



TRAFFIC STUDY

Proposed FedEx Ground Hub
Industrial Park Road
Middletown, CT

EXECUTIVE SUMMARY	i
I. EXISTING CONDITIONS	7
Access Network	7
Intersection Characteristics	9
Existing Traffic Volumes	12
Truck Restrictions	14
Crash Data Analysis	15
II. PROJECTED TRAFFIC CONDITIONS	17
No Build Traffic Volumes	17
Trip Generation	19
Trip Distribution	20
Assigned Site Generated Traffic Volumes	23
Build Traffic Volumes	26
III. ROADWAY ADEQUACY	28
Signalized Intersections	29
Unsignalized Intersections	30
IV. CONCLUSIONS AND RECOMMENDATIONS	41

ILLUSTRATIONS

FIGURE 1 – LOCATION MAP	6
FIGURE 2 – EXISTING (2020) TRAFFIC VOLUMES	13
FIGURE 3 – NO BUILD (2021) TRAFFIC VOLUMES.....	18
FIGURE 4 – VEHICULAR TRIP DISTRIBUTION	21
FIGURE 5 – TRUCK TRIP DISTRIBUTION	22
FIGURE 6 – VEHICULAR SITE GENERATED TRAFFIC VOLUMES	24
FIGURE 7 – TRUCK SITE GENERATED TRAFFIC VOLUMES	25
FIGURE 8 – BUILD (2021) TRAFFIC VOLUMES	27

TABLES

TABLE 1 – CRASH DATA SUMMARY	16
TABLE 2 – PEAK HOUR TRIP GENERATION	20
TABLE 3 – SIGNALIZED INTERSECTION – LEVEL OF SERVICE	29
TABLE 4 – UNSIGNALIZED INTERSECTION – LEVEL OF SERVICE.....	30
TABLE 5 – PEAK HOUR LEVELS OF SERVICE.....	31

APPENDIX

2015 ORIGINALLY OSTA APPROVED DEVELOPMENT
CAPACITY ANALYSES

EXECUTIVE SUMMARY

Expansion of a FedEx Hub along Industrial Park Road and Middle Street is proposed. The site is part of the former Aetna Insurance Company division headquarters and is roughly bordered by Division Street to the north, Industrial Park Road to the east, Middle Street to the west and the Aetna data center to the south. Access to the site will be provided for internal employee passenger cars on Middle Street and for trucks and truck drivers at a satellite lot on Industrial Park Road.

This study investigated the traffic impact associated with the expansion of a FedEx Hub during the weekday morning and afternoon peak hours. Weekday morning and afternoon peak hour traffic volumes were obtained at key nearby intersections in November of 2014. Current peak hour traffic volumes were developed using 2014 counts by applying an annual growth factor of 1% to the balanced count profiles approved in the original 2015 "Aetna Subdivision Exp. / FedEx Ground Hub, OSTA Number: 082-1506-01" study. To stay conservative, traffic volumes at the driveway sites utilized forecasted volumes for "proposed current operation" as these volumes were higher than 2020 observed. For the proposed expansion, the FedEx Ground Hub is assumed to generate approximately 5,910 trips per day, and an additional 451 (82 enter, 369 exit) vehicle trips during the weekday AM peak hour, and 483 (327 enter, 156 exit) during the weekday PM peak hour by the year 2030.

The traffic operations at the intersections studied will remain essentially unchanged and for most locations at acceptable levels. Some existing issues that may be further exacerbated by the FedEx expansion project, or perceived to be, as well as other concerns identified in the details of the analyses are identified. While there are no large system level traffic improvements needed, there are observed, existing, or projected background, problem areas that should be addressed in the future by municipal or State agencies independent of the FedEx project. Moving forward, the following should be considered:

By FedEx:

1. The proposal must to be submitted to the Office of State Traffic Administration (OSTA) to obtain a Certificate of Operation as a major traffic generator under Section 14-311 of the Connecticut General Statutes.
2. All large trucks should use the 1-91 interchange at Route 372 (#21). Trucks oriented towards other regional expressways, 1-84, Route 9 and Route 72 could legally use Route 372 to reach the site, but we recommend that the large trucks stay on the expressway network to avoid mixing with local traffic.
3. Industrial Park Road at proposed Hub driveway – This “T” intersection was formally signalized and currently it operates with a warning sign flashing beacon. Based on the FedEx traffic volume projections, the traffic analysis shows traffic signal is not warranted and under forecasted volumes the intersection will operate at LOS “A” and “C” during AM and PM Peak hours.
4. Industrial Park Road at proposed satellite parking lot – sight distances based on truck needs should be provided. Minor widening and radii improvements to the existing satellite parking lot driveway should be implemented to accommodate the anticipated truck turns from the Site. In addition, it appears that the curb cut is in the transition area from two southbound Industrial Park Road lanes to one. This is an undesirable situation and some pavement marking and signing adjustments should be made.
5. Proposed third access point at Main Street helps the distribution of vehicular Site generated traffic during peak hours. All three driveways perform at adequate LOS of “B” and “C”
6. Route 372 (Berlin Road) at Sebethe Drive intersection is projected to operate at an “E” level of service during PM peak with delay of 74 seconds. The inclusion of FedEx expansion project is projected to result in an “E” level of service with delay increase of 3 seconds. This location is controlled jointly with the 1-91 SB ramps and Industrial Park Road intersection, 250' to the east and the complex traffic signal phasing is very difficult to model. Modification of the traffic signal to

reallocate more time to the left turn movement would improve the build conditions and overall delay for the intersection would shorten to 50 seconds.

By Municipal and/or State Agencies:

1. The all way stop at Country Club Road at the 1-91 NB off ramp (exit #20) has a background "F" level of service during the morning peak period, with the off-ramp at "F". While FedEx has a minimal impact here, the City of Middletown and CTDOT should consider further warrant analysis, a traffic signal would provide benefit during the morning peak periods, but much less so during other times.
2. The all way stop at Country Club Road at Middle Street and the 1-91 SB on ramp (exit #20) has a background "F" level of service during both peak periods studies, with westbound Country Club Road or Middle Street at "F". While FedEx has a minimal impact here, similarly if warranted, a traffic signal would provide significant benefit. Providing additional travel lanes on Middle Street and westbound Country Club Road in conjunction with a traffic signal would be even more beneficial. While there is right of way available for geometric improvements, a pump station in the northeast corner limits the possibility of improvement.
3. The level of service at the stop controlled 1-91 SB off ramp (exit #20) at Middle Street has a background "F" level of service during the afternoon peak period. While there may be an increase in delay for ramp traffic, there is still sufficient capacity for the movement. Vehicles turning right from the ramp may already bypass left turners, resulting in better than computed operation.
4. The Industrial Park Road (stop controlled) level of service at Smith Street during the afternoon peak period is projected to go from "E" to "F". While there may be an increase in delay for Industrial Park Road traffic, there is still sufficient capacity for the movement. Two possible options to improve traffic flow include implementation of an all-way stop, which would reduce the Industrial Park Road delays (at the expense of Smith Street). Overall intersection delay will remain 28 seconds. The second option would be to widen the Industrial Park Road to

provide two lanes approaching Smith Street. There is sufficient right of way to provide two approaching lanes. This would require restriping of Industrial Park Road from former Aetna Site drive to Smith Street in southbound direction.

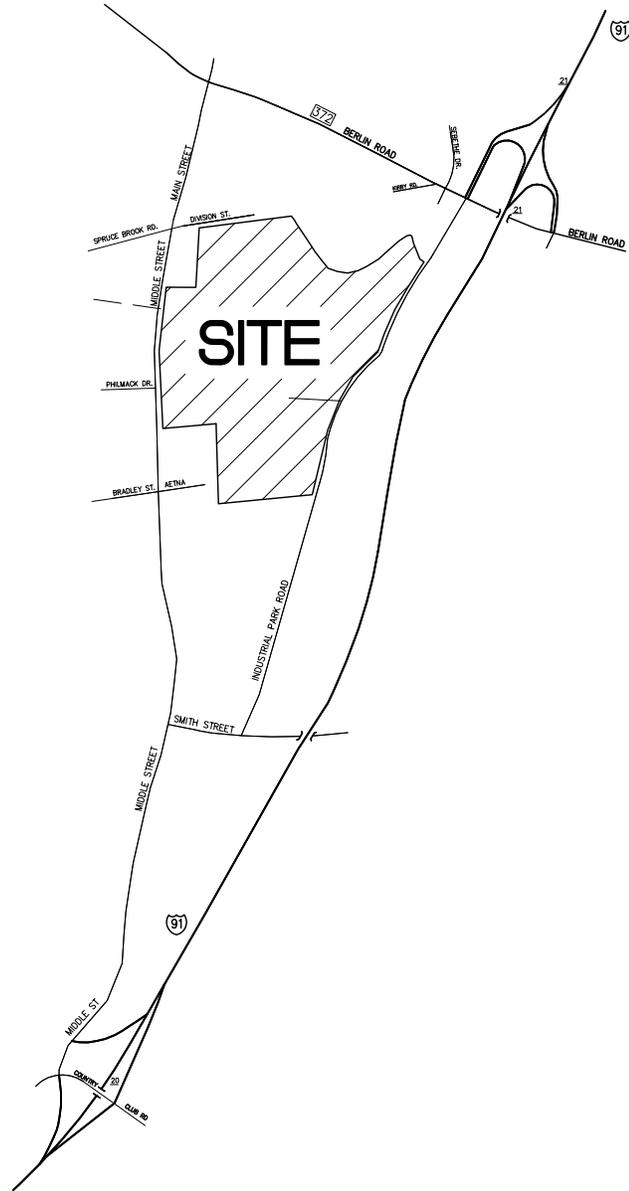
5. Route 372 (Berlin Road) at Sebethe Drive intersection is controlled jointly with the 1-91 SB ramps and Industrial Park Road intersection, 250' to the east. Currently it is projected to operate at an "E" level of service during PM peak with delay of 74 seconds. Modification of the traffic signal to reallocate more time to the left turn movement would improve the build conditions however the City of Middletown and CTDOT should consider next level improvements such as additional auxiliary turn lanes and/or a third eastbound through lane could be constructed. Available right of way would limit the length of thru lanes for example to approximately 175 feet and beyond Sebethe Drive it would become the right turn lane at Industrial Park Road. This would limit its effectiveness but provide satisfactory mitigation if needed.

I. INTRODUCTION

The expansion of FedEx Ground Hub is located on 239 +/- acre site is roughly bordered by Division Street to the north, Middle Street to the west, Industrial Park Road to the east, and the Aetna data center to the south. **See Figure 1.** It was formerly the site of a major Aetna Insurance Company facility. Originally constructed in 1983, the Aetna facility contained about 1.4 million square feet of floor area, with over 5,000 employees and 4,600 parking spaces. That facility, except for the data center, was vacated in 2010 and demolished in 2011.

The FedEx Ground Hub has a certain operational characteristic that impacts the way traffic utilizes the site. There will be essentially two separate circulation and access networks. The parking area for the cars of internal employees (package handlers, etc.) will be accessible only from Middle Street and not connected for vehicular circulation to the truck parking areas at the hub, nor to Industrial Park Road. The truck parking areas at the hub will be accessible only from Industrial Park Road and similarly not connected circulation wise to the passenger car parking area or to Middle Street. In addition, there will be a satellite parking area on Industrial Park Road where truck drivers leave their personal cars, pick up a tractor, and drive to the hub to get a trailer. The Industrial Park Road access for the main hub (trucks) is via the existing yellow warning traffic signalized Aetna entrance. Access for the satellite lot along Middle Street is located about 1,200 feet north of that truck access. A new access /egress point is proposed on Middle Street between two existing driveways to address queuing in the parking lot.

This study investigated the traffic impact associated with the proposed expansion of the FedEx Ground Hub development during the weekday morning and afternoon peak traffic periods. These represent the peak periods for traffic on the adjacent street system. The FedEx hub traffic may actually peak at times outside the commuter peak, but for a conservative worst-case analysis, it was assumed the two coincide.



REV: DECEMBER 2020



SITE LOCATION
FEDEX HUB
MIDDLETOWN, CONNECTICUT
SCHEMATIC, NOT TO SCALE

FIGURE 1

II. EXISTING CONDITIONS

An investigation of the existing conditions on the adjacent roadway network formed the basis for assessing any traffic issues associated with a FedEx Ground Hub operation. This investigation included a field reconnaissance, field traffic counting, and research of pertinent planning and traffic data at local and State agencies.

Access Network

The project study area consists of the signalized intersections at the following locations:

- Route 372 (Berlin Road) at I-91 SB ramps and Industrial Park Road
- Route 372 (Berlin Road) at I-91 NB ramps
- Route 372 (Mill Street) at Main Street
- Middle Street at Smith Street
- Middle Street at Aetna driveway and Bradley Street

Primary access roads in the site vicinity include Interstate Route 91, Route 372 (Berlin Road/Mill Street), Country Club Road, Industrial Park Road and Middle Street. Other roads of potential interest include Main Street and Smith Street.

Interstate Route 91 bisects the state as a limited access north-south expressway facility. In the vicinity of the site, Interstate Route 91 is a six-lane highway. A split interchange (#20) exists with Country Club Road and Middle Street about 1.75 miles south of the site, in the City of Middletown. The I-91 northbound ramps intersect Country Club Road about one quarter mile east of Middle Street. The I-91 southbound ramps are on Middle Street, the on ramp at the Middle Street/Country Club Road intersection, and the off ramp 500 feet to the north on Middle Street. A full interchange (#21) is found at Route 372 (Berlin Road) in the Town of Cromwell, about three quarters of a mile north of the site. The southbound ramps intersect Route 372 (Berlin Road) directly opposite Industrial Park Road, and the northbound ramps are located about one quarter mile to the east.

Route 372 (Berlin Road and Mill Street) is an east-west oriented minor arterial, running through the Towns of Berlin and Cromwell near the site. In the Town of Cromwell, Route 372 (Berlin Road) is a 4-6 lane facility. Abutting lands are heavily developed commercially with restaurants, retail stores, motels, etc. The roadway has a 40 mile per hour speed limit and is generally straight and flat with sporadic illumination. There are traffic signals at both I-91 ramp intersections and at Walmart to the west of the interchange. In the Town of Berlin, Route 372 (Mill Street) is a two-lane facility with a 40 mile per hour speed limit. Abutting lands are much more lightly developed. There is a traffic signal at the Main Street intersection.

Country Club Road is a two-lane City of Middletown roadway, classified as a minor arterial by CTDOT. The speed limit is 25 miles per hour. Abutting lands are residential east of I-91. Between I-91 and Middle Street, Country Club Road is on a downgrade. The roadway width is 40 feet. There is sporadic illumination and a sidewalk only across the I-91 bridge. There are all-way stops at both the I-91 NB off ramp and the Middle Street/I-91 SB on ramp intersections. In the immediate interchange area the most noticeable land use is the headquarters of the Connecticut Department of Emergency Services and Public Protection. There is also a park and ride lot adjacent to the southbound on ramp.

Industrial Park Road is a 1.6 mile long, north-south oriented facility running between Route 372 (Berlin Road) in the Town of Cromwell and Smith Street in the City of Middletown. It is classified as a collector by CTDOT. In the site vicinity, between I-91 and the former Aetna driveway, once signalized, Industrial Park Road is a 52 feet wide, 3-4 lane roadway. One of the two southbound travel lanes, which we believe once continued all the way to the Aetna driveway, has been eliminated by pavement markings about 1/2 mile from Route 372 (Berlin Road). The speed limit is 35 miles per hour and Industrial Park Road has a gently rolling alignment. Illumination is provided. There

are a few commercial driveways near the Route 372 (Berlin Road) intersection and a park and ride lot. There are no other curb cuts between Route 372 (Berlin Road) and the former Aetna driveway. From the former Aetna driveway southerly to Smith Street, Industrial Park road is a two-lane facility 40'-48' in width. Abutting developed lands consist primarily of manufacturing and light industrial uses.

Middle Street is a two lane, north-south oriented City of Middletown roadway running between Country Club Road and Division Street/Spruce Brook Road. It is classified as a collector by CTDOT. The speed limit is 35 miles per hour and illumination is provided. Roadway widths vary from about 39'-40' between Country Club Road and Smith Street; 29'-30' between Smith Street and the Aetna driveway/Bradley Street intersection; and 39'-40' from that location north to Division Street.

Intersection Characteristics

Several key intersections were reviewed in this study to determine if they would be impacted by the expected site traffic volumes. They are as follows:

- **Route 372 (Berlin Road) at 1-91 SB ramps and Industrial Park Road** - This signalized intersection shares operations and traffic signal phasing with the Sebethe Drive intersection, located about 250 feet to the west. At the main intersection, both Route 372 (Berlin Road) approaches have a left turn lane, two through lanes and a right turn lane. The northbound approach, Industrial Park Road, has a left turn lane, a through lane and a channelized right turn lane. The 1-91 SB off ramp has a left turn lane, two through lanes and a right turn lane. At the Sebethe Drive intersection, Route 372 (Berlin Road) eastbound has a left turn lane and two through lanes. The Route 372 (Berlin Road) approach has two through lanes. Sebethe Drive has a left turn lane, a left/through lane and a right turn lane. Directly opposite Sebethe Drive is an entrance only curb cut for McDonald's. The traffic signal phasing is complex due to the need to control both intersections and includes protected only left turn phasing for Route 372 (Berlin Road) at the

main intersection, internal clearances, protected/permitted left turn phasing for the off ramp and Industrial Park Road, as well as emergency vehicle pre-emption.

- **Route 372 (Berlin Road) at I-91 NB ramps** - This signalized intersection, located about ¼ mile east of the I-91 SB ramps is part of a CTDOT coordinated system along Route 372 (Berlin Road). Route 372 (Berlin Road) has two through lanes in each direction along with an eastbound left turn lane and a westbound right turn lane. The left turn is protected/permitted in the traffic signal sequence. The I-91 off ramp has three lanes, two for left turns and one for right turns. There is a walk phase to cross Route 372 (Berlin Road) on the east side of the intersection, as well as emergency vehicle pre-emption.
- **Route 372 (Mill Street) at Main Street** - This signalized intersection is located about three quarters of a mile west of the I-91 SB ramps. There is another signalized intersection (Walmart) between the two. Route 372 (Mill Street) eastbound has a left/through lane and a right turn lane. Route 372 (Mill Street) westbound has a left turn lane and a through / right lane. The Main Street approaches to the intersection each have a single lane. The traffic signal provides simple two-phase operation.
- **Industrial Park Road at former Aetna driveway** – This formally signalized “T” type intersection is located about 0.8 miles south of Route 372 (Berlin Road). The traffic signal has been replaced with a warning sign flashing beacon. Northbound Industrial Park Road has two travel lanes. Southbound from Route 372 to the former Aetna driveway has two travel lanes with one turning into exclusive right turn lane approximately 0.4 miles to the north. To the south of the intersection, Industrial Park Road currently has a single travel lane. The former Aetna driveway has two left turn lanes and a right turn lane at the intersection.
- **Industrial Park Road at Smith Street** - This unsignalized “T” intersection is located about 0.8 miles south of the former Aetna driveway. Industrial Park Road is stop controlled.

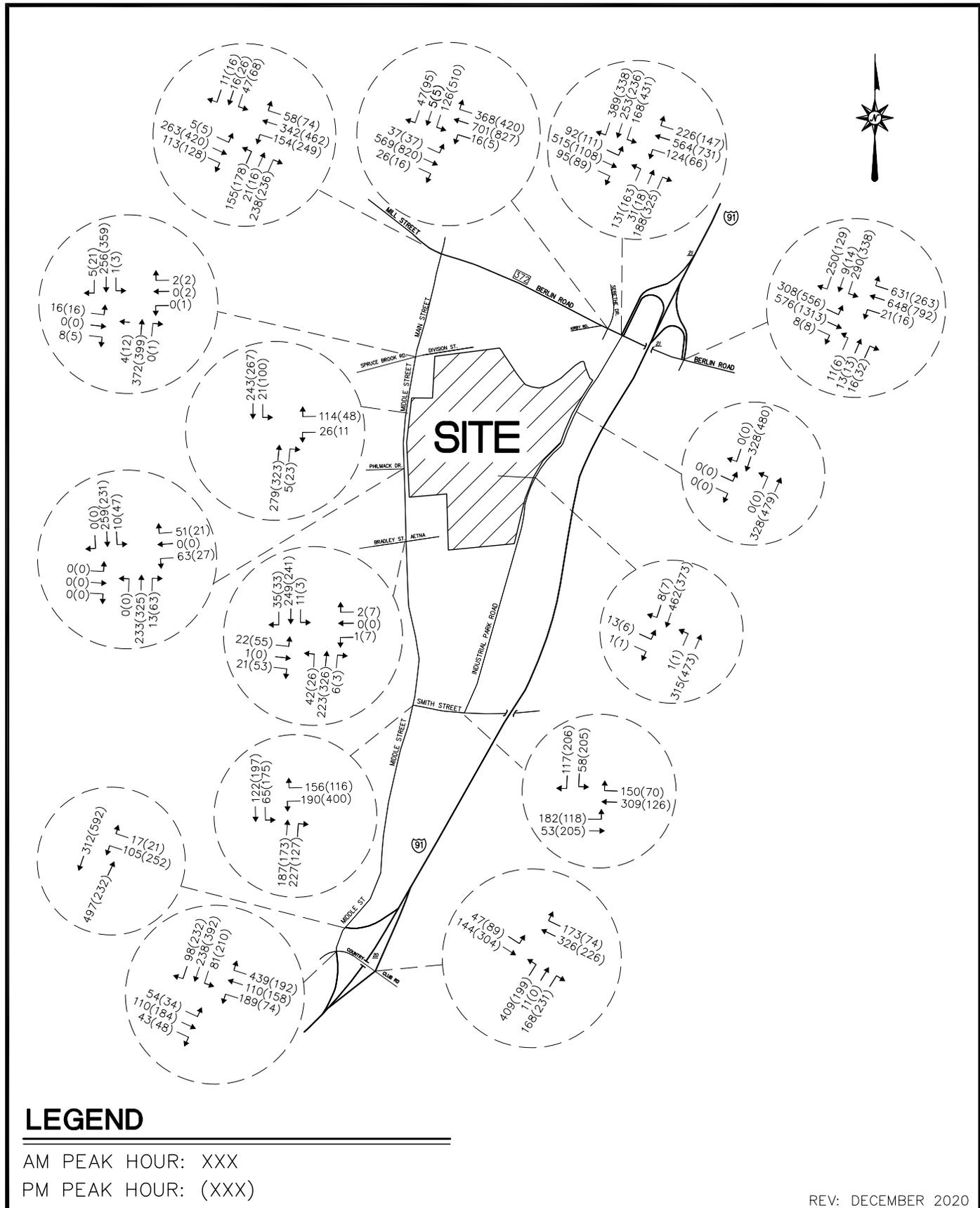
- **Middle Street at Smith Street** - This signalized "T" type intersection is located about 1/4 mile west of the Industrial Park Road intersection. All approaches are single lane. There is protected/permitted phasing for the Middle Street southbound approach. The traffic signal operation was very inefficient when observed during a morning period. A truck tire path has been worn off the pavement in southeast corner of the intersection.
- **Middle Street at Aetna driveway and Bradley Street** - This signalized intersection is located about 2/3rds of a mile north of Smith Street. Northbound Middle Street has a left/through lane and a channelized right turn lane. Southbound Middle Street has a left turn lane and a through lane. Bradley Street has a single approach lane and the Aetna driveway, which services their data center, has a left/through lane and a channelized right turn lane. The traffic signal phasing provides protected/permitted southbound left turns.
- **Middle Street/Main Street at Division Street and Spruce Brook Road** - Located about 0.7 mile north of the existing signalized Aetna driveway, this all - way stop is at the Middletown/Berlin boundary. All approaches are one lane.
- **Middle Street at I-91 SB off ramp** - The off ramp is "Stop" controlled at this "T" intersection. All approaches are single lane.
- **Middle Street at Country Club Road and I-91 SB on ramp** - This intersection, located about 500 feet south of the I-91 SB off ramp is an all-way stop. All approaches are one lane
- **Country Club Road and I-91 NB ramps** - This intersection, located about 1000 feet east of Middle Street is an all-way stop. Over the years the City of Middletown has tried to have signalization approved at this intersection.

Existing Traffic Volumes

Weekday morning and afternoon peak hour traffic volumes were obtained at the above intersections in November of 2014. In addition, turning count movements were obtained at the four access/egress points to the FedEx Ground Hub operation Site. These counts were performed the week of November 16, 2020 and it should be noted that these counts are impacted by the COVID-19 Pandemic. CTDOT has published guidance concerning traffic count data regarding COVID-19.

Daily traffic volumes, while not used in capacity analyses, provide an indication of the roadway usage and function. Interstate Route 91 carries nearly 122,900 daily trips north of Exit 21 ramps. The Route 372 (Berlin Road) interchange (#21) handled over 20,500 daily trips. The corresponding 1-91 interchange on Country Club Road/Middle Street (#20) handled approximately 11,900. Daily traffic volumes on Route 372 (Berlin Road) range from about 11,000 at the Berlin/Middletown line to just over 24,600 east of 1-91. Industrial Park Road carried daily traffic volumes ranging from about 7,500 trips near Route 372 (Berlin Road) to 6,100 near Smith Street. Main Street in Berlin carried 5,100 daily trips, while Middle Street carried about 7,600 near Country Club Road. Country Club Road carried 5,300 daily trips east of 1-91. Smith Street north of Miner Street T-intersection carries 2,800 daily trips.

The current peak hour traffic volumes were developed using 2014 counts by applying an annual growth factor of 1% to the balanced count profiles approved in the original 2015 "Aetna Subdivision Exp. / FedEx Ground Hub, OSTA Number: 082-1506-01" study. To stay conservative, traffic volumes at the driveway sites utilized forecasted volumes for "proposed current operation" as these volumes were higher than 2020 observed. The current peak hour traffic volumes for the intersections are illustrated in **Figure 2**.



**CURRENT (2020) TRAFFIC VOLUMES
 FEDEX HUB
 MIDDLETOWN, CONNECTICUT**

SCHMATIC, NOT TO SCALE

FIGURE 2

Truck Restrictions

In the traffic study area and surroundings, truck restrictions exist at selected roadways.

Through Trucks

“Section 14-298 of the General Statutes of Connecticut (CGS) grants authority to the Office of the State Traffic Administration (OSTA) to prohibit through truck traffic of streets and highways within the limits of and under the jurisdiction of any city, town or borough within Connecticut for the protection and safety of the public.” The decision is made based on consideration of many factors including: roadway width, whether the road is a logical one for through trucks, the number and severity of curves and grades, sight line restrictions, roadside character and development, number and character of intersecting roads, traffic control devices, traffic volume and density, bridge clearances, speed limits, and the adequacy of alternate routes. If an investigation shows that a road is inadequate for through trucks, a reasonable alternate route must be available and a requests for through truck prohibitions must be submitted from each Local Traffic Authority (LTA) from all municipalities along the requested route to the Executive Director of the OSTA for review and consideration. In Connecticut, a through truck is defined as one that passes through a town without having an origin or destination in that town. If a truck originates or has a scheduled stop within that town, it would not be affected by a through truck prohibition. Sections of roadway observed with such restriction include:

- The section of Main Street in the Town of Berlin, which acts as the continuation of Middle Street, from the intersection with Division Street/Spruce Brook Road to Route 372 (Mill Street) is signed for "No Through Trucks".
- Smith Street east of Industrial Park Road is similarly signed.

The "No Through Truck" regulations posted on Main Street in the Town of Berlin and on Smith Street in the City of Middletown were approved by the Office of State Traffic Administration. Therefore, no FedEx trucks can use Main Street unless they have a scheduled stop in the Town of Berlin.

- **Certain Large Trucks** - These are trucks with 53' trailers or double trailers, often referred to by their AASHTO designations of WB-67 and WB-67D. Trucks in Connecticut are regulated under Sections 14-261, 261a, 264, 267a, 269 and 270 of the Connecticut General Statutes, consistent with the requirements of the Federal Surface Transportation Assistance Act (STAA) of 1982. Pursuant to State statutes, 53' semi-trailers, and 28' doubles with an overall length not exceeding 65', may travel the designated highway system. This system includes State numbered Routes 1-399, 450, 476, 508, 695, 695; the Interstate highway system; and State and Local roads for up to one mile from those routes to access to terminals, etc. FedEx uses trucks of this type and they may use the 1-91 interchange at Route 372 (#21), Route 372 (Berlin Road) and Industrial Park Road to reach the site, which is less than one mile from Route 372 (Berlin Road). However, they may not use the 1-91 interchange with Country Club Road (#20), Country Club Road, or other connecting streets to reach the site, which is more than one mile away, unless the one mile limit is waived by the Commissioner of Transportation.

Crash Data Analysis

As part of the existing conditions analysis, crash data for the most recent five-year period from January 1, 2015 through December 31, 2019, was obtained from the Connecticut Crash Data Repository.

Three hundred eighty-six (386) crashes in the study area were reviewed; the most common crashes were the front to rear at thirty-eight percent (38%) followed closely by angle crashes at thirty percent (30%). The majority of crashes resulted in "No Apparent Injury" at eighty percent (80%). There were no fatalities and only sixteen (16) crashes associated with "Suspected Serious Injury" in the corridor for the five-year period.

According to the crash records mentioned above, Route 372 between Cross Street and Coles Road experienced the majority of the crashes in the corridor at seventy-eight (78) percent. Below **Table 1** summaries the crash data.

Table 1 – Crash Data Summary

Proposed FedEx Ground Hub, Industrial Park Road, Middletown, CT						
	Middle Street / Main Street	Industrial Park Road	Route 372 / Berlin Road	Smith Street	Total	Percent
Year						
2015	7	13	68	4	92	24%
2016	5	5	63	1	74	19%
2017	7	6	80	1	94	24%
2018	9	3	43	3	58	15%
2019	15	4	46	3	68	18%
Total	43	31	300	12	386	100%
Crash Type						
Angle	7	4	99	4	114	30%
Front to Front	1	0	2	0	3	1%
Front to Rear	15	6	121	3	145	38%
Not Applicable	16	11	31	4	62	16%
Other	0	0	5	0	5	1%
Rear to Rear	0	0	3	0	3	1%
Rear to Side	0	1	0	0	1	0%
Sideswipe, Opposite Direction	1	1	5	0	7	2%
Sideswipe, Same Direction	3	8	34	1	46	12%
Total	43	31	300	12	386	100%
Severity						
Fatal Injury (K)	0	0	0	0	0	0%
Suspected Serious Injury (A)	2	0	6	0	8	2%
Suspected Minor Injury (B)	3	2	22	1	28	7%
Possible Injury (C)	5	3	32	2	42	11%
No Apparent Injury (O)	33	26	240	9	308	80%
Unknown	0	0	0	0	0	0%
Total	43	31	300	12	386	100%
Note: Data collected from the Connecticut Crash Data Repository						

III. PROJECTED TRAFFIC CONDITIONS

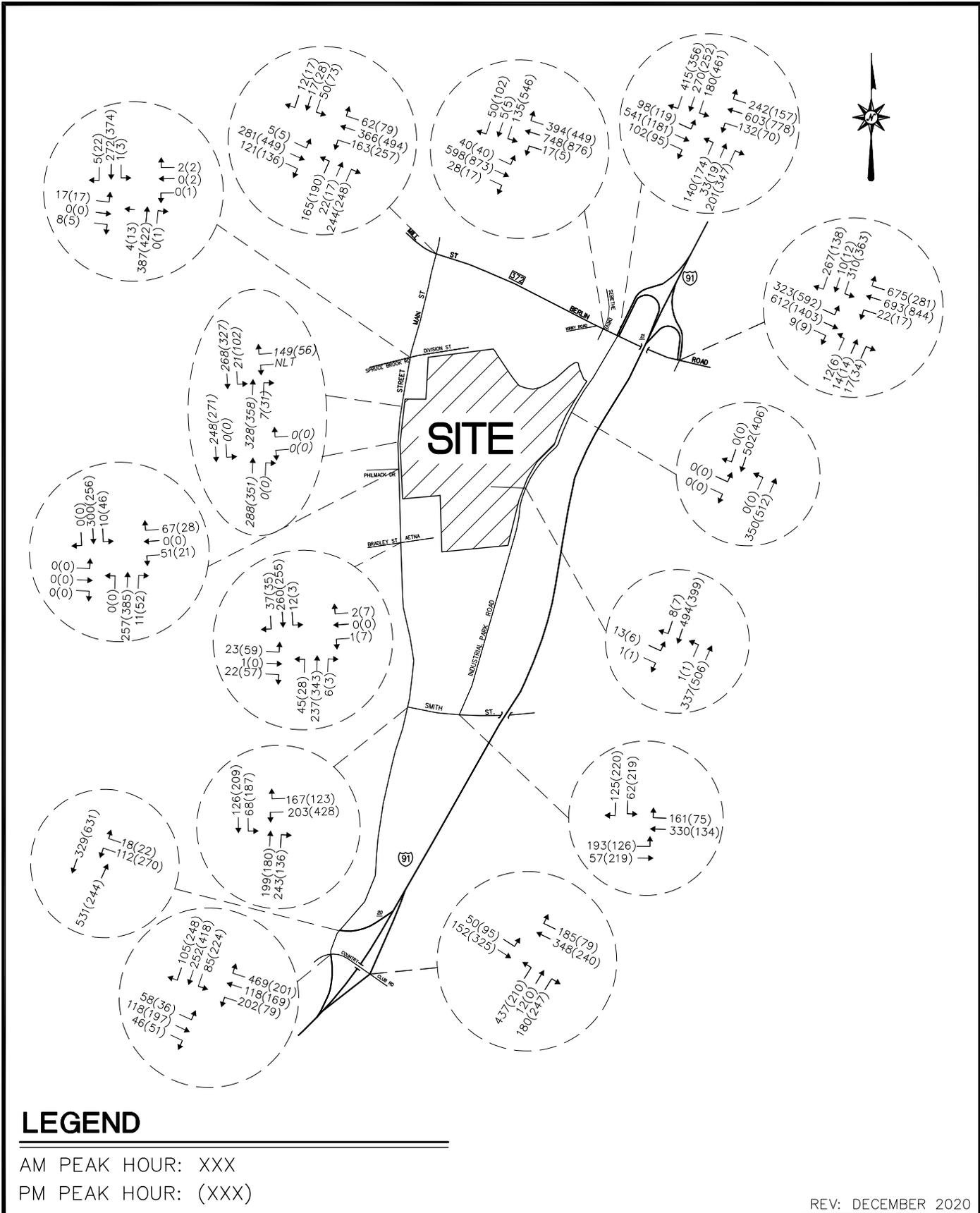
In order to evaluate traffic conditions when the proposed expansion is completed in 2030, future traffic volumes networks were forecast under the 2030 No Build Conditions (without the proposed expansion development) and under 2030 Build Conditions (with the proposed expansion development) were developed.

The projected traffic volumes on the roadway network under 2030 No Build conditions were assumed to include all existing traffic and new traffic resulting from background sources of traffic growth, including proposed current operation volumes at the proposed development. The project traffic volumes on the roadway network under 2030 Build conditions were assumed to include the anticipated project full expansion site-generated traffic volumes in addition to the assumed background traffic growth. A 1% annual growth rate was applied to the 2020 existing traffic volumes to develop the 2030 traffic volumes. The annual growth volumes were added to the Existing Traffic Volumes to determine the 2030 No Build Conditions (without the proposed expansion of a FedEx Hub) and under 2030 Build Conditions (with the proposed expansion development).

No Build Traffic Volumes

In addition to applying a growth rate, any approved or pending developments in the area that may add substantial traffic volume to the study intersections were considered. In discussions with Connecticut Department of Transportation and the town of Middletown there were no additional developments in the vicinity of the project.

Figure 3 graphically illustrates the No Build Traffic Volumes.



BACKGROUND 2030 TRAFFIC VOLUMES FEDEX HUB MIDDLETOWN, CONNECTICUT

SCHEMATIC, NOT TO SCALE

FIGURE 3

Trip Generation

The distribution of anticipated site traffic onto the roadway network was based on the Site specific operation and access characteristics, an estimate of the origin of employees based on journey to work data, and anticipated large truck patterns from FedEx. As noted, the site is designed for the majority of employees to park in the Middle Street lots and trucks to use Industrial Park Road.

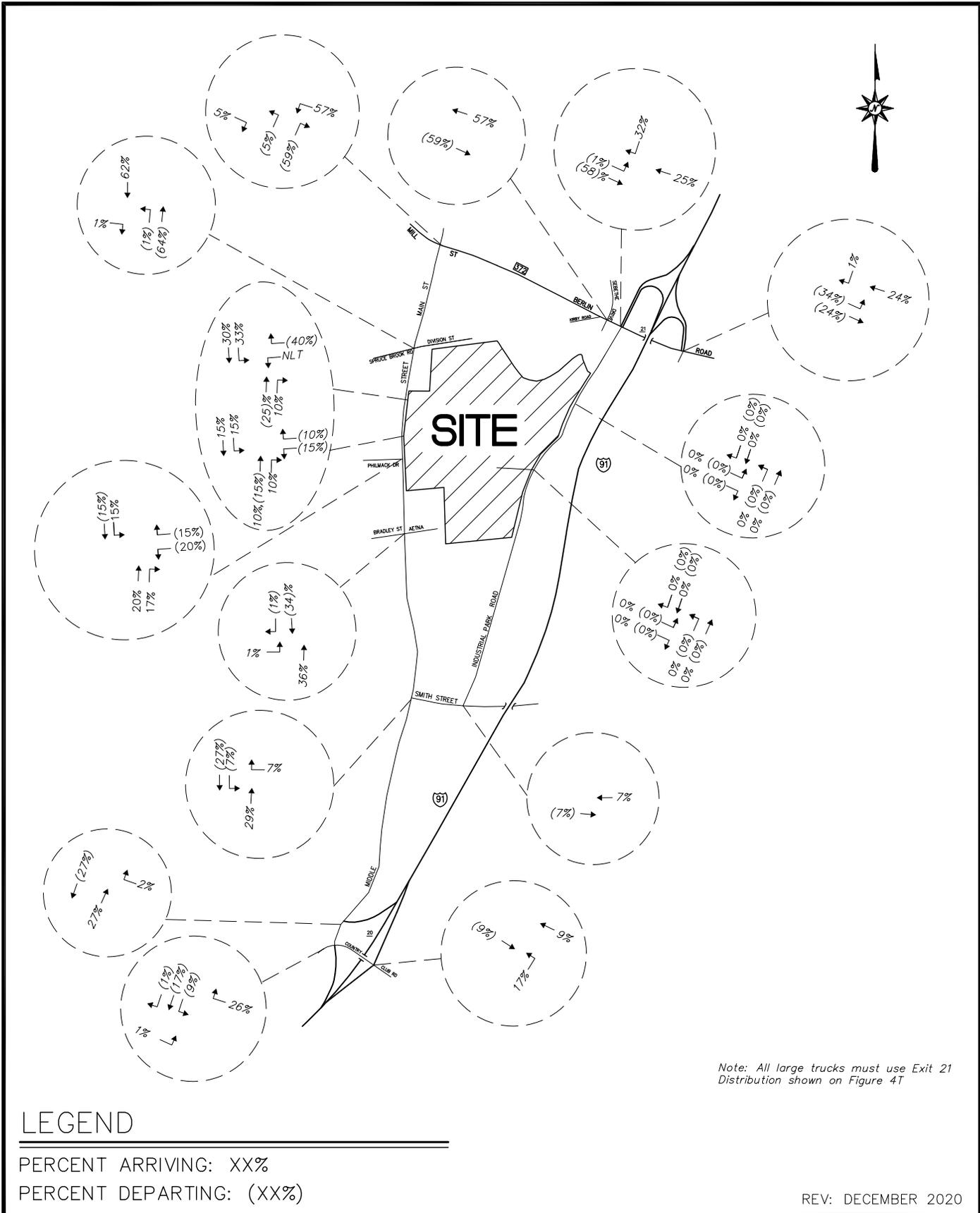
The level of traffic likely generated by the proposed expansion of a FedEx Hub station has been estimated by the tenant to aide in determining the potential traffic impact on the study intersections. The tenant completed a detailed analysis determining the number and time of site traffic arrivals and departures at the site, which is a function of the delivery area population and business density. Approximately 35 percent of the daily traffic volume will consist of trucks. The proposed expansion to the site is anticipated to generate a total of approximately 5,910 trips per day; the majority of which are off-peak hours. All of the large trucks will use 1-91 interchange #21 at Route 372 (Berlin Road), primarily oriented to/from the north, per the FedEx service area. The anticipated trip distribution of passenger car traffic and large truck traffic are depicted in Figure 4A and Figure 4 B. A summary of the peak hour trip generation projections for the proposed distribution station is presented in **Table 2**. As indicated in this table, the proposed expansion is projected to generate an additional 451 (82 enter, 369 exit) vehicle trips, during the weekday AM peak hour and 483 (327 enter, 156 exit) during the weekday PM peak hour by the year 2030. In the **Appendix**, table with 2015 originally proposed current operation peak hour trip generation projections can be found.

Table 2 – Peak Hour Trip Generation

Trips By	Trips					
	AM Peak Hour			PM Peak Hour		
	Total	In	Out	Total	In	Out
Autos	395	61	334	448	308	140
Trailer Trucks	56	21	35	35	19	16
Vans	0	0	0	0	0	0
Net New Trips	451	82	369	483	327	156
Ref: Trip Generation developed by Tenant 11/15/2020						

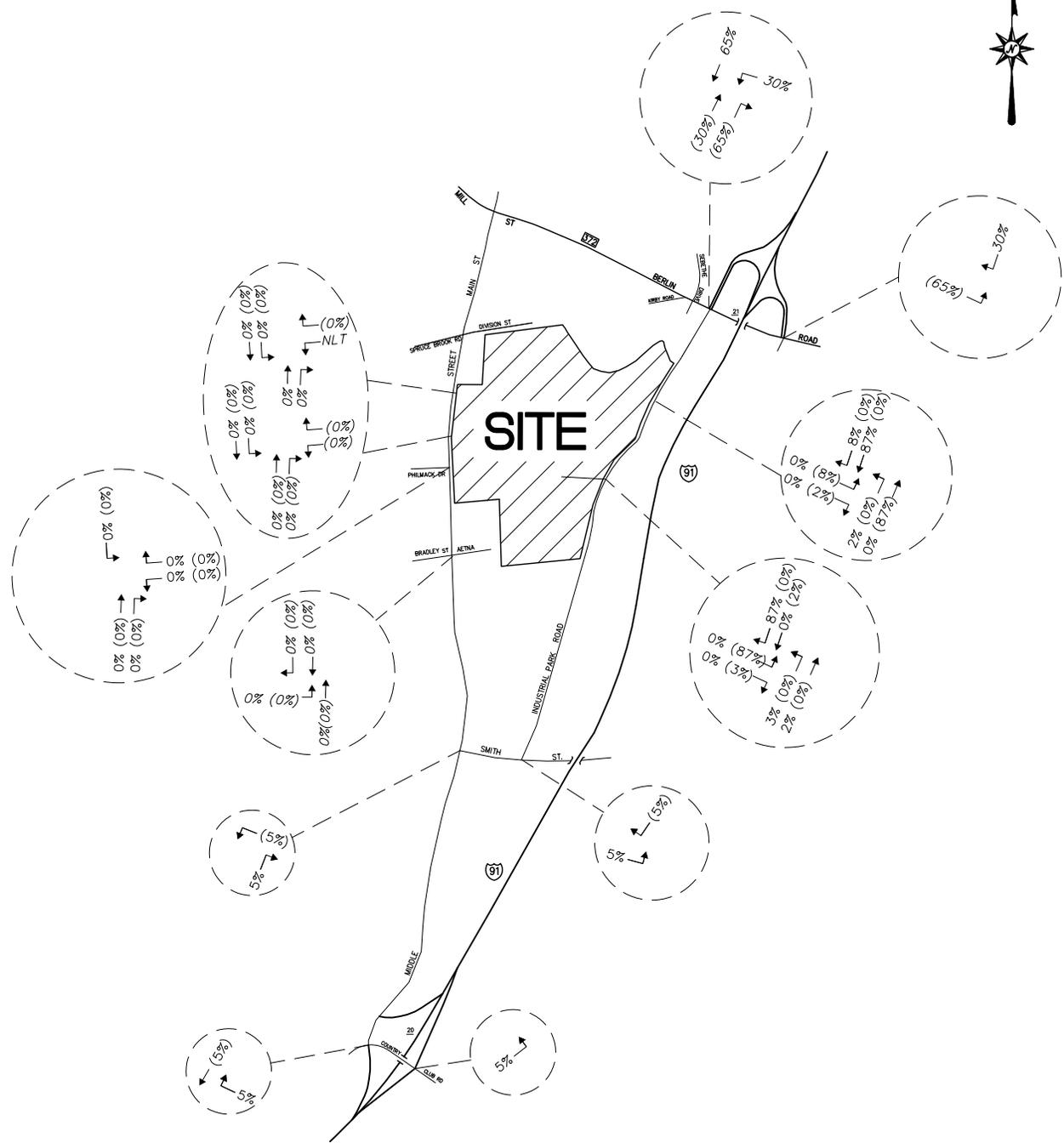
Trip Distribution

The directional distribution of traffic is typically a function of population densities, competing opportunities, existing travel patterns adjacent to the Site, and the efficiency and limitations of the existing roadway system. The distribution of specific operation site traffic onto the roadway network was based on the site on journey to work data and anticipated large truck patterns from FedEx. Based upon the Site's close proximity to Interstate 91, it is anticipated that the majority of employees/delivery vehicles will utilize I-91 for access and egress from the Site. Approximately 35 percent of the daily traffic volume will consist of trucks. However, the peak hour traffic volume percentage will be much lower. All of the large trucks will use I-91 interchange #21 at Route 372 (Berlin Road), primarily oriented to/from the north, per the FedEx service area. The distribution of the anticipated traffic volumes was based on arrival/departure patterns shown in **Figure 4** and **Figure 5** for vehicular and truck traffic respectively.



TRIP DISTRIBUTION—AUTOMOBILES
 FEDEX HUB
 MIDDLETOWN, CONNECTICUT
 SCHEMATIC, NOT TO SCALE

FIGURE 4



LEGEND

PERCENT ARRIVING: XX%
 PERCENT DEPARTING: (XX%)

REV: DECEMBER 2020

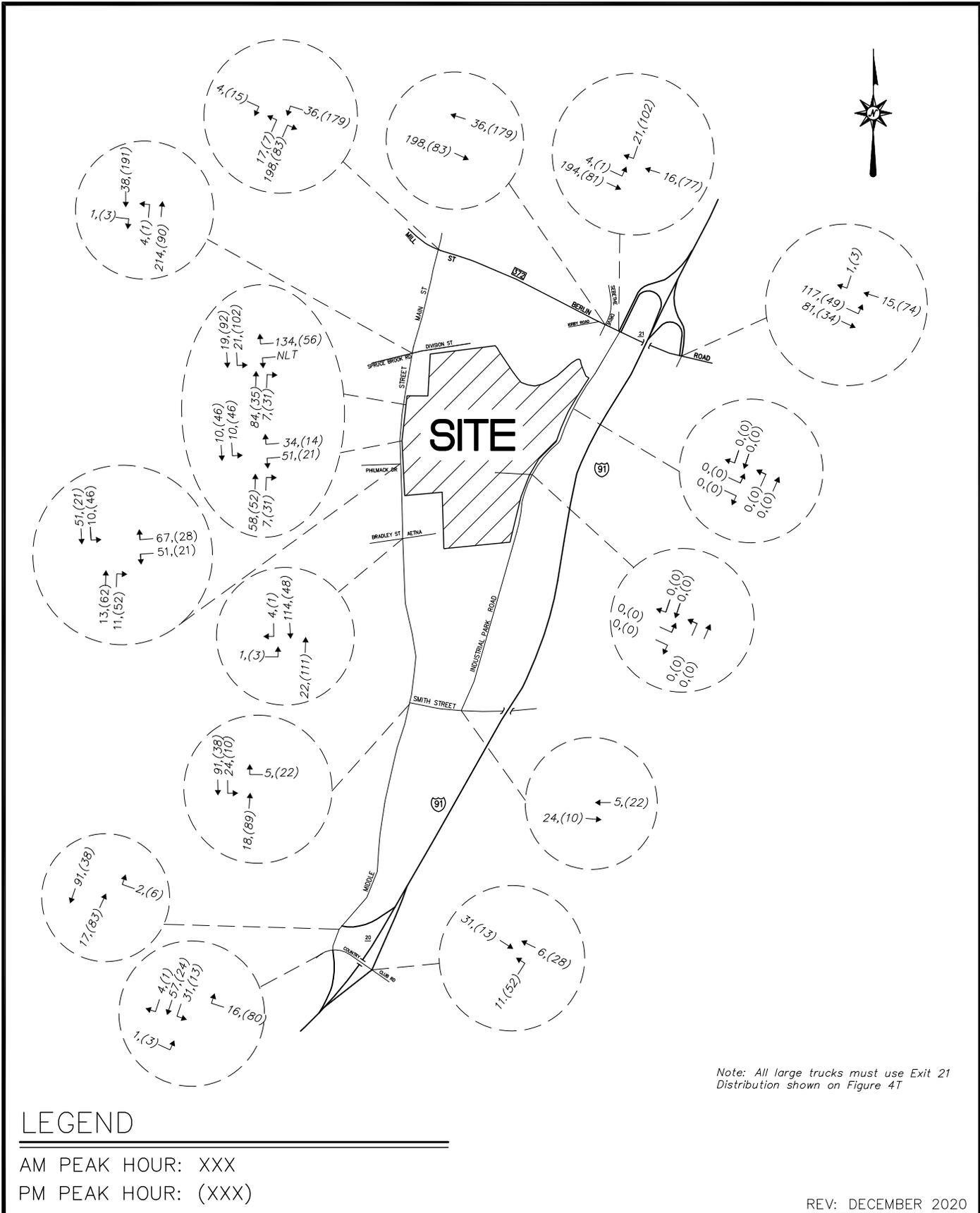


TRIP DISTRIBUTION—TRUCKS
 FEDEX HUB
 MIDDLETOWN, CONNECTICUT
 SCHEMATIC, NOT TO SCALE

FIGURE 5

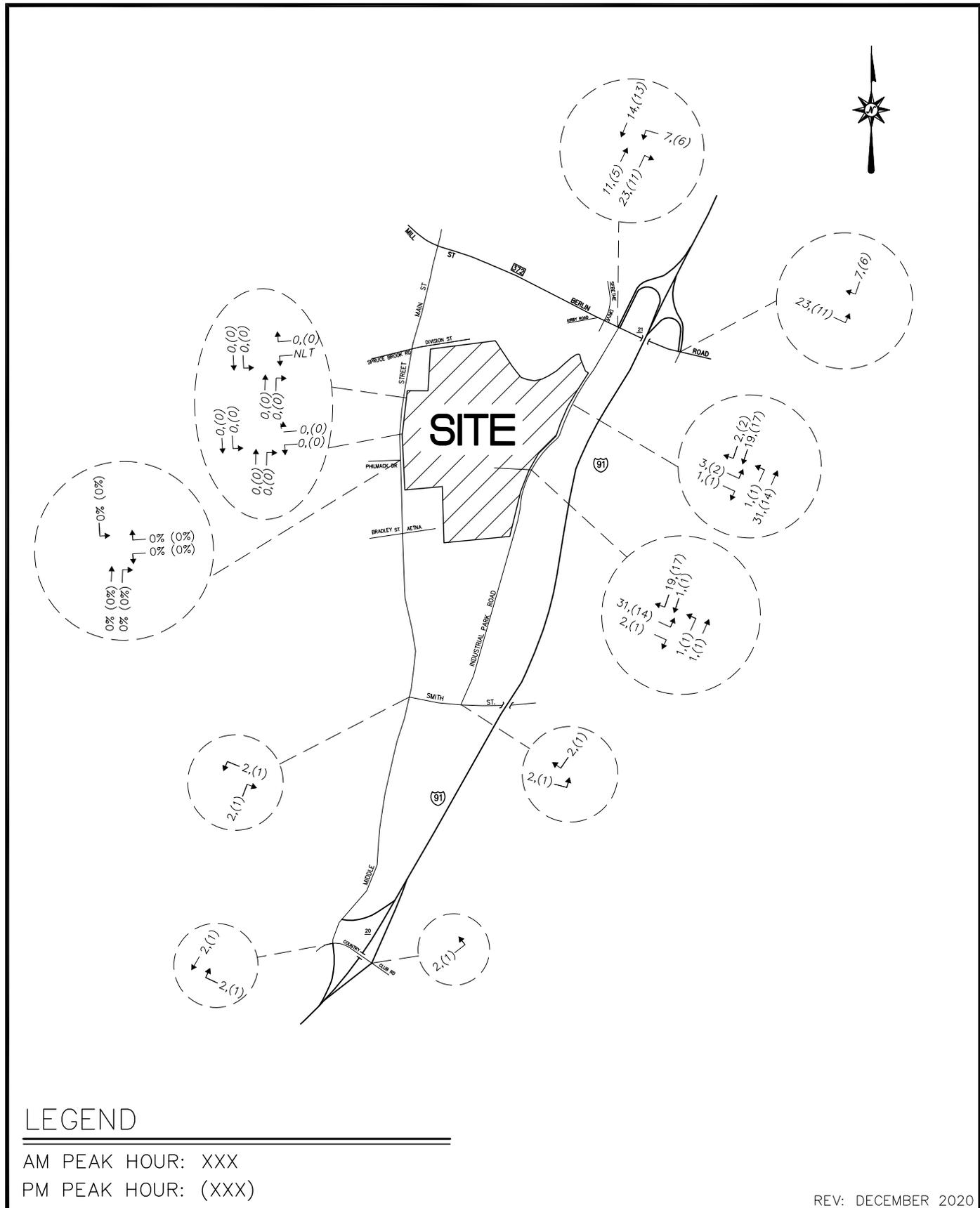
Assigned Site Generated Traffic Volumes

The generated trips are multiplied by the corresponding proportions to ascertain the site-generated traffic volumes. **Figure 6** shows the site-generated peak hour vehicular traffic generated by the site to the nearby roadway network. **Figure 7** illustrates the site-generated peak hour truck traffic generated by the site and assigned to the nearby roadway network.



NEW SITE AUTOMOBILE TRAFFIC VOLUMES
 FEDEX HUB
 MIDDLETOWN, CONNECTICUT
 SCHEMATIC, NOT TO SCALE

FIGURE 6



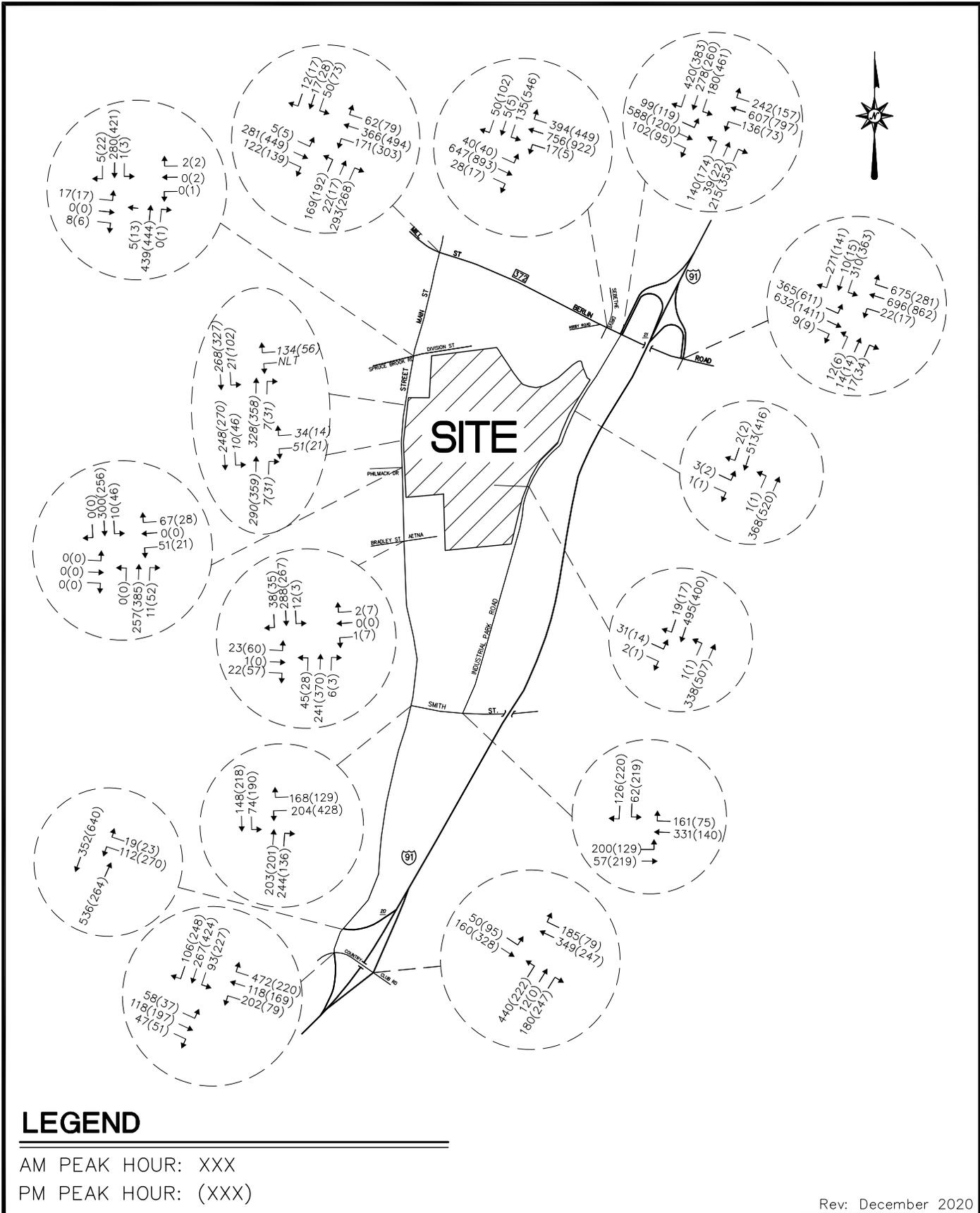
NEW SITE TRUCK TRAFFIC VOLUMES
 FEDEX HUB
 MIDDLETOWN, CONNECTICUT

SCHMATIC, NOT TO SCALE

FIGURE 7

Build Traffic Volumes

The assigned site-generated traffic volumes were superimposed onto the 2030 No Build Traffic volumes to establish the future 2030 Build Traffic volumes, as illustrated in **Figure 8**.



**BUILD (2030) TRAFFIC VOLUMES
 FEDEX HUB
 MIDDLETOWN, CONNECTICUT**

SCHMATIC, NOT TO SCALE

FIGURE 8

IV. ROADWAY ADEQUACY

The intersection capacity analyses were prepared using the methodology described in the Highway Capacity Manual (HCM), published by the Transportation Research Board (TRB) for the existing and build traffic volume scenarios to simulate the traffic impact of a proposed delivery station on the adjacent roadway network. As documented in the HCM, intersection performance is influenced by several factors, including traffic demand; lane configurations; lane widths; turning restrictions; roadway grades; and signal phasing. The existing physical roadway characteristics and signal phasing and timing settings were determined by observing conditions in the field and reviewing the current traffic control signal plans provided by the Connecticut Department of Transportation.

Synchro™ software (Version 9) was used to model the study intersections based on the parameters mentioned above. The Synchro software is widely utilized by the traffic engineering industry and is consistent with the procedures in the HCM.

Signalized Intersections

Signalized intersections are analyzed in terms of vehicle capacity and motorist delay. Capacity is the maximum rate of vehicle flow through an intersection given typical operating conditions. The number of vehicles traveling through an intersection is divided by the capacity of the intersection to determine an overall volume to capacity ratio (v/c). A v/c value under 1.00 indicates that the number of vehicles traveling through an intersection is less than capacity.

As stated in the HCM, level of service for signalized intersections is defined in terms of control delay. Control delay measures the increase in delay a motorist experiences while encountering a traffic control signal. These factors include initial deceleration delay, queue move-up time, stopped delay, and final acceleration delay. This delay is measured per vehicle for a 15-minute analysis period and is associated with the levels of service, which are summarized in **Table 3** below:

Table 3 – Signalized Intersection – Level of Service

<u>Level of Service¹</u>	<u>Average Control Delay (seconds per vehicle)</u>
A	≤ 10
B	> 10 and ≤ 20
C	> 20 and ≤ 35
D	> 35 and ≤ 55
E	> 55 and ≤ 80
F	> 80

¹If volume-to-capacity ratio is over 1.0 for a lane group, LOS F. Intersection and approach-based LOS is based solely on control delay.

Level of Service A represents the optimum level where most motorists arrive at the subject intersection during the green phase and thus experience virtually no delay. Conversely, Level of Service F indicates that motorists are delayed over 80 seconds while traveling through the intersection and can often imply a complete breakdown of

that location. Level of Service D is generally considered the limit of acceptable motorist delay.

Unsignalized Intersections

Unsignalized intersections are generally evaluated in terms of average side street delay, as well as the capacity of the roadway approach. This analysis is based on the random arrival of vehicles and the associated gaps generated by this random arrival within the traffic stream. There is no overall level of service for unsignalized intersections. The relationship between levels of service and average side street delay are summarized in **Table 4** below:

Table 4 – Unsignalized Intersection – Level of Service

<u>Level of Service</u> ¹	<u>Average Control Delay</u> (seconds per vehicle)
A	≤ 10
B	> 10 and ≤ 15
C	> 15 and ≤ 25
D	> 25 and ≤ 35
E	> 35 and ≤ 50
F	> 50

¹If volume-to-capacity ratio is over 1.0 for a lane group, LOS F. Intersection and approach-based LOS is based solely on control delay.

It should be noted that unsignalized levels of service do not correspond to those for signalized intersections, nor do they constitute warrants for the installation of traffic control signals. It is also recognized that the methodology is overly conservative and that computations can indicate operations at poor levels of service (E or F) with even very low side street volumes, although they often function without serious problems in the real world.

Table 5 shows the levels of service (LOS) at the subject intersections. A more detailed table is included in the Appendix.

Table 5 – Peak Hour Levels of Service

Intersection	AM				PM			
	2020 Existing	2030 Background w/ proposed current operation Vols	2030 Full Build	2030 Full Build Improved	2020 Existing	2030 Background w/ proposed current operation Vols	2030 Full Build	2030 Full Build Improved
Route 372 (Berlin Road) at Main Street	B/12.7	B/13.9	B/15.0	B/15.0	B/18.6	C/21.2	C/24.4	C/24.4
Route 372 EB Thru / Left	B/0.37/120	B/0.40/140	B/0.42/145	B/0.42/145	B/0.53/220	B/0.55/235	B/0.52/235	B/0.52/235
Route 372 EB Right	A/0.17/25	A/0.18/30	A/0.19/30	A/0.19/30	A/0.17/25	A/0.17/25	A/0.17/30	A/0.17/30
Route 372 WB Left	B/0.37/85	B/0.41/95	B/0.46/110	B/0.46/110	C/0.77/#200	D/0.82/#255	D/0.91/#315	D/0.91/#315
Route 372 WB Thru / Right	B/0.56/185	B/0.61/220	B/0.63/230	B/0.63/230	B/0.67/290	B/0.70/325	B/0.66/325	B/0.66/325
Main St NB Left/ Thru/ Right	B/0.71/175	B/0.72/200	B/0.75/230	B/0.75/230	C/0.77/#315	C/0.82/#370	D/0.86/#395	D/0.86/#395
Main St SB Left/ Thru/ Right	B/0.15/40	B/0.16/45	B/0.15/45	B/0.15/45	B/0.25/85	B/0.28/90	C/0.29/95	C/0.29/95
Route 372 (Berlin Rd) at Sebethe Drive ¹	B/15.1	B/16.1	B/18.1	B/17.1	E/57.3	E/74.4	E/77.8	D/48.8
Route 372 EB Left	D/0.48/#70	E/0.53/#80	E/0.54/#95	E/0.54/#80	E/0.59/#85	F/0.64/#95	F/0.64/#95	F/0.69/#95
Route 372 EB Thru / Right	C/0.63/255	C/0.66/275	D/0.73/#390	C/0.72/305	F/1.07/#540	F/1.17/#590	F/1.20/#605	E/1.01/#530
Route 372 WB Left/ Thru/ Right	A/0.47/25	A/0.50/25	A/0.50/40	A/0.50/25	A/0.54/m85	A/0.57/m90	A/0.59/m95	A/0.62/45
Sebethe Drive SB Left	D/0.40/95	D/0.42/100	D/0.42/105	D/0.42/100	F/1.10/#430	F/1.21/#465	F/1.21/#465	F/0.95/#395
Sebethe Drive SB Thru	D/0.39/95	D/0.42/100	D/0.42/105	D/0.42/100	F/1.12/#440	F/1.23/#475	F/1.23/#475	F/0.96/#410
Sebethe Drive SB Right	A/0.16/25	A/0.17/25	A/0.17/25	A/0.17/25	A/0.27/25	A/0.30/25	A/0.30/25	A/0.26/25

Overall Intersection – X/XX.X - Level of Service/Intersection Signal Delay in sec
Approaches - X/X.XX/XXX – Level of Service/Volume to Capacity Ratio/95% Queue Length in ft

¹ – Signalized Intersection

² – Unsignalized Intersections, data populated from the model.

– 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.



Intersection	AM				PM			
	2020 Existing	2030 Background w/ proposed current operation Vols	2030 Full Build	2030 Full Build Improved	2020 Existing	2030 Background w/ proposed current operation Vols	2030 Full Build	2030 Full Build Improved
Route 372 at I-91SB Ext 21 at Industrial Park Road ¹	B/19.6	C/20.4	C/20.7	C/20.4	C/28.5	D/40.4	D/43.5	D/36.5
Route 372 EB Left	E/0.53/m100	E/0.56/m100	E/0.57/m100	E/0.57/m95	D/0.46/m65	E/0.50/m60	E/0.50/m60	D/0.39/m75
Route 372 EB Thru	A/0.45/50	A/0.48/55	A/0.54/60	A/0.52/55	B/0.81/m175	D/0.89/m170	D/0.91/m165	C/0.74/m185
Route 372 EB Right	A/0.07/m25	A/0.07/m25	A/0.07/m5	A/0.07/m25	A/0.06/m25	A/0.07/m25	A/0.07/m25	A/0.07/m25
Route 372 WB Left	D/0.62/145	D/0.65/155	E/0.68/165	D/0.67/160	E/0.49/95	E/0.51/100	E/0.52/105	E/0.58/105
Route 372 WB Thru	C/0.59/245	C/0.64/265	C/0.66/#330	C/0.64/270	E/0.94/#445	E/1.02/#485	F/1.05/#500	D/0.88/#425
Route 372 WB Right	B/0.42/105	B/0.45/120	B/0.46/130	B/0.46/120	A/0.32/55	A/0.35/65	A/0.35/65	A/0.29/40
Main St NB Left	C/0.37/105	C/0.40/110	C/0.39/110	C/0.41/110	C/0.38/125	C/0.40/130	C/0.40/130	C/0.47/165
Main St NB Thru	C/0.11/45	C/0.12/50	C/0.12/55	C/0.13/55	C/0.05/30	C/0.05/35	C/0.06/35	D/0.13/45
Main St NB Right	A/0.13/25	A/0.14/25	A/0.15/25	A/0.15/25	A/0.23/25	A/0.24/25	A/0.25/25	A/0.25/25
Ext21 Off-Ramp SB Left	C/0.40/130	C/0.42/140	C/0.41/140	C/0.42/140	D/0.84/350	D/0.87/#390	D/0.87/#395	F/1.03/#480
Ext21 Off-Ramp SB Thru	D/0.48/125	D/0.49/130	C/0.46/135	D/0.51/135	D/0.37/115	C/0.36/120	C/0.37/125	E/0.80/#175
Ext21 Off-Ramp SB Right	B/0.69/85	B/0.70/90	A/0.68/85	B/0.71/90	A/0.60/75	A/0.60/75	A/0.62/80	B/0.78/#130
Route 372 (Berlin Road) at I-91NB Exit 21 ¹	B/10.4	B/11.3	B/11.8	B/11.8	B/19.0	C/21.7	C/23.4	C/23.4
Route 372 EB Left	A/0.56/90	A/0.61/110	B/0.68/125	B/0.68/125	C/0.84/#510	D/0.94/#575	E/0.98/#600	E/0.98/#600
Route 372 EB Thru / Right	A/0.24/80	A/0.26/95	A/0.26/100	A/0.26/100	A/0.57/245	A/0.61/275	A/0.62/275	A/0.62/275
Route 372 WB Thru	B/0.35/175	B/0.38/210	B/0.39/225	B/0.39/225	C/0.78/245	C/0.81/250	C/0.81/255	C/0.81/255
Route 372 WB Right	A/0.57/60	A/0.61/80	A/0.62/110	A/0.62/110	A/0.41/50	A/0.43/45	A/0.42/45	A/0.42/45
Ext21 Off-Ramp SB Left	D/0.59/125	D/0.59/125	D/0.59/125	D/0.59/125	C/0.61/125	C/0.62/130	C/0.63/135	C/0.63/135
Ext21 Off-Ramp SB Right	A/0.43/85	B/0.45/95	B/0.44/90	B/0.44/90	A/0.15/45	A/0.16/55	A/0.17/60	A/0.17/60

Overall Intersection – X/XX.X - Level of Service/Intersection Signal Delay in sec

Approaches - X/X.XX/XXX – Level of Service/Volume to Capacity Ratio/95% Queue Length in ft

¹ – Signalized Intersection

² – Unsignalized Intersections, data populated from the model.

– 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.



<u>Intersection</u>	<u>AM</u>				<u>PM</u>			
	2020 Existing	2030 Background w/ proposed current operation Vols	2030 Full Build	2030 Full Build Improved	2020 Existing	2030 Background w/ proposed current operation Vols	2030 Full Build	2030 Full Build Improved
Industrial Park Road at Satellite Driveway ²	A/0.0	A/0.0	C/17.3	C/17.3	A/0.0	A/0.0	C/16.0	C/16.0
Satellite Driveway EB Left/Right	A/0.00/25	A/0.00/25	C/0.01/25	C/0.02/25	A/0.00/25	A/0.01/25	C/0.01/25	C/0.01/25
Industrial Park Rd NB Left/Thru	A/0.00/25	A/0.00/25	A/0.00/25	A/0.00/25	A/0.00/25	A/0.00/25	A/0.00/25	A/0.00/25
Industrial Park Rd SB Thru/Right	-	-	-	-	-	-	-	-
Industrial Park Road at Site Truck Driveway ¹	A/6.2	A/6.7	A/6.7	C/22.0	C/18.1	C/19.1	C/20.2	C/20.2
Site Truck Driveway EB Left	A/0.01/25	C/0.04/100	C/0.11/225	C/0.14/25	C/0.03/25	C/0.03/25	C/0.06/25	C/0.06/25
Site Truck Driveway EB Right	A/0.01/25	C/0.02/50	C/0.50/100	C/0.01/25	B/0.00/25	B/0.00/25	B/0.00/25	B/0.00/25
Industrial Park Rd NB Left/Thru	A/0.13/25	A/0.14/25	A/0.00/25	B/0.00/25	A/0.00/25	B/0.00/25	B/0.00/25	B/0.00/25
Industrial Park Rd SB Thru	A/0.54/175	A/0.32/25	C/0.32/25	A/0.00/25	A/0.00/25	A/0.00/25	A/0.00/25	A/0.00/25
Industrial Park Rd SB Thru / Right	A/0.01/25	A/0.01/25	-	-	A/0.00/25	A/0.00/25	-	-

Overall Intersection – X/XX.X - Level of Service/Intersection Signal Delay in sec
Approaches - X/X.XX/XXX – Level of Service/Volume to Capacity Ratio/95% Queue Length in ft

¹ – Signalized Intersection

² – Unsignalized Intersections, data populated from the model.

