	0.97	1.00	1.00	0.76	1.00
Frt			0.850			0.850			0.850		0.850	
Flt Protected	0.950			0.950			0.950	0.950		0.950		
Satd. Flow (prot)	1770	3539	1583	1770	3539	1583	3433	3433	1583	1770	3610	0
Flt Permitted	0.564			0.409			0.447	0.955		0.446		
Satd. Flow (perm)	1051	3539	1583	762	3539	1583	1615	3451	1583	831	3610	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			84			105			162		126	
Link Speed (mph)		30			30			30		30		
Link Distance (ft)		728			572			642		887		
Travel Time (s)		16.5			13.0			14.6		20.2		
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)	189	580	84	78	309	105	64	538	232	62	312	126
Shared Lane Traffic (%)												
Lane Group Flow (vph)	189	580	84	78	309	105	64	538	232	62	438	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	Right	Right
Median Width(ft)		12			12			48		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	15	9	15	9	9
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Perm	Perm	Perm	Perm	Prot	
Protected Phases		2			6						4	
Permitted Phases	2		2	6		6	8	8	8	4		
Minimum Split (s)	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	
Total Split (s)	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	
Total Split (%)	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	
Maximum Green (s)	18.0	18.0	18.0	18.0	18.0	18.0	18.0	18.0	18.0	18.0	18.0	
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	
Lead/Lag												
Lead-Lag Optimize?												
Walk Time (s)	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	
Flash Don't Walk (s)	11.0	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	0	
Act Effct Green (s)	18.0	18.0	18.0	18.0	18.0	18.0	18.0	18.0	18.0	18.0	18.0	
Actuated g/C Ratio	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	
v/c Ratio	0.45	0.41	0.12	0.26	0.22	0.15	0.10	0.39	0.32	0.19	0.29	
Control Delay (s/veh)	11.5	8.3	2.1	11.8	9.4	3.1	9.0	10.7	4.8	10.6	7.0	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay (s/veh)	11.5	8.3	2.1	11.8	9.4	3.1	9.0	10.7	4.8	10.6	7.0	

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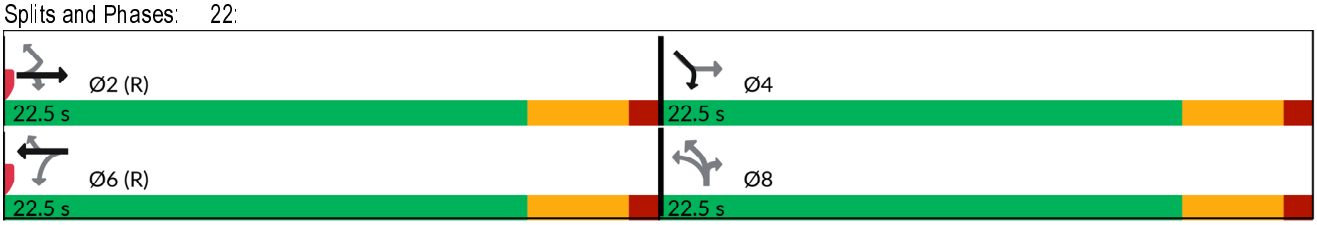
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL2	NBL	NBR	SEL	SER	SER2
LOS	B	A	A	B	A	A	A	B	A	B	A	
Approach Delay (s/veh)		8.4			8.4			8.9		7.4		
Approach LOS		A			A			A		A		

Intersection Summary	
Area Type:	Other
Cycle Length: 45	
Actuated Cycle Length: 45	
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green	
Natural Cycle: 45	
Control Type: Pretimed	
Maximum v/c Ratio: 0.45	
Intersection Signal Delay (s/veh): 8.4	Intersection LOS: A
Intersection Capacity Utilization 52.2%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 22:



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Lane Group	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (vph)	39	263	6	2	701	67	0	0	30	60	0	42
Future Volume (vph)	39	263	6	2	701	67	0	0	30	60	0	42
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
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		0.997			0.988				0.865			0.850
Flt Protected		0.994								0.950		
Satd. Flow (prot)	0	1846	0	0	1840	0	0	0	1611	1770	0	1583
Flt Permitted		0.994								0.950		
Satd. Flow (perm)	0	1846	0	0	1840	0	0	0	1611	1770	0	1583
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		954			324			275			312	
Travel Time (s)		21.7			7.4			6.3			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)	42	286	7	2	762	73	0	0	33	65	0	46
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	335	0	0	837	0	0	0	33	65	0	46
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)		0			0			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane		Yes										
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
Sign Control		Free			Free			Free			Free	

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	
Intersection Capacity Utilization 55.1%	ICU Level of Service B
Analysis Period (min) 15	

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Appendix F

Synchro Output – Proposed AM Peak

Lanes, Volumes, Timings
3: 12/05/2025

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	541	2417	237	43	1791	218	380	356	66	84	88	91
Future Volume (vph)	541	2417	237	43	1791	218	380	356	66	84	88	91
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	150		150	150		150	150		150	150		150
Storage Lanes	2		0	2		0	1		1	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	0.97	0.86	0.86	0.97	0.86	0.86	0.91	0.91	1.00	0.91	0.91	1.00
Frt		0.987			0.984				0.850			0.850
Flt Protected	0.950			0.950			0.950	0.985		0.950	0.985	
Satd. Flow (prot)	3433	6325	0	3433	6305	0	1610	3339	1583	1610	3339	1583
Flt Permitted	0.151			0.182			0.659	0.809		0.333	0.765	
Satd. Flow (perm)	546	6325	0	658	6305	0	1117	2743	1583	564	2594	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		55			50				92			99
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		448			1349			324			554	
Travel Time (s)		10.2			30.7			7.4			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)	588	2627	258	47	1947	237	413	387	72	91	96	99
Shared Lane Traffic (%)							40%			48%		
Lane Group Flow (vph)	588	2885	0	47	2184	0	248	552	72	47	140	99
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)		24			24			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	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+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		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt	NA		Perm	NA		Perm	NA	Perm	Perm	NA	Perm
Protected Phases	7	4			8			2			6	
Permitted Phases	4			8			2		2	6		6

