BEFORE THE
PENNSYLVANIA PUBLIC UTILITY COMMISSION

Application of CSX Transportation, Inc. for Approval of the Abolition of the Crossing (DOT 140 634 G) where Cemetery Avenue crosses above grade the tracks of CSX Transportation, Inc. located in the City of Philadelphia, Philadelphia County, Pennsylvania, and the allocation of cost thereto.	:	Docket No. A-2019-3013783

WRITTEN DIRECT TESTIMONY OF DEREK MIHALY, P.E. ON BEHALF OF CSX TRANSPORTATION, INC.

December 18, 2020

CSXT STATEMENT NO. 1

EXHIBIT
CSX Statement 1
exhibitsticker.com

Q. Mr. Mihaly, please state and spell your full name for the record.

A. Derek S. Mihaly.

Q. And by whom are you employed, Mr. Mihaly?

A. CSX Transportation, Inc. CSXT for short.

Q. What is your business address?

A. 4 Neshaminy Interplex, Suite 205, Trevose, PA 19053.

Q. And what is your position with CSXT?

A. Project Manager II.

Q. What are your duties in that position?

A. I currently manage Public Projects in the Design and Construction Department. I oversee the review and approval of design and construction plans by outside parties. Outside party projects involve the construction of new overhead highway and undergrade railroad bridges, and the demolition and reconstruction of existing highway and undergrade railroad bridges. My territory encompasses 7 states in the Northeast, including Pennsylvania, and Canada.

Q. Are you a licensed professional engineer?

A. Yes.

Q. Are you familiar with the crossing at issue in this proceeding?

A. Yes.

Q. Is CSXT the owner and operator of the line of railroad under this highway bridge crossing?

A. Yes.

Q. Please describe the general area of the involved crossing and the street involved.

A. It is an urban area, with a mix of residential and commercial properties adjacent to the railroad. This is shown in some detail in Figure 1 of the Traffic Study, which is CSXT Exhibit 4. Mr. Creasy will provide more detailed information about the crossing area and its vicinity, traffic volumes and other crossings in the area.

Q. Please describe the general type of the crossing structure and approach roadways, including number of spans, principal dimensions, roadway width, width of traffic lanes, horizontal and vertical clearance of the structure with respect to the railroad tracks, identifying the date the crossing was constructed and who constructed it.

A. The bridge is a single span, through-plate girder superstructure with a reinforced concrete vehicular roadway. It is 88 feet long and 39 feet wide. The curb-to-curb width is 30 feet, according to McCormick Taylor's inspection report, with two traffic lanes. The bridge superstructure was reconstructed in 1961 by the B&O Railroad, following a train derailment that destroyed much of the bridge. The original bridge was constructed in 1886 by the B&O and reconstructed in 1921. The bridge superstructure was designed in 1961 ~~we believe for a 14-ton limit~~ and presently has a 14-ton posting limit with 21 tons for combinations. The vertical clearance for trains under the bridge is presently 19.8 feet on Track 1 and 19.9 feet on Track 2, while the horizontal clearance is 17.74 feet for Track 1 and 20 feet for Track 2.

Q. Mr. Mihaly, do you have any photos that show the bridge and crossing area generally?

A. Yes, CSXT Exhibit 1 has six photos that show the crossing and area immediately adjacent to it that I took on December 15, 2020.

Q. Who has maintenance responsibility for the bridge and its approaches?

A. According to the October 2, 1961, Order, in the proceeding docketed to A-88079, which

is CSXT Exhibit 2, the B&O was assigned maintenance responsibility for the bridge substructure and superstructure, and the City had maintenance responsibility for the approaches.

Q. Who conducts the required every other year NBIS inspection of the bridge?

A. To our knowledge, the City does this, performed recently by McCormick Taylor.

Q. Does CSXT receive copies of these inspection reports?

A. Yes, from McCormick Taylor, although we did not have one in our files for 2016.

Q. Mr. Mihaly, do you think the McCormick Taylor inspector's recommendation in its March 30, 2020, interim inspection report to install structure mounted guide rail across both sides of the bridge to protect the fracture critical through girders and to install standard pedestrian fencing along both sides of the bridge is warranted?

A. Although this does not have to do with CSXT's Application to abolish the crossing, I understand that the Commission's Bureau of Investigation and Enforcement has raised this issue. CSXT thinks that these items constitute alterations to the crossing and so should be the subject of a petition and field meeting at which all concerned parties can weigh in on the need for any alterations and potential alternatives. If agreement cannot be reached at the field meeting, the Commission can then decide.

Q. What actions has CSXT taken as a result of the most recent inspection report?

A. We replaced the missing fence mid-rails identified in the report as well as another segment identified by I&E more recently.

Q. What other work has CSXT performed on the bridge in recent years and at what cost?

A. About five years ago CSXT repaired both main girders that had heavy deterioration and perforation to the webs of the main girders over the entire length at a cost of

approximately $319,000. About three years ago CSXT replaced impact damaged floorbeams to restore the bridge to its design capacity at a cost of approximately $290,000.

Q. Does CSXT also inspect this structure?

A. Yes. CSXT performs an annual inspection on all structures, for their safety in regard to rail operations.

Q. From these inspections, both McCormick Taylor's and CSXT's, what is your professional opinion of the present condition of the bridge substructure and superstructure?

A. The bridge is safe and adequately meets the requirements of and serves the purposes for which it was designed.

Q. Is the bridge unsafe in any manner in your professional opinion?

A. No, it is currently open for traffic.

Q. Why then does CSXT seek to abolish the crossing?

A. It is redundant and therefor unnecessary, to which Mr. Creasy will testify in more detail.

Q. Please provide testimony indicating the number of tracks presently located at the crossing site and state whether any track is electrified; state the volume, class and approximate speed of all trains operated daily over these tracks; and state whether any changes in such operations are contemplated in the foreseeable future.

A. Two tracks, neither of which is electrified. The traffic volume in 2018 was 14 trains per day with a timetable speed of 30 miles per hour. An ongoing clearance project and approved PennDOT grant to lower the tracks will allow double-stack container traffic to utilize the line, increasing efficiency. That project is expected to be completed in 2024.

Q. You had previously mentioned that the present minimum vertical clearance at this crossing is 19.8 feet. Does the clearance project play any part in CSXT's request that this crossing be abolished and the bridge removed?

A. No. Our clearance project is currently ongoing and all drainage and structural work has been completed. Required clearances would be achieved through lowering of the tracks at this crossing and at the adjacent four structures, two on either side of the Cemetery Avenue crossing.

Q. Will CSXT agree to perform the actual work, including plan preparation, and assume the cost of bridge demolition/removal, barrier construction, approach modifications and any other work deemed necessary to ensure public safety and convenience at the existing crossing if its Application to abolish is granted?

A. Yes.

Q. What portion of the cost of and responsibility for future maintenance and inspection will CSXT agree to assume if the Cemetery Avenue Bridge is removed and what portion of the costs and responsibility should be allocated to others? Your response should include barriers, remaining abutments, approach modifications and any other work deemed necessary for public safety and convenience at the former crossing.

A. The maintenance and cost responsibilities for the roadway approaches, barriers and any applicable roadway signage should be assumed by the City as the roadway owner. CSXT would retain maintenance responsibility for the remaining abutments.

Q. Should the Cemetery Avenue crossing not be abolished, what portion of future maintenance and inspection will it agree to bear, and what portions of the work or costs thereof should be performed and borne by others?

A. We think the bridge superstructure work and cost responsibilities should be assigned to the City, along with its present responsibilities for the roadway approaches. CSXT would agree to retain cost and work responsibilities for the abutments. We think that would be a fair division of responsibilities in these circumstances.

Q. How does CSXT benefit from either the existence or removal of the Cemetery Avenue Bridge?

A. Beyond the separation of train and vehicular traffic, CSXT obtains no benefit from this crossing. The primary beneficiary is instead the City and its residents, yet the City has no present cost responsibilities for the bridge.

Q. Mr. Mihaly, does CSXT have responsibility for many highway bridges in Pennsylvania?

A. CSXT has historical maintenance responsibility for a handful of highway bridges in Pennsylvania. But we are a railroad involved in the design, construction and maintenance of railroad bridges. Highway bridges should be the responsibility of the highway authority that owns the roadway the bridge carries, which knows the most about and receives the most benefit from the bridge.

CSXT Exhibit 1

A

12/15/2020
B

12/15/2020
C

D

E

F

CSXT Exhibit 2

PENNSYLVANIA PUBLIC UTILITY COMMISSION

Application Docket No. 88079

In re: Application of THE BALTIMORE AND OHIO RAILROAD COMPANY - For approval of the alteration of the crossing where Cemetery Avenue crosses above the tracks of said company, in the City of Philadelphia, and the allocation of the costs and expenses incident thereto.

O R D E R

BY THE COMMISSION, OCTOBER 2, 1961:

This matter is before us upon application of The Baltimore and Ohio Railroad Company seeking approval of the alteration of the crossing (presently demolished) where Cemetery Avenue crosses above the grade of tracks of the railroad company in the City of Philadelphia.

The proposed rail-highway crossing project consists primarily of the replacement of the superstructure of the Cemetery Avenue Bridge which was destroyed on March 24, 1960 by a train derailment.

By the order issued May 15, 1961, prior to the formal hearing held in this proceeding, we approved the petition of The Baltimore and Ohio Railroad Company seeking a preliminary order temporarily approving the alteration of the crossing. The effect of that order is limited to a period of time ending December 31, 1962.

Testimony submitted at the hearing held June 15, 1961 shows that in the year 1886 The Baltimore and Ohio Railroad Company, at its sole cost and expense, constructed a bridge at this location to carry Cemetery Avenue across and above the grade of the facilities of the railroad company. This bridge was constructed in accordance with the ordinance of City Council approved July 3, 1885 and agreements between the City of Philadelphia and The Baltimore and Ohio Railroad Company, and was maintained by andat the sole cost and expense of the railroad company until May 24, 1960 when a train derailment completely destroyed the superstructure of the bridge.

DOCKETED
APPLIC
ENTRY

Since the destruction of this facility, all highway and pedestrian traffic, which formerly crossed the tracks of the railroad company at this location, has been forced todetour over other city streets and bridges over the railroad tracks. According to the witness of the City of Philadelphia, this has caused considerable inconvenience to the traveling public and has created an economic hardship in the business community adjacent to Cemetery Avenue.

At the request of the City of Philadelphia, the railroad company now proposes, at its sole cost and expense, to construct a new modern superstructure to replace the old one destroyed on May 24, 1960 and has prepared complete construction drawings showing the manner in which it is proposed to construct the improvement.

These drawings, a copy of which was admitted at the hearing held June 15, 1960 as applicant's Exhibit No. A-1, show that a new single span steel plate girder superstructure will be constructed upon the existing stone masonry abutments after minor alterations have been made to adapt them to the new superstructure. The new superstructure will provide a reinforced concrete vehicular roadway 30 feet in width between curbs and will provide two 5-foot wide sidewalks which are carried on cantilever brackets on the outside of the main steel girders.

By the elimination of the two intermediate supporting columns which supported the old bridge, horizontal clearance will be materially increased and will exceed the minimum requirements of the Commission's Railroad Regulations. However, the bridge will provide a vertical clearance over the tracks of the railroad company of only 17 feet 3/8 inch. This is less than the minimum requirements of the aforesaid railroad regulations.

Our order issued May 15, 1961 at A. 87886 approved, subject to certain operating conditions, The Baltimore and Ohio Railroad Company's request for an exemption of the 22-foot minimum over-head clearance requirements of our railroad regulations.

Applicant's Exhibit No. A-1 shows that the lines and grades of the new superstructure will conform closely with the lines and grades of the existing street and that only minor adjustments will be required to fit the new bridge superstructure to the existing approach conditions.

The railroad company will furnish all material and do all work necessary to construct the entire improvement, including minor changes in the highway approaches and, upon completion thereof, will maintain the entire substructure and superstructure of the bridge. City of Philadelphia will maintain the highway approaches to the new bridge.

No objections to the construction of the rail-highway crossing project as proposed by the applicant were entered at the hearing and the record clearly establishes the need of the proposed improvement.

Upon full consideration of the matters and things involved we find and determine that the alteration of the crossing, above grade, as above described, is necessary or proper for the service, accommodation, convenience, or safety of the public; THEREFORE,

IT IS ORDERED:

1. That the instant application be and is hereby approved.

2. That the crossing, where Cemetery Avenue crosses above the grade of the tracks of The Baltimore and Ohio Railroad Company in the City of Philadelphia, be altered in accordance with the general construction plans prepared by The Baltimore and Ohio Railroad Company and admitted at the hearing held in this proceeding on June 15, 1961 as applicant's Exhibit No. A-1 which plans are attached hereto, made part hereof, and are hereby approved except insofar as they may relate to the division of work, the deletion of work, or to the allocation of the costs and expenses incident to the construction and maintenance of the improvement.

3. That The Baltimore and Ohio Railroad Company, at its sole cost and expense, furnish all material and do all work required to make any temporary or permanent alterations or relocations of its tracks,

signals, wire lines, or other facilities required to permit the construction of the improvement and, in addition, maintain any watchmen and flagmen required to protect its operations during the time the existing bridge is being altered and during the time alterations are being made to its facilities in accordance with this order.

4. That any relocation of, changes in, or removal of any adjacent structures, equipment, or other facilities of any public utility other than The Baltimore and Ohio Railroad Company, which may be required as incidental to the execution of the improvement, be made by said public utility in such manner as will not interfere with the construction of the improvement and said relocated or changed facilities thereafter to be maintained by the respective utility.

5. That The Baltimore and Ohio Railroad Company, at its sole cost and expense, furnish all material and do all work necessary to construct the entire new superstructure, to remove the existing columns and bents, and to modify or alter the existing abutments in accordance with the approved plans.

6. That The Baltimore and Ohio Railroad Company, at its sole cost and expense, furnish all material and do all work necessary to adjust the grade of the highway approaches to conform with the new superstructure and to repave all portions of the highway disturbed in the construction of the improvement to a satisfactory condition conforming with the adjacent highway approaches.

7. That The Baltimore and Ohio Railroad Company, at its sole cost and expense, furnish all material and do all work necessary to complete the remainder of the improvement in accordance with the approved plans.

8. That all work necessary to complete the improvement be done in a manner satisfactory to this Commission and be fully completed on or before December 31, 1961 and that on or before said date The Baltimore and Ohio Railroad Company report to this Commission the date of actual completion of the improvement.

9. That The Baltimore and Ohio Railroad Company pay all compensation for damages, if any, due to the owners for property taken, injured, or destroyed by reason of the construction of the improvement in accordance with this order.

10. That, upon completion of the improvement and its opening to public use, City of Philadelphia, at its sole cost and expense, furnish all material and do all work necessary thereafter to maintain the highway approaches to the altered crossing, above grade.

11. That, upon completion of the improvement and its opening to public use, The Baltimore and Ohio Railroad Company, at its sole cost and expense, furnish all material and do all work necessary thereafter to maintain the remainder of the crossing improvement, including the entire substructure and superstructure of the altered bridge.

PENNSYLVANIA PUBLIC UTILITY COMMISSION

Chairman

ATTEST:

Secretary

OVERSIZE
DOCUMENTS

BEFORE THE
PENNSYLVANIA PUBLIC UTILITY COMMISSION

Application of CSX Transportation, Inc. for Approval of the Abolition of the Crossing (DOT 140 634 G) where Cemetery Avenue crosses above grade the tracks of CSX Transportation, Inc. located in the City of Philadelphia, Philadelphia County, Pennsylvania, and the allocation of cost thereto.	:	Docket No. A-2019-3013783

WRITTEN DIRECT TESTIMONY OF GREGORY E. CREASY, P.E. ON BEHALF OF CSX TRANSPORTATION, INC.

Date: December 18, 2020

CSXT STATEMENT NO. 2

EXHIBIT
CSX Statement 2
exhibitsticker.com

Q. Sir, would you please state your full name for the record?

A. Gregory E. Creasy.

Q. Mr. Creasy, what is the name of your company?

A. Grove Miller Engineering, Inc.

Q. What does Grove Miller Engineering do?

A. We are a traffic and transportation engineering firm. We perform traffic studies for developers and for municipalities. We have previously performed similar studies for this and other railroads. We have been in business for almost 40 years doing transportation and traffic engineering.

Q. What specifically is your position and the work that you do at Grove Miller?

A. I am the President and principal owner of the firm and I am responsible for the day-to-day traffic engineering services at the firm, performing the traffic studies and overseeing other transportation studies as well.

Q. How long have you been employed by Grove Miller Engineering?

A. I have been at Grove Miller for 21 years.

Q. When did you become President and prior to that time what did you do at Grove Miller Engineering?

A. I became President of the firm in approximately 2012. Prior to that I was the Vice President of Engineering of the firm. I was responsible for the day-to-day activities of the engineering portion of the firm for approximately 7 years before becoming President.

Q. What were your jobs prior to joining Grove Miller Engineering?

A. Before starting at Grove Miller, I was an entry level traffic engineer at Herbert, Rowland & Grubic, Inc. in Harrisburg, Pennsylvania for the first 1 ½ years I was out of college.

Prior to that I had summer internships at the Pennsylvania Department of Transportation, District 3-0 while I was in college.

Q. What is your educational background, Mr. Creasy?

A. I received a Bachelor of Science Degree in Civil Engineering from Pennsylvania State University in 1995 and a Master of Engineering and Civil Engineering from Pennsylvania State University in 1997.

Q. Do you have any professional licensures, Mr. Creasy?

A. I am a licensed professional engineer in the State of Pennsylvania since 2002.

Q. Do you have any professional affiliations, Mr. Creasy?

A. I am a member of the Institute of Transportation Engineers and its Mid-Atlantic Section.

Q. Mr. Creasy, I am showing you now what has been marked for identification as CSXT Exhibit 3. What is this?

A. This is my curriculum vitae that has more detailed information regarding my background and professional credentials that we were discussing.

Q. Mr. Creasy, are you familiar with the Cemetery Avenue Bridge in the City of Philadelphia that is at issue in this proceeding?

A. Yes, I am familiar with the subject crossing.

Q. Were you retained by CSXT to perform a Traffic Impact Study in conjunction with CSXT's Application to Abolish the Cemetery Avenue crossing?

A. Yes.

Q. What did that study entail?

A. The study was performed to assess if the roadway network surrounding the subject crossing can accommodate the traffic that currently uses the bridge crossing. The study

also included a travel time evaluation to determine the impact of the crossing closure on travel times for vehicles that currently use the crossing.

Q. Mr. Creasy, did that assessment result in the report that I am showing you now that is marked for identification as CSXT Exhibit 4?

A. Yes it did. We have issued the report titled "Traffic Impact Study for CSX Transportation Cemetery Avenue Crossing Bridge Removal in City of Philadelphia, Philadelphia County" and it is dated August 2019.

Q. Referring to Figure 1 in the Study, please describe Cemetery Avenue, the area of the crossing and the number and types of residences and businesses that would be directly affected by the crossing closure.

A. Cemetery Avenue in the area of the bridge crossing, between Kingsessing Avenue and Greenway Avenue, provides two-way traffic. Land uses near the bridge are generally residential and commercial in nature. These uses include auto repair shops, a storage/garage unit business, single family homes, and multi-family housing.

Q. Would you please provide an overview of the report and what you looked at in conjunction with it?

A. The purpose of the report was to assess the ability of the surrounding roadway network to accommodate the traffic volumes that currently use the bridge crossing. We identified eight intersections in the surrounding roadway network that were likely the most impacted by the redistribution of the traffic that currently uses the Cemetery Avenue crossing to access different travel routes. Traffic counts were conducted at those eight intersections and capacity analyses were conducted to measure levels of service. The existing 2019 conditions, 2030 conditions with the bridge crossing remaining open, and 2030 conditions

with the bridge crossing removed were evaluated. In addition to the capacity analyses, a travel time study was conducted to determine what, if any, additional delays that traffic currently using the Cemetery Avenue bridge crossing would experience on their new travel routes in the study area.

Q. What is the average daily traffic (ADT) on Cemetery Avenue and other nearby intersections?

A. The existing ADT on Cemetery Avenue at the subject bridge crossing is approximately 5,400 vehicles per day (Page 4 of CSXT Exhibit 4). The AM and PM peak hour traffic volumes at the eight study intersections are shown in Figures 2 and 3 of CSXT Exhibit 4.

Q. Why did you examine other nearby intersections?

A. The intersections studied were chosen based upon a review of the study area, identifying how traffic would most likely be rerouted to the surrounding roadway network and the intersections most likely impacted by the closing of the crossing. The intersections selected were the ones that it was estimated most of traffic would use. Obviously, local traffic can find other routes to get where they need to go, but we chose the intersections and the routes that seemed to be the most logical for most people to use.

Q. Where do you project that traffic that formerly used Cemetery Avenue would be diverted upon its closure?

A. Diverted traffic will likely use a combination of Kingsessing Avenue, 65th Street, 61st Street, Greenway Avenue, and Woodland Avenue to travel through the study area. Trip diversion volumes are depicted in Figures 6 and 7 of CSXT Exhibit 4.

Q. What would be the effect on those intersections if the Cemetery Avenue crossing is closed?

A. The capacity analyses indicate that all the study intersections are expected to operate at Level of Service "B" or better in the 2030 design year with the crossing open. The analyses also indicate that all intersections are expected to continue to operate at LOS "B" or better in the 2030 design year even with the crossing closed. The overall intersection LOS remains the same for each intersection with the crossing open or closed.

Q. Did you examine the accommodation of peak AM and PM capacity as well as overall daily traffic volumes anticipated to be diverted from the Cemetery Avenue closure to these other intersections?

A. The AM and PM peak hour capacity was evaluated at the study intersections with the diverted traffic volumes from the Cemetery Avenue bridge closure. The results of the analyses are provided in Tables 1 through 8 of CSXT Exhibit 4. As mentioned previously, overall intersection capacity Level of Service is not impacted by diverted traffic at any of the study area intersections.

Q. Would any roadway or traffic control improvements be necessary at any of the nearby intersections examined in order to accommodate the additional traffic?

A. No roadway or traffic control improvements would be needed to accommodate the diverted traffic. At the intersection of Kingsessing Avenue/Cemetery Avenue, traffic volumes on Cemetery Avenue would be very significantly reduced with the removal of the crossing. The traffic signal at the intersection could be removed due to the lack of side street traffic. Traffic signal maintenance and electric power service would no longer be necessary, representing a cost savings for the City.

Q. What about additional vehicular travel distances and times due to the closure of the Cemetery Avenue bridge. How were those examined and what were your conclusions?

A. Travel time runs were conducted to assess the potential impacts on travel times in the study area for Cemetery Avenue traffic that would have to divert with the closure of the crossing. The travel time evaluations and travel distances were calculated assuming a worst-case scenario where traffic would be at the crossing bridge and then have to reroute to the other side of the crossing bridge to complete their trip. Most traffic would not be traveling from one side of the crossing bridge to the other, so those vehicles would be able to choose shorter routes to get to their destination which would lessen the impact on travel times. The travel time evaluation consisted of five travel time runs in each direction along the diversion route to arrive at an average travel time. The route for the diverted traffic was along Kingsessing Avenue, 65th Street, and Greenway Avenue for a total distance of approximately 0.4 miles. The average travel time was approximately two minutes. Again, this is a worst case scenario and most of the diverted traffic would experience shorter travel times using the existing street grid network. Local traffic will likely choose the best routes for their particular transportation needs which will minimize the impact experienced by drivers.

Q. What about school buses in particular? Would they experience any change in route distance and travel times due to the removal of the Cemetery Avenue Bridge?

A. I do not know the school bus routes in the area, so I cannot provide an appropriate answer to this question. However, it is a distance of just 200 feet from each side of the bridge to the nearest street intersection, so if children were picked up there, there would be no meaningful disruption to bus routes.

Q. What about emergency responders, in particular fire, police and ambulance? Please explain how the bridge removal would affect response times for each of those vital services, referring to the map whenever possible.

A. Figure 10 of CSXT Exhibit 4 provides a location map of emergency responder locations in the vicinity of the Cemetery Avenue crossing. The closest emergency responder locations are at Woodland Avenue/65th Street (located south of the crossing bridge as shown in Figure 10) and 52nd Street/Willows Avenue (located northeast of the crossing bridge as shown in Figure 10). The roadway network in the area of the subject crossing generally provides connected through streets and complete blocks that provide many travel route options for emergency service providers. The available roadway network provides many access routes to and through the crossing bridge area so the proposed removal of the bridge is not expected to have an impact on incident response times.

Q. What about turning evaluations for emergency responders and snowplows? Would the street width on each side of the bridge be wide enough for them to turn around?

A. Cemetery Avenue on either side of the crossing bridge is wide enough for police and ambulance vehicles to make u-turns or three-point turns, but not fire trucks or large snow plows. Large trucks would have to back out of the cul-de-sac area, which is a distance of approximately 200 feet.

Q. Would it be unusual in an urban environment for a fire truck to have to back out of a street or alley to depart from a fire scene, with the use of fire personnel or police to stop traffic while they do so?

A. I really cannot speak to this from any personal experience, but it seems logical to me that there were would be many alleys, private drives and parking areas in any city where that would be the case.

Q. What about pedestrians, have you examined their use of the bridge and how a closure would affect them?

A. We performed a 24-hour pedestrian count for the bridge on Wednesday, September 2, 2020. The count inventoried pedestrians crossing on both sides of the bridge in both directions. The count found a total of 119 pedestrians that crossed the bridge during that period. Of the 119 total, 63 crossed in the eastbound direction toward Greenway Avenue and 56 crossed in the westbound direction toward Kingsessing Avenue.

Q. And how would a closure affect walking distances for pedestrians such as those?

A. If the Cemetery Avenue bride were removed, the nearest pedestrian pathway over the railroad be would be 65th Street. The additional walking distance from the intersection of Kingsessing Avenue/Cemetery Avenue to the intersection of Greenway Avenue/Cemetery Avenue would be 1,400 feet. The existing and diverted walking distances for pedestrians is depicted in Figure DT-1, which is marked for identification as CSXT Exhibit 5. With an average walking speed of 4 feet per second, the additional walk time would be approximately 6 minutes. Just as with the vehicle travel time evaluations and travel distances, the additional times/distances for pedestrian movements were calculated assuming a worst-case scenario of traveling from one side of the bridge to the other. It is unlikely that many people would be doing this, so pedestrians could use other, likely shorter, routes once crossing the railroad at 65th Street to arrive at their destination.

Q. In your professional opinion, Mr. Creasy, would households and businesses directly affected by the crossing closure have reasonable egress with the removal of the Cemetery Avenue Bridge?

A. Yes. Residents and businesses would still have access to Cemetery Avenue to travel to Kingessing Avenue to the west or Greenway Avenue to the east to connect to the local street network grid.

Q. In your professional opinion, Mr. Creasy, is the Cemetery Avenue Bridge necessary for public safety?

A. No. Given the urban nature of the area, there are several approach routes available for surrounding emergency service responders to access the area of the Cemetery Avenue crossing. As stated previously in my testimony, the available roadway network provides many access routes to and through the crossing bridge area so the proposed removal of the bridge would not be expected to have an impact on incident response times.

Q. In your professional opinion, is the crossing necessary for the public convenience?

A. As the results of our Traffic Impact Study (CSXT Exhibit 4) shows, the surrounding roadway network intersections can adequately accommodate the traffic volumes that would be diverted with the closing of the Cemetery Avenue crossing without impacts to overall intersection Levels of Service for the foreseeable future. In addition, the travel time run study indicated that there were minor travel time increases for traffic in the study area. Given all of the findings of our traffic analysis, it is my professional opinion that the Cemetery Avenue crossing is not an integral part of the roadway network in the surrounding area and is not a necessary component of the transportation system.

CSXT Exhibit 3

GREGORY E. CREASY, PRESIDENT

Grove Miller Engineering, Inc. · 4800 Linglestown Road, Suite 307 · Harrisburg, PA 17112
TEL: (717) 545-3636 · www.grovemiller.com · gcreasy@grovemiller.com

Occupation: Consulting Traffic Engineer

Education: The Pennsylvania State University, University Park, PA
Bachelor of Science, Civil Engineering, 1995
Master of Engineering, Civil Engineering, 1997

Professional Registration: Commonwealth Of Pennsylvania
Professional Engineer, PE 060549
June 20, 2002

Professional Affiliation: Institute of Transportation Engineers (ITE), Member

Employment History:

Grove Miller Engineering, Inc. February 1999 – To Date

Responsible for overseeing the day-to-day engineering activities of the firm
Prepare transportation impact studies (TIS)
Prepare comprehensive transportation improvement plans for municipal clients
Conduct traffic analyses, traffic studies, and traffic signal warrant analyses
Prepare traffic signal designs, construction plans, and construction specifications
Prepare technical proposals, price proposals, and scope of work documents
Review TIS reports, signal permit drawings, and other traffic studies
Manage project budgets, schedules, submissions, and client correspondence

Herbert, Rowland & Grubic, Inc. September 1997 – February 1999

Performed responsibilities of entry-level traffic engineer

The Pennsylvania State University August 1995 – August 1997

Performed responsibilities of Graduate Assistant and Teaching Assistant

Pennsylvania Department of Transportation May 1990 – August 1990
Engineering District 3-0 May 1991 – August 1991

Performed responsibilities of Engineering Intern in Highway Design Unit

Expert Testimony:
PUC Proceeding: Rail crossing closure, City of Lebanon, Lebanon Co., PA
PUC Proceeding: Rail crossing closure, Carroll Township, York Co., PA
PUC Proceeding: Rail crossing closure, Pine Street, Darby Borough, Delaware Co., PA
PUC Proceeding: Rail crossing closures, Dawson Borough, Fayette Co., PA
PUC Proceeding: Rail crossings, Susquehanna Co., Lackawanna Co., Wyoming Co., PA
Rezoning/Conditional Use Hearing: Goodman Logistics Center, W. Pennsboro Twp., PA
Conditional Use Hearing: Verus Partners Warehouse, W. Pennsboro Twp., PA
Conditional Use Hearing: Fox Farm, Newberry Twp., PA

CSXT Exhibit 4

TRAFFIC IMPACT STUDY

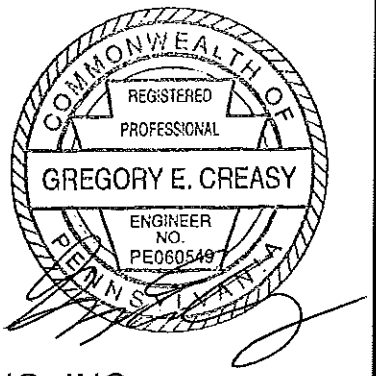
for

CSX TRANSPORTATION

Cemetery Avenue Crossing Bridge Removal

in

City of Philadelphia, Philadelphia County



August 2019

by

GROVE MILLER ENGINEERING, INC.
Traffic Engineering Consultants
Harrisburg, Pennsylvania

www.grovemiller.com

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EXECUTIVE SUMMARY

CSX Transportation desires to abolish a public rail-highway crossing of its tracks with Cemetery Avenue in the City of Philadelphia in Philadelphia County, Pennsylvania. The proposed closure would result in the permanent removal of the vehicular and pedestrian bridge on Cemetery Avenue, between Kingsessing Avenue and Greenway Avenue. An automatic traffic recorder (ATR) count indicates the average daily traffic (ADT) volume on Cemetery Avenue at the rail-highway crossing bridge is approximately 5,400 vehicles. The following traffic impact study will assess the impact of the removal of the bridge carrying Cemetery Avenue over the railroad on the adjacent highway network, i.e. the study area shown in Figure 1.

Traffic counts were conducted in the vicinity of the proposed bridge closure, at the following study area intersections:

- Kingsessing Avenue and 65th Street
- Kingsessing Avenue and Cemetery Avenue
- Kingsessing Avenue and 61st Street
- Cemetery Avenue and Greenway Avenue/63rd Street
- Woodland Avenue and 65th Street
- Woodland Avenue and 63rd Street
- Woodland Avenue and 62nd Street/Cemetery Avenue
- Woodland Avenue and 61st Street

Analyses were conducted for the existing 2019 transportation conditions. The analyses indicate that all study area intersections currently operate at desirable Levels of Service (LOS). All of the study area intersections are currently under capacity, meaning that the intersections could handle additional traffic without the need for geometric or operational improvements.

The 2030 projection year analyses indicate that all of the study area intersections continue to operate at overall desirable LOS (LOS “B” or better) with the Cemetery Avenue rail-highway crossing bridge remaining open. In the 2030 projection year all of the study area

intersections are expected to continue to operate at overall desirable LOS (LOS "B" or better) with the proposed removal of the Cemetery Avenue rail-highway crossing bridge. As evidenced by the fact that there is no change in the intersection LOS with the removal of the Cemetery Avenue rail-highway crossing bridge, traffic diverted from the Cemetery Avenue rail-highway crossing will not have an impact on the future study area intersection operations.

Travel time runs were conducted to assess the potential impacts on travel times in the study area for traffic that currently uses the Cemetery Avenue rail-highway crossing bridge that would have to divert to other routes. The travel time evaluations and travel distances assumed a worst-case scenario where traffic would be at the crossing bridge and then have to reroute to the other side of the crossing bridge. Most traffic would not be traveling from one side of the crossing bridge to the other, so those vehicles would be able to use shorter routes to get to their destination so their travel times would not be impacted to the extent presented in the travel time study results. The travel time study results indicate that, in the worst-case scenario, a small number of vehicles diverted as a result of the proposed removal of the Cemetery Avenue rail-highway crossing bridge would on average experience a moderate increase in travel time of one (1) minute and 45 seconds to two (2) minutes. It is anticipated that the local traffic that uses this segment of the roadway network will find the best routes for their particular transportation needs. These future route adjustments will further minimize any impact experienced by drivers.

The potential impact to emergency service provider response times was assessed in conjunction with the travel time study. There are existing emergency services located at the intersection of Woodland Avenue/65th Street (Police, Fire, and Paramedic) and the intersection of 52nd Street/Willows Avenue (Fire and Paramedic) in and around the study area. The roadway network in the area of the subject crossing provides connected through streets and complete street blocks that provide many travel route options for emergency service providers. When the number and distribution of emergency service providers is considered with the complete roadway network, the proposed removal of the Cemetery Avenue rail-highway crossing bridge is not expected to increase incident response times.

INTRODUCTION

CSX Transportation desires to abolish a public rail-highway crossing of its tracks with Cemetery Avenue in the City of Philadelphia in Philadelphia County, Pennsylvania. Grove Miller Engineering, Inc. has been retained by CSX Transportation to conduct a traffic impact study to assess the impact of the removal of the bridge carrying Cemetery Avenue over the railroad on the adjacent highway network. The crossing location will be referred to as the "Cemetery Avenue Rail-Highway Crossing" in this traffic impact study. A location map is provided as Figure 1.

The traffic study addresses the following issues:

- Determine existing traffic conditions at the study area intersections.
- Estimate the diversion of peak hour traffic volumes from the removal of the Cemetery Avenue rail-highway crossing bridge location to the surrounding highway network.
- Distribute the diverted trips to the surrounding highway network.
- Project current traffic volumes to a 2030 design year.
- Perform traffic analyses to determine existing and future traffic operational characteristics.
- Provide recommendations to effectively accommodate projected traffic demands on the adjacent highway network with the elimination of the subject rail-highway crossing.

The methodology and analyses results are documented in this traffic impact study report.

EXISTING CONDITIONS

The existing Cemetery Avenue rail-highway crossing bridge is located on Cemetery Avenue between Kingsessing Avenue and Greenway Avenue. Land uses in the area of the crossing are commercial and residential in nature.

Existing conditions of adjacent roadways are described below.

Cemetery Avenue. Cemetery Avenue is a local two (2) lane roadway providing an east/west roadway connection between Kingsessing Avenue and Woodland Avenue. Cemetery Avenue accommodates two-way traffic between Kingsessing Avenue and Greenway Avenue. West of Kingsessing Avenue, Cemetery Avenue is one-way westbound. East of Greenway Avenue, Cemetery Avenue is one-way eastbound. There is a rail-highway crossing bridge on Cemetery Avenue on the two-way section of Cemetery Avenue between Kingsessing Avenue and Greenway Avenue. The average weekday daily traffic volume on Cemetery Avenue is approximately 5,400 vehicles at the bridge crossing over the CSX Transportation rail line. The speed limit on Cemetery Avenue is 25 MPH and there are no pavement markings.

Kingsessing Avenue. Kingsessing Avenue is a two (2) lane state roadway (SR 3023) running in a north/south direction, west of the subject rail-highway crossing bridge. The average weekday daily traffic volume on Kingsessing Avenue in the area of 65th Street and Cemetery Avenue is approximately 5,250 vehicles according to PennDOT records. The speed limit is 25 MPH and pavement markings consist of a double yellow centerline, white edge lines, and bike lane markings. There is a SEPTA Trolley route on this section of Kingsessing Avenue.

Woodland Avenue. Woodland Avenue is a two (2) lane local roadway providing a north/south connection through the study area east of the subject rail-highway crossing bridge. The speed limit is 25 MPH and pavement markings consist of a double yellow centerline, white edge lines, and bike lane markings. There is a SEPTA Trolley route on this section of Woodland Avenue.

65th Street. 65th Street is a two (2) lane state roadway (SR 3004) running in an east/west direction, south of the subject rail-highway crossing bridge. The average weekday daily traffic volume on 65th Street in the area of Kingsessing Avenue and Woodland Avenue is approximately 6,500 vehicles according to PennDOT records. The speed limit is 25 MPH and there are no pavement markings. There is a SEPTA Trolley route on portions of 65th Street.

PROPOSED CONDITIONS

CSX Transportation desires to abolish a public rail-highway crossing of its tracks with Cemetery Avenue in the City of Philadelphia. The company desires to remove the bridge that carries Cemetery Street over the railroad tracks. The surrounding street network grid would accommodate the diverted traffic volumes from Cemetery Avenue.

DATA COLLECTION

Manual turning movement traffic counts (TMCs) were conducted at intersections on the roadway network in the area of the Cemetery Avenue rail-highway crossing bridge on an average weekday in March 2019. Manual counts were conducted at the following study area intersections:

- Kingsessing Avenue and 65th Street
- Kingsessing Avenue and Cemetery Avenue
- Kingsessing Avenue and 61st Street
- Cemetery Avenue and Greenway Avenue/63rd Street
- Woodland Avenue and 65th Street
- Woodland Avenue and 63rd Street
- Woodland Avenue and 62nd Street/Cemetery Avenue
- Woodland Avenue and 61st Street

The counts were conducted during the weekday morning peak traffic period (6:00-9:00 AM) and afternoon weekday peak traffic period (3:00-6:00 PM). A summary of the existing 2019 peak hour count data is provided in Figures 2 and 3, and copies of the traffic count data summary sheets are provided in the Appendix.

An automatic traffic recorder (ATR) count was conducted on Cemetery Avenue in the area of the rail-highway crossing bridge to determine the average weekday traffic volume. The ATR data indicates that the average daily traffic volume on the Cemetery Avenue rail-highway crossing bridge is approximately 5,400 vehicles per day. Copies of the traffic count data summary sheets are provided in the Appendix.

TRIP DIVERSION

Traffic volumes currently using Cemetery Avenue across the rail-highway crossing bridge will be diverted to adjacent streets with the proposed removal of the rail-highway crossing bridge. Diverted traffic will likely use a combination of Kingsessing Avenue, 65th Street, 61st Street, and Woodland Avenue to travel through the study area. The AM and PM peak hour trip diversions are shown in Figures 6 and 7. The trip diversions were used to estimate future 2030 design year traffic volumes at each of the study area intersections with the rail-highway crossing bridge removed. Documentation of the trip diversions for each approach to the Cemetery Avenue rail-highway bridge crossing are documented in a spreadsheet format and can be found in the Appendix.

TRAFFIC PROJECTIONS

Traffic projections were made in order to account for growth in background traffic volumes which may result from future potential development in the region. The 2019 existing traffic volumes were projected to a 2030 design year using a 0.00 percent annual traffic growth rate, which indicates that the study area is built-up to a level that additional traffic from growth will be negligible. The traffic growth rate was referenced from growth factor data provided by the PennDOT Bureau of Planning and Research. Traffic growth rate documentation is provided in the Appendix.

The 2030 design year peak hour traffic volumes with the Cemetery Avenue rail-highway crossing bridge remaining open are shown in Figures 4 and 5. The 2030 design year peak hour traffic volumes with the removal of the Cemetery Avenue rail-highway crossing bridge are shown in Figures 8 and 9. Traffic projections for the 2030 design year with the Cemetery Avenue rail-highway crossing bridge remaining open and with the with the

removal of the Cemetery Avenue rail-crossing bridge are documented in a spreadsheet format and can be found in the Appendix.

TRAFFIC ANALYSES

Traffic analyses were conducted to determine the existing and future operational conditions at the intersections of:

- Kingsessing Avenue and 65th Street
- Kingsessing Avenue and Cemetery Avenue
- Kingsessing Avenue and 61st Street
- Cemetery Avenue and Greenway Avenue/63rd Street
- Woodland Avenue and 65th Street
- Woodland Avenue and 63rd Street
- Woodland Avenue and 62nd Street/Cemetery Avenue
- Woodland Avenue and 61st Street

Analyses were completed for 2019 existing conditions, 2030 design year conditions with the Cemetery Avenue rail-highway crossing bridge open, and 2030 design year conditions with the Cemetery Avenue rail-highway crossing bridge removed.

Highway Capacity Analyses

Synchro Software Version 10 was used to perform all the capacity analyses for this study. The capacity analyses report sheets are provided in the Appendix. The analyses evaluate the intersection operations in terms of level of service (LOS). These levels of service (LOS) range from LOS "A" to LOS "F" with LOS "A" representing little or no delay and LOS "F" exceeding the practical limitations of available capacity and causing extreme delay.

Highway capacity analyses were completed for the 2019 existing conditions and 2030 projected conditions. Capacity analyses report sheets and a summary table are provided in the Appendix. A summary of the capacity analyses at each of the study area intersections follows.

INTERSECTION DISCUSSION

The following sections detail the traffic analyses performed at each study intersection.

Kingsessing Avenue and 65th Street.

Capacity Analyses

2019 Existing Conditions: The signalized intersection currently operates at LOS "A" during the AM and PM peak hours.

2030 Design Year Conditions with Bridge Crossing Open: The intersection is expected to continue to operate at LOS "A" during the AM and PM peak hours.

2030 Design Year Conditions with Bridge Crossing Removed: The intersection is expected to continue to operate at LOS "A" during the AM and PM peak hours.

The capacity analyses for this intersection are summarized in Table 1.

Table 1. Capacity Analyses Summary:
Kingsessing Avenue and 65th Street

Movement	Signalized Highway Capacity Analyses Results LOS (average delay per vehicle in seconds)					
	AM Peak Hour			PM Peak Hour		
	2019 Existing	2030 Crossing Open	2030 Bridge Removed	2019 Existing	2030 Crossing Open	2030 Bridge Removed
65th Street - EB	A	A	A	A	A	A
65th Street - WB	A	A	A	A	A	A
Kingsessing Avenue - NB	B	B	B	B	B	B
Kingsessing Avenue - SB	B	B	B	B	B	B
OVERALL	**A (8.1)**	**A (8.1)**	**A (7.1)**	**A (8.1)**	**A (8.1)**	**A (7.7)**

Kingsessing Avenue and Cemetery Avenue.

Capacity Analyses

2019 Existing Conditions: The signalized intersection currently operates at LOS "A" during the AM peak hour, and at LOS "B" during the PM peak hour.

2030 Design Year Conditions with Bridge Crossing Open: The intersection is expected to continue to operate at LOS "A" during the AM peak hour, and at LOS "B" during the PM peak hour.

2030 Design Year Conditions with Bridge Crossing Removed: Traffic volumes on Cemetery Avenue will be extremely low with the rail-highway crossing bridge removed. The traffic signal at this intersection could be removed due to the lack of side street (Cemetery Avenue) traffic. Traffic signal maintenance and electric power service would no longer be necessary, representing a cost savings for the City.

The capacity analyses for this intersection are summarized in Table 2.

Table 2. Capacity Analyses Summary:
Kingsessing Avenue and Cemetery Avenue

Movement	Signalized Highway Capacity Analyses Results LOS (average delay per vehicle in seconds)					
	AM Peak Hour			PM Peak Hour		
	2019 Existing	2030 Crossing Open	2030 Bridge Removed	2019 Existing	2030 Crossing Open	2030 Bridge Removed
Cemetery Avenue - WB	B	B	- - -	B	B	- - -
Kingsessing Avenue - NB	B	B	- - -	B	B	- - -
Kingsessing Avenue - SB	A	A	- - -	A	A	- - -
OVERALL	**A (9.6)**	**A (9.6)**	**- - -**	**B (10.4)**	**B (10.4)**	**- - -**

Kingsessing Avenue and 61st Street.

Capacity Analyses

2019 Existing Conditions: The signalized intersection currently operates at LOS "A" during the AM and PM peak hours.

2030 Design Year Conditions with Bridge Crossing Open: The intersection is expected to continue to operate at LOS "A" during the AM and PM peak hours.

2030 Design Year Conditions with Bridge Crossing Removed: The intersection is expected to continue to operate at LOS "A" during the AM and PM peak hours.

The capacity analyses for this intersection are summarized in Table 3.

Table 3. Capacity Analyses Summary:
Kingsessing Avenue and 61st Street

Movement	Signalized Highway Capacity Analyses Results LOS (average delay per vehicle in seconds)					
	AM Peak Hour			PM Peak Hour		
	2019 Existing	2030 Crossing Open	2030 Bridge Removed	2019 Existing	2030 Crossing Open	2030 Bridge Removed
61st Street - EB	B	B	B	B	B	B
61st Street - WB	B	B	B	B	B	B
Kingsessing Avenue - NB	A	A	A	A	A	A
Kingsessing Avenue - SB	A	A	A	A	A	A
OVERALL	**A (6.6)**	**A (6.6)**	**A (6.6)**	**A (8.6)**	**A (8.6)**	**A (8.7)**

Cemetery Avenue and Greenway Avenue/63rd Street.

Capacity Analyses

2019 Existing Conditions: The unsignalized intersection currently operates at LOS "A" during the AM and PM peak hours.

2030 Design Year Conditions with Bridge Crossing Open: The intersection is expected to continue to operate at LOS "A" during the AM and PM peak hours.

2030 Design Year Conditions with Bridge Crossing Removed: The intersection is expected to continue to operate at LOS "A" during the AM and PM peak hours.

The capacity analyses for this intersection are summarized in Table 4.

Table 4. Capacity Analyses Summary:
Cemetery Avenue and Greenway Avenue/63rd Street

Movement	Unsignalized Highway Capacity Analyses Results LOS (average delay per vehicle in seconds)					
	AM Peak Hour			PM Peak Hour		
	2019 Existing	2030 Crossing Open	2030 Bridge Removed	2019 Existing	2030 Crossing Open	2030 Bridge Removed
Cemetery Avenue - EB	A	A	A	A	A	A
63rd Street - WB	A	A	A	B	B	A
Greenway Avenue - NB	A	A	A	A	A	A
Greenway Avenue - SB	A	A	A	A	A	A
OVERALL	**A (8.2)**	**A (8.2)**	**A (6.9)**	**A (9.6)**	**A (9.6)**	**A (7.2)**

Woodland Avenue and 65th Street.

Capacity Analyses

2019 Existing Conditions: The signalized intersection currently operates at LOS "B" during the AM and PM peak hours.

2030 Design Year Conditions with Bridge Crossing Open: The intersection is expected to continue to operate at LOS "B" during the AM and PM peak hours.

2030 Design Year Conditions with Bridge Crossing Removed: The intersection is expected to continue to operate at LOS "B" during the AM and PM peak hours.

The capacity analyses for this intersection are summarized in Table 5.

Table 5. Capacity Analyses Summary:
Woodland Avenue and 65th Street

Movement	Signalized Highway Capacity Analyses Results LOS (average delay per vehicle in seconds)					
	AM Peak Hour			PM Peak Hour		
	2019 Existing	2030 Crossing Open	2030 Bridge Removed	2019 Existing	2030 Crossing Open	2030 Bridge Removed
65th Street - EB	B	B	B	C	C	C
65th Street - WB	B	B (19.4)*	C (20.9)*	B	B	B
Woodland Avenue - NB	A	A	A	A	A	A
Woodland Avenue - SB	A	A	A	A	A	A
OVERALL	**B (10.7)**	**B (10.7)**	**B (11.6)**	**B (10.3)**	**B (10.3)**	**B (11.2)**

* - The cut-off between LOS "B" and LOS "C" is 20 seconds of delay.

Woodland Avenue and 63rd Street.

Capacity Analyses

2019 Existing Conditions: The signalized intersection currently operates at LOS "A" during the AM and PM peak hours.

2030 Design Year Conditions with Bridge Crossing Open: The intersection is expected to continue to operate at LOS "A" during the AM and PM peak hours.

2030 Design Year Conditions with Bridge Crossing Removed: The intersection is expected to continue to operate at LOS "A" during the AM and PM peak hours.

The capacity analyses for this intersection are summarized in Table 6.

Table 6. Capacity Analyses Summary:
Woodland Avenue and 63rd Street

Movement	Signalized Highway Capacity Analyses Results LOS (average delay per vehicle in seconds)					
	AM Peak Hour			PM Peak Hour		
	2019 Existing	2030 Crossing Open	2030 Bridge Removed	2019 Existing	2030 Crossing Open	2030 Bridge Removed
63rd Street - EB	B	B	B	B	B	B
63rd Street - WB	B	B	B	B	B	B
Woodland Avenue - NB	A	A	A	A	A	A
Woodland Avenue - SB	A	A	A	A	A	A
OVERALL	**A (7.0)**	**A (7.0)**	**A (5.7)**	**A (8.4)**	**A (8.4)**	**A (7.3)**

Woodland Avenue and 62nd Street/Cemetery Avenue.

Capacity Analyses

2019 Existing Conditions: The signalized intersection currently operates at LOS "A" during the AM and PM peak hours.

2030 Design Year Conditions with Bridge Crossing Open: The intersection is expected to continue to operate at LOS "A" during the AM and PM peak hours.

2030 Design Year Conditions with Bridge Crossing Removed: The intersection is expected to continue to operate at LOS "A" during the AM and PM peak hours.

The capacity analyses for this intersection are summarized in Table 7.

Table 7. Capacity Analyses Summary:
Woodland Avenue and 62nd Street/Cemetery Avenue

Movement	Signalized Highway Capacity Analyses Results LOS (average delay per vehicle in seconds)					
	AM Peak Hour			PM Peak Hour		
	2019 Existing	2030 Crossing Open	2030 Bridge Removed	2019 Existing	2030 Crossing Open	2030 Bridge Removed
Cemetery Avenue - EB	C	C	C	B	B	B
62nd Street - WB	C	C	C	B	B	B
Woodland Avenue - NB	A	A	A	A	A	A
Woodland Avenue - SB	A	A	A	A	A	A
OVERALL	**A (6.9)**	**A (6.9)**	**A (6.1)**	**A (3.9)**	**A (3.9)**	**A (3.9)**

Woodland Avenue and 61st Street.

Capacity Analyses

2019 Existing Conditions: The signalized intersection currently operates at LOS "A" during the AM and PM peak hours.

2030 Design Year Conditions with Bridge Crossing Open: The intersection is expected to continue to operate at LOS "A" during the AM and PM peak hours.

2030 Design Year Conditions with Bridge Crossing Removed: The intersection is expected to continue to operate at LOS "A" during the AM and PM peak hours.

The capacity analyses for this intersection are summarized in Table 8.

Table 8. Capacity Analyses Summary:
Woodland Avenue and 61st Street

Movement	Signalized Highway Capacity Analyses Results LOS (average delay per vehicle in seconds)					
	AM Peak Hour			PM Peak Hour		
	2019 Existing	2030 Crossing Open	2030 Bridge Removed	2019 Existing	2030 Crossing Open	2030 Bridge Removed
61st Street - EB	B	B	B	B	B	B
Shopping Center Driveway - WB	B	B	B	B	B	B
Woodland Avenue - NB	A	A	A	A	A	A
Woodland Avenue - SB	A	A	A	A	A	A
OVERALL	**A (7.1)**	**A (7.1)**	**A (7.6)**	**A (8.6)**	**A (8.6)**	**A (9.3)**

TRAVEL TIME STUDY

Traffic volumes currently using the Cemetery Avenue rail-highway crossing bridge will be permanently diverted to adjacent streets with the proposed bridge closure. Travel time runs were conducted to assess the potential impacts on travel times in the study area for traffic that currently uses the Cemetery Avenue rail-highway crossing bridge that would have to divert to other routes. The travel time evaluations and travel distances assumed a worst-case scenario where traffic would be at the crossing bridge and then have to reroute to the other side of the crossing bridge. Most traffic would not be traveling from one side of the crossing bridge to the other, so those vehicles would be able to use shorter routes to get to their destination so their travel times would not be impacted to the extent presented in the travel time study results. Please refer to the study area map provided in Figure 1 to follow the travel routes outlined below.

To/From the West Side

For vehicles traveling to and from the west side of the Cemetery Avenue rail-highway crossing bridge, the end points chosen for the route were the west side of the bridge and the Cemetery Avenue/Greenway Avenue/63rd Street intersection. The travel route would be via Cemetery Avenue to Kingsessing Avenue southbound, to 65th Street eastbound, and Greenway Avenue northbound. The average travel time for this route was two (2) minutes for the 0.4 mile route.

To/From the East Side

For vehicles traveling to and from the east side of the Cemetery Avenue rail-highway crossing bridge, the end points chosen for the route were the east side of the bridge and the Kingsessing Avenue/Cemetery Avenue intersection. The travel route would be via Cemetery Avenue to Greenway Avenue southbound, to 65th Street westbound, and Kingsessing Avenue northbound. The average travel time for this route was one (1) minute and 45 seconds for the 0.4 mile route.

Summary of Results

The travel time study results indicate that, in the worst-case scenario, a small number of vehicles diverted as a result of the proposed removal of the Cemetery Avenue rail-highway

crossing bridge would on average experience a moderate increase in travel time of one (1) minute and 45 seconds to two (2) minutes. Most traffic would not be traveling from one side of the crossing bridge to the other, so those vehicles would be able to use shorter routes to get to their destination so their travel times would not be impacted nearly as much.

It should be noted that travel time runs were only conducted for the worst-case scenario conditions for traffic diversion. It is anticipated that the local traffic that uses this segment of the roadway network will find the best routes for their particular transportation needs. These future route adjustments will further minimize any impact experienced by drivers. The travel time study summary table is provided in the Appendix.

Emergency Service Response Times

The potential impact to emergency service provider response times was assessed in conjunction with the travel time study. There are existing emergency services located at the intersection of Woodland Avenue/65th Street (Police, Fire, and Paramedic) and the intersection of 52nd Street/Willows Avenue (Fire and Paramedic) in and around the study area. The locations of the surrounding emergency service providers are shown in Figure 10.

The urban nature of the study ensures that, in the event of an incident, emergency service providers will respond from multiple agencies, and locations. The roadway network in the area of the subject crossing provides connected through streets and complete street blocks that provide many travel route options for emergency service providers. When the number and distribution of emergency service providers is considered with the available roadway network, the proposed removal of the Cemetery Avenue rail-highway crossing bridge is not expected to increase incident response times.

CONCLUSIONS

Traffic Volumes

■An automatic traffic recorder (ATR) count indicates the average daily traffic (ADT) volume on Cemetery Avenue at the rail-highway crossing bridge is approximately 5,400 vehicles.

■This is a minor amount of traffic that can be absorbed by the surrounding local street network.

Intersection Capacity

■In the 2019 existing conditions analyses, as well as the 2030 projection year analyses, all of the study area intersections are expected to operate at LOS "B" or better at an overall level. The fact that there is no change in the intersection LOS with the removal of the Cemetery Avenue rail-highway crossing bridge shows that traffic diverted from the Cemetery Avenue rail-highway crossing will not have an impact on the future study area intersection operations.

■The adjacent street grid has sufficient capacity to accommodate peak hour and daily traffic volumes anticipated to be diverted from the proposed removal of the Cemetery Avenue rail-highway crossing bridge.

■Traffic diverted from the removal of the Cemetery Avenue rail-highway crossing bridge will have a minor impact on the future study area intersection operations.

■No roadway or traffic control improvements are recommended at the following intersections because desirable levels of service can be maintained with the existing intersection configurations and traffic controls:

- Kingsessing Avenue and 65th Street
- Kingsessing Avenue and 61st Street
- Cemetery Avenue and Greenway Avenue/63rd Street

- Woodland Avenue and 65th Street
- Woodland Avenue and 63rd Street
- Woodland Avenue and 62nd Street/Cemetery Avenue
- Woodland Avenue and 61st Street

■Traffic volumes on Cemetery Avenue will be extremely low with the rail-highway crossing bridge removed. The traffic signal at the intersection of Kingsessing Avenue and Cemetery Avenue could be removed due to the lack of side street (Cemetery Avenue) traffic. Traffic signal maintenance and electric power service would no longer be necessary, representing a cost savings for the City.

Travel Time Study

■The travel time evaluations and travel distances assumed a worst-case scenario where traffic would be at the crossing bridge and then have to reroute to the other side of the crossing bridge. The travel time study results indicate that, in the worst-case scenario, a small number of vehicles diverted as a result of the proposed removal of the Cemetery Avenue rail-highway crossing bridge would on average experience a moderate increase in travel time of one (1) minute and 45 seconds to two (2) minutes. Most traffic would not be traveling from one side of the crossing bridge to the other, so those vehicles would be able to use shorter routes to get to their destination so their travel times would not be impacted nearly as much.

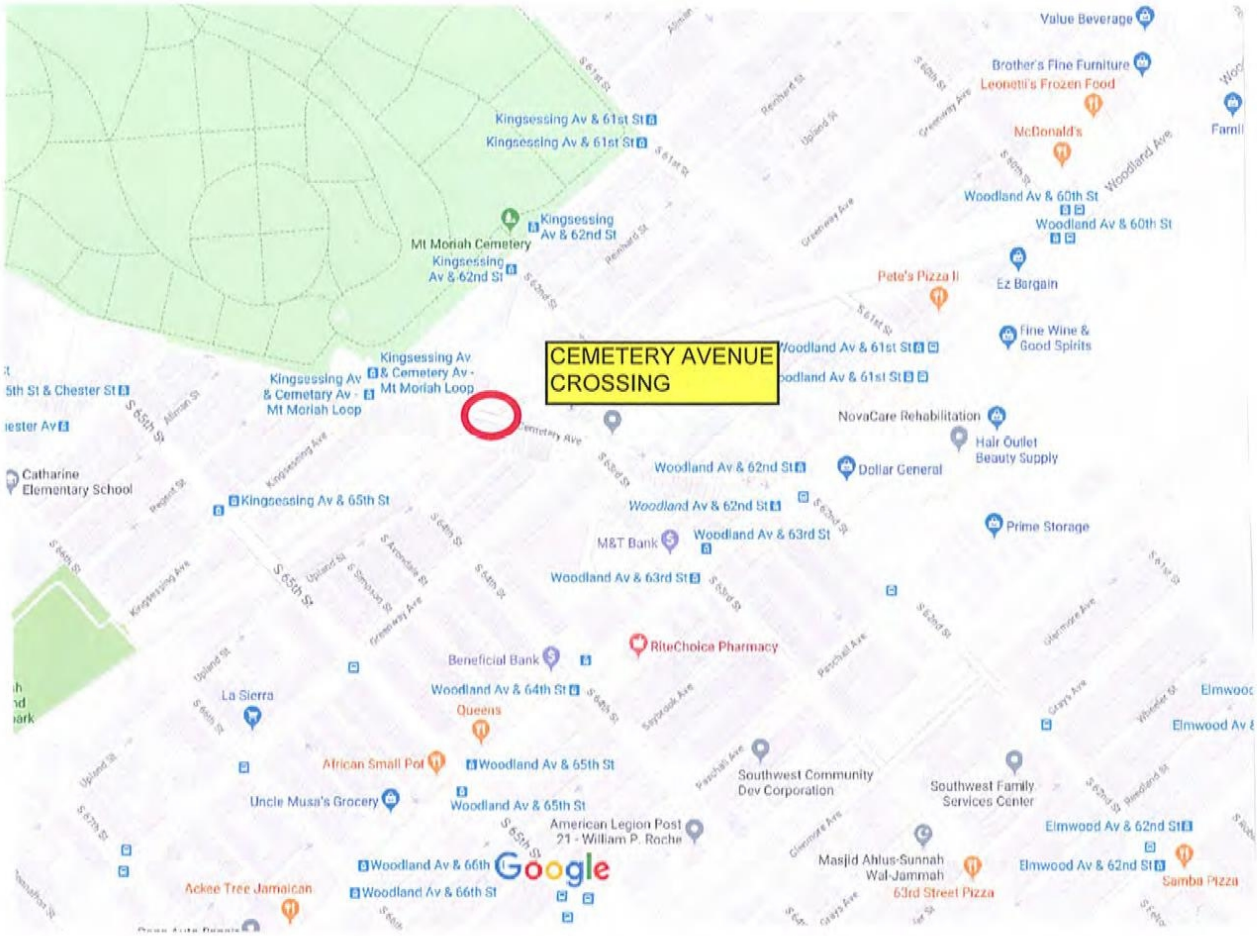
■Drivers will not experience a significant impact from the potential travel time increases due to the urban nature and complete street grid (the roadway network in the area of the subject crossing provides connected through streets and complete street blocks) in the study area.

■The location of emergency service providers and the complete street grid indicates that incident response times will not be impacted.

■The street grid network has sufficient connections to provide drivers and emergency service providers with multiple alternate route choices if the Cemetery Avenue rail-highway crossing bridge is removed.

FIGURES

GROVE MILLER ENGINEERING, INC.



TRANSPORTATION IMPACT STUDY

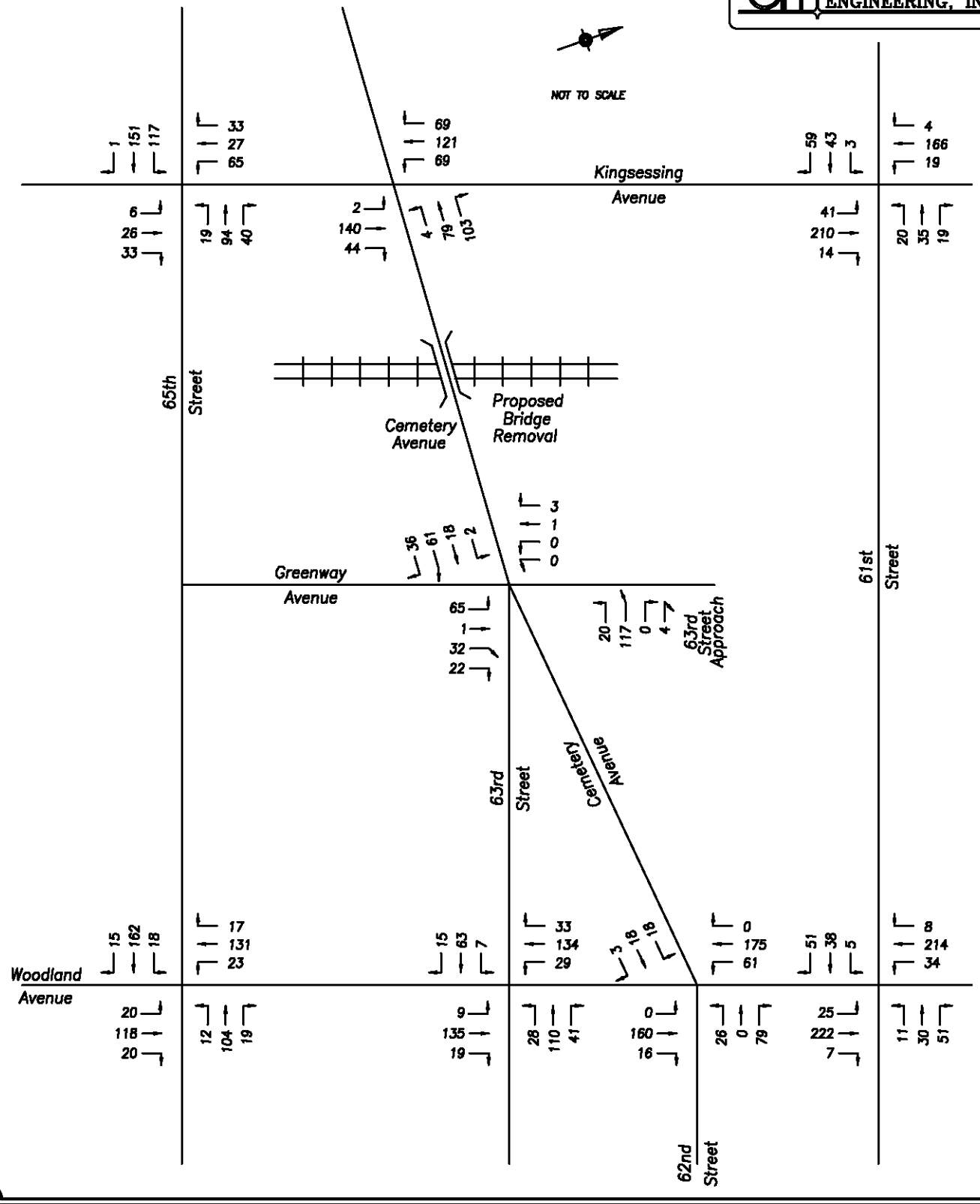
CEMETERY AVENUE CROSSING BRIDGE REMOVAL

City of Philadelphia, Philadelphia County

FIGURE 1

STUDY AREA

GROVE MILLER ENGINEERING, INC.