– 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.



Intersection	AM				PM			
	2020 Existing	2030 Background w/ proposed current operation Vols	2030 Full Build	2030 Full Build Improved	2020 Existing	2030 Background w/ proposed current operation Vols	2030 Full Build	2030 Full Build Improved
Industrial Park Road at Smith Street ²	C/5.9	C/6.6	C/23.9	C/23.9	C/17.7	C/26.0	D/27.5	D/27.5
Smith St EB Right/Thru/Left	A/0.19/25	A/0.20/25	A/0.21/25	A/0.21/25	A/0.10/25	A/0.10/25	A/0.11/25	A/0.11/25
Smith St WB Right/Thru/Left	A/0.00/25	A/0.20/25	A/0.00/25	A/0.00/25	A/0.00/25	A/0.10/25	A/0.00/25	A/0.00/25
Industrial Park Rd SB Right/ Left	C/0.44/55	C/0.51/70	C/0.52/75	C/0.52/75	E/0.84/220	F/0.95/275	F/0.96/310	F/0.96/310
Middle St. / Main St. at Division Street / Spruce Brook Rd. ²	B/10.7	B/11.0	B/11.9	B/11.9	B/12.4	B/13.0	B/14.4	B/14.4
Spruce Brook Rd EB Right/Thru/ Left	A/0.04/25	A/0.04/25	A/0.04/25	A/0.04/25	A/0.55/25	A/0.04/25	A/0.04/25	A/0.04/25
Division St WB Right/Thru/Left	A/0.00/25	A/0.00/25	A/0.00/25	A/0.00/25	A/0.04/25	A/0.01/25	A/0.01/25	A/0.01/25
Middle St NB Right/Thru/Left	B/0.49/70	B/11.80/75	B/0.58/95	B/0.38/95	B/0.01/85	B/0.54/100	B/0.63/115	B/0.63/115
Main St SB Right/Thru/Left	A/0.35/40	B/0.37/45	B/0.39/45	B/0.58/45	B/0.51/75	B/0.59/100	B/0.61/105	B/0.61/105

Overall Intersection – X/XX.X - Level of Service/Intersection Signal Delay in sec

Approaches - X/X.XX/XXX – Level of Service/Volume to Capacity Ratio/95% Queue Length in ft

¹ – Signalized Intersection

² – Unsignalized Intersections, data populated from the model.

– 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.



<u>Intersection</u>	<u>AM</u>				<u>PM</u>			
	2020 Existing	2030 Background w/ proposed current operation Vols	2030 Full Build	2030 Full Build Improved	2020 Existing	2030 Background w/ proposed current operation Vols	2030 Full Build	2030 Full Build Improved
Middle St. / Main Street at Northern Site Driveway ²	B/12.2	B/12.4	B/11.7	B/11.7	B/12.5	B/12.9	B/11.2	B/11.2
Northern Access Point Left	B/0.23/25	B/0.24/25	B/0.21/25	B/0.21/25	B/0.12/25	B/0.12/25	B/0.09/25	B/0.09/25
Northern Access Point Right	A/0.00/25	A/0.00/25	A/0.00/25	A/0.00/25	A/0.09/25	A/0.00/25	A/0.09/25	A/0.01/25
Middle St NB Right/Thru	A/0.00/25	A/0.00/25	A/0.00/25	A/0.00/25	A/0.09/25	A/0.09/25	A/0.00/25	A/0.00/25
Main St SB Thru/ Left	A/0.02/25	A/0.02/25	A/0.02/25	A/0.02/25	A/0.09/25	A/0.00/25	A/0.10/25	A/0.10/25
Middle Street at Newly Proposed Site Driveway ²	-	-	B/12.6	B/12.6	-	-	B/14.2	B/14.2
Newly Proposed Site Driveway Left	-	-	B/0.12/25	B/0.12/25	-	-	C/0.07/25	C/0.07/25
Newly Proposed Site Driveway Right	-	-	B/0.05/25	B/0.05/25	-	-	B/0.02/25	B/0.02/25
Middle St NB Right/Thru	A/0.00/25	A/0.00/25	A/0.01/25	A/0.01/25	A/0.00/25	A/0.19/25	A/0.04/25	A/0.04/25
Middle St SB Thru/ Left	A/0.00/25	A/0.00/25	A/0.00/25	A/0.00/25	A/0.00/25	A/0.19/25	A/0.04/25	A/0.04/25

Overall Intersection – X/XX.X - Level of Service/Intersection Signal Delay in sec
Approaches - X/X.XX/XXX – Level of Service/Volume to Capacity Ratio/95% Queue Length in ft

¹ – Signalized Intersection

² – Unsignalized Intersections, data populated from the model.

– 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.



<u>Intersection</u>	<u>AM</u>				<u>PM</u>			
	2020 Existing	2030 Background w/ proposed current operation Vols	2030 Full Build	2030 Full Build Improved	2020 Existing	2030 Background w/ proposed current operation Vols	2030 Full Build	2030 Full Build Improved
Middle Street at Southern Site Driveway²	B/12.9	B/13.3	B/13.8	B/13.8	B/14.0	B/14.5	C/15.2	C/15.2
Southern Site Driveway Left	B/0.21/25	B/0.22/25	B/0.24/25	B/0.24/25	B/0.04/25	B/0.12/25	C/0.13/25	C/0.13/25
Southern Site Driveway Right	-	-	-	-	-	-	-	-
Middle St NB Right/Thru	A/0.00/25	A/0.00/25	A/0.01/25	A/0.01/25	A/0.00/25	A/0.00/25	A/0.00/25	A/0.00/25
Middle St SB Thru/ Left	A/0.00/25	A/0.00/25	A/0.01/25	A/0.01/25	A/8.30/25	A/0.05/25	A/0.05/25	A/0.04/25
Middle Street at Bradley Street / Aetna Drive¹	A/3.4	A/3.4	A/3.4	A/3.4	A/6.5	A/6.7	A/6.9	A/7.6
Aetna Drive Left / Thru / Right	A/0.12/25	A/0.12/25	A/0.12/25	A/0.12/25	A/0.30/35	A/0.31/25	A/0.32/40	B/0.34/55
Bradley St Left /Thru	B/0.00/25	B/0.00/25	B/0.00/25	B/0.00/25	B/0.02/25	B/0.03/25	B/0.03/25	B/0.02/25
Bradley St Right	A/0.00/25	A/0.00/25	A/0.00/25	A/0.00/25	A/0.00/25	A/0.01/25	A/0.01/25	A/0.01/25
Middle St NB Left /Thru	A/0.19/100	A/0.21/110	A/0.21/110	A/0.21/110	A/0.35/140	A/0.37/25	A/0.40/165	A/0.40/175
Middle St NB Right	A/0.00/25	A/0.00/25	A/0.00/25	A/0.00/25	A/0.00/25	A/0.00/25	A/0.00/25	A/0.00/25
Middle St SB Left	A/0.10/25	A/0.01/25	A/0.01/25	A/0.01/25	A/0.00/25	A/0.00/25	A/0.01/25	A/0.01/25

Overall Intersection – X/XX.X - Level of Service/Intersection Signal Delay in sec
Approaches - X/X.XX/XXX – Level of Service/Volume to Capacity Ratio/95% Queue Length in ft

¹ – Signalized Intersection

² – Unsignalized Intersections, data populated from the model.

– 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.



Intersection	AM				PM			
	2020 Existing	2030 Background w/ proposed current operation Vols	2030 Full Build	2030 Full Build Improved	2020 Existing	2030 Background w/ proposed current operation Vols	2030 Full Build	2030 Full Build Improved
Middle Street at Smith Street ¹	B/18.5	C/20.2	C/20.4	C/20.4	D/35.5	D/35.6	D/38.7	D/38.7
Smith Street WB Right / Left	C/0.69/205	C/0.72/240	C/0.72/240	C/0.72/240	D/0.91/#475	D/0.91/#525	D/0.92/#535	D/0.92/#535
Middle Street NB Right/Thru	B/0.70/230	C/0.73/265	C/0.74/275	C/0.74/275	C/0.64/180	B/0.50/190	B/0.51/210	B/0.51/210
Middle Street SB Thru/Left	A/0.29/85	B/0.32/95	B/0.38/110	B/0.38/110	C/0.65/#310	D/0.87/#280	D/0.91/#315	D/0.91/#315
Middle Street at I-91 SB Off Exit 20 ²	C/22.4	D/25.5	D/27.1	D/27.1	F/66.1	F/104.3	D/29.6	D/29.6
I-91 SB Off Exit 20 WB Right / Left	C/0.39/45	D/0.45/55	D/0.47/60	D/0.47/60	F/0.91/25	F/1.05/300	F/1.10/325	F/1.10/325
Middle Street NB Thru	-	-	-	-	-	-	-	-
Middle Street SB Thru	-	-	-	-	-	-	-	-
Middle Street at I-91 SB On Exit 20 at Country Club Road ²	F/88.8	F/118.4	F/126.7	D/35.4	F/159.1	F/196.1	F/204.7	D/44.0
Country Club Road EB Left / Thru / Right	B/0.42/50	C/0.47/55	C/0.49/60	A/0.31/80	C/0.64/25	C/0.72/25	C/0.73/90	C/0.62/165
Country Club Road WB Left / Thru / Right	F/1.23/750	F/1.35/925	F/1.37/975	D/0.97/#520	D/0.95/25	E/1.05/25	E/1.11/230	E/0.98/#340
I-91 SB On Exit 20 SB Right / Left	D/0.83/175	D/0.92/200	E/0.97/225	D/0.92/#350	F/1.49/50	F/1.64/55	F/1.67/1435	D/1.00/#575

Overall Intersection – X/XX.X - Level of Service/Intersection Signal Delay in sec

Approaches - X/X.XX/XXX – Level of Service/Volume to Capacity Ratio/95% Queue Length in ft

¹ – Signalized Intersection

² – Unsignalized Intersections, data populated from the model.

– 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.



<u>Intersection</u>	<u>AM</u>				<u>PM</u>			
	2020 Existing	2030 Background w/ proposed current operation Vols	2030 Full Build	2030 Full Build Improved	2020 Existing	2030 Background w/ proposed current operation Vols	2030 Full Build	2030 Full Build Improved
I-91 NB Exit 20 at Country Club Road²	F/61.1	F/87.0	F/89.8	C/25.5	C/21.7	D/28.3	D/30.9	B/16.0
Country Club Road EB Left / Thru	C/0.42/285	C/0.47/55	C/0.49/55	B/0.56/110	C/0.71/145	C/0.61/25	D/0.81/200	B/0.68/210
Country Club Road WB Thru / Right	E/0.95/285	F/1.06/340	F/1.06/345	C/0.83/#295	C/0.55/85	D/0.83/25	C/0.63/100	B/0.45/130
I-91 SB On Exit 20 NB Left / Thru / Right	F/1.08/480	F/1.19/630	F/1.20/650	C/0.88/#345	C/0.76/170	D/0.80/25	E/0.86/245	B/0.76/215

Overall Intersection – X/XX.X - Level of Service/Intersection Signal Delay in sec
Approaches - X/X.XX/XXX – Level of Service/Volume to Capacity Ratio/95% Queue Length in ft

¹ – Signalized Intersection

² – Unsignalized Intersections, data populated from the model.

– 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.



As illustrated in **Table 5**, the AM and PM Peak Hour Existing Scenario traffic operations were analyzed as the base conditions for comparison with the Build Scenarios. In both Existing Scenarios and the No Build Scenarios, several intersections and approaches are projected to operate at undesirable levels of service. Specific movements that experience Levels of Service (LOS) E or F in the Existing and 2030 No Build Scenarios during the AM and PM Peak Hours are as follows:

- Route 372 (Berlin Road) at McDonalds / Sebethe Drive
 - Route 372 EB Left
 - Route 372 EB Thru / Right
 - Sebethe Drive SB Left
 - Sebethe Drive SB Thru
- Route 372 (Berlin Road) at I-91SB Exit 21 at Industrial Park Road
 - Route 372 EB Left
 - Route 372 WB Left
 - Route 372 WB Thru
- Industrial Park Road at Smith Street
 - Industrial Park Road
- Middle Street at I-91 SB Off (Exit 20)
 - I-91 SB Off Exit 20 WB Right / Left
- Middle Street at I-91 SB On (Exit 20) at Country Club Road
 - Country Club Road WB Left / Thru / Right
 - I-91 SB On Exit 20 SB Right / Left
- I-91 NB Exit 20 at Country Club Road
 - Country Club Road WB Left / Thru
 - I-91 SB On Exit 20 NB Left / Thru / Right

The primary existing problems areas are the unsignalized 1-91 ramp intersections at Exit #20, Country Club Road, Middle Street, and Smith Street. The overall levels of service for the two all-way stop controlled intersections along Country Club Road are "F" under background conditions, with one or more traffic movements having a volume to capacity ratio greater than one (1) and "F" level of service. In addition, LOS "E" and "F" is also observed along Route 372 signalized intersections, for eastbound and westbound left turns. A more detailed review of the analyses also revealed other traffic issues that may have to be addressed. Those are discussed in the next section of this report.

In order to mitigate the delays, timings can be modified. The phase splits were adjusted to balance the needs of intersections and provide as little impact by using the optimization tool in the Synchro software to develop Build Improved Scenarios. By optimizing the phase splits for AM and PM Peak Hour, simulation improves efficiency and level of service along the corridor.

With adjusted phase splits overall LOS of US Route 5 at I-291 EB On/Off-Ramps /Route 30 (Ellington Rd.) improved from LOS D to LOS C in PM peak. During AM Peak Hour, US Route 5 (John Fitch Blvd) at Chapel Road with signal timing adjustments overall improves from LOS E to LOS C.

V. CONCLUSIONS AND RECOMMENDATIONS

This traffic study has been prepared for a new tenant and a change of use of an existing lot at 240 Ellington Road. The study area is along a suburban stretch of CT Route 30 (Ellington Road) that is primarily industrial with residential neighborhoods to the northeast. The focus of this study was to evaluate the traffic flows and operating conditions on the roadways and intersections projected to be used by motorists traveling to and from the proposed development and to quantify the potential traffic impacts on these roadways and intersections. After analyses of the Existing, No Build, and Build Scenarios of the AM and PM Peak Hours, it should be noted that there is no notable deterioration from the other proposed developments in the vicinity of this development where those traffic volumes have been included in the No Build scenarios. Some existing issues that may be further exacerbated by the FedEx project, or perceived to be, as well as other concerns identified in the details of the analyses are identified. While there are no large system level traffic improvements needed, there are observed, existing, or projected background, problem areas that should be addressed in the future by municipal or State agencies independent of the FedEx project. Moving forward, the following should be considered:

By FedEx:

1. The proposal must to be submitted to the Office of State Traffic Administration (OSTA) to obtain a Certificate of Operation as a major traffic generator under Section 14-311 of the Connecticut General Statutes.
2. All large trucks should use the I-91 interchange at Route 372 (#21). Trucks oriented towards other regional expressways, I-84, Route 9 and Route 72 could legally use Route 372 to reach the site, but we recommend that the large trucks stay on the expressway network to avoid mixing with local traffic.
3. Industrial Park Road at proposed Hub driveway – This “T” intersection was formally signalized and currently it operates with a warning sign flashing beacon. Based on the FedEx traffic volume projections, the traffic analysis shows traffic signal is

not warranted and under forecasted volumes the intersection will operate at LOS "A" and "C" during AM and PM Peak hours.

4. Industrial Park Road at proposed satellite parking lot – sight distances based on truck needs should be provided. Minor widening and radii improvements to the existing satellite parking lot driveway should be implemented to accommodate the anticipated truck turns from the Site. In addition, it appears that the curb cut is in the transition area from two southbound Industrial Park Road lanes to one. This is an undesirable situation and some pavement marking and signing adjustments should be made.
5. Proposed third access point at Main Street helps the distribution of vehicular Site generated traffic during peak hours. All three driveways perform at adequate LOS of "B" and "C"
6. Route 372 (Berlin Road) at Sebethe Drive intersection is projected to operate at an "E" level of service during PM peak with delay of 74 seconds. The inclusion of FedEx expansion project is projected to result in an "E" level of service with delay increase of 3 seconds. This location is controlled jointly with the 1-91 SB ramps and Industrial Park Road intersection, 250' to the east and the complex traffic signal phasing is very difficult to model. Modification of the traffic signal to reallocate more time to the left turn movement would improve the build conditions and overall delay for the intersection would shorten to 50 seconds.

By Municipal and/or State Agencies:

1. The all way stop at Country Club Road at the 1-91 NB off ramp (exit #20) has a background "F" level of service during the morning peak period, with the off-ramp at "F". While FedEx has a minimal impact here, the City of Middletown and CTDOT should consider further warrant analysis, a traffic signal would provide benefit during the morning peak periods, but much less so during other times.

2. The all way stop at Country Club Road at Middle Street and the 1-91 SB on ramp (exit #20) has a background "F" level of service during both peak periods studies, with westbound Country Club Road or Middle Street at "F". While FedEx has a minimal impact here, similarly if warranted, a traffic signal would provide significant benefit. Providing additional travel lanes on Middle Street and westbound Country Club Road in conjunction with a traffic signal would be even more beneficial. While there is right of way available for geometric improvements, a pump station in the northeast corner limits the possibility of improvement.
3. The level of service at the stop controlled 1-91 SB off ramp (exit #20) at Middle Street has a background "F" level of service during the afternoon peak period. While there may be an increase in delay for ramp traffic, there is still sufficient capacity for the movement. Vehicles turning right from the ramp may already bypass left turners, resulting in better than computed operation.
4. The Industrial Park Road (stop controlled) level of service at Smith Street during the afternoon peak period is projected to go from "E" to "F". While there may be an increase in delay for Industrial Park Road traffic, there is still sufficient capacity for the movement. Two possible options to improve traffic flow include implementation of an all-way stop, which would reduce the Industrial Park Road delays (at the expense of Smith Street). Overall intersection delay will remain 28 seconds. The second option would be to widen the Industrial Park Road to provide two lanes approaching Smith Street. There is sufficient right of way to provide two approaching lanes. This would require restriping of Industrial Park Road from former Aetna Site drive to Smith Street in southbound direction.
5. Route 372 (Berlin Road) at Sebethe Drive intersection is controlled jointly with the 1-91 SB ramps and Industrial Park Road intersection, 250' to the east. Currently it is projected to operate at an "E" level of service during PM peak with delay of 74 seconds. Modification of the traffic signal to reallocate more time to the left turn movement would improve the build conditions however the City of Middletown

and CTDOT should consider next level improvements such as additional auxiliary turn lanes and/or a third eastbound through lane could be constructed. Available right of way would limit the length of thru lanes for example to approximately 175 feet and beyond Sebethe Drive it would become the right turn lane at Industrial Park Road. This would limit its effectiveness but provide satisfactory mitigation if needed.

APPENDIX

2015 ORIGINALLY OSTA APPROVED DEVELOPMENT



Traffic Study FedEx Ground – Hartford, CT II CY18 New Hub Middletown, Connecticut

Prepared for:



**Facilities & Material Handling Project Management
FedEx Ground Package System, Inc.
1000 FedEx Drive
Moon Township, PA 15108**

Prepared By:

BL Companies, Inc.
355 Research Parkway
Meriden, Connecticut 06450

June 2015: Rev; August 2015

CONTENTS

<u>Part</u>	<u>Description</u>	<u>Page</u>
	EXECUTIVE SUMMARY	i
I	INTRODUCTION	1
II	EXISTING CONDITIONS	3
	Access Network	3
	Intersection Geometry and Control	7
	Current Traffic Volumes	11
	Crash Data	11
	Public Transportation	12
	Truck Restrictions	13
III	PROJECTED TRAFFIC CONDITIONS	15
	Background Traffic Volumes	15
	Trip Distribution	15
	Site Traffic Volumes	16
	Build Traffic Volumes	18
IV	ROADWAY ADEQUACY	19
	Signalized Intersections	19
	Unsignalized Intersections	20
V	CONCLUSIONS AND RECOMMENDATIONS	23

ILLUSTRATIONS

<u>Figure</u>	<u>Title</u>	<u>Follows Page</u>
1	Location Plan	1
2	Current (2014) Traffic Volumes	11
3	Background (2019) Traffic Volumes	15
4, 4T	Trip Distribution	16
5, 5T	New Site Traffic Volumes	18
6	Build (2019) Traffic Volumes	18

TABLES

<u>Number</u>	<u>Title</u>	<u>Page</u>
1	FedEx Hub Trip Generation	17
2	Signalized Intersection - Level of Service	20
3	Unsignalized Intersection - Level of Service	21
4	Peak Hour Levels of Service	22

APPENDIX

Traffic Operations Summary
Capacity Analyses

EXECUTIVE SUMMARY

Development of a FedEx Hub along Industrial Park Road and Middle Street in Middletown, Connecticut is proposed. The site (a portion of 930 Middle Street) is part of the former Aetna Insurance Company division headquarters and is roughly bordered by Division Street to the north, Industrial Park Road to the east, Middle Street to the west and the Aetna data center/vacant land to the south. Access to the site will be provided for internal employee passenger cars on Middle Street and for trucks and truck drivers at a satellite lot on Industrial Park Road. The project was approved by the Middletown Planning and Zoning commission on August 11, 2015.

This study investigated the traffic impact associated with the development of a FedEx Hub during the weekday morning and afternoon peak hours. Weekday morning and afternoon peak hour traffic volumes were obtained at key nearby intersections in Middletown, Cromwell and Berlin in November of 2014.

The FedEx Ground Hub, assumed to be a 52.5K Full Phase (without local city activity) is projected to generate 3,860 daily, 260 morning and 325 afternoon peak hour trips. These traffic volumes are significantly lower than those generated when Aetna occupied the site. There is no local delivery from this hub, so all truck traffic is highway oriented.

Overall levels of service at the studied intersections studied remain unchanged, or within the acceptable range, with two exceptions: the I-91 NB off ramp at Country Club Road, where the morning peak period level of service for left turns is projected to be "E", and the Industrial Park

Road approach to Smith Street, where an “E” level of service is projected for the afternoon peak period.

While the FedEx traffic impact may be small and no large system level traffic improvements needed, there are observed, existing, or projected background, problem areas that should be addressed in the future by municipal or State agencies independent of the FedEx project. Moving forward, the following should be considered:

By FedEx

1. The proposal must to be submitted to the Office of State Traffic Administration (OSTA) to obtain a Certificate of Operation as a major traffic generator under Section 14-311 of the Connecticut General Statutes.
2. All large trucks should use the I-91 interchange at Route 372 (#21). Trucks oriented towards other regional expressways, I-84, Route 9 and Route 72 could legally use Route 372 to reach the site. While these may be shorter routes, it is recommended that the large trucks stay on the expressway network to avoid mixing with local traffic.
3. Industrial Park Road at proposed Hub driveway – Reactivation of the existing traffic signal would require an inspection of the installation, which has been out of operation for a few years. It appears that a traffic signal is not warranted based on the FedEx traffic volume projections and in a preliminary meeting, the Office of State Traffic Administration indicated they would not be supportive of reactivating an unwarranted traffic signal. Maintaining the signal in its current flashing mode may be beneficial to provide advance warning of this significant intersection, the first major access point one sees along Industrial Park Road traveling south from Route 372. The former southbound Industrial Park Road southbound right turn lane into Aetna was painted

out when Aetna closed. That lane should be reinstated in conjunction with other pavement marking changes, see below.

4. Industrial Park Road at proposed satellite parking lot. The availability of adequate intersection sight distance, based on truck needs, should be provided. In addition, it appears that the curb cut is in the transition area from two southbound Industrial Park Road lanes to one. This is an undesirable situation and some pavement marking and signing adjustments should be made.
5. It is believed that Industrial Park Road once had two southbound travel lanes from Route 372 to the Aetna driveway. The second southbound lane became the right turn lane into Aetna. With the closure of the Aetna complex, that second lane was closed and a transition to one lane made to the north. It is recommended that the two lane southbound arrangement be reinstated.
6. Route 372 (Mill Street) at Main Street – the existing 100'± long westbound Route 372 left turn lane should be lengthened to 240'± at this intersection in Berlin. This will require a minor widening along Route 372. There is sufficient right of way available for this improvement.
7. Route 372 (Berlin Road) at I-91 NB ramps – the afternoon peak period eastbound Route 372 (Berlin Road) left turn onto I-91 north is projected to be at LOS “E”, over capacity, and the queue nearing the end of the left turn lane under the build condition at this intersection in Cromwell. The three other nearby development projects also contribute to this potential problem. Modification of the traffic signal to reallocate more time to the left turn movement would nearly replicate the background condition.

By Municipal and/or State Agencies

1. Country Club Road at the I-91 NB off ramp (exit #20) - this all-way stop has a projected “E” level of service during the morning peak period, with left turns from the off-ramp and Middle Street westbound traffic nearing capacity. FedEx has a minimal impact here, and field observations do not suggest a current problem. If warranted, a traffic signal could provide benefit during the morning peak period, but much less so during other times.
2. Country Club Road at Middle Street and the I-91 SB on ramp (exit #20) - this all-way stop has a background “E” level of service during both peak periods studied, with westbound Country Club Road or Middle Street at “F”. Significant queueing was observed on Middle Street during the afternoon peak period, and on westbound Country Club Road during the morning period. If warranted, a traffic signal would provide some level of improvement, but queues would still be substantial. Providing additional travel lanes on Middle Street and westbound Country Club Road (right turn lane) in conjunction with a traffic signal would be more beneficial. A partial 2-lane roundabout could be workable, but right of way acquisition would be necessary. While there is right of way available for geometric improvements (the State owns the property on three of the corners), a pump station in the northeast corner may limit the possibility of improvement.
3. Middle Street at Smith Street - the traffic volumes at this signalized intersection do not suggest a problem, but field observations revealed that the traffic signal is operating very inefficiently. The traffic signal is not responsive to traffic volumes, that is, it has no vehicle detection and timing is the same regardless of traffic. This is not an effective type of operation for a location such as this.
4. Smith Street at Industrial Park Road - the Industrial Park Road (stop controlled) level of service during the afternoon peak period is projected to go from “D” to “E”, although the

increase in average delay is only about 4 seconds per vehicle. There will still be sufficient capacity for the movement. As development continues along Industrial Park Road, a minor (3'-4') widening of Industrial Park Road to provide two lanes approaching Smith Street could prove beneficial.

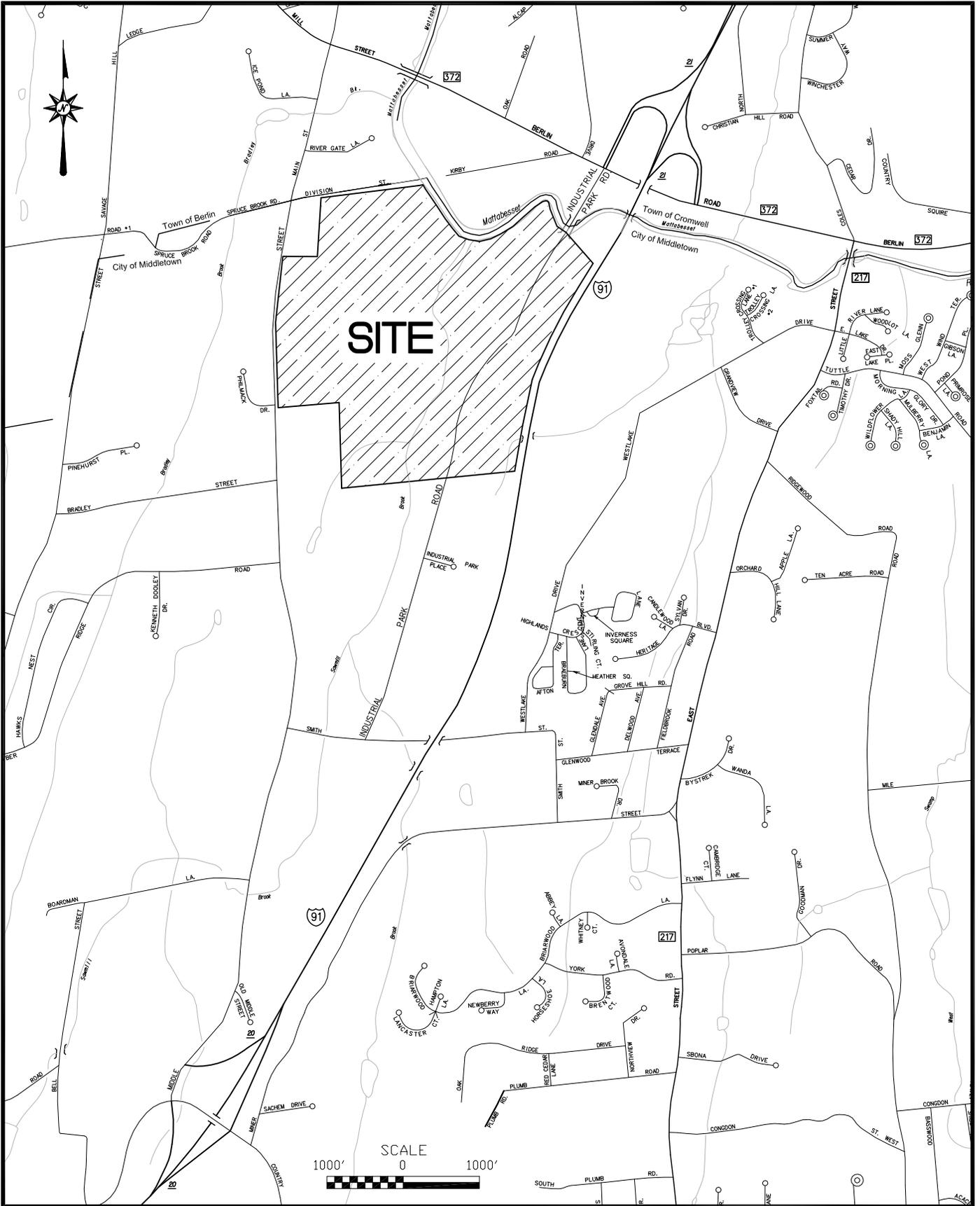
5. Route 372 (Berlin Road) at Sebeth Drive – the intersection is projected to operate at an overall “E” level of service, with several individual traffic movements at “F” and over capacity under afternoon peak period background conditions. A recently approved 88,000 square foot development project on Sebeth Drive, a dead end road, directly impacts this intersection. Afternoon peak hour traffic volumes on Sebeth Drive alone are expected to reach nearly 1,200 vehicles. The FedEx project is projected to have minimal impact on this intersection. This location is controlled jointly with the I-91 SB ramps and Industrial Park Road intersection, 250'± to the east with complex traffic signal phasing. The Town of Cromwell should investigate options to provide additional access to Sebeth Drive to relieve the traffic pressure. Other possible improvements include constructing a third eastbound Route 372 through lane from the vicinity of Kirby Road to the intersection. Beyond Sebeth Drive it would become the right turn lane at Industrial Park Road. A Route 372 westbound right turn lane could be constructed between the I-91 ramps and Sebeth Drive, but might impact the commuter parking lot fronting Route 372.

I. INTRODUCTION

The development of a FedEx Ground Hub on portions of the former Aetna Insurance Company site on Industrial Park Road and Middle Street in Middletown, CT is proposed.

The 239± acre site is roughly bordered by Division Street to the north, Middle Street to the west, Industrial Park Road to the east, and the Aetna data center to the south (See Figure 1). It was formerly the site of a major Aetna Insurance Company facility. Originally constructed in 1983, the Aetna facility contained about 1.4 million square feet of floor area, with over 5,000 employees and 4,600 parking spaces. That facility, except for the data center, was vacated in 2010 and demolished in 2011.

The FedEx Ground Hub will have certain operational characteristics that impact the way traffic utilizes the site. There will be essentially two separate circulation and access networks. The parking area for the cars of internal employees (package handlers, etc.) will be accessible only from Middle Street and not connected for vehicular circulation to the truck parking areas at the hub, nor to Industrial Park Road. The truck parking areas at the hub will be accessible only from Industrial Park Road and similarly not connected circulation wise to the passenger car parking area or to Middle Street. In addition, there will be a satellite parking area on Industrial Park Road where truck drivers leave their personal cars, pick up a tractor, and drive to the hub to get a trailer.



LOCATION MAP
 FEDEX GROUND HUB
 MIDDLETOWN, CT

FIGURE 1

The Industrial Park Road access for the main hub (trucks) will be via the existing signalized Aetna entrance (currently closed). Access for the primary satellite lot along Industrial Park Road will be located about 1,200 feet north of the main hub access.

This study investigated the traffic impact associated with the proposed FedEx Ground Hub development during the weekday morning and afternoon peak traffic periods. These represent the peak periods for traffic on the adjacent street system. The FedEx Hub business day traffic may actually peak at times slightly outside the commuter peak, but for a conservative worst case analysis, it was assumed the two coincide.

The project was approved by the Middletown Planning and Zoning commission on August 11, 2015

II. EXISTING CONDITIONS

An investigation of the existing conditions on the adjacent roadway network formed the basis for assessing any traffic issues associated with a FedEx Ground Hub operation. This investigation included a field reconnaissance, field traffic counting, and research of pertinent planning and traffic data at local and State agencies.

Access Network

Primary access roads in the site vicinity include Interstate Route 91, Route 372 (Berlin Road/Mill Street), Country Club Road, Industrial Park Road and Middle Street. Other roads of potential interest include Main Street and Smith Street.

Interstate Route 91 bisects the state as a limited access north-south expressway facility. In the vicinity of the site, Interstate Route 91 is a six lane highway. A split interchange (#20) exists with Country Club Road and Middle Street about 1.75 miles south of the site, in the City of Middletown. The I-91 northbound ramps intersect Country Club Road about one quarter mile east of Middle Street. The I-91 southbound ramps are on Middle Street, the on ramp at the Middle Street/Country Club Road intersection, and the off ramp 500'± to the north on Middle Street. A full interchange (#21) is found at Route 372 (Berlin Road) in the Town of Cromwell, about three quarters of a mile north of the site. The southbound ramps intersect Route 372 (Berlin Road) directly opposite Industrial Park Road, and the northbound ramps are located about one quarter mile to the east.

Route 372 (Berlin Road and Mill Street) is an east-west oriented minor arterial, running through the Towns of Berlin and Cromwell near the site. In the Town of Cromwell, Route 372 (Berlin Road) is a 4-6 lane facility. Abutting lands are heavily developed commercially with restaurants, retail stores, motels, etc. The roadway has a 40 mile per hour speed limit and is generally straight and flat with sporadic illumination. There are traffic signals at both I-91 ramp intersections and at Wal*Mart to the west of the interchange. In the Town of Berlin, Route 372 (Mill Street) is a two lane facility with a 40 mile per hour speed limit. Abutting lands are much more lightly developed. There is a traffic signal at the Main Street intersection.



Country Club Road is a two lane City of Middletown roadway, classified as a minor arterial by CTDOT. The speed limit is 25 miles per hour. Abutting lands are residential east of I-91. Between I-91 and Middle Street, Country Club Road is on a downgrade. The roadway width is 40'±. There is sporadic illumination and a sidewalk only across the I-91 bridge. There are all-way stops at both the I-91 NB off ramp and the Middle Street/I-91 SB on ramp intersections. In the immediate interchange area the most noticeable land use is the headquarters of the

Connecticut Department of Emergency Services and Public Protection. There is also a park and ride lot adjacent to the southbound on ramp.

Industrial Park Road is a 1.6 mile long, north-south oriented municipal facility running between Route 372 (Berlin Road) in the Town of Cromwell and Smith Street in the City of Middletown. It is

classified as a collector by CTDOT. In the site vicinity, between I-91 and the former Aetna driveway, once signalized, Industrial Park Road is a 52' wide, 3-4 lane roadway. One of the two southbound travel lanes, which we believe once continued all the way to the Aetna driveway, has been eliminated by pavement markings about ½ mile from Route 372 (Berlin Road). The speed limit is 35 miles per hour and Industrial Park Road has a gently rolling alignment. Illumination is provided. There are no sidewalks. There are a few commercial driveways near the Route 372 (Berlin Road) intersection and a park and ride lot. There are no other curb cuts between Route 372 (Berlin Road) and the former Aetna driveway. From the former Aetna driveway southerly to Smith Street, Industrial Park Road is a two lane facility 40'-48' in width. Abutting developed lands consist primarily of manufacturing and light industrial uses.



Middle Street is a two lane, north-south oriented City of Middletown roadway running between Country Club Road and Division Street/Spruce Brook Road. It is classified as a collector by CTDOT. The speed limit is 35 miles per hour and illumination is provided. Roadway widths vary from about 39'-40' between Country Club Road and Smith Street; 29'-30' between Smith Street and the Aetna data center driveway/Bradley Street intersection; and 39'-40' from that location north to Division Street. Abutting lands include light industrial and manufacturing uses and some residential properties at the northerly end. The Aetna complex has frontage along Middle Street from Bradley Street to about 1000' feet south of



Division Street, portions of which will become the FedEx site. The West Lake Pedestrian Bikeway runs along the easterly side of Middle Street from Smith Street to a point south of the Aetna data center. There are traffic control signals at Smith Street and at the Bradley Street/Aetna data center driveway. There are all-way stops at Country Club Road/I-91 SB on ramp, Boardman Lane and Division Street/Spruce Brook Road.

Main Street is a two lane Town of Berlin facility, which is the extension of Middle Street from Division Street/Spruce Brook Road to Route 372 (Mill Street). It is classified as a collector by CTDOT. Abutting lands are primarily residential properties. Main Street is on a downgrade in the northbound direction and is 24'-32' in width. The speed limit is 25 miles per hour and illumination is provided. Sidewalks are found sporadically. Main Street is signed for "No Through Trucks" at both ends and for "No Trucks" southbound.

Smith Street is a two lane east-west oriented Middletown collector, connecting Middle Street with Route 217 (East Street). Abutting lands west of West Lake Drive include an Army Reserve center and light industrial or manufacturing uses. Residential uses are found east of West Lake Drive. Smith Street is 36'± wide between Middle Street and Industrial Park Road. The speed limit is 25 miles per hour and illumination is



provided. The West Lake Pedestrian Bikeway runs along the northerly side to Middle Street.

Intersection Geometry and Control

Several key intersections were reviewed in this study to determine if they would be impacted by the expected site traffic volumes.

- **Route 372 (Berlin Road) at I-91 SB ramps and Industrial Park Road** – This signalized intersection shares operations and traffic signal phasing with the Sebeth Drive intersection, located about 250 feet to the west. At the main intersection, both Route 372 (Berlin Road) approaches have a left turn lane, two through lanes and a right turn lane. The northbound approach, Industrial Park Road, has a left turn lane, a through lane and a channelized right turn lane. The I-91 SB off ramp has a left turn lane, two through lanes and a right turn lane. At the Sebeth Drive intersection, Route 372 (Berlin Road) eastbound has a left turn lane and two through lanes. The Route 372 (Berlin Road) approach has two through lanes. Sebeth Drive has a left turn lane, a left/through lane and a right turn lane. Directly opposite Sebeth Drive is an entrance only curb cut for McDonald's. The traffic signal phasing is complex due to the need to control both intersections and includes protected only left turn phasing for Route 372 (Berlin Road) at the main intersection, internal clearances, protected/permitted left turn phasing for the off ramp and Industrial Park Road, as well as emergency vehicle pre-emption.



- **Route 372 (Berlin Road) at I-91 NB ramps** - This signalized intersection, located about ¼ mile east of the I-91 SB ramps is part of a CTDOT coordinated system along Route 372 (Berlin Road). Route 372 (Berlin Road) has two through lanes in each direction along with an eastbound left turn lane and a westbound right turn lane. The left turn is protected/permitted in the traffic signal sequence. The I-91 off ramp has three lanes, two for left turns and one for right turns. There is a walk phase to cross Route 372 (Berlin Road) on the east side of the intersection, as well as emergency vehicle pre-emption.



- **Route 372 (Mill Street) at Main Street**– This signalized intersection is located about three quarters of a mile west of the I-91 SB ramps. There is another signalized intersection (Wal*Mart) between the two. Route 372 (Mill Street) eastbound has a left/through lane and a right turn lane. Route 372 (Mill Street) westbound has a left turn lane and a through/right lane. The Main Street approaches to the intersection each have a single lane. The traffic signal provides simple two phase operation.
- **Industrial Park Road at former Aetna driveway** – This formerly signalized “T” type intersection is located about 0.8 miles south of Route 372 (Berlin Road). The traffic signal is currently on flash as the former Aetna driveway is inactive. A traffic

signal head is missing. Northbound Industrial Park Road has two travel lanes. Southbound Industrial Park Road currently has a single travel lane. When Aetna was in operation, it is believed a southbound right turn lane (currently painted over) was provided. The former Aetna driveway has two left turn lanes and a right turn lane at the intersection. Protected/permitted left turn traffic signal phasing was provided for northbound Industrial Park Road.



- **Industrial Park Road at Smith Street**– This unsignalized “T” intersection is located about 0.8 miles south of the former Aetna driveway. Industrial Park Road is stop controlled.

- **Middle Street at Smith Street**– This signalized “T” type intersection is located about 1/4 mile west of the Industrial Park Road intersection. All approaches are single lane. There is protected/permitted phasing for the Middle Street southbound approach. The traffic signal operation was very inefficient when observed during a morning period. It is believe the operation does not provide for any vehicle detection or responsiveness to traffic volumes.



- **Middle Street at Aetna data center driveway and Bradley Street**– This signalized intersection is located about

2/3rds of a mile north of Smith Street.

Northbound Middle Street has a left/through lane and a channelized

right turn lane. Southbound Middle Street has a left turn lane and a through



lane. Bradley Street has a single approach lane and the Aetna driveway, which services their data center, has a left/through lane and a channelized right turn lane.

The traffic signal phasing provides protected/permitted southbound left turns.

- **Middle Street/Main Street at Division Street and Spruce Brook Road**– Located about 0.7 mile north of the existing signalized Aetna data center driveway, this all-way stop is at the Middletown/Berlin boundary. All approaches are one lane.

- **Middle Street at I-91 SB (Exit #20) off ramp**– The off ramp is “Stop” controlled at this “T” intersection. All approaches are single lane.

- **Middle Street at Country Club Road and I-91 SB on ramp**– This intersection, located about 500’ south of the I-91 SB off ramp is an all-way stop. All approaches are one lane. There is a commuter parking lot on the SW corner of this intersection.

- **Country Club Road and I-91 NB ramps** – This intersection, located about 1000’ east of Middle Street is an all-way stop. All approaches are one lane, although

right turning off ramp traffic uses the shoulder during peak periods to bypass those turning left.

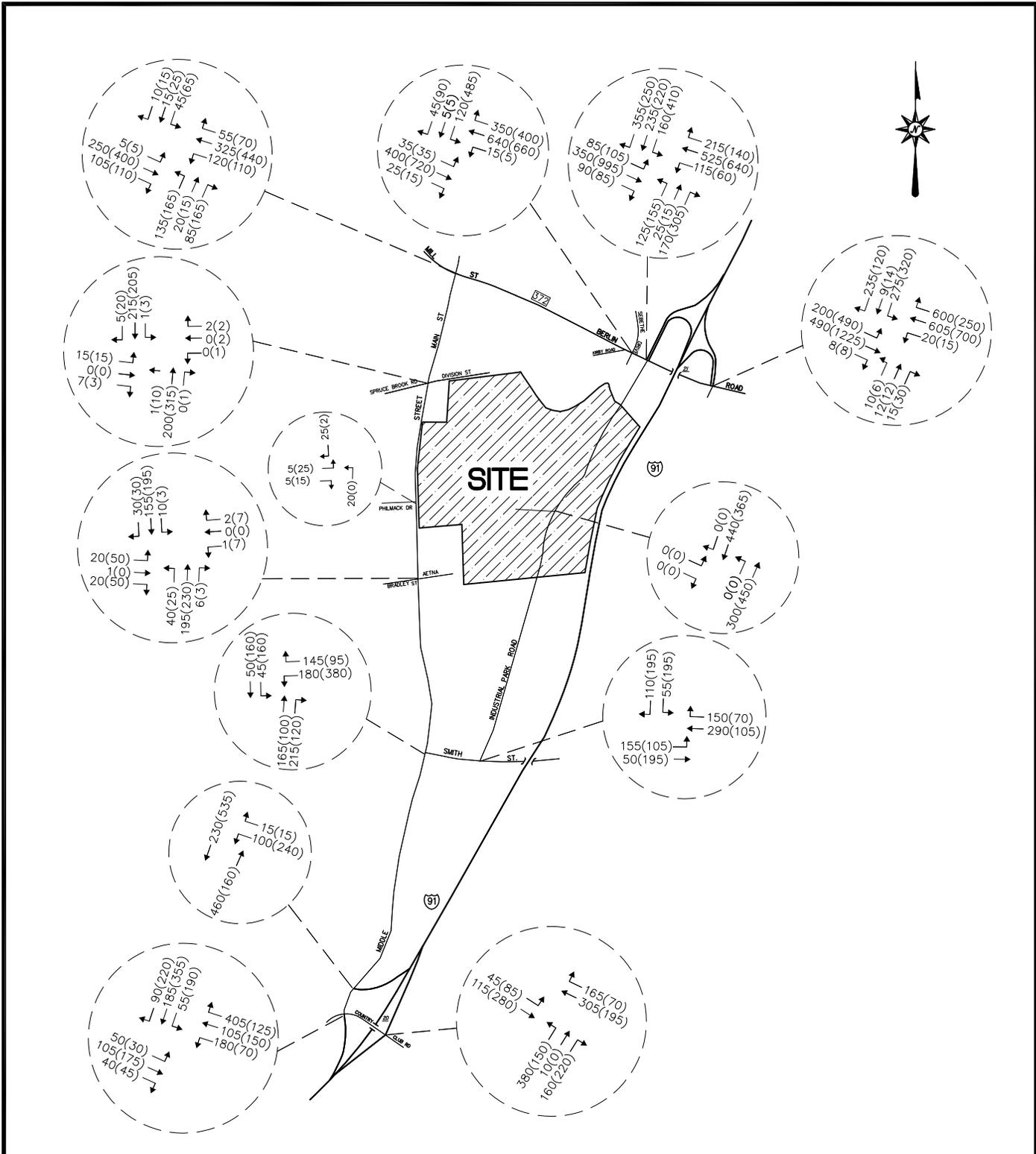
Current Traffic Volumes

Weekday morning and afternoon peak hour traffic volumes were obtained at the above intersections in November of 2014. The current peak hour traffic volumes for the intersections are illustrated in Figure 2. All traffic volumes in this report were approved by the CTDOT Bureau of Policy and Planning. Subsequently, minor modifications were made to add Philmack Drive, opposite the southerly Middle Street site driveway, and to prohibit left turns from the northerly driveway.

Daily traffic volumes, while not used in capacity analyses, provide an indication of the roadway usage and function. Interstate Route 91 carries nearly 114,000 daily trips past the site. The Route 372 (Berlin Road) interchange (#21) handled over 23,000 daily trips. The corresponding I-91 interchange on Country Club Road/Middle Street (#20) handled approximately 12,000. Daily traffic volumes on Route 372 (Berlin Road) range from about 11,000 at the Berlin/Middletown line to just over 22,000 east of I-91. Industrial Park Road carried daily traffic volumes ranging from about 6,700 trips near Route 372 (Berlin Road) to 5,200 near Smith Street. Main Street in Berlin carried 5,100 daily trips, while Middle Street carried about 6,400 near Country Club Road. Country Club Road carried 5,300 daily trips east of I-91.

Crash Data

The most recent available crash data was obtained from the Connecticut Department of Transportation for Route 372 (Mill Street and Berlin Road) for the three year 2011-2013 period



LEGEND

AM PEAK HOUR: XXX
 PM PEAK HOUR: (XXX)

REV: JULY 2015



**CURRENT (2014) TRAFFIC VOLUMES
 FEDEX HUB
 MIDDLETOWN, CONNECTICUT**

SCHMATIC, NOT TO SCALE

FIGURE 2

along the 1.2 mile section from the east of the I-91 interchange to the intersection with Main Street in Berlin. The data, which may have issues with changes to milepost designation, showed 150 recorded crashes, including one fatality. The most prevalent (69) type was the rear end collision. As might be expected, the largest clusters of crashes occurred at the I-91 ramp intersections. Forty-eight (48) accidents were reported at the combined Sebeth Drive/Industrial Park Road/I-91 SB ramp intersection. Twenty two (22) accidents were recorded at the I-91 NB ramp intersection. Both those ramp intersections are on CTDOT's 2010-2012 SLOSSS list¹. Other locations with an identifiable number of crashes reported during the 2011-13 period included:

- Gas station opposite the I-91 NB ramps – 14
- Kirby Road – 10
- Main Street – 9
- Convenience store west of I-91 NB ramps – 7

The most recent available crash data was obtained for the three year 2011-2013 period from the University of Connecticut Crash Data repository for the local roads in the vicinity of the site. There was one crash recorded on Middle Street, near the I-91 SB off ramp and three accidents on Industrial Park Road.

¹-Pursuant to Title 23, US Code Section 409, this data is not admissible and not discoverable for any other purpose in any action for damages arising from an occurrence at a location addressed in this report.

Public Transportation

The roads fronting the site are partially served by three Middletown Area Transit (MAT) routes. The "M Link" runs northbound along Middle Street at about a one hour headway between downtown Meriden and downtown Middletown. The "E" route runs northbound along Industrial Park Road at about a one hour headway between downtown Middletown and the shopping areas on Route 372. The Route I-North route provides limited evening service between downtown Middletown and the shopping areas on Route 372 using Industrial Park Road in the northbound

direction. Finally, CT Transit runs the 906 Route - Cromwell Express from the park and ride lot on Industrial Park Road to downtown Hartford.

Truck Restrictions

FedEx is aware of certain truck restrictions that will impact the allowable routing of their trucks. Specifically, there are restrictions on through trucks and certain large trucks.

Through Trucks - The section of Main Street in the Town of Berlin, which acts as the continuation of Middle Street, from the intersection with Division Street/Spruce Brook Road to Route 372 (Mill Street) is signed for “No Through Trucks”. In addition, Smith Street east of Industrial Park Road is similarly signed. In Connecticut, a through truck is defined as one that passes through a town without having an origin or destination in that town. If a truck originates or has a scheduled stop within that town, it would not be affected by a through truck prohibition.

Section 14-298 of the General Statutes of Connecticut grants authority to the Office of the State Traffic Administration (OSTA) to make regulations, in cooperation and agreement with local traffic authorities, regarding through truck traffic within the limits of any municipality in this state. The “No Through Truck” regulations posted on Main Street in the Town of Berlin and on Smith Street in the City of Middletown were approved by the Office of State Traffic Administration. Therefore, no FedEx trucks can use Main Street unless they have a scheduled stop in the Town of Berlin.

Certain Large Trucks – These are trucks with 53’ trailers or double trailers, often referred to by their AASHTO designations of WB-67 and WB-67D. Trucks in Connecticut are regulated under Sections 14-261, 261a, 264, 267a, 269 and 270 of the Connecticut General Statutes, consistent with the requirements of the Federal Surface Transportation Assistance Act (STAA) of 1982. Pursuant to State statutes, 53’ semi-trailers, and 28’ doubles with an overall length not exceeding 65’, may travel the designated highway system. This system includes State numbered Routes 1-399, 450, 476, 508, 695, 695; the Interstate highway system; and State and Local roads for up to one mile from those routes to access to terminals, etc. FedEx uses trucks of this type and they may use the I-91 interchange at Route 372 (#21), Route 372 (Berlin Road) and Industrial Park Road to reach the site, which is less than one mile from Route 372 (Berlin Road). However, they may not use the I-91 interchange with Country Club Road (#20), Country Club Road, or other connecting streets to reach the site, which is more than one mile away, unless the one mile limit is waived by the Commissioner of Transportation.



III. PROJECTED TRAFFIC CONDITIONS

The intersections cited above were tested against future traffic demand. Future traffic volumes were estimated to determine if any traffic issues would result from a proposed FedEx Ground Hub development. Estimated site traffic volumes were determined, assigned to the critical roadway network, and superimposed onto anticipated year 2019 background traffic volumes.

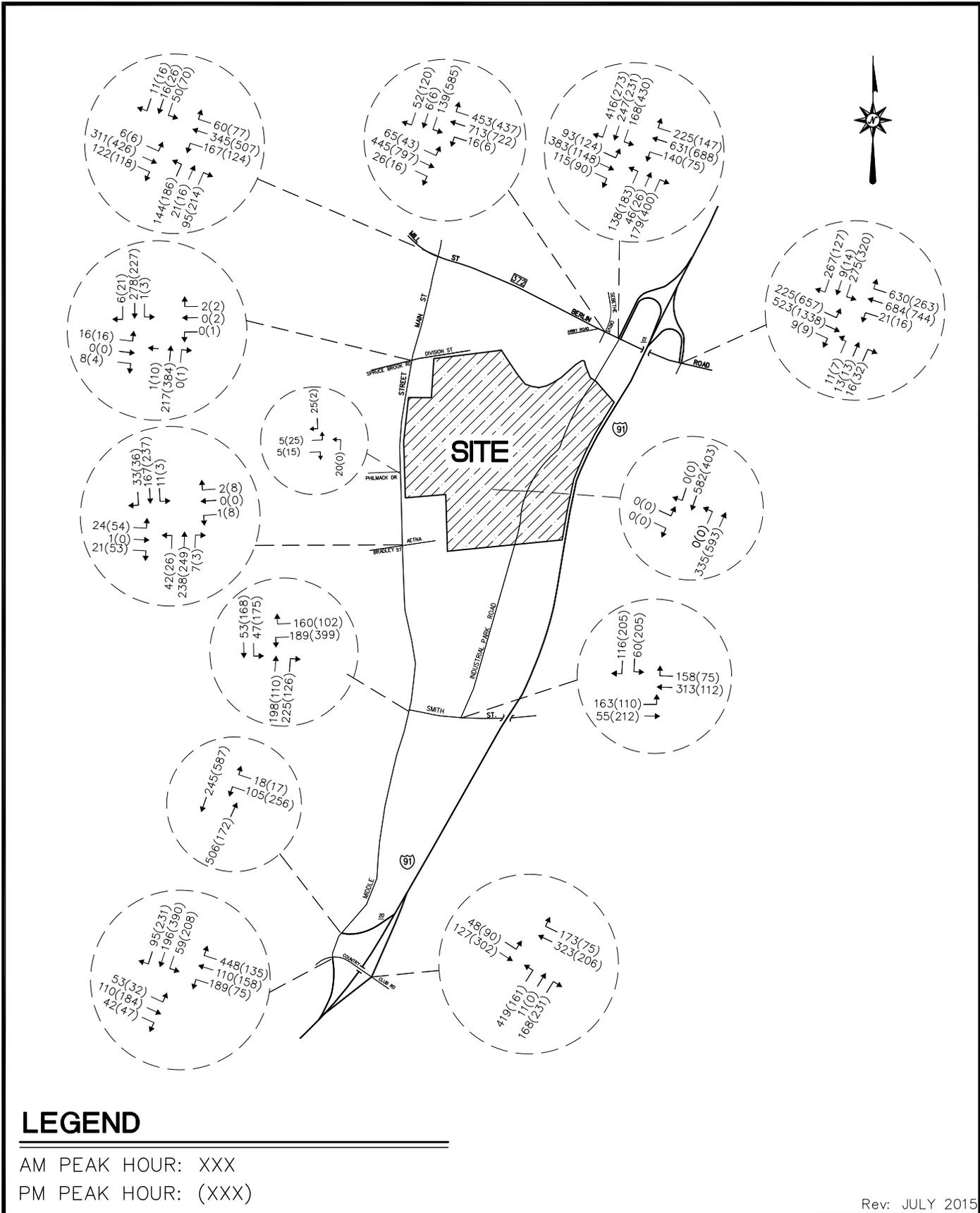
Background Traffic Volumes

Local Growth

The existing through traffic volumes were grown at a rate of 1 percent per year (based on historical data since 1990, the actual increase has been less) to the year 2019 to account for “normal” growth in the corridor, occupancy of currently vacant buildings, etc. In addition, traffic projections from three other nearby approved developments were incorporated into the analysis: the remaining CenterPoint office development along Industrial Park Road; a recently approved 55,000 square foot office building on Middle Street, across from and just north of the FedEx site; and a recently approved 88,000 square foot office/warehouse development on Sebeth Drive in Cromwell. Those three developments, if constructed, will potentially add 370± peak hour trips to the nearby street network. The year 2019 background traffic volumes are illustrated in Figure 3.

Trip Distribution

The distribution of the anticipated site traffic onto the roadway network was based on the site specific operational and access characteristics, an estimate of the origin of employees based on journey to work data, and anticipated large truck patterns from FedEx. As noted, the site is designed for internal employees to park in the Middle Street lot and trucks to use Industrial Park



**BACKGROUND (2019) TRAFFIC VOLUMES
 FEDEX HUB
 MIDDLETOWN, CONNECTICUT**

SCHMATIC, NOT TO SCALE

FIGURE 3

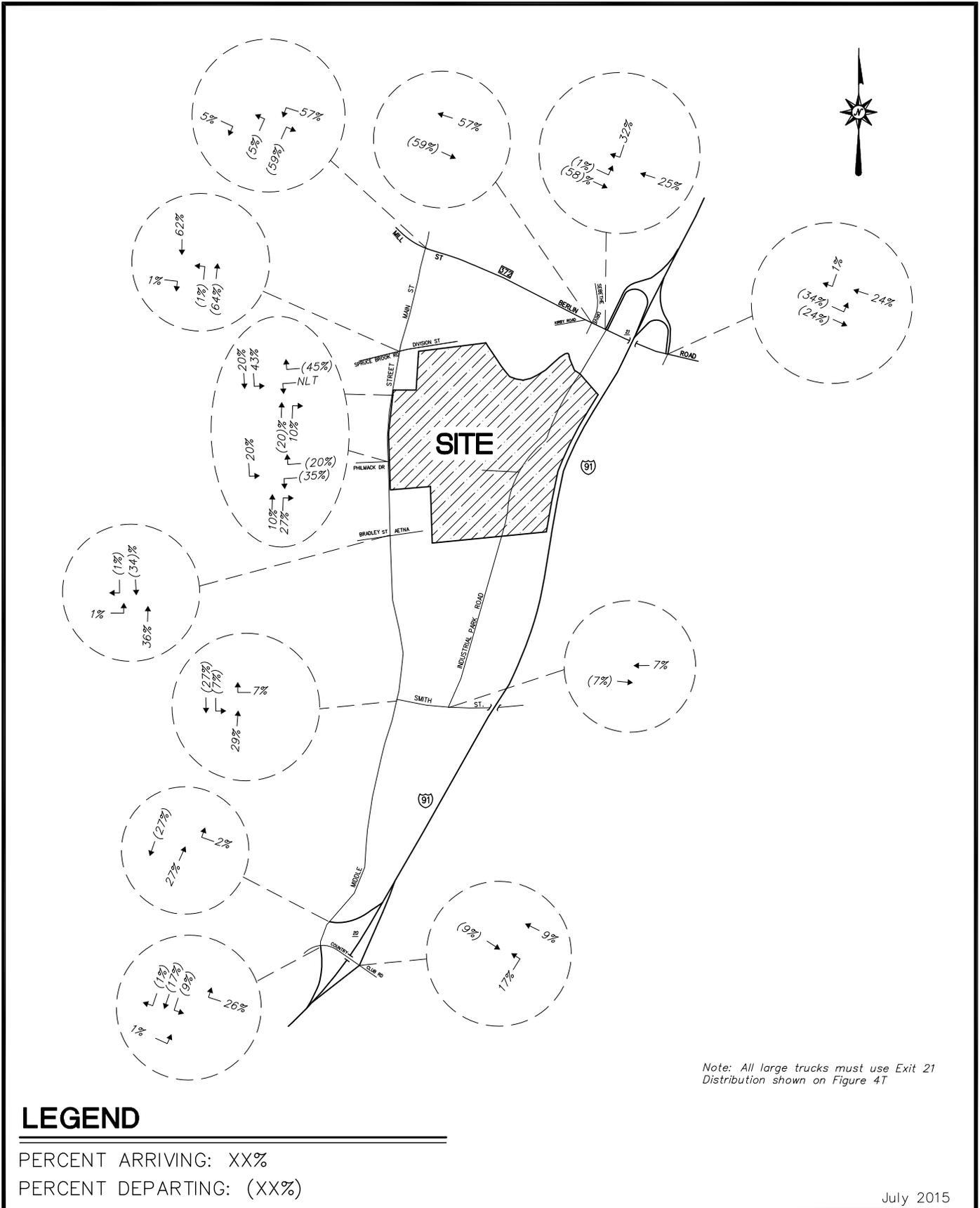
Road. Approximately 25% of the daily traffic volume will consist of trucks. However, the peak hour traffic volume percentage will be much lower. All of the large trucks will use I-91 interchange #21 at Route 372 (Berlin Road), primarily oriented to/from the north, per the FedEx service area. The anticipated trip distribution of truck traffic is shown in Figure 4T. There will be no local delivery from this hub. The anticipated trip distribution of passenger car traffic is depicted in Figure 4 and is heavily oriented towards I-91 and Middle Street. Since the large majority of the traffic consists of employees, much of the generated traffic is oriented to Middle Street, where they must park.

Site Traffic Volumes

Trip generation defines the number of trips oriented to and from a particular land use. Typically, trip generation rates quantify the relationship of a specific land use with the number of vehicles per unit of time. These rates, often determined from studies of similar facilities, form the basis for estimating the number of vehicles generated by future development.

The rates found in the most utilized source, the Institute of Transportation Engineers (ITE) Trip Generation, 9th edition, are based on studies of actual facilities. However, the closest ITE land uses to the proposed FedEx facility, “Warehousing” or “High-Cube Warehouse/Distribution Center”, may not accurately represent the level of traffic, or the specific pattern of flow, found in high volume package processing facilities.

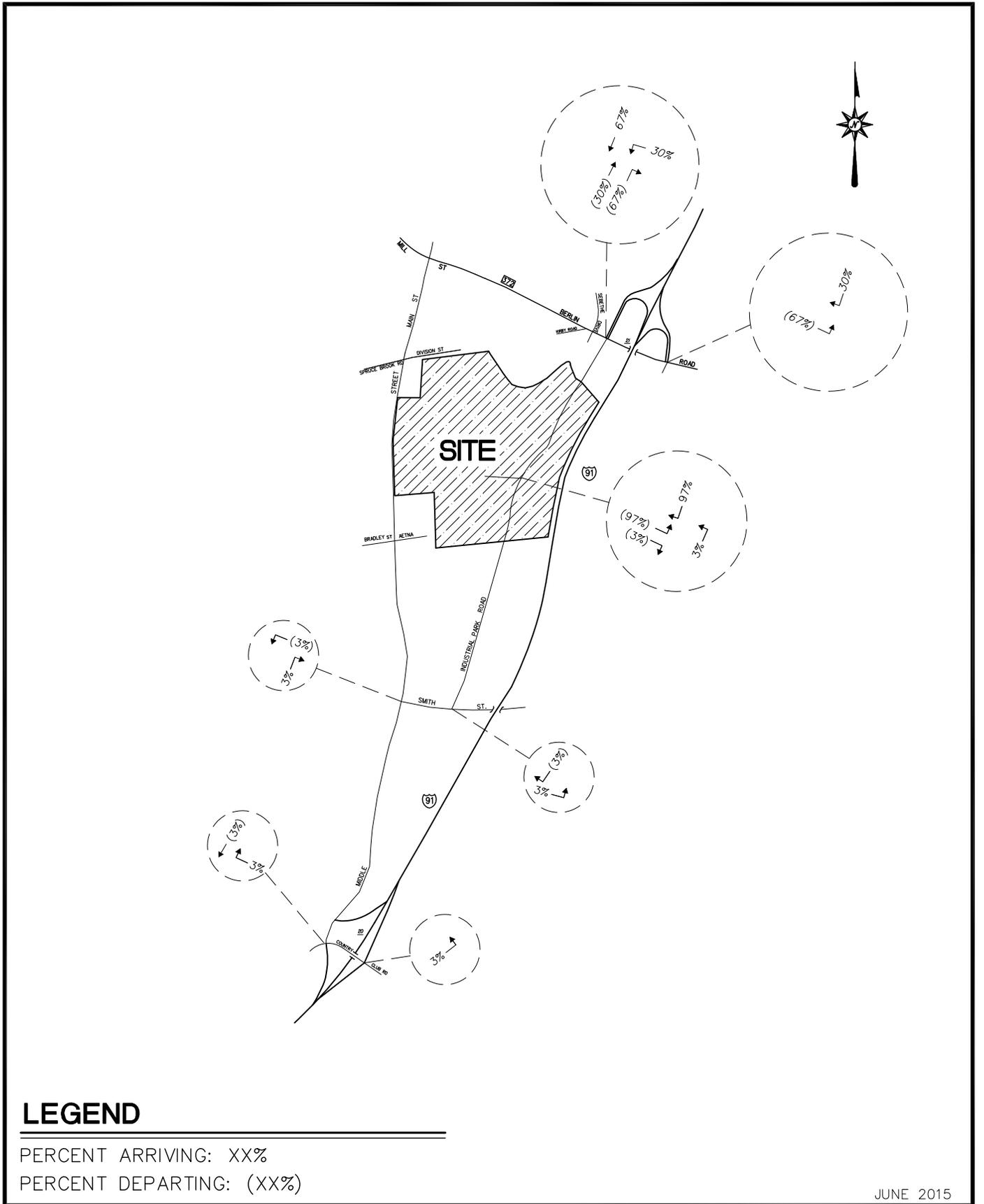
The trip generation estimates for this study were based on the typical package sorting operations anticipated at a 52.5K Full Phase (no local city operations) FedEx hub, as provided by FedEx. It also assumes the full capacity of the facility, although that will not be reached until several years



**TRIP DISTRIBUTION-AUTOMOBILES
FEDEX HUB
MIDDLETOWN, CONNECTICUT**

SCHEMATIC, NOT TO SCALE

FIGURE 4



**TRIP DISTRIBUTION-TRUCKS
FEDEX HUB
MIDDLETOWN, CONNECTICUT**

SCHEMATIC, NOT TO SCALE

FIGURE 4T

after the 2019 opening. Note that a different type facility, with local city delivery for example, would exhibit its own traffic pattern.

In addition, while the morning and afternoon peak traffic hours for the FedEx facility may fall slightly outside the commuter peak traffic periods along the adjacent roadway network, for a conservative analysis, since that characteristic cannot be guaranteed, it was also assumed that the site and street traffic peaks coincide. Table 1 shows the anticipated morning and afternoon peak hour trip generation for the hub. On a daily basis, the FedEx hub is anticipated to generate 3,860± trips (1930 in, 1930 out). Of those, about 75% are passenger cars and 25% trucks. The highest truck volumes are expected to occur during the 8 PM - 5 AM time period. As a result, the morning peak hour truck percentage is about 8% trucks, while the afternoon is 15%. The large majority of trucks will be either “doubles” or “large singles”. Morning and afternoon peak hour trip generation is anticipated to be 260 and 325 trips respectively. As noted, these may not exactly coincide with the commuter peak periods along the nearby roadway system.

Table 1
FedEx Hub Trip Generation

	Cars	Trucks	Total
Daily	1455/1455(2910)	475/475(950)	1930/1930(3860)
AM Peak Hour	45/195(240)	8/12(20)	53/207(260)
PM Peak Hour	230/45(275)	30/20(50)	260/65(325)

00/00(000) – trips in/out (total)

By comparison, using ITE rates, a generic warehouse of the same size (580,000± s.f.) would be expected to generate 2,230 daily, 215 morning and 185 afternoon peak hour trips, respectively. Similarly a high-cube warehouse/distribution center of that size would be expected to generate 990 daily, 65 morning and 75 afternoon peak hour trips, respectively. When at full operation, the

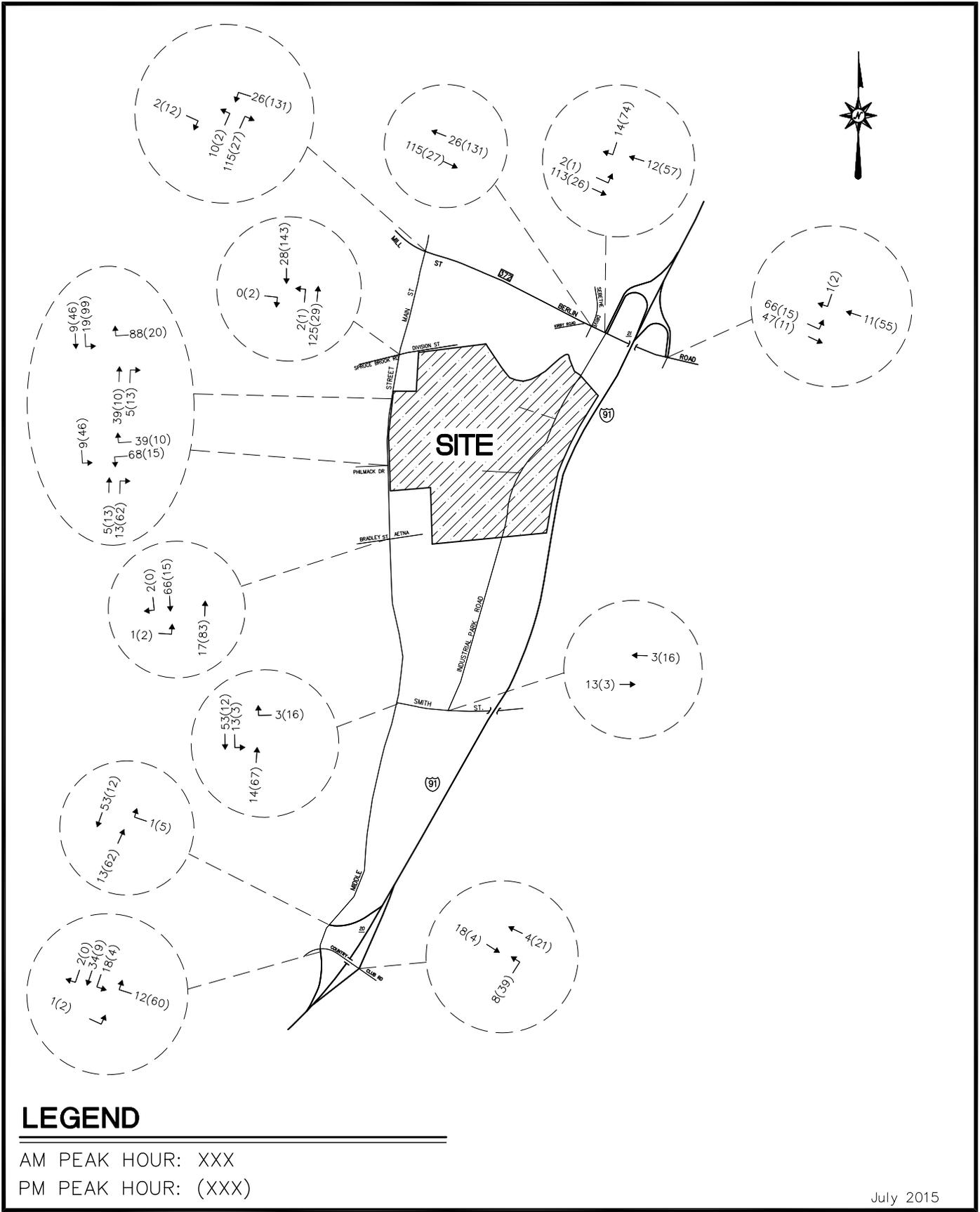
former Aetna division headquarters appeared to generate over 2,000 peak hour trips. As noted under Local Growth, the three developments included in the background traffic volumes could potentially add 370± peak hour trips, a higher total than the FedEx site.