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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	7	4		8	8		2	2	2	6	6	6
Switch Phase												
Minimum Initial (s)	5.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	9.5	20.0		20.0	20.0		20.0	20.0	20.0	20.0	20.0	20.0
Total Split (s)	14.0	40.0		26.0	26.0		25.0	25.0	25.0	25.0	25.0	25.0
Total Split (%)	21.5%	61.5%		40.0%	40.0%		38.5%	38.5%	38.5%	38.5%	38.5%	38.5%
Maximum Green (s)	9.5	36.0		22.0	22.0		21.0	21.0	21.0	21.0	21.0	21.0
Yellow Time (s)	3.5	3.5		3.5	3.5		3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	0.5		0.5	0.5		0.5	0.5	0.5	0.5	0.5	0.5
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)	4.5	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lead			Lag	Lag							
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	3.0	3.0
Recall Mode	None	None		None	None		C-Max	C-Max	C-Max	None	None	None
Walk Time (s)		5.0		5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0
Flash Don't Walk (s)		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
Act Effct Green (s)	35.5	36.0		22.0	22.0		21.0	21.0	21.0	21.0	21.0	21.0
Actuated g/C Ratio	0.55	0.55		0.34	0.34		0.32	0.32	0.32	0.32	0.32	0.32
v/c Ratio	0.82	0.82		0.21	1.01		0.69	0.62	0.13	0.26	0.17	0.17
Control Delay (s/veh)	22.3	14.1		18.4	43.8		31.5	22.4	3.5	20.9	16.4	4.9
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	22.3	14.1		18.4	43.8		31.5	22.4	3.5	20.9	16.4	4.9
LOS	C	B		B	D		C	C	A	C	B	A
Approach Delay (s/veh)		15.5			43.2			23.4			13.2	
Approach LOS		B			D			C			B	
90th %ile Green (s)	9.5	36.0		22.0	22.0		21.0	21.0	21.0	21.0	21.0	21.0
90th %ile Term Code	Max	Max		Max	Max		Coord	Coord	Coord	Coord	Coord	Coord
70th %ile Green (s)	9.5	36.0		22.0	22.0		21.0	21.0	21.0	21.0	21.0	21.0
70th %ile Term Code	Max	Max		Max	Max		Coord	Coord	Coord	Coord	Coord	Coord
50th %ile Green (s)	9.5	36.0		22.0	22.0		21.0	21.0	21.0	21.0	21.0	21.0
50th %ile Term Code	Max	Max		Max	Max		Coord	Coord	Coord	Coord	Coord	Coord
30th %ile Green (s)	9.5	36.0		22.0	22.0		21.0	21.0	21.0	21.0	21.0	21.0
30th %ile Term Code	Max	Max		Max	Max		Coord	Coord	Coord	Coord	Coord	Coord
10th %ile Green (s)	9.4	36.0		22.1	22.1		21.0	21.0	21.0	21.0	21.0	21.0
10th %ile Term Code	Gap	Max		Max	Max		Coord	Coord	Coord	Coord	Coord	Coord

Intersection Summary	
Area Type:	Other
Cycle Length: 65	
Actuated Cycle Length: 65	
Offset: 0 (0%), Referenced to phase 2:NBTL, Start of Green	
Natural Cycle: 65	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 1.01	
Intersection Signal Delay (s/veh): 25.4	Intersection LOS: C
Intersection Capacity Utilization 76.0%	ICU Level of Service D
Analysis Period (min) 15	

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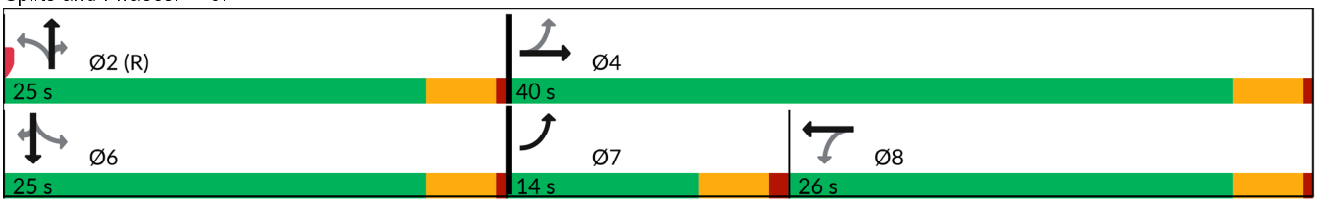
Splits and Phases: 3:



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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	20	190	246	301	321	11	134	13	68	5	9	23
Future Volume (vph)	20	190	246	301	321	11	134	13	68	5	9	23
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	0.95	0.95	0.95	1.00	1.00	1.00	1.00
Frt			0.850		0.995				0.850			0.850
Flt Protected	0.950			0.950			0.950	0.960		0.950		
Satd. Flow (prot)	1770	3539	1583	1770	3522	0	1681	1699	1583	1770	1863	1583
Flt Permitted	0.516			0.622			0.950	0.960				
Satd. Flow (perm)	961	3539	1583	1159	3522	0	1681	1699	1583	1863	1863	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			267		5				87			87
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		928			519			278			361	
Travel Time (s)		21.1			11.8			6.3			8.2	
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)	22	207	267	327	349	12	146	14	74	5	10	25
Shared Lane Traffic (%)							45%					
Lane Group Flow (vph)	22	207	267	327	361	0	80	80	74	5	10	25
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	1	2		1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru	Right	Left	Thru	Right
Leading Detector (ft)	20	100	20	20	100		20	100	20	20	100	20
Trailing Detector (ft)	0	0	0	0	0		0	0	0	0	0	0
Detector 1 Position(ft)	0	0	0	0	0		0	0	0	0	0	0
Detector 1 Size(ft)	20	6	20	20	6		20	6	20	20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+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	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	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	0.0
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA	Perm	Perm	NA		Split	NA	Perm	Perm	NA	Perm
Protected Phases		4			8		2	2			6	
Permitted Phases	4		4	8					2	6		6
Detector Phase	4	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	5.0

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Lanes, Volumes, Timings
4: 12/05/2025

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Split (s)	22.5	22.5	22.5	22.5	22.5		22.5	22.5	22.5	22.5	22.5	22.5
Total Split (s)	30.0	30.0	30.0	30.0	30.0		22.5	22.5	22.5	22.5	22.5	22.5
Total Split (%)	40.0%	40.0%	40.0%	40.0%	40.0%		30.0%	30.0%	30.0%	30.0%	30.0%	30.0%
Maximum Green (s)	25.5	25.5	25.5	25.5	25.5		18.0	18.0	18.0	18.0	18.0	18.0
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5		3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5		4.5	4.5	4.5	4.5	4.5	4.5
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	3.0
Recall Mode	None	None	None	None	None		C-Max	C-Max	C-Max	None	None	None
Walk Time (s)	7.0	7.0	7.0	7.0	7.0		7.0	7.0	7.0	7.0	7.0	7.0
Flash Don't Walk (s)	11.0	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	0
Act Effct Green (s)	27.8	27.8	27.8	27.8	27.8		31.7	31.7	31.7	6.0	6.0	6.0
Actuated g/C Ratio	0.37	0.37	0.37	0.37	0.37		0.42	0.42	0.42	0.08	0.08	0.08
v/c Ratio	0.06	0.16	0.35	0.76	0.28		0.11	0.11	0.10	0.03	0.07	0.12
Control Delay (s/veh)	12.6	14.6	3.1	31.8	15.7		19.2	19.2	5.0	32.0	32.6	1.2
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	12.6	14.6	3.1	31.8	15.7		19.2	19.2	5.0	32.0	32.6	1.2
LOS	B	B	A	C	B		B	B	A	C	C	A
Approach Delay (s/veh)		8.3			23.4			14.7			12.9	
Approach LOS		A			C			B			B	
90th %ile Green (s)	36.6	36.6	36.6	36.6	36.6		18.0	18.0	18.0	6.9	6.9	6.9
90th %ile Term Code	Hold	Hold	Hold	Max	Max		Coord	Coord	Coord	Gap	Gap	Gap
70th %ile Green (s)	31.4	31.4	31.4	31.4	31.4		23.8	23.8	23.8	6.3	6.3	6.3
70th %ile Term Code	Hold	Hold	Hold	Gap	Gap		Coord	Coord	Coord	Gap	Gap	Gap
50th %ile Green (s)	28.6	28.6	28.6	28.6	28.6		27.1	27.1	27.1	5.8	5.8	5.8
50th %ile Term Code	Hold	Hold	Hold	Gap	Gap		Coord	Coord	Coord	Gap	Gap	Gap
30th %ile Green (s)	24.5	24.5	24.5	24.5	24.5		41.5	41.5	41.5	0.0	0.0	0.0
30th %ile Term Code	Hold	Hold	Hold	Gap	Gap		Coord	Coord	Coord	Skip	Skip	Skip
10th %ile Green (s)	18.0	18.0	18.0	18.0	18.0		48.0	48.0	48.0	0.0	0.0	0.0
10th %ile Term Code	Hold	Hold	Hold	Gap	Gap		Coord	Coord	Coord	Skip	Skip	Skip