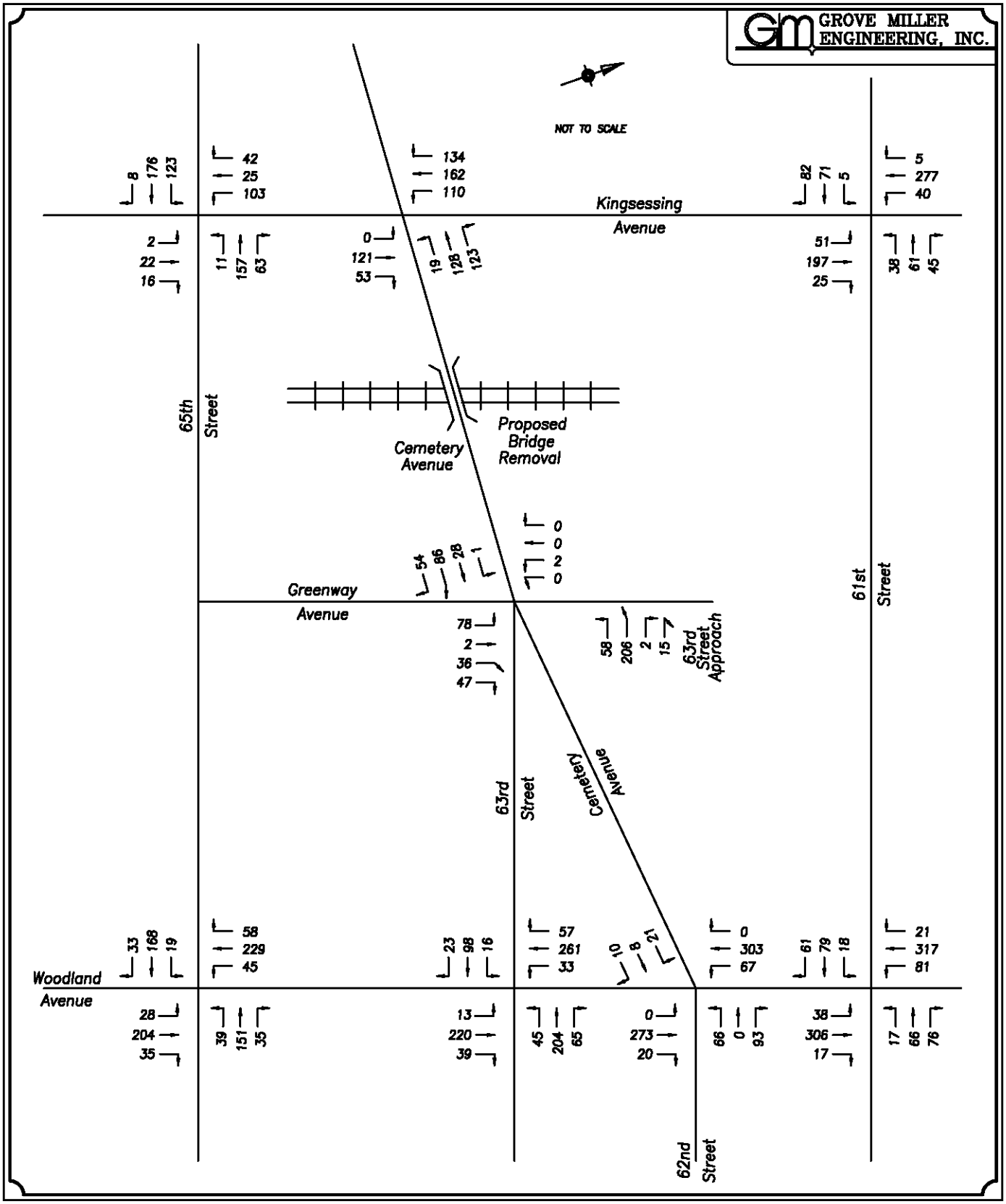
TRANSPORTATION IMPACT STUDY

CEMETERY AVENUE CROSSING BRIDGE REMOVAL

City of Philadelphia, Philadelphia County

FIGURE 2

2019 EXISTING AM PEAK HOUR TRAFFIC VOLUMES



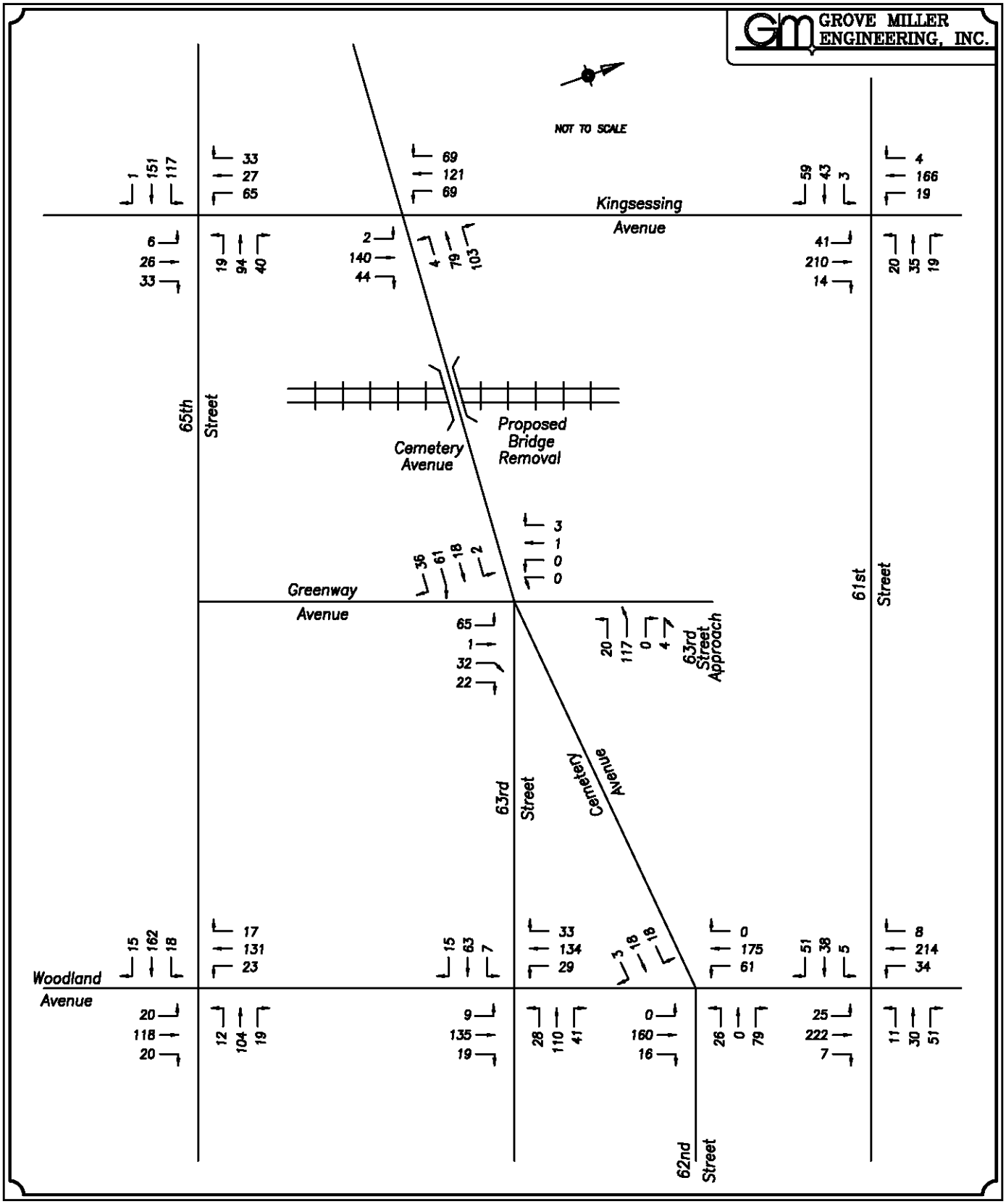
TRANSPORTATION IMPACT STUDY

CEMETERY AVENUE CROSSING BRIDGE REMOVAL

City of Philadelphia, Philadelphia County

FIGURE 3

2019 EXISTING PM PEAK HOUR TRAFFIC VOLUMES



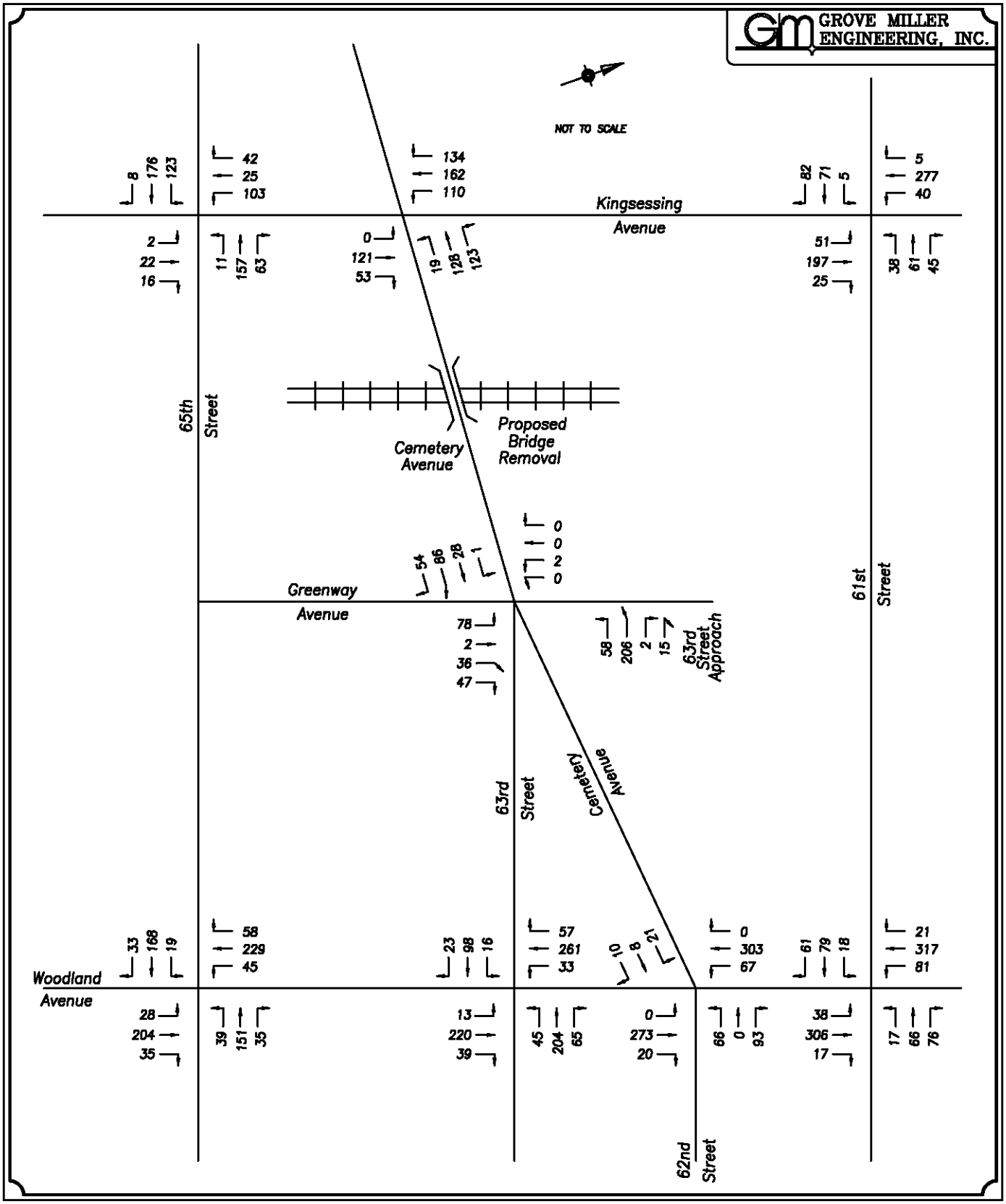
TRANSPORTATION IMPACT STUDY

CEMETERY AVENUE CROSSING BRIDGE REMOVAL

City of Philadelphia, Philadelphia County

FIGURE 4

2030 DESIGN YEAR AM PEAK HOUR TRAFFIC VOLUMES WITH CROSSING OPEN



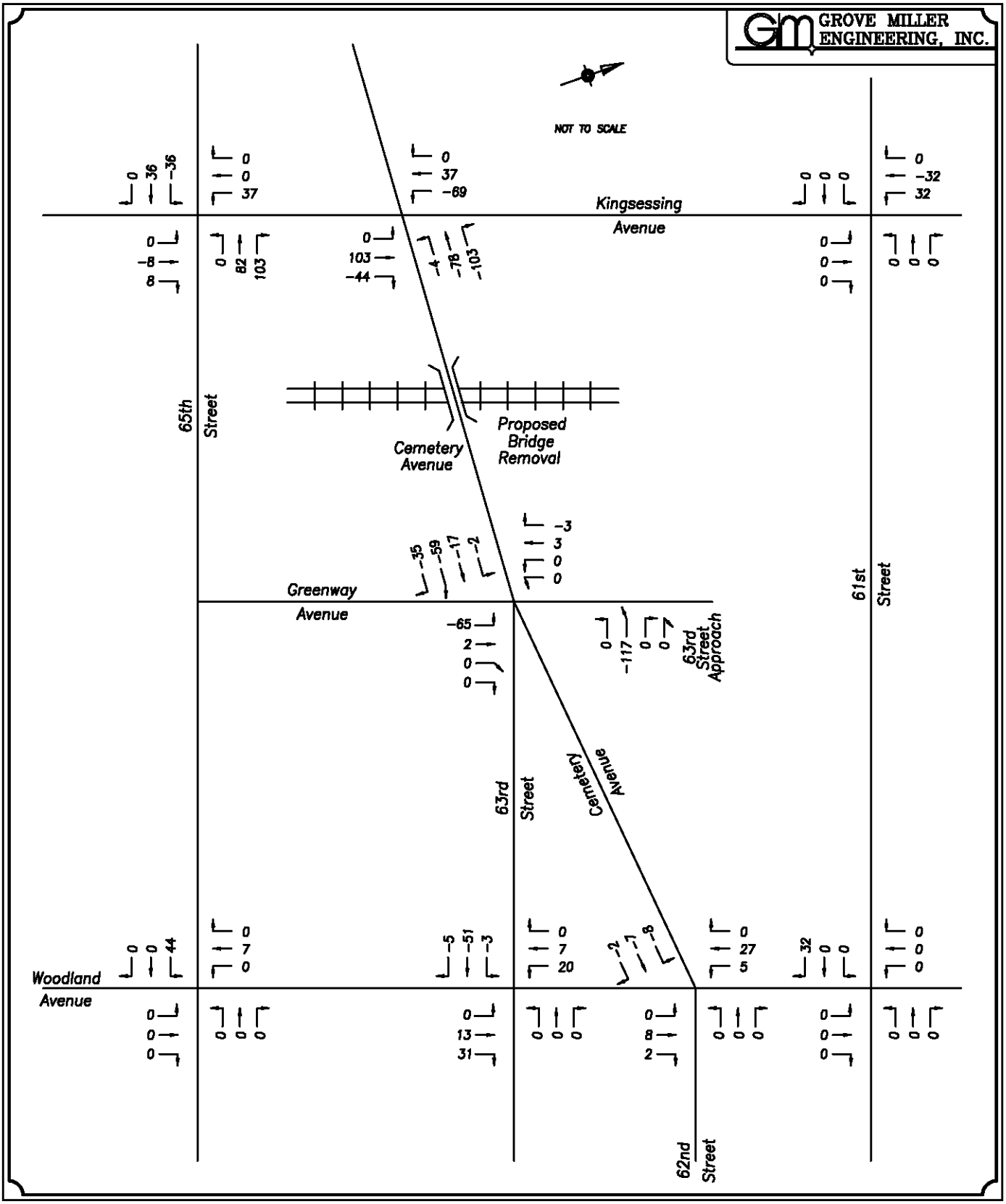
TRANSPORTATION IMPACT STUDY

CEMETERY AVENUE CROSSING BRIDGE REMOVAL

City of Philadelphia, Philadelphia County

FIGURE 5

2030 DESIGN YEAR PM PEAK HOUR TRAFFIC VOLUMES WITH CROSSING OPEN



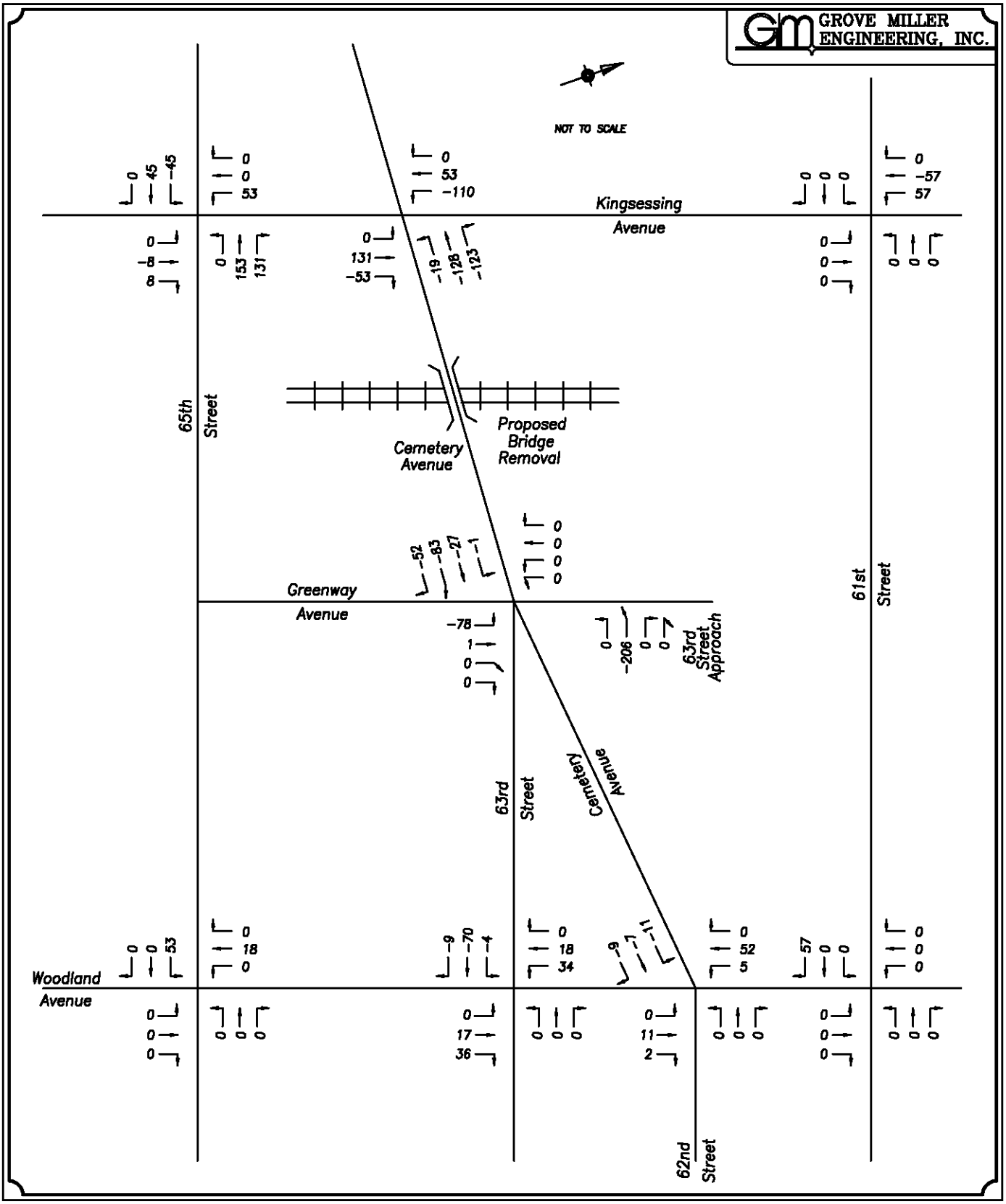
TRANSPORTATION IMPACT STUDY

CEMETERY AVENUE CROSSING BRIDGE REMOVAL

City of Philadelphia, Philadelphia County

FIGURE 6

TRIP DIVERSION FOR AM PEAK HOUR TRAFFIC VOLUMES



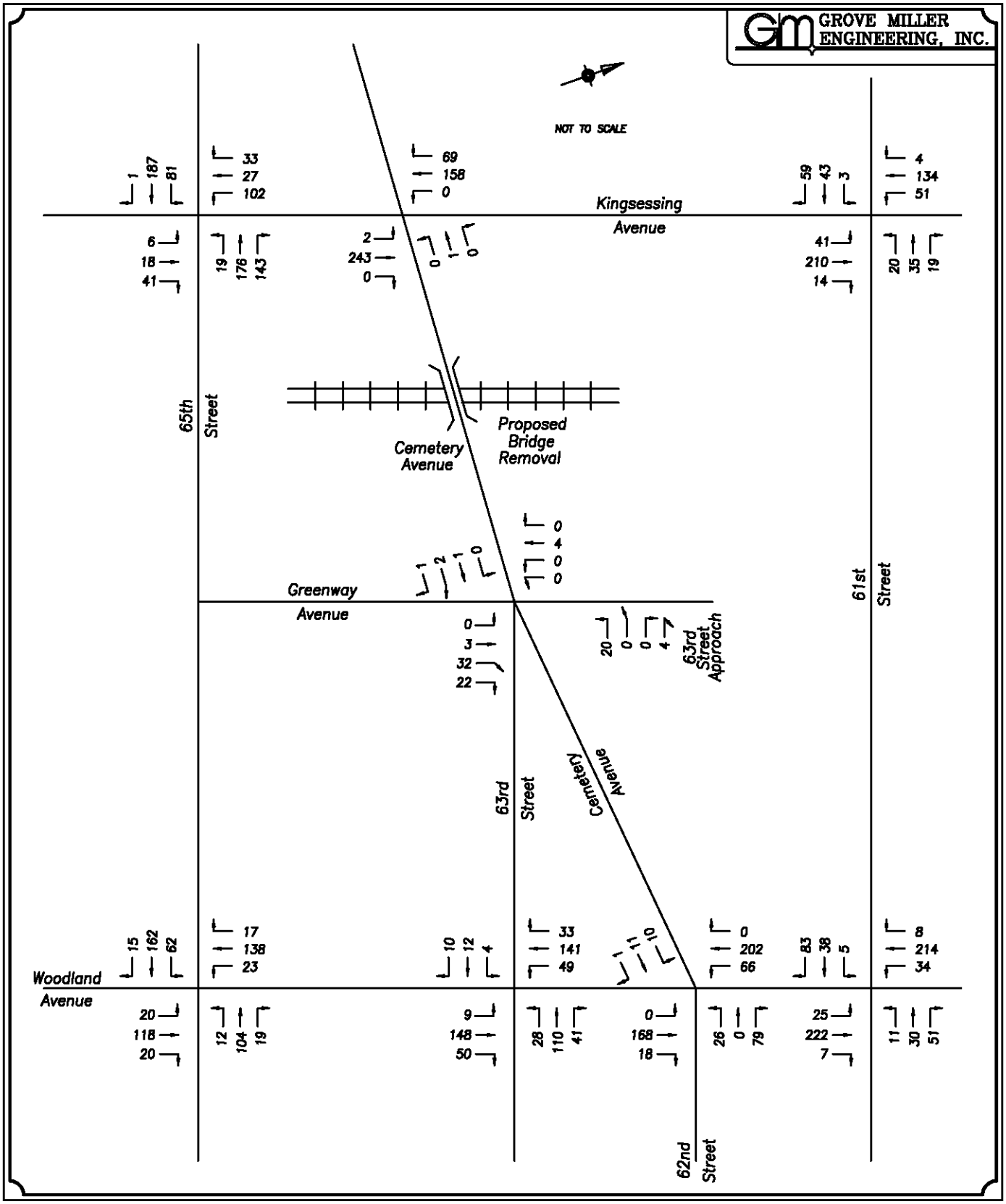
TRANSPORTATION IMPACT STUDY

CEMETERY AVENUE CROSSING BRIDGE REMOVAL

City of Philadelphia, Philadelphia County

FIGURE 7

TRIP DIVERSION FOR PM PEAK HOUR TRAFFIC VOLUMES



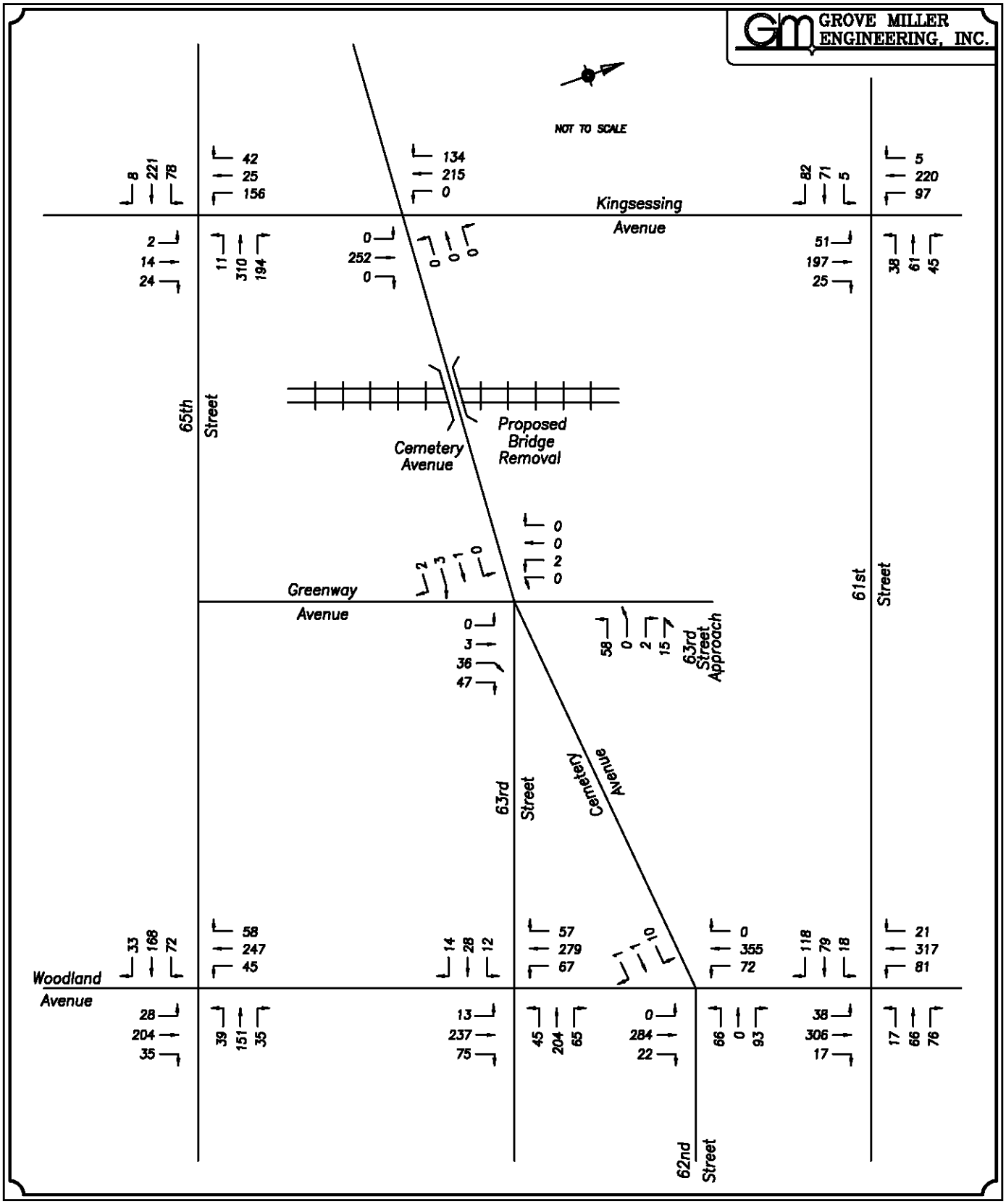
TRANSPORTATION IMPACT STUDY

CEMETERY AVENUE CROSSING BRIDGE REMOVAL

City of Philadelphia, Philadelphia County

FIGURE 8

2030 DESIGN YEAR AM PEAK HOUR TRAFFIC VOLUMES WITH BRIDGE REMOVED



TRANSPORTATION IMPACT STUDY

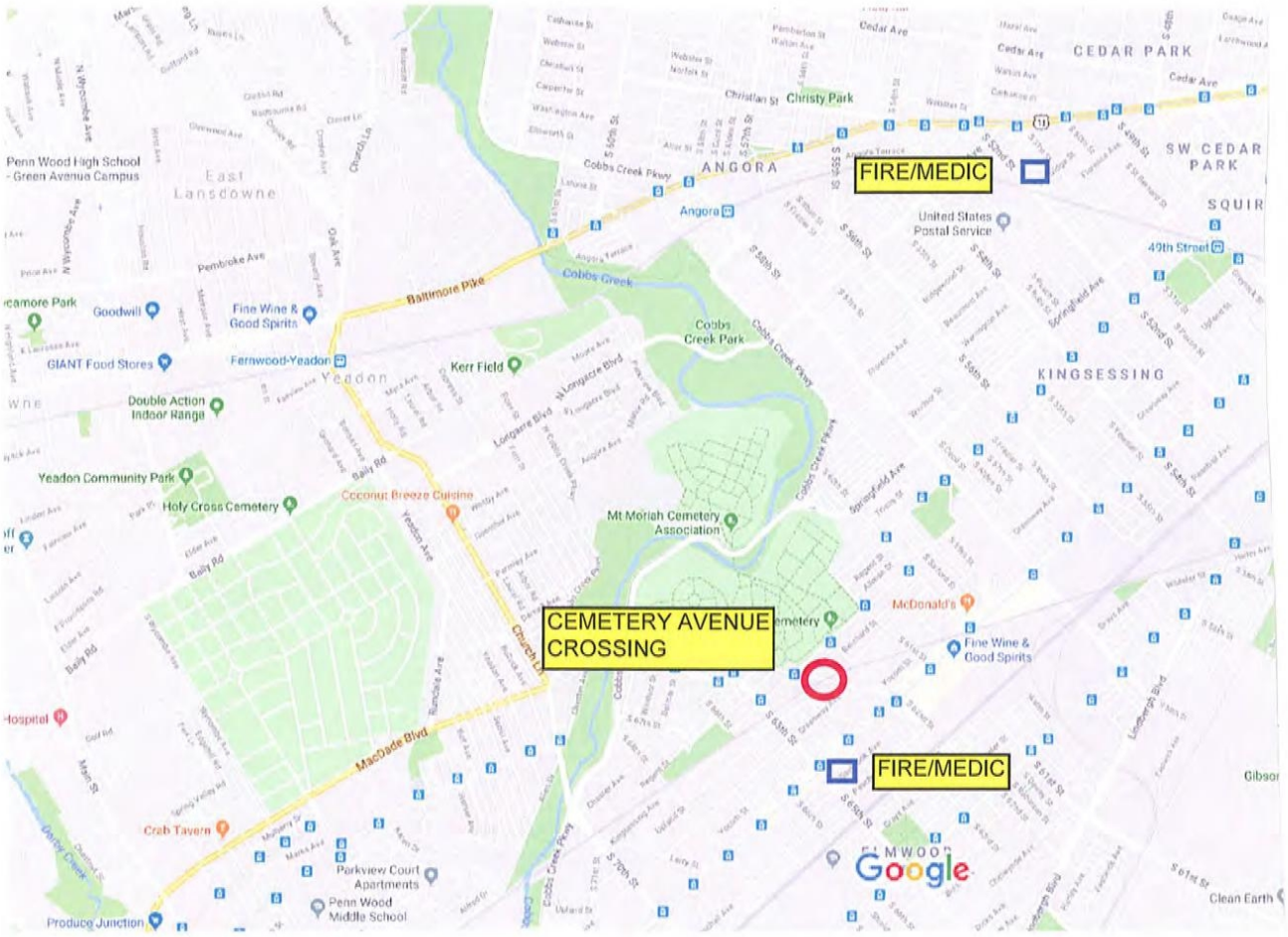
CEMETERY AVENUE CROSSING BRIDGE REMOVAL

City of Philadelphia, Philadelphia County

FIGURE 9

2030 DESIGN YEAR PM PEAK HOUR TRAFFIC VOLUMES WITH BRIDGE REMOVED

GROVE MILLER ENGINEERING, INC.



TRANSPORTATION IMPACT STUDY

CEMETERY AVENUE CROSSING BRIDGE REMOVAL

City of Philadelphia, Philadelphia County

FIGURE 10

EMERGENCY SERVICE LOCATION MAP

APPENDIX

TURNING MOVEMENT COUNT DATA

TRI-STATE TRAFFIC DATA

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Philadelphia, PA
Kingsessing Ave & 65th St
Tuesday, March 12, 2019
Location: 39.927846, -75.237006

Count Name: Kingsessing Ave/65th St
Site Code:
Start Date: 03/12/2019

Turning Movement Data

Start Time	65th St Eastbound							65th St Westbound							Kingsessing Ave Northbound							Kingsessing Ave Southbound							Int. Total
	Left	Thru	Right	Right on Red	U-Turn	Peds	App. Total	Left	Thru	Right	Right on Red	U-Turn	Peds	App. Total	Left	Thru	Right	Right on Red	U-Turn	Peds	App. Total	Left	Thru	Right	Right on Red	U-Turn	Peds	App. Total	
6:00 AM	9	11	0	0	0	1	20	1	6	0	1	0	2	8	1	3	1	1	0	2	6	3	1	2	0	0	3	6	40
6:15 AM	15	10	0	0	0	0	25	0	11	5	0	0	0	16	0	1	0	1	0	2	2	5	1	2	1	0	2	9	52
6:30 AM	14	8	0	0	0	3	22	0	7	7	1	0	2	15	0	6	0	1	0	7	7	6	3	3	0	0	3	12	56
6:45 AM	16	16	0	0	0	4	32	2	14	9	3	0	1	28	2	5	2	1	0	3	10	8	0	2	0	0	0	10	80
Hourly Total	54	45	0	0	0	8	99	3	38	21	5	0	5	67	3	15	3	4	0	14	25	22	5	9	1	0	8	37	228
7:00 AM	15	24	1	0	0	1	40	1	19	11	0	0	7	31	0	6	1	1	0	6	8	8	5	4	0	0	4	17	96
7:15 AM	30	29	0	0	0	4	59	0	10	15	1	0	3	26	1	5	4	0	0	7	10	7	3	4	1	0	4	15	110
7:30 AM	34	27	0	0	0	3	61	1	26	15	1	0	2	43	1	8	2	0	0	5	11	14	2	4	1	0	4	21	136
7:45 AM	27	29	0	0	0	2	56	2	22	16	2	0	0	42	0	5	2	0	0	3	7	23	2	4	0	0	5	29	134
Hourly Total	106	109	1	0	0	10	216	4	77	57	4	0	12	142	2	24	9	1	0	21	36	52	12	16	2	0	17	82	476
8:00 AM	26	40	0	0	0	3	66	3	21	10	1	0	5	35	2	7	10	2	0	3	21	18	7	8	0	0	3	33	155
8:15 AM	27	37	0	0	0	2	64	12	25	12	0	0	3	49	1	6	9	2	0	20	18	16	9	5	1	0	3	31	162
8:30 AM	21	31	1	0	0	2	53	1	24	11	0	0	5	36	3	10	6	1	0	6	20	19	6	9	0	0	3	34	143
8:45 AM	43	43	0	0	0	5	86	3	24	5	1	0	0	33	0	3	3	0	0	6	6	12	5	8	2	0	2	27	152
Hourly Total	117	151	1	0	0	12	269	19	94	38	2	0	13	153	6	26	28	5	0	35	65	65	27	30	3	0	11	125	612
9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Hourly Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:00 PM	40	41	1	0	0	6	82	3	37	9	0	0	9	49	3	6	8	3	0	12	20	27	8	10	0	0	10	45	196
3:15 PM	28	42	0	0	0	3	70	3	41	13	1	0	9	58	0	4	9	1	0	29	14	18	6	8	0	0	7	32	174
3:30 PM	27	40	3	0	0	9	70	4	46	15	0	0	1	65	1	4	3	1	0	12	9	27	5	7	1	0	10	40	184
3:45 PM	31	33	2	1	0	4	67	0	36	16	0	0	7	52	0	8	2	1	0	6	11	26	7	7	0	0	14	40	170
Hourly Total	126	156	6	1	0	22	289	10	160	53	1	0	26	224	4	22	22	6	0	59	54	98	26	32	1	0	41	157	724
4:00 PM	33	51	2	0	0	5	86	1	44	18	0	0	3	63	0	4	4	0	0	7	8	22	8	14	0	0	12	44	201
4:15 PM	32	52	0	0	0	21	84	6	31	13	1	0	3	51	1	6	2	3	0	7	12	28	5	13	0	0	24	46	193
4:30 PM	26	39	1	0	0	3	66	6	35	5	0	0	0	46	0	7	4	0	0	4	11	29	7	12	0	0	5	48	171
4:45 PM	23	41	0	0	0	8	64	5	45	6	0	0	6	56	1	2	8	0	0	13	11	27	6	12	0	0	10	45	176
Hourly Total	114	183	3	0	0	37	300	18	155	42	1	0	12	216	2	19	18	3	0	31	42	106	26	51	0	0	51	183	741
5:00 PM	34	50	1	0	0	7	85	6	46	10	1	0	5	63	0	1	4	0	0	8	5	20	7	12	1	0	5	40	193
5:15 PM	25	35	0	0	0	9	60	1	40	15	3	0	4	59	1	3	3	1	0	8	8	29	14	9	2	0	12	54	181
5:30 PM	34	38	0	0	0	7	72	7	52	14	0	0	0	73	1	3	6	0	0	16	10	20	8	10	5	0	12	43	198
5:45 PM	20	41	0	0	0	5	61	5	45	10	0	0	3	60	2	3	3	0	0	5	8	26	5	11	2	0	11	44	173
Hourly Total	113	164	1	0	0	28	278	19	183	49	4	0	12	255	4	10	16	1	0	37	31	95	34	42	10	0	40	181	745
6:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	1
Grand Total	630	808	12	1	0	117	1451	73	707	260	17	0	80	1057	21	116	96	20	0	197	253	439	130	180	17	0	168	766	3527
Approach %	43.4	55.7	0.8	0.1	0.0	-	-	6.9	66.9	24.6	1.6	0.0	-	-	8.3	45.8	37.9	7.9	0.0	-	-	57.3	17.0	23.5	2.2	0.0	-	-	-
Total %	17.9	22.9	0.3	0.0	0.0	-	41.1	2.1	20.0	7.4	0.5	0.0	-	30.0	0.6	3.3	2.7	0.6	0.0	-	7.2	12.4	3.7	5.1	0.5	0.0	-	21.7	-
Lights	553	797	12	1	0	-	1363	71	697	224	16	0	-	1008	21	110	93	20	0	-	244	385	125	127	9	0	-	646	3261
% Lights	87.8	98.6	100.0	100.0	-	-	93.9	97.3	98.6	86.2	94.1	-	-	95.4	100.0	94.8	96.9	100.0	-	-	96.4	87.7	96.2	70.6	52.9	-	-	84.3	92.5
Buses	71	5	0	0	0	-	76	2	5	30	1	0	-	38	0	6	3	0	0	-	9	41	5	46	8	0	-	100	223
% Buses	11.3	0.6	0.0	0.0	-	-	5.2	2.7	0.7	11.5	5.9	-	-	3.6	0.0	5.2	3.1	0.0	-	-	3.6	9.3	3.8	25.6	47.1	-	-	13.1	6.3
Trucks	6	6	0	0	0	-	12	0	5	6	0	0	-	11	0	0	0	0	0	-	0	13	0	7	0	0	-	20	43
% Trucks	1.0	0.7	0.0	0.0	-	-	0.8	0.0	0.7	2.3	0.0	-	-	1.0	0.0	0.0	0.0	0.0	-	-	0.0	3.0	0.0	3.9	0.0	-	-	2.6	1.2
Bicycles on Crosswalk	-	-	-	-	-	0	-	-	-	-	-	-	0	-	-	-	-	-	-	0	-	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	-	0.0	-	-	-	-	-	-	0.0	-	-	-	-	-	-	0.0	-	-	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	-	-	117	-	-	-	-	-	-	80	-	-	-	-	-	-	197	-	-	-	-	-	-	168	-	-
% Pedestrians	-	-	-	-	-	100.0	-	-	-	-	-	-	100.0	-	-	-	-	-	-	100.0	-	-	-	-	-	-	100.0	-	-

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Philadelphia, PA
Kingsessing Ave & 65th St
Tuesday, March 12, 2019
Location: 39.927846, -75.237006

Count Name: Kingsessing Ave/65th St
Site Code:
Start Date: 03/12/2019

Turning Movement Peak Hour Data (8:00 AM)

Start Time	65th St Eastbound							65th St Westbound							Kingsessing Ave Northbound							Kingsessing Ave Southbound							Int. Total
	Left	Thru	Right	Right on Red	U-Turn	Peds	App. Total	Left	Thru	Right	Right on Red	U-Turn	Peds	App. Total	Left	Thru	Right	Right on Red	U-Turn	Peds	App. Total	Left	Thru	Right	Right on Red	U-Turn	Peds	App. Total	
8:00 AM	26	40	0	0	0	3	66	3	21	10	1	0	5	35	2	7	10	2	0	3	21	18	7	8	0	0	3	33	155
8:15 AM	27	37	0	0	0	2	64	12	25	12	0	0	3	49	1	6	9	2	0	20	18	16	9	5	1	0	3	31	162
8:30 AM	21	31	1	0	0	2	53	1	24	11	0	0	5	36	3	10	6	1	0	6	20	19	6	9	0	0	3	34	143
8:45 AM	43	43	0	0	0	5	86	3	24	5	1	0	0	33	0	3	3	0	0	6	6	12	5	8	2	0	2	27	152
Total	117	151	1	0	0	12	269	19	94	38	2	0	13	153	6	26	28	5	0	35	65	65	27	30	3	0	11	125	612
Approach %	43.5	56.1	0.4	0.0	0.0	-	-	12.4	61.4	24.8	1.3	0.0	-	-	9.2	40.0	43.1	7.7	0.0	-	-	52.0	21.6	24.0	2.4	0.0	-	-	-
Total %	19.1	24.7	0.2	0.0	0.0	-	44.0	3.1	15.4	6.2	0.3	0.0	-	25.0	1.0	4.2	4.6	0.8	0.0	-	10.6	10.6	4.4	4.9	0.5	0.0	-	20.4	-
PHF	0.680	0.878	0.250	0.000	0.000	-	0.782	0.396	0.940	0.792	0.500	0.000	-	0.781	0.500	0.650	0.700	0.625	0.000	-	0.774	0.855	0.750	0.833	0.375	0.000	-	0.919	0.944
Lights	105	148	1	0	0	-	254	19	91	36	2	0	-	148	6	26	27	5	0	-	64	60	27	19	2	0	-	108	574
% Lights	89.7	98.0	100.0	-	-	-	94.4	100.0	96.8	94.7	100.0	-	-	96.7	100.0	100.0	96.4	100.0	-	-	98.5	92.3	100.0	63.3	66.7	-	-	86.4	93.8
Buses	11	2	0	0	0	-	13	0	3	1	0	0	-	4	0	0	1	0	0	-	1	3	0	10	1	0	-	14	32
% Buses	9.4	1.3	0.0	-	-	-	4.8	0.0	3.2	2.6	0.0	-	-	2.6	0.0	0.0	3.6	0.0	-	-	1.5	4.6	0.0	33.3	33.3	-	-	11.2	5.2
Trucks	1	1	0	0	0	-	2	0	0	1	0	0	-	1	0	0	0	0	0	-	0	2	0	1	0	0	-	3	6
% Trucks	0.9	0.7	0.0	-	-	-	0.7	0.0	0.0	2.6	0.0	-	-	0.7	0.0	0.0	0.0	0.0	-	-	0.0	3.1	0.0	3.3	0.0	-	-	2.4	1.0
Bicycles on Crosswalk	-	-	-	-	-	0	-	-	-	-	-	-	0	-	-	-	-	-	-	0	-	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	-	0.0	-	-	-	-	-	-	0.0	-	-	-	-	-	-	0.0	-	-	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	-	-	12	-	-	-	-	-	-	13	-	-	-	-	-	-	35	-	-	-	-	-	-	11	-	-
% Pedestrians	-	-	-	-	-	100.0	-	-	-	-	-	-	100.0	-	-	-	-	-	-	100.0	-	-	-	-	-	-	100.0	-	-

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	Left	Thru	Right	Right on Red	U-Turn	Peds	App. Total	Left	Thru	Right	Right on Red	U-Turn	Peds	App. Total	Left	Thru	Right	Right on Red	U-Turn	Peds	App. Total	Left	Thru	Right	Right on Red	U-Turn	Peds	App. Total	
3:30 PM	27	40	3	0	0	9	70	4	46	15	0	0	1	65	1	4	3	1	0	12	9	27	5	7	1	0	10	40	184
3:45 PM	31	33	2	1	0	4	67	0	36	16	0	0	7	52	0	8	2	1	0	6	11	26	7	7	0	0	14	40	170
4:00 PM	33	51	2	0	0	5	86	1	44	18	0	0	3	63	0	4	4	0	0	7	8	22	8	14	0	0	12	44	201
4:15 PM	32	52	0	0	0	21	84	6	31	13	1	0	3	51	1	6	2	3	0	7	12	28	5	13	0	0	24	46	193
Total	123	176	7	1	0	39	307	11	157	62	1	0	14	231	2	22	11	5	0	32	40	103	25	41	1	0	60	170	748
Approach %	40.1	57.3	2.3	0.3	0.0	-	-	4.8	68.0	26.8	0.4	0.0	-	-	5.0	55.0	27.5	12.5	0.0	-	-	60.6	14.7	24.1	0.6	0.0	-	-	-
Total %	16.4	23.5	0.9	0.1	0.0	-	41.0	1.5	21.0	8.3	0.1	0.0	-	30.9	0.3	2.9	1.5	0.7	0.0	-	5.3	13.8	3.3	5.5	0.1	0.0	-	22.7	-
PHF	0.932	0.846	0.583	0.250	0.000	-	0.892	0.458	0.853	0.861	0.250	0.000	-	0.888	0.500	0.688	0.688	0.417	0.000	-	0.833	0.920	0.781	0.732	0.250	0.000	-	0.924	0.930
Lights	104	172	7	1	0	-	284	11	153	50	1	0	-	215	2	20	11	5	0	-	38	91	24	31	1	0	-	147	684
% Lights	84.6	97.7	100.0	100.0	-	-	92.5	100.0	97.5	80.6	100.0	-	-	93.1	100.0	90.9	100.0	100.0	-	-	95.0	88.3	96.0	75.6	100.0	-	-	86.5	91.4
Buses	17	1	0	0	0	-	18	0	1	11	0	0	-	12	0	2	0	0	0	-	2	8	1	8	0	0	-	17	49
% Buses	13.8	0.6	0.0	0.0	-	-	5.9	0.0	0.6	17.7	0.0	-	-	5.2	0.0	9.1	0.0	0.0	-	-	5.0	7.8	4.0	19.5	0.0	-	-	10.0	6.6
Trucks	2	3	0	0	0	-	5	0	3	1	0	0	-	4	0	0	0	0	0	-	0	4	0	2	0	0	-	6	15
% Trucks	1.6	1.7	0.0	0.0	-	-	1.6	0.0	1.9	1.6	0.0	-	-	1.7	0.0	0.0	0.0	0.0	-	-	0.0	3.9	0.0	4.9	0.0	-	-	3.5	2.0
Bicycles on Crosswalk	-	-	-	-	-	0	-	-	-	-	-	-	0	-	-	-	-	-	-	0	-	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	-	0.0	-	-	-	-	-	-	0.0	-	-	-	-	-	-	0.0	-	-	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	-	-	39	-	-	-	-	-	-	14	-	-	-	-	-	-	32	-	-	-	-	-	-	60	-	-
% Pedestrians	-	-	-	-	-	100.0	-	-	-	-	-	-	100.0	-	-	-	-	-	-	100.0	-	-	-	-	-	-	100.0	-	-

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Coatesville, Pennsylvania, United States 19320
610-466-1469
Serving Transportation Professionals Since 1995

Philadelphia, PA
Kingsessing Ave & Cemetary Ave
Tuesday, March 12, 2019
Location: 39.928911, -75.235438

Count Name: Kingsessing Ave/Cemetery Ave
Site Code:
Start Date: 03/12/2019

Turning Movement Data

Start Time	Cemetery Ave Eastbound		Cemetery Ave Westbound							Kingsessing Ave Northbound							Kingsessing Ave Southbound							Int. Total
	Peds	App. Total	Left	Thru	Right	Right on Red	U-Turn	Peds	App. Total	Left	Thru	Right	Right on Red	U-Turn	Peds	App. Total	Left	Thru	Right	Right on Red	U-Turn	Peds	App. Total	
6:00 AM	0	0	2	5	4	2	0	0	13	0	9	3	0	0	2	12	6	3	3	0	0	0	12	37
6:15 AM	0	0	0	8	3	3	0	0	14	0	16	6	0	0	0	22	4	9	6	0	0	0	19	55
6:30 AM	1	0	2	13	4	5	0	0	24	0	26	4	0	0	2	30	14	11	5	0	0	2	30	84
6:45 AM	0	0	1	23	9	5	0	0	38	0	29	3	0	0	1	32	3	9	6	0	0	0	18	88
Hourly Total	1	0	5	49	20	15	0	0	89	0	80	16	0	0	5	96	27	32	20	0	0	2	79	264
7:00 AM	0	0	2	16	12	2	0	3	32	1	27	5	2	0	1	35	9	17	5	2	0	0	33	100
7:15 AM	2	0	1	16	16	1	0	0	34	0	42	4	2	0	7	48	8	13	7	1	0	0	29	111
7:30 AM	0	0	2	14	19	4	0	0	39	0	46	12	1	0	2	59	17	19	14	0	0	0	50	148
7:45 AM	3	0	0	19	16	6	0	1	41	1	43	9	2	0	3	55	15	28	18	1	0	0	62	158
Hourly Total	5	0	5	65	63	13	0	4	146	2	158	30	7	0	13	197	49	77	44	4	0	0	174	517
8:00 AM	2	0	0	18	25	10	0	1	53	0	37	8	0	0	1	45	20	31	18	2	0	1	71	169
8:15 AM	2	0	4	25	20	4	0	0	53	1	29	10	2	0	2	42	16	27	16	1	0	0	60	155
8:30 AM	2	0	0	17	15	7	0	5	39	0	31	11	2	0	0	44	18	35	10	3	0	0	66	149
8:45 AM	2	0	2	22	7	3	0	4	34	1	30	18	0	0	1	49	16	24	9	0	0	0	49	132
Hourly Total	8	0	6	82	67	24	0	10	179	2	127	47	4	0	4	180	70	117	53	6	0	1	246	605
9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Hourly Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:00 PM	0	0	5	18	18	10	0	1	51	0	38	17	0	0	1	55	21	41	20	1	0	0	83	189
3:15 PM	3	0	4	23	34	8	0	8	69	1	32	16	0	0	8	49	25	28	25	0	0	0	78	196
3:30 PM	0	0	4	28	24	3	0	1	59	0	35	9	2	0	4	46	43	35	21	0	0	0	99	204
3:45 PM	0	0	5	27	23	5	0	0	60	0	39	13	2	0	2	54	27	39	30	0	0	1	96	210
Hourly Total	3	0	18	96	99	26	0	10	239	1	144	55	4	0	15	204	116	143	96	1	0	1	356	799
4:00 PM	12	0	4	32	28	7	0	0	71	1	42	12	2	0	3	57	26	34	26	5	0	0	91	219
4:15 PM	14	0	6	28	21	2	0	5	57	0	46	8	1	0	0	55	29	48	22	1	0	0	100	212
4:30 PM	3	0	4	26	19	13	0	4	62	0	26	13	0	0	2	39	26	40	30	0	0	1	96	197
4:45 PM	4	0	5	28	17	7	0	4	57	0	19	8	3	0	1	30	30	39	21	4	0	0	94	181
Hourly Total	33	0	19	114	85	29	0	13	247	1	133	41	6	0	6	181	111	161	99	10	0	1	381	809
5:00 PM	4	0	6	22	36	5	0	4	69	0	27	14	4	0	0	45	34	33	27	4	0	2	98	212
5:15 PM	2	0	6	42	29	3	0	1	80	0	35	9	2	0	5	46	23	49	22	3	0	0	97	223
5:30 PM	2	0	3	31	24	6	0	1	64	0	33	15	2	0	1	50	23	39	35	2	0	1	99	213
5:45 PM	4	0	4	33	18	2	0	1	57	0	26	4	3	0	6	33	30	41	33	8	0	0	112	202
Hourly Total	12	0	19	128	107	16	0	7	270	0	121	42	11	0	12	174	110	162	117	17	0	3	406	850
6:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	1
Grand Total	62	0	72	534	441	123	0	44	1170	6	763	231	32	0	55	1032	483	692	430	38	0	8	1643	3845
Approach %	-	-	6.2	45.6	37.7	10.5	0.0	-	-	0.6	73.9	22.4	3.1	0.0	-	-	29.4	42.1	26.2	2.3	0.0	-	-	-
Total %	-	0.0	1.9	13.9	11.5	3.2	0.0	-	30.4	0.2	19.8	6.0	0.8	0.0	-	26.8	12.6	18.0	11.2	1.0	0.0	-	42.7	-
Lights	-	0	66	529	409	113	0	-	1117	6	650	225	31	0	-	912	455	583	424	38	0	-	1500	3529
% Lights	-	-	91.7	99.1	92.7	91.9	-	-	95.5	100.0	85.2	97.4	96.9	-	-	88.4	94.2	84.2	98.6	100.0	-	-	91.3	91.8
Buses	-	0	4	1	27	9	0	-	41	0	103	4	1	0	-	108	26	95	5	0	0	-	126	275
% Buses	-	-	5.6	0.2	6.1	7.3	-	-	3.5	0.0	13.5	1.7	3.1	-	-	10.5	5.4	13.7	1.2	0.0	-	-	7.7	7.2
Trucks	-	0	2	4	5	1	0	-	12	0	10	2	0	0	-	12	2	14	1	0	0	-	17	41
% Trucks	-	-	2.8	0.7	1.1	0.8	-	-	1.0	0.0	1.3	0.9	0.0	-	-	1.2	0.4	2.0	0.2	0.0	-	-	1.0	1.1
Bicycles on Crosswalk	2	-	-	-	-	-	-	2	-	-	-	-	-	-	1	-	-	-	-	-	-	1	-	-
% Bicycles on Crosswalk	3.2	-	-	-	-	-	-	4.5	-	-	-	-	-	-	1.8	-	-	-	-	-	-	12.5	-	-
Pedestrians	60	-	-	-	-	-	-	42	-	-	-	-	-	-	54	-	-	-	-	-	-	7	-	-
% Pedestrians	96.8	-	-	-	-	-	-	95.5	-	-	-	-	-	-	98.2	-	-	-	-	-	-	87.5	-	-

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Coatesville, Pennsylvania, United States 19320
610-466-1469
Serving Transportation Professionals Since 1995

Turning Movement Peak Hour Data (7:45 AM)

Start Time	Cemetery Ave Eastbound		Cemetery Ave Westbound							Kingsessing Ave Northbound							Kingsessing Ave Southbound							Int. Total
	Peds	App. Total	Left	Thru	Right	Right on Red	U-Turn	Peds	App. Total	Left	Thru	Right	Right on Red	U-Turn	Peds	App. Total	Left	Thru	Right	Right on Red	U-Turn	Peds	App. Total	
7:45 AM	3	0	0	19	16	6	0	1	41	1	43	9	2	0	3	55	15	28	18	1	0	0	62	158
8:00 AM	2	0	0	18	25	10	0	1	53	0	37	8	0	0	1	45	20	31	18	2	0	1	71	169
8:15 AM	2	0	4	25	20	4	0	0	53	1	29	10	2	0	2	42	16	27	16	1	0	0	60	155
8:30 AM	2	0	0	17	15	7	0	5	39	0	31	11	2	0	0	44	18	35	10	3	0	0	66	149
Total	9	0	4	79	76	27	0	7	186	2	140	38	6	0	6	186	69	121	62	7	0	1	259	631
Approach %	-	-	2.2	42.5	40.9	14.5	0.0	-	-	1.1	75.3	20.4	3.2	0.0	-	-	26.6	46.7	23.9	2.7	0.0	-	-	-
Total %	-	0.0	0.6	12.5	12.0	4.3	0.0	-	29.5	0.3	22.2	6.0	1.0	0.0	-	29.5	10.9	19.2	9.8	1.1	0.0	-	41.0	-
PHF	-	0.000	0.250	0.790	0.760	0.675	0.000	-	0.877	0.500	0.814	0.864	0.750	0.000	-	0.845	0.863	0.864	0.861	0.583	0.000	-	0.912	0.933
Lights	-	0	3	78	73	27	0	-	181	2	123	37	6	0	-	168	67	105	60	7	0	-	239	588
% Lights	-	-	75.0	98.7	96.1	100.0	-	-	97.3	100.0	87.9	97.4	100.0	-	-	90.3	97.1	86.8	96.8	100.0	-	-	92.3	93.2
Buses	-	0	1	0	2	0	0	-	3	0	16	1	0	0	-	17	2	15	2	0	0	-	19	39
% Buses	-	-	25.0	0.0	2.6	0.0	-	-	1.6	0.0	11.4	2.6	0.0	-	-	9.1	2.9	12.4	3.2	0.0	-	-	7.3	6.2
Trucks	-	0	0	1	1	0	0	-	2	0	1	0	0	0	-	1	0	1	0	0	0	-	1	4
% Trucks	-	-	0.0	1.3	1.3	0.0	-	-	1.1	0.0	0.7	0.0	0.0	-	-	0.5	0.0	0.8	0.0	0.0	-	-	0.4	0.6
Bicycles on Crosswalk	0	-	-	-	-	-	-	0	-	-	-	-	-	-	0	-	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	0.0	-	-	-	-	-	-	0.0	-	-	-	-	-	-	0.0	-	-	-	-	-	-	0.0	-	-
Pedestrians	9	-	-	-	-	-	-	7	-	-	-	-	-	-	6	-	-	-	-	-	-	1	-	-
% Pedestrians	100.0	-	-	-	-	-	-	100.0	-	-	-	-	-	-	100.0	-	-	-	-	-	-	100.0	-	-

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Coatesville, Pennsylvania, United States 19320
610-466-1469
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Turning Movement Peak Hour Data (5:00 PM)

Start Time	Cemetery Ave Eastbound		Cemetery Ave Westbound							Kingsessing Ave Northbound							Kingsessing Ave Southbound							Int. Total
	Peds	App. Total	Left	Thru	Right	Right on Red	U-Turn	Peds	App. Total	Left	Thru	Right	Right on Red	U-Turn	Peds	App. Total	Left	Thru	Right	Right on Red	U-Turn	Peds	App. Total	
5:00 PM	4	0	6	22	36	5	0	4	69	0	27	14	4	0	0	45	34	33	27	4	0	2	98	212
5:15 PM	2	0	6	42	29	3	0	1	80	0	35	9	2	0	5	46	23	49	22	3	0	0	97	223
5:30 PM	2	0	3	31	24	6	0	1	64	0	33	15	2	0	1	50	23	39	35	2	0	1	99	213
5:45 PM	4	0	4	33	18	2	0	1	57	0	26	4	3	0	6	33	30	41	33	8	0	0	112	202
Total	12	0	19	128	107	16	0	7	270	0	121	42	11	0	12	174	110	162	117	17	0	3	406	850
Approach %	-	-	7.0	47.4	39.6	5.9	0.0	-	-	0.0	69.5	24.1	6.3	0.0	-	-	27.1	39.9	28.8	4.2	0.0	-	-	-
Total %	-	0.0	2.2	15.1	12.6	1.9	0.0	-	31.8	0.0	14.2	4.9	1.3	0.0	-	20.5	12.9	19.1	13.8	2.0	0.0	-	47.8	-
PHF	-	0.000	0.792	0.762	0.743	0.667	0.000	-	0.844	0.000	0.864	0.700	0.688	0.000	-	0.870	0.809	0.827	0.836	0.531	0.000	-	0.906	0.953
Lights	-	0	18	128	105	15	0	-	266	0	112	42	11	0	-	165	108	140	117	17	0	-	382	813
% Lights	-	-	94.7	100.0	98.1	93.8	-	-	98.5	-	92.6	100.0	100.0	-	-	94.8	98.2	86.4	100.0	100.0	-	-	94.1	95.6
Buses	-	0	1	0	1	0	0	-	2	0	9	0	0	0	-	9	2	18	0	0	0	-	20	31
% Buses	-	-	5.3	0.0	0.9	0.0	-	-	0.7	-	7.4	0.0	0.0	-	-	5.2	1.8	11.1	0.0	0.0	-	-	4.9	3.6
Trucks	-	0	0	0	1	1	0	-	2	0	0	0	0	0	-	0	0	4	0	0	0	-	4	6
% Trucks	-	-	0.0	0.0	0.9	6.3	-	-	0.7	-	0.0	0.0	0.0	-	-	0.0	0.0	2.5	0.0	0.0	-	-	1.0	0.7
Bicycles on Crosswalk	2	-	-	-	-	-	-	0	-	-	-	-	-	-	0	-	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	16.7	-	-	-	-	-	-	0.0	-	-	-	-	-	-	0.0	-	-	-	-	-	-	0.0	-	-
Pedestrians	10	-	-	-	-	-	-	7	-	-	-	-	-	-	12	-	-	-	-	-	-	3	-	-
% Pedestrians	83.3	-	-	-	-	-	-	100.0	-	-	-	-	-	-	100.0	-	-	-	-	-	-	100.0	-	-

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184 Baker Rd

Coatesville, Pennsylvania, United States 19320
610-466-1469
Serving Transportation Professionals Since 1995

Philadelphia, PA
Kingsessing Ave & 61st St
Tuesday, March 12, 2019
Location: 39.931117, -75.232321

Count Name: Kingsessing Ave/61st St
Site Code:
Start Date: 03/12/2019

Turning Movement Data

Start Time	61st St Eastbound							61st St Westbound							Kingsessing Ave Northbound							Kingsessing Ave Southbound							Int. Total
	Left	Thru	Right	Right on Red	U-Turn	Peds	App. Total	Left	Thru	Right	Right on Red	U-Turn	Peds	App. Total	Left	Thru	Right	Right on Red	U-Turn	Peds	App. Total	Left	Thru	Right	Right on Red	U-Turn	Peds	App. Total	
6:00 AM	1	1	3	1	0	0	6	1	3	1	0	0	1	5	1	10	1	0	0	0	12	3	6	0	0	0	0	9	32
6:15 AM	0	1	3	1	0	0	5	0	1	3	0	0	0	4	3	19	2	0	0	0	24	0	16	0	0	0	0	16	49
6:30 AM	1	4	8	4	0	0	17	2	8	3	0	0	1	13	5	27	1	0	0	2	33	2	14	1	0	1	0	18	81
6:45 AM	0	2	3	3	0	0	8	2	2	3	1	0	0	8	6	38	2	0	0	1	46	1	10	0	0	0	0	11	73
Hourly Total	2	8	17	9	0	0	36	5	14	10	1	0	2	30	15	94	6	0	0	3	115	6	46	1	0	1	0	54	235
7:00 AM	0	3	2	2	0	0	7	2	8	1	1	0	2	12	7	29	3	0	0	1	39	1	25	0	0	0	2	26	84
7:15 AM	0	6	5	3	0	0	14	5	5	1	1	0	0	12	10	43	2	0	0	2	55	7	19	1	0	0	1	27	108
7:30 AM	0	13	8	3	0	1	24	4	8	2	0	0	2	14	11	54	2	0	0	2	67	6	37	0	0	0	6	43	148
7:45 AM	1	11	11	6	0	0	29	4	9	5	2	0	0	20	9	59	4	0	0	4	72	5	44	1	1	0	2	51	172
Hourly Total	1	33	26	14	0	1	74	15	30	9	4	0	4	58	37	185	11	0	0	9	233	19	125	2	1	0	11	147	512
8:00 AM	1	15	10	7	0	0	33	4	11	4	2	0	0	21	15	54	3	1	0	0	73	3	50	1	1	0	3	55	182
8:15 AM	1	4	10	4	0	2	19	8	7	4	0	0	3	19	6	43	4	0	0	4	53	5	35	0	0	0	1	40	131
8:30 AM	0	9	15	3	0	0	27	2	3	2	1	0	4	8	7	44	4	0	0	0	55	7	40	0	0	0	0	47	137
8:45 AM	1	7	8	4	0	2	20	6	9	2	2	1	3	20	5	30	3	1	0	3	39	4	31	4	0	0	1	39	118
Hourly Total	3	35	43	18	0	4	99	20	30	12	5	1	10	68	33	171	14	2	0	7	220	19	156	5	1	0	5	181	568
9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Hourly Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:00 PM	0	12	14	3	0	1	29	15	15	3	1	0	1	34	6	52	4	0	0	2	62	11	54	1	1	0	5	67	192
3:15 PM	0	13	11	9	0	2	33	2	15	12	1	0	1	30	10	55	2	0	0	1	67	9	51	1	0	0	5	61	191
3:30 PM	1	26	19	7	0	0	53	4	17	9	2	0	0	32	16	41	5	3	0	1	65	8	66	1	0	0	10	75	225
3:45 PM	1	16	17	2	0	4	36	11	17	5	4	0	0	37	11	47	8	0	0	0	66	13	64	2	0	0	2	79	218
Hourly Total	2	67	61	21	0	7	151	32	64	29	8	0	2	133	43	195	19	3	0	4	260	41	235	5	1	0	22	282	826
4:00 PM	2	14	14	3	0	2	33	15	10	10	0	0	1	35	15	56	5	0	0	0	76	9	58	1	0	0	4	68	212
4:15 PM	1	15	16	4	0	3	36	8	17	15	0	0	2	40	9	53	4	0	0	5	66	10	89	1	0	0	11	100	242
4:30 PM	1	11	24	4	0	4	40	3	10	2	0	0	4	15	10	47	2	0	0	0	59	6	63	0	0	0	6	69	183
4:45 PM	4	18	22	0	0	2	44	9	11	4	1	0	1	25	8	36	2	2	0	3	48	8	60	1	0	0	9	69	186
Hourly Total	8	58	76	11	0	11	153	35	48	31	1	0	8	115	42	192	13	2	0	8	249	33	270	3	0	0	30	306	823
5:00 PM	0	11	20	9	0	3	40	8	12	7	0	0	4	27	14	46	6	2	0	2	68	12	59	1	1	0	6	73	208
5:15 PM	0	28	20	4	0	0	52	11	20	4	2	0	3	37	11	50	4	2	0	3	67	8	62	2	0	0	2	72	228
5:30 PM	0	18	13	3	0	3	34	14	9	6	3	0	1	32	7	54	0	0	1	0	62	7	67	0	0	0	8	74	202
5:45 PM	0	9	19	8	0	0	36	6	13	2	4	0	1	25	5	37	4	4	0	0	50	7	72	3	2	0	7	84	195
Hourly Total	0	66	72	24	0	6	162	39	54	19	9	0	9	121	37	187	14	8	1	5	247	34	260	6	3	0	23	303	833
6:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	2	2
Grand Total	16	267	295	97	0	29	675	146	240	110	28	1	35	525	207	1024	77	15	1	36	1324	153	1093	22	6	1	91	1275	3799
Approach %	2.4	39.6	43.7	14.4	0.0	-	-	27.8	45.7	21.0	5.3	0.2	-	-	15.6	77.3	5.8	1.1	0.1	-	-	12.0	85.7	1.7	0.5	0.1	-	-	-
Total %	0.4	7.0	7.8	2.6	0.0	-	17.8	3.8	6.3	2.9	0.7	0.0	-	13.8	5.4	27.0	2.0	0.4	0.0	-	34.9	4.0	28.8	0.6	0.2	0.0	-	33.6	-
Lights	16	260	272	97	0	-	645	139	234	101	27	1	-	502	192	879	69	13	1	-	1154	144	968	21	6	1	-	1140	3441
% Lights	100.0	97.4	92.2	100.0	-	-	95.6	95.2	97.5	91.8	96.4	100.0	-	95.6	92.8	85.8	89.6	86.7	100.0	-	87.2	94.1	88.6	95.5	100.0	100.0	-	89.4	90.6
Buses	0	6	22	0	0	-	28	3	5	7	1	0	-	16	15	135	6	1	0	-	157	7	106	1	0	0	-	114	315
% Buses	0.0	2.2	7.5	0.0	-	-	4.1	2.1	2.1	6.4	3.6	0.0	-	3.0	7.2	13.2	7.8	6.7	0.0	-	11.9	4.6	9.7	4.5	0.0	0.0	-	8.9	8.3
Trucks	0	1	1	0	0	-	2	4	1	2	0	0	-	7	0	10	2	1	0	-	13	2	19	0	0	0	-	21	43
% Trucks	0.0	0.4	0.3	0.0	-	-	0.3	2.7	0.4	1.8	0.0	0.0	-	1.3	0.0	1.0	2.6	6.7	0.0	-	1.0	1.3	1.7	0.0	0.0	0.0	-	1.6	1.1
Bicycles on Crosswalk	-	-	-	-	-	0	-	-	-	-	-	-	0	-	-	-	-	-	-	0	-	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	-	0.0	-	-	-	-	-	-	0.0	-	-	-	-	-	-	0.0	-	-	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	-	-	29	-	-	-	-	-	-	35	-	-	-	-	-	-	36	-	-	-	-	-	-	91	-	-
% Pedestrians	-	-	-	-	-	100.0	-	-	-	-	-	-	100.0	-	-	-	-	-	-	100.0	-	-	-	-	-	-	100.0	-	-

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Philadelphia, PA
Kingsessing Ave & 61st St
Tuesday, March 12, 2019
Location: 39.931117, -75.232321

Count Name: Kingsessing Ave/61st St
Site Code:
Start Date: 03/12/2019

Turning Movement Peak Hour Data (7:30 AM)

Start Time	61st St Eastbound							61st St Westbound							Kingsessing Ave Northbound							Kingsessing Ave Southbound							Int. Total
	Left	Thru	Right	Right on Red	U-Turn	Peds	App. Total	Left	Thru	Right	Right on Red	U-Turn	Peds	App. Total	Left	Thru	Right	Right on Red	U-Turn	Peds	App. Total	Left	Thru	Right	Right on Red	U-Turn	Peds	App. Total	
7:30 AM	0	13	8	3	0	1	24	4	8	2	0	0	2	14	11	54	2	0	0	2	67	6	37	0	0	0	6	43	148
7:45 AM	1	11	11	6	0	0	29	4	9	5	2	0	0	20	9	59	4	0	0	4	72	5	44	1	1	0	2	51	172
8:00 AM	1	15	10	7	0	0	33	4	11	4	2	0	0	21	15	54	3	1	0	0	73	3	50	1	1	0	3	55	182
8:15 AM	1	4	10	4	0	2	19	8	7	4	0	0	3	19	6	43	4	0	0	4	53	5	35	0	0	0	1	40	131
Total	3	43	39	20	0	3	105	20	35	15	4	0	5	74	41	210	13	1	0	10	265	19	166	2	2	0	12	189	633
Approach %	2.9	41.0	37.1	19.0	0.0	-	-	27.0	47.3	20.3	5.4	0.0	-	-	15.5	79.2	4.9	0.4	0.0	-	-	10.1	87.8	1.1	1.1	0.0	-	-	-
Total %	0.5	6.8	6.2	3.2	0.0	-	16.6	3.2	5.5	2.4	0.6	0.0	-	11.7	6.5	33.2	2.1	0.2	0.0	-	41.9	3.0	26.2	0.3	0.3	0.0	-	29.9	-
PHF	0.750	0.717	0.886	0.714	0.000	-	0.795	0.625	0.795	0.750	0.500	0.000	-	0.881	0.683	0.890	0.813	0.250	0.000	-	0.908	0.792	0.830	0.500	0.500	0.000	-	0.859	0.870
Lights	3	42	35	20	0	-	100	20	32	15	4	0	-	71	40	185	10	1	0	-	236	17	141	2	2	0	-	162	569
% Lights	100.0	97.7	89.7	100.0	-	-	95.2	100.0	91.4	100.0	100.0	-	-	95.9	97.6	88.1	76.9	100.0	-	-	89.1	89.5	84.9	100.0	100.0	-	-	85.7	89.9
Buses	0	1	4	0	0	-	5	0	2	0	0	0	-	2	1	22	1	0	0	-	24	2	24	0	0	0	-	26	57
% Buses	0.0	2.3	10.3	0.0	-	-	4.8	0.0	5.7	0.0	0.0	-	-	2.7	2.4	10.5	7.7	0.0	-	-	9.1	10.5	14.5	0.0	0.0	-	-	13.8	9.0
Trucks	0	0	0	0	0	-	0	0	1	0	0	0	-	1	0	3	2	0	0	-	5	0	1	0	0	0	-	1	7
% Trucks	0.0	0.0	0.0	0.0	-	-	0.0	0.0	2.9	0.0	0.0	-	-	1.4	0.0	1.4	15.4	0.0	-	-	1.9	0.0	0.6	0.0	0.0	-	-	0.5	1.1
Bicycles on Crosswalk	-	-	-	-	-	0	-	-	-	-	-	-	0	-	-	-	-	-	-	0	-	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	-	0.0	-	-	-	-	-	-	0.0	-	-	-	-	-	-	0.0	-	-	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	-	-	3	-	-	-	-	-	-	5	-	-	-	-	-	-	10	-	-	-	-	-	-	12	-	-
% Pedestrians	-	-	-	-	-	100.0	-	-	-	-	-	-	100.0	-	-	-	-	-	-	100.0	-	-	-	-	-	-	100.0	-	-

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Philadelphia, PA
Kingsessing Ave & 61st St
Tuesday, March 12, 2019
Location: 39.931117, -75.232321

Count Name: Kingsessing Ave/61st St
Site Code:
Start Date: 03/12/2019

Turning Movement Peak Hour Data (3:30 PM)

Start Time	61st St Eastbound							61st St Westbound							Kingsessing Ave Northbound							Kingsessing Ave Southbound							Int. Total
	Left	Thru	Right	Right on Red	U-Turn	Peds	App. Total	Left	Thru	Right	Right on Red	U-Turn	Peds	App. Total	Left	Thru	Right	Right on Red	U-Turn	Peds	App. Total	Left	Thru	Right	Right on Red	U-Turn	Peds	App. Total	
3:30 PM	1	26	19	7	0	0	53	4	17	9	2	0	0	32	16	41	5	3	0	1	65	8	66	1	0	0	10	75	225
3:45 PM	1	16	17	2	0	4	36	11	17	5	4	0	0	37	11	47	8	0	0	0	66	13	64	2	0	0	2	79	218
4:00 PM	2	14	14	3	0	2	33	15	10	10	0	0	1	35	15	56	5	0	0	0	76	9	58	1	0	0	4	68	212
4:15 PM	1	15	16	4	0	3	36	8	17	15	0	0	2	40	9	53	4	0	0	5	66	10	89	1	0	0	11	100	242
Total	5	71	66	16	0	9	158	38	61	39	6	0	3	144	51	197	22	3	0	6	273	40	277	5	0	0	27	322	897
Approach %	3.2	44.9	41.8	10.1	0.0	-	-	26.4	42.4	27.1	4.2	0.0	-	-	18.7	72.2	8.1	1.1	0.0	-	-	12.4	86.0	1.6	0.0	0.0	-	-	-
Total %	0.6	7.9	7.4	1.8	0.0	-	17.6	4.2	6.8	4.3	0.7	0.0	-	16.1	5.7	22.0	2.5	0.3	0.0	-	30.4	4.5	30.9	0.6	0.0	0.0	-	35.9	-
PHF	0.625	0.683	0.868	0.571	0.000	-	0.745	0.633	0.897	0.650	0.375	0.000	-	0.900	0.797	0.879	0.688	0.250	0.000	-	0.898	0.769	0.778	0.625	0.000	0.000	-	0.805	0.927
Lights	5	69	59	16	0	-	149	37	61	35	6	0	-	139	47	168	19	1	0	-	235	38	249	4	0	0	-	291	814
% Lights	100.0	97.2	89.4	100.0	-	-	94.3	97.4	100.0	89.7	100.0	-	-	96.5	92.2	85.3	86.4	33.3	-	-	86.1	95.0	89.9	80.0	-	-	-	90.4	90.7
Buses	0	2	6	0	0	-	8	1	0	2	0	0	-	3	4	28	3	1	0	-	36	1	19	1	0	0	-	21	68
% Buses	0.0	2.8	9.1	0.0	-	-	5.1	2.6	0.0	5.1	0.0	-	-	2.1	7.8	14.2	13.6	33.3	-	-	13.2	2.5	6.9	20.0	-	-	-	6.5	7.6
Trucks	0	0	1	0	0	-	1	0	0	2	0	0	-	2	0	1	0	1	0	-	2	1	9	0	0	0	-	10	15
% Trucks	0.0	0.0	1.5	0.0	-	-	0.6	0.0	0.0	5.1	0.0	-	-	1.4	0.0	0.5	0.0	33.3	-	-	0.7	2.5	3.2	0.0	-	-	-	3.1	1.7
Bicycles on Crosswalk	-	-	-	-	-	0	-	-	-	-	-	-	0	-	-	-	-	-	-	0	-	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	-	0.0	-	-	-	-	-	-	0.0	-	-	-	-	-	-	0.0	-	-	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	-	-	9	-	-	-	-	-	-	3	-	-	-	-	-	-	6	-	-	-	-	-	-	27	-	-
% Pedestrians	-	-	-	-	-	100.0	-	-	-	-	-	-	100.0	-	-	-	-	-	-	100.0	-	-	-	-	-	-	100.0	-	-

Greenway Ave/63rd St@Cemetery Ave - TMC

Tue Mar 12, 2019
Full Length (6 AM-9 AM, 3 PM-6 PM)
All Classes (Lights, Articulated Trucks and Single-Unit Trucks, Buses, Pedestrians, Bicycles on Crosswalk)
All Movements
ID: 630459, Location: 39.928456, -75.232985

Provided by: Tri-State Traffic Data, Inc.
184 Baker Road,
Coatesville, PA, 19320, US

Leg	Cemetery Ave							Cemetery Ave							Greenway Ave						
Direction	Eastbound							Westbound							Northbound						
Time	L	T	BR	R	U	App	Ped*	HL	L	T	R	U	App	Ped*	L	T	R	HR	U	App	Ped*
2019-03-12 6:00AM	0	0	9	1	0	**10**	0	0	0	0	0	0	**0**	0	1	0	5	1	0	**7**	0
6:15AM	0	3	6	0	0	**9**	0	0	0	0	0	0	**0**	0	5	0	3	4	0	**12**	0
6:30AM	0	2	11	4	0	**17**	0	0	0	0	0	0	**0**	0	6	0	3	1	0	**10**	2
6:45AM	0	1	3	1	0	**5**	0	0	0	0	0	0	**0**	0	7	0	6	3	0	**16**	0
Hourly Total	0	6	29	6	0	**41**	0	0	0	0	0	0	**0**	0	19	0	17	9	0	**45**	2
7:00AM	0	3	11	5	0	**19**	0	0	0	0	0	0	**0**	0	9	0	5	3	0	**17**	3
7:15AM	0	2	10	2	0	**14**	0	0	0	0	0	0	**0**	1	8	0	6	4	0	**18**	2
7:30AM	1	8	15	9	0	**33**	0	0	0	0	0	0	**0**	1	15	0	4	6	0	**25**	7
7:45AM	0	3	13	9	1	**26**	0	0	0	0	0	0	**0**	0	11	0	7	7	1	**26**	2
Hourly Total	1	16	49	25	1	**92**	0	0	0	0	0	0	**0**	2	43	0	22	20	1	**86**	14
8:00AM	0	1	18	11	0	**30**	1	0	0	0	0	0	**0**	1	22	1	10	4	0	**37**	0
8:15AM	1	6	15	7	0	**29**	0	0	0	0	0	0	**0**	1	17	0	11	5	0	**33**	4
8:30AM	1	5	18	6	0	**30**	1	0	0	0	0	0	**0**	0	12	0	5	2	0	**19**	0
8:45AM	0	6	20	10	0	**36**	1	0	0	0	0	0	**0**	1	4	2	6	7	0	**19**	1
Hourly Total	2	18	71	34	0	**125**	3	0	0	0	0	0	**0**	3	55	3	32	18	0	**108**	5
9:00AM	0	0	0	0	0	**0**	0	0	0	0	0	0	**0**	0	0	0	0	0	0	**0**	0
Hourly Total	0	0	0	0	0	**0**	0	0	0	0	0	0	**0**	0	0	0	0	0	0	**0**	0
3:00PM	1	5	20	9	0	**35**	2	0	0	0	0	0	**0**	3	20	0	10	8	1	**39**	2
3:15PM	0	8	21	17	0	**46**	2	0	0	0	0	0	**0**	6	29	0	12	10	0	**51**	3
3:30PM	1	4	29	21	0	**55**	2	0	0	0	0	0	**0**	0	16	0	9	8	0	**33**	11
3:45PM	0	5	25	11	0	**41**	1	0	0	0	0	0	**0**	2	11	0	15	10	0	**36**	1
Hourly Total	2	22	95	58	0	**177**	7	0	0	0	0	0	**0**	11	76	0	46	36	1	**159**	17
4:00PM	0	9	24	15	0	**48**	2	0	0	0	0	0	**0**	2	28	1	23	11	0	**63**	1
4:15PM	0	5	17	15	0	**37**	1	0	0	0	0	0	**0**	0	16	1	9	8	1	**35**	1
4:30PM	1	5	25	13	0	**44**	1	0	0	0	0	0	**0**	0	18	1	9	4	1	**33**	0
4:45PM	1	5	21	14	1	**42**	2	0	0	0	0	0	**0**	2	13	0	11	12	0	**36**	0
Hourly Total	2	24	87	57	1	**171**	6	0	0	0	0	0	**0**	4	75	3	52	35	2	**167**	2
5:00PM	1	12	26	15	0	**54**	0	0	1	0	0	0	**1**	0	28	1	5	12	2	**48**	2
5:15PM	0	6	16	11	0	**33**	2	0	0	0	0	0	**0**	4	20	1	9	17	0	**47**	4
5:30PM	0	7	23	10	0	**40**	0	0	0	0	0	0	**0**	3	20	0	9	12	0	**41**	1
5:45PM	0	3	21	18	0	**42**	1	0	0	0	0	0	**0**	1	10	0	13	6	0	**29**	4
Hourly Total	1	28	86	54	0	**169**	3	0	1	0	0	0	**1**	8	78	2	36	47	2	**165**	11
6:00PM	0	0	0	0	0	**0**	0	0	0	0	0	0	**0**	0	0	0	0	0	0	**0**	0
Hourly Total	0	0	0	0	0	**0**	0	0	0	0	0	0	**0**	0	0	0	0	0	0	**0**	0
Total	8	114	417	234	2	**775**	19	0	1	0	0	0	**1**	28	346	8	205	165	6	**730**	51
% Approach	1.0%	14.7%	53.8%	30.2%	0.3%	-	-	0%	100%	0%	0%	0%	-	-	47.4%	1.1%	28.1%	22.6%	0.8%	-	-
% Total	0.3%	4.4%	15.9%	8.9%	0.1%	**29.6%**	-	0%	0%	0%	0%	0%	**0%**	-	13.2%	0.3%	7.8%	6.3%	0.2%	**27.9%**	-
Lights	8	107	391	227	2	**735**	-	0	1	0	0	0	**1**	-	335	8	197	159	6	**705**	-
% Lights	100%	93.9%	93.8%	97.0%	100%	**94.8%**	-	0%	100%	0%	0%	0%	**100%**	-	96.8%	100%	96.1%	96.4%	100%	**96.6%**	-
Articulated Trucks and Single-Unit Trucks	0	4	2	1	0	**7**	-	0	0	0	0	0	**0**	-	1	0	2	3	0	**6**	-
% Articulated Trucks and Single-Unit Trucks	0%	3.5%	0.5%	0.4%	0%	**0.9%**	-	0%	0%	0%	0%	0%	**0%**	-	0.3%	0%	1.0%	1.8%	0%	**0.8%**	-
Buses	0	3	24	6	0	**33**	-	0	0	0	0	0	**0**	-	10	0	6	3	0	**19**	-
% Buses	0%	2.6%	5.8%	2.6%	0%	**4.3%**	-	0%	0%	0%	0%	0%	**0%**	-	2.9%	0%	2.9%	1.8%	0%	**2.6%**	-
Pedestrians	-	-	-	-	-	-	19	-	-	-	-	-	-	27	-	-	-	-	-	-	51
% Pedestrians	-	-	-	-	-	-	100%	-	-	-	-	-	-	96.4%	-	-	-	-	-	-	100%
Bicycles on Crosswalk	-	-	-	-	-	-	0	-	-	-	-	-	-	1	-	-	-	-	-	-	0
% Bicycles on Crosswalk	-	-	-	-	-	-	0%	-	-	-	-	-	-	3.6%	-	-	-	-	-	-	0%

*Pedestrians and Bicycles on Crosswalk. BL: Bear left, BR: Bear right, HL: Hard left, HR: Hard right, L: Left, R: Right, T: Thru, U: U-Turn

Greenway Ave/63rd St@Cemetery Ave - TMC
Tue Mar 12, 2019
Full Length (6 AM-9 AM, 3 PM-6 PM)
All Classes (Lights, Articulated Trucks and Single-Unit Trucks, Buses, Pedestrians, Bicycles on Crosswalk)
All Movements
ID: 630459, Location: 39.928456, -75.232985

Provided by: Tri-State Traffic Data, Inc.
184 Baker Road,
Coatesville, PA, 19320, US

Leg Direction	Greenway Ave Southbound							63rd St Northwestbound							
Time	L	BL	T	R	U	App	Ped*	HL	BL	BR	HR	U	App	Ped*	Int
2019-03-12 6:00AM	0	0	0	0	0	**0**	2	1	13	0	0	0	**14**	0	**31**
6:15AM	0	0	0	0	0	**0**	0	4	11	0	0	0	**15**	1	**36**
6:30AM	0	0	0	0	0	**0**	1	2	18	0	0	0	**20**	2	**47**
6:45AM	0	0	0	0	0	**0**	0	7	32	0	0	0	**39**	1	**60**
Hourly Total	0	0	0	0	0	**0**	3	14	74	0	0	0	**88**	4	**174**
7:00AM	0	0	0	0	0	**0**	0	1	27	0	1	0	**29**	1	**65**
7:15AM	0	0	0	0	0	**0**	2	2	26	0	3	0	**31**	2	**63**
7:30AM	0	0	0	0	0	**0**	2	6	24	0	0	0	**30**	2	**88**
7:45AM	0	0	1	1	0	**2**	0	4	28	0	2	0	**34**	2	**88**
Hourly Total	0	0	1	1	0	**2**	4	13	105	0	6	0	**124**	7	**304**
8:00AM	0	0	0	0	0	**0**	3	3	31	0	1	0	**35**	2	**102**
8:15AM	0	0	0	2	0	**2**	3	7	34	0	1	0	**42**	1	**106**
8:30AM	0	0	0	0	0	**0**	1	7	26	1	2	0	**36**	2	**85**
8:45AM	0	0	0	0	0	**0**	0	6	28	0	0	0	**34**	2	**89**
Hourly Total	0	0	0	2	0	**2**	7	23	119	1	4	0	**147**	7	**382**
9:00AM	0	0	0	0	0	**0**	0	0	0	0	0	0	**0**	0	**0**
Hourly Total	0	0	0	0	0	**0**	0	0	0	0	0	0	**0**	0	**0**
3:00PM	1	0	1	0	0	**2**	3	7	34	0	2	0	**43**	4	**119**
3:15PM	0	1	0	1	0	**2**	5	6	42	0	4	1	**53**	10	**152**
3:30PM	0	0	0	0	0	**0**	4	7	43	0	5	0	**55**	5	**143**
3:45PM	0	0	0	0	0	**0**	2	8	45	0	5	0	**58**	3	**135**
Hourly Total	1	1	1	1	0	**4**	14	28	164	0	16	1	**209**	22	**549**
4:00PM	0	0	0	2	0	**2**	5	9	45	2	5	0	**61**	7	**174**
4:15PM	0	0	1	0	0	**1**	3	16	39	0	3	0	**58**	3	**131**
4:30PM	0	0	1	0	0	**1**	3	11	46	1	5	0	**63**	8	**141**
4:45PM	0	1	1	0	0	**2**	2	13	41	0	7	0	**61**	3	**141**
Hourly Total	0	1	3	2	0	**6**	13	49	171	3	20	0	**243**	21	**587**
5:00PM	0	0	0	0	0	**0**	1	13	43	2	0	0	**58**	1	**161**
5:15PM	0	0	0	0	0	**0**	3	15	67	0	3	1	**86**	4	**166**
5:30PM	0	1	0	0	0	**1**	1	11	47	0	4	0	**62**	4	**144**
5:45PM	0	1	0	0	0	**1**	2	19	49	0	8	0	**76**	2	**148**
Hourly Total	0	2	0	0	0	**2**	7	58	206	2	15	1	**282**	11	**619**
6:00PM	0	0	0	0	0	**0**	0	0	0	0	1	0	**1**	0	**1**
Hourly Total	0	0	0	0	0	**0**	0	0	0	0	1	0	**1**	0	**1**
Total	1	4	5	6	0	**16**	48	185	839	6	62	2	**1094**	72	**2616**
% Approach	6.3%	25.0%	31.3%	37.5%	0%	**-**	-	16.9%	76.7%	0.5%	5.7%	0.2%	**-**	-	-
% Total	0%	0.2%	0.2%	0.2%	0%	**0.6%**	-	7.1%	32.1%	0.2%	2.4%	0.1%	**41.8%**	-	-
Lights	1	4	5	6	0	**16**	-	176	796	6	57	2	**1037**	-	2494
% Lights	100%	100%	100%	100%	0%	**100%**	-	95.1%	94.9%	100%	91.9%	100%	**94.8%**	-	95.3%
Articulated Trucks and Single-Unit Trucks	0	0	0	0	0	**0**	-	3	8	0	1	0	**12**	-	25
% Articulated Trucks and Single-Unit Trucks	0%	0%	0%	0%	0%	**0%**	-	1.6%	1.0%	0%	1.6%	0%	**1.1%**	-	1.0%
Buses	0	0	0	0	0	**0**	-	6	35	0	4	0	**45**	-	97
% Buses	0%	0%	0%	0%	0%	**0%**	-	3.2%	4.2%	0%	6.5%	0%	**4.1%**	-	3.7%
Pedestrians	-	-	-	-	-	-	47	-	-	-	-	-	-	71	
% Pedestrians	-	-	-	-	-	-	97.9%	-	-	-	-	-	-	98.6%	-
Bicycles on Crosswalk	-	-	-	-	-	-	1	-	-	-	-	-	-	1	
% Bicycles on Crosswalk	-	-	-	-	-	-	2.1%	-	-	-	-	-	-	1.4%	-

*Pedestrians and Bicycles on Crosswalk. BL: Bear left, BR: Bear right, HL: Hard left, HR: Hard right, L: Left, R: Right, T: Thru, U: U-Turn

Greenway Ave/63rd St@Cemetery Ave - TMC

Tue Mar 12, 2019
AM Peak (7:30 AM - 8:30 AM)
All Classes (Lights, Articulated Trucks and Single-Unit Trucks, Buses, Pedestrians, Bicycles on Crosswalk)
All Movements
ID: 630459, Location: 39.928456, -75.232985

Provided by: Tri-State Traffic Data, Inc.
184 Baker Road,
Coatesville, PA, 19320, US

Leg	Cemetery Ave							Cemetery Ave							Greenway Ave						
Direction	Eastbound							Westbound							Northbound						
Time	L	T	BR	R	U	App	Ped*	HL	L	T	R	U	App	Ped*	L	T	R	HR	U	App	Ped*
2019-03-12 7:30AM	1	8	15	9	0	**33**	0	0	0	0	0	0	**0**	1	15	0	4	6	0	**25**	7
7:45AM	0	3	13	9	1	**26**	0	0	0	0	0	0	**0**	0	11	0	7	7	1	**26**	2
8:00AM	0	1	18	11	0	**30**	1	0	0	0	0	0	**0**	1	22	1	10	4	0	**37**	0
8:15AM	1	6	15	7	0	**29**	0	0	0	0	0	0	**0**	1	17	0	11	5	0	**33**	4
Total	2	18	61	36	1	**118**	1	0	0	0	0	0	**0**	3	65	1	32	22	1	**121**	13
% Approach	1.7%	15.3%	51.7%	30.5%	0.8%	-	-	0%	0%	0%	0%	0%	-	-	53.7%	0.8%	26.4%	18.2%	0.8%	-	-
% Total	0.5%	4.7%	15.9%	9.4%	0.3%	**30.7%**	-	0%	0%	0%	0%	0%	**0%**	-	16.9%	0.3%	8.3%	5.7%	0.3%	**31.5%**	-
PHF	0.500	0.563	0.847	0.818	0.250	**0.894**	-	-	-	-	-	-	-	-	0.739	0.250	0.727	0.786	0.250	**0.818**	-
Lights	2	16	57	34	1	**110**	-	0	0	0	0	0	**0**	-	62	1	30	22	1	**116**	-
% Lights	100%	88.9%	93.4%	94.4%	100%	**93.2%**	-	0%	0%	0%	0%	0%	-	-	95.4%	100%	93.8%	100%	100%	**95.9%**	-
Articulated Trucks and Single-Unit Trucks	0	0	1	0	0	**1**	-	0	0	0	0	0	**0**	-	0	0	1	0	0	**1**	-
% Articulated Trucks and Single-Unit Trucks	0%	0%	1.6%	0%	0%	**0.8%**	-	0%	0%	0%	0%	0%	-	-	0%	0%	3.1%	0%	0%	**0.8%**	-
Buses	0	2	3	2	0	**7**	-	0	0	0	0	0	**0**	-	3	0	1	0	0	**4**	-
% Buses	0%	11.1%	4.9%	5.6%	0%	**5.9%**	-	0%	0%	0%	0%	0%	-	-	4.6%	0%	3.1%	0%	0%	**3.3%**	-
Pedestrians	-	-	-	-	-	-	1	-	-	-	-	-	-	3	-	-	-	-	-	-	13
% Pedestrians	-	-	-	-	-	-	100%	-	-	-	-	-	-	100%	-	-	-	-	-	-	100%
Bicycles on Crosswalk	-	-	-	-	-	-	0	-	-	-	-	-	-	0	-	-	-	-	-	-	0
% Bicycles on Crosswalk	-	-	-	-	-	-	0%	-	-	-	-	-	-	0%	-	-	-	-	-	-	0%

*Pedestrians and Bicycles on Crosswalk. BL: Bear left, BR: Bear right, HL: Hard left, HR: Hard right, L: Left, R: Right, T: Thru, U: U-Turn

Greenway Ave/63rd St@Cemetery Ave - TMC
Tue Mar 12, 2019
AM Peak (7:30 AM - 8:30 AM)
All Classes (Lights, Articulated Trucks and Single-Unit Trucks, Buses, Pedestrians, Bicycles on Crosswalk)
All Movements
ID: 630459, Location: 39.928456, -75.232985

Provided by: Tri-State Traffic Data, Inc.
184 Baker Road,
Coatesville, PA, 19320, US

Leg / Direction	Greenway Ave Southbound							63rd St Northwestbound							
Time	L	BL	T	R	U	App	Ped*	HL	BL	BR	HR	U	App	Ped*	Int
2019-03-12 7:30AM	0	0	0	0	0	**0**	2	6	24	0	0	0	**30**	2	**88**
7:45AM	0	0	1	1	0	**2**	0	4	28	0	2	0	**34**	2	**88**
8:00AM	0	0	0	0	0	**0**	3	3	31	0	1	0	**35**	2	**102**
8:15AM	0	0	0	2	0	**2**	3	7	34	0	1	0	**42**	1	**106**
Total	0	0	1	3	0	**4**	8	20	117	0	4	0	**141**	7	**384**
% Approach	0%	0%	25.0%	75.0%	0%	**-**	-	14.2%	83.0%	0%	2.8%	0%	**-**	-	-
% Total	0%	0%	0.3%	0.8%	0%	**1.0%**	-	5.2%	30.5%	0%	1.0%	0%	**36.7%**	-	-
PHF	-	-	0.250	0.375	-	**0.500**	-	0.714	0.860	-	0.500	-	**0.839**	-	0.906
Lights	0	0	1	3	0	**4**	-	19	111	0	4	0	**134**	-	364
% Lights	0%	0%	100%	100%	0%	**100%**	-	95.0%	94.9%	0%	100%	0%	**95.0%**	-	94.8%
Articulated Trucks and Single-Unit Trucks	0	0	0	0	0	**0**	-	0	2	0	0	0	**2**	-	4
% Articulated Trucks and Single-Unit Trucks	0%	0%	0%	0%	0%	**0%**	-	0%	1.7%	0%	0%	0%	**1.4%**	-	1.0%
Buses	0	0	0	0	0	**0**	-	1	4	0	0	0	**5**	-	16
% Buses	0%	0%	0%	0%	0%	**0%**	-	5.0%	3.4%	0%	0%	0%	**3.5%**	-	4.2%
Pedestrians	-	-	-	-	-	-	7	-	-	-	-	-	-	7	
% Pedestrians	-	-	-	-	-	-	87.5%	-	-	-	-	-	-	100%	-
Bicycles on Crosswalk	-	-	-	-	-	-	1	-	-	-	-	-	-	0	
% Bicycles on Crosswalk	-	-	-	-	-	-	12.5%	-	-	-	-	-	-	0%	-