Figures 5 and 5T show the site generated peak hour automobile and truck traffic for the hub, assigned to the nearby street system.

It is not anticipated that there will be any pedestrian traffic generated by this facility. The Industrial Park Road access is secured and for trucks only. Pedestrians or bicycles are not permitted. FedEx is providing a parking rack for 9 bicycles in the Middle Street lot.

Build Traffic Volumes

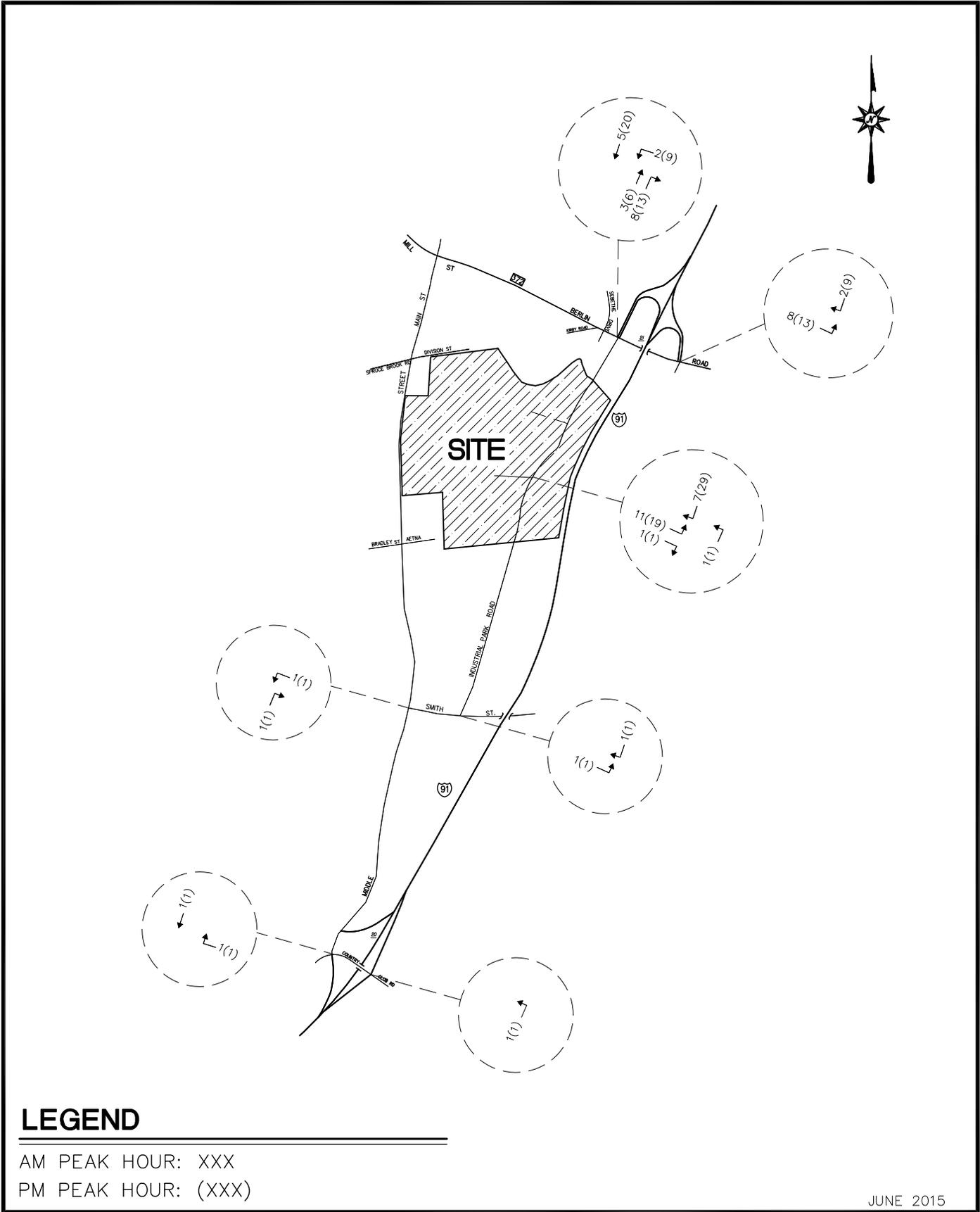
The anticipated traffic volumes generated by the FedEx Ground Hub development were superimposed onto the background traffic volumes to establish the build traffic volumes, as illustrated in Figure 6.



**NEW SITE AUTOMOBILE TRAFFIC VOLUMES
 FEDEX HUB
 MIDDLETOWN, CONNECTICUT**

SCHMATIC, NOT TO SCALE

FIGURE 5

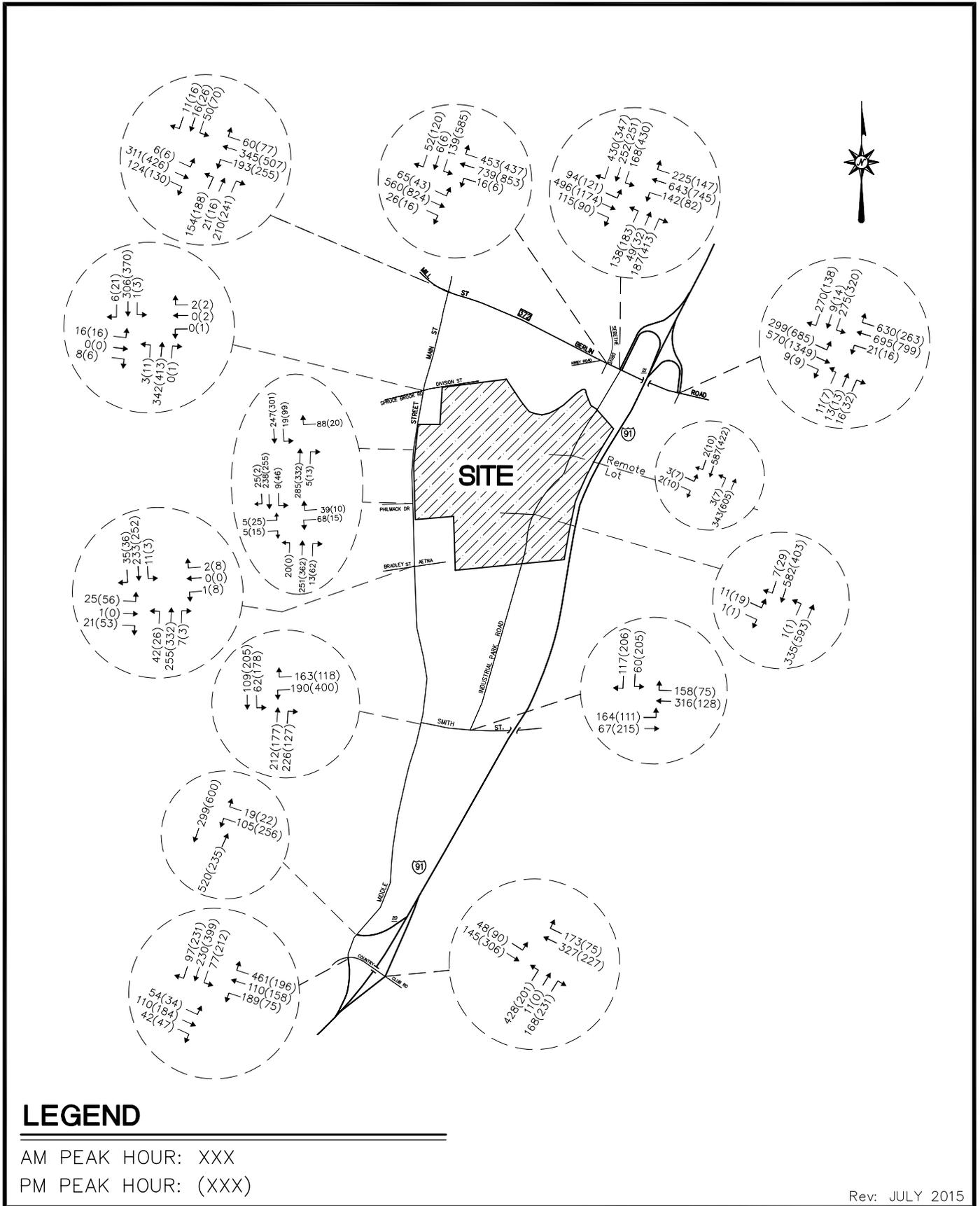


**NEW SITE TRUCK TRAFFIC VOLUMES
 FEDEX HUB
 MIDDLETOWN, CONNECTICUT**

SCHEMATIC, NOT TO SCALE

JUNE 2015

FIGURE 5T



**BUILD (2019) TRAFFIC VOLUMES
 FEDEX HUB
 MIDDLETOWN, CONNECTICUT**

SCHEMATIC, NOT TO SCALE

FIGURE 6

IV. ROADWAY ADEQUACY

Capacity analyses were prepared using the methodology described in the Highway Capacity Manual (HCM), published by the Transportation Research Board (TRB) for the background and build traffic volume scenarios to simulate the traffic impact of a FedEx Hub development on the adjacent roadway network.

Signalized Intersections

Signalized intersections are analyzed in terms of vehicle capacity and motorist delay. Capacity is the maximum rate of vehicle flow through an intersection given typical operating conditions. The number of vehicles traveling through an intersection is divided by the capacity of the intersection to determine an overall volume to capacity ratio (v/c). A v/c value under 1.00 indicates that the number of vehicles traveling through an intersection is less than capacity.

As stated in the HCM, level of service for signalized intersections is defined in terms of control delay. Control delay measures the increase in delay a motorist experiences while encountering a traffic control signal. These factors include initial deceleration delay, queue move-up time, stopped delay, and final acceleration delay. This delay is measured per vehicle for a 15-minute analysis period and is associated with the levels of service, which are summarized in Table 2 below:

Table 2
Signalized Intersection - Level of Service

<u>Level of Service</u>	<u>Control Delay per Vehicle (seconds)</u>
A	< 10
B	> 10 and ≤ 20
C	> 20 and ≤ 35
D	> 35 and ≤ 55
E	> 55 and ≤ 80
F	> 80

Level of service A represents the optimum level where most motorists arrive at the subject intersection during the green phase and thus experience virtually no delay. Conversely, level of service F indicates that motorists are delayed over 80 seconds while traveling through the intersection, and can often imply a complete breakdown of that location. Level of service D is generally considered the limit of acceptable motorist delay.

Unsignalized Intersections

Unsignalized intersections are generally evaluated in terms of average side street delay, as well as the capacity of the roadway approach. This analysis is based on the random arrival of vehicles and the associated gaps generated by this random arrival within the traffic stream. There is no overall level of service for unsignalized intersections. The relationship between levels of service and average side street delay are summarized in Table 3 below:

Table 3
Unsignalized Intersection – Level of Service

<u>Level of Service</u>	<u>Delay Range (seconds)</u>
A	< 10
B	> 10 and ≤ 15
C	> 15 and ≤ 25
D	> 25 and ≤ 35
E	> 35 and ≤ 50
F	> 50

It should be noted that unsignalized levels of service do not correspond to those for signalized intersections, nor do they constitute warrants for the installation of traffic control signals. It is also recognized that the methodology is overly conservative and that computations can indicate operations at poor levels of service (E or F) with even very low side street volumes, although they often function without serious problems in the real world.

Table 4 shows the levels of service (LOS) at the subject intersections. A more detailed Table is included in the Appendix.

**Table 4
Peak Hour Levels of Service**

Intersection	Peak Hour			
	Background		Build	
	AM	PM	AM	PM
Route 372 at Main St ²	B	B	B	C
Route 372 at Sebethe Drive ²	B	E	B	E
Route 372 at I-91 SB Ramps/ Industrial Park Rd ²	C	C	C	D
Route 372 at I-91 NB Ramps ²	B	C	B	C
Industrial Park Rd at Hub driveway ¹	-	-	C	C
Industrial Park Road at Satellite lot	-	-	C	C
Industrial Park Rd at Smith St ¹	C	D	C	E
Middle St at Division St/Spruce Brook Rd ³	A	A	B	B
Middle Street at north site driveway	-	-	B	B
Middle Street at south site driveway	-	-	B	B
Middle St at Aetna driveway/Bradley St ²	A	A	A	A
Middle St at Smith St ²	B	C	B	C
Middle St at I-91 SB off ramp ¹	C	F	C	F
Middle St at Country Club Rd/I-91 SB On Ramp ³	E	E	E	E
Country Club Rd at I-91 NB Off ramp ³	D	C	E	C

- 1- Unsignalized, LOS for controlled traffic only
- 2- Signalized, overall intersection LOS
- 3- All way Stop, overall intersection LOS

Levels of Service at the intersections studied remain unchanged, or within the acceptable range, with two exceptions: the I-91 NB off ramp at Country Club Road, where the morning peak period level of service for left turns is projected to be “E”, and the Industrial Park Road approach to Smith Street, where an “E” level of service is projected for the afternoon peak period.

While the FedEx impact may be small, there are observed, existing, or projected background, problem areas that may have to be addressed in the future by municipal or State agencies independent of the FedEx project. The computed overall levels of service do not completely describe the state of traffic operations at several locations. Those are discussed in the next section of this report.

V. CONCLUSIONS AND RECOMMENDATIONS

This study investigated the potential traffic operational issues associated with a FedEx Ground Hub development during the weekday morning and afternoon peak traffic periods. The proposed FedEx Ground Hub is projected to generate 3,860 daily, 260 morning and 325 afternoon peak hour trips.

With two exceptions, overall traffic operations at the intersections studied will remain essentially unchanged, or remain at acceptable levels post FedEx. A more detailed evaluation identified some existing, or background operational issues that deserve attention. While there are no large system level traffic improvements needed, various individual intersections or traffic movements can be improved. Moving forward, the following should be considered:

By FedEx

1. The proposal must to be submitted to the Office of State Traffic Administration (OSTA) to obtain a Certificate of Operation as a major traffic generator under Section 14-311 of the Connecticut General Statutes.
2. All large trucks should use the I-91 interchange at Route 372 (#21). Trucks oriented towards other regional expressways, I-84, Route 9 and Route 72 could legally use Route 372 to reach the site. While these may be shorter routes, it is recommended that the large trucks stay on the expressway network to avoid mixing with local traffic.

3. Industrial Park Road at proposed Hub driveway – Reactivation of the existing traffic signal would require an inspection of the installation, which has been out of operation for a few years. It is clear that there is at least one traffic signal head missing and perhaps other components have been cannibalized or stolen. It also appears that a traffic signal is not warranted based on the FedEx traffic volume projections and in a preliminary meeting, the Office of State Traffic Administration indicated they would not be supportive of reactivating an unwarranted traffic signal. Maintaining the signal in its current flashing mode may be beneficial to provide advance warning of this significant intersection, the first major access point one sees along Industrial Park Road traveling south from Route 372. The driveway can be reduced from its current three lane exit to two lanes. The former southbound Industrial Park Road southbound right turn lane into Aetna was painted out when Aetna closed. That lane should be reinstated in conjunction with other pavement marking changes, see below.
4. Industrial Park Road at proposed satellite parking lot. The availability of adequate intersection sight distance, based on truck needs is necessary at this location. In addition, it appears that the curb cut is in the transition area from two southbound Industrial Park Road lanes to one. This is an undesirable situation and some pavement marking and signing adjustments should be made.
5. It is believed that Industrial Park Road once had two southbound travel lanes from Route 372 to the Aetna driveway. The second southbound lane became the right turn lane into Aetna. With the closure of the Aetna complex, that second lane was closed and a transition to one lane made to the north. It is recommended that the two lane southbound arrangement be reinstated.

6. Route 372 (Mill Street) at Main Street – the existing 100'± long westbound Route 372 left turn lane should be lengthened to 240'± at this intersection in Berlin. This will require a minor widening along Route 372. There is sufficient right of way available for this improvement.
7. Route 372 (Berlin Road) at I-91 NB ramps – the afternoon peak period eastbound Route 372 (Berlin Road) left turn onto I-91 north is projected to be at LOS “E”, capacity, and the queue nearing the end of the left turn lane under the build condition at this intersection in Cromwell. The three other nearby development projects also contribute to this potential problem. Modification of the traffic signal to reallocate more time to the left turn movement would nearly replicate the background condition.

By Municipal and/or State Agencies

There are observed, existing, or projected background, problem areas that may have to be addressed in the future by municipal or State agencies independent of the FedEx project.

1. Country Club Road at the I-91 NB off ramp (exit #20) - this all-way stop has a projected “E” level of service during the morning peak period, with left turns from the off-ramp and Middle Street westbound traffic currently nearing capacity. FedEx has a minimal impact here. If warranted, a traffic signal could provide benefit during the morning peak period, but much less so during other times.
2. Country Club Road at Middle Street and the I-91 SB on ramp (exit #20) - this all-way stop has a background “E” level of service during both peak periods studied, with westbound Country Club Road or Middle Street at “F”. Significant queueing was observed on Middle Street during the afternoon peak period, and on westbound Country Club Road during the

morning period. If warranted, a traffic signal would provide some level of improvement, but queues would still be substantial. Providing additional travel lanes on Middle Street and westbound Country Club Road (right turn lane) in conjunction with a traffic signal would be more beneficial. A partial 2-lane roundabout could be workable, but right of way acquisition could be necessary. While there is right of way available for geometric improvements (the State owns the property on three of the corners), a pump station in the northeast corner may limit the possibility of improvement.

3. Middle Street at Smith Street - the traffic volumes at this signalized intersection do not suggest a problem, but field observations revealed that the traffic signal is operating very inefficiently, with long queues on Smith Street. The traffic signal is not responsive to traffic volumes, that is, it has no vehicle detection and timing is the same regardless of traffic. This is not an effective type of operation for a location such as this.
4. Smith Street at Industrial Park Road - the Industrial Park Road (stop controlled) level of service during the afternoon peak period is projected to go from “D” to “E”, although the increase in average delay is only about 4 seconds per vehicle. There will still be sufficient capacity for the movement. As development continues along Industrial Park Road, a minor (3'-4') widening of Industrial Park Road to provide two lanes approaching Smith Street could prove beneficial.
5. Route 372 (Berlin Road) at Sebeth Drive – the intersection is projected to operate at an overall “E” level of service, with several individual traffic movements at “F” and over capacity under afternoon peak period background conditions. A recently approved 88,000 square foot development project on Sebeth Drive, a dead end road, directly impacts this intersection. Afternoon peak hour traffic volumes on Sebeth Drive alone are expected to reach nearly 1200 vehicles. The FedEx project is projected to have minimal impact on

this intersection. This location is controlled jointly with the I-91 SB ramps and Industrial Park Road intersection, 250'± to the east and the complex traffic signal phasing is very difficult to model. The Town of Cromwell should investigate options to provide additional access to Sebethe Drive to relieve the traffic pressure. Other possible improvements include constructing a third eastbound Route 372 through lane from the vicinity of Kirby Road to the intersection. Available right of way would limit the length of this lane to perhaps 175'. Beyond Sebethe Drive it would become the right turn lane at Industrial Park Road. This would limit its effectiveness, but still provide some improvement. A Route 372 westbound right turn lane could be constructed between the I-91 ramps and Sebethe Drive, but might impact the commuter parking lot fronting Route 372.

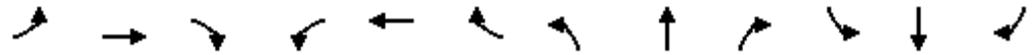
2020 PROPOSED CURRENT OPERATION VOLUMES
PEAK HOUR TRIP GENERATION AND
TRIP DISTRIBUTION SUMMARIES

Table A
Mid-Growth Peak Hour Trip Generation
12/18/2020

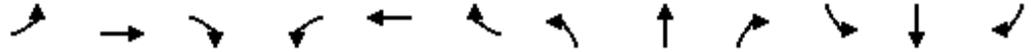
	Trips					
Trips By	AM Peak Hour			PM Peak Hour		
		300	48	252	340	233
Autos	21	8	13	13	7	6
Trailer Trucks	0	0	0	0	0	0
Vans	321	56	265	353	240	113
Net New Trips	300	48	252	340	233	107

Ref: Trip Generation developed by Tenant
11/15/2020

CAPACITY ANALYSES



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕	↗	↖	↘			↕			↕	
Traffic Volume (vph)	5	263	113	154	342	58	155	16	238	47	16	11
Future Volume (vph)	5	263	113	154	342	58	155	16	238	47	16	11
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	15	12	12	15	12
Storage Length (ft)	0		150	100		0	0		0	0		0
Storage Lanes	0		1	1		0	0		0	0		0
Taper Length (ft)	25			50			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850		0.978			0.921			0.980	
Flt Protected		0.999		0.950				0.981			0.969	
Satd. Flow (prot)	0	1861	1583	1770	1822	0	0	1851	0	0	1946	0
Flt Permitted		0.992		0.582				0.842			0.741	
Satd. Flow (perm)	0	1848	1583	1084	1822	0	0	1589	0	0	1488	0
Right Turn on Red			Yes			Yes			Yes			No
Satd. Flow (RTOR)			123		16			93				
Link Speed (mph)		35			35			30				30
Link Distance (ft)		875			2306			2021				579
Travel Time (s)		17.0			44.9			45.9				13.2
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)	5	286	123	167	372	63	168	17	259	51	17	12
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	291	123	167	435	0	0	444	0	0	80	0
Turn Type	Perm	NA	Perm	Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			8				4
Permitted Phases	2		2	6			8			4		
Detector Phase	2	2	2	6	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	15.0	15.0	15.0	15.0	15.0		9.0	9.0		9.0	9.0	
Minimum Split (s)	20.0	20.0	20.0	20.0	20.0		13.0	13.0		13.0	13.0	
Total Split (s)	50.0	50.0	50.0	50.0	50.0		34.0	34.0		34.0	34.0	
Total Split (%)	59.5%	59.5%	59.5%	59.5%	59.5%		40.5%	40.5%		40.5%	40.5%	
Maximum Green (s)	45.0	45.0	45.0	45.0	45.0		30.0	30.0		30.0	30.0	
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	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	
Total Lost Time (s)		5.0	5.0	5.0	5.0			4.0			4.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	4.0	4.0	4.0	4.0	4.0		3.0	3.0		3.0	3.0	
Recall Mode	Min	Min	Min	Min	Min		None	None		None	None	
Act Effct Green (s)		17.7	17.7	17.7	17.7			14.9			14.9	
Actuated g/C Ratio		0.42	0.42	0.42	0.42			0.35			0.35	
v/c Ratio		0.37	0.17	0.37	0.56			0.71			0.15	
Control Delay		11.1	3.2	12.6	13.2			16.4			10.2	
Queue Delay		0.0	0.0	0.0	0.0			0.0			0.0	
Total Delay		11.1	3.2	12.6	13.2			16.4			10.2	
LOS		B	A	B	B			B			B	
Approach Delay		8.8			13.1			16.4			10.2	



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach LOS	A			B			B			B		
Queue Length 50th (ft)		40	0	23	63			56			11	
Queue Length 95th (ft)		119	24	81	184			174			39	
Internal Link Dist (ft)		795			2226			1941			499	
Turn Bay Length (ft)			150	100								
Base Capacity (vph)		1760	1513	1032	1736			1209			1110	
Starvation Cap Reductn		0	0	0	0			0			0	
Spillback Cap Reductn		0	0	0	0			0			0	
Storage Cap Reductn		0	0	0	0			0			0	
Reduced v/c Ratio		0.17	0.08	0.16	0.25			0.37			0.07	

Intersection Summary

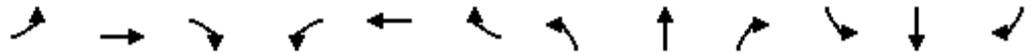
Area Type:	Other
Cycle Length:	84
Actuated Cycle Length:	42
Natural Cycle:	40
Control Type:	Actuated-Uncoordinated
Maximum v/c Ratio:	0.71
Intersection Signal Delay:	12.7
Intersection LOS:	B
Intersection Capacity Utilization:	72.4%
ICU Level of Service:	C
Analysis Period (min):	15

Splits and Phases: 101: Main & Rte 372



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	37	569	26	16	701	368	0	0	0	126	5	47
Future Volume (vph)	37	569	26	16	701	368	0	0	0	126	5	47
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	300		0	0		0	0		0	125		125
Storage Lanes	1		0	0		0	0		0	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	0.95	0.95	0.95	0.95	1.00	1.00	1.00	0.95	0.95	1.00
Frt		0.993			0.949							0.850
Flt Protected	0.950				0.999					0.950	0.956	
Satd. Flow (prot)	1770	3514	0	0	3355	0	0	0	0	1681	1692	1583
Flt Permitted	0.156				0.955					0.950	0.956	
Satd. Flow (perm)	291	3514	0	0	3208	0	0	0	0	1681	1692	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		4			225							166
Link Speed (mph)		40			40			25			30	
Link Distance (ft)		364			232			215			478	
Travel Time (s)		6.2			4.0			5.9			10.9	
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)	40	618	28	17	762	400	0	0	0	137	5	51
Shared Lane Traffic (%)										48%		
Lane Group Flow (vph)	40	646	0	0	1179	0	0	0	0	71	71	51
Turn Type	Perm	NA		Perm	NA					Split	NA	Prot
Protected Phases		1 8			1 2 5 6					7	7	7
Permitted Phases	1 8			1 2 5 6	8							
Detector Phase	1	1		1 2 5 6	1					7	7	7
Switch Phase												
Minimum Initial (s)										7.0	7.0	7.0
Minimum Split (s)										11.3	11.3	11.3
Total Split (s)										19.3	19.3	19.3
Total Split (%)										17.3%	17.3%	17.3%
Maximum Green (s)										15.0	15.0	15.0
Yellow Time (s)										3.2	3.2	3.2
All-Red Time (s)										1.1	1.1	1.1
Lost Time Adjust (s)										0.0	0.0	0.0
Total Lost Time (s)										4.3	4.3	4.3
Lead/Lag										Lead	Lead	Lead
Lead-Lag Optimize?												
Vehicle Extension (s)										1.0	1.0	1.0
Recall Mode										None	None	None
Act Effct Green (s)	24.6	24.6			61.8					9.0	9.0	9.0
Actuated g/C Ratio	0.29	0.29			0.73					0.11	0.11	0.11
v/c Ratio	0.48	0.63			0.47					0.40	0.39	0.16
Control Delay	49.3	30.2			2.1					44.5	44.4	1.1
Queue Delay	0.0	0.0			0.7					0.0	0.0	0.0
Total Delay	49.3	30.2			2.8					44.5	44.4	1.1
LOS	D	C			A					D	D	A
Approach Delay		31.3			2.8						33.0	
Approach LOS		C			A						C	

Lane Group	Ø1	Ø2	Ø3	Ø4	Ø5	Ø6	Ø8
Lane Configurations							
Traffic Volume (vph)							
Future Volume (vph)							
Ideal Flow (vphpl)							
Storage Length (ft)							
Storage Lanes							
Taper Length (ft)							
Lane Util. Factor							
Frt							
Flt Protected							
Satd. Flow (prot)							
Flt Permitted							
Satd. Flow (perm)							
Right Turn on Red							
Satd. Flow (RTOR)							
Link Speed (mph)							
Link Distance (ft)							
Travel Time (s)							
Peak Hour Factor							
Adj. Flow (vph)							
Shared Lane Traffic (%)							
Lane Group Flow (vph)							
Turn Type							
Protected Phases	1	2	3	4	5	6	8
Permitted Phases							
Detector Phase							
Switch Phase							
Minimum Initial (s)	15.0	1.0	7.0	1.0	5.0	10.0	1.0
Minimum Split (s)	20.0	5.6	10.8	3.1	8.6	14.7	3.1
Total Split (s)	29.0	5.6	20.8	3.1	18.6	34.7	3.1
Total Split (%)	26%	5%	19%	3%	17%	31%	3%
Maximum Green (s)	24.0	1.0	17.0	1.0	15.0	30.0	1.0
Yellow Time (s)	3.0	4.0	3.2	2.0	3.0	3.2	2.0
All-Red Time (s)	2.0	0.6	0.6	0.1	0.6	1.5	0.1
Lost Time Adjust (s)							
Total Lost Time (s)							
Lead/Lag			Lead	Lag	Lead	Lag	Lag
Lead-Lag Optimize?							
Vehicle Extension (s)	3.0	3.0	1.0	1.0	1.0	3.0	3.0
Recall Mode	Min	Max	None	None	None	None	None
Act Effct Green (s)							
Actuated g/C Ratio							
v/c Ratio							
Control Delay							
Queue Delay							
Total Delay							
LOS							
Approach Delay							
Approach LOS							

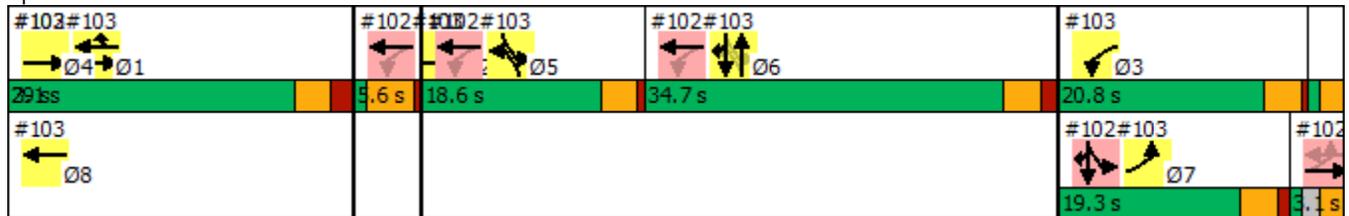


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 50th (ft)	17	150			17					36	36	0
Queue Length 95th (ft)	#69	255			14					91	91	0
Internal Link Dist (ft)		284			152			135			398	
Turn Bay Length (ft)	300									125		125
Base Capacity (vph)	87	1055			2497					303	305	422
Starvation Cap Reductn	0	0			865					0	0	0
Spillback Cap Reductn	0	12			0					0	0	0
Storage Cap Reductn	0	0			0					0	0	0
Reduced v/c Ratio	0.46	0.62			0.72					0.23	0.23	0.12

Intersection Summary

Area Type: Other
 Cycle Length: 111.8
 Actuated Cycle Length: 84.4
 Natural Cycle: 65
 Control Type: Semi Act-Uncoord
 Maximum v/c Ratio: 0.69
 Intersection Signal Delay: 15.1
 Intersection LOS: B
 Intersection Capacity Utilization 56.6%
 ICU Level of Service B
 Analysis Period (min) 15
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

Splits and Phases: 102: McD/Sebethe & Rte 372



Lane Group	Ø1	Ø2	Ø3	Ø4	Ø5	Ø6	Ø8
Queue Length 50th (ft)							
Queue Length 95th (ft)							
Internal Link Dist (ft)							
Turn Bay Length (ft)							
Base Capacity (vph)							
Starvation Cap Reductn							
Spillback Cap Reductn							
Storage Cap Reductn							
Reduced v/c Ratio							
Intersection Summary							

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	92	515	95	124	564	226	131	31	188	168	253	389
Future Volume (vph)	92	515	95	124	564	226	131	31	188	168	253	389
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	325		125	375		0	460		325
Storage Lanes	1		1	1		1	1		1	1		2
Taper Length (ft)	25			50			25			25		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	0.95	1.00
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	3539	1568	1752	3539	1583	1752	1845	1568	1770	3505	1583
Flt Permitted	0.950			0.950			0.522			0.735		
Satd. Flow (perm)	1770	3539	1568	1752	3539	1583	963	1845	1568	1369	3505	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			208			187			208			423
Link Speed (mph)		40			40			35			35	
Link Distance (ft)		232			1355			2498			741	
Travel Time (s)		4.0			23.1			48.7			14.4	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	2%	2%	3%	3%	2%	2%	3%	3%	3%	2%	3%	2%
Adj. Flow (vph)	100	560	103	135	613	246	142	34	204	183	275	423
Shared Lane Traffic (%)												
Lane Group Flow (vph)	100	560	103	135	613	246	142	34	204	183	275	423
Turn Type	Prot	NA	Free	Prot	NA	custom	pm+pt	NA	Free	pm+pt	NA	Prot
Protected Phases	7	1 2 4		3	1 8	1	5	6		5	6	6
Permitted Phases			Free				6		Free	6		
Detector Phase	7	1 2 4		3	1 8	1	5	6		5 6	6	6
Switch Phase												
Minimum Initial (s)	7.0			7.0		15.0	5.0	10.0		5.0	10.0	10.0
Minimum Split (s)	11.3			10.8		20.0	8.6	14.7		8.6	14.7	14.7
Total Split (s)	19.3			20.8		29.0	18.6	34.7		18.6	34.7	34.7
Total Split (%)	17.3%			18.6%		25.9%	16.6%	31.0%		16.6%	31.0%	31.0%
Maximum Green (s)	15.0			17.0		24.0	15.0	30.0		15.0	30.0	30.0
Yellow Time (s)	3.2			3.2		3.0	3.0	3.2		3.0	3.2	3.2
All-Red Time (s)	1.1			0.6		2.0	0.6	1.5		0.6	1.5	1.5
Lost Time Adjust (s)	0.0			0.0		0.0	0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	4.3			3.8		5.0	3.6	4.7		3.6	4.7	4.7
Lead/Lag	Lead			Lead			Lead	Lag		Lead	Lag	Lag
Lead-Lag Optimize?												
Vehicle Extension (s)	1.0			1.0		3.0	1.0	3.0		1.0	3.0	3.0
Recall Mode	None			None		Min	None	None		None	None	None
Act Effct Green (s)	9.0	29.4	84.4	10.4	24.6	23.7	25.0	13.8	84.4	25.0	13.8	13.8
Actuated g/C Ratio	0.11	0.35	1.00	0.12	0.29	0.28	0.30	0.16	1.00	0.30	0.16	0.16
v/c Ratio	0.53	0.45	0.07	0.62	0.59	0.42	0.37	0.11	0.13	0.40	0.48	0.69
Control Delay	60.5	4.3	0.1	50.0	29.6	10.9	23.2	32.6	0.2	23.6	35.8	10.1
Queue Delay	0.0	0.4	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	60.5	4.7	0.1	50.0	29.7	10.9	23.2	32.6	0.2	23.6	35.8	10.2
LOS	E	A	A	D	C	B	C	C	A	C	D	B
Approach Delay		11.4			27.8			11.7			21.0	

Lane Group	Ø2	Ø4	Ø8
Lane Configurations			
Traffic Volume (vph)			
Future Volume (vph)			
Ideal Flow (vphpl)			
Storage Length (ft)			
Storage Lanes			
Taper Length (ft)			
Lane Util. Factor			
Frt			
Flt Protected			
Satd. Flow (prot)			
Flt Permitted			
Satd. Flow (perm)			
Right Turn on Red			
Satd. Flow (RTOR)			
Link Speed (mph)			
Link Distance (ft)			
Travel Time (s)			
Peak Hour Factor			
Heavy Vehicles (%)			
Adj. Flow (vph)			
Shared Lane Traffic (%)			
Lane Group Flow (vph)			
Turn Type			
Protected Phases	2	4	8
Permitted Phases			
Detector Phase			
Switch Phase			
Minimum Initial (s)	1.0	1.0	1.0
Minimum Split (s)	5.6	3.1	3.1
Total Split (s)	5.6	3.1	3.1
Total Split (%)	5%	3%	3%
Maximum Green (s)	1.0	1.0	1.0
Yellow Time (s)	4.0	2.0	2.0
All-Red Time (s)	0.6	0.1	0.1
Lost Time Adjust (s)			
Total Lost Time (s)			
Lead/Lag		Lag	Lag
Lead-Lag Optimize?			
Vehicle Extension (s)	3.0	1.0	3.0
Recall Mode	Max	None	None
Act Effct Green (s)			
Actuated g/C Ratio			
v/c Ratio			
Control Delay			
Queue Delay			
Total Delay			
LOS			
Approach Delay			



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach LOS	B			C			B			C		
Queue Length 50th (ft)	47	32	0	67	142	22	53	15	0	69	69	0
Queue Length 95th (ft)	m97	50	m0	143	242	103	103	45	0	130	121	85
Internal Link Dist (ft)	152			1275			2418			661		
Turn Bay Length (ft)				325			125			460		
Base Capacity (vph)	319	1211	1568	358	1060	590	461	666	1568	796	1266	841
Starvation Cap Reductn	6	253	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	42	0	0	0	0	0	0	5
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.32	0.58	0.07	0.38	0.60	0.42	0.31	0.05	0.13	0.23	0.22	0.51

Intersection Summary

Area Type: Other
 Cycle Length: 111.8
 Actuated Cycle Length: 84.4
 Natural Cycle: 65
 Control Type: Semi Act-Uncoord
 Maximum v/c Ratio: 0.69
 Intersection Signal Delay: 19.6
 Intersection LOS: B
 Intersection Capacity Utilization 58.4%
 ICU Level of Service B
 Analysis Period (min) 15
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 103: Ind Park/I91SB & Rte 372

#103#103 → Ø4 → Ø1 29.5s	#102#103 ← Ø5 5.6s	#102#103 ← Ø6 18.6s	#102#103 ← Ø6 34.7s	#103 ↙ Ø3 20.8s	#102#103 ↙ Ø7 19.3s	#102 → Ø8 3.1s
--------------------------------	--------------------------	---------------------------	---------------------------	-----------------------	---------------------------	----------------------

Lane Group	Ø2	Ø4	Ø8
Approach LOS			
Queue Length 50th (ft)			
Queue Length 95th (ft)			
Internal Link Dist (ft)			
Turn Bay Length (ft)			
Base Capacity (vph)			
Starvation Cap Reductn			
Spillback Cap Reductn			
Storage Cap Reductn			
Reduced v/c Ratio			
Intersection Summary			



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↖	↗↗	↖↖	↗	↖↖	↗
Traffic Volume (vph)	308	576	648	631	290	250
Future Volume (vph)	308	576	648	631	290	250
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	725			225	200	110
Storage Lanes	1			1	0	1
Taper Length (ft)	25				75	
Lane Util. Factor	1.00	0.95	0.95	1.00	0.97	1.00
Frt				0.850		0.850
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1770	3539	3539	1583	3433	1583
Flt Permitted	0.323				0.950	
Satd. Flow (perm)	602	3539	3539	1583	3433	1583
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)				686		186
Link Speed (mph)		40	40		35	
Link Distance (ft)		1355	610		341	
Travel Time (s)		23.1	10.4		6.6	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	335	626	704	686	315	272
Shared Lane Traffic (%)						
Lane Group Flow (vph)	335	626	704	686	315	272
Turn Type	pm+pt	NA	NA	Perm	Prot	pt+ov
Protected Phases	5	2	6		4	4 5
Permitted Phases	2			6		
Detector Phase	5	2	6	6	4	4
Switch Phase						
Minimum Initial (s)	5.0	15.0	15.0	15.0	7.0	
Minimum Split (s)	9.0	20.0	20.0	20.0	11.0	
Total Split (s)	18.0	70.0	52.0	52.0	20.0	
Total Split (%)	20.0%	77.8%	57.8%	57.8%	22.2%	
Maximum Green (s)	14.0	65.0	47.0	47.0	16.0	
Yellow Time (s)	3.0	4.0	4.0	4.0	3.0	
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	4.0	5.0	5.0	5.0	4.0	
Lead/Lag	Lead		Lag	Lag		
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	C-Min	C-Min	C-Min	None	
Act Effct Green (s)	68.0	67.0	51.9	51.9	14.0	29.1
Actuated g/C Ratio	0.76	0.74	0.58	0.58	0.16	0.32
v/c Ratio	0.56	0.24	0.35	0.57	0.59	0.43
Control Delay	7.5	4.1	11.7	3.2	39.6	9.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	7.5	4.1	11.7	3.2	39.6	9.1
LOS	A	A	B	A	D	A
Approach Delay		5.3	7.5		25.5	
Approach LOS		A	A		C	

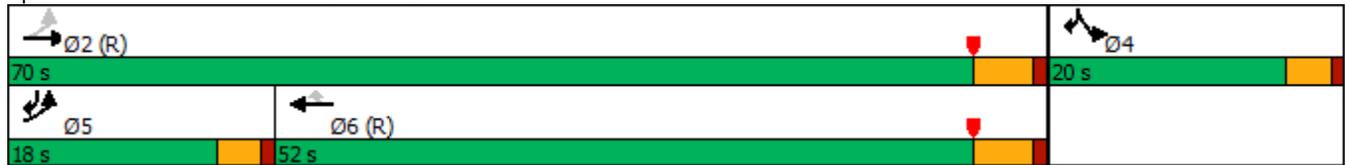


Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Queue Length 50th (ft)	45	46	100	0	87	35
Queue Length 95th (ft)	90	79	173	56	122	82
Internal Link Dist (ft)		1275	530		261	
Turn Bay Length (ft)	725			225	200	110
Base Capacity (vph)	640	2651	2066	1210	626	632
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.52	0.24	0.34	0.57	0.50	0.43

Intersection Summary

Area Type:	Other
Cycle Length:	90
Actuated Cycle Length:	90
Offset:	0 (0%), Referenced to phase 2:EBTL and 6:WBT, Start of Yellow
Natural Cycle:	50
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	0.59
Intersection Signal Delay:	10.4
Intersection LOS:	B
Intersection Capacity Utilization	63.6%
ICU Level of Service	B
Analysis Period (min)	15

Splits and Phases: 104: Rte 372 & I91NB





Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	0	0	0	328	470	0
Future Volume (vph)	0	0	0	328	470	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	0.95	0.95	0.95	0.95
Frt						
Flt Protected						
Satd. Flow (prot)	1267	0	0	3505	3505	0
Flt Permitted						
Satd. Flow (perm)	1267	0	0	3505	3505	0
Link Speed (mph)	25			35	35	
Link Distance (ft)	139			256	2498	
Travel Time (s)	3.8			5.0	48.7	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	50%	50%	50%	3%	3%	50%
Adj. Flow (vph)	0	0	0	357	511	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	0	357	511	0
Sign Control	Stop			Free	Free	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	16.3%
ICU Level of Service	A
Analysis Period (min)	15

Intersection						
Int Delay, s/veh	0					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	T			T		
Traffic Vol, veh/h	0	0	0	328	470	0
Future Vol, veh/h	0	0	0	328	470	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	50	50	50	3	3	50
Mvmt Flow	0	0	0	357	511	0

Major/Minor	Minor2	Major1		Major2	
Conflicting Flow All	690	256	511	0	0
Stage 1	511	-	-	-	-
Stage 2	179	-	-	-	-
Critical Hdwy	7.8	7.9	5.1	-	-
Critical Hdwy Stg 1	6.8	-	-	-	-
Critical Hdwy Stg 2	6.8	-	-	-	-
Follow-up Hdwy	4	3.8	2.7	-	-
Pot Cap-1 Maneuver	289	616	778	-	-
Stage 1	449	-	-	-	-
Stage 2	708	-	-	-	-
Platoon blocked, %				-	-
Mov Cap-1 Maneuver	289	616	778	-	-
Mov Cap-2 Maneuver	289	-	-	-	-
Stage 1	449	-	-	-	-
Stage 2	708	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	0	0	0
HCM LOS	A		

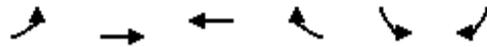
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	778	-	-	-	-
HCM Lane V/C Ratio	-	-	-	-	-
HCM Control Delay (s)	0	-	0	-	-
HCM Lane LOS	A	-	A	-	-
HCM 95th %tile Q(veh)	0	-	-	-	-



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	13	1	1	315	462	8
Future Volume (vph)	13	1	1	315	462	8
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	240	0			100
Storage Lanes	2	1	0			1
Taper Length (ft)	25		25			
Lane Util. Factor	0.97	1.00	0.95	0.95	1.00	1.00
Frt		0.850				0.850
Flt Protected	0.950					
Satd. Flow (prot)	1751	808	0	3495	1845	808
Flt Permitted	0.950					
Satd. Flow (perm)	1751	808	0	3495	1845	808
Link Speed (mph)	30			40	40	
Link Distance (ft)	754			943	1266	
Travel Time (s)	17.1			16.1	21.6	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	100%	100%	100%	3%	3%	100%
Adj. Flow (vph)	14	1	1	342	502	9
Shared Lane Traffic (%)						
Lane Group Flow (vph)	14	1	0	343	502	9
Sign Control	Stop			Free	Free	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	34.3% ICU Level of Service A
Analysis Period (min)	15



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↔		↘	↙
Traffic Volume (vph)	182	53	309	150	58	117
Future Volume (vph)	182	53	309	150	58	117
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.956		0.910	
Flt Protected		0.963			0.984	
Satd. Flow (prot)	0	1780	1775	0	1663	0
Flt Permitted		0.963			0.984	
Satd. Flow (perm)	0	1780	1775	0	1663	0
Link Speed (mph)		30	30		30	
Link Distance (ft)		1107	1054		3274	
Travel Time (s)		25.2	24.0		74.4	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	3%	2%	2%	3%	3%	2%
Adj. Flow (vph)	198	58	336	163	63	127
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	256	499	0	190	0
Sign Control		Free	Free		Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	58.7%
ICU Level of Service	B
Analysis Period (min)	15

Intersection

Int Delay, s/veh 5.9

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↕		↕	
Traffic Vol, veh/h	182	53	309	150	58	117
Future Vol, veh/h	182	53	309	150	58	117
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	3	2	2	3	3	2
Mvmt Flow	198	58	336	163	63	127

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	499	0	0
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	4.13	-	-
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	2.227	-	-
Pot Cap-1 Maneuver	1060	-	-
Stage 1	-	-	-
Stage 2	-	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	1060	-	-
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	EB	WB	SB
HCM Control Delay, s	7.1	0	20
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1060	-	-	-	428
HCM Lane V/C Ratio	0.187	-	-	-	0.444
HCM Control Delay (s)	9.2	0	-	-	20
HCM Lane LOS	A	A	-	-	C
HCM 95th %tile Q(veh)	0.7	-	-	-	2.2

FedEx- Middletown
 110: Middle/Main & Spruce Brook/Division

2020 Existing Volumes With Mid-Forcast Dev.
 Timing Plan: AM Peak Hr

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	16	0	8	0	0	2	4	372	0	1	256	5
Future Volume (vph)	16	0	8	0	0	2	4	372	0	1	256	5
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		0.953			0.865							0.998
Flt Protected		0.968										
Satd. Flow (prot)	0	1718	0	0	1611	0	0	1863	0	0	1859	0
Flt Permitted		0.968										
Satd. Flow (perm)	0	1718	0	0	1611	0	0	1863	0	0	1859	0
Link Speed (mph)		30			30			35			30	
Link Distance (ft)		475			567			2074			2021	
Travel Time (s)		10.8			12.9			40.4			45.9	
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)	17	0	9	0	0	2	4	404	0	1	278	5
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	26	0	0	2	0	0	408	0	0	284	0
Sign Control		Stop			Stop			Stop			Stop	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 37.2% ICU Level of Service A

Analysis Period (min) 15

Intersection	
Intersection Delay, s/veh	10.7
Intersection LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	16	0	8	0	0	2	4	372	0	1	256	5
Future Vol, veh/h	16	0	8	0	0	2	4	372	0	1	256	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
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	17	0	9	0	0	2	4	404	0	1	278	5
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	8.6	7.9	11.4	9.8
HCM LOS	A	A	B	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	1%	67%	0%	0%
Vol Thru, %	99%	0%	0%	98%
Vol Right, %	0%	33%	100%	2%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	376	24	2	262
LT Vol	4	16	0	1
Through Vol	372	0	0	256
RT Vol	0	8	2	5
Lane Flow Rate	409	26	2	285
Geometry Grp	1	1	1	1
Degree of Util (X)	0.488	0.039	0.003	0.348
Departure Headway (Hd)	4.3	5.357	4.86	4.405
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	842	668	735	817
Service Time	2.315	3.392	2.9	2.421
HCM Lane V/C Ratio	0.486	0.039	0.003	0.349
HCM Control Delay	11.4	8.6	7.9	9.8
HCM Lane LOS	B	A	A	A
HCM 95th-tile Q	2.7	0.1	0	1.6



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	26	114	279	5	21	243
Future Volume (vph)	26	114	279	5	21	243
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.890		0.998			
Flt Protected	0.991					0.996
Satd. Flow (prot)	1643	0	1859	0	0	1855
Flt Permitted	0.991					0.996
Satd. Flow (perm)	1643	0	1859	0	0	1855
Link Speed (mph)	25		35			35
Link Distance (ft)	450		732			2074
Travel Time (s)	12.3		14.3			40.4
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	28	124	303	5	23	264
Shared Lane Traffic (%)						
Lane Group Flow (vph)	152	0	308	0	0	287
Sign Control	Stop		Free			Free

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	45.3% ICU Level of Service A
Analysis Period (min)	15

Intersection						
Int Delay, s/veh	2.7					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	Y		T			T
Traffic Vol, veh/h	26	114	279	5	21	243
Future Vol, veh/h	26	114	279	5	21	243
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	28	124	303	5	23	264

Major/Minor	Minor1	Major1	Major2		
Conflicting Flow All	616	306	0	0	308
Stage 1	306	-	-	-	-
Stage 2	310	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12
Critical Hdwy Stg 1	5.42	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218
Pot Cap-1 Maneuver	454	734	-	-	1253
Stage 1	747	-	-	-	-
Stage 2	744	-	-	-	-
Platoon blocked, %			-	-	-
Mov Cap-1 Maneuver	444	734	-	-	1253
Mov Cap-2 Maneuver	444	-	-	-	-
Stage 1	747	-	-	-	-
Stage 2	728	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	12.2	0	0.6
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	655	1253
HCM Lane V/C Ratio	-	-	0.232	0.018
HCM Control Delay (s)	-	-	12.2	7.9
HCM Lane LOS	-	-	B	A
HCM 95th %tile Q(veh)	-	-	0.9	0.1



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	63	51	233	13	10	259
Future Volume (vph)	63	51	233	13	10	259
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.940		0.993			
Flt Protected	0.973					0.998
Satd. Flow (prot)	1704	0	1850	0	0	1859
Flt Permitted	0.973					0.998
Satd. Flow (perm)	1704	0	1850	0	0	1859
Link Speed (mph)	25		35			35
Link Distance (ft)	471		839			732
Travel Time (s)	12.8		16.3			14.3
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	68	55	253	14	11	282
Shared Lane Traffic (%)						
Lane Group Flow (vph)	123	0	267	0	0	293
Sign Control	Stop		Free			Free

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	35.0% ICU Level of Service A
Analysis Period (min)	15

Intersection						
Int Delay, s/veh	2.5					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	TT		T			T
Traffic Vol, veh/h	63	51	233	13	10	259
Future Vol, veh/h	63	51	233	13	10	259
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	68	55	253	14	11	282

Major/Minor	Minor1	Major1	Major2		
Conflicting Flow All	564	260	0	0	267
Stage 1	260	-	-	-	-
Stage 2	304	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12
Critical Hdwy Stg 1	5.42	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218
Pot Cap-1 Maneuver	487	779	-	-	1297
Stage 1	783	-	-	-	-
Stage 2	748	-	-	-	-
Platoon blocked, %					
Mov Cap-1 Maneuver	482	779	-	-	1297
Mov Cap-2 Maneuver	482	-	-	-	-
Stage 1	783	-	-	-	-
Stage 2	741	-	-	-	-

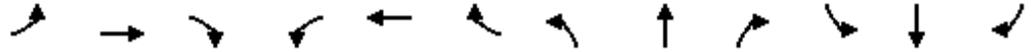
Approach	WB	NB	SB
HCM Control Delay, s	12.9	0	0.3
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	581	1297
HCM Lane V/C Ratio	-	-	0.213	0.008
HCM Control Delay (s)	-	-	12.9	7.8
HCM Lane LOS	-	-	B	A
HCM 95th %tile Q(veh)	-	-	0.8	0

FedEx- Middletown
114: Middle & Bradley/Aetna

2020 Existing Volumes With Mid-Forcast Dev.
Timing Plan: AM Peak Hr

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	22	1	21	1	0	2	42	223	6	11	249	35
Future Volume (vph)	22	1	21	1	0	2	42	223	6	11	249	35
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	14	12	12	12	12	12	12	12	12	12	12
Storage Length (ft)	0		0	0		0	0		175	175		0
Storage Lanes	0		0	0		1	0		1	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.935				0.850			0.850		0.982	
Flt Protected		0.976			0.950			0.992		0.950		
Satd. Flow (prot)	0	1813	0	0	1770	1583	0	1848	1583	1770	1829	0
Flt Permitted								0.923		0.498		
Satd. Flow (perm)	0	1858	0	0	1863	1583	0	1719	1583	928	1829	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		23				191			191		21	
Link Speed (mph)		25			30			35			35	
Link Distance (ft)		519			341			3417			839	
Travel Time (s)		14.2			7.8			66.6			16.3	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	24	1	23	1	0	2	46	242	7	12	271	38
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	48	0	0	1	2	0	288	7	12	309	0
Turn Type	Perm	NA		Perm	NA	Free	Perm	NA	Free	pm+pt	NA	
Protected Phases		4			8			2		1	6	
Permitted Phases	4			8		Free	2		Free	6		
Detector Phase	4	4		8	8		2	2		1	6	
Switch Phase												
Minimum Initial (s)	7.0	7.0		7.0	7.0		15.0	15.0		5.0	15.0	
Minimum Split (s)	11.5	11.5		11.5	11.5		19.5	19.5		9.5	19.5	
Total Split (s)	20.0	20.0		20.0	20.0		30.0	30.0		10.0	40.0	
Total Split (%)	33.3%	33.3%		33.3%	33.3%		50.0%	50.0%		16.7%	66.7%	
Maximum Green (s)	15.5	15.5		15.5	15.5		25.5	25.5		5.5	35.5	
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	
Total Lost Time (s)		4.5			4.5			4.5		4.5	4.5	
Lead/Lag							Lag	Lag		Lead		
Lead-Lag Optimize?												
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		Min	Min		None	Min	
Act Effct Green (s)		7.3			7.3	34.5		30.1	34.5	27.9	31.7	
Actuated g/C Ratio		0.21			0.21	1.00		0.87	1.00	0.81	0.92	
v/c Ratio		0.12			0.00	0.00		0.19	0.00	0.01	0.18	
Control Delay		9.0			12.0	0.0		4.4	0.0	2.2	1.7	
Queue Delay		0.0			0.0	0.0		0.0	0.0	0.0	0.0	
Total Delay		9.0			12.0	0.0		4.4	0.0	2.2	1.7	
LOS		A			B	A		A	A	A	A	
Approach Delay		9.0			4.0			4.3			1.8	

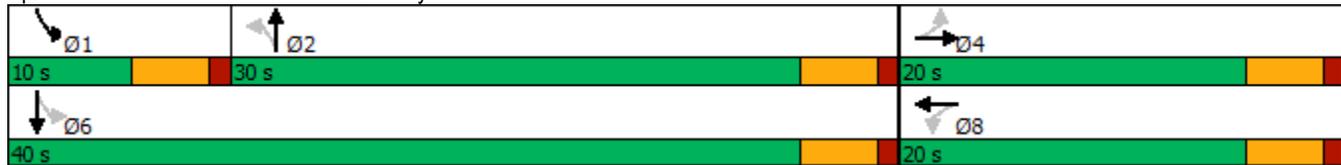


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach LOS		A			A			A			A	
Queue Length 50th (ft)		4			0	0		0	0	0	0	0
Queue Length 95th (ft)		24			3	0		100	0	5	51	
Internal Link Dist (ft)		439			261			3337			759	
Turn Bay Length (ft)									175	175		
Base Capacity (vph)		863			853	1583		1564	1583	886	1774	
Starvation Cap Reductn		0			0	0		0	0	0	0	
Spillback Cap Reductn		0			0	0		0	0	0	0	
Storage Cap Reductn		0			0	0		0	0	0	0	
Reduced v/c Ratio		0.06			0.00	0.00		0.18	0.00	0.01	0.17	

Intersection Summary

Area Type:	Other
Cycle Length:	60
Actuated Cycle Length:	34.5
Natural Cycle:	45
Control Type:	Actuated-Uncoordinated
Maximum v/c Ratio:	0.19
Intersection Signal Delay:	3.4
Intersection LOS:	A
Intersection Capacity Utilization:	49.8%
ICU Level of Service:	A
Analysis Period (min):	15

Splits and Phases: 114: Middle & Bradley/Aetna





Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	190	156	187	227	65	122
Future Volume (vph)	190	156	187	227	65	122
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.939		0.926			
Flt Protected	0.973					0.983
Satd. Flow (prot)	1685	0	1708	0	0	1813
Flt Permitted	0.973					0.662
Satd. Flow (perm)	1685	0	1708	0	0	1221
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)	52		84			
Link Speed (mph)	30		35			35
Link Distance (ft)	1107		4763			3417
Travel Time (s)	25.2		92.8			66.6
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%
Adj. Flow (vph)	207	170	203	247	71	133
Shared Lane Traffic (%)						
Lane Group Flow (vph)	377	0	450	0	0	204
Turn Type	Perm		NA		pm+pt	NA
Protected Phases			2		1	6
Permitted Phases	8				6	
Detector Phase	8		2		1	6
Switch Phase						
Minimum Initial (s)	5.0		15.0		5.0	15.0
Minimum Split (s)	22.5		22.5		9.5	22.5
Total Split (s)	38.0		42.5		9.5	52.0
Total Split (%)	42.2%		47.2%		10.6%	57.8%
Maximum Green (s)	33.5		38.0		5.0	47.5
Yellow Time (s)	3.5		3.5		3.5	3.5
All-Red Time (s)	1.0		1.0		1.0	1.0
Lost Time Adjust (s)	0.0		0.0			0.0
Total Lost Time (s)	4.5		4.5			4.5
Lead/Lag			Lag		Lead	
Lead-Lag Optimize?			Yes		Yes	
Vehicle Extension (s)	3.0		3.0		3.0	3.0
Recall Mode	None		Min		Max	Min
Walk Time (s)	7.0		7.0			7.0
Flash Dont Walk (s)	11.0		11.0			11.0
Pedestrian Calls (#/hr)	0		0			0
Act Effct Green (s)	16.3		18.7			28.6
Actuated g/C Ratio	0.30		0.34			0.53
v/c Ratio	0.69		0.70			0.29
Control Delay	22.1		19.8			9.3
Queue Delay	0.0		0.0			0.0
Total Delay	22.1		19.8			9.3
LOS	C		B			A
Approach Delay	22.1		19.8			9.3



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Approach LOS	C		B		A	
Queue Length 50th (ft)	79		92		30	
Queue Length 95th (ft)	203		228		84	
Internal Link Dist (ft)	1027		4683		3337	
Turn Bay Length (ft)						
Base Capacity (vph)	1099		1265		1134	
Starvation Cap Reductn	0		0		0	
Spillback Cap Reductn	0		0		0	
Storage Cap Reductn	0		0		0	
Reduced v/c Ratio	0.34		0.36		0.18	

Intersection Summary

Area Type:	Other
Cycle Length:	90
Actuated Cycle Length:	54.3
Natural Cycle:	55
Control Type:	Actuated-Uncoordinated
Maximum v/c Ratio:	0.70
Intersection Signal Delay:	18.5
Intersection LOS:	B
Intersection Capacity Utilization:	67.6%
ICU Level of Service:	C
Analysis Period (min):	15

Splits and Phases: 115: Middle & Smith



						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	105	17	497	0	0	312
Future Volume (vph)	105	17	497	0	0	312
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.982					
Flt Protected	0.959					
Satd. Flow (prot)	1754	0	1863	0	0	1863
Flt Permitted	0.959					
Satd. Flow (perm)	1754	0	1863	0	0	1863
Link Speed (mph)	30		30			30
Link Distance (ft)	888		541			4763
Travel Time (s)	20.2		12.3			108.3
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	114	18	540	0	0	339
Shared Lane Traffic (%)						
Lane Group Flow (vph)	132	0	540	0	0	339
Sign Control	Stop		Free			Free

Intersection Summary

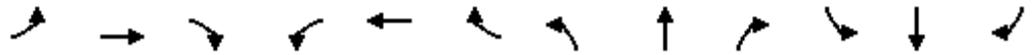
Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	39.7%
Analysis Period (min)	15
	ICU Level of Service A

Intersection						
Int Delay, s/veh	2.9					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	W		T			T
Traffic Vol, veh/h	105	17	497	0	0	312
Future Vol, veh/h	105	17	497	0	0	312
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	114	18	540	0	0	339

Major/Minor	Minor1	Major1	Major2			
Conflicting Flow All	879	540	0	-	-	-
Stage 1	540	-	-	-	-	-
Stage 2	339	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	-	-
Pot Cap-1 Maneuver	318	542	-	0	0	-
Stage 1	584	-	-	0	0	-
Stage 2	722	-	-	0	0	-
Platoon blocked, %			-			-
Mov Cap-1 Maneuver	318	542	-	-	-	-
Mov Cap-2 Maneuver	318	-	-	-	-	-
Stage 1	584	-	-	-	-	-
Stage 2	722	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	22.4	0	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBTWBLn1	SBT
Capacity (veh/h)	- 337	-
HCM Lane V/C Ratio	- 0.393	-
HCM Control Delay (s)	- 22.4	-
HCM Lane LOS	- C	-
HCM 95th %tile Q(veh)	- 1.8	-



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕						↕	
Traffic Volume (vph)	54	110	43	189	110	439	0	0	0	81	238	98
Future Volume (vph)	54	110	43	189	110	439	0	0	0	81	238	98
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		0.972			0.920							0.968
Flt Protected		0.987			0.987							0.990
Satd. Flow (prot)	0	1787	0	0	1691	0	0	0	0	0	1785	0
Flt Permitted		0.987			0.987							0.990
Satd. Flow (perm)	0	1787	0	0	1691	0	0	0	0	0	1785	0
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		832			1070			907			541	
Travel Time (s)		18.9			24.3			20.6			12.3	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	59	120	47	205	120	477	0	0	0	88	259	107
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	226	0	0	802	0	0	0	0	0	454	0
Sign Control		Stop			Stop			Stop			Stop	

Intersection Summary

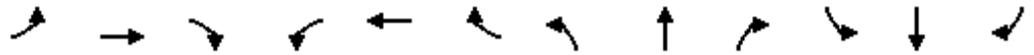
Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	86.8%
ICU Level of Service	E
Analysis Period (min)	15

Intersection	
Intersection Delay, s/veh	88.8
Intersection LOS	F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕						↕	
Traffic Vol, veh/h	54	110	43	189	110	439	0	0	0	81	238	98
Future Vol, veh/h	54	110	43	189	110	439	0	0	0	81	238	98
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	59	120	47	205	120	477	0	0	0	88	259	107
Number of Lanes	0	1	0	0	1	0	0	0	0	0	1	0

Approach	EB	WB	SB
Opposing Approach	WB	EB	
Opposing Lanes	1	1	0
Conflicting Approach Left	SB		WB
Conflicting Lanes Left	1	0	1
Conflicting Approach Right		SB	EB
Conflicting Lanes Right	0	1	1
HCM Control Delay	14.4	143.6	28.8
HCM LOS	B	F	D

Lane	EBLn1	WBLn1	SBLn1
Vol Left, %	26%	26%	19%
Vol Thru, %	53%	15%	57%
Vol Right, %	21%	59%	24%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	207	738	417
LT Vol	54	189	81
Through Vol	110	110	238
RT Vol	43	439	98
Lane Flow Rate	225	802	453
Geometry Grp	1	1	1
Degree of Util (X)	0.403	1.248	0.771
Departure Headway (Hd)	6.831	5.599	6.711
Convergence, Y/N	Yes	Yes	Yes
Cap	531	650	544
Service Time	4.831	3.612	4.711
HCM Lane V/C Ratio	0.424	1.234	0.833
HCM Control Delay	14.4	143.6	28.8
HCM Lane LOS	B	F	D
HCM 95th-tile Q	1.9	29.9	7



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕				
Traffic Volume (vph)	47	144	0	0	326	173	409	11	168	0	0	0
Future Volume (vph)	47	144	0	0	326	173	409	11	168	0	0	0
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
Fr _t					0.953			0.961				
Fl _t Protected		0.988						0.966				
Satd. Flow (prot)	0	1840	0	0	1775	0	0	1729	0	0	0	0
Fl _t Permitted		0.988						0.966				
Satd. Flow (perm)	0	1840	0	0	1775	0	0	1729	0	0	0	0
Link Speed (mph)		30			30			30				30
Link Distance (ft)		1070			714			989				751
Travel Time (s)		24.3			16.2			22.5				17.1
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)	51	157	0	0	354	188	445	12	183	0	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	208	0	0	542	0	0	640	0	0	0	0
Sign Control		Stop			Stop			Stop			Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	81.4%
ICU Level of Service	D
Analysis Period (min)	15

Intersection	
Intersection Delay, s/veh	61.1
Intersection LOS	F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔				
Traffic Vol, veh/h	47	144	0	0	326	173	409	11	168	0	0	0
Future Vol, veh/h	47	144	0	0	326	173	409	11	168	0	0	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	51	157	0	0	354	188	445	12	183	0	0	0
Number of Lanes	0	1	0	0	1	0	0	1	0	0	0	0

Approach	EB	WB	NB
Opposing Approach	WB	EB	
Opposing Lanes	1	1	0
Conflicting Approach Left		NB	EB
Conflicting Lanes Left	0	1	1
Conflicting Approach Right	NB		WB
Conflicting Lanes Right	1	0	1
HCM Control Delay	15.2	45.2	89.6
HCM LOS	C	E	F

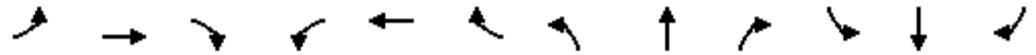
Lane	NBLn1	EBLn1	WBLn1
Vol Left, %	70%	25%	0%
Vol Thru, %	2%	75%	65%
Vol Right, %	29%	0%	35%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	588	191	499
LT Vol	409	47	0
Through Vol	11	144	326
RT Vol	168	0	173
Lane Flow Rate	639	208	542
Geometry Grp	1	1	1
Degree of Util (X)	1.094	0.401	0.916
Departure Headway (Hd)	6.164	7.334	6.4
Convergence, Y/N	Yes	Yes	Yes
Cap	588	494	570
Service Time	4.223	5.334	4.4
HCM Lane V/C Ratio	1.087	0.421	0.951
HCM Control Delay	89.6	15.2	45.2
HCM Lane LOS	F	C	E
HCM 95th-tile Q	19.2	1.9	11.3

FedEx- Middletown
101: Main & Rte 372

2020 Existing Volumes With Mid-Forecast Dev.

Timing Plan: PM Peak Hr

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	5	420	128	249	462	74	178	16	236	68	26	16
Future Volume (vph)	5	420	128	249	462	74	178	16	236	68	26	16
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	15	12	12	15	12
Storage Length (ft)	0		150	100		0	0		0	0		0
Storage Lanes	0		1	1		0	0		0	0		0
Taper Length (ft)	25			50			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Fr _t			0.850		0.979			0.926			0.981	
Fl _t Protected		0.999		0.950				0.980			0.970	
Satd. Flow (prot)	0	1861	1583	1770	1824	0	0	1859	0	0	1950	0
Fl _t Permitted		0.995		0.403				0.830			0.669	
Satd. Flow (perm)	0	1853	1583	751	1824	0	0	1575	0	0	1345	0
Right Turn on Red			Yes			Yes			Yes			No
Satd. Flow (RTOR)			139		15			82				
Link Speed (mph)		35			35			30				30
Link Distance (ft)		875			2306			2021				579
Travel Time (s)		17.0			44.9			45.9				13.2
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)	5	457	139	271	502	80	193	17	257	74	28	17
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	462	139	271	582	0	0	467	0	0	119	0
Turn Type	Perm	NA	Perm	Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			8				4
Permitted Phases	2		2	6			8			4		
Detector Phase	2	2	2	6	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	15.0	15.0	15.0	15.0	15.0		9.0	9.0		9.0	9.0	
Minimum Split (s)	20.0	20.0	20.0	20.0	20.0		13.0	13.0		13.0	13.0	
Total Split (s)	50.0	50.0	50.0	50.0	50.0		34.0	34.0		34.0	34.0	
Total Split (%)	59.5%	59.5%	59.5%	59.5%	59.5%		40.5%	40.5%		40.5%	40.5%	
Maximum Green (s)	45.0	45.0	45.0	45.0	45.0		30.0	30.0		30.0	30.0	
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	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	
Total Lost Time (s)		5.0	5.0	5.0	5.0			4.0			4.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	4.0	4.0	4.0	4.0	4.0		3.0	3.0		3.0	3.0	
Recall Mode	Min	Min	Min	Min	Min		None	None		None	None	
Act Effct Green (s)		27.2	27.2	27.2	27.2			20.4			20.4	
Actuated g/C Ratio		0.47	0.47	0.47	0.47			0.35			0.35	
v/c Ratio		0.53	0.17	0.77	0.67			0.77			0.25	
Control Delay		13.6	2.6	29.7	16.3			25.0			17.4	
Queue Delay		0.0	0.0	0.0	0.0			0.0			0.0	
Total Delay		13.6	2.6	29.7	16.3			25.0			17.4	
LOS		B	A	C	B			C			B	
Approach Delay		11.1			20.5			25.0			17.4	

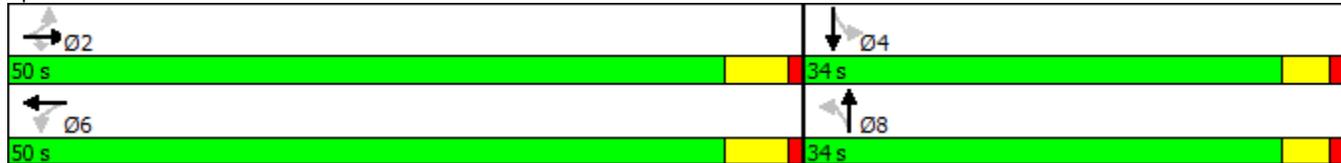


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach LOS		B			C			C			B	
Queue Length 50th (ft)		99	0	68	133			106			26	
Queue Length 95th (ft)		216	25	#200	290			#314			84	
Internal Link Dist (ft)		795			2226			1941			499	
Turn Bay Length (ft)			150	100								
Base Capacity (vph)		1466	1281	594	1446			952			784	
Starvation Cap Reductn		0	0	0	0			0			0	
Spillback Cap Reductn		0	0	0	0			0			0	
Storage Cap Reductn		0	0	0	0			0			0	
Reduced v/c Ratio		0.32	0.11	0.46	0.40			0.49			0.15	

Intersection Summary

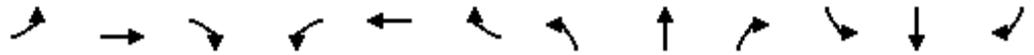
Area Type: Other
 Cycle Length: 84
 Actuated Cycle Length: 57.7
 Natural Cycle: 40
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 0.77
 Intersection Signal Delay: 18.6
 Intersection LOS: B
 Intersection Capacity Utilization 89.8%
 ICU Level of Service E
 Analysis Period (min) 15
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

