# BUTLER PROPERTY INDUSTRIAL PARK
*Knox County, Tennessee*

# *TRAFFIC IMPACT STUDY*

***Prepared For:***
**THE DEVELOPMENT CORPORATION of KNOXVILLE**

***Prepared By:***

CDM Smith

**November 2013**

# BUTLER PROPERTY DEVELOPMENT

**Knox County, Tennessee**

## TRAFFIC IMPACT STUDY

**Prepared for**

**The Development Corporation of Knox County**
**17 Market Square, # 201**
**Knoxville, Tennessee 37902**


**December 2013**

**Prepared by**

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**Project No. 101299**

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# EXECUTIVE SUMMARY

This study was commissioned to address the impact and access of a industrial development in Knox County, Tennessee. The study required the collection of traffic data, generation of anticipated traffic volumes from the proposed site and development of projected traffic volumes from normal growth and from the development site. Analysis of the resulting traffic projections was conducted to determine the capacity and levels of service for the proposed site access. This study will develop measures necessary to mitigate traffic impacts including improved roadway geometrics and traffic control devices within the environs of the proposed development. Discussions with the Knox County determined that the study scope would address the proposed development access to the adjacent roadway facility and the adjacent intersections of Garrison Drive at Byington Beaver Ridge Road and the planned Karns Valley Connector.

The proposed development is approximately 70 acres, currently vacant and proposed for light manufacturing use. Current zoning of the study property is agriculture with a designation for low density residential in the current land use plan. The proposed industrial development, at build-out, may be a maximum of 855,000 square-feet of industrial space.

Background traffic, traffic that may be anticipated regardless of the proposed development, was determined using a 2-percent annual growth rate until the assumed build-out year of 2018. Trips associated with a planned residential development by others was also distributed and included in the background traffic condition.

The manufacturing land use was assumed for this development, for it more reflected the goal employment of 580 and the uses identified by the Development Corporation. Trips generated for 855,000 square feet of light industrial space were found to be 3,300 daily trips, 680 AM peak hour trips, and 650 PM peak hour trips. A conservative 10-percent of the trips were also assigned to Garrison Drive.

Using the identified turning movements for the existing and projected traffic conditions, with and without the proposed development, capacity and level of service analyses were conducted using the **2010 Highway Capacity Manual**. Analyses determined that with recommendation of this study, acceptable levels of service could be maintained. Signalization and turn lanes were determined necessary to mitigated poor levels of service that may otherwise occur without any mitigation.

The intersection of Byington Beaver Ridge Road and Garrison Drive currently meets the Peak Hour signal warrant, thereby mitigating a failing level of service. Signalization of the Byington Beaver Ridge Road and Garrison Drive intersection should provide a very good level of service. The industrial site, at build-out will warrant signalization of the Karns Valley Connector and Garrison Road intersection. The realignment of the industrial access road and Garrison Drive intersection provides for the primary traffic movement between the Karns Valley Connector and the industrial access. Teeing Garrison Drive to the industrial access with a STOP control provides for an acceptable level of service and should deter traffic on Garrison Drive. Sufficient storage should be provided for the westbound approach to Karns Valley Connector to minimize

delay and queues. With a 2018 projected 1,111 daily traffic for Garrison Drive, the proposed development reflects approximately 30-percent of the traffic, representing a maximum impact given good access to Karns Valley Connector.

The projected traffic volumes, analyses conducted, and Knox County policies identified the following improvements necessary for the maintenance of an acceptable LOS during the peak hours:

1. Provide minimum 375-foot left- and right-turn lanes for the westbound approach to the Karns Valley Connector.

2. Provide a minimum 350-foot left-turn lane for the southbound movement from Karns Valley Connector to Garrison Drive.

3. Provide a minimum 250-foot right-turn lane for the northbound movement from Karns Valley Connector to Garrison Drive.

4. Signalize the intersection of Byington Beaver Ridge Road and Garrison Drive for the mitigation of existing conditions.