*Pedestrians and Bicycles on Crosswalk. BL: Bear left, BR: Bear right, HL: Hard left, HR: Hard right, L: Left, R: Right, T: Thru, U: U-Turn

Greenway Ave/63rd St@Cemetery Ave - TMC

Tue Mar 12, 2019
PM Peak (5 PM - 6 PM) - Overall Peak Hour
All Classes (Lights, Articulated Trucks and Single-Unit Trucks, Buses, Pedestrians, Bicycles on Crosswalk)
All Movements
ID: 630459, Location: 39.928456, -75.232985

Provided by: Tri-State Traffic Data, Inc.
184 Baker Road,
Coatesville, PA, 19320, US

Leg	Cemetery Ave							Cemetery Ave							Greenway Ave						
Direction	Eastbound							Westbound							Northbound						
Time	L	T	BR	R	U	App	Ped*	HL	L	T	R	U	App	Ped*	L	T	R	HR	U	App	Ped*
2019-03-12 5:00PM	1	12	26	15	0	**54**	0	0	1	0	0	0	**1**	0	28	1	5	12	2	**48**	2
5:15PM	0	6	16	11	0	**33**	2	0	0	0	0	0	**0**	4	20	1	9	17	0	**47**	4
5:30PM	0	7	23	10	0	**40**	0	0	0	0	0	0	**0**	3	20	0	9	12	0	**41**	1
5:45PM	0	3	21	18	0	**42**	1	0	0	0	0	0	**0**	1	10	0	13	6	0	**29**	4
Total	1	28	86	54	0	**169**	3	0	1	0	0	0	**1**	8	78	2	36	47	2	**165**	11
% Approach	0.6%	16.6%	50.9%	32.0%	0%	-	-	0%	100%	0%	0%	0%	-	-	47.3%	1.2%	21.8%	28.5%	1.2%	-	-
% Total	0.2%	4.5%	13.9%	8.7%	0%	**27.3%**	-	0%	0.2%	0%	0%	0%	**0.2%**	-	12.6%	0.3%	5.8%	7.6%	0.3%	**26.7%**	-
PHF	0.250	0.583	0.827	0.750	-	**0.782**	-	-	0.250	-	-	-	**0.250**	-	0.696	0.500	0.692	0.691	0.250	**0.859**	-
Lights	1	28	84	53	0	**166**	-	0	1	0	0	0	**1**	-	78	2	36	47	2	**165**	-
% Lights	100%	100%	97.7%	98.1%	0%	**98.2%**	-	0%	100%	0%	0%	0%	**100%**	-	100%	100%	100%	100%	100%	**100%**	-
Articulated Trucks and Single-Unit Trucks	0	0	0	0	0	**0**	-	0	0	0	0	0	**0**	-	0	0	0	0	0	**0**	-
% Articulated Trucks and Single-Unit Trucks	0%	0%	0%	0%	0%	**0%**	-	0%	0%	0%	0%	0%	**0%**	-	0%	0%	0%	0%	0%	**0%**	-
Buses	0	0	2	1	0	**3**	-	0	0	0	0	0	**0**	-	0	0	0	0	0	**0**	-
% Buses	0%	0%	2.3%	1.9%	0%	**1.8%**	-	0%	0%	0%	0%	0%	**0%**	-	0%	0%	0%	0%	0%	**0%**	-
Pedestrians	-	-	-	-	-	-	3	-	-	-	-	-	-	8	-	-	-	-	-	-	11
% Pedestrians	-	-	-	-	-	-	100%	-	-	-	-	-	-	100%	-	-	-	-	-	-	100%
Bicycles on Crosswalk	-	-	-	-	-	-	0	-	-	-	-	-	-	0	-	-	-	-	-	-	0
% Bicycles on Crosswalk	-	-	-	-	-	-	0%	-	-	-	-	-	-	0%	-	-	-	-	-	-	0%

*Pedestrians and Bicycles on Crosswalk. BL: Bear left, BR: Bear right, HL: Hard left, HR: Hard right, L: Left, R: Right, T: Thru, U: U-Turn

Greenway Ave/63rd St@Cemetery Ave - TMC
Tue Mar 12, 2019
PM Peak (5 PM - 6 PM) - Overall Peak Hour
All Classes (Lights, Articulated Trucks and Single-Unit Trucks, Buses, Pedestrians, Bicycles on Crosswalk)
All Movements
ID: 630459, Location: 39.928456, -75.232985

Provided by: Tri-State Traffic Data, Inc.
184 Baker Road,
Coatesville, PA, 19320, US

Leg Direction	Greenway Ave Southbound							63rd St Northwestbound							
Time	L	BL	T	R	U	App	Ped*	HL	BL	BR	HR	U	App	Ped*	Int
2019-03-12 5:00PM	0	0	0	0	0	**0**	1	13	43	2	0	0	**58**	1	**161**
5:15PM	0	0	0	0	0	**0**	3	15	67	0	3	1	**86**	4	**166**
5:30PM	0	1	0	0	0	**1**	1	11	47	0	4	0	**62**	4	**144**
5:45PM	0	1	0	0	0	**1**	2	19	49	0	8	0	**76**	2	**148**
Total	0	2	0	0	0	**2**	7	58	206	2	15	1	**282**	11	**619**
% Approach	0%	100%	0%	0%	0%	**-**	-	20.6%	73.0%	0.7%	5.3%	0.4%	**-**	-	-
% Total	0%	0.3%	0%	0%	0%	**0.3%**	-	9.4%	33.3%	0.3%	2.4%	0.2%	**45.6%**	-	-
PHF	-	0.500	-	-	-	**0.500**	-	0.763	0.769	0.250	0.469	0.250	**0.820**	-	0.932
Lights	0	2	0	0	0	**2**	-	58	202	2	14	1	**277**	-	611
% Lights	0%	100%	0%	0%	0%	**100%**	-	100%	98.1%	100%	93.3%	100%	**98.2%**	-	98.7%
Articulated Trucks and Single-Unit Trucks	0	0	0	0	0	**0**	-	0	0	0	0	0	**0**	-	0
% Articulated Trucks and Single-Unit Trucks	0%	0%	0%	0%	0%	**0%**	-	0%	0%	0%	0%	0%	**0%**	-	0%
Buses	0	0	0	0	0	**0**	-	0	4	0	1	0	**5**	-	8
% Buses	0%	0%	0%	0%	0%	**0%**	-	0%	1.9%	0%	6.7%	0%	**1.8%**	-	1.3%
Pedestrians	-	-	-	-	-	-	7	-	-	-	-	-	-	11	
% Pedestrians	-	-	-	-	-	-	100%	-	-	-	-	-	-	100%	-
Bicycles on Crosswalk	-	-	-	-	-	-	0	-	-	-	-	-	-	0	
% Bicycles on Crosswalk	-	-	-	-	-	-	0%	-	-	-	-	-	-	0%	-

*Pedestrians and Bicycles on Crosswalk. BL: Bear left, BR: Bear right, HL: Hard left, HR: Hard right, L: Left, R: Right, T: Thru, U: U-Turn

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184 Baker Rd

Coatesville, Pennsylvania, United States 19320
610-466-1469
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Philadelphia, PA
Woodland Ave & 65th St
Tuesday, March 12, 2019
Location: 39.925591, -75.234311

Count Name: Woodland Ave/65th St
Site Code:
Start Date: 03/12/2019

Turning Movement Peak Hour Data (8:00 AM)

Start Time	65th St Eastbound							65th St Westbound							Woodland Ave Northbound							Woodland Ave Southbound							Int. Total
	Left	Thru	Right	Right on Red	U-Turn	Peds	App. Total	Left	Thru	Right	Right on Red	U-Turn	Peds	App. Total	Left	Thru	Right	Right on Red	U-Turn	Peds	App. Total	Left	Thru	Right	Right on Red	U-Turn	Peds	App. Total	
8:00 AM	4	46	1	1	0	13	52	2	20	4	1	0	21	27	7	32	4	1	0	19	44	9	29	2	1	0	9	41	164
8:15 AM	1	43	4	1	0	9	49	3	28	4	0	0	22	35	4	26	4	0	0	17	34	5	28	5	0	0	8	38	156
8:30 AM	1	40	4	0	0	11	45	6	27	2	0	0	13	35	5	35	4	0	0	21	44	5	40	4	2	0	5	51	175
8:45 AM	12	33	3	1	0	13	49	1	29	7	1	0	5	38	4	25	5	2	0	8	36	4	34	2	1	0	7	41	164
Total	18	162	12	3	0	46	195	12	104	17	2	0	61	135	20	118	17	3	0	65	158	23	131	13	4	0	29	171	659
Approach %	9.2	83.1	6.2	1.5	0.0	-	-	8.9	77.0	12.6	1.5	0.0	-	-	12.7	74.7	10.8	1.9	0.0	-	-	13.5	76.6	7.6	2.3	0.0	-	-	-
Total %	2.7	24.6	1.8	0.5	0.0	-	29.6	1.8	15.8	2.6	0.3	0.0	-	20.5	3.0	17.9	2.6	0.5	0.0	-	24.0	3.5	19.9	2.0	0.6	0.0	-	25.9	-
PHF	0.375	0.880	0.750	0.750	0.000	-	0.938	0.500	0.897	0.607	0.500	0.000	-	0.888	0.714	0.843	0.850	0.375	0.000	-	0.898	0.639	0.819	0.650	0.500	0.000	-	0.838	0.941
Lights	17	151	12	3	0	-	183	11	97	17	2	0	-	127	19	98	17	3	0	-	137	22	110	12	4	0	-	148	595
% Lights	94.4	93.2	100.0	100.0	-	-	93.8	91.7	93.3	100.0	100.0	-	-	94.1	95.0	83.1	100.0	100.0	-	-	86.7	95.7	84.0	92.3	100.0	-	-	86.5	90.3
Buses	1	9	0	0	0	-	10	0	7	0	0	0	-	7	1	16	0	0	0	-	17	1	16	0	0	0	-	17	51
% Buses	5.6	5.6	0.0	0.0	-	-	5.1	0.0	6.7	0.0	0.0	-	-	5.2	5.0	13.6	0.0	0.0	-	-	10.8	4.3	12.2	0.0	0.0	-	-	9.9	7.7
Trucks	0	2	0	0	0	-	2	1	0	0	0	0	-	1	0	4	0	0	0	-	4	0	5	1	0	0	-	6	13
% Trucks	0.0	1.2	0.0	0.0	-	-	1.0	8.3	0.0	0.0	0.0	-	-	0.7	0.0	3.4	0.0	0.0	-	-	2.5	0.0	3.8	7.7	0.0	-	-	3.5	2.0
Bicycles on Crosswalk	-	-	-	-	-	1	-	-	-	-	-	-	0	-	-	-	-	-	-	0	-	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	-	2.2	-	-	-	-	-	-	0.0	-	-	-	-	-	-	0.0	-	-	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	-	-	45	-	-	-	-	-	-	61	-	-	-	-	-	-	65	-	-	-	-	-	-	29	-	-
% Pedestrians	-	-	-	-	-	97.8	-	-	-	-	-	-	100.0	-	-	-	-	-	-	100.0	-	-	-	-	-	-	100.0	-	-

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Philadelphia, PA
Woodland Ave & 65th St
Tuesday, March 12, 2019
Location: 39.925591, -75.234311

Count Name: Woodland Ave/65th St
Site Code:
Start Date: 03/12/2019

Turning Movement Peak Hour Data (4:45 PM)

Start Time	65th St Eastbound							65th St Westbound							Woodland Ave Northbound							Woodland Ave Southbound							Int. Total
	Left	Thru	Right	Right on Red	U-Turn	Peds	App. Total	Left	Thru	Right	Right on Red	U-Turn	Peds	App. Total	Left	Thru	Right	Right on Red	U-Turn	Peds	App. Total	Left	Thru	Right	Right on Red	U-Turn	Peds	App. Total	
4:45 PM	5	50	5	0	0	48	60	10	31	8	0	0	22	49	4	38	8	1	0	25	51	9	61	12	0	0	15	82	242
5:00 PM	5	49	9	1	0	20	64	6	40	5	0	0	29	51	9	53	12	0	0	21	74	13	58	14	2	0	11	87	276
5:15 PM	3	36	15	0	0	29	54	11	34	9	1	0	21	55	11	51	10	0	0	18	72	6	59	10	1	0	20	76	257
5:30 PM	6	33	3	0	0	27	42	12	46	11	1	0	30	70	4	62	4	0	0	19	70	17	51	15	4	0	18	87	269
Total	19	168	32	1	0	124	220	39	151	33	2	0	102	225	28	204	34	1	0	83	267	45	229	51	7	0	64	332	1044
Approach %	8.6	76.4	14.5	0.5	0.0	-	-	17.3	67.1	14.7	0.9	0.0	-	-	10.5	76.4	12.7	0.4	0.0	-	-	13.6	69.0	15.4	2.1	0.0	-	-	-
Total %	1.8	16.1	3.1	0.1	0.0	-	21.1	3.7	14.5	3.2	0.2	0.0	-	21.6	2.7	19.5	3.3	0.1	0.0	-	25.6	4.3	21.9	4.9	0.7	0.0	-	31.8	-
PHF	0.792	0.840	0.533	0.250	0.000	-	0.859	0.813	0.821	0.750	0.500	0.000	-	0.804	0.636	0.823	0.708	0.250	0.000	-	0.902	0.662	0.939	0.850	0.438	0.000	-	0.954	0.946
Lights	19	152	31	1	0	-	203	38	143	32	2	0	-	215	28	193	33	1	0	-	255	45	213	50	7	0	-	315	988
% Lights	100.0	90.5	96.9	100.0	-	-	92.3	97.4	94.7	97.0	100.0	-	-	95.6	100.0	94.6	97.1	100.0	-	-	95.5	100.0	93.0	98.0	100.0	-	-	94.9	94.6
Buses	0	11	0	0	0	-	11	0	7	0	0	0	-	7	0	11	1	0	0	-	12	0	13	0	0	0	-	13	43
% Buses	0.0	6.5	0.0	0.0	-	-	5.0	0.0	4.6	0.0	0.0	-	-	3.1	0.0	5.4	2.9	0.0	-	-	4.5	0.0	5.7	0.0	0.0	-	-	3.9	4.1
Trucks	0	5	1	0	0	-	6	1	1	1	0	0	-	3	0	0	0	0	0	-	0	0	3	1	0	0	-	4	13
% Trucks	0.0	3.0	3.1	0.0	-	-	2.7	2.6	0.7	3.0	0.0	-	-	1.3	0.0	0.0	0.0	0.0	-	-	0.0	0.0	1.3	2.0	0.0	-	-	1.2	1.2
Bicycles on Crosswalk	-	-	-	-	-	0	-	-	-	-	-	-	0	-	-	-	-	-	-	0	-	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	-	0.0	-	-	-	-	-	-	0.0	-	-	-	-	-	-	0.0	-	-	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	-	-	124	-	-	-	-	-	-	102	-	-	-	-	-	-	83	-	-	-	-	-	-	64	-	-
% Pedestrians	-	-	-	-	-	100.0	-	-	-	-	-	-	100.0	-	-	-	-	-	-	100.0	-	-	-	-	-	-	100.0	-	-

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Philadelphia, PA
Woodland Ave & 63rd St
Tuesday, March 12, 2019
Location: 39.927425, -75.231718

Count Name: Woodland Ave/63rd St
Site Code:
Start Date: 03/12/2019

Turning Movement Data

Start Time	63rd St Eastbound							63rd St Westbound							Woodland Ave Northbound							Woodland Ave Southbound							Int. Total
	Left	Thru	Right	Right on Red	U-Turn	Peds	App. Total	Left	Thru	Right	Right on Red	U-Turn	Peds	App. Total	Left	Thru	Right	Right on Red	U-Turn	Peds	App. Total	Left	Thru	Right	Right on Red	U-Turn	Peds	App. Total	
6:00 AM	0	10	0	0	0	1	10	3	9	4	0	0	6	16	0	13	1	0	0	1	14	4	12	3	0	0	0	19	59
6:15 AM	0	8	1	0	0	3	9	4	11	4	2	0	7	21	0	10	1	0	0	0	11	0	9	3	0	0	0	12	53
6:30 AM	1	12	1	0	0	3	14	7	18	1	3	0	8	29	0	15	3	1	1	1	20	2	15	3	1	0	3	21	84
6:45 AM	0	5	0	1	0	4	6	3	32	6	2	0	6	43	1	31	4	0	0	4	36	2	19	5	0	0	2	26	111
Hourly Total	1	35	2	1	0	11	39	17	70	15	7	0	27	109	1	69	9	1	1	6	81	8	55	14	1	0	5	78	307
7:00 AM	0	13	1	0	0	6	14	7	22	8	2	0	9	39	2	32	2	1	0	2	37	4	18	4	1	0	1	27	117
7:15 AM	1	13	0	1	0	6	15	4	30	6	1	0	8	41	0	32	1	1	0	3	34	5	12	3	0	0	1	20	110
7:30 AM	1	17	1	1	0	2	20	3	27	3	3	0	16	36	0	35	5	1	0	6	41	7	26	2	0	0	1	35	132
7:45 AM	1	16	3	1	0	9	21	1	29	4	1	0	19	35	1	36	2	0	0	4	39	5	27	3	2	0	2	37	132
Hourly Total	3	59	5	3	0	23	70	15	108	21	7	0	52	151	3	135	10	3	0	15	151	21	83	12	3	0	5	119	491
8:00 AM	0	18	1	2	0	6	21	5	28	8	3	0	16	44	4	29	4	1	0	4	38	5	26	3	0	0	4	34	137
8:15 AM	1	12	2	3	0	3	18	8	30	8	1	0	12	47	2	28	2	0	0	19	32	7	32	10	2	0	4	51	148
8:30 AM	3	13	5	0	0	8	21	6	30	9	0	0	11	45	2	37	3	4	0	2	46	8	42	6	2	0	1	58	170
8:45 AM	3	20	1	1	0	8	25	9	22	11	1	0	13	43	1	41	4	1	0	9	47	9	34	8	2	0	2	53	168
Hourly Total	7	63	9	6	0	25	85	28	110	36	5	0	52	179	9	135	13	6	0	34	163	29	134	27	6	0	11	196	623
9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Hourly Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:00 PM	4	13	6	1	0	35	24	13	31	10	1	0	45	55	4	58	7	2	0	20	71	8	54	9	0	0	5	71	221
3:15 PM	5	25	2	2	0	27	34	17	45	9	1	0	34	72	4	53	6	3	0	6	66	5	42	4	2	0	16	53	225
3:30 PM	5	25	3	0	0	25	33	14	36	7	5	0	35	62	2	42	9	3	0	20	56	12	65	16	1	0	16	94	245
3:45 PM	5	25	5	0	1	33	36	12	37	8	1	0	44	58	3	51	6	4	0	10	64	7	42	6	6	0	1	61	219
Hourly Total	19	88	16	3	1	120	127	56	149	34	8	0	158	247	13	204	28	12	0	56	257	32	203	35	9	0	38	279	910
4:00 PM	2	23	8	0	0	37	33	9	48	6	1	0	29	64	6	58	9	0	0	8	73	6	46	11	4	0	18	67	237
4:15 PM	3	17	8	0	0	35	28	4	49	9	0	0	33	62	0	58	11	5	0	10	74	9	68	12	1	1	10	91	255
4:30 PM	5	22	3	1	0	31	31	13	45	18	0	0	36	76	5	55	10	0	0	22	70	5	52	9	0	0	4	66	243
4:45 PM	6	22	7	1	0	32	36	22	41	9	2	0	35	74	4	47	4	1	0	18	56	7	65	17	3	0	8	92	258
Hourly Total	16	84	26	2	0	135	128	48	183	42	3	0	133	276	15	218	34	6	0	58	273	27	231	49	8	1	40	316	993
5:00 PM	2	25	9	1	0	35	37	12	45	3	1	0	28	61	0	54	12	2	0	11	68	5	63	13	2	0	5	83	249
5:15 PM	4	22	9	0	0	24	35	8	66	10	0	0	27	84	1	56	5	0	0	14	62	9	67	15	0	1	9	92	273
5:30 PM	3	25	3	0	1	20	32	12	37	25	2	0	33	76	5	62	3	5	0	9	75	11	71	16	4	0	9	102	285
5:45 PM	7	26	1	0	0	24	34	13	56	20	4	0	23	93	7	48	11	1	0	14	67	8	60	7	0	0	7	75	269
Hourly Total	16	98	22	1	1	103	138	45	204	58	7	0	111	314	13	220	31	8	0	48	272	33	261	51	6	1	30	352	1076
6:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	62	427	80	16	2	417	587	209	824	206	37	0	534	1276	54	981	125	36	1	217	1197	150	967	188	33	2	129	1340	4400
Approach %	10.6	72.7	13.6	2.7	0.3	-	-	16.4	64.6	16.1	2.9	0.0	-	-	4.5	82.0	10.4	3.0	0.1	-	-	11.2	72.2	14.0	2.5	0.1	-	-	-
Total %	1.4	9.7	1.8	0.4	0.0	-	13.3	4.8	18.7	4.7	0.8	0.0	-	29.0	1.2	22.3	2.8	0.8	0.0	-	27.2	3.4	22.0	4.3	0.8	0.0	-	30.5	-
Lights	60	402	76	16	2	-	556	200	776	188	36	0	-	1200	53	854	119	34	1	-	1061	140	869	178	33	2	-	1222	4039
% Lights	96.8	94.1	95.0	100.0	100.0	-	94.7	95.7	94.2	91.3	97.3	-	-	94.0	98.1	87.1	95.2	94.4	100.0	-	88.6	93.3	89.9	94.7	100.0	100.0	-	91.2	91.8
Buses	1	22	3	0	0	-	26	5	41	12	1	0	-	59	1	99	3	1	0	-	104	8	80	3	0	0	-	91	280
% Buses	1.6	5.2	3.8	0.0	0.0	-	4.4	2.4	5.0	5.8	2.7	-	-	4.6	1.9	10.1	2.4	2.8	0.0	-	8.7	5.3	8.3	1.6	0.0	0.0	-	6.8	6.4
Trucks	1	3	1	0	0	-	5	4	7	6	0	0	-	17	0	28	3	1	0	-	32	2	18	7	0	0	-	27	81
% Trucks	1.6	0.7	1.3	0.0	0.0	-	0.9	1.9	0.8	2.9	0.0	-	-	1.3	0.0	2.9	2.4	2.8	0.0	-	2.7	1.3	1.9	3.7	0.0	0.0	-	2.0	1.8
Bicycles on Crosswalk	-	-	-	-	-	4	-	-	-	-	-	-	9	-	-	-	-	-	-	4	-	-	-	-	-	-	1	-	-
% Bicycles on Crosswalk	-	-	-	-	-	1.0	-	-	-	-	-	-	1.7	-	-	-	-	-	-	1.8	-	-	-	-	-	-	0.8	-	-
Pedestrians	-	-	-	-	-	413	-	-	-	-	-	-	525	-	-	-	-	-	-	213	-	-	-	-	-	-	128	-	-
% Pedestrians	-	-	-	-	-	99.0	-	-	-	-	-	-	98.3	-	-	-	-	-	-	98.2	-	-	-	-	-	-	99.2	-	-

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Philadelphia, PA
Woodland Ave & 63rd St
Tuesday, March 12, 2019
Location: 39.927425, -75.231718

Count Name: Woodland Ave/63rd St
Site Code:
Start Date: 03/12/2019

Turning Movement Peak Hour Data (8:00 AM)

Start Time	63rd St Eastbound							63rd St Westbound							Woodland Ave Northbound							Woodland Ave Southbound							Int. Total
	Left	Thru	Right	Right on Red	U-Turn	Peds	App. Total	Left	Thru	Right	Right on Red	U-Turn	Peds	App. Total	Left	Thru	Right	Right on Red	U-Turn	Peds	App. Total	Left	Thru	Right	Right on Red	U-Turn	Peds	App. Total	
8:00 AM	0	18	1	2	0	6	21	5	28	8	3	0	16	44	4	29	4	1	0	4	38	5	26	3	0	0	4	34	137
8:15 AM	1	12	2	3	0	3	18	8	30	8	1	0	12	47	2	28	2	0	0	19	32	7	32	10	2	0	4	51	148
8:30 AM	3	13	5	0	0	8	21	6	30	9	0	0	11	45	2	37	3	4	0	2	46	8	42	6	2	0	1	58	170
8:45 AM	3	20	1	1	0	8	25	9	22	11	1	0	13	43	1	41	4	1	0	9	47	9	34	8	2	0	2	53	168
Total	7	63	9	6	0	25	85	28	110	36	5	0	52	179	9	135	13	6	0	34	163	29	134	27	6	0	11	196	623
Approach %	8.2	74.1	10.6	7.1	0.0	-	-	15.6	61.5	20.1	2.8	0.0	-	-	5.5	82.8	8.0	3.7	0.0	-	-	14.8	68.4	13.8	3.1	0.0	-	-	-
Total %	1.1	10.1	1.4	1.0	0.0	-	13.6	4.5	17.7	5.8	0.8	0.0	-	28.7	1.4	21.7	2.1	1.0	0.0	-	26.2	4.7	21.5	4.3	1.0	0.0	-	31.5	-
PHF	0.583	0.788	0.450	0.500	0.000	-	0.850	0.778	0.917	0.818	0.417	0.000	-	0.952	0.563	0.823	0.813	0.375	0.000	-	0.867	0.806	0.798	0.675	0.750	0.000	-	0.845	0.916
Lights	7	61	8	6	0	-	82	25	105	35	5	0	-	170	9	119	12	6	0	-	146	29	114	25	6	0	-	174	572
% Lights	100.0	96.8	88.9	100.0	-	-	96.5	89.3	95.5	97.2	100.0	-	-	95.0	100.0	88.1	92.3	100.0	-	-	89.6	100.0	85.1	92.6	100.0	-	-	88.8	91.8
Buses	0	1	0	0	0	-	1	2	4	0	0	0	-	6	0	13	1	0	0	-	14	0	15	0	0	0	-	15	36
% Buses	0.0	1.6	0.0	0.0	-	-	1.2	7.1	3.6	0.0	0.0	-	-	3.4	0.0	9.6	7.7	0.0	-	-	8.6	0.0	11.2	0.0	0.0	-	-	7.7	5.8
Trucks	0	1	1	0	0	-	2	1	1	1	0	0	-	3	0	3	0	0	0	-	3	0	5	2	0	0	-	7	15
% Trucks	0.0	1.6	11.1	0.0	-	-	2.4	3.6	0.9	2.8	0.0	-	-	1.7	0.0	2.2	0.0	0.0	-	-	1.8	0.0	3.7	7.4	0.0	-	-	3.6	2.4
Bicycles on Crosswalk	-	-	-	-	-	0	-	-	-	-	-	-	0	-	-	-	-	-	-	0	-	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	-	0.0	-	-	-	-	-	-	0.0	-	-	-	-	-	-	0.0	-	-	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	-	-	25	-	-	-	-	-	-	52	-	-	-	-	-	-	34	-	-	-	-	-	-	11	-	-
% Pedestrians	-	-	-	-	-	100.0	-	-	-	-	-	-	100.0	-	-	-	-	-	-	100.0	-	-	-	-	-	-	100.0	-	-

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Philadelphia, PA
Woodland Ave & 63rd St
Tuesday, March 12, 2019
Location: 39.927425, -75.231718

Count Name: Woodland Ave/63rd St
Site Code:
Start Date: 03/12/2019

Turning Movement Peak Hour Data (5:00 PM)

Start Time	63rd St Eastbound							63rd St Westbound							Woodland Ave Northbound							Woodland Ave Southbound							Int. Total
	Left	Thru	Right	Right on Red	U-Turn	Peds	App. Total	Left	Thru	Right	Right on Red	U-Turn	Peds	App. Total	Left	Thru	Right	Right on Red	U-Turn	Peds	App. Total	Left	Thru	Right	Right on Red	U-Turn	Peds	App. Total	
5:00 PM	2	25	9	1	0	35	37	12	45	3	1	0	28	61	0	54	12	2	0	11	68	5	63	13	2	0	5	83	249
5:15 PM	4	22	9	0	0	24	35	8	66	10	0	0	27	84	1	56	5	0	0	14	62	9	67	15	0	1	9	92	273
5:30 PM	3	25	3	0	1	20	32	12	37	25	2	0	33	76	5	62	3	5	0	9	75	11	71	16	4	0	9	102	285
5:45 PM	7	26	1	0	0	24	34	13	56	20	4	0	23	93	7	48	11	1	0	14	67	8	60	7	0	0	7	75	269
Total	16	98	22	1	1	103	138	45	204	58	7	0	111	314	13	220	31	8	0	48	272	33	261	51	6	1	30	352	1076
Approach %	11.6	71.0	15.9	0.7	0.7	-	-	14.3	65.0	18.5	2.2	0.0	-	-	4.8	80.9	11.4	2.9	0.0	-	-	9.4	74.1	14.5	1.7	0.3	-	-	-
Total %	1.5	9.1	2.0	0.1	0.1	-	12.8	4.2	19.0	5.4	0.7	0.0	-	29.2	1.2	20.4	2.9	0.7	0.0	-	25.3	3.1	24.3	4.7	0.6	0.1	-	32.7	-
PHF	0.571	0.942	0.611	0.250	0.250	-	0.932	0.865	0.773	0.580	0.438	0.000	-	0.844	0.464	0.887	0.646	0.400	0.000	-	0.907	0.750	0.919	0.797	0.375	0.250	-	0.863	0.944
Lights	16	96	22	1	1	-	136	45	200	55	7	0	-	307	13	208	31	8	0	-	260	31	244	50	6	1	-	332	1035
% Lights	100.0	98.0	100.0	100.0	100.0	-	98.6	100.0	98.0	94.8	100.0	-	-	97.8	100.0	94.5	100.0	100.0	-	-	95.6	93.9	93.5	98.0	100.0	100.0	-	94.3	96.2
Buses	0	2	0	0	0	-	2	0	4	0	0	0	-	4	0	10	0	0	0	-	10	2	13	1	0	0	-	16	32
% Buses	0.0	2.0	0.0	0.0	0.0	-	1.4	0.0	2.0	0.0	0.0	-	-	1.3	0.0	4.5	0.0	0.0	-	-	3.7	6.1	5.0	2.0	0.0	0.0	-	4.5	3.0
Trucks	0	0	0	0	0	-	0	0	0	3	0	0	-	3	0	2	0	0	0	-	2	0	4	0	0	0	-	4	9
% Trucks	0.0	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	5.2	0.0	-	-	1.0	0.0	0.9	0.0	0.0	-	-	0.7	0.0	1.5	0.0	0.0	0.0	-	1.1	0.8
Bicycles on Crosswalk	-	-	-	-	-	2	-	-	-	-	-	-	3	-	-	-	-	-	-	1	-	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	-	1.9	-	-	-	-	-	-	2.7	-	-	-	-	-	-	2.1	-	-	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	-	-	101	-	-	-	-	-	-	108	-	-	-	-	-	-	47	-	-	-	-	-	-	30	-	-
% Pedestrians	-	-	-	-	-	98.1	-	-	-	-	-	-	97.3	-	-	-	-	-	-	97.9	-	-	-	-	-	-	100.0	-	-

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Philadelphia, PA
62nd St & Woodland Ave/Cemetary Ave
Tuesday, March 12, 2019
Location: 39.928155, -75.230643

Count Name: Woodland Ave/62nd St@Cemetery Ave
Site Code:
Start Date: 03/12/2019

Turning Movement Data

Start Time	Cemetery Ave Eastbound						62nd St Westbound						Woodland Ave Northbound						Woodland Ave Southbound					
	Left	Thru	Right	Right on Red	Peds	App. Total	Left	Right	Right on Red	U-Turn	Peds	App. Total	Thru	Right	Right on Red	U-Turn	Peds	App. Total	Left	Thru	U-Turn	Peds	App. Total	Int. Total
6:00 AM	3	2	0	0	1	5	0	5	0	0	3	5	17	0	2	0	1	19	6	17	0	1	23	52
6:15 AM	4	1	0	0	4	5	0	8	0	0	0	8	14	1	1	0	0	16	2	10	0	2	12	41
6:30 AM	3	1	0	0	1	4	0	7	1	0	0	8	26	2	0	0	2	28	8	19	0	2	27	67
6:45 AM	7	1	0	0	4	8	0	18	4	0	6	22	37	1	1	0	0	39	20	28	0	1	48	117
Hourly Total	17	5	0	0	10	22	0	38	5	0	9	43	94	4	4	0	3	102	36	74	0	6	110	277
7:00 AM	2	4	0	0	6	6	4	16	0	0	11	20	38	1	0	0	1	39	6	18	0	3	24	89
7:15 AM	4	1	0	0	10	5	3	11	2	0	14	16	40	4	0	1	7	45	12	21	0	4	33	99
7:30 AM	8	2	2	1	4	13	5	17	0	0	15	22	32	1	0	0	1	33	16	32	0	6	48	116
7:45 AM	8	0	0	1	5	9	3	25	0	0	13	28	39	2	0	0	3	41	12	36	0	0	48	126
Hourly Total	22	7	2	2	25	33	15	69	2	0	53	86	149	8	0	1	12	158	46	107	0	13	153	430
8:00 AM	5	4	0	0	1	9	9	16	2	0	4	27	32	9	0	0	1	41	19	26	0	2	45	122
8:15 AM	6	4	0	1	3	11	5	16	2	0	9	23	32	2	0	0	3	34	15	49	0	6	64	132
8:30 AM	4	4	1	1	11	10	6	23	0	0	9	29	50	2	0	0	1	52	18	57	0	5	75	166
8:45 AM	3	6	0	0	13	9	6	17	3	0	8	26	46	3	0	0	1	49	10	43	0	2	53	137
Hourly Total	18	18	1	2	28	39	26	72	7	0	30	105	160	16	0	0	6	176	62	175	0	15	237	557
9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Hourly Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:00 PM	4	6	5	0	28	15	6	30	2	0	12	38	69	6	0	0	6	75	23	59	0	13	82	210
3:15 PM	7	4	2	1	39	14	9	33	0	0	10	42	61	7	0	0	9	68	21	55	0	10	76	200
3:30 PM	4	5	4	0	33	13	14	27	0	0	5	41	61	4	0	0	9	65	25	71	0	11	96	215
3:45 PM	14	11	3	0	42	28	5	24	0	0	12	29	50	2	0	0	26	52	20	64	0	18	84	193
Hourly Total	29	26	14	1	142	70	34	114	2	0	39	150	241	19	0	0	50	260	89	249	0	52	338	818
4:00 PM	12	6	3	0	26	21	9	27	1	0	1	37	62	10	2	0	16	74	13	62	0	21	75	207
4:15 PM	3	6	3	1	27	13	9	37	0	0	1	46	60	11	0	0	7	71	12	73	0	16	85	215
4:30 PM	8	4	1	0	47	13	7	23	1	0	8	31	73	11	1	0	13	85	14	60	0	5	74	203
4:45 PM	11	1	1	0	17	13	8	26	3	0	4	37	53	8	1	0	10	62	11	72	0	9	83	195
Hourly Total	34	17	8	1	117	60	33	113	5	0	14	151	248	40	4	0	46	292	50	267	0	51	317	820
5:00 PM	5	3	4	1	16	13	20	17	1	0	5	38	62	0	0	0	13	62	15	75	0	9	90	203
5:15 PM	8	2	3	0	5	13	16	23	0	0	2	39	69	4	0	0	6	73	21	78	0	12	99	224
5:30 PM	4	3	2	0	21	9	17	22	0	0	2	39	74	10	0	0	16	84	19	82	0	3	101	233
5:45 PM	4	0	0	0	12	4	13	30	0	0	3	43	68	6	0	0	9	74	12	68	0	3	80	201
Hourly Total	21	8	9	1	54	39	66	92	1	0	12	159	273	20	0	0	44	293	67	303	0	27	370	861
6:00 PM	0	0	0	0	1	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1
Grand Total	141	81	34	7	377	263	174	499	22	0	157	695	1165	107	8	1	161	1281	350	1175	0	164	1525	3764
Approach %	53.6	30.8	12.9	2.7	-	-	25.0	71.8	3.2	0.0	-	-	90.9	8.4	0.6	0.1	-	-	23.0	77.0	0.0	-	-	-
Total %	3.7	2.2	0.9	0.2	-	7.0	4.6	13.3	0.6	0.0	-	18.5	31.0	2.8	0.2	0.0	-	34.0	9.3	31.2	0.0	-	40.5	-
Lights	133	74	31	7	-	245	168	412	18	0	-	598	1022	104	8	1	-	1135	267	1065	0	-	1332	3310
% Lights	94.3	91.4	91.2	100.0	-	93.2	96.6	82.6	81.8	-	-	86.0	87.7	97.2	100.0	100.0	-	88.6	76.3	90.6	-	-	87.3	87.9
Buses	5	4	2	0	-	11	2	76	3	0	-	81	107	1	0	0	-	108	75	89	0	-	164	364
% Buses	3.5	4.9	5.9	0.0	-	4.2	1.1	15.2	13.6	-	-	11.7	9.2	0.9	0.0	0.0	-	8.4	21.4	7.6	-	-	10.8	9.7
Trucks	3	3	1	0	-	7	4	11	1	0	-	16	36	2	0	0	-	38	8	21	0	-	29	90
% Trucks	2.1	3.7	2.9	0.0	-	2.7	2.3	2.2	4.5	-	-	2.3	3.1	1.9	0.0	0.0	-	3.0	2.3	1.8	-	-	1.9	2.4
Bicycles on Crosswalk	-	-	-	-	1	-	-	-	-	-	1	-	-	-	-	-	1	-	-	-	-	1	-	-
% Bicycles on Crosswalk	-	-	-	-	0.3	-	-	-	-	-	0.6	-	-	-	-	-	0.6	-	-	-	-	0.6	-	-
Pedestrians	-	-	-	-	376	-	-	-	-	-	156	-	-	-	-	-	160	-	-	-	-	163	-	-
% Pedestrians	-	-	-	-	99.7	-	-	-	-	-	99.4	-	-	-	-	-	99.4	-	-	-	-	99.4	-	-

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Philadelphia, PA
62nd St & Woodland Ave/Cemetary Ave
Tuesday, March 12, 2019
Location: 39.928155, -75.230643

Count Name: Woodland Ave/62nd St@Cemetery Ave
Site Code:
Start Date: 03/12/2019

Turning Movement Peak Hour Data (8:00 AM)

Start Time	Cemetery Ave Eastbound						62nd St Westbound						Woodland Ave Northbound						Woodland Ave Southbound					
	Left	Thru	Right	Right on Red	Peds	App. Total	Left	Right	Right on Red	U-Turn	Peds	App. Total	Thru	Right	Right on Red	U-Turn	Peds	App. Total	Left	Thru	U-Turn	Peds	App. Total	Int. Total
8:00 AM	5	4	0	0	1	9	9	16	2	0	4	27	32	9	0	0	1	41	19	26	0	2	45	122
8:15 AM	6	4	0	1	3	11	5	16	2	0	9	23	32	2	0	0	3	34	15	49	0	6	64	132
8:30 AM	4	4	1	1	11	10	6	23	0	0	9	29	50	2	0	0	1	52	18	57	0	5	75	166
8:45 AM	3	6	0	0	13	9	6	17	3	0	8	26	46	3	0	0	1	49	10	43	0	2	53	137
Total	18	18	1	2	28	39	26	72	7	0	30	105	160	16	0	0	6	176	62	175	0	15	237	557
Approach %	46.2	46.2	2.6	5.1	-	-	24.8	68.6	6.7	0.0	-	-	90.9	9.1	0.0	0.0	-	-	26.2	73.8	0.0	-	-	-
Total %	3.2	3.2	0.2	0.4	-	7.0	4.7	12.9	1.3	0.0	-	18.9	28.7	2.9	0.0	0.0	-	31.6	11.1	31.4	0.0	-	42.5	-
PHF	0.750	0.750	0.250	0.500	-	0.886	0.722	0.783	0.583	0.000	-	0.905	0.800	0.444	0.000	0.000	-	0.846	0.816	0.768	0.000	-	0.790	0.839
Lights	17	18	1	2	-	38	23	61	5	0	-	89	143	15	0	0	-	158	49	156	0	-	205	490
% Lights	94.4	100.0	100.0	100.0	-	97.4	88.5	84.7	71.4	-	-	84.8	89.4	93.8	-	-	-	89.8	79.0	89.1	-	-	86.5	88.0
Buses	0	0	0	0	-	0	0	8	1	0	-	9	13	0	0	0	-	13	12	15	0	-	27	49
% Buses	0.0	0.0	0.0	0.0	-	0.0	0.0	11.1	14.3	-	-	8.6	8.1	0.0	-	-	-	7.4	19.4	8.6	-	-	11.4	8.8
Trucks	1	0	0	0	-	1	3	3	1	0	-	7	4	1	0	0	-	5	1	4	0	-	5	18
% Trucks	5.6	0.0	0.0	0.0	-	2.6	11.5	4.2	14.3	-	-	6.7	2.5	6.3	-	-	-	2.8	1.6	2.3	-	-	2.1	3.2
Bicycles on Crosswalk	-	-	-	-	1	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	3.6	-	-	-	-	-	0.0	-	-	-	-	-	0.0	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	-	27	-	-	-	-	-	30	-	-	-	-	-	6	-	-	-	-	15	-	-
% Pedestrians	-	-	-	-	96.4	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-	-	-	100.0	-	-

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Philadelphia, PA
62nd St & Woodland Ave/Cemetary Ave
Tuesday, March 12, 2019
Location: 39.928155, -75.230643

Count Name: Woodland Ave/62nd St@Cemetery Ave
Site Code:
Start Date: 03/12/2019

Turning Movement Peak Hour Data (5:00 PM)

Start Time	Cemetery Ave Eastbound						62nd St Westbound						Woodland Ave Northbound						Woodland Ave Southbound					
	Left	Thru	Right	Right on Red	Peds	App. Total	Left	Right	Right on Red	U-Turn	Peds	App. Total	Thru	Right	Right on Red	U-Turn	Peds	App. Total	Left	Thru	U-Turn	Peds	App. Total	Int. Total
5:00 PM	5	3	4	1	16	13	20	17	1	0	5	38	62	0	0	0	13	62	15	75	0	9	90	203
5:15 PM	8	2	3	0	5	13	16	23	0	0	2	39	69	4	0	0	6	73	21	78	0	12	99	224
5:30 PM	4	3	2	0	21	9	17	22	0	0	2	39	74	10	0	0	16	84	19	82	0	3	101	233
5:45 PM	4	0	0	0	12	4	13	30	0	0	3	43	68	6	0	0	9	74	12	68	0	3	80	201
Total	21	8	9	1	54	39	66	92	1	0	12	159	273	20	0	0	44	293	67	303	0	27	370	861
Approach %	53.8	20.5	23.1	2.6	-	-	41.5	57.9	0.6	0.0	-	-	93.2	6.8	0.0	0.0	-	-	18.1	81.9	0.0	-	-	-
Total %	2.4	0.9	1.0	0.1	-	4.5	7.7	10.7	0.1	0.0	-	18.5	31.7	2.3	0.0	0.0	-	34.0	7.8	35.2	0.0	-	43.0	-
PHF	0.656	0.667	0.563	0.250	-	0.750	0.825	0.767	0.250	0.000	-	0.924	0.922	0.500	0.000	0.000	-	0.872	0.798	0.924	0.000	-	0.916	0.924
Lights	21	7	9	1	-	38	65	84	1	0	-	150	259	20	0	0	-	279	58	286	0	-	344	811
% Lights	100.0	87.5	100.0	100.0	-	97.4	98.5	91.3	100.0	-	-	94.3	94.9	100.0	-	-	-	95.2	86.6	94.4	-	-	93.0	94.2
Buses	0	1	0	0	-	1	1	7	0	0	-	8	8	0	0	0	-	8	8	14	0	-	22	39
% Buses	0.0	12.5	0.0	0.0	-	2.6	1.5	7.6	0.0	-	-	5.0	2.9	0.0	-	-	-	2.7	11.9	4.6	-	-	5.9	4.5
Trucks	0	0	0	0	-	0	0	1	0	0	-	1	6	0	0	0	-	6	1	3	0	-	4	11
% Trucks	0.0	0.0	0.0	0.0	-	0.0	0.0	1.1	0.0	-	-	0.6	2.2	0.0	-	-	-	2.0	1.5	1.0	-	-	1.1	1.3
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	1	-	-
% Bicycles on Crosswalk	-	-	-	-	0.0	-	-	-	-	-	0.0	-	-	-	-	-	0.0	-	-	-	-	3.7	-	-
Pedestrians	-	-	-	-	54	-	-	-	-	-	12	-	-	-	-	-	44	-	-	-	-	26	-	-
% Pedestrians	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-	-	-	96.3	-	-

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Philadelphia, PA
Woodland Ave & 61st St
Tuesday, March 12, 2019
Location: 39.929184, -75.229226

Count Name: Woodland Ave/61st St
Site Code:
Start Date: 03/12/2019

Turning Movement Data

Start Time	61st St Eastbound							Shopping Center Dwy Westbound							Woodland Ave Northbound							Woodland Ave Southbound							Int. Total
	Left	Thru	Right	Right on Red	U-Turn	Peds	App. Total	Left	Thru	Right	Right on Red	U-Turn	Peds	App. Total	Left	Thru	Right	Right on Red	U-Turn	Peds	App. Total	Left	Thru	Right	Right on Red	U-Turn	Peds	App. Total	
6:00 AM	1	4	3	0	0	3	8	0	3	3	2	0	3	8	3	20	0	0	0	5	23	2	18	0	0	0	1	20	59
6:15 AM	1	2	2	1	0	5	6	1	1	1	1	0	1	4	0	28	0	0	0	6	28	2	14	0	0	0	0	16	54
6:30 AM	1	3	2	3	0	4	9	0	4	1	5	0	6	10	6	19	1	1	0	3	27	3	20	0	1	0	1	24	70
6:45 AM	2	2	4	4	0	4	12	4	5	6	4	0	2	19	6	37	0	1	0	15	44	5	30	1	0	0	1	36	111
Hourly Total	5	11	11	8	0	16	35	5	13	11	12	0	12	41	15	104	1	2	0	29	122	12	82	1	1	0	3	96	294
7:00 AM	1	2	1	2	0	5	6	3	3	3	5	0	9	14	7	48	0	0	0	11	55	9	32	2	0	0	2	43	118
7:15 AM	5	9	7	3	0	10	24	1	10	3	5	0	1	19	7	52	1	0	0	5	60	6	21	0	0	0	3	27	130
7:30 AM	4	6	7	1	0	8	18	1	10	11	7	0	1	29	7	53	1	0	0	20	61	6	38	0	0	0	1	44	152
7:45 AM	0	14	3	3	0	8	20	1	10	8	6	0	6	25	9	48	0	0	0	8	57	9	38	2	0	0	1	49	151
Hourly Total	10	31	18	9	0	31	68	6	33	25	23	0	17	87	30	201	2	0	0	44	233	30	129	4	0	0	7	163	551
8:00 AM	1	10	6	12	0	3	29	2	6	7	3	0	8	18	10	53	1	2	0	6	66	1	49	1	0	0	4	51	164
8:15 AM	2	8	6	3	0	8	19	0	11	7	6	0	5	24	4	47	1	1	0	8	53	11	52	2	1	0	2	66	162
8:30 AM	1	13	7	3	0	8	24	8	3	6	9	0	5	26	6	62	1	0	0	9	69	12	62	0	0	0	5	74	193
8:45 AM	1	7	7	7	0	13	22	1	10	8	5	0	7	24	5	60	1	0	0	4	66	10	51	3	1	0	3	65	177
Hourly Total	5	38	26	25	0	32	94	11	30	28	23	0	25	92	25	222	4	3	0	27	254	34	214	6	2	0	14	256	696
9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Hourly Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:00 PM	4	14	12	3	0	17	33	5	18	12	6	0	7	41	12	85	3	0	0	17	100	13	60	3	0	0	5	76	250
3:15 PM	2	19	12	1	0	15	34	7	23	10	4	0	9	44	11	79	1	0	1	16	92	16	62	2	0	0	5	80	250
3:30 PM	5	14	15	4	0	18	38	2	19	22	5	0	15	48	12	66	3	1	0	18	82	21	85	1	2	0	1	109	277
3:45 PM	6	19	9	6	0	19	40	6	17	15	2	0	14	40	16	71	4	0	0	24	91	8	80	5	0	0	5	93	264
Hourly Total	17	66	48	14	0	69	145	20	77	59	17	0	45	173	51	301	11	1	1	75	365	58	287	11	2	0	16	358	1041
4:00 PM	7	15	10	0	0	21	32	1	14	19	6	0	13	40	6	82	3	3	0	21	94	19	69	8	1	0	4	97	263
4:15 PM	0	19	15	5	0	17	39	4	25	10	2	0	14	41	16	73	4	2	0	16	95	20	71	4	1	0	5	96	271
4:30 PM	3	17	12	1	0	16	33	6	8	15	2	0	13	31	11	89	1	0	0	16	101	15	65	3	0	0	0	83	248
4:45 PM	4	15	12	1	0	10	32	6	15	15	2	0	14	38	15	74	4	0	0	13	93	18	78	4	2	0	9	102	265
Hourly Total	14	66	49	7	0	64	136	17	62	59	12	0	54	150	48	318	12	5	0	66	383	72	283	19	4	0	18	378	1047
5:00 PM	9	20	8	4	0	12	41	1	16	17	4	0	10	38	7	82	4	0	0	17	93	16	74	1	1	0	4	92	264
5:15 PM	1	19	15	3	0	7	38	6	20	12	5	0	8	43	7	70	3	0	0	6	80	30	86	5	3	0	11	124	285
5:30 PM	4	25	14	4	0	14	47	4	15	17	4	1	15	41	9	80	6	0	0	8	95	17	79	5	0	0	7	101	284
5:45 PM	4	20	8	3	0	11	35	5	8	15	5	1	8	34	21	78	6	0	0	4	105	7	76	3	0	0	6	86	260
Hourly Total	18	84	45	14	0	44	161	16	59	61	18	2	41	156	44	310	19	0	0	35	373	70	315	14	4	0	28	403	1093
6:00 PM	0	0	0	1	0	0	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Grand Total	69	296	197	78	0	256	640	75	274	243	105	2	195	699	213	1456	49	11	1	276	1730	276	1310	55	13	0	86	1654	4723
Approach %	10.8	46.3	30.8	12.2	0.0	-	-	10.7	39.2	34.8	15.0	0.3	-	-	12.3	84.2	2.8	0.6	0.1	-	-	16.7	79.2	3.3	0.8	0.0	-	-	-
Total %	1.5	6.3	4.2	1.7	0.0	-	13.6	1.6	5.8	5.1	2.2	0.0	-	14.8	4.5	30.8	1.0	0.2	0.0	-	36.6	5.8	27.7	1.2	0.3	0.0	-	35.0	-
Lights	68	291	185	74	0	-	618	71	269	237	105	2	-	684	196	1233	49	11	1	-	1490	268	1134	52	12	0	-	1466	4258
% Lights	98.6	98.3	93.9	94.9	-	-	96.6	94.7	98.2	97.5	100.0	100.0	-	97.9	92.0	84.7	100.0	100.0	100.0	-	86.1	97.1	86.6	94.5	92.3	-	-	88.6	90.2
Buses	0	3	9	2	0	-	14	2	2	1	0	0	-	5	13	179	0	0	0	-	192	2	151	0	1	0	-	154	365
% Buses	0.0	1.0	4.6	2.6	-	-	2.2	2.7	0.7	0.4	0.0	0.0	-	0.7	6.1	12.3	0.0	0.0	0.0	-	11.1	0.7	11.5	0.0	7.7	-	-	9.3	7.7
Trucks	1	2	3	2	0	-	8	2	3	5	0	0	-	10	4	44	0	0	0	-	48	6	25	3	0	0	-	34	100
% Trucks	1.4	0.7	1.5	2.6	-	-	1.3	2.7	1.1	2.1	0.0	0.0	-	1.4	1.9	3.0	0.0	0.0	0.0	-	2.8	2.2	1.9	5.5	0.0	-	-	2.1	2.1
Bicycles on Crosswalk	-	-	-	-	-	4	-	-	-	-	-	-	10	-	-	-	-	-	-	0	-	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	-	1.6	-	-	-	-	-	-	5.1	-	-	-	-	-	-	0.0	-	-	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	-	-	252	-	-	-	-	-	-	185	-	-	-	-	-	-	276	-	-	-	-	-	-	86	-	-
% Pedestrians	-	-	-	-	-	98.4	-	-	-	-	-	-	94.9	-	-	-	-	-	-	100.0	-	-	-	-	-	-	100.0	-	-

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Philadelphia, PA
Woodland Ave & 61st St
Tuesday, March 12, 2019
Location: 39.929184, -75.229226

Count Name: Woodland Ave/61st St
Site Code:
Start Date: 03/12/2019

Turning Movement Peak Hour Data (8:00 AM)

Start Time	61st St Eastbound							Shopping Center Dwy Westbound							Woodland Ave Northbound							Woodland Ave Southbound							Int. Total
	Left	Thru	Right	Right on Red	U-Turn	Peds	App. Total	Left	Thru	Right	Right on Red	U-Turn	Peds	App. Total	Left	Thru	Right	Right on Red	U-Turn	Peds	App. Total	Left	Thru	Right	Right on Red	U-Turn	Peds	App. Total	
8:00 AM	1	10	6	12	0	3	29	2	6	7	3	0	8	18	10	53	1	2	0	6	66	1	49	1	0	0	4	51	164
8:15 AM	2	8	6	3	0	8	19	0	11	7	6	0	5	24	4	47	1	1	0	8	53	11	52	2	1	0	2	66	162
8:30 AM	1	13	7	3	0	8	24	8	3	6	9	0	5	26	6	62	1	0	0	9	69	12	62	0	0	0	5	74	193
8:45 AM	1	7	7	7	0	13	22	1	10	8	5	0	7	24	5	60	1	0	0	4	66	10	51	3	1	0	3	65	177
Total	5	38	26	25	0	32	94	11	30	28	23	0	25	92	25	222	4	3	0	27	254	34	214	6	2	0	14	256	696
Approach %	5.3	40.4	27.7	26.6	0.0	-	-	12.0	32.6	30.4	25.0	0.0	-	-	9.8	87.4	1.6	1.2	0.0	-	-	13.3	83.6	2.3	0.8	0.0	-	-	-
Total %	0.7	5.5	3.7	3.6	0.0	-	13.5	1.6	4.3	4.0	3.3	0.0	-	13.2	3.6	31.9	0.6	0.4	0.0	-	36.5	4.9	30.7	0.9	0.3	0.0	-	36.8	-
PHF	0.625	0.731	0.929	0.521	0.000	-	0.810	0.344	0.682	0.875	0.639	0.000	-	0.885	0.625	0.895	1.000	0.375	0.000	-	0.920	0.708	0.863	0.500	0.500	0.000	-	0.865	0.902
Lights	5	38	26	22	0	-	91	9	29	25	23	0	-	86	25	194	4	3	0	-	226	32	183	5	2	0	-	222	625
% Lights	100.0	100.0	100.0	88.0	-	-	96.8	81.8	96.7	89.3	100.0	-	-	93.5	100.0	87.4	100.0	100.0	-	-	89.0	94.1	85.5	83.3	100.0	-	-	86.7	89.8
Buses	0	0	0	1	0	-	1	0	0	1	0	0	-	1	0	23	0	0	0	-	23	0	28	0	0	0	-	28	53
% Buses	0.0	0.0	0.0	4.0	-	-	1.1	0.0	0.0	3.6	0.0	-	-	1.1	0.0	10.4	0.0	0.0	-	-	9.1	0.0	13.1	0.0	0.0	-	-	10.9	7.6
Trucks	0	0	0	2	0	-	2	2	1	2	0	0	-	5	0	5	0	0	0	-	5	2	3	1	0	0	-	6	18
% Trucks	0.0	0.0	0.0	8.0	-	-	2.1	18.2	3.3	7.1	0.0	-	-	5.4	0.0	2.3	0.0	0.0	-	-	2.0	5.9	1.4	16.7	0.0	-	-	2.3	2.6
Bicycles on Crosswalk	-	-	-	-	-	1	-	-	-	-	-	-	1	-	-	-	-	-	-	0	-	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	-	3.1	-	-	-	-	-	-	4.0	-	-	-	-	-	-	0.0	-	-	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	-	-	31	-	-	-	-	-	-	24	-	-	-	-	-	-	27	-	-	-	-	-	-	14	-	-
% Pedestrians	-	-	-	-	-	96.9	-	-	-	-	-	-	96.0	-	-	-	-	-	-	100.0	-	-	-	-	-	-	100.0	-	-

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Philadelphia, PA
Woodland Ave & 61st St
Tuesday, March 12, 2019
Location: 39.929184, -75.229226

Count Name: Woodland Ave/61st St
Site Code:
Start Date: 03/12/2019

Turning Movement Peak Hour Data (4:45 PM)

Start Time	61st St Eastbound							Shopping Center Dwy Westbound							Woodland Ave Northbound							Woodland Ave Southbound							Int. Total
	Left	Thru	Right	Right on Red	U-Turn	Peds	App. Total	Left	Thru	Right	Right on Red	U-Turn	Peds	App. Total	Left	Thru	Right	Right on Red	U-Turn	Peds	App. Total	Left	Thru	Right	Right on Red	U-Turn	Peds	App. Total	
4:45 PM	4	15	12	1	0	10	32	6	15	15	2	0	14	38	15	74	4	0	0	13	93	18	78	4	2	0	9	102	265
5:00 PM	9	20	8	4	0	12	41	1	16	17	4	0	10	38	7	82	4	0	0	17	93	16	74	1	1	0	4	92	264
5:15 PM	1	19	15	3	0	7	38	6	20	12	5	0	8	43	7	70	3	0	0	6	80	30	86	5	3	0	11	124	285
5:30 PM	4	25	14	4	0	14	47	4	15	17	4	1	15	41	9	80	6	0	0	8	95	17	79	5	0	0	7	101	284
Total	18	79	49	12	0	43	158	17	66	61	15	1	47	160	38	306	17	0	0	44	361	81	317	15	6	0	31	419	1098
Approach %	11.4	50.0	31.0	7.6	0.0	-	-	10.6	41.3	38.1	9.4	0.6	-	-	10.5	84.8	4.7	0.0	0.0	-	-	19.3	75.7	3.6	1.4	0.0	-	-	-
Total %	1.6	7.2	4.5	1.1	0.0	-	14.4	1.5	6.0	5.6	1.4	0.1	-	14.6	3.5	27.9	1.5	0.0	0.0	-	32.9	7.4	28.9	1.4	0.5	0.0	-	38.2	-
PHF	0.500	0.790	0.817	0.750	0.000	-	0.840	0.708	0.825	0.897	0.750	0.250	-	0.930	0.633	0.933	0.708	0.000	0.000	-	0.950	0.675	0.922	0.750	0.500	0.000	-	0.845	0.963
Lights	18	76	49	12	0	-	155	17	65	61	15	1	-	159	37	282	17	0	0	-	336	80	286	15	6	0	-	387	1037
% Lights	100.0	96.2	100.0	100.0	-	-	98.1	100.0	98.5	100.0	100.0	100.0	-	99.4	97.4	92.2	100.0	-	-	-	93.1	98.8	90.2	100.0	100.0	-	-	92.4	94.4
Buses	0	2	0	0	0	-	2	0	1	0	0	0	-	1	0	20	0	0	0	-	20	1	25	0	0	0	-	26	49
% Buses	0.0	2.5	0.0	0.0	-	-	1.3	0.0	1.5	0.0	0.0	0.0	-	0.6	0.0	6.5	0.0	-	-	-	5.5	1.2	7.9	0.0	0.0	-	-	6.2	4.5
Trucks	0	1	0	0	0	-	1	0	0	0	0	0	-	0	1	4	0	0	0	-	5	0	6	0	0	0	-	6	12
% Trucks	0.0	1.3	0.0	0.0	-	-	0.6	0.0	0.0	0.0	0.0	0.0	-	0.0	2.6	1.3	0.0	-	-	-	1.4	0.0	1.9	0.0	0.0	-	-	1.4	1.1
Bicycles on Crosswalk	-	-	-	-	-	2	-	-	-	-	-	-	1	-	-	-	-	-	-	0	-	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	-	4.7	-	-	-	-	-	-	2.1	-	-	-	-	-	-	0.0	-	-	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	-	-	41	-	-	-	-	-	-	46	-	-	-	-	-	-	44	-	-	-	-	-	-	31	-	-
% Pedestrians	-	-	-	-	-	95.3	-	-	-	-	-	-	97.9	-	-	-	-	-	-	100.0	-	-	-	-	-	-	100.0	-	-

TRI-STATE TRAFFIC DATA

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Philadelphia, PA
Woodland Ave & 65th St
Tuesday, March 12, 2019
Location: 39.925591, -75.234311

Count Name: Woodland Ave/65th St
Site Code:
Start Date: 03/12/2019
Page No: 1

Turning Movement Data

Start Time	65th St Eastbound							65th St Westbound							Woodland Ave Northbound							Woodland Ave Southbound							Int. Total
	Left	Thru	Right	Right on Red	U-Turn	Peds	App. Total	Left	Thru	Right	Right on Red	U-Turn	Peds	App. Total	Left	Thru	Right	Right on Red	U-Turn	Peds	App. Total	Left	Thru	Right	Right on Red	U-Turn	Peds	App. Total	
6:00 AM	3	9	0	0	0	1	12	0	6	2	1	0	7	9	0	10	2	1	0	3	13	1	13	0	1	0	1	15	49
6:15 AM	3	16	6	0	0	8	25	3	15	0	2	0	10	20	3	10	2	0	0	12	15	0	13	0	0	0	4	13	73
6:30 AM	2	12	2	0	0	3	16	1	12	3	0	0	11	16	2	15	6	0	0	2	23	3	19	2	0	1	7	25	80
6:45 AM	2	14	2	0	0	9	18	1	17	3	1	0	12	22	1	21	1	0	0	21	23	2	17	2	0	0	7	21	84
Hourly Total	10	51	10	0	0	21	71	5	50	8	4	0	40	67	6	56	11	1	0	38	74	6	62	4	1	1	19	74	286
7:00 AM	2	25	2	2	0	10	31	2	19	5	0	0	9	26	2	27	2	0	0	9	31	5	18	0	0	0	3	23	111
7:15 AM	3	34	4	0	0	6	41	4	12	6	0	0	11	22	4	27	2	1	0	16	34	3	22	1	0	0	2	26	123
7:30 AM	2	26	4	0	0	9	32	5	24	9	1	0	11	39	3	27	4	0	0	3	34	3	24	1	0	0	12	28	133
7:45 AM	2	36	6	0	0	6	44	3	25	5	1	0	14	34	4	34	3	1	0	16	42	4	17	3	1	0	9	25	145
Hourly Total	9	121	16	2	0	31	148	14	80	25	2	0	45	121	13	115	11	2	0	44	141	15	81	5	1	0	26	102	512
8:00 AM	4	46	1	1	0	13	52	2	20	4	1	0	21	27	7	32	4	1	0	19	44	9	29	2	1	0	9	41	164
8:15 AM	1	43	4	1	0	9	49	3	28	4	0	0	22	35	4	26	4	0	0	17	34	5	28	5	0	0	8	38	156
8:30 AM	1	40	4	0	0	11	45	6	27	2	0	0	13	35	5	35	4	0	0	21	44	5	40	4	2	0	5	51	175
8:45 AM	12	33	3	1	0	13	49	1	29	7	1	0	5	38	4	25	5	2	0	8	36	4	34	2	1	0	7	41	164
Hourly Total	18	162	12	3	0	46	195	12	104	17	2	0	61	135	20	118	17	3	0	65	158	23	131	13	4	0	29	171	659
9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Hourly Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:00 PM	10	39	9	1	0	24	59	8	29	7	0	0	37	44	6	50	10	0	0	15	66	13	41	7	0	0	18	61	230
3:15 PM	10	43	6	0	0	22	59	8	37	7	1	0	34	53	4	51	4	2	0	20	61	9	47	5	2	0	12	63	236
3:30 PM	5	33	3	0	0	31	41	6	44	8	0	0	43	58	6	44	8	0	0	21	58	5	54	9	0	0	28	68	225
3:45 PM	2	34	6	0	0	46	42	7	37	9	0	0	30	53	8	58	10	0	0	22	76	8	43	6	1	0	24	58	229
Hourly Total	27	149	24	1	0	123	201	29	147	31	1	0	144	208	24	203	32	2	0	78	261	35	185	27	3	0	82	250	920
4:00 PM	6	41	8	0	0	38	55	2	34	6	2	0	40	44	5	54	4	1	0	18	64	9	43	12	1	0	28	65	228
4:15 PM	10	51	4	0	0	32	65	4	27	12	0	0	41	43	5	56	7	0	0	28	68	3	62	6	1	0	27	72	248
4:30 PM	16	30	7	1	0	30	54	9	30	7	1	0	28	47	2	44	10	0	0	14	56	6	46	11	1	0	13	64	221
4:45 PM	5	50	5	0	0	48	60	10	31	8	0	0	22	49	4	38	8	1	0	25	51	9	61	12	0	0	15	82	242
Hourly Total	37	172	24	1	0	148	234	25	122	33	3	0	131	183	16	192	29	2	0	85	239	27	212	41	3	0	83	283	939
5:00 PM	5	49	9	1	0	20	64	6	40	5	0	0	29	51	9	53	12	0	0	21	74	13	58	14	2	0	11	87	276
5:15 PM	3	36	15	0	0	29	54	11	34	9	1	0	21	55	11	51	10	0	0	18	72	6	59	10	1	0	20	76	257
5:30 PM	6	33	3	0	0	27	42	12	46	11	1	0	30	70	4	62	4	0	0	19	70	17	51	15	4	0	18	87	269
5:45 PM	7	28	5	0	0	30	40	7	27	8	0	0	34	42	3	44	7	0	0	9	54	8	51	7	1	1	17	68	204
Hourly Total	21	146	32	1	0	106	200	36	147	33	2	0	114	218	27	210	33	0	0	67	270	44	219	46	8	1	66	318	1006
6:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
Grand Total	122	801	118	8	0	475	1049	121	650	147	14	0	535	932	106	894	133	10	0	377	1143	150	890	136	20	2	306	1198	4322
Approach %	11.6	76.4	11.2	0.8	0.0	-	-	13.0	69.7	15.8	1.5	0.0	-	-	9.3	78.2	11.6	0.9	0.0	-	-	12.5	74.3	11.4	1.7	0.2	-	-	-
Total %	2.8	18.5	2.7	0.2	0.0	-	24.3	2.8	15.0	3.4	0.3	0.0	-	21.6	2.5	20.7	3.1	0.2	0.0	-	26.4	3.5	20.6	3.1	0.5	0.0	-	27.7	-
Lights	117	730	116	8	0	-	971	115	595	138	10	0	-	858	101	778	130	10	0	-	1019	143	801	133	20	2	-	1099	3947
% Lights	95.9	91.1	98.3	100.0	-	-	92.6	95.0	91.5	93.9	71.4	-	-	92.1	95.3	87.0	97.7	100.0	-	-	89.2	95.3	90.0	97.8	100.0	100.0	-	91.7	91.3
Buses	3	54	0	0	0	-	57	2	48	6	2	0	-	58	5	93	3	0	0	-	101	6	74	1	0	0	-	81	297
% Buses	2.5	6.7	0.0	0.0	-	-	5.4	1.7	7.4	4.1	14.3	-	-	6.2	4.7	10.4	2.3	0.0	-	-	8.8	4.0	8.3	0.7	0.0	0.0	-	6.8	6.9
Trucks	2	17	2	0	0	-	21	4	7	3	2	0	-	16	0	23	0	0	0	-	23	1	15	2	0	0	-	18	78
% Trucks	1.6	2.1	1.7	0.0	-	-	2.0	3.3	1.1	2.0	14.3	-	-	1.7	0.0	2.6	0.0	0.0	-	-	2.0	0.7	1.7	1.5	0.0	0.0	-	1.5	1.8
Bicycles on Crosswalk	-	-	-	-	-	3	-	-	-	-	-	-	0	-	-	-	-	-	-	1	-	-	-	-	-	-	1	-	-
% Bicycles on Crosswalk	-	-	-	-	-	0.6	-	-	-	-	-	-	0.0	-	-	-	-	-	-	0.3	-	-	-	-	-	-	0.3	-	-
Pedestrians	-	-	-	-	-	472	-	-	-	-	-	-	535	-	-	-	-	-	-	376	-	-	-	-	-	-	305	-	-
% Pedestrians	-	-	-	-	-	99.4	-	-	-	-	-	-	100.0	-	-	-	-	-	-	99.7	-	-	-	-	-	-	99.7	-	-

AUTOMATIC TRAFFIC RECORDER COUNT DATA

Tri-State Traffic Data, Inc.

610-466-1469
TSTData.com

Road: Cemetery Ave
Location: 450 ft E of Kingsessing Ave
Counter: 35300

Site Code: 1
Station ID:
A to B EB

Latitude: 39' 92860.0000 North

Start	Monday, March 11, 2019		Tuesday, March 12, 2019		Wednesday, March 13, 2019		Thursday, March 14, 2019		Friday, March 15, 2019		Saturday, March 16, 2019		Sunday, March 17, 2019		Week Average	
Time	EB	WB	EB	WB	EB	WB	EB	WB	EB	WB	EB	WB	EB	WB	EB	WB
12:00 AM	*	*	16	47	25	36	33	51	20	59	40	75	35	66	28	56
01:00	*	*	9	29	15	28	14	35	24	25	22	42	28	55	19	36
02:00	*	*	9	23	16	15	15	18	21	12	19	58	30	48	18	29
03:00	*	*	9	14	7	8	6	10	9	15	21	22	9	31	10	17
04:00	*	*	16	13	11	17	14	18	9	14	18	34	13	25	14	20
05:00	*	*	25	30	27	34	37	39	22	32	18	28	15	19	24	30
06:00	*	*	47	94	57	96	60	89	47	82	32	47	22	29	44	73
07:00	*	*	101	148	92	146	101	174	103	146	46	66	38	40	80	120
08:00	*	*	**145**	171	124	158	**133**	175	120	**182**	64	81	33	83	103	142
09:00	*	*	106	**178**	125	160	129	**179**	127	177	95	126	84	102	111	154
10:00	*	*	99	158	**135**	**168**	129	141	125	167	129	151	99	130	119	152
11:00	*	*	114	169	121	166	125	172	**131**	180	**163**	**217**	**122**	**137**	**129**	**174**
12:00 PM	*	*	115	195	127	174	105	196	142	220	134	215	95	155	120	192
01:00	132	218	124	182	124	173	144	179	155	227	150	229	89	187	131	199
02:00	142	212	145	202	159	214	126	223	**209**	268	**160**	240	**121**	**208**	152	224
03:00	171	253	**182**	218	157	**258**	175	231	152	285	122	**246**	117	169	154	237
04:00	**183**	257	173	224	170	232	187	271	176	274	152	238	96	194	**162**	241
05:00	170	**290**	176	**275**	**172**	258	**193**	**305**	169	**292**	131	199	100	179	159	**257**
06:00	131	216	153	204	151	253	131	253	169	236	114	198	84	164	133	218
07:00	104	189	108	167	96	159	122	182	140	206	123	183	85	145	111	176
08:00	83	132	88	127	79	144	94	146	104	145	88	176	69	141	86	144
09:00	63	101	69	124	53	107	63	148	78	158	64	136	65	116	65	127
10:00	46	92	65	100	54	109	71	104	59	119	69	119	52	83	59	104
11:00	42	65	42	70	38	82	34	80	64	112	48	110	41	61	44	83
Total	1267	2025	2136	3162	2135	3195	2241	3419	2375	3633	2022	3236	1542	2567	2075	3205
Day	3292		5298		5330		5660		6008		5258		4109		5280	
AM Peak	-	-	08:00	09:00	10:00	10:00	08:00	09:00	11:00	08:00	11:00	11:00	11:00	11:00	11:00	11:00
Vol.	-	-	145	178	135	168	133	179	131	182	163	217	122	137	129	174
PM Peak	16:00	17:00	15:00	17:00	17:00	15:00	17:00	17:00	14:00	17:00	14:00	15:00	14:00	14:00	16:00	17:00
Vol.	183	290	182	275	172	258	193	305	209	292	160	246	121	208	162	257

TRAFFIC GROWTH RATE DOCUMENTATION

Growth Factors for August 2018 to July 2019				
County	Urban Interstate	Rural Interstate	Urban Non-Interstate	Rural Non-Interstate
ADAMS	*	*	0.98	0.75
ALLEGHENY	0.86	2.18	0.00	0.38
ARMSTRONG	0.85	*	0.00	0.38
BEAVER	0.80	1.96	0.00	0.35
BEDFORD	*	2.13	0.00	0.44
BERKS	1.16	2.43	0.26	0.58
BLAIR	0.81	1.94	0.00	0.37
BRADFORD	1.14	*	0.07	0.51
BUCKS	1.36	2.33	0.60	0.61
BUTLER	1.79	2.75	0.71	0.76
CAMBRIA	0.40	*	0.00	0.19
CAMERON	*	*	*	0.16
CARBON	1.35	2.60	0.38	0.64
CENTRE	1.53	2.55	0.70	0.69
CHESTER	1.74	3.02	0.58	0.82
CLARION	0.96	2.02	0.00	0.41
CLEARFIELD	0.99	2.09	0.01	0.44
CLINTON	0.95	2.26	0.00	0.47
COLUMBIA	1.19	2.29	0.35	0.56
CRAWFORD	0.95	2.00	0.09	0.44
CUMBERLAND	1.58	2.56	0.80	0.70
DAUPHIN	1.37	*	0.47	0.64
DELAWARE	0.99	*	0.00	*
ELK	*	*	0.00	0.31
ERIE	1.00	2.16	0.00	0.45
FAYETTE	0.84	*	0.00	0.40
FOREST	*	*	*	0.67
FRANKLIN	1.36	2.57	0.53	0.66
FULTON	*	2.13	*	0.52
GREENE	1.23	2.63	0.00	0.57
HUNTINGDON	*	1.96	0.00	0.39
INDIANA	1.22	*	0.17	0.53
JEFFERSON	*	2.13	0.00	0.44
JUNIATA	*	*	*	0.57
LACKAWANNA	0.85	2.30	0.00	0.44
LANCASTER	1.79	2.67	1.14	0.80
LAWRENCE	0.80	2.09	0.00	0.37
LEBANON	*	2.48	0.45	0.62
LEHIGH	1.58	2.88	0.48	0.74
LUZERNE	0.77	2.17	0.00	0.40
LYCOMING	1.02	2.18	0.04	0.47
MCKEAN	0.66	*	0.00	0.34
MERCER	0.69	1.99	0.00	0.35
MIFFLIN	0.80	*	0.00	0.39
MONROE	1.44	2.49	0.73	0.68
MONTGOMERY	1.21	*	0.34	0.58
MONTOUR	1.53	2.64	0.34	0.67
NORTHAMPTON	1.33	2.56	0.47	0.65
NORTHUMBERLAND	0.83	2.09	0.00	0.41
PERRY	*	*	[illegible]	0.65
PHILADELPHIA	0.75	*	0.00	*
PIKE	2.20	2.84	[illegible]	0.98
POTTER	*	*	*	0.48
SCHUYLKILL	0.64	1.92	0.00	0.35
SNYDER	1.21	*	0.40	0.57
SOMERSET	0.65	1.76	0.00	0.34
SULLIVAN	*	*	*	0.43
SUSQUEHANNA	1.16	2.26	0.33	0.54
TIOGA	*	*	*	0.50
UNION	1.57	2.46	0.87	0.70
VENANGO	*	1.71	0.00	0.29
WARREN	*	*	0.00	0.38
WASHINGTON	1.32	2.63	0.15	0.60
WAYNE	*	2.25	0.21	0.53
WESTMORELAND	0.96	2.09	0.00	0.42
WYOMING	*	*	0.00	0.44
YORK	1.39	2.56	0.60	0.67

* = Functional Class Doesn't Exist in County

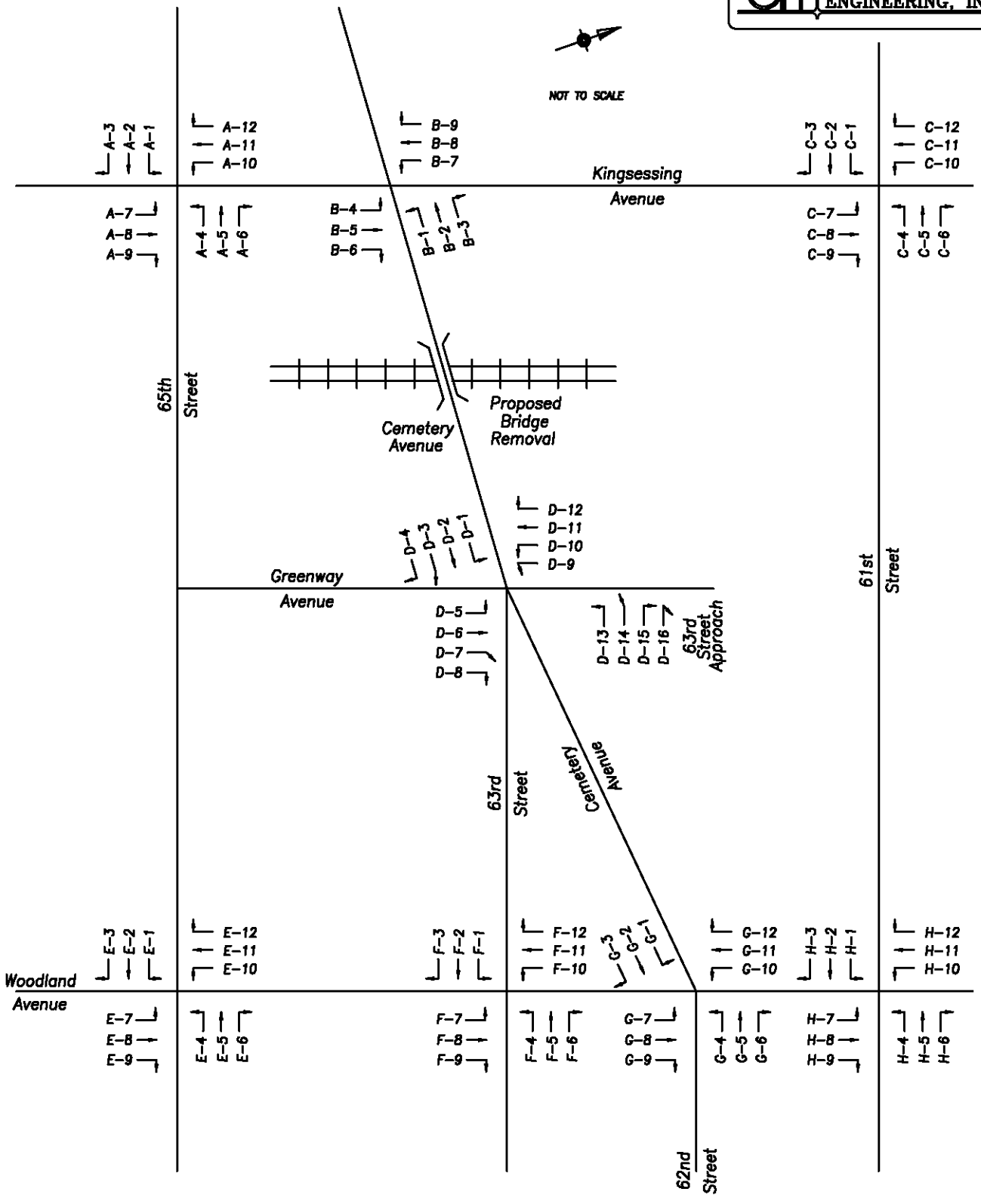
Questions? Please contact Andrew O'Neill at the Bureau of Planning and Research, 717-346-3250 or andoneill@pa.gov

NOTE: The projected growth factors are derived using historical VMT (Vehicle Miles Traveled) data (1994 to 2017), as well as Woods and Poole demographic and economic data. The factors should be compounded when calculating future values. The factors should not be used to project traffic beyond a 20-year period. Please be aware that these factors are estimates, and unforeseen events (opening of shopping centers, fast food franchises, gas stations, etc) could cause growth to change over time.

pennsylvania
DEPARTMENT OF TRANSPORTATION

TRAFFIC PROJECTIONS

GROVE MILLER ENGINEERING, INC.