Splits and Phases: 101: Main & Rte 372



												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	37	820	16	5	827	420	0	0	0	510	5	95
Future Volume (vph)	37	820	16	5	827	420	0	0	0	510	5	95
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	300		0	0		0	0		0	125		125
Storage Lanes	1		0	0		0	0		0	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	0.95	0.95	0.95	0.95	1.00	1.00	1.00	0.95	0.95	1.00
Frt		0.997			0.950							0.850
Flt Protected	0.950									0.950	0.953	
Satd. Flow (prot)	1770	3529	0	0	3362	0	0	0	0	1681	1686	1583
Flt Permitted	0.154				0.955					0.950	0.953	
Satd. Flow (perm)	287	3529	0	0	3211	0	0	0	0	1681	1686	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		2			220							166
Link Speed (mph)		40			40			25			30	
Link Distance (ft)		364			232			215			478	
Travel Time (s)		6.2			4.0			5.9			10.9	
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)	40	891	17	5	899	457	0	0	0	554	5	103
Shared Lane Traffic (%)										50%		
Lane Group Flow (vph)	40	908	0	0	1361	0	0	0	0	277	282	103
Turn Type	Perm	NA		Perm	NA					Split	NA	Prot
Protected Phases		1 8			1 2 5 6					7	7	7
Permitted Phases	1 8			1 2 5 6	8							
Detector Phase	1	1		1 2 5 6	1					7	7	7
Switch Phase												
Minimum Initial (s)										7.0	7.0	7.0
Minimum Split (s)										11.3	11.3	11.3
Total Split (s)										19.3	19.3	19.3
Total Split (%)										17.3%	17.3%	17.3%
Maximum Green (s)										15.0	15.0	15.0
Yellow Time (s)										3.2	3.2	3.2
All-Red Time (s)										1.1	1.1	1.1
Lost Time Adjust (s)										0.0	0.0	0.0
Total Lost Time (s)										4.3	4.3	4.3
Lead/Lag										Lead	Lead	Lead
Lead-Lag Optimize?												
Vehicle Extension (s)										1.0	1.0	1.0
Recall Mode										None	None	None
Act Effct Green (s)	24.2	24.2			73.4					15.1	15.1	15.1
Actuated g/C Ratio	0.24	0.24			0.73					0.15	0.15	0.15
v/c Ratio	0.59	1.07			0.54					1.10	1.12	0.27
Control Delay	73.4	91.1			3.0					129.7	134.6	2.7
Queue Delay	0.0	4.1			1.5					1.0	1.0	0.0
Total Delay	73.4	95.2			4.5					130.7	135.7	2.7
LOS	E	F			A					F	F	A
Approach Delay		94.3			4.5						112.9	
Approach LOS		F			A						F	

Lane Group	Ø1	Ø2	Ø3	Ø4	Ø5	Ø6	Ø8
Lane Configurations							
Traffic Volume (vph)							
Future Volume (vph)							
Ideal Flow (vphpl)							
Storage Length (ft)							
Storage Lanes							
Taper Length (ft)							
Lane Util. Factor							
Frt							
Flt Protected							
Satd. Flow (prot)							
Flt Permitted							
Satd. Flow (perm)							
Right Turn on Red							
Satd. Flow (RTOR)							
Link Speed (mph)							
Link Distance (ft)							
Travel Time (s)							
Peak Hour Factor							
Adj. Flow (vph)							
Shared Lane Traffic (%)							
Lane Group Flow (vph)							
Turn Type							
Protected Phases	1	2	3	4	5	6	8
Permitted Phases							
Detector Phase							
Switch Phase							
Minimum Initial (s)	15.0	1.0	7.0	1.0	5.0	10.0	1.0
Minimum Split (s)	20.0	5.6	10.8	3.1	8.6	14.7	3.1
Total Split (s)	29.0	5.6	20.8	3.1	18.6	34.7	3.1
Total Split (%)	26%	5%	19%	3%	17%	31%	3%
Maximum Green (s)	24.0	1.0	17.0	1.0	15.0	30.0	1.0
Yellow Time (s)	3.0	4.0	3.2	2.0	3.0	3.2	2.0
All-Red Time (s)	2.0	0.6	0.6	0.1	0.6	1.5	0.1
Lost Time Adjust (s)							
Total Lost Time (s)							
Lead/Lag			Lead	Lag	Lead	Lag	Lag
Lead-Lag Optimize?							
Vehicle Extension (s)	3.0	3.0	1.0	1.0	1.0	3.0	3.0
Recall Mode	Min	Max	None	None	None	None	None
Act Effct Green (s)							
Actuated g/C Ratio							
v/c Ratio							
Control Delay							
Queue Delay							
Total Delay							
LOS							
Approach Delay							
Approach LOS							



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 50th (ft)	23	~345			41					~214	~222	0
Queue Length 95th (ft)	#85	#537			m83					#428	#437	8
Internal Link Dist (ft)		284			152			135			398	
Turn Bay Length (ft)	300									125		125
Base Capacity (vph)	68	845			2504					251	252	377
Starvation Cap Reductn	0	0			888					0	0	0
Spillback Cap Reductn	0	8			0					18	18	0
Storage Cap Reductn	0	0			0					0	0	0
Reduced v/c Ratio	0.59	1.08			0.84					1.19	1.21	0.27

Intersection Summary

Area Type: Other
 Cycle Length: 111.8
 Actuated Cycle Length: 101
 Natural Cycle: 90
 Control Type: Semi Act-Uncoord
 Maximum v/c Ratio: 1.12
 Intersection Signal Delay: 57.3
 Intersection LOS: E
 Intersection Capacity Utilization 62.0%
 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: 102: McD/Sebethe & Rte 372

#103#103 → Ø4 → Ø1 29.8 s	#102#103 ← Ø5 5.6 s	#102#103 ← Ø6 18.6 s	#102#103 ← Ø6 34.7 s	#103 ↙ Ø3 20.8 s	#102#103 ↙ Ø7 19.3 s	#102 → Ø8 5.1 s
---------------------------------	---------------------------	----------------------------	----------------------------	------------------------	----------------------------	-----------------------

Lane Group	Ø1	Ø2	Ø3	Ø4	Ø5	Ø6	Ø8
Queue Length 50th (ft)							
Queue Length 95th (ft)							
Internal Link Dist (ft)							
Turn Bay Length (ft)							
Base Capacity (vph)							
Starvation Cap Reductn							
Spillback Cap Reductn							
Storage Cap Reductn							
Reduced v/c Ratio							
Intersection Summary							

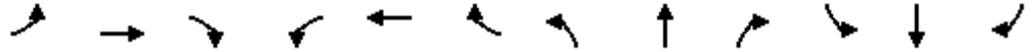
FedEx- Middletown
103: Ind Park/I91SB & Rte 372

2020 Existing Volumes With Mid-Forecast Dev.

Timing Plan: PM Peak Hr

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	111	1108	89	66	731	147	163	18	325	431	236	338
Future Volume (vph)	111	1108	89	66	731	147	163	18	325	431	236	338
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	325		125	375		0	460		325
Storage Lanes	1		1	1		1	1		1	1		2
Taper Length (ft)	25			50			25			25		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	0.95	1.00
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	3539	1568	1752	3539	1583	1752	1845	1568	1770	3505	1583
Flt Permitted	0.950			0.950			0.536			0.744		
Satd. Flow (perm)	1770	3539	1568	1752	3539	1583	989	1845	1568	1386	3505	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			208			159			335			367
Link Speed (mph)		40			40			35			35	
Link Distance (ft)		232			1355			2498			741	
Travel Time (s)		4.0			23.1			48.7			14.4	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	2%	2%	3%	3%	2%	2%	3%	3%	3%	2%	3%	2%
Adj. Flow (vph)	121	1204	97	72	795	160	177	20	353	468	257	367
Shared Lane Traffic (%)												
Lane Group Flow (vph)	121	1204	97	72	795	160	177	20	353	468	257	367
Turn Type	Prot	NA	Free	Prot	NA	custom	pm+pt	NA	Free	pm+pt	NA	Prot
Protected Phases	7	1 2 4		3	1 8	1	5	6		5	6	6
Permitted Phases			Free				6		Free	6		
Detector Phase	7	1 2 4		3	1 8	1	5	6		5 6	6	6
Switch Phase												
Minimum Initial (s)	7.0			7.0		15.0	5.0	10.0		5.0	10.0	10.0
Minimum Split (s)	11.3			10.8		20.0	8.6	14.7		8.6	14.7	14.7
Total Split (s)	19.3			20.8		29.0	18.6	34.7		18.6	34.7	34.7
Total Split (%)	17.3%			18.6%		25.9%	16.6%	31.0%		16.6%	31.0%	31.0%
Maximum Green (s)	15.0			17.0		24.0	15.0	30.0		15.0	30.0	30.0
Yellow Time (s)	3.2			3.2		3.0	3.0	3.2		3.0	3.2	3.2
All-Red Time (s)	1.1			0.6		2.0	0.6	1.5		0.6	1.5	1.5
Lost Time Adjust (s)	0.0			0.0		0.0	0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	4.3			3.8		5.0	3.6	4.7		3.6	4.7	4.7
Lead/Lag	Lead			Lead			Lead	Lag		Lead	Lag	Lag
Lead-Lag Optimize?												
Vehicle Extension (s)	1.0			1.0		3.0	1.0	3.0		1.0	3.0	3.0
Recall Mode	None			None		Min	None	None		None	None	None
Act Effct Green (s)	15.1	42.4	101.0	8.6	24.2	24.2	36.4	20.2	101.0	36.4	20.2	20.2
Actuated g/C Ratio	0.15	0.42	1.00	0.09	0.24	0.24	0.36	0.20	1.00	0.36	0.20	0.20
v/c Ratio	0.46	0.81	0.06	0.49	0.94	0.32	0.38	0.05	0.23	0.84	0.37	0.60
Control Delay	52.3	7.1	0.0	57.2	58.8	7.7	22.4	31.0	0.3	41.0	35.5	7.9
Queue Delay	1.1	11.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	53.4	18.3	0.0	57.2	58.8	7.7	22.4	31.0	0.3	41.0	35.5	7.9
LOS	D	B	A	E	E	A	C	C	A	D	D	A
Approach Delay		20.0			50.8			8.5			28.6	

Lane Group	Ø2	Ø4	Ø8
Lane Configurations			
Traffic Volume (vph)			
Future Volume (vph)			
Ideal Flow (vphpl)			
Storage Length (ft)			
Storage Lanes			
Taper Length (ft)			
Lane Util. Factor			
Frt			
Flt Protected			
Satd. Flow (prot)			
Flt Permitted			
Satd. Flow (perm)			
Right Turn on Red			
Satd. Flow (RTOR)			
Link Speed (mph)			
Link Distance (ft)			
Travel Time (s)			
Peak Hour Factor			
Heavy Vehicles (%)			
Adj. Flow (vph)			
Shared Lane Traffic (%)			
Lane Group Flow (vph)			
Turn Type			
Protected Phases	2	4	8
Permitted Phases			
Detector Phase			
Switch Phase			
Minimum Initial (s)	1.0	1.0	1.0
Minimum Split (s)	5.6	3.1	3.1
Total Split (s)	5.6	3.1	3.1
Total Split (%)	5%	3%	3%
Maximum Green (s)	1.0	1.0	1.0
Yellow Time (s)	4.0	2.0	2.0
All-Red Time (s)	0.6	0.1	0.1
Lost Time Adjust (s)			
Total Lost Time (s)			
Lead/Lag		Lag	Lag
Lead-Lag Optimize?			
Vehicle Extension (s)	3.0	1.0	3.0
Recall Mode	Max	None	None
Act Effct Green (s)			
Actuated g/C Ratio			
v/c Ratio			
Control Delay			
Queue Delay			
Total Delay			
LOS			
Approach Delay			

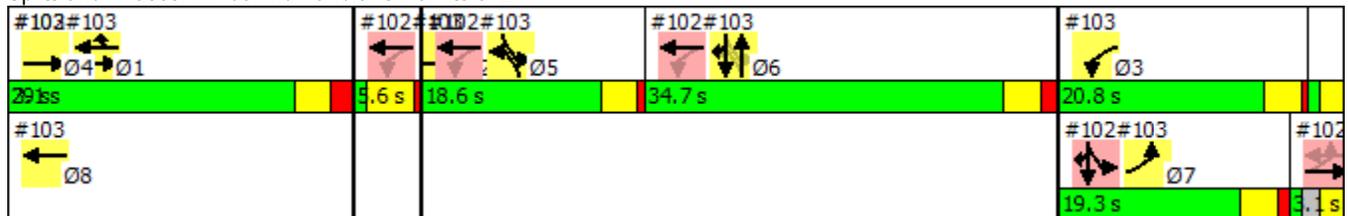


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach LOS	C			D			A			C		
Queue Length 50th (ft)	61	151	0	45	265	1	75	10	0	241	75	0
Queue Length 95th (ft)	m61	m171	m0	95	#442	55	122	30	0	348	111	71
Internal Link Dist (ft)	152			1275			2418			661		
Turn Bay Length (ft)				325			125			460		
Base Capacity (vph)	264	1483	1568	296	846	499	470	551	1568	694	1047	730
Starvation Cap Reductn	40	271	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	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	0
Reduced v/c Ratio	0.54	0.99	0.06	0.24	0.94	0.32	0.38	0.04	0.23	0.67	0.25	0.50

Intersection Summary

Area Type: Other
 Cycle Length: 111.8
 Actuated Cycle Length: 101
 Natural Cycle: 90
 Control Type: Semi Act-Uncoord
 Maximum v/c Ratio: 1.12
 Intersection Signal Delay: 28.5 Intersection LOS: C
 Intersection Capacity Utilization 83.4% ICU Level of Service E
 Analysis Period (min) 15
 # 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: 103: Ind Park/I91SB & Rte 372



Lane Group	Ø2	Ø4	Ø8
Approach LOS			
Queue Length 50th (ft)			
Queue Length 95th (ft)			
Internal Link Dist (ft)			
Turn Bay Length (ft)			
Base Capacity (vph)			
Starvation Cap Reductn			
Spillback Cap Reductn			
Storage Cap Reductn			
Reduced v/c Ratio			
Intersection Summary			



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↖	↗↗	↖↖	↗	↖↖	↗
Traffic Volume (vph)	556	1313	792	263	338	129
Future Volume (vph)	556	1313	792	263	338	129
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	725			225	200	110
Storage Lanes	1			1	0	1
Taper Length (ft)	25				75	
Lane Util. Factor	1.00	0.95	0.95	1.00	0.97	1.00
Fr _t				0.850		0.850
Fl _t Protected	0.950				0.950	
Satd. Flow (prot)	1770	3539	3539	1583	3433	1583
Fl _t Permitted	0.138				0.950	
Satd. Flow (perm)	257	3539	3539	1583	3433	1583
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)				286		79
Link Speed (mph)		40	40		35	
Link Distance (ft)		1355	610		341	
Travel Time (s)		23.1	10.4		6.6	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	604	1427	861	286	367	140
Shared Lane Traffic (%)						
Lane Group Flow (vph)	604	1427	861	286	367	140
Turn Type	pm+pt	NA	NA	Perm	Prot	pt+ov
Protected Phases	5	2	6		4	4 5
Permitted Phases	2			6		
Detector Phase	5	2	6	6	4	4
Switch Phase						
Minimum Initial (s)	5.0	15.0	15.0	15.0	7.0	
Minimum Split (s)	9.0	20.0	20.0	20.0	11.0	
Total Split (s)	20.0	60.0	40.0	40.0	20.0	
Total Split (%)	25.0%	75.0%	50.0%	50.0%	25.0%	
Maximum Green (s)	16.0	55.0	35.0	35.0	16.0	
Yellow Time (s)	3.0	4.0	4.0	4.0	3.0	
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	4.0	5.0	5.0	5.0	4.0	
Lead/Lag	Lead		Lag	Lag		
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	C-Min	C-Min	C-Min	None	
Act Effct Green (s)	58.0	57.0	25.0	25.0	14.0	46.0
Actuated g/C Ratio	0.72	0.71	0.31	0.31	0.18	0.58
v/c Ratio	0.84	0.57	0.78	0.41	0.61	0.15
Control Delay	31.9	7.1	30.1	4.3	34.6	5.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	31.9	7.1	30.1	4.3	34.6	5.0
LOS	C	A	C	A	C	A
Approach Delay		14.5	23.7		26.4	
Approach LOS		B	C		C	

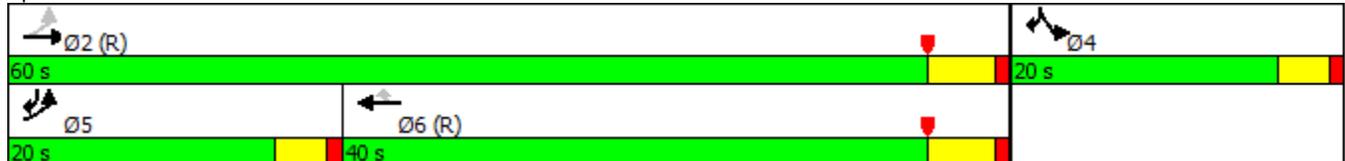


Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Queue Length 50th (ft)	206	147	210	0	88	12
Queue Length 95th (ft)	#506	243	241	46	122	43
Internal Link Dist (ft)		1275	530		261	
Turn Bay Length (ft)	725			225	200	110
Base Capacity (vph)	715	2540	1548	853	706	922
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.84	0.56	0.56	0.34	0.52	0.15

Intersection Summary

Area Type: Other
 Cycle Length: 80
 Actuated Cycle Length: 80
 Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBT, Start of Yellow
 Natural Cycle: 50
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.84
 Intersection Signal Delay: 19.0
 Intersection LOS: B
 Intersection Capacity Utilization 73.2%
 ICU Level of Service D
 Analysis Period (min) 15
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

Splits and Phases: 104: Rte 372 & I91NB





Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	0	0	0	479	380	0
Future Volume (vph)	0	0	0	479	380	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	0.95	0.95	0.95	0.95
Frt						
Flt Protected						
Satd. Flow (prot)	1267	0	0	3505	3505	0
Flt Permitted						
Satd. Flow (perm)	1267	0	0	3505	3505	0
Link Speed (mph)	25			35	35	
Link Distance (ft)	124			135	2498	
Travel Time (s)	3.4			2.6	48.7	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	50%	50%	50%	3%	3%	50%
Adj. Flow (vph)	0	0	0	521	413	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	0	521	413	0
Sign Control	Stop			Free	Free	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	16.6%
ICU Level of Service	A
Analysis Period (min)	15

Intersection						
Int Delay, s/veh	0					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	T			T		
Traffic Vol, veh/h	0	0	0	479	380	0
Future Vol, veh/h	0	0	0	479	380	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	50	50	50	3	3	50
Mvmt Flow	0	0	0	521	413	0

Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	674	207	413	0	-	0
Stage 1	413	-	-	-	-	-
Stage 2	261	-	-	-	-	-
Critical Hdwy	7.8	7.9	5.1	-	-	-
Critical Hdwy Stg 1	6.8	-	-	-	-	-
Critical Hdwy Stg 2	6.8	-	-	-	-	-
Follow-up Hdwy	4	3.8	2.7	-	-	-
Pot Cap-1 Maneuver	297	670	864	-	-	-
Stage 1	514	-	-	-	-	-
Stage 2	633	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	297	670	864	-	-	-
Mov Cap-2 Maneuver	297	-	-	-	-	-
Stage 1	514	-	-	-	-	-
Stage 2	633	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	0	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	864	-	-	-	-
HCM Lane V/C Ratio	-	-	-	-	-
HCM Control Delay (s)	0	-	0	-	-
HCM Lane LOS	A	-	A	-	-
HCM 95th %tile Q(veh)	0	-	-	-	-



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	6	1	1	473	373	7
Future Volume (vph)	6	1	1	473	373	7
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	240	0			100
Storage Lanes	1	1	0			1
Taper Length (ft)	25		25			
Lane Util. Factor	1.00	1.00	0.95	0.95	1.00	1.00
Frt		0.850				0.850
Flt Protected	0.950					
Satd. Flow (prot)	902	808	0	3498	1845	808
Flt Permitted	0.950					
Satd. Flow (perm)	902	808	0	3498	1845	808
Link Speed (mph)	30			40	40	
Link Distance (ft)	754			943	1253	
Travel Time (s)	17.1			16.1	21.4	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	100%	100%	100%	3%	3%	100%
Adj. Flow (vph)	7	1	1	514	405	8
Shared Lane Traffic (%)						
Lane Group Flow (vph)	7	1	0	515	405	8
Sign Control	Stop			Free	Free	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	29.6% ICU Level of Service A
Analysis Period (min)	15

Intersection						
Int Delay, s/veh	0.1					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↘	↗		↕↕	↕	↗
Traffic Vol, veh/h	6	1	1	473	373	7
Future Vol, veh/h	6	1	1	473	373	7
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	Free
Storage Length	0	240	-	-	-	100
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	100	100	100	3	3	100
Mvmt Flow	7	1	1	514	405	8

Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	664	405	405	0	-	0
Stage 1	405	-	-	-	-	-
Stage 2	259	-	-	-	-	-
Critical Hdwy	8.1	7.7	5.6	-	-	-
Critical Hdwy Stg 1	6.9	-	-	-	-	-
Critical Hdwy Stg 2	7.3	-	-	-	-	-
Follow-up Hdwy	4.45	4.25	3.15	-	-	-
Pot Cap-1 Maneuver	266	448	723	-	-	0
Stage 1	473	-	-	-	-	0
Stage 2	559	-	-	-	-	0
Platoon blocked, %				-	-	
Mov Cap-1 Maneuver	265	448	723	-	-	-
Mov Cap-2 Maneuver	265	-	-	-	-	-
Stage 1	472	-	-	-	-	-
Stage 2	559	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	18.1	0	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT
Capacity (veh/h)	723	-	265	448	-
HCM Lane V/C Ratio	0.002	-	0.025	0.002	-
HCM Control Delay (s)	10	0	18.9	13.1	-
HCM Lane LOS	A	A	C	B	-
HCM 95th %tile Q(veh)	0	-	0.1	0	-



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	118	205	126	70	206	205
Future Volume (vph)	118	205	126	70	206	205
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Fr _t			0.952		0.933	
Fl _t Protected		0.982			0.976	
Satd. Flow (prot)	0	1823	1767	0	1688	0
Fl _t Permitted		0.982			0.976	
Satd. Flow (perm)	0	1823	1767	0	1688	0
Link Speed (mph)		30	30		30	
Link Distance (ft)		1107	1054		3274	
Travel Time (s)		25.2	24.0		74.4	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	3%	2%	2%	3%	3%	2%
Adj. Flow (vph)	128	223	137	76	224	223
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	351	213	0	447	0
Sign Control		Free	Free		Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	62.2%
ICU Level of Service	B
Analysis Period (min)	15

Intersection

Int Delay, s/veh 17.7

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↕		↕	
Traffic Vol, veh/h	118	205	126	70	206	205
Future Vol, veh/h	118	205	126	70	206	205
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	3	2	2	3	3	2
Mvmt Flow	128	223	137	76	224	223

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	213	0	0
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	4.13	-	-
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	2.227	-	-
Pot Cap-1 Maneuver	1351	-	-
Stage 1	-	-	-
Stage 2	-	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	1351	-	-
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	EB	WB	SB
HCM Control Delay, s	2.9	0	37.8
HCM LOS			E

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1351	-	-	-	532
HCM Lane V/C Ratio	0.095	-	-	-	0.84
HCM Control Delay (s)	7.9	0	-	-	37.8
HCM Lane LOS	A	A	-	-	E
HCM 95th %tile Q(veh)	0.3	-	-	-	8.7

FedEx- Middletown
110: Middle/Main & Spruce Brook/Division

2020 Existing Volumes With Mid-Forecast Dev.
Timing Plan: PM Peak Hr

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	16	0	5	1	2	2	12	399	1	3	359	21
Future Volume (vph)	16	0	5	1	2	2	12	399	1	3	359	21
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		0.969			0.946							0.993
Flt Protected		0.963			0.990			0.999				
Satd. Flow (prot)	0	1738	0	0	1745	0	0	1861	0	0	1850	0
Flt Permitted		0.963			0.990			0.999				
Satd. Flow (perm)	0	1738	0	0	1745	0	0	1861	0	0	1850	0
Link Speed (mph)		30			30			35			30	
Link Distance (ft)		475			567			2074			2021	
Travel Time (s)		10.8			12.9			40.4			45.9	
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)	17	0	5	1	2	2	13	434	1	3	390	23
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	22	0	0	5	0	0	448	0	0	416	0
Sign Control		Stop			Stop			Stop			Stop	

Intersection Summary

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

Intersection	
Intersection Delay, s/veh	12.4
Intersection LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	16	0	5	1	2	2	12	399	1	3	359	21
Future Vol, veh/h	16	0	5	1	2	2	12	399	1	3	359	21
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	17	0	5	1	2	2	13	434	1	3	390	23
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	9.1	8.7	12.8	12.1
HCM LOS	A	A	B	B

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	3%	76%	20%	1%
Vol Thru, %	97%	0%	40%	94%
Vol Right, %	0%	24%	40%	5%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	412	21	5	383
LT Vol	12	16	1	3
Through Vol	399	0	2	359
RT Vol	1	5	2	21
Lane Flow Rate	448	23	5	416
Geometry Grp	1	1	1	1
Degree of Util (X)	0.553	0.037	0.008	0.513
Departure Headway (Hd)	4.443	5.794	5.621	4.44
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	815	616	634	812
Service Time	2.464	3.85	3.683	2.462
HCM Lane V/C Ratio	0.55	0.037	0.008	0.512
HCM Control Delay	12.8	9.1	8.7	12.1
HCM Lane LOS	B	A	A	B
HCM 95th-tile Q	3.4	0.1	0	3



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	11	48	323	23	100	267
Future Volume (vph)	11	48	323	23	100	267
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.890		0.991			
Flt Protected	0.991					0.987
Satd. Flow (prot)	1643	0	1846	0	0	1839
Flt Permitted	0.991					0.987
Satd. Flow (perm)	1643	0	1846	0	0	1839
Link Speed (mph)	25		35			35
Link Distance (ft)	106		712			2074
Travel Time (s)	2.9		13.9			40.4
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	12	52	351	25	109	290
Shared Lane Traffic (%)						
Lane Group Flow (vph)	64	0	376	0	0	399
Sign Control	Stop		Free			Free

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	51.5%
Analysis Period (min)	15
	ICU Level of Service A

Intersection						
Int Delay, s/veh	2					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	W	W	T	T	T	T
Traffic Vol, veh/h	11	48	323	23	100	267
Future Vol, veh/h	11	48	323	23	100	267
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	12	52	351	25	109	290

Major/Minor	Minor1	Major1	Major2		
Conflicting Flow All	872	364	0	0	376
Stage 1	364	-	-	-	-
Stage 2	508	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12
Critical Hdwy Stg 1	5.42	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218
Pot Cap-1 Maneuver	321	681	-	-	1182
Stage 1	703	-	-	-	-
Stage 2	604	-	-	-	-
Platoon blocked, %					
Mov Cap-1 Maneuver	286	681	-	-	1182
Mov Cap-2 Maneuver	286	-	-	-	-
Stage 1	703	-	-	-	-
Stage 2	538	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	12.5	0	2.3
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	542	1182
HCM Lane V/C Ratio	-	-	0.118	0.092
HCM Control Delay (s)	-	-	12.5	8.4
HCM Lane LOS	-	-	B	A
HCM 95th %tile Q(veh)	-	-	0.4	0.3



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	27	21	325	63	47	231
Future Volume (vph)	27	21	325	63	47	231
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.940		0.978			
Flt Protected	0.973					0.992
Satd. Flow (prot)	1704	0	1822	0	0	1848
Flt Permitted	0.973					0.992
Satd. Flow (perm)	1704	0	1822	0	0	1848
Link Speed (mph)	25		35			35
Link Distance (ft)	103		859			712
Travel Time (s)	2.8		16.7			13.9
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	29	23	353	68	51	251
Shared Lane Traffic (%)						
Lane Group Flow (vph)	52	0	421	0	0	302
Sign Control	Stop		Free			Free

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	49.0% ICU Level of Service A
Analysis Period (min)	15

Intersection						
Int Delay, s/veh	1.5					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	27	21	325	63	47	231
Future Vol, veh/h	27	21	325	63	47	231
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	29	23	353	68	51	251

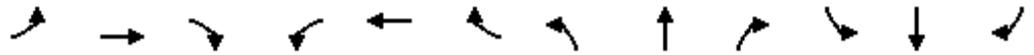
Major/Minor	Minor1	Major1	Major2		
Conflicting Flow All	740	387	0	0	421
Stage 1	387	-	-	-	-
Stage 2	353	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12
Critical Hdwy Stg 1	5.42	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218
Pot Cap-1 Maneuver	384	661	-	-	1138
Stage 1	686	-	-	-	-
Stage 2	711	-	-	-	-
Platoon blocked, %			-	-	-
Mov Cap-1 Maneuver	364	661	-	-	1138
Mov Cap-2 Maneuver	364	-	-	-	-
Stage 1	686	-	-	-	-
Stage 2	674	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	14	0	1.4
HCM LOS	B		

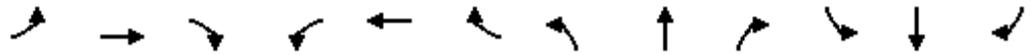
Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	453	1138
HCM Lane V/C Ratio	-	-	0.115	0.045
HCM Control Delay (s)	-	-	14	8.3
HCM Lane LOS	-	-	B	A
HCM 95th %tile Q(veh)	-	-	0.4	0.1

FedEx- Middletown
114: Middle & Bradley/Aetna

2020 Existing Volumes With Mid-Forecast Dev.
Timing Plan: PM Peak Hr



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕	↕		↕	↕	↕	↕	
Traffic Volume (vph)	55	0	53	7	0	7	26	326	3	3	241	33
Future Volume (vph)	55	0	53	7	0	7	26	326	3	3	241	33
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	14	12	12	12	12	12	12	12	12	12	12
Storage Length (ft)	0		0	0		0	0		175	175		0
Storage Lanes	0		0	0		1	0		1	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.934				0.850			0.850		0.982	
Flt Protected		0.975			0.950			0.996		0.950		
Satd. Flow (prot)	0	1809	0	0	1770	1583	0	1855	1583	1770	1829	0
Flt Permitted		0.836			0.862			0.966		0.422		
Satd. Flow (perm)	0	1551	0	0	1606	1583	0	1799	1583	786	1829	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		109				191			191		20	
Link Speed (mph)		25			30			35			35	
Link Distance (ft)		519			341			3417			859	
Travel Time (s)		14.2			7.8			66.6			16.7	
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)	60	0	58	8	0	8	28	354	3	3	262	36
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	118	0	0	8	8	0	382	3	3	298	0
Turn Type	Perm	NA		Perm	NA	Free	Perm	NA	Free	pm+pt	NA	
Protected Phases		4			8			2		1	6	
Permitted Phases	4			8		Free	2		Free	6		
Detector Phase	4	4		8	8		2	2		1	6	
Switch Phase												
Minimum Initial (s)	7.0	7.0		7.0	7.0		15.0	15.0		5.0	15.0	
Minimum Split (s)	11.5	11.5		11.5	11.5		19.5	19.5		9.5	19.5	
Total Split (s)	20.0	20.0		20.0	20.0		30.0	30.0		10.0	40.0	
Total Split (%)	33.3%	33.3%		33.3%	33.3%		50.0%	50.0%		16.7%	66.7%	
Maximum Green (s)	15.5	15.5		15.5	15.5		25.5	25.5		5.5	35.5	
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	
Total Lost Time (s)		4.5			4.5			4.5		4.5	4.5	
Lead/Lag							Lag	Lag		Lead		
Lead-Lag Optimize?												
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		Min	Min		None	Min	
Act Effct Green (s)		7.6			7.6	37.5		22.5	37.5	23.2	24.1	
Actuated g/C Ratio		0.20			0.20	1.00		0.60	1.00	0.62	0.64	
v/c Ratio		0.30			0.02	0.01		0.35	0.00	0.00	0.25	
Control Delay		6.7			13.0	0.0		8.0	0.0	3.7	4.7	
Queue Delay		0.0			0.0	0.0		0.0	0.0	0.0	0.0	
Total Delay		6.7			13.0	0.0		8.0	0.0	3.7	4.7	
LOS		A			B	A		A	A	A	A	
Approach Delay		6.7			6.5			7.9			4.6	

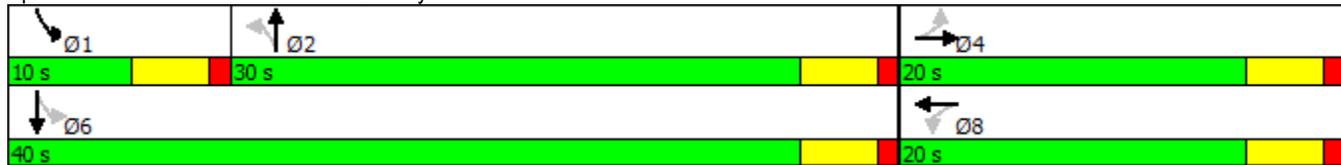


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach LOS		A			A			A			A	
Queue Length 50th (ft)		1			1	0		34	0	0		23
Queue Length 95th (ft)		33			10	0		138	0	2		54
Internal Link Dist (ft)		439			261			3337				779
Turn Bay Length (ft)									175	175		
Base Capacity (vph)		723			684	1583		1379	1583	634		1671
Starvation Cap Reductn		0			0	0		0	0	0		0
Spillback Cap Reductn		0			0	0		0	0	0		0
Storage Cap Reductn		0			0	0		0	0	0		0
Reduced v/c Ratio		0.16			0.01	0.01		0.28	0.00	0.00		0.18

Intersection Summary

Area Type:	Other
Cycle Length:	60
Actuated Cycle Length:	37.5
Natural Cycle:	45
Control Type:	Actuated-Uncoordinated
Maximum v/c Ratio:	0.35
Intersection Signal Delay:	6.5
Intersection LOS:	A
Intersection Capacity Utilization:	57.5%
ICU Level of Service:	B
Analysis Period (min):	15

Splits and Phases: 114: Middle & Bradley/Aetna



						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	400	116	173	127	175	197
Future Volume (vph)	400	116	173	127	175	197
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.970		0.943			
Flt Protected	0.963					0.977
Satd. Flow (prot)	1723	0	1740	0	0	1802
Flt Permitted	0.963					0.363
Satd. Flow (perm)	1723	0	1740	0	0	670
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)	18		51			
Link Speed (mph)	30		35			35
Link Distance (ft)	1107		4763			3417
Travel Time (s)	25.2		92.8			66.6
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%
Adj. Flow (vph)	435	126	188	138	190	214
Shared Lane Traffic (%)						
Lane Group Flow (vph)	561	0	326	0	0	404
Turn Type	Perm		NA		pm+pt	NA
Protected Phases			2		1	6
Permitted Phases	8				6	
Detector Phase	8		2		1	6
Switch Phase						
Minimum Initial (s)	5.0		15.0		5.0	15.0
Minimum Split (s)	22.5		22.5		9.5	22.5
Total Split (s)	38.0		42.5		9.5	52.0
Total Split (%)	42.2%		47.2%		10.6%	57.8%
Maximum Green (s)	33.5		38.0		5.0	47.5
Yellow Time (s)	3.5		3.5		3.5	3.5
All-Red Time (s)	1.0		1.0		1.0	1.0
Lost Time Adjust (s)	0.0		0.0			0.0
Total Lost Time (s)	4.5		4.5			4.5
Lead/Lag			Lag		Lead	
Lead-Lag Optimize?			Yes		Yes	
Vehicle Extension (s)	3.0		3.0		3.0	3.0
Recall Mode	None		C-Min		Max	C-Min
Walk Time (s)	7.0		7.0			7.0
Flash Dont Walk (s)	11.0		11.0			11.0
Pedestrian Calls (#/hr)	0		0			0
Act Effct Green (s)	31.6		24.4			49.4
Actuated g/C Ratio	0.35		0.27			0.55
v/c Ratio	0.91		0.64			0.65
Control Delay	47.4		28.6			24.1
Queue Delay	0.0		0.0			0.0
Total Delay	47.4		28.6			24.1
LOS	D		C			C
Approach Delay	47.4		28.6			24.1

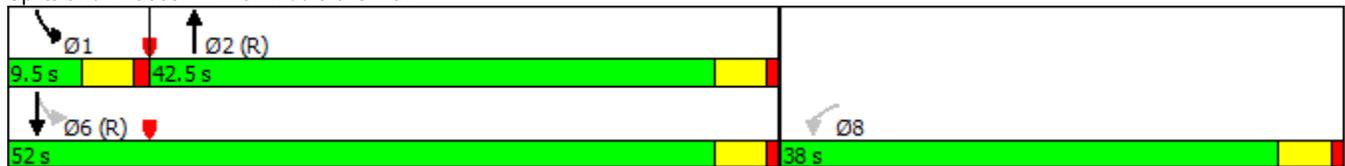


Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Approach LOS	D		C		C	
Queue Length 50th (ft)	276		157		136	
Queue Length 95th (ft)	#473		177		#307	
Internal Link Dist (ft)	1027		4683		3337	
Turn Bay Length (ft)						
Base Capacity (vph)	656		764		626	
Starvation Cap Reductn	0		0		0	
Spillback Cap Reductn	0		0		0	
Storage Cap Reductn	0		0		0	
Reduced v/c Ratio	0.86		0.43		0.65	

Intersection Summary

Area Type: Other
 Cycle Length: 90
 Actuated Cycle Length: 90
 Offset: 9.5 (11%), Referenced to phase 2:NBT and 6:SBTL, Start of Green
 Natural Cycle: 65
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.91
 Intersection Signal Delay: 35.4
 Intersection LOS: D
 Intersection Capacity Utilization 77.4%
 ICU Level of Service D
 Analysis Period (min) 15
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

Splits and Phases: 115: Middle & Smith



						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	252	21	232	0	0	592
Future Volume (vph)	252	21	232	0	0	592
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.990					
Flt Protected	0.956					
Satd. Flow (prot)	1763	0	1863	0	0	1863
Flt Permitted	0.956					
Satd. Flow (perm)	1763	0	1863	0	0	1863
Link Speed (mph)	30		30			30
Link Distance (ft)	888		541			4763
Travel Time (s)	20.2		12.3			108.3
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	274	23	252	0	0	643
Shared Lane Traffic (%)						
Lane Group Flow (vph)	297	0	252	0	0	643
Sign Control	Stop		Free			Free

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	53.1% ICU Level of Service A
Analysis Period (min)	15

Intersection						
Int Delay, s/veh	16.4					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↑		↑			↑
Traffic Vol, veh/h	252	21	232	0	0	592
Future Vol, veh/h	252	21	232	0	0	592
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	274	23	252	0	0	643

Major/Minor	Minor1	Major1	Major2			
Conflicting Flow All	895	252	0	-	-	-
Stage 1	252	-	-	-	-	-
Stage 2	643	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	-	-
Pot Cap-1 Maneuver	311	787	-	0	0	-
Stage 1	790	-	-	0	0	-
Stage 2	523	-	-	0	0	-
Platoon blocked, %			-			-
Mov Cap-1 Maneuver	311	787	-	-	-	-
Mov Cap-2 Maneuver	311	-	-	-	-	-
Stage 1	790	-	-	-	-	-
Stage 2	523	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	66.1	0	0
HCM LOS	F		

Minor Lane/Major Mvmt	NBTWBLn1	SBT
Capacity (veh/h)	- 326	-
HCM Lane V/C Ratio	- 0.91	-
HCM Control Delay (s)	- 66.1	-
HCM Lane LOS	- F	-
HCM 95th %tile Q(veh)	- 8.9	-



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕						↕	
Traffic Volume (vph)	34	184	48	74	158	192	0	0	0	210	392	232
Future Volume (vph)	34	184	48	74	158	192	0	0	0	210	392	232
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		0.976			0.939							0.962
Flt Protected		0.994			0.991							0.988
Satd. Flow (prot)	0	1807	0	0	1733	0	0	0	0	0	1770	0
Flt Permitted		0.994			0.991							0.988
Satd. Flow (perm)	0	1807	0	0	1733	0	0	0	0	0	1770	0
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		832			1070			907			541	
Travel Time (s)		18.9			24.3			20.6			12.3	
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	200	52	80	172	209	0	0	0	228	426	252
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	289	0	0	461	0	0	0	0	0	906	0
Sign Control		Stop			Stop			Stop			Stop	

Intersection Summary

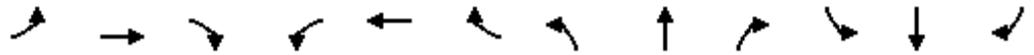
Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	88.9%
ICU Level of Service	E
Analysis Period (min)	15

Intersection	
Intersection Delay, s/veh	159.1
Intersection LOS	F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕						↕	
Traffic Vol, veh/h	34	184	48	74	158	192	0	0	0	210	392	232
Future Vol, veh/h	34	184	48	74	158	192	0	0	0	210	392	232
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	37	200	52	80	172	209	0	0	0	228	426	252
Number of Lanes	0	1	0	0	1	0	0	0	0	0	1	0

Approach	EB	WB	SB
Opposing Approach	WB	EB	
Opposing Lanes	1	1	0
Conflicting Approach Left	SB		WB
Conflicting Lanes Left	1	0	1
Conflicting Approach Right		SB	EB
Conflicting Lanes Right	0	1	1
HCM Control Delay	19.8	33.2	267.6
HCM LOS	C	D	F

Lane	EBLn1	WBLn1	SBLn1
Vol Left, %	13%	17%	25%
Vol Thru, %	69%	37%	47%
Vol Right, %	18%	45%	28%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	266	424	834
LT Vol	34	74	210
Through Vol	184	158	392
RT Vol	48	192	232
Lane Flow Rate	289	461	907
Geometry Grp	1	1	1
Degree of Util (X)	0.531	0.789	1.538
Departure Headway (Hd)	8.058	7.514	6.107
Convergence, Y/N	Yes	Yes	Yes
Cap	451	484	607
Service Time	6.058	5.514	4.107
HCM Lane V/C Ratio	0.641	0.952	1.494
HCM Control Delay	19.8	33.2	267.6
HCM Lane LOS	C	D	F
HCM 95th-tile Q	3	7.2	46.9



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕				
Traffic Volume (vph)	89	304	0	0	226	74	199	0	231	0	0	0
Future Volume (vph)	89	304	0	0	226	74	199	0	231	0	0	0
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
Fr t					0.967			0.927				
Flt Protected		0.989						0.977				
Satd. Flow (prot)	0	1842	0	0	1801	0	0	1687	0	0	0	0
Flt Permitted		0.989						0.977				
Satd. Flow (perm)	0	1842	0	0	1801	0	0	1687	0	0	0	0
Link Speed (mph)		30			30			30				30
Link Distance (ft)		1070			714			989				751
Travel Time (s)		24.3			16.2			22.5				17.1
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)	97	330	0	0	246	80	216	0	251	0	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	427	0	0	326	0	0	467	0	0	0	0
Sign Control		Stop			Stop			Stop			Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	72.5%
ICU Level of Service	C
Analysis Period (min)	15

Intersection	
Intersection Delay, s/veh	21.7
Intersection LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔				
Traffic Vol, veh/h	89	304	0	0	226	74	199	0	231	0	0	0
Future Vol, veh/h	89	304	0	0	226	74	199	0	231	0	0	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	97	330	0	0	246	80	216	0	251	0	0	0
Number of Lanes	0	1	0	0	1	0	0	1	0	0	0	0

Approach	EB	WB	NB
Opposing Approach	WB	EB	
Opposing Lanes	1	1	0
Conflicting Approach Left		NB	EB
Conflicting Lanes Left	0	1	1
Conflicting Approach Right	NB		WB
Conflicting Lanes Right	1	0	1
HCM Control Delay	22.7	16.1	24.6
HCM LOS	C	C	C

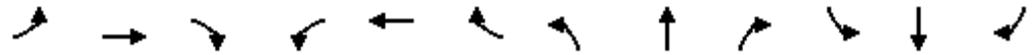
Lane	NBLn1	EBLn1	WBLn1
Vol Left, %	46%	23%	0%
Vol Thru, %	0%	77%	75%
Vol Right, %	54%	0%	25%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	430	393	300
LT Vol	199	89	0
Through Vol	0	304	226
RT Vol	231	0	74
Lane Flow Rate	467	427	326
Geometry Grp	1	1	1
Degree of Util (X)	0.753	0.712	0.543
Departure Headway (Hd)	5.803	6	5.99
Convergence, Y/N	Yes	Yes	Yes
Cap	617	598	597
Service Time	3.887	4.093	4.09
HCM Lane V/C Ratio	0.757	0.714	0.546
HCM Control Delay	24.6	22.7	16.1
HCM Lane LOS	C	C	C
HCM 95th-tile Q	6.7	5.8	3.3

NO BUILD

EXISTING

FedEx- Middletown
101: Main & Rte 372

2030 Base w/ Mid Vols
Timing Plan: AM Peak Hr



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕	↗	↖	↘			↕			↕	
Traffic Volume (vph)	5	281	121	163	366	62	165	22	244	50	17	12
Future Volume (vph)	5	281	121	163	366	62	165	22	244	50	17	12
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	15	12	12	15	12
Storage Length (ft)	0		150	100		0	0		0	0		0
Storage Lanes	0		1	1		0	0		0	0		0
Taper Length (ft)	25			50			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850		0.978			0.924			0.979	
Flt Protected		0.999		0.950				0.981			0.969	
Satd. Flow (prot)	0	1861	1583	1770	1822	0	0	1857	0	0	1944	0
Flt Permitted		0.992		0.561				0.839			0.730	
Satd. Flow (perm)	0	1848	1583	1045	1822	0	0	1588	0	0	1464	0
Right Turn on Red			Yes			Yes			Yes			No
Satd. Flow (RTOR)			132		16			87				
Link Speed (mph)		35			35			30				30
Link Distance (ft)		875			2306			2021				579
Travel Time (s)		17.0			44.9			45.9				13.2
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)	5	305	132	177	398	67	179	24	265	54	18	13
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	310	132	177	465	0	0	468	0	0	85	0
Turn Type	Perm	NA	Perm	Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			8				4
Permitted Phases	2		2	6			8			4		
Detector Phase	2	2	2	6	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	15.0	15.0	15.0	15.0	15.0		9.0	9.0		9.0	9.0	
Minimum Split (s)	20.0	20.0	20.0	20.0	20.0		13.0	13.0		13.0	13.0	
Total Split (s)	50.0	50.0	50.0	50.0	50.0		34.0	34.0		34.0	34.0	
Total Split (%)	59.5%	59.5%	59.5%	59.5%	59.5%		40.5%	40.5%		40.5%	40.5%	
Maximum Green (s)	45.0	45.0	45.0	45.0	45.0		30.0	30.0		30.0	30.0	
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	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	
Total Lost Time (s)		5.0	5.0	5.0	5.0			4.0			4.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	4.0	4.0	4.0	4.0	4.0		3.0	3.0		3.0	3.0	
Recall Mode	Min	Min	Min	Min	Min		None	None		None	None	
Act Effct Green (s)		18.6	18.6	18.6	18.6			16.7			16.7	
Actuated g/C Ratio		0.42	0.42	0.42	0.42			0.37			0.37	
v/c Ratio		0.40	0.18	0.41	0.61			0.72			0.16	
Control Delay		12.3	3.3	14.2	15.0			17.3			10.5	
Queue Delay		0.0	0.0	0.0	0.0			0.0			0.0	
Total Delay		12.3	3.3	14.2	15.0			17.3			10.5	
LOS		B	A	B	B			B			B	
Approach Delay		9.6			14.8			17.3			10.5	



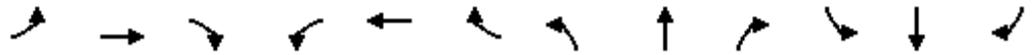
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach LOS	A			B			B			B		
Queue Length 50th (ft)		48	0	28	77			65			12	
Queue Length 95th (ft)		138	27	94	216			199			43	
Internal Link Dist (ft)		795			2226			1941			499	
Turn Bay Length (ft)			150	100								
Base Capacity (vph)		1706	1471	964	1683			1145			1032	
Starvation Cap Reductn		0	0	0	0			0			0	
Spillback Cap Reductn		0	0	0	0			0			0	
Storage Cap Reductn		0	0	0	0			0			0	
Reduced v/c Ratio		0.18	0.09	0.18	0.28			0.41			0.08	

Intersection Summary

Area Type: Other
 Cycle Length: 84
 Actuated Cycle Length: 44.8
 Natural Cycle: 40
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 0.72
 Intersection Signal Delay: 13.9
 Intersection LOS: B
 Intersection Capacity Utilization 76.2%
 ICU Level of Service D
 Analysis Period (min) 15

Splits and Phases: 101: Main & Rte 372





Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗			↖					↖	↗	↖
Traffic Volume (vph)	40	598	28	17	748	394	0	0	0	135	5	50
Future Volume (vph)	40	598	28	17	748	394	0	0	0	135	5	50
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	300		0	0		0	0		0	125		125
Storage Lanes	1		0	0		0	0		0	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	0.95	0.95	0.95	0.95	1.00	1.00	1.00	0.95	0.95	1.00
Frt		0.993			0.949							0.850
Flt Protected	0.950				0.999					0.950	0.955	
Satd. Flow (prot)	1770	3514	0	0	3355	0	0	0	0	1681	1690	1583
Flt Permitted	0.150				0.955					0.950	0.955	
Satd. Flow (perm)	279	3514	0	0	3208	0	0	0	0	1681	1690	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		4			227							166
Link Speed (mph)		40			40			25			30	
Link Distance (ft)		364			232			215			478	
Travel Time (s)		6.2			4.0			5.9			10.9	
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)	43	650	30	18	813	428	0	0	0	147	5	54
Shared Lane Traffic (%)										48%		
Lane Group Flow (vph)	43	680	0	0	1259	0	0	0	0	76	76	54
Turn Type	Perm	NA		Perm	NA					Split	NA	Prot
Protected Phases		1 8			1 2 5 6					7	7	7
Permitted Phases	1 8			1 2 5 6	8							
Detector Phase	1	1		1 2 5 6	1					7	7	7
Switch Phase												
Minimum Initial (s)										7.0	7.0	7.0
Minimum Split (s)										11.3	11.3	11.3
Total Split (s)										19.3	19.3	19.3
Total Split (%)										17.3%	17.3%	17.3%
Maximum Green (s)										15.0	15.0	15.0
Yellow Time (s)										3.2	3.2	3.2
All-Red Time (s)										1.1	1.1	1.1
Lost Time Adjust (s)										0.0	0.0	0.0
Total Lost Time (s)										4.3	4.3	4.3
Lead/Lag										Lead	Lead	Lead
Lead-Lag Optimize?												
Vehicle Extension (s)										1.0	1.0	1.0
Recall Mode										None	None	None
Act Effct Green (s)	25.3	25.3			63.8					9.3	9.3	9.3
Actuated g/C Ratio	0.29	0.29			0.74					0.11	0.11	0.11
v/c Ratio	0.53	0.66			0.50					0.42	0.42	0.17
Control Delay	56.6	31.9			2.4					46.0	45.8	1.2
Queue Delay	0.0	0.1			0.8					0.0	0.0	0.0
Total Delay	56.6	32.0			3.1					46.0	45.8	1.2
LOS	E	C			A					D	D	A
Approach Delay		33.4			3.1						34.2	
Approach LOS		C			A						C	

Lane Group	Ø1	Ø2	Ø3	Ø4	Ø5	Ø6	Ø8
Lane Configurations							
Traffic Volume (vph)							
Future Volume (vph)							
Ideal Flow (vphpl)							
Storage Length (ft)							
Storage Lanes							
Taper Length (ft)							
Lane Util. Factor							
Frt							
Flt Protected							
Satd. Flow (prot)							
Flt Permitted							
Satd. Flow (perm)							
Right Turn on Red							
Satd. Flow (RTOR)							
Link Speed (mph)							
Link Distance (ft)							
Travel Time (s)							
Peak Hour Factor							
Adj. Flow (vph)							
Shared Lane Traffic (%)							
Lane Group Flow (vph)							
Turn Type							
Protected Phases	1	2	3	4	5	6	8
Permitted Phases							
Detector Phase							
Switch Phase							
Minimum Initial (s)	15.0	1.0	7.0	1.0	5.0	10.0	1.0
Minimum Split (s)	20.0	5.6	10.8	3.1	8.6	14.7	3.1
Total Split (s)	29.0	5.6	20.8	3.1	18.6	34.7	3.1
Total Split (%)	26%	5%	19%	3%	17%	31%	3%
Maximum Green (s)	24.0	1.0	17.0	1.0	15.0	30.0	1.0
Yellow Time (s)	3.0	4.0	3.2	2.0	3.0	3.2	2.0
All-Red Time (s)	2.0	0.6	0.6	0.1	0.6	1.5	0.1
Lost Time Adjust (s)							
Total Lost Time (s)							
Lead/Lag			Lead	Lag	Lead	Lag	Lag
Lead-Lag Optimize?							
Vehicle Extension (s)	3.0	3.0	1.0	1.0	1.0	3.0	3.0
Recall Mode	Min	Max	None	None	None	None	None
Act Effct Green (s)							
Actuated g/C Ratio							
v/c Ratio							
Control Delay							
Queue Delay							
Total Delay							
LOS							
Approach Delay							
Approach LOS							

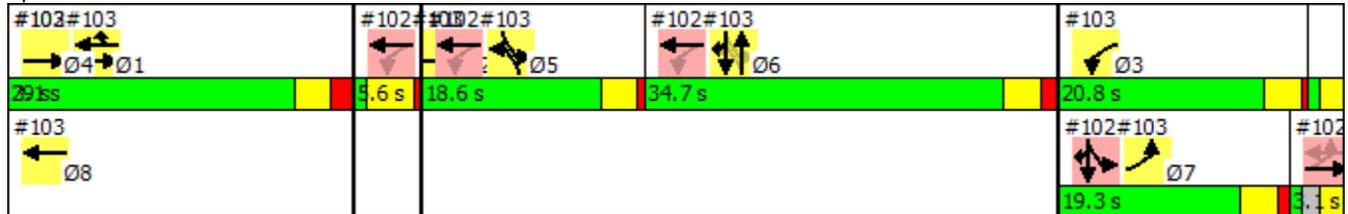


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 50th (ft)	19	168			23					41	41	0
Queue Length 95th (ft)	#77	275			16					96	96	0
Internal Link Dist (ft)		284			152			135			398	
Turn Bay Length (ft)	300									125		125
Base Capacity (vph)	81	1025			2524					294	296	414
Starvation Cap Reductn	0	0			850					0	0	0
Spillback Cap Reductn	0	15			0					0	0	0
Storage Cap Reductn	0	0			0					0	0	0
Reduced v/c Ratio	0.53	0.67			0.75					0.26	0.26	0.13

Intersection Summary

Area Type: Other
 Cycle Length: 111.8
 Actuated Cycle Length: 86.8
 Natural Cycle: 65
 Control Type: Semi Act-Uncoord
 Maximum v/c Ratio: 0.70
 Intersection Signal Delay: 16.1
 Intersection LOS: B
 Intersection Capacity Utilization 59.5%
 ICU Level of Service B
 Analysis Period (min) 15
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

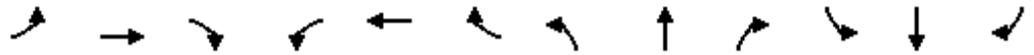
Splits and Phases: 102: McD/Sebethe & Rte 372



Lane Group	Ø1	Ø2	Ø3	Ø4	Ø5	Ø6	Ø8
Queue Length 50th (ft)							
Queue Length 95th (ft)							
Internal Link Dist (ft)							
Turn Bay Length (ft)							
Base Capacity (vph)							
Starvation Cap Reductn							
Spillback Cap Reductn							
Storage Cap Reductn							
Reduced v/c Ratio							
Intersection Summary							

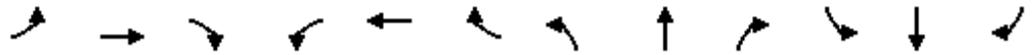
FedEx- Middletown
103: Ind Park/I91SB & Rte 372

2030 Base w/ Mid Vols
Timing Plan: AM Peak Hr



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↘	↗↗	↘	↘	↗↗	↘	↘	↗	↘	↘	↗↗	↘
Traffic Volume (vph)	98	541	102	132	603	242	140	33	201	180	270	415
Future Volume (vph)	98	541	102	132	603	242	140	33	201	180	270	415
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	325		125	375		0	460		325
Storage Lanes	1		1	1		1	1		1	1		2
Taper Length (ft)	25			50			25			25		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	0.95	1.00
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	3539	1568	1752	3539	1583	1752	1845	1568	1770	3505	1583
Flt Permitted	0.950			0.950			0.494			0.734		
Satd. Flow (perm)	1770	3539	1568	1752	3539	1583	911	1845	1568	1367	3505	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			208			188			218			451
Link Speed (mph)		40			40			35				35
Link Distance (ft)		232			1355			2498				741
Travel Time (s)		4.0			23.1			48.7				14.4
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	2%	2%	3%	3%	2%	2%	3%	3%	3%	2%	3%	2%
Adj. Flow (vph)	107	588	111	143	655	263	152	36	218	196	293	451
Shared Lane Traffic (%)												
Lane Group Flow (vph)	107	588	111	143	655	263	152	36	218	196	293	451
Turn Type	Prot	NA	Free	Prot	NA	custom	pm+pt	NA	Free	pm+pt	NA	Prot
Protected Phases	7	1 2 4		3	1 8	1	5	6		5	6	6
Permitted Phases			Free				6		Free	6		
Detector Phase	7	1 2 4		3	1 8	1	5	6		5 6	6	6
Switch Phase												
Minimum Initial (s)	7.0			7.0		15.0	5.0	10.0		5.0	10.0	10.0
Minimum Split (s)	11.3			10.8		20.0	8.6	14.7		8.6	14.7	14.7
Total Split (s)	19.3			20.8		29.0	18.6	34.7		18.6	34.7	34.7
Total Split (%)	17.3%			18.6%		25.9%	16.6%	31.0%		16.6%	31.0%	31.0%
Maximum Green (s)	15.0			17.0		24.0	15.0	30.0		15.0	30.0	30.0
Yellow Time (s)	3.2			3.2		3.0	3.0	3.2		3.0	3.2	3.2
All-Red Time (s)	1.1			0.6		2.0	0.6	1.5		0.6	1.5	1.5
Lost Time Adjust (s)	0.0			0.0		0.0	0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	4.3			3.8		5.0	3.6	4.7		3.6	4.7	4.7
Lead/Lag	Lead			Lead			Lead	Lag		Lead	Lag	Lag
Lead-Lag Optimize?												
Vehicle Extension (s)	1.0			1.0		3.0	1.0	3.0		1.0	3.0	3.0
Recall Mode	None			None		Min	None	None		None	None	None
Act Effct Green (s)	9.3	30.0	86.8	10.9	25.3	24.4	26.4	14.7	86.8	26.4	14.7	14.7
Actuated g/C Ratio	0.11	0.35	1.00	0.13	0.29	0.28	0.30	0.17	1.00	0.30	0.17	0.17
v/c Ratio	0.56	0.48	0.07	0.65	0.64	0.45	0.40	0.12	0.14	0.42	0.49	0.70
Control Delay	62.1	4.6	0.1	51.8	31.5	12.4	23.7	32.8	0.2	23.9	36.3	10.1
Queue Delay	0.1	0.4	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	62.1	5.0	0.1	51.8	31.6	12.4	23.7	32.8	0.2	23.9	36.3	10.1
LOS	E	A	A	D	C	B	C	C	A	C	D	B
Approach Delay		11.9			29.6			11.9			21.1	

Lane Group	Ø2	Ø4	Ø8
Lane Configurations			
Traffic Volume (vph)			
Future Volume (vph)			
Ideal Flow (vphpl)			
Storage Length (ft)			
Storage Lanes			
Taper Length (ft)			
Lane Util. Factor			
Frt			
Flt Protected			
Satd. Flow (prot)			
Flt Permitted			
Satd. Flow (perm)			
Right Turn on Red			
Satd. Flow (RTOR)			
Link Speed (mph)			
Link Distance (ft)			
Travel Time (s)			
Peak Hour Factor			
Heavy Vehicles (%)			
Adj. Flow (vph)			
Shared Lane Traffic (%)			
Lane Group Flow (vph)			
Turn Type			
Protected Phases	2	4	8
Permitted Phases			
Detector Phase			
Switch Phase			
Minimum Initial (s)	1.0	1.0	1.0
Minimum Split (s)	5.6	3.1	3.1
Total Split (s)	5.6	3.1	3.1
Total Split (%)	5%	3%	3%
Maximum Green (s)	1.0	1.0	1.0
Yellow Time (s)	4.0	2.0	2.0
All-Red Time (s)	0.6	0.1	0.1
Lost Time Adjust (s)			
Total Lost Time (s)			
Lead/Lag		Lag	Lag
Lead-Lag Optimize?			
Vehicle Extension (s)	3.0	1.0	3.0
Recall Mode	Max	None	None
Act Effct Green (s)			
Actuated g/C Ratio			
v/c Ratio			
Control Delay			
Queue Delay			
Total Delay			
LOS			
Approach Delay			



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach LOS	B			C			B			C		
Queue Length 50th (ft)	52	35	0	74	161	30	57	17	0	76	75	0
Queue Length 95th (ft)	m99	54	m0	152	264	118	110	47	0	140	130	87
Internal Link Dist (ft)	152			1275			2418			661		
Turn Bay Length (ft)				325			125			375		
Base Capacity (vph)	310	1224	1568	347	1030	579	453	647	1568	777	1229	848
Starvation Cap Reductn	9	248	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	46	0	0	0	0	0	0	5
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.36	0.60	0.07	0.41	0.67	0.45	0.34	0.06	0.14	0.25	0.24	0.53

Intersection Summary

Area Type: Other
 Cycle Length: 111.8
 Actuated Cycle Length: 86.8
 Natural Cycle: 65
 Control Type: Semi Act-Uncoord
 Maximum v/c Ratio: 0.70
 Intersection Signal Delay: 20.4
 Intersection LOS: C
 Intersection Capacity Utilization 61.5%
 ICU Level of Service B
 Analysis Period (min) 15
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 103: Ind Park/I91SB & Rte 372

#103#103 → Ø4 → Ø1 29.5s	#102#103 ← Ø5 5.6s	#102#103 ← Ø6 18.6s	#102#103 ← Ø6 34.7s	#103 ↘ Ø3 20.8s	#102#103 ↘ Ø7 19.3s	#102 → Ø8 5.1s
--------------------------------	--------------------------	---------------------------	---------------------------	-----------------------	---------------------------	----------------------

Lane Group	Ø2	Ø4	Ø8
Approach LOS			
Queue Length 50th (ft)			
Queue Length 95th (ft)			
Internal Link Dist (ft)			
Turn Bay Length (ft)			
Base Capacity (vph)			
Starvation Cap Reductn			
Spillback Cap Reductn			
Storage Cap Reductn			
Reduced v/c Ratio			
Intersection Summary			



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	323	612	693	675	310	267
Future Volume (vph)	323	612	693	675	310	267
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	725			225	200	110
Storage Lanes	1			1	0	1
Taper Length (ft)	25				75	
Lane Util. Factor	1.00	0.95	0.95	1.00	0.97	1.00
Fr _t				0.850		0.850
Fl _t Protected	0.950				0.950	
Satd. Flow (prot)	1770	3539	3539	1583	3433	1583
Fl _t Permitted	0.297				0.950	
Satd. Flow (perm)	553	3539	3539	1583	3433	1583
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)				712		164
Link Speed (mph)		40	40		35	
Link Distance (ft)		1355	610		341	
Travel Time (s)		23.1	10.4		6.6	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	351	665	753	734	337	290
Shared Lane Traffic (%)						
Lane Group Flow (vph)	351	665	753	734	337	290
Turn Type	pm+pt	NA	NA	Perm	Prot	pt+ov
Protected Phases	5	2	6		4	4 5
Permitted Phases	2			6		
Detector Phase	5	2	6	6	4	4
Switch Phase						
Minimum Initial (s)	5.0	15.0	15.0	15.0	7.0	
Minimum Split (s)	9.0	20.0	20.0	20.0	11.0	
Total Split (s)	18.0	70.0	52.0	52.0	20.0	
Total Split (%)	20.0%	77.8%	57.8%	57.8%	22.2%	
Maximum Green (s)	14.0	65.0	47.0	47.0	16.0	
Yellow Time (s)	3.0	4.0	4.0	4.0	3.0	
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	4.0	5.0	5.0	5.0	4.0	
Lead/Lag	Lead		Lag	Lag		
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	C-Min	C-Min	C-Min	None	
Act Effct Green (s)	67.1	66.1	50.3	50.3	14.9	30.7
Actuated g/C Ratio	0.75	0.73	0.56	0.56	0.17	0.34
v/c Ratio	0.61	0.26	0.38	0.61	0.59	0.45
Control Delay	9.1	4.6	13.1	4.0	38.7	10.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	9.1	4.6	13.1	4.0	38.7	10.8
LOS	A	A	B	A	D	B
Approach Delay		6.1	8.6		25.8	
Approach LOS		A	A		C	



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Queue Length 50th (ft)	49	51	113	5	93	52
Queue Length 95th (ft)	106	94	206	78	125	94
Internal Link Dist (ft)		1275	530		261	
Turn Bay Length (ft)	725			225	200	110
Base Capacity (vph)	609	2639	2038	1213	649	638
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.58	0.25	0.37	0.61	0.52	0.45

Intersection Summary

Area Type:	Other
Cycle Length:	90
Actuated Cycle Length:	90
Offset:	0 (0%), Referenced to phase 2:EBTL and 6:WBT, Start of Yellow
Natural Cycle:	50
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	0.61
Intersection Signal Delay:	11.3
Intersection LOS:	B
Intersection Capacity Utilization	67.2%
ICU Level of Service	C
Analysis Period (min)	15

Splits and Phases: 104: Rte 372 & I91NB





Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	0	0	0	350	502	0
Future Volume (vph)	0	0	0	350	502	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	0.95	0.95	0.95	0.95
Frt						
Flt Protected						
Satd. Flow (prot)	1267	0	0	3505	3505	0
Flt Permitted						
Satd. Flow (perm)	1267	0	0	3505	3505	0
Link Speed (mph)	25			35	35	
Link Distance (ft)	139			256	2498	
Travel Time (s)	3.8			5.0	48.7	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	50%	50%	50%	3%	3%	50%
Adj. Flow (vph)	0	0	0	380	546	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	0	380	546	0
Sign Control	Stop			Free	Free	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	17.2%
ICU Level of Service	A
Analysis Period (min)	15

Intersection

Int Delay, s/veh	0					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↘↗			↕↕	↕↕	
Traffic Vol, veh/h	0	0	0	350	502	0
Future Vol, veh/h	0	0	0	350	502	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	50	50	50	3	3	50
Mvmt Flow	0	0	0	380	546	0

Major/Minor	Minor2	Major1		Major2	
Conflicting Flow All	736	273	546	0	0
Stage 1	546	-	-	-	-
Stage 2	190	-	-	-	-
Critical Hdwy	7.8	7.9	5.1	-	-
Critical Hdwy Stg 1	6.8	-	-	-	-
Critical Hdwy Stg 2	6.8	-	-	-	-
Follow-up Hdwy	4	3.8	2.7	-	-
Pot Cap-1 Maneuver	267	599	750	-	-
Stage 1	428	-	-	-	-
Stage 2	697	-	-	-	-
Platoon blocked, %				-	-
Mov Cap-1 Maneuver	267	599	750	-	-
Mov Cap-2 Maneuver	267	-	-	-	-
Stage 1	428	-	-	-	-
Stage 2	697	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	0	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	750	-	-	-	-
HCM Lane V/C Ratio	-	-	-	-	-
HCM Control Delay (s)	0	-	0	-	-
HCM Lane LOS	A	-	A	-	-
HCM 95th %tile Q(veh)	0	-	-	-	-



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	13	1	1	337	494	8
Future Volume (vph)	13	1	1	337	494	8
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	240	0			100
Storage Lanes	2	1	0			1
Taper Length (ft)	25		25			
Lane Util. Factor	0.97	1.00	0.95	0.95	1.00	1.00
Frt		0.850				0.850
Flt Protected	0.950					
Satd. Flow (prot)	1751	808	0	3496	1845	808
Flt Permitted	0.950					
Satd. Flow (perm)	1751	808	0	3496	1845	808
Link Speed (mph)	30			40	40	
Link Distance (ft)	754			943	1266	
Travel Time (s)	17.1			16.1	21.6	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	100%	100%	100%	3%	3%	100%
Adj. Flow (vph)	14	1	1	366	537	9
Shared Lane Traffic (%)						
Lane Group Flow (vph)	14	1	0	367	537	9
Sign Control	Stop			Free	Free	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	36.0% ICU Level of Service A
Analysis Period (min)	15



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↔		↕	
Traffic Volume (vph)	193	57	330	161	62	125
Future Volume (vph)	193	57	330	161	62	125
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Fr _t			0.956		0.910	
Fl _t Protected		0.963			0.984	
Satd. Flow (prot)	0	1780	1775	0	1663	0
Fl _t Permitted		0.963			0.984	
Satd. Flow (perm)	0	1780	1775	0	1663	0
Link Speed (mph)		30	30		30	
Link Distance (ft)		1107	1054		3274	
Travel Time (s)		25.2	24.0		74.4	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	3%	2%	2%	3%	3%	2%
Adj. Flow (vph)	210	62	359	175	67	136
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	272	534	0	203	0
Sign Control		Free	Free		Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	62.0%
ICU Level of Service	B
Analysis Period (min)	15

Intersection

Int Delay, s/veh 6.6

Movement EBL EBT WBT WBR SBL SBR

Lane Configurations		↕	↔		↕	
Traffic Vol, veh/h	193	57	330	161	62	125
Future Vol, veh/h	193	57	330	161	62	125
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	3	2	2	3	3	2
Mvmt Flow	210	62	359	175	67	136

Major/Minor Major1 Major2 Minor2

Conflicting Flow All	534	0	-	0	929	447
Stage 1	-	-	-	-	447	-
Stage 2	-	-	-	-	482	-
Critical Hdwy	4.13	-	-	-	6.43	6.22
Critical Hdwy Stg 1	-	-	-	-	5.43	-
Critical Hdwy Stg 2	-	-	-	-	5.43	-
Follow-up Hdwy	2.227	-	-	-	3.527	3.318
Pot Cap-1 Maneuver	1029	-	-	-	296	612
Stage 1	-	-	-	-	642	-
Stage 2	-	-	-	-	619	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1029	-	-	-	234	612
Mov Cap-2 Maneuver	-	-	-	-	234	-
Stage 1	-	-	-	-	507	-
Stage 2	-	-	-	-	619	-

Approach EB WB SB

HCM Control Delay, s	7.3	0	23
HCM LOS			C

Minor Lane/Major Mvmt EBL EBT WBT WBR SBLn1

Capacity (veh/h)	1029	-	-	-	399
HCM Lane V/C Ratio	0.204	-	-	-	0.509
HCM Control Delay (s)	9.4	0	-	-	23
HCM Lane LOS	A	A	-	-	C
HCM 95th %tile Q(veh)	0.8	-	-	-	2.8



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Volume (vph)	17	0	8	0	0	2	4	387	0	1	272	5
Future Volume (vph)	17	0	8	0	0	2	4	387	0	1	272	5
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
Flt		0.955			0.865							0.998
Flt Protected		0.968										
Satd. Flow (prot)	0	1722	0	0	1611	0	0	1863	0	0	1859	0
Flt Permitted		0.968										
Satd. Flow (perm)	0	1722	0	0	1611	0	0	1863	0	0	1859	0
Link Speed (mph)		30			30			35			30	
Link Distance (ft)		475			567			2074			2021	
Travel Time (s)		10.8			12.9			40.4			45.9	
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)	18	0	9	0	0	2	4	421	0	1	296	5
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	27	0	0	2	0	0	425	0	0	302	0
Sign Control		Stop			Stop			Stop			Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	38.0%
Analysis Period (min)	15
	ICU Level of Service A

Intersection	
Intersection Delay, s/veh	11
Intersection LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	17	0	8	0	0	2	4	387	0	1	272	5
Future Vol, veh/h	17	0	8	0	0	2	4	387	0	1	272	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
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	18	0	9	0	0	2	4	421	0	1	296	5
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	8.7	8	11.8	10.1
HCM LOS	A	A	B	B