Intersection Summary

Area Type: Other
Cycle Length: 75
Actuated Cycle Length: 75
Offset: 0 (0%), Referenced to phase 2:NBTL, Start of Green
Natural Cycle: 75
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.76
Intersection Signal Delay (s/veh): 16.6 Intersection LOS: B
Intersection Capacity Utilization 47.3% ICU Level of Service A
Analysis Period (min) 15

Splits and Phases: 4:

Educational Use Only

Lane Group	SEL	SET	NWT	NWR	SWL	SWR
Lane Configurations						
Traffic Volume (vph)	0	0	2426	138	0	4
Future Volume (vph)	0	0	2426	138	0	4
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	0.86	0.86	0.86	1.00	1.00
Frt			0.992			0.865
Flt Protected						
Satd. Flow (prot)	0	6408	6357	0	0	1611
Flt Permitted						
Satd. Flow (perm)	0	6408	6357	0	0	1611
Link Speed (mph)		30	30		30	
Link Distance (ft)		1623	448		540	
Travel Time (s)		36.9	10.2		12.3	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	2637	150	0	4
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	2787	0	0	4
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		24	24		0	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15			9	15	9
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 47.5%		ICU Level of Service A	
Analysis Period (min) 15			

Educational Use Only

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations												
Traffic Volume (vph)	34	42	34	96	90	114	192	2884	125	170	1689	144
Future Volume (vph)	34	42	34	96	90	114	192	2884	125	170	1689	144
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	0.95	0.95	1.00	0.97	1.00	1.00	0.97	0.86	0.86	1.00	0.86	0.86
Frt			0.850			0.850		0.994			0.988	
Flt Protected	0.950	0.996		0.950			0.950			0.950		
Satd. Flow (prot)	1681	1763	1583	3433	1863	1583	3433	6369	0	1770	6331	0
Flt Permitted	0.687	0.975		0.723			0.073			0.068		
Satd. Flow (perm)	1216	1725	1583	2613	1863	1583	264	6369	0	127	6331	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			73			124		15			34	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		694			378			968			1623	
Travel Time (s)		15.8			8.6			22.0			36.9	
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)	37	46	37	104	98	124	209	3135	136	185	1836	157
Shared Lane Traffic (%)	10%											
Lane Group Flow (vph)	33	50	37	104	98	124	209	3271	0	185	1993	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)		24			24			24			24	
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	1	2	1	1	2		1	2	
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru		Left	Thru	
Leading Detector (ft)	20	100	20	20	100	20	20	100		20	100	
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	20	6	20	20	6		20	6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+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		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA	Perm	Perm	NA	Perm	pm+pt	NA		pm+pt	NA	
Protected Phases		4			8		1	6		5	2	
Permitted Phases	4		4	8		8	6			2		
Detector Phase	4	4	4	8	8	8	1	6		5	2	
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	

Educational Use Only

Lanes, Volumes, Timings
8: 12/05/2025

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	SEL	SET	SER	NWL	NWT	NWR
Minimum Split (s)	22.5	22.5	22.5	22.5	22.5	22.5	9.5	22.5		9.5	22.5	
Total Split (s)	22.8	22.8	22.8	22.8	22.8	22.8	12.2	54.2		13.0	55.0	
Total Split (%)	25.3%	25.3%	25.3%	25.3%	25.3%	25.3%	13.6%	60.2%		14.4%	61.1%	
Maximum Green (s)	18.3	18.3	18.3	18.3	18.3	18.3	7.7	49.7		8.5	50.5	
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5		3.5	3.5	
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0		1.0	1.0	
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)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5		4.5	4.5	
Lead/Lag							Lead	Lag		Lead	Lag	
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	
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	None	None	None	C-Max		None	C-Max	
Walk Time (s)	7.0	7.0	7.0	7.0	7.0	7.0		7.0			7.0	
Flash Don't 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)	10.2	10.2	10.2	10.2	10.2	10.2	63.7	56.5		68.8	59.0	
Actuated g/C Ratio	0.11	0.11	0.11	0.11	0.11	0.11	0.71	0.63		0.76	0.66	
v/c Ratio	0.24	0.26	0.15	0.35	0.46	0.43	0.47	0.82		0.67	0.48	
Control Delay (s/veh)	39.1	38.3	3.4	39.1	43.6	11.5	12.0	16.2		28.8	8.6	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay (s/veh)	39.1	38.3	3.4	39.1	43.6	11.5	12.0	16.2		28.8	8.6	
LOS	D	D	A	D	D	B	B	B		C	A	
Approach Delay (s/veh)		27.8			30.0			15.9			10.3	
Approach LOS		C			C			B			B	
90th %ile Green (s)	14.7	14.7	14.7	14.7	14.7	14.7	9.5	49.7		12.1	52.3	
90th %ile Term Code	Hold	Hold	Hold	Gap	Gap	Gap	Gap	Coord		Max	Coord	
70th %ile Green (s)	11.6	11.6	11.6	11.6	11.6	11.6	7.8	52.5		12.4	57.1	
70th %ile Term Code	Hold	Hold	Hold	Gap	Gap	Gap	Gap	Coord		Gap	Coord	
50th %ile Green (s)	10.1	10.1	10.1	10.1	10.1	10.1	6.7	56.3		10.1	59.7	
50th %ile Term Code	Hold	Hold	Hold	Gap	Gap	Gap	Gap	Coord		Gap	Coord	
30th %ile Green (s)	8.5	8.5	8.5	8.5	8.5	8.5	6.3	60.3		7.7	61.7	
30th %ile Term Code	Hold	Hold	Hold	Gap	Gap	Gap	Gap	Coord		Gap	Coord	
10th %ile Green (s)	6.3	6.3	6.3	6.3	6.3	6.3	5.9	63.5		6.7	64.3	
10th %ile Term Code	Hold	Hold	Hold	Gap	Gap	Gap	Gap	Coord		Gap	Coord	

Intersection Summary	
Area Type: Other	
Cycle Length: 90	
Actuated Cycle Length: 90	
Offset: 0 (0%), Referenced to phase 2:NWTL and 6:SETL, Start of Green	
Natural Cycle: 90	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.82	
Intersection Signal Delay (s/veh): 14.9	Intersection LOS: B
Intersection Capacity Utilization 74.0%	ICU Level of Service D
Analysis Period (min) 15	

Splits and Phases: 8:

Educational Use Only

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations												
Traffic Volume (vph)	0	948	0	0	458	3	0	0	27	0	0	0
Future Volume (vph)	0	948	0	0	458	3	0	0	27	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	0.91	0.91	1.00	0.91	0.91	1.00	1.00	1.00	1.00	1.00	1.00
Frt					0.999				0.865			
Flt Protected												
Satd. Flow (prot)	0	5085	0	0	5080	0	0	0	1611	0	0	1863
Flt Permitted												
Satd. Flow (perm)	0	5085	0	0	5080	0	0	0	1611	0	0	1863
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		284			316			426			482	
Travel Time (s)		6.5			7.2			9.7			11.0	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	1030	0	0	498	3	0	0	29	0	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	1030	0	0	501	0	0	0	29	0	0	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)		0			0			0			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	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Free			Free			Stop			Stop	