TRANSPORTATION IMPACT STUDY

CEMETERY AVENUE CROSSING BRIDGE REMOVAL

City of Philadelphia, Philadelphia County

INTERSECTION MOVEMENT KEY

PROJ: 772.04 TRANSPORTATION IMPACT STUDY
DATE: 05.01.19 GROVE MILLER ENGINEERING INC.
BY: GEC CSX
OK: CEMETERY AVENUE CROSSING
CITY OF PHILADELPHIA, PHILADELPHIA COUNTY

EVENT	YEAR	% / YR	GROWTH FACTOR
COUNT	2019	0.00%	1.0000
DESIGN	2030	0.00%	1.0000

AM PEAK HOUR

MVMT. NO.	2019 COUNT VOLUME	2030 PROJ VOLUMES	MVMT. NO.	REDISTRIBUTION OF TRAFFIC DUE TO CROSSING CLOSURE: GREENWAY AVE NB LEFT TURN TRIPS	63RD ST NB THRU MOVEMENT TRIPS	GREENWAY AVE SB RIGHT TURN TRIPS	KINGSESSING AVE NB RIGHT TURN TRIPS	KINGSESSING AVE SB LEFT TURN TRIPS	PROJECTED VOLUME WITH CROSSING 2030	MVMT. NO.	PROJECTED VOLUME WITHOUT CROSSING 2030
A-1	117	117	A-1				-36		117	A-1	81
A-2	151	151	A-2				36		151	A-2	187
A-3	1	1	A-3						1	A-3	1
A-4	19	19	A-4						19	A-4	19
A-5	94	94	A-5	29	52	1			94	A-5	176
A-6	40	40	A-6	36	65	2			40	A-6	143
A-7	6	6	A-7						6	A-7	6
A-8	26	26	A-8				-8		26	A-8	18
A-9	33	33	A-9				8		33	A-9	41
A-10	65	65	A-10					37	65	A-10	102
A-11	27	27	A-11						27	A-11	27
A-12	33	33	A-12						33	A-12	33
B-1	4	4	B-1	-1	-3				4	B-1	0
B-2	79	79	B-2	-28	-49	-1			79	B-2	1
B-3	103	103	B-3	-36	-65	-2			103	B-3	0
B-4	2	2	B-4						2	B-4	2
B-5	140	140	B-5	36	65	2			140	B-5	243
B-6	44	44	B-6				-44		44	B-6	0
B-7	69	69	B-7					-69	69	B-7	0
B-8	121	121	B-8					37	121	B-8	158
B-9	69	69	B-9						69	B-9	69
C-1	3	3	C-1						3	C-1	3
C-2	43	43	C-2						43	C-2	43
C-3	59	59	C-3						59	C-3	59
C-4	20	20	C-4						20	C-4	20
C-5	35	35	C-5						35	C-5	35
C-6	19	19	C-6						19	C-6	19
C-7	41	41	C-7						41	C-7	41
C-8	210	210	C-8						210	C-8	210
C-9	14	14	C-9						14	C-9	14
C-10	19	19	C-10					32	19	C-10	51
C-11	166	166	C-11					-32	166	C-11	134
C-12	4	4	C-12						4	C-12	4
D-1	2	2	D-1					-2	2	D-1	0
D-2	18	18	D-2				-10	-7	18	D-2	1
D-3	61	61	D-3				-34	-25	61	D-3	2
D-4	36	36	D-4					-35	36	D-4	1
D-5	65	65	D-5	-65					65	D-5	0
D-6	1	1	D-6					2	1	D-6	3
D-7	32	32	D-7						32	D-7	32
D-8	22	22	D-8						22	D-8	22
D-9	0	0	D-9						0	D-9	0
D-10	0	0	D-10						0	D-10	0
D-11	1	1	D-11			3			1	D-11	4
D-12	3	3	D-12			-3			3	D-12	0
D-13	20	20	D-13						20	D-13	20
D-14	117	117	D-14		-117				117	D-14	0
D-15	0	0	D-15						0	D-15	0
D-16	4	4	D-16						4	D-16	4
E-1	18	18	E-1				44		18	E-1	62
E-2	162	162	E-2						162	E-2	162
E-3	15	15	E-3						15	E-3	15
E-4	12	12	E-4						12	E-4	12
E-5	104	104	E-5						104	E-5	104
E-6	19	19	E-6						19	E-6	19
E-7	20	20	E-7						20	E-7	20
E-8	118	118	E-8						118	E-8	118
E-9	20	20	E-9						20	E-9	20
E-10	23	23	E-10						23	E-10	23
E-11	131	131	E-11					7	131	E-11	138
E-12	17	17	E-12						17	E-12	17
F-1	7	7	F-1				-3		7	F-1	4
F-2	63	63	F-2				-31	-20	63	F-2	12
F-3	15	15	F-3					-5	15	F-3	10
F-4	28	28	F-4						28	F-4	28
F-5	110	110	F-5						110	F-5	110
F-6	41	41	F-6						41	F-6	41
F-7	9	9	F-7						9	F-7	9
F-8	135	135	F-8				13		135	F-8	148
F-9	19	19	F-9				31		19	F-9	50
F-10	29	29	F-10					20	29	F-10	49
F-11	134	134	F-11					7	134	F-11	141
F-12	33	33	F-12						33	F-12	33
G-1	18	18	G-1				-8		18	G-1	10
G-2	18	18	G-2				-2	-5	18	G-2	11
G-3	3	3	G-3					-2	3	G-3	1
G-4	26	26	G-4						26	G-4	26
G-5	0	0	G-5						0	G-5	0
G-6	79	79	G-6						79	G-6	79
G-7	0	0	G-7						0	G-7	0
G-8	160	160	G-8				8		160	G-8	168
G-9	16	16	G-9				2		16	G-9	18
G-10	61	61	G-10					5	61	G-10	66
G-11	175	175	G-11					27	175	G-11	202
G-12	0	0	G-12						0	G-12	0
H-1	5	5	H-1						5	H-1	5
H-2	38	38	H-2						38	H-2	38
H-3	51	51	H-3					32	51	H-3	83
H-4	11	11	H-4						11	H-4	11
H-5	30	30	H-5						30	H-5	30
H-6	51	51	H-6						51	H-6	51
H-7	25	25	H-7						25	H-7	25
H-8	222	222	H-8						222	H-8	222
H-9	7	7	H-9						7	H-9	7
H-10	34	34	H-10						34	H-10	34
H-11	214	214	H-11						214	H-11	214
H-12	8	8	H-12						8	H-12	8

PROJ 772 04 TRANSPORTATION IMPACT STUDY
DATE 05 01 19 GROVE MILLER ENGINEERING INC
BY GEC CSX
OK CEMETERY AVENUE CROSSING
CITY OF PHILADELPHIA, PHILADELPHIA COUNTY

EVENT	YEAR	% / YR	GROWTH FACTOR
COUNT	2019	0 00%	1 0000
DESIGN	2030	0 00%	1 0000

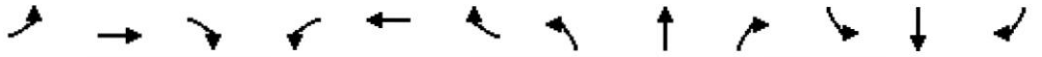
PM PEAK HOUR

MVMT NO	2019 COUNT VOLUME	2030 PROJ VOLUMES	MVMT NO	REDISTRIBUTION OF TRAFFIC DUE TO CROSSING CLOSURE: GREENWAY AVE NB LEFT TURN TRIPS	63RD ST NB THRU MOVEMENT TRIPS	GREENWAY AVE SB RIGHT TURN TRIPS	KINGSESSING AVE NB RIGHT TURN TRIPS	KINGSESSING AVE SB LEFT TURN TRIPS	PROJECTED VOLUME WITH CROSSING 2030	MVMT NO	PROJECTED VOLUME WITHOUT CROSSING 2030
A-1	123	123	A-1				-45		123	A-1	78
A-2	176	176	A-2				45		176	A-2	221
A-3	8	8	A-3						8	A-3	8
A-4	11	11	A-4						11	A-4	11
A-5	157	157	A-5	42	111				157	A-5	310
A-6	63	63	A-6	36	95				63	A-6	194
A-7	2	2	A-7						2	A-7	2
A-8	22	22	A-8				-8		22	A-8	14
A-9	16	16	A-9				8		16	A-9	24
A-10	103	103	A-10					53	103	A-10	156
A-11	25	25	A-11						25	A-11	25
A-12	42	42	A-12						42	A-12	42
B-1	19	19	B-1	-5	-14				19	B-1	0
B-2	128	128	B-2	-37	-97				128	B-2	0
B-3	123	123	B-3	-36	-95				123	B-3	0
B-4	0	0	B-4						0	B-4	0
B-5	121	121	B-5	36	95				121	B-5	252
B-6	53	53	B-6				-53		53	B-6	0
B-7	110	110	B-7					-110	110	B-7	0
B-8	162	162	B-8					53	162	B-8	215
B-9	134	134	B-9						134	B-9	134
C-1	5	5	C-1						5	C-1	5
C-2	71	71	C-2						71	C-2	71
C-3	82	82	C-3						82	C-3	82
C-4	38	38	C-4						38	C-4	38
C-5	61	61	C-5						61	C-5	61
C-6	45	45	C-6						45	C-6	45
C-7	51	51	C-7						51	C-7	51
C-8	197	197	C-8						197	C-8	197
C-9	25	25	C-9						25	C-9	25
C-10	40	40	C-10					57	40	C-10	97
C-11	277	277	C-11					-57	277	C-11	220
C-12	5	5	C-12						5	C-12	5
D-1	1	1	D-1					-1	1	D-1	0
D-2	28	28	D-2				-13	-14	28	D-2	1
D-3	86	86	D-3				-40	-43	86	D-3	3
D-4	54	54	D-4					-52	54	D-4	2
D-5	78	78	D-5	-78					78	D-5	0
D-6	2	2	D-6					1	2	D-6	3
D-7	36	36	D-7						36	D-7	36
D-8	47	47	D-8						47	D-8	47
D-9	0	0	D-9						0	D-9	0
D-10	2	2	D-10						2	D-10	2
D-11	0	0	D-11						0	D-11	0
D-12	0	0	D-12						0	D-12	0
D-13	58	58	D-13						58	D-13	58
D-14	206	206	D-14		-206				206	D-14	0
D-15	2	2	D-15						2	D-15	2
D-16	15	15	D-16						15	D-16	15
E-1	19	19	E-1				53		19	E-1	72
E-2	168	168	E-2						168	E-2	168
E-3	33	33	E-3						33	E-3	33
E-4	39	39	E-4						39	E-4	39
E-5	151	151	E-5						151	E-5	151
E-6	35	35	E-6						35	E-6	35
E-7	28	28	E-7						28	E-7	28
E-8	204	204	E-8						204	E-8	204
E-9	35	35	E-9						35	E-9	35
E-10	45	45	E-10						45	E-10	45
E-11	229	229	E-11					18	229	E-11	247
E-12	58	58	E-12						58	E-12	58
F-1	16	16	F-1				-4		16	F-1	12
F-2	98	98	F-2				-36	-34	98	F-2	28
F-3	23	23	F-3					-9	23	F-3	14
F-4	45	45	F-4						45	F-4	45
F-5	204	204	F-5						204	F-5	204
F-6	65	65	F-6						65	F-6	65
F-7	13	13	F-7						13	F-7	13
F-8	220	220	F-8				17		220	F-8	237
F-9	39	39	F-9				36		39	F-9	75
F-10	33	33	F-10					34	33	F-10	67
F-11	261	261	F-11					18	261	F-11	279
F-12	57	57	F-12						57	F-12	57
G-1	21	21	G-1				-11		21	G-1	10
G-2	8	8	G-2				-2	-5	8	G-2	1
G-3	10	10	G-3					-9	10	G-3	1
G-4	66	66	G-4						66	G-4	66
G-5	0	0	G-5						0	G-5	0
G-6	93	93	G-6						93	G-6	93
G-7	0	0	G-7						0	G-7	0
G-8	273	273	G-8				11		273	G-8	284
G-9	20	20	G-9				2		20	G-9	22
G-10	67	67	G-10					5	67	G-10	72
G-11	303	303	G-11					52	303	G-11	355
G-12	0	0	G-12						0	G-12	0
H-1	18	18	H-1						18	H-1	18
H-2	79	79	H-2						79	H-2	79
H-3	61	61	H-3					57	61	H-3	118
H-4	17	17	H-4						17	H-4	17
H-5	66	66	H-5						66	H-5	66
H-6	76	76	H-6						76	H-6	76
H-7	38	38	H-7						38	H-7	38
H-8	306	306	H-8						306	H-8	306
H-9	17	17	H-9						17	H-9	17
H-10	81	81	H-10						81	H-10	81
H-11	317	317	H-11						317	H-11	317
H-12	21	21	H-12						21	H-12	21

CAPACITY ANALYSIS WORKSHEETS

CAPACITY ANALYSES

KINGSESSING AVENUE
AND
65TH STREET

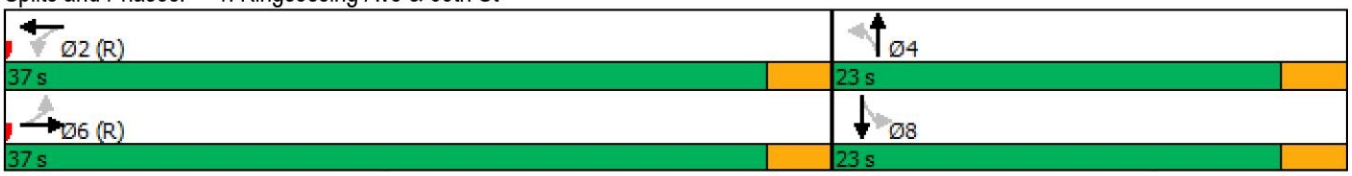


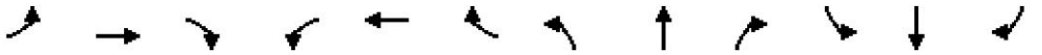
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	117	151	1	19	94	40	6	26	33	65	27	33
Future Volume (vph)	117	151	1	19	94	40	6	26	33	65	27	33
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	11	12
Grade (%)		0%			-1%			0%			0%	
Storage Length (ft)	0		0	0		0	0		0	0		0
Storage Lanes	0		0	0		0	0		0	0		0
Taper Length (ft)	25			25			25			25		
Right Turn on Red			No			No			No			No
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		1000			1110			1000			580	
Travel Time (s)		27.3			30.3			27.3			15.8	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	1%	1%	0%	0%	0%	3%	0%	0%	0%	3%	0%	3%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	286	0	0	163	0	0	69	0	0	133	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		6			2			4			8	
Permitted Phases	6			2			4			8		
Detector Phase	6	6		2	2		4	4		8	8	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	22.5	22.5		22.5	22.5		22.5	22.5		22.5	22.5	
Total Split (s)	37.0	37.0		37.0	37.0		23.0	23.0		23.0	23.0	
Total Split (%)	61.7%	61.7%		61.7%	61.7%		38.3%	38.3%		38.3%	38.3%	
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Lost Time Adjust (s)		0.0			0.0			0.0			0.0	
Total Lost Time (s)		3.0			3.0			3.0			3.0	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	Max	Max		Max	Max		Max	Max		Max	Max	
Act Effct Green (s)		34.0			34.0			20.0			20.0	
Actuated g/C Ratio		0.57			0.57			0.33			0.33	
v/c Ratio		0.34			0.17			0.13			0.29	
Control Delay		8.5			3.4			14.8			16.5	
Queue Delay		0.0			0.0			0.0			0.0	
Total Delay		8.5			3.4			14.8			16.5	
LOS		A			A			B			B	
Approach Delay		8.5			3.4			14.8			16.5	
Approach LOS		A			A			B			B	
Queue Length 50th (ft)		50			9			17			40	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 95th (ft)		90			20			41			87	
Internal Link Dist (ft)		920			1030			920			500	
Turn Bay Length (ft)												
Base Capacity (vph)		829			939			550			463	
Starvation Cap Reductn		0			0			0			0	
Spillback Cap Reductn		0			0			0			0	
Storage Cap Reductn		0			0			0			0	
Reduced v/c Ratio		0.34			0.17			0.13			0.29	

Intersection Summary			
Area Type:	Other		
Cycle Length: 60			
Actuated Cycle Length: 60			
Offset: 0 (0%), Referenced to phase 2:WBTL and 6:EBTL, Start of Green			
Natural Cycle: 45			
Control Type: Pretimed			
Maximum v/c Ratio: 0.34			
Intersection Signal Delay: 9.5		Intersection LOS: A	
Intersection Capacity Utilization 48.3%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 1: Kingsessing Ave & 65th St





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	117	151	1	19	94	40	6	26	33	65	27	33
Future Volume (veh/h)	117	151	1	19	94	40	6	26	33	65	27	33
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1786	1786	1786	1800	1800	1800	1800	1800	1800	1800	1800	1800
Adj Flow Rate, veh/h	124	161	1	20	100	43	6	28	35	69	29	35
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	1	1	1	0	0	0	0	0	0	0	0	0
Cap, veh/h	419	509	3	138	620	248	82	251	276	316	134	128
Arrive On Green	0.57	0.57	0.57	1.00	1.00	1.00	0.33	0.33	0.33	0.33	0.33	0.33
Sat Flow, veh/h	587	899	5	124	1095	437	52	752	827	676	402	385
Grp Volume(v), veh/h	286	0	0	163	0	0	69	0	0	133	0	0
Grp Sat Flow(s),veh/h/ln	1491	0	0	1656	0	0	1631	0	0	1462	0	0
Q Serve(g_s), s	3.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.8	0.0	0.0
Cycle Q Clear(g_c), s	5.6	0.0	0.0	0.0	0.0	0.0	1.7	0.0	0.0	3.7	0.0	0.0
Prop In Lane	0.43		0.00	0.12		0.26	0.09		0.51	0.52		0.26
Lane Grp Cap(c), veh/h	931	0	0	1006	0	0	609	0	0	579	0	0
V/C Ratio(X)	0.31	0.00	0.00	0.16	0.00	0.00	0.11	0.00	0.00	0.23	0.00	0.00
Avail Cap(c_a), veh/h	931	0	0	1006	0	0	609	0	0	579	0	0
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	6.8	0.0	0.0	0.0	0.0	0.0	13.9	0.0	0.0	14.5	0.0	0.0
Incr Delay (d2), s/veh	0.9	0.0	0.0	0.3	0.0	0.0	0.4	0.0	0.0	0.9	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	3.2	0.0	0.0	0.2	0.0	0.0	1.2	0.0	0.0	2.5	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	7.6	0.0	0.0	0.3	0.0	0.0	14.3	0.0	0.0	15.4	0.0	0.0
LnGrp LOS	A	A	A	A	A	A	B	A	A	B	A	A
Approach Vol, veh/h		286			163			69			133	
Approach Delay, s/veh		7.6			0.3			14.3			15.4	
Approach LOS		A			A			B			B	

Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		37.0		23.0		37.0		23.0				
Change Period (Y+Rc), s		3.0		3.0		3.0		3.0				
Max Green Setting (Gmax), s		34.0		20.0		34.0		20.0				
Max Q Clear Time (g_c+I1), s		2.0		3.7		7.6		5.7				
Green Ext Time (p_c), s		1.0		0.3		1.9		0.6				

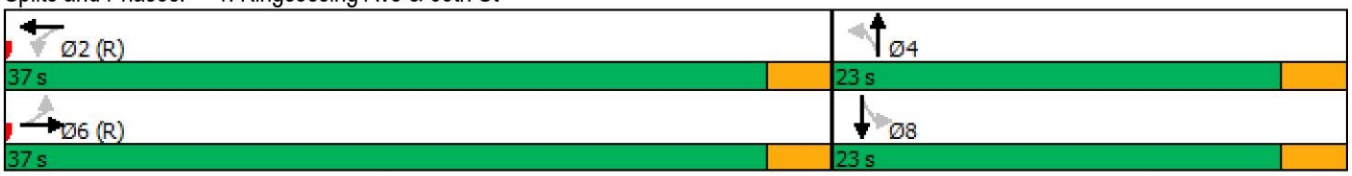
Intersection Summary												
HCM 6th Ctrl Delay			8.1									
HCM 6th LOS			A									

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	117	151	1	19	94	40	6	26	33	65	27	33
Future Volume (vph)	117	151	1	19	94	40	6	26	33	65	27	33
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	11	12
Grade (%)		0%			-1%			0%			0%	
Storage Length (ft)	0		0	0		0	0		0	0		0
Storage Lanes	0		0	0		0	0		0	0		0
Taper Length (ft)	25			25			25			25		
Right Turn on Red			No			No			No			No
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		1000			1110			1000			580	
Travel Time (s)		27.3			30.3			27.3			15.8	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	1%	1%	0%	0%	0%	3%	0%	0%	0%	3%	0%	3%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	286	0	0	163	0	0	69	0	0	133	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		6			2			4			8	
Permitted Phases	6			2			4			8		
Detector Phase	6	6		2	2		4	4		8	8	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	22.5	22.5		22.5	22.5		22.5	22.5		22.5	22.5	
Total Split (s)	37.0	37.0		37.0	37.0		23.0	23.0		23.0	23.0	
Total Split (%)	61.7%	61.7%		61.7%	61.7%		38.3%	38.3%		38.3%	38.3%	
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Lost Time Adjust (s)		0.0			0.0			0.0			0.0	
Total Lost Time (s)		3.0			3.0			3.0			3.0	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	Max	Max		Max	Max		Max	Max		Max	Max	
Act Effct Green (s)		34.0			34.0			20.0			20.0	
Actuated g/C Ratio		0.57			0.57			0.33			0.33	
v/c Ratio		0.34			0.17			0.13			0.29	
Control Delay		8.5			3.4			14.8			16.5	
Queue Delay		0.0			0.0			0.0			0.0	
Total Delay		8.5			3.4			14.8			16.5	
LOS		A			A			B			B	
Approach Delay		8.5			3.4			14.8			16.5	
Approach LOS		A			A			B			B	
Queue Length 50th (ft)		50			9			17			40	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 95th (ft)		90			20			41			87	
Internal Link Dist (ft)		920			1030			920			500	
Turn Bay Length (ft)												
Base Capacity (vph)		829			939			550			463	
Starvation Cap Reductn		0			0			0			0	
Spillback Cap Reductn		0			0			0			0	
Storage Cap Reductn		0			0			0			0	
Reduced v/c Ratio		0.34			0.17			0.13			0.29	

Intersection Summary			
Area Type:	Other		
Cycle Length: 60			
Actuated Cycle Length: 60			
Offset: 0 (0%), Referenced to phase 2:WBTL and 6:EBTL, Start of Green			
Natural Cycle: 45			
Control Type: Pretimed			
Maximum v/c Ratio: 0.34			
Intersection Signal Delay: 9.5		Intersection LOS: A	
Intersection Capacity Utilization 48.3%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 1: Kingsessing Ave & 65th St



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Volume (veh/h)	117	151	1	19	94	40	6	26	33	65	27	33
Future Volume (veh/h)	117	151	1	19	94	40	6	26	33	65	27	33
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1786	1786	1786	1800	1800	1800	1800	1800	1800	1800	1800	1800
Adj Flow Rate, veh/h	124	161	1	20	100	43	6	28	35	69	29	35
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	1	1	1	0	0	0	0	0	0	0	0	0
Cap, veh/h	419	509	3	138	620	248	82	251	276	316	134	128
Arrive On Green	0.57	0.57	0.57	1.00	1.00	1.00	0.33	0.33	0.33	0.33	0.33	0.33
Sat Flow, veh/h	587	899	5	124	1095	437	52	752	827	676	402	385
Grp Volume(v), veh/h	286	0	0	163	0	0	69	0	0	133	0	0
Grp Sat Flow(s),veh/h/ln	1491	0	0	1656	0	0	1631	0	0	1462	0	0
Q Serve(g_s), s	3.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.8	0.0	0.0
Cycle Q Clear(g_c), s	5.6	0.0	0.0	0.0	0.0	0.0	1.7	0.0	0.0	3.7	0.0	0.0
Prop In Lane	0.43		0.00	0.12		0.26	0.09		0.51	0.52		0.26
Lane Grp Cap(c), veh/h	931	0	0	1006	0	0	609	0	0	579	0	0
V/C Ratio(X)	0.31	0.00	0.00	0.16	0.00	0.00	0.11	0.00	0.00	0.23	0.00	0.00
Avail Cap(c_a), veh/h	931	0	0	1006	0	0	609	0	0	579	0	0
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	6.8	0.0	0.0	0.0	0.0	0.0	13.9	0.0	0.0	14.5	0.0	0.0
Incr Delay (d2), s/veh	0.9	0.0	0.0	0.3	0.0	0.0	0.4	0.0	0.0	0.9	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	3.2	0.0	0.0	0.2	0.0	0.0	1.2	0.0	0.0	2.5	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	7.6	0.0	0.0	0.3	0.0	0.0	14.3	0.0	0.0	15.4	0.0	0.0
LnGrp LOS	A	A	A	A	A	A	B	A	A	B	A	A
Approach Vol, veh/h		286			163			69			133	
Approach Delay, s/veh		7.6			0.3			14.3			15.4	
Approach LOS		A			A			B			B	

Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		37.0		23.0		37.0		23.0				
Change Period (Y+Rc), s		3.0		3.0		3.0		3.0				
Max Green Setting (Gmax), s		34.0		20.0		34.0		20.0				
Max Q Clear Time (g_c+I1), s		2.0		3.7		7.6		5.7				
Green Ext Time (p_c), s		1.0		0.3		1.9		0.6				

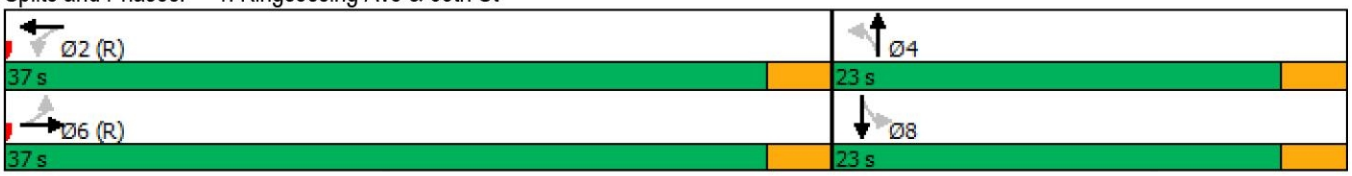
Intersection Summary												
HCM 6th Ctrl Delay			8.1									
HCM 6th LOS			A									

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	81	187	1	19	176	143	6	18	41	102	27	33
Future Volume (vph)	81	187	1	19	176	143	6	18	41	102	27	33
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	11	12
Grade (%)		0%			-1%			0%			0%	
Storage Length (ft)	0		0	0		0	0		0	0		0
Storage Lanes	0		0	0		0	0		0	0		0
Taper Length (ft)	25			25			25			25		
Right Turn on Red			No			No			No			No
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		1000			1110			1000			580	
Travel Time (s)		27.3			30.3			27.3			15.8	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	1%	1%	0%	0%	0%	3%	0%	0%	0%	3%	0%	3%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	286	0	0	359	0	0	69	0	0	173	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		6			2			4			8	
Permitted Phases	6			2			4			8		
Detector Phase	6	6		2	2		4	4		8	8	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	22.5	22.5		22.5	22.5		22.5	22.5		22.5	22.5	
Total Split (s)	37.0	37.0		37.0	37.0		23.0	23.0		23.0	23.0	
Total Split (%)	61.7%	61.7%		61.7%	61.7%		38.3%	38.3%		38.3%	38.3%	
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Lost Time Adjust (s)		0.0			0.0			0.0			0.0	
Total Lost Time (s)		3.0			3.0			3.0			3.0	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	Max	Max		Max	Max		Max	Max		Max	Max	
Act Effct Green (s)		34.0			34.0			20.0			20.0	
Actuated g/C Ratio		0.57			0.57			0.33			0.33	
v/c Ratio		0.34			0.38			0.13			0.39	
Control Delay		8.4			6.6			14.8			19.3	
Queue Delay		0.0			0.0			0.0			0.0	
Total Delay		8.4			6.6			14.8			19.3	
LOS		A			A			B			B	
Approach Delay		8.4			6.6			14.8			19.3	
Approach LOS		A			A			B			B	
Queue Length 50th (ft)		49			43			17			53	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 95th (ft)		90			76			41			112	
Internal Link Dist (ft)		920			1030			920			500	
Turn Bay Length (ft)												
Base Capacity (vph)		835			935			538			440	
Starvation Cap Reductn		0			0			0			0	
Spillback Cap Reductn		0			0			0			0	
Storage Cap Reductn		0			0			0			0	
Reduced v/c Ratio		0.34			0.38			0.13			0.39	

Intersection Summary			
Area Type:	Other		
Cycle Length: 60			
Actuated Cycle Length: 60			
Offset: 0 (0%), Referenced to phase 2:WBTL and 6:EBTL, Start of Green			
Natural Cycle: 45			
Control Type: Pretimed			
Maximum v/c Ratio: 0.39			
Intersection Signal Delay: 10.3		Intersection LOS: B	
Intersection Capacity Utilization 61.5%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 1: Kingsessing Ave & 65th St



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Volume (veh/h)	81	187	1	19	176	143	6	18	41	102	27	33
Future Volume (veh/h)	81	187	1	19	176	143	6	18	41	102	27	33
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1786	1786	1786	1800	1800	1800	1800	1800	1800	1800	1800	1800
Adj Flow Rate, veh/h	86	199	1	20	187	152	6	19	44	109	29	35
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	1	1	1	0	0	0	0	0	0	0	0	0
Cap, veh/h	290	628	3	84	519	396	82	176	339	377	101	96
Arrive On Green	0.57	0.57	0.57	1.00	1.00	1.00	0.33	0.33	0.33	0.33	0.33	0.33
Sat Flow, veh/h	374	1108	5	37	916	700	51	528	1018	837	304	289
Grp Volume(v), veh/h	286	0	0	359	0	0	69	0	0	173	0	0
Grp Sat Flow(s),veh/h/ln	1487	0	0	1653	0	0	1597	0	0	1430	0	0
Q Serve(g_s), s	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.4	0.0	0.0
Cycle Q Clear(g_c), s	5.1	0.0	0.0	0.0	0.0	0.0	1.8	0.0	0.0	5.1	0.0	0.0
Prop In Lane	0.30		0.00	0.06		0.42	0.09		0.64	0.63		0.20
Lane Grp Cap(c), veh/h	921	0	0	1000	0	0	597	0	0	574	0	0
V/C Ratio(X)	0.31	0.00	0.00	0.36	0.00	0.00	0.12	0.00	0.00	0.30	0.00	0.00
Avail Cap(c_a), veh/h	921	0	0	1000	0	0	597	0	0	574	0	0
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	6.7	0.0	0.0	0.0	0.0	0.0	13.9	0.0	0.0	15.0	0.0	0.0
Incr Delay (d2), s/veh	0.9	0.0	0.0	1.0	0.0	0.0	0.4	0.0	0.0	1.3	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	3.2	0.0	0.0	0.5	0.0	0.0	1.2	0.0	0.0	3.3	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	7.6	0.0	0.0	1.0	0.0	0.0	14.3	0.0	0.0	16.3	0.0	0.0
LnGrp LOS	A	A	A	A	A	A	B	A	A	B	A	A
Approach Vol, veh/h		286			359			69			173	
Approach Delay, s/veh		7.6			1.0			14.3			16.3	
Approach LOS		A			A			B			B	

Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		37.0		23.0		37.0		23.0				
Change Period (Y+Rc), s		3.0		3.0		3.0		3.0				
Max Green Setting (Gmax), s		34.0		20.0		34.0		20.0				
Max Q Clear Time (g_c+I1), s		2.0		3.8		7.1		7.1				
Green Ext Time (p_c), s		2.7		0.3		2.0		0.8				

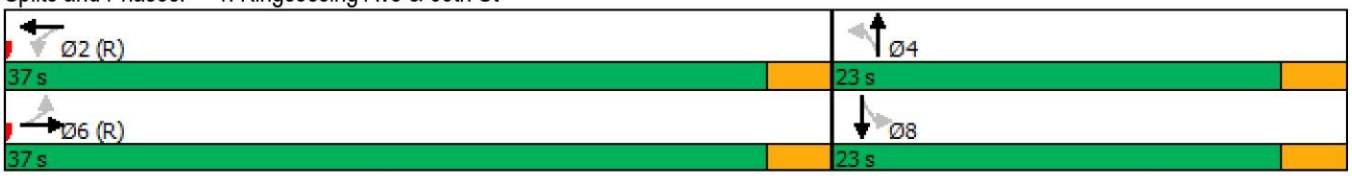
Intersection Summary												
HCM 6th Ctrl Delay			7.1									
HCM 6th LOS			A									

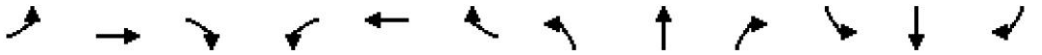
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	123	176	8	11	157	63	2	22	16	103	25	42
Future Volume (vph)	123	176	8	11	157	63	2	22	16	103	25	42
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	11	12
Grade (%)		0%			-1%			0%			0%	
Storage Length (ft)	0		0	0		0	0		0	0		0
Storage Lanes	0		0	0		0	0		0	0		0
Taper Length (ft)	25			25			25			25		
Right Turn on Red			No			No			No			No
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		1000			1110			1000			580	
Travel Time (s)		27.3			30.3			27.3			15.8	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	15%	2%	0%	0%	3%	19%	0%	9%	0%	12%	4%	24%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	330	0	0	249	0	0	43	0	0	183	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		6			2			4			8	
Permitted Phases	6			2			4			8		
Detector Phase	6	6		2	2		4	4		8	8	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	22.5	22.5		22.5	22.5		22.5	22.5		22.5	22.5	
Total Split (s)	37.0	37.0		37.0	37.0		23.0	23.0		23.0	23.0	
Total Split (%)	61.7%	61.7%		61.7%	61.7%		38.3%	38.3%		38.3%	38.3%	
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Lost Time Adjust (s)		0.0			0.0			0.0			0.0	
Total Lost Time (s)		3.0			3.0			3.0			3.0	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	Max	Max		Max	Max		Max	Max		Max	Max	
Act Effct Green (s)		34.0			34.0			20.0			20.0	
Actuated g/C Ratio		0.57			0.57			0.33			0.33	
v/c Ratio		0.44			0.27			0.08			0.46	
Control Delay		9.8			4.9			14.3			19.2	
Queue Delay		0.0			0.0			0.0			0.0	
Total Delay		9.8			4.9			14.3			19.2	
LOS		A			A			B			B	
Approach Delay		9.8			4.9			14.3			19.2	
Approach LOS		A			A			B			B	
Queue Length 50th (ft)		61			19			10			61	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 95th (ft)		113			38			29			119	
Internal Link Dist (ft)		920			1030			920			500	
Turn Bay Length (ft)												
Base Capacity (vph)		756			906			537			402	
Starvation Cap Reductn		0			0			0			0	
Spillback Cap Reductn		0			0			0			0	
Storage Cap Reductn		0			0			0			0	
Reduced v/c Ratio		0.44			0.27			0.08			0.46	

Intersection Summary			
Area Type:	Other		
Cycle Length: 60			
Actuated Cycle Length: 60			
Offset: 0 (0%), Referenced to phase 2:WBTL and 6:EBTL, Start of Green			
Natural Cycle: 45			
Control Type: Pretimed			
Maximum v/c Ratio: 0.46			
Intersection Signal Delay: 10.6		Intersection LOS: B	
Intersection Capacity Utilization 57.7%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 1: Kingsessing Ave & 65th St





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Volume (veh/h)	123	176	8	11	157	63	2	22	16	103	25	42
Future Volume (veh/h)	123	176	8	11	157	63	2	22	16	103	25	42
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1772	1772	1772	1758	1758	1758	1674	1674	1674	1744	1744	1744
Adj Flow Rate, veh/h	132	189	9	12	169	68	2	24	17	111	27	45
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	2	2	2	3	3	3	9	9	9	4	4	4
Cap, veh/h	375	502	22	78	669	257	68	308	205	356	90	114
Arrive On Green	0.57	0.57	0.57	1.00	1.00	1.00	0.33	0.33	0.33	0.33	0.33	0.33
Sat Flow, veh/h	513	886	39	27	1180	454	16	925	615	780	271	343
Grp Volume(v), veh/h	330	0	0	249	0	0	43	0	0	183	0	0
Grp Sat Flow(s),veh/h/ln	1438	0	0	1661	0	0	1556	0	0	1394	0	0
Q Serve(g_s), s	4.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.5	0.0	0.0
Cycle Q Clear(g_c), s	7.0	0.0	0.0	0.0	0.0	0.0	1.1	0.0	0.0	5.8	0.0	0.0
Prop In Lane	0.40		0.03	0.05		0.27	0.05		0.40	0.61		0.25
Lane Grp Cap(c), veh/h	899	0	0	1004	0	0	582	0	0	561	0	0
V/C Ratio(X)	0.37	0.00	0.00	0.25	0.00	0.00	0.07	0.00	0.00	0.33	0.00	0.00
Avail Cap(c_a), veh/h	899	0	0	1004	0	0	582	0	0	561	0	0
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	7.0	0.0	0.0	0.0	0.0	0.0	13.7	0.0	0.0	15.2	0.0	0.0
Incr Delay (d2), s/veh	1.2	0.0	0.0	0.6	0.0	0.0	0.2	0.0	0.0	1.5	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.2	0.0	0.0	0.2	0.0	0.0	0.4	0.0	0.0	2.0	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	8.2	0.0	0.0	0.6	0.0	0.0	14.0	0.0	0.0	16.7	0.0	0.0
LnGrp LOS	A	A	A	A	A	A	B	A	A	B	A	A
Approach Vol, veh/h		330			249			43			183	
Approach Delay, s/veh		8.2			0.6			14.0			16.7	
Approach LOS		A			A			B			B	

Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		37.0		23.0		37.0		23.0				
Change Period (Y+Rc), s		3.0		3.0		3.0		3.0				
Max Green Setting (Gmax), s		34.0		20.0		34.0		20.0				
Max Q Clear Time (g_c+I1), s		2.0		3.1		9.0		7.8				
Green Ext Time (p_c), s		1.7		0.1		2.3		0.8				

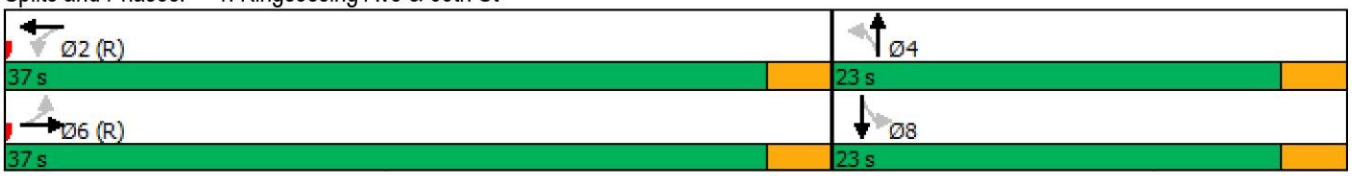
Intersection Summary												
HCM 6th Ctrl Delay			8.1									
HCM 6th LOS			A									

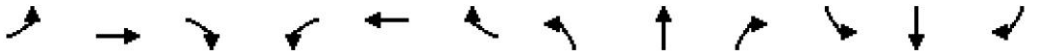
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	123	176	8	11	157	63	2	22	16	103	25	42
Future Volume (vph)	123	176	8	11	157	63	2	22	16	103	25	42
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	11	12
Grade (%)		0%			-1%			0%			0%	
Storage Length (ft)	0		0	0		0	0		0	0		0
Storage Lanes	0		0	0		0	0		0	0		0
Taper Length (ft)	25			25			25			25		
Right Turn on Red			No			No			No			No
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		1000			1110			1000			580	
Travel Time (s)		27.3			30.3			27.3			15.8	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	15%	2%	0%	0%	3%	19%	0%	9%	0%	12%	4%	24%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	330	0	0	249	0	0	43	0	0	183	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		6			2			4			8	
Permitted Phases	6			2			4			8		
Detector Phase	6	6		2	2		4	4		8	8	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	22.5	22.5		22.5	22.5		22.5	22.5		22.5	22.5	
Total Split (s)	37.0	37.0		37.0	37.0		23.0	23.0		23.0	23.0	
Total Split (%)	61.7%	61.7%		61.7%	61.7%		38.3%	38.3%		38.3%	38.3%	
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Lost Time Adjust (s)		0.0			0.0			0.0			0.0	
Total Lost Time (s)		3.0			3.0			3.0			3.0	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	Max	Max		Max	Max		Max	Max		Max	Max	
Act Effct Green (s)		34.0			34.0			20.0			20.0	
Actuated g/C Ratio		0.57			0.57			0.33			0.33	
v/c Ratio		0.44			0.27			0.08			0.46	
Control Delay		9.8			4.9			14.3			19.2	
Queue Delay		0.0			0.0			0.0			0.0	
Total Delay		9.8			4.9			14.3			19.2	
LOS		A			A			B			B	
Approach Delay		9.8			4.9			14.3			19.2	
Approach LOS		A			A			B			B	
Queue Length 50th (ft)		61			19			10			61	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 95th (ft)		113			38			29			119	
Internal Link Dist (ft)		920			1030			920			500	
Turn Bay Length (ft)												
Base Capacity (vph)		756			906			537			402	
Starvation Cap Reductn		0			0			0			0	
Spillback Cap Reductn		0			0			0			0	
Storage Cap Reductn		0			0			0			0	
Reduced v/c Ratio		0.44			0.27			0.08			0.46	

Intersection Summary			
Area Type:	Other		
Cycle Length: 60			
Actuated Cycle Length: 60			
Offset: 0 (0%), Referenced to phase 2:WBTL and 6:EBTL, Start of Green			
Natural Cycle: 45			
Control Type: Pretimed			
Maximum v/c Ratio: 0.46			
Intersection Signal Delay: 10.6		Intersection LOS: B	
Intersection Capacity Utilization 57.7%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 1: Kingsessing Ave & 65th St





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Volume (veh/h)	123	176	8	11	157	63	2	22	16	103	25	42
Future Volume (veh/h)	123	176	8	11	157	63	2	22	16	103	25	42
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1772	1772	1772	1758	1758	1758	1674	1674	1674	1744	1744	1744
Adj Flow Rate, veh/h	132	189	9	12	169	68	2	24	17	111	27	45
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	2	2	2	3	3	3	9	9	9	4	4	4
Cap, veh/h	375	502	22	78	669	257	68	308	205	356	90	114
Arrive On Green	0.57	0.57	0.57	1.00	1.00	1.00	0.33	0.33	0.33	0.33	0.33	0.33
Sat Flow, veh/h	513	886	39	27	1180	454	16	925	615	780	271	343
Grp Volume(v), veh/h	330	0	0	249	0	0	43	0	0	183	0	0
Grp Sat Flow(s),veh/h/ln	1438	0	0	1661	0	0	1556	0	0	1394	0	0
Q Serve(g_s), s	4.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.5	0.0	0.0
Cycle Q Clear(g_c), s	7.0	0.0	0.0	0.0	0.0	0.0	1.1	0.0	0.0	5.8	0.0	0.0
Prop In Lane	0.40		0.03	0.05		0.27	0.05		0.40	0.61		0.25
Lane Grp Cap(c), veh/h	899	0	0	1004	0	0	582	0	0	561	0	0
V/C Ratio(X)	0.37	0.00	0.00	0.25	0.00	0.00	0.07	0.00	0.00	0.33	0.00	0.00
Avail Cap(c_a), veh/h	899	0	0	1004	0	0	582	0	0	561	0	0
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	7.0	0.0	0.0	0.0	0.0	0.0	13.7	0.0	0.0	15.2	0.0	0.0
Incr Delay (d2), s/veh	1.2	0.0	0.0	0.6	0.0	0.0	0.2	0.0	0.0	1.5	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.2	0.0	0.0	0.2	0.0	0.0	0.4	0.0	0.0	2.0	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	8.2	0.0	0.0	0.6	0.0	0.0	14.0	0.0	0.0	16.7	0.0	0.0
LnGrp LOS	A	A	A	A	A	A	B	A	A	B	A	A
Approach Vol, veh/h		330			249			43			183	
Approach Delay, s/veh		8.2			0.6			14.0			16.7	
Approach LOS		A			A			B			B	

Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		37.0		23.0		37.0		23.0				
Change Period (Y+Rc), s		3.0		3.0		3.0		3.0				
Max Green Setting (Gmax), s		34.0		20.0		34.0		20.0				
Max Q Clear Time (g_c+I1), s		2.0		3.1		9.0		7.8				
Green Ext Time (p_c), s		1.7		0.1		2.3		0.8				

Intersection Summary												
HCM 6th Ctrl Delay			8.1									
HCM 6th LOS			A									

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	78	221	8	11	310	194	2	14	24	156	25	42
Future Volume (vph)	78	221	8	11	310	194	2	14	24	156	25	42
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	11	12
Grade (%)		0%			-1%			0%			0%	
Storage Length (ft)	0		0	0		0	0		0	0		0
Storage Lanes	0		0	0		0	0		0	0		0
Taper Length (ft)	25			25			25			25		
Right Turn on Red			No			No			No			No
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		1000			1110			1000			580	
Travel Time (s)		27.3			30.3			27.3			15.8	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	15%	2%	0%	0%	3%	19%	0%	9%	0%	12%	4%	24%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	331	0	0	554	0	0	43	0	0	240	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		6			2			4			8	
Permitted Phases	6			2			4			8		
Detector Phase	6	6		2	2		4	4		8	8	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	22.5	22.5		22.5	22.5		22.5	22.5		22.5	22.5	
Total Split (s)	37.0	37.0		37.0	37.0		23.0	23.0		23.0	23.0	
Total Split (%)	61.7%	61.7%		61.7%	61.7%		38.3%	38.3%		38.3%	38.3%	
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Lost Time Adjust (s)		0.0			0.0			0.0			0.0	
Total Lost Time (s)		3.0			3.0			3.0			3.0	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	Max	Max		Max	Max		Max	Max		Max	Max	
Act Effct Green (s)		34.0			34.0			20.0			20.0	
Actuated g/C Ratio		0.57			0.57			0.33			0.33	
v/c Ratio		0.43			0.63			0.08			0.62	
Control Delay		9.6			10.9			14.3			25.8	
Queue Delay		0.0			0.0			0.0			0.0	
Total Delay		9.6			10.9			14.3			25.8	
LOS		A			B			B			C	
Approach Delay		9.6			10.9			14.3			25.8	
Approach LOS		A			B			B			C	
Queue Length 50th (ft)		61			87			10			85	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 95th (ft)		112			141			29			#165	
Internal Link Dist (ft)		920			1030			920			500	
Turn Bay Length (ft)												
Base Capacity (vph)		775			886			529			386	
Starvation Cap Reductn		0			0			0			0	
Spillback Cap Reductn		0			0			0			0	
Storage Cap Reductn		0			0			0			0	
Reduced v/c Ratio		0.43			0.63			0.08			0.62	

Intersection Summary			
Area Type:	Other		
Cycle Length: 60			
Actuated Cycle Length: 60			
Offset: 0 (0%), Referenced to phase 2:WBTL and 6:EBTL, Start of Green			
Natural Cycle: 60			
Control Type: Pretimed			
Maximum v/c Ratio: 0.63			
Intersection Signal Delay: 13.7		Intersection LOS: B	
Intersection Capacity Utilization 77.6%		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: 1: Kingsessing Ave & 65th St

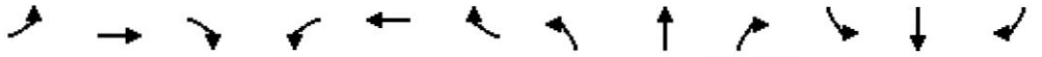
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Volume (veh/h)	78	221	8	11	310	194	2	14	24	156	25	42
Future Volume (veh/h)	78	221	8	11	310	194	2	14	24	156	25	42
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1772	1772	1772	1758	1758	1758	1674	1674	1674	1744	1744	1744
Adj Flow Rate, veh/h	84	238	9	12	333	209	2	15	26	168	27	45
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	2	2	2	3	3	3	9	9	9	4	4	4
Cap, veh/h	237	627	22	68	572	350	68	193	303	405	68	86
Arrive On Green	0.57	0.57	0.57	1.00	1.00	1.00	0.33	0.33	0.33	0.33	0.33	0.33
Sat Flow, veh/h	286	1106	39	12	1009	618	15	579	909	908	205	257
Grp Volume(v), veh/h	331	0	0	554	0	0	43	0	0	240	0	0
Grp Sat Flow(s),veh/h/ln	1431	0	0	1639	0	0	1504	0	0	1369	0	0
Q Serve(g_s), s	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	7.1	0.0	0.0
Cycle Q Clear(g_c), s	6.1	0.0	0.0	0.0	0.0	0.0	1.2	0.0	0.0	8.3	0.0	0.0
Prop In Lane	0.25		0.03	0.02		0.38	0.05		0.60	0.70		0.19
Lane Grp Cap(c), veh/h	886	0	0	990	0	0	564	0	0	558	0	0
V/C Ratio(X)	0.37	0.00	0.00	0.56	0.00	0.00	0.08	0.00	0.00	0.43	0.00	0.00
Avail Cap(c_a), veh/h	886	0	0	990	0	0	564	0	0	558	0	0
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	6.9	0.0	0.0	0.0	0.0	0.0	13.7	0.0	0.0	16.0	0.0	0.0
Incr Delay (d2), s/veh	1.2	0.0	0.0	2.3	0.0	0.0	0.3	0.0	0.0	2.4	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.2	0.0	0.0	0.6	0.0	0.0	0.4	0.0	0.0	2.8	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	8.1	0.0	0.0	2.3	0.0	0.0	14.0	0.0	0.0	18.4	0.0	0.0
LnGrp LOS	A	A	A	A	A	A	B	A	A	B	A	A
Approach Vol, veh/h		331			554			43			240	
Approach Delay, s/veh		8.1			2.3			14.0			18.4	
Approach LOS		A			A			B			B	

Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		37.0		23.0		37.0		23.0				
Change Period (Y+Rc), s		3.0		3.0		3.0		3.0				
Max Green Setting (Gmax), s		34.0		20.0		34.0		20.0				
Max Q Clear Time (g_c+I1), s		2.0		3.2		8.1		10.3				
Green Ext Time (p_c), s		4.6		0.1		2.5		1.0				

Intersection Summary												
HCM 6th Ctrl Delay			7.7									
HCM 6th LOS			A									

CAPACITY ANALYSES

KINGSESSING AVENUE
AND
CEMETERY AVENUE

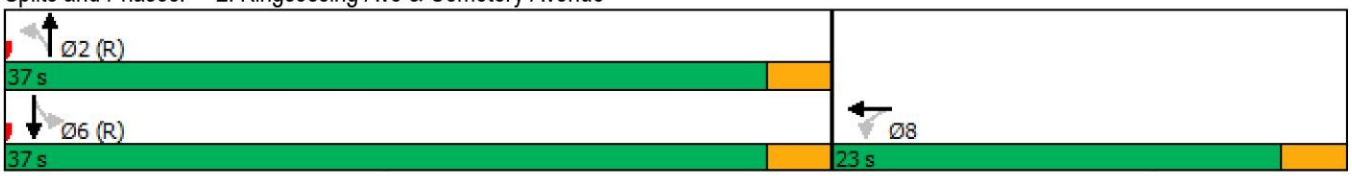


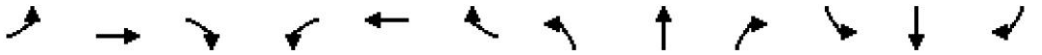
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	4	79	103	2	140	44	69	121	69
Future Volume (vph)	0	0	0	4	79	103	2	140	44	69	121	69
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	12	12	12	12	12	12	11	12	12	11	12
Grade (%)		0%			0%			0%			-1%	
Storage Length (ft)	0		0	0		0	0		0	0		0
Storage Lanes	0		0	0		0	0		0	0		0
Taper Length (ft)	25			25			25			25		
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		445			350			580			1170	
Travel Time (s)		12.1			9.5			15.8			31.9	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.92	0.92	0.92	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	0%	1%	1%	0%	1%	0%	0%	1%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	0	200	0	0	200	0	0	278	0
Turn Type				Perm	NA		Perm	NA		Perm	NA	
Protected Phases					8			2			6	
Permitted Phases				8			2			6		
Detector Phase				8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)				5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)				22.5	22.5		22.5	22.5		22.5	22.5	
Total Split (s)				23.0	23.0		37.0	37.0		37.0	37.0	
Total Split (%)				38.3%	38.3%		61.7%	61.7%		61.7%	61.7%	
Yellow Time (s)				3.0	3.0		3.0	3.0		3.0	3.0	
All-Red Time (s)				0.0	0.0		0.0	0.0		0.0	0.0	
Lost Time Adjust (s)					0.0			0.0			0.0	
Total Lost Time (s)					3.0			3.0			3.0	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode				Max	Max		Max	Max		Max	Max	
Act Effct Green (s)					20.0			34.0			34.0	
Actuated g/C Ratio					0.33			0.57			0.57	
v/c Ratio					0.32			0.21			0.32	
Control Delay					8.8			4.2			14.0	
Queue Delay					0.0			0.0			0.0	
Total Delay					8.8			4.2			14.0	
LOS					A			A			B	
Approach Delay					8.8			4.2			14.0	
Approach LOS					A			A			B	
Queue Length 50th (ft)					22			9			66	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 95th (ft)					64			39			126	
Internal Link Dist (ft)		365			270			500			1090	
Turn Bay Length (ft)												
Base Capacity (vph)					623			963			866	
Starvation Cap Reductn					0			0			0	
Spillback Cap Reductn					0			0			0	
Storage Cap Reductn					0			0			0	
Reduced v/c Ratio					0.32			0.21			0.32	

Intersection Summary			
Area Type:	Other		
Cycle Length: 60			
Actuated Cycle Length: 60			
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 45			
Control Type: Pretimed			
Maximum v/c Ratio: 0.32			
Intersection Signal Delay: 9.6		Intersection LOS: A	
Intersection Capacity Utilization 47.2%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 2: Kingsessing Ave & Cemetery Avenue





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	4	79	103	2	140	44	69	121	69
Future Volume (veh/h)	0	0	0	4	79	103	2	140	44	69	121	69
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach					No			No			No	
Adj Sat Flow, veh/h/ln				1800	1786	1800	1786	1786	1786	1786	1786	1786
Adj Flow Rate, veh/h				4	85	111	2	151	47	74	130	74
Peak Hour Factor				0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %				0	1	0	1	1	1	1	1	1
Cap, veh/h				11	230	300	62	741	228	264	445	230
Arrive On Green				0.33	0.33	0.33	0.19	0.19	0.19	0.95	0.95	0.95
Sat Flow, veh/h				32	689	900	3	1307	402	333	786	406
Grp Volume(v), veh/h				200	0	0	200	0	0	278	0	0
Grp Sat Flow(s),veh/h/ln				1622	0	0	1712	0	0	1525	0	0
Q Serve(g_s), s				5.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s				5.6	0.0	0.0	5.9	0.0	0.0	0.7	0.0	0.0
Prop In Lane				0.02		0.55	0.01		0.23	0.27		0.27
Lane Grp Cap(c), veh/h				541	0	0	1031	0	0	940	0	0
V/C Ratio(X)				0.37	0.00	0.00	0.19	0.00	0.00	0.30	0.00	0.00
Avail Cap(c_a), veh/h				541	0	0	1031	0	0	940	0	0
HCM Platoon Ratio				1.00	1.00	1.00	0.33	0.33	0.33	1.67	1.67	1.67
Upstream Filter(I)				1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh				15.2	0.0	0.0	13.0	0.0	0.0	0.7	0.0	0.0
Incr Delay (d2), s/veh				1.9	0.0	0.0	0.4	0.0	0.0	0.8	0.0	0.0
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln				4.0	0.0	0.0	4.1	0.0	0.0	0.7	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh				17.1	0.0	0.0	13.4	0.0	0.0	1.5	0.0	0.0
LnGrp LOS				B	A	A	B	A	A	A	A	A
Approach Vol, veh/h					200			200			278	
Approach Delay, s/veh					17.1			13.4			1.5	
Approach LOS					B			B			A	

Timer - Assigned Phs	2			6		8			
Phs Duration (G+Y+Rc), s	37.0			37.0		23.0			
Change Period (Y+Rc), s	3.0			3.0		3.0			
Max Green Setting (Gmax), s	34.0			34.0		20.0			
Max Q Clear Time (g_c+I1), s	7.9			2.7		7.6			
Green Ext Time (p_c), s	1.2			2.0		0.9			

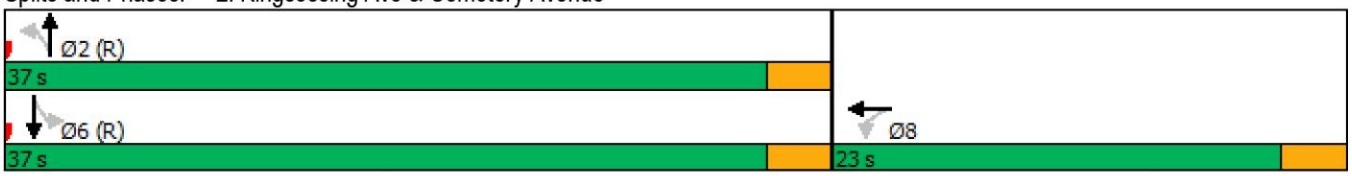
Intersection Summary		
HCM 6th Ctrl Delay	9.6	
HCM 6th LOS	A	

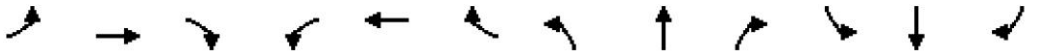
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	4	79	103	2	140	44	69	121	69
Future Volume (vph)	0	0	0	4	79	103	2	140	44	69	121	69
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	12	12	12	12	12	12	11	12	12	11	12
Grade (%)		0%			0%			0%			-1%	
Storage Length (ft)	0		0	0		0	0		0	0		0
Storage Lanes	0		0	0		0	0		0	0		0
Taper Length (ft)	25			25			25			25		
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		445			329			580			1170	
Travel Time (s)		12.1			9.0			15.8			31.9	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.92	0.92	0.92	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	0%	1%	1%	0%	1%	0%	0%	1%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	0	200	0	0	200	0	0	278	0
Turn Type				Perm	NA		Perm	NA		Perm	NA	
Protected Phases					8			2			6	
Permitted Phases				8			2			6		
Detector Phase				8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)				5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)				22.5	22.5		22.5	22.5		22.5	22.5	
Total Split (s)				23.0	23.0		37.0	37.0		37.0	37.0	
Total Split (%)				38.3%	38.3%		61.7%	61.7%		61.7%	61.7%	
Yellow Time (s)				3.0	3.0		3.0	3.0		3.0	3.0	
All-Red Time (s)				0.0	0.0		0.0	0.0		0.0	0.0	
Lost Time Adjust (s)					0.0			0.0			0.0	
Total Lost Time (s)					3.0			3.0			3.0	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode				Max	Max		Max	Max		Max	Max	
Act Effct Green (s)					20.0			34.0			34.0	
Actuated g/C Ratio					0.33			0.57			0.57	
v/c Ratio					0.32			0.21			0.32	
Control Delay					8.8			4.2			14.0	
Queue Delay					0.0			0.0			0.0	
Total Delay					8.8			4.2			14.0	
LOS					A			A			B	
Approach Delay					8.8			4.2			14.0	
Approach LOS					A			A			B	
Queue Length 50th (ft)					22			9			66	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 95th (ft)					64			39			126	
Internal Link Dist (ft)		365			249			500			1090	
Turn Bay Length (ft)												
Base Capacity (vph)					623			963			866	
Starvation Cap Reductn					0			0			0	
Spillback Cap Reductn					0			0			0	
Storage Cap Reductn					0			0			0	
Reduced v/c Ratio					0.32			0.21			0.32	

Intersection Summary			
Area Type:	Other		
Cycle Length: 60			
Actuated Cycle Length: 60			
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 45			
Control Type: Pretimed			
Maximum v/c Ratio: 0.32			
Intersection Signal Delay: 9.6		Intersection LOS: A	
Intersection Capacity Utilization 47.2%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 2: Kingsessing Ave & Cemetery Avenue

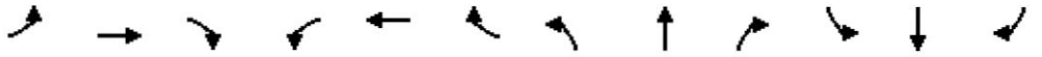




Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	4	79	103	2	140	44	69	121	69
Future Volume (veh/h)	0	0	0	4	79	103	2	140	44	69	121	69
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach					No			No			No	
Adj Sat Flow, veh/h/ln				1800	1786	1800	1786	1786	1786	1786	1786	1786
Adj Flow Rate, veh/h				4	85	111	2	151	47	74	130	74
Peak Hour Factor				0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %				0	1	0	1	1	1	1	1	1
Cap, veh/h				11	230	300	62	741	228	264	445	230
Arrive On Green				0.33	0.33	0.33	0.19	0.19	0.19	0.95	0.95	0.95
Sat Flow, veh/h				32	689	900	3	1307	402	333	786	406
Grp Volume(v), veh/h				200	0	0	200	0	0	278	0	0
Grp Sat Flow(s),veh/h/ln				1622	0	0	1712	0	0	1525	0	0
Q Serve(g_s), s				5.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s				5.6	0.0	0.0	5.9	0.0	0.0	0.7	0.0	0.0
Prop In Lane				0.02		0.55	0.01		0.23	0.27		0.27
Lane Grp Cap(c), veh/h				541	0	0	1031	0	0	940	0	0
V/C Ratio(X)				0.37	0.00	0.00	0.19	0.00	0.00	0.30	0.00	0.00
Avail Cap(c_a), veh/h				541	0	0	1031	0	0	940	0	0
HCM Platoon Ratio				1.00	1.00	1.00	0.33	0.33	0.33	1.67	1.67	1.67
Upstream Filter(I)				1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh				15.2	0.0	0.0	13.0	0.0	0.0	0.7	0.0	0.0
Incr Delay (d2), s/veh				1.9	0.0	0.0	0.4	0.0	0.0	0.8	0.0	0.0
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln				4.0	0.0	0.0	4.1	0.0	0.0	0.7	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh				17.1	0.0	0.0	13.4	0.0	0.0	1.5	0.0	0.0
LnGrp LOS				B	A	A	B	A	A	A	A	A
Approach Vol, veh/h					200			200			278	
Approach Delay, s/veh					17.1			13.4			1.5	
Approach LOS					B			B			A	

Timer - Assigned Phs		2				6		8				
Phs Duration (G+Y+Rc), s		37.0				37.0		23.0				
Change Period (Y+Rc), s		3.0				3.0		3.0				
Max Green Setting (Gmax), s		34.0				34.0		20.0				
Max Q Clear Time (g_c+I1), s		7.9				2.7		7.6				
Green Ext Time (p_c), s		1.2				2.0		0.9				

Intersection Summary		
HCM 6th Ctrl Delay	9.6	
HCM 6th LOS	A	



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	19	128	123	0	121	53	110	162	134
Future Volume (vph)	0	0	0	19	128	123	0	121	53	110	162	134
Ideal Flow (vphpl)	1800	1900	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	12	12	12	12	12	12	11	12	12	11	12
Grade (%)		0%			0%			0%			-1%	
Storage Length (ft)	0		0	0		0	0		0	0		0
Storage Lanes	0		0	0		0	0		0	0		0
Taper Length (ft)	25			25			25			25		
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		445			299			580			1170	
Travel Time (s)		12.1			8.2			15.8			31.9	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.92	0.92	0.92	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	5%	0%	2%	0%	7%	0%	2%	14%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	0	284	0	0	183	0	0	428	0
Turn Type				Perm	NA			NA		Perm	NA	
Protected Phases					8			2			6	
Permitted Phases				8			2			6		
Detector Phase				8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)				5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)				22.5	22.5		22.5	22.5		22.5	22.5	
Total Split (s)				23.0	23.0		37.0	37.0		37.0	37.0	
Total Split (%)				38.3%	38.3%		61.7%	61.7%		61.7%	61.7%	
Yellow Time (s)				3.0	3.0		3.0	3.0		3.0	3.0	
All-Red Time (s)				0.0	0.0		0.0	0.0		0.0	0.0	
Lost Time Adjust (s)					0.0			0.0			0.0	
Total Lost Time (s)					3.0			3.0			3.0	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode				Max	Max		Max	Max		Max	Max	
Act Effct Green (s)					20.0			34.0			34.0	
Actuated g/C Ratio					0.33			0.57			0.57	
v/c Ratio					0.47			0.20			0.53	
Control Delay					14.5			3.5			18.9	
Queue Delay					0.0			0.0			0.0	
Total Delay					14.5			3.5			18.9	
LOS					B			A			B	
Approach Delay					14.5			3.5			18.9	
Approach LOS					B			A			B	
Queue Length 50th (ft)					56			6			121	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 95th (ft)					117			17			m200	
Internal Link Dist (ft)		365			219			500			1090	
Turn Bay Length (ft)												
Base Capacity (vph)					604			925			810	
Starvation Cap Reductn					0			0			0	
Spillback Cap Reductn					0			0			0	
Storage Cap Reductn					0			0			0	
Reduced v/c Ratio					0.47			0.20			0.53	

Intersection Summary			
Area Type:	Other		
Cycle Length: 60			
Actuated Cycle Length: 60			
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 50			
Control Type: Pretimed			
Maximum v/c Ratio: 0.53			
Intersection Signal Delay: 14.3		Intersection LOS: B	
Intersection Capacity Utilization 60.3%		ICU Level of Service B	
Analysis Period (min) 15			

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 2: Kingsessing Ave & Cemetery Avenue

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	19	128	123	0	121	53	110	162	134
Future Volume (veh/h)	0	0	0	19	128	123	0	121	53	110	162	134
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach					No			No			No	
Adj Sat Flow, veh/h/ln				1800	1800	1800	1702	1702	1702	1603	1603	1603
Adj Flow Rate, veh/h				20	135	129	0	127	56	116	171	141
Peak Hour Factor				0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %				0	0	0	7	7	7	14	14	14
Cap, veh/h				39	263	251	0	634	280	245	340	250
Arrive On Green				0.33	0.33	0.33	0.00	0.19	0.19	0.95	0.95	0.95
Sat Flow, veh/h				117	788	753	0	1119	494	298	600	441
Grp Volume(v), veh/h				284	0	0	0	0	183	428	0	0
Grp Sat Flow(s),veh/h/ln				1659	0	0	0	0	1613	1339	0	0
Q Serve(g_s), s				8.3	0.0	0.0	0.0	0.0	5.7	0.5	0.0	0.0
Cycle Q Clear(g_c), s				8.3	0.0	0.0	0.0	0.0	5.7	6.2	0.0	0.0
Prop In Lane				0.07		0.45	0.00		0.31	0.27		0.33
Lane Grp Cap(c), veh/h				553	0	0	0	0	914	835	0	0
V/C Ratio(X)				0.51	0.00	0.00	0.00	0.00	0.20	0.51	0.00	0.00
Avail Cap(c_a), veh/h				553	0	0	0	0	914	835	0	0
HCM Platoon Ratio				1.00	1.00	1.00	0.33	0.33	0.33	1.67	1.67	1.67
Upstream Filter(I)				1.00	0.00	0.00	0.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh				16.1	0.0	0.0	0.0	0.0	12.9	0.7	0.0	0.0
Incr Delay (d2), s/veh				3.4	0.0	0.0	0.0	0.0	0.5	2.2	0.0	0.0
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				3.4	0.0	0.0	0.0	0.0	2.1	0.8	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh				19.5	0.0	0.0	0.0	0.0	13.4	3.0	0.0	0.0
LnGrp LOS				B	A	A	A	A	B	A	A	A
Approach Vol, veh/h					284			183			428	
Approach Delay, s/veh					19.5			13.4			3.0	
Approach LOS					B			B			A	

Timer - Assigned Phs		2				6		8				
Phs Duration (G+Y+Rc), s		37.0				37.0		23.0				
Change Period (Y+Rc), s		3.0				3.0		3.0				
Max Green Setting (Gmax), s		34.0				34.0		20.0				
Max Q Clear Time (g_c+I1), s		7.7				8.2		10.3				
Green Ext Time (p_c), s		1.1				3.3		1.2				

Intersection Summary												
HCM 6th Ctrl Delay			10.4									
HCM 6th LOS			B									

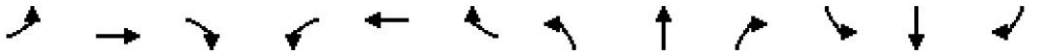
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	19	128	123	0	121	53	110	162	134
Future Volume (vph)	0	0	0	19	128	123	0	121	53	110	162	134
Ideal Flow (vphpl)	1800	1900	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	12	12	12	12	12	12	11	12	12	11	12
Grade (%)		0%			0%			0%			-1%	
Storage Length (ft)	0		0	0		0	0		0	0		0
Storage Lanes	0		0	0		0	0		0	0		0
Taper Length (ft)	25			25			25			25		
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		445			342			580			1170	
Travel Time (s)		12.1			9.3			15.8			31.9	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.92	0.92	0.92	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	5%	0%	2%	0%	7%	0%	2%	14%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	0	284	0	0	183	0	0	428	0
Turn Type				Perm	NA			NA		Perm	NA	
Protected Phases					8			2			6	
Permitted Phases				8			2			6		
Detector Phase				8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)				5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)				22.5	22.5		22.5	22.5		22.5	22.5	
Total Split (s)				23.0	23.0		37.0	37.0		37.0	37.0	
Total Split (%)				38.3%	38.3%		61.7%	61.7%		61.7%	61.7%	
Yellow Time (s)				3.0	3.0		3.0	3.0		3.0	3.0	
All-Red Time (s)				0.0	0.0		0.0	0.0		0.0	0.0	
Lost Time Adjust (s)					0.0			0.0			0.0	
Total Lost Time (s)					3.0			3.0			3.0	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode				Max	Max		Max	Max		Max	Max	
Act Effct Green (s)					20.0			34.0			34.0	
Actuated g/C Ratio					0.33			0.57			0.57	
v/c Ratio					0.47			0.20			0.53	
Control Delay					14.5			3.5			18.9	
Queue Delay					0.0			0.0			0.0	
Total Delay					14.5			3.5			18.9	
LOS					B			A			B	
Approach Delay					14.5			3.5			18.9	
Approach LOS					B			A			B	
Queue Length 50th (ft)					56			6			121	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 95th (ft)					117			17			m200	
Internal Link Dist (ft)		365			262			500			1090	
Turn Bay Length (ft)												
Base Capacity (vph)					604			925			810	
Starvation Cap Reductn					0			0			0	
Spillback Cap Reductn					0			0			0	
Storage Cap Reductn					0			0			0	
Reduced v/c Ratio					0.47			0.20			0.53	

Intersection Summary			
Area Type:	Other		
Cycle Length: 60			
Actuated Cycle Length: 60			
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 50			
Control Type: Pretimed			
Maximum v/c Ratio: 0.53			
Intersection Signal Delay: 14.3		Intersection LOS: B	
Intersection Capacity Utilization 60.3%		ICU Level of Service B	
Analysis Period (min) 15			

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 2: Kingsessing Ave & Cemetery Avenue



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	19	128	123	0	121	53	110	162	134
Future Volume (veh/h)	0	0	0	19	128	123	0	121	53	110	162	134
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach					No			No			No	
Adj Sat Flow, veh/h/ln				1800	1800	1800	1702	1702	1702	1603	1603	1603
Adj Flow Rate, veh/h				20	135	129	0	127	56	116	171	141
Peak Hour Factor				0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %				0	0	0	7	7	7	14	14	14
Cap, veh/h				39	263	251	0	634	280	245	340	250
Arrive On Green				0.33	0.33	0.33	0.00	0.19	0.19	0.95	0.95	0.95
Sat Flow, veh/h				117	788	753	0	1119	494	298	600	441
Grp Volume(v), veh/h				284	0	0	0	0	183	428	0	0
Grp Sat Flow(s),veh/h/ln				1659	0	0	0	0	1613	1339	0	0
Q Serve(g_s), s				8.3	0.0	0.0	0.0	0.0	5.7	0.5	0.0	0.0
Cycle Q Clear(g_c), s				8.3	0.0	0.0	0.0	0.0	5.7	6.2	0.0	0.0
Prop In Lane				0.07		0.45	0.00		0.31	0.27		0.33
Lane Grp Cap(c), veh/h				553	0	0	0	0	914	835	0	0
V/C Ratio(X)				0.51	0.00	0.00	0.00	0.00	0.20	0.51	0.00	0.00
Avail Cap(c_a), veh/h				553	0	0	0	0	914	835	0	0
HCM Platoon Ratio				1.00	1.00	1.00	0.33	0.33	0.33	1.67	1.67	1.67
Upstream Filter(I)				1.00	0.00	0.00	0.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh				16.1	0.0	0.0	0.0	0.0	12.9	0.7	0.0	0.0
Incr Delay (d2), s/veh				3.4	0.0	0.0	0.0	0.0	0.5	2.2	0.0	0.0
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				3.4	0.0	0.0	0.0	0.0	2.1	0.8	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh				19.5	0.0	0.0	0.0	0.0	13.4	3.0	0.0	0.0
LnGrp LOS				B	A	A	A	A	B	A	A	A
Approach Vol, veh/h					284			183			428	
Approach Delay, s/veh					19.5			13.4			3.0	
Approach LOS					B			B			A	

Timer - Assigned Phs		2				6		8				
Phs Duration (G+Y+Rc), s		37.0				37.0		23.0				
Change Period (Y+Rc), s		3.0				3.0		3.0				
Max Green Setting (Gmax), s		34.0				34.0		20.0				
Max Q Clear Time (g_c+I1), s		7.7				8.2		10.3				
Green Ext Time (p_c), s		1.1				3.3		1.2				

Intersection Summary		
HCM 6th Ctrl Delay		10.4
HCM 6th LOS		B

CAPACITY ANALYSES

KINGSESSING AVENUE
AND
61ST STREET

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	3	43	59	20	35	19	41	210	14	19	166	4
Future Volume (vph)	3	43	59	20	35	19	41	210	14	19	166	4
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	10	12	12	11	12	12	11	12	12	11	12
Grade (%)		0%			-1%			0%			0%	
Storage Length (ft)	0		0	0		0	0		0	0		0
Storage Lanes	0		0	0		0	0		0	0		0
Taper Length (ft)	25			25			25			25		
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		990			1125			1170			1000	
Travel Time (s)		27.0			30.7			31.9			27.3	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	0%	0%	0%	0%	3%	0%	0%	1%	15%	0%	1%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	120	0	0	85	0	0	304	0	0	218	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	22.5	22.5		22.5	22.5		22.5	22.5		22.5	22.5	
Total Split (s)	23.0	23.0		23.0	23.0		37.0	37.0		37.0	37.0	
Total Split (%)	38.3%	38.3%		38.3%	38.3%		61.7%	61.7%		61.7%	61.7%	
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Lost Time Adjust (s)		0.0			0.0			0.0			0.0	
Total Lost Time (s)		3.0			3.0			3.0			3.0	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	Max	Max		Max	Max		Max	Max		Max	Max	
Act Effct Green (s)		20.0			20.0			34.0			34.0	
Actuated g/C Ratio		0.33			0.33			0.57			0.57	
v/c Ratio		0.21			0.16			0.34			0.23	
Control Delay		8.5			12.2			7.1			7.2	
Queue Delay		0.0			0.0			0.0			0.0	
Total Delay		8.5			12.2			7.1			7.2	
LOS		A			B			A			A	
Approach Delay		8.5			12.2			7.1			7.2	
Approach LOS		A			B			A			A	
Queue Length 50th (ft)		13			14			53			34	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 95th (ft)		42			40			91			62	
Internal Link Dist (ft)		910			1045			1090			920	
Turn Bay Length (ft)												
Base Capacity (vph)		560			531			907			938	
Starvation Cap Reductn		0			0			0			0	
Spillback Cap Reductn		0			0			0			0	
Storage Cap Reductn		0			0			0			0	
Reduced v/c Ratio		0.21			0.16			0.34			0.23	

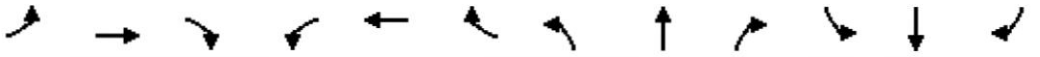
Intersection Summary			
Area Type:	Other		
Cycle Length: 60			
Actuated Cycle Length: 60			
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 45			
Control Type: Pretimed			
Maximum v/c Ratio: 0.34			
Intersection Signal Delay: 8.0		Intersection LOS: A	
Intersection Capacity Utilization 40.6%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 3: Kingsessing Ave & 61st St

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Volume (veh/h)	3	43	59	20	35	19	41	210	14	19	166	4
Future Volume (veh/h)	3	43	59	20	35	19	41	210	14	19	166	4
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1800	1800	1800	1758	1758	1758	1786	1786	1786	1786	1786	1786
Adj Flow Rate, veh/h	3	49	68	23	40	22	47	241	16	22	191	5
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Percent Heavy Veh, %	0	0	0	3	3	3	1	1	1	1	1	1
Cap, veh/h	65	232	308	177	282	133	169	797	50	120	896	22
Arrive On Green	0.33	0.33	0.33	0.33	0.33	0.33	1.00	1.00	1.00	0.57	0.57	0.57
Sat Flow, veh/h	9	697	924	301	845	400	175	1406	88	95	1582	39
Grp Volume(v), veh/h	120	0	0	85	0	0	304	0	0	218	0	0
Grp Sat Flow(s),veh/h/ln	1630	0	0	1545	0	0	1669	0	0	1716	0	0
Q Serve(g_s), 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
Cycle Q Clear(g_c), s	3.2	0.0	0.0	2.1	0.0	0.0	0.0	0.0	0.0	3.6	0.0	0.0
Prop In Lane	0.02		0.57	0.27		0.26	0.15		0.05	0.10		0.02
Lane Grp Cap(c), veh/h	605	0	0	591	0	0	1015	0	0	1038	0	0
V/C Ratio(X)	0.20	0.00	0.00	0.14	0.00	0.00	0.30	0.00	0.00	0.21	0.00	0.00
Avail Cap(c_a), veh/h	605	0	0	591	0	0	1015	0	0	1038	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	14.4	0.0	0.0	14.0	0.0	0.0	0.0	0.0	0.0	6.4	0.0	0.0
Incr Delay (d2), s/veh	0.7	0.0	0.0	0.5	0.0	0.0	0.8	0.0	0.0	0.5	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	2.2	0.0	0.0	1.5	0.0	0.0	0.4	0.0	0.0	2.3	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	15.1	0.0	0.0	14.6	0.0	0.0	0.8	0.0	0.0	6.9	0.0	0.0
LnGrp LOS	B	A	A	B	A	A	A	A	A	A	A	A
Approach Vol, veh/h		120			85			304			218	
Approach Delay, s/veh		15.1			14.6			0.8			6.9	
Approach LOS		B			B			A			A	

Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		37.0		23.0		37.0		23.0				
Change Period (Y+Rc), s		3.0		3.0		3.0		3.0				
Max Green Setting (Gmax), s		34.0		20.0		34.0		20.0				
Max Q Clear Time (g_c+I1), s		2.0		5.2		5.6		4.1				
Green Ext Time (p_c), s		2.1		0.5		1.4		0.3				

Intersection Summary												
HCM 6th Ctrl Delay			6.6									
HCM 6th LOS			A									



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	3	43	59	20	35	19	41	210	14	19	166	4
Future Volume (vph)	3	43	59	20	35	19	41	210	14	19	166	4
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	10	12	12	11	12	12	11	12	12	11	12
Grade (%)		0%			-1%			0%			0%	
Storage Length (ft)	0		0	0		0	0		0	0		0
Storage Lanes	0		0	0		0	0		0	0		0
Taper Length (ft)	25			25			25			25		
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		990			1125			1170			1000	
Travel Time (s)		27.0			30.7			31.9			27.3	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	0%	0%	0%	0%	3%	0%	0%	1%	15%	0%	1%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	120	0	0	85	0	0	304	0	0	218	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	22.5	22.5		22.5	22.5		22.5	22.5		22.5	22.5	
Total Split (s)	23.0	23.0		23.0	23.0		37.0	37.0		37.0	37.0	
Total Split (%)	38.3%	38.3%		38.3%	38.3%		61.7%	61.7%		61.7%	61.7%	
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Lost Time Adjust (s)		0.0			0.0			0.0			0.0	
Total Lost Time (s)		3.0			3.0			3.0			3.0	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	Max	Max		Max	Max		Max	Max		Max	Max	
Act Effct Green (s)		20.0			20.0			34.0			34.0	
Actuated g/C Ratio		0.33			0.33			0.57			0.57	
v/c Ratio		0.21			0.16			0.34			0.23	
Control Delay		8.5			12.2			7.1			7.2	
Queue Delay		0.0			0.0			0.0			0.0	
Total Delay		8.5			12.2			7.1			7.2	
LOS		A			B			A			A	
Approach Delay		8.5			12.2			7.1			7.2	
Approach LOS		A			B			A			A	
Queue Length 50th (ft)		13			14			53			34	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 95th (ft)		42			40			91			62	
Internal Link Dist (ft)		910			1045			1090			920	
Turn Bay Length (ft)												
Base Capacity (vph)		560			531			907			938	
Starvation Cap Reductn		0			0			0			0	
Spillback Cap Reductn		0			0			0			0	
Storage Cap Reductn		0			0			0			0	
Reduced v/c Ratio		0.21			0.16			0.34			0.23	