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	1%	68%	0%	0%
Vol Thru, %	99%	0%	0%	98%
Vol Right, %	0%	32%	100%	2%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	391	25	2	278
LT Vol	4	17	0	1
Through Vol	387	0	0	272
RT Vol	0	8	2	5
Lane Flow Rate	425	27	2	302
Geometry Grp	1	1	1	1
Degree of Util (X)	0.51	0.041	0.003	0.372
Departure Headway (Hd)	4.323	5.438	4.934	4.427
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	837	657	723	816
Service Time	2.339	3.48	2.98	2.445
HCM Lane V/C Ratio	0.508	0.041	0.003	0.37
HCM Control Delay	11.8	8.7	8	10.1
HCM Lane LOS	B	A	A	B
HCM 95th-tile Q	3	0.1	0	1.7



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	26	114	295	5	21	259
Future Volume (vph)	26	114	295	5	21	259
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.890		0.998			
Flt Protected	0.991					0.996
Satd. Flow (prot)	1643	0	1859	0	0	1855
Flt Permitted	0.991					0.996
Satd. Flow (perm)	1643	0	1859	0	0	1855
Link Speed (mph)	25		35			35
Link Distance (ft)	450		732			2074
Travel Time (s)	12.3		14.3			40.4
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	28	124	321	5	23	282
Shared Lane Traffic (%)						
Lane Group Flow (vph)	152	0	326	0	0	305
Sign Control	Stop		Free			Free

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	46.1% ICU Level of Service A
Analysis Period (min)	15

Intersection

Int Delay, s/veh 2.6

Movement WBL WBR NBT NBR SBL SBT

Lane Configurations						
Traffic Vol, veh/h	26	114	295	5	21	259
Future Vol, veh/h	26	114	295	5	21	259
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	28	124	321	5	23	282

Major/Minor Minor1 Major1 Major2

Conflicting Flow All	652	324	0	0	326	0
Stage 1	324	-	-	-	-	-
Stage 2	328	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	433	717	-	-	1234	-
Stage 1	733	-	-	-	-	-
Stage 2	730	-	-	-	-	-
Platoon blocked, %			-	-		
Mov Cap-1 Maneuver	423	717	-	-	1234	-
Mov Cap-2 Maneuver	423	-	-	-	-	-
Stage 1	733	-	-	-	-	-
Stage 2	714	-	-	-	-	-

Approach WB NB SB

HCM Control Delay, s	12.4	0	0.6
HCM LOS	B		

Minor Lane/Major Mvmt NBT NBRWBLn1 SBL SBT

Capacity (veh/h)	-	-	635	1234	-
HCM Lane V/C Ratio	-	-	0.24	0.018	-
HCM Control Delay (s)	-	-	12.4	8	0
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	0.9	0.1	-



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	63	51	249	13	10	275
Future Volume (vph)	63	51	249	13	10	275
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.940		0.993			
Flt Protected	0.973					0.998
Satd. Flow (prot)	1704	0	1850	0	0	1859
Flt Permitted	0.973					0.998
Satd. Flow (perm)	1704	0	1850	0	0	1859
Link Speed (mph)	25		35			35
Link Distance (ft)	471		839			732
Travel Time (s)	12.8		16.3			14.3
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	68	55	271	14	11	299
Shared Lane Traffic (%)						
Lane Group Flow (vph)	123	0	285	0	0	310
Sign Control	Stop		Free			Free

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	35.8%
Analysis Period (min)	15
	ICU Level of Service A

Intersection

Int Delay, s/veh 2.4

Movement WBL WBR NBT NBR SBL SBT

Lane Configurations						
Traffic Vol, veh/h	63	51	249	13	10	275
Future Vol, veh/h	63	51	249	13	10	275
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	68	55	271	14	11	299

Major/Minor Minor1 Major1 Major2

Conflicting Flow All	599	278	0	0	285	0
Stage 1	278	-	-	-	-	-
Stage 2	321	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	465	761	-	-	1277	-
Stage 1	769	-	-	-	-	-
Stage 2	735	-	-	-	-	-
Platoon blocked, %			-	-		
Mov Cap-1 Maneuver	460	761	-	-	1277	-
Mov Cap-2 Maneuver	460	-	-	-	-	-
Stage 1	769	-	-	-	-	-
Stage 2	728	-	-	-	-	-

Approach WB NB SB

HCM Control Delay, s	13.3	0	0.3
HCM LOS	B		

Minor Lane/Major Mvmt NBT NBRWBLn1 SBL SBT

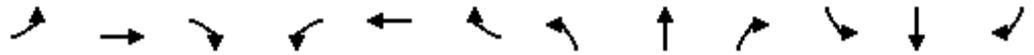
Capacity (veh/h)	-	-	559	1277	-
HCM Lane V/C Ratio	-	-	0.222	0.009	-
HCM Control Delay (s)	-	-	13.3	7.8	0
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	0.8	0	-

FedEx- Middletown
114: Middle & Bradley/Aetna

2030 Base w/ Mid Vols
Timing Plan: AM Peak Hr



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕	↕		↕	↕	↕	↕	
Traffic Volume (vph)	23	1	22	1	0	2	45	237	6	12	260	37
Future Volume (vph)	23	1	22	1	0	2	45	237	6	12	260	37
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	14	12	12	12	12	12	12	12	12	12	12
Storage Length (ft)	0		0	0		0	0		175	175		0
Storage Lanes	0		0	0		1	0		1	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Fr _t		0.935				0.850			0.850		0.981	
Fl _t Protected		0.976			0.950			0.992		0.950		
Satd. Flow (prot)	0	1813	0	0	1770	1583	0	1848	1583	1770	1827	0
Fl _t Permitted								0.919		0.489		
Satd. Flow (perm)	0	1858	0	0	1863	1583	0	1712	1583	911	1827	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		24				191			191		21	
Link Speed (mph)		25			30			35			35	
Link Distance (ft)		519			341			3417			839	
Travel Time (s)		14.2			7.8			66.6			16.3	
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	1	24	1	0	2	49	258	7	13	283	40
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	50	0	0	1	2	0	307	7	13	323	0
Turn Type	Perm	NA		Perm	NA	Free	Perm	NA	Free	pm+pt	NA	
Protected Phases		4			8			2		1	6	
Permitted Phases	4			8		Free	2		Free	6		
Detector Phase	4	4		8	8		2	2		1	6	
Switch Phase												
Minimum Initial (s)	7.0	7.0		7.0	7.0		15.0	15.0		5.0	15.0	
Minimum Split (s)	11.5	11.5		11.5	11.5		19.5	19.5		9.5	19.5	
Total Split (s)	20.0	20.0		20.0	20.0		30.0	30.0		10.0	40.0	
Total Split (%)	33.3%	33.3%		33.3%	33.3%		50.0%	50.0%		16.7%	66.7%	
Maximum Green (s)	15.5	15.5		15.5	15.5		25.5	25.5		5.5	35.5	
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	
Total Lost Time (s)		4.5			4.5			4.5		4.5	4.5	
Lead/Lag							Lag	Lag		Lead		
Lead-Lag Optimize?												
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		Min	Min		None	Min	
Act Effct Green (s)		7.3			7.3	34.4		30.0	34.4	27.8	31.7	
Actuated g/C Ratio		0.21			0.21	1.00		0.87	1.00	0.81	0.92	
v/c Ratio		0.12			0.00	0.00		0.21	0.00	0.01	0.19	
Control Delay		8.9			12.0	0.0		4.4	0.0	2.2	1.8	
Queue Delay		0.0			0.0	0.0		0.0	0.0	0.0	0.0	
Total Delay		8.9			12.0	0.0		4.4	0.0	2.2	1.8	
LOS		A			B	A		A	A	A	A	
Approach Delay		8.9			4.0			4.3			1.8	

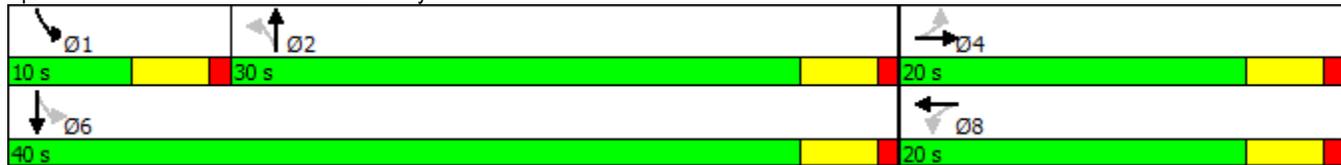


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach LOS		A			A			A			A	
Queue Length 50th (ft)		4			0	0		0	0	0	0	
Queue Length 95th (ft)		25			3	0		107	0	5	55	
Internal Link Dist (ft)		439			261			3337			759	
Turn Bay Length (ft)									175	175		
Base Capacity (vph)		870			860	1583		1567	1583	876	1768	
Starvation Cap Reductn		0			0	0		0	0	0	0	
Spillback Cap Reductn		0			0	0		0	0	0	0	
Storage Cap Reductn		0			0	0		0	0	0	0	
Reduced v/c Ratio		0.06			0.00	0.00		0.20	0.00	0.01	0.18	

Intersection Summary

Area Type:	Other
Cycle Length:	60
Actuated Cycle Length:	34.4
Natural Cycle:	45
Control Type:	Actuated-Uncoordinated
Maximum v/c Ratio:	0.21
Intersection Signal Delay:	3.4
Intersection LOS:	A
Intersection Capacity Utilization:	51.5%
ICU Level of Service:	A
Analysis Period (min):	15

Splits and Phases: 114: Middle & Bradley/Aetna





Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	203	167	199	243	68	126
Future Volume (vph)	203	167	199	243	68	126
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.939		0.926			
Flt Protected	0.973					0.983
Satd. Flow (prot)	1685	0	1708	0	0	1813
Flt Permitted	0.973					0.610
Satd. Flow (perm)	1685	0	1708	0	0	1125
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)	52		85			
Link Speed (mph)	30		35			35
Link Distance (ft)	1107		4763			3417
Travel Time (s)	25.2		92.8			66.6
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%
Adj. Flow (vph)	221	182	216	264	74	137
Shared Lane Traffic (%)						
Lane Group Flow (vph)	403	0	480	0	0	211
Turn Type	Perm		NA		pm+pt	NA
Protected Phases			2		1	6
Permitted Phases	8				6	
Detector Phase	8		2		1	6
Switch Phase						
Minimum Initial (s)	5.0		15.0		5.0	15.0
Minimum Split (s)	22.5		22.5		9.5	22.5
Total Split (s)	38.0		42.5		9.5	52.0
Total Split (%)	42.2%		47.2%		10.6%	57.8%
Maximum Green (s)	33.5		38.0		5.0	47.5
Yellow Time (s)	3.5		3.5		3.5	3.5
All-Red Time (s)	1.0		1.0		1.0	1.0
Lost Time Adjust (s)	0.0		0.0			0.0
Total Lost Time (s)	4.5		4.5			4.5
Lead/Lag			Lag		Lead	
Lead-Lag Optimize?			Yes		Yes	
Vehicle Extension (s)	3.0		3.0		3.0	3.0
Recall Mode	None		Min		Max	Min
Walk Time (s)	7.0		7.0			7.0
Flash Dont Walk (s)	11.0		11.0			11.0
Pedestrian Calls (#/hr)	0		0			0
Act Effct Green (s)	17.9		20.2			30.2
Actuated g/C Ratio	0.31		0.35			0.52
v/c Ratio	0.72		0.73			0.32
Control Delay	23.8		21.6			10.2
Queue Delay	0.0		0.0			0.0
Total Delay	23.8		21.6			10.2
LOS	C		C			B
Approach Delay	23.8		21.6			10.2

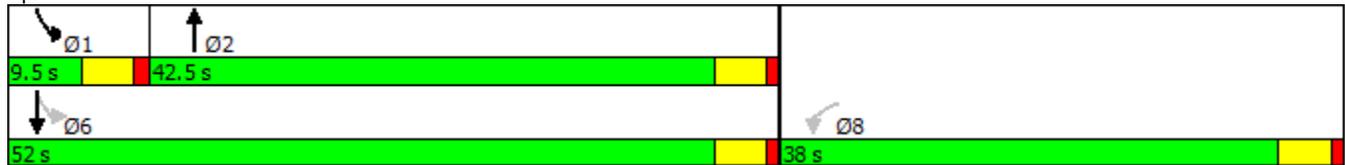


Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Approach LOS	C		C		B	
Queue Length 50th (ft)	93		108		33	
Queue Length 95th (ft)	237		264		95	
Internal Link Dist (ft)	1027		4683		3337	
Turn Bay Length (ft)						
Base Capacity (vph)	1050		1211		1016	
Starvation Cap Reductn	0		0		0	
Spillback Cap Reductn	0		0		0	
Storage Cap Reductn	0		0		0	
Reduced v/c Ratio	0.38		0.40		0.21	

Intersection Summary

Area Type:	Other
Cycle Length:	90
Actuated Cycle Length:	57.6
Natural Cycle:	60
Control Type:	Actuated-Uncoordinated
Maximum v/c Ratio:	0.73
Intersection Signal Delay:	20.2
Intersection LOS:	C
Intersection Capacity Utilization:	70.6%
ICU Level of Service:	C
Analysis Period (min):	15

Splits and Phases: 115: Middle & Smith





Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	112	18	531	0	0	329
Future Volume (vph)	112	18	531	0	0	329
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.981					
Flt Protected	0.959					
Satd. Flow (prot)	1752	0	1863	0	0	1863
Flt Permitted	0.959					
Satd. Flow (perm)	1752	0	1863	0	0	1863
Link Speed (mph)	30		30		30	
Link Distance (ft)	888		541		4763	
Travel Time (s)	20.2		12.3		108.3	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	122	20	577	0	0	358
Shared Lane Traffic (%)						
Lane Group Flow (vph)	142	0	577	0	0	358
Sign Control	Stop		Free		Free	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	41.9%
Analysis Period (min)	15
	ICU Level of Service A

Intersection						
Int Delay, s/veh	3.3					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↘↗		↑			↑
Traffic Vol, veh/h	112	18	531	0	0	329
Future Vol, veh/h	112	18	531	0	0	329
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	122	20	577	0	0	358

Major/Minor	Minor1	Major1	Major2			
Conflicting Flow All	935	577	0	-	-	-
Stage 1	577	-	-	-	-	-
Stage 2	358	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	-	-
Pot Cap-1 Maneuver	295	516	-	0	0	-
Stage 1	562	-	-	0	0	-
Stage 2	707	-	-	0	0	-
Platoon blocked, %			-			-
Mov Cap-1 Maneuver	295	516	-	-	-	-
Mov Cap-2 Maneuver	295	-	-	-	-	-
Stage 1	562	-	-	-	-	-
Stage 2	707	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	25.5	0	0
HCM LOS	D		

Minor Lane/Major Mvmt	NBTWBLn1	SBT
Capacity (veh/h)	- 314	-
HCM Lane V/C Ratio	- 0.45	-
HCM Control Delay (s)	- 25.5	-
HCM Lane LOS	- D	-
HCM 95th %tile Q(veh)	- 2.2	-



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕						↕	
Traffic Volume (vph)	58	118	46	202	118	469	0	0	0	85	252	105
Future Volume (vph)	58	118	46	202	118	469	0	0	0	85	252	105
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		0.972			0.920							0.968
Flt Protected		0.987			0.987							0.991
Satd. Flow (prot)	0	1787	0	0	1691	0	0	0	0	0	1787	0
Flt Permitted		0.987			0.987							0.991
Satd. Flow (perm)	0	1787	0	0	1691	0	0	0	0	0	1787	0
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		832			1070			907			541	
Travel Time (s)		18.9			24.3			20.6			12.3	
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)	63	128	50	220	128	510	0	0	0	92	274	114
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	241	0	0	858	0	0	0	0	0	480	0
Sign Control		Stop			Stop			Stop			Stop	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 92.1% ICU Level of Service F

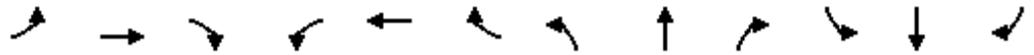
Analysis Period (min) 15

Intersection	
Intersection Delay, s/veh	118.4
Intersection LOS	F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕						↕	
Traffic Vol, veh/h	58	118	46	202	118	469	0	0	0	85	252	105
Future Vol, veh/h	58	118	46	202	118	469	0	0	0	85	252	105
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	63	128	50	220	128	510	0	0	0	92	274	114
Number of Lanes	0	1	0	0	1	0	0	0	0	0	1	0

Approach	EB	WB	SB
Opposing Approach	WB	EB	
Opposing Lanes	1	1	0
Conflicting Approach Left	SB		WB
Conflicting Lanes Left	1	0	1
Conflicting Approach Right		SB	EB
Conflicting Lanes Right	0	1	1
HCM Control Delay	15.6	194.4	34.5
HCM LOS	C	F	D

Lane	EBLn1	WBLn1	SBLn1
Vol Left, %	26%	26%	19%
Vol Thru, %	53%	15%	57%
Vol Right, %	21%	59%	24%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	222	789	442
LT Vol	58	202	85
Through Vol	118	118	252
RT Vol	46	469	105
Lane Flow Rate	241	858	480
Geometry Grp	1	1	1
Degree of Util (X)	0.44	1.37	0.822
Departure Headway (Hd)	7.103	5.752	6.951
Convergence, Y/N	Yes	Yes	Yes
Cap	512	635	524
Service Time	5.103	3.765	4.951
HCM Lane V/C Ratio	0.471	1.351	0.916
HCM Control Delay	15.6	194.4	34.5
HCM Lane LOS	C	F	D
HCM 95th-tile Q	2.2	37.4	8.1



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕				
Traffic Volume (vph)	50	152	0	0	348	185	437	12	180	0	0	0
Future Volume (vph)	50	152	0	0	348	185	437	12	180	0	0	0
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
Fr _t					0.953			0.961				
Fl _t Protected		0.988						0.966				
Satd. Flow (prot)	0	1840	0	0	1775	0	0	1729	0	0	0	0
Fl _t Permitted		0.988						0.966				
Satd. Flow (perm)	0	1840	0	0	1775	0	0	1729	0	0	0	0
Link Speed (mph)		30			30			30				30
Link Distance (ft)		1070			714			989				751
Travel Time (s)		24.3			16.2			22.5				17.1
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)	54	165	0	0	378	201	475	13	196	0	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	219	0	0	579	0	0	684	0	0	0	0
Sign Control		Stop			Stop			Stop			Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	86.2%
ICU Level of Service	E
Analysis Period (min)	15

Intersection	
Intersection Delay, s/veh	87
Intersection LOS	F

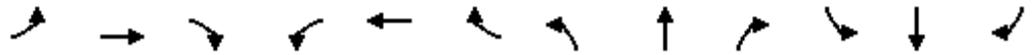
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔				
Traffic Vol, veh/h	50	152	0	0	348	185	437	12	180	0	0	0
Future Vol, veh/h	50	152	0	0	348	185	437	12	180	0	0	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	54	165	0	0	378	201	475	13	196	0	0	0
Number of Lanes	0	1	0	0	1	0	0	1	0	0	0	0

Approach	EB	WB	NB
Opposing Approach	WB	EB	
Opposing Lanes	1	1	0
Conflicting Approach Left		NB	EB
Conflicting Lanes Left	0	1	1
Conflicting Approach Right	NB		WB
Conflicting Lanes Right	1	0	1
HCM Control Delay	16.3	60.6	132.1
HCM LOS	C	F	F

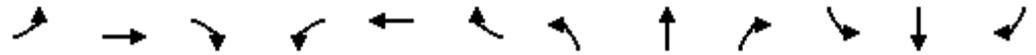
Lane	NBLn1	EBLn1	WBLn1
Vol Left, %	69%	25%	0%
Vol Thru, %	2%	75%	65%
Vol Right, %	29%	0%	35%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	629	202	533
LT Vol	437	50	0
Through Vol	12	152	348
RT Vol	180	0	185
Lane Flow Rate	684	220	579
Geometry Grp	1	1	1
Degree of Util (X)	1.21	0.426	0.984
Departure Headway (Hd)	6.369	7.701	6.682
Convergence, Y/N	Yes	Yes	Yes
Cap	574	470	545
Service Time	4.369	5.701	4.682
HCM Lane V/C Ratio	1.192	0.468	1.062
HCM Control Delay	132.1	16.3	60.6
HCM Lane LOS	F	C	F
HCM 95th-tile Q	25.1	2.1	13.6

FedEx- Middletown
101: Main & Rte 372

2030 Base w/ Mid Vols
Timing Plan: PM Peak Hr



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕	↗	↖	↘			↕			↕	
Traffic Volume (vph)	5	449	136	257	494	79	190	17	248	73	28	17
Future Volume (vph)	5	449	136	257	494	79	190	17	248	73	28	17
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	15	12	12	15	12
Storage Length (ft)	0		150	100		0	0		0	0		0
Storage Lanes	0		1	1		0	0		0	0		0
Taper Length (ft)	25			50			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850		0.979			0.926			0.981	
Flt Protected		0.999		0.950				0.980			0.970	
Satd. Flow (prot)	0	1861	1583	1770	1824	0	0	1859	0	0	1950	0
Flt Permitted		0.995		0.375				0.824			0.645	
Satd. Flow (perm)	0	1853	1583	699	1824	0	0	1563	0	0	1297	0
Right Turn on Red			Yes			Yes			Yes			No
Satd. Flow (RTOR)			148		15			80				
Link Speed (mph)		35			35			30				30
Link Distance (ft)		875			2306			2021				579
Travel Time (s)		17.0			44.9			45.9				13.2
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)	5	488	148	279	537	86	207	18	270	79	30	18
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	493	148	279	623	0	0	495	0	0	127	0
Turn Type	Perm	NA	Perm	Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			8				4
Permitted Phases	2		2	6			8			4		
Detector Phase	2	2	2	6	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	15.0	15.0	15.0	15.0	15.0		9.0	9.0		9.0	9.0	
Minimum Split (s)	20.0	20.0	20.0	20.0	20.0		13.0	13.0		13.0	13.0	
Total Split (s)	50.0	50.0	50.0	50.0	50.0		34.0	34.0		34.0	34.0	
Total Split (%)	59.5%	59.5%	59.5%	59.5%	59.5%		40.5%	40.5%		40.5%	40.5%	
Maximum Green (s)	45.0	45.0	45.0	45.0	45.0		30.0	30.0		30.0	30.0	
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	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	
Total Lost Time (s)		5.0	5.0	5.0	5.0			4.0			4.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	4.0	4.0	4.0	4.0	4.0		3.0	3.0		3.0	3.0	
Recall Mode	Min	Min	Min	Min	Min		None	None		None	None	
Act Effct Green (s)		31.1	31.1	31.1	31.1			22.7			22.7	
Actuated g/C Ratio		0.49	0.49	0.49	0.49			0.36			0.36	
v/c Ratio		0.55	0.17	0.82	0.70			0.82			0.28	
Control Delay		14.3	2.5	36.6	17.4			30.2			19.4	
Queue Delay		0.0	0.0	0.0	0.0			0.0			0.0	
Total Delay		14.3	2.5	36.6	17.4			30.2			19.4	
LOS		B	A	D	B			C			B	
Approach Delay		11.6			23.3			30.2			19.4	



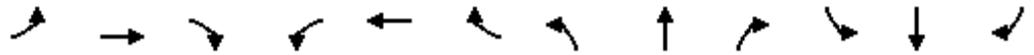
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach LOS		B			C			C				B
Queue Length 50th (ft)		130	0	90	178			149				36
Queue Length 95th (ft)		235	25	#251	321			#369				90
Internal Link Dist (ft)		795			2226			1941				499
Turn Bay Length (ft)			150	100								
Base Capacity (vph)		1359	1200	513	1342			857				679
Starvation Cap Reductn		0	0	0	0			0				0
Spillback Cap Reductn		0	0	0	0			0				0
Storage Cap Reductn		0	0	0	0			0				0
Reduced v/c Ratio		0.36	0.12	0.54	0.46			0.58				0.19

Intersection Summary

Area Type: Other
 Cycle Length: 84
 Actuated Cycle Length: 63.9
 Natural Cycle: 45
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 0.82
 Intersection Signal Delay: 21.2
 Intersection LOS: C
 Intersection Capacity Utilization 94.9%
 ICU Level of Service F
 Analysis Period (min) 15
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

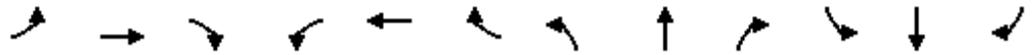
Splits and Phases: 101: Main & Rte 372





Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗			↖					↖	↗	↖
Traffic Volume (vph)	40	873	17	5	876	449	0	0	0	546	5	102
Future Volume (vph)	40	873	17	5	876	449	0	0	0	546	5	102
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	300		0	0		0	0		0	125		125
Storage Lanes	1		0	0		0	0		0	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	0.95	0.95	0.95	0.95	1.00	1.00	1.00	0.95	0.95	1.00
Frt		0.997			0.949							0.850
Flt Protected	0.950									0.950	0.953	
Satd. Flow (prot)	1770	3529	0	0	3359	0	0	0	0	1681	1686	1583
Flt Permitted	0.154				0.955					0.950	0.953	
Satd. Flow (perm)	287	3529	0	0	3208	0	0	0	0	1681	1686	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		2			223							166
Link Speed (mph)		40			40			25			30	
Link Distance (ft)		364			232			215			478	
Travel Time (s)		6.2			4.0			5.9			10.9	
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)	43	949	18	5	952	488	0	0	0	593	5	111
Shared Lane Traffic (%)										50%		
Lane Group Flow (vph)	43	967	0	0	1445	0	0	0	0	296	302	111
Turn Type	Perm	NA		Perm	NA					Split	NA	Prot
Protected Phases		1 8			1 2 5 6					7	7	7
Permitted Phases	1 8			1 2 5 6	8							
Detector Phase	1	1		1 2 5 6	1					7	7	7
Switch Phase												
Minimum Initial (s)										7.0	7.0	7.0
Minimum Split (s)										11.3	11.3	11.3
Total Split (s)										19.3	19.3	19.3
Total Split (%)										17.3%	17.3%	17.3%
Maximum Green (s)										15.0	15.0	15.0
Yellow Time (s)										3.2	3.2	3.2
All-Red Time (s)										1.1	1.1	1.1
Lost Time Adjust (s)										0.0	0.0	0.0
Total Lost Time (s)										4.3	4.3	4.3
Lead/Lag										Lead	Lead	Lead
Lead-Lag Optimize?												
Vehicle Extension (s)										1.0	1.0	1.0
Recall Mode										None	None	None
Act Effct Green (s)	24.1	24.1			75.6					15.1	15.1	15.1
Actuated g/C Ratio	0.23	0.23			0.73					0.15	0.15	0.15
v/c Ratio	0.64	1.17			0.57					1.21	1.23	0.30
Control Delay	82.5	125.9			3.5					164.9	171.7	3.7
Queue Delay	0.0	0.1			2.0					1.7	1.6	0.0
Total Delay	82.5	125.9			5.6					166.6	173.3	3.7
LOS	F	F			A					F	F	A
Approach Delay		124.1			5.6						144.0	
Approach LOS		F			A						F	

Lane Group	Ø1	Ø2	Ø3	Ø4	Ø5	Ø6	Ø8
Lane Configurations							
Traffic Volume (vph)							
Future Volume (vph)							
Ideal Flow (vphpl)							
Storage Length (ft)							
Storage Lanes							
Taper Length (ft)							
Lane Util. Factor							
Frt							
Flt Protected							
Satd. Flow (prot)							
Flt Permitted							
Satd. Flow (perm)							
Right Turn on Red							
Satd. Flow (RTOR)							
Link Speed (mph)							
Link Distance (ft)							
Travel Time (s)							
Peak Hour Factor							
Adj. Flow (vph)							
Shared Lane Traffic (%)							
Lane Group Flow (vph)							
Turn Type							
Protected Phases	1	2	3	4	5	6	8
Permitted Phases							
Detector Phase							
Switch Phase							
Minimum Initial (s)	15.0	1.0	7.0	1.0	5.0	10.0	1.0
Minimum Split (s)	20.0	5.6	10.8	3.1	8.6	14.7	3.1
Total Split (s)	29.0	5.6	20.8	3.1	18.6	34.7	3.1
Total Split (%)	26%	5%	19%	3%	17%	31%	3%
Maximum Green (s)	24.0	1.0	17.0	1.0	15.0	30.0	1.0
Yellow Time (s)	3.0	4.0	3.2	2.0	3.0	3.2	2.0
All-Red Time (s)	2.0	0.6	0.6	0.1	0.6	1.5	0.1
Lost Time Adjust (s)							
Total Lost Time (s)							
Lead/Lag			Lead	Lag	Lead	Lag	Lag
Lead-Lag Optimize?							
Vehicle Extension (s)	3.0	3.0	1.0	1.0	1.0	3.0	3.0
Recall Mode	Min	Max	None	None	None	None	None
Act Effct Green (s)							
Actuated g/C Ratio							
v/c Ratio							
Control Delay							
Queue Delay							
Total Delay							
LOS							
Approach Delay							
Approach LOS							



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 50th (ft)	27	~428			71					~266	~275	0
Queue Length 95th (ft)	#94	#586			m88					#463	#473	15
Internal Link Dist (ft)		284			152			135			398	
Turn Bay Length (ft)	300									125		125
Base Capacity (vph)	67	827			2521					245	246	373
Starvation Cap Reductn	0	0			880					0	0	0
Spillback Cap Reductn	0	9			0					27	27	0
Storage Cap Reductn	0	0			0					0	0	0
Reduced v/c Ratio	0.64	1.18			0.88					1.36	1.38	0.30

Intersection Summary

Area Type: Other
 Cycle Length: 111.8
 Actuated Cycle Length: 103.2
 Natural Cycle: 100
 Control Type: Semi Act-Uncoord
 Maximum v/c Ratio: 1.23
 Intersection Signal Delay: 74.4
 Intersection Capacity Utilization 65.3%
 Analysis Period (min) 15
 Intersection LOS: E
 ICU Level of Service C

~ 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: 102: McD/Sebethe & Rte 372

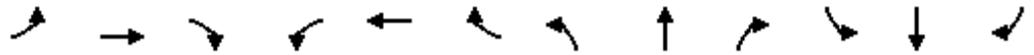
#103#103 → Ø4 → Ø1 29.8 s	#102#103 ← Ø5 5.6 s	#102#103 ← Ø6 18.6 s	#102#103 ← Ø6 34.7 s	#103 ↙ Ø3 20.8 s	#102#103 ↙ Ø7 19.3 s	#102 → Ø8 5.1 s
---------------------------------	---------------------------	----------------------------	----------------------------	------------------------	----------------------------	-----------------------

Lane Group	Ø1	Ø2	Ø3	Ø4	Ø5	Ø6	Ø8
Queue Length 50th (ft)							
Queue Length 95th (ft)							
Internal Link Dist (ft)							
Turn Bay Length (ft)							
Base Capacity (vph)							
Starvation Cap Reductn							
Spillback Cap Reductn							
Storage Cap Reductn							
Reduced v/c Ratio							
Intersection Summary							



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↘	↗	↘	↘	↗	↘	↘	↗	↘	↘	↗	↘
Traffic Volume (vph)	119	1181	95	70	778	157	174	19	347	461	252	356
Future Volume (vph)	119	1181	95	70	778	157	174	19	347	461	252	356
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	325		125	375		0	460		325
Storage Lanes	1		1	1		1	1		1	1		2
Taper Length (ft)	25			50			25			25		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	0.95	1.00
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	3539	1568	1752	3539	1583	1752	1845	1568	1770	3505	1583
Flt Permitted	0.950			0.950			0.521			0.744		
Satd. Flow (perm)	1770	3539	1568	1752	3539	1583	961	1845	1568	1386	3505	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			208			159			322			387
Link Speed (mph)		40			40			35				35
Link Distance (ft)		232			1355			2498				741
Travel Time (s)		4.0			23.1			48.7				14.4
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	2%	2%	3%	3%	2%	2%	3%	3%	3%	2%	3%	2%
Adj. Flow (vph)	129	1284	103	76	846	171	189	21	377	501	274	387
Shared Lane Traffic (%)												
Lane Group Flow (vph)	129	1284	103	76	846	171	189	21	377	501	274	387
Turn Type	Prot	NA	Free	Prot	NA	custom	pm+pt	NA	Free	pm+pt	NA	Prot
Protected Phases	7	1 2 4		3	1 8	1	5	6		5	6	6
Permitted Phases			Free				6		Free	6		
Detector Phase	7	1 2 4		3	1 8	1	5	6		5 6	6	6
Switch Phase												
Minimum Initial (s)	7.0			7.0		15.0	5.0	10.0		5.0	10.0	10.0
Minimum Split (s)	11.3			10.8		20.0	8.6	14.7		8.6	14.7	14.7
Total Split (s)	19.3			20.8		29.0	18.6	34.7		18.6	34.7	34.7
Total Split (%)	17.3%			18.6%		25.9%	16.6%	31.0%		16.6%	31.0%	31.0%
Maximum Green (s)	15.0			17.0		24.0	15.0	30.0		15.0	30.0	30.0
Yellow Time (s)	3.2			3.2		3.0	3.0	3.2		3.0	3.2	3.2
All-Red Time (s)	1.1			0.6		2.0	0.6	1.5		0.6	1.5	1.5
Lost Time Adjust (s)	0.0			0.0		0.0	0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	4.3			3.8		5.0	3.6	4.7		3.6	4.7	4.7
Lead/Lag	Lead			Lead			Lead	Lag		Lead	Lag	Lag
Lead-Lag Optimize?												
Vehicle Extension (s)	1.0			1.0		3.0	1.0	3.0		1.0	3.0	3.0
Recall Mode	None			None		Min	None	None		None	None	None
Act Effct Green (s)	15.1	42.2	103.2	8.8	24.1	24.1	38.6	22.4	103.2	38.6	22.4	22.4
Actuated g/C Ratio	0.15	0.41	1.00	0.09	0.23	0.23	0.37	0.22	1.00	0.37	0.22	0.22
v/c Ratio	0.50	0.89	0.07	0.51	1.02	0.35	0.40	0.05	0.24	0.87	0.36	0.60
Control Delay	54.0	9.3	0.0	59.1	77.6	9.2	22.3	30.5	0.4	43.9	34.8	7.5
Queue Delay	1.3	35.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	55.4	44.9	0.0	59.1	77.6	9.2	22.4	30.5	0.4	43.9	34.8	7.5
LOS	E	D	A	E	E	A	C	C	A	D	C	A
Approach Delay		42.7			65.6			8.5			29.6	

Lane Group	Ø2	Ø4	Ø8
Lane Configurations			
Traffic Volume (vph)			
Future Volume (vph)			
Ideal Flow (vphpl)			
Storage Length (ft)			
Storage Lanes			
Taper Length (ft)			
Lane Util. Factor			
Frt			
Flt Protected			
Satd. Flow (prot)			
Flt Permitted			
Satd. Flow (perm)			
Right Turn on Red			
Satd. Flow (RTOR)			
Link Speed (mph)			
Link Distance (ft)			
Travel Time (s)			
Peak Hour Factor			
Heavy Vehicles (%)			
Adj. Flow (vph)			
Shared Lane Traffic (%)			
Lane Group Flow (vph)			
Turn Type			
Protected Phases	2	4	8
Permitted Phases			
Detector Phase			
Switch Phase			
Minimum Initial (s)	1.0	1.0	1.0
Minimum Split (s)	5.6	3.1	3.1
Total Split (s)	5.6	3.1	3.1
Total Split (%)	5%	3%	3%
Maximum Green (s)	1.0	1.0	1.0
Yellow Time (s)	4.0	2.0	2.0
All-Red Time (s)	0.6	0.1	0.1
Lost Time Adjust (s)			
Total Lost Time (s)			
Lead/Lag		Lag	Lag
Lead-Lag Optimize?			
Vehicle Extension (s)	3.0	1.0	3.0
Recall Mode	Max	None	None
Act Effct Green (s)			
Actuated g/C Ratio			
v/c Ratio			
Control Delay			
Queue Delay			
Total Delay			
LOS			
Approach Delay			

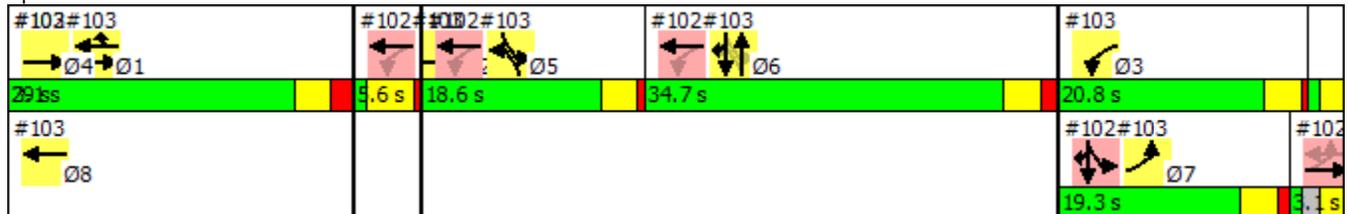


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach LOS	D			E			A			C		
Queue Length 50th (ft)	68	193	0	51	~335	6	80	11	0	265	81	0
Queue Length 95th (ft)	m59	m167	m0	99	#483	63	130	31	0	#390	118	74
Internal Link Dist (ft)	152			1275			2418			661		
Turn Bay Length (ft)				325			125			460		
Base Capacity (vph)	258	1445	1568	290	828	491	475	539	1568	679	1025	736
Starvation Cap Reductn	38	248	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	11	0	0	0	0	3
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.59	1.07	0.07	0.26	1.02	0.35	0.41	0.04	0.24	0.74	0.27	0.53

Intersection Summary

Area Type: Other
 Cycle Length: 111.8
 Actuated Cycle Length: 103.2
 Natural Cycle: 100
 Control Type: Semi Act-Uncoord
 Maximum v/c Ratio: 1.23
 Intersection Signal Delay: 40.4
 Intersection LOS: D
 Intersection Capacity Utilization 87.1%
 ICU Level of Service E
 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: 103: Ind Park/I91SB & Rte 372



Lane Group	Ø2	Ø4	Ø8
Approach LOS			
Queue Length 50th (ft)			
Queue Length 95th (ft)			
Internal Link Dist (ft)			
Turn Bay Length (ft)			
Base Capacity (vph)			
Starvation Cap Reductn			
Spillback Cap Reductn			
Storage Cap Reductn			
Reduced v/c Ratio			
Intersection Summary			



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↖	↗↗	↖↖	↖	↗↗	↖
Traffic Volume (vph)	592	1403	844	281	362	138
Future Volume (vph)	592	1403	844	281	362	138
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	725			225	200	110
Storage Lanes	1			1	0	1
Taper Length (ft)	25				75	
Lane Util. Factor	1.00	0.95	0.95	1.00	0.97	1.00
Frt				0.850		0.850
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1770	3539	3539	1583	3433	1583
Flt Permitted	0.135				0.950	
Satd. Flow (perm)	251	3539	3539	1583	3433	1583
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)				305		66
Link Speed (mph)		40	40		35	
Link Distance (ft)		1355	610		341	
Travel Time (s)		23.1	10.4		6.6	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	643	1525	917	305	393	150
Shared Lane Traffic (%)						
Lane Group Flow (vph)	643	1525	917	305	393	150
Turn Type	pm+pt	NA	NA	Perm	Prot	pt+ov
Protected Phases	5	2	6		4	4 5
Permitted Phases	2			6		
Detector Phase	5	2	6	6	4	4
Switch Phase						
Minimum Initial (s)	5.0	15.0	15.0	15.0	7.0	
Minimum Split (s)	9.0	20.0	20.0	20.0	11.0	
Total Split (s)	20.0	60.0	40.0	40.0	20.0	
Total Split (%)	25.0%	75.0%	50.0%	50.0%	25.0%	
Maximum Green (s)	16.0	55.0	35.0	35.0	16.0	
Yellow Time (s)	3.0	4.0	4.0	4.0	3.0	
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	4.0	5.0	5.0	5.0	4.0	
Lead/Lag	Lead		Lag	Lag		
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	C-Min	C-Min	C-Min	None	
Act Effct Green (s)	57.3	56.3	25.7	25.7	14.7	45.3
Actuated g/C Ratio	0.72	0.70	0.32	0.32	0.18	0.57
v/c Ratio	0.94	0.61	0.81	0.43	0.62	0.16
Control Delay	45.9	8.0	30.4	4.1	34.3	6.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	45.9	8.0	30.4	4.1	34.3	6.4
LOS	D	A	C	A	C	A
Approach Delay		19.2	23.9		26.6	
Approach LOS		B	C		C	



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Queue Length 50th (ft)	248	171	217	0	94	18
Queue Length 95th (ft)	#573	275	250	45	130	54
Internal Link Dist (ft)		1275	530		261	
Turn Bay Length (ft)	725			225	200	110
Base Capacity (vph)	684	2520	1548	864	715	911
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.94	0.61	0.59	0.35	0.55	0.16

Intersection Summary

Area Type: Other
 Cycle Length: 80
 Actuated Cycle Length: 80
 Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBT, Start of Yellow
 Natural Cycle: 60
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.94
 Intersection Signal Delay: 21.7
 Intersection LOS: C
 Intersection Capacity Utilization 77.3%
 ICU Level of Service D
 Analysis Period (min) 15
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

Splits and Phases: 104: Rte 372 & I91NB





Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	0	0	0	512	406	0
Future Volume (vph)	0	0	0	512	406	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	0.95	0.95	0.95	0.95
Frt						
Flt Protected						
Satd. Flow (prot)	1267	0	0	3505	3505	0
Flt Permitted						
Satd. Flow (perm)	1267	0	0	3505	3505	0
Link Speed (mph)	25			35	35	
Link Distance (ft)	124			135	2498	
Travel Time (s)	3.4			2.6	48.7	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	50%	50%	50%	3%	3%	50%
Adj. Flow (vph)	0	0	0	557	441	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	0	557	441	0
Sign Control	Stop			Free	Free	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	17.5%
ICU Level of Service	A
Analysis Period (min)	15

Intersection						
Int Delay, s/veh	0					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	T			T		
Traffic Vol, veh/h	0	0	0	512	406	0
Future Vol, veh/h	0	0	0	512	406	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	50	50	50	3	3	50
Mvmt Flow	0	0	0	557	441	0

Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	720	221	441	0	-	0
Stage 1	441	-	-	-	-	-
Stage 2	279	-	-	-	-	-
Critical Hdwy	7.8	7.9	5.1	-	-	-
Critical Hdwy Stg 1	6.8	-	-	-	-	-
Critical Hdwy Stg 2	6.8	-	-	-	-	-
Follow-up Hdwy	4	3.8	2.7	-	-	-
Pot Cap-1 Maneuver	275	654	838	-	-	-
Stage 1	495	-	-	-	-	-
Stage 2	618	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	275	654	838	-	-	-
Mov Cap-2 Maneuver	275	-	-	-	-	-
Stage 1	495	-	-	-	-	-
Stage 2	618	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	0	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	838	-	-	-	-
HCM Lane V/C Ratio	-	-	-	-	-
HCM Control Delay (s)	0	-	0	-	-
HCM Lane LOS	A	-	A	-	-
HCM 95th %tile Q(veh)	0	-	-	-	-



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	6	1	1	506	399	7
Future Volume (vph)	6	1	1	506	399	7
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	240	0			100
Storage Lanes	1	1	0			1
Taper Length (ft)	25		25			
Lane Util. Factor	1.00	1.00	0.95	0.95	1.00	1.00
Frt		0.850				0.850
Flt Protected	0.950					
Satd. Flow (prot)	902	808	0	3499	1845	808
Flt Permitted	0.950					
Satd. Flow (perm)	902	808	0	3499	1845	808
Link Speed (mph)	30			40	40	
Link Distance (ft)	754			943	1253	
Travel Time (s)	17.1			16.1	21.4	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	100%	100%	100%	3%	3%	100%
Adj. Flow (vph)	7	1	1	550	434	8
Shared Lane Traffic (%)						
Lane Group Flow (vph)	7	1	0	551	434	8
Sign Control	Stop			Free	Free	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	31.0% ICU Level of Service A
Analysis Period (min)	15

Intersection

Int Delay, s/veh	0.1					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↙	↗		↕↕	↕	↗
Traffic Vol, veh/h	6	1	1	506	399	7
Future Vol, veh/h	6	1	1	506	399	7
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	Free
Storage Length	0	240	-	-	-	100
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	100	100	100	3	3	100
Mvmt Flow	7	1	1	550	434	8

Major/Minor

	Minor2	Major1	Major2			
Conflicting Flow All	711	434	434	0	-	0
Stage 1	434	-	-	-	-	-
Stage 2	277	-	-	-	-	-
Critical Hdwy	8.1	7.7	5.6	-	-	-
Critical Hdwy Stg 1	6.9	-	-	-	-	-
Critical Hdwy Stg 2	7.3	-	-	-	-	-
Follow-up Hdwy	4.45	4.25	3.15	-	-	-
Pot Cap-1 Maneuver	246	428	699	-	-	0
Stage 1	455	-	-	-	-	0
Stage 2	545	-	-	-	-	0
Platoon blocked, %				-	-	
Mov Cap-1 Maneuver	246	428	699	-	-	-
Mov Cap-2 Maneuver	246	-	-	-	-	-
Stage 1	454	-	-	-	-	-
Stage 2	545	-	-	-	-	-

Approach

	EB	NB	SB
HCM Control Delay, s	19.1	0	0
HCM LOS	C		

Minor Lane/Major Mvmt

	NBL	NBT	EBLn1	EBLn2	SBT
Capacity (veh/h)	699	-	246	428	-
HCM Lane V/C Ratio	0.002	-	0.027	0.003	-
HCM Control Delay (s)	10.2	0	20	13.4	-
HCM Lane LOS	B	A	C	B	-
HCM 95th %tile Q(veh)	0	-	0.1	0	-



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↔		↙	↙
Traffic Volume (vph)	126	219	134	75	219	220
Future Volume (vph)	126	219	134	75	219	220
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.951		0.932	
Flt Protected		0.982			0.976	
Satd. Flow (prot)	0	1823	1765	0	1686	0
Flt Permitted		0.982			0.976	
Satd. Flow (perm)	0	1823	1765	0	1686	0
Link Speed (mph)		30	30		30	
Link Distance (ft)		1107	1054		3274	
Travel Time (s)		25.2	24.0		74.4	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	3%	2%	2%	3%	3%	2%
Adj. Flow (vph)	137	238	146	82	238	239
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	375	228	0	477	0
Sign Control		Free	Free		Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	65.7%
ICU Level of Service	C
Analysis Period (min)	15

Intersection

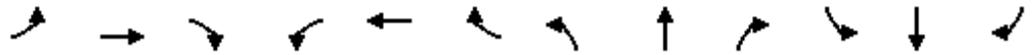
Int Delay, s/veh 26

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↕		↕	
Traffic Vol, veh/h	126	219	134	75	219	220
Future Vol, veh/h	126	219	134	75	219	220
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	3	2	2	3	3	2
Mvmt Flow	137	238	146	82	238	239

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	228	0	-	0	699 187
Stage 1	-	-	-	-	187 -
Stage 2	-	-	-	-	512 -
Critical Hdwy	4.13	-	-	-	6.43 6.22
Critical Hdwy Stg 1	-	-	-	-	5.43 -
Critical Hdwy Stg 2	-	-	-	-	5.43 -
Follow-up Hdwy	2.227	-	-	-	3.527 3.318
Pot Cap-1 Maneuver	1334	-	-	-	405 855
Stage 1	-	-	-	-	843 -
Stage 2	-	-	-	-	600 -
Platoon blocked, %		-	-	-	
Mov Cap-1 Maneuver	1334	-	-	-	357 855
Mov Cap-2 Maneuver	-	-	-	-	357 -
Stage 1	-	-	-	-	744 -
Stage 2	-	-	-	-	600 -

Approach	EB	WB	SB
HCM Control Delay, s	2.9	0	56.6
HCM LOS			F

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1334	-	-	-	504
HCM Lane V/C Ratio	0.103	-	-	-	0.947
HCM Control Delay (s)	8	0	-	-	56.6
HCM Lane LOS	A	A	-	-	F
HCM 95th %tile Q(veh)	0.3	-	-	-	11.8



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Volume (vph)	17	0	5	1	2	2	13	422	1	3	374	22
Future Volume (vph)	17	0	5	1	2	2	13	422	1	3	374	22
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		0.971			0.946							0.993
Flt Protected		0.962			0.990			0.999				
Satd. Flow (prot)	0	1740	0	0	1745	0	0	1861	0	0	1850	0
Flt Permitted		0.962			0.990			0.999				
Satd. Flow (perm)	0	1740	0	0	1745	0	0	1861	0	0	1850	0
Link Speed (mph)		30			30			35			30	
Link Distance (ft)		475			567			2074			2021	
Travel Time (s)		10.8			12.9			40.4			45.9	
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)	18	0	5	1	2	2	14	459	1	3	407	24
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	23	0	0	5	0	0	474	0	0	434	0
Sign Control		Stop			Stop			Stop			Stop	

Intersection Summary

Area Type: Other
 Control Type: Unsignalized
 Intersection Capacity Utilization 41.3% ICU Level of Service A
 Analysis Period (min) 15

Intersection	
Intersection Delay, s/veh	13
Intersection LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	17	0	5	1	2	2	13	422	1	3	374	22
Future Vol, veh/h	17	0	5	1	2	2	13	422	1	3	374	22
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	18	0	5	1	2	2	14	459	1	3	407	24
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	9.2	8.8	13.7	12.6
HCM LOS	A	A	B	B

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	3%	77%	20%	1%
Vol Thru, %	97%	0%	40%	94%
Vol Right, %	0%	23%	40%	6%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	436	22	5	399
LT Vol	13	17	1	3
Through Vol	422	0	2	374
RT Vol	1	5	2	22
Lane Flow Rate	474	24	5	434
Geometry Grp	1	1	1	1
Degree of Util (X)	0.588	0.039	0.009	0.539
Departure Headway (Hd)	4.467	5.893	5.715	4.472
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	810	605	623	807
Service Time	2.493	3.958	3.784	2.498
HCM Lane V/C Ratio	0.585	0.04	0.008	0.538
HCM Control Delay	13.7	9.2	8.8	12.6
HCM Lane LOS	B	A	A	B
HCM 95th-tile Q	3.9	0.1	0	3.3



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	11	48	344	23	100	282
Future Volume (vph)	11	48	344	23	100	282
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.890		0.992			
Flt Protected	0.991					0.987
Satd. Flow (prot)	1643	0	1848	0	0	1839
Flt Permitted	0.991					0.987
Satd. Flow (perm)	1643	0	1848	0	0	1839
Link Speed (mph)	25		35			35
Link Distance (ft)	106		712			2074
Travel Time (s)	2.9		13.9			40.4
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	12	52	374	25	109	307
Shared Lane Traffic (%)						
Lane Group Flow (vph)	64	0	399	0	0	416
Sign Control	Stop		Free			Free

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	53.4%
Analysis Period (min)	15
	ICU Level of Service A

Intersection

Int Delay, s/veh 2

Movement WBL WBR NBT NBR SBL SBT

Lane Configurations	W	W	N	N	S	S
Traffic Vol, veh/h	11	48	344	23	100	282
Future Vol, veh/h	11	48	344	23	100	282
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	12	52	374	25	109	307

Major/Minor Minor1 Major1 Major2

Conflicting Flow All	912	387	0	0	399	0
Stage 1	387	-	-	-	-	-
Stage 2	525	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	304	661	-	-	1160	-
Stage 1	686	-	-	-	-	-
Stage 2	593	-	-	-	-	-
Platoon blocked, %			-	-		
Mov Cap-1 Maneuver	270	661	-	-	1160	-
Mov Cap-2 Maneuver	270	-	-	-	-	-
Stage 1	686	-	-	-	-	-
Stage 2	526	-	-	-	-	-

Approach WB NB SB

HCM Control Delay, s	12.9	0	2.2
HCM LOS	B		

Minor Lane/Major Mvmt NBT NBRWBLn1 SBL SBT

Capacity (veh/h)	-	-	520	1160	-
HCM Lane V/C Ratio	-	-	0.123	0.094	-
HCM Control Delay (s)	-	-	12.9	8.4	0
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	0.4	0.3	-



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	27	21	346	63	47	246
Future Volume (vph)	27	21	346	63	47	246
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.940		0.979			
Flt Protected	0.973					0.992
Satd. Flow (prot)	1704	0	1824	0	0	1848
Flt Permitted	0.973					0.992
Satd. Flow (perm)	1704	0	1824	0	0	1848
Link Speed (mph)	25		35			35
Link Distance (ft)	103		859			712
Travel Time (s)	2.8		16.7			13.9
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	29	23	376	68	51	267
Shared Lane Traffic (%)						
Lane Group Flow (vph)	52	0	444	0	0	318
Sign Control	Stop		Free			Free

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	50.9%
Analysis Period (min)	15
	ICU Level of Service A

Intersection						
Int Delay, s/veh	1.4					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	27	21	346	63	47	246
Future Vol, veh/h	27	21	346	63	47	246
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	29	23	376	68	51	267

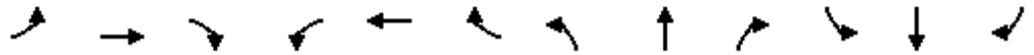
Major/Minor	Minor1	Major1	Major2		
Conflicting Flow All	779	410	0	0	444
Stage 1	410	-	-	-	-
Stage 2	369	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12
Critical Hdwy Stg 1	5.42	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218
Pot Cap-1 Maneuver	364	642	-	-	1116
Stage 1	670	-	-	-	-
Stage 2	699	-	-	-	-
Platoon blocked, %					
Mov Cap-1 Maneuver	344	642	-	-	1116
Mov Cap-2 Maneuver	344	-	-	-	-
Stage 1	670	-	-	-	-
Stage 2	661	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	14.5	0	1.3
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	432	1116
HCM Lane V/C Ratio	-	-	0.121	0.046
HCM Control Delay (s)	-	-	14.5	8.4
HCM Lane LOS	-	-	B	A
HCM 95th %tile Q(veh)	-	-	0.4	0.1

FedEx- Middletown
114: Middle & Bradley/Aetna

2030 Base w/ Mid Vols
Timing Plan: PM Peak Hr



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕	↕		↕	↕	↕	↕	
Traffic Volume (vph)	59	0	57	7	0	7	28	343	3	3	255	35
Future Volume (vph)	59	0	57	7	0	7	28	343	3	3	255	35
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	14	12	12	12	12	12	12	12	12	12	12
Storage Length (ft)	0		0	0		0	0		175	175		0
Storage Lanes	0		0	0		1	0		1	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Fr _t		0.934				0.850			0.850		0.982	
Fl _t Protected		0.975			0.950			0.996		0.950		
Satd. Flow (prot)	0	1809	0	0	1770	1583	0	1855	1583	1770	1829	0
Fl _t Permitted		0.836			0.838			0.964		0.405		
Satd. Flow (perm)	0	1551	0	0	1561	1583	0	1796	1583	754	1829	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		109				191			191		20	
Link Speed (mph)		25			30			35			35	
Link Distance (ft)		519			341			3417			859	
Travel Time (s)		14.2			7.8			66.6			16.7	
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)	64	0	62	8	0	8	30	373	3	3	277	38
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	126	0	0	8	8	0	403	3	3	315	0
Turn Type	Perm	NA		Perm	NA	Free	Perm	NA	Free	pm+pt	NA	
Protected Phases		4			8			2		1	6	
Permitted Phases	4			8		Free	2		Free	6		
Detector Phase	4	4		8	8		2	2		1	6	
Switch Phase												
Minimum Initial (s)	7.0	7.0		7.0	7.0		15.0	15.0		5.0	15.0	
Minimum Split (s)	11.5	11.5		11.5	11.5		19.5	19.5		9.5	19.5	
Total Split (s)	20.0	20.0		20.0	20.0		30.0	30.0		10.0	40.0	
Total Split (%)	33.3%	33.3%		33.3%	33.3%		50.0%	50.0%		16.7%	66.7%	
Maximum Green (s)	15.5	15.5		15.5	15.5		25.5	25.5		5.5	35.5	
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	
Total Lost Time (s)		4.5			4.5			4.5		4.5	4.5	
Lead/Lag							Lag	Lag		Lead		
Lead-Lag Optimize?												
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		Min	Min		None	Min	
Act Effct Green (s)		7.6			7.6	37.3		22.3	37.3	22.9	23.9	
Actuated g/C Ratio		0.20			0.20	1.00		0.60	1.00	0.61	0.64	
v/c Ratio		0.31			0.03	0.01		0.37	0.00	0.00	0.27	
Control Delay		7.2			13.1	0.0		8.2	0.0	4.0	4.8	
Queue Delay		0.0			0.0	0.0		0.0	0.0	0.0	0.0	
Total Delay		7.2			13.1	0.0		8.2	0.0	4.0	4.8	
LOS		A			B	A		A	A	A	A	
Approach Delay		7.2			6.6			8.1			4.8	



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach LOS		A			A			A			A	
Queue Length 50th (ft)		2			1	0		36	0	0	24	
Queue Length 95th (ft)		37			10	0		149	0	2	59	
Internal Link Dist (ft)		439			261			3337			779	
Turn Bay Length (ft)									175	175		
Base Capacity (vph)		726			668	1583		1363	1583	617	1678	
Starvation Cap Reductn		0			0	0		0	0	0	0	
Spillback Cap Reductn		0			0	0		0	0	0	0	
Storage Cap Reductn		0			0	0		0	0	0	0	
Reduced v/c Ratio		0.17			0.01	0.01		0.30	0.00	0.00	0.19	

Intersection Summary

Area Type:	Other
Cycle Length:	60
Actuated Cycle Length:	37.3
Natural Cycle:	45
Control Type:	Actuated-Uncoordinated
Maximum v/c Ratio:	0.37
Intersection Signal Delay:	6.7
Intersection LOS:	A
Intersection Capacity Utilization:	59.8%
ICU Level of Service:	B
Analysis Period (min):	15

Splits and Phases: 114: Middle & Bradley/Aetna





Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	428	123	180	136	187	209
Future Volume (vph)	428	123	180	136	187	209
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.970		0.942			
Flt Protected	0.963					0.977
Satd. Flow (prot)	1723	0	1738	0	0	1802
Flt Permitted	0.963					0.462
Satd. Flow (perm)	1723	0	1738	0	0	852
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)	18		52			
Link Speed (mph)	30		35			35
Link Distance (ft)	1107		4763			3417
Travel Time (s)	25.2		92.8			66.6
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%
Adj. Flow (vph)	465	134	196	148	203	227
Shared Lane Traffic (%)						
Lane Group Flow (vph)	599	0	344	0	0	430
Turn Type	Perm		NA		pm+pt	NA
Protected Phases			2		1	6
Permitted Phases	8				6	
Detector Phase	8		2		1	6
Switch Phase						
Minimum Initial (s)	5.0		15.0		5.0	15.0
Minimum Split (s)	22.5		22.5		9.5	22.5
Total Split (s)	38.0		42.5		9.5	52.0
Total Split (%)	42.2%		47.2%		10.6%	57.8%
Maximum Green (s)	33.5		38.0		5.0	47.5
Yellow Time (s)	3.5		3.5		3.5	3.5
All-Red Time (s)	1.0		1.0		1.0	1.0
Lost Time Adjust (s)	0.0		0.0			0.0
Total Lost Time (s)	4.5		4.5			4.5
Lead/Lag			Lag		Lead	
Lead-Lag Optimize?			Yes		Yes	
Vehicle Extension (s)	3.0		3.0		3.0	3.0
Recall Mode	None		Min		Max	Min
Walk Time (s)	7.0		7.0			7.0
Flash Dont Walk (s)	11.0		11.0			11.0
Pedestrian Calls (#/hr)	0		0			0
Act Effct Green (s)	30.1		30.5			40.4
Actuated g/C Ratio	0.38		0.38			0.51
v/c Ratio	0.91		0.50			0.87
Control Delay	44.2		18.4			37.3
Queue Delay	0.0		0.0			0.0
Total Delay	44.2		18.4			37.3
LOS	D		B			D
Approach Delay	44.2		18.4			37.3

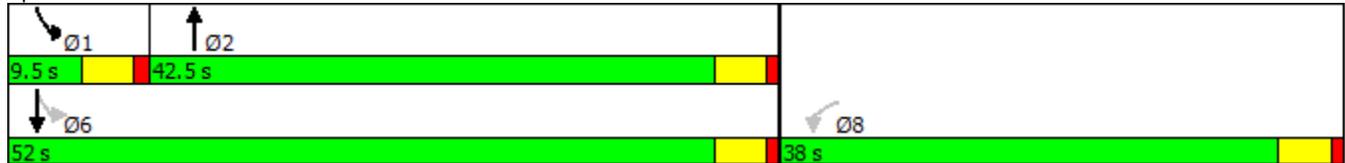


Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Approach LOS	D		B		D	
Queue Length 50th (ft)	311		113		143	
Queue Length 95th (ft)	#525		188		#280	
Internal Link Dist (ft)	1027		4683		3337	
Turn Bay Length (ft)						
Base Capacity (vph)	762		887		589	
Starvation Cap Reductn	0		0		0	
Spillback Cap Reductn	0		0		0	
Storage Cap Reductn	0		0		0	
Reduced v/c Ratio	0.79		0.39		0.73	

Intersection Summary

Area Type: Other
 Cycle Length: 90
 Actuated Cycle Length: 79.9
 Natural Cycle: 80
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 0.91
 Intersection Signal Delay: 35.6
 Intersection LOS: D
 Intersection Capacity Utilization 81.6%
 ICU Level of Service D
 Analysis Period (min) 15
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

Splits and Phases: 115: Middle & Smith





Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	270	22	244	0	0	631
Future Volume (vph)	270	22	244	0	0	631
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.990					
Flt Protected	0.956					
Satd. Flow (prot)	1763	0	1863	0	0	1863
Flt Permitted	0.956					
Satd. Flow (perm)	1763	0	1863	0	0	1863
Link Speed (mph)	30		30			30
Link Distance (ft)	888		541			4763
Travel Time (s)	20.2		12.3			108.3
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	293	24	265	0	0	686
Shared Lane Traffic (%)						
Lane Group Flow (vph)	317	0	265	0	0	686
Sign Control	Stop		Free			Free

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	56.2%
Analysis Period (min)	15
	ICU Level of Service B

Intersection						
Int Delay, s/veh	26.1					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↔		↑			↑
Traffic Vol, veh/h	270	22	244	0	0	631
Future Vol, veh/h	270	22	244	0	0	631
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	293	24	265	0	0	686

Major/Minor	Minor1	Major1	Major2			
Conflicting Flow All	951	265	0	-	-	-
Stage 1	265	-	-	-	-	-
Stage 2	686	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	-	-
Pot Cap-1 Maneuver	~ 288	774	-	0	0	-
Stage 1	779	-	-	0	0	-
Stage 2	500	-	-	0	0	-
Platoon blocked, %			-			-
Mov Cap-1 Maneuver	~ 288	774	-	-	-	-
Mov Cap-2 Maneuver	~ 288	-	-	-	-	-
Stage 1	779	-	-	-	-	-
Stage 2	500	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	104.3	0	0
HCM LOS	F		

Minor Lane/Major Mvmt	NBTWBLn1	SBT
Capacity (veh/h)	- 302	-
HCM Lane V/C Ratio	- 1.051	-
HCM Control Delay (s)	- 104.3	-
HCM Lane LOS	- F	-
HCM 95th %tile Q(veh)	- 11.9	-

Notes
 ~: Volume exceeds capacity \$: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕						↕	
Traffic Volume (vph)	36	197	51	79	169	201	0	0	0	224	418	248
Future Volume (vph)	36	197	51	79	169	201	0	0	0	224	418	248
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		0.976			0.940							0.962
Flt Protected		0.994			0.991							0.988
Satd. Flow (prot)	0	1807	0	0	1735	0	0	0	0	0	1770	0
Flt Permitted		0.994			0.991							0.988
Satd. Flow (perm)	0	1807	0	0	1735	0	0	0	0	0	1770	0
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		832			1070			907			541	
Travel Time (s)		18.9			24.3			20.6			12.3	
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)	39	214	55	86	184	218	0	0	0	243	454	270
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	308	0	0	488	0	0	0	0	0	967	0
Sign Control		Stop			Stop			Stop			Stop	

Intersection Summary

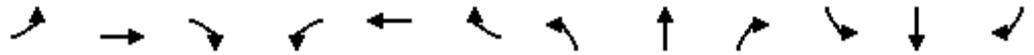
Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	94.3%
ICU Level of Service	F
Analysis Period (min)	15

Intersection	
Intersection Delay, s/veh	196.1
Intersection LOS	F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕						↕	
Traffic Vol, veh/h	36	197	51	79	169	201	0	0	0	224	418	248
Future Vol, veh/h	36	197	51	79	169	201	0	0	0	224	418	248
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	39	214	55	86	184	218	0	0	0	243	454	270
Number of Lanes	0	1	0	0	1	0	0	0	0	0	1	0

Approach	EB	WB	SB
Opposing Approach	WB	EB	
Opposing Lanes	1	1	0
Conflicting Approach Left	SB		WB
Conflicting Lanes Left	1	0	1
Conflicting Approach Right		SB	EB
Conflicting Lanes Right	0	1	1
HCM Control Delay	22.2	40.7	330
HCM LOS	C	E	F

Lane	EBLn1	WBLn1	SBLn1
Vol Left, %	13%	18%	25%
Vol Thru, %	69%	38%	47%
Vol Right, %	18%	45%	28%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	284	449	890
LT Vol	36	79	224
Through Vol	197	169	418
RT Vol	51	201	248
Lane Flow Rate	309	488	967
Geometry Grp	1	1	1
Degree of Util (X)	0.573	0.843	1.68
Departure Headway (Hd)	8.469	7.894	6.251
Convergence, Y/N	Yes	Yes	Yes
Cap	429	464	590
Service Time	6.469	5.894	4.251
HCM Lane V/C Ratio	0.72	1.052	1.639
HCM Control Delay	22.2	40.7	330
HCM Lane LOS	C	E	F
HCM 95th-tile Q	3.5	8.3	55.5



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕				
Traffic Volume (vph)	95	325	0	0	240	79	210	0	247	0	0	0
Future Volume (vph)	95	325	0	0	240	79	210	0	247	0	0	0
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
Fr t					0.967			0.927				
Flt Protected		0.989						0.978				
Satd. Flow (prot)	0	1842	0	0	1801	0	0	1689	0	0	0	0
Flt Permitted		0.989						0.978				
Satd. Flow (perm)	0	1842	0	0	1801	0	0	1689	0	0	0	0
Link Speed (mph)		30			30			30				30
Link Distance (ft)		1070			714			989				751
Travel Time (s)		24.3			16.2			22.5				17.1
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)	103	353	0	0	261	86	228	0	268	0	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	456	0	0	347	0	0	496	0	0	0	0
Sign Control		Stop			Stop			Stop			Stop	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 76.6% ICU Level of Service D

Analysis Period (min) 15

Intersection	
Intersection Delay, s/veh	28.3
Intersection LOS	D

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔				
Traffic Vol, veh/h	95	325	0	0	240	79	210	0	247	0	0	0
Future Vol, veh/h	95	325	0	0	240	79	210	0	247	0	0	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	103	353	0	0	261	86	228	0	268	0	0	0
Number of Lanes	0	1	0	0	1	0	0	1	0	0	0	0

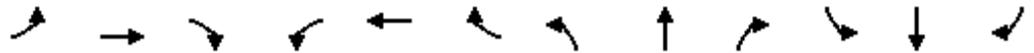
Approach	EB	WB	NB
Opposing Approach	WB	EB	
Opposing Lanes	1	1	0
Conflicting Approach Left		NB	EB
Conflicting Lanes Left	0	1	1
Conflicting Approach Right	NB		WB
Conflicting Lanes Right	1	0	1
HCM Control Delay	30.1	18.9	33.1
HCM LOS	D	C	D

Lane	NBLn1	EBLn1	WBLn1
Vol Left, %	46%	23%	0%
Vol Thru, %	0%	77%	75%
Vol Right, %	54%	0%	25%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	457	420	319
LT Vol	210	95	0
Through Vol	0	325	240
RT Vol	247	0	79
Lane Flow Rate	497	457	347
Geometry Grp	1	1	1
Degree of Util (X)	0.839	0.801	0.61
Departure Headway (Hd)	6.079	6.314	6.338
Convergence, Y/N	Yes	Yes	Yes
Cap	596	571	569
Service Time	4.119	4.362	4.391
HCM Lane V/C Ratio	0.834	0.8	0.61
HCM Control Delay	33.1	30.1	18.9
HCM Lane LOS	D	D	C
HCM 95th-tile Q	8.9	7.8	4.1

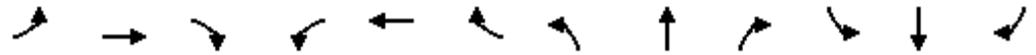
BUILD

FedEx- Middletown
101: Main & Rte 372

2030 Full Build
Timing Plan: AM Peak Hr



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕	↗	↖	↘			↕			↕	
Traffic Volume (vph)	5	281	122	171	366	62	169	22	293	50	17	12
Future Volume (vph)	5	281	122	171	366	62	169	22	293	50	17	12
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	15	12	12	15	12
Storage Length (ft)	0		150	100		0	0		0	0		0
Storage Lanes	0		1	1		0	0		0	0		0
Taper Length (ft)	25			50			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850		0.978			0.918			0.979	
Flt Protected		0.999		0.950				0.983			0.969	
Satd. Flow (prot)	0	1861	1583	1770	1822	0	0	1849	0	0	1944	0
Flt Permitted		0.992		0.546				0.852			0.717	
Satd. Flow (perm)	0	1848	1583	1017	1822	0	0	1603	0	0	1438	0
Right Turn on Red			Yes			Yes			Yes			No
Satd. Flow (RTOR)			133		16			102				
Link Speed (mph)		35			35			30				30
Link Distance (ft)		875			2306			2021				579
Travel Time (s)		17.0			44.9			45.9				13.2
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)	5	305	133	186	398	67	184	24	318	54	18	13
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	310	133	186	465	0	0	526	0	0	85	0
Turn Type	Perm	NA	Perm	Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			8				4
Permitted Phases	2		2	6			8			4		
Detector Phase	2	2	2	6	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	15.0	15.0	15.0	15.0	15.0		9.0	9.0		9.0	9.0	
Minimum Split (s)	20.0	20.0	20.0	20.0	20.0		13.0	13.0		13.0	13.0	
Total Split (s)	50.0	50.0	50.0	50.0	50.0		34.0	34.0		34.0	34.0	
Total Split (%)	59.5%	59.5%	59.5%	59.5%	59.5%		40.5%	40.5%		40.5%	40.5%	
Maximum Green (s)	45.0	45.0	45.0	45.0	45.0		30.0	30.0		30.0	30.0	
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	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	
Total Lost Time (s)		5.0	5.0	5.0	5.0			4.0			4.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	4.0	4.0	4.0	4.0	4.0		3.0	3.0		3.0	3.0	
Recall Mode	Min	Min	Min	Min	Min		None	None		None	None	
Act Effct Green (s)		18.9	18.9	18.9	18.9			19.1			19.1	
Actuated g/C Ratio		0.40	0.40	0.40	0.40			0.40			0.40	
v/c Ratio		0.42	0.19	0.46	0.63			0.75			0.15	
Control Delay		13.6	3.5	16.6	16.8			17.4			10.1	
Queue Delay		0.0	0.0	0.0	0.0			0.0			0.0	
Total Delay		13.6	3.5	16.6	16.8			17.4			10.1	
LOS		B	A	B	B			B			B	
Approach Delay		10.6			16.7			17.4			10.1	