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	
Intersection Capacity Utilization 21.7%	ICU Level of Service A
Analysis Period (min) 15	

Educational Use Only

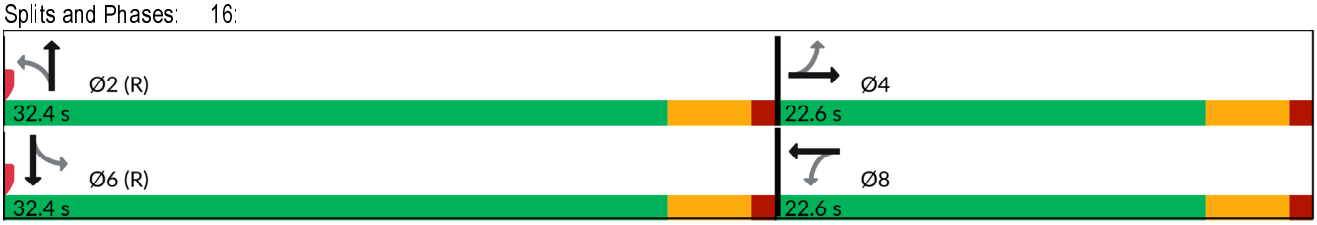
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	109	271	105	60	62	36	162	411	487	184	274	83
Future Volume (vph)	109	271	105	60	62	36	162	411	487	184	274	83
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.91	0.91	1.00	0.91	0.91
Frt		0.958			0.945			0.919			0.965	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	1785	0	1770	1760	0	1770	4673	0	1770	4907	0
Flt Permitted	0.689			0.339			0.514			0.259		
Satd. Flow (perm)	1283	1785	0	631	1760	0	957	4673	0	482	4907	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		38			39			341			90	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		324			949			316			728	
Travel Time (s)		7.4			21.6			7.2			16.5	
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)	118	295	114	65	67	39	176	447	529	200	298	90
Shared Lane Traffic (%)												
Lane Group Flow (vph)	118	409	0	65	106	0	176	976	0	200	388	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	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Minimum Split (s)	22.5	22.5		22.5	22.5		22.5	22.5		22.5	22.5	
Total Split (s)	22.6	22.6		22.6	22.6		32.4	32.4		32.4	32.4	
Total Split (%)	41.1%	41.1%		41.1%	41.1%		58.9%	58.9%		58.9%	58.9%	
Maximum Green (s)	18.1	18.1		18.1	18.1		27.9	27.9		27.9	27.9	
Yellow Time (s)	3.5	3.5		3.5	3.5		3.5	3.5		3.5	3.5	
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0		1.0	1.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.5	4.5		4.5	4.5		4.5	4.5		4.5	4.5	
Lead/Lag												
Lead-Lag Optimize?												
Walk Time (s)	7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0	
Flash Don't 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)	18.1	18.1		18.1	18.1		27.9	27.9		27.9	27.9	
Actuated g/C Ratio	0.33	0.33		0.33	0.33		0.51	0.51		0.51	0.51	
v/c Ratio	0.28	0.67		0.31	0.18		0.36	0.38		0.82	0.15	
Control Delay (s/veh)	15.9	20.8		19.0	10.1		10.9	5.7		43.2	5.7	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay (s/veh)	15.9	20.8		19.0	10.1		10.9	5.7		43.2	5.7	

Educational Use Only

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
LOS	B	C		B	B		B	A		D	A	
Approach Delay (s/veh)		19.7			13.4			6.5			18.4	
Approach LOS		B			B			A			B	

Intersection Summary	
Area Type:	Other
Cycle Length: 55	
Actuated Cycle Length: 55	
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green	
Natural Cycle: 55	
Control Type: Pretimed	
Maximum v/c Ratio: 0.82	
Intersection Signal Delay (s/veh): 12.7	Intersection LOS: B
Intersection Capacity Utilization 68.9%	ICU Level of Service C
Analysis Period (min) 15	

Splits and Phases: 16:



Educational Use Only

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations												
Traffic Volume (vph)	51	1017	9	5	274	86	3	0	6	0	0	2
Future Volume (vph)	51	1017	9	5	274	86	3	0	6	0	0	2
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	0.91	0.91	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.999			0.964			0.850				0.850
Flt Protected	0.950			0.950			0.950					
Satd. Flow (prot)	1770	5080	0	1770	3412	0	1770	1583	0	1863	0	1583
Flt Permitted	0.950			0.950			0.950					
Satd. Flow (perm)	1770	5080	0	1770	3412	0	1770	1583	0	1863	0	1583
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		554			284			275			473	
Travel Time (s)		12.6			6.5			6.3			10.8	
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
Adj. Flow (vph)	55	1105	10	5	298	93	3	0	7	0	0	2
Shared Lane Traffic (%)												
Lane Group Flow (vph)	55	1115	0	5	391	0	3	7	0	0	0	2
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)		24			24			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
Sign Control		Free			Free			Stop			Stop	

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	
Intersection Capacity Utilization 36.5%	ICU Level of Service A
Analysis Period (min) 15	

Educational Use Only

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL2	NBL	NBR	SEL	SER	SER2
Lane Configurations												
Traffic Volume (vph)	201	259	84	155	766	213	53	210	46	115	277	41
Future Volume (vph)	201	259	84	155	766	213	53	210	46	115	277	41
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	0.97	0.97	1.00	1.00	0.76	1.00
Frt			0.850			0.850			0.850		0.850	
Flt Protected	0.950			0.950			0.950	0.950		0.950		
Satd. Flow (prot)	1770	3539	1583	1770	3539	1583	3433	3433	1583	1770	3610	0
Flt Permitted	0.259			0.579			0.500	0.955		0.612		
Satd. Flow (perm)	482	3539	1583	1079	3539	1583	1807	3451	1583	1140	3610	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			91			232			50		45	
Link Speed (mph)		30			30			30		30		
Link Distance (ft)		728			572			642		887		
Travel Time (s)		16.5			13.0			14.6		20.2		
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)	218	282	91	168	833	232	58	228	50	125	301	45
Shared Lane Traffic (%)												
Lane Group Flow (vph)	218	282	91	168	833	232	58	228	50	125	346	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	Right	Right
Median Width(ft)		12			12			48		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	15	9	15	9	9
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Perm	Perm	Perm	Perm	Prot	
Protected Phases		2			6						4	
Permitted Phases	2		2	6		6	8	8	8	4		
Minimum Split (s)	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	
Total Split (s)	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	
Total Split (%)	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	
Maximum Green (s)	18.0	18.0	18.0	18.0	18.0	18.0	18.0	18.0	18.0	18.0	18.0	
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	
Lead/Lag												
Lead-Lag Optimize?												
Walk Time (s)	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	
Flash Don't Walk (s)	11.0	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	0	
Act Effct Green (s)	18.0	18.0	18.0	18.0	18.0	18.0	18.0	18.0	18.0	18.0	18.0	
Actuated g/C Ratio	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	
v/c Ratio	1.14	0.20	0.13	0.39	0.59	0.30	0.08	0.17	0.08	0.27	0.24	
Control Delay (s/veh)	129.4	9.3	3.2	13.0	12.7	2.9	8.8	9.1	3.7	11.2	8.2	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay (s/veh)	129.4	9.3	3.2	13.0	12.7	2.9	8.8	9.1	3.7	11.2	8.2	