Intersection Summary			
Area Type:	Other		
Cycle Length: 60			
Actuated Cycle Length: 60			
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 45			
Control Type: Pretimed			
Maximum v/c Ratio: 0.34			
Intersection Signal Delay: 8.0		Intersection LOS: A	
Intersection Capacity Utilization 40.6%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 3: Kingsessing Ave & 61st St

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Volume (veh/h)	3	43	59	20	35	19	41	210	14	19	166	4
Future Volume (veh/h)	3	43	59	20	35	19	41	210	14	19	166	4
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1800	1800	1800	1758	1758	1758	1786	1786	1786	1786	1786	1786
Adj Flow Rate, veh/h	3	49	68	23	40	22	47	241	16	22	191	5
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Percent Heavy Veh, %	0	0	0	3	3	3	1	1	1	1	1	1
Cap, veh/h	65	232	308	177	282	133	169	797	50	120	896	22
Arrive On Green	0.33	0.33	0.33	0.33	0.33	0.33	1.00	1.00	1.00	0.57	0.57	0.57
Sat Flow, veh/h	9	697	924	301	845	400	175	1406	88	95	1582	39
Grp Volume(v), veh/h	120	0	0	85	0	0	304	0	0	218	0	0
Grp Sat Flow(s),veh/h/ln	1630	0	0	1545	0	0	1669	0	0	1716	0	0
Q Serve(g_s), 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
Cycle Q Clear(g_c), s	3.2	0.0	0.0	2.1	0.0	0.0	0.0	0.0	0.0	3.6	0.0	0.0
Prop In Lane	0.02		0.57	0.27		0.26	0.15		0.05	0.10		0.02
Lane Grp Cap(c), veh/h	605	0	0	591	0	0	1015	0	0	1038	0	0
V/C Ratio(X)	0.20	0.00	0.00	0.14	0.00	0.00	0.30	0.00	0.00	0.21	0.00	0.00
Avail Cap(c_a), veh/h	605	0	0	591	0	0	1015	0	0	1038	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	14.4	0.0	0.0	14.0	0.0	0.0	0.0	0.0	0.0	6.4	0.0	0.0
Incr Delay (d2), s/veh	0.7	0.0	0.0	0.5	0.0	0.0	0.8	0.0	0.0	0.5	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	2.2	0.0	0.0	1.5	0.0	0.0	0.4	0.0	0.0	2.3	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	15.1	0.0	0.0	14.6	0.0	0.0	0.8	0.0	0.0	6.9	0.0	0.0
LnGrp LOS	B	A	A	B	A	A	A	A	A	A	A	A
Approach Vol, veh/h		120			85			304			218	
Approach Delay, s/veh		15.1			14.6			0.8			6.9	
Approach LOS		B			B			A			A	

Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		37.0		23.0		37.0		23.0				
Change Period (Y+Rc), s		3.0		3.0		3.0		3.0				
Max Green Setting (Gmax), s		34.0		20.0		34.0		20.0				
Max Q Clear Time (g_c+I1), s		2.0		5.2		5.6		4.1				
Green Ext Time (p_c), s		2.1		0.5		1.4		0.3				

Intersection Summary	
HCM 6th Ctrl Delay	6.6
HCM 6th LOS	A

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	3	43	59	20	35	19	41	210	14	51	134	4
Future Volume (vph)	3	43	59	20	35	19	41	210	14	51	134	4
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	10	12	12	11	12	12	11	12	12	11	12
Grade (%)		0%			-1%			0%			0%	
Storage Length (ft)	0		0	0		0	0		0	0		0
Storage Lanes	0		0	0		0	0		0	0		0
Taper Length (ft)	25			25			25			25		
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		990			1125			1170			1000	
Travel Time (s)		27.0			30.7			31.9			27.3	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	0%	0%	0%	0%	3%	0%	0%	1%	15%	0%	1%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	120	0	0	85	0	0	304	0	0	218	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	22.5	22.5		22.5	22.5		22.5	22.5		22.5	22.5	
Total Split (s)	23.0	23.0		23.0	23.0		37.0	37.0		37.0	37.0	
Total Split (%)	38.3%	38.3%		38.3%	38.3%		61.7%	61.7%		61.7%	61.7%	
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Lost Time Adjust (s)		0.0			0.0			0.0			0.0	
Total Lost Time (s)		3.0			3.0			3.0			3.0	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	Max	Max		Max	Max		Max	Max		Max	Max	
Act Effct Green (s)		20.0			20.0			34.0			34.0	
Actuated g/C Ratio		0.33			0.33			0.57			0.57	
v/c Ratio		0.21			0.16			0.34			0.26	
Control Delay		8.5			12.0			11.6			7.5	
Queue Delay		0.0			0.0			0.0			0.0	
Total Delay		8.5			12.0			11.6			7.5	
LOS		A			B			B			A	
Approach Delay		8.5			12.0			11.6			7.5	
Approach LOS		A			B			B			A	
Queue Length 50th (ft)		13			14			86			35	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 95th (ft)		42			40			156			64	
Internal Link Dist (ft)		910			1045			1090			920	
Turn Bay Length (ft)												
Base Capacity (vph)		560			531			907			852	
Starvation Cap Reductn		0			0			0			0	
Spillback Cap Reductn		0			0			0			0	
Storage Cap Reductn		0			0			0			0	
Reduced v/c Ratio		0.21			0.16			0.34			0.26	

Intersection Summary			
Area Type:	Other		
Cycle Length: 60			
Actuated Cycle Length: 60			
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 45			
Control Type: Pretimed			
Maximum v/c Ratio: 0.34			
Intersection Signal Delay: 9.9		Intersection LOS: A	
Intersection Capacity Utilization 35.6%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 3: Kingsessing Ave & 61st St

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Volume (veh/h)	3	43	59	20	35	19	41	210	14	51	134	4
Future Volume (veh/h)	3	43	59	20	35	19	41	210	14	51	134	4
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1800	1800	1800	1758	1758	1758	1786	1786	1786	1786	1786	1786
Adj Flow Rate, veh/h	3	49	68	23	40	22	47	241	16	59	154	5
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Percent Heavy Veh, %	0	0	0	3	3	3	1	1	1	1	1	1
Cap, veh/h	65	232	308	177	282	133	169	801	50	271	664	20
Arrive On Green	0.33	0.33	0.33	0.33	0.33	0.33	1.00	1.00	1.00	0.57	0.57	0.57
Sat Flow, veh/h	9	697	924	301	845	400	176	1413	88	344	1171	36
Grp Volume(v), veh/h	120	0	0	85	0	0	304	0	0	218	0	0
Grp Sat Flow(s),veh/h/ln	1630	0	0	1545	0	0	1678	0	0	1551	0	0
Q Serve(g_s), 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
Cycle Q Clear(g_c), s	3.2	0.0	0.0	2.1	0.0	0.0	0.0	0.0	0.0	3.6	0.0	0.0
Prop In Lane	0.02		0.57	0.27		0.26	0.15		0.05	0.27		0.02
Lane Grp Cap(c), veh/h	605	0	0	591	0	0	1020	0	0	955	0	0
V/C Ratio(X)	0.20	0.00	0.00	0.14	0.00	0.00	0.30	0.00	0.00	0.23	0.00	0.00
Avail Cap(c_a), veh/h	605	0	0	591	0	0	1020	0	0	955	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	14.4	0.0	0.0	14.0	0.0	0.0	0.0	0.0	0.0	6.4	0.0	0.0
Incr Delay (d2), s/veh	0.7	0.0	0.0	0.5	0.0	0.0	0.7	0.0	0.0	0.6	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	2.2	0.0	0.0	1.5	0.0	0.0	0.4	0.0	0.0	2.3	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	15.1	0.0	0.0	14.6	0.0	0.0	0.7	0.0	0.0	7.0	0.0	0.0
LnGrp LOS	B	A	A	B	A	A	A	A	A	A	A	A
Approach Vol, veh/h		120			85			304			218	
Approach Delay, s/veh		15.1			14.6			0.7			7.0	
Approach LOS		B			B			A			A	

Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		37.0		23.0		37.0		23.0				
Change Period (Y+Rc), s		3.0		3.0		3.0		3.0				
Max Green Setting (Gmax), s		34.0		20.0		34.0		20.0				
Max Q Clear Time (g_c+I1), s		2.0		5.2		5.6		4.1				
Green Ext Time (p_c), s		2.1		0.5		1.4		0.3				

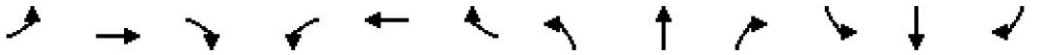
Intersection Summary												
HCM 6th Ctrl Delay			6.6									
HCM 6th LOS			A									

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	5	71	82	38	61	45	51	197	25	40	277	5
Future Volume (vph)	5	71	82	38	61	45	51	197	25	40	277	5
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	10	12	12	11	12	12	11	12	12	11	12
Grade (%)		0%			-1%			0%			0%	
Storage Length (ft)	0		0	0		0	0		0	0		0
Storage Lanes	0		0	0		0	0		0	0		0
Taper Length (ft)	25			25			25			25		
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		990			1125			1170			1000	
Travel Time (s)		27.0			30.7			31.9			27.3	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	0%	3%	9%	3%	0%	9%	0%	15%	20%	5%	10%	20%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	169	0	0	155	0	0	294	0	0	346	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	22.5	22.5		22.5	22.5		22.5	22.5		22.5	22.5	
Total Split (s)	23.0	23.0		23.0	23.0		37.0	37.0		37.0	37.0	
Total Split (%)	38.3%	38.3%		38.3%	38.3%		61.7%	61.7%		61.7%	61.7%	
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Lost Time Adjust (s)		0.0			0.0			0.0			0.0	
Total Lost Time (s)		3.0			3.0			3.0			3.0	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	Max	Max		Max	Max		Max	Max		Max	Max	
Act Effct Green (s)		20.0			20.0			34.0			34.0	
Actuated g/C Ratio		0.33			0.33			0.57			0.57	
v/c Ratio		0.31			0.30			0.37			0.41	
Control Delay		9.5			13.7			5.5			9.1	
Queue Delay		0.0			0.0			0.0			0.0	
Total Delay		9.5			13.7			5.5			9.1	
LOS		A			B			A			A	
Approach Delay		9.5			13.7			5.5			9.1	
Approach LOS		A			B			A			A	
Queue Length 50th (ft)		20			29			37			62	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 95th (ft)		59			73			62			112	
Internal Link Dist (ft)		910			1045			1090			920	
Turn Bay Length (ft)												
Base Capacity (vph)		547			515			785			847	
Starvation Cap Reductn		0			0			0			0	
Spillback Cap Reductn		0			0			0			0	
Storage Cap Reductn		0			0			0			0	
Reduced v/c Ratio		0.31			0.30			0.37			0.41	

Intersection Summary			
Area Type:	Other		
Cycle Length: 60			
Actuated Cycle Length: 60			
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 45			
Control Type: Pretimed			
Maximum v/c Ratio: 0.41			
Intersection Signal Delay: 8.8		Intersection LOS: A	
Intersection Capacity Utilization 52.0%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 3: Kingsessing Ave & 61st St



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Volume (veh/h)	5	71	82	38	61	45	51	197	25	40	277	5
Future Volume (veh/h)	5	71	82	38	61	45	51	197	25	40	277	5
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1758	1758	1758	1800	1800	1800	1589	1589	1589	1660	1660	1660
Adj Flow Rate, veh/h	5	76	88	41	66	48	55	212	27	43	298	5
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	3	3	3	0	0	0	15	15	15	10	10	10
Cap, veh/h	66	252	278	173	261	161	181	623	74	135	814	13
Arrive On Green	0.33	0.33	0.33	0.33	0.33	0.33	1.00	1.00	1.00	0.57	0.57	0.57
Sat Flow, veh/h	12	755	834	292	783	482	194	1099	131	120	1436	23
Grp Volume(v), veh/h	169	0	0	155	0	0	294	0	0	346	0	0
Grp Sat Flow(s),veh/h/ln	1602	0	0	1558	0	0	1423	0	0	1579	0	0
Q Serve(g_s), 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
Cycle Q Clear(g_c), s	4.7	0.0	0.0	4.0	0.0	0.0	0.0	0.0	0.0	6.9	0.0	0.0
Prop In Lane	0.03		0.52	0.26		0.31	0.19		0.09	0.12		0.01
Lane Grp Cap(c), veh/h	596	0	0	595	0	0	878	0	0	962	0	0
V/C Ratio(X)	0.28	0.00	0.00	0.26	0.00	0.00	0.34	0.00	0.00	0.36	0.00	0.00
Avail Cap(c_a), veh/h	596	0	0	595	0	0	878	0	0	962	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	14.9	0.0	0.0	14.7	0.0	0.0	0.0	0.0	0.0	7.1	0.0	0.0
Incr Delay (d2), s/veh	1.2	0.0	0.0	1.1	0.0	0.0	1.0	0.0	0.0	1.0	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.8	0.0	0.0	1.6	0.0	0.0	0.3	0.0	0.0	2.3	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	16.1	0.0	0.0	15.7	0.0	0.0	1.0	0.0	0.0	8.2	0.0	0.0
LnGrp LOS	B	A	A	B	A	A	A	A	A	A	A	A
Approach Vol, veh/h		169			155			294			346	
Approach Delay, s/veh		16.1			15.7			1.0			8.2	
Approach LOS		B			B			A			A	

Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		37.0		23.0		37.0		23.0				
Change Period (Y+Rc), s		3.0		3.0		3.0		3.0				
Max Green Setting (Gmax), s		34.0		20.0		34.0		20.0				
Max Q Clear Time (g_c+I1), s		2.0		6.7		8.9		6.0				
Green Ext Time (p_c), s		2.1		0.8		2.4		0.7				

Intersection Summary												
HCM 6th Ctrl Delay			8.6									
HCM 6th LOS			A									

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	5	71	82	38	61	45	51	197	25	40	277	5
Future Volume (vph)	5	71	82	38	61	45	51	197	25	40	277	5
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	10	12	12	11	12	12	11	12	12	11	12
Grade (%)		0%			-1%			0%			0%	
Storage Length (ft)	0		0	0		0	0		0	0		0
Storage Lanes	0		0	0		0	0		0	0		0
Taper Length (ft)	25			25			25			25		
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		990			1125			1170			1000	
Travel Time (s)		27.0			30.7			31.9			27.3	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	0%	3%	9%	3%	0%	9%	0%	15%	20%	5%	10%	20%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	169	0	0	155	0	0	294	0	0	346	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	22.5	22.5		22.5	22.5		22.5	22.5		22.5	22.5	
Total Split (s)	23.0	23.0		23.0	23.0		37.0	37.0		37.0	37.0	
Total Split (%)	38.3%	38.3%		38.3%	38.3%		61.7%	61.7%		61.7%	61.7%	
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Lost Time Adjust (s)		0.0			0.0			0.0			0.0	
Total Lost Time (s)		3.0			3.0			3.0			3.0	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	Max	Max		Max	Max		Max	Max		Max	Max	
Act Effct Green (s)		20.0			20.0			34.0			34.0	
Actuated g/C Ratio		0.33			0.33			0.57			0.57	
v/c Ratio		0.31			0.30			0.37			0.41	
Control Delay		9.5			13.7			5.5			9.1	
Queue Delay		0.0			0.0			0.0			0.0	
Total Delay		9.5			13.7			5.5			9.1	
LOS		A			B			A			A	
Approach Delay		9.5			13.7			5.5			9.1	
Approach LOS		A			B			A			A	
Queue Length 50th (ft)		20			29			37			62	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 95th (ft)		59			73			62			112	
Internal Link Dist (ft)		910			1045			1090			920	
Turn Bay Length (ft)												
Base Capacity (vph)		547			515			785			847	
Starvation Cap Reductn		0			0			0			0	
Spillback Cap Reductn		0			0			0			0	
Storage Cap Reductn		0			0			0			0	
Reduced v/c Ratio		0.31			0.30			0.37			0.41	

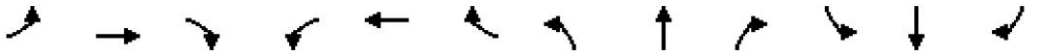
Intersection Summary			
Area Type:	Other		
Cycle Length: 60			
Actuated Cycle Length: 60			
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 45			
Control Type: Pretimed			
Maximum v/c Ratio: 0.41			
Intersection Signal Delay: 8.8		Intersection LOS: A	
Intersection Capacity Utilization 52.0%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 3: Kingsessing Ave & 61st St

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Volume (veh/h)	5	71	82	38	61	45	51	197	25	40	277	5
Future Volume (veh/h)	5	71	82	38	61	45	51	197	25	40	277	5
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1758	1758	1758	1800	1800	1800	1589	1589	1589	1660	1660	1660
Adj Flow Rate, veh/h	5	76	88	41	66	48	55	212	27	43	298	5
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	3	3	3	0	0	0	15	15	15	10	10	10
Cap, veh/h	66	252	278	173	261	161	181	623	74	135	814	13
Arrive On Green	0.33	0.33	0.33	0.33	0.33	0.33	1.00	1.00	1.00	0.57	0.57	0.57
Sat Flow, veh/h	12	755	834	292	783	482	194	1099	131	120	1436	23
Grp Volume(v), veh/h	169	0	0	155	0	0	294	0	0	346	0	0
Grp Sat Flow(s),veh/h/ln	1602	0	0	1558	0	0	1423	0	0	1579	0	0
Q Serve(g_s), 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
Cycle Q Clear(g_c), s	4.7	0.0	0.0	4.0	0.0	0.0	0.0	0.0	0.0	6.9	0.0	0.0
Prop In Lane	0.03		0.52	0.26		0.31	0.19		0.09	0.12		0.01
Lane Grp Cap(c), veh/h	596	0	0	595	0	0	878	0	0	962	0	0
V/C Ratio(X)	0.28	0.00	0.00	0.26	0.00	0.00	0.34	0.00	0.00	0.36	0.00	0.00
Avail Cap(c_a), veh/h	596	0	0	595	0	0	878	0	0	962	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	14.9	0.0	0.0	14.7	0.0	0.0	0.0	0.0	0.0	7.1	0.0	0.0
Incr Delay (d2), s/veh	1.2	0.0	0.0	1.1	0.0	0.0	1.0	0.0	0.0	1.0	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.8	0.0	0.0	1.6	0.0	0.0	0.3	0.0	0.0	2.3	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	16.1	0.0	0.0	15.7	0.0	0.0	1.0	0.0	0.0	8.2	0.0	0.0
LnGrp LOS	B	A	A	B	A	A	A	A	A	A	A	A
Approach Vol, veh/h		169			155			294			346	
Approach Delay, s/veh		16.1			15.7			1.0			8.2	
Approach LOS		B			B			A			A	

Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		37.0		23.0		37.0		23.0				
Change Period (Y+Rc), s		3.0		3.0		3.0		3.0				
Max Green Setting (Gmax), s		34.0		20.0		34.0		20.0				
Max Q Clear Time (g_c+I1), s		2.0		6.7		8.9		6.0				
Green Ext Time (p_c), s		2.1		0.8		2.4		0.7				

Intersection Summary		
HCM 6th Ctrl Delay		8.6
HCM 6th LOS		A



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	5	71	82	38	61	45	51	197	25	97	220	5
Future Volume (vph)	5	71	82	38	61	45	51	197	25	97	220	5
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	10	12	12	11	12	12	11	12	12	11	12
Grade (%)		0%			-1%			0%			0%	
Storage Length (ft)	0		0	0		0	0		0	0		0
Storage Lanes	0		0	0		0	0		0	0		0
Taper Length (ft)	25			25			25			25		
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		990			1125			1170			1000	
Travel Time (s)		27.0			30.7			31.9			27.3	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	0%	3%	9%	3%	0%	9%	0%	15%	20%	5%	10%	20%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	169	0	0	155	0	0	294	0	0	346	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	22.5	22.5		22.5	22.5		22.5	22.5		22.5	22.5	
Total Split (s)	23.0	23.0		23.0	23.0		37.0	37.0		37.0	37.0	
Total Split (%)	38.3%	38.3%		38.3%	38.3%		61.7%	61.7%		61.7%	61.7%	
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Lost Time Adjust (s)		0.0			0.0			0.0			0.0	
Total Lost Time (s)		3.0			3.0			3.0			3.0	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	Max	Max		Max	Max		Max	Max		Max	Max	
Act Effct Green (s)		20.0			20.0			34.0			34.0	
Actuated g/C Ratio		0.33			0.33			0.57			0.57	
v/c Ratio		0.31			0.30			0.37			0.46	
Control Delay		9.5			13.7			12.7			10.0	
Queue Delay		0.0			0.0			0.0			0.0	
Total Delay		9.5			13.7			12.7			10.0	
LOS		A			B			B			B	
Approach Delay		9.5			13.7			12.7			10.0	
Approach LOS		A			B			B			B	
Queue Length 50th (ft)		20			29			91			64	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 95th (ft)		59			73			163			120	
Internal Link Dist (ft)		910			1045			1090			920	
Turn Bay Length (ft)												
Base Capacity (vph)		547			515			785			757	
Starvation Cap Reductn		0			0			0			0	
Spillback Cap Reductn		0			0			0			0	
Storage Cap Reductn		0			0			0			0	
Reduced v/c Ratio		0.31			0.30			0.37			0.46	

Intersection Summary			
Area Type:	Other		
Cycle Length: 60			
Actuated Cycle Length: 60			
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 45			
Control Type: Pretimed			
Maximum v/c Ratio: 0.46			
Intersection Signal Delay: 11.3		Intersection LOS: B	
Intersection Capacity Utilization 57.8%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 3: Kingsessing Ave & 61st St

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Volume (veh/h)	5	71	82	38	61	45	51	197	25	97	220	5
Future Volume (veh/h)	5	71	82	38	61	45	51	197	25	97	220	5
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1758	1758	1758	1800	1800	1800	1589	1589	1589	1660	1660	1660
Adj Flow Rate, veh/h	5	76	88	41	66	48	55	212	27	104	237	5
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	3	3	3	0	0	0	15	15	15	10	10	10
Cap, veh/h	66	252	278	173	261	161	183	629	75	282	592	12
Arrive On Green	0.33	0.33	0.33	0.33	0.33	0.33	1.00	1.00	1.00	0.57	0.57	0.57
Sat Flow, veh/h	12	755	834	292	783	482	197	1110	132	361	1044	21
Grp Volume(v), veh/h	169	0	0	155	0	0	294	0	0	346	0	0
Grp Sat Flow(s),veh/h/ln	1602	0	0	1558	0	0	1439	0	0	1425	0	0
Q Serve(g_s), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.8	0.0	0.0
Cycle Q Clear(g_c), s	4.7	0.0	0.0	4.0	0.0	0.0	0.0	0.0	0.0	7.4	0.0	0.0
Prop In Lane	0.03		0.52	0.26		0.31	0.19		0.09	0.30		0.01
Lane Grp Cap(c), veh/h	596	0	0	595	0	0	887	0	0	886	0	0
V/C Ratio(X)	0.28	0.00	0.00	0.26	0.00	0.00	0.33	0.00	0.00	0.39	0.00	0.00
Avail Cap(c_a), veh/h	596	0	0	595	0	0	887	0	0	886	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	14.9	0.0	0.0	14.7	0.0	0.0	0.0	0.0	0.0	7.2	0.0	0.0
Incr Delay (d2), s/veh	1.2	0.0	0.0	1.1	0.0	0.0	1.0	0.0	0.0	1.3	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.8	0.0	0.0	1.6	0.0	0.0	0.2	0.0	0.0	2.3	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	16.1	0.0	0.0	15.7	0.0	0.0	1.0	0.0	0.0	8.5	0.0	0.0
LnGrp LOS	B	A	A	B	A	A	A	A	A	A	A	A
Approach Vol, veh/h		169			155			294			346	
Approach Delay, s/veh		16.1			15.7			1.0			8.5	
Approach LOS		B			B			A			A	

Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		37.0		23.0		37.0		23.0				
Change Period (Y+Rc), s		3.0		3.0		3.0		3.0				
Max Green Setting (Gmax), s		34.0		20.0		34.0		20.0				
Max Q Clear Time (g_c+I1), s		2.0		6.7		9.4		6.0				
Green Ext Time (p_c), s		2.1		0.8		2.4		0.7				

Intersection Summary												
HCM 6th Ctrl Delay			8.7									
HCM 6th LOS			A									

CAPACITY ANALYSES

CEMTERY AVENUE
AND
GREENWAY AVENUE/ 63RD STREET

Lane Group	WBL2	WBL	WBR	NBL	NBT	NBR	SBL	SBT	SBR	NEL	NER	NER2
Lane Configurations												
Traffic Volume (vph)	20	117	4	65	1	54	0	1	3	2	18	97
Future Volume (vph)	20	117	4	65	1	54	0	1	3	2	18	97
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	12	12	12	12	12
Grade (%)		0%			0%			0%		-1%		
Storage Length (ft)		0	0	0		0	0		0	0	0	
Storage Lanes		1	0	0		0	0		0	1	0	
Taper Length (ft)		25		25			25			25		
Link Speed (mph)		25			25			25		25		
Link Distance (ft)		525			619			581		714		
Travel Time (s)		14.3			16.9			15.8		19.5		
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	5%	5%	0%	5%	2%	4%	0%	0%	0%	0%	11%	6%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%		0%		
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	155	0	0	131	0	0	4	0	129	0	0
Sign Control		Stop			Stop			Stop		Stop		

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 38.7%		ICU Level of Service A	
Analysis Period (min) 15			

Intersection	
Intersection Delay, s/veh	8.2
Intersection LOS	A

Movement	WBL	WBR	NBL	NBT	NBR	SBL	SBT	SBR	NEU	NEL	NER
Lane Configurations											
Traffic Vol, veh/h	117	4	65	1	54	0	1	3	0	2	18
Future Vol, veh/h	117	4	65	1	54	0	1	3	0	2	18
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.92	0.91	0.91
Heavy Vehicles, %	5	0	5	2	4	0	0	0	2	0	11
Mvmt Flow	129	4	71	1	59	0	1	3	0	2	20
Number of Lanes	1	0	0	1	0	0	1	0	0	1	0

Approach	NB	SB	NE
Opposing Approach	SB	NB	
Opposing Lanes	1	1	0
Conflicting Approach Left	NE	WB	SB
Conflicting Lanes Left	1	1	1
Conflicting Approach Right	WB	NE	WB
Conflicting Lanes Right	1	1	1
HCM Control Delay	8.3	7.3	7.4
HCM LOS	A	A	A

Lane	NELn1	NBLn1	WBLn1	SBLn1
Vol Left, %	2%	54%	97%	0%
Vol Thru, %	0%	1%	0%	25%
Vol Right, %	98%	45%	3%	75%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	117	120	141	4
LT Vol	2	65	137	0
Through Vol	0	1	0	1
RT Vol	115	54	4	3
Lane Flow Rate	129	132	155	4
Geometry Grp	1	1	1	1
Degree of Util (X)	0.136	0.163	0.199	0.005
Departure Headway (Hd)	3.805	4.447	4.615	4.224
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	944	808	782	848
Service Time	1.82	2.466	2.615	2.248
HCM Lane V/C Ratio	0.137	0.163	0.198	0.005
HCM Control Delay	7.4	8.3	8.8	7.3
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	0.5	0.6	0.7	0

Lane Group	WBL2	WBL	WBR	NBL	NBT	NBR	SBL	SBT	SBR	NEL	NER	NER2
Lane Configurations												
Traffic Volume (vph)	20	117	4	65	1	54	0	1	3	2	18	97
Future Volume (vph)	20	117	4	65	1	54	0	1	3	2	18	97
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	12	12	12	12	12
Grade (%)		0%			0%			0%		-1%		
Storage Length (ft)		0	0	0		0	0		0	0	0	
Storage Lanes		1	0	0		0	0		0	1	0	
Taper Length (ft)		25		25			25			25		
Link Speed (mph)		25			25			25		25		
Link Distance (ft)		525			619			581		714		
Travel Time (s)		14.3			16.9			15.8		19.5		
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	5%	5%	0%	5%	2%	4%	0%	0%	0%	0%	11%	6%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%		0%		
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	155	0	0	131	0	0	4	0	129	0	0
Sign Control		Stop			Stop			Stop		Stop		

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 38.7%		ICU Level of Service A	
Analysis Period (min) 15			

Intersection	
Intersection Delay, s/veh	8.2
Intersection LOS	A

Movement	WBL	WBR	NBL	NBT	NBR	SBL	SBT	SBR	NEU	NEL	NER
Lane Configurations											
Traffic Vol, veh/h	117	4	65	1	54	0	1	3	0	2	18
Future Vol, veh/h	117	4	65	1	54	0	1	3	0	2	18
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.92	0.91	0.91
Heavy Vehicles, %	5	0	5	2	4	0	0	0	2	0	11
Mvmt Flow	129	4	71	1	59	0	1	3	0	2	20
Number of Lanes	1	0	0	1	0	0	1	0	0	1	0

Approach	NB	SB	NE
Opposing Approach	SB	NB	
Opposing Lanes	1	1	0
Conflicting Approach Left	NE	WB	SB
Conflicting Lanes Left	1	1	1
Conflicting Approach Right	WB	NE	WB
Conflicting Lanes Right	1	1	1
HCM Control Delay	8.3	7.3	7.4
HCM LOS	A	A	A

Lane	NELn1	NBLn1	WBLn1	SBLn1
Vol Left, %	2%	54%	97%	0%
Vol Thru, %	0%	1%	0%	25%
Vol Right, %	98%	45%	3%	75%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	117	120	141	4
LT Vol	2	65	137	0
Through Vol	0	1	0	1
RT Vol	115	54	4	3
Lane Flow Rate	129	132	155	4
Geometry Grp	1	1	1	1
Degree of Util (X)	0.136	0.163	0.199	0.005
Departure Headway (Hd)	3.805	4.447	4.615	4.224
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	944	808	782	848
Service Time	1.82	2.466	2.615	2.248
HCM Lane V/C Ratio	0.137	0.163	0.198	0.005
HCM Control Delay	7.4	8.3	8.8	7.3
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	0.5	0.6	0.7	0

Lane Group	WBL2	WBL	WBR	NBL	NBT	NBR	SBL	SBT	SBR	NEL	NER	NER2
Lane Configurations												
Traffic Volume (vph)	20	0	4	0	3	54	0	4	0	0	1	3
Future Volume (vph)	20	0	4	0	3	54	0	4	0	0	1	3
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	12	12	12	12	12
Grade (%)		0%			0%			0%		-1%		
Storage Length (ft)		0	0	0		0	0		0	0	0	
Storage Lanes		1	0	0		0	0		0	1	0	
Taper Length (ft)		25		25			25			25		
Link Speed (mph)		25			25			25		25		
Link Distance (ft)		525			619			581		714		
Travel Time (s)		14.3			16.9			15.8		19.5		
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	5%	5%	0%	5%	2%	4%	0%	0%	0%	0%	11%	6%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%		0%		
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	26	0	0	62	0	0	4	0	4	0	0
Sign Control		Stop			Stop			Stop		Stop		

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 20.2%		ICU Level of Service A	
Analysis Period (min) 15			

Intersection	
Intersection Delay, s/veh	6.9
Intersection LOS	A

Movement	WBL	WBR	NBL	NBT	NBR	SBL	SBT	SBR	NEU	NEL	NER
Lane Configurations											
Traffic Vol, veh/h	0	4	0	3	54	0	4	0	0	0	1
Future Vol, veh/h	0	4	0	3	54	0	4	0	0	0	1
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.92	0.91	0.91
Heavy Vehicles, %	5	0	5	2	4	0	0	0	2	0	11
Mvmt Flow	0	4	0	3	59	0	4	0	0	0	1
Number of Lanes	1	0	0	1	0	0	1	0	0	1	0

Approach	NB	SB	NE
Opposing Approach	SB	NB	
Opposing Lanes	1	1	0
Conflicting Approach Left	NE	WB	SB
Conflicting Lanes Left	1	1	1
Conflicting Approach Right	WB	NE	WB
Conflicting Lanes Right	1	1	1
HCM Control Delay	6.7	7	6.5
HCM LOS	A	A	A

Lane	NELn1	NBLn1	WBLn1	SBLn1
Vol Left, %	0%	0%	83%	0%
Vol Thru, %	0%	5%	0%	100%
Vol Right, %	100%	95%	17%	0%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	4	57	24	4
LT Vol	0	0	20	0
Through Vol	0	3	0	4
RT Vol	4	54	4	0
Lane Flow Rate	4	63	26	4
Geometry Grp	1	1	1	1
Degree of Util (X)	0.004	0.06	0.031	0.005
Departure Headway (Hd)	3.436	3.422	4.173	4
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	1043	1048	861	896
Service Time	1.453	1.438	2.182	2.019
HCM Lane V/C Ratio	0.004	0.06	0.03	0.004
HCM Control Delay	6.5	6.7	7.3	7
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	0	0.2	0.1	0

Lane Group	WBL2	WBL	WBR	NBL	NBT	NBR	SBL	SBT	SBR	NEL	NER	NER2
Lane Configurations												
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	12	12	12	12	12
Grade (%)		0%			0%			0%		-1%		
Storage Length (ft)		0	0	0		0	0		0	0	0	
Storage Lanes		1	0	0		0	0		0	1	0	
Taper Length (ft)		25		25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.992			0.931					0.866		
Flt Protected		0.955			0.977			0.950				
Satd. Flow (prot)	0	1768	0	0	1728	0	0	1805	0	1627	0	0
Flt Permitted		0.955			0.977			0.950				
Satd. Flow (perm)	0	1768	0	0	1728	0	0	1805	0	1627	0	0
Link Speed (mph)		25			25			25		25		
Link Distance (ft)		525			619			581		714		
Travel Time (s)		14.3			16.9			15.8		19.5		
Adj. Flow (vph)	62	222	18	84	2	89	2	0	0	1	30	151
Lane Group Flow (vph)	0	302	0	0	175	0	0	2	0	182	0	0
Sign Control		Stop			Stop			Stop		Stop		

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 44.6%		ICU Level of Service A	
Analysis Period (min) 15			

Intersection	
Intersection Delay, s/veh	9.6
Intersection LOS	A

Movement	WBL	WBR	NBL	NBT	NBR	SBL	SBT	SBR	NEU	NEL	NER
Lane Configurations											
Traffic Vol, veh/h	206	17	78	2	83	2	0	0	0	1	28
Future Vol, veh/h	206	17	78	2	83	2	0	0	0	1	28
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.92	0.93	0.93
Heavy Vehicles, %	2	6	0	0	0	0	0	0	2	0	0
Mvmt Flow	222	18	84	2	89	2	0	0	0	1	30
Number of Lanes	1	0	0	1	0	0	1	0	0	1	0

Approach	NB	SB	NE
Opposing Approach	SB	NB	
Opposing Lanes	1	1	0
Conflicting Approach Left	NE	WB	SB
Conflicting Lanes Left	1	1	1
Conflicting Approach Right	WB	NE	WB
Conflicting Lanes Right	1	1	1
HCM Control Delay	9.3	8.5	8.2
HCM LOS	A	A	A

Lane	NELn1	NBLn1	WBLn1	SBLn1
Vol Left, %	1%	48%	94%	100%
Vol Thru, %	0%	1%	0%	0%
Vol Right, %	99%	51%	6%	0%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	169	163	281	2
LT Vol	1	78	264	2
Through Vol	0	2	0	0
RT Vol	168	83	17	0
Lane Flow Rate	182	175	302	2
Geometry Grp	1	1	1	1
Degree of Util (X)	0.206	0.232	0.392	0.003
Departure Headway (Hd)	4.086	4.764	4.668	5.427
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	876	752	770	656
Service Time	2.127	2.808	2.705	3.491
HCM Lane V/C Ratio	0.208	0.233	0.392	0.003
HCM Control Delay	8.2	9.3	10.7	8.5
HCM Lane LOS	A	A	B	A
HCM 95th-tile Q	0.8	0.9	1.9	0

Lane Group	WBL2	WBL	WBR	NBL	NBT	NBR	SBL	SBT	SBR	NEL	NER	NER2
Lane Configurations												
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	12	12	12	12	12
Grade (%)		0%			0%			0%		-1%		
Storage Length (ft)		0	0	0		0	0		0	0	0	
Storage Lanes		1	0	0		0	0		0	1	0	
Taper Length (ft)		25		25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.992			0.931					0.866		
Flt Protected		0.955			0.977			0.950				
Satd. Flow (prot)	0	1768	0	0	1728	0	0	1805	0	1627	0	0
Flt Permitted		0.955			0.977			0.950				
Satd. Flow (perm)	0	1768	0	0	1728	0	0	1805	0	1627	0	0
Link Speed (mph)		25			25			25		25		
Link Distance (ft)		525			619			581		714		
Travel Time (s)		14.3			16.9			15.8		19.5		
Adj. Flow (vph)	62	222	18	84	2	89	2	0	0	1	30	151
Lane Group Flow (vph)	0	302	0	0	175	0	0	2	0	182	0	0
Sign Control		Stop			Stop			Stop		Stop		

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 44.6%		ICU Level of Service A	
Analysis Period (min) 15			

Intersection	
Intersection Delay, s/veh	9.6
Intersection LOS	A

Movement	WBL	WBR	NBL	NBT	NBR	SBL	SBT	SBR	NEU	NEL	NER
Lane Configurations											
Traffic Vol, veh/h	206	17	78	2	83	2	0	0	0	1	28
Future Vol, veh/h	206	17	78	2	83	2	0	0	0	1	28
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.92	0.93	0.93
Heavy Vehicles, %	2	6	0	0	0	0	0	0	2	0	0
Mvmt Flow	222	18	84	2	89	2	0	0	0	1	30
Number of Lanes	1	0	0	1	0	0	1	0	0	1	0

Approach	NB	SB	NE
Opposing Approach	SB	NB	
Opposing Lanes	1	1	0
Conflicting Approach Left	NE	WB	SB
Conflicting Lanes Left	1	1	1
Conflicting Approach Right	WB	NE	WB
Conflicting Lanes Right	1	1	1
HCM Control Delay	9.3	8.5	8.2
HCM LOS	A	A	A

Lane	NELn1	NBLn1	WBLn1	SBLn1
Vol Left, %	1%	48%	94%	100%
Vol Thru, %	0%	1%	0%	0%
Vol Right, %	99%	51%	6%	0%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	169	163	281	2
LT Vol	1	78	264	2
Through Vol	0	2	0	0
RT Vol	168	83	17	0
Lane Flow Rate	182	175	302	2
Geometry Grp	1	1	1	1
Degree of Util (X)	0.206	0.232	0.392	0.003
Departure Headway (Hd)	4.086	4.764	4.668	5.427
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	876	752	770	656
Service Time	2.127	2.808	2.705	3.491
HCM Lane V/C Ratio	0.208	0.233	0.392	0.003
HCM Control Delay	8.2	9.3	10.7	8.5
HCM Lane LOS	A	A	B	A
HCM 95th-tile Q	0.8	0.9	1.9	0

Lane Group	WBL2	WBL	WBR	NBL	NBT	NBR	SBL	SBT	SBR	NEL	NER	NER2
Lane Configurations												
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	12	12	12	12	12
Grade (%)		0%			0%			0%		-1%		
Storage Length (ft)		0	0	0		0	0		0	0	0	
Storage Lanes		1	0	0		0	0		0	1	0	
Taper Length (ft)		25		25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.970			0.869					0.865		
Flt Protected		0.963						0.950				
Satd. Flow (prot)	0	1751	0	0	1651	0	0	1805	0	1625	0	0
Flt Permitted		0.963						0.950				
Satd. Flow (perm)	0	1751	0	0	1651	0	0	1805	0	1625	0	0
Link Speed (mph)		25			25			25		25		
Link Distance (ft)		525			619			581		714		
Travel Time (s)		14.3			16.9			15.8		19.5		
Adj. Flow (vph)	62	0	18	0	3	89	2	0	0	0	1	5
Lane Group Flow (vph)	0	80	0	0	92	0	0	2	0	6	0	0
Sign Control		Stop			Stop			Stop		Stop		

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 22.9%		ICU Level of Service A	
Analysis Period (min) 15			

Intersection	
Intersection Delay, s/veh	7.2
Intersection LOS	A

Movement	WBL	WBR	NBL	NBT	NBR	SBL	SBT	SBR	NEU	NEL	NER
Lane Configurations											
Traffic Vol, veh/h	0	17	0	3	83	2	0	0	0	0	1
Future Vol, veh/h	0	17	0	3	83	2	0	0	0	0	1
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.92	0.93	0.93
Heavy Vehicles, %	2	6	0	0	0	0	0	0	2	0	0
Mvmt Flow	0	18	0	3	89	2	0	0	0	0	1
Number of Lanes	1	0	0	1	0	0	1	0	0	1	0

Approach	NB	SB	NE
Opposing Approach	SB	NB	
Opposing Lanes	1	1	0
Conflicting Approach Left	NE	WB	SB
Conflicting Lanes Left	1	1	1
Conflicting Approach Right	WB	NE	WB
Conflicting Lanes Right	1	1	1
HCM Control Delay	6.9	7.4	6.6
HCM LOS	A	A	A

Lane	NELn1	NBLn1	WBLn1	SBLn1
Vol Left, %	0%	0%	77%	100%
Vol Thru, %	0%	3%	0%	0%
Vol Right, %	100%	97%	23%	0%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	6	86	75	2
LT Vol	0	0	58	2
Through Vol	0	3	0	0
RT Vol	6	83	17	0
Lane Flow Rate	6	92	81	2
Geometry Grp	1	1	1	1
Degree of Util (X)	0.006	0.089	0.092	0.003
Departure Headway (Hd)	3.526	3.474	4.088	4.324
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	1012	1026	878	824
Service Time	1.559	1.514	2.104	2.37
HCM Lane V/C Ratio	0.006	0.09	0.092	0.002
HCM Control Delay	6.6	6.9	7.5	7.4
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	0	0.3	0.3	0

CAPACITY ANALYSES

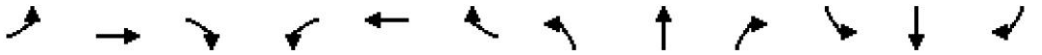
WOODLAND AVENUE
AND
65TH STREET

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	18	162	15	12	104	19	20	118	20	23	131	17
Future Volume (vph)	18	162	15	12	104	19	20	118	20	23	131	17
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	12	12	12	12	12	12	11	12	12	11	12
Grade (%)		-1%			0%			0%			0%	
Storage Length (ft)	0		0	0		0	0		0	0		0
Storage Lanes	0		0	0		0	0		0	0		0
Taper Length (ft)	25			25			25			25		
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		1110			1000			1000			990	
Travel Time (s)		30.3			27.3			27.3			27.0	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	6%	7%	0%	8%	7%	0%	5%	17%	0%	4%	16%	8%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	207	0	0	144	0	0	168	0	0	181	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	22.5	22.5		22.5	22.5		22.5	22.5		22.5	22.5	
Total Split (s)	23.0	23.0		23.0	23.0		37.0	37.0		37.0	37.0	
Total Split (%)	38.3%	38.3%		38.3%	38.3%		61.7%	61.7%		61.7%	61.7%	
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Lost Time Adjust (s)		0.0			0.0			0.0			0.0	
Total Lost Time (s)		3.0			3.0			3.0			3.0	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	Max	Max		Max	Max		Max	Max		Max	Max	
Act Effct Green (s)		20.0			20.0			34.0			34.0	
Actuated g/C Ratio		0.33			0.33			0.57			0.57	
v/c Ratio		0.38			0.26			0.20			0.22	
Control Delay		17.8			14.6			6.3			8.9	
Queue Delay		0.0			0.0			0.0			0.0	
Total Delay		17.8			14.6			6.3			8.9	
LOS		B			B			A			A	
Approach Delay		17.8			14.6			6.3			8.9	
Approach LOS		B			B			A			A	
Queue Length 50th (ft)		67			33			23			39	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 95th (ft)		120			71			48			70	
Internal Link Dist (ft)		1030			920			920			910	
Turn Bay Length (ft)												
Base Capacity (vph)		552			550			834			831	
Starvation Cap Reductn		0			0			0			0	
Spillback Cap Reductn		0			0			0			0	
Storage Cap Reductn		0			0			0			0	
Reduced v/c Ratio		0.38			0.26			0.20			0.22	

Intersection Summary			
Area Type:	Other		
Cycle Length: 60			
Actuated Cycle Length: 60			
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 45			
Control Type: Pretimed			
Maximum v/c Ratio: 0.38			
Intersection Signal Delay: 12.1		Intersection LOS: B	
Intersection Capacity Utilization 34.5%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 5: Woodland Ave & 65th St



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Volume (veh/h)	18	162	15	12	104	19	20	118	20	23	131	17
Future Volume (veh/h)	18	162	15	12	104	19	20	118	20	23	131	17
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1702	1702	1702	1702	1702	1702	1561	1561	1561	1575	1575	1575
Adj Flow Rate, veh/h	19	172	16	13	111	20	21	126	21	24	139	18
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	7	7	7	7	7	7	17	17	17	16	16	16
Cap, veh/h	87	485	42	84	450	75	132	664	104	139	687	84
Arrive On Green	0.22	0.22	0.22	0.33	0.33	0.33	0.57	0.57	0.57	1.00	1.00	1.00
Sat Flow, veh/h	65	1455	127	55	1349	226	113	1172	184	125	1213	148
Grp Volume(v), veh/h	207	0	0	144	0	0	168	0	0	181	0	0
Grp Sat Flow(s),veh/h/ln	1647	0	0	1630	0	0	1469	0	0	1485	0	0
Q Serve(g_s), 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
Cycle Q Clear(g_c), s	6.3	0.0	0.0	3.8	0.0	0.0	3.2	0.0	0.0	0.0	0.0	0.0
Prop In Lane	0.09		0.08	0.09		0.14	0.12		0.12	0.13		0.10
Lane Grp Cap(c), veh/h	615	0	0	609	0	0	900	0	0	910	0	0
V/C Ratio(X)	0.34	0.00	0.00	0.24	0.00	0.00	0.19	0.00	0.00	0.20	0.00	0.00
Avail Cap(c_a), veh/h	615	0	0	609	0	0	900	0	0	910	0	0
HCM Platoon Ratio	0.67	0.67	0.67	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	18.0	0.0	0.0	14.6	0.0	0.0	6.3	0.0	0.0	0.0	0.0	0.0
Incr Delay (d2), s/veh	1.5	0.0	0.0	0.9	0.0	0.0	0.5	0.0	0.0	0.5	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	4.7	0.0	0.0	2.7	0.0	0.0	1.8	0.0	0.0	0.2	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	19.4	0.0	0.0	15.5	0.0	0.0	6.8	0.0	0.0	0.5	0.0	0.0
LnGrp LOS	B	A	A	B	A	A	A	A	A	A	A	A
Approach Vol, veh/h		207			144			168			181	
Approach Delay, s/veh		19.4			15.5			6.8			0.5	
Approach LOS		B			B			A			A	

Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		37.0		23.0		37.0		23.0				
Change Period (Y+Rc), s		3.0		3.0		3.0		3.0				
Max Green Setting (Gmax), s		34.0		20.0		34.0		20.0				
Max Q Clear Time (g_c+I1), s		5.2		8.3		2.0		5.8				
Green Ext Time (p_c), s		1.1		0.9		1.2		0.6				

Intersection Summary												
HCM 6th Ctrl Delay			10.7									
HCM 6th LOS			B									

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	18	162	15	12	104	19	20	118	20	23	131	17
Future Volume (vph)	18	162	15	12	104	19	20	118	20	23	131	17
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	12	12	12	12	12	12	11	12	12	11	12
Grade (%)		-1%			0%			0%			0%	
Storage Length (ft)	0		0	0		0	0		0	0		0
Storage Lanes	0		0	0		0	0		0	0		0
Taper Length (ft)	25			25			25			25		
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		1110			1000			1000			990	
Travel Time (s)		30.3			27.3			27.3			27.0	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	6%	7%	0%	8%	7%	0%	5%	17%	0%	4%	16%	8%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	207	0	0	144	0	0	168	0	0	181	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	22.5	22.5		22.5	22.5		22.5	22.5		22.5	22.5	
Total Split (s)	23.0	23.0		23.0	23.0		37.0	37.0		37.0	37.0	
Total Split (%)	38.3%	38.3%		38.3%	38.3%		61.7%	61.7%		61.7%	61.7%	
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Lost Time Adjust (s)		0.0			0.0			0.0			0.0	
Total Lost Time (s)		3.0			3.0			3.0			3.0	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	Max	Max		Max	Max		Max	Max		Max	Max	
Act Effct Green (s)		20.0			20.0			34.0			34.0	
Actuated g/C Ratio		0.33			0.33			0.57			0.57	
v/c Ratio		0.38			0.26			0.20			0.22	
Control Delay		17.8			14.6			6.3			8.9	
Queue Delay		0.0			0.0			0.0			0.0	
Total Delay		17.8			14.6			6.3			8.9	
LOS		B			B			A			A	
Approach Delay		17.8			14.6			6.3			8.9	
Approach LOS		B			B			A			A	
Queue Length 50th (ft)		67			33			23			39	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 95th (ft)		120			71			48			70	
Internal Link Dist (ft)		1030			920			920			910	
Turn Bay Length (ft)												
Base Capacity (vph)		552			550			834			831	
Starvation Cap Reductn		0			0			0			0	
Spillback Cap Reductn		0			0			0			0	
Storage Cap Reductn		0			0			0			0	
Reduced v/c Ratio		0.38			0.26			0.20			0.22	

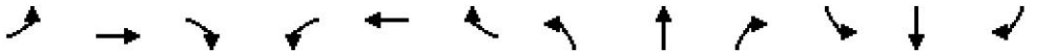
Intersection Summary			
Area Type:	Other		
Cycle Length: 60			
Actuated Cycle Length: 60			
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 45			
Control Type: Pretimed			
Maximum v/c Ratio: 0.38			
Intersection Signal Delay: 12.1		Intersection LOS: B	
Intersection Capacity Utilization 34.5%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 5: Woodland Ave & 65th St

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Volume (veh/h)	18	162	15	12	104	19	20	118	20	23	131	17
Future Volume (veh/h)	18	162	15	12	104	19	20	118	20	23	131	17
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1702	1702	1702	1702	1702	1702	1561	1561	1561	1575	1575	1575
Adj Flow Rate, veh/h	19	172	16	13	111	20	21	126	21	24	139	18
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	7	7	7	7	7	7	17	17	17	16	16	16
Cap, veh/h	87	485	42	84	450	75	132	664	104	139	687	84
Arrive On Green	0.22	0.22	0.22	0.33	0.33	0.33	0.57	0.57	0.57	1.00	1.00	1.00
Sat Flow, veh/h	65	1455	127	55	1349	226	113	1172	184	125	1213	148
Grp Volume(v), veh/h	207	0	0	144	0	0	168	0	0	181	0	0
Grp Sat Flow(s),veh/h/ln	1647	0	0	1630	0	0	1469	0	0	1485	0	0
Q Serve(g_s), 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
Cycle Q Clear(g_c), s	6.3	0.0	0.0	3.8	0.0	0.0	3.2	0.0	0.0	0.0	0.0	0.0
Prop In Lane	0.09		0.08	0.09		0.14	0.12		0.12	0.13		0.10
Lane Grp Cap(c), veh/h	615	0	0	609	0	0	900	0	0	910	0	0
V/C Ratio(X)	0.34	0.00	0.00	0.24	0.00	0.00	0.19	0.00	0.00	0.20	0.00	0.00
Avail Cap(c_a), veh/h	615	0	0	609	0	0	900	0	0	910	0	0
HCM Platoon Ratio	0.67	0.67	0.67	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	18.0	0.0	0.0	14.6	0.0	0.0	6.3	0.0	0.0	0.0	0.0	0.0
Incr Delay (d2), s/veh	1.5	0.0	0.0	0.9	0.0	0.0	0.5	0.0	0.0	0.5	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	4.7	0.0	0.0	2.7	0.0	0.0	1.8	0.0	0.0	0.2	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	19.4	0.0	0.0	15.5	0.0	0.0	6.8	0.0	0.0	0.5	0.0	0.0
LnGrp LOS	B	A	A	B	A	A	A	A	A	A	A	A
Approach Vol, veh/h		207			144			168			181	
Approach Delay, s/veh		19.4			15.5			6.8			0.5	
Approach LOS		B			B			A			A	

Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		37.0		23.0		37.0		23.0				
Change Period (Y+Rc), s		3.0		3.0		3.0		3.0				
Max Green Setting (Gmax), s		34.0		20.0		34.0		20.0				
Max Q Clear Time (g_c+I1), s		5.2		8.3		2.0		5.8				
Green Ext Time (p_c), s		1.1		0.9		1.2		0.6				

Intersection Summary												
HCM 6th Ctrl Delay			10.7									
HCM 6th LOS			B									

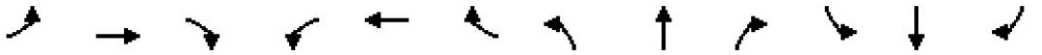


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	62	162	15	12	104	19	20	118	20	23	138	17
Future Volume (vph)	62	162	15	12	104	19	20	118	20	23	138	17
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	12	12	12	12	12	12	11	12	12	11	12
Grade (%)		-1%			0%			0%			0%	
Storage Length (ft)	0		0	0		0	0		0	0		0
Storage Lanes	0		0	0		0	0		0	0		0
Taper Length (ft)	25			25			25			25		
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		1110			1000			1000			990	
Travel Time (s)		30.3			27.3			27.3			27.0	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	6%	7%	0%	8%	7%	0%	5%	17%	0%	4%	16%	8%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	254	0	0	144	0	0	168	0	0	189	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	22.5	22.5		22.5	22.5		22.5	22.5		22.5	22.5	
Total Split (s)	23.0	23.0		23.0	23.0		37.0	37.0		37.0	37.0	
Total Split (%)	38.3%	38.3%		38.3%	38.3%		61.7%	61.7%		61.7%	61.7%	
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Lost Time Adjust (s)		0.0			0.0			0.0			0.0	
Total Lost Time (s)		3.0			3.0			3.0			3.0	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	Max	Max		Max	Max		Max	Max		Max	Max	
Act Effct Green (s)		20.0			20.0			34.0			34.0	
Actuated g/C Ratio		0.33			0.33			0.57			0.57	
v/c Ratio		0.50			0.26			0.20			0.23	
Control Delay		21.2			14.7			6.3			10.0	
Queue Delay		0.0			0.0			0.0			0.0	
Total Delay		21.2			14.7			6.3			10.0	
LOS		C			B			A			B	
Approach Delay		21.2			14.7			6.3			10.0	
Approach LOS		C			B			A			B	
Queue Length 50th (ft)		87			33			23			48	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 95th (ft)		85			71			48			80	
Internal Link Dist (ft)		1030			920			920			910	
Turn Bay Length (ft)												
Base Capacity (vph)		509			548			833			831	
Starvation Cap Reductn		0			0			0			0	
Spillback Cap Reductn		0			0			0			0	
Storage Cap Reductn		0			0			0			0	
Reduced v/c Ratio		0.50			0.26			0.20			0.23	

Intersection Summary			
Area Type:	Other		
Cycle Length: 60			
Actuated Cycle Length: 60			
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 45			
Control Type: Pretimed			
Maximum v/c Ratio: 0.50			
Intersection Signal Delay: 13.8		Intersection LOS: B	
Intersection Capacity Utilization 44.8%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 5: Woodland Ave & 65th St



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Volume (veh/h)	62	162	15	12	104	19	20	118	20	23	138	17
Future Volume (veh/h)	62	162	15	12	104	19	20	118	20	23	138	17
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1702	1702	1702	1702	1702	1702	1561	1561	1561	1575	1575	1575
Adj Flow Rate, veh/h	66	172	16	13	111	20	21	126	21	24	147	18
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	7	7	7	7	7	7	17	17	17	16	16	16
Cap, veh/h	170	389	32	84	450	75	132	664	104	134	697	80
Arrive On Green	0.22	0.22	0.22	0.33	0.33	0.33	0.57	0.57	0.57	1.00	1.00	1.00
Sat Flow, veh/h	283	1166	97	55	1349	226	113	1172	184	118	1231	142
Grp Volume(v), veh/h	254	0	0	144	0	0	168	0	0	189	0	0
Grp Sat Flow(s),veh/h/ln	1547	0	0	1630	0	0	1468	0	0	1490	0	0
Q Serve(g_s), s	2.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	8.2	0.0	0.0	3.8	0.0	0.0	3.2	0.0	0.0	0.0	0.0	0.0
Prop In Lane	0.26		0.06	0.09		0.14	0.12		0.12	0.13		0.10
Lane Grp Cap(c), veh/h	591	0	0	609	0	0	899	0	0	912	0	0
V/C Ratio(X)	0.43	0.00	0.00	0.24	0.00	0.00	0.19	0.00	0.00	0.21	0.00	0.00
Avail Cap(c_a), veh/h	591	0	0	609	0	0	899	0	0	912	0	0
HCM Platoon Ratio	0.67	0.67	0.67	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	18.6	0.0	0.0	14.6	0.0	0.0	6.3	0.0	0.0	0.0	0.0	0.0
Incr Delay (d2), s/veh	2.3	0.0	0.0	0.9	0.0	0.0	0.5	0.0	0.0	0.5	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	6.1	0.0	0.0	2.7	0.0	0.0	1.8	0.0	0.0	0.2	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	20.9	0.0	0.0	15.5	0.0	0.0	6.8	0.0	0.0	0.5	0.0	0.0
LnGrp LOS	C	A	A	B	A	A	A	A	A	A	A	A
Approach Vol, veh/h		254			144			168			189	
Approach Delay, s/veh		20.9			15.5			6.8			0.5	
Approach LOS		C			B			A			A	

Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		37.0		23.0		37.0		23.0				
Change Period (Y+Rc), s		3.0		3.0		3.0		3.0				
Max Green Setting (Gmax), s		34.0		20.0		34.0		20.0				
Max Q Clear Time (g_c+I1), s		5.2		10.2		2.0		5.8				
Green Ext Time (p_c), s		1.1		1.0		1.2		0.6				

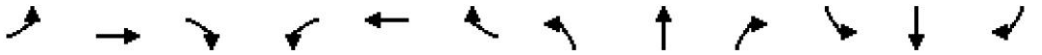
Intersection Summary												
HCM 6th Ctrl Delay			11.6									
HCM 6th LOS			B									

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	19	168	33	39	151	35	28	204	35	45	229	58
Future Volume (vph)	19	168	33	39	151	35	28	204	35	45	229	58
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	12	12	12	12	12	12	11	12	12	11	12
Grade (%)		-1%			0%			0%			0%	
Storage Length (ft)	0		0	0		0	0		0	0		0
Storage Lanes	0		0	0		0	0		0	0		0
Taper Length (ft)	25			25			25			25		
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		1110			1000			1000			990	
Travel Time (s)		30.3			27.3			27.3			27.0	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	0%	10%	3%	3%	5%	3%	0%	5%	3%	0%	7%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	232	0	0	237	0	0	281	0	0	349	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	22.5	22.5		22.5	22.5		22.5	22.5		22.5	22.5	
Total Split (s)	23.0	23.0		23.0	23.0		37.0	37.0		37.0	37.0	
Total Split (%)	38.3%	38.3%		38.3%	38.3%		61.7%	61.7%		61.7%	61.7%	
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Lost Time Adjust (s)		0.0			0.0			0.0			0.0	
Total Lost Time (s)		3.0			3.0			3.0			3.0	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	Max	Max		Max	Max		Max	Max		Max	Max	
Act Effct Green (s)		20.0			20.0			34.0			34.0	
Actuated g/C Ratio		0.33			0.33			0.57			0.57	
v/c Ratio		0.43			0.45			0.31			0.40	
Control Delay		17.6			17.7			7.5			9.8	
Queue Delay		0.0			0.0			0.0			0.0	
Total Delay		17.6			17.7			7.5			9.8	
LOS		B			B			A			A	
Approach Delay		17.6			17.7			7.5			9.8	
Approach LOS		B			B			A			A	
Queue Length 50th (ft)		69			60			43			73	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 95th (ft)		120			116			82			89	
Internal Link Dist (ft)		1030			920			920			910	
Turn Bay Length (ft)												
Base Capacity (vph)		540			532			894			870	
Starvation Cap Reductn		0			0			0			0	
Spillback Cap Reductn		0			0			0			0	
Storage Cap Reductn		0			0			0			0	
Reduced v/c Ratio		0.43			0.45			0.31			0.40	

Intersection Summary			
Area Type:	Other		
Cycle Length: 60			
Actuated Cycle Length: 60			
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 45			
Control Type: Pretimed			
Maximum v/c Ratio: 0.45			
Intersection Signal Delay: 12.6		Intersection LOS: B	
Intersection Capacity Utilization 56.0%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 5: Woodland Ave & 65th St



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Volume (veh/h)	19	168	33	39	151	35	28	204	35	45	229	58
Future Volume (veh/h)	19	168	33	39	151	35	28	204	35	45	229	58
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1660	1660	1660	1730	1730	1730	1730	1730	1730	1702	1702	1702
Adj Flow Rate, veh/h	20	177	35	41	159	37	29	215	37	47	241	61
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	10	10	10	5	5	5	5	5	5	7	7	7
Cap, veh/h	85	428	80	123	395	83	119	746	121	144	656	155
Arrive On Green	0.22	0.22	0.22	0.33	0.33	0.33	0.57	0.57	0.57	1.00	1.00	1.00
Sat Flow, veh/h	60	1284	239	157	1186	248	92	1317	214	134	1157	273
Grp Volume(v), veh/h	232	0	0	237	0	0	281	0	0	349	0	0
Grp Sat Flow(s),veh/h/ln	1582	0	0	1591	0	0	1623	0	0	1564	0	0
Q Serve(g_s), 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
Cycle Q Clear(g_c), s	7.4	0.0	0.0	6.6	0.0	0.0	5.2	0.0	0.0	0.0	0.0	0.0
Prop In Lane	0.09		0.15	0.17		0.16	0.10		0.13	0.13		0.17
Lane Grp Cap(c), veh/h	593	0	0	601	0	0	986	0	0	955	0	0
V/C Ratio(X)	0.39	0.00	0.00	0.39	0.00	0.00	0.28	0.00	0.00	0.37	0.00	0.00
Avail Cap(c_a), veh/h	593	0	0	601	0	0	986	0	0	955	0	0
HCM Platoon Ratio	0.67	0.67	0.67	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	18.4	0.0	0.0	15.5	0.0	0.0	6.8	0.0	0.0	0.0	0.0	0.0
Incr Delay (d2), s/veh	1.9	0.0	0.0	1.9	0.0	0.0	0.7	0.0	0.0	1.1	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.1	0.0	0.0	2.6	0.0	0.0	1.7	0.0	0.0	0.3	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	20.3	0.0	0.0	17.5	0.0	0.0	7.5	0.0	0.0	1.1	0.0	0.0
LnGrp LOS	C	A	A	B	A	A	A	A	A	A	A	A
Approach Vol, veh/h		232			237			281			349	
Approach Delay, s/veh		20.3			17.5			7.5			1.1	
Approach LOS		C			B			A			A	

Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		37.0		23.0		37.0		23.0				
Change Period (Y+Rc), s		3.0		3.0		3.0		3.0				
Max Green Setting (Gmax), s		34.0		20.0		34.0		20.0				
Max Q Clear Time (g_c+I1), s		7.2		9.4		2.0		8.6				
Green Ext Time (p_c), s		1.9		1.0		2.6		1.1				

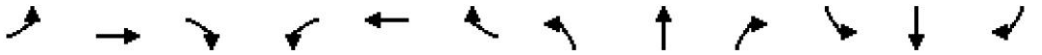
Intersection Summary												
HCM 6th Ctrl Delay			10.3									
HCM 6th LOS			B									

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	19	168	33	39	151	35	28	204	35	45	229	58
Future Volume (vph)	19	168	33	39	151	35	28	204	35	45	229	58
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	12	12	12	12	12	12	11	12	12	11	12
Grade (%)		-1%			0%			0%			0%	
Storage Length (ft)	0		0	0		0	0		0	0		0
Storage Lanes	0		0	0		0	0		0	0		0
Taper Length (ft)	25			25			25			25		
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		1110			1000			1000			990	
Travel Time (s)		30.3			27.3			27.3			27.0	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	0%	10%	3%	3%	5%	3%	0%	5%	3%	0%	7%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	232	0	0	237	0	0	281	0	0	349	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	22.5	22.5		22.5	22.5		22.5	22.5		22.5	22.5	
Total Split (s)	23.0	23.0		23.0	23.0		37.0	37.0		37.0	37.0	
Total Split (%)	38.3%	38.3%		38.3%	38.3%		61.7%	61.7%		61.7%	61.7%	
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Lost Time Adjust (s)		0.0			0.0			0.0			0.0	
Total Lost Time (s)		3.0			3.0			3.0			3.0	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	Max	Max		Max	Max		Max	Max		Max	Max	
Act Effct Green (s)		20.0			20.0			34.0			34.0	
Actuated g/C Ratio		0.33			0.33			0.57			0.57	
v/c Ratio		0.43			0.45			0.31			0.40	
Control Delay		17.6			17.7			7.5			9.8	
Queue Delay		0.0			0.0			0.0			0.0	
Total Delay		17.6			17.7			7.5			9.8	
LOS		B			B			A			A	
Approach Delay		17.6			17.7			7.5			9.8	
Approach LOS		B			B			A			A	
Queue Length 50th (ft)		69			60			43			73	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 95th (ft)		120			116			82			89	
Internal Link Dist (ft)		1030			920			920			910	
Turn Bay Length (ft)												
Base Capacity (vph)		540			532			894			870	
Starvation Cap Reductn		0			0			0			0	
Spillback Cap Reductn		0			0			0			0	
Storage Cap Reductn		0			0			0			0	
Reduced v/c Ratio		0.43			0.45			0.31			0.40	

Intersection Summary			
Area Type:	Other		
Cycle Length: 60			
Actuated Cycle Length: 60			
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 45			
Control Type: Pretimed			
Maximum v/c Ratio: 0.45			
Intersection Signal Delay: 12.6		Intersection LOS: B	
Intersection Capacity Utilization 56.0%		ICU Level of Service B	
Analysis Period (min) 15			

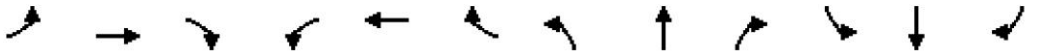
Splits and Phases: 5: Woodland Ave & 65th St



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Volume (veh/h)	19	168	33	39	151	35	28	204	35	45	229	58
Future Volume (veh/h)	19	168	33	39	151	35	28	204	35	45	229	58
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1660	1660	1660	1730	1730	1730	1730	1730	1730	1702	1702	1702
Adj Flow Rate, veh/h	20	177	35	41	159	37	29	215	37	47	241	61
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	10	10	10	5	5	5	5	5	5	7	7	7
Cap, veh/h	85	428	80	123	395	83	119	746	121	144	656	155
Arrive On Green	0.22	0.22	0.22	0.33	0.33	0.33	0.57	0.57	0.57	1.00	1.00	1.00
Sat Flow, veh/h	60	1284	239	157	1186	248	92	1317	214	134	1157	273
Grp Volume(v), veh/h	232	0	0	237	0	0	281	0	0	349	0	0
Grp Sat Flow(s),veh/h/ln	1582	0	0	1591	0	0	1623	0	0	1564	0	0
Q Serve(g_s), 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
Cycle Q Clear(g_c), s	7.4	0.0	0.0	6.6	0.0	0.0	5.2	0.0	0.0	0.0	0.0	0.0
Prop In Lane	0.09		0.15	0.17		0.16	0.10		0.13	0.13		0.17
Lane Grp Cap(c), veh/h	593	0	0	601	0	0	986	0	0	955	0	0
V/C Ratio(X)	0.39	0.00	0.00	0.39	0.00	0.00	0.28	0.00	0.00	0.37	0.00	0.00
Avail Cap(c_a), veh/h	593	0	0	601	0	0	986	0	0	955	0	0
HCM Platoon Ratio	0.67	0.67	0.67	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	18.4	0.0	0.0	15.5	0.0	0.0	6.8	0.0	0.0	0.0	0.0	0.0
Incr Delay (d2), s/veh	1.9	0.0	0.0	1.9	0.0	0.0	0.7	0.0	0.0	1.1	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.1	0.0	0.0	2.6	0.0	0.0	1.7	0.0	0.0	0.3	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	20.3	0.0	0.0	17.5	0.0	0.0	7.5	0.0	0.0	1.1	0.0	0.0
LnGrp LOS	C	A	A	B	A	A	A	A	A	A	A	A
Approach Vol, veh/h		232			237			281			349	
Approach Delay, s/veh		20.3			17.5			7.5			1.1	
Approach LOS		C			B			A			A	

Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		37.0		23.0		37.0		23.0				
Change Period (Y+Rc), s		3.0		3.0		3.0		3.0				
Max Green Setting (Gmax), s		34.0		20.0		34.0		20.0				
Max Q Clear Time (g_c+I1), s		7.2		9.4		2.0		8.6				
Green Ext Time (p_c), s		1.9		1.0		2.6		1.1				

Intersection Summary												
HCM 6th Ctrl Delay			10.3									
HCM 6th LOS			B									

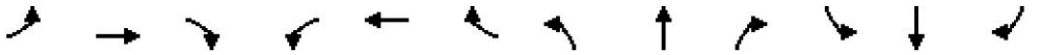


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	72	168	33	39	151	35	28	204	35	45	247	58
Future Volume (vph)	72	168	33	39	151	35	28	204	35	45	247	58
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	12	12	12	12	12	12	11	12	12	11	12
Grade (%)		-1%			0%			0%			0%	
Storage Length (ft)	0		0	0		0	0		0	0		0
Storage Lanes	0		0	0		0	0		0	0		0
Taper Length (ft)	25			25			25			25		
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		1110			1000			1000			990	
Travel Time (s)		30.3			27.3			27.3			27.0	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	0%	10%	3%	3%	5%	3%	0%	5%	3%	0%	7%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	288	0	0	237	0	0	281	0	0	368	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	22.5	22.5		22.5	22.5		22.5	22.5		22.5	22.5	
Total Split (s)	23.0	23.0		23.0	23.0		37.0	37.0		37.0	37.0	
Total Split (%)	38.3%	38.3%		38.3%	38.3%		61.7%	61.7%		61.7%	61.7%	
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Lost Time Adjust (s)		0.0			0.0			0.0			0.0	
Total Lost Time (s)		3.0			3.0			3.0			3.0	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	Max	Max		Max	Max		Max	Max		Max	Max	
Act Effct Green (s)		20.0			20.0			34.0			34.0	
Actuated g/C Ratio		0.33			0.33			0.57			0.57	
v/c Ratio		0.57			0.45			0.31			0.42	
Control Delay		21.7			17.8			7.5			11.2	
Queue Delay		0.0			0.0			0.0			0.0	
Total Delay		21.7			17.8			7.5			11.2	
LOS		C			B			A			B	
Approach Delay		21.7			17.8			7.5			11.2	
Approach LOS		C			B			A			B	
Queue Length 50th (ft)		99			60			43			86	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 95th (ft)		98			116			82			147	
Internal Link Dist (ft)		1030			920			920			910	
Turn Bay Length (ft)												
Base Capacity (vph)		501			531			893			874	
Starvation Cap Reductn		0			0			0			0	
Spillback Cap Reductn		0			0			0			0	
Storage Cap Reductn		0			0			0			0	
Reduced v/c Ratio		0.57			0.45			0.31			0.42	

Intersection Summary			
Area Type:	Other		
Cycle Length: 60			
Actuated Cycle Length: 60			
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 45			
Control Type: Pretimed			
Maximum v/c Ratio: 0.57			
Intersection Signal Delay: 14.2		Intersection LOS: B	
Intersection Capacity Utilization 59.7%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 5: Woodland Ave & 65th St



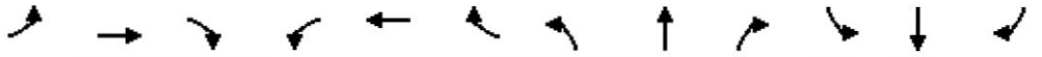
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Volume (veh/h)	72	168	33	39	151	35	28	204	35	45	247	58
Future Volume (veh/h)	72	168	33	39	151	35	28	204	35	45	247	58
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1660	1660	1660	1730	1730	1730	1730	1730	1730	1702	1702	1702
Adj Flow Rate, veh/h	76	177	35	41	159	37	29	215	37	47	260	61
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	10	10	10	5	5	5	5	5	5	7	7	7
Cap, veh/h	168	342	60	124	399	84	118	745	121	138	673	148
Arrive On Green	0.22	0.22	0.22	0.33	0.33	0.33	0.57	0.57	0.57	1.00	1.00	1.00
Sat Flow, veh/h	278	1026	180	160	1197	251	92	1315	213	124	1188	261
Grp Volume(v), veh/h	288	0	0	237	0	0	281	0	0	368	0	0
Grp Sat Flow(s),veh/h/ln	1484	0	0	1607	0	0	1621	0	0	1573	0	0
Q Serve(g_s), s	3.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	9.8	0.0	0.0	6.6	0.0	0.0	5.2	0.0	0.0	0.0	0.0	0.0
Prop In Lane	0.26		0.12	0.17		0.16	0.10		0.13	0.13		0.17
Lane Grp Cap(c), veh/h	570	0	0	606	0	0	985	0	0	959	0	0
V/C Ratio(X)	0.50	0.00	0.00	0.39	0.00	0.00	0.29	0.00	0.00	0.38	0.00	0.00
Avail Cap(c_a), veh/h	570	0	0	606	0	0	985	0	0	959	0	0
HCM Platoon Ratio	0.67	0.67	0.67	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	19.2	0.0	0.0	15.5	0.0	0.0	6.8	0.0	0.0	0.0	0.0	0.0
Incr Delay (d2), s/veh	3.2	0.0	0.0	1.9	0.0	0.0	0.7	0.0	0.0	1.2	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.1	0.0	0.0	2.6	0.0	0.0	1.7	0.0	0.0	0.3	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	22.4	0.0	0.0	17.4	0.0	0.0	7.5	0.0	0.0	1.2	0.0	0.0
LnGrp LOS	C	A	A	B	A	A	A	A	A	A	A	A
Approach Vol, veh/h		288			237			281			368	
Approach Delay, s/veh		22.4			17.4			7.5			1.2	
Approach LOS		C			B			A			A	

Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		37.0		23.0		37.0		23.0				
Change Period (Y+Rc), s		3.0		3.0		3.0		3.0				
Max Green Setting (Gmax), s		34.0		20.0		34.0		20.0				
Max Q Clear Time (g_c+I1), s		7.2		11.8		2.0		8.6				
Green Ext Time (p_c), s		1.9		1.1		2.7		1.1				

Intersection Summary												
HCM 6th Ctrl Delay			11.2									
HCM 6th LOS			B									

CAPACITY ANALYSES

WOODLAND AVENUE
AND
63RD STREET

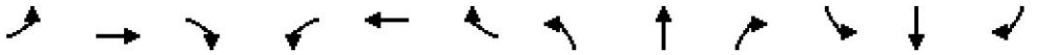


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	7	63	15	28	110	41	9	135	19	29	134	33
Future Volume (vph)	7	63	15	28	110	41	9	135	19	29	134	33
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	12	12	12	12	12	12	11	12	12	11	12
Grade (%)		-1%			0%			0%			0%	
Storage Length (ft)	0		0	0		0	0		0	0		0
Storage Lanes	0		0	0		0	0		0	0		0
Taper Length (ft)	25			25			25			25		
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		525			1000			990			370	
Travel Time (s)		14.3			27.3			27.0			10.1	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
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
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	0%	3%	11%	11%	5%	3%	0%	12%	8%	0%	15%	7%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	92	0	0	195	0	0	178	0	0	214	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	22.5	22.5		22.5	22.5		22.5	22.5		22.5	22.5	
Total Split (s)	23.0	23.0		23.0	23.0		37.0	37.0		37.0	37.0	
Total Split (%)	38.3%	38.3%		38.3%	38.3%		61.7%	61.7%		61.7%	61.7%	
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Lost Time Adjust (s)		0.0			0.0			0.0			0.0	
Total Lost Time (s)		3.0			3.0			3.0			3.0	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	Max	Max		Max	Max		Max	Max		Max	Max	
Act Effct Green (s)		20.0			20.0			34.0			34.0	
Actuated g/C Ratio		0.33			0.33			0.57			0.57	
v/c Ratio		0.16			0.36			0.20			0.26	
Control Delay		13.0			15.2			4.9			3.2	
Queue Delay		0.0			0.0			0.0			0.0	
Total Delay		13.0			15.2			4.9			3.2	
LOS		B			B			A			A	
Approach Delay		13.0			15.2			4.9			3.2	
Approach LOS		B			B			A			A	
Queue Length 50th (ft)		19			44			19			8	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 95th (ft)		47			91			37			15	
Internal Link Dist (ft)		445			920			910			290	
Turn Bay Length (ft)												
Base Capacity (vph)		564			546			871			836	
Starvation Cap Reductn		0			0			0			0	
Spillback Cap Reductn		0			0			0			0	
Storage Cap Reductn		0			0			0			0	
Reduced v/c Ratio		0.16			0.36			0.20			0.26	

Intersection Summary			
Area Type:	Other		
Cycle Length: 60			
Actuated Cycle Length: 60			
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 45			
Control Type: Pretimed			
Maximum v/c Ratio: 0.36			
Intersection Signal Delay: 8.4		Intersection LOS: A	
Intersection Capacity Utilization 44.2%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 6: Woodland Ave & 63rd St



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Volume (veh/h)	7	63	15	28	110	41	9	135	19	29	134	33
Future Volume (veh/h)	7	63	15	28	110	41	9	135	19	29	134	33
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1758	1758	1758	1730	1730	1730	1632	1632	1632	1589	1589	1589
Adj Flow Rate, veh/h	8	68	16	30	120	45	10	147	21	32	146	36
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
Percent Heavy Veh, %	3	3	3	5	5	5	12	12	12	15	15	15
Cap, veh/h	83	444	97	114	368	124	82	771	106	152	608	140
Arrive On Green	0.33	0.33	0.33	0.33	0.33	0.33	1.00	1.00	1.00	1.00	1.00	1.00
Sat Flow, veh/h	53	1333	292	133	1103	371	33	1360	186	147	1073	247
Grp Volume(v), veh/h	92	0	0	195	0	0	178	0	0	214	0	0
Grp Sat Flow(s),veh/h/ln	1677	0	0	1607	0	0	1579	0	0	1466	0	0
Q Serve(g_s), 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
Cycle Q Clear(g_c), s	2.3	0.0	0.0	5.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Prop In Lane	0.09		0.17	0.15		0.23	0.06		0.12	0.15		0.17
Lane Grp Cap(c), veh/h	624	0	0	605	0	0	958	0	0	900	0	0
V/C Ratio(X)	0.15	0.00	0.00	0.32	0.00	0.00	0.19	0.00	0.00	0.24	0.00	0.00
Avail Cap(c_a), veh/h	624	0	0	605	0	0	958	0	0	900	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	2.00	2.00	2.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	14.1	0.0	0.0	15.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Incr Delay (d2), s/veh	0.5	0.0	0.0	1.4	0.0	0.0	0.4	0.0	0.0	0.6	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	1.6	0.0	0.0	3.8	0.0	0.0	0.2	0.0	0.0	0.3	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	14.6	0.0	0.0	16.5	0.0	0.0	0.4	0.0	0.0	0.6	0.0	0.0
LnGrp LOS	B	A	A	B	A	A	A	A	A	A	A	A
Approach Vol, veh/h		92			195			178			214	
Approach Delay, s/veh		14.6			16.5			0.4			0.6	
Approach LOS		B			B			A			A	

Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		37.0		23.0		37.0		23.0				
Change Period (Y+Rc), s		3.0		3.0		3.0		3.0				
Max Green Setting (Gmax), s		34.0		20.0		34.0		20.0				
Max Q Clear Time (g_c+I1), s		2.0		4.3		2.0		7.3				
Green Ext Time (p_c), s		1.1		0.4		1.4		0.9				

Intersection Summary												
HCM 6th Ctrl Delay			7.0									
HCM 6th LOS			A									