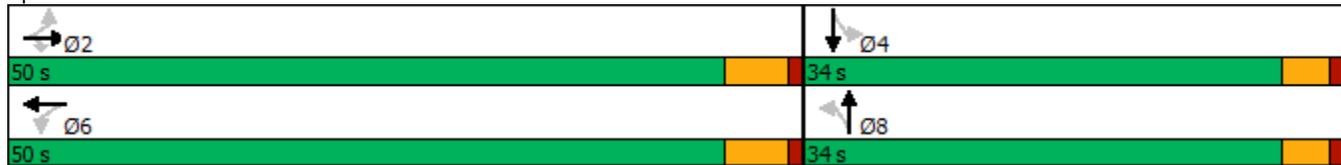
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach LOS		B			B			B			B	
Queue Length 50th (ft)		55	0	34	88			82			13	
Queue Length 95th (ft)		145	28	106	228			229			42	
Internal Link Dist (ft)		795			2226			1941			499	
Turn Bay Length (ft)			150	100								
Base Capacity (vph)		1677	1449	923	1655			1099			955	
Starvation Cap Reductn		0	0	0	0			0			0	
Spillback Cap Reductn		0	0	0	0			0			0	
Storage Cap Reductn		0	0	0	0			0			0	
Reduced v/c Ratio		0.18	0.09	0.20	0.28			0.48			0.09	

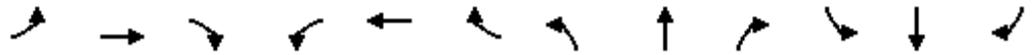
Intersection Summary

Area Type: Other
 Cycle Length: 84
 Actuated Cycle Length: 47.4
 Natural Cycle: 40
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 0.75
 Intersection Signal Delay: 15.0
 Intersection Capacity Utilization 79.2%
 Analysis Period (min) 15

Intersection LOS: B
 ICU Level of Service D

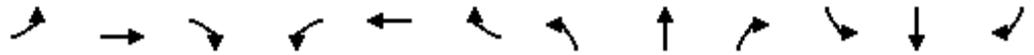
Splits and Phases: 101: Main & Rte 372





Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↘	↗			↖					↘	↗	↖
Traffic Volume (vph)	40	647	28	17	756	394	0	0	0	135	5	50
Future Volume (vph)	40	647	28	17	756	394	0	0	0	135	5	50
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	300		0	0		0	0		0	125		125
Storage Lanes	1		0	0		0	0		0	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	0.95	0.95	0.95	0.95	1.00	1.00	1.00	0.95	0.95	1.00
Frt		0.994			0.949							0.850
Flt Protected	0.950				0.999					0.950	0.955	
Satd. Flow (prot)	1770	3518	0	0	3355	0	0	0	0	1681	1690	1583
Flt Permitted	0.150				0.955					0.950	0.955	
Satd. Flow (perm)	279	3518	0	0	3208	0	0	0	0	1681	1690	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		3			223							166
Link Speed (mph)		40			40			25			30	
Link Distance (ft)		364			232			215			478	
Travel Time (s)		6.2			4.0			5.9			10.9	
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)	43	703	30	18	822	428	0	0	0	147	5	54
Shared Lane Traffic (%)										48%		
Lane Group Flow (vph)	43	733	0	0	1268	0	0	0	0	76	76	54
Turn Type	Perm	NA		Perm	NA					Split	NA	Prot
Protected Phases		1 8			1 2 5 6					7	7	7
Permitted Phases	1 8			1 2 5 6	8							
Detector Phase	1	1		1 2 5 6	1					7	7	7
Switch Phase												
Minimum Initial (s)										7.0	7.0	7.0
Minimum Split (s)										11.3	11.3	11.3
Total Split (s)										19.3	19.3	19.3
Total Split (%)										17.3%	17.3%	17.3%
Maximum Green (s)										15.0	15.0	15.0
Yellow Time (s)										3.2	3.2	3.2
All-Red Time (s)										1.1	1.1	1.1
Lost Time Adjust (s)										0.0	0.0	0.0
Total Lost Time (s)										4.3	4.3	4.3
Lead/Lag										Lead	Lead	Lead
Lead-Lag Optimize?												
Vehicle Extension (s)										1.0	1.0	1.0
Recall Mode										None	None	None
Act Effct Green (s)	25.4	25.4			66.2					9.6	9.6	9.6
Actuated g/C Ratio	0.28	0.28			0.74					0.11	0.11	0.11
v/c Ratio	0.54	0.73			0.50					0.42	0.42	0.17
Control Delay	61.2	36.2			2.5					47.7	47.5	1.2
Queue Delay	0.0	0.0			0.8					0.0	0.0	0.0
Total Delay	61.2	36.2			3.3					47.7	47.5	1.2
LOS	E	D			A					D	D	A
Approach Delay		37.6			3.3						35.4	
Approach LOS		D			A						D	

Lane Group	Ø1	Ø2	Ø3	Ø4	Ø5	Ø6	Ø8
Lane Configurations							
Traffic Volume (vph)							
Future Volume (vph)							
Ideal Flow (vphpl)							
Storage Length (ft)							
Storage Lanes							
Taper Length (ft)							
Lane Util. Factor							
Frt							
Flt Protected							
Satd. Flow (prot)							
Flt Permitted							
Satd. Flow (perm)							
Right Turn on Red							
Satd. Flow (RTOR)							
Link Speed (mph)							
Link Distance (ft)							
Travel Time (s)							
Peak Hour Factor							
Adj. Flow (vph)							
Shared Lane Traffic (%)							
Lane Group Flow (vph)							
Turn Type							
Protected Phases	1	2	3	4	5	6	8
Permitted Phases							
Detector Phase							
Switch Phase							
Minimum Initial (s)	15.0	1.0	7.0	1.0	5.0	10.0	1.0
Minimum Split (s)	20.0	5.6	10.8	3.1	8.6	14.7	3.1
Total Split (s)	29.0	5.6	20.8	3.1	18.6	34.7	3.1
Total Split (%)	26%	5%	19%	3%	17%	31%	3%
Maximum Green (s)	24.0	1.0	17.0	1.0	15.0	30.0	1.0
Yellow Time (s)	3.0	4.0	3.2	2.0	3.0	3.2	2.0
All-Red Time (s)	2.0	0.6	0.6	0.1	0.6	1.5	0.1
Lost Time Adjust (s)							
Total Lost Time (s)							
Lead/Lag			Lead	Lag	Lead	Lag	Lag
Lead-Lag Optimize?							
Vehicle Extension (s)	3.0	3.0	1.0	1.0	1.0	3.0	3.0
Recall Mode	Min	Max	None	None	None	None	None
Act Effct Green (s)							
Actuated g/C Ratio							
v/c Ratio							
Control Delay							
Queue Delay							
Total Delay							
LOS							
Approach Delay							
Approach LOS							

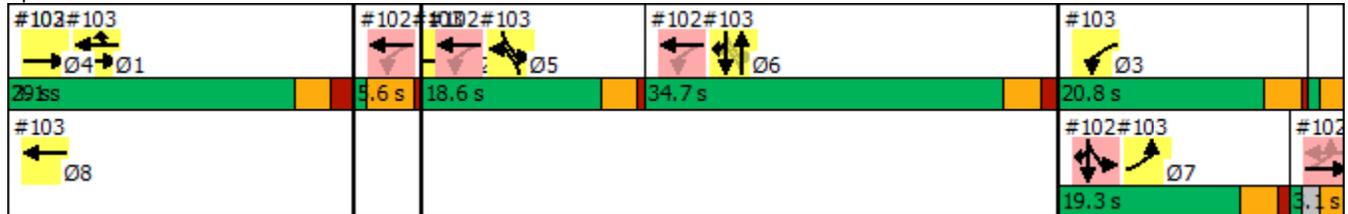


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 50th (ft)	21	195			25					42	42	0
Queue Length 95th (ft)	#95	#390			36					101	101	0
Internal Link Dist (ft)		284			152			135			398	
Turn Bay Length (ft)	300									125		125
Base Capacity (vph)	79	1000			2535					287	288	407
Starvation Cap Reductn	0	0			867					0	0	0
Spillback Cap Reductn	0	0			0					0	0	0
Storage Cap Reductn	0	0			0					0	0	0
Reduced v/c Ratio	0.54	0.73			0.76					0.26	0.26	0.13

Intersection Summary

Area Type: Other
 Cycle Length: 111.8
 Actuated Cycle Length: 89.6
 Natural Cycle: 65
 Control Type: Semi Act-Uncoord
 Maximum v/c Ratio: 0.73
 Intersection Signal Delay: 18.1
 Intersection LOS: B
 Intersection Capacity Utilization 59.7%
 ICU Level of Service B
 Analysis Period (min) 15
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

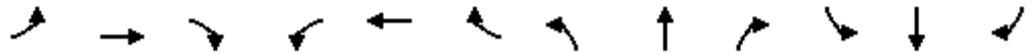
Splits and Phases: 102: McD/Sebethe & Rte 372



Lane Group	Ø1	Ø2	Ø3	Ø4	Ø5	Ø6	Ø8
Queue Length 50th (ft)							
Queue Length 95th (ft)							
Internal Link Dist (ft)							
Turn Bay Length (ft)							
Base Capacity (vph)							
Starvation Cap Reductn							
Spillback Cap Reductn							
Storage Cap Reductn							
Reduced v/c Ratio							
Intersection Summary							

FedEx- Middletown
103: Ind Park/I91SB & Rte 372

2030 Full Build
Timing Plan: AM Peak Hr



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↘	↑↑	↗	↘	↑↑	↗	↘	↑	↗	↘	↑↑	↗
Traffic Volume (vph)	99	588	102	136	607	242	140	39	215	180	278	420
Future Volume (vph)	99	588	102	136	607	242	140	39	215	180	278	420
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	325		125	375		0	460		325
Storage Lanes	1		1	1		1	1		1	1		2
Taper Length (ft)	25			50			25			25		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	0.95	1.00
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	3539	1568	1752	3539	1583	1752	1845	1568	1770	3505	1583
Flt Permitted	0.950			0.950			0.491			0.730		
Satd. Flow (perm)	1770	3539	1568	1752	3539	1583	906	1845	1568	1360	3505	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			208			186			234			457
Link Speed (mph)		40			40			35				35
Link Distance (ft)		232			1355			1244				741
Travel Time (s)		4.0			23.1			24.2				14.4
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	2%	2%	3%	3%	2%	2%	3%	3%	3%	2%	3%	2%
Adj. Flow (vph)	108	639	111	148	660	263	152	42	234	196	302	457
Shared Lane Traffic (%)												
Lane Group Flow (vph)	108	639	111	148	660	263	152	42	234	196	302	457
Turn Type	Prot	NA	Free	Prot	NA	custom	pm+pt	NA	Free	pm+pt	NA	Prot
Protected Phases	7	1 2 4		3	1 8	1	5	6		5	6	6
Permitted Phases			Free				6		Free	6		
Detector Phase	7	1 2 4		3	1 8	1	5	6		5 6	6	6
Switch Phase												
Minimum Initial (s)	7.0			7.0		15.0	5.0	10.0		5.0	10.0	10.0
Minimum Split (s)	11.3			10.8		20.0	8.6	14.7		8.6	14.7	14.7
Total Split (s)	19.3			20.8		29.0	18.6	34.7		18.6	34.7	34.7
Total Split (%)	17.3%			18.6%		25.9%	16.6%	31.0%		16.6%	31.0%	31.0%
Maximum Green (s)	15.0			17.0		24.0	15.0	30.0		15.0	30.0	30.0
Yellow Time (s)	3.2			3.2		3.0	3.0	3.2		3.0	3.2	3.2
All-Red Time (s)	1.1			0.6		2.0	0.6	1.5		0.6	1.5	1.5
Lost Time Adjust (s)	0.0			0.0		0.0	0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	4.3			3.8		5.0	3.6	4.7		3.6	4.7	4.7
Lead/Lag	Lead			Lead			Lead	Lag		Lead	Lag	Lag
Lead-Lag Optimize?												
Vehicle Extension (s)	1.0			1.0		3.0	1.0	3.0		1.0	3.0	3.0
Recall Mode	None			None		Min	None	None		None	None	None
Act Effct Green (s)	9.6	30.2	89.6	11.2	25.4	24.5	28.6	16.9	89.6	28.6	16.9	16.9
Actuated g/C Ratio	0.11	0.34	1.00	0.12	0.28	0.27	0.32	0.19	1.00	0.32	0.19	0.19
v/c Ratio	0.57	0.54	0.07	0.68	0.66	0.46	0.39	0.12	0.15	0.41	0.46	0.68
Control Delay	64.7	4.4	0.1	55.2	34.1	13.4	22.9	31.8	0.2	23.1	34.8	9.0
Queue Delay	0.1	0.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	64.8	5.0	0.1	55.2	34.1	13.4	22.9	31.8	0.2	23.1	34.8	9.0
LOS	E	A	A	E	C	B	C	C	A	C	C	A
Approach Delay		11.9			32.0			11.4			20.1	

Lane Group	Ø2	Ø4	Ø8
Lane Configurations			
Traffic Volume (vph)			
Future Volume (vph)			
Ideal Flow (vphpl)			
Storage Length (ft)			
Storage Lanes			
Taper Length (ft)			
Lane Util. Factor			
Frt			
Flt Protected			
Satd. Flow (prot)			
Flt Permitted			
Satd. Flow (perm)			
Right Turn on Red			
Satd. Flow (RTOR)			
Link Speed (mph)			
Link Distance (ft)			
Travel Time (s)			
Peak Hour Factor			
Heavy Vehicles (%)			
Adj. Flow (vph)			
Shared Lane Traffic (%)			
Lane Group Flow (vph)			
Turn Type			
Protected Phases	2	4	8
Permitted Phases			
Detector Phase			
Switch Phase			
Minimum Initial (s)	1.0	1.0	1.0
Minimum Split (s)	5.6	3.1	3.1
Total Split (s)	5.6	3.1	3.1
Total Split (%)	5%	3%	3%
Maximum Green (s)	1.0	1.0	1.0
Yellow Time (s)	4.0	2.0	2.0
All-Red Time (s)	0.6	0.1	0.1
Lost Time Adjust (s)			
Total Lost Time (s)			
Lead/Lag		Lag	Lag
Lead-Lag Optimize?			
Vehicle Extension (s)	3.0	1.0	3.0
Recall Mode	Max	None	None
Act Effct Green (s)			
Actuated g/C Ratio			
v/c Ratio			
Control Delay			
Queue Delay			
Total Delay			
LOS			
Approach Delay			

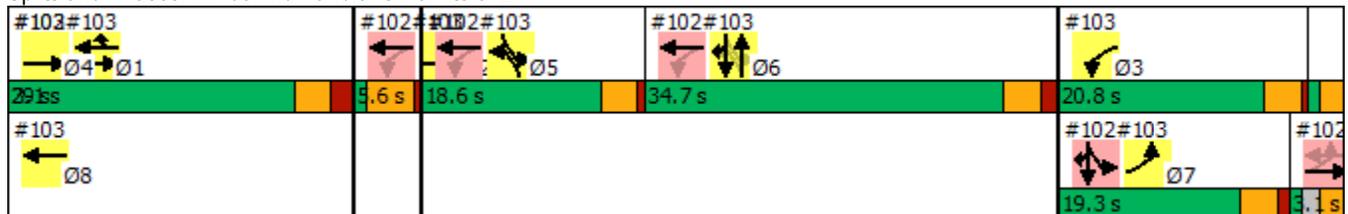


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach LOS	B			C			B			C		
Queue Length 50th (ft)	55	36	0	80	172	33	58	20	0	77	78	0
Queue Length 95th (ft)	m96	57	m0	165	#328	126	109	52	0	138	132	84
Internal Link Dist (ft)	152			1275			1164			661		
Turn Bay Length (ft)				325			125			460		
Base Capacity (vph)	302	1192	1568	338	1004	567	462	630	1568	754	1196	841
Starvation Cap Reductn	11	228	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	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	0
Reduced v/c Ratio	0.37	0.66	0.07	0.44	0.66	0.46	0.33	0.07	0.15	0.26	0.25	0.54

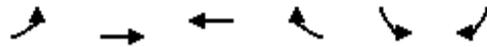
Intersection Summary

Area Type: Other
 Cycle Length: 111.8
 Actuated Cycle Length: 89.6
 Natural Cycle: 65
 Control Type: Semi Act-Uncoord
 Maximum v/c Ratio: 0.73
 Intersection Signal Delay: 20.7
 Intersection LOS: C
 Intersection Capacity Utilization 62.0%
 ICU Level of Service B
 Analysis Period (min) 15
 # 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: 103: Ind Park/I91SB & Rte 372



Lane Group	Ø2	Ø4	Ø8
Approach LOS			
Queue Length 50th (ft)			
Queue Length 95th (ft)			
Internal Link Dist (ft)			
Turn Bay Length (ft)			
Base Capacity (vph)			
Starvation Cap Reductn			
Spillback Cap Reductn			
Storage Cap Reductn			
Reduced v/c Ratio			
Intersection Summary			



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	365	632	696	675	310	271
Future Volume (vph)	365	632	696	675	310	271
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	725			225	200	110
Storage Lanes	1			1	0	1
Taper Length (ft)	25				75	
Lane Util. Factor	1.00	0.95	0.95	1.00	0.97	1.00
Frt				0.850		0.850
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1770	3539	3539	1583	3433	1583
Flt Permitted	0.291				0.950	
Satd. Flow (perm)	542	3539	3539	1583	3433	1583
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)				689		162
Link Speed (mph)		40	40		35	
Link Distance (ft)		1355	610		341	
Travel Time (s)		23.1	10.4		6.6	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	397	687	757	734	337	295
Shared Lane Traffic (%)						
Lane Group Flow (vph)	397	687	757	734	337	295
Turn Type	pm+pt	NA	NA	Perm	Prot	pt+ov
Protected Phases	5	2	6		4	4 5
Permitted Phases	2			6		
Detector Phase	5	2	6	6	4	4
Switch Phase						
Minimum Initial (s)	5.0	15.0	15.0	15.0	7.0	
Minimum Split (s)	9.0	20.0	20.0	20.0	11.0	
Total Split (s)	18.0	70.0	52.0	52.0	20.0	
Total Split (%)	20.0%	77.8%	57.8%	57.8%	22.2%	
Maximum Green (s)	14.0	65.0	47.0	47.0	16.0	
Yellow Time (s)	3.0	4.0	4.0	4.0	3.0	
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	4.0	5.0	5.0	5.0	4.0	
Lead/Lag	Lead		Lag	Lag		
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	C-Min	C-Min	C-Min	None	
Act Effct Green (s)	67.1	66.1	49.0	49.0	14.9	32.0
Actuated g/C Ratio	0.75	0.73	0.54	0.54	0.17	0.36
v/c Ratio	0.68	0.26	0.39	0.62	0.59	0.44
Control Delay	10.9	4.6	14.2	4.7	38.7	10.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	10.9	4.6	14.2	4.7	38.7	10.4
LOS	B	A	B	A	D	B
Approach Delay		6.9	9.5		25.5	
Approach LOS		A	A		C	

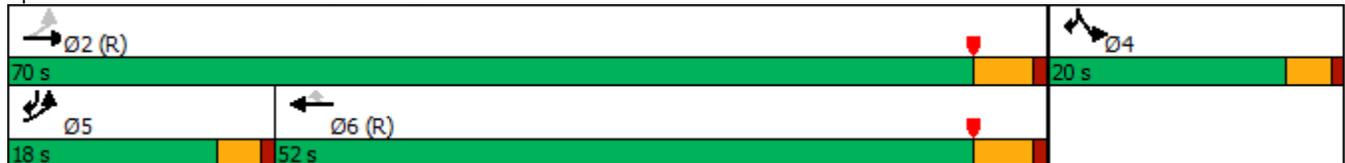


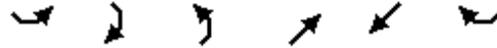
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Queue Length 50th (ft)	58	53	117	11	93	54
Queue Length 95th (ft)	124	98	222	109	125	90
Internal Link Dist (ft)		1275	530		261	
Turn Bay Length (ft)	725			225	200	110
Base Capacity (vph)	613	2639	2018	1198	649	657
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.65	0.26	0.38	0.61	0.52	0.45

Intersection Summary

Area Type:	Other
Cycle Length:	90
Actuated Cycle Length:	90
Offset:	0 (0%), Referenced to phase 2:EBTL and 6:WBT, Start of Yellow
Natural Cycle:	55
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	0.68
Intersection Signal Delay:	11.8
Intersection LOS:	B
Intersection Capacity Utilization	69.5%
ICU Level of Service	C
Analysis Period (min)	15

Splits and Phases: 104: Rte 372 & I91NB





Lane Group	SEL	SER	NEL	NET	SWT	SWR
Lane Configurations						
Traffic Volume (vph)	3	1	1	368	513	2
Future Volume (vph)	3	1	1	368	513	2
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	0.95	0.95	0.95	0.95
Fr _t		0.850			0.999	
Fl _t Protected	0.950					
Satd. Flow (prot)	1203	1077	0	3501	3496	0
Fl _t Permitted	0.950					
Satd. Flow (perm)	1203	1077	0	3501	3496	0
Link Speed (mph)	25			35	35	
Link Distance (ft)	517			425	1602	
Travel Time (s)	14.1			8.3	31.2	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	50%	50%	50%	3%	3%	50%
Adj. Flow (vph)	3	1	1	400	558	2
Shared Lane Traffic (%)						
Lane Group Flow (vph)	3	1	0	401	560	0
Sign Control	Stop			Free	Free	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	24.2%
	ICU Level of Service A
Analysis Period (min)	15

Intersection

Int Delay, s/veh 0.1

Movement	SEL	SER	NEL	NET	SWT	SWR
Lane Configurations						
Traffic Vol, veh/h	3	1	1	368	513	2
Future Vol, veh/h	3	1	1	368	513	2
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	0	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	50	50	50	3	3	50
Mvmt Flow	3	1	1	400	558	2

Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	761	280	560	0	-	0
Stage 1	559	-	-	-	-	-
Stage 2	202	-	-	-	-	-
Critical Hdwy	7.8	7.9	5.1	-	-	-
Critical Hdwy Stg 1	6.8	-	-	-	-	-
Critical Hdwy Stg 2	6.8	-	-	-	-	-
Follow-up Hdwy	4	3.8	2.7	-	-	-
Pot Cap-1 Maneuver	256	592	739	-	-	-
Stage 1	420	-	-	-	-	-
Stage 2	686	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	255	592	739	-	-	-
Mov Cap-2 Maneuver	255	-	-	-	-	-
Stage 1	419	-	-	-	-	-
Stage 2	686	-	-	-	-	-

Approach	SE	NE	SW
HCM Control Delay, s	17.3	0	0
HCM LOS	C		

Minor Lane/Major Mvmt	NEL	NET	SELn1	SELn2	SWT	SWR
Capacity (veh/h)	739	-	255	592	-	-
HCM Lane V/C Ratio	0.001	-	0.013	0.002	-	-
HCM Control Delay (s)	9.9	0	19.3	11.1	-	-
HCM Lane LOS	A	A	C	B	-	-
HCM 95th %tile Q(veh)	0	-	0	0	-	-



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	31	2	1	338	495	19
Future Volume (vph)	31	2	1	338	495	19
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	240	0			100
Storage Lanes	2	1	0			1
Taper Length (ft)	25		25			
Lane Util. Factor	0.97	1.00	0.95	0.95	1.00	1.00
Frt		0.850				0.850
Flt Protected	0.950					
Satd. Flow (prot)	1751	808	0	3496	1845	808
Flt Permitted	0.950					
Satd. Flow (perm)	1751	808	0	3496	1845	808
Link Speed (mph)	30			40	40	
Link Distance (ft)	754			943	820	
Travel Time (s)	17.1			16.1	14.0	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	100%	100%	100%	3%	3%	100%
Adj. Flow (vph)	34	2	1	367	538	21
Shared Lane Traffic (%)						
Lane Group Flow (vph)	34	2	0	368	538	21
Sign Control	Stop			Free	Free	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	36.1% ICU Level of Service A
Analysis Period (min)	15



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↔		↘	↘
Traffic Volume (vph)	200	57	331	161	62	126
Future Volume (vph)	200	57	331	161	62	126
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Fr _t			0.956		0.909	
Fl _t Protected		0.963			0.984	
Satd. Flow (prot)	0	1780	1775	0	1661	0
Fl _t Permitted		0.963			0.984	
Satd. Flow (perm)	0	1780	1775	0	1661	0
Link Speed (mph)		30	30		30	
Link Distance (ft)		1107	1054		3274	
Travel Time (s)		25.2	24.0		74.4	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	3%	2%	2%	3%	3%	2%
Adj. Flow (vph)	217	62	360	175	67	137
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	279	535	0	204	0
Sign Control		Free	Free		Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	62.5%
ICU Level of Service	B
Analysis Period (min)	15

Intersection						
Int Delay, s/veh	6.8					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↔	↔		↔	
Traffic Vol, veh/h	200	57	331	161	62	126
Future Vol, veh/h	200	57	331	161	62	126
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	3	2	2	3	3	2
Mvmt Flow	217	62	360	175	67	137

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	535	0	-	0	944 448
Stage 1	-	-	-	-	448 -
Stage 2	-	-	-	-	496 -
Critical Hdwy	4.13	-	-	-	6.43 6.22
Critical Hdwy Stg 1	-	-	-	-	5.43 -
Critical Hdwy Stg 2	-	-	-	-	5.43 -
Follow-up Hdwy	2.227	-	-	-	3.527 3.318
Pot Cap-1 Maneuver	1028	-	-	-	290 611
Stage 1	-	-	-	-	642 -
Stage 2	-	-	-	-	610 -
Platoon blocked, %		-	-	-	
Mov Cap-1 Maneuver	1028	-	-	-	226 611
Mov Cap-2 Maneuver	-	-	-	-	226 -
Stage 1	-	-	-	-	501 -
Stage 2	-	-	-	-	610 -

Approach	EB	WB	SB
HCM Control Delay, s	7.3	0	23.9
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1028	-	-	-	391
HCM Lane V/C Ratio	0.211	-	-	-	0.523
HCM Control Delay (s)	9.4	0	-	-	23.9
HCM Lane LOS	A	A	-	-	C
HCM 95th %tile Q(veh)	0.8	-	-	-	2.9



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Volume (vph)	17	0	8	0	0	2	5	439	0	1	280	5
Future Volume (vph)	17	0	8	0	0	2	5	439	0	1	280	5
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		0.955			0.865							0.998
Flt Protected		0.968						0.999				
Satd. Flow (prot)	0	1722	0	0	1611	0	0	1861	0	0	1859	0
Flt Permitted		0.968						0.999				
Satd. Flow (perm)	0	1722	0	0	1611	0	0	1861	0	0	1859	0
Link Speed (mph)		30			30			35			30	
Link Distance (ft)		475			567			1767			2021	
Travel Time (s)		10.8			12.9			34.4			45.9	
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)	18	0	9	0	0	2	5	477	0	1	304	5
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	27	0	0	2	0	0	482	0	0	310	0
Sign Control		Stop			Stop			Stop			Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	41.5%
Analysis Period (min)	15
	ICU Level of Service A

Intersection	
Intersection Delay, s/veh	11.9
Intersection LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	17	0	8	0	0	2	5	439	0	1	280	5
Future Vol, veh/h	17	0	8	0	0	2	5	439	0	1	280	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
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	18	0	9	0	0	2	5	477	0	1	304	5
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	8.9	8.1	13.2	10.3
HCM LOS	A	A	B	B

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	1%	68%	0%	0%
Vol Thru, %	99%	0%	0%	98%
Vol Right, %	0%	32%	100%	2%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	444	25	2	286
LT Vol	5	17	0	1
Through Vol	439	0	0	280
RT Vol	0	8	2	5
Lane Flow Rate	483	27	2	311
Geometry Grp	1	1	1	1
Degree of Util (X)	0.582	0.042	0.003	0.388
Departure Headway (Hd)	4.338	5.58	5.079	4.488
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	835	640	702	802
Service Time	2.355	3.627	3.132	2.508
HCM Lane V/C Ratio	0.578	0.042	0.003	0.388
HCM Control Delay	13.2	8.9	8.1	10.3
HCM Lane LOS	B	A	A	B
HCM 95th-tile Q	3.8	0.1	0	1.8



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	0	134	328	7	21	268
Future Volume (vph)	0	134	328	7	21	268
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	0		50	0	
Storage Lanes	1	1		0	0	
Taper Length (ft)	25				25	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.850	0.997			
Flt Protected						0.996
Satd. Flow (prot)	1863	1583	1857	0	0	1855
Flt Permitted						0.996
Satd. Flow (perm)	1863	1583	1857	0	0	1855
Link Speed (mph)	25		35			35
Link Distance (ft)	450		591			1767
Travel Time (s)	12.3		11.5			34.4
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	146	357	8	23	291
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	146	365	0	0	314
Sign Control	Stop		Free			Free

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	34.8%
ICU Level of Service	A
Analysis Period (min)	15

Intersection						
Int Delay, s/veh	2.3					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	134	328	7	21	268
Future Vol, veh/h	0	134	328	7	21	268
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	0	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	146	357	8	23	291

Major/Minor	Minor1	Major1	Major2		
Conflicting Flow All	698	361	0	0	365
Stage 1	361	-	-	-	-
Stage 2	337	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12
Critical Hdwy Stg 1	5.42	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218
Pot Cap-1 Maneuver	407	684	-	-	1194
Stage 1	705	-	-	-	-
Stage 2	723	-	-	-	-
Platoon blocked, %			-	-	-
Mov Cap-1 Maneuver	398	684	-	-	1194
Mov Cap-2 Maneuver	398	-	-	-	-
Stage 1	705	-	-	-	-
Stage 2	706	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	11.7	0	0.6
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	-	684	1194
HCM Lane V/C Ratio	-	-	-	0.213	0.019
HCM Control Delay (s)	-	-	0	11.7	8.1
HCM Lane LOS	-	-	A	B	A
HCM 95th %tile Q(veh)	-	-	-	0.8	0.1



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	51	34	290	7	10	248
Future Volume (vph)	51	34	290	7	10	248
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	0		150	120	
Storage Lanes	1	1		0	0	
Taper Length (ft)	25				25	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.850	0.997			
Flt Protected	0.950					0.998
Satd. Flow (prot)	1770	1583	1857	0	0	1859
Flt Permitted	0.950					0.998
Satd. Flow (perm)	1770	1583	1857	0	0	1859
Link Speed (mph)	30		35			35
Link Distance (ft)	343		438			591
Travel Time (s)	7.8		8.5			11.5
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	55	37	315	8	11	270
Shared Lane Traffic (%)						
Lane Group Flow (vph)	55	37	323	0	0	281
Sign Control	Stop		Free			Free

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	31.2%
ICU Level of Service	A
Analysis Period (min)	15

Intersection						
Int Delay, s/veh	1.8					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	51	34	290	7	10	248
Future Vol, veh/h	51	34	290	7	10	248
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	0	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	55	37	315	8	11	270

Major/Minor	Minor1	Major1	Major2		
Conflicting Flow All	611	319	0	0	323
Stage 1	319	-	-	-	-
Stage 2	292	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12
Critical Hdwy Stg 1	5.42	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218
Pot Cap-1 Maneuver	457	722	-	-	1237
Stage 1	737	-	-	-	-
Stage 2	758	-	-	-	-
Platoon blocked, %					
Mov Cap-1 Maneuver	452	722	-	-	1237
Mov Cap-2 Maneuver	452	-	-	-	-
Stage 1	737	-	-	-	-
Stage 2	750	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	12.6	0	0.3
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	452	722	1237
HCM Lane V/C Ratio	-	-	0.123	0.051	0.009
HCM Control Delay (s)	-	-	14.1	10.3	7.9
HCM Lane LOS	-	-	B	B	A
HCM 95th %tile Q(veh)	-	-	0.4	0.2	0



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	67	51	257	11	10	300
Future Volume (vph)	67	51	257	11	10	300
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.942		0.994			
Flt Protected	0.972					0.998
Satd. Flow (prot)	1706	0	1852	0	0	1859
Flt Permitted	0.972					0.998
Satd. Flow (perm)	1706	0	1852	0	0	1859
Link Speed (mph)	25		35			35
Link Distance (ft)	471		868			438
Travel Time (s)	12.8		16.9			8.5
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	73	55	279	12	11	326
Shared Lane Traffic (%)						
Lane Group Flow (vph)	128	0	291	0	0	337
Sign Control	Stop		Free			Free

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	37.4%
Analysis Period (min)	15
	ICU Level of Service A

Intersection						
Int Delay, s/veh	2.5					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	TT		TT			TT
Traffic Vol, veh/h	67	51	257	11	10	300
Future Vol, veh/h	67	51	257	11	10	300
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	73	55	279	12	11	326

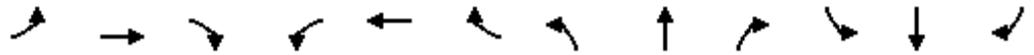
Major/Minor	Minor1	Major1	Major2		
Conflicting Flow All	633	285	0	0	291
Stage 1	285	-	-	-	-
Stage 2	348	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12
Critical Hdwy Stg 1	5.42	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218
Pot Cap-1 Maneuver	444	754	-	-	1271
Stage 1	763	-	-	-	-
Stage 2	715	-	-	-	-
Platoon blocked, %					
Mov Cap-1 Maneuver	439	754	-	-	1271
Mov Cap-2 Maneuver	439	-	-	-	-
Stage 1	763	-	-	-	-
Stage 2	707	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	13.8	0	0.3
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	536	1271
HCM Lane V/C Ratio	-	-	0.239	0.009
HCM Control Delay (s)	-	-	13.8	7.9
HCM Lane LOS	-	-	B	A
HCM 95th %tile Q(veh)	-	-	0.9	0

FedEx- Middletown
114: Middle & Bradley/Aetna

2030 Full Build
Timing Plan: AM Peak Hr



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕	↕		↕	↕	↕	↕	
Traffic Volume (vph)	23	1	22	1	0	2	45	241	6	12	288	38
Future Volume (vph)	23	1	22	1	0	2	45	241	6	12	288	38
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	14	12	12	12	12	12	12	12	12	12	12
Storage Length (ft)	0		0	0		0	0		175	175		0
Storage Lanes	0		0	0		1	0		1	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.935				0.850			0.850		0.983	
Flt Protected		0.976			0.950			0.992		0.950		
Satd. Flow (prot)	0	1813	0	0	1770	1583	0	1848	1583	1770	1831	0
Flt Permitted								0.916		0.488		
Satd. Flow (perm)	0	1858	0	0	1863	1583	0	1706	1583	909	1831	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		24				191			191		19	
Link Speed (mph)		25			30			35			35	
Link Distance (ft)		519			341			3417			868	
Travel Time (s)		14.2			7.8			66.6			16.9	
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)	25	1	24	1	0	2	49	262	7	13	313	41
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	50	0	0	1	2	0	311	7	13	354	0
Turn Type	Perm	NA		Perm	NA	Free	Perm	NA	Free	pm+pt	NA	
Protected Phases		4			8			2		1	6	
Permitted Phases	4			8		Free	2		Free	6		
Detector Phase	4	4		8	8		2	2		1	6	
Switch Phase												
Minimum Initial (s)	7.0	7.0		7.0	7.0		15.0	15.0		5.0	15.0	
Minimum Split (s)	11.5	11.5		11.5	11.5		19.5	19.5		9.5	19.5	
Total Split (s)	20.0	20.0		20.0	20.0		30.0	30.0		10.0	40.0	
Total Split (%)	33.3%	33.3%		33.3%	33.3%		50.0%	50.0%		16.7%	66.7%	
Maximum Green (s)	15.5	15.5		15.5	15.5		25.5	25.5		5.5	35.5	
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	
Total Lost Time (s)		4.5			4.5			4.5		4.5	4.5	
Lead/Lag							Lag	Lag		Lead		
Lead-Lag Optimize?												
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		Min	Min		None	Min	
Act Effct Green (s)		7.3			7.3	34.5		30.1	34.5	27.9	31.8	
Actuated g/C Ratio		0.21			0.21	1.00		0.87	1.00	0.81	0.92	
v/c Ratio		0.12			0.00	0.00		0.21	0.00	0.01	0.21	
Control Delay		9.0			12.0	0.0		4.4	0.0	2.1	1.8	
Queue Delay		0.0			0.0	0.0		0.0	0.0	0.0	0.0	
Total Delay		9.0			12.0	0.0		4.4	0.0	2.1	1.8	
LOS		A			B	A		A	A	A	A	
Approach Delay		9.0			4.0			4.3			1.8	



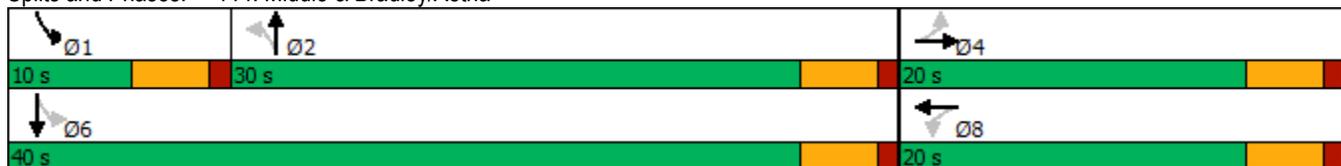
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach LOS		A			A			A			A	
Queue Length 50th (ft)		4			0	0		0	0	0	0	
Queue Length 95th (ft)		25			3	0		109	0	5	61	
Internal Link Dist (ft)		439			261			3337			788	
Turn Bay Length (ft)									175	175		
Base Capacity (vph)		868			858	1583		1560	1583	874	1769	
Starvation Cap Reductn		0			0	0		0	0	0	0	
Spillback Cap Reductn		0			0	0		0	0	0	0	
Storage Cap Reductn		0			0	0		0	0	0	0	
Reduced v/c Ratio		0.06			0.00	0.00		0.20	0.00	0.01	0.20	

Intersection Summary

Area Type: Other
 Cycle Length: 60
 Actuated Cycle Length: 34.5
 Natural Cycle: 45
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 0.21
 Intersection Signal Delay: 3.4
 Intersection Capacity Utilization 53.2%
 Analysis Period (min) 15

Intersection LOS: A
 ICU Level of Service A

Splits and Phases: 114: Middle & Bradley/Aetna





Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	204	168	203	244	74	148
Future Volume (vph)	204	168	203	244	74	148
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.939		0.926			
Flt Protected	0.973					0.984
Satd. Flow (prot)	1685	0	1708	0	0	1815
Flt Permitted	0.973					0.587
Satd. Flow (perm)	1685	0	1708	0	0	1083
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)	53		83			
Link Speed (mph)	30		35			35
Link Distance (ft)	1107		4763			3417
Travel Time (s)	25.2		92.8			66.6
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%
Adj. Flow (vph)	222	183	221	265	80	161
Shared Lane Traffic (%)						
Lane Group Flow (vph)	405	0	486	0	0	241
Turn Type	Perm		NA		pm+pt	NA
Protected Phases			2		1	6
Permitted Phases	8				6	
Detector Phase	8		2		1	6
Switch Phase						
Minimum Initial (s)	5.0		15.0		5.0	15.0
Minimum Split (s)	22.5		22.5		9.5	22.5
Total Split (s)	38.0		42.5		9.5	52.0
Total Split (%)	42.2%		47.2%		10.6%	57.8%
Maximum Green (s)	33.5		38.0		5.0	47.5
Yellow Time (s)	3.5		3.5		3.5	3.5
All-Red Time (s)	1.0		1.0		1.0	1.0
Lost Time Adjust (s)	0.0		0.0			0.0
Total Lost Time (s)	4.5		4.5			4.5
Lead/Lag			Lag		Lead	
Lead-Lag Optimize?			Yes		Yes	
Vehicle Extension (s)	3.0		3.0		3.0	3.0
Recall Mode	None		Min		Max	Min
Walk Time (s)	7.0		7.0			7.0
Flash Dont Walk (s)	11.0		11.0			11.0
Pedestrian Calls (#/hr)	0		0			0
Act Effct Green (s)	18.1		20.5			30.5
Actuated g/C Ratio	0.31		0.35			0.52
v/c Ratio	0.72		0.74			0.38
Control Delay	23.9		22.1			10.9
Queue Delay	0.0		0.0			0.0
Total Delay	23.9		22.1			10.9
LOS	C		C			B
Approach Delay	23.9		22.1			10.9



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Approach LOS	C		C		B	
Queue Length 50th (ft)	94		111		39	
Queue Length 95th (ft)	240		272		109	
Internal Link Dist (ft)	1027		4683		3337	
Turn Bay Length (ft)						
Base Capacity (vph)	1044		1203		978	
Starvation Cap Reductn	0		0		0	
Spillback Cap Reductn	0		0		0	
Storage Cap Reductn	0		0		0	
Reduced v/c Ratio	0.39		0.40		0.25	

Intersection Summary

Area Type:	Other
Cycle Length:	90
Actuated Cycle Length:	58.1
Natural Cycle:	60
Control Type:	Actuated-Uncoordinated
Maximum v/c Ratio:	0.74
Intersection Signal Delay:	20.4
Intersection LOS:	C
Intersection Capacity Utilization:	71.0%
ICU Level of Service:	C
Analysis Period (min):	15

Splits and Phases: 115: Middle & Smith





Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	112	19	536	0	0	352
Future Volume (vph)	112	19	536	0	0	352
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.980					
Flt Protected	0.959					
Satd. Flow (prot)	1751	0	1863	0	0	1863
Flt Permitted	0.959					
Satd. Flow (perm)	1751	0	1863	0	0	1863
Link Speed (mph)	30		30		30	
Link Distance (ft)	888		541		4763	
Travel Time (s)	20.2		12.3		108.3	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	122	21	583	0	0	383
Shared Lane Traffic (%)						
Lane Group Flow (vph)	143	0	583	0	0	383
Sign Control	Stop		Free		Free	

Intersection Summary

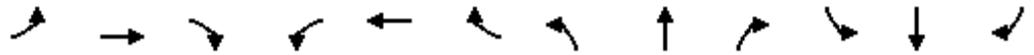
Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	42.2%
Analysis Period (min)	15
	ICU Level of Service A

Intersection						
Int Delay, s/veh	3.5					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↔		↑			↑
Traffic Vol, veh/h	112	19	536	0	0	352
Future Vol, veh/h	112	19	536	0	0	352
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	122	21	583	0	0	383

Major/Minor	Minor1	Major1	Major2			
Conflicting Flow All	966	583	0	-	-	-
Stage 1	583	-	-	-	-	-
Stage 2	383	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	-	-
Pot Cap-1 Maneuver	282	512	-	0	0	-
Stage 1	558	-	-	0	0	-
Stage 2	689	-	-	0	0	-
Platoon blocked, %			-			-
Mov Cap-1 Maneuver	282	512	-	-	-	-
Mov Cap-2 Maneuver	282	-	-	-	-	-
Stage 1	558	-	-	-	-	-
Stage 2	689	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	27.1	0	0
HCM LOS	D		

Minor Lane/Major Mvmt	NBTWBLn1	SBT
Capacity (veh/h)	- 302	-
HCM Lane V/C Ratio	- 0.471	-
HCM Control Delay (s)	- 27.1	-
HCM Lane LOS	- D	-
HCM 95th %tile Q(veh)	- 2.4	-



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕						↕	
Traffic Volume (vph)	58	118	47	202	118	472	0	0	0	93	267	106
Future Volume (vph)	58	118	47	202	118	472	0	0	0	93	267	106
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		0.972			0.920							0.969
Flt Protected		0.987			0.987							0.990
Satd. Flow (prot)	0	1787	0	0	1691	0	0	0	0	0	1787	0
Flt Permitted		0.987			0.987							0.990
Satd. Flow (perm)	0	1787	0	0	1691	0	0	0	0	0	1787	0
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		832			1070			907			541	
Travel Time (s)		18.9			24.3			20.6			12.3	
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)	63	128	51	220	128	513	0	0	0	101	290	115
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	242	0	0	861	0	0	0	0	0	506	0
Sign Control		Stop			Stop			Stop			Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	93.7%
ICU Level of Service	F
Analysis Period (min)	15

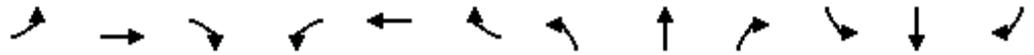
Intersection

Intersection Delay, s/veh	126.7
Intersection LOS	F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕						↕	
Traffic Vol, veh/h	58	118	47	202	118	472	0	0	0	93	267	106
Future Vol, veh/h	58	118	47	202	118	472	0	0	0	93	267	106
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	63	128	51	220	128	513	0	0	0	101	290	115
Number of Lanes	0	1	0	0	1	0	0	0	0	0	1	0

Approach	EB	WB	SB
Opposing Approach	WB	EB	
Opposing Lanes	1	1	0
Conflicting Approach Left	SB		WB
Conflicting Lanes Left	1	0	1
Conflicting Approach Right		SB	EB
Conflicting Lanes Right	0	1	1
HCM Control Delay	16	208.4	40.7
HCM LOS	C	F	E

Lane	EBLn1	WBLn1	SBLn1
Vol Left, %	26%	26%	20%
Vol Thru, %	53%	15%	57%
Vol Right, %	21%	60%	23%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	223	792	466
LT Vol	58	202	93
Through Vol	118	118	267
RT Vol	47	472	106
Lane Flow Rate	242	861	507
Geometry Grp	1	1	1
Degree of Util (X)	0.449	1.402	0.869
Departure Headway (Hd)	7.259	5.861	7.02
Convergence, Y/N	Yes	Yes	Yes
Cap	499	628	522
Service Time	5.259	3.876	5.02
HCM Lane V/C Ratio	0.485	1.371	0.971
HCM Control Delay	16	208.4	40.7
HCM Lane LOS	C	F	E
HCM 95th-tile Q	2.3	39	9.4



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕				
Traffic Volume (vph)	50	160	0	0	349	185	440	12	180	0	0	0
Future Volume (vph)	50	160	0	0	349	185	440	12	180	0	0	0
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
Fr _t					0.953			0.961				
Fl _t Protected		0.988						0.966				
Satd. Flow (prot)	0	1840	0	0	1775	0	0	1729	0	0	0	0
Fl _t Permitted		0.988						0.966				
Satd. Flow (perm)	0	1840	0	0	1775	0	0	1729	0	0	0	0
Link Speed (mph)		30			30			30				30
Link Distance (ft)		1070			714			989				751
Travel Time (s)		24.3			16.2			22.5				17.1
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)	54	174	0	0	379	201	478	13	196	0	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	228	0	0	580	0	0	687	0	0	0	0
Sign Control		Stop			Stop			Stop			Stop	

Intersection Summary

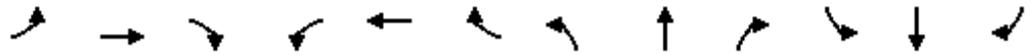
Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	86.8%
ICU Level of Service	E
Analysis Period (min)	15

Intersection	
Intersection Delay, s/veh	89.8
Intersection LOS	F

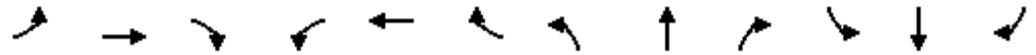
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔				
Traffic Vol, veh/h	50	160	0	0	349	185	440	12	180	0	0	0
Future Vol, veh/h	50	160	0	0	349	185	440	12	180	0	0	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	54	174	0	0	379	201	478	13	196	0	0	0
Number of Lanes	0	1	0	0	1	0	0	1	0	0	0	0

Approach	EB	WB	NB
Opposing Approach	WB	EB	
Opposing Lanes	1	1	0
Conflicting Approach Left		NB	EB
Conflicting Lanes Left	0	1	1
Conflicting Approach Right	NB		WB
Conflicting Lanes Right	1	0	1
HCM Control Delay	16.8	62.8	136.9
HCM LOS	C	F	F

Lane	NBLn1	EBLn1	WBLn1
Vol Left, %	70%	24%	0%
Vol Thru, %	2%	76%	65%
Vol Right, %	28%	0%	35%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	632	210	534
LT Vol	440	50	0
Through Vol	12	160	349
RT Vol	180	0	185
Lane Flow Rate	687	228	580
Geometry Grp	1	1	1
Degree of Util (X)	1.222	0.444	0.992
Departure Headway (Hd)	6.406	7.738	6.732
Convergence, Y/N	Yes	Yes	Yes
Cap	570	468	546
Service Time	4.406	5.738	4.732
HCM Lane V/C Ratio	1.205	0.487	1.062
HCM Control Delay	136.9	16.8	62.8
HCM Lane LOS	F	C	F
HCM 95th-tile Q	25.6	2.2	13.8



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕	↗	↖	↘			↕			↕	
Traffic Volume (vph)	5	449	139	303	494	79	192	17	268	73	28	17
Future Volume (vph)	5	449	139	303	494	79	192	17	268	73	28	17
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	15	12	12	15	12
Storage Length (ft)	0		150	100		0	0		0	0		0
Storage Lanes	0		1	1		0	0		0	0		0
Taper Length (ft)	25			50			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850		0.979			0.924			0.981	
Flt Protected		0.999		0.950				0.980			0.970	
Satd. Flow (prot)	0	1861	1583	1770	1824	0	0	1855	0	0	1950	0
Flt Permitted		0.995		0.380				0.826			0.622	
Satd. Flow (perm)	0	1853	1583	708	1824	0	0	1564	0	0	1250	0
Right Turn on Red			Yes			Yes			Yes			No
Satd. Flow (RTOR)			151		15			85				
Link Speed (mph)		35			35			30				30
Link Distance (ft)		875			2306			2021				579
Travel Time (s)		17.0			44.9			45.9				13.2
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)	5	488	151	329	537	86	209	18	291	79	30	18
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	493	151	329	623	0	0	518	0	0	127	0
Turn Type	Perm	NA	Perm	Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			8				4
Permitted Phases	2		2	6			8			4		
Detector Phase	2	2	2	6	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	15.0	15.0	15.0	15.0	15.0		9.0	9.0		9.0	9.0	
Minimum Split (s)	20.0	20.0	20.0	20.0	20.0		13.0	13.0		13.0	13.0	
Total Split (s)	50.0	50.0	50.0	50.0	50.0		34.0	34.0		34.0	34.0	
Total Split (%)	59.5%	59.5%	59.5%	59.5%	59.5%		40.5%	40.5%		40.5%	40.5%	
Maximum Green (s)	45.0	45.0	45.0	45.0	45.0		30.0	30.0		30.0	30.0	
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	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	
Total Lost Time (s)		5.0	5.0	5.0	5.0			4.0			4.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	4.0	4.0	4.0	4.0	4.0		3.0	3.0		3.0	3.0	
Recall Mode	Min	Min	Min	Min	Min		None	None		None	None	
Act Effct Green (s)		37.0	37.0	37.0	37.0			25.3			25.3	
Actuated g/C Ratio		0.51	0.51	0.51	0.51			0.35			0.35	
v/c Ratio		0.52	0.17	0.91	0.66			0.86			0.29	
Control Delay		14.2	2.4	48.2	16.8			35.4			21.2	
Queue Delay		0.0	0.0	0.0	0.0			0.0			0.0	
Total Delay		14.2	2.4	48.2	16.8			35.4			21.2	
LOS		B	A	D	B			D			C	
Approach Delay		11.4			27.7			35.4			21.2	



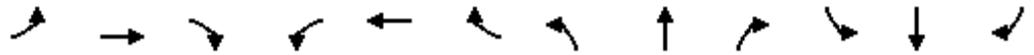
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach LOS		B			C			D			C	
Queue Length 50th (ft)		154	0	141	211			211				47
Queue Length 95th (ft)		235	26	#314	321			#393				91
Internal Link Dist (ft)		795			2226			1941				499
Turn Bay Length (ft)			150	100								
Base Capacity (vph)		1220	1094	466	1206			748				560
Starvation Cap Reductn		0	0	0	0			0				0
Spillback Cap Reductn		0	0	0	0			0				0
Storage Cap Reductn		0	0	0	0			0				0
Reduced v/c Ratio		0.40	0.14	0.71	0.52			0.69				0.23

Intersection Summary

Area Type: Other
 Cycle Length: 84
 Actuated Cycle Length: 71.9
 Natural Cycle: 55
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 0.91
 Intersection Signal Delay: 24.4
 Intersection LOS: C
 Intersection Capacity Utilization 96.2%
 ICU Level of Service F
 Analysis Period (min) 15
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

Splits and Phases: 101: Main & Rte 372





Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗			↖					↖	↗	↖
Traffic Volume (vph)	40	893	17	5	922	449	0	0	0	546	5	102
Future Volume (vph)	40	893	17	5	922	449	0	0	0	546	5	102
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	300		0	0		0	0		0	125		125
Storage Lanes	1		0	0		0	0		0	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	0.95	0.95	0.95	0.95	1.00	1.00	1.00	0.95	0.95	1.00
Frt		0.997			0.951							0.850
Flt Protected	0.950									0.950	0.953	
Satd. Flow (prot)	1770	3529	0	0	3366	0	0	0	0	1681	1686	1583
Flt Permitted	0.154				0.955					0.950	0.953	
Satd. Flow (perm)	287	3529	0	0	3214	0	0	0	0	1681	1686	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		1			203							166
Link Speed (mph)		40			40			25			30	
Link Distance (ft)		364			232			215			478	
Travel Time (s)		6.2			4.0			5.9			10.9	
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)	43	971	18	5	1002	488	0	0	0	593	5	111
Shared Lane Traffic (%)										50%		
Lane Group Flow (vph)	43	989	0	0	1495	0	0	0	0	296	302	111
Turn Type	Perm	NA		Perm	NA					Split	NA	Prot
Protected Phases		1 8			1 2 5 6					7	7	7
Permitted Phases	1 8			1 2 5 6	8							
Detector Phase	1	1		1 2 5 6	1					7	7	7
Switch Phase												
Minimum Initial (s)										7.0	7.0	7.0
Minimum Split (s)										11.3	11.3	11.3
Total Split (s)										19.3	19.3	19.3
Total Split (%)										17.3%	17.3%	17.3%
Maximum Green (s)										15.0	15.0	15.0
Yellow Time (s)										3.2	3.2	3.2
All-Red Time (s)										1.1	1.1	1.1
Lost Time Adjust (s)										0.0	0.0	0.0
Total Lost Time (s)										4.3	4.3	4.3
Lead/Lag										Lead	Lead	Lead
Lead-Lag Optimize?												
Vehicle Extension (s)										1.0	1.0	1.0
Recall Mode										None	None	None
Act Effct Green (s)	24.1	24.1			75.7					15.1	15.1	15.1
Actuated g/C Ratio	0.23	0.23			0.73					0.15	0.15	0.15
v/c Ratio	0.64	1.20			0.59					1.21	1.23	0.30
Control Delay	82.5	137.2			3.9					165.3	172.5	3.7
Queue Delay	0.0	0.1			2.7					1.7	1.6	0.0
Total Delay	82.5	137.3			6.6					166.9	174.1	3.7
LOS	F	F			A					F	F	A
Approach Delay		135.0			6.6						144.4	
Approach LOS		F			A						F	

Lane Group	Ø1	Ø2	Ø3	Ø4	Ø5	Ø6	Ø8
Lane Configurations							
Traffic Volume (vph)							
Future Volume (vph)							
Ideal Flow (vphpl)							
Storage Length (ft)							
Storage Lanes							
Taper Length (ft)							
Lane Util. Factor							
Frt							
Flt Protected							
Satd. Flow (prot)							
Flt Permitted							
Satd. Flow (perm)							
Right Turn on Red							
Satd. Flow (RTOR)							
Link Speed (mph)							
Link Distance (ft)							
Travel Time (s)							
Peak Hour Factor							
Adj. Flow (vph)							
Shared Lane Traffic (%)							
Lane Group Flow (vph)							
Turn Type							
Protected Phases	1	2	3	4	5	6	8
Permitted Phases							
Detector Phase							
Switch Phase							
Minimum Initial (s)	15.0	1.0	7.0	1.0	5.0	10.0	1.0
Minimum Split (s)	20.0	5.6	10.8	3.1	8.6	14.7	3.1
Total Split (s)	29.0	5.6	20.8	3.1	18.6	34.7	3.1
Total Split (%)	26%	5%	19%	3%	17%	31%	3%
Maximum Green (s)	24.0	1.0	17.0	1.0	15.0	30.0	1.0
Yellow Time (s)	3.0	4.0	3.2	2.0	3.0	3.2	2.0
All-Red Time (s)	2.0	0.6	0.6	0.1	0.6	1.5	0.1
Lost Time Adjust (s)							
Total Lost Time (s)							
Lead/Lag			Lead	Lag	Lead	Lag	Lag
Lead-Lag Optimize?							
Vehicle Extension (s)	3.0	3.0	1.0	1.0	1.0	3.0	3.0
Recall Mode	Min	Max	None	None	None	None	None
Act Effct Green (s)							
Actuated g/C Ratio							
v/c Ratio							
Control Delay							
Queue Delay							
Total Delay							
LOS							
Approach Delay							
Approach LOS							



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 50th (ft)	27	~447			84					~267	~275	0
Queue Length 95th (ft)	#94	#605			m93					#463	#473	15
Internal Link Dist (ft)		284			152			135			398	
Turn Bay Length (ft)	300									125		125
Base Capacity (vph)	67	825			2522					245	246	373
Starvation Cap Reductn	0	0			875					0	0	0
Spillback Cap Reductn	0	11			0					27	27	0
Storage Cap Reductn	0	0			0					0	0	0
Reduced v/c Ratio	0.64	1.21			0.91					1.36	1.38	0.30

Intersection Summary

Area Type: Other
 Cycle Length: 111.8
 Actuated Cycle Length: 103.3
 Natural Cycle: 100
 Control Type: Semi Act-Uncoord
 Maximum v/c Ratio: 1.23
 Intersection Signal Delay: 77.8
 Intersection Capacity Utilization 66.5%
 Analysis Period (min) 15
 Intersection LOS: E
 ICU Level of Service C

~ 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.

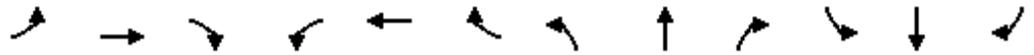
Splits and Phases: 102: McD/Sebethe & Rte 372

#103#103 → Ø4 → Ø1	#102#102#103 ← Ø5	#102#103 ← Ø6	#103 ↙ Ø3	
29.8 s	5.6 s	18.6 s	20.8 s	
#103 ← Ø8			#102#103 ↘ Ø7	#102 → Ø9
			19.3 s	3.1 s

Lane Group	Ø1	Ø2	Ø3	Ø4	Ø5	Ø6	Ø8
Queue Length 50th (ft)							
Queue Length 95th (ft)							
Internal Link Dist (ft)							
Turn Bay Length (ft)							
Base Capacity (vph)							
Starvation Cap Reductn							
Spillback Cap Reductn							
Storage Cap Reductn							
Reduced v/c Ratio							
Intersection Summary							

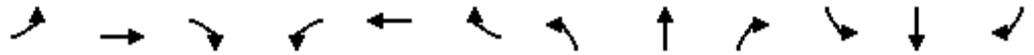
FedEx- Middletown
103: Ind Park/I91SB & Rte 372

2030 Full Build
Timing Plan: PM Peak Hr



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↘	↗	↘	↘	↗	↘	↘	↗	↘	↘	↗	↘
Traffic Volume (vph)	119	1200	95	73	797	157	174	22	354	461	260	383
Future Volume (vph)	119	1200	95	73	797	157	174	22	354	461	260	383
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	325		125	375		0	460		325
Storage Lanes	1		1	1		1	1		1	1		2
Taper Length (ft)	25			50			25			25		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	0.95	1.00
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	3539	1568	1752	3539	1583	1752	1845	1568	1770	3505	1583
Flt Permitted	0.950			0.950			0.510			0.742		
Satd. Flow (perm)	1770	3539	1568	1752	3539	1583	941	1845	1568	1382	3505	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			208			159			321			416
Link Speed (mph)		40			40			35				35
Link Distance (ft)		232			1355			1167				741
Travel Time (s)		4.0			23.1			22.7				14.4
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	2%	2%	3%	3%	2%	2%	3%	3%	3%	2%	3%	2%
Adj. Flow (vph)	129	1304	103	79	866	171	189	24	385	501	283	416
Shared Lane Traffic (%)												
Lane Group Flow (vph)	129	1304	103	79	866	171	189	24	385	501	283	416
Turn Type	Prot	NA	Free	Prot	NA	custom	pm+pt	NA	Free	pm+pt	NA	Prot
Protected Phases	7	1 2 4		3	1 8	1	5	6		5	6	6
Permitted Phases			Free				6		Free	6		
Detector Phase	7	1 2 4		3	1 8	1	5	6		5 6	6	6
Switch Phase												
Minimum Initial (s)	7.0			7.0		15.0	5.0	10.0		5.0	10.0	10.0
Minimum Split (s)	11.3			10.8		20.0	8.6	14.7		8.6	14.7	14.7
Total Split (s)	19.3			20.8		29.0	18.6	34.7		18.6	34.7	34.7
Total Split (%)	17.3%			18.6%		25.9%	16.6%	31.0%		16.6%	31.0%	31.0%
Maximum Green (s)	15.0			17.0		24.0	15.0	30.0		15.0	30.0	30.0
Yellow Time (s)	3.2			3.2		3.0	3.0	3.2		3.0	3.2	3.2
All-Red Time (s)	1.1			0.6		2.0	0.6	1.5		0.6	1.5	1.5
Lost Time Adjust (s)	0.0			0.0		0.0	0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	4.3			3.8		5.0	3.6	4.7		3.6	4.7	4.7
Lead/Lag	Lead			Lead			Lead	Lag		Lead	Lag	Lag
Lead-Lag Optimize?												
Vehicle Extension (s)	1.0			1.0		3.0	1.0	3.0		1.0	3.0	3.0
Recall Mode	None			None		Min	None	None		None	None	None
Act Effct Green (s)	15.1	42.0	103.3	8.9	24.1	24.1	38.7	22.5	103.3	38.7	22.5	22.5
Actuated g/C Ratio	0.15	0.41	1.00	0.09	0.23	0.23	0.37	0.22	1.00	0.37	0.22	0.22
v/c Ratio	0.50	0.91	0.07	0.52	1.05	0.35	0.40	0.06	0.25	0.87	0.37	0.62
Control Delay	54.3	10.0	0.0	59.3	84.3	9.2	22.4	30.6	0.4	44.0	35.0	7.6
Queue Delay	1.3	41.4	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.1
Total Delay	55.7	51.4	0.0	59.3	84.3	9.2	22.4	30.6	0.4	44.0	35.0	7.7
LOS	E	D	A	E	F	A	C	C	A	D	C	A
Approach Delay		48.3			71.0			8.6			29.3	

Lane Group	Ø2	Ø4	Ø8
Lane Configurations			
Traffic Volume (vph)			
Future Volume (vph)			
Ideal Flow (vphpl)			
Storage Length (ft)			
Storage Lanes			
Taper Length (ft)			
Lane Util. Factor			
Frt			
Flt Protected			
Satd. Flow (prot)			
Flt Permitted			
Satd. Flow (perm)			
Right Turn on Red			
Satd. Flow (RTOR)			
Link Speed (mph)			
Link Distance (ft)			
Travel Time (s)			
Peak Hour Factor			
Heavy Vehicles (%)			
Adj. Flow (vph)			
Shared Lane Traffic (%)			
Lane Group Flow (vph)			
Turn Type			
Protected Phases	2	4	8
Permitted Phases			
Detector Phase			
Switch Phase			
Minimum Initial (s)	1.0	1.0	1.0
Minimum Split (s)	5.6	3.1	3.1
Total Split (s)	5.6	3.1	3.1
Total Split (%)	5%	3%	3%
Maximum Green (s)	1.0	1.0	1.0
Yellow Time (s)	4.0	2.0	2.0
All-Red Time (s)	0.6	0.1	0.1
Lost Time Adjust (s)			
Total Lost Time (s)			
Lead/Lag		Lag	Lag
Lead-Lag Optimize?			
Vehicle Extension (s)	3.0	1.0	3.0
Recall Mode	Max	None	None
Act Effct Green (s)			
Actuated g/C Ratio			
v/c Ratio			
Control Delay			
Queue Delay			
Total Delay			
LOS			
Approach Delay			



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach LOS	D			E			A			C		
Queue Length 50th (ft)	69	193	0	53	~352	6	80	13	0	265	83	0
Queue Length 95th (ft)	m59	m165	m0	102	#500	63	130	34	0	#391	121	77
Internal Link Dist (ft)	152			1275			1087			661		
Turn Bay Length (ft)				325			125			460		
Base Capacity (vph)	258	1439	1568	290	827	491	471	539	1568	677	1024	757
Starvation Cap Reductn	38	241	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	11	0	0	0	0	14
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.59	1.09	0.07	0.27	1.05	0.35	0.41	0.04	0.25	0.74	0.28	0.56

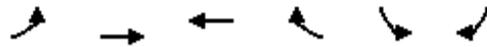
Intersection Summary

Area Type: Other
 Cycle Length: 111.8
 Actuated Cycle Length: 103.3
 Natural Cycle: 100
 Control Type: Semi Act-Uncoord
 Maximum v/c Ratio: 1.23
 Intersection Signal Delay: 43.5
 Intersection LOS: D
 Intersection Capacity Utilization 87.6%
 ICU Level of Service E
 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: 103: Ind Park/I91SB & Rte 372

#103#103 → Ø4 → Ø1 29.8 s	#102#103 ← Ø5 5.6 s	#102#103 ← Ø6 18.6 s	#102#103 ← Ø6 34.7 s	#103 ↙ Ø3 20.8 s	#102#103 ↘ Ø7 19.3 s	#102 → Ø8 3.1 s
---------------------------------	---------------------------	----------------------------	----------------------------	------------------------	----------------------------	-----------------------

Lane Group	Ø2	Ø4	Ø8
Approach LOS			
Queue Length 50th (ft)			
Queue Length 95th (ft)			
Internal Link Dist (ft)			
Turn Bay Length (ft)			
Base Capacity (vph)			
Starvation Cap Reductn			
Spillback Cap Reductn			
Storage Cap Reductn			
Reduced v/c Ratio			
Intersection Summary			



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↖	↗↗	↖↖	↗	↖↖	↗
Traffic Volume (vph)	611	1411	862	281	363	141
Future Volume (vph)	611	1411	862	281	363	141
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	725			225	200	110
Storage Lanes	1			1	0	1
Taper Length (ft)	25				75	
Lane Util. Factor	1.00	0.95	0.95	1.00	0.97	1.00
Frt				0.850		0.850
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1770	3539	3539	1583	3433	1583
Flt Permitted	0.132				0.950	
Satd. Flow (perm)	246	3539	3539	1583	3433	1583
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)				305		62
Link Speed (mph)		40	40		35	
Link Distance (ft)		1355	610		341	
Travel Time (s)		23.1	10.4		6.6	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	664	1534	937	305	395	153
Shared Lane Traffic (%)						
Lane Group Flow (vph)	664	1534	937	305	395	153
Turn Type	pm+pt	NA	NA	Perm	Prot	pt+ov
Protected Phases	5	2	6		4	4 5
Permitted Phases	2			6		
Detector Phase	5	2	6	6	4	4
Switch Phase						
Minimum Initial (s)	5.0	15.0	15.0	15.0	7.0	
Minimum Split (s)	9.0	20.0	20.0	20.0	11.0	
Total Split (s)	20.0	60.0	40.0	40.0	20.0	
Total Split (%)	25.0%	75.0%	50.0%	50.0%	25.0%	
Maximum Green (s)	16.0	55.0	35.0	35.0	16.0	
Yellow Time (s)	3.0	4.0	4.0	4.0	3.0	
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	4.0	5.0	5.0	5.0	4.0	
Lead/Lag	Lead		Lag	Lag		
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	C-Min	C-Min	C-Min	None	
Act Effct Green (s)	57.4	56.4	26.2	26.2	14.6	44.8
Actuated g/C Ratio	0.72	0.70	0.33	0.33	0.18	0.56
v/c Ratio	0.98	0.62	0.81	0.42	0.63	0.17
Control Delay	55.2	7.9	30.3	4.0	34.5	6.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	55.2	7.9	30.3	4.0	34.5	6.8
LOS	E	A	C	A	C	A
Approach Delay		22.2	23.9		26.8	
Approach LOS		C	C		C	

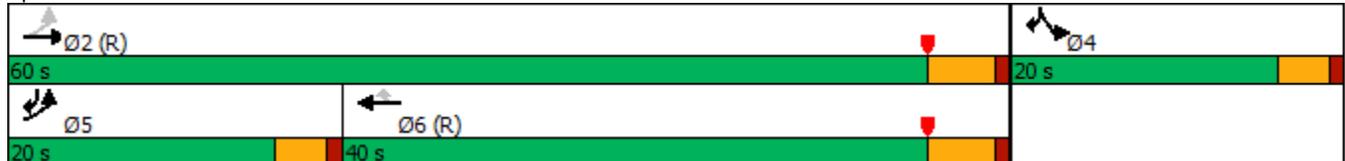


Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Queue Length 50th (ft)	267	173	222	0	95	20
Queue Length 95th (ft)	#598	273	255	45	131	56
Internal Link Dist (ft)		1275	530		261	
Turn Bay Length (ft)	725			225	200	110
Base Capacity (vph)	675	2519	1548	864	712	901
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.98	0.61	0.61	0.35	0.55	0.17

Intersection Summary

Area Type: Other
 Cycle Length: 80
 Actuated Cycle Length: 80
 Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBT, Start of Yellow
 Natural Cycle: 60
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.98
 Intersection Signal Delay: 23.4
 Intersection LOS: C
 Intersection Capacity Utilization 78.9%
 ICU Level of Service D
 Analysis Period (min) 15
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

Splits and Phases: 104: Rte 372 & I91NB





Lane Group	EBL	EBR	NEL	NET	SWT	SWR
Lane Configurations						
Traffic Volume (vph)	2	1	1	520	416	2
Future Volume (vph)	2	1	1	520	416	2
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	0.95	0.95	0.95	0.95
Frt	0.955				0.999	
Flt Protected	0.968					
Satd. Flow (prot)	1171	0	0	3502	3494	0
Flt Permitted	0.968					
Satd. Flow (perm)	1171	0	0	3502	3494	0
Link Speed (mph)	25			35	35	
Link Distance (ft)	124			268	1697	
Travel Time (s)	3.4			5.2	33.1	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	50%	50%	50%	3%	3%	50%
Adj. Flow (vph)	2	1	1	565	452	2
Shared Lane Traffic (%)						
Lane Group Flow (vph)	3	0	0	566	454	0
Sign Control	Stop			Free	Free	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	25.1%
ICU Level of Service	A
Analysis Period (min)	15

Intersection

Int Delay, s/veh 0.1

Movement EBL EBR NEL NET SWT SWR

Lane Configurations	↔		↕↕		↕↕	
Traffic Vol, veh/h	2	1	1	520	416	2
Future Vol, veh/h	2	1	1	520	416	2
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	50	50	50	3	3	50
Mvmt Flow	2	1	1	565	452	2

Major/Minor Minor2 Major1 Major2

Conflicting Flow All	738	227	454	0	-	0
Stage 1	453	-	-	-	-	-
Stage 2	285	-	-	-	-	-
Critical Hdwy	7.8	7.9	5.1	-	-	-
Critical Hdwy Stg 1	6.8	-	-	-	-	-
Critical Hdwy Stg 2	6.8	-	-	-	-	-
Follow-up Hdwy	4	3.8	2.7	-	-	-
Pot Cap-1 Maneuver	267	647	827	-	-	-
Stage 1	487	-	-	-	-	-
Stage 2	613	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	266	647	827	-	-	-
Mov Cap-2 Maneuver	266	-	-	-	-	-
Stage 1	486	-	-	-	-	-
Stage 2	613	-	-	-	-	-