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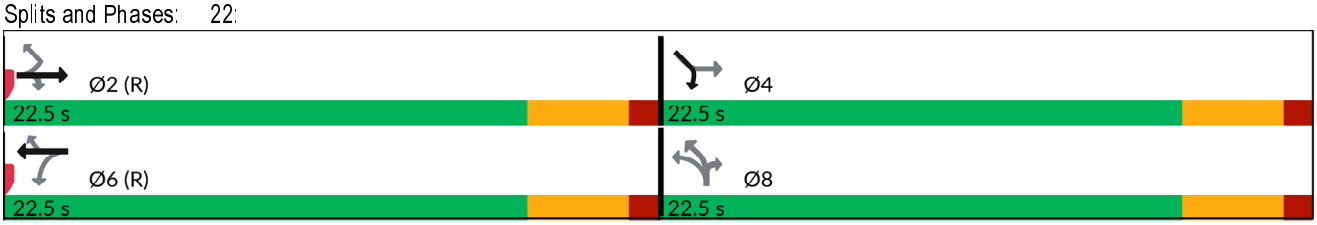
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL2	NBL	NBR	SEL	SER	SER2
LOS	F	A	A	B	B	A	A	A	A	B	A	
Approach Delay (s/veh)		52.7			10.9			8.2		9.0		
Approach LOS		D			B			A		A		

Intersection Summary	
Area Type:	Other
Cycle Length: 45	
Actuated Cycle Length: 45	
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green	
Natural Cycle: 60	
Control Type: Pretimed	
Maximum v/c Ratio: 1.14	
Intersection Signal Delay (s/veh): 19.6	Intersection LOS: B
Intersection Capacity Utilization 59.7%	ICU Level of Service B
Analysis Period (min) 15	

Splits and Phases: 22:



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Lane Group	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (vph)	14	448	41	3	260	22	0	0	2	60	0	42
Future Volume (vph)	14	448	41	3	260	22	0	0	2	60	0	42
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
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		0.989			0.990				0.865			0.850
Flt Protected		0.999								0.950		
Satd. Flow (prot)	0	1840	0	0	1844	0	0	0	1611	1770	0	1583
Flt Permitted		0.999								0.950		
Satd. Flow (perm)	0	1840	0	0	1844	0	0	0	1611	1770	0	1583
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		954			324			275			312	
Travel Time (s)		21.7			7.4			6.3			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)	15	487	45	3	283	24	0	0	2	65	0	46
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	547	0	0	310	0	0	0	2	65	0	46
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)		0			0			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane		Yes										
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
Sign Control		Free			Free			Free			Free	

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	
Intersection Capacity Utilization 44.8%	ICU Level of Service A
Analysis Period (min) 15	

Educational Use Only

Appendix G

Synchro Output – Proposed PM Peak

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	145	1971	655	147	1814	124	454	160	135	295	570	559
Future Volume (vph)	145	1971	655	147	1814	124	454	160	135	295	570	559
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	150		150	150		150	150		150	150		150
Storage Lanes	2		0	2		0	1		1	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	0.97	0.86	0.86	0.97	0.86	0.86	0.91	0.91	1.00	0.91	0.91	1.00
Frt		0.963			0.990				0.850			0.850
Flt Protected	0.950			0.950			0.950	0.972		0.950	0.997	
Satd. Flow (prot)	3433	6171	0	3433	6344	0	1610	3295	1583	1610	3380	1583
Flt Permitted	0.073			0.077			0.392	0.569		0.497	0.918	
Satd. Flow (perm)	264	6171	0	278	6344	0	664	1929	1583	842	3112	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		80			13				138			186
Link Speed (mph)		55			55			55			55	
Link Distance (ft)		448			1349			324			554	
Travel Time (s)		5.6			16.7			4.0			6.9	
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)	158	2142	712	160	1972	135	493	174	147	321	620	608
Shared Lane Traffic (%)							50%			11%		
Lane Group Flow (vph)	158	2854	0	160	2107	0	246	421	147	286	655	608
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)		24			24			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	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+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		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	Free
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8			2		2	6		Free

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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	7	4		3	8		5	2	2	1	6	
Switch Phase												
Minimum Initial (s)	5.0	4.0		5.0	4.0		5.0	4.0	4.0	5.0	4.0	
Minimum Split (s)	9.5	20.0		9.5	20.0		9.5	20.0	20.0	9.5	20.0	
Total Split (s)	12.7	59.0		9.6	55.9		14.3	36.9	36.9	24.5	47.1	
Total Split (%)	9.8%	45.4%		7.4%	43.0%		11.0%	28.4%	28.4%	18.8%	36.2%	
Maximum Green (s)	8.2	55.0		5.1	51.9		9.8	32.9	32.9	20.0	43.1	
Yellow Time (s)	3.5	3.5		3.5	3.5		3.5	3.5	3.5	3.5	3.5	
All-Red Time (s)	1.0	0.5		1.0	0.5		1.0	0.5	0.5	1.0	0.5	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	4.5	4.0		4.5	4.0		4.5	4.0	4.0	4.5	4.0	
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag	Lag	Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes	Yes	Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	None		None	None		None	C-Max	C-Max	None	None	
Walk Time (s)		5.0			5.0			5.0	5.0		5.0	
Flash Don't Walk (s)		11.0			11.0			11.0	11.0		11.0	
Pedestrian Calls (#/hr)		0			0			0	0		0	
Act Effct Green (s)	62.4	55.0		56.8	52.2		43.7	44.7	34.4	56.9	57.4	130.0
Actuated g/C Ratio	0.48	0.42		0.44	0.40		0.34	0.34	0.26	0.44	0.44	1.00
v/c Ratio	0.50	1.07		0.65	0.82		0.84	0.55	0.28	0.60	0.46	0.38
Control Delay (s/veh)	23.1	76.8		31.5	38.0		55.4	28.6	8.7	31.1	26.5	0.7
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	23.1	76.8		31.5	38.0		55.4	28.6	8.7	31.1	26.5	0.7
LOS	C	E		C	D		E	C	A	C	C	A
Approach Delay (s/veh)		74.0			37.6			33.1			17.2	
Approach LOS		E			D			C			B	
90th %ile Green (s)	8.2	55.0		5.1	51.9		9.8	32.9	32.9	20.0	43.1	
90th %ile Term Code	Max	Max		Max	Max		Max	Coord	Coord	Max	Coord	
70th %ile Green (s)	8.2	55.0		5.1	51.9		9.8	32.9	32.9	20.0	43.1	
70th %ile Term Code	Max	Max		Max	Max		Max	Coord	Coord	Max	Coord	
50th %ile Green (s)	8.2	55.0		5.1	51.9		9.8	32.9	32.9	20.0	43.1	
50th %ile Term Code	Max	Max		Max	Max		Max	Coord	Coord	Max	Coord	
30th %ile Green (s)	7.9	55.0		5.1	52.2		9.8	34.7	34.7	18.2	43.1	
30th %ile Term Code	Gap	Max		Max	Max		Max	Coord	Coord	Gap	Coord	
10th %ile Green (s)	6.9	55.0		5.1	53.2		9.8	38.7	38.7	14.2	43.1	
10th %ile Term Code	Gap	Max		Max	Hold		Max	Coord	Coord	Gap	Coord	