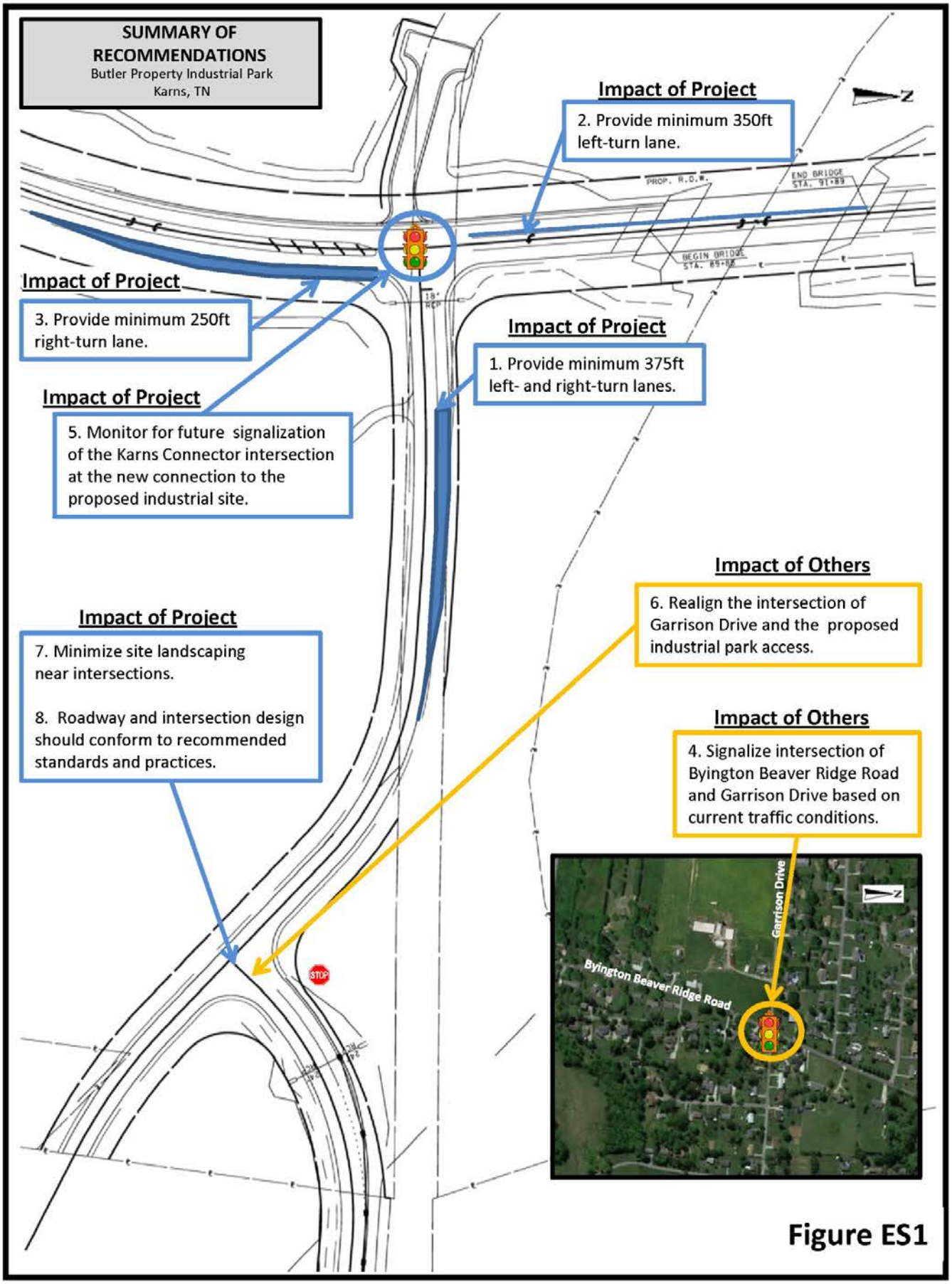
5. Monitor the intersection of Karns Valley Connector and Garrison Drive for signalization. Install a traffic signal when warrant can be satisfied and provide for right-turn overlaps to and from Garrison Drive.

6. Realign the intersection of Garrison Drive and the industrial access assigning the right of way to the industrial development.

7. Minimize landscaping, using low growing vegetation and signing at the planned accesses to insure that safe sight-distance is maintained.

8. Roadway and intersection design should conform to the recommended standards and practices adopted by the Institute of Transportation Engineers (ITE), American Association of State and Highway Officials (AASHTO), Lee County, and the Virginia Department of Transportation.

A summary of recommendations are provided in **Figure ES1**. The blue color represents improvements identified due to the proposed project impacts and the orange color represents improvements identified due to impacts of others.


SUMMARY OF RECOMMENDATIONS
Butler Property Industrial Park
Karns, TN
Impact of Project
2. Provide minimum 350ft left-turn lane.
Impact of Project
3. Provide minimum 250ft right-turn lane.
Impact of Project
1. Provide minimum 375ft left- and right-turn lanes.
Impact of Project
5. Monitor for future signalization of the Karns Connector intersection at the new connection to the proposed industrial site.
Impact of Others
6. Realign the intersection of Garrison Drive and the proposed industrial park access.
Impact of Project
7. Minimize site landscaping near intersections.
8. Roadway and intersection design should conform to recommended standards and practices.
Impact of Others
4. Signalize intersection of Byington Beaver Ridge Road and Garrison Drive based on current traffic conditions.
Garrison Drive
Byington Beaver Ridge Road
STOP
Figure ES1

# INTRODUCTION

This study was commissioned to address the impact and access of an industrial development in Knox County, Tennessee. The study required the collection of traffic data, generation of anticipated traffic volumes from the proposed site and development of projected traffic volumes from normal growth and from the development site. Analysis of the resulting traffic projections was conducted to determine the capacity and levels of service for the proposed site access. This study will develop measures necessary to mitigate traffic impacts including improved roadway geometrics and traffic control devices within the environs of the proposed development. Discussions with Knox County determined that the study scope would address the proposed development access to the adjacent roadway facility and the intersections of Garrison Drive with the existing Byington Beaver Ridge Road and planned Karns Valley Connector.