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	7	63	15	28	110	41	9	135	19	29	134	33
Future Volume (vph)	7	63	15	28	110	41	9	135	19	29	134	33
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	12	12	12	12	12	12	11	12	12	11	12
Grade (%)		-1%			0%			0%			0%	
Storage Length (ft)	0		0	0		0	0		0	0		0
Storage Lanes	0		0	0		0	0		0	0		0
Taper Length (ft)	25			25			25			25		
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		525			1000			990			370	
Travel Time (s)		14.3			27.3			27.0			10.1	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
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
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	0%	3%	11%	11%	5%	3%	0%	12%	8%	0%	15%	7%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	92	0	0	195	0	0	178	0	0	214	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	22.5	22.5		22.5	22.5		22.5	22.5		22.5	22.5	
Total Split (s)	23.0	23.0		23.0	23.0		37.0	37.0		37.0	37.0	
Total Split (%)	38.3%	38.3%		38.3%	38.3%		61.7%	61.7%		61.7%	61.7%	
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Lost Time Adjust (s)		0.0			0.0			0.0			0.0	
Total Lost Time (s)		3.0			3.0			3.0			3.0	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	Max	Max		Max	Max		Max	Max		Max	Max	
Act Effct Green (s)		20.0			20.0			34.0			34.0	
Actuated g/C Ratio		0.33			0.33			0.57			0.57	
v/c Ratio		0.16			0.36			0.20			0.26	
Control Delay		13.0			15.2			4.9			3.2	
Queue Delay		0.0			0.0			0.0			0.0	
Total Delay		13.0			15.2			4.9			3.2	
LOS		B			B			A			A	
Approach Delay		13.0			15.2			4.9			3.2	
Approach LOS		B			B			A			A	
Queue Length 50th (ft)		19			44			19			8	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 95th (ft)		47			91			37			15	
Internal Link Dist (ft)		445			920			910			290	
Turn Bay Length (ft)												
Base Capacity (vph)		564			546			871			836	
Starvation Cap Reductn		0			0			0			0	
Spillback Cap Reductn		0			0			0			0	
Storage Cap Reductn		0			0			0			0	
Reduced v/c Ratio		0.16			0.36			0.20			0.26	

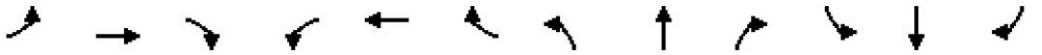
Intersection Summary			
Area Type:	Other		
Cycle Length: 60			
Actuated Cycle Length: 60			
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 45			
Control Type: Pretimed			
Maximum v/c Ratio: 0.36			
Intersection Signal Delay: 8.4		Intersection LOS: A	
Intersection Capacity Utilization 44.2%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 6: Woodland Ave & 63rd St

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Volume (veh/h)	7	63	15	28	110	41	9	135	19	29	134	33
Future Volume (veh/h)	7	63	15	28	110	41	9	135	19	29	134	33
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1758	1758	1758	1730	1730	1730	1632	1632	1632	1589	1589	1589
Adj Flow Rate, veh/h	8	68	16	30	120	45	10	147	21	32	146	36
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
Percent Heavy Veh, %	3	3	3	5	5	5	12	12	12	15	15	15
Cap, veh/h	83	444	97	114	368	124	82	771	106	152	608	140
Arrive On Green	0.33	0.33	0.33	0.33	0.33	0.33	1.00	1.00	1.00	1.00	1.00	1.00
Sat Flow, veh/h	53	1333	292	133	1103	371	33	1360	186	147	1073	247
Grp Volume(v), veh/h	92	0	0	195	0	0	178	0	0	214	0	0
Grp Sat Flow(s),veh/h/ln	1677	0	0	1607	0	0	1579	0	0	1466	0	0
Q Serve(g_s), 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
Cycle Q Clear(g_c), s	2.3	0.0	0.0	5.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Prop In Lane	0.09		0.17	0.15		0.23	0.06		0.12	0.15		0.17
Lane Grp Cap(c), veh/h	624	0	0	605	0	0	958	0	0	900	0	0
V/C Ratio(X)	0.15	0.00	0.00	0.32	0.00	0.00	0.19	0.00	0.00	0.24	0.00	0.00
Avail Cap(c_a), veh/h	624	0	0	605	0	0	958	0	0	900	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	2.00	2.00	2.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	14.1	0.0	0.0	15.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Incr Delay (d2), s/veh	0.5	0.0	0.0	1.4	0.0	0.0	0.4	0.0	0.0	0.6	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	1.6	0.0	0.0	3.8	0.0	0.0	0.2	0.0	0.0	0.3	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	14.6	0.0	0.0	16.5	0.0	0.0	0.4	0.0	0.0	0.6	0.0	0.0
LnGrp LOS	B	A	A	B	A	A	A	A	A	A	A	A
Approach Vol, veh/h		92			195			178			214	
Approach Delay, s/veh		14.6			16.5			0.4			0.6	
Approach LOS		B			B			A			A	

Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		37.0		23.0		37.0		23.0				
Change Period (Y+Rc), s		3.0		3.0		3.0		3.0				
Max Green Setting (Gmax), s		34.0		20.0		34.0		20.0				
Max Q Clear Time (g_c+I1), s		2.0		4.3		2.0		7.3				
Green Ext Time (p_c), s		1.1		0.4		1.4		0.9				

Intersection Summary												
HCM 6th Ctrl Delay			7.0									
HCM 6th LOS			A									



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	4	12	10	28	110	41	9	148	50	49	141	33
Future Volume (vph)	4	12	10	28	110	41	9	148	50	49	141	33
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	12	12	12	12	12	12	11	12	12	11	12
Grade (%)		-1%			0%			0%			0%	
Storage Length (ft)	0		0	0		0	0		0	0		0
Storage Lanes	0		0	0		0	0		0	0		0
Taper Length (ft)	25			25			25			25		
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		525			1000			990			370	
Travel Time (s)		14.3			27.3			27.0			10.1	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
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
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	0%	3%	11%	11%	5%	3%	0%	12%	8%	0%	15%	7%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	28	0	0	195	0	0	225	0	0	242	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	22.5	22.5		22.5	22.5		22.5	22.5		22.5	22.5	
Total Split (s)	23.0	23.0		23.0	23.0		37.0	37.0		37.0	37.0	
Total Split (%)	38.3%	38.3%		38.3%	38.3%		61.7%	61.7%		61.7%	61.7%	
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Lost Time Adjust (s)		0.0			0.0			0.0			0.0	
Total Lost Time (s)		3.0			3.0			3.0			3.0	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	Max	Max		Max	Max		Max	Max		Max	Max	
Act Effct Green (s)		20.0			20.0			34.0			34.0	
Actuated g/C Ratio		0.33			0.33			0.57			0.57	
v/c Ratio		0.05			0.35			0.26			0.30	
Control Delay		10.7			15.2			3.5			3.1	
Queue Delay		0.0			0.0			0.0			0.0	
Total Delay		10.7			15.2			3.5			3.1	
LOS		B			B			A			A	
Approach Delay		10.7			15.2			3.5			3.1	
Approach LOS		B			B			A			A	
Queue Length 50th (ft)		4			44			15			8	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 95th (ft)		19			91			31			15	
Internal Link Dist (ft)		445			920			910			290	
Turn Bay Length (ft)												
Base Capacity (vph)		533			550			873			807	
Starvation Cap Reductn		0			0			0			0	
Spillback Cap Reductn		0			0			0			0	
Storage Cap Reductn		0			0			0			0	
Reduced v/c Ratio		0.05			0.35			0.26			0.30	

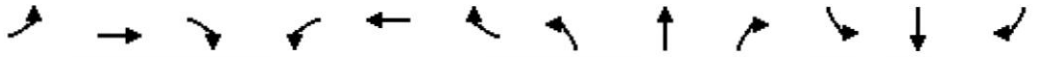
Intersection Summary			
Area Type:	Other		
Cycle Length: 60			
Actuated Cycle Length: 60			
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 45			
Control Type: Pretimed			
Maximum v/c Ratio: 0.35			
Intersection Signal Delay: 6.9		Intersection LOS: A	
Intersection Capacity Utilization 48.7%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 6: Woodland Ave & 63rd St

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Volume (veh/h)	4	12	10	28	110	41	9	148	50	49	141	33
Future Volume (veh/h)	4	12	10	28	110	41	9	148	50	49	141	33
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1758	1758	1758	1730	1730	1730	1632	1632	1632	1589	1589	1589
Adj Flow Rate, veh/h	4	13	11	30	120	45	10	161	54	53	153	36
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
Percent Heavy Veh, %	3	3	3	5	5	5	12	12	12	15	15	15
Cap, veh/h	107	282	207	114	369	124	75	656	211	208	544	119
Arrive On Green	0.33	0.33	0.33	0.33	0.33	0.33	1.00	1.00	1.00	1.00	1.00	1.00
Sat Flow, veh/h	116	846	622	134	1108	373	22	1158	373	238	960	209
Grp Volume(v), veh/h	28	0	0	195	0	0	225	0	0	242	0	0
Grp Sat Flow(s),veh/h/ln	1584	0	0	1616	0	0	1552	0	0	1408	0	0
Q Serve(g_s), 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
Cycle Q Clear(g_c), s	0.7	0.0	0.0	5.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Prop In Lane	0.14		0.39	0.15		0.23	0.04		0.24	0.22		0.15
Lane Grp Cap(c), veh/h	597	0	0	608	0	0	942	0	0	871	0	0
V/C Ratio(X)	0.05	0.00	0.00	0.32	0.00	0.00	0.24	0.00	0.00	0.28	0.00	0.00
Avail Cap(c_a), veh/h	597	0	0	608	0	0	942	0	0	871	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	2.00	2.00	2.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	13.6	0.0	0.0	15.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Incr Delay (d2), s/veh	0.1	0.0	0.0	1.4	0.0	0.0	0.6	0.0	0.0	0.8	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	0.5	0.0	0.0	3.8	0.0	0.0	0.3	0.0	0.0	0.3	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	13.7	0.0	0.0	16.5	0.0	0.0	0.6	0.0	0.0	0.8	0.0	0.0
LnGrp LOS	B	A	A	B	A	A	A	A	A	A	A	A
Approach Vol, veh/h		28			195			225			242	
Approach Delay, s/veh		13.7			16.5			0.6			0.8	
Approach LOS		B			B			A			A	

Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		37.0		23.0		37.0		23.0				
Change Period (Y+Rc), s		3.0		3.0		3.0		3.0				
Max Green Setting (Gmax), s		34.0		20.0		34.0		20.0				
Max Q Clear Time (g_c+I1), s		2.0		2.7		2.0		7.3				
Green Ext Time (p_c), s		1.5		0.1		1.7		0.9				

Intersection Summary												
HCM 6th Ctrl Delay			5.7									
HCM 6th LOS			A									



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	16	98	23	45	204	65	13	220	39	33	261	57
Future Volume (vph)	16	98	23	45	204	65	13	220	39	33	261	57
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	12	12	12	12	12	12	11	12	12	11	12
Grade (%)		-1%			0%			0%			0%	
Storage Length (ft)	0		0	0		0	0		0	0		0
Storage Lanes	0		0	0		0	0		0	0		0
Taper Length (ft)	25			25			25			25		
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		525			1000			990			370	
Travel Time (s)		14.3			27.3			27.0			10.1	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	0%	2%	0%	0%	2%	5%	0%	5%	0%	6%	7%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	145	0	0	334	0	0	289	0	0	374	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	22.5	22.5		22.5	22.5		22.5	22.5		22.5	22.5	
Total Split (s)	23.0	23.0		23.0	23.0		37.0	37.0		37.0	37.0	
Total Split (%)	38.3%	38.3%		38.3%	38.3%		61.7%	61.7%		61.7%	61.7%	
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Lost Time Adjust (s)		0.0			0.0			0.0			0.0	
Total Lost Time (s)		3.0			3.0			3.0			3.0	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	Max	Max		Max	Max		Max	Max		Max	Max	
Act Effct Green (s)		20.0			20.0			34.0			34.0	
Actuated g/C Ratio		0.33			0.33			0.57			0.57	
v/c Ratio		0.26			0.60			0.31			0.42	
Control Delay		14.2			21.0			6.7			5.4	
Queue Delay		0.0			0.0			0.0			0.0	
Total Delay		14.2			21.0			6.7			5.4	
LOS		B			C			A			A	
Approach Delay		14.2			21.0			6.7			5.4	
Approach LOS		B			C			A			A	
Queue Length 50th (ft)		33			91			34			44	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 95th (ft)		70			167			82			42	
Internal Link Dist (ft)		445			920			910			290	
Turn Bay Length (ft)												
Base Capacity (vph)		566			554			922			883	
Starvation Cap Reductn		0			0			0			0	
Spillback Cap Reductn		0			0			0			0	
Storage Cap Reductn		0			0			0			0	
Reduced v/c Ratio		0.26			0.60			0.31			0.42	

Intersection Summary			
Area Type:	Other		
Cycle Length: 60			
Actuated Cycle Length: 60			
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 45			
Control Type: Pretimed			
Maximum v/c Ratio: 0.60			
Intersection Signal Delay: 11.4		Intersection LOS: B	
Intersection Capacity Utilization 63.4%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 6: Woodland Ave & 63rd St

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Volume (veh/h)	16	98	23	45	204	65	13	220	39	33	261	57
Future Volume (veh/h)	16	98	23	45	204	65	13	220	39	33	261	57
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1772	1772	1772	1772	1772	1772	1730	1730	1730	1702	1702	1702
Adj Flow Rate, veh/h	17	104	24	48	217	69	14	234	41	35	278	61
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	2	2	2	2	2	2	5	5	5	7	7	7
Cap, veh/h	96	433	92	117	386	113	79	794	134	110	715	148
Arrive On Green	0.33	0.33	0.33	0.33	0.33	0.33	1.00	1.00	1.00	1.00	1.00	1.00
Sat Flow, veh/h	86	1300	275	144	1158	339	28	1401	236	78	1261	261
Grp Volume(v), veh/h	145	0	0	334	0	0	289	0	0	374	0	0
Grp Sat Flow(s),veh/h/ln	1661	0	0	1641	0	0	1665	0	0	1600	0	0
Q Serve(g_s), s	0.0	0.0	0.0	2.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	3.7	0.0	0.0	9.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Prop In Lane	0.12		0.17	0.14		0.21	0.05		0.14	0.09		0.16
Lane Grp Cap(c), veh/h	621	0	0	616	0	0	1007	0	0	973	0	0
V/C Ratio(X)	0.23	0.00	0.00	0.54	0.00	0.00	0.29	0.00	0.00	0.38	0.00	0.00
Avail Cap(c_a), veh/h	621	0	0	616	0	0	1007	0	0	973	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	2.00	2.00	2.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	14.6	0.0	0.0	16.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Incr Delay (d2), s/veh	0.9	0.0	0.0	3.4	0.0	0.0	0.7	0.0	0.0	1.2	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.5	0.0	0.0	4.1	0.0	0.0	0.2	0.0	0.0	0.3	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	15.4	0.0	0.0	20.0	0.0	0.0	0.7	0.0	0.0	1.2	0.0	0.0
LnGrp LOS	B	A	A	B	A	A	A	A	A	A	A	A
Approach Vol, veh/h		145			334			289			374	
Approach Delay, s/veh		15.4			20.0			0.7			1.2	
Approach LOS		B			B			A			A	

Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		37.0		23.0		37.0		23.0				
Change Period (Y+Rc), s		3.0		3.0		3.0		3.0				
Max Green Setting (Gmax), s		34.0		20.0		34.0		20.0				
Max Q Clear Time (g_c+I1), s		2.0		5.7		2.0		11.9				
Green Ext Time (p_c), s		2.0		0.6		2.8		1.3				

Intersection Summary												
HCM 6th Ctrl Delay			8.4									
HCM 6th LOS			A									

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	16	98	23	45	204	65	13	220	39	33	261	57
Future Volume (vph)	16	98	23	45	204	65	13	220	39	33	261	57
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	12	12	12	12	12	12	11	12	12	11	12
Grade (%)		-1%			0%			0%			0%	
Storage Length (ft)	0		0	0		0	0		0	0		0
Storage Lanes	0		0	0		0	0		0	0		0
Taper Length (ft)	25			25			25			25		
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		525			1000			990			370	
Travel Time (s)		14.3			27.3			27.0			10.1	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	0%	2%	0%	0%	2%	5%	0%	5%	0%	6%	7%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	145	0	0	334	0	0	289	0	0	374	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	22.5	22.5		22.5	22.5		22.5	22.5		22.5	22.5	
Total Split (s)	23.0	23.0		23.0	23.0		37.0	37.0		37.0	37.0	
Total Split (%)	38.3%	38.3%		38.3%	38.3%		61.7%	61.7%		61.7%	61.7%	
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Lost Time Adjust (s)		0.0			0.0			0.0			0.0	
Total Lost Time (s)		3.0			3.0			3.0			3.0	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	Max	Max		Max	Max		Max	Max		Max	Max	
Act Effct Green (s)		20.0			20.0			34.0			34.0	
Actuated g/C Ratio		0.33			0.33			0.57			0.57	
v/c Ratio		0.26			0.60			0.31			0.42	
Control Delay		14.2			21.0			6.7			5.4	
Queue Delay		0.0			0.0			0.0			0.0	
Total Delay		14.2			21.0			6.7			5.4	
LOS		B			C			A			A	
Approach Delay		14.2			21.0			6.7			5.4	
Approach LOS		B			C			A			A	
Queue Length 50th (ft)		33			91			34			44	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 95th (ft)		70			167			82			42	
Internal Link Dist (ft)		445			920			910			290	
Turn Bay Length (ft)												
Base Capacity (vph)		566			554			922			883	
Starvation Cap Reductn		0			0			0			0	
Spillback Cap Reductn		0			0			0			0	
Storage Cap Reductn		0			0			0			0	
Reduced v/c Ratio		0.26			0.60			0.31			0.42	

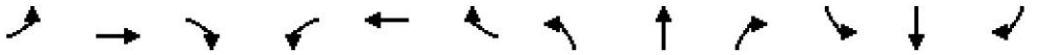
Intersection Summary			
Area Type:	Other		
Cycle Length: 60			
Actuated Cycle Length: 60			
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 45			
Control Type: Pretimed			
Maximum v/c Ratio: 0.60			
Intersection Signal Delay: 11.4		Intersection LOS: B	
Intersection Capacity Utilization 63.4%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 6: Woodland Ave & 63rd St

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Volume (veh/h)	16	98	23	45	204	65	13	220	39	33	261	57
Future Volume (veh/h)	16	98	23	45	204	65	13	220	39	33	261	57
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1772	1772	1772	1772	1772	1772	1730	1730	1730	1702	1702	1702
Adj Flow Rate, veh/h	17	104	24	48	217	69	14	234	41	35	278	61
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	2	2	2	2	2	2	5	5	5	7	7	7
Cap, veh/h	96	433	92	117	386	113	79	794	134	110	715	148
Arrive On Green	0.33	0.33	0.33	0.33	0.33	0.33	1.00	1.00	1.00	1.00	1.00	1.00
Sat Flow, veh/h	86	1300	275	144	1158	339	28	1401	236	78	1261	261
Grp Volume(v), veh/h	145	0	0	334	0	0	289	0	0	374	0	0
Grp Sat Flow(s),veh/h/ln	1661	0	0	1641	0	0	1665	0	0	1600	0	0
Q Serve(g_s), s	0.0	0.0	0.0	2.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	3.7	0.0	0.0	9.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Prop In Lane	0.12		0.17	0.14		0.21	0.05		0.14	0.09		0.16
Lane Grp Cap(c), veh/h	621	0	0	616	0	0	1007	0	0	973	0	0
V/C Ratio(X)	0.23	0.00	0.00	0.54	0.00	0.00	0.29	0.00	0.00	0.38	0.00	0.00
Avail Cap(c_a), veh/h	621	0	0	616	0	0	1007	0	0	973	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	2.00	2.00	2.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	14.6	0.0	0.0	16.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Incr Delay (d2), s/veh	0.9	0.0	0.0	3.4	0.0	0.0	0.7	0.0	0.0	1.2	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.5	0.0	0.0	4.1	0.0	0.0	0.2	0.0	0.0	0.3	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	15.4	0.0	0.0	20.0	0.0	0.0	0.7	0.0	0.0	1.2	0.0	0.0
LnGrp LOS	B	A	A	B	A	A	A	A	A	A	A	A
Approach Vol, veh/h		145			334			289			374	
Approach Delay, s/veh		15.4			20.0			0.7			1.2	
Approach LOS		B			B			A			A	

Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		37.0		23.0		37.0		23.0				
Change Period (Y+Rc), s		3.0		3.0		3.0		3.0				
Max Green Setting (Gmax), s		34.0		20.0		34.0		20.0				
Max Q Clear Time (g_c+I1), s		2.0		5.7		2.0		11.9				
Green Ext Time (p_c), s		2.0		0.6		2.8		1.3				

Intersection Summary												
HCM 6th Ctrl Delay			8.4									
HCM 6th LOS			A									



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	12	28	14	45	204	65	13	237	75	67	279	57
Future Volume (vph)	12	28	14	45	204	65	13	237	75	67	279	57
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	12	12	12	12	12	12	11	12	12	11	12
Grade (%)		-1%			0%			0%			0%	
Storage Length (ft)	0		0	0		0	0		0	0		0
Storage Lanes	0		0	0		0	0		0	0		0
Taper Length (ft)	25			25			25			25		
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		525			1000			990			370	
Travel Time (s)		14.3			27.3			27.0			10.1	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	0%	2%	0%	0%	2%	5%	0%	5%	0%	6%	7%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	58	0	0	334	0	0	346	0	0	429	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	22.5	22.5		22.5	22.5		22.5	22.5		22.5	22.5	
Total Split (s)	23.0	23.0		23.0	23.0		37.0	37.0		37.0	37.0	
Total Split (%)	38.3%	38.3%		38.3%	38.3%		61.7%	61.7%		61.7%	61.7%	
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Lost Time Adjust (s)		0.0			0.0			0.0			0.0	
Total Lost Time (s)		3.0			3.0			3.0			3.0	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	Max	Max		Max	Max		Max	Max		Max	Max	
Act Effct Green (s)		20.0			20.0			34.0			34.0	
Actuated g/C Ratio		0.33			0.33			0.57			0.57	
v/c Ratio		0.11			0.60			0.37			0.52	
Control Delay		11.8			20.7			5.6			5.4	
Queue Delay		0.0			0.0			0.0			0.1	
Total Delay		11.8			20.7			5.6			5.5	
LOS		B			C			A			A	
Approach Delay		11.8			20.7			5.6			5.5	
Approach LOS		B			C			A			A	
Queue Length 50th (ft)		10			91			32			44	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 95th (ft)		32			166			75			42	
Internal Link Dist (ft)		445			920			910			290	
Turn Bay Length (ft)												
Base Capacity (vph)		542			561			924			832	
Starvation Cap Reductn		0			0			0			40	
Spillback Cap Reductn		0			0			0			0	
Storage Cap Reductn		0			0			0			0	
Reduced v/c Ratio		0.11			0.60			0.37			0.54	

Intersection Summary			
Area Type:	Other		
Cycle Length: 60			
Actuated Cycle Length: 60			
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 50			
Control Type: Pretimed			
Maximum v/c Ratio: 0.60			
Intersection Signal Delay: 10.2		Intersection LOS: B	
Intersection Capacity Utilization 73.4%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 6: Woodland Ave & 63rd St

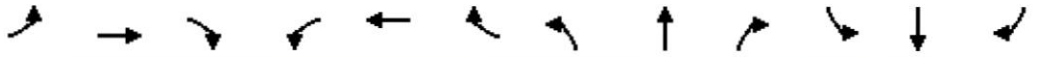
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Volume (veh/h)	12	28	14	45	204	65	13	237	75	67	279	57
Future Volume (veh/h)	12	28	14	45	204	65	13	237	75	67	279	57
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1772	1772	1772	1772	1772	1772	1730	1730	1730	1702	1702	1702
Adj Flow Rate, veh/h	13	30	15	48	217	69	14	252	80	71	297	61
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	2	2	2	2	2	2	5	5	5	7	7	7
Cap, veh/h	152	314	137	117	389	114	75	703	215	169	643	123
Arrive On Green	0.33	0.33	0.33	0.33	0.33	0.33	1.00	1.00	1.00	1.00	1.00	1.00
Sat Flow, veh/h	235	943	411	146	1167	342	23	1240	380	175	1134	217
Grp Volume(v), veh/h	58	0	0	334	0	0	346	0	0	429	0	0
Grp Sat Flow(s),veh/h/ln	1590	0	0	1656	0	0	1643	0	0	1526	0	0
Q Serve(g_s), s	0.0	0.0	0.0	2.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	1.4	0.0	0.0	9.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Prop In Lane	0.22		0.26	0.14		0.21	0.04		0.23	0.17		0.14
Lane Grp Cap(c), veh/h	603	0	0	621	0	0	993	0	0	934	0	0
V/C Ratio(X)	0.10	0.00	0.00	0.54	0.00	0.00	0.35	0.00	0.00	0.46	0.00	0.00
Avail Cap(c_a), veh/h	603	0	0	621	0	0	993	0	0	934	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	2.00	2.00	2.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	13.8	0.0	0.0	16.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Incr Delay (d2), s/veh	0.3	0.0	0.0	3.3	0.0	0.0	1.0	0.0	0.0	1.6	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.6	0.0	0.0	4.1	0.0	0.0	0.3	0.0	0.0	0.4	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	14.1	0.0	0.0	19.9	0.0	0.0	1.0	0.0	0.0	1.6	0.0	0.0
LnGrp LOS	B	A	A	B	A	A	A	A	A	A	A	A
Approach Vol, veh/h		58			334			346			429	
Approach Delay, s/veh		14.1			19.9			1.0			1.6	
Approach LOS		B			B			A			A	

Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		37.0		23.0		37.0		23.0				
Change Period (Y+Rc), s		3.0		3.0		3.0		3.0				
Max Green Setting (Gmax), s		34.0		20.0		34.0		20.0				
Max Q Clear Time (g_c+I1), s		2.0		3.4		2.0		11.9				
Green Ext Time (p_c), s		2.5		0.2		3.4		1.3				

Intersection Summary												
HCM 6th Ctrl Delay			7.3									
HCM 6th LOS			A									

CAPACITY ANALYSES

WOODLAND AVENUE
AND
62ND STREET/CEMETERY AVENUE

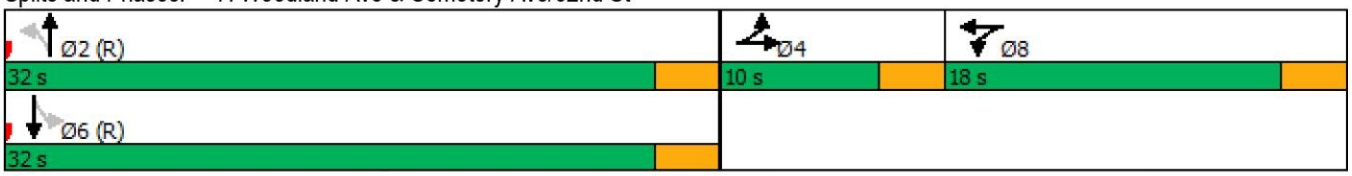


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	18	18	3	26	0	79	0	160	16	61	175	0
Future Volume (vph)	18	18	3	26	0	79	0	160	16	61	175	0
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	12	12	12	12	12	12	11	12	12	11	12
Grade (%)		0%			0%			-1%			0%	
Storage Length (ft)	0		0	0		0	0		0	0		0
Storage Lanes	0		0	0		0	0		0	0		0
Taper Length (ft)	25			25			25			25		
Right Turn on Red			No			No			No			Yes
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		350			1000			370			575	
Travel Time (s)		9.5			27.3			10.1			15.7	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84	0.94	0.84	0.84	0.84	0.84	0.92
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	6%	0%	0%	12%	2%	16%	2%	11%	6%	21%	11%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	46	0	0	125	0	0	209	0	0	281	0
Turn Type	Split	NA		Split	NA			NA		Perm	NA	
Protected Phases	4	4		8	8			2			6	
Permitted Phases							2			6		
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	10.0	10.0		10.0	10.0		22.5	22.5		22.5	22.5	
Total Split (s)	10.0	10.0		18.0	18.0		32.0	32.0		32.0	32.0	
Total Split (%)	16.7%	16.7%		30.0%	30.0%		53.3%	53.3%		53.3%	53.3%	
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Lost Time Adjust (s)		0.0			0.0			0.0			0.0	
Total Lost Time (s)		3.0			3.0			3.0			3.0	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	Max	Max		Max	Max		Max	Max		Max	Max	
Act Effct Green (s)		7.0			15.0			29.0			29.0	
Actuated g/C Ratio		0.12			0.25			0.48			0.48	
v/c Ratio		0.23			0.36			0.28			0.43	
Control Delay		27.4			22.2			10.9			10.2	
Queue Delay		0.0			0.0			0.0			0.0	
Total Delay		27.4			22.2			10.9			10.2	
LOS		C			C			B			B	
Approach Delay		27.4			22.2			10.9			10.2	
Approach LOS		C			C			B			B	
Queue Length 50th (ft)		15			37			45			48	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 95th (ft)		39			72			75			73	
Internal Link Dist (ft)		270			920			290			495	
Turn Bay Length (ft)												
Base Capacity (vph)		197			347			755			655	
Starvation Cap Reductn		0			0			0			0	
Spillback Cap Reductn		0			0			0			0	
Storage Cap Reductn		0			0			0			0	
Reduced v/c Ratio		0.23			0.36			0.28			0.43	

Intersection Summary			
Area Type:	Other		
Cycle Length: 60			
Actuated Cycle Length: 60			
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 45			
Control Type: Pretimed			
Maximum v/c Ratio: 0.43			
Intersection Signal Delay: 13.9		Intersection LOS: B	
Intersection Capacity Utilization 40.4%		ICU Level of Service A	
Analysis Period (min) 15			

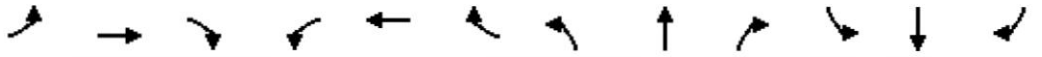
Splits and Phases: 7: Woodland Ave & Cemetery Ave/62nd St



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Volume (veh/h)	18	18	3	26	0	79	0	160	16	61	175	0
Future Volume (veh/h)	18	18	3	26	0	79	0	160	16	61	175	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1800	1800	1800	1772	1772	1772	1646	1646	1646	1646	1646	1646
Adj Flow Rate, veh/h	21	21	4	31	0	94	0	190	19	73	208	0
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84	0.94	0.84	0.84	0.84	0.84	0.92
Percent Heavy Veh, %	0	0	0	2	2	2	11	11	11	11	11	11
Cap, veh/h	92	92	18	96	0	290	0	711	71	220	565	0
Arrive On Green	0.12	0.12	0.12	0.25	0.00	0.25	0.00	0.97	0.97	0.97	0.97	0.00
Sat Flow, veh/h	791	791	151	383	0	1161	0	1472	147	298	1170	0
Grp Volume(v), veh/h	46	0	0	125	0	0	0	0	209	281	0	0
Grp Sat Flow(s),veh/h/ln	1733	0	0	1544	0	0	0	0	1619	1468	0	0
Q Serve(g_s), s	1.4	0.0	0.0	4.0	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.0
Cycle Q Clear(g_c), s	1.4	0.0	0.0	4.0	0.0	0.0	0.0	0.0	0.3	0.5	0.0	0.0
Prop In Lane	0.46		0.09	0.25		0.75	0.00		0.09	0.26		0.00
Lane Grp Cap(c), veh/h	202	0	0	386	0	0	0	0	783	785	0	0
V/C Ratio(X)	0.23	0.00	0.00	0.32	0.00	0.00	0.00	0.00	0.27	0.36	0.00	0.00
Avail Cap(c_a), veh/h	202	0	0	386	0	0	0	0	783	785	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	2.00	2.00	2.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	24.0	0.0	0.0	18.4	0.0	0.0	0.0	0.0	0.5	0.5	0.0	0.0
Incr Delay (d2), s/veh	2.6	0.0	0.0	2.2	0.0	0.0	0.0	0.0	0.8	1.3	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	1.3	0.0	0.0	2.8	0.0	0.0	0.0	0.0	0.5	0.7	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	26.6	0.0	0.0	20.6	0.0	0.0	0.0	0.0	1.4	1.8	0.0	0.0
LnGrp LOS	C	A	A	C	A	A	A	A	A	A	A	A
Approach Vol, veh/h		46			125			209			281	
Approach Delay, s/veh		26.6			20.6			1.4			1.8	
Approach LOS		C			C			A			A	

Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		32.0		10.0		32.0		18.0				
Change Period (Y+Rc), s		3.0		3.0		3.0		3.0				
Max Green Setting (Gmax), s		29.0		7.0		29.0		15.0				
Max Q Clear Time (g_c+I1), s		2.3		3.4		2.5		6.0				
Green Ext Time (p_c), s		1.3		0.0		1.9		0.4				

Intersection Summary												
HCM 6th Ctrl Delay			6.9									
HCM 6th LOS			A									

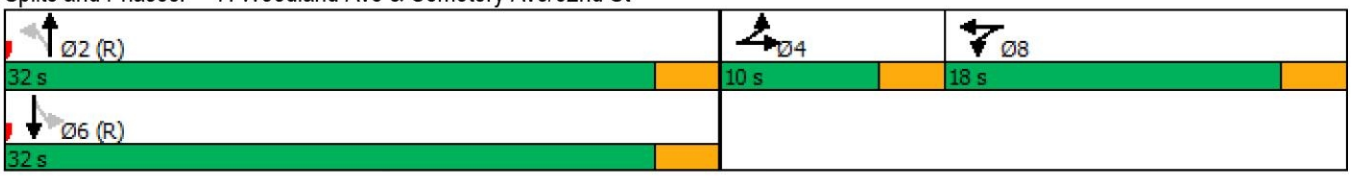


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	18	18	3	26	0	79	0	160	16	61	175	0
Future Volume (vph)	18	18	3	26	0	79	0	160	16	61	175	0
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	12	12	12	12	12	12	11	12	12	11	12
Grade (%)		0%			0%			-1%			0%	
Storage Length (ft)	0		0	0		0	0		0	0		0
Storage Lanes	0		0	0		0	0		0	0		0
Taper Length (ft)	25			25			25			25		
Right Turn on Red			No			No			No			Yes
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		350			1000			370			575	
Travel Time (s)		9.5			27.3			10.1			15.7	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84	0.94	0.84	0.84	0.84	0.84	0.92
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	6%	0%	0%	12%	2%	16%	2%	11%	6%	21%	11%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	46	0	0	125	0	0	209	0	0	281	0
Turn Type	Split	NA		Split	NA			NA		Perm	NA	
Protected Phases	4	4		8	8			2			6	
Permitted Phases							2			6		
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	10.0	10.0		10.0	10.0		22.5	22.5		22.5	22.5	
Total Split (s)	10.0	10.0		18.0	18.0		32.0	32.0		32.0	32.0	
Total Split (%)	16.7%	16.7%		30.0%	30.0%		53.3%	53.3%		53.3%	53.3%	
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Lost Time Adjust (s)		0.0			0.0			0.0			0.0	
Total Lost Time (s)		3.0			3.0			3.0			3.0	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	Max	Max		Max	Max		Max	Max		Max	Max	
Act Effct Green (s)		7.0			15.0			29.0			29.0	
Actuated g/C Ratio		0.12			0.25			0.48			0.48	
v/c Ratio		0.23			0.36			0.28			0.43	
Control Delay		27.4			22.2			10.9			10.2	
Queue Delay		0.0			0.0			0.0			0.0	
Total Delay		27.4			22.2			10.9			10.2	
LOS		C			C			B			B	
Approach Delay		27.4			22.2			10.9			10.2	
Approach LOS		C			C			B			B	
Queue Length 50th (ft)		15			37			45			48	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 95th (ft)		39			72			75			73	
Internal Link Dist (ft)		270			920			290			495	
Turn Bay Length (ft)												
Base Capacity (vph)		197			347			755			655	
Starvation Cap Reductn		0			0			0			0	
Spillback Cap Reductn		0			0			0			0	
Storage Cap Reductn		0			0			0			0	
Reduced v/c Ratio		0.23			0.36			0.28			0.43	

Intersection Summary			
Area Type:	Other		
Cycle Length: 60			
Actuated Cycle Length: 60			
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 45			
Control Type: Pretimed			
Maximum v/c Ratio: 0.43			
Intersection Signal Delay: 13.9		Intersection LOS: B	
Intersection Capacity Utilization 40.4%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 7: Woodland Ave & Cemetery Ave/62nd St



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Volume (veh/h)	18	18	3	26	0	79	0	160	16	61	175	0
Future Volume (veh/h)	18	18	3	26	0	79	0	160	16	61	175	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1800	1800	1800	1772	1772	1772	1646	1646	1646	1646	1646	1646
Adj Flow Rate, veh/h	21	21	4	31	0	94	0	190	19	73	208	0
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84	0.94	0.84	0.84	0.84	0.84	0.92
Percent Heavy Veh, %	0	0	0	2	2	2	11	11	11	11	11	11
Cap, veh/h	92	92	18	96	0	290	0	711	71	220	565	0
Arrive On Green	0.12	0.12	0.12	0.25	0.00	0.25	0.00	0.97	0.97	0.97	0.97	0.00
Sat Flow, veh/h	791	791	151	383	0	1161	0	1472	147	298	1170	0
Grp Volume(v), veh/h	46	0	0	125	0	0	0	0	209	281	0	0
Grp Sat Flow(s),veh/h/ln	1733	0	0	1544	0	0	0	0	1619	1468	0	0
Q Serve(g_s), s	1.4	0.0	0.0	4.0	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.0
Cycle Q Clear(g_c), s	1.4	0.0	0.0	4.0	0.0	0.0	0.0	0.0	0.3	0.5	0.0	0.0
Prop In Lane	0.46		0.09	0.25		0.75	0.00		0.09	0.26		0.00
Lane Grp Cap(c), veh/h	202	0	0	386	0	0	0	0	783	785	0	0
V/C Ratio(X)	0.23	0.00	0.00	0.32	0.00	0.00	0.00	0.00	0.27	0.36	0.00	0.00
Avail Cap(c_a), veh/h	202	0	0	386	0	0	0	0	783	785	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	2.00	2.00	2.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	24.0	0.0	0.0	18.4	0.0	0.0	0.0	0.0	0.5	0.5	0.0	0.0
Incr Delay (d2), s/veh	2.6	0.0	0.0	2.2	0.0	0.0	0.0	0.0	0.8	1.3	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	1.3	0.0	0.0	2.8	0.0	0.0	0.0	0.0	0.5	0.7	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	26.6	0.0	0.0	20.6	0.0	0.0	0.0	0.0	1.4	1.8	0.0	0.0
LnGrp LOS	C	A	A	C	A	A	A	A	A	A	A	A
Approach Vol, veh/h		46			125			209			281	
Approach Delay, s/veh		26.6			20.6			1.4			1.8	
Approach LOS		C			C			A			A	

Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		32.0		10.0		32.0		18.0				
Change Period (Y+Rc), s		3.0		3.0		3.0		3.0				
Max Green Setting (Gmax), s		29.0		7.0		29.0		15.0				
Max Q Clear Time (g_c+I1), s		2.3		3.4		2.5		6.0				
Green Ext Time (p_c), s		1.3		0.0		1.9		0.4				

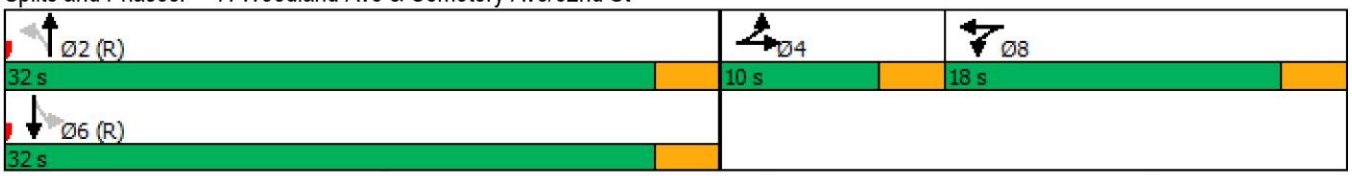
Intersection Summary												
HCM 6th Ctrl Delay			6.9									
HCM 6th LOS			A									

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	10	11	1	26	0	79	0	168	18	66	202	0
Future Volume (vph)	10	11	1	26	0	79	0	168	18	66	202	0
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	12	12	12	12	12	12	11	12	12	11	12
Grade (%)		0%			0%			-1%			0%	
Storage Length (ft)	0		0	0		0	0		0	0		0
Storage Lanes	0		0	0		0	0		0	0		0
Taper Length (ft)	25			25			25			25		
Right Turn on Red			No			No			No			Yes
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		350			1000			370			575	
Travel Time (s)		9.5			27.3			10.1			15.7	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84	0.94	0.84	0.84	0.84	0.84	0.92
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	6%	0%	0%	12%	2%	16%	2%	11%	6%	21%	11%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	26	0	0	125	0	0	221	0	0	319	0
Turn Type	Split	NA		Split	NA			NA		Perm	NA	
Protected Phases	4	4		8	8			2			6	
Permitted Phases							2			6		
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	10.0	10.0		10.0	10.0		22.5	22.5		22.5	22.5	
Total Split (s)	10.0	10.0		18.0	18.0		32.0	32.0		32.0	32.0	
Total Split (%)	16.7%	16.7%		30.0%	30.0%		53.3%	53.3%		53.3%	53.3%	
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Lost Time Adjust (s)		0.0			0.0			0.0			0.0	
Total Lost Time (s)		3.0			3.0			3.0			3.0	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	Max	Max		Max	Max		Max	Max		Max	Max	
Act Effct Green (s)		7.0			15.0			29.0			29.0	
Actuated g/C Ratio		0.12			0.25			0.48			0.48	
v/c Ratio		0.13			0.36			0.29			0.49	
Control Delay		25.6			22.2			9.8			11.1	
Queue Delay		0.0			0.0			0.0			0.0	
Total Delay		25.6			22.2			9.8			11.1	
LOS		C			C			A			B	
Approach Delay		25.6			22.2			9.8			11.1	
Approach LOS		C			C			A			B	
Queue Length 50th (ft)		9			37			43			60	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 95th (ft)		26			72			70			88	
Internal Link Dist (ft)		270			920			290			495	
Turn Bay Length (ft)												
Base Capacity (vph)		198			347			754			655	
Starvation Cap Reductn		0			0			0			0	
Spillback Cap Reductn		0			0			0			0	
Storage Cap Reductn		0			0			0			0	
Reduced v/c Ratio		0.13			0.36			0.29			0.49	

Intersection Summary			
Area Type:	Other		
Cycle Length: 60			
Actuated Cycle Length: 60			
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 45			
Control Type: Pretimed			
Maximum v/c Ratio: 0.49			
Intersection Signal Delay: 13.3		Intersection LOS: B	
Intersection Capacity Utilization 42.8%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 7: Woodland Ave & Cemetery Ave/62nd St



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Volume (veh/h)	10	11	1	26	0	79	0	168	18	66	202	0
Future Volume (veh/h)	10	11	1	26	0	79	0	168	18	66	202	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1800	1800	1800	1772	1772	1772	1646	1646	1646	1646	1646	1646
Adj Flow Rate, veh/h	12	13	1	31	0	94	0	200	21	79	240	0
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84	0.94	0.84	0.84	0.84	0.84	0.92
Percent Heavy Veh, %	0	0	0	2	2	2	11	11	11	11	11	11
Cap, veh/h	94	102	8	96	0	290	0	708	74	211	576	0
Arrive On Green	0.12	0.12	0.12	0.25	0.00	0.25	0.00	0.97	0.97	0.97	0.97	0.00
Sat Flow, veh/h	807	874	67	383	0	1161	0	1464	154	281	1193	0
Grp Volume(v), veh/h	26	0	0	125	0	0	0	0	221	319	0	0
Grp Sat Flow(s),veh/h/ln	1748	0	0	1544	0	0	0	0	1618	1474	0	0
Q Serve(g_s), s	0.8	0.0	0.0	4.0	0.0	0.0	0.0	0.0	0.4	0.0	0.0	0.0
Cycle Q Clear(g_c), s	0.8	0.0	0.0	4.0	0.0	0.0	0.0	0.0	0.4	0.6	0.0	0.0
Prop In Lane	0.46		0.04	0.25		0.75	0.00		0.10	0.25		0.00
Lane Grp Cap(c), veh/h	204	0	0	386	0	0	0	0	782	787	0	0
V/C Ratio(X)	0.13	0.00	0.00	0.32	0.00	0.00	0.00	0.00	0.28	0.41	0.00	0.00
Avail Cap(c_a), veh/h	204	0	0	386	0	0	0	0	782	787	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	2.00	2.00	2.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	23.8	0.0	0.0	18.4	0.0	0.0	0.0	0.0	0.5	0.5	0.0	0.0
Incr Delay (d2), s/veh	1.3	0.0	0.0	2.2	0.0	0.0	0.0	0.0	0.9	1.5	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	0.7	0.0	0.0	2.8	0.0	0.0	0.0	0.0	0.5	0.8	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	25.0	0.0	0.0	20.6	0.0	0.0	0.0	0.0	1.4	2.1	0.0	0.0
LnGrp LOS	C	A	A	C	A	A	A	A	A	A	A	A
Approach Vol, veh/h		26			125			221			319	
Approach Delay, s/veh		25.0			20.6			1.4			2.1	
Approach LOS		C			C			A			A	

Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		32.0		10.0		32.0		18.0				
Change Period (Y+Rc), s		3.0		3.0		3.0		3.0				
Max Green Setting (Gmax), s		29.0		7.0		29.0		15.0				
Max Q Clear Time (g_c+I1), s		2.4		2.8		2.6		6.0				
Green Ext Time (p_c), s		1.4		0.0		2.2		0.4				

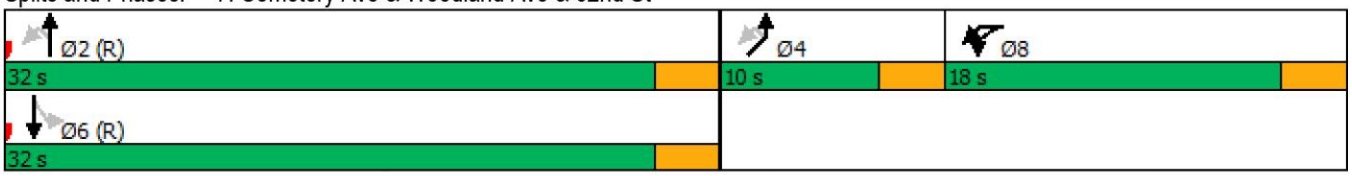
Intersection Summary												
HCM 6th Ctrl Delay			6.1									
HCM 6th LOS			A									

Lane Group	WBL2	WBL	WBR	NBL	NBT	NBR	SBL	SBT	SBR	NEL	NER	NER2
Lane Configurations												
Traffic Volume (vph)	66	0	93	0	273	20	67	303	0	21	8	10
Future Volume (vph)	66	0	93	0	273	20	67	303	0	21	8	10
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	12	12	12	11	12	12	11	12	12	12	12
Grade (%)		0%			-1%			0%		-1%		
Storage Length (ft)		0	0	0		0	0		0	0	0	
Storage Lanes		1	0	0		0	0		0	1	0	
Taper Length (ft)		25		25			25			25		
Right Turn on Red			No			No			Yes			No
Link Speed (mph)		25			25			25		25		
Link Distance (ft)		1000			370			575		352		
Travel Time (s)		27.3			10.1			15.7		9.6		
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
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
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	9%	2%	5%	0%	13%	6%	2%	0%	13%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%		0%		
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	173	0	0	319	0	0	402	0	43	0	0
Turn Type	Prot	Prot			NA		Perm	NA		Prot		
Protected Phases	8	8			2			6		4		
Permitted Phases				2			6					
Detector Phase	8	8		2	2		6	6		4		
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0		
Minimum Split (s)	10.0	10.0		22.5	22.5		22.5	22.5		10.0		
Total Split (s)	18.0	18.0		32.0	32.0		32.0	32.0		10.0		
Total Split (%)	30.0%	30.0%		53.3%	53.3%		53.3%	53.3%		16.7%		
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0		
All-Red Time (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0		
Lost Time Adjust (s)		0.0			0.0			0.0		0.0		
Total Lost Time (s)		3.0			3.0			3.0		3.0		
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	Max	Max		Max	Max		Max	Max		Max		
Act Effct Green (s)		15.0			29.0			29.0		7.0		
Actuated g/C Ratio		0.25			0.48			0.48		0.12		
v/c Ratio		0.45			0.40			0.57		0.23		
Control Delay		23.6			11.3			13.5		27.5		
Queue Delay		0.0			0.0			0.0		0.0		
Total Delay		23.6			11.3			13.5		27.5		
LOS		C			B			B		C		
Approach Delay		23.6			11.3			13.5		27.5		
Approach LOS		C			B			B		C		
Queue Length 50th (ft)		53			74			71		14		

Lane Group	WBL2	WBL	WBR	NBL	NBT	NBR	SBL	SBT	SBR	NEL	NER	NER2
Queue Length 95th (ft)		104			100			145		40		
Internal Link Dist (ft)		920			290			495		272		
Turn Bay Length (ft)												
Base Capacity (vph)		382			800			702		187		
Starvation Cap Reductn		0			0			0		0		
Spillback Cap Reductn		0			0			0		0		
Storage Cap Reductn		0			0			0		0		
Reduced v/c Ratio		0.45			0.40			0.57		0.23		

Intersection Summary			
Area Type:	Other		
Cycle Length: 60			
Actuated Cycle Length: 60			
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 50			
Control Type: Pretimed			
Maximum v/c Ratio: 0.57			
Intersection Signal Delay: 15.3		Intersection LOS: B	
Intersection Capacity Utilization 64.6%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 7: Cemetery Ave & Woodland Ave & 62nd St



Movement	WBL2	WBL	WBR	NBL	NBT	NBR	SBL	SBT	SBR	NEL	NER	NER2
Lane Configurations												
Traffic Volume (veh/h)	66	0	93	0	273	20	67	303	0	21	8	10
Future Volume (veh/h)	66	0	93	0	273	20	67	303	0	21	8	10
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No		No		
Adj Sat Flow, veh/h/ln	1772	1772	1772	1730	1730	1730	1716	1716	1716	1800	1800	1800
Adj Flow Rate, veh/h	72	72	101	0	297	22	73	329	0	23	11	11
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
Percent Heavy Veh, %	2	2	2	5	5	5	6	6	6	0	0	0
Cap, veh/h	196	196	276	0	923	68	197	798	0	0	0	0
Arrive On Green	0.30	0.30	0.30	0.00	1.00	1.00	1.00	1.00	0.00	0.00	0.00	0.00
Sat Flow, veh/h	655	655	919	0	1591	118	193	1375	0	0		
Grp Volume(v), veh/h	173	173	0	0	0	319	402	0	0	0.0		
Grp Sat Flow(s),veh/h/ln	1574	1574	0	0	0	1709	1568	0	0			
Q Serve(g_s), s	4.3	4.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
Cycle Q Clear(g_c), s	4.3	4.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
Prop In Lane	0.42	0.42	0.58	0.00		0.07	0.18		0.00			
Lane Grp Cap(c), veh/h	472	472	0	0	0	991	995	0	0			
V/C Ratio(X)	0.37	0.37	0.00	0.00	0.00	0.32	0.40	0.00	0.00			
Avail Cap(c_a), veh/h	472	472	0	0	0	991	995	0	0			
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	2.00	2.00	2.00	2.00			
Upstream Filter(I)	1.00	1.00	0.00	0.00	0.00	1.00	1.00	0.00	0.00			
Uniform Delay (d), s/veh	13.8	13.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
Incr Delay (d2), s/veh	2.2	2.2	0.0	0.0	0.0	0.9	1.2	0.0	0.0			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	1.7	1.7	0.0	0.0	0.0	0.2	0.3	0.0	0.0			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	16.0	16.0	0.0	0.0	0.0	0.9	1.2	0.0	0.0			
LnGrp LOS	B	B	A	A	A	A	A	A	A			
Approach Vol, veh/h	173	173			319			402				
Approach Delay, s/veh	16.0	16.0			0.9			1.2				
Approach LOS	B	B			A			A				

Timer - Assigned Phs		2				6		8				
Phs Duration (G+Y+Rc), s		32.0				32.0		18.0				
Change Period (Y+Rc), s		3.0				3.0		3.0				
Max Green Setting (Gmax), s		29.0				29.0		15.0				
Max Q Clear Time (g_c+I1), s		2.0				2.0		6.3				
Green Ext Time (p_c), s		2.1				2.9		0.3				

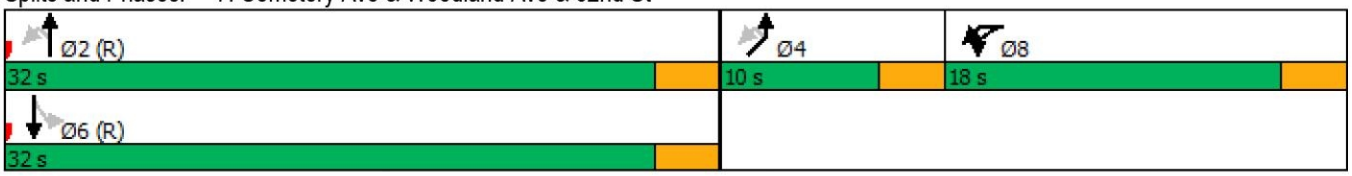
Intersection Summary												
HCM 6th Ctrl Delay			3.9									
HCM 6th LOS			A									

Lane Group	WBL2	WBL	WBR	NBL	NBT	NBR	SBL	SBT	SBR	NEL	NER	NER2
Lane Configurations												
Traffic Volume (vph)	66	0	93	0	273	20	67	303	0	21	8	10
Future Volume (vph)	66	0	93	0	273	20	67	303	0	21	8	10
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	12	12	12	11	12	12	11	12	12	12	12
Grade (%)		0%			-1%			0%		-1%		
Storage Length (ft)		0	0	0		0	0		0	0	0	
Storage Lanes		1	0	0		0	0		0	1	0	
Taper Length (ft)		25		25			25			25		
Right Turn on Red			No			No			Yes			No
Link Speed (mph)		25			25			25		25		
Link Distance (ft)		1000			370			575		352		
Travel Time (s)		27.3			10.1			15.7		9.6		
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
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
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	9%	2%	5%	0%	13%	6%	2%	0%	13%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%		0%		
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	173	0	0	319	0	0	402	0	43	0	0
Turn Type	Prot	Prot			NA		Perm	NA		Prot		
Protected Phases	8	8			2			6		4		
Permitted Phases				2			6					
Detector Phase	8	8		2	2		6	6		4		
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0		
Minimum Split (s)	10.0	10.0		22.5	22.5		22.5	22.5		10.0		
Total Split (s)	18.0	18.0		32.0	32.0		32.0	32.0		10.0		
Total Split (%)	30.0%	30.0%		53.3%	53.3%		53.3%	53.3%		16.7%		
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0		
All-Red Time (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0		
Lost Time Adjust (s)		0.0			0.0			0.0		0.0		
Total Lost Time (s)		3.0			3.0			3.0		3.0		
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	Max	Max		Max	Max		Max	Max		Max		
Act Effct Green (s)		15.0			29.0			29.0		7.0		
Actuated g/C Ratio		0.25			0.48			0.48		0.12		
v/c Ratio		0.45			0.40			0.57		0.23		
Control Delay		23.6			11.3			13.5		27.5		
Queue Delay		0.0			0.0			0.0		0.0		
Total Delay		23.6			11.3			13.5		27.5		
LOS		C			B			B		C		
Approach Delay		23.6			11.3			13.5		27.5		
Approach LOS		C			B			B		C		
Queue Length 50th (ft)		53			74			71		14		

Lane Group	WBL2	WBL	WBR	NBL	NBT	NBR	SBL	SBT	SBR	NEL	NER	NER2
Queue Length 95th (ft)		104			100			145		40		
Internal Link Dist (ft)		920			290			495		272		
Turn Bay Length (ft)												
Base Capacity (vph)		382			800			702		187		
Starvation Cap Reductn		0			0			0		0		
Spillback Cap Reductn		0			0			0		0		
Storage Cap Reductn		0			0			0		0		
Reduced v/c Ratio		0.45			0.40			0.57		0.23		

Intersection Summary			
Area Type:	Other		
Cycle Length: 60			
Actuated Cycle Length: 60			
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 50			
Control Type: Pretimed			
Maximum v/c Ratio: 0.57			
Intersection Signal Delay: 15.3		Intersection LOS: B	
Intersection Capacity Utilization 64.6%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 7: Cemetery Ave & Woodland Ave & 62nd St



Movement	WBL2	WBL	WBR	NBL	NBT	NBR	SBL	SBT	SBR	NEL	NER	NER2
Lane Configurations												
Traffic Volume (veh/h)	66	0	93	0	273	20	67	303	0	21	8	10
Future Volume (veh/h)	66	0	93	0	273	20	67	303	0	21	8	10
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No		No		
Adj Sat Flow, veh/h/ln	1772	1772	1772	1730	1730	1730	1716	1716	1716	1800	1800	1800
Adj Flow Rate, veh/h	72	72	101	0	297	22	73	329	0	23	11	11
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
Percent Heavy Veh, %	2	2	2	5	5	5	6	6	6	0	0	0
Cap, veh/h	196	196	276	0	923	68	197	798	0	0	0	0
Arrive On Green	0.30	0.30	0.30	0.00	1.00	1.00	1.00	1.00	0.00	0.00	0.00	0.00
Sat Flow, veh/h	655	655	919	0	1591	118	193	1375	0	0		
Grp Volume(v), veh/h	173	173	0	0	0	319	402	0	0	0.0		
Grp Sat Flow(s),veh/h/ln	1574	1574	0	0	0	1709	1568	0	0			
Q Serve(g_s), s	4.3	4.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
Cycle Q Clear(g_c), s	4.3	4.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
Prop In Lane	0.42	0.42	0.58	0.00		0.07	0.18		0.00			
Lane Grp Cap(c), veh/h	472	472	0	0	0	991	995	0	0			
V/C Ratio(X)	0.37	0.37	0.00	0.00	0.00	0.32	0.40	0.00	0.00			
Avail Cap(c_a), veh/h	472	472	0	0	0	991	995	0	0			
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	2.00	2.00	2.00	2.00			
Upstream Filter(I)	1.00	1.00	0.00	0.00	0.00	1.00	1.00	0.00	0.00			
Uniform Delay (d), s/veh	13.8	13.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
Incr Delay (d2), s/veh	2.2	2.2	0.0	0.0	0.0	0.9	1.2	0.0	0.0			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	1.7	1.7	0.0	0.0	0.0	0.2	0.3	0.0	0.0			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	16.0	16.0	0.0	0.0	0.0	0.9	1.2	0.0	0.0			
LnGrp LOS	B	B	A	A	A	A	A	A	A			
Approach Vol, veh/h	173	173			319			402				
Approach Delay, s/veh	16.0	16.0			0.9			1.2				
Approach LOS	B	B			A			A				

Timer - Assigned Phs		2				6		8				
Phs Duration (G+Y+Rc), s		32.0				32.0		18.0				
Change Period (Y+Rc), s		3.0				3.0		3.0				
Max Green Setting (Gmax), s		29.0				29.0		15.0				
Max Q Clear Time (g_c+I1), s		2.0				2.0		6.3				
Green Ext Time (p_c), s		2.1				2.9		0.3				

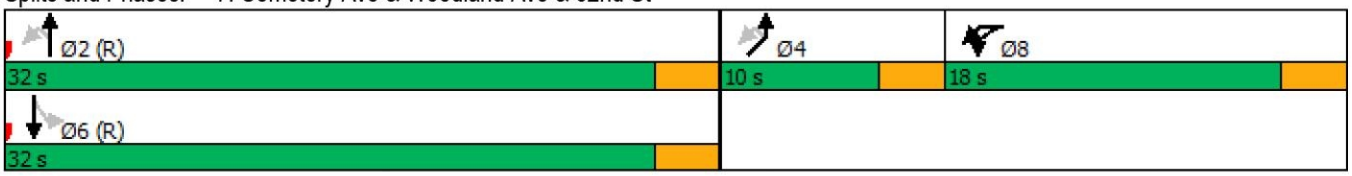
Intersection Summary												
HCM 6th Ctrl Delay			3.9									
HCM 6th LOS			A									

Lane Group	WBL2	WBL	WBR	NBL	NBT	NBR	SBL	SBT	SBR	NEL	NER	NER2
Lane Configurations												
Traffic Volume (vph)	66	0	93	0	284	22	72	355	0	10	1	1
Future Volume (vph)	66	0	93	0	284	22	72	355	0	10	1	1
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	12	12	12	11	12	12	11	12	12	12	12
Grade (%)		0%			-1%			0%		-1%		
Storage Length (ft)		0	0	0		0	0		0	0	0	
Storage Lanes		1	0	0		0	0		0	1	0	
Taper Length (ft)		25		25			25			25		
Right Turn on Red			No			No			Yes			No
Link Speed (mph)		25			25			25		25		
Link Distance (ft)		1000			370			575		352		
Travel Time (s)		27.3			10.1			15.7		9.6		
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
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
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	9%	2%	5%	0%	13%	6%	2%	0%	13%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%		0%		
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	173	0	0	333	0	0	464	0	13	0	0
Turn Type	Prot	Prot			NA		Perm	NA		Prot		
Protected Phases	8	8			2			6		4		
Permitted Phases				2			6					
Detector Phase	8	8		2	2		6	6		4		
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0		
Minimum Split (s)	10.0	10.0		22.5	22.5		22.5	22.5		10.0		
Total Split (s)	18.0	18.0		32.0	32.0		32.0	32.0		10.0		
Total Split (%)	30.0%	30.0%		53.3%	53.3%		53.3%	53.3%		16.7%		
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0		
All-Red Time (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0		
Lost Time Adjust (s)		0.0			0.0			0.0		0.0		
Total Lost Time (s)		3.0			3.0			3.0		3.0		
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	Max	Max		Max	Max		Max	Max		Max		
Act Effct Green (s)		15.0			29.0			29.0		7.0		
Actuated g/C Ratio		0.25			0.48			0.48		0.12		
v/c Ratio		0.45			0.42			0.66		0.07		
Control Delay		23.6			10.6			15.3		24.6		
Queue Delay		0.0			0.0			0.0		0.0		
Total Delay		23.6			10.6			15.3		24.6		
LOS		C			B			B		C		
Approach Delay		23.6			10.6			15.3		24.6		
Approach LOS		C			B			B		C		
Queue Length 50th (ft)		53			70			90		4		

Lane Group	WBL2	WBL	WBR	NBL	NBT	NBR	SBL	SBT	SBR	NEL	NER	NER2
Queue Length 95th (ft)		104			99			174		18		
Internal Link Dist (ft)		920			290			495		272		
Turn Bay Length (ft)												
Base Capacity (vph)		382			799			704		196		
Starvation Cap Reductn		0			0			0		0		
Spillback Cap Reductn		0			0			0		0		
Storage Cap Reductn		0			0			0		0		
Reduced v/c Ratio		0.45			0.42			0.66		0.07		

Intersection Summary			
Area Type:	Other		
Cycle Length: 60			
Actuated Cycle Length: 60			
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 60			
Control Type: Pretimed			
Maximum v/c Ratio: 0.66			
Intersection Signal Delay: 15.3		Intersection LOS: B	
Intersection Capacity Utilization 68.5%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 7: Cemetery Ave & Woodland Ave & 62nd St



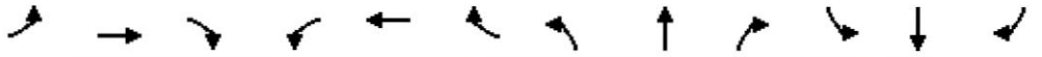
Movement	WBL2	WBL	WBR	NBL	NBT	NBR	SBL	SBT	SBR	NEL	NER	NER2
Lane Configurations												
Traffic Volume (veh/h)	66	0	93	0	284	22	72	355	0	10	1	1
Future Volume (veh/h)	66	0	93	0	284	22	72	355	0	10	1	1
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No		No		
Adj Sat Flow, veh/h/ln	1772	1772	1772	1730	1730	1730	1716	1716	1716	1800	1800	1800
Adj Flow Rate, veh/h	72	72	101	0	309	24	78	386	0	11	1	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
Percent Heavy Veh, %	2	2	2	5	5	5	6	6	6	0	0	0
Cap, veh/h	196	196	276	0	919	71	185	815	0	0	0	0
Arrive On Green	0.30	0.30	0.30	0.00	1.00	1.00	1.00	1.00	0.00	0.00	0.00	0.00
Sat Flow, veh/h	655	655	919	0	1585	123	174	1405	0	0		
Grp Volume(v), veh/h	173	173	0	0	0	333	464	0	0	0.0		
Grp Sat Flow(s),veh/h/ln	1574	1574	0	0	0	1708	1579	0	0			
Q Serve(g_s), s	4.3	4.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
Cycle Q Clear(g_c), s	4.3	4.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
Prop In Lane	0.42	0.42	0.58	0.00		0.07	0.17		0.00			
Lane Grp Cap(c), veh/h	472	472	0	0	0	990	1000	0	0			
V/C Ratio(X)	0.37	0.37	0.00	0.00	0.00	0.34	0.46	0.00	0.00			
Avail Cap(c_a), veh/h	472	472	0	0	0	990	1000	0	0			
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	2.00	2.00	2.00	2.00			
Upstream Filter(I)	1.00	1.00	0.00	0.00	0.00	1.00	1.00	0.00	0.00			
Uniform Delay (d), s/veh	13.8	13.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
Incr Delay (d2), s/veh	2.2	2.2	0.0	0.0	0.0	0.9	1.5	0.0	0.0			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	1.7	1.7	0.0	0.0	0.0	0.3	0.4	0.0	0.0			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	16.0	16.0	0.0	0.0	0.0	0.9	1.5	0.0	0.0			
LnGrp LOS	B	B	A	A	A	A	A	A	A			
Approach Vol, veh/h	173	173			333			464				
Approach Delay, s/veh	16.0	16.0			0.9			1.5				
Approach LOS	B	B			A			A				

Timer - Assigned Phs		2				6		8				
Phs Duration (G+Y+Rc), s		32.0				32.0		18.0				
Change Period (Y+Rc), s		3.0				3.0		3.0				
Max Green Setting (Gmax), s		29.0				29.0		15.0				
Max Q Clear Time (g_c+I1), s		2.0				2.0		6.3				
Green Ext Time (p_c), s		2.2				3.5		0.3				

Intersection Summary												
HCM 6th Ctrl Delay			3.9									
HCM 6th LOS			A									

CAPACITY ANALYSES

WOODLAND AVENUE
AND
61ST STREET



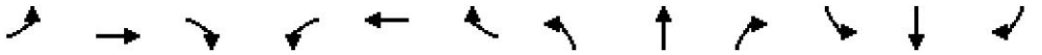
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	5	38	51	11	30	51	25	222	7	34	214	8
Future Volume (vph)	5	38	51	11	30	51	25	222	7	34	214	8
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	12	12	12	12	12	12	11	12	12	11	12
Grade (%)		-1%			0%			0%			0%	
Storage Length (ft)	0		0	0		0	0		0	0		0
Storage Lanes	0		0	0		0	0		0	0		0
Taper Length (ft)	25			25			25			25		
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		1125			200			575			1000	
Travel Time (s)		30.7			5.5			15.7			27.3	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	0%	0%	0%	18%	3%	11%	0%	13%	0%	6%	14%	13%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	105	0	0	102	0	0	283	0	0	285	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	22.5	22.5		22.5	22.5		22.5	22.5		22.5	22.5	
Total Split (s)	23.0	23.0		23.0	23.0		37.0	37.0		37.0	37.0	
Total Split (%)	38.3%	38.3%		38.3%	38.3%		61.7%	61.7%		61.7%	61.7%	
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Lost Time Adjust (s)		0.0			0.0			0.0			0.0	
Total Lost Time (s)		3.0			3.0			3.0			3.0	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	Max	Max		Max	Max		Max	Max		Max	Max	
Act Effct Green (s)		20.0			20.0			34.0			34.0	
Actuated g/C Ratio		0.33			0.33			0.57			0.57	
v/c Ratio		0.18			0.19			0.33			0.35	
Control Delay		4.6			8.7			3.7			8.4	
Queue Delay		0.0			0.0			0.0			0.0	
Total Delay		4.6			8.7			3.7			8.4	
LOS		A			A			A			A	
Approach Delay		4.6			8.7			3.7			8.4	
Approach LOS		A			A			A			A	
Queue Length 50th (ft)		2			11			13			48	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 95th (ft)		m21			40			15			90	
Internal Link Dist (ft)		1045			120			495			920	
Turn Bay Length (ft)												
Base Capacity (vph)		591			533			849			822	
Starvation Cap Reductn		0			0			0			0	
Spillback Cap Reductn		0			0			0			0	
Storage Cap Reductn		0			0			0			0	
Reduced v/c Ratio		0.18			0.19			0.33			0.35	

Intersection Summary			
Area Type:	Other		
Cycle Length: 60			
Actuated Cycle Length: 60			
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 45			
Control Type: Pretimed			
Maximum v/c Ratio: 0.35			
Intersection Signal Delay: 6.2		Intersection LOS: A	
Intersection Capacity Utilization 36.9%		ICU Level of Service A	
Analysis Period (min) 15			

m Volume for 95th percentile queue is metered by upstream signal.