Intersection Summary	
Area Type:	Other
Cycle Length: 130	
Actuated Cycle Length: 130	
Offset: 0 (0%), Referenced to phase 2:NBTL, Start of Green	
Natural Cycle: 90	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 1.07	
Intersection Signal Delay (s/veh): 47.3	Intersection LOS: D
Intersection Capacity Utilization 86.3%	ICU Level of Service E
Analysis Period (min) 15	

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Splits and Phases: 3:

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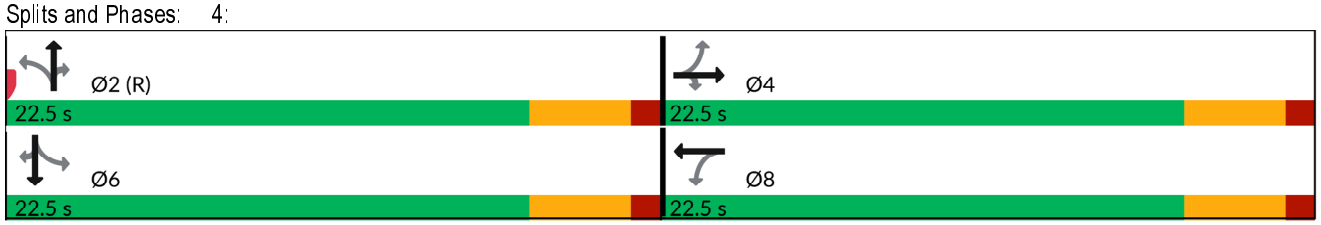
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	23	246	194	125	281	6	511	25	263	8	9	20
Future Volume (vph)	23	246	194	125	281	6	511	25	263	8	9	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	0.95	0.95	0.95	1.00	1.00	1.00	1.00
Frt			0.850		0.997				0.850			0.850
Flt Protected	0.950			0.950			0.950	0.957		0.950		
Satd. Flow (prot)	1770	3539	1583	1770	3529	0	1681	1694	1583	1770	1863	1583
Flt Permitted	0.562			0.587			0.751	0.739		0.538		
Satd. Flow (perm)	1047	3539	1583	1093	3529	0	1329	1308	1583	1002	1863	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			211		6				286			36
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		928			519			278			361	
Travel Time (s)		21.1			11.8			6.3			8.2	
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)	25	267	211	136	305	7	555	27	286	9	10	22
Shared Lane Traffic (%)							48%					
Lane Group Flow (vph)	25	267	211	136	312	0	289	293	286	9	10	22
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	Perm	NA	Perm	Perm	NA		Perm	NA	Perm	Perm	NA	Perm
Protected Phases		4			8			2			6	
Permitted Phases	4		4	8			2		2	6		6
Minimum Split (s)	22.5	22.5	22.5	22.5	22.5		22.5	22.5	22.5	22.5	22.5	22.5
Total Split (s)	22.5	22.5	22.5	22.5	22.5		22.5	22.5	22.5	22.5	22.5	22.5
Total Split (%)	50.0%	50.0%	50.0%	50.0%	50.0%		50.0%	50.0%	50.0%	50.0%	50.0%	50.0%
Maximum Green (s)	18.0	18.0	18.0	18.0	18.0		18.0	18.0	18.0	18.0	18.0	18.0
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5		3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5		4.5	4.5	4.5	4.5	4.5	4.5
Lead/Lag												
Lead-Lag Optimize?												
Walk Time (s)	7.0	7.0	7.0	7.0	7.0		7.0	7.0	7.0	7.0	7.0	7.0
Flash Don't Walk (s)	11.0	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	0
Act Effct Green (s)	18.0	18.0	18.0	18.0	18.0		18.0	18.0	18.0	18.0	18.0	18.0
Actuated g/C Ratio	0.40	0.40	0.40	0.40	0.40		0.40	0.40	0.40	0.40	0.40	0.40
v/c Ratio	0.06	0.19	0.28	0.31	0.22		0.54	0.56	0.36	0.02	0.01	0.03
Control Delay (s/veh)	8.9	9.2	2.9	11.8	9.2		15.1	15.6	3.0	8.5	8.2	2.9
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	8.9	9.2	2.9	11.8	9.2		15.1	15.6	3.0	8.5	8.2	2.9

Educational Use Only

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
LOS	A	A	A	B	A		B	B	A	A	A	A
Approach Delay (s/veh)		6.6			10.0			11.3			5.4	
Approach LOS		A			B			B			A	

Intersection Summary	
Area Type:	Other
Cycle Length: 45	
Actuated Cycle Length: 45	
Offset: 0 (0%), Referenced to phase 2:NBTL, Start of Green	
Natural Cycle: 45	
Control Type: Pretimed	
Maximum v/c Ratio: 0.56	
Intersection Signal Delay (s/veh): 9.6	Intersection LOS: A
Intersection Capacity Utilization 46.5%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 4:



Educational Use Only

Lane Group	SEL	SET	NWT	NWR	SWL	SWR
Lane Configurations						
Traffic Volume (vph)	0	0	2745	2	0	77
Future Volume (vph)	0	0	2745	2	0	77
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	0.86	0.86	0.86	1.00	1.00
Frt						0.865
Flt Protected						
Satd. Flow (prot)	0	6408	6408	0	0	1611
Flt Permitted						
Satd. Flow (perm)	0	6408	6408	0	0	1611
Link Speed (mph)		30	30		30	
Link Distance (ft)		1623	448		540	
Travel Time (s)		36.9	10.2		12.3	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	2984	2	0	84
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	2986	0	0	84
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		24	24		0	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15			9	15	9
Sign Control		Free	Free		Stop	

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	
Intersection Capacity Utilization 51.2%	ICU Level of Service A
Analysis Period (min) 15	

Educational Use Only

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations												
Traffic Volume (vph)	128	62	174	232	54	469	120	2059	47	72	2249	90
Future Volume (vph)	128	62	174	232	54	469	120	2059	47	72	2249	90
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	0.95	0.95	1.00	0.97	1.00	1.00	0.97	0.86	0.86	1.00	0.86	0.86
Frt			0.850			0.850		0.997			0.994	
Flt Protected	0.950	0.982		0.950			0.950			0.950		
Satd. Flow (prot)	1681	1738	1583	3433	1863	1583	3433	6389	0	1770	6369	0
Flt Permitted	0.719	0.895		0.684			0.147			0.147		
Satd. Flow (perm)	1272	1584	1583	2472	1863	1583	531	6389	0	274	6369	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			30			30		10			19	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		694			378			968			1623	
Travel Time (s)		15.8			8.6			22.0			36.9	
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)	139	67	189	252	59	510	130	2238	51	78	2445	98
Shared Lane Traffic (%)	29%											
Lane Group Flow (vph)	99	107	189	252	59	510	130	2289	0	78	2543	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)		24			24			24			24	
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	1	2	1	1	2		1	2	
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru		Left	Thru	
Leading Detector (ft)	20	100	20	20	100	20	20	100		20	100	
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	20	6	20	20	6		20	6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+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		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		4			8			6			2	
Permitted Phases	4		4	8		8	6			2		
Detector Phase	4	4	4	8	8	8	6	6		2	2	
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	