## Proposed Site Uses

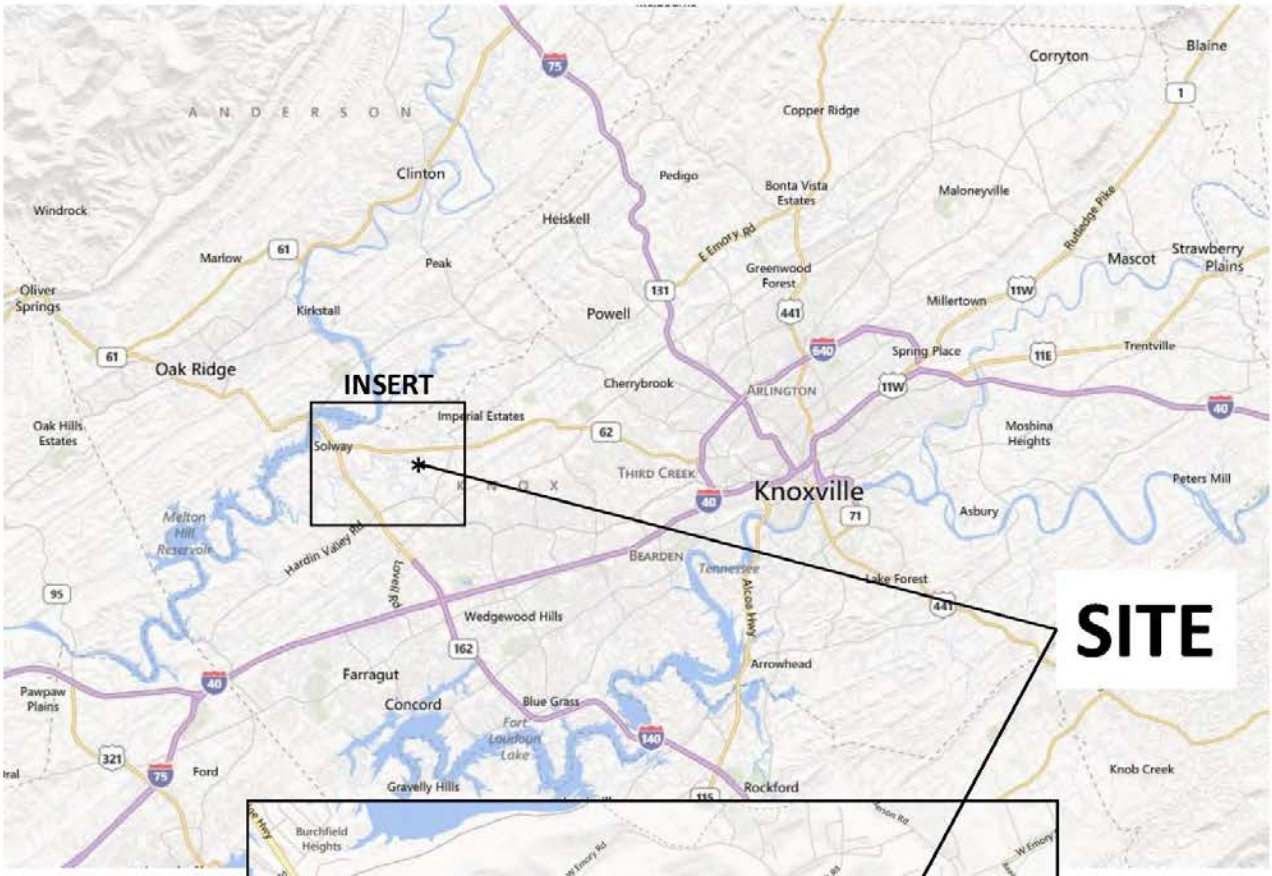
The proposed development is approximately 70 acres, currently vacant and proposed for light manufacturing use. Current zoning of the study property is agriculture with a designation for low density residential in the current land use plan. The proposed industrial development, at build-out, may be a maximum of 855,000 square-feet of industrial space. The employment goal for the site is approximately 580. **Figure 1** illustrates the concept site plan for the development.