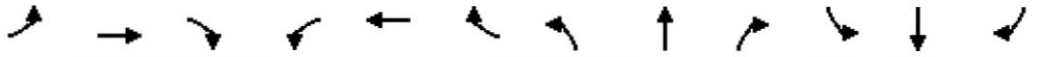
Splits and Phases: 8: Woodland Ave & 61st St



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	5	38	51	11	30	51	25	222	7	34	214	8
Future Volume (veh/h)	5	38	51	11	30	51	25	222	7	34	214	8
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1800	1800	1800	1758	1758	1758	1617	1617	1617	1603	1603	1603
Adj Flow Rate, veh/h	6	42	57	12	33	57	28	247	8	38	238	9
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	0	0	0	3	3	3	13	13	13	14	14	14
Cap, veh/h	72	240	295	95	202	291	113	809	25	140	757	27
Arrive On Green	0.33	0.33	0.33	0.33	0.33	0.33	1.00	1.00	1.00	0.57	0.57	0.57
Sat Flow, veh/h	26	719	885	83	607	874	83	1428	44	127	1336	48
Grp Volume(v), veh/h	105	0	0	102	0	0	283	0	0	285	0	0
Grp Sat Flow(s),veh/h/ln	1630	0	0	1564	0	0	1555	0	0	1510	0	0
Q Serve(g_s), 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
Cycle Q Clear(g_c), s	2.7	0.0	0.0	2.7	0.0	0.0	0.0	0.0	0.0	5.7	0.0	0.0
Prop In Lane	0.06		0.54	0.12		0.56	0.10		0.03	0.13		0.03
Lane Grp Cap(c), veh/h	607	0	0	588	0	0	947	0	0	924	0	0
V/C Ratio(X)	0.17	0.00	0.00	0.17	0.00	0.00	0.30	0.00	0.00	0.31	0.00	0.00
Avail Cap(c_a), veh/h	607	0	0	588	0	0	947	0	0	924	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	14.2	0.0	0.0	14.2	0.0	0.0	0.0	0.0	0.0	6.9	0.0	0.0
Incr Delay (d2), s/veh	0.6	0.0	0.0	0.6	0.0	0.0	0.8	0.0	0.0	0.9	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	1.9	0.0	0.0	1.8	0.0	0.0	0.4	0.0	0.0	3.2	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	14.9	0.0	0.0	14.9	0.0	0.0	0.8	0.0	0.0	7.7	0.0	0.0
LnGrp LOS	B	A	A	B	A	A	A	A	A	A	A	A
Approach Vol, veh/h		105			102			283			285	
Approach Delay, s/veh		14.9			14.9			0.8			7.7	
Approach LOS		B			B			A			A	

Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		37.0		23.0		37.0		23.0				
Change Period (Y+Rc), s		3.0		3.0		3.0		3.0				
Max Green Setting (Gmax), s		34.0		20.0		34.0		20.0				
Max Q Clear Time (g_c+I1), s		2.0		4.7		7.7		4.7				
Green Ext Time (p_c), s		2.0		0.4		1.9		0.4				

Intersection Summary												
HCM 6th Ctrl Delay			7.1									
HCM 6th LOS			A									



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	5	38	51	11	30	51	25	222	7	34	214	8
Future Volume (vph)	5	38	51	11	30	51	25	222	7	34	214	8
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	12	12	12	12	12	12	11	12	12	11	12
Grade (%)		-1%			0%			0%			0%	
Storage Length (ft)	0		0	0		0	0		0	0		0
Storage Lanes	0		0	0		0	0		0	0		0
Taper Length (ft)	25			25			25			25		
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		1125			200			575			1000	
Travel Time (s)		30.7			5.5			15.7			27.3	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	0%	0%	0%	18%	3%	11%	0%	13%	0%	6%	14%	13%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	105	0	0	102	0	0	283	0	0	285	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	22.5	22.5		22.5	22.5		22.5	22.5		22.5	22.5	
Total Split (s)	23.0	23.0		23.0	23.0		37.0	37.0		37.0	37.0	
Total Split (%)	38.3%	38.3%		38.3%	38.3%		61.7%	61.7%		61.7%	61.7%	
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Lost Time Adjust (s)		0.0			0.0			0.0			0.0	
Total Lost Time (s)		3.0			3.0			3.0			3.0	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	Max	Max		Max	Max		Max	Max		Max	Max	
Act Effct Green (s)		20.0			20.0			34.0			34.0	
Actuated g/C Ratio		0.33			0.33			0.57			0.57	
v/c Ratio		0.18			0.19			0.33			0.35	
Control Delay		4.6			8.7			3.7			8.4	
Queue Delay		0.0			0.0			0.0			0.0	
Total Delay		4.6			8.7			3.7			8.4	
LOS		A			A			A			A	
Approach Delay		4.6			8.7			3.7			8.4	
Approach LOS		A			A			A			A	
Queue Length 50th (ft)		2			11			13			48	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 95th (ft)		m21			40			18			90	
Internal Link Dist (ft)		1045			120			495			920	
Turn Bay Length (ft)												
Base Capacity (vph)		591			533			849			822	
Starvation Cap Reductn		0			0			0			0	
Spillback Cap Reductn		0			0			0			0	
Storage Cap Reductn		0			0			0			0	
Reduced v/c Ratio		0.18			0.19			0.33			0.35	

Intersection Summary			
Area Type:	Other		
Cycle Length: 60			
Actuated Cycle Length: 60			
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 45			
Control Type: Pretimed			
Maximum v/c Ratio: 0.35			
Intersection Signal Delay: 6.2		Intersection LOS: A	
Intersection Capacity Utilization 36.9%		ICU Level of Service A	
Analysis Period (min) 15			

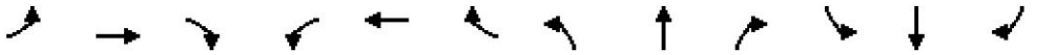
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 8: Woodland Ave & 61st St

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Volume (veh/h)	5	38	51	11	30	51	25	222	7	34	214	8
Future Volume (veh/h)	5	38	51	11	30	51	25	222	7	34	214	8
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1800	1800	1800	1758	1758	1758	1617	1617	1617	1603	1603	1603
Adj Flow Rate, veh/h	6	42	57	12	33	57	28	247	8	38	238	9
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	0	0	0	3	3	3	13	13	13	14	14	14
Cap, veh/h	72	240	295	95	202	291	113	809	25	140	757	27
Arrive On Green	0.33	0.33	0.33	0.33	0.33	0.33	1.00	1.00	1.00	0.57	0.57	0.57
Sat Flow, veh/h	26	719	885	83	607	874	83	1428	44	127	1336	48
Grp Volume(v), veh/h	105	0	0	102	0	0	283	0	0	285	0	0
Grp Sat Flow(s),veh/h/ln	1630	0	0	1564	0	0	1555	0	0	1510	0	0
Q Serve(g_s), 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
Cycle Q Clear(g_c), s	2.7	0.0	0.0	2.7	0.0	0.0	0.0	0.0	0.0	5.7	0.0	0.0
Prop In Lane	0.06		0.54	0.12		0.56	0.10		0.03	0.13		0.03
Lane Grp Cap(c), veh/h	607	0	0	588	0	0	947	0	0	924	0	0
V/C Ratio(X)	0.17	0.00	0.00	0.17	0.00	0.00	0.30	0.00	0.00	0.31	0.00	0.00
Avail Cap(c_a), veh/h	607	0	0	588	0	0	947	0	0	924	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	14.2	0.0	0.0	14.2	0.0	0.0	0.0	0.0	0.0	6.9	0.0	0.0
Incr Delay (d2), s/veh	0.6	0.0	0.0	0.6	0.0	0.0	0.8	0.0	0.0	0.9	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	1.9	0.0	0.0	1.8	0.0	0.0	0.4	0.0	0.0	3.2	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	14.9	0.0	0.0	14.9	0.0	0.0	0.8	0.0	0.0	7.7	0.0	0.0
LnGrp LOS	B	A	A	B	A	A	A	A	A	A	A	A
Approach Vol, veh/h		105			102			283			285	
Approach Delay, s/veh		14.9			14.9			0.8			7.7	
Approach LOS		B			B			A			A	

Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		37.0		23.0		37.0		23.0				
Change Period (Y+Rc), s		3.0		3.0		3.0		3.0				
Max Green Setting (Gmax), s		34.0		20.0		34.0		20.0				
Max Q Clear Time (g_c+I1), s		2.0		4.7		7.7		4.7				
Green Ext Time (p_c), s		2.0		0.4		1.9		0.4				

Intersection Summary		
HCM 6th Ctrl Delay		7.1
HCM 6th LOS		A



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	5	38	83	11	30	51	25	222	7	34	214	8
Future Volume (vph)	5	38	83	11	30	51	25	222	7	34	214	8
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	12	12	12	12	12	12	11	12	12	11	12
Grade (%)		-1%			0%			0%			0%	
Storage Length (ft)	0		0	0		0	0		0	0		0
Storage Lanes	0		0	0		0	0		0	0		0
Taper Length (ft)	25			25			25			25		
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		1125			200			575			1000	
Travel Time (s)		30.7			5.5			15.7			27.3	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	0%	0%	0%	18%	3%	11%	0%	13%	0%	6%	14%	13%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	140	0	0	102	0	0	283	0	0	285	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	22.5	22.5		22.5	22.5		22.5	22.5		22.5	22.5	
Total Split (s)	23.0	23.0		23.0	23.0		37.0	37.0		37.0	37.0	
Total Split (%)	38.3%	38.3%		38.3%	38.3%		61.7%	61.7%		61.7%	61.7%	
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Lost Time Adjust (s)		0.0			0.0			0.0			0.0	
Total Lost Time (s)		3.0			3.0			3.0			3.0	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	Max	Max		Max	Max		Max	Max		Max	Max	
Act Effct Green (s)		20.0			20.0			34.0			34.0	
Actuated g/C Ratio		0.33			0.33			0.57			0.57	
v/c Ratio		0.23			0.19			0.33			0.35	
Control Delay		2.6			8.7			4.7			8.4	
Queue Delay		0.0			0.0			0.0			0.0	
Total Delay		2.6			8.7			4.7			8.4	
LOS		A			A			A			A	
Approach Delay		2.6			8.7			4.7			8.4	
Approach LOS		A			A			A			A	
Queue Length 50th (ft)		1			11			16			48	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 95th (ft)		m5			40			31			90	
Internal Link Dist (ft)		1045			120			495			920	
Turn Bay Length (ft)												
Base Capacity (vph)		606			532			849			822	
Starvation Cap Reductn		0			0			0			0	
Spillback Cap Reductn		0			0			0			0	
Storage Cap Reductn		0			0			0			0	
Reduced v/c Ratio		0.23			0.19			0.33			0.35	

Intersection Summary			
Area Type:	Other		
Cycle Length: 60			
Actuated Cycle Length: 60			
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 45			
Control Type: Pretimed			
Maximum v/c Ratio: 0.35			
Intersection Signal Delay: 6.1		Intersection LOS: A	
Intersection Capacity Utilization 37.7%		ICU Level of Service A	
Analysis Period (min) 15			

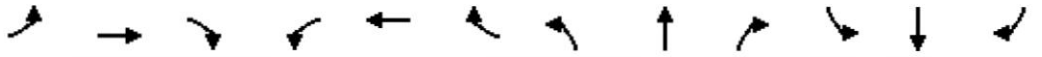
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 8: Woodland Ave & 61st St

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Volume (veh/h)	5	38	83	11	30	51	25	222	7	34	214	8
Future Volume (veh/h)	5	38	83	11	30	51	25	222	7	34	214	8
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1800	1800	1800	1758	1758	1758	1617	1617	1617	1603	1603	1603
Adj Flow Rate, veh/h	6	42	92	12	33	57	28	247	8	38	238	9
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	0	0	0	3	3	3	13	13	13	14	14	14
Cap, veh/h	69	177	351	95	202	291	113	809	25	140	757	27
Arrive On Green	0.33	0.33	0.33	0.33	0.33	0.33	1.00	1.00	1.00	0.57	0.57	0.57
Sat Flow, veh/h	19	530	1053	83	605	872	83	1428	44	127	1336	48
Grp Volume(v), veh/h	140	0	0	102	0	0	283	0	0	285	0	0
Grp Sat Flow(s),veh/h/ln	1602	0	0	1560	0	0	1555	0	0	1510	0	0
Q Serve(g_s), 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
Cycle Q Clear(g_c), s	3.8	0.0	0.0	2.7	0.0	0.0	0.0	0.0	0.0	5.7	0.0	0.0
Prop In Lane	0.04		0.66	0.12		0.56	0.10		0.03	0.13		0.03
Lane Grp Cap(c), veh/h	597	0	0	587	0	0	947	0	0	924	0	0
V/C Ratio(X)	0.23	0.00	0.00	0.17	0.00	0.00	0.30	0.00	0.00	0.31	0.00	0.00
Avail Cap(c_a), veh/h	597	0	0	587	0	0	947	0	0	924	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	14.6	0.0	0.0	14.2	0.0	0.0	0.0	0.0	0.0	6.9	0.0	0.0
Incr Delay (d2), s/veh	0.9	0.0	0.0	0.6	0.0	0.0	0.8	0.0	0.0	0.9	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	2.6	0.0	0.0	1.8	0.0	0.0	0.4	0.0	0.0	3.2	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	15.5	0.0	0.0	14.9	0.0	0.0	0.8	0.0	0.0	7.7	0.0	0.0
LnGrp LOS	B	A	A	B	A	A	A	A	A	A	A	A
Approach Vol, veh/h		140			102			283			285	
Approach Delay, s/veh		15.5			14.9			0.8			7.7	
Approach LOS		B			B			A			A	

Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		37.0		23.0		37.0		23.0				
Change Period (Y+Rc), s		3.0		3.0		3.0		3.0				
Max Green Setting (Gmax), s		34.0		20.0		34.0		20.0				
Max Q Clear Time (g_c+I1), s		2.0		5.8		7.7		4.7				
Green Ext Time (p_c), s		2.0		0.6		1.9		0.4				

Intersection Summary												
HCM 6th Ctrl Delay			7.6									
HCM 6th LOS			A									

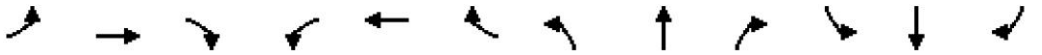


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	18	79	61	17	66	76	38	306	17	81	317	21
Future Volume (vph)	18	79	61	17	66	76	38	306	17	81	317	21
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	12	12	12	12	12	12	11	12	12	11	12
Grade (%)		-1%			0%			0%			0%	
Storage Length (ft)	0		0	0		0	0		0	0		0
Storage Lanes	0		0	0		0	0		0	0		0
Taper Length (ft)	25			25			25			25		
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		1125			200			575			1000	
Travel Time (s)		30.7			5.5			15.7			27.3	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	0%	4%	0%	0%	2%	0%	3%	8%	0%	1%	10%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	165	0	0	166	0	0	377	0	0	436	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	22.5	22.5		22.5	22.5		22.5	22.5		22.5	22.5	
Total Split (s)	23.0	23.0		23.0	23.0		37.0	37.0		37.0	37.0	
Total Split (%)	38.3%	38.3%		38.3%	38.3%		61.7%	61.7%		61.7%	61.7%	
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Lost Time Adjust (s)		0.0			0.0			0.0			0.0	
Total Lost Time (s)		3.0			3.0			3.0			3.0	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	Max	Max		Max	Max		Max	Max		Max	Max	
Act Effct Green (s)		20.0			20.0			34.0			34.0	
Actuated g/C Ratio		0.33			0.33			0.57			0.57	
v/c Ratio		0.28			0.28			0.44			0.55	
Control Delay		11.4			9.7			3.9			11.2	
Queue Delay		0.0			0.0			0.0			0.0	
Total Delay		11.4			9.7			3.9			11.2	
LOS		B			A			A			B	
Approach Delay		11.4			9.7			3.9			11.2	
Approach LOS		B			A			A			B	
Queue Length 50th (ft)		25			22			16			86	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 95th (ft)		67			59			31			157	
Internal Link Dist (ft)		1045			120			495			920	
Turn Bay Length (ft)												
Base Capacity (vph)		579			592			860			799	
Starvation Cap Reductn		0			0			0			0	
Spillback Cap Reductn		0			0			0			0	
Storage Cap Reductn		0			0			0			0	
Reduced v/c Ratio		0.28			0.28			0.44			0.55	

Intersection Summary			
Area Type:	Other		
Cycle Length: 60			
Actuated Cycle Length: 60			
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 50			
Control Type: Pretimed			
Maximum v/c Ratio: 0.55			
Intersection Signal Delay: 8.6		Intersection LOS: A	
Intersection Capacity Utilization 58.7%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 8: Woodland Ave & 61st St



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Volume (veh/h)	18	79	61	17	66	76	38	306	17	81	317	21
Future Volume (veh/h)	18	79	61	17	66	76	38	306	17	81	317	21
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1744	1744	1744	1772	1772	1772	1688	1688	1688	1660	1660	1660
Adj Flow Rate, veh/h	19	82	64	18	69	79	40	319	18	84	330	22
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	4	4	4	2	2	2	8	8	8	10	10	10
Cap, veh/h	94	298	206	91	254	253	120	808	43	190	678	42
Arrive On Green	0.33	0.33	0.33	0.33	0.33	0.33	1.00	1.00	1.00	0.57	0.57	0.57
Sat Flow, veh/h	81	893	617	74	763	760	94	1426	76	209	1197	75
Grp Volume(v), veh/h	165	0	0	166	0	0	377	0	0	436	0	0
Grp Sat Flow(s),veh/h/ln	1591	0	0	1598	0	0	1597	0	0	1480	0	0
Q Serve(g_s), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.5	0.0	0.0
Cycle Q Clear(g_c), s	4.5	0.0	0.0	4.5	0.0	0.0	0.0	0.0	0.0	9.6	0.0	0.0
Prop In Lane	0.12		0.39	0.11		0.48	0.11		0.05	0.19		0.05
Lane Grp Cap(c), veh/h	597	0	0	599	0	0	971	0	0	910	0	0
V/C Ratio(X)	0.28	0.00	0.00	0.28	0.00	0.00	0.39	0.00	0.00	0.48	0.00	0.00
Avail Cap(c_a), veh/h	597	0	0	599	0	0	971	0	0	910	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	14.8	0.0	0.0	14.8	0.0	0.0	0.0	0.0	0.0	7.7	0.0	0.0
Incr Delay (d2), s/veh	1.1	0.0	0.0	1.1	0.0	0.0	1.2	0.0	0.0	1.8	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.7	0.0	0.0	1.7	0.0	0.0	0.3	0.0	0.0	3.2	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	16.0	0.0	0.0	16.0	0.0	0.0	1.2	0.0	0.0	9.5	0.0	0.0
LnGrp LOS	B	A	A	B	A	A	A	A	A	A	A	A
Approach Vol, veh/h		165			166			377			436	
Approach Delay, s/veh		16.0			16.0			1.2			9.5	
Approach LOS		B			B			A			A	

Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		37.0		23.0		37.0		23.0				
Change Period (Y+Rc), s		3.0		3.0		3.0		3.0				
Max Green Setting (Gmax), s		34.0		20.0		34.0		20.0				
Max Q Clear Time (g_c+I1), s		2.0		6.5		11.6		6.5				
Green Ext Time (p_c), s		2.8		0.7		3.2		0.8				

Intersection Summary												
HCM 6th Ctrl Delay			8.6									
HCM 6th LOS			A									

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	18	79	61	17	66	76	38	306	17	81	317	21
Future Volume (vph)	18	79	61	17	66	76	38	306	17	81	317	21
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	12	12	12	12	12	12	11	12	12	11	12
Grade (%)		-1%			0%			0%			0%	
Storage Length (ft)	0		0	0		0	0		0	0		0
Storage Lanes	0		0	0		0	0		0	0		0
Taper Length (ft)	25			25			25			25		
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		1125			200			575			1000	
Travel Time (s)		30.7			5.5			15.7			27.3	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	0%	4%	0%	0%	2%	0%	3%	8%	0%	1%	10%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	165	0	0	166	0	0	377	0	0	436	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	22.5	22.5		22.5	22.5		22.5	22.5		22.5	22.5	
Total Split (s)	23.0	23.0		23.0	23.0		37.0	37.0		37.0	37.0	
Total Split (%)	38.3%	38.3%		38.3%	38.3%		61.7%	61.7%		61.7%	61.7%	
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Lost Time Adjust (s)		0.0			0.0			0.0			0.0	
Total Lost Time (s)		3.0			3.0			3.0			3.0	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	Max	Max		Max	Max		Max	Max		Max	Max	
Act Effct Green (s)		20.0			20.0			34.0			34.0	
Actuated g/C Ratio		0.33			0.33			0.57			0.57	
v/c Ratio		0.28			0.28			0.44			0.55	
Control Delay		11.4			9.7			3.9			11.2	
Queue Delay		0.0			0.0			0.0			0.0	
Total Delay		11.4			9.7			3.9			11.2	
LOS		B			A			A			B	
Approach Delay		11.4			9.7			3.9			11.2	
Approach LOS		B			A			A			B	
Queue Length 50th (ft)		25			22			16			86	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 95th (ft)		67			59			31			157	
Internal Link Dist (ft)		1045			120			495			920	
Turn Bay Length (ft)												
Base Capacity (vph)		579			592			860			799	
Starvation Cap Reductn		0			0			0			0	
Spillback Cap Reductn		0			0			0			0	
Storage Cap Reductn		0			0			0			0	
Reduced v/c Ratio		0.28			0.28			0.44			0.55	

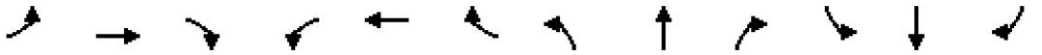
Intersection Summary			
Area Type:	Other		
Cycle Length: 60			
Actuated Cycle Length: 60			
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 50			
Control Type: Pretimed			
Maximum v/c Ratio: 0.55			
Intersection Signal Delay: 8.6		Intersection LOS: A	
Intersection Capacity Utilization 58.7%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 8: Woodland Ave & 61st St

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Volume (veh/h)	18	79	61	17	66	76	38	306	17	81	317	21
Future Volume (veh/h)	18	79	61	17	66	76	38	306	17	81	317	21
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1744	1744	1744	1772	1772	1772	1688	1688	1688	1660	1660	1660
Adj Flow Rate, veh/h	19	82	64	18	69	79	40	319	18	84	330	22
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	4	4	4	2	2	2	8	8	8	10	10	10
Cap, veh/h	94	298	206	91	254	253	120	808	43	190	678	42
Arrive On Green	0.33	0.33	0.33	0.33	0.33	0.33	1.00	1.00	1.00	0.57	0.57	0.57
Sat Flow, veh/h	81	893	617	74	763	760	94	1426	76	209	1197	75
Grp Volume(v), veh/h	165	0	0	166	0	0	377	0	0	436	0	0
Grp Sat Flow(s),veh/h/ln	1591	0	0	1598	0	0	1597	0	0	1480	0	0
Q Serve(g_s), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.5	0.0	0.0
Cycle Q Clear(g_c), s	4.5	0.0	0.0	4.5	0.0	0.0	0.0	0.0	0.0	9.6	0.0	0.0
Prop In Lane	0.12		0.39	0.11		0.48	0.11		0.05	0.19		0.05
Lane Grp Cap(c), veh/h	597	0	0	599	0	0	971	0	0	910	0	0
V/C Ratio(X)	0.28	0.00	0.00	0.28	0.00	0.00	0.39	0.00	0.00	0.48	0.00	0.00
Avail Cap(c_a), veh/h	597	0	0	599	0	0	971	0	0	910	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	14.8	0.0	0.0	14.8	0.0	0.0	0.0	0.0	0.0	7.7	0.0	0.0
Incr Delay (d2), s/veh	1.1	0.0	0.0	1.1	0.0	0.0	1.2	0.0	0.0	1.8	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.7	0.0	0.0	1.7	0.0	0.0	0.3	0.0	0.0	3.2	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	16.0	0.0	0.0	16.0	0.0	0.0	1.2	0.0	0.0	9.5	0.0	0.0
LnGrp LOS	B	A	A	B	A	A	A	A	A	A	A	A
Approach Vol, veh/h		165			166			377			436	
Approach Delay, s/veh		16.0			16.0			1.2			9.5	
Approach LOS		B			B			A			A	

Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		37.0		23.0		37.0		23.0				
Change Period (Y+Rc), s		3.0		3.0		3.0		3.0				
Max Green Setting (Gmax), s		34.0		20.0		34.0		20.0				
Max Q Clear Time (g_c+I1), s		2.0		6.5		11.6		6.5				
Green Ext Time (p_c), s		2.8		0.7		3.2		0.8				

Intersection Summary												
HCM 6th Ctrl Delay			8.6									
HCM 6th LOS			A									



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	18	79	118	17	66	76	38	306	17	81	317	21
Future Volume (vph)	18	79	118	17	66	76	38	306	17	81	317	21
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	12	12	12	12	12	12	11	12	12	11	12
Grade (%)		-1%			0%			0%			0%	
Storage Length (ft)	0		0	0		0	0		0	0		0
Storage Lanes	0		0	0		0	0		0	0		0
Taper Length (ft)	25			25			25			25		
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		1125			200			575			1000	
Travel Time (s)		30.7			5.5			15.7			27.3	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	0%	4%	0%	0%	2%	0%	3%	8%	0%	1%	10%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	224	0	0	166	0	0	377	0	0	436	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	22.5	22.5		22.5	22.5		22.5	22.5		22.5	22.5	
Total Split (s)	23.0	23.0		23.0	23.0		37.0	37.0		37.0	37.0	
Total Split (%)	38.3%	38.3%		38.3%	38.3%		61.7%	61.7%		61.7%	61.7%	
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Lost Time Adjust (s)		0.0			0.0			0.0			0.0	
Total Lost Time (s)		3.0			3.0			3.0			3.0	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	Max	Max		Max	Max		Max	Max		Max	Max	
Act Effct Green (s)		20.0			20.0			34.0			34.0	
Actuated g/C Ratio		0.33			0.33			0.57			0.57	
v/c Ratio		0.37			0.28			0.44			0.55	
Control Delay		7.9			9.7			4.8			11.2	
Queue Delay		0.0			0.0			0.0			0.0	
Total Delay		7.9			9.7			4.8			11.2	
LOS		A			A			A			B	
Approach Delay		7.9			9.7			4.8			11.2	
Approach LOS		A			A			A			B	
Queue Length 50th (ft)		3			22			19			86	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 95th (ft)		39			60			36			157	
Internal Link Dist (ft)		1045			120			495			920	
Turn Bay Length (ft)												
Base Capacity (vph)		610			589			860			799	
Starvation Cap Reductn		0			0			0			0	
Spillback Cap Reductn		0			0			0			0	
Storage Cap Reductn		0			0			0			0	
Reduced v/c Ratio		0.37			0.28			0.44			0.55	

Intersection Summary			
Area Type:	Other		
Cycle Length: 60			
Actuated Cycle Length: 60			
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 50			
Control Type: Pretimed			
Maximum v/c Ratio: 0.55			
Intersection Signal Delay: 8.4		Intersection LOS: A	
Intersection Capacity Utilization 62.4%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 8: Woodland Ave & 61st St

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	18	79	118	17	66	76	38	306	17	81	317	21
Future Volume (veh/h)	18	79	118	17	66	76	38	306	17	81	317	21
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1744	1744	1744	1772	1772	1772	1688	1688	1688	1660	1660	1660
Adj Flow Rate, veh/h	19	82	123	18	69	79	40	319	18	84	330	22
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	4	4	4	2	2	2	8	8	8	10	10	10
Cap, veh/h	84	215	286	91	254	253	120	808	43	190	678	42
Arrive On Green	0.33	0.33	0.33	0.33	0.33	0.33	1.00	1.00	1.00	0.57	0.57	0.57
Sat Flow, veh/h	57	646	857	73	761	758	94	1426	76	209	1197	75
Grp Volume(v), veh/h	224	0	0	166	0	0	377	0	0	436	0	0
Grp Sat Flow(s),veh/h/ln	1561	0	0	1592	0	0	1597	0	0	1480	0	0
Q Serve(g_s), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.5	0.0	0.0
Cycle Q Clear(g_c), s	6.6	0.0	0.0	4.5	0.0	0.0	0.0	0.0	0.0	9.6	0.0	0.0
Prop In Lane	0.08		0.55	0.11		0.48	0.11		0.05	0.19		0.05
Lane Grp Cap(c), veh/h	585	0	0	597	0	0	971	0	0	910	0	0
V/C Ratio(X)	0.38	0.00	0.00	0.28	0.00	0.00	0.39	0.00	0.00	0.48	0.00	0.00
Avail Cap(c_a), veh/h	585	0	0	597	0	0	971	0	0	910	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	15.5	0.0	0.0	14.8	0.0	0.0	0.0	0.0	0.0	7.7	0.0	0.0
Incr Delay (d2), s/veh	1.9	0.0	0.0	1.2	0.0	0.0	1.2	0.0	0.0	1.8	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.5	0.0	0.0	1.8	0.0	0.0	0.3	0.0	0.0	3.2	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	17.4	0.0	0.0	16.0	0.0	0.0	1.2	0.0	0.0	9.5	0.0	0.0
LnGrp LOS	B	A	A	B	A	A	A	A	A	A	A	A
Approach Vol, veh/h		224			166			377			436	
Approach Delay, s/veh		17.4			16.0			1.2			9.5	
Approach LOS		B			B			A			A	

Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		37.0		23.0		37.0		23.0				
Change Period (Y+Rc), s		3.0		3.0		3.0		3.0				
Max Green Setting (Gmax), s		34.0		20.0		34.0		20.0				
Max Q Clear Time (g_c+I1), s		2.0		8.6		11.6		6.5				
Green Ext Time (p_c), s		2.8		1.0		3.2		0.8				

Intersection Summary	
HCM 6th Ctrl Delay	9.3
HCM 6th LOS	A

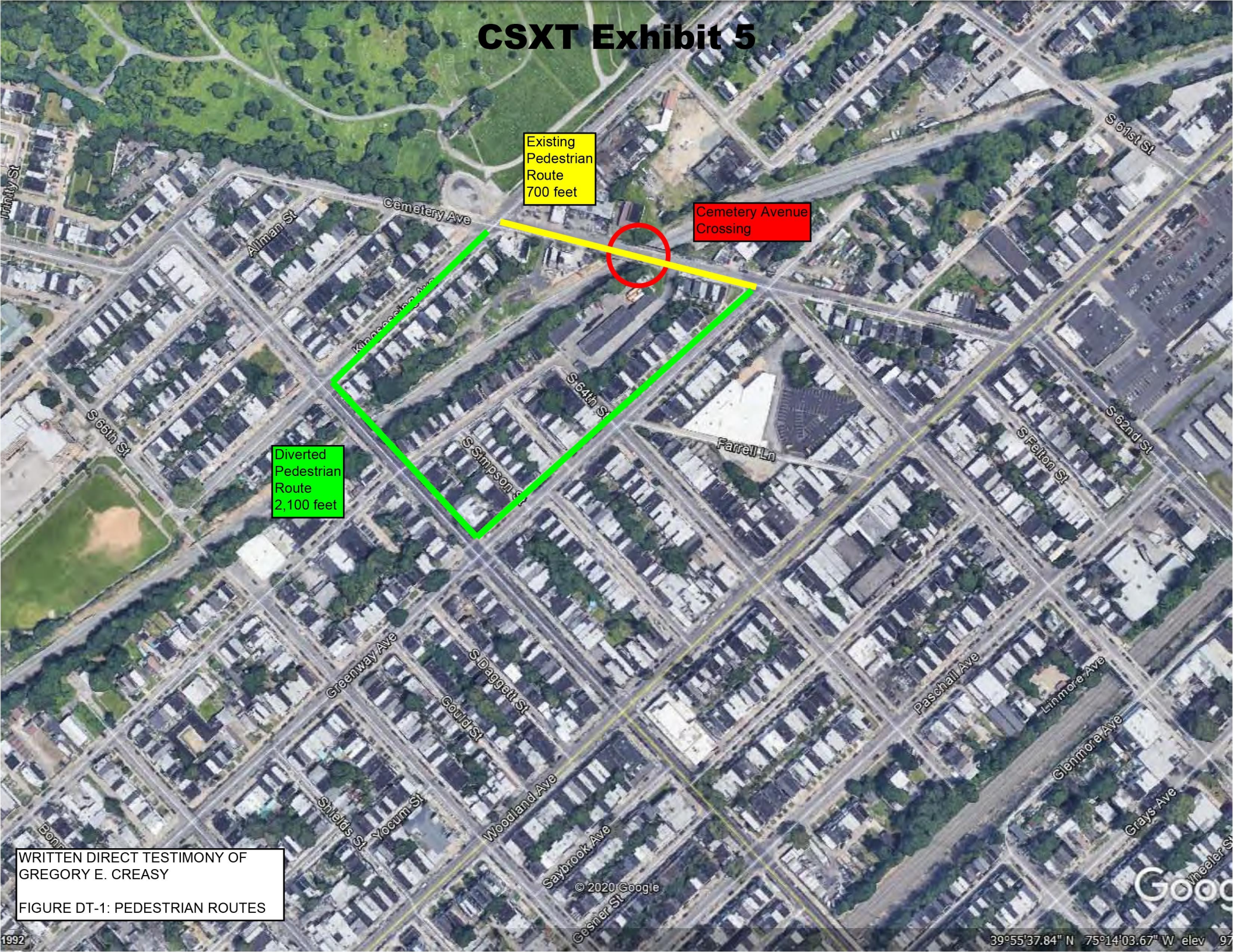
TRAVEL TIME STUDY

Travel Time Summary Table

Travel Time Study Results (sec)	
2019 Existing Conditions	
North Side of Cemetery Avenue Rail-Highway Bridge to Greenway Avenue/63rd Street	
Travel Run Times	98
	93
	152
	106
	151
Average Travel Time (sec)	**120**
South Side of Cemetery Avenue Rail-Highway Bridge to Kingsessing Avenue/Cemetery Avenue	
Travel Run Times	103
	109
	113
	110
	92
Average Travel Time (sec)	**105**

G:\772_04\corres\travel time table.wpd

CSXT Exhibit 5



WRITTEN DIRECT TESTIMONY OF
GREGORY E. CREASY

FIGURE DT-1: PEDESTRIAN ROUTES

BEFORE THE
PENNSYLVANIA PUBLIC UTILITY COMMISSION

Application of CSX Transportation, Inc. for Approval of the Abolition of the Crossing (DOT 140 634 G) where Cemetery Avenue crosses above grade the tracks of CSX Transportation, Inc. located in the City of Philadelphia, Philadelphia County, Pennsylvania, and the allocation of cost thereto.	:	Docket No. A-2019-3013783

REBUTTAL TESTIMONY OF DEREK MIHALY
ON BEHALF OF CSX TRANSPORTATION, INC.

PUBLIC VERSION

Date: January 22, 2021

CSXT STATEMENT NO. 3-R

EXHIBIT
CSX Statement R-3
exhibitsticker.com

Q. Mr. Mihaly, have you had the opportunity to review the written direct testimony of the City, PennDOT and I&E in this matter?

A. Yes.

Q. Is there any rebuttal that you would like to provide to any of that testimony?

A. Yes.

Q. Okay, let's start with the testimony of Mr. Darren Gatti of the City. Mr. Gatti states on the second page of his testimony text (all of which is numbered as 1), line 18, that the bridge is "generally in disrepair." Do you agree with that assessment?

A. No, the bridge is open, there is no recommendation to close it, and it is adequate for what it was designed and constructed to do.

Q. Mr. Gatti notes on the 3rd page, lines 5-11, that the bridge is currently posted for 14 tons, which he terms as "structurally deficient." Do you have any rebuttal in that regard?

A. We found in our files the attached letter from McCormick Taylor to Mr. Christopher Renfro of the City Streets Department, dated October 9, 2017, stating that following CSXT's work to replace certain specified floorbeams, the bridge was inspected and the load ratings were updated to account for the new floorbeams. "The bridge is currently posted for 14 Tons except Combinations 21 Tons. Based on the updated load ratings, which are attached for your records, the bridge no longer requires posting and the existing signs may be removed." This letter is marked for identification as CSXT Exhibit 6. We also note that on the 8th page ~~51~~ 39 of the 2020 bridge inspection report, McCormick Taylor states that the bridge is safe for ~~23~~ tons and so does not need to be posted.

Q. When you visited the bridge, did you notice any vehicles parked on the bridge?

A. Yes.

Q. Those vehicles would add to the load on the bridge at any given time, correct?

A. Yes. For example, on I&E Exhibit No. 1, there are 4 cars parked on the bridge. If each one weighs about 1.5 tons, that's a 6-ton load on the bridge.

Q. Whose responsibility would it be to prohibit vehicles from parking on the bridge and ticket them if they do so, if the bridge is posted?

A. The City's.

Q. Mr. Gatti notes on the 4th page, lines 22-24, continuing onto the 5th page, lines 1-6, that between the 2016 and 2020 * * * *. Did CSXT do any work on the bridge within that time period?

A. Following the submittal of my direct testimony, I was able to obtain additional information regarding the repairs that CSXT performed from the files of others within the company. CSXT actually spent a total of about $645,000 to make repairs in 2015 and 2016.

Q. Would you please explain the nature of that work?

A. Corrosion and perforations in the web were repaired in 2015 by adding steel plates to patch over and strengthen the deteriorated condition. Floor system components that had been damaged by a bridge strike were replaced in kind. To facilitate the floor system repair a portion of the concrete deck was removed and replaced. * * * * these repairs are * * * * shown in the photos from site visits at the time in CSXT Exhibit 8. CSXT then in 2016 replaced Floorbeams 19, 20, 21 and 22, as noted in the October 9, 2017, letter from McCormick Taylor to Mr. Renfro of the City. These repairs provide for equal or greater capacity than the original bridge design.

Q. Mr. Gatti states that the 2020 inspection report noted * * * * on the 5th page of his written testimony, continuing onto the 6th page, lines 1-8. What is your response to his testimony in that regard?

A. * * * * In addition, it is CSXT policy to not paint bridges, as painting has no impact on the structural integrity of the bridge.

Q. * * * *

A. * * * * any restrictions on snow plow, trash truck, emergency services or bus usage of the bridge are due to the City's continued posting of the bridge when it does not need to do so.

Q. Mr. Gatti also testifies on the 6th page, lines 21-22, that the City cannot pave the roadway on the bridge because the maximum load was downgraded, and so the bridge cannot hold its paving trucks. What is your response in that regard, Mr. Mihaly?

A. The posted ratings are not our responsibility. However, the previous posting of 14 tons except combinations 21 tons could have been lifted following CSXT's repairs, pursuant to the October 9, 2017, letter to the City from McCormick Taylor. With no posting, the bridge could be repaved.

Q. Do you agree with Mr. Gatti's testimony on the 7th page, lines 6-11, that the superstructure should be replaced at CSXT's cost?

A. No. The City owns the bridge, while CSXT is required by the PUC to maintain it. The replacement of the bridge would be an upgrade for a structure that is functioning as it was designed and constructed. The bridge is currently safe and does not even need to be posted. If the City wants the upgrade of a new bridge superstructure, it should be responsible for that as the owner of the bridge.

Q. Mr. Gatti claims on the 10th page of his testimony, lines 6-9, that CSXT did not inform the City when it performed work on the crossing. Is that correct?

A. No it is not. Attached as CSXT Exhibit 9 are street closure permits from the City for the work CSXT performed in 2015 and 2016.

Q. Moving on then to I&E, William Sinick states on page 4, lines 4-6 of his testimony that the bridge abutments "consist each of stone masonry elements and reinforced concrete elements and are located at each end of the bridge." Are the abutments more or less incorporated into the retaining wall for the cut through which the tracks are located?

A. Yes, more or less. If the bridge superstructure is ordered to be removed, then the abutments will function as part of the retaining wall.

Q. On page 5, lines 8-11, Mr. Sinick notes * * * *. Do you agree with that assessment?

A. As CSXT informed Sandy Martin of McCormick Taylor in its letter to her dated April 26, 2016, * * * *, CSXT is responsible for the condition of the bridge as it was originally approved, which did not include * * * *. If it is determined that * * * * are now necessary, CSXT thinks that should be the responsibility of the City, as that is a roadway feature.

Q. The missing railing that Mr. Sinick identifies in I&E Exhibits E and F, in his testimony on page 7, lines 14-22, has CSXT fixed that railing?

A. That's correct. The photos attached as CSXT Exhibit 11, which were taken on January 19, 2021, show that those repairs have been made.

Q. * * * *

A. * * * *. I assume that it did meet the applicable standards that were in place in 1961 when the bridge was designed and accepted by all parties, and we were not aware of the PUC asking for any alteration prior to this time.

Q. Mr. Sinick suggests on page 11, lines 8-11 of his testimony that if the bridge is not abolished, then maintenance should be reassigned to the City and that it be provided a cost allocation for the rehabilitation or replacement of the bridge. What is your response to that suggestion?

A. If the bridge is not abolished, I agree that the City should be assigned maintenance responsibilities as well as all future costs.

CSXT Exhibit 6

McCORMICK TAYLOR

October 9, 2017

Mr. Christopher Renfro, P.E., Engineering Supervisor
City of Philadelphia - Department of Streets
830 MSB - 1401 JFK Blvd.
Philadelphia, PA 19102

REFERENCE: Cemetery Avenue over CSX Transportation
BMS # 67 7301 0020 0088

Dear Mr. Renfro:

As you are aware, McCormick Taylor, Inc. is currently under contract with PennDOT to perform routine inspections of locally owned bridges located within District 6-0. Please be advised that as part of a recent inspection of the Cemetery Avenue Bridge, it was noted that Floorbeams 19, 20, 21, and 22 have been replaced. The load ratings for this structure were updated subsequent to the inspection to account for the new floorbeams. The bridge is currently posted for 14 Tons except Combinations 21 Tons. Based on the updated load ratings, which are attached for your records, the bridge no longer requires posting and the existing signs may be removed.

Should you have any questions or require additional information, please do not hesitate to call me or Tom Canataro, P.E. at 610-640-3500.

Sincerely,

Jennifer S. Payne-McAleer, E.I., CBSI
Project Manager

Attachment

Pc: Margaret Sherman, P.E., TranSystems
Shawn Larkins, E.I., PennDOT District 6-0
Ed Sparks, CSX Transportation
Tom Canataro, P.E., McCormick Taylor, Inc.
Audrey Everett, SET, McCormick Taylor, Inc.

APPENDIX iP 03-C

LOAD RATING SUMMARY FORM

Done By: CMN Date: 8/28/17

Checked By: TMC Date: 8/31/17

Structure ID (5A01): 67 7301 0020 0088 Inspection Date (7A01): N/A

Facility Carried (5A08): Cemetery Ave

Feature Intersected (5A07): CSX Railroad

Structure Type (6A26 – 6A29): Riveted Built-up Through Girder

Spans / Members Analyzed: Span 1; Girders/Floorbeams 9-17, Floorbeams 19 and 20

Analysis Method: LFD

PennDOT Program / Version: BAR7 / v.7.14.0.1

VEHICLE	IR (Factor / TONS)	OR (Factor / TONS)	CONTROLLING MEMBER / SPAN		LOAD EFFECT (M/V)	
			IR	OR	IR	OR
H20	1.18 / 23.6	1.96 / 39.3	FB 9-17	FB 9-17	M	M
HS20	1.07 / 38.7	1.79 / 64.5	Girder	Girder	V	V
ML80	0.99 / 36.2	1.65 / 60.4	Girder	Girder	V	V
TK527	0.95 / 37.9	1.58 / 63.1	Girder	Girder	V	V

Comments/Assumptions*: Floorbeams 19, 20, 21, and 22 were replaced since the previous inspection. The bridge is currently posted for 14 Tons Except Combinations 21 Tons. Based on the load rating calculations, the bridge posting may be removed.

COMMONWEALTH OF PENNSYLVANIA
REGISTERED PROFESSIONAL
TYLER HUU THAI
ENGINEER
No. PE051051-E

8/31/2017

*Identify the amount, location and member with the controlling section loss, wearing surface thickness, and other significant information. These comments should also be recorded in BMS2 item IR19

CSXT Exhibit 8

November 05, 2015

Philadelphia, Philadelphia County, PA; Fabrication and Installation of Structural Steel Repairs to Existing Through Plate Girders; Baltimore Division, Philadelphia Subdivision, MP: BAK-3.6

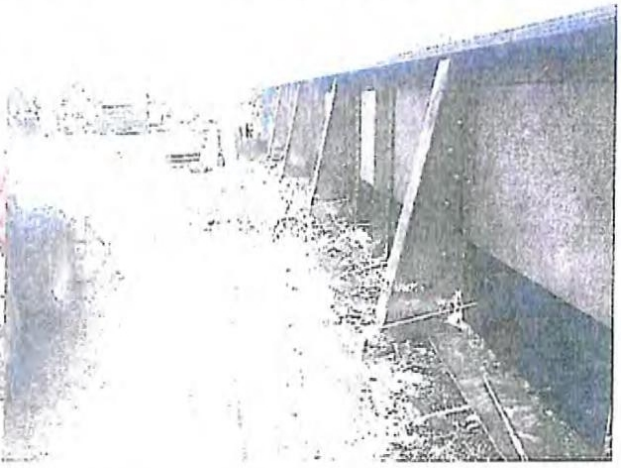
Site Visit Observations:

Upon arrival, I observed local conditions, inspected and applied my PPE. I observed that many laborers were working without proper PPE. I asked to speak to the job superintendent, but he was not present. I spoke to several men and stated that they all should be wearing hardhats, safety glasses, vests, hearing protection, and steel toe boots. I waited for all laborers to apply their PPE before allowing them to resume work activities. While on site, I observed removal of the concrete curb on the south through girder and installation of the steel repair plates on the north through girder.

1. Laborers working without proper PPE

2. Laborers working with proper PPE

3. Removal of conc. curb along S. thru-girder



4. Installation of repair plates along N. thru-girder

Sincerely,

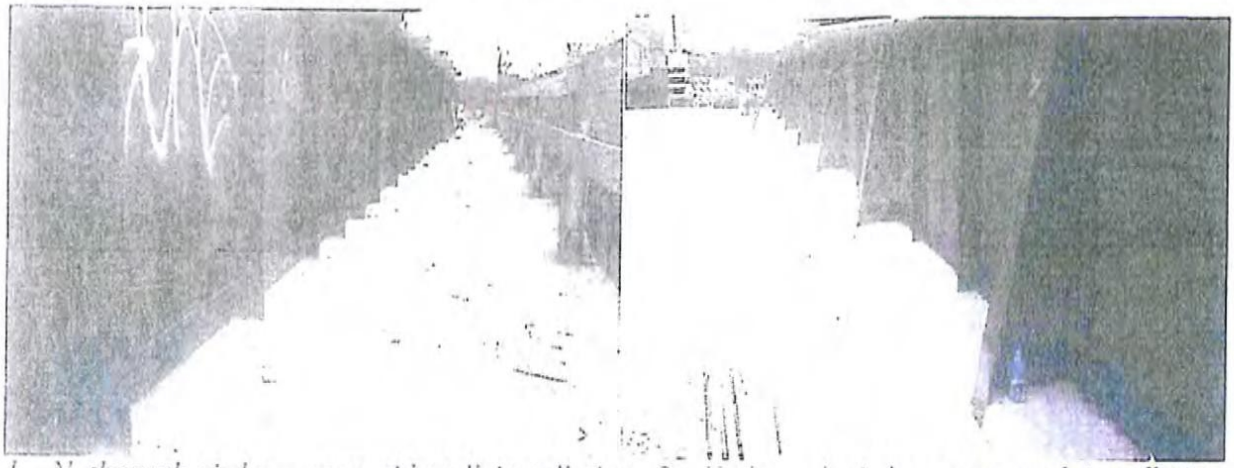
Joshua Davis, PE
Construction Monitoring Representative
Bergmann Associates

November 13, 2015

Philadelphia, Philadelphia County, PA; Fabrication and Installation of Structural Steel Repairs to Existing Through Plate Girders; Baltimore Division, Philadelphia Subdivision, MP: BAK-3.6

Site Visit Observations:

Upon arrival, I observed local conditions, inspected and applied my PPE, and provided myself a safety briefing. All workers were observed wearing the appropriate PPE. All repair plates have been added to corroded steel areas on both through girders. New concrete has been installed in repair areas on both girders.



1. N. through girder – conc. sidewalk installation *2. N. through girder - conc. curb installation*

3. S. through girder – conc. sidewalk installation *4. S. through girder - conc. curb installation*

Sincerely,

Tucker Faherty
Construction Monitoring Representative
Bergmann Associates

CSXT Exhibit 9

City of Philadelphia

Department of Streets
Highway Division - Right-of-Way Unit
940 Municipal Services Building
1401 John F. Kennedy Boulevard

David J Perri, PE
Commissioner

October 23, 2015

MIKE MOGAN
SIX TOWER BRIDGE - SUITE 430
CONSHOHOCKEN, PA 19428

PERMIT NO: 2015-02114

PERMIT TYPE: Equipment Placement

PROJECT TYPES:
Other Event

DETAILED DESCRIPTION OF CLOSURE:
PERMISSION IS HEREBY GRANTED TO CLOSE CEMETARY AVENUE, BETWEEN GREENWAY AND KINGSESSING AVENUES"

GENERAL LOCATION LIST:

Occupancy Type	On Street	From Street	To Street	Reference Type	Value
Full Closure	CEMETERY AVE	GREENWAY AVE	KINGSESSING AVE		

ENCROACHMENTS ON THE RIGHT-OF-WAY:
- Other: BRIDGE REPAIR

DATE: 10/26/2015 - 12/27/2015

TIME: CONTINUOUS

PURPOSE: BRIDGE REPAIR

COMMENTS:
PERMIT WRITTEN IN CONJUNCTION WITH CSX TRANSPORTATION"
- CONTRACTOR IS RESPONSIBLE FOR POSTING & MAINTAINING "TEMPORARY NO PARKING" SIGNS FOR DURATION OF PROJECT.
- MUST POST AND MAINTAIN SIGNAGE NOTIFYING MOTORISTS OF CLOSURE AND TO UTLIZE APPROVED DETOUR.
- MUST MAINTAIN GOOD HOUSEKEEPING AT ALL TIMES DURING AND AFTER EVENT/WORK SITE
- PARKING OF PERSONAL EQUIPMENT PROHIBITED. ANY INFRACTION COULD RESULT IN FINES, TOWING AND RESCISSION OF PERMIT.
- Permitee is Responsible for Notifying All Businesses, Hospitals, Residents, etc of Impending Closure
- MUST REFER TO PA DOT PUB 213 FOR PROPER WORK ZONE TRAFFIC CONTROL.

MUST KEEP PERMIT ON SITE AT ALL TIMES TO SHOW ANY AGENT FROM THE CITY OF PHILADELPHIA UPON DEMAND .

During this subject closure, you agree to maintain regulation PADOT barricades (if applicable) at the extremities of the construction area; provide watchmen where necessary; direct traffic including notification signs and danger signals; be subject to the regulations of the Highway Division in accordance with the Department of Streets, Licenses and Inspections, Police & Fire, PADOT, and any other department that may be concerned. In accepting this permit, you further agree to be responsible for all injuries to persons and/or damages to property that may be caused by the street closure, and to hold the City of Philadelphia harmless in the event of an accident or mishap. Upon expiration of this permit, the barricades, signs, etc., must be removed, and the street left in a clean and safe condition.

Patrick O'Donnell
For Chief Highway Engineer

CC:

Bridges	Capt. Helker	Donald Carlton, Samt	Fire Department
Highway Division	Richard Dickson, PPA	SEPTA	SWEEP
Traffic Division	01st Highway	02nd Councilmanic	02nd Traffic
12th Police	P: (610) 834-4080	F:	

City of Philadelphia

Department of Streets
Highway Division - Right-of-Way Unit
960 Municipal Services Building
1401 John F. Kennedy Boulevard

Donald Carlton
Commissioner

August 19, 2016

MICAH FORD
JAMES J. ANDERSON CONSTRCTION COMPANY, INC.
6958 TORRESDALE AVENUE, STE 200
Philadelphia, PA 19135

PERMIT NO: 2016-11701

PERMIT TYPE: Equipment Placement

UTILITY OWNER:
Private Owner

PROJECT TYPES:
Equipment Delivery/Removal Other Event

DETAILED DESCRIPTION OF CLOSURE:
PERMISSION IS HEREBY GRANTED TO CLOSE CEMETARY AVENUE FROM KINGSESSING AVENUE TO GREENWAY AVENUE

GENERAL LOCATION LIST:

Occupancy Type	On Street	From Street	To Street	Reference Type	Value
Full Closure	CEMETERY AVE	KINGSESSING AVE	GREENWAY AVE		

ENCROACHMENTS ON THE RIGHT-OF-WAY:
- Construction Fence
- Portable Power Equipment
- Trailer
- Truck

DATE: 8/22/2016 - 10/7/2016

TIME: CONTINUOUS

PURPOSE: STRUCTURAL STEEL REPAIRS ON CEMETARY AVENUE OVER CSXT AT MP BAK3.60

COMMENTS:

CONTRACTOR TO PROVIDE ALL DETOUR SIGNAGE AS PER APPROVED DETOUR PLAN SUBMITTED AND APPROVED BY STREETS DEPARTMENT*

CONTRACTOR TO MAINTAIN PEDESTRIAN ACCESS THROUGH STREET AT ALL TIMES*

- MUST MAINTAIN A 6' PEDESTRIAN FOOTWAY AT ALL TIMES
- MUST OPEN STREET TO FULL WIDTH AT THE CONCLUSION OF WORK.
- MUST MAINTAIN GOOD HOUSEKEEPING AT ALL TIMES DURING AND AFTER EVENT/WORK SITE
- MUST PROVIDE & MAINTAIN ACCESS FOR EMERGENCY VEHICLES AT ALL TIMES, I.E. POLICE, FIRE, ETC.
- CONTRACTOR IS RESPONSIBLE FOR POSTING & MAINTAINING "TEMPORARY NO PARKING" SIGNS FOR DURATION OF PROJECT.
- MUST POST AND MAINTAIN SIGNAGE NOTIFYING MOTORISTS OF CLOSURE AND TO UTLIZE APPROVED DETOUR.
- MUST REFER TO PA DOT PUB 213 FOR PROPER WORK ZONE TRAFFIC CONTROL.

MUST KEEP PERMIT ON SITE AT ALL TIMES TO SHOW ANY AGENT FROM THE CITY OF PHILADELPHIA UPON DEMAND .

During this subject closure, you agree to maintain regulation PADOT barricades (if applicable) at the extremities of the construction area; provide watchmen where necessary; direct traffic including notification signs and danger signals; be subject to the regulations of the Highway Division in accordance with the Department of Streets, Licenses and Inspections, Police & Fire, PADOT, and any other department that may be concerned. In accepting this permit, you further agree to be responsible for all injuries to persons and/or damages to property that may be caused by the street closure, and to hold the City of Philadelphia harmless in the event of an accident or mishap. Upon expiration of this permit, the barricades, signs, etc., must be removed, and the street left in a clean and safe condition.

City of Philadelphia

Department of Streets
Highway Division - Right-of-Way Unit
960 Municipal Services Building
1401 John F. Kennedy Boulevard

Donald Carlton
Commissioner

Permit No: 2016-11701

Frederick Miami
Permits Officer

CC:

Bridges
Highway Division
Traffic Division
12th Police

Capt. Catalini
Linda Bradley
01st Highway
P: (215) 331-7150

Donald Carlton, Sanit
SEPTA
02nd Councilmanic
F: (215) 331-7155

Fire Department
SWEEP
02nd Traffic

CSXT Exhibit 11

BEFORE THE
PENNSYLVANIA PUBLIC UTILITY COMMISSION

Application of CSX Transportation, Inc. for Approval of the Abolition of the Crossing (DOT 140 634 G) where Cemetery Avenue crosses above grade the tracks of CSX Transportation, Inc. located in the City of Philadelphia, Philadelphia County, Pennsylvania, and the allocation of cost thereto.	:	Docket No. A-2019-3013783

REBUTTAL TESTIMONY OF GREGORY E. CREASY, P.E. ON BEHALF OF CSX TRANSPORTATION, INC.

Date: January 22, 2021

CSXT STATEMENT NO. 4-R

EXHIBIT
CSX Statement R-4
exhibitsticker.com

Q. Mr. Creasy, have you reviewed the direct written testimony of witnesses for the City, PennDOT and BI&E in this proceeding?

A. Yes I have.

Q. Are there any to which you would like to provide rebuttal testimony?

A. I would like to provide rebuttal testimony to Mr. Davies' testimony regarding pedestrians and liquid fuels. I would like to provide rebuttal testimony Mr. Gatti's testimony with respect to the findings and conclusions of the Traffic Impact Study.

Q. Mr. Davies of PennDOT on page 2 of his testimony criticizes your traffic study for not including an analysis of pedestrian and bicycle traffic at this crossing. What is your response to that?

A. The purpose of the Traffic Impact Study was to determine whether the street network surrounding the crossing could handle the additional traffic diverted if the crossing was closed. My Written Direct Testimony provides information regarding pedestrian activity on the bridge and pedestrian rerouting should the bridge be removed. Kingsessing Avenue, 65th Street, and Greenway Avenue, as well as most other streets in the vicinity of the crossing, have sidewalks on both sides of the street to accommodate pedestrian traffic. Bicycle traffic would share the roadway network with vehicular traffic, which is common in urban areas.

Q. What about Mr. Davies' criticism of insufficient analysis of the impact of increased traffic volumes on 61st and 65th Streets due to diverted traffic from a closure of the bridge on page 3 of his testimony? He specifically mentions the need to examine the impact on pedestrian and bicycle traffic diverted to these alternate routes and whether any mitigation

may be needed as confirmed through a traffic engineering and safety study, which I ask you to address.

A. The Traffic Impact Study followed standard traffic engineering practice to redistribute traffic volumes diverted from the removal of the bridge. The analyses and conclusions of the report clearly show that the existing roadway network has adequate capacity to accommodate the additional traffic volumes with no impacts on intersection levels of service. No improvements are required to accommodate the additional traffic. The pedestrian count, as discussed in my Written Direct Testimony, was 119 during a 24-hour period. This is an average of less than five (5) pedestrians per hour (with an hourly high of 11), which is not a significant increase in pedestrian volume for the alternate routes that would impact safety. The intersections of 65th Street with Kingsessing Avenue and Greenway Avenue are controlled by traffic signals and have crosswalks on all four (4) approaches. The unsignalized intersection of 65th Street and Upland Street provides crosswalks for the Upland Street approaches. The pedestrian count also collected information on the number of bicycles using the Cemetery Avenue crossing. The count indicated that only two (2) bicycles used the crossing in a 24-hour period. Mr. Davies' testimony also mentions that 65th Street in on the City's High Injury Network, and recommends that CSX consider mitigating any substandard design elements. The Traffic Impact Study clearly shows that the diverted traffic from the removal of the Cemetery Avenue crossing will not impact traffic operations along 65th Street. Any substandard design elements should be investigated by the party that owns and maintains the roadway regardless of the status of the Cemetery Avenue Crossing.

Q. Also, on page 3 of his testimony, Mr. Davies testifies that the City will lose liquid fuels funds for that portion of Cemetery Avenue if cul-de-sacs are not constructed on either side of the removed bridge. Can you provide testimony as to the portion of the street for which such funding would be lost and the amount of such funding?

A. Without cul-de-sacs, it is my understanding that the section of Cemetery Avenue from Kingsessing Avenue to Greenway Avenue would be removed from the Liquid Fuels funding inventory. Based on information in the 2020 PennDOT Municipal Liquid Fuels (MLF) Allocation report, which is found on its website, the removal of the approximately 650 feet of Cemetery Avenue would result in the loss of approximately $2,000 per year in Liquid Fuels money. Calculations and documentation are attached as CSXT Exhibit 12.

Q. Do you have any other rebuttal in regard to Mr. Davies' written testimony?

A. No.

Q. Let's move on then to the written testimony of Darin Gatti from the City. On the second page of his testimony (all pages are numbered 1), he states that the Cemetery Avenue crossing is "a necessary link to maintain a redundant transportation system" and "becomes a critical link when one of the other crossings are unavailable." What is your response to that?

A. In the ten blocks from 58th Street to 68th Street there are five (5) streets other than Cemetery Avenue that have grade separated crossings over the railroad. 58th Street, 60th Street, 61st Street, 65th Street, and 68th Street all provide for crossings of the railroad. There are many routes available in the area for traffic to cross over the railroad.

Q. On the 6th page of his written testimony, lines 2-3, Mr. Gatti testifies that the bridge is unsafe for snow plows, trash trucks, emergency services, and busses. Do you agree with his assessment?

A. It is my understanding that a October 9, 2017 letter prepared by McCormick Taylor (PennDOT local bridge inspectors) acknowledges the replacement of Floorbeams 19, 20, 21 and 22 of the Cemetery Avenue bridge by CSXT. See CSXT Exhibit 6. McCormick Taylor updated the load ratings for the bridge based on this improvement. The letter states, "Based on the updated load ratings…the bridge no longer requires posting and the existing signs may be removed." Since the bridge is no longer weight restricted, the bridge can be used by the vehicles Mr. Gatti mentions. If the weight restrictions have remained in place, the large vehicles Mr. Gatti mentions should not have been using the bridge, so removal of the bridge would not impact the current travel patterns of the large vehicles.

Q. On the 7th page of his written testimony, lines 21-22, Mr. Gatti further testifies that closure of the bridge "would result in two short dead ends that would be effectively inaccessible to large City service vehicles as well as Ambulances and UPS trucks." Do you agree with that assessment?

A. As mentioned in my Written Direct Testimony, Cemetery Avenue on either side of the crossing bridge is wide enough for police, ambulances, and UPS vehicles to make u-turns or three-point turns, but not fire trucks or large snow plows. Large trucks would have to back out of the cul-de-sac area, which is a distance of approximately 200 feet. With the current weight restriction posting on the bridge, large vehicles would currently be using the approaches as dead end streets already.

Q. On the 8th page of his testimony, lines 17-19, Mr Gatti testifies in regard to the traffic study that it "implausible [sic] states [on page 19] that no additional traffic control devices will be required where traffic increases along new detours." He further states on lines 20-21 that the study does not address to which streets those vehicles would be diverted. Do you wish to provide any rebuttal in that regard?

A. The Traffic Impact Study (TIS), CSXT Exhibit 4, specifically addresses which streets the traffic currently using Cemetery Avenue is most likely to be diverted to. The diverted volumes are provided in the TIS as well. The surrounding study area intersections were studied with the diverted volumes, and the results were that the intersection levels of service would not be impacted by the diverted traffic. The TIS used standard traffic study methodologies and practices to properly evaluate the surrounding roadway network with the diverted traffic. The documentation and analyses in the TIS validate the conclusion that no roadway or traffic control improvements are needed at the study intersections due to the diverted traffic. The report demonstrates that Mr. Gatti's opinion of the recommendations being "implausible" is not correct.

Q. On the 9th page of his testimony, lines 4-6, Mr. Gatti criticizes the report for looking at increased travel times only under existing conditions, and not in a scenario where traffic has increased due to a permanent bridge closure. Would you like to offer any rebuttal in that regard?

A. The travel time study was performed using standard engineering practices. The capacity analyses in the TIS indicate that there will not be increases in intersection delay with the diverted traffic that would result in increased travel times over the travel times observed

on these routes under existing conditions. Therefore, travel times will not be impacted along the likely routes taken by diverted traffic.

Q. What about Mr. Gatti's criticism on page 9, lines 8-10, about the report not offering any evidence for area residents' ability to find the best routes for their particular travel needs. Do you have any response to that?

A. Residents of an area know their neighborhood and the roadway network well, and have little trouble adjusting their travel routes to find the new shortest distance and time for their desired travel routes when the roadway network changes due to construction, emergency response, or roadway network adjustments such as a bridge removal.

Q. What about his criticism on that same page, lines 11-13, that even though two fire stations are located nearby, the bridge closure could cut off the fastest route. What is your response in that regard?

A. The roadway network in the area of the subject crossing generally provides connected through streets and complete blocks that provide many travel route options for emergency service providers. The available roadway network provides many access routes to and through the crossing bridge area so the proposed removal of the bridge will not impact incident response times.

Q. What about the ability of the two businesses bordering the crossing to attract clientele from the other side of the bridge, to which Mr. Gatti testifies on the 9th page, lines 15-17. With the nature of these two businesses, do you have any thoughts in that regard?

A. I believe the businesses to which Mr. Gatti is referencing are an auto repair facility and a storage facility. Potential customers would still have access to Cemetery Avenue to travel to Kingessing Avenue to the west or Greenway Avenue to the east and use the local street

network grid to get to the other side of the crossing as demonstrated in the TIS. In a vehicle, the ability to get to one of these businesses in a timely matter will not be impacted by the removal of the bridge.

Q. How about his assertions on that same page, lines 18-21, that patrons of these businesses would be forced to reverse out of the street, as would trash trucks, paving trucks and snow removal vehicles if cul-de-sacs were not created?

A. Cemetery Avenue on either side of the crossing bridge is wide enough for customers to make u-turns or three-point turns. Customers will also use the parking areas of the businesses to make turning maneuvers. Large trucks would have to back out of the cul-de-sac area, which is a distance of approximately 200 feet.

Q. What about Mr. Gatti's assertion on the 10th page, lines 12-14, that if any of the two adjacent crossings were blocked, "traffic circulation in the neighborhood would be paralyzed"?

A. Traffic volumes and intersection capacity analyses documented in the TIS indicate that there is a lot of excess capacity in the surrounding roadway system to accommodate additional traffic volumes if one of the other streets crossing the railroad were blocked after the bridge was removed. The TIS documents that the surrounding intersection are projected to operate at level of service "A" or "B" (the two best levels of service) with the removal of the bridge. As mentioned previously, in the ten blocks from 58th Street to 68th Street there are five (5) streets other than Cemetery Avenue that have grade separated crossings over the railroad. 58th Street, 60th Street, 61st Street, 65th Street, and 68th Street all provide for crossings of the railroad. There are many routes available in the area for

traffic to cross over the railroad. It is my professional opinion that the traffic circulation of the area would not be paralyzed as Mr. Gatti suggests.

Q. And do you have any rebuttal to the testimony of Police Lieutenant Joseph Ruff, on page 2, lines 15-23, about the alleged negative effect that the bridge removal would have on officers' ability to respond to crimes and provide back up?

A. In the ten blocks from 58th Street to 68th Street there are five (5) streets other than Cemetery Avenue that have grade separated crossings over the railroad. 58th Street, 60th Street, 61st Street, 65th Street, and 68th Street all provide for crossings of the railroad. There are many routes available to cross over the railroad. The available roadway network provides many access routes to and through the crossing bridge area so the proposed removal of the bridge will not impact incident response times.

CSXT Exhibit 12

Municipal Liquid Fuels Program

The Municipal Liquid Fuels Program funds a range of projects to support construction, reconstruction, maintenance and repair of public roads or streets. Funds are only available to municipalities who submit annual reports (MS 965 Actual Use Report, MS 965P Project and Miscellaneous Receipts and MS965S Record of Checks) and make its deposits and payments or expenditures in compliance with the Act (Section 2.6 Appropriate Use of Funds). Failure to do so may result in not receiving allocations from PennDOT until all discrepancies are resolved.

In addition, the Department of Community and Economic Development's (DCED) Survey of Financial Condition form must be submitted by March 15.

The amount of a municipality's allocation is based on its population and miles of roads on their approved Liquid Fuels Inventory. To be placed on the system a road must have minimum of 33' right-of-way in a township and 16' in a borough. The "cartway" (drivable surface) must be a minimum width of 16', and the road must be a minimum of 250' in length. If the road is a dead end, it must have cul de sac (turnaround) at the end with a minimum 40' radius.

To continue to receive Liquid Fuels funds, a road must be maintained in such a condition that it can be driven safely at 15 mph.

Resources

Municipal Resolution Form (http://www.dot.state.pa.us/public/bureaus/MunicipalServices/forms/MunicipalResolution.pdf) (PDF)

Electronic Access Licensing Agreement (/Doing-Business/LocalGovernment/LiquidFuels/MunicipalLiquidFuelsProgram/Documents/dotGrants%20Electronic%20Access%20Licensing%20Agreement.pdf) (PDF)

Policies & Procedures for the Administration of the Liquid Fuels Tax Act 655 (Publication 9) (http://www.dot.state.pa.us/public/PubsForms/Publications/Pub%209.pdf) (PDF)

Electronic Filing of Municipal Statistics Forms (https://dced.pa.gov/local-government/municipal-statistics/)

Central Vendor Management Unit (http://www.vendorregistration.state.pa.us/cvmu/paniter/default.aspx)

Financial Consultants (/Doing-Business/LocalGovernment/LiquidFuels/Pages/Financial-Consultants.aspx)

Reports

MLF Statewide Allocation Reports:

The reports on the right are the current and prior years' Municipal Liquid Fuels (MLF) Allocations. Contained within each report are the actual Miles (column 4) and Population (column 5) used in calculating each municipality's Gross Allocation (column 6). Some municipalities enter into agreements with PennDOT so that the Department conducts the required bridge inspections (Bridge Inspection Costs appear under column 7) on their behalf. The municipality's share of these costs is deducted from the Gross Allocation to arrive at the Net Allocation (column 8). Annually, a municipality may use 20% of their Net Allocation for the purchase of major equipment, titled 20% Allocation (column 9), and represents a portion of the net allocation, not an additional payment.

2020 (/Doing-Business/LocalGovernment/LiquidFuels/MunicipalLiquidFuelsProgram/Documents/2020-MLF-Allocation-Report.pdf) (PDF)

2019 (/Doing-Business/LocalGovernment/LiquidFuels/MunicipalLiquidFuelsProgram/Documents/2019%20MLF%20Allocation%20%20Report.pdf) (PDF)

2018 (/Doing-Business/LocalGovernment/LiquidFuels/MunicipalLiquidFuelsProgram/Documents/2018%20Municipal%20Liquid%20Fuels%20Statewide%20Allocation.pdf) (PDF)

2017 (/Doing-Business/LocalGovernment/LiquidFuels/MunicipalLiquidFuelsProgram/Documents/2017%20Municipal%20Liquid%20Fuels%20Statewide%20Allocation.pdf) (PDF)

2016 (/Doing-Business/LocalGovernment/LiquidFuels/MunicipalLiquidFuelsProgram/Documents/2016%20MLF%20Allocation%20Report.pdf) (PDF)

2015 (/Doing-Business/LocalGovernment/LiquidFuels/MunicipalLiquidFuelsProgram/Documents/2015%20MLF%20Statewide%20Allocation.pdf) (PDF)

2014 (http://www.dot.state.pa.us/public/bureaus/MunicipalServices/forms/MLF_Allocation_Rpt_2014.pdf) (PDF)

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION
BUREAU OF MUNICIPAL SERVICES
MLF ALLOCATIONS REPORT

Municipal Liquid Fuels (MLF) Jan 29 2020 11:32AM

COUNTY CODE	MUN CODE	MUNICIPALITY NAME	MILES	POPULATION	GROSS ALLOCATION	BRIDGE INSP COST	NET ALLOCATION	20 % ALLOCATION
Philadelphia County								
67	301	PHILADELPHIA	2194.29	1,526,006	36,603,770.67	72,351.00	36,531,419.67	7,306,283.93
		County Totals:	2194.29	1,526,006	36,603,770.67	72,351.00	36,531,419.67	7,306,283.93

Cemetery Avenue Crossing Bridge Removal

City of Philadelphia, Philadelphia County

Liquid Fuels Calculation for
Cemetery Avenue from Kingsessing Avenue to Greenway Avenue

Approximate distance along Cemetery Avenue from Kingsessing Avenue to Greenway Avenue is 650 feet, which equals 0.1231 miles.

From PennDOT's Municipal Liquid Fuels Program Website:

The 2020 MLF (Municipal Liquid Fuels) Allocation Report (relevant page attached) provided the following data for the City of Philadelphia:

Total Net Allocation for the City: $36,531,419.67
Total Miles of City roads for Liquid Fuels: 2,194.29

City Liquid Fuels $/mile = $36,531,419.67/ 2,194.29 miles = $16,648.40 / mile

The 650 feet of Cemetery Avenue that would be removed from the Liquid Fuels mileage would result in a loss of:

$16,648.40 / mile x 0.1231 miles = $2,049.42

CSXT Cross Examination
Exhibit 1

EXHIBIT

CSX Cross Exhibit 1

exhibitsticker.com

BRIDGE
WEIGHT
LIMIT
15
TONS
KDX-2243

BERGMANN
ARCHITECTS ENGINEERS PLANNERS

MEMO

To: Derek Mihaly

From: Mike Leonard, PE

Date: February 8, 2021

Re: Cemetery Avenue (BAK 3.60 Philadelphia PA)

Cemetery Ave Bridge Rehabilitation

Expected Remaining Service Life

The subject structure is a girder floorbeam stringer bridge founded on stone masonry abutments. It was constructed in 1961 from girders that were moved from another location. The bridge is owned and maintained by CSX Transportation (CSXT) and carries Cemetery Avenue over CSXT in Philadelphia, PA.

In 2014, a hands on, interim bridge inspection was conducted by McCormick Taylor on behalf of PennDOT District 6-0. Most components of the bridge were rated in satisfactory or fair condition except for the girders and floorbeams which were rated in poor condition. The inspection noted several deficiencies to girder and floorbeam members.

In 2016, the deficient members were repaired to original capacity. Restoring the bridge to its original capacity will improve its condition rating. Given the repairs and the current condition of the bridge, the remaining service life of the structure is expected to be greater than 25 years.

CSXT^ Cross Examination
Exhibit 2

EXHIBIT
CSX Cross Exhibit 2
exhibitsticker.com

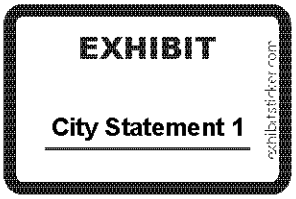
8375 Dix Ellis Trail
Building 600, Suite 105
Jacksonville, FL 32256

BEFORE THE
PENNSYLVANIA PUBLIC UTILITY COMMISSION

Application of CSX Transportation, Inc.	**:**	**Docket No. A-20193013783**
Approval of the Abolition of the Crossing	**:**	
(DOT 140 634 G) where Cemetery Avenue:		
Crosses above grade the tracks of CSX	**:**	**Electronically Filed**
Transportation, Inc. located in the City	**:**	
Of Philadelphia, Philadelphia County	**:**	
Pennsylvania, and the allocation of cost	**:**	
Thereto.	**:**	

CITY OF PHILADELPHIA STATEMENTS 1 and 2

NON-PROPRIETARY



CITY OF PHILADELPHIA TESTIMONY
DOCKET NO. A-2019-3013783
HEARING STATEMENT NO. 1
DIRECT TESTIMONY OF DARIN GATTI, P.E.
HEARING DATE: FEBRUARY 9-10, 2021

NON-PROPRIETARY

All testimony potentially protected under the Protective Order filed December 7, 2020 is redacted and noted as such. The Protected Exhibits are also redacted. Both appear in the City's Proprietary copy of testimony.

Q: Please state your full name, occupation, and business address.

A: Darin L. Gatti PE. Chief Engineer and President of the Board of Surveyors, Philadelphia Streets Department. 1401 John F. Kennedy Boulevard, Suite 830, Philadelphia, PA 19102.

Q: What are your qualifications for this role?

A: I am a licensed Professional Engineer in the State of Pennsylvania. I have 39 years of experience as a bridge engineer with the Streets Department where I manage all aspects of the City's bridge inventory

Q: For how long have you been employed by the Streets Department?

A: 39 years

Q: In the course of your employment have you had occasion to represent the Streets Department before the Pennsylvania Public Utility Commission?

A: Yes.

Q: Are you authorized to testify on behalf of the Streets Department?

A: Yes.

Q: And have you had occasion to participate in the demolition, establishment, and/or reconstruction of bridges carrying highways within the City of Philadelphia?

A: Yes.

Q: Do you inspect bridges on behalf of the City?

A: Yes, although I mainly supervise the bridge inspectors.

Q: Approximately how many bridges have you examined in your time with the City?

A: I don't have an accurate count but the number would be in the hundreds

Q: And do you also, as a professional engineer, review inspection reports for these bridges?

A: Yes.

Q: Are you familiar with the bridge that carries Cemetery Avenue over CSX rail line?

Yes.

Q: Is that located in the City of Philadelphia?

A: Yes.

Q: In the course of your employment as Streets' Chief Engineer have you visited the bridge?

A: Yes.

Q: When was the last time you were there?

A: February 26, 2020 for the PUC field view

Q: How does the City's transportation system benefit from this above-grade crossing?

A: It is a necessary link to maintain a redundant transportation system. The railroad divides the neighborhood with only a few connections between the two sides. It becomes a critical link when one of the other crossings are unavailable.

Q: Can you please describe your observations of the bridge?

A: It's generally in disrepair. The bridge is located in the southwest portion of the City near Mount Moriah Cemetery and carries Cemetery Avenue east to west over a freight train line owned, as far as I'm aware, by CSX. Cemetery Avenue is a two-lane City street. The bridge is bordered to the east by a vacant lot, a storage facility, and residential housing. On the west side there are more residential units and a commercial facility that appears to be an auto body shop and/or scrap yard.

The bridge itself is paved for motor vehicles and has a sidewalk bordering the north and south curb lines. The sidewalk is in decent repair, but the guard rails are missing pieces and at any rate not built safely or with adequate materials. It's dangerous for someone to walk on that sidewalk across the bridge.

The bridge is currently posted at fourteen tons, meaning the maximum cumulative weight of vehicles and/or pedestrians at any time cannot exceed that limit. This maximum load was calculated by a contractor for PennDOT.

PennDOT regulations state that any bridge does not meet the legal load limit is considered structurally deficient. The legal load limit is eighty thousand pounds, or roughly forty tons. My observation of the bridge therefore concludes that the bridge isn't safe either for pedestrians nor large vehicles, and is structurally deficient.

Q: Are you aware of, or in possession of, any previous orders by the Commission regarding this bridge?

A: Only the PUC's order from 1961 for the railroad's reconstruction of the bridge, delegating responsibility for maintenance of the structure to CSX in paragraph 10, and the approaches to the City in paragraph 11. The bridge is a railroad-built bridge carrying a public highway.

Q: Are you aware of, or in possession of, any City ordinances, orders, or regulations regarding this bridge?

A: An 1885 City ordinance, signed by the mayor on July 3 of that year, authorizes the crossing of Cemetery Ave by the railroad, conditioned on approval by the Chief Engineer of the City, and requiring the railroad to maintain the facility carrying the street over the rail line. This ordinance

was a means of eliminating, at the railroad's request, at-grade crossings. Cemetery Avenue has been public right-of-way since at least 1868, and the bridge was thereafter constructed in or around 1887 pursuant to that ordinance. The bridge was only created because, under that law, the railroad was responsible for its upkeep. Otherwise, the City wouldn't have allowed the line to interfere with its right-of-way.

Q: Is a copy of that the ordinance the City marked Exhibit 1?

A: Yes.

Q: Are you aware of, or in possession of, any inspection reports conducted for the subject bridge?

A: Yes. Reports issued in March of 2016 and 2020, respectively, commissioned by PennDOT.

Q: Is the 2016 report what the City marked as Exhibit 2?

A: Yes.

Q: And the 2020 report is marked City's Exhibit 3?

A: Yes.

Q: Referencing the 2020 Report, did you conduct the inspection this document reports on?

A: No. It was commissioned by PennDOT and done by McCormick Taylor. It was sent to someone in the Streets Department and forwarded to me, and I reviewed it in conjunction with my own inspection of the bridge.

Q: So you've had the opportunity to review the report?

A: Yes.

Q: Please describe the report's conclusions and recommendations.

A: The conclusions and recommendations of the report may be subject to the Protective Order filed December 7, 2020, and will be part of the Protected Testimony.

Q: What is delamination?

A: The answer includes details that are subject to the Protective Order filed December 7, 2020, and will be part of the Protected Testimony.

Q: Are there pictures of this?

A: The photographs, as contents of the report, are subject to the Protective Order filed December 7, 2020, and will be part of the Protected Testimony.

Q: What, if any, other issues were described?

The conclusions and recommendations of the report are subject to the Protective Order filed December 7, 2020, and will be part of the Protected Testimony.

Q: Do these conclusions merit immediate action to the bridge's superstructure?

A: Yes.

Q: Returning to your observations of the bridge, you mentioned general disrepair. Has the City taken any remedial action to abate those conditions?

A: Because we are responsible for the approaches, we are in the process of clearing weeds from the sidewalk area and filling in gaps between the road and the bridge joint that could expand without further action. We are in the process of replacing load postings that have gone missing. The City has been unable to pave the road the bridge carries since the maximum load was downgraded, because the bridge cannot hold our paving trucks.

Q: Is the City aware of any other abatement actions by any other party?

A: We know that CSX did some work to the bridge recently, but we have no record of what that work was, no idea of the scope or quality of whatever work occurred, and upon information and belief no significant improvements have been made.

Q: How can the bridge be restored to a safe, operable condition?

A: Extensive repairs, but replacement of the superstructure would be the most cost-effective solution. At CSX's expense, per the Commission's 1961 order. A replacement of the superstructure is necessary because, in my experience, the history of degradation that this bridge's structural integrity has seen renders full repair more expensive than outright replacement. The bridge is approximately sixty years old, and the Streets Department estimates the life of a concrete superstructure to be sixty years.

I estimate that the cost of such repair would amount to about five million dollars, depending on the condition of the substructure and the integrity of the superstructure's current steel facilities.

Q: You stated earlier that you attended the field conference in this matter, is that correct?

A: Yes.

Q: Can you describe what occurred at that meeting?

A: CSX stated that they wanted to remove the bridge without any modifications to the approaches. The City objected to the removal of the bridge as it would have significant negative impacts to the neighborhood and the City's ability to maintain the approach streets.

Q: What effect would closure have on the City's ability to maintain the approach streets?

A: Closure of the bridge would result in two short dead ends that would be effectively inaccessible to large City service vehicles as well as Ambulances and UPS trucks. The approach streets would have to be re-designed with cul-de-sacs at great cost, an unfair expense for the closure of a non-City bridge that wasn't maintained. Closure of that stretch of City right-of-way also jeopardizes our federal grant aid eligibility in that area – highways need to be "through-streets" to qualify for federal aid, or they are not considered supportive of the traffic network - so

not only would closure inhibit City services and place undue hardship on residents, it would adversely affect the City's ability to maintain its public right-of-way elsewhere.

Q: If you know, how significant is the total traffic – vehicular and foot – over the bridge?

When we conducted the field conference I observed several people walking over the bridge and it appears to be a routinely-used link between the Woodland Avenue and Cobbs Creek Parkway corridors, two heavily-used arterial roads. There was a traffic study commissioned by CSX, which I also reviewed.

Q: Can you please describe the findings of the traffic report?

A: The traffic study was not complete and did not investigate all of the impacts to the neighborhood of the proposed bridge removal. Page four recognizes that the surrounding area is residential and commercial in nature, but the study fails to address the pedestrian, bicycle, or really any non-motor vehicle traffic at all. Even with regard to motor vehicles, the study acknowledges that approximately 5400 cars traverse the crossing daily. That is a significant impact, and the conclusion on page nineteen implausible states that no additional traffic control devices will be required where traffic increases along new detours.

Page six contemplates where vehicles would be detoured, but simply states that those trips would be diverted to other routes. As I stated before, this bridge connects two highly utilized corridors in Cobbs Creek Parkway and Woodland Avenue. To say that trips would be diverted is an oversimplification of the change to our traffic grid. Of course the closure of a bridge diverts trips. It also impacts travel times, routes, and traffic on those detours, and this simplistic conclusion just doesn't take into account a multimodal traffic landscape characteristic of an urban environment.

Page sixteen estimates increased travel time via the proposed new routes, but does so under existing conditions, and not in a scenario where traffic has increased due to a permanent bridge closure. The conclusions to this travel time impact study again completely fail to take into account other modes of transportation, and admits that some vehicles will be delayed.

That same conclusion suggests that "local traffic that uses this segment of the roadway network will find the best routes for their particular transportation needs," which shows admirable faith in our citizens' directional capacities, but doesn't offer any real evidence for such a determination. Similarly, the report posits that closure of this right-of-way won't practically affect emergency services because of their ability to arrive from different locations. The existence of two fire stations capable of reaching a fire is scant consolation if the fastest route is closed.

Q: How else will the residents of the area be affected?

The bridge is bordered by at least seven houses on each side, as well as two businesses. These people would be restricted in their ability to cross the rail line or attract clientele from the other side of the bridge. In addition, simple closure of the bridge would put an unreasonable burden on users of the street itself. Without creating a cul-de-sac where the street would terminate upon closure of the bridge, vehicles would be forced to reverse out of the street. This creates a dangerous condition for regular users and an impossible situation for City services like trash removal, paving, and snow removal. This neighborhood is generally low-income residential. Removal of the bridge on its face may seem like a minor inconvenience given the existence of other bridges somewhat nearby, but this assumes the ability of nearby residents to physically get to these other bridges, or financially have the means to easily travel the extra distance.

Q: What are potential detours around this crossing?

A: 63rd St and 65th St

Q: Have these detours been used before?

A: I believe so, but I am not completely sure. When CSX closed the bridge for whatever work occurred sometime between 2016 and 2020 those two streets would've been the logical alternate routes, but the City did not post any detour signs because we did not know what work was occurring.

Q: Besides City and emergency services, would any other transportation element be affected by removal of the bridge?

Without this bridge, if any of the other two crossings are blocked the traffic circulation in the neighborhood would be paralyzed, creating a severe economic impact as well as safety impact by delays in emergency service response times. The bridge is in such disrepair now that it's unsafe for trash trucks, snow plows, and busses to cross anyway. They're too heavy. I don't know if the bridge is on any school bus routes, and that's probably a moot point right now anyway with COVID-related school closures, but a bus wouldn't be able to safely cross either. As it stands, the City's delivery of essential services to its residents is hindered by the lack of care afforded this bridge by CSX, despite its maintenance obligations. The pedestrian detour is ½ mile, although this may be acceptable for a temporary condition it is an undue burden to the residents of the street as a permanent situation.

Q: In your opinion as the City Streets' Department's Chief Engineer, should this bridge be abolished?

A: No, the negative impact to the neighborhood economy, transportation circulation, and delivery of city services would be too great.

Q: In your opinion, does this bridge need significant work to abate unsafe conditions of its structure?

A: Yes. The superstructure needs to be replaced and the substructure repaired.

Q: Whose burden is that repair?

A: CSX needs to repair the substructure and replace the superstructure. We would re-pave the street if we could, but the bridge can only hold fourteen tons. The City believes that the Commission's 1961 Order should be complied with, that maintenance of the bridge itself is the responsibility of CSX, and they should restore to the relevant AASHTO and PennDOT specifications. The City is happy to adhere to the order and maintain the approaches. The bridge should not be abolished or otherwise closed, as not only does it restrict the movement of the neighborhood and City services, but simple closure of the bridge creates an unsafe condition of the street. If somehow the bridge is closed, CSX should pay for the street on either end to be cul-de-saced.

Q: Does that conclude your testimony?

A: Yes.

CITY EXHIBIT 1

AN ORDINANCE

Relative to the construction of the railroad of the Baltimore and Philadelphia Railroad Company within the City of Philadelphia, authorizing it to enter upon and occupy certain streets in said city under certain conditions, and providing for the carrying into effect of such authority and conditions.

SECTION 1. *The Select and Common Councils of the City of Philadelphia do ordain*, That the Baltimore and Philadelphia Railroad Company be, and it is, hereby authorized to enter upon and occupy by way of crossing only, any and all streets, lanes, alleys, and other highways, over, upon, or under which it may be necessary for its railroad to pass between the western limits of the City of Philadelphia at the point where said railroad crosses Cobb's creek, near Church lane, and the Chester branch of the Philadelphia and Reading Railroad: *Provided*, That nothing herein contained shall authorize the longitudinal occupation of any street between said points, except Kingsessing avenue, until the lines thereof shall be changed as hereinafter provided: *And provided also*, That whenever a greater width than sixty feet, the amount allowed by law, shall be required, the railroad company shall pay any additional cost for the building of bridges over the excess of sixty feet.

SECT. 2. The said authority shall only be exercised subject to the following conditions:

1. That the route of said railroad shall be substantially that which is shown upon the map or plan now presented, and which shall, before this ordinance shall have any effect to confer the authority aforesaid upon said railroad company, be filed by it in the office of the Chief Engineer and Surveyor of the City of Philadelphia.

2. That Church lane, or Seventieth street, shall be crossed by means of an overhead crossing, with a clearance above the present surface thereof of not less than twelve feet; Gray's avenue, by means of an overhead crossing; and Woodland avenue and Sixtieth street by means of undergrade crossings, as hereinafter provided for.

SECT. 3. That in order to permit the said railroad to be taken under Woodland avenue and Sixtieth street, and over

Gray's avenue, the Board of Surveyors be, and it is, hereby authorized to change the grade of said streets at the point where the line of said railroad crosses said streets: *Provided*, That the said railroad company shall be at the expense of making such change of grade and of reconstructing the said streets upon such changed grade: *And provided*, That the said railroad company shall indemnify the city from any and all loss or liability in consequence of the claims of property owners upon said Woodland avenue, Sixtieth street, and Gray's avenue between the points where the grade thereof is thus changed, for any damages which they may suffer in consequence of such change of grade: *And provided further*, That the grade on said Woodland avenue shall be made at the rate of three feet per one hundred feet.

SECT. 4. All the crossings by said railroad over the highways aforesaid, whether at grade, overhead, or by undergrade, shall be constructed by said company, under the supervision of the Chief Engineer and Surveyor of the City of Philadelphia.

SECT. 5. That the said railroad company shall agree to keep its railroad and all its structures crossing any of the streets aforesaid in good order and condition at all times, and to save the city of Philadelphia harmless from any liability or responsibility whatever which may grow out of the establishment and use of the said railroad over and across the streets aforesaid.

SECT. 6. That the Board of Surveyors be, and it is, hereby authorized to revise the lines and grades of the streets upon the plans of the city, the lines of which are crossed by the location of the railroad of the Baltimore and Philadelphia Railroad Company, between Cobb's Creek and the Chester branch of the Philadelphia and Reading Railroad, in the Twenty-seventh Ward of the City of Philadelphia, so as to enable the said streets, as far as is possible, to be carried over or to pass under the said railroad, and so as to avoid the occupation of Kingsessing avenue between Sixty-sixth and Sixty-ninth streets. The cost of such revision to be paid by the railroad company.

SECT. 7. The said railroad company shall enter into a bond in form to be approved by the City Solicitor, with security to be approved by Councils, to compensate the City of Philadelphia for all loss or damage which she may sustain by reason

of the change of grade of any and all streets now opened, and for all loss or damage to said city by reason of the widening, alteration, or relocation of any and all streets now opened along the line of said road, and for all loss or damage to the city from the alteration, removal, and relocation of gas mains, sewers, water pipes, and other like municipal work, which alterations, changes, widenings, and relocations may become necessary by the construction of the road as located in said ordinance.

SECT. 8. That the said railroad company shall, at all times hereafter, maintain and keep in repair all bridges constructed by it in the City of Philadelphia.

SECT. 9. That before this ordinance shall take effect, the said railroad company shall file at the Law Department, its acceptance of the provisions named in the said ordinance, and a covenant to perform all of the conditions and provisions therein, in such form as the City Solicitor shall approve: *Provided*, That before said ordinance shall take effect the said railroad company shall file its plan before referred to, and shall pay into the City Treasury the sum of fifty (50) dollars, to pay for printing this ordinance.

Approved the third day of July, A. D. 1885.

WILLIAM B. SMITH,
Mayor of Philadelphia.

AN ORDINANCE

To authorize a transfer in the annual appropriation to the Clerks of Councils, for the year 1885.

SECTION 1. *The Select and Common Councils of the City of Philadelphia do ordain*, That the City Controller be authorized and directed to make the following transfer in the annual appropriation to the Clerks of Councils, for the year 1885, viz.: From Item 2, printing, one thousand five hundred (1,500) dollars, to Item 7, incidentals.

Approved the third day of July, A. D. 1885.

WILLIAM B. SMITH,
Mayor of Philadelphia.

CITY EXHIBIT 2

REPORT SUBJECT TO PROTECTIVE ORDER FILED DECEMBER 7, 2020 AND
INCLUDED IN PROPRIETARY TESTIMONY

1 **CITY EXHIBIT 3**

REPORT SUBJECT TO PROTECTIVE ORDER FILED DECEMBER 7, 2020 AND
INCLUDED IN PROPRIETARY TESTIMONY

CITY OF PHILADSELPHIA'S TESTIMONY
DOCKET NO. A-2019-3013783
HEARING STATEMENT NO. 2
DIRECT TESTIMONY OF LIEUTENANT JOSEPH RUFF
HEARING DATE: FEBRUARY 9-10, 2021

Q: Please state your full name, occupation, rank, and business address

A: Joseph Ruff, Lieutenant, Philadelphia Police Department 12th District. Business address 6448 Woodland Avenue, Philadelphia, PA 19142.

Q: How long have you been a police officer?

A: Twenty-seven years, the last nine as a Lieutenant in this district.