Educational Use Only

Lanes, Volumes, Timings
8: 12/05/2025

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	SEL	SET	SER	NWL	NWT	NWR
Minimum Split (s)	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5		22.5	22.5	
Total Split (s)	24.0	24.0	24.0	24.0	24.0	24.0	31.0	31.0		31.0	31.0	
Total Split (%)	43.6%	43.6%	43.6%	43.6%	43.6%	43.6%	56.4%	56.4%		56.4%	56.4%	
Maximum Green (s)	19.5	19.5	19.5	19.5	19.5	19.5	26.5	26.5		26.5	26.5	
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5		3.5	3.5	
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0		1.0	1.0	
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)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5		4.5	4.5	
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	None	None	C-Max	C-Max		C-Max	C-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 Don't 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)	18.8	18.8	18.8	18.8	18.8	18.8	27.2	27.2		27.2	27.2	
Actuated g/C Ratio	0.34	0.34	0.34	0.34	0.34	0.34	0.49	0.49		0.49	0.49	
v/c Ratio	0.23	0.20	0.34	0.30	0.09	0.91	0.50	0.72		0.58	0.81	
Control Delay (s/veh)	14.2	13.5	12.9	14.1	12.4	40.3	18.1	12.8		33.5	14.3	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay (s/veh)	14.2	13.5	12.9	14.1	12.4	40.3	18.1	12.8		33.5	14.3	
LOS	B	B	B	B	B	D	B	B		C	B	
Approach Delay (s/veh)		13.4			30.3			13.1			14.9	
Approach LOS		B			C			B			B	
90th %ile Green (s)	19.5	19.5	19.5	19.5	19.5	19.5	26.5	26.5		26.5	26.5	
90th %ile Term Code	Hold	Hold	Hold	Max	Max	Max	Coord	Coord		Coord	Coord	
70th %ile Green (s)	19.5	19.5	19.5	19.5	19.5	19.5	26.5	26.5		26.5	26.5	
70th %ile Term Code	Hold	Hold	Hold	Max	Max	Max	Coord	Coord		Coord	Coord	
50th %ile Green (s)	19.5	19.5	19.5	19.5	19.5	19.5	26.5	26.5		26.5	26.5	
50th %ile Term Code	Hold	Hold	Hold	Max	Max	Max	Coord	Coord		Coord	Coord	
30th %ile Green (s)	19.5	19.5	19.5	19.5	19.5	19.5	26.5	26.5		26.5	26.5	
30th %ile Term Code	Hold	Hold	Hold	Max	Max	Max	Coord	Coord		Coord	Coord	
10th %ile Green (s)	16.1	16.1	16.1	16.1	16.1	16.1	29.9	29.9		29.9	29.9	
10th %ile Term Code	Hold	Hold	Hold	Gap	Gap	Gap	Coord	Coord		Coord	Coord	

Intersection Summary	
Area Type: Other	
Cycle Length: 55	
Actuated Cycle Length: 55	
Offset: 0 (0%), Referenced to phase 2:NWTL and 6:SETL, Start of Green	
Natural Cycle: 55	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.91	
Intersection Signal Delay (s/veh): 16.1	Intersection LOS: B
Intersection Capacity Utilization 79.6%	ICU Level of Service D
Analysis Period (min) 15	

Splits and Phases: 8:

Educational Use Only

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations												
Traffic Volume (vph)	0	465	0	0	108	1	0	0	11	0	0	0
Future Volume (vph)	0	465	0	0	108	1	0	0	11	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	0.91	0.91	1.00	0.91	0.91	1.00	1.00	1.00	1.00	1.00	1.00
Frt					0.999				0.865			
Flt Protected												
Satd. Flow (prot)	0	5085	0	0	5080	0	0	0	1611	0	0	1863
Flt Permitted												
Satd. Flow (perm)	0	5085	0	0	5080	0	0	0	1611	0	0	1863
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		284			316			426			482	
Travel Time (s)		6.5			7.2			9.7			11.0	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	505	0	0	117	1	0	0	12	0	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	505	0	0	118	0	0	0	12	0	0	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)		0			0			0			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	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Free			Free			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 13.3%		ICU Level of Service A	
Analysis Period (min) 15			

Educational Use Only

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	157	153	124	329	380	163	108	235	123	36	563	115
Future Volume (vph)	157	153	124	329	380	163	108	235	123	36	563	115
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.91	0.91	1.00	0.91	0.91
Frt		0.933			0.955			0.948			0.975	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	1738	0	1770	1779	0	1770	4821	0	1770	4958	0
Flt Permitted	0.168			0.577			0.320			0.513		
Satd. Flow (perm)	313	1738	0	1075	1779	0	596	4821	0	956	4958	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		93			42			134			85	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		324			949			316			728	
Travel Time (s)		7.4			21.6			7.2			16.5	
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)	171	166	135	358	413	177	117	255	134	39	612	125
Shared Lane Traffic (%)												
Lane Group Flow (vph)	171	301	0	358	590	0	117	389	0	39	737	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	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+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		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases	7	4			8			2			6	
Permitted Phases	4			8			2			6		
Detector Phase	7	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	

Educational Use Only

Lanes, Volumes, Timings
16: 12/05/2025

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Split (s)	9.5	22.5		22.5	22.5		22.5	22.5		22.5	22.5	
Total Split (s)	9.5	22.5		22.5	22.5		22.5	22.5		22.5	22.5	
Total Split (%)	17.4%	41.3%		41.3%	41.3%		41.3%	41.3%		41.3%	41.3%	
Maximum Green (s)	5.0	18.0		18.0	18.0		18.0	18.0		18.0	18.0	
Yellow Time (s)	3.5	3.5		3.5	3.5		3.5	3.5		3.5	3.5	
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0		1.0	1.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.5	4.5		4.5	4.5		4.5	4.5		4.5	4.5	
Lead/Lag	Lead			Lag	Lag							
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		C-Max	C-Max		C-Max	C-Max	
Walk Time (s)		7.0		7.0	7.0		7.0	7.0		7.0	7.0	
Flash Don't 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)	26.9	26.9		19.3	19.3		18.6	18.6		18.6	18.6	
Actuated g/C Ratio	0.49	0.49		0.35	0.35		0.34	0.34		0.34	0.34	
v/c Ratio	0.60	0.33		0.94	0.90		0.58	0.22		0.12	0.42	
Control Delay (s/veh)	17.5	6.6		57.4	37.8		30.5	8.9		14.0	13.2	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay (s/veh)	17.5	6.6		57.4	37.8		30.5	8.9		14.0	13.2	
LOS	B	A		E	D		C	A		B	B	
Approach Delay (s/veh)		10.6			45.2			13.9			13.2	
Approach LOS		B			D			B			B	
90th %ile Green (s)	5.0	27.5		18.0	18.0		18.0	18.0		18.0	18.0	
90th %ile Term Code	Max	Hold		Max	Max		Coord	Coord		Coord	Coord	
70th %ile Green (s)	5.0	27.5		18.0	18.0		18.0	18.0		18.0	18.0	
70th %ile Term Code	Max	Hold		Max	Max		Coord	Coord		Coord	Coord	
50th %ile Green (s)	5.0	27.5		18.0	18.0		18.0	18.0		18.0	18.0	
50th %ile Term Code	Max	Hold		Max	Max		Coord	Coord		Coord	Coord	
30th %ile Green (s)	5.0	27.5		18.0	18.0		18.0	18.0		18.0	18.0	
30th %ile Term Code	Max	Hold		Max	Max		Coord	Coord		Coord	Coord	
10th %ile Green (s)	0.0	24.4		24.4	24.4		21.1	21.1		21.1	21.1	
10th %ile Term Code	Skip	Hold		Gap	Gap		Coord	Coord		Coord	Coord	