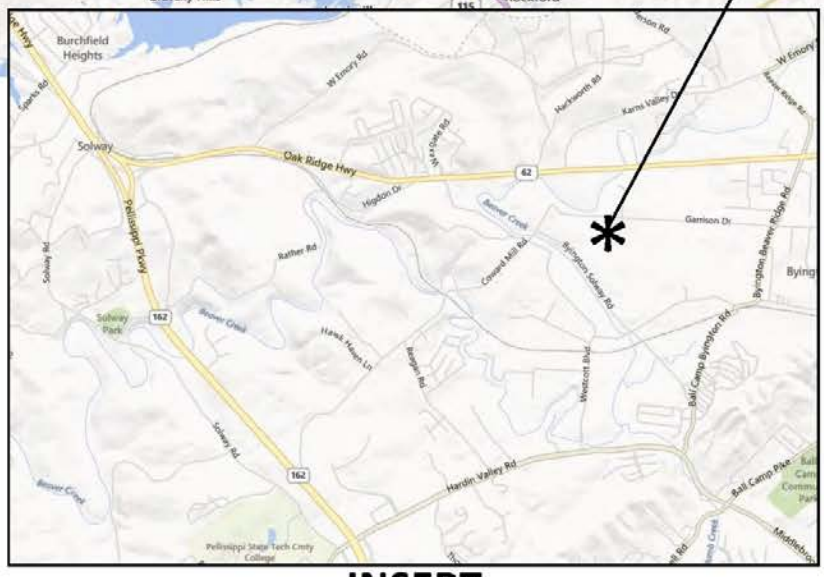
## Site Location

The location of the site is in Knox County, south of Garrison Drive, between the proposed Karns Connector and Byington Beaver Ridge Road. The site is located northwest of the Knoxville central business district (CBD). **Figure 2** is a vicinity map illustrating the site relative to local and regional access.


SITE CONCEPT PLAN
Butler Property Industrial Park
Karns, TN
N
Pond #3
500 ft
170,000 sf Bldg Pad
300 ft
150 ft
Parking
250 ft
Parking
Parking
500 ft
125,000 sf Bldg Pad
250 ft
Pond #2
Pond #1
Parking
700 ft
560,000 sf Bldg Pad
800 ft
Figure 1

**VICINITY MAP**
Butler Property Industrial Park
Karns, TN




INSERT

N

**Figure 2**

# LOCAL AND REGIONAL ACCESS

The proposed development will add trips to both the local and regional facilities. Intersections between these facilities will be evaluated to determine the development's impact upon them. A brief description of these facilities is provided in the section.

**Local Access**

Access to the site is from a proposed street intersecting with Garrison Drive. Garrison Drive is a 16-foot minor collector facility extending from Byington Solway Road to Byington Beaver Ridge Road (S.R. 131). The 2012 average daily traffic on Garrison Drive is 540. Byington Beaver Ridge Road, east of the site, is a 2-lane secondary state route extending north and south of the site, intersecting Oak Ridge Highway (S.R. 62) north of the site and Byington Solway Road to the south.

**Regional Access**

Byington Beaver Ridge Road (S.R. 131), to the south, intersects Byington Solway Road, which to the west, intersects Ball Camp Byington Road providing for the state route to continue to Hardin Valley Road and Middlebrook Pike. From Middlebrook Pike, State Route 131 continues to Kingston Pike as Lovell Road intersecting Pellissippi Parkway (S.R. 162) and Interstate 40/75. Ball Camp Byington Road intersection with Byington Solway Road has a one lane Railroad underpass that limits the efficient flow of traffic. Ball Camp Byington Road has an 2012 ADT of approximately 11,170.

Plans exist for the connection of Karns Valley Drive north and south of Oak Ridge Highway, providing an improved connection from Hardin Valley Road via Westcott Boulevard north to West Emory Road, intersecting Oak Ridge Highway. With completion of the Karns Valley Road Connection to the Oak Ridge Highway and an associated reduction in traffic on Byington Beaver Ridge and Ball Camp Byington Road, access should improve at the existing Ball Camp Byington Road railroad crossing to the south.

Emory Road (S.R. 131) is the extension of the State's secondary facility to the northeast intersecting Clinton Highway (U.S. 25W), Interstate 75 North, Norris Freeway (U.S. 441), Maynardville Pike (S.R. 33), and Tazewell Pike (S.R. 331). Emory Road extends to Washington Pike which connects to State Hwy 61 to the east. This east and west facility provides many connections to the north.

North of the site, Oak Ridge Highway (S.R. 62) is a two-lane primary state route extending east to Knoxville and west to Pellissippi Parkway (S.R. 162) which extends into Oak Ridge. The 2012 average daily traffic (ADT) on the Oak Ridge Highway is 15,510 to the east and 11,200 to the west near the Anderson county line.

Pellissippi Parkway (S.R. 162) is a 4-lane divided expressway extending north to Oak Ridge and south becoming I-140 with an interchange with Interstate 40/75. Oak Ridge Highway (S.R. 62) has an interchange with Interstate 640 in Knoxville to the east. To the south, S.R. 131 also intersects Pellissippi Parkway (S.R. 162). Interstates 40 and 75 provides regional access throughout Tennessee, I-40 extends east and west from Memphis to Asheville, North Carolina, and I-75 extending north and south connects Lexington, Kentucky and Chattanooga Tennessee through Knoxville.