Approach EB NE SW

HCM Control Delay, s	16	0	0
HCM LOS	C		

Minor Lane/Major Mvmt NEL NET EBLn1 SWT SWR

Capacity (veh/h)	827	-	331	-	-
HCM Lane V/C Ratio	0.001	-	0.01	-	-
HCM Control Delay (s)	9.4	0	16	-	-
HCM Lane LOS	A	A	C	-	-
HCM 95th %tile Q(veh)	0	-	0	-	-



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	14	1	1	507	400	17
Future Volume (vph)	14	1	1	507	400	17
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	240	0			100
Storage Lanes	1	1	0			1
Taper Length (ft)	25		25			
Lane Util. Factor	1.00	1.00	0.95	0.95	1.00	1.00
Frt		0.850				0.850
Flt Protected	0.950					
Satd. Flow (prot)	902	808	0	3499	1845	808
Flt Permitted	0.950					
Satd. Flow (perm)	902	808	0	3499	1845	808
Link Speed (mph)	30			40	40	
Link Distance (ft)	754			943	580	
Travel Time (s)	17.1			16.1	9.9	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	100%	100%	100%	3%	3%	100%
Adj. Flow (vph)	15	1	1	551	435	18
Shared Lane Traffic (%)						
Lane Group Flow (vph)	15	1	0	552	435	18
Sign Control	Stop			Free	Free	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	31.1% ICU Level of Service A
Analysis Period (min)	15

Intersection

Int Delay, s/veh	0.3					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	14	1	1	507	400	17
Future Vol, veh/h	14	1	1	507	400	17
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	Free
Storage Length	0	240	-	-	-	100
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	100	100	100	3	3	100
Mvmt Flow	15	1	1	551	435	18

Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	713	435	435	0	-	0
Stage 1	435	-	-	-	-	-
Stage 2	278	-	-	-	-	-
Critical Hdwy	8.1	7.7	5.6	-	-	-
Critical Hdwy Stg 1	6.9	-	-	-	-	-
Critical Hdwy Stg 2	7.3	-	-	-	-	-
Follow-up Hdwy	4.45	4.25	3.15	-	-	-
Pot Cap-1 Maneuver	245	427	698	-	-	0
Stage 1	454	-	-	-	-	0
Stage 2	544	-	-	-	-	0
Platoon blocked, %				-	-	
Mov Cap-1 Maneuver	245	427	698	-	-	-
Mov Cap-2 Maneuver	245	-	-	-	-	-
Stage 1	453	-	-	-	-	-
Stage 2	544	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	20.2	0	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT
Capacity (veh/h)	698	-	245	427	-
HCM Lane V/C Ratio	0.002	-	0.062	0.003	-
HCM Control Delay (s)	10.2	0	20.7	13.5	-
HCM Lane LOS	B	A	C	B	-
HCM 95th %tile Q(veh)	0	-	0.2	0	-



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	129	219	140	75	219	220
Future Volume (vph)	129	219	140	75	219	220
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Fr _t			0.953		0.932	
Fl _t Protected		0.982			0.976	
Satd. Flow (prot)	0	1823	1769	0	1686	0
Fl _t Permitted		0.982			0.976	
Satd. Flow (perm)	0	1823	1769	0	1686	0
Link Speed (mph)		30	30		30	
Link Distance (ft)		1107	1054		3274	
Travel Time (s)		25.2	24.0		74.4	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	3%	2%	2%	3%	3%	2%
Adj. Flow (vph)	140	238	152	82	238	239
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	378	234	0	477	0
Sign Control		Free	Free		Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	66.2%
ICU Level of Service	C
Analysis Period (min)	15

Intersection

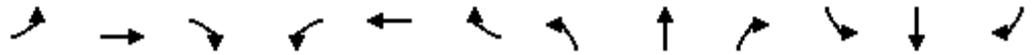
Int Delay, s/veh 27.5

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↕		↕	
Traffic Vol, veh/h	129	219	140	75	219	220
Future Vol, veh/h	129	219	140	75	219	220
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	3	2	2	3	3	2
Mvmt Flow	140	238	152	82	238	239

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	234	0	-	0	711 193
Stage 1	-	-	-	-	193 -
Stage 2	-	-	-	-	518 -
Critical Hdwy	4.13	-	-	-	6.43 6.22
Critical Hdwy Stg 1	-	-	-	-	5.43 -
Critical Hdwy Stg 2	-	-	-	-	5.43 -
Follow-up Hdwy	2.227	-	-	-	3.527 3.318
Pot Cap-1 Maneuver	1328	-	-	-	398 849
Stage 1	-	-	-	-	837 -
Stage 2	-	-	-	-	596 -
Platoon blocked, %		-	-	-	
Mov Cap-1 Maneuver	1328	-	-	-	350 849
Mov Cap-2 Maneuver	-	-	-	-	350 -
Stage 1	-	-	-	-	736 -
Stage 2	-	-	-	-	596 -

Approach	EB	WB	SB
HCM Control Delay, s	3	0	60.4
HCM LOS			F

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1328	-	-	-	496
HCM Lane V/C Ratio	0.106	-	-	-	0.962
HCM Control Delay (s)	8	0	-	-	60.4
HCM Lane LOS	A	A	-	-	F
HCM 95th %tile Q(veh)	0.4	-	-	-	12.3



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Volume (vph)	17	0	6	1	2	2	13	444	1	3	421	22
Future Volume (vph)	17	0	6	1	2	2	13	444	1	3	421	22
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		0.962			0.946							0.993
Flt Protected		0.965			0.990			0.999				
Satd. Flow (prot)	0	1729	0	0	1745	0	0	1861	0	0	1850	0
Flt Permitted		0.965			0.990			0.999				
Satd. Flow (perm)	0	1729	0	0	1745	0	0	1861	0	0	1850	0
Link Speed (mph)		30			30			35			30	
Link Distance (ft)		475			567			1776			2021	
Travel Time (s)		10.8			12.9			34.6			45.9	
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)	18	0	7	1	2	2	14	483	1	3	458	24
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	25	0	0	5	0	0	498	0	0	485	0
Sign Control		Stop			Stop			Stop			Stop	

Intersection Summary

Area Type: Other
 Control Type: Unsignalized
 Intersection Capacity Utilization 42.7% ICU Level of Service A
 Analysis Period (min) 15

Intersection	
Intersection Delay, s/veh	14.4
Intersection LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	17	0	6	1	2	2	13	444	1	3	421	22
Future Vol, veh/h	17	0	6	1	2	2	13	444	1	3	421	22
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	18	0	7	1	2	2	14	483	1	3	458	24
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	9.4	9	14.9	14.3
HCM LOS	A	A	B	B

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	3%	74%	20%	1%
Vol Thru, %	97%	0%	40%	94%
Vol Right, %	0%	26%	40%	5%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	458	23	5	446
LT Vol	13	17	1	3
Through Vol	444	0	2	421
RT Vol	1	6	2	22
Lane Flow Rate	498	25	5	485
Geometry Grp	1	1	1	1
Degree of Util (X)	0.626	0.042	0.009	0.607
Departure Headway (Hd)	4.526	6.02	5.875	4.509
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	797	591	604	800
Service Time	2.557	4.096	3.958	2.541
HCM Lane V/C Ratio	0.625	0.042	0.008	0.606
HCM Control Delay	14.9	9.4	9	14.3
HCM Lane LOS	B	A	A	B
HCM 95th-tile Q	4.5	0.1	0	4.2



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	0	56	358	31	102	327
Future Volume (vph)	0	56	358	31	102	327
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Fr _t		0.850	0.989			
Fl _t Protected						0.988
Satd. Flow (prot)	1863	1583	1842	0	0	1840
Fl _t Permitted						0.988
Satd. Flow (perm)	1863	1583	1842	0	0	1840
Link Speed (mph)	25		35			35
Link Distance (ft)	326		594			1776
Travel Time (s)	8.9		11.6			34.6
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	61	389	34	111	355
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	61	423	0	0	466
Sign Control	Stop		Free			Free

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	50.2%
Analysis Period (min)	15
	ICU Level of Service A

Intersection

Int Delay, s/veh 1.7

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	56	358	31	102	327
Future Vol, veh/h	0	56	358	31	102	327
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	0	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	61	389	34	111	355

Major/Minor	Minor1	Major1	Major2
Conflicting Flow All	983	406	0
Stage 1	406	-	-
Stage 2	577	-	-
Critical Hdwy	6.42	6.22	-
Critical Hdwy Stg 1	5.42	-	-
Critical Hdwy Stg 2	5.42	-	-
Follow-up Hdwy	3.518	3.318	-
Pot Cap-1 Maneuver	276	645	-
Stage 1	673	-	-
Stage 2	562	-	-
Platoon blocked, %		-	-
Mov Cap-1 Maneuver	242	645	-
Mov Cap-2 Maneuver	242	-	-
Stage 1	673	-	-
Stage 2	493	-	-

Approach	WB	NB	SB
HCM Control Delay, s	11.2	0	2
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	-	645	1136
HCM Lane V/C Ratio	-	-	-	0.094	0.098
HCM Control Delay (s)	-	-	0	11.2	8.5
HCM Lane LOS	-	-	A	B	A
HCM 95th %tile Q(veh)	-	-	-	0.3	0.3



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	21	14	359	31	46	270
Future Volume (vph)	21	14	359	31	46	270
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Fr _t		0.850	0.989			
Fl _t Protected	0.950					0.993
Satd. Flow (prot)	1770	1583	1842	0	0	1850
Fl _t Permitted	0.950					0.993
Satd. Flow (perm)	1770	1583	1842	0	0	1850
Link Speed (mph)	30		35			35
Link Distance (ft)	331		429			594
Travel Time (s)	7.5		8.4			11.6
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	23	15	390	34	50	293
Shared Lane Traffic (%)						
Lane Group Flow (vph)	23	15	424	0	0	343
Sign Control	Stop		Free			Free

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	50.9% ICU Level of Service A
Analysis Period (min)	15

Intersection

Int Delay, s/veh 1.2

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	21	14	359	31	46	270
Future Vol, veh/h	21	14	359	31	46	270
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	0	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	23	15	390	34	50	293

Major/Minor	Minor1	Major1	Major2
Conflicting Flow All	800	407	0
Stage 1	407	-	-
Stage 2	393	-	-
Critical Hdwy	6.42	6.22	-
Critical Hdwy Stg 1	5.42	-	-
Critical Hdwy Stg 2	5.42	-	-
Follow-up Hdwy	3.518	3.318	-
Pot Cap-1 Maneuver	354	644	-
Stage 1	672	-	-
Stage 2	682	-	-
Platoon blocked, %		-	-
Mov Cap-1 Maneuver	335	644	-
Mov Cap-2 Maneuver	335	-	-
Stage 1	672	-	-
Stage 2	646	-	-

Approach	WB	NB	SB
HCM Control Delay, s	14.2	0	1.2
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	335	644	1135
HCM Lane V/C Ratio	-	-	0.068	0.024	0.044
HCM Control Delay (s)	-	-	16.5	10.7	8.3
HCM Lane LOS	-	-	C	B	A
HCM 95th %tile Q(veh)	-	-	0.2	0.1	0.1



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	28	21	385	52	46	256
Future Volume (vph)	28	21	385	52	46	256
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.941		0.984			
Flt Protected	0.972					0.992
Satd. Flow (prot)	1704	0	1833	0	0	1848
Flt Permitted	0.972					0.992
Satd. Flow (perm)	1704	0	1833	0	0	1848
Link Speed (mph)	25		35			35
Link Distance (ft)	305		867			429
Travel Time (s)	8.3		16.9			8.4
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	30	23	418	57	50	278
Shared Lane Traffic (%)						
Lane Group Flow (vph)	53	0	475	0	0	328
Sign Control	Stop		Free			Free

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	52.8%
Analysis Period (min)	15
	ICU Level of Service A

Intersection

Int Delay, s/veh 1.4

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	28	21	385	52	46	256
Future Vol, veh/h	28	21	385	52	46	256
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	30	23	418	57	50	278

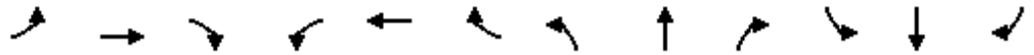
Major/Minor	Minor1	Major1	Major2
Conflicting Flow All	825	447	0
Stage 1	447	-	-
Stage 2	378	-	-
Critical Hdwy	6.42	6.22	-
Critical Hdwy Stg 1	5.42	-	-
Critical Hdwy Stg 2	5.42	-	-
Follow-up Hdwy	3.518	3.318	-
Pot Cap-1 Maneuver	342	612	-
Stage 1	644	-	-
Stage 2	693	-	-
Platoon blocked, %		-	-
Mov Cap-1 Maneuver	324	612	-
Mov Cap-2 Maneuver	324	-	-
Stage 1	644	-	-
Stage 2	656	-	-

Approach	WB	NB	SB
HCM Control Delay, s	15.2	0	1.3
HCM LOS	C		

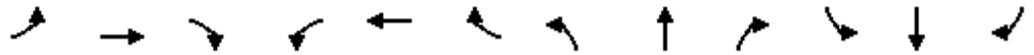
Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	406	1087
HCM Lane V/C Ratio	-	-	0.131	0.046
HCM Control Delay (s)	-	-	15.2	8.5
HCM Lane LOS	-	-	C	A
HCM 95th %tile Q(veh)	-	-	0.4	0.1

FedEx- Middletown
114: Middle & Bradley/Aetna

2030 Full Build
Timing Plan: PM Peak Hr



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕	↕		↕	↕	↕	↕	
Traffic Volume (vph)	60	0	57	7	0	7	28	370	3	3	267	35
Future Volume (vph)	60	0	57	7	0	7	28	370	3	3	267	35
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	14	12	12	12	12	12	12	12	12	12	12
Storage Length (ft)	0		0	0		0	0		175	175		0
Storage Lanes	0		0	0		1	0		1	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Fr _t		0.934				0.850			0.850		0.983	
Fl _t Protected		0.975			0.950			0.997		0.950		
Satd. Flow (prot)	0	1809	0	0	1770	1583	0	1857	1583	1770	1831	0
Fl _t Permitted		0.835			0.832			0.965		0.384		
Satd. Flow (perm)	0	1550	0	0	1550	1583	0	1798	1583	715	1831	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		109				191			191		19	
Link Speed (mph)		25			30			35			35	
Link Distance (ft)		519			341			3417			867	
Travel Time (s)		14.2			7.8			66.6			16.9	
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)	65	0	62	8	0	8	30	402	3	3	290	38
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	127	0	0	8	8	0	432	3	3	328	0
Turn Type	Perm	NA		Perm	NA	Free	Perm	NA	Free	pm+pt	NA	
Protected Phases		4			8			2		1	6	
Permitted Phases	4			8		Free	2		Free	6		
Detector Phase	4	4		8	8		2	2		1	6	
Switch Phase												
Minimum Initial (s)	7.0	7.0		7.0	7.0		15.0	15.0		5.0	15.0	
Minimum Split (s)	11.5	11.5		11.5	11.5		19.5	19.5		9.5	19.5	
Total Split (s)	20.0	20.0		20.0	20.0		30.0	30.0		10.0	40.0	
Total Split (%)	33.3%	33.3%		33.3%	33.3%		50.0%	50.0%		16.7%	66.7%	
Maximum Green (s)	15.5	15.5		15.5	15.5		25.5	25.5		5.5	35.5	
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	
Total Lost Time (s)		4.5			4.5			4.5		4.5	4.5	
Lead/Lag							Lag	Lag		Lead		
Lead-Lag Optimize?												
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		Min	Min		None	Min	
Act Effct Green (s)		7.7			7.7	37.6		22.6	37.6	23.1	24.1	
Actuated g/C Ratio		0.20			0.20	1.00		0.60	1.00	0.61	0.64	
v/c Ratio		0.32			0.03	0.01		0.40	0.00	0.01	0.28	
Control Delay		7.4			13.6	0.0		8.3	0.0	4.0	4.9	
Queue Delay		0.0			0.0	0.0		0.0	0.0	0.0	0.0	
Total Delay		7.4			13.6	0.0		8.3	0.0	4.0	4.9	
LOS		A			B	A		A	A	A	A	
Approach Delay		7.4			6.8			8.3			4.9	

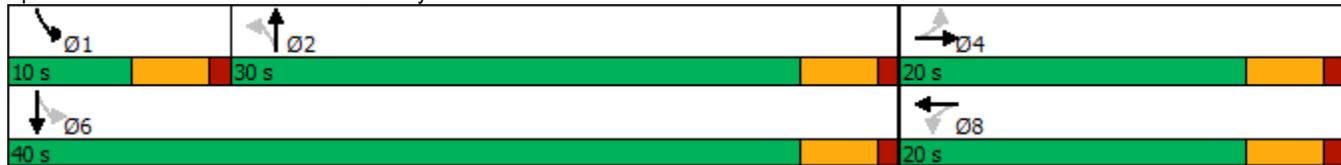


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach LOS		A			A			A				A
Queue Length 50th (ft)		2			1	0		40	0	0		26
Queue Length 95th (ft)		38			10	0		162	0	2		62
Internal Link Dist (ft)		439			261			3337				787
Turn Bay Length (ft)									175	175		
Base Capacity (vph)		723			661	1583		1356	1583	599		1673
Starvation Cap Reductn		0			0	0		0	0	0		0
Spillback Cap Reductn		0			0	0		0	0	0		0
Storage Cap Reductn		0			0	0		0	0	0		0
Reduced v/c Ratio		0.18			0.01	0.01		0.32	0.00	0.01		0.20

Intersection Summary

Area Type:	Other
Cycle Length:	60
Actuated Cycle Length:	37.6
Natural Cycle:	45
Control Type:	Actuated-Uncoordinated
Maximum v/c Ratio:	0.40
Intersection Signal Delay:	6.9
Intersection LOS:	A
Intersection Capacity Utilization:	61.9%
ICU Level of Service:	B
Analysis Period (min):	15

Splits and Phases: 114: Middle & Bradley/Aetna





Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	428	129	201	136	190	218
Future Volume (vph)	428	129	201	136	190	218
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.969		0.945			
Flt Protected	0.963					0.977
Satd. Flow (prot)	1721	0	1743	0	0	1802
Flt Permitted	0.963					0.450
Satd. Flow (perm)	1721	0	1743	0	0	830
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)	19		47			
Link Speed (mph)	30		35			35
Link Distance (ft)	1107		4763			3417
Travel Time (s)	25.2		92.8			66.6
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%
Adj. Flow (vph)	465	140	218	148	207	237
Shared Lane Traffic (%)						
Lane Group Flow (vph)	605	0	366	0	0	444
Turn Type	Perm		NA		pm+pt	NA
Protected Phases			2		1	6
Permitted Phases	8				6	
Detector Phase	8		2		1	6
Switch Phase						
Minimum Initial (s)	5.0		15.0		5.0	15.0
Minimum Split (s)	22.5		22.5		9.5	22.5
Total Split (s)	38.0		42.5		9.5	52.0
Total Split (%)	42.2%		47.2%		10.6%	57.8%
Maximum Green (s)	33.5		38.0		5.0	47.5
Yellow Time (s)	3.5		3.5		3.5	3.5
All-Red Time (s)	1.0		1.0		1.0	1.0
Lost Time Adjust (s)	0.0		0.0			0.0
Total Lost Time (s)	4.5		4.5			4.5
Lead/Lag			Lag		Lead	
Lead-Lag Optimize?			Yes		Yes	
Vehicle Extension (s)	3.0		3.0		3.0	3.0
Recall Mode	None		Min		Max	Min
Walk Time (s)	7.0		7.0			7.0
Flash Dont Walk (s)	11.0		11.0			11.0
Pedestrian Calls (#/hr)	0		0			0
Act Effct Green (s)	31.4		33.1			42.9
Actuated g/C Ratio	0.38		0.40			0.51
v/c Ratio	0.92		0.51			0.91
Control Delay	46.9		19.2			43.7
Queue Delay	0.0		0.0			0.0
Total Delay	46.9		19.2			43.7
LOS	D		B			D
Approach Delay	46.9		19.2			43.7



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Approach LOS	D		B			D
Queue Length 50th (ft)	316		127			149
Queue Length 95th (ft)	#532		206			#311
Internal Link Dist (ft)	1027		4683			3337
Turn Bay Length (ft)						
Base Capacity (vph)	720		840			545
Starvation Cap Reductn	0		0			0
Spillback Cap Reductn	0		0			0
Storage Cap Reductn	0		0			0
Reduced v/c Ratio	0.84		0.44			0.81

Intersection Summary

Area Type: Other
 Cycle Length: 90
 Actuated Cycle Length: 83.5
 Natural Cycle: 90
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 0.92
 Intersection Signal Delay: 38.7
 Intersection LOS: D
 Intersection Capacity Utilization 83.7%
 ICU Level of Service E
 Analysis Period (min) 15
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

Splits and Phases: 115: Middle & Smith





Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	270	23	264	0	0	640
Future Volume (vph)	270	23	264	0	0	640
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.989					
Flt Protected	0.956					
Satd. Flow (prot)	1761	0	1863	0	0	1863
Flt Permitted	0.956					
Satd. Flow (perm)	1761	0	1863	0	0	1863
Link Speed (mph)	30		30			30
Link Distance (ft)	888		541			4763
Travel Time (s)	20.2		12.3			108.3
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	293	25	287	0	0	696
Shared Lane Traffic (%)						
Lane Group Flow (vph)	318	0	287	0	0	696
Sign Control	Stop		Free			Free

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	56.7%
Analysis Period (min)	15
	ICU Level of Service B

Intersection

Int Delay, s/veh	29.6					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↘↗		↑			↑
Traffic Vol, veh/h	270	23	264	0	0	640
Future Vol, veh/h	270	23	264	0	0	640
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	293	25	287	0	0	696

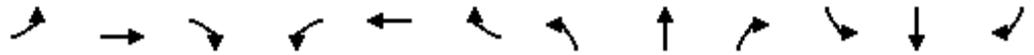
Major/Minor	Minor1	Major1	Major2			
Conflicting Flow All	983	287	0	-	-	-
Stage 1	287	-	-	-	-	-
Stage 2	696	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	-	-
Pot Cap-1 Maneuver	~ 276	752	-	0	0	-
Stage 1	762	-	-	0	0	-
Stage 2	495	-	-	0	0	-
Platoon blocked, %			-			-
Mov Cap-1 Maneuver	~ 276	752	-	-	-	-
Mov Cap-2 Maneuver	~ 276	-	-	-	-	-
Stage 1	762	-	-	-	-	-
Stage 2	495	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	120.9	0	0
HCM LOS	F		

Minor Lane/Major Mvmt	NBTWBLn1	SBT
Capacity (veh/h)	- 290	-
HCM Lane V/C Ratio	- 1.098	-
HCM Control Delay (s)	- 120.9	-
HCM Lane LOS	- F	-
HCM 95th %tile Q(veh)	- 12.9	-

Notes

~: Volume exceeds capacity \$: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕						↕	
Traffic Volume (vph)	37	197	51	79	169	220	0	0	0	227	424	248
Future Volume (vph)	37	197	51	79	169	220	0	0	0	227	424	248
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		0.976			0.937							0.963
Flt Protected		0.994			0.992							0.988
Satd. Flow (prot)	0	1807	0	0	1731	0	0	0	0	0	1772	0
Flt Permitted		0.994			0.992							0.988
Satd. Flow (perm)	0	1807	0	0	1731	0	0	0	0	0	1772	0
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		832			1070			907			541	
Travel Time (s)		18.9			24.3			20.6			12.3	
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)	40	214	55	86	184	239	0	0	0	247	461	270
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	309	0	0	509	0	0	0	0	0	978	0
Sign Control		Stop			Stop			Stop			Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	95.6%
ICU Level of Service	F
Analysis Period (min)	15

Intersection	
Intersection Delay, s/veh	204.7
Intersection LOS	F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕						↕	
Traffic Vol, veh/h	37	197	51	79	169	220	0	0	0	227	424	248
Future Vol, veh/h	37	197	51	79	169	220	0	0	0	227	424	248
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	40	214	55	86	184	239	0	0	0	247	461	270
Number of Lanes	0	1	0	0	1	0	0	0	0	0	1	0

Approach	EB	WB	SB
Opposing Approach	WB	EB	
Opposing Lanes	1	1	0
Conflicting Approach Left	SB		WB
Conflicting Lanes Left	1	0	1
Conflicting Approach Right		SB	EB
Conflicting Lanes Right	0	1	1
HCM Control Delay	22.7	46	345.1
HCM LOS	C	E	F

Lane	EBLn1	WBLn1	SBLn1
Vol Left, %	13%	17%	25%
Vol Thru, %	69%	36%	47%
Vol Right, %	18%	47%	28%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	285	468	899
LT Vol	37	79	227
Through Vol	197	169	424
RT Vol	51	220	248
Lane Flow Rate	310	509	977
Geometry Grp	1	1	1
Degree of Util (X)	0.578	0.878	1.714
Departure Headway (Hd)	8.604	7.961	6.314
Convergence, Y/N	Yes	Yes	Yes
Cap	424	458	586
Service Time	6.604	5.961	4.314
HCM Lane V/C Ratio	0.731	1.111	1.667
HCM Control Delay	22.7	46	345.1
HCM Lane LOS	C	E	F
HCM 95th-tile Q	3.5	9.2	57.3



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕				
Traffic Volume (vph)	95	328	0	0	247	79	222	0	247	0	0	0
Future Volume (vph)	95	328	0	0	247	79	222	0	247	0	0	0
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
Fr _t					0.967			0.929				
Fl _t Protected		0.989						0.977				
Satd. Flow (prot)	0	1842	0	0	1801	0	0	1691	0	0	0	0
Fl _t Permitted		0.989						0.977				
Satd. Flow (perm)	0	1842	0	0	1801	0	0	1691	0	0	0	0
Link Speed (mph)		30			30			30				30
Link Distance (ft)		1070			714			989				751
Travel Time (s)		24.3			16.2			22.5				17.1
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)	103	357	0	0	268	86	241	0	268	0	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	460	0	0	354	0	0	509	0	0	0	0
Sign Control		Stop			Stop			Stop			Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	77.8%
ICU Level of Service	D
Analysis Period (min)	15

Intersection	
Intersection Delay, s/veh	30.9
Intersection LOS	D

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↔			↕				
Traffic Vol, veh/h	95	328	0	0	247	79	222	0	247	0	0	0
Future Vol, veh/h	95	328	0	0	247	79	222	0	247	0	0	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	103	357	0	0	268	86	241	0	268	0	0	0
Number of Lanes	0	1	0	0	1	0	0	1	0	0	0	0

Approach	EB	WB	NB
Opposing Approach	WB	EB	
Opposing Lanes	1	1	0
Conflicting Approach Left		NB	EB
Conflicting Lanes Left	0	1	1
Conflicting Approach Right	NB		WB
Conflicting Lanes Right	1	0	1
HCM Control Delay	32.2	20	37.2
HCM LOS	D	C	E

Lane	NBLn1	EBLn1	WBLn1
Vol Left, %	47%	22%	0%
Vol Thru, %	0%	78%	76%
Vol Right, %	53%	0%	24%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	469	423	326
LT Vol	222	95	0
Through Vol	0	328	247
RT Vol	247	0	79
Lane Flow Rate	510	460	354
Geometry Grp	1	1	1
Degree of Util (X)	0.87	0.818	0.633
Departure Headway (Hd)	6.146	6.407	6.43
Convergence, Y/N	Yes	Yes	Yes
Cap	591	566	560
Service Time	4.188	4.459	4.486
HCM Lane V/C Ratio	0.863	0.813	0.632
HCM Control Delay	37.2	32.2	20
HCM Lane LOS	E	D	C
HCM 95th-tile Q	9.8	8.2	4.4

BUILD IMPROVED

Lanes, Volumes, Timings
101: Main & Rte 372

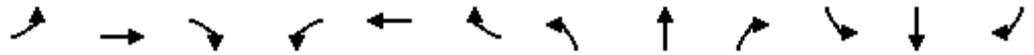
12/21/2020



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	5	281	122	171	366	62	169	22	293	50	17	12
Future Volume (vph)	5	281	122	171	366	62	169	22	293	50	17	12
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	15	12	12	15	12
Storage Length (ft)	0		150	100		0	0		0	0		0
Storage Lanes	0		1	1		0	0		0	0		0
Taper Length (ft)	25			50			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Fr _t			0.850		0.978			0.918			0.979	
Fl _t Protected		0.999		0.950				0.983			0.969	
Satd. Flow (prot)	0	1861	1583	1770	1822	0	0	1849	0	0	1944	0
Fl _t Permitted		0.992		0.546				0.852			0.717	
Satd. Flow (perm)	0	1848	1583	1017	1822	0	0	1603	0	0	1438	0
Right Turn on Red			Yes			Yes			Yes			No
Satd. Flow (RTOR)			133		16			102				
Link Speed (mph)		35			35			30				30
Link Distance (ft)		875			2306			2021				579
Travel Time (s)		17.0			44.9			45.9				13.2
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)	5	305	133	186	398	67	184	24	318	54	18	13
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	310	133	186	465	0	0	526	0	0	85	0
Enter Blocked Intersection	No											
Lane Alignment	Left	Left	Right									
Median Width(ft)		12			12			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	0.88	1.00	1.00	0.88	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	1	1	1	1		1	1		1	1	
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru		Left	Thru	
Leading Detector (ft)	20	200	20	20	200		20	30		20	30	
Trailing Detector (ft)	0	194	20	20	194		0	-5		0	-5	
Detector 1 Position(ft)	0	194	20	20	194		0	-5		0	-5	
Detector 1 Size(ft)	20	6	0	0	6		20	35		20	35	
Detector 1 Type	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	
Detector 1 Queue (s)	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	
Turn Type	Perm	NA	Perm	Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			8				4
Permitted Phases	2		2	6			8			4		
Detector Phase	2	2	2	6	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	15.0	15.0	15.0	15.0	15.0		9.0	9.0		9.0	9.0	
Minimum Split (s)	20.0	20.0	20.0	20.0	20.0		13.0	13.0		13.0	13.0	

Lanes, Volumes, Timings
101: Main & Rte 372

12/21/2020

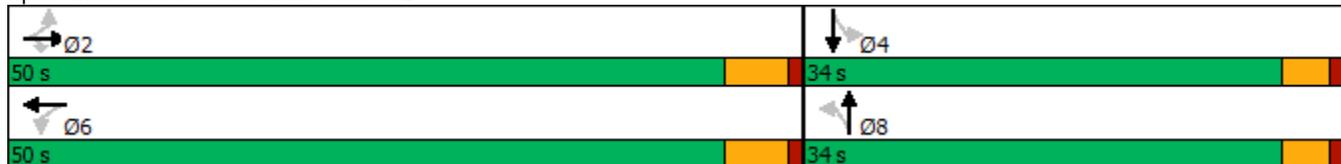


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Split (s)	50.0	50.0	50.0	50.0	50.0		34.0	34.0		34.0	34.0	
Total Split (%)	59.5%	59.5%	59.5%	59.5%	59.5%		40.5%	40.5%		40.5%	40.5%	
Maximum Green (s)	45.0	45.0	45.0	45.0	45.0		30.0	30.0		30.0	30.0	
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	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	
Total Lost Time (s)		5.0	5.0	5.0	5.0			4.0			4.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	4.0	4.0	4.0	4.0	4.0		3.0	3.0		3.0	3.0	
Recall Mode	Min	Min	Min	Min	Min		None	None		None	None	
Act Effct Green (s)		18.9	18.9	18.9	18.9			19.1			19.1	
Actuated g/C Ratio		0.40	0.40	0.40	0.40			0.40			0.40	
v/c Ratio		0.42	0.19	0.46	0.63			0.75			0.15	
Control Delay		13.6	3.5	16.6	16.8			17.4			10.1	
Queue Delay		0.0	0.0	0.0	0.0			0.0			0.0	
Total Delay		13.6	3.5	16.6	16.8			17.4			10.1	
LOS		B	A	B	B			B			B	
Approach Delay		10.6			16.7			17.4			10.1	
Approach LOS		B			B			B			B	
Queue Length 50th (ft)		55	0	34	88			82			13	
Queue Length 95th (ft)		145	28	106	228			229			42	
Internal Link Dist (ft)		795			2226			1941			499	
Turn Bay Length (ft)			150	100								
Base Capacity (vph)		1677	1449	923	1655			1099			955	
Starvation Cap Reductn		0	0	0	0			0			0	
Spillback Cap Reductn		0	0	0	0			0			0	
Storage Cap Reductn		0	0	0	0			0			0	
Reduced v/c Ratio		0.18	0.09	0.20	0.28			0.48			0.09	

Intersection Summary

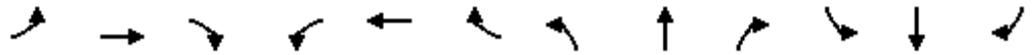
Area Type:	Other
Cycle Length:	84
Actuated Cycle Length:	47.4
Natural Cycle:	40
Control Type:	Actuated-Uncoordinated
Maximum v/c Ratio:	0.75
Intersection Signal Delay:	15.0
Intersection LOS:	B
Intersection Capacity Utilization:	79.2%
ICU Level of Service:	D
Analysis Period (min):	15

Splits and Phases: 101: Main & Rte 372



Lanes, Volumes, Timings
102: McD/Sebethe & Rte 372

12/21/2020

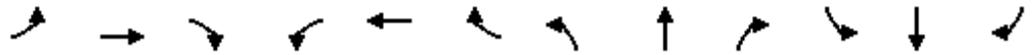


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	40	647	28	17	756	394	0	0	0	135	5	50
Future Volume (vph)	40	647	28	17	756	394	0	0	0	135	5	50
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	300		0	0		0	0		0	125		125
Storage Lanes	1		0	0		0	0		0	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	0.95	0.95	0.95	0.95	1.00	1.00	1.00	0.95	0.95	1.00
Frt		0.994			0.949							0.850
Flt Protected	0.950				0.999					0.950	0.955	
Satd. Flow (prot)	1770	3518	0	0	3355	0	0	0	0	1681	1690	1583
Flt Permitted	0.150				0.955					0.950	0.955	
Satd. Flow (perm)	279	3518	0	0	3208	0	0	0	0	1681	1690	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		3			223							166
Link Speed (mph)		40			40			25			30	
Link Distance (ft)		364			232			215			478	
Travel Time (s)		6.2			4.0			5.9			10.9	
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)	43	703	30	18	822	428	0	0	0	147	5	54
Shared Lane Traffic (%)										48%		
Lane Group Flow (vph)	43	733	0	0	1268	0	0	0	0	76	76	54
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			0			12			12	
Link Offset(ft)		6			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	1		1	1					1	1	1
Detector Template	Left	Thru		Left	Thru					Left	Thru	Right
Leading Detector (ft)	50	50		20	50					30	30	30
Trailing Detector (ft)	50	50		0	50					-5	-5	-5
Detector 1 Position(ft)	50	50		0	50					-5	-5	-5
Detector 1 Size(ft)	0	0		20	0					35	35	35
Detector 1 Type	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
Detector 1 Queue (s)	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
Turn Type	Perm	NA		Perm	NA					Split	NA	Prot
Protected Phases		1 8			1 2 5 6					7	7	7
Permitted Phases	1 8			1 2 5 6		8						
Detector Phase	1	1		1 2 5 6	1					7	7	7
Switch Phase												
Minimum Initial (s)										7.0	7.0	7.0
Minimum Split (s)										11.3	11.3	11.3
Total Split (s)										19.3	19.3	19.3

Lane Group	Ø1	Ø2	Ø3	Ø4	Ø5	Ø6	Ø8
Lane Configurations							
Traffic Volume (vph)							
Future Volume (vph)							
Ideal Flow (vphpl)							
Storage Length (ft)							
Storage Lanes							
Taper Length (ft)							
Lane Util. Factor							
Frt							
Flt Protected							
Satd. Flow (prot)							
Flt Permitted							
Satd. Flow (perm)							
Right Turn on Red							
Satd. Flow (RTOR)							
Link Speed (mph)							
Link Distance (ft)							
Travel Time (s)							
Peak Hour Factor							
Adj. Flow (vph)							
Shared Lane Traffic (%)							
Lane Group Flow (vph)							
Enter Blocked Intersection							
Lane Alignment							
Median Width(ft)							
Link Offset(ft)							
Crosswalk Width(ft)							
Two way Left Turn Lane							
Headway Factor							
Turning Speed (mph)							
Number of Detectors							
Detector Template							
Leading Detector (ft)							
Trailing Detector (ft)							
Detector 1 Position(ft)							
Detector 1 Size(ft)							
Detector 1 Type							
Detector 1 Channel							
Detector 1 Extend (s)							
Detector 1 Queue (s)							
Detector 1 Delay (s)							
Turn Type							
Protected Phases	1	2	3	4	5	6	8
Permitted Phases							
Detector Phase							
Switch Phase							
Minimum Initial (s)	15.0	1.0	7.0	1.0	5.0	10.0	1.0
Minimum Split (s)	20.0	5.6	10.8	3.1	8.6	14.7	3.1
Total Split (s)	29.0	5.6	20.8	3.1	18.6	34.7	3.1

Lanes, Volumes, Timings
 102: McD/Sebethe & Rte 372

12/21/2020

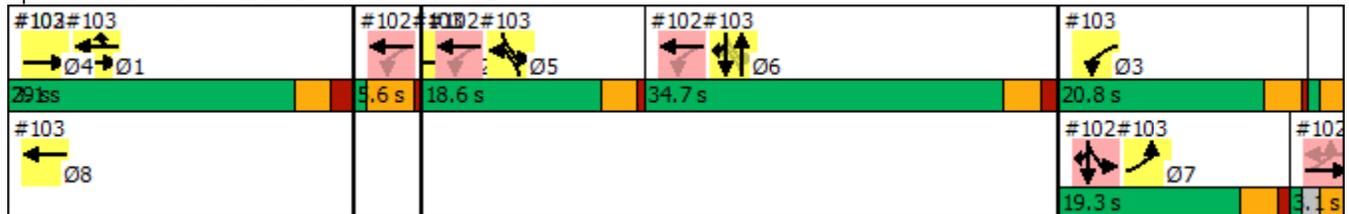


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Split (%)										17.3%	17.3%	17.3%
Maximum Green (s)										15.0	15.0	15.0
Yellow Time (s)										3.2	3.2	3.2
All-Red Time (s)										1.1	1.1	1.1
Lost Time Adjust (s)										0.0	0.0	0.0
Total Lost Time (s)										4.3	4.3	4.3
Lead/Lag										Lead	Lead	Lead
Lead-Lag Optimize?												
Vehicle Extension (s)										1.0	1.0	1.0
Recall Mode										None	None	None
Act Effct Green (s)	25.3	25.3			64.0					9.4	9.4	9.4
Actuated g/C Ratio	0.29	0.29			0.73					0.11	0.11	0.11
v/c Ratio	0.54	0.72			0.50					0.42	0.42	0.17
Control Delay	57.2	33.7			2.4					46.1	46.0	1.2
Queue Delay	0.0	0.1			0.8					0.0	0.0	0.0
Total Delay	57.2	33.8			3.2					46.1	46.0	1.2
LOS	E	C			A					D	D	A
Approach Delay		35.1			3.2						34.3	
Approach LOS		D			A						C	
Queue Length 50th (ft)	20	187			23					41	41	0
Queue Length 95th (ft)	#78	302			16					96	96	0
Internal Link Dist (ft)		284			152			135			398	
Turn Bay Length (ft)	300									125		125
Base Capacity (vph)	80	1021			2521					293	295	413
Starvation Cap Reductn	0	0			846					0	0	0
Spillback Cap Reductn	0	16			0					0	0	0
Storage Cap Reductn	0	0			0					0	0	0
Reduced v/c Ratio	0.54	0.73			0.76					0.26	0.26	0.13

Intersection Summary

Area Type: Other
 Cycle Length: 111.8
 Actuated Cycle Length: 87.2
 Natural Cycle: 65
 Control Type: Semi Act-Uncoord
 Maximum v/c Ratio: 0.72
 Intersection Signal Delay: 17.1
 Intersection LOS: B
 Intersection Capacity Utilization 59.7%
 ICU Level of Service B
 Analysis Period (min) 15
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

Splits and Phases: 102: McD/Sebethe & Rte 372



Lane Group	Ø1	Ø2	Ø3	Ø4	Ø5	Ø6	Ø8
Total Split (%)	26%	5%	19%	3%	17%	31%	3%
Maximum Green (s)	24.0	1.0	17.0	1.0	15.0	30.0	1.0
Yellow Time (s)	3.0	4.0	3.2	2.0	3.0	3.2	2.0
All-Red Time (s)	2.0	0.6	0.6	0.1	0.6	1.5	0.1
Lost Time Adjust (s)							
Total Lost Time (s)							
Lead/Lag			Lead	Lag	Lead	Lag	Lag
Lead-Lag Optimize?							
Vehicle Extension (s)	3.0	3.0	1.0	1.0	1.0	3.0	3.0
Recall Mode	Min	Max	None	None	None	None	None
Act Effct Green (s)							
Actuated g/C Ratio							
v/c Ratio							
Control Delay							
Queue Delay							
Total Delay							
LOS							
Approach Delay							
Approach LOS							
Queue Length 50th (ft)							
Queue Length 95th (ft)							
Internal Link Dist (ft)							
Turn Bay Length (ft)							
Base Capacity (vph)							
Starvation Cap Reductn							
Spillback Cap Reductn							
Storage Cap Reductn							
Reduced v/c Ratio							
Intersection Summary							

Lanes, Volumes, Timings
103: Ind Park/I91SB & Rte 372

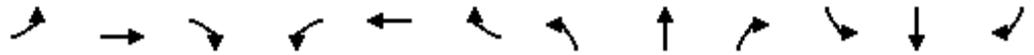
12/21/2020

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	99	588	102	136	607	242	140	39	215	180	278	420
Future Volume (vph)	99	588	102	136	607	242	140	39	215	180	278	420
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	325		125	375		0	460		325
Storage Lanes	1		1	1		1	1		1	1		2
Taper Length (ft)	25			50			25			25		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	0.95	1.00
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	3539	1568	1752	3539	1583	1752	1845	1568	1770	3505	1583
Flt Permitted	0.950			0.950			0.481			0.730		
Satd. Flow (perm)	1770	3539	1568	1752	3539	1583	887	1845	1568	1360	3505	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			208			186			234			457
Link Speed (mph)		40			40			35				35
Link Distance (ft)		232			1355			1191				741
Travel Time (s)		4.0			23.1			23.2				14.4
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	2%	2%	3%	3%	2%	2%	3%	3%	3%	2%	3%	2%
Adj. Flow (vph)	108	639	111	148	660	263	152	42	234	196	302	457
Shared Lane Traffic (%)												
Lane Group Flow (vph)	108	639	111	148	660	263	152	42	234	196	302	457
Enter Blocked Intersection	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	1	1	1	1	1	1	1	1	1	1	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (ft)	30	50	20	30	50	50	30	50	20	30	50	50
Trailing Detector (ft)	-5	44	20	-5	44	44	-5	44	20	-5	44	44
Detector 1 Position(ft)	-5	44	20	-5	44	44	-5	44	20	-5	44	44
Detector 1 Size(ft)	35	6	0	35	6	6	35	6	0	35	6	6
Detector 1 Type	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	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	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	0.0
Turn Type	Prot	NA	Free	Prot	NA	custom	pm+pt	NA	Free	pm+pt	NA	Prot
Protected Phases	7	1 2 4		3	1 8	1	5	6		5	6	6
Permitted Phases			Free				6		Free	6		
Detector Phase	7	1 2 4		3	1 8	1	5	6		5 6	6	6
Switch Phase												
Minimum Initial (s)	7.0			7.0		15.0	5.0	10.0		5.0	10.0	10.0
Minimum Split (s)	11.3			10.8		20.0	8.6	14.7		8.6	14.7	14.7

Lane Group	Ø2	Ø4	Ø8
Lane Configurations			
Traffic Volume (vph)			
Future Volume (vph)			
Ideal Flow (vphpl)			
Storage Length (ft)			
Storage Lanes			
Taper Length (ft)			
Lane Util. Factor			
Frt			
Flt Protected			
Satd. Flow (prot)			
Flt Permitted			
Satd. Flow (perm)			
Right Turn on Red			
Satd. Flow (RTOR)			
Link Speed (mph)			
Link Distance (ft)			
Travel Time (s)			
Peak Hour Factor			
Heavy Vehicles (%)			
Adj. Flow (vph)			
Shared Lane Traffic (%)			
Lane Group Flow (vph)			
Enter Blocked Intersection			
Lane Alignment			
Median Width(ft)			
Link Offset(ft)			
Crosswalk Width(ft)			
Two way Left Turn Lane			
Headway Factor			
Turning Speed (mph)			
Number of Detectors			
Detector Template			
Leading Detector (ft)			
Trailing Detector (ft)			
Detector 1 Position(ft)			
Detector 1 Size(ft)			
Detector 1 Type			
Detector 1 Channel			
Detector 1 Extend (s)			
Detector 1 Queue (s)			
Detector 1 Delay (s)			
Turn Type			
Protected Phases	2	4	8
Permitted Phases			
Detector Phase			
Switch Phase			
Minimum Initial (s)	1.0	1.0	1.0
Minimum Split (s)	5.6	3.1	3.1

Lanes, Volumes, Timings
103: Ind Park/I91SB & Rte 372

12/21/2020

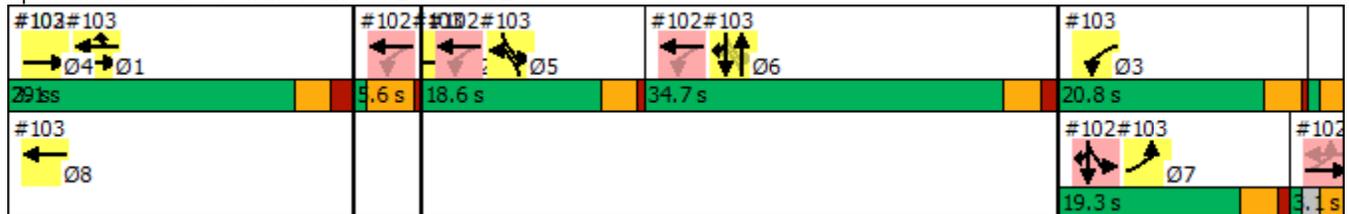


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Split (s)	19.3			20.8		29.0	18.6	34.7		18.6	34.7	34.7
Total Split (%)	17.3%			18.6%		25.9%	16.6%	31.0%		16.6%	31.0%	31.0%
Maximum Green (s)	15.0			17.0		24.0	15.0	30.0		15.0	30.0	30.0
Yellow Time (s)	3.2			3.2		3.0	3.0	3.2		3.0	3.2	3.2
All-Red Time (s)	1.1			0.6		2.0	0.6	1.5		0.6	1.5	1.5
Lost Time Adjust (s)	0.0			0.0		0.0	0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	4.3			3.8		5.0	3.6	4.7		3.6	4.7	4.7
Lead/Lag	Lead			Lead			Lead	Lag		Lead	Lag	Lag
Lead-Lag Optimize?												
Vehicle Extension (s)	1.0			1.0		3.0	1.0	3.0		1.0	3.0	3.0
Recall Mode	None			None		Min	None	None		None	None	None
Act Effct Green (s)	9.4	30.0	87.2	11.1	25.3	24.4	26.6	14.9	87.2	26.6	14.9	14.9
Actuated g/C Ratio	0.11	0.34	1.00	0.13	0.29	0.28	0.31	0.17	1.00	0.31	0.17	0.17
v/c Ratio	0.57	0.52	0.07	0.67	0.64	0.46	0.41	0.13	0.15	0.42	0.51	0.71
Control Delay	62.1	4.5	0.1	52.7	31.9	12.7	23.8	33.0	0.2	23.9	36.5	10.0
Queue Delay	0.1	0.5	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	62.1	5.0	0.1	52.7	32.1	12.7	23.8	33.0	0.2	23.9	36.5	10.0
LOS	E	A	A	D	C	B	C	C	A	C	D	B
Approach Delay		11.6			30.2			11.8			21.3	
Approach LOS		B			C			B			C	
Queue Length 50th (ft)	54	35	0	77	164	31	58	20	0	76	78	0
Queue Length 95th (ft)	m94	54	m0	157	268	120	110	53	0	140	133	88
Internal Link Dist (ft)		152			1275			1111			661	
Turn Bay Length (ft)				325		125	375			460		325
Base Capacity (vph)	309	1219	1568	346	1025	576	449	644	1568	772	1224	850
Starvation Cap Reductn	9	237	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	46	0	0	0	0	0	0	5
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.36	0.65	0.07	0.43	0.67	0.46	0.34	0.07	0.15	0.25	0.25	0.54

Intersection Summary

Area Type: Other
 Cycle Length: 111.8
 Actuated Cycle Length: 87.2
 Natural Cycle: 65
 Control Type: Semi Act-Uncoord
 Maximum v/c Ratio: 0.72
 Intersection Signal Delay: 20.4
 Intersection LOS: C
 Intersection Capacity Utilization 62.0%
 ICU Level of Service B
 Analysis Period (min) 15
 m Volume for 95th percentile queue is metered by upstream signal.

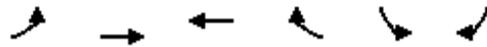
Splits and Phases: 103: Ind Park/I91SB & Rte 372



Lane Group	Ø2	Ø4	Ø8
Total Split (s)	5.6	3.1	3.1
Total Split (%)	5%	3%	3%
Maximum Green (s)	1.0	1.0	1.0
Yellow Time (s)	4.0	2.0	2.0
All-Red Time (s)	0.6	0.1	0.1
Lost Time Adjust (s)			
Total Lost Time (s)			
Lead/Lag		Lag	Lag
Lead-Lag Optimize?			
Vehicle Extension (s)	3.0	1.0	3.0
Recall Mode	Max	None	None
Act Effct Green (s)			
Actuated g/C Ratio			
v/c Ratio			
Control Delay			
Queue Delay			
Total Delay			
LOS			
Approach Delay			
Approach LOS			
Queue Length 50th (ft)			
Queue Length 95th (ft)			
Internal Link Dist (ft)			
Turn Bay Length (ft)			
Base Capacity (vph)			
Starvation Cap Reductn			
Spillback Cap Reductn			
Storage Cap Reductn			
Reduced v/c Ratio			
Intersection Summary			

Lanes, Volumes, Timings
104: Rte 372 & I91NB

12/21/2020



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	365	632	696	675	310	271
Future Volume (vph)	365	632	696	675	310	271
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	725			225	200	110
Storage Lanes	1			1	0	1
Taper Length (ft)	25				75	
Lane Util. Factor	1.00	0.95	0.95	1.00	0.97	1.00
Fr _t				0.850		0.850
Fl _t Protected	0.950				0.950	
Satd. Flow (prot)	1770	3539	3539	1583	3433	1583
Fl _t Permitted	0.291				0.950	
Satd. Flow (perm)	542	3539	3539	1583	3433	1583
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)				689		162
Link Speed (mph)		40	40		35	
Link Distance (ft)		1355	610		341	
Travel Time (s)		23.1	10.4		6.6	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	397	687	757	734	337	295
Shared Lane Traffic (%)						
Lane Group Flow (vph)	397	687	757	734	337	295
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		12	12		30	
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
Number of Detectors	1	1	1	1	1	1
Detector Template	Left	Thru	Thru	Right	Left	Right
Leading Detector (ft)	30	400	400	20	30	30
Trailing Detector (ft)	-10	394	394	20	-10	-10
Detector 1 Position(ft)	-10	394	394	20	-10	-10
Detector 1 Size(ft)	40	6	6	0	40	40
Detector 1 Type	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
Detector 1 Queue (s)	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
Turn Type	pm+pt	NA	NA	Perm	Prot	pt+ov
Protected Phases	5	2	6		4	4 5
Permitted Phases	2			6		
Detector Phase	5	2	6	6	4	4
Switch Phase						
Minimum Initial (s)	5.0	15.0	15.0	15.0	7.0	
Minimum Split (s)	9.0	20.0	20.0	20.0	11.0	
Total Split (s)	18.0	70.0	52.0	52.0	20.0	

Lanes, Volumes, Timings
104: Rte 372 & I91NB

12/21/2020

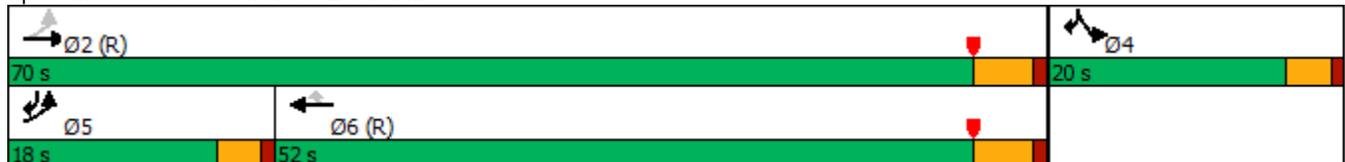


Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Total Split (%)	20.0%	77.8%	57.8%	57.8%	22.2%	
Maximum Green (s)	14.0	65.0	47.0	47.0	16.0	
Yellow Time (s)	3.0	4.0	4.0	4.0	3.0	
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	4.0	5.0	5.0	5.0	4.0	
Lead/Lag	Lead		Lag	Lag		
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	C-Min	C-Min	C-Min	None	
Act Effct Green (s)	67.1	66.1	49.0	49.0	14.9	32.0
Actuated g/C Ratio	0.75	0.73	0.54	0.54	0.17	0.36
v/c Ratio	0.68	0.26	0.39	0.62	0.59	0.44
Control Delay	10.9	4.6	14.2	4.7	38.7	10.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	10.9	4.6	14.2	4.7	38.7	10.4
LOS	B	A	B	A	D	B
Approach Delay		6.9	9.5		25.5	
Approach LOS		A	A		C	
Queue Length 50th (ft)	58	53	117	11	93	54
Queue Length 95th (ft)	124	98	222	109	125	90
Internal Link Dist (ft)		1275	530		261	
Turn Bay Length (ft)	725			225	200	110
Base Capacity (vph)	613	2639	2018	1198	649	657
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.65	0.26	0.38	0.61	0.52	0.45

Intersection Summary

Area Type: Other
 Cycle Length: 90
 Actuated Cycle Length: 90
 Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBT, Start of Yellow
 Natural Cycle: 55
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.68
 Intersection Signal Delay: 11.8
 Intersection Capacity Utilization 69.5%
 Analysis Period (min) 15
 Intersection LOS: B
 ICU Level of Service C

Splits and Phases: 104: Rte 372 & I91NB



Lanes, Volumes, Timings
105: Ind Park & Sat Lot

12/21/2020



Lane Group	EBL	EBR	NEL	NET	SWT	SWR
Lane Configurations						
Traffic Volume (vph)	3	1	1	368	513	2
Future Volume (vph)	3	1	1	368	513	2
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	0.95	0.95	0.95	0.95
Frt	0.966			0.999		
Flt Protected	0.964					
Satd. Flow (prot)	1180	0	0	3501	3496	0
Flt Permitted	0.964					
Satd. Flow (perm)	1180	0	0	3501	3496	0
Link Speed (mph)	25			35	35	
Link Distance (ft)	249			248	1643	
Travel Time (s)	6.8			4.8	32.0	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	50%	50%	50%	3%	3%	50%
Adj. Flow (vph)	3	1	1	400	558	2
Shared Lane Traffic (%)						
Lane Group Flow (vph)	4	0	0	401	560	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	12			0	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	Stop			Free	Free	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	24.2% ICU Level of Service A
Analysis Period (min)	15

Intersection						
Int Delay, s/veh	0.1					
Movement	EBL	EBR	NEL	NET	SWT	SWR
Lane Configurations	T			T		T
Traffic Vol, veh/h	3	1	1	368	513	2
Future Vol, veh/h	3	1	1	368	513	2
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	50	50	50	3	3	50
Mvmt Flow	3	1	1	400	558	2

Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	761	280	560	0	-	0
Stage 1	559	-	-	-	-	-
Stage 2	202	-	-	-	-	-
Critical Hdwy	7.8	7.9	5.1	-	-	-
Critical Hdwy Stg 1	6.8	-	-	-	-	-
Critical Hdwy Stg 2	6.8	-	-	-	-	-
Follow-up Hdwy	4	3.8	2.7	-	-	-
Pot Cap-1 Maneuver	256	592	739	-	-	-
Stage 1	420	-	-	-	-	-
Stage 2	686	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	255	592	739	-	-	-
Mov Cap-2 Maneuver	255	-	-	-	-	-
Stage 1	419	-	-	-	-	-
Stage 2	686	-	-	-	-	-

Approach	EB	NE	SW
HCM Control Delay, s	17.3	0	0
HCM LOS	C		

Minor Lane/Major Mvmt	NEL	NET	EBLn1	SWT	SWR
Capacity (veh/h)	739	-	297	-	-
HCM Lane V/C Ratio	0.001	-	0.015	-	-
HCM Control Delay (s)	9.9	0	17.3	-	-
HCM Lane LOS	A	A	C	-	-
HCM 95th %tile Q(veh)	0	-	0	-	-

Lanes, Volumes, Timings
106: Ind Park & Fedex Truck

12/21/2020



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	31	2	1	338	495	19
Future Volume (vph)	31	2	1	338	495	19
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	240	0			100
Storage Lanes	1	1	0			1
Taper Length (ft)	25		25			
Lane Util. Factor	1.00	1.00	0.95	0.95	1.00	1.00
Frt		0.850				0.850
Flt Protected	0.950					
Satd. Flow (prot)	902	808	0	3496	1845	808
Flt Permitted	0.950					
Satd. Flow (perm)	902	808	0	3496	1845	808
Link Speed (mph)	30			40	40	
Link Distance (ft)	754			943	1018	
Travel Time (s)	17.1			16.1	17.4	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	100%	100%	100%	3%	3%	100%
Adj. Flow (vph)	34	2	1	367	538	21
Shared Lane Traffic (%)						
Lane Group Flow (vph)	34	2	0	368	538	21
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	12			0	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			15
Sign Control	Stop			Free	Free	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	36.1%
Analysis Period (min)	15
	ICU Level of Service A

Intersection						
Int Delay, s/veh	0.8					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	31	2	1	338	495	19
Future Vol, veh/h	31	2	1	338	495	19
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	Free
Storage Length	0	240	-	-	-	100
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	100	100	100	3	3	100
Mvmt Flow	34	2	1	367	538	21

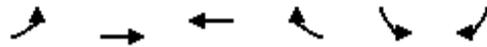
Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	724	538	538	0	-	0
Stage 1	538	-	-	-	-	-
Stage 2	186	-	-	-	-	-
Critical Hdwy	8.1	7.7	5.6	-	-	-
Critical Hdwy Stg 1	6.9	-	-	-	-	-
Critical Hdwy Stg 2	7.3	-	-	-	-	-
Follow-up Hdwy	4.45	4.25	3.15	-	-	-
Pot Cap-1 Maneuver	240	362	621	-	-	0
Stage 1	395	-	-	-	-	0
Stage 2	621	-	-	-	-	0
Platoon blocked, %				-	-	
Mov Cap-1 Maneuver	240	362	621	-	-	-
Mov Cap-2 Maneuver	240	-	-	-	-	-
Stage 1	394	-	-	-	-	-
Stage 2	621	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	22	0	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT
Capacity (veh/h)	621	-	240	362	-
HCM Lane V/C Ratio	0.002	-	0.14	0.006	-
HCM Control Delay (s)	10.8	0	22.4	15	-
HCM Lane LOS	B	A	C	C	-
HCM 95th %tile Q(veh)	0	-	0.5	0	-

Lanes, Volumes, Timings
107: Smith & Ind Park

12/21/2020



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	200	57	331	161	62	126
Future Volume (vph)	200	57	331	161	62	126
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.956		0.909	
Flt Protected		0.963			0.984	
Satd. Flow (prot)	0	1780	1775	0	1661	0
Flt Permitted		0.963			0.984	
Satd. Flow (perm)	0	1780	1775	0	1661	0
Link Speed (mph)		30	30		30	
Link Distance (ft)		1107	1054		3267	
Travel Time (s)		25.2	24.0		74.3	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	3%	2%	2%	3%	3%	2%
Adj. Flow (vph)	217	62	360	175	67	137
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	279	535	0	204	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		0	0		12	
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	62.5%
ICU Level of Service	B
Analysis Period (min)	15

Intersection						
Int Delay, s/veh	6.8					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↔	↔		↔	
Traffic Vol, veh/h	200	57	331	161	62	126
Future Vol, veh/h	200	57	331	161	62	126
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	3	2	2	3	3	2
Mvmt Flow	217	62	360	175	67	137

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	535	0	-	0	944 448
Stage 1	-	-	-	-	448 -
Stage 2	-	-	-	-	496 -
Critical Hdwy	4.13	-	-	-	6.43 6.22
Critical Hdwy Stg 1	-	-	-	-	5.43 -
Critical Hdwy Stg 2	-	-	-	-	5.43 -
Follow-up Hdwy	2.227	-	-	-	3.527 3.318
Pot Cap-1 Maneuver	1028	-	-	-	290 611
Stage 1	-	-	-	-	642 -
Stage 2	-	-	-	-	610 -
Platoon blocked, %		-	-	-	
Mov Cap-1 Maneuver	1028	-	-	-	226 611
Mov Cap-2 Maneuver	-	-	-	-	226 -
Stage 1	-	-	-	-	501 -
Stage 2	-	-	-	-	610 -

Approach	EB	WB	SB
HCM Control Delay, s	7.3	0	23.9
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1028	-	-	-	391
HCM Lane V/C Ratio	0.211	-	-	-	0.523
HCM Control Delay (s)	9.4	0	-	-	23.9
HCM Lane LOS	A	A	-	-	C
HCM 95th %tile Q(veh)	0.8	-	-	-	2.9

Lanes, Volumes, Timings
110: Middle/Main & Spruce Brook/Division

12/21/2020



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Volume (vph)	17	0	8	0	0	2	5	439	0	1	280	5
Future Volume (vph)	17	0	8	0	0	2	5	439	0	1	280	5
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
Fr _t		0.955			0.865						0.998	
Fl _t Protected		0.968						0.999				
Satd. Flow (prot)	0	1722	0	0	1611	0	0	1861	0	0	1859	0
Fl _t Permitted		0.968						0.999				
Satd. Flow (perm)	0	1722	0	0	1611	0	0	1861	0	0	1859	0
Link Speed (mph)		30			30			35			30	
Link Distance (ft)		475			567			1776			2021	
Travel Time (s)		10.8			12.9			34.6			45.9	
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)	18	0	9	0	0	2	5	477	0	1	304	5
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	27	0	0	2	0	0	482	0	0	310	0
Enter Blocked Intersection	No	No	No									
Lane Alignment	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		Stop			Stop			Stop			Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	41.5%
ICU Level of Service	A
Analysis Period (min)	15

Intersection

Intersection Delay, s/veh	11.9
Intersection LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	17	0	8	0	0	2	5	439	0	1	280	5
Future Vol, veh/h	17	0	8	0	0	2	5	439	0	1	280	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
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	18	0	9	0	0	2	5	477	0	1	304	5
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	8.9	8.1	13.2	10.3
HCM LOS	A	A	B	B

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	1%	68%	0%	0%
Vol Thru, %	99%	0%	0%	98%
Vol Right, %	0%	32%	100%	2%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	444	25	2	286
LT Vol	5	17	0	1
Through Vol	439	0	0	280
RT Vol	0	8	2	5
Lane Flow Rate	483	27	2	311
Geometry Grp	1	1	1	1
Degree of Util (X)	0.582	0.042	0.003	0.388
Departure Headway (Hd)	4.338	5.58	5.079	4.488
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	835	640	702	802
Service Time	2.355	3.627	3.132	2.508
HCM Lane V/C Ratio	0.578	0.042	0.003	0.388
HCM Control Delay	13.2	8.9	8.1	10.3
HCM Lane LOS	B	A	A	B
HCM 95th-tile Q	3.8	0.1	0	1.8

Lanes, Volumes, Timings

111: Middle & Lot N

12/21/2020



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	0	134	328	7	21	268
Future Volume (vph)	0	134	328	7	21	268
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.865		0.997			
Flt Protected						0.996
Satd. Flow (prot)	1611	0	1857	0	0	1855
Flt Permitted						0.996
Satd. Flow (perm)	1611	0	1857	0	0	1855
Link Speed (mph)	25		35			35
Link Distance (ft)	492		596			1776
Travel Time (s)	13.4		11.6			34.6
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	146	357	8	23	291
Shared Lane Traffic (%)						
Lane Group Flow (vph)	146	0	365	0	0	314
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	12		0			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		9	15	
Sign Control	Stop		Free			Free

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	46.4%
Analysis Period (min)	15
	ICU Level of Service A

Intersection						
Int Delay, s/veh	2.3					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	134	328	7	21	268
Future Vol, veh/h	0	134	328	7	21	268
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	146	357	8	23	291

Major/Minor	Minor1	Major1	Major2		
Conflicting Flow All	698	361	0	0	365
Stage 1	361	-	-	-	-
Stage 2	337	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12
Critical Hdwy Stg 1	5.42	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218
Pot Cap-1 Maneuver	407	684	-	-	1194
Stage 1	705	-	-	-	-
Stage 2	723	-	-	-	-
Platoon blocked, %			-	-	-
Mov Cap-1 Maneuver	398	684	-	-	1194
Mov Cap-2 Maneuver	398	-	-	-	-
Stage 1	705	-	-	-	-
Stage 2	706	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	11.7	0	0.6
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	684	1194
HCM Lane V/C Ratio	-	-	0.213	0.019
HCM Control Delay (s)	-	-	11.7	8.1
HCM Lane LOS	-	-	B	A
HCM 95th %tile Q(veh)	-	-	0.8	0.1

Lanes, Volumes, Timings

112: Middle

12/21/2020



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	51	34	290	7	10	248
Future Volume (vph)	51	34	290	7	10	248
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Fr _t		0.850	0.997			
Fl _t Protected	0.950					0.998
Satd. Flow (prot)	1770	1583	1857	0	0	1859
Fl _t Permitted	0.950					0.998
Satd. Flow (perm)	1770	1583	1857	0	0	1859
Link Speed (mph)	30		35			35
Link Distance (ft)	460		430			596
Travel Time (s)	10.5		8.4			11.6
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	55	37	315	8	11	270
Shared Lane Traffic (%)						
Lane Group Flow (vph)	55	37	323	0	0	281
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	12		0			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		9	15	
Sign Control	Stop		Free			Free

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	31.2%
Analysis Period (min)	15
	ICU Level of Service A

Intersection						
Int Delay, s/veh	1.8					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	51	34	290	7	10	248
Future Vol, veh/h	51	34	290	7	10	248
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	0	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	55	37	315	8	11	270

Major/Minor	Minor1	Major1	Major2		
Conflicting Flow All	611	319	0	0	323
Stage 1	319	-	-	-	-
Stage 2	292	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12
Critical Hdwy Stg 1	5.42	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218
Pot Cap-1 Maneuver	457	722	-	-	1237
Stage 1	737	-	-	-	-
Stage 2	758	-	-	-	-
Platoon blocked, %			-	-	-
Mov Cap-1 Maneuver	452	722	-	-	1237
Mov Cap-2 Maneuver	452	-	-	-	-
Stage 1	737	-	-	-	-
Stage 2	750	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	12.6	0	0.3
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	452	722	1237
HCM Lane V/C Ratio	-	-	0.123	0.051	0.009
HCM Control Delay (s)	-	-	14.1	10.3	7.9
HCM Lane LOS	-	-	B	B	A
HCM 95th %tile Q(veh)	-	-	0.4	0.2	0

Lanes, Volumes, Timings
113: Middle & Lot S

12/21/2020



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	67	51	257	11	10	300
Future Volume (vph)	67	51	257	11	10	300
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.942		0.994			
Flt Protected	0.972					0.998
Satd. Flow (prot)	1706	0	1852	0	0	1859
Flt Permitted	0.972					0.998
Satd. Flow (perm)	1706	0	1852	0	0	1859
Link Speed (mph)	25		35			35
Link Distance (ft)	471		866			430
Travel Time (s)	12.8		16.9			8.4
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	73	55	279	12	11	326
Shared Lane Traffic (%)						
Lane Group Flow (vph)	128	0	291	0	0	337
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	12		0			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		9	15	
Sign Control	Stop		Free			Free

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	37.4%
Analysis Period (min)	15
	ICU Level of Service A

Intersection						
Int Delay, s/veh	2.5					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	W		T			T
Traffic Vol, veh/h	67	51	257	11	10	300
Future Vol, veh/h	67	51	257	11	10	300
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	73	55	279	12	11	326

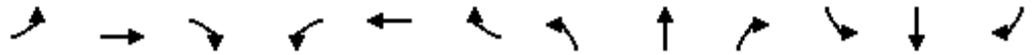
Major/Minor	Minor1	Major1	Major2		
Conflicting Flow All	633	285	0	0	291
Stage 1	285	-	-	-	-
Stage 2	348	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12
Critical Hdwy Stg 1	5.42	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218
Pot Cap-1 Maneuver	444	754	-	-	1271
Stage 1	763	-	-	-	-
Stage 2	715	-	-	-	-
Platoon blocked, %			-	-	-
Mov Cap-1 Maneuver	439	754	-	-	1271
Mov Cap-2 Maneuver	439	-	-	-	-
Stage 1	763	-	-	-	-
Stage 2	707	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	13.8	0	0.3
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	536	1271
HCM Lane V/C Ratio	-	-	0.239	0.009
HCM Control Delay (s)	-	-	13.8	7.9
HCM Lane LOS	-	-	B	A
HCM 95th %tile Q(veh)	-	-	0.9	0

Lanes, Volumes, Timings
114: Middle & Bradley/Aetna

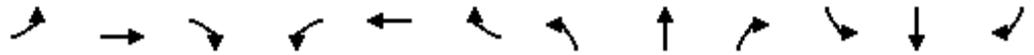
12/21/2020



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕	↕		↕	↕	↕	↕	
Traffic Volume (vph)	23	1	22	1	0	2	45	241	6	12	288	12
Future Volume (vph)	23	1	22	1	0	2	45	241	6	12	288	12
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	14	12	12	12	12	12	12	12	12	12	12
Storage Length (ft)	0		0	0		0	0		175	175		0
Storage Lanes	0		0	0		1	0		1	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Fr _t		0.935				0.850			0.850		0.994	
Fl _t Protected		0.976			0.950			0.992		0.950		
Satd. Flow (prot)	0	1813	0	0	1770	1583	0	1848	1583	1770	1852	0
Fl _t Permitted								0.920		0.488		
Satd. Flow (perm)	0	1858	0	0	1863	1583	0	1714	1583	909	1852	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		24				191			191		6	
Link Speed (mph)		25			30			35			35	
Link Distance (ft)		519			341			3417			866	
Travel Time (s)		14.2			7.8			66.6			16.9	
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)	25	1	24	1	0	2	49	262	7	13	313	13
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	50	0	0	1	2	0	311	7	13	326	0
Enter Blocked Intersection	No											
Lane Alignment	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												
Headway Factor	1.00	0.92	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	1		1	1	1	1	1	1	1	1	
Detector Template	Left	Thru		Left	Thru	Right	Left	Thru	Right	Left	Thru	
Leading Detector (ft)	20	20		20	20	20	20	100	20	30	100	
Trailing Detector (ft)	0	0		0	0	20	0	96	20	0	96	
Detector 1 Position(ft)	0	0		0	0	20	0	96	20	0	96	
Detector 1 Size(ft)	20	20		20	20	0	20	4	0	30	4	
Detector 1 Type	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	
Turn Type	Perm	NA		Perm	NA	Free	Perm	NA	Free	pm+pt	NA	
Protected Phases		4			8			2		1	6	
Permitted Phases	4			8		Free	2		Free	6		
Detector Phase	4	4		8	8		2	2		1	6	
Switch Phase												
Minimum Initial (s)	7.0	7.0		7.0	7.0		15.0	15.0		5.0	15.0	
Minimum Split (s)	11.5	11.5		11.5	11.5		19.5	19.5		9.5	19.5	