Intersection Summary	
Area Type: Other	
Cycle Length: 54.5	
Actuated Cycle Length: 54.5	
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green	
Natural Cycle: 65	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.94	
Intersection Signal Delay (s/veh): 24.1	Intersection LOS: C
Intersection Capacity Utilization 73.0%	ICU Level of Service D
Analysis Period (min) 15	

Splits and Phases: 16:

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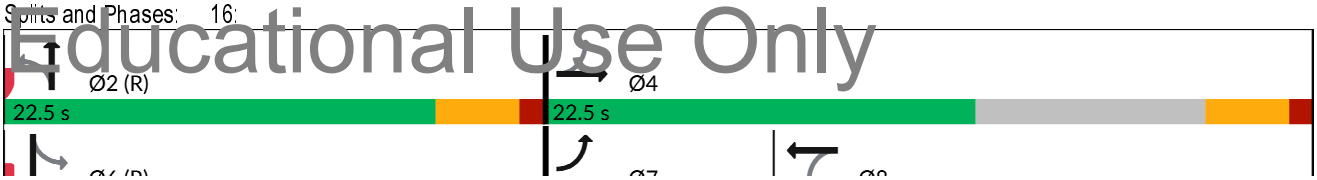

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations												
Traffic Volume (vph)	6	419	1	7	1050	7	1	0	31	4	0	5
Future Volume (vph)	6	419	1	7	1050	7	1	0	31	4	0	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	0.91	0.91	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt					0.999			0.850				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	5085	0	1770	3536	0	1770	1583	0	1770	0	1583
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1770	5085	0	1770	3536	0	1770	1583	0	1770	0	1583
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		554			284			275			473	
Travel Time (s)		12.6			6.5			6.3			10.8	
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
Adj. Flow (vph)	7	455	1	8	1141	8	1	0	34	4	0	5
Shared Lane Traffic (%)												
Lane Group Flow (vph)	7	456	0	8	1149	0	1	34	0	4	0	5
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)		24			24			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
Sign Control		Free			Free			Stop			Stop	

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	
Intersection Capacity Utilization 39.2%	ICU Level of Service A
Analysis Period (min) 15	

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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL2	NBL	NBR	SEL	SER	SER2
Lane Configurations												
Traffic Volume (vph)	174	534	77	72	284	97	59	495	213	57	287	116
Future Volume (vph)	174	534	77	72	284	97	59	495	213	57	287	116
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	0.97	0.97	1.00	1.00	0.76	1.00
Frt			0.850			0.850			0.850		0.850	
Flt Protected	0.950			0.950			0.950	0.950		0.950		
Satd. Flow (prot)	1770	3539	1583	1770	3539	1583	3433	3433	1583	1770	3610	0
Flt Permitted	0.564			0.409			0.447	0.955		0.446		
Satd. Flow (perm)	1051	3539	1583	762	3539	1583	1615	3451	1583	831	3610	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			84			105			162		126	
Link Speed (mph)		30			30			30		30		
Link Distance (ft)		728			572			642		887		
Travel Time (s)		16.5			13.0			14.6		20.2		
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)	189	580	84	78	309	105	64	538	232	62	312	126
Shared Lane Traffic (%)												
Lane Group Flow (vph)	189	580	84	78	309	105	64	538	232	62	438	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	Right	Right
Median Width(ft)		12			12			48		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	15	9	15	9	9
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Perm	Perm	Perm	Perm	Prot	
Protected Phases		2			6						4	
Permitted Phases	2		2	6		6	8	8	8	4		
Minimum Split (s)	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	
Total Split (s)	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	
Total Split (%)	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	
Maximum Green (s)	18.0	18.0	18.0	18.0	18.0	18.0	18.0	18.0	18.0	18.0	18.0	
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	
Lead/Lag												
Lead-Lag Optimize?												
Walk Time (s)	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	
Flash Don't Walk (s)	11.0	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	0	
Act Effct Green (s)	18.0	18.0	18.0	18.0	18.0	18.0	18.0	18.0	18.0	18.0	18.0	
Actuated g/C Ratio	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	
v/c Ratio	0.45	0.41	0.12	0.26	0.22	0.15	0.10	0.39	0.32	0.19	0.29	
Control Delay (s/veh)	14.2	10.8	3.2	11.8	9.4	3.1	9.0	10.7	4.8	10.6	7.0	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay (s/veh)	14.2	10.8	3.2	11.8	9.4	3.1	9.0	10.7	4.8	10.6	7.0	

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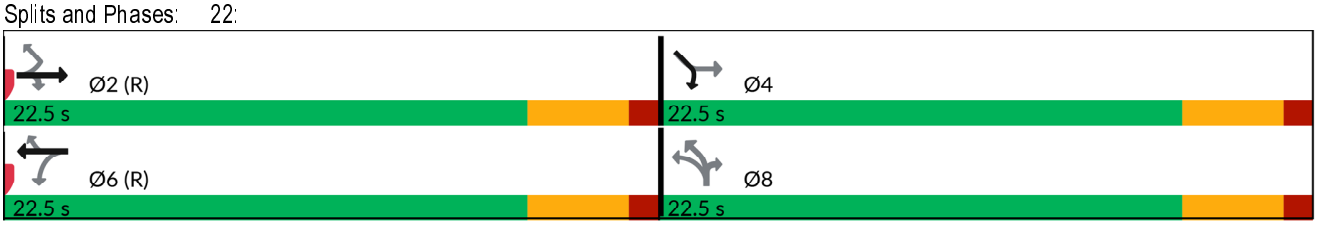
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL2	NBL	NBR	SEL	SER	SER2
LOS	B	B	A	B	A	A	A	B	A	B	A	
Approach Delay (s/veh)		10.8			8.4			8.9		7.4		
Approach LOS		B			A			A		A		

Intersection Summary	
Area Type:	Other
Cycle Length: 45	
Actuated Cycle Length: 45	
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green	
Natural Cycle: 45	
Control Type: Pretimed	
Maximum v/c Ratio: 0.45	
Intersection Signal Delay (s/veh): 9.2	Intersection LOS: A
Intersection Capacity Utilization 52.2%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 22:



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Lane Group	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (vph)	39	263	6	2	701	67	0	0	30	60	0	42
Future Volume (vph)	39	263	6	2	701	67	0	0	30	60	0	42
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
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		0.997			0.988				0.865			0.850
Flt Protected		0.994								0.950		
Satd. Flow (prot)	0	1846	0	0	1840	0	0	0	1611	1770	0	1583
Flt Permitted		0.994								0.950		
Satd. Flow (perm)	0	1846	0	0	1840	0	0	0	1611	1770	0	1583
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		954			324			275			312	
Travel Time (s)		21.7			7.4			6.3			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)	42	286	7	2	762	73	0	0	33	65	0	46
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	335	0	0	837	0	0	0	33	65	0	46
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)		0			0			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane		Yes										
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
Sign Control		Free			Free			Free			Free	

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	
Intersection Capacity Utilization 55.1%	ICU Level of Service B
Analysis Period (min) 15	

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