# EXISITING TRAFFIC CONDITIONS

**Existing Traffic Volumes and Intersection Geometry**

A turning movement count (TMC) was conducted in October of 2013 for the intersection of Byington Beaver Ridge Road and Garrison Drive. The count was conducted 7:00-9:00AM and 2:00-6:00PM. The AM and PM peak hours were found between 7:15-8:15AM and 5:00-6:00PM. The posted speed limit for Garrison Drive is 30mph. Traffic control and intersection geometry are illustrated in **Figure 3,** and **Figure 4** illustrates the existing peak-hour traffic volumes.

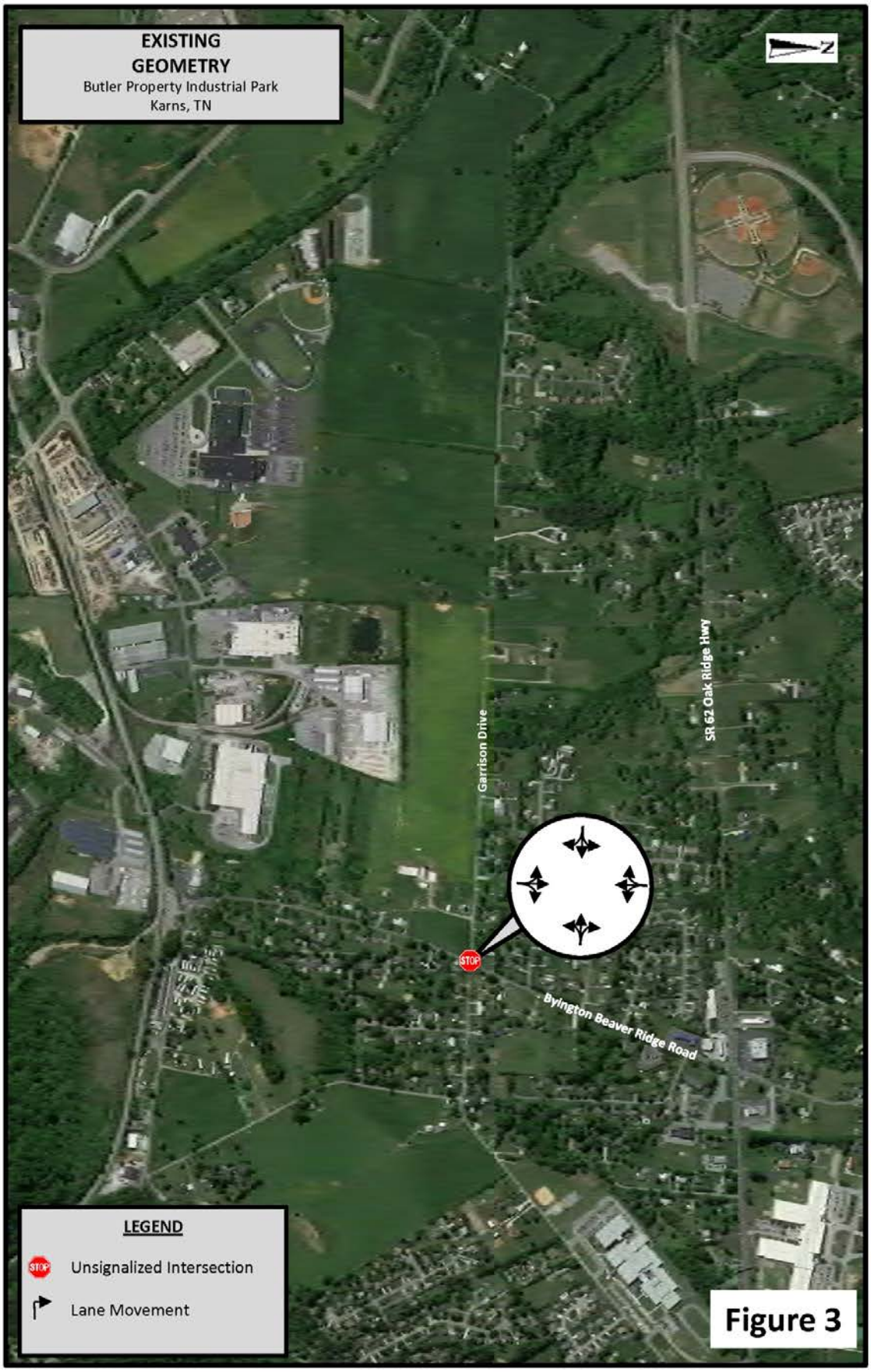
**Intersection Delay Study**

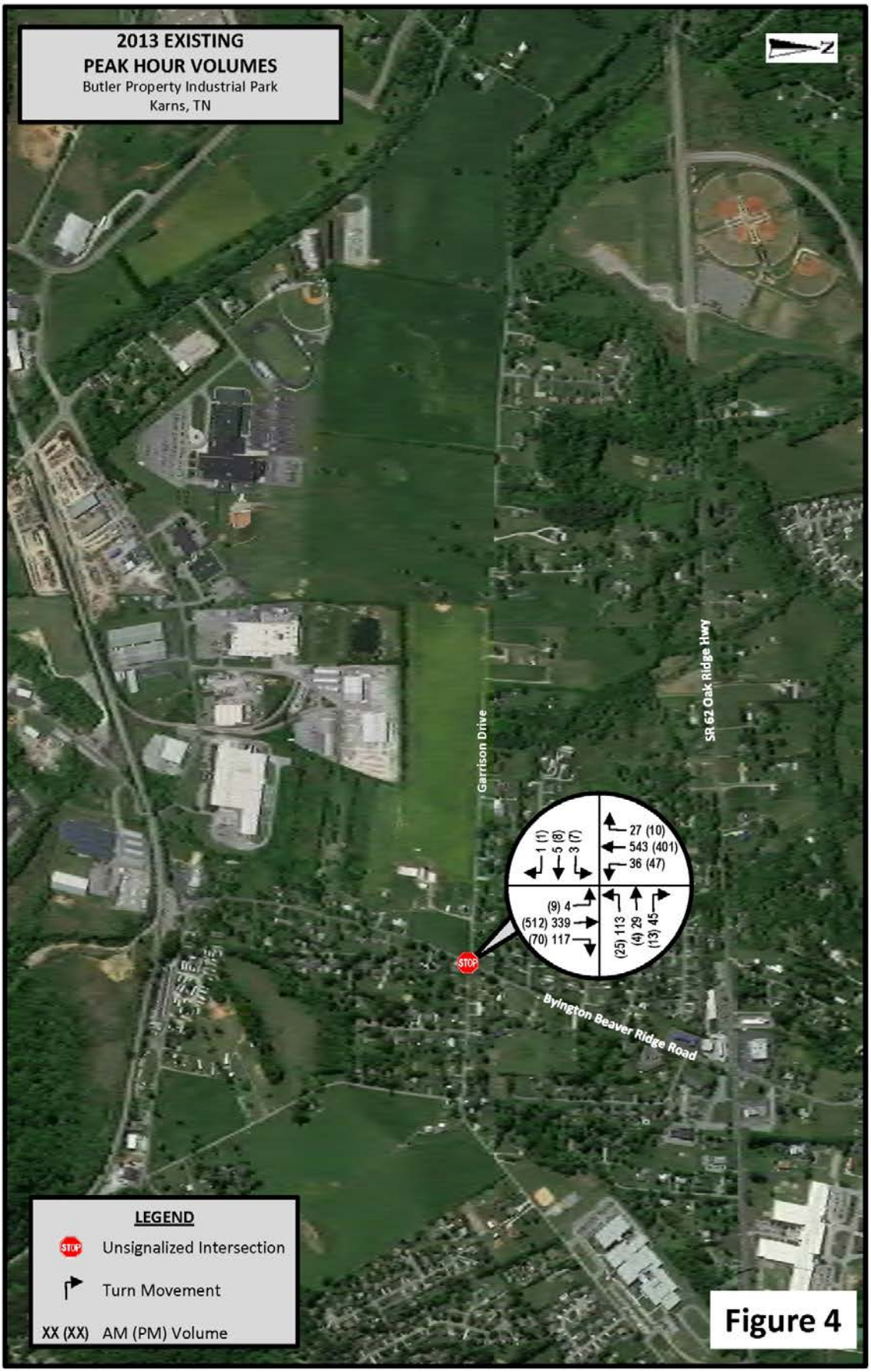
In addition to the turning movement count conducted for the intersection of Garrison Drive with Byington Beaver Ridge Road, a delay study was conducted for the Garrison Road approaches to Byington Beaver Ridge Road. This delay study found significant delays for the westbound approach of Garrison Road to Byington Beaver Ridge Road. This delay was found to be approximately 69 seconds during the morning peak hours and 38 seconds during the afternoon school peak hour. The delay associated with the PM peak hour was found to be 22 seconds.

**Traffic Signal Warrant Evaluation**

For the Garrison Drive intersection with Byington Beaver Ridge Road, an evaluation for traffic control signals was conducted for the existing 2013 traffic conditions. There are eight warrants published in the **Manual on Uniform Traffic Control Devices, 2009 Edition**. Three traffic volume warrants were examined including the Eight-Hour Vehicular Volume (Warrant 1), Four-hour (Warrant 2), and Peak-hour Volume (Warrant 3B). The Eight-Hour Vehicular Volume Warrant is further subdivided into three parts, the Minimum Volume (Warrant 1A), Interruption to Continuous Traffic Flow (Warrant 1B), and Combination (Warrant 1A & B). Any part of Warrant 1 must be met for a minimum of eight hours. Warrant 2 must be met for four hours, and one hour must be met for the Peak-Hour Warrant (Warrant 3B). The volume thresholds required to satisfy the volume warrants are reduced when prevailing speeds are in excess of 40mph.