Lanes, Volumes, Timings
114: Middle & Bradley/Aetna

12/21/2020

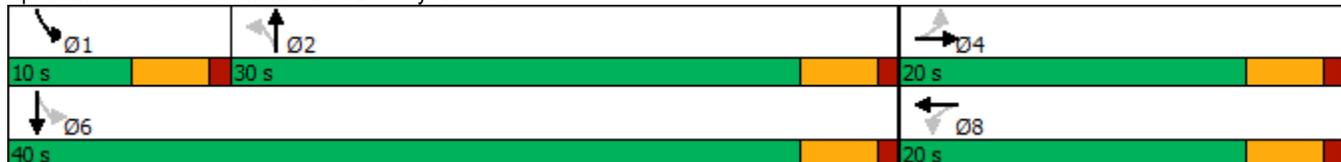


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Split (s)	20.0	20.0		20.0	20.0		30.0	30.0		10.0	40.0	
Total Split (%)	33.3%	33.3%		33.3%	33.3%		50.0%	50.0%		16.7%	66.7%	
Maximum Green (s)	15.5	15.5		15.5	15.5		25.5	25.5		5.5	35.5	
Yellow Time (s)	3.5	3.5		3.5	3.5		3.5	3.5		3.5	3.5	
All-Red 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	
Total Lost Time (s)		4.5			4.5			4.5		4.5	4.5	
Lead/Lag							Lag	Lag		Lead		
Lead-Lag Optimize?												
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		Min	Min		None	Min	
Act Effct Green (s)		7.3			7.3	34.4		30.1	34.4	27.8	31.7	
Actuated g/C Ratio		0.21			0.21	1.00		0.88	1.00	0.81	0.92	
v/c Ratio		0.12			0.00	0.00		0.21	0.00	0.01	0.19	
Control Delay		8.9			12.0	0.0		4.4	0.0	2.1	1.8	
Queue Delay		0.0			0.0	0.0		0.0	0.0	0.0	0.0	
Total Delay		8.9			12.0	0.0		4.4	0.0	2.1	1.8	
LOS		A			B	A		A	A	A	A	
Approach Delay		8.9			4.0			4.3			1.8	
Approach LOS		A			A			A			A	
Queue Length 50th (ft)		4			0	0		0	0	0	0	
Queue Length 95th (ft)		25			3	0		109	0	5	57	
Internal Link Dist (ft)		439			261			3337			786	
Turn Bay Length (ft)									175	175		
Base Capacity (vph)		869			859	1583		1568	1583	875	1790	
Starvation Cap Reductn		0			0	0		0	0	0	0	
Spillback Cap Reductn		0			0	0		0	0	0	0	
Storage Cap Reductn		0			0	0		0	0	0	0	
Reduced v/c Ratio		0.06			0.00	0.00		0.20	0.00	0.01	0.18	

Intersection Summary

Area Type:	Other
Cycle Length:	60
Actuated Cycle Length:	34.4
Natural Cycle:	45
Control Type:	Actuated-Uncoordinated
Maximum v/c Ratio:	0.21
Intersection Signal Delay:	3.4
Intersection LOS:	A
Intersection Capacity Utilization:	51.6%
ICU Level of Service:	A
Analysis Period (min):	15

Splits and Phases: 114: Middle & Bradley/Aetna



Lanes, Volumes, Timings
115: Middle & Smith

12/21/2020



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	204	168	203	244	74	148
Future Volume (vph)	204	168	203	244	74	148
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.939		0.926			
Flt Protected	0.973					0.984
Satd. Flow (prot)	1685	0	1708	0	0	1815
Flt Permitted	0.973					0.587
Satd. Flow (perm)	1685	0	1708	0	0	1083
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)	53		83			
Link Speed (mph)	30		35			35
Link Distance (ft)	1107		4763			3417
Travel Time (s)	25.2		92.8			66.6
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%
Adj. Flow (vph)	222	183	221	265	80	161
Shared Lane Traffic (%)						
Lane Group Flow (vph)	405	0	486	0	0	241
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	12		0			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		9	15	
Number of Detectors	1		1		1	1
Detector Template	Left		Thru		Left	Thru
Leading Detector (ft)	30		100		20	100
Trailing Detector (ft)	0		94		0	94
Detector 1 Position(ft)	0		94		0	94
Detector 1 Size(ft)	30		6		20	6
Detector 1 Type	Cl+Ex		Cl+Ex		Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0		0.0		0.0	0.0
Detector 1 Queue (s)	0.0		0.0		0.0	0.0
Detector 1 Delay (s)	0.0		0.0		0.0	0.0
Turn Type	Perm		NA		pm+pt	NA
Protected Phases			2		1	6
Permitted Phases	8				6	
Detector Phase	8		2		1	6
Switch Phase						
Minimum Initial (s)	5.0		15.0		5.0	15.0
Minimum Split (s)	22.5		22.5		9.5	22.5
Total Split (s)	38.0		42.5		9.5	52.0
Total Split (%)	42.2%		47.2%		10.6%	57.8%
Maximum Green (s)	33.5		38.0		5.0	47.5

Lanes, Volumes, Timings
115: Middle & Smith

12/21/2020

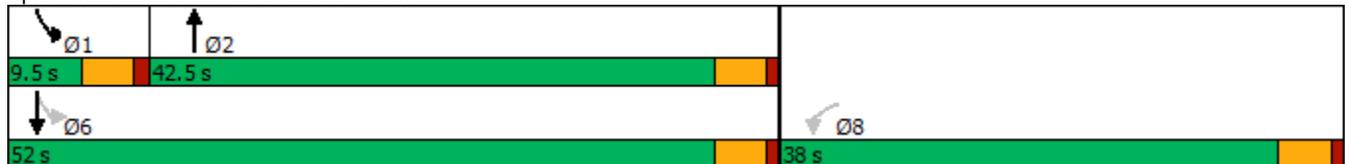


Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Yellow Time (s)	3.5		3.5		3.5	3.5
All-Red Time (s)	1.0		1.0		1.0	1.0
Lost Time Adjust (s)	0.0		0.0			0.0
Total Lost Time (s)	4.5		4.5			4.5
Lead/Lag			Lag		Lead	
Lead-Lag Optimize?			Yes		Yes	
Vehicle Extension (s)	3.0		3.0		3.0	3.0
Recall Mode	None		Min		Max	Min
Walk Time (s)	7.0		7.0			7.0
Flash Dont Walk (s)	11.0		11.0			11.0
Pedestrian Calls (#/hr)	0		0			0
Act Effct Green (s)	18.1		20.5			30.5
Actuated g/C Ratio	0.31		0.35			0.52
v/c Ratio	0.72		0.74			0.38
Control Delay	23.9		22.1			10.9
Queue Delay	0.0		0.0			0.0
Total Delay	23.9		22.1			10.9
LOS	C		C			B
Approach Delay	23.9		22.1			10.9
Approach LOS	C		C			B
Queue Length 50th (ft)	94		111			39
Queue Length 95th (ft)	240		272			109
Internal Link Dist (ft)	1027		4683			3337
Turn Bay Length (ft)						
Base Capacity (vph)	1044		1203			978
Starvation Cap Reductn	0		0			0
Spillback Cap Reductn	0		0			0
Storage Cap Reductn	0		0			0
Reduced v/c Ratio	0.39		0.40			0.25

Intersection Summary

Area Type:	Other
Cycle Length:	90
Actuated Cycle Length:	58.1
Natural Cycle:	60
Control Type:	Actuated-Uncoordinated
Maximum v/c Ratio:	0.74
Intersection Signal Delay:	20.4
Intersection LOS:	C
Intersection Capacity Utilization	71.0%
ICU Level of Service	C
Analysis Period (min)	15

Splits and Phases: 115: Middle & Smith



Lanes, Volumes, Timings
116: Middle & I91 SB off

12/21/2020



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	112	19	536	0	0	352
Future Volume (vph)	112	19	536	0	0	352
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Fr _t	0.980					
Fl _t Protected	0.959					
Satd. Flow (prot)	1751	0	1863	0	0	1863
Fl _t Permitted	0.959					
Satd. Flow (perm)	1751	0	1863	0	0	1863
Link Speed (mph)	30		30			30
Link Distance (ft)	888		541			4763
Travel Time (s)	20.2		12.3			108.3
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	122	21	583	0	0	383
Shared Lane Traffic (%)						
Lane Group Flow (vph)	143	0	583	0	0	383
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	12		0			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		9	15	
Sign Control	Stop		Free			Free

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	42.2%
Analysis Period (min)	15
	ICU Level of Service A

Intersection						
Int Delay, s/veh	3.5					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↔		↑			↑
Traffic Vol, veh/h	112	19	536	0	0	352
Future Vol, veh/h	112	19	536	0	0	352
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	122	21	583	0	0	383

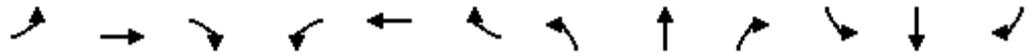
Major/Minor	Minor1	Major1	Major2			
Conflicting Flow All	966	583	0	-	-	-
Stage 1	583	-	-	-	-	-
Stage 2	383	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	-	-
Pot Cap-1 Maneuver	282	512	-	0	0	-
Stage 1	558	-	-	0	0	-
Stage 2	689	-	-	0	0	-
Platoon blocked, %			-			-
Mov Cap-1 Maneuver	282	512	-	-	-	-
Mov Cap-2 Maneuver	282	-	-	-	-	-
Stage 1	558	-	-	-	-	-
Stage 2	689	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	27.1	0	0
HCM LOS	D		

Minor Lane/Major Mvmt	NBTWBLn1	SBT
Capacity (veh/h)	- 302	-
HCM Lane V/C Ratio	- 0.471	-
HCM Control Delay (s)	- 27.1	-
HCM Lane LOS	- D	-
HCM 95th %tile Q(veh)	- 2.4	-

Lanes, Volumes, Timings
117: I91 SB on/Middle & Country Club

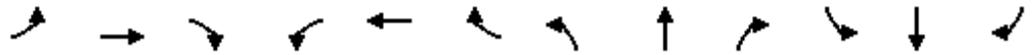
12/21/2020



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕						↕	
Traffic Volume (vph)	58	118	47	202	118	472	0	0	0	93	267	106
Future Volume (vph)	58	118	47	202	118	472	0	0	0	93	267	106
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
Fr't		0.972			0.920							0.969
Fl't Protected		0.987			0.987							0.990
Satd. Flow (prot)	0	1787	0	0	1691	0	0	0	0	0	1787	0
Fl't Permitted		0.753			0.846							0.990
Satd. Flow (perm)	0	1363	0	0	1450	0	0	0	0	0	1787	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		34			186							23
Link Speed (mph)		30			30			30				30
Link Distance (ft)		832			1070			907				541
Travel Time (s)		18.9			24.3			20.6				12.3
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)	63	128	51	220	128	513	0	0	0	101	290	115
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	242	0	0	861	0	0	0	0	0	506	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
Number of Detectors	1	1		1	1					1	1	
Detector Template	Left	Thru		Left	Thru					Left	Thru	
Leading Detector (ft)	20	30		20	30					20	30	
Trailing Detector (ft)	0	0		0	0					0	0	
Detector 1 Position(ft)	0	0		0	0					0	0	
Detector 1 Size(ft)	20	30		20	30					20	30	
Detector 1 Type	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	
Detector 1 Queue (s)	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	
Turn Type	Perm	NA		Perm	NA					Perm	NA	
Protected Phases		4			8							6
Permitted Phases	4			8						6		
Detector Phase	4	4		8	8					6	6	
Switch Phase												
Minimum Initial (s)	7.0	7.0		7.0	7.0					7.0	7.0	
Minimum Split (s)	11.5	11.5		11.5	11.5					11.5	11.5	
Total Split (s)	41.0	41.0		41.0	41.0					24.0	24.0	
Total Split (%)	63.1%	63.1%		63.1%	63.1%					36.9%	36.9%	
Maximum Green (s)	36.5	36.5		36.5	36.5					19.5	19.5	
Yellow Time (s)	3.5	3.5		3.5	3.5					3.5	3.5	

Lanes, Volumes, Timings
 117: I91 SB on/Middle & Country Club

12/21/2020

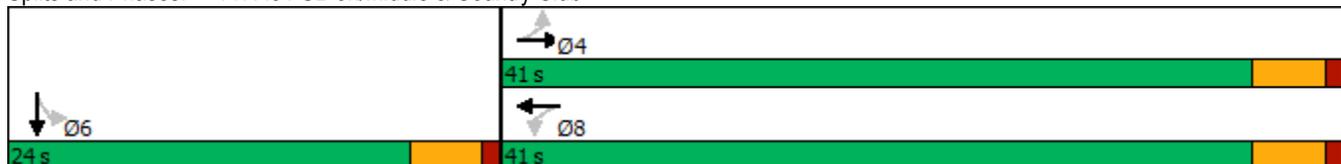


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
All-Red Time (s)	1.0	1.0		1.0	1.0					1.0	1.0	
Lost Time Adjust (s)		0.0			0.0						0.0	
Total Lost Time (s)		4.5			4.5						4.5	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0					3.0	3.0	
Recall Mode	None	None		None	None					None	None	
Act Effct Green (s)		35.1			35.1						18.9	
Actuated g/C Ratio		0.56			0.56						0.30	
v/c Ratio		0.31			0.97						0.92	
Control Delay		7.7			37.1						45.9	
Queue Delay		0.0			0.0						0.0	
Total Delay		7.7			37.1						45.9	
LOS		A			D						D	
Approach Delay		7.7			37.1						45.9	
Approach LOS		A			D						D	
Queue Length 50th (ft)		38			241						181	
Queue Length 95th (ft)		76			#520						#347	
Internal Link Dist (ft)		752			990			827			461	
Turn Bay Length (ft)												
Base Capacity (vph)		806			920						570	
Starvation Cap Reductn		0			0						0	
Spillback Cap Reductn		0			0						0	
Storage Cap Reductn		0			0						0	
Reduced v/c Ratio		0.30			0.94						0.89	

Intersection Summary

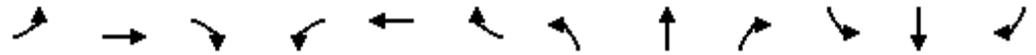
Area Type: Other
 Cycle Length: 65
 Actuated Cycle Length: 63.1
 Natural Cycle: 65
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 0.97
 Intersection Signal Delay: 35.4
 Intersection LOS: D
 Intersection Capacity Utilization 94.5%
 ICU Level of Service F
 Analysis Period (min) 15
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

Splits and Phases: 117: I91 SB on/Middle & Country Club



Lanes, Volumes, Timings
 118: I91NB off/I91NB on & Country Club

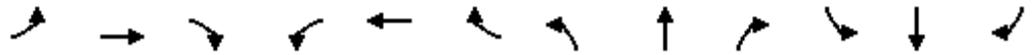
12/21/2020



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕				
Traffic Volume (vph)	50	160	0	0	349	185	440	12	180	0	0	0
Future Volume (vph)	50	160	0	0	349	185	440	12	180	0	0	0
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
Fr t					0.953			0.961				
Flt Protected		0.988						0.966				
Satd. Flow (prot)	0	1840	0	0	1775	0	0	1729	0	0	0	0
Flt Permitted		0.588						0.966				
Satd. Flow (perm)	0	1095	0	0	1775	0	0	1729	0	0	0	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)					61			52				
Link Speed (mph)		30			30			30				30
Link Distance (ft)		1070			714			989				751
Travel Time (s)		24.3			16.2			22.5				17.1
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)	54	174	0	0	379	201	478	13	196	0	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	228	0	0	580	0	0	687	0	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
Number of Detectors	1	1			1		1	1				
Detector Template	Left	Thru			Thru		Left	Thru				
Leading Detector (ft)	20	30			30		20	30				
Trailing Detector (ft)	0	0			0		0	0				
Detector 1 Position(ft)	0	0			0		0	0				
Detector 1 Size(ft)	20	30			30		20	30				
Detector 1 Type	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				
Detector 1 Queue (s)	0.0	0.0			0.0		0.0	0.0				
Detector 1 Delay (s)	0.0	0.0			0.0		0.0	0.0				
Turn Type	Perm	NA			NA		Perm	NA				
Protected Phases		4			8			2				
Permitted Phases	4						2					
Detector Phase	4	4			8		2	2				
Switch Phase												
Minimum Initial (s)	15.0	15.0			15.0		7.0	7.0				
Minimum Split (s)	19.5	19.5			19.5		11.5	11.5				
Total Split (s)	23.0	23.0			23.0		27.0	27.0				
Total Split (%)	46.0%	46.0%			46.0%		54.0%	54.0%				
Maximum Green (s)	18.5	18.5			18.5		22.5	22.5				
Yellow Time (s)	3.5	3.5			3.5		3.5	3.5				

Lanes, Volumes, Timings
 118: I91NB off/I91NB on & Country Club

12/21/2020

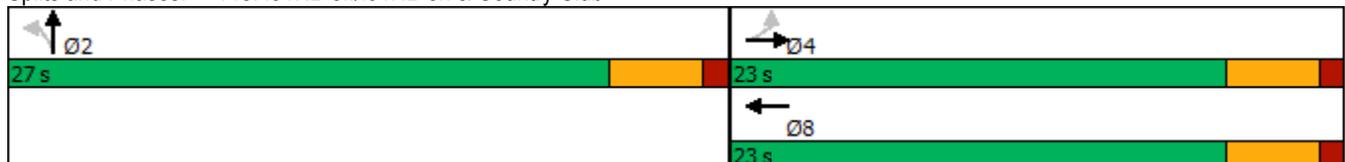


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
All-Red Time (s)	1.0	1.0			1.0		1.0	1.0				
Lost Time Adjust (s)		0.0			0.0			0.0				
Total Lost Time (s)		4.5			4.5			4.5				
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0			3.0		3.0	3.0				
Recall Mode	None	None			None		None	None				
Act Effct Green (s)		17.6			17.6			20.5				
Actuated g/C Ratio		0.37			0.37			0.43				
v/c Ratio		0.56			0.83			0.88				
Control Delay		18.8			25.7			27.5				
Queue Delay		0.0			0.0			0.0				
Total Delay		18.8			25.7			27.5				
LOS		B			C			C				
Approach Delay		18.8			25.7			27.5				
Approach LOS		B			C			C				
Queue Length 50th (ft)		51			133			154				
Queue Length 95th (ft)		110			#295			#342				
Internal Link Dist (ft)		990			634			909			671	
Turn Bay Length (ft)												
Base Capacity (vph)		433			739			859				
Starvation Cap Reductn		0			0			0				
Spillback Cap Reductn		0			0			0				
Storage Cap Reductn		0			0			0				
Reduced v/c Ratio		0.53			0.78			0.80				

Intersection Summary

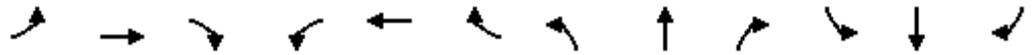
Area Type: Other
 Cycle Length: 50
 Actuated Cycle Length: 47.2
 Natural Cycle: 50
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 0.88
 Intersection Signal Delay: 25.5
 Intersection LOS: C
 Intersection Capacity Utilization 89.4%
 ICU Level of Service E
 Analysis Period (min) 15
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

Splits and Phases: 118: I91NB off/I91NB on & Country Club



FedEx- Middletown
101: Main & Rte 372

BUILD 52.5 + Improvements
Timing Plan: PM Peak Hr



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	5	449	139	303	494	79	192	17	268	73	28	17
Future Volume (vph)	5	449	139	303	494	79	192	17	268	73	28	17
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	15	12	12	15	12
Storage Length (ft)	0		150	100		0	0		0	0		0
Storage Lanes	0		1	1		0	0		0	0		0
Taper Length (ft)	25			50			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850		0.979			0.924			0.981	
Flt Protected		0.999		0.950				0.980			0.970	
Satd. Flow (prot)	0	1861	1583	1770	1824	0	0	1855	0	0	1950	0
Flt Permitted		0.995		0.380				0.826			0.622	
Satd. Flow (perm)	0	1853	1583	708	1824	0	0	1564	0	0	1250	0
Right Turn on Red			Yes			Yes			Yes			No
Satd. Flow (RTOR)			151		15			85				
Link Speed (mph)		35			35			30				30
Link Distance (ft)		875			2306			2021				579
Travel Time (s)		17.0			44.9			45.9				13.2
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)	5	488	151	329	537	86	209	18	291	79	30	18
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	493	151	329	623	0	0	518	0	0	127	0
Turn Type	Perm	NA	Perm	Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			8				4
Permitted Phases	2		2	6			8			4		
Detector Phase	2	2	2	6	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	15.0	15.0	15.0	15.0	15.0		9.0	9.0		9.0	9.0	
Minimum Split (s)	20.0	20.0	20.0	20.0	20.0		13.0	13.0		13.0	13.0	
Total Split (s)	50.0	50.0	50.0	50.0	50.0		34.0	34.0		34.0	34.0	
Total Split (%)	59.5%	59.5%	59.5%	59.5%	59.5%		40.5%	40.5%		40.5%	40.5%	
Maximum Green (s)	45.0	45.0	45.0	45.0	45.0		30.0	30.0		30.0	30.0	
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	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	
Total Lost Time (s)		5.0	5.0	5.0	5.0			4.0			4.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	4.0	4.0	4.0	4.0	4.0		3.0	3.0		3.0	3.0	
Recall Mode	Min	Min	Min	Min	Min		None	None		None	None	
Act Effct Green (s)		37.0	37.0	37.0	37.0			25.3			25.3	
Actuated g/C Ratio		0.51	0.51	0.51	0.51			0.35			0.35	
v/c Ratio		0.52	0.17	0.91	0.66			0.86			0.29	
Control Delay		14.2	2.4	48.2	16.8			35.4			21.2	
Queue Delay		0.0	0.0	0.0	0.0			0.0			0.0	
Total Delay		14.2	2.4	48.2	16.8			35.4			21.2	
LOS		B	A	D	B			D			C	
Approach Delay		11.4			27.7			35.4			21.2	



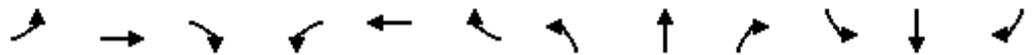
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach LOS		B			C			D			C	
Queue Length 50th (ft)		154	0	141	211			211			47	
Queue Length 95th (ft)		235	26	#314	321			#393			91	
Internal Link Dist (ft)		795			2226			1941			499	
Turn Bay Length (ft)			150	100								
Base Capacity (vph)		1220	1094	466	1206			748			560	
Starvation Cap Reductn		0	0	0	0			0			0	
Spillback Cap Reductn		0	0	0	0			0			0	
Storage Cap Reductn		0	0	0	0			0			0	
Reduced v/c Ratio		0.40	0.14	0.71	0.52			0.69			0.23	

Intersection Summary

Area Type: Other
 Cycle Length: 84
 Actuated Cycle Length: 71.9
 Natural Cycle: 55
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 0.91
 Intersection Signal Delay: 24.4
 Intersection LOS: C
 Intersection Capacity Utilization 96.2%
 ICU Level of Service F
 Analysis Period (min) 15
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

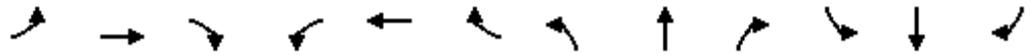
Splits and Phases: 101: Main & Rte 372





Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗			↖					↖	↗	↖
Traffic Volume (vph)	40	893	17	5	922	449	0	0	0	546	5	102
Future Volume (vph)	40	893	17	5	922	449	0	0	0	546	5	102
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	300		0	0		0	0		0	125		125
Storage Lanes	1		0	0		0	0		0	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	0.95	0.95	0.95	0.95	1.00	1.00	1.00	0.95	0.95	1.00
Frt		0.997			0.951							0.850
Flt Protected	0.950									0.950	0.953	
Satd. Flow (prot)	1770	3529	0	0	3366	0	0	0	0	1681	1686	1583
Flt Permitted	0.122				0.955					0.950	0.953	
Satd. Flow (perm)	227	3529	0	0	3214	0	0	0	0	1681	1686	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		2			174							166
Link Speed (mph)		40			40			25			30	
Link Distance (ft)		364			232			215			478	
Travel Time (s)		6.2			4.0			5.9			10.9	
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)	43	971	18	5	1002	488	0	0	0	593	5	111
Shared Lane Traffic (%)										50%		
Lane Group Flow (vph)	43	989	0	0	1495	0	0	0	0	296	302	111
Turn Type	Perm	NA		Perm	NA					Split	NA	Prot
Protected Phases		1 8			1 2 5 6					7	7	7
Permitted Phases	1 8			1 2 5 6	8							
Detector Phase	1	1		1 2 5 6	1					7	7	7
Switch Phase												
Minimum Initial (s)										7.0	7.0	7.0
Minimum Split (s)										11.3	11.3	11.3
Total Split (s)										25.6	25.6	25.6
Total Split (%)										22.9%	22.9%	22.9%
Maximum Green (s)										21.3	21.3	21.3
Yellow Time (s)										3.2	3.2	3.2
All-Red Time (s)										1.1	1.1	1.1
Lost Time Adjust (s)										0.0	0.0	0.0
Total Lost Time (s)										4.3	4.3	4.3
Lead/Lag										Lead	Lead	Lead
Lead-Lag Optimize?												
Vehicle Extension (s)										1.0	1.0	1.0
Recall Mode										None	None	None
Act Effct Green (s)	31.0	31.0			78.3					20.8	20.8	20.8
Actuated g/C Ratio	0.28	0.28			0.70					0.19	0.19	0.19
v/c Ratio	0.69	1.01			0.62					0.95	0.96	0.26
Control Delay	89.0	71.0			3.8					84.1	87.5	2.9
Queue Delay	0.0	0.0			2.3					36.5	40.8	0.0
Total Delay	89.0	71.0			6.0					120.7	128.2	2.9
LOS	F	E			A					F	F	A
Approach Delay		71.8			6.0						105.5	
Approach LOS		E			A						F	

Lane Group	Ø1	Ø2	Ø3	Ø4	Ø5	Ø6	Ø8
Lane Configurations							
Traffic Volume (vph)							
Future Volume (vph)							
Ideal Flow (vphpl)							
Storage Length (ft)							
Storage Lanes							
Taper Length (ft)							
Lane Util. Factor							
Frt							
Flt Protected							
Satd. Flow (prot)							
Flt Permitted							
Satd. Flow (perm)							
Right Turn on Red							
Satd. Flow (RTOR)							
Link Speed (mph)							
Link Distance (ft)							
Travel Time (s)							
Peak Hour Factor							
Adj. Flow (vph)							
Shared Lane Traffic (%)							
Lane Group Flow (vph)							
Turn Type							
Protected Phases	1	2	3	4	5	6	8
Permitted Phases							
Detector Phase							
Switch Phase							
Minimum Initial (s)	15.0	1.0	7.0	1.0	5.0	10.0	1.0
Minimum Split (s)	20.0	5.6	10.8	3.1	8.6	14.7	3.1
Total Split (s)	36.0	6.7	14.5	14.2	24.6	16.0	3.1
Total Split (%)	32%	6%	13%	13%	22%	14%	3%
Maximum Green (s)	31.0	2.1	10.7	12.1	21.0	11.3	1.0
Yellow Time (s)	3.0	4.0	3.2	2.0	3.0	3.2	2.0
All-Red Time (s)	2.0	0.6	0.6	0.1	0.6	1.5	0.1
Lost Time Adjust (s)							
Total Lost Time (s)							
Lead/Lag			Lead	Lag	Lead	Lag	Lag
Lead-Lag Optimize?							
Vehicle Extension (s)	3.0	3.0	1.0	1.0	1.0	3.0	3.0
Recall Mode	Min	Max	None	None	None	None	None
Act Effct Green (s)							
Actuated g/C Ratio							
v/c Ratio							
Control Delay							
Queue Delay							
Total Delay							
LOS							
Approach Delay							
Approach LOS							

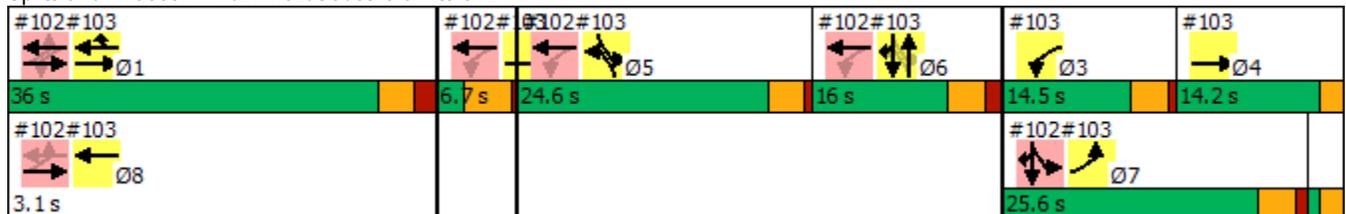


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 50th (ft)	28	~382			56					222	227	0
Queue Length 95th (ft)	#94	#527			45					#394	#407	13
Internal Link Dist (ft)		284			152			135			398	
Turn Bay Length (ft)	300									125		125
Base Capacity (vph)	62	982			2414					320	321	436
Starvation Cap Reductn	0	0			744					0	0	0
Spillback Cap Reductn	0	0			0					44	44	0
Storage Cap Reductn	0	0			0					0	0	0
Reduced v/c Ratio	0.69	1.01			0.90					1.07	1.09	0.25

Intersection Summary

Area Type:	Other
Cycle Length:	112
Actuated Cycle Length:	111.5
Natural Cycle:	100
Control Type:	Semi Act-Uncoord
Maximum v/c Ratio:	1.03
Intersection Signal Delay:	48.8
Intersection LOS:	D
Intersection Capacity Utilization	66.5%
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.	

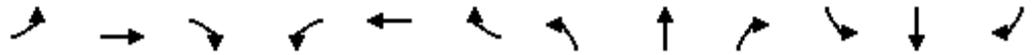
Splits and Phases: 102: McD/Sebethe & Rte 372



Lane Group	Ø1	Ø2	Ø3	Ø4	Ø5	Ø6	Ø8
Queue Length 50th (ft)							
Queue Length 95th (ft)							
Internal Link Dist (ft)							
Turn Bay Length (ft)							
Base Capacity (vph)							
Starvation Cap Reductn							
Spillback Cap Reductn							
Storage Cap Reductn							
Reduced v/c Ratio							
Intersection Summary							

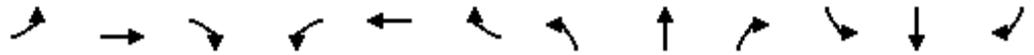
FedEx- Middletown
103: Ind Park/I91SB & Rte 372

BUILD 52.5 + Improvements
Timing Plan: PM Peak Hr



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↘	↗↗	↘	↘	↗↗	↘	↘	↗	↘	↘	↗↗	↘
Traffic Volume (vph)	119	1200	95	73	797	157	174	22	354	461	260	383
Future Volume (vph)	119	1200	95	73	797	157	174	22	354	461	260	383
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	325		125	375		0	460		325
Storage Lanes	1		1	1		1	1		1	1		2
Taper Length (ft)	25			50			25			25		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	0.95	1.00
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	3539	1568	1752	3539	1583	1752	1845	1568	1770	3505	1583
Flt Permitted	0.950			0.950			0.354			0.742		
Satd. Flow (perm)	1770	3539	1568	1752	3539	1583	653	1845	1568	1382	3505	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			244			196			244			416
Link Speed (mph)		40			40			35				35
Link Distance (ft)		232			1355			1267				741
Travel Time (s)		4.0			23.1			24.7				14.4
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	2%	2%	3%	3%	2%	2%	3%	3%	3%	2%	3%	2%
Adj. Flow (vph)	129	1304	103	79	866	171	189	24	385	501	283	416
Shared Lane Traffic (%)												
Lane Group Flow (vph)	129	1304	103	79	866	171	189	24	385	501	283	416
Turn Type	Prot	NA	Free	Prot	NA	custom	pm+pt	NA	Free	pm+pt	NA	Prot
Protected Phases	7	1 2 4		3	1 8	1	5	6		5	6	6
Permitted Phases			Free				6		Free	6		
Detector Phase	7	1 2 4		3	1 8	1	5	6		5 6	6	6
Switch Phase												
Minimum Initial (s)	7.0			7.0		15.0	5.0	10.0		5.0	10.0	10.0
Minimum Split (s)	11.3			10.8		20.0	8.6	14.7		8.6	14.7	14.7
Total Split (s)	25.6			14.5		36.0	24.6	16.0		24.6	16.0	16.0
Total Split (%)	22.9%			12.9%		32.1%	22.0%	14.3%		22.0%	14.3%	14.3%
Maximum Green (s)	21.3			10.7		31.0	21.0	11.3		21.0	11.3	11.3
Yellow Time (s)	3.2			3.2		3.0	3.0	3.2		3.0	3.2	3.2
All-Red Time (s)	1.1			0.6		2.0	0.6	1.5		0.6	1.5	1.5
Lost Time Adjust (s)	0.0			0.0		0.0	0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	4.3			3.8		5.0	3.6	4.7		3.6	4.7	4.7
Lead/Lag	Lead			Lead			Lead	Lag		Lead	Lag	Lag
Lead-Lag Optimize?												
Vehicle Extension (s)	1.0			1.0		3.0	1.0	3.0		1.0	3.0	3.0
Recall Mode	None			None		Min	None	None		None	None	None
Act Effct Green (s)	20.8	55.6	111.5	8.7	31.0	31.0	33.4	11.3	111.5	33.4	11.3	11.3
Actuated g/C Ratio	0.19	0.50	1.00	0.08	0.28	0.28	0.30	0.10	1.00	0.30	0.10	0.10
v/c Ratio	0.39	0.74	0.07	0.58	0.88	0.29	0.47	0.13	0.25	1.03	0.80	0.78
Control Delay	48.1	3.3	0.0	66.6	50.3	4.3	32.5	47.8	0.4	85.2	66.5	15.9
Queue Delay	2.6	19.9	0.0	0.0	0.8	0.0	0.0	0.0	0.0	0.0	0.0	0.1
Total Delay	50.7	23.2	0.0	66.6	51.1	4.3	32.5	47.8	0.4	85.2	66.5	16.0
LOS	D	C	A	E	D	A	C	D	A	F	E	B
Approach Delay		23.9			45.0			12.4			56.8	

Lane Group	Ø2	Ø4	Ø8
Lane Configurations			
Traffic Volume (vph)			
Future Volume (vph)			
Ideal Flow (vphpl)			
Storage Length (ft)			
Storage Lanes			
Taper Length (ft)			
Lane Util. Factor			
Frt			
Flt Protected			
Satd. Flow (prot)			
Flt Permitted			
Satd. Flow (perm)			
Right Turn on Red			
Satd. Flow (RTOR)			
Link Speed (mph)			
Link Distance (ft)			
Travel Time (s)			
Peak Hour Factor			
Heavy Vehicles (%)			
Adj. Flow (vph)			
Shared Lane Traffic (%)			
Lane Group Flow (vph)			
Turn Type			
Protected Phases	2	4	8
Permitted Phases			
Detector Phase			
Switch Phase			
Minimum Initial (s)	1.0	1.0	1.0
Minimum Split (s)	5.6	3.1	3.1
Total Split (s)	6.7	14.2	3.1
Total Split (%)	6%	13%	3%
Maximum Green (s)	2.1	12.1	1.0
Yellow Time (s)	4.0	2.0	2.0
All-Red Time (s)	0.6	0.1	0.1
Lost Time Adjust (s)			
Total Lost Time (s)			
Lead/Lag		Lag	Lag
Lead-Lag Optimize?			
Vehicle Extension (s)	3.0	1.0	3.0
Recall Mode	Max	None	None
Act Effct Green (s)			
Actuated g/C Ratio			
v/c Ratio			
Control Delay			
Queue Delay			
Total Delay			
LOS			
Approach Delay			



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach LOS	C			D			B			E		
Queue Length 50th (ft)	67	123	0	56	314	0	102	16	0	~351	106	0
Queue Length 95th (ft)	m72	m182	m0	105	#423	37	163	43	0	#477	#173	#127
Internal Link Dist (ft)	152			1275			1187			661		
Turn Bay Length (ft)				325			125			460		
Base Capacity (vph)	337	1765	1568	168	983	581	402	187	1568	486	355	534
Starvation Cap Reductn	120	493	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	22	0	0	0	0	0	0	2
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.59	1.03	0.07	0.47	0.90	0.29	0.47	0.13	0.25	1.03	0.80	0.78

Intersection Summary

Area Type: Other
 Cycle Length: 112
 Actuated Cycle Length: 111.5
 Natural Cycle: 100
 Control Type: Semi Act-Uncoord
 Maximum v/c Ratio: 1.03
 Intersection Signal Delay: 36.5
 Intersection LOS: D
 Intersection Capacity Utilization 87.6%
 ICU Level of Service E
 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: 103: Ind Park/I91SB & Rte 372

#102#103 ← → Ø1 36 s	#102#103 ← → Ø5 6.7 s	#102#103 ← → Ø6 24.6 s	#102#103 ← → Ø6 16 s	#103 ↙ ↘ Ø3 14.5 s	#103 → Ø4 14.2 s
#102#103 ← → Ø8 3.1 s				#102#103 ↙ ↘ Ø7 25.6 s	

Lane Group	Ø2	Ø4	Ø8
Approach LOS			
Queue Length 50th (ft)			
Queue Length 95th (ft)			
Internal Link Dist (ft)			
Turn Bay Length (ft)			
Base Capacity (vph)			
Starvation Cap Reductn			
Spillback Cap Reductn			
Storage Cap Reductn			
Reduced v/c Ratio			
Intersection Summary			



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↖	↗↗	↖↖	↗	↖↖	↗
Traffic Volume (vph)	611	1411	862	281	363	141
Future Volume (vph)	611	1411	862	281	363	141
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	725			225	200	110
Storage Lanes	1			1	0	1
Taper Length (ft)	25				75	
Lane Util. Factor	1.00	0.95	0.95	1.00	0.97	1.00
Fr _t				0.850		0.850
Fl _t Protected	0.950				0.950	
Satd. Flow (prot)	1770	3539	3539	1583	3433	1583
Fl _t Permitted	0.132				0.950	
Satd. Flow (perm)	246	3539	3539	1583	3433	1583
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)				305		62
Link Speed (mph)		40	40		35	
Link Distance (ft)		1355	610		341	
Travel Time (s)		23.1	10.4		6.6	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	664	1534	937	305	395	153
Shared Lane Traffic (%)						
Lane Group Flow (vph)	664	1534	937	305	395	153
Turn Type	pm+pt	NA	NA	Perm	Prot	pt+ov
Protected Phases	5	2	6		4	4 5
Permitted Phases	2			6		
Detector Phase	5	2	6	6	4	4
Switch Phase						
Minimum Initial (s)	5.0	15.0	15.0	15.0	7.0	
Minimum Split (s)	9.0	20.0	20.0	20.0	11.0	
Total Split (s)	20.0	60.0	40.0	40.0	20.0	
Total Split (%)	25.0%	75.0%	50.0%	50.0%	25.0%	
Maximum Green (s)	16.0	55.0	35.0	35.0	16.0	
Yellow Time (s)	3.0	4.0	4.0	4.0	3.0	
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	4.0	5.0	5.0	5.0	4.0	
Lead/Lag	Lead		Lag	Lag		
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	C-Min	C-Min	C-Min	None	
Act Effct Green (s)	57.4	56.4	26.2	26.2	14.6	44.8
Actuated g/C Ratio	0.72	0.70	0.33	0.33	0.18	0.56
v/c Ratio	0.98	0.62	0.81	0.42	0.63	0.17
Control Delay	55.2	7.9	30.3	4.0	34.5	6.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	55.2	7.9	30.3	4.0	34.5	6.8
LOS	E	A	C	A	C	A
Approach Delay		22.2	23.9		26.8	
Approach LOS		C	C		C	

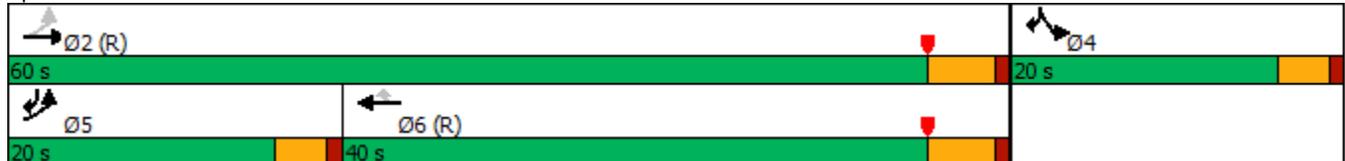


Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Queue Length 50th (ft)	267	173	222	0	95	20
Queue Length 95th (ft)	#598	273	255	45	131	56
Internal Link Dist (ft)		1275	530		261	
Turn Bay Length (ft)	725			225	200	110
Base Capacity (vph)	675	2519	1548	864	712	901
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.98	0.61	0.61	0.35	0.55	0.17

Intersection Summary

Area Type: Other
 Cycle Length: 80
 Actuated Cycle Length: 80
 Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBT, Start of Yellow
 Natural Cycle: 60
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.98
 Intersection Signal Delay: 23.4
 Intersection LOS: C
 Intersection Capacity Utilization 78.9%
 ICU Level of Service D
 Analysis Period (min) 15
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

Splits and Phases: 104: Rte 372 & I91NB





Lane Group	EBL	EBR	NEL	NET	SWT	SWR
Lane Configurations						
Traffic Volume (vph)	2	1	2	520	416	2
Future Volume (vph)	2	1	2	520	416	2
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	0.95	0.95	0.95	0.95
Fr _t	0.955				0.999	
Fl _t Protected	0.968					
Satd. Flow (prot)	1171	0	0	3499	3494	0
Fl _t Permitted	0.968					
Satd. Flow (perm)	1171	0	0	3499	3494	0
Link Speed (mph)	25			35	35	
Link Distance (ft)	124			141	1543	
Travel Time (s)	3.4			2.7	30.1	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	50%	50%	50%	3%	3%	50%
Adj. Flow (vph)	2	1	2	565	452	2
Shared Lane Traffic (%)						
Lane Group Flow (vph)	3	0	0	567	454	0
Sign Control	Stop			Free	Free	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	25.8%
ICU Level of Service	A
Analysis Period (min)	15

Intersection

Int Delay, s/veh	0.1					
Movement	EBL	EBR	NEL	NET	SWT	SWR
Lane Configurations	↔			↕↕	↕↕	
Traffic Vol, veh/h	2	1	2	520	416	2
Future Vol, veh/h	2	1	2	520	416	2
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	50	50	50	3	3	50
Mvmt Flow	2	1	2	565	452	2

Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	740	227	454	0	-	0
Stage 1	453	-	-	-	-	-
Stage 2	287	-	-	-	-	-
Critical Hdwy	7.8	7.9	5.1	-	-	-
Critical Hdwy Stg 1	6.8	-	-	-	-	-
Critical Hdwy Stg 2	6.8	-	-	-	-	-
Follow-up Hdwy	4	3.8	2.7	-	-	-
Pot Cap-1 Maneuver	266	647	827	-	-	-
Stage 1	487	-	-	-	-	-
Stage 2	611	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	265	647	827	-	-	-
Mov Cap-2 Maneuver	265	-	-	-	-	-
Stage 1	485	-	-	-	-	-
Stage 2	611	-	-	-	-	-

Approach	EB	NE	SW
HCM Control Delay, s	16	0	0
HCM LOS	C		

Minor Lane/Major Mvmt	NEL	NET	EBLn1	SWT	SWR
Capacity (veh/h)	827	-	330	-	-
HCM Lane V/C Ratio	0.003	-	0.01	-	-
HCM Control Delay (s)	9.4	0	16	-	-
HCM Lane LOS	A	A	C	-	-
HCM 95th %tile Q(veh)	0	-	0	-	-



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	14	1	1	507	400	17
Future Volume (vph)	14	1	1	507	400	17
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	240	0			100
Storage Lanes	1	1	0			1
Taper Length (ft)	25		25			
Lane Util. Factor	1.00	1.00	0.95	0.95	1.00	1.00
Frt		0.850				0.850
Flt Protected	0.950					
Satd. Flow (prot)	902	808	0	3499	1845	808
Flt Permitted	0.950					
Satd. Flow (perm)	902	808	0	3499	1845	808
Link Speed (mph)	30			40	40	
Link Distance (ft)	754			943	963	
Travel Time (s)	17.1			16.1	16.4	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	100%	100%	100%	3%	3%	100%
Adj. Flow (vph)	15	1	1	551	435	18
Shared Lane Traffic (%)						
Lane Group Flow (vph)	15	1	0	552	435	18
Sign Control	Stop			Free	Free	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	31.1% ICU Level of Service A
Analysis Period (min)	15

Intersection						
Int Delay, s/veh	0.3					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	14	1	1	507	400	17
Future Vol, veh/h	14	1	1	507	400	17
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	Free
Storage Length	0	240	-	-	-	100
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	100	100	100	3	3	100
Mvmt Flow	15	1	1	551	435	18

Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	713	435	435	0	-	0
Stage 1	435	-	-	-	-	-
Stage 2	278	-	-	-	-	-
Critical Hdwy	8.1	7.7	5.6	-	-	-
Critical Hdwy Stg 1	6.9	-	-	-	-	-
Critical Hdwy Stg 2	7.3	-	-	-	-	-
Follow-up Hdwy	4.45	4.25	3.15	-	-	-
Pot Cap-1 Maneuver	245	427	698	-	-	0
Stage 1	454	-	-	-	-	0
Stage 2	544	-	-	-	-	0
Platoon blocked, %				-	-	
Mov Cap-1 Maneuver	245	427	698	-	-	-
Mov Cap-2 Maneuver	245	-	-	-	-	-
Stage 1	453	-	-	-	-	-
Stage 2	544	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	20.2	0	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT
Capacity (veh/h)	698	-	245	427	-
HCM Lane V/C Ratio	0.002	-	0.062	0.003	-
HCM Control Delay (s)	10.2	0	20.7	13.5	-
HCM Lane LOS	B	A	C	B	-
HCM 95th %tile Q(veh)	0	-	0.2	0	-



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↔		↕	
Traffic Volume (vph)	129	219	140	75	219	220
Future Volume (vph)	129	219	140	75	219	220
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.953		0.932	
Flt Protected		0.982			0.976	
Satd. Flow (prot)	0	1823	1769	0	1686	0
Flt Permitted		0.982			0.976	
Satd. Flow (perm)	0	1823	1769	0	1686	0
Link Speed (mph)		30	30		30	
Link Distance (ft)		1107	1054		3266	
Travel Time (s)		25.2	24.0		74.2	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	3%	2%	2%	3%	3%	2%
Adj. Flow (vph)	140	238	152	82	238	239
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	378	234	0	477	0
Sign Control		Free	Free		Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	66.2%
ICU Level of Service	C
Analysis Period (min)	15

Intersection

Int Delay, s/veh 27.5

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↕		↕	
Traffic Vol, veh/h	129	219	140	75	219	220
Future Vol, veh/h	129	219	140	75	219	220
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	3	2	2	3	3	2
Mvmt Flow	140	238	152	82	238	239

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	234	0	-	0	711 193
Stage 1	-	-	-	-	193 -
Stage 2	-	-	-	-	518 -
Critical Hdwy	4.13	-	-	-	6.43 6.22
Critical Hdwy Stg 1	-	-	-	-	5.43 -
Critical Hdwy Stg 2	-	-	-	-	5.43 -
Follow-up Hdwy	2.227	-	-	-	3.527 3.318
Pot Cap-1 Maneuver	1328	-	-	-	398 849
Stage 1	-	-	-	-	837 -
Stage 2	-	-	-	-	596 -
Platoon blocked, %		-	-	-	
Mov Cap-1 Maneuver	1328	-	-	-	350 849
Mov Cap-2 Maneuver	-	-	-	-	350 -
Stage 1	-	-	-	-	736 -
Stage 2	-	-	-	-	596 -

Approach	EB	WB	SB
HCM Control Delay, s	3	0	60.4
HCM LOS			F

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1328	-	-	-	496
HCM Lane V/C Ratio	0.106	-	-	-	0.962
HCM Control Delay (s)	8	0	-	-	60.4
HCM Lane LOS	A	A	-	-	F
HCM 95th %tile Q(veh)	0.4	-	-	-	12.3



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Volume (vph)	17	0	6	1	2	2	13	444	1	3	421	22
Future Volume (vph)	17	0	6	1	2	2	13	444	1	3	421	22
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		0.962			0.946							0.993
Flt Protected		0.965			0.990			0.999				
Satd. Flow (prot)	0	1729	0	0	1745	0	0	1861	0	0	1850	0
Flt Permitted		0.965			0.990			0.999				
Satd. Flow (perm)	0	1729	0	0	1745	0	0	1861	0	0	1850	0
Link Speed (mph)		30			30			35			30	
Link Distance (ft)		475			567			1797			2021	
Travel Time (s)		10.8			12.9			35.0			45.9	
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)	18	0	7	1	2	2	14	483	1	3	458	24
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	25	0	0	5	0	0	498	0	0	485	0
Sign Control		Stop			Stop			Stop			Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	42.7%
ICU Level of Service	A
Analysis Period (min)	15

Intersection	
Intersection Delay, s/veh	14.4
Intersection LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	17	0	6	1	2	2	13	444	1	3	421	22
Future Vol, veh/h	17	0	6	1	2	2	13	444	1	3	421	22
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	18	0	7	1	2	2	14	483	1	3	458	24
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	9.4	9	14.9	14.3
HCM LOS	A	A	B	B

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	3%	74%	20%	1%
Vol Thru, %	97%	0%	40%	94%
Vol Right, %	0%	26%	40%	5%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	458	23	5	446
LT Vol	13	17	1	3
Through Vol	444	0	2	421
RT Vol	1	6	2	22
Lane Flow Rate	498	25	5	485
Geometry Grp	1	1	1	1
Degree of Util (X)	0.626	0.042	0.009	0.607
Departure Headway (Hd)	4.526	6.02	5.875	4.509
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	797	591	604	800
Service Time	2.557	4.096	3.958	2.541
HCM Lane V/C Ratio	0.625	0.042	0.008	0.606
HCM Control Delay	14.9	9.4	9	14.3
HCM Lane LOS	B	A	A	B
HCM 95th-tile Q	4.5	0.1	0	4.2



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	0	56	358	31	102	327
Future Volume (vph)	0	56	358	31	102	327
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.850	0.989			
Flt Protected						0.988
Satd. Flow (prot)	1863	1583	1842	0	0	1840
Flt Permitted						0.988
Satd. Flow (perm)	1863	1583	1842	0	0	1840
Link Speed (mph)	25		35			35
Link Distance (ft)	388		571			1797
Travel Time (s)	10.6		11.1			35.0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	61	389	34	111	355
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	61	423	0	0	466
Sign Control	Stop		Free			Free

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	50.2%
ICU Level of Service	A
Analysis Period (min)	15

Intersection						
Int Delay, s/veh	1.7					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	56	358	31	102	327
Future Vol, veh/h	0	56	358	31	102	327
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	0	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	61	389	34	111	355

Major/Minor	Minor1	Major1	Major2			
Conflicting Flow All	983	406	0	0	423	0
Stage 1	406	-	-	-	-	-
Stage 2	577	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	276	645	-	-	1136	-
Stage 1	673	-	-	-	-	-
Stage 2	562	-	-	-	-	-
Platoon blocked, %			-	-		
Mov Cap-1 Maneuver	242	645	-	-	1136	-
Mov Cap-2 Maneuver	242	-	-	-	-	-
Stage 1	673	-	-	-	-	-
Stage 2	493	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	11.2	0	2
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	-	645	1136
HCM Lane V/C Ratio	-	-	-	0.094	0.098
HCM Control Delay (s)	-	-	0	11.2	8.5
HCM Lane LOS	-	-	A	B	A
HCM 95th %tile Q(veh)	-	-	-	0.3	0.3



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	21	14	359	31	46	270
Future Volume (vph)	21	14	359	31	46	270
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Fr _t		0.850	0.989			
Fl _t Protected	0.950					0.993
Satd. Flow (prot)	1770	1583	1842	0	0	1850
Fl _t Permitted	0.950					0.993
Satd. Flow (perm)	1770	1583	1842	0	0	1850
Link Speed (mph)	30		35			35
Link Distance (ft)	357		439			571
Travel Time (s)	8.1		8.6			11.1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	23	15	390	34	50	293
Shared Lane Traffic (%)						
Lane Group Flow (vph)	23	15	424	0	0	343
Sign Control	Stop		Free			Free

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	50.9% ICU Level of Service A
Analysis Period (min)	15

Intersection						
Int Delay, s/veh	1.2					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	21	14	359	31	46	270
Future Vol, veh/h	21	14	359	31	46	270
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	0	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	23	15	390	34	50	293

Major/Minor	Minor1	Major1	Major2		
Conflicting Flow All	800	407	0	0	424
Stage 1	407	-	-	-	-
Stage 2	393	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12
Critical Hdwy Stg 1	5.42	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218
Pot Cap-1 Maneuver	354	644	-	-	1135
Stage 1	672	-	-	-	-
Stage 2	682	-	-	-	-
Platoon blocked, %			-	-	-
Mov Cap-1 Maneuver	335	644	-	-	1135
Mov Cap-2 Maneuver	335	-	-	-	-
Stage 1	672	-	-	-	-
Stage 2	646	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	14.2	0	1.2
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	335	644	1135	-
HCM Lane V/C Ratio	-	-	0.068	0.024	0.044	-
HCM Control Delay (s)	-	-	16.5	10.7	8.3	0
HCM Lane LOS	-	-	C	B	A	A
HCM 95th %tile Q(veh)	-	-	0.2	0.1	0.1	-



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	28	21	385	52	46	256
Future Volume (vph)	28	21	385	52	46	256
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.941		0.984			
Flt Protected	0.972					0.992
Satd. Flow (prot)	1704	0	1833	0	0	1848
Flt Permitted	0.972					0.992
Satd. Flow (perm)	1704	0	1833	0	0	1848
Link Speed (mph)	25		35			35
Link Distance (ft)	421		857			439
Travel Time (s)	11.5		16.7			8.6
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	30	23	418	57	50	278
Shared Lane Traffic (%)						
Lane Group Flow (vph)	53	0	475	0	0	328
Sign Control	Stop		Free			Free

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	52.8%
Analysis Period (min)	15
	ICU Level of Service A

Intersection						
Int Delay, s/veh	1.4					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	28	21	385	52	46	256
Future Vol, veh/h	28	21	385	52	46	256
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	30	23	418	57	50	278

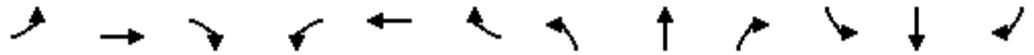
Major/Minor	Minor1	Major1	Major2			
Conflicting Flow All	825	447	0	0	475	0
Stage 1	447	-	-	-	-	-
Stage 2	378	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	342	612	-	-	1087	-
Stage 1	644	-	-	-	-	-
Stage 2	693	-	-	-	-	-
Platoon blocked, %			-	-		
Mov Cap-1 Maneuver	324	612	-	-	1087	-
Mov Cap-2 Maneuver	324	-	-	-	-	-
Stage 1	644	-	-	-	-	-
Stage 2	656	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	15.2	0	1.3
HCM LOS	C		

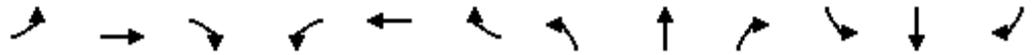
Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	406	1087
HCM Lane V/C Ratio	-	-	0.131	0.046
HCM Control Delay (s)	-	-	15.2	8.5
HCM Lane LOS	-	-	C	A
HCM 95th %tile Q(veh)	-	-	0.4	0.1

FedEx- Middletown
114: Middle & Bradley/Aetna

BUILD 52.5 + Improvements
Timing Plan: PM Peak Hr



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕	↕		↕	↕	↕	↕	
Traffic Volume (vph)	60	1	57	7	0	7	28	370	3	3	267	35
Future Volume (vph)	60	1	57	7	0	7	28	370	3	3	267	35
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	14	12	12	12	12	12	12	12	12	12	12
Storage Length (ft)	0		0	0		0	0		175	175		0
Storage Lanes	0		0	0		1	0		1	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.935				0.850			0.850		0.983	
Flt Protected		0.975			0.950			0.997		0.950		
Satd. Flow (prot)	0	1811	0	0	1770	1583	0	1857	1583	1770	1831	0
Flt Permitted		0.836			0.820			0.965		0.383		
Satd. Flow (perm)	0	1553	0	0	1527	1583	0	1798	1583	713	1831	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		62				191			191		19	
Link Speed (mph)		25			30			35			35	
Link Distance (ft)		519			341			3417			857	
Travel Time (s)		14.2			7.8			66.6			16.7	
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)	65	1	62	8	0	8	30	402	3	3	290	38
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	128	0	0	8	8	0	432	3	3	328	0
Turn Type	Perm	NA		Perm	NA	Free	Perm	NA	Free	pm+pt	NA	
Protected Phases		4			8			2		1	6	
Permitted Phases	4			8		Free	2		Free	6		
Detector Phase	4	4		8	8		2	2		1	6	
Switch Phase												
Minimum Initial (s)	7.0	7.0		7.0	7.0		15.0	15.0		5.0	15.0	
Minimum Split (s)	11.5	11.5		11.5	11.5		19.5	19.5		9.5	19.5	
Total Split (s)	20.0	20.0		20.0	20.0		30.0	30.0		10.0	40.0	
Total Split (%)	33.3%	33.3%		33.3%	33.3%		50.0%	50.0%		16.7%	66.7%	
Maximum Green (s)	15.5	15.5		15.5	15.5		25.5	25.5		5.5	35.5	
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	
Total Lost Time (s)		4.5			4.5			4.5		4.5	4.5	
Lead/Lag							Lag	Lag		Lead		
Lead-Lag Optimize?												
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		Min	Min		None	Min	
Act Effct Green (s)		8.1			8.1	38.2		22.8	38.2	23.3	24.3	
Actuated g/C Ratio		0.21			0.21	1.00		0.60	1.00	0.61	0.64	
v/c Ratio		0.34			0.02	0.01		0.40	0.00	0.01	0.28	
Control Delay		10.9			13.4	0.0		8.7	0.0	4.3	5.1	
Queue Delay		0.0			0.0	0.0		0.0	0.0	0.0	0.0	
Total Delay		10.9			13.4	0.0		8.7	0.0	4.3	5.1	
LOS		B			B	A		A	A	A	A	
Approach Delay		10.9			6.7			8.6			5.1	

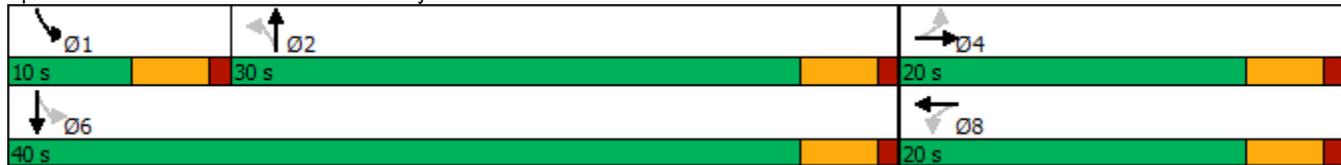


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach LOS		B			A			A				A
Queue Length 50th (ft)		9			1	0		40	0	0		26
Queue Length 95th (ft)		53			11	0		171	0	2		69
Internal Link Dist (ft)		439			261			3337				777
Turn Bay Length (ft)									175	175		
Base Capacity (vph)		690			643	1583		1341	1583	592		1663
Starvation Cap Reductn		0			0	0		0	0	0		0
Spillback Cap Reductn		0			0	0		0	0	0		0
Storage Cap Reductn		0			0	0		0	0	0		0
Reduced v/c Ratio		0.19			0.01	0.01		0.32	0.00	0.01		0.20

Intersection Summary

Area Type:	Other
Cycle Length:	60
Actuated Cycle Length:	38.2
Natural Cycle:	45
Control Type:	Actuated-Uncoordinated
Maximum v/c Ratio:	0.40
Intersection Signal Delay:	7.6
Intersection LOS:	A
Intersection Capacity Utilization:	62.0%
ICU Level of Service:	B
Analysis Period (min):	15

Splits and Phases: 114: Middle & Bradley/Aetna





Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	428	129	201	136	190	218
Future Volume (vph)	428	129	201	136	190	218
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.969		0.945			
Flt Protected	0.963					0.977
Satd. Flow (prot)	1721	0	1743	0	0	1802
Flt Permitted	0.963					0.450
Satd. Flow (perm)	1721	0	1743	0	0	830
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)	19		47			
Link Speed (mph)	30		35			35
Link Distance (ft)	1107		4764			3417
Travel Time (s)	25.2		92.8			66.6
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%
Adj. Flow (vph)	465	140	218	148	207	237
Shared Lane Traffic (%)						
Lane Group Flow (vph)	605	0	366	0	0	444
Turn Type	Perm		NA		pm+pt	NA
Protected Phases			2		1	6
Permitted Phases	8				6	
Detector Phase	8		2		1	6
Switch Phase						
Minimum Initial (s)	5.0		15.0		5.0	15.0
Minimum Split (s)	22.5		22.5		9.5	22.5
Total Split (s)	38.0		42.5		9.5	52.0
Total Split (%)	42.2%		47.2%		10.6%	57.8%
Maximum Green (s)	33.5		38.0		5.0	47.5
Yellow Time (s)	3.5		3.5		3.5	3.5
All-Red Time (s)	1.0		1.0		1.0	1.0
Lost Time Adjust (s)	0.0		0.0			0.0
Total Lost Time (s)	4.5		4.5			4.5
Lead/Lag			Lag		Lead	
Lead-Lag Optimize?			Yes		Yes	
Vehicle Extension (s)	3.0		3.0		3.0	3.0
Recall Mode	None		Min		Max	Min
Walk Time (s)	7.0		7.0			7.0
Flash Dont Walk (s)	11.0		11.0			11.0
Pedestrian Calls (#/hr)	0		0			0
Act Effct Green (s)	31.4		33.1			42.9
Actuated g/C Ratio	0.38		0.40			0.51
v/c Ratio	0.92		0.51			0.91
Control Delay	46.9		19.2			43.7
Queue Delay	0.0		0.0			0.0
Total Delay	46.9		19.2			43.7
LOS	D		B			D
Approach Delay	46.9		19.2			43.7



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Approach LOS	D		B			D
Queue Length 50th (ft)	316		127			149
Queue Length 95th (ft)	#532		206			#311
Internal Link Dist (ft)	1027		4684			3337
Turn Bay Length (ft)						
Base Capacity (vph)	720		840			545
Starvation Cap Reductn	0		0			0
Spillback Cap Reductn	0		0			0
Storage Cap Reductn	0		0			0
Reduced v/c Ratio	0.84		0.44			0.81

Intersection Summary

Area Type: Other
 Cycle Length: 90
 Actuated Cycle Length: 83.5
 Natural Cycle: 90
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 0.92
 Intersection Signal Delay: 38.7
 Intersection LOS: D
 Intersection Capacity Utilization 83.7%
 ICU Level of Service E
 Analysis Period (min) 15
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

Splits and Phases: 115: Middle & Smith





Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	270	23	264	0	0	640
Future Volume (vph)	270	23	264	0	0	640
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.989					
Flt Protected	0.956					
Satd. Flow (prot)	1761	0	1863	0	0	1863
Flt Permitted	0.956					
Satd. Flow (perm)	1761	0	1863	0	0	1863
Link Speed (mph)	30		30			30
Link Distance (ft)	888		541			4764
Travel Time (s)	20.2		12.3			108.3
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	293	25	287	0	0	696
Shared Lane Traffic (%)						
Lane Group Flow (vph)	318	0	287	0	0	696
Sign Control	Stop		Free			Free

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	56.7%
Analysis Period (min)	15
	ICU Level of Service B

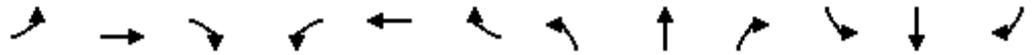
Intersection						
Int Delay, s/veh	29.6					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↘↗		↑			↑
Traffic Vol, veh/h	270	23	264	0	0	640
Future Vol, veh/h	270	23	264	0	0	640
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	293	25	287	0	0	696

Major/Minor	Minor1	Major1	Major2			
Conflicting Flow All	983	287	0	-	-	-
Stage 1	287	-	-	-	-	-
Stage 2	696	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	-	-
Pot Cap-1 Maneuver	~ 276	752	-	0	0	-
Stage 1	762	-	-	0	0	-
Stage 2	495	-	-	0	0	-
Platoon blocked, %			-			-
Mov Cap-1 Maneuver	~ 276	752	-	-	-	-
Mov Cap-2 Maneuver	~ 276	-	-	-	-	-
Stage 1	762	-	-	-	-	-
Stage 2	495	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	120.9	0	0
HCM LOS	F		

Minor Lane/Major Mvmt	NBTWBLn1	SBT
Capacity (veh/h)	- 290	-
HCM Lane V/C Ratio	- 1.098	-
HCM Control Delay (s)	- 120.9	-
HCM Lane LOS	- F	-
HCM 95th %tile Q(veh)	- 12.9	-

Notes
 ~: Volume exceeds capacity \$: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕						↕	
Traffic Volume (vph)	37	197	51	79	169	220	0	0	0	227	424	248
Future Volume (vph)	37	197	51	79	169	220	0	0	0	227	424	248
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
Fr _t		0.976			0.937							0.963
Fl _t Protected		0.994			0.992							0.988
Satd. Flow (prot)	0	1807	0	0	1731	0	0	0	0	0	1772	0
Fl _t Permitted		0.870			0.864							0.988
Satd. Flow (perm)	0	1582	0	0	1508	0	0	0	0	0	1772	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		19			77							50
Link Speed (mph)		30			30			30				30
Link Distance (ft)		832			1070			907				541
Travel Time (s)		18.9			24.3			20.6				12.3
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)	40	214	55	86	184	239	0	0	0	247	461	270
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	309	0	0	509	0	0	0	0	0	978	0
Turn Type	Perm	NA		Perm	NA					Perm	NA	
Protected Phases		4			8							6
Permitted Phases	4			8						6		
Detector Phase	4	4		8	8					6	6	
Switch Phase												
Minimum Initial (s)	7.0	7.0		7.0	7.0					7.0	7.0	
Minimum Split (s)	11.5	11.5		11.5	11.5					11.5	11.5	
Total Split (s)	23.0	23.0		23.0	23.0					37.0	37.0	
Total Split (%)	38.3%	38.3%		38.3%	38.3%					61.7%	61.7%	
Maximum Green (s)	18.5	18.5		18.5	18.5					32.5	32.5	
Yellow Time (s)	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	
Lost Time Adjust (s)		0.0			0.0						0.0	
Total Lost Time (s)		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	
Recall Mode	None	None		None	None					None	None	
Act Effct Green (s)		18.5			18.5							32.5
Actuated g/C Ratio		0.31			0.31							0.54
v/c Ratio		0.62			0.98							1.00
Control Delay		23.0			57.1							43.9
Queue Delay		0.0			0.0							0.0
Total Delay		23.0			57.1							43.9
LOS		C			E							D
Approach Delay		23.0			57.1							43.9
Approach LOS		C			E							D
Queue Length 50th (ft)		88			156							303
Queue Length 95th (ft)		162			#339							#571
Internal Link Dist (ft)		752			990			827				461



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Bay Length (ft)												
Base Capacity (vph)		500			518						982	
Starvation Cap Reductn		0			0						0	
Spillback Cap Reductn		0			0						0	
Storage Cap Reductn		0			0						0	
Reduced v/c Ratio		0.62			0.98						1.00	

Intersection Summary

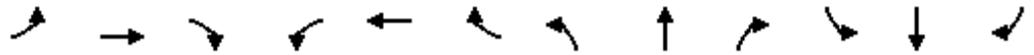
Area Type: Other
 Cycle Length: 60
 Actuated Cycle Length: 60
 Natural Cycle: 70
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 1.00
 Intersection Signal Delay: 44.0 Intersection LOS: D
 Intersection Capacity Utilization 96.4% ICU Level of Service F
 Analysis Period (min) 15
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

Splits and Phases: 117: I91 SB on/Middle & Country Club



FedEx- Middletown
118: I91NB off/I91NB on & Country Club

BUILD 52.5 + Improvements
Timing Plan: PM Peak Hr



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕				
Traffic Volume (vph)	95	328	0	0	247	79	222	0	247	0	0	0
Future Volume (vph)	95	328	0	0	247	79	222	0	247	0	0	0
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
Fr _t					0.967			0.929				
Fl _t Protected		0.989						0.977				
Satd. Flow (prot)	0	1842	0	0	1801	0	0	1691	0	0	0	0
Fl _t Permitted		0.843						0.977				
Satd. Flow (perm)	0	1570	0	0	1801	0	0	1691	0	0	0	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)					36			110				
Link Speed (mph)		30			30			30				30
Link Distance (ft)		1070			714			989				751
Travel Time (s)		24.3			16.2			22.5				17.1
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)	103	357	0	0	268	86	241	0	268	0	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	460	0	0	354	0	0	509	0	0	0	0
Turn Type	Perm	NA			NA		Perm	NA				
Protected Phases		2			6			8				
Permitted Phases	2						8					
Detector Phase	2	2			6		8	8				
Switch Phase												
Minimum Initial (s)	15.0	15.0			15.0		7.0	7.0				
Minimum Split (s)	19.5	19.5			19.5		11.5	11.5				
Total Split (s)	32.0	32.0			32.0		28.0	28.0				
Total Split (%)	53.3%	53.3%			53.3%		46.7%	46.7%				
Maximum Green (s)	27.5	27.5			27.5		23.5	23.5				
Yellow Time (s)	3.5	3.5			3.5		3.5	3.5				
All-Red Time (s)	1.0	1.0			1.0		1.0	1.0				
Lost Time Adjust (s)		0.0			0.0			0.0				
Total Lost Time (s)		4.5			4.5			4.5				
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0			3.0		3.0	3.0				
Recall Mode	None	None			None		None	None				
Act Effct Green (s)		19.0			19.0			15.7				
Actuated g/C Ratio		0.43			0.43			0.36				
v/c Ratio		0.68			0.45			0.76				
Control Delay		17.3			10.8			18.5				
Queue Delay		0.0			0.0			0.0				
Total Delay		17.3			10.8			18.5				
LOS		B			B			B				
Approach Delay		17.3			10.8			18.5				
Approach LOS		B			B			B				
Queue Length 50th (ft)		83			49			68				
Queue Length 95th (ft)		210			129			215				
Internal Link Dist (ft)		990			634			909				671



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Bay Length (ft)												
Base Capacity (vph)		1030			1194			996				
Starvation Cap Reductn		0			0			0				
Spillback Cap Reductn		0			0			0				
Storage Cap Reductn		0			0			0				
Reduced v/c Ratio		0.45			0.30			0.51				

Intersection Summary

Area Type:	Other
Cycle Length:	60
Actuated Cycle Length:	44.1
Natural Cycle:	40
Control Type:	Actuated-Uncoordinated
Maximum v/c Ratio:	0.76
Intersection Signal Delay:	16.0
Intersection LOS:	B
Intersection Capacity Utilization	79.0%
ICU Level of Service	D
Analysis Period (min)	15

Splits and Phases: 118: I91NB off/I91NB on & Country Club