Q: Are you authorized to testify on behalf of the Philadelphia Police Department?

A: Yes.

Q: Are you familiar with the bridge carrying Cemetery Avenue over CSX rail in your district?

A: Yes. It is approximately two blocks from our district headquarters.

Q: In your experience as a police officer, have you yourself had occasion to patrol or otherwise use this bridge?

A: Yes. My current role is the administrative Lieutenant here in the 12th District, but it is not uncommon for me to be out on patrol. I use that bridge on every patrol I take.

Q: Do other officers in your district use the bridge?

A: The bridge is frequently used by our officers every day.

Q: Following up on that question, can you describe the frequency with which the police answer calls, engage with the community, or otherwise conduct law enforcement activities in the immediate vicinity of this bridge?

EXHIBIT
City Statement 2
exhibitsticker.com

A: Police officers answer calls every day in the vicinity of the Cemetery Ave Bridge. Year to date, there have been 195 Part 1 crimes in the vicinity of the bridge, and approximately 4500 calls for service in the immediate area. While that doesn't mean that the bridge is absolutely used for every such call, the Cemetery Avenue bridge would be a primary route to facilitate access to each of these calls.

Q: Can you explain what you mean by "Part 1 crime?"

A: Part 1 and Part 2 crimes are designations given by the FBI's Uniform Crime Reporting Program. Part 1 crimes are higher grade felonies. Murder and non-negligent manslaughter, forcible rape, robbery, aggravated assault, burglary, larceny, motor vehicle theft, and arson.

Q: And the bridge is a vital access route for responding to 195 such crimes just this year?

A: Yes. Not calls, confirmed crimes.

Q: Have you personally observed its use for other City services?

A: I have personally observed the Philadelphia Fire Department using that bridge frequently.

Q: How would the bridge's removal affect police services?

A: The railroad bisects the 12th District. This creates significant problems with access to either side of the district. It increases response time and prevents officers from reaching each other in a timely manner when backup is needed. Although on a map it appears as if other bridges can provide adequate access, the reality is, patrol work aside, these are emergency responses. We are already hampered by the railroad-created lack of access for 3 to 5 blocks at a time across our entire district. Taking away even one access route adds seconds to responses when seconds matter, especially when responding to hundreds of Part 1 crimes a year. Removal compounds an existing problem the railroad causes. I believe the Cemetery Avenue Bridge is an essential transport option for emergency services.

Q: Does that conclude your testimony?

A: Yes.

BEFORE THE
PENNSYLVANIA PUBLIC UTILITY COMMISSION

Application of CSX Transportation, Inc.	:	**Docket No. A-2019-3013783**
Approval of the Abolition of the Crossing	:	
(DOT 140 634 G) where Cemetery Avenue:		
Crosses above grade the tracks of CSX	:	**Electronically Filed**
Transportation, Inc. located in the City	:	
Of Philadelphia, Philadelphia County,	:	
Pennsylvania, and the allocation of cost	:	
Thereto.	:	

CITY OF PHILADELPHIA STATEMENT 3R

NON-PROPRIETARY

CITY OF PHILADELPHIA TESTIMONY
DOCKET NO. A-2019-3013783
HEARING STATEMENT NO. 3R
REBUTTAL TESTIMONY OF DARIN GATTI, P.E.
HEARING DATE: FEBRUARY 9-10, 2021

NON-PROPRIETARY

All testimony protected under the Protective Order granted December 14, 2020 is redacted and noted as such. This testimony appears in full in the City's Proprietary copy of testimony.

Q: Please state your full name, occupation, and business address.

A: Darin L. Gatti PE. Chief Engineer and President of the Board of Surveyors, Philadelphia Streets Department. 1401 John F. Kennedy Boulevard, Suite 830, Philadelphia, PA 19102.

Q: Did you provide direct testimony on behalf of the City in this matter?

A: Yes.

Q: Are you still authorized to testify on behalf of the Streets Department?

A: Yes.

Q: Have you had occasion to review other direct testimony offered in this matter?

A: Yes.

Q: Have you fully read and understood the testimony offered by Derek Mihaly on behalf of CSX Transportation Corp.?

A: Yes.

Q: Can you describe what, if anything, you believe is inaccurate?

A: I want to start with the assertion on Page 3, Line 19, that the bridge was designed to hold fourteen tons. As I stated in my testimony, bridges such as the one carrying Cemetery Avenue must meet AASHTO and PennDOT standards that mandate the ability to hold 72,000lbs, or 36 tons. If CSX built that bridge to hold 14 tons, they built a deficient bridge. If they built it to

standard and it can now hold 14 tons, that shows how far they've allowed the bridge to deteriorate. I have been a professional engineer for thirty-nine years, and I have never encountered a bridge of that size being built to anything like a 14-ton load.

Q: Is that all?

A: Page 4, Line 13. Mr. Mihaly is asked whether a structure-mounted guide rail is "warranted." I'm not sure the question is answered, but the answer should be "yes." If a vehicle impacts the through girder, the girder could buckle and cause a catastrophic collapse of the structure. That is why the inspection report requires the addition of the structure-mounted guiderail, and pedestrian fencing. Insisting that either of those measures is not warranted imperils the safety of the thousands of people – drivers or pedestrians – regularly using that bridge.

Speaking of safety and guard rails, at Line 20 on Page 4 Mr. Mihaly does state that fencing midrails along the pedestrian crossing have been replaced. Respectfully, CSX can say that they installed a new midrail, but in my decades of experience as an engineer, and the pictures bear this out, there is no way that that midrail would satisfy any code safety requirement. The original railing was far more substantial and safer in all respects.

Q: Speaking of safety, Mr. Mihaly expressly states that the bridge is not unsafe. Do you agree?

A: No. Mr. Mihaly's answer, at Page 5, Line 14, makes the illogical leap that because it can be used, it cannot be unsafe. We've been through this at length but I will state it again: The superstructure is deteriorated. The substructure is cracked. The bridge cannot hold a satisfactory load. Guardrails protecting pedestrians from vehicles are inadequate. Midrails protecting pedestrians from falling to the tracks are inadequate. Again, respectfully, to answer the question "is the bridge unsafe in any manner" with "no, it is currently open to traffic" is flat out wrong.

Bridges fail without being closed first.-The bridge is not safe for legal loads and is no longer sufficient for the purpose for which it was designed.

Q: Anything else?

A: Two points, one major, one minor:

First, Page 7, Line 9. I believe Mr. Mihaly's description of CSX's benefit is oversimplified. He states that CSX's only benefit is the separation of train and vehicular traffic, and that the City is the primary beneficiary because the bridge allows the continuation of the street. Remember, this bridge was built after Cemetery Avenue was established. It was built for the rail line. Without this bridge, CSX wouldn't have been able to cut through our existing network. The City, in allowing these crossings, accommodated the railroad at its inconvenience. CSX is the primary beneficiary, which is why they should have been maintaining it.

Lastly, Page 4, line 5. * BEGIN REDACTED* The contents of the report are subject to the Protective Order granted December 14, 2020, and will be part of the Protected Testimony. *END REDACTED*

Q: Does that conclude your rebuttal of Mr. Mihaly's testimony?

A: Yes.

Q: Thank you, Mr. Gatti, and have you fully read and understood the testimony offered by the Pennsylvania Public Utility Commission's Investigations and Enforcement Division?

A: Yes.

Q: Turning your attention to that document, specifically Page Five, lines Six and Seven, how would you respond, if at all, to the contention that the City has not addressed Priority 0 items listed on the interim inspection report?

* BEGIN REDACTED* The contents of the report are subject to the Protective Order granted December 14, 2020, and will be part of the Protected Testimony. *END REDACTED*

Q: Are there any other City omissions described by Mr. Sinick that you disagree with?

A: Yes. Beginning on page 9, line 13, Mr. Sinick describes what he believes to be the maintenance responsibilities of each party. Specifically, Mr. Sinick states that sidewalk approaches are the responsibility of the City. That's not fully correct. Respectfully, the sidewalk approaches to this bridge are private property. Under the Philadelphia Code, Section 11-505(1), sidewalks of all public streets must be maintained and repaired by the property owner whose property the sidewalk fronts. It has been established that Cemetery Avenue is a public roadway. The City understands that it must maintain the roadway approaches to this bridge as part of its right-of-way network (which construction of this bridge impeded). The sidewalks leading up to this bridge are the responsibility of the private property owners, not the City.

The law requires the property owner be notified and given an opportunity to cure the defect. If that owner does not abate the conditions, the City may then fix the sidewalk and bill the owner. City action with invoice to the owner cannot happen without proper notice, and so we have been hamstrung by this requirement. We are going through this process and in the interest of public safety, a work order is now being processed to address the sidewalk approaches adjacent to the bridge.

Q: And is there any other aspect of Mr. Sinick's testimony you wish to address?

A: Only part of his conclusion, found beginning on Page 13 at Line 9, that rehabilitation of the bridge could be done with a cost allocation from CSX to the City. Maintenance of this bridge is currently the responsibility of CSX, a responsibility that they have clearly let lapse. There is no equitable interest in tasking the City with the repair itself, or assigning maintenance obligations

to a repaired, rather than replaced, superstructure. Virtually every part of the superstructure has been allowed to deteriorate to the point where future maintenance costs skyrocket and effectively eliminating any return on investment for repairs to the superstructure.

As I detailed in my testimony, the degradation of the bridge is such that only a replacement of the superstructure would adequately abate the dangerous conditions present. If maintenance obligations are reassigned to the City (and we don't believe they should be, but in the event they were), simple repairs to an already-faulty superstructure would be overly burdensome, and of a magnitude much greater than maintenance of a new superstructure. CSX should replace the superstructure at its own cost. The alternative is allowing CSX to pay for someone else to fix their bridge, and then simply walk away after.

Q: Finally, is there anything you would like to address regarding the testimony of Mr. Creasy?

A: Yes. I have already spoken in my direct testimony about my views on the report. These are just my responses to Mr. Creasy's conclusions.

At Page 3, Line 22 Mr. Creasy explains the scope of the study, and fails to mention any consultation with local agencies or other person with knowledge of traffic behavior, patterns, and needs of the neighborhood. The conclusions reached cannot be complete without those considerations.

At Page 8, Line 15 Mr. Creasy states that police and ambulance vehicles can make u-turns and three-point turns based on current street width. Respectfully, this fails to take into account on-street parking on Cemetery Avenue, and removal of on-street parking in conjunction with

abolition of the bridge in order to accommodate emergency vehicles would be yet another inconvenience placed upon the residents of this street.

Finally, at Page 10, Line 15 Mr. Creasy concludes that our roadway network can adequately accommodate the abolition of the bridge. I again respectfully disagree. All roadway networks require some redundancy to ensure their ability to flexibly manage interim closures. CSXT's conclusion assumes that alternate routes will forever remain permanently open, and ignores the possibility of temporary closures for maintenance, emergencies, or other scenarios. Without the bridge, one temporary closure throws the surrounding system into turmoil. The Cemetery Avenue crossing therefore is integral.

Q: Thank you. Does that conclude your testimony?

A: Yes.

DEPARTMENT OF TRANSPORTATION'S TESTIMONY
DOCKET NO. A-2019-3013783
HEARING STATEMENT NO. 1
HEARING DATE: FEBRUARY 9-10, 2021

Q. Please state your name and business address.

A. Mary Ann Lang. PennDOT Engineering District 6-0, 7000 Geerdes Blvd., King of Prussia, PA 19406.

Q. By whom are you employed and in what capacity?

A. Pennsylvania Department of Transportation as the District Utility Manager.

Q. What is your educational background?

A. I have an Associates Degree in Graphic Design.

Q. How long have you been employed by the Department of Transportation, PennDOT?

A. 26 years.

Q. How long have you been in your current position?

A. 12 years.

Q. Please generally describe your duties.

A. I manage 8 employees and oversee all PennDOT highway/bridge project related utility and railroad coordination work in the PennDOT District 6-0 area, which consists of Bucks, Chester, Delaware, Montgomery and Philadelphia Counties. I also oversee the Railroad/Highway Grade Crossing Safety Program for at-grade crossings throughout the District.

Q. What position(s) did you hold prior to your current position?

A. I started as an Engineering Tech and then a year later was promoted to a Utility Relocation Inspector and then a year later promoted to a Utility Relocation Technician. In approximately 2004 I was promoted to District Utility Administrator.

EXHIBIT
Department Statement 1
exhibitsticker.com

Q. Are you authorized to testify in this proceeding on behalf of PennDOT?

A. Yes.

Q. Are you familiar with the PUC order at Docket No. A-88079, dated October 2, 1961?

A. Yes.

Q. Was PennDOT assigned any maintenance responsibility for the bridge?

A. No.

Q. Has PennDOT performed any maintenance on this bridge?

A. No.

Q. Does PennDOT have any responsibilities for the bridge that carries Cemetery Avenue?

A. No. PennDOT's only involvement is providing the Inspection Agreement that the City of Philadelphia uses for inspecting its bridges over railroads.

Q. PennDOT has been asked to describe conditions that exist at the rail/highway crossing that may make the crossing dangerous or inadequate. Is PennDOT aware of any such conditions?

A. Since PennDOT does not have any maintenance responsibilities at this crossing and Cemetery Avenue is a City street and the bridge is maintained by CSX, PennDOT defers to those parties to discuss any conditions that may exist at this crossing.

Q. Does PennDOT have an average daily traffic count for Cemetery Avenue at the crossing?

A. No.

Q. Does PennDOT have a pedestrian count?

A. No.

Q. A bicycle count?

A. No.

Q. Does this conclude your direct testimony?

A. Yes.

DEPARTMENT OF TRANSPORTATION'S TESTIMONY
DOCKET NO. A-2019-3013783
HEARING STATEMENT NO. 2
HEARING DATE: FEBRUARY 9-10, 2021

Q. Please state your name and business address.

A. Charles H. Davies, P.E., PennDOT Engineering District 6-0, 7000 Geerdes Boulevard, King of Prussia, PA 19406.

Q. By whom are you employed and in what capacity?

A. Pennsylvania Department of Transportation as the Assistant District Executive - Design.

Q. What is your educational background?

A. I have B.S. in Civil Engineering from Temple University and a M.S. in Structural Engineering from Drexel University.

Q. How long have you been employed by the Department of Transportation, PennDOT?

A. 34 years.

Q. How long have you been in your current position?

A. 15 years.

Q. What other positions have you held?

A. I was a bridge design engineer and the District Bridge Engineer.

Q. Please generally describe your duties.

A. I oversee the Design Program in the District 6 Office, this area includes Bucks, Chester, Delaware, Montgomery and Philadelphia Counties. My duties include managing all forms of funding and how it is spent, all in house design, along with Project Management on Consultant designed projects, Bridge Inspection, Right of Way Acquisition, Utility and Railroad Coordination, Contract Development, Historical and Environmental issues/concerns, along with other duties that arise.

EXHIBIT
Department Statement 2
exhibitsticker.com

Q. Are you authorized to testify in this proceeding on behalf of PennDOT?

A. Yes.

Q. Are you familiar with the crossing which is the subject of today's proceeding?

A. Yes.

Q. Will PennDOT benefit by the removal of the bridge or by the bridge remaining?

A. PennDOT does not benefit from the existence of the bridge and it won't benefit by the removal. This structure isn't integral to the state highway system in the area but is probably important to the City. PennDOT has concerns about the impacts on the surrounding roads if the bridge is removed.

Q. Are you familiar with the Traffic Impact Study performed by Grove Miller Engineering for CSXT?

A. Yes.

Q. Does this study address PennDOT's concerns?

A. No.

Q. Why not?

A. We know that the pedestrians and bicyclists use this bridge. If PennDOT had requested a similar study at this location, we would have requested an analysis of pedestrian and bicycle traffic.

Q. Why?

A. PennDOT must consider all forms of transportation and the impacts on all modes of transportation when making decisions concerning changes to any facilities the department is responsible for.

Q. Would PennDOT have requested further analysis on anything else?

A. Yes. The Traffic Study finds sufficient capacity on 61st Street and 65th Street. However, the removal of the Cemetery Avenue structure will essentially detour more vehicles, pedestrians and bicyclists onto 61St Street and 65th Street, which are the closest alternate routes. The removal of the structure is certain to increase pedestrian and bicyclist exposure to vehicles along these alternate routes, so the magnitude of impact should be further understood, and the viability of these routes of being capable of safely handling the added volumes (either as-is or with mitigation) should be confirmed through a traffic engineering and safety study. Specifically, 65th Street is known to be on the City of Philadelphia's 2017 High Injury Network, so PennDOT recommends that CSX consider mitigating any substandard design elements identified along it.

Q. Does the City of Philadelphia get liquid fuels money for Cemetery Avenue?

A. Yes.

Q. What happens to those funds if the bridge is removed?

A. The funds go away for the length of the bridge. If cul de sacs aren't constructed on either side of the bridge, the City would lose liquid fuel money for the length of Cemetery Avenue.

Q. Is this bridge on the Transportation Improvement Plan?

A. No.

Q. Is this bridge on a Twelve-Year Plan?

A. No.

Q. What is the relevance of the bridge not being on the Transportation Improvement Plan or the Twelve-Year Plan?

A. There are no state or federal funds currently available for this bridge

Q. Is Cemetery Avenue a Federal Aid Route?

A. Yes.

Q. What does that mean?

A. Any work on Cemetery Avenue is eligible for federal funds.

Q. What are the impacts of the bridge removal on availability of federal funds in the future?

A. If the bridge is removed it is possible that Cemetery Avenue will lose its Federal Aid Route designation. This means that the City would not be able to use federal funds for any work on Cemetery Avenue.

Q. Is PennDOT willing to bear any costs for any work at this location?

A. No. PennDOT cannot commit to participating in the cost of any work at this. In addition to not being on an approved Transportation Improvement Plan or a Twelve-Year Plan, the Cemetery Avenue bridge over CSX is not an approved capital budget or bridge bill enabling expenditure of state transportation funds. The City and/or CSX should be the parties ordered to perform studies, prepare plans, assume the cost of future maintenance or the removal of the structure or any modifications needed to maintain the crossing so it is safe for the traveling public, pedestrians and the railroad. PennDOT is willing to bear its costs for any plan reviews that may be required.

Q. Does this conclude your direct testimony?

A. Yes.

DEPARTMENT OF TRANSPORTATION'S TESTIMONY
DOCKET NO. A-2019-3013783
HEARING STATEMENT NO. R3
REBUTTAL TESTIMONY OF CHARLES H. DAVIES, P.E.
HEARING DATE: FEBRUARY 9-10, 2021

Q. Please state your name.

A. Charles H. Davies.

Q. Have you reviewed the direct testimony of the other parties?

A. Yes, I have.

Q. Are there any statements regarding PennDOT that you need to address?

A. Yes.

Q. Please proceed.

A. PennDOT has the legal obligation to make sure that all bridges over twenty feet are inspected. For that reason, we have an agreement with a consultant that the local municipalities and counties can utilize to have their bridges inspected. The City has used this agreement to have the consultant inspect the bridge carrying Cemetery Avenue. The consultant is paid with federal funds and withheld liquid fuels to cover the local share of the inspection.

Q. Is there anything else that you need to address?

A. Yes, I understand that my testimony regarding funding has raised some questions and I would like the opportunity to expand upon my answers.

I'm going to keep the process basic. For a proposed project to be funded, the project sponsor has to go through a process. The first step is to get the project on the TIP, the Transportation Improvement Plan. The TIP is the regionally agreed upon list of priority transportation projects that would use federal funds. Projects are vetted at the county or major city level and if the county agrees that a project has merit and to determine which projects get submitted for consideration. The proposed projects from the local levels then get prioritized by the Regional Technical

EXHIBIT
Department Statement 3-R
exhibitstriker.com

Committee. In order to get on the TIP, a member of the Delaware Valley Regional Planning Commission ("DVRPC"), the metropolitan planning organization for the area, must submit it for consideration.

Q. Is this process required by federal legislation?

A. Yes, by the Federal Highway Act of 1962.

Q. Is that why you reference projects that would use federal funding?

A. Yes

Q. Do all highway projects, whether it is anticipated that federal funds are being used or not, get included on the TIP?

A. Yes. The only exceptions are projects funded on the state highway network through Department county maintenance allocations, or local projects funded with liquid fuel revenues distributed directly to counties.

Q. Why is important for a project to be on a TIP?

A. A project needs to be on a TIP in order to be funded. Once it is on the TIP the project advances to the Twelve-Year Plan (TYP) for preliminary engineering, design and construction phases.

Q. And this regardless of whether state or federal money is being used?

A. Yes.

Q. Can federal funding be used for routine maintenance?

A. No, there are restrictions on the use of federal funds for bridges based on sufficiency rating, which in part is determined by its condition ratings.

Q. Does federal funding have to be used for work on Cemetery Avenue?

A. No.

Q. So availability of federal funding depends upon the scope of the work?

A. Yes

Q. Do you know which party currently has maintenance responsibility for this bridge?

A. Yes. The railroad.

Q. Would the railroad be able to advocate for a project on this bridge to be placed on the TIP?

A. Yes. But that doesn't mean that it is a foregone conclusion that the project will get on a TIP. It still has to be approved by the County and the Regional Planning Commission. It would have to meet the priorities of the region just like any other project.

Q. If the project meets the region's priorities, would the railroad be able to be the project sponsor?

A. I don't know. In my experience, that has not happened.

Q. How long does it normally take to get a project from concept to construction?

A. Depends upon the scope of the project, urgency of the project and the cooperation of all stakeholders, but it could take at least 4 years. This includes the necessary reviews of plans and getting the funds in place. It also depends upon the other priorities of the region.

Q. Does this conclude your testimony?

A. Yes.

Application of CSX Transportation, Inc., for approval of the abolition of the crossing (DOT 140 634 G) where Cemetery Avenue crosses above grade the tracks of CSX Transportation, Inc., located in the City of Philadelphia, Philadelphia County and the allocation of cost thereto.

Docket No.: A-2019-3013783

Direct Testimony of
William M. Sinick, P.E.

NON-PROPRIETARY

EXHIBIT
I and E Direct Testimony
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BEFORE THE
PENNSYLVANIA PUBLIC UTILITY COMMISSION

Application of CSX Transportation, Inc., for approval of the abolition of the crossing (DOT 140 634 G) where Cemetery Avenue crosses above grade the tracks of CSX Transportation, Inc., located in the City of Philadelphia, Philadelphia County and the allocation of cost thereto.	: : : : : : : :	Docket No.: A-2019-3013783

PRE-SERVED DIRECT TESTIMONY OF THE
BUREAU OF INVESTIGATION AND ENFORCEMENT

Testimony of: William M. Sinick, P.E.
Rail Safety Division
Bureau of Technical Utility Services
Pennsylvania Public Utility Commission

Q: Please state your name for the record.

A: William Michael Sinick.

Q: Are you currently employed?

A: Yes.

Q: By whom are you employed and in what capacity?

A: I work for the Pennsylvania Public Utility Commission's ("Commission") Bureau of Technical Utility Services ("TUS"). I am a Civil Engineer Consultant, Bridges, in the Rail Safety Section.

Q: How long have you been employed with the Commonwealth and what are your credentials?

A: I have worked for the Commonwealth for approximately 22 years and with the Commission since June of 2015. Previously, I was employed for 3 plus years at the Pennsylvania Department of Environmental Protection as a Hydraulic Engineer approving bridge waterway permits for the Pennsylvania Department of Transportation and I worked for roughly 13 years at the Pennsylvania Department of Transportation as a Bridge and Transportation Engineer. I have been a licensed professional engineer in the Commonwealth of Pennsylvania since June of 2005 and a certified bridge safety inspector since March of 2011. I have a Bachelor's Degree in Civil Engineering Technology from the University of Pittsburgh at Johnstown, PA.

Q: What are your current job responsibilities as a civil engineer for the Bureau of Technical Utility Services?

A: I act as an engineering representative and liaison between the Pennsylvania Public Utility Commission, Pennsylvania Department of Transportation, railroad companies, local municipal governments and non-carrier public utility companies on complex matters relating to the location, design, construction, rehabilitation, abolition and most importantly the public safety of highway/rail crossings with specific expertise in bridge structures.

Q: Are you familiar with the crossing that is the subject of this case?

A: Yes, I was recently assigned the case to review and handle going forward.

Q: Please provide a brief overview of your responsibilities in terms of public highway/rail roadway bridges under the Commission's jurisdiction.

A: When I am assigned a rail case involving existing bridge structures under the Commission's jurisdiction, the first and most important responsibility that I have above all other matters related to the case is public safety. The most important document that I have as a professional engineer to assess public safety of the bridge structure is the bridge safety inspection report. Every public roadway bridge equal to or greater than 20 feet in the state of Pennsylvania has statutory requirements for bridge safety inspections and inventory requirements. The Pennsylvania Department of Transportation ("PennDOT") is responsible for managing the bridge safety inspection program and compliance in Pennsylvania. This bridge falls under the National Bridge Inspection Standards ("NBIS")

statutory requirements, Pennsylvania Statute Act 44 of 1988, which empowers PennDOT to inspect bridges they do not own or maintain, as well as impose PennDOT's policies and procedures for bridge safety inspections and other various state statutory requirements related to bridge load posting or vertical clearance restrictions. In this state, a bridge inspector has to be certified to perform NBIS safety inspections which are quite extensive and are outlined under NBIS 23 CFR §650.309. My overall point here is that the bridge safety inspection report overseen and managed by PennDOT is the most important document that we have as professional engineers to ensure that the requirements for public safety of any roadway bridge under the Commission's jurisdiction are being met and upheld.

Q: Did PennDOT complete an inspection of the bridge structure at this particular crossing?

A: Yes, an inspection was completed on March 30, 2020.

Q: Did you have the opportunity to review the March 2020 Interim Bridge Inspection Report provided under protected seal?

A: Yes.

Q: In reviewing the case, did you visit the crossing?

A: Yes, I visited the crossing on November 17, 2020 for an on-site evaluation and field view.

Q: Please describe the bridge structure at the crossing.

A: The public highway/rail crossing is a single span fracture critical, steel through girder bridge structure. It was reported to be originally constructed in 1886 and

reconstructed in 1961 after a train derailment. The bridge has two (2) main components, the substructure and the superstructure. The substructure supports the superstructure and transfers all the bridge loading to the foundations beneath the ground. With this bridge there are two (2) substructures (abutments) and they consist each of stone masonry elements and reinforced concrete elements and are located at each end of the bridge. The superstructure is comprised of two (2) steel through girders connected together with a steel floorbeam system. The floorbeam system primarily supports the bridge deck, roadway and vehicle loading. The sidewalk, bridge pedestrian railing, and pedestrian loading on this structure is primarily supported by steel support angles which are directly connected to the two (2) main girders. The support angles and floorbeams transfer all the bridge loading to the two (2) steel main through girders which in turn carries and transfers all the loading to the substructures.

Q: Please describe the physical state of the crossing based on your field view observations and your review of the bridge's most recent safety inspection report.

A: As per the most recent bridge inspection report conducted in March of 2020, there are several maintenance items that are deemed as Priority 0 and 1 items. Priority 0 and 1 maintenance items identified in a bridge safety inspection report as per PennDOT policy are defined as having critical deficiencies that threaten either the structural integrity of the bridge (or other structures) or public safety. *See* PennDOT Bridge Safety Inspection Manual, 2nd Edition (Revised March 2010).

START CONFIDENTIAL [redacted] *END CONFIDENTIAL* As per PennDOT policy, all Priority 0 items have to be addressed within 7 days of identification. As of my field visit on November 17, 2020, these Priority 0 maintenance items have not been addressed.

START CONFIDENTIAL [redacted] *END CONFIDENTIAL* The timeframe identified by PennDOT policy to correct these Priority 1 deficiencies are that the physical work must be scheduled and completed within 6 months of notification, if and only if the item will not degrade further or compromise public safety. In this context and as per my findings on the field visit that was conducted on November 17, 2020, *START CONFIDENTIAL* [redacted] *END CONFIDENTIAL*

Q: During your field view on November 17, 2020, did you take any pictures of the Cemetery Avenue public crossing and assess the public safety issues?

A: Yes, I took several pictures during my visit to the crossing which highlighted the Priority 0 and 1 items that were mentioned in the bridge safety inspection report. I have labeled them as I&E Exhibit "A," I&E Exhibit "B," I&E Exhibit "C," I&E Exhibit "D," I&E Exhibit "E," I&E Exhibit "F," I&E Exhibit "G," I&E Exhibit "H," and I&E Exhibit "I."

Q: Please describe what is attached hereto as I&E Exhibit A, I&E Exhibit B, I&E Exhibit C, I&E Exhibit D, I&E Exhibit E, I&E Exhibit F, I&E Exhibit G, I&E Exhibit H, and I&E Exhibit I.

A: I&E Exhibit A shows the near right sidewalk approach to the crossing looking east. I&E Exhibit B shows the right sidewalk pedestrian railing. I&E Exhibit C shows the far right sidewalk approach to the crossing. I&E Exhibit D shows the far left sidewalk approach to the crossing. I&E Exhibit E shows the left sidewalk pedestrian railing. I&E Exhibit F shows the left sidewalk pedestrian railing. I&E Exhibit G shows the near left sidewalk approach. I&E Exhibit H shows the far bridge expansion joint. I&E Exhibit I shows the two (2) steel through girders.

Q: In reference to the exhibits, can you please briefly describe the physical condition of the elements described in the exhibits?

A: Exhibit A, C, D and G depict the four (4) sidewalk approaches to the crossing and *START CONFIDENTIAL* [redacted] *END CONFIDENTIAL* They are all grade

separated meaning there is significant differences in the height of the sidewalk on the bridge with respect to the sidewalk approaches, and the sidewalk approaches are pulled away horizontally from the sidewalks on the bridge leaving large voids and crevasses between the two. It cannot be navigated by pedestrians in wheelchairs or pedestrians who face challenges while they walk. As shown in Exhibit A, pedestrians who use strollers or other means to transport their children also face great difficulty in using the sidewalk approaches. It's a massive tripping hazard at the very least for all pedestrians, and the debris and vegetation adds to the safety issues as clearly shown in Exhibit A, C, D, and G. I might add that snow, ice, and debris removal are part of the overall maintenance of the bridge sidewalks, sidewalk approaches, roadway approaches, and roadway across the structure. This maintenance is typically assigned to the local municipality and roadway owner.

Exhibits B, E and F show the bridge pedestrian railing and its condition. Overall, even if this bridge pedestrian railing was in excellent condition, it would be grossly substandard to the bridge design standards of today, not to mention a public walkway on a bridge at least twenty (20) feet above an active railway in a heavily populated area. As you can see in I&E Exhibits E and F, there is a missing bottom rail on the pedestrian railing exposing an open area roughly three (3) feet by ten (10) feet. This missing bottom rail is a very immediate threat to public safety for toddlers, kids, and anybody that might lose their footing on a slippery sidewalk or tripping-hazard prone walkway such as this.

Exhibit H is a picture of the spalling around the bridge expansion joint which could be an indication that the bridge expansion joint is not working properly and can lead to structural problems with the entire structure.

Exhibit I is a picture of the *START CONFIDENTIAL* [redacted] *END CONFIDENTIAL* It should also be noted that vehicles are parked on the bridge adding load to a load-restricted structure. This load may be factored into the overall load rating but it should be noted for PennDOT's engineers or consultants that conduct the load rating.

Q: As the Commission's Rail Safety Section engineer assigned to the case, what are the ongoing public safety issues associated with this crossing?

A: First and foremost, the biggest public safety issue with this bridge and its sidewalk approaches are the fact that neither one is being maintained in an acceptable manner. In this case, a bridge safety inspection report was completed in March 2020, but the Priority items in the report are not being addressed in accordance with PennDOT policy and the findings of the report. Both the City of Philadelphia and CSX Transportation, Inc., were notified by letter dated March 31, 2020 of the Priority 0 and 1 maintenance items and timeframes that those items needed to be addressed by. As of the date of my testimony, those Priority 0 and 1 items had not been fully addressed or remediated. This is the most pressing problem that we have as engineers in the Rail Safety Section. In my opinion, all Priority 0 and 1

items need addressed immediately, and the Priority 2 maintenance items in the March 2020 bridge safety inspection report need to be scheduled and programmed for physical work. Per PennDOT policy, Priority 2 items need to be addressed within the routine inspection cycle, or, in other words, before the next routine inspection. *START CONFIDENTIAL* [redacted] *END CONFIDENTIAL* Furthermore, the parties responsible for maintenance should be held accountable going forward for the Priority 0, 1, and 2 maintenance recommendations highlighted in future bridge safety inspection reports.

Q: Regarding this bridge structure and public crossing, who are the responsible parties for maintenance.?

A: It is my understanding that CSX Transportation, Inc. is responsible for maintenance of the bridge items such as the bridge pedestrian railing, bridge sidewalk, bridge concrete deck, substructures, superstructure, and the bridge expansion joints. The City of Philadelphia is responsible for the roadway, bridge regulatory and advanced warning signs, sidewalk approaches, roadway approaches, and roadway surface across the bridge. For a locally maintained roadway, snow, ice, trash, and debris removal is typically assigned to the local municipality as they control the ordinances for garbage, snow, ice, and debris removal within that municipality.

Q: What are some of the factors the Rail Safety Section will consider when assessing the abolishment of this crossing?

A: Some of the factors are as follows:

a) the City of Philadelphia's formal position on the abolition of the crossing;

b) removal of the bridge superstructure and cost allocation thereof;

c) cul-de-sac construction, costs, and future maintenance assignment thereof;

d) future maintenance of the existing bridge substructures if not removed in its entirety;

e) if the substructures are removed, whether it will affect property adjoining the existing substructures and how will that be mitigated;

f) if the bridge structure was removed, protective fencing and other barriers along the area to prevent vehicle and pedestrian access or falls, and the maintenance thereof;

g) construction and demolition plans, and their submission, review, and approval through the Rail Safety Section;

h) the final inspection of any worked performed with respect to the abolition of the crossing through the Rail Safety Section; and

i) property appropriation or vacation, and the assessment of any payments associated with the abolition and/or future maintenance assignments pertaining to this crossing.

Q: Does the Rail Safety Section take a position regarding whether the crossing should be abolished?

A: The Rail Safety Section looks at all the factors discussed above before taking a formal position on the abolishment. After viewing the application filed by CSX Transportation, Inc. and the prehearing memorandums, it is my opinion that the bridge must be rehabilitated if it is to remain open. If the bridge is removed and the public crossing is abolished, then the factors discussed above must be addressed. If the City of Philadelphia does not agree to the abolishment, then I suggest reassigning maintenance of the bridge to the City of Philadelphia and providing a cost allocation to the City of Philadelphia from CSX Transportation, Inc. for the rehabilitation or replacement of the bridge. In light of my recommendations and opinions, I reserve the right to supplement or modify after reading the other parties' direct testimony and assessing their formal positions on the requested abolishment.

However, the Rail Safety Section does take the position that all Priority 0 and 1 maintenance items listed in the March 2020 bridge safety inspection report and future reports should be addressed immediately as per PennDOT's bridge inspection policy, regardless of the pendency of this matter.

Q: Are you aware of any prior Commission Orders, Decisions, or Secretarial Letters concerning this crossing?

A: Yes. My search revealed four (4) dockets which involved the crossing at Cemetery Avenue. The dockets with a brief summary are described below:

a) A-00088079, filed April 14, 1961, Application of The Baltimore and Ohio Railroad Company for approval of the alteration of the crossing where Cemetery Avenue crosses above the grade of the tracks of said company, in the City of Philadelphia, and the allocation of the costs and expenses incident thereto (replacement of the superstructure after it was destroyed on March 24, 1960 by a train derailment).

b) A-00106298, filed June 5, 1985, Application of Lightnet for approval of the alteration of crossings at grade, above grade and below grade by the placement of fiber optic cable at points where the tracks and right-of-way of The Baltimore and Ohio Railroad Company, Consolidated Rail Corporation, and Southeastern Pennsylvania Transportation Authority cross public highways and railroad tracks of other railroads in Philadelphia County.

c) A-00114085, filed June 23, 1997, Application of CSX Transportation, Inc., for the alteration of the crossing and exemption from statutory vertical clearance requirements in connection with modification of its tracks to improve vertical clearance for double-stack container traffic under overhead Bridge No. 88B, Cemetery Avenue, (AAR 140 634 G) in the City of Philadelphia.

d) A-00115524, filed December 17, 1998, Application of Metromedia Fiber Optic Network Services for approval of the alteration of various rail

crossings where tracks and right-of-way of CSX cross public highways in Philadelphia and Delaware Counties (installation of fiber optic cable).

Q: Have all your answers and responses today been based upon your personal knowledge or engineering expertise?

A: Yes.

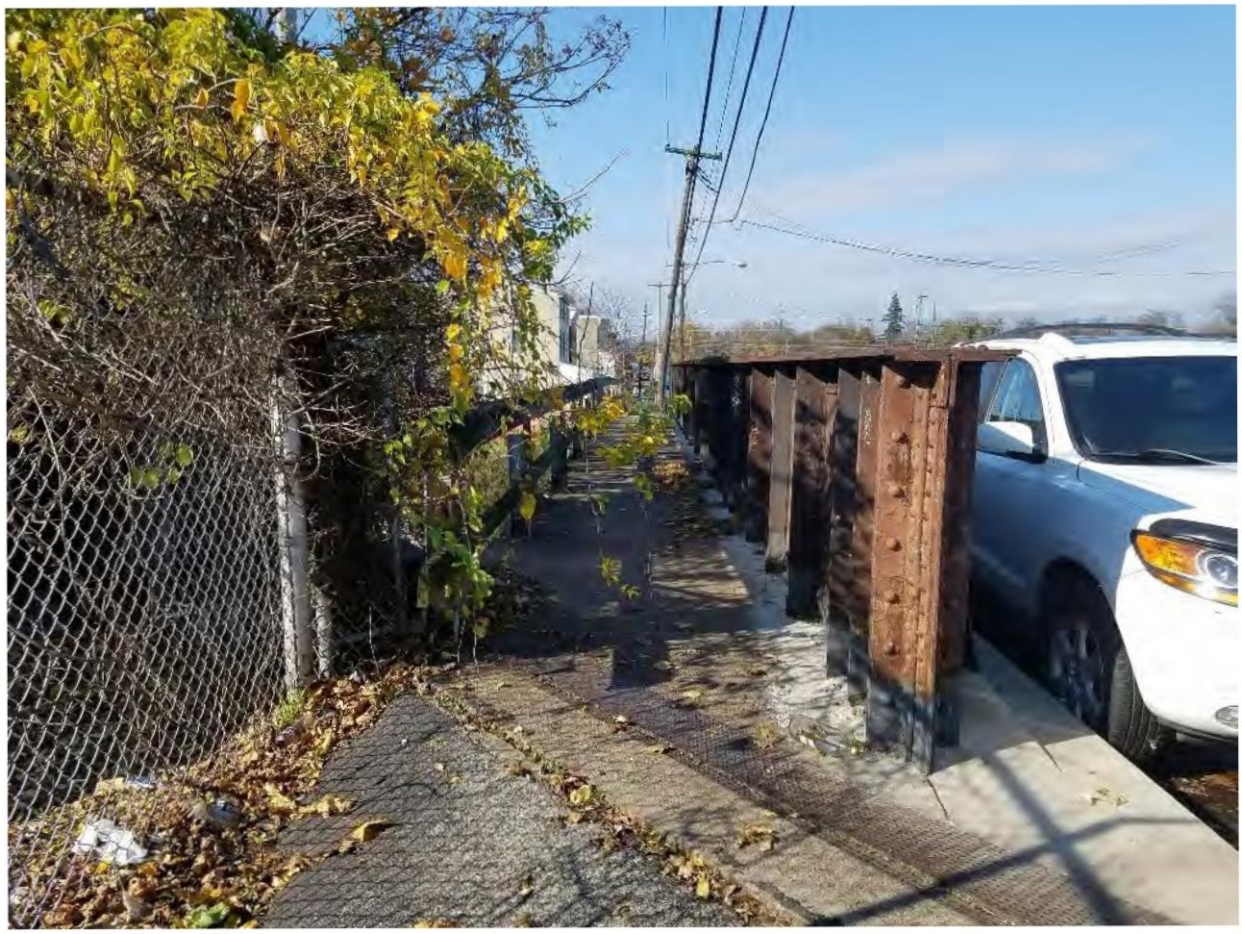
Q: Does this conclude your testimony?

A: Yes. However, I reserve the right to supplement my testimony as additional issues and facts arise during the course of the proceeding.

I&E
Exhibit A

I&E
Exhibit B

I&E
Exhibit C



I&E
Exhibit D

I&E
Exhibit E

I&E
Exhibit F

I&E
Exhibit G

4X4

I&E
Exhibit H

I&E
Exhibit I

COMMONWEALTH OF PENNSYLVANIA
PENNSYLVANIA PUBLIC UTILITY COMMISSION
COMMONWEALTH KEYSTONE BUILDING
400 NORTH STREET, HARRISBURG, PA 17120

BUREAU OF
INVESTIGATION
&
ENFORCEMENT

January 22, 2021

Via Electronic Mail
Honorable Darlene Heep
Administrative Law Judge
Pennsylvania Public Utility Commission
801 Market Street
Suite 4063
Philadelphia, PA 19107
dheep@pa.gov

Re: Application of CSX Transportation, Inc. for Approval of the Abolition of the Crossing (DOT 140 634 G) where Cemetery Avenue crosses above grade the tracks of CSX Transportation, Inc. located in the City of Philadelphia, Philadelphia County, Pennsylvania, and the allocation of cost thereto.
Docket No. A-2019-3013783
Pre-Served Rebuttal Testimony of the Bureau of Investigation and Enforcement

Dear Judge Heep:

Enclosed please find the Bureau of Investigation and Enforcement's ("I&E") **Pre-Served Rebuttal Testimony of the Bureau of Investigation and Enforcement** in the above-referenced matter.

Copies have been served on the parties of record in accordance with the Certificate of Service. If you have any questions, please contact the undersigned.

Sincerely,

Kayla L. Rost
Prosecutor
Bureau of Investigation and Enforcement
PA Attorney ID No. 322768
(717) 787-1888
karost@pa.gov

KLR/jfm
Enclosures

cc: Rosemary Chiavetta, Secretary
(via e-file - Cover Letter and Certificate of Service only)
Pamela McNeal, Legal Assistant
(via email – pmcneal@pa.gov)
William Sinick, P.E.
(via email – wilsinick@pa.gov)
Per Certificate of Service

EXHIBIT
I and E Rebuttal Testimony
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BEFORE THE
PENNSYLVANIA PUBLIC UTILITY COMMISSION

Application of CSX Transportation, Inc., for approval of the abolition of the crossing (DOT 140 634 G) where Cemetery Avenue crosses above grade the tracks of CSX Transportation, Inc., located in the City of Philadelphia, Philadelphia County and the allocation of cost thereto.	:	Docket No.: A-2019-3013783

PRE-SERVED REBUTTAL TESTIMONY
OF
THE BUREAU OF INVESTIGATION AND ENFORCEMENT

Testimony of: William M. Sinick, P.E.
Rail Safety Division
Bureau of Technical Utility Services
Pennsylvania Public Utility Commission

Q: Please state your name for the record.

A: William Michael Sinick.

Q: Where do you work and in what capacity?

A: I work for the Pennsylvania Public Utility Commission's ("Commission") Bureau of Technical Utility Services ("TUS"). I am a Civil Engineer Consultant, Bridges in the Rail Safety Section.

Q: Are you the same William Michael Sinick who previously submitted the direct testimony in the Bureau of Investigation and Enforcement's Statement 1 in the above-captioned matter?

A: Yes.

Q: What is the purpose of your rebuttal testimony?

A: The purpose of my rebuttal testimony is to respond to the direct testimony of the other parties filed in this matter. Specifically, I reviewed the following documents in preparation for my rebuttal testimony:

1. City of Philadelphia's ("City") direct testimony of Darin Gatti, P.E., City Statement No. 1;
2. City's direct testimony of Lieutenant Joseph Ruff, City Statement No. 2;
3. CSX Transportation, Inc., ("CSXT") direct testimony of Derek Mihaly, P.E., CSXT Statement No. 1;
4. CSXT's direct testimony of Gregory E. Creasy, P.E., CSXT Statement No. 2;
5. Pennsylvania Department of Transportation ("PennDOT") direct testimony of Mary Ann Lang, PennDOT Statement No. 1;

6. PennDOT's direct testimony of Charles H. Davies, P.E., PennDOT Statement No. 2; and
7. The letter sent on December 18, 2020 on behalf of CSXT in response to a Letter sent on behalf of the Bureau of Investigation and Enforcement (I&E) entitled I&E Letter-Bridge Inspection Report.

Q: After reviewing the above-referenced testimony and related documents outlining the parties' positions, do you have an opinion regarding the abolishment of this public crossing?

A: Yes.

Q: What is your position on the abolishment of this public crossing?

A: I strongly support the City's position to contest the application and fight the abolishment of the crossing contrary to CSXT's application and position. I'd like to state on the record that when a public crossing is abolished it implicitly states that either railroad or vehicle/bicycle traffic will be terminated at the crossing forever or until such time as the parties agree or disagree to its reestablishment through a Commission proceeding. Thus, the safety of the bridge at this particular public crossing is a separate matter. In other words, we don't have to abolish the crossing to make the bridge safe. To make the bridge safe or safer, we have to repair the bridge as per the priority maintenance recommendations indicated within the Bridge Safety Inspection Reports administered by PennDOT and either rehabilitate or replace it to today's American Association of State Highway and Transportation Officials ("AASHTO") and PennDOT Bridge Design Standards

and Specifications as Mr. Darin Gatti alluded to in his testimony. That will make the bridge safe or safer for all modes of traffic, railroad, vehicle/bicycle, and pedestrian traffic. While my number one concern is public safety and addressing the current safety concerns at the bridge, just to be clear, I agree with the City that the abolishment of the bridge is not in the public interest.

Q: Mr. Darin Gatti mentioned that the bridge should be replaced instead of rehabilitated due to its age and disrepair. Do you support this position?

A: Yes, I believe and support Mr. Gatti's position that it would likely be more expensive to rehabilitate the existing superstructure to today's design standards as opposed to replacing the superstructure and repairing the substructures if the substructures would be capable of carrying today's design loadings necessary for the new superstructure. That determination would be made in the preliminary design stage as it's made for any bridge replacement across the state.

Q: What other concerns would be addressed by a replacement of the structure?

A: The bridge would no longer be posted or restricted for load which means that fire trucks, buses, delivery vehicles, etc., could use the bridge without restriction. Pedestrian access, mobility and safety would be greatly enhanced and improved, and a fracture critical structure would be removed from inventory.

Q: What is meant by fracture critical?

A: As defined by National Bridge Inspection Standards ("NBIS"), fracture critical is "a steel member in tension, or with a tension element, whose failure would probably cause a portion of or the entire bridge to collapse." See I&E Exhibit J,

page 2. These types of structures are more expensive to maintain, are generally more problematic than other types of bridge structures, and are systematically being replaced in this state and all across the country.

Q: Do you have any further comments on the City's testimony?

A: Yes, having been at the site and the neighborhood, I do agree with the City that removal of the bridge and abolishment of the crossing would put an undue burden on the City and adversely affect the low-income community surrounding the bridge on both sides of the public crossing.

Q: Both the City and PennDOT direct testimony concluded that the Traffic Impact Study performed on behalf of CSXT was incomplete and did not address all concerns resulting from removal of the bridge. Have you reviewed the Traffic Impact Study and, if so, what are your concerns?

A: I have only completed a cursory review of the study since I'm not a traffic engineer and my specific expertise is in bridges and transportation. Traffic engineering is a very nuanced specialty that uses a lot of data and variables as exhibited by the sheer length of this study, which is roughly 210 pages. I would defer to the City and PennDOT for their expertise on this matter.

I will note that the study suggests that approximately 5,400 vehicles traverse the crossing a day and, at the very least, approximately 119 pedestrians use the crossing a day. The study on pedestrian traffic allegedly occurred on Wednesday, September 2, 2020 during a pandemic with lockdowns, closures, and high unemployment rates, and possibly without any appreciation for the impact on

school buses and students due to the late start of most school districts and/or transition to virtual learning. I would also note that, during my visit to the crossing on Tuesday, November 17, 2020, I saw at least 5 pedestrians use the crossing during an approximate 15-minute timeframe.

As a Transportation Engineer for over two (2) decades, it stands to reason, that if you remove all of this traffic and put it primarily on two other avenues without upgrades and improvements to those avenues/corridors, you will increase traffic congestion and volume, and thereby increase the likelihood of more traffic-related accidents, both pedestrian and vehicular.

Q: Mr. Derek Mihaly mentioned in his direct testimony for CSXT that the bridge was safe and goes on to state that maintenance responsibility for a highway bridge should be assigned to the highway authority. What is your opinion on these matters?

A: As I indicated in my direct testimony, as indicated in the City's direct testimony, and as indicated in the Bridge Safety Inspection Reports and Priority Maintenance Notification Letters, the bridge and sidewalk approaches are not safe and the Priority 0 and 1 maintenance items need addressed immediately irrespective of this proceeding's outcome. The 1961 Order assigned maintenance of the bridge substructure and superstructure to the railroad (B&O Railroad at the time, now CSXT).

I agree with the City that the lack of adequate routine maintenance, such as painting, cleaning etc., has led to the bridge's deteriorated condition today. In my

opinion, if an administrative law judge were to entertain the possibility of reassigning maintenance responsibilities, it would be unfair to reassign maintenance to the City without a robust cost allocation for future maintenance or contribution towards its replacement.

Q: Do you have any further rebuttal testimony?

A: Yes, I would like to clarify the record and respond to a letter sent to the Commission's Bureau of Investigation and Enforcement on December 18, 2020 on behalf of CSXT, which has been made part of this record. The letter questions the authority of the consultant bridge inspector who performed the March 2020 Interim Bridge Safety Inspection Report. The authority and standard of the consultant bridge inspector comes from the NBIS administered by PennDOT through a consultant inspection agreement between the City and PennDOT. NBIS is the national standard for the inspection of public highway bridges greater than 20 feet in length. This standard is set forth in the Code of Federal Regulations ("CFR") Chapter 23 Highways Part 650. As part of or a result of the NBIS requirements, there are at least two other inspections that are performed on this structure: (1) a fracture critical inspection is performed on this structure which looks at all fracture critical members in detail with hands on visual inspection and (2) an annual interim (special) inspection due to the bridge structure being restricted and posted for safe load capacity. See I&E Exhibit K. These requirements are the national standard for the bridge safety inspection of this structure.

Q: To clarify, what is the authority and standard for bridge safety inspections of all public highway bridges greater than 20 feet in length in the Commonwealth of Pennsylvania and nationwide?

A: The authority and standard for bridge safety inspections are the National Bridge Inspection Standards under CFR Chapter 23 Highways Part 650.

Q: Who is responsible to ensure compliance with the NBIS requirements in the Commonwealth of Pennsylvania?

A: The Pennsylvania Department of Transportation.

Q: Are the Bridge Safety Inspection Reports made part of this record part of those bridge safety inspection requirements?

A: Yes.

Q: It was also mentioned in CSXT's direct testimony and its December 18, 2020 letter to I&E that some of the critical priority maintenance items constituted alterations and would therefore require Commission approval. As a Rail Safety Section Engineer working on behalf of the Commission, how are these matters typically handled?

A: Whenever we have a facility located within a public crossing under the Commission's exclusive jurisdiction, we handle these matters in the following way. If the matter poses an immediate threat to public safety, we expect the party responsible for maintenance of that facility to immediately correct or mitigate the immediate threat, either by temporary or permanent means, and concurrently notify the Rail Safety Section by phone or email the nature of the threat and what

is being done to rectify it. At that point in time, if it is determined to be an alteration by the Rail Safety Section, we will ask that particular party to file, after the fact, an application to affirm the alteration that was done to mediate the immediate threat to public safety or we may introduce a docket addressing the matter through the Commission's internal processes. This happens routinely and happens on a monthly basis.

Q: Would you consider the Priority 0 and 1 maintenance items a threat to public safety?

A: Yes, by definition in PennDOT Publication 238 (Bridge Safety Inspection Manual) section 2.13.2, ***"Critical and High Priority Maintenance Items Critical (Priority 0) or high (Priority 1) priorities for maintenance activities are defined as having deficiencies that threaten either the structural integrity of the bridge (or other structures) or public safety."*** See I&E Exhibit L. The notification and timeframes to resolve or mitigate these critical deficiencies were highlighted in the Priority Notification Letters sent to CSXT concerning this structure dating back to at least March 28, 2016, and most recently March 31, 2020, for the same priority maintenance items. To my knowledge, the Rail Safety Section was not aware of these Priority Notification Letters and adverse Bridge Safety Inspections Reports prior to this proceeding.

Q: What are the timeframes for mitigation of these Priority 0 and 1 maintenance items that CSXT was made aware of in these letters?

A: Priority 0 items are to be mitigated within 7 days and Priority 1 items are to be

mitigated within 6 months.

Q: Putting your opinion on the safety of the bridge aside, please provide your opinion on CSXT's application and what you rely on to reach that opinion and/or conclusion.

A: I do not think the abolishment of this crossing is in the public's interest. I think the public interest as a whole and locally within this community is best served if the application from CSXT to abolish the public crossing is denied for the following reasons:

1. As indicated by the City's testimony, I believe it would put undue burden on the citizens, businesses, and emergency responders that live and work in that area.
2. It would move at least 5,400 vehicles and 119 pedestrians, by CSXT's own admission, in a densely populated area to other crossing locations without proposed improvements to those locations which will make those crossings more dangerous and congested.
3. The Cemetery Avenue above grade public crossing, as reported to the Commission's Rail Safety Section, has not been a source of rail or vehicular conflicts or accidents, thus the crossing statically provides the safest route for the traversing public as well as CSXT's trains as they both navigate through this densely populated area.
4. When any railroad attempts to abolish a public crossing that involves an above grade highway bridge that doesn't have a history of vehicle/pedestrian rail

conflicts and/or accidents, I question the ability of the railroad to try to restrict the highway authority from their right and ability to move traffic, people, goods and services. It would be similar to the City trying to abolish an above grade railroad bridge from crossing one of their highways, it's an anomaly.

5. Typically, an abolishment at public crossings arise when the railroad or highway authority abandons their facilities at that location, when a crossing has a history of vehicle/pedestrian rail conflicts or accidents, when there is a high redundancy of public crossings in that specific area with low population densities and usage, or when the parties amicably agree to abolish the public crossing for other reasons. The Cemetery Avenue crossing in my opinion does not meet or rise to the criteria or reasoning for abolishment.

Q: Have all your answers and responses today been based upon your personal knowledge and/or engineering expertise?

A: Yes.

Q: Does this conclude your rebuttal testimony?

A: Yes. However, I reserve the right to supplement my testimony as additional issues and facts arise during the course of the proceeding.

I&E
EXHIBIT J

APPENDIX IP 01-B

NBIS Code of Federal Regulations (CFR)
Chapter 23 Highways – Part 650

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JANUARY, 2005 NBIS REGULATIONS

CODE OF FEDERAL REGULATIONS
PART 650--BRIDGES, STRUCTURES, AND HYDRAULICS

1. The authority citation for part 650 continues to read as follows:

Authority: 23 U.S.C. 109 (a) and (h), 144, 151, 315, and 319; 33 U.S.C. 401, 491 et eq., 511 et seq.; 23 CFR 1.32; 49 CFR 1.48(b), E.O. 11988 (3 CFR, 1977 Comp. p. 117); Department of Transportation Order 5650.2 dated April 23, 1979 (44 FR 24678); sec. 161 of Public Law 97-424, 96 Stat. 2097, 3135; sec. 4(b) of Public Law 97-134, 95 Stat. 1699; and sec. 1057 of Public Law 102-240, 105 Stat. 2002; and sec. 1311 of Pub. L. 105-178, as added by Pub. L. 105-206, 112 Stat. 842 (1998).

2. Revise subpart C to read as follows:

Subpart C--National Bridge Inspection Standards

Sec.
650.301 Purpose.
650.303 Applicability.
650.305 Definitions.
650.307 Bridge inspection organization.
650.309 Qualifications of personnel.
650.311 Inspection frequency.
650.313 Inspection procedures.
650.315 Inventory.
650.317 Reference manuals.

Subpart C--National Bridge Inspection Standards

§ 650.301 Purpose.

This subpart sets the national standards for the proper safety inspection and evaluation of all highway bridges in accordance with 23 U.S.C. 151.

§ 650.303 Applicability.

The National Bridge Inspection Standards (NBIS) in this subpart apply to all structures defined as highway bridges located on all public roads.

§ 650.305 Definitions.

Terms used in this subpart are defined as follows:

American Association of State Highway and Transportation Officials (AASHTO) Manual. "Manual for Condition Evaluation of Bridges," second edition, published by the American Association of State Highway and Transportation Officials (incorporated by reference, see Sec. 650.317).

Bridge. A structure including supports erected over a depression or an obstruction, such as water, highway, or railway, and having a track or passageway for carrying traffic or other moving loads, and having an opening measured along the center of the roadway of more than 20 feet between undercopings of abutments or spring lines of arches, or extreme ends of openings for multiple boxes; it may also include multiple pipes, where the clear distance between openings is less than half of the smaller contiguous opening.

Bridge inspection experience. Active participation in bridge inspections in accordance with the NBIS, in either a field inspection, supervisory, or management role. A combination of bridge design, bridge maintenance, bridge construction and bridge inspection experience, with the predominant amount in bridge inspection, is acceptable.

Bridge inspection refresher training. The National Highway Institute "Bridge Inspection Refresher Training Course" [1] or other State, local, or federally developed instruction aimed to improve quality of inspections, introduce new techniques, and maintain the consistency of the inspection program.

Bridge Inspector's Reference Manual (BIRM). A comprehensive FHWA manual on programs, procedures and techniques for inspecting and evaluating a variety of in-service highway bridges. This manual may be purchased from the U.S. Government Printing Office, Washington, DC 20402 and from National Technical Information Service, Springfield, Virginia 22161, and is available at the following URL: http://www.fhwa.dot.gov/bridge/bripub.htm.

Complex bridge. Movable, suspension, cable stayed, and other bridges with unusual characteristics.

Comprehensive bridge inspection training. Training that covers all aspects of bridge inspection and enables inspectors to relate conditions observed on a bridge to established criteria (see the Bridge Inspector's Reference Manual for the recommended material to be covered in a comprehensive training course).

Critical finding. A structural or safety related deficiency that requires immediate follow-up inspection or action.

Damage inspection. This is an unscheduled inspection to assess structural damage resulting from environmental factors or human actions.

Fracture critical member (FCM). A steel member in tension, or with a tension element, whose failure would probably cause a portion of or the entire bridge to collapse.

Fracture critical member inspection. A hands-on inspection of a fracture critical member or member components that may include visual and other nondestructive evaluation.

Hands-on. Inspection within arms length of the component. Inspection uses visual techniques that may be supplemented by nondestructive testing.

Highway. The term ``highway'' is defined in 23 U.S.C. 101(a)(11).

In-depth inspection. A close-up, inspection of one or more members above or below the water level to identify any deficiencies not readily detectable using routine inspection procedures; hands-on inspection may be necessary at some locations.

Initial inspection. The first inspection of a bridge as it becomes a part of the bridge file to provide all Structure Inventory and Appraisal (SI&A) data and other relevant data and to determine baseline structural conditions.

Legal load. The maximum legal load for each vehicle configuration permitted by law for the State in which the bridge is located.

Load rating. The determination of the live load carrying capacity of a bridge using bridge plans and supplemented by information gathered from a field inspection.

National Institute for Certification in Engineering Technologies (NICET). The NICET provides nationally applicable voluntary certification programs covering several broad engineering technology fields and a number of specialized subfields. For information on the NICET program certification contact: National Institute for Certification in Engineering Technologies, 1420 King Street, Alexandria, VA 22314-2794.

Operating rating. The maximum permissible live load to which the structure may be subjected for the load configuration used in the rating.

Professional engineer (PE). An individual, who has fulfilled education and experience requirements and passed rigorous exams that, under State licensure laws, permits them to offer engineering services directly to the public. Engineering licensure laws vary from State to State, but, in general, to become a PE an individual must be a graduate of an engineering program accredited by the Accreditation Board for Engineering and Technology, pass the Fundamentals of Engineering exam, gain four years of experience working under a PE, and pass the Principles of Practice of Engineering exam.

Program Manager. The individual in charge of the program, that has been assigned or delegated the duties and responsibilities for bridge inspection, reporting, and inventory. The program manager provides overall leadership and is available to inspection team leaders to provide guidance.

Public road. The term ``public road'' is defined in 23 U.S.C. 101(a)(27).

Quality assurance (QA). The use of sampling and other measures to assure the adequacy of quality control procedures in order to verify or measure the quality level of the entire bridge inspection and load rating program.

Quality control (QC). Procedures that are intended to maintain the quality of a bridge inspection and load rating at or above a specified level.

Routine inspection. Regularly scheduled inspection consisting of observations and/or measurements needed to determine the physical and functional condition of the bridge, to identify any changes from initial or previously recorded conditions, and to ensure that the structure continues to satisfy present service requirements.

Routine permit load. A live load, which has a gross weight, axle weight or distance between axles not conforming with State statutes for legally configured vehicles, authorized for unlimited trips over an extended period of time to move alongside other heavy vehicles on a regular basis.

Scour. Erosion of streambed or bank material due to flowing water; often considered as being localized around piers and abutments of bridges.

Scour critical bridge. A bridge with a foundation element that has been determined to be unstable for the observed or evaluated scour condition.

Special inspection. An inspection scheduled at the discretion of the bridge owner, used to monitor a particular known or suspected deficiency.

State transportation department. The term "State transportation department" is defined in 23 U.S.C. 101(a)(34).

Team leader. Individual in charge of an inspection team responsible for planning, preparing, and performing field inspection of the bridge.

Underwater diver bridge inspection training. Training that covers all aspects of underwater bridge inspection and enables inspectors to relate the conditions of underwater bridge elements to established criteria (see the Bridge Inspector's Reference Manual section on underwater inspection for the recommended material to be covered in an underwater diver bridge inspection training course).

Underwater inspection. Inspection of the underwater portion of a bridge substructure and the surrounding channel, which cannot be inspected visually at low water by wading or probing, generally requiring diving or other appropriate techniques.

§ 650.307 Bridge inspection organization.

(a) Each State transportation department must inspect, or cause to be inspected, all highway bridges located on public roads that are fully or partially located within the State's boundaries, except for bridges that are owned by Federal agencies.
(b) Federal agencies must inspect, or cause to be inspected, all highway bridges located on public roads that are fully or partially located within the respective agency responsibility or jurisdiction.
(c) Each State transportation department or Federal agency must include a bridge inspection organization that is responsible for the following:
    (1) Statewide or Federal agency wide bridge inspection policies and procedures, quality assurance and quality control, and preparation and maintenance of a bridge inventory.
    (2) Bridge inspections, reports, load ratings and other requirements of these standards.
(d) Functions identified in paragraphs (c)(1) and (2) of this section may be delegated, but such delegation does not relieve the State transportation department or Federal agency of any of its responsibilities under this subpart.
(e) The State transportation department or Federal agency bridge inspection organization must have a program manager with the qualifications defined in § 650.309(a), who has been delegated responsibility for paragraphs (c)(1) and (2) of this section.

§ 650.309 Qualifications of personnel.

(a) A program manager must, at a minimum:
  (1) Be a registered professional engineer, or have ten years bridge inspection experience; and
  (2) Successfully complete a Federal Highway Administration (FHWA) approved comprehensive bridge inspection training course.

(b) There are five ways to qualify as a team leader. A team leader must, at a minimum:
  (1) Have the qualifications specified in paragraph (a) of this section; or
  (2) Have five years bridge inspection experience and have successfully completed an FHWA approved comprehensive bridge inspection training course; or
  (3) Be certified as a Level III or IV Bridge Safety Inspector under the National Society of Professional Engineer's program for National Certification in Engineering Technologies (NICET) and have successfully completed an FHWA approved comprehensive bridge inspection training course, or
  (4) Have all of the following:
    (i) A bachelor's degree in engineering from a college or university accredited by or determined as substantially equivalent by the Accreditation Board for Engineering and Technology;
    (ii) Successfully passed the National Council of Examiners for Engineering and Surveying Fundamentals of Engineering examination;
    (iii) Two years of bridge inspection experience; and
    (iv) Successfully completed an FHWA approved comprehensive bridge inspection training course, or
  (5) Have all of the following:
    (i) An associate's degree in engineering or engineering technology from a college or university accredited by or determined as substantially equivalent by the Accreditation Board for Engineering and Technology;
    (ii) Four years of bridge inspection experience; and
    (iii) Successfully completed an FHWA approved comprehensive bridge inspection training course.

(c) The individual charged with the overall responsibility for load rating bridges must be a registered professional engineer.

(d) An underwater bridge inspection diver must complete an FHWA approved comprehensive bridge inspection training course or other FHWA approved underwater diver bridge inspection training course.

§ 650.311 Inspection frequency.

(a) Routine inspections.
  (1) Inspect each bridge at regular intervals not to exceed twenty-four months.
  (2) Certain bridges require inspection at less than twenty-four month intervals. Establish criteria to determine the level and frequency to which these bridges are inspected considering such factors as age, traffic characteristics, and known deficiencies.
  (3) Certain bridges may be inspected at greater than twenty-four month intervals, not to exceed forty-eight-months, with written FHWA approval. This may be appropriate when past inspection findings and analysis justifies the increased inspection interval.

(b) Underwater inspections.

(1) Inspect underwater structural elements at regular intervals not to exceed sixty months.
(2) Certain underwater structural elements require inspection at less than sixty-month intervals. Establish criteria to determine the level and frequency to which these members are inspected considering such factors as construction material, environment, age, scour characteristics, condition rating from past inspections and known deficiencies.
(3) Certain underwater structural elements may be inspected at greater than sixty-month intervals, not to exceed seventy-two months, with written FHWA approval. This may be appropriate when past inspection findings and analysis justifies the increased inspection interval.

(c) Fracture critical member (FCM) inspections.
(1) Inspect FCMs at intervals not to exceed twenty-four months.
(2) Certain FCMs require inspection at less than twenty-four-month intervals. Establish criteria to determine the level and frequency to which these members are inspected considering such factors as age, traffic characteristics, and known deficiencies.

(d) Damage, in-depth, and special inspections. Establish criteria to determine the level and frequency of these inspections.

§ 650.313 Inspection procedures.

(a) Inspect each bridge in accordance with the inspection procedures in the AASHTO Manual (incorporated by reference, see § 650.317).
(b) Provide at least one team leader, who meets the minimum qualifications stated in § 650.309, at the bridge at all times during each initial, routine, in-depth, fracture critical member and underwater inspection.
(c) Rate each bridge as to its safe load-carrying capacity in accordance with the AASHTO Manual (incorporated by reference, see § 650.317). Post or restrict the bridge in accordance with the AASHTO Manual or in accordance with State law, when the maximum unrestricted legal loads or State routine permit loads exceed that allowed under the operating rating or equivalent rating factor.
(d) Prepare bridge files as described in the AASHTO Manual (incorporated by reference, see § 650.317). Maintain reports on the results of bridge inspections together with notations of any action taken to address the findings of such inspections. Maintain relevant maintenance and inspection data to allow assessment of current bridge condition. Record the findings and results of bridge inspections on standard State or Federal agency forms.
(e) Identify bridges with FCMs, bridges requiring underwater inspection, and bridges that are scour critical.
(1) Bridges with fracture critical members. In the inspection records, identify the location of FCMs and describe the FCM inspection frequency and procedures. Inspect FCMs according to these procedures.
(2) Bridges requiring underwater inspections. Identify the location of underwater elements and include a description of the underwater elements, the inspection frequency and the procedures in the inspection records for each bridge requiring underwater inspection. Inspect those elements requiring underwater inspections according to these procedures.
(3) Bridges that are scour critical. Prepare a plan of action to monitor known and potential deficiencies and to address critical findings. Monitor bridges that are scour critical in accordance with the plan.

(f) Complex bridges. Identify specialized inspection procedures, and additional inspector training and experience required to inspect complex bridges. Inspect complex bridges according to those procedures.
(g) Quality control and quality assurance. Assure systematic quality control (QC) and quality assurance (QA) procedures are used to maintain a high degree of accuracy and consistency in the inspection program. Include periodic field review of inspection teams, periodic bridge inspection refresher training for program managers and team leaders, and independent review of inspection reports and computations.
(h) Follow-up on critical findings. Establish a statewide or Federal agency wide procedure to assure that critical findings are addressed in a timely manner. Periodically notify the FHWA of the actions taken to resolve or monitor critical findings.

§ 650.315 Inventory.

(a) Each State or Federal agency must prepare and maintain an inventory of all bridges subject to the NBIS. Certain Structure Inventory and Appraisal (SI&A) data must be collected and retained by the State or Federal agency for collection by the FHWA as requested. A tabulation of this data is contained in the SI&A sheet distributed by the FHWA as part of the "Recording and Coding Guide for the Structure Inventory and Appraisal of the Nation's Bridges," (December 1995) together with subsequent interim changes or the most recent version. Report the data using FHWA established procedures as outlined in the "Recording and Coding Guide for the Structure Inventory and Appraisal of the Nation's Bridges."
(b) For routine, in-depth, fracture critical member, underwater, damage and special inspections enter the SI&A data into the State or Federal agency inventory within 90 days of the date of inspection for State or Federal agency bridges and within 180 days of the date of inspection for all other bridges.
(c) For existing bridge modifications that alter previously recorded data and for new bridges, enter the SI&A data into the State or Federal agency inventory within 90 days after the completion of the work for State or Federal agency bridges and within 180 days after the completion of the work for all other bridges.
(d) For changes in load restriction or closure status, enter the SI&A data into the State or Federal agency inventory within 90 days after the change in status of the structure for State or Federal agency bridges and within 180 days after the change in status of the structure for all other bridges.

§ 650.317 Reference manuals.

(a) The materials listed in this subpart are incorporated by reference in the corresponding sections noted. These incorporations by reference were approved by the Director of the Federal Register in accordance with 5 U.S.C. 552(a) and 1 CFR part 51. These materials are incorporated as they exist on the date of the approval, and notice of any change in these documents will be published in the **Federal Register**. The materials are available for purchase at the address listed below, and are available for inspection at the National Archives and Records Administration (NARA). These materials may also be reviewed at the Department of Transportation Library, 400 Seventh Street, SW., Washington, DC, in Room 2200. For information on the availability of these materials at NARA call (202) 741-6030, or go to the following URL: http://www.archives.gov/federal_register/code_of_federal_regulations/ibr_locations.html In the event there is a conflict between the standards in this subpart and any of these materials, the standards in this subpart will apply.

(b) The following materials are available for purchase from the American Association of State Highway and Transportation Officials, Suite 249, 444 N. Capitol Street, NW., Washington, DC 20001. The materials may also be ordered via the AASHTO bookstore located at the following URL: http://www.aashto.org/aashto/home.nsf/FrontPage.

(1) The Manual for Condition Evaluation of Bridges, 1994, second edition, as amended by the 1995, 1996, 1998, and 2000 interim revisions, AASHTO, incorporation by reference approved for § § 650.305 and 650.313.

(2) 2001 Interim Revision to the Manual for Condition Evaluation of Bridges, AASHTO, incorporation by reference approved for § § 650.305 and 650.313.

(3) 2003 Interim Revision to the Manual for Condition Evaluation of Bridges, AASHTO, incorporation by reference approved for § § 650.305 and 650.313.

[1] The National Highway Institute training may be found at the following URL: http://www.nhi.fhwa.dot.gov/Home.aspx

I&E
EXHIBIT K

- Uncompleted non-bridge maintenance items (e.g., roadway drainage, channel debris) have caused significant bridge damage in several incidences.
- A 24-month cycle is needed for effective planning and programming of bridge maintenance activities, especially on-demand repairs and preventative maintenance items.
  In addition, new asset management analysis tools for bridges and other assets require high quality bridge condition and needs data collected at regular intervals to provide good decision-making tools for bridge owners.

Potential savings in inspection costs using longer inspection intervals on a limited number of bridges have not offset the potential risk to public safety and decreased accuracy of management systems.

Table IP 2.3.2.4-1 Maximum Interval of Routine Inspections

Maximum Interval	Bridge Description	Comments
24 months	▪ Highway bridges without a weight restriction	
	▪ Closed Highway Bridges	See IP 2.7 for inspection requirements
	▪ Non-highway bridges and structures over State Routes	See IP 2.10 for inspection requirements
12 months	▪ Highway Bridges with weight restrictions (e.g., posted weight limit, restricted to One Truck at a Time)	With the approval of the District Bridge Engineer, Interim (Special) Inspections of critical areas of a bridge may be used to meet the reduced interval between the biennial Routine Inspections
	▪ Highway bridge with a Condition Rating of 3 or less for non-fracture critical superstructure, substructure, or culvert component	
	▪ Highway bridge with a Condition Rating of 4 for a fracture critical superstructure.	
6 months	▪ Highway bridge with a Condition Rating of 3 or less for a fracture critical superstructure.	
	▪ Any temporary structure or bridge, or those with temporary supports, falsework, or cribbing.	

MONITORING COMPLIANCE OF INSPECTION FREQUENCY: The bridge owner is responsible to ensure that the individual bridges and structures under his purview are inspected in compliance with the standards as set forth in this Manual. To ensure that the bridges and structures are inspected in a timely manner for public safety and for compliance with regulations, the responsibilities for monitoring and ensuring the compliance of safety inspection frequencies are as follows:

- District Bridge Engineer for the following individual structures in his District:
  - Department bridges/structures
  - NBIS bridges owned by local municipalities and Counties
  - Non-highway bridges/structures over State Routes
- Bridge QA Division for the following individual structures statewide:
  - NBIS bridges owned by PTC, DCNR, and other state and federal agencies
- Bridge QA Division for overall statewide compliance of all structures

In those cases where Table IP 2.3.2.4-1 requires a full, routine NBI inspection and an inspection frequency less than 24 months, the coding for Item 7A09 (Inspection frequency) must reflect the reduced interval.

To facilitate the monitoring of compliance of the inspection frequency with the maximum 24 month interval allowed by NBIS and any reduced interval due to bridge conditions, the coding in Table IP 2.3.2.4-2 should be used for BMS2 data item 7A03 and 6B20.

I&E
EXHIBIT L

The bridge maintenance category and value payoff benefit was determined by its relative impact on the life cycle costs of maintaining bridges. Accordingly, these categories and payoff values do not correspond directly to assignment of maintenance priorities, especially for Priority 0 or 1.

2.13.2 Critical and High Priority Maintenance Items

Critical (Priority 0) or high (Priority 1) priorities (BMS2 Item IM05) for maintenance activities are defined as having deficiencies that threaten either the structural integrity of the bridge (or other structures) or public safety. This limits the application of Priority 0 or 1 to those activities to correct such deficiencies. Damaged or missing vertical clearance or load limit signs are examples where there may be no immediate structure safety problem, but where public safety is compromised and immediate action is required. It follows that maintenance activities such as painting and cleaning may have a high value payoff benefit for life cycle costs but should not warrant a Priority of 0 or 1. There may be situations where activities in Other Structural category of maintenance activities may warrant Priority 0 or 1.

The BMS2 Coding Manual Publication 100A further details the IM05 coding instructions and provides further examples.

In general, the conditions that create the recommendation for Priority 0 and Priority 1maintenance items would warrant the development of a Bridge Problem Report (BPR). The District should notify BQAD of the problem immediately and the determination of the need for a BPR will be made.

Because of the threat to structural and public safety they pose, the following additional actions are required for Department bridges (or structures) with maintenance activities that warrant a critical or high priority (IM05 = 0 or 1 respectively):

- **Approval by District Bridge Engineer –** The inspection and maintenance recommendations must be immediately reviewed by the District Bridge Engineer to determine the appropriate mitigation and restoration for the deficient condition.
- **Plan of Action for resolving the critical deficiencies** – See Section IP 2.14

For non-Department bridges (including those owned by municipalities, counties and other agencies), critical or high priority maintenance needs pose the same possible threats to public safety. In the Department's overarching role and responsibilities for the safety of public highway bridges, the District must take additional steps to see that the bridge owner has had the public safety issues fully explained to them along with the need to take appropriate action to mitigate or correct them.

- While the standard scopes of work for bridge safety inspection agreements call for the inspector to notify the owner of such critical deficiencies, the District (also a recipient of the critical deficiency notice) is to contact the owner by a telephone call, personal visit, or correspondence (fax or e-mail) to determine if the owner's plan for repair is timely and sufficient. To properly convey the significant public safety issues, this District contact person should be the District Bridge Engineer or other Professional Engineer. The District Municipal Services staff may also be helpful during this contact.
- If the proposed action by the owner is not deemed sufficient, additional District actions may be necessary to ensure public safety, up to and including closing the bridge. The District is to immediately contact the Chief Bridge Engineer if an owner is not taking timely action and before restricting a bridge without the owner's consent.
- The non-Department bridge owners are not required to follow the full POA process as described herein. However, the POA process in BMS2 is a good way for them to document their actions for critical bridge deficiencies. This exception to using the full POA process does not reduce or exempt the owner's obligation to take timely actions to secure the safety of their bridges.

2.14 PLAN OF ACTION FOR CRITICAL AND HIGH PRIORITY MAINTENANCE ITEMS

Because of the potential threat to public safety, a Plan of Action (POA) is required for all recommended maintenance activities with a Priority 0 or 1. The POA must identify the action(s) to be taken to repair and/or mitigate the deficiency that warranted the critical or high priority recommendation.

The processes involved in determining the recommended action and its priority in the safety inspection program and the development and implementation of the POA itself are highly interactive. High levels of

communication and cooperation between all parties are necessary to make the required corrective actions occur in a timely manner.

2.14.1 Timeframe for POAs

Priority 0 activities are to be resolved or mitigated within 7 days of identification.

- For Priority 0 items, physical action must be taken to resolve the critical deficiency. By definition, this work cannot be deferred. By definition, monitoring alone for Priority 0 items will not suffice.
- The immediate actions taken may not resolve the deficiency, but must restore or mitigate the safety problem to an acceptable level, even if level of service must be reduced. Such an example may be to close the bridge immediately until repairs can commence.
- Additional work at a later time may be needed to restore bridge to full service and safety. This additional work may be needed at a Priority 1 level.

Priority 1 activities are to be resolved or mitigated within 6 months.

- Priority 1 requires physical work to correct the deficiency.
- For Priority 1, physical work to correct the deficiencies may be deferred only if other work (e.g. rehabilitation project) is scheduled in the near future and if the condition of the structure will not further degrade and compromise safety before that scheduled work is done.
- In this context, the timeframe for "near future" generally should not extend beyond 2 years unless justification for this exception is provided by the District Bridge Engineer.
- Monitoring alone or in conjunction with repairs may suffice if conditions will not degrade. Monitoring should be quantitative by including measurements of structure, e.g., deflection, crack width, scour depth, etc., and not just description of visual observation. Sketches and charts showing changes over time are highly recommended.
- For deferred actions, the POA must provide full justification for the above points.

Development and acceptance of a Priority 0 POA should be complete within 2 days for 90% of occurrences and within 3 days on 100% of occurrences. Development and acceptance of a Priority 1 POA should be complete within 7 days on 100% of occurrences.

The timeframe for a POA starts on the day of the inspection where deficiency is discovered. Generally, the need for critical or high priority maintenance items is determined during a safety inspection. However, if a critical deficiency is found between inspections, an inspection to fully ascertain the condition must be done. This need not be a regular NBIS inspection if a special inspection of the problem area only will suffice.

It may be necessary to take immediate actions, permanent or temporary in nature, to safeguard public safety (e.g. temporary shoring, bridge closing) before the POA is fully developed.

Exceptions to the timeline for POA documentation will be considered only for complex problems that take more time to reach a final solution. The District must request a POA documentation time extension via e-mail to the Chief Bridge Engineer before the end of day 3. Such extensions to the POA documentation do not extend to implementation of interim or permanent action(s) recommended to secure safety.

2.14.2 Responsibilities for Plan of Action

The responsibilities for the various portions of a POA can be generally described as listed below. It is important to note that the Districts may re-assign the POA responsibilities outside the safety inspection program activities to meet the POA requirements as best fits their organization. However, decisions concerning public safety which require the expertise of a professional engineer cannot be re-assigned to individuals not duly qualified.

<u>District Bridge Engineer</u>

- Determination of Critical or High Priority Maintenance Recommendations
- Development of POA and concurrence with actions.
- Development of repair plans, as needed
- Input and maintenance of BMS2 data

BEFORE THE
PENNSYLVANIA PUBLIC UTILITY COMMISSION

Application of CSX Transportation, Inc. for Approval of the Abolition of the Crossing (DOT 140 634 G) where Cemetery Avenue crosses above grade the tracks of CSX Transportation, Inc. located in the City of Philadelphia, Philadelphia County, Pennsylvania, and the allocation of cost thereto.	:	Docket No. A-2019-3013783

CERTIFICATE OF SERVICE

I hereby certify that I have this day served a true copy of the foregoing **Pre-Served Rebuttal Testimony of the Bureau of Investigation and Enforcement** dated January 22, 2021, upon the parties listed below, in accordance with the requirements of 52 Pa. Code § 1.54 (relating to service by a party).

Service by Electronic Mail Only

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