With the prevailing speed in excess of 40mph, traffic volumes at the intersection of Garrison Drive with Byington Beaver Ridge Road satisfies the Peak-Hour (Warrant 3B) signal warrant and approaches the Four-Hour warrant with three hours satisfied.


EXISTING
GEOMETRY
Butler Property Industrial Park
Karns, TN
N
Garrison Drive
SR 62 Oak Ridge Hwy
STOP
Byington Beaver Ridge Road
LEGEND
Unsignalized Intersection
Lane Movement
Figure 3


2013 EXISTING
PEAK HOUR VOLUMES
Butler Property Industrial Park
Karns, TN
N
Garrison Drive
SR 62 Oak Ridge Hwy
Bylington Beaver Ridge Road
1 (1)
5 (8)
3 (7)
27 (10)
543 (401)
36 (47)
(9) 4
(512) 339
(70) 117
(25) 113
(4) 29
(13) 45
STOP
LEGEND
Unsignalized Intersection
Turn Movement
XX (XX) AM (PM) Volume
Figure 4

## Existing Capacity and Level of Service

In order to evaluate the current operations of the traffic control devices, capacity and level of service were calculated using the **2010 Highway Capacity Manual, Special Report 209** published by the Transportation Research Board (TRB). Signalized and unsignalized intersections are evaluated based on estimated intersection delays, which may be related to level of service (LOS).

Level of service and capacity are the measurements of an intersection's ability to accommodate traffic volumes. Levels of service for intersections range from A to F. LOS A is the best, and LOS F is failing. For signalized intersections, a LOS of A has an average estimated intersection delay of less than 10 seconds, and LOS F has an estimated delay of greater than 80 seconds. A LOS of C and D are typical design values. Within urban areas, a LOS D, delay between 35 and 55 seconds, is considered acceptable by the Institute of Transportation Engineers (ITE) for signalized intersections.

Unsignalized intersection levels of service have lower thresholds of delays. A LOS of F exceeds estimated delays of 50 seconds. For urban arterials, minor approaches may frequently experience levels of service E. A full level of service description for unsignalized and signalized intersections is presented in **Tables 1 and 2**, respectively.

Analyses of existing conditions are conducted using the Synchro, Version 8, Software, developed by Trafficware. **Table 3** presents the analyses of the access intersection. **Figure 5** illustrates the existing traffic control and geometry and LOS for the study peak hours.

## Table 1
## LEVEL-OF-SERVICE (LOS) DESCRIPTION FOR TWO-WAY STOP INTERSECTIONS

| Level of Service | Average Control Delay per Vehicle (seconds) |
|---|---|
| A | ≤ 10.0 |
| B | > 10.0 and ≤ 15.0 |
| C | > 15.0 and ≤ 25.0 |
| D | > 25.0 and ≤ 35.0 |
| E | > 35.0 and ≤ 50.0 |
| F | > 50.0 |

**SOURCE:** **Highway Capacity Manual, TRB Special Report 209**

## Table 2
## LEVEL-OF-SERVICE (LOS) DESCRIPTION FOR SIGNALIZED INTERSECTIONS

| LOS | Average Control Delay per Vehicle (seconds) | Description |
|---|---|---|
| A | ≤ 10.0 | Very low delay with extremely favorable progression. Most vehicles don't stop. |
| B | > 10.0 and ≤ 20.0 | Generally good progression. Increase number of stops from that described for LOS "A" resulting in higher delays |
| C | > 20.0 and ≤ 35.0 | Fair progression with increased delay. Number of stopping vehicles become significant; however, many still pass through the intersection without stopping. Stable flow. |
| D | > 35.0 and ≤ 55.0 | The influence of congestion becomes more noticeable. Longer delays resulting from unfavorable progression, longer cycles, or high V/C ratios. Approaching unstable flow. |
| E | > 55.0 and ≤ 80.0 | Limit of acceptable delay. Long delays associated with poor progression, long cycles, or high V/C ratios. |
| F | > 80.0 | Unacceptable operation resulting from oversaturation (flow rates exceed capacity). Poor progression, long cycles, and high V/C ratios. |

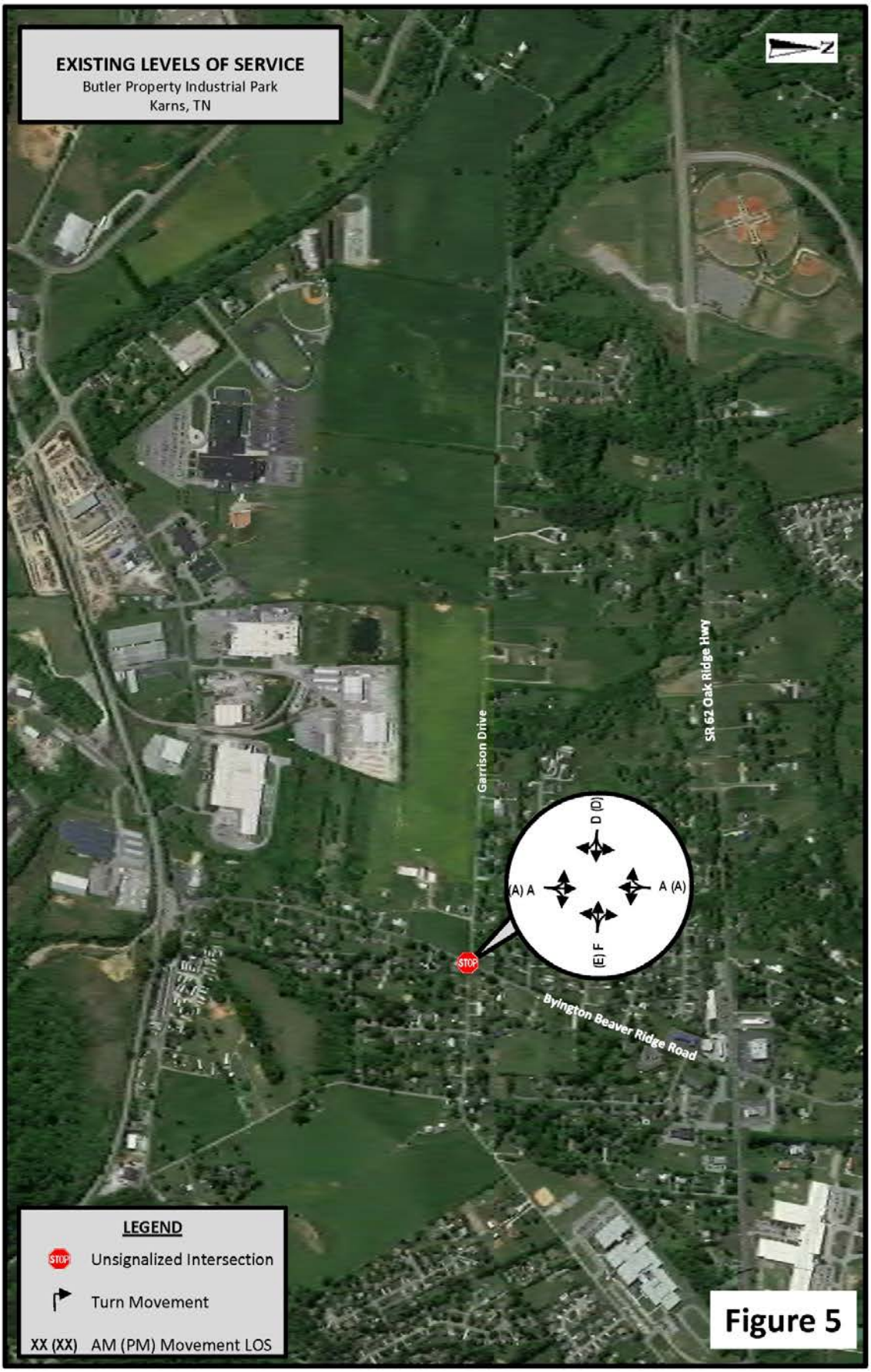
**SOURCE:** **Highway Capacity Manual, TRB Special Report 209**

**Table 3**
**2013 Capacity and Level of Service**

| INTERSECTION | TRAFFIC CONTROL | PEAK PERIOD | V/C | DELAY | LOS |
|---|---|---|---|---|---|
| **Byington Beaver Ridge Road** | **STOP** | **AM** | **0.11 / 1.43** | **33.8 / 278.9** | **D / F** |
| **at Garrison Drive** | **EB/WB** | **PM** | **0.18 / 0.43** | **32.6 / 37.2** | **D / E** |
| *INSTALL SIGNAL* | *SIGNAL* | *AM* | *0.69* | *10.3* | *B* |
| | *MITIGATION* | *PM* | *0.49* | *5.6* | *A* |

**Note: Average vehicle delay estimated in seconds. STOP control analyses conducted in HCM 2010 TWSC methodology are presented by total minor approaches.**

The existing intersection of Byington Beaver Ridge Road and Garrison Drive is operating with a westbound LOS F and E during the AM and PM peak hours, respectively. These delays were confirmed with the delay study conducted for the intersection. With signalization of the intersection, a very good LOS may be achieved.


EXISTING LEVELS OF SERVICE
Butler Property Industrial Park
Karns, TN
N
Garrison Drive
SR 62 Oak Ridge Hwy
D (D)
(A) A
A (A)
(E) F
STOP
Bylington Beaver Ridge Road
LEGEND
Unsignalized Intersection
Turn Movement
XX (XX) AM (PM) Movement LOS
Figure 5

# BACKGROUND TRAFFIC CONDITIONS

Future traffic conditions or background conditions are the anticipated conditions regardless of the proposed development. Traffic through the study area should continue to grow as the region develops. West of the proposed site, plans exist for the connection of Karns Valley Drive north and south of Oak Ridge Highway, providing an improved connection from Hardin Valley Road via Westcott Boulevard north to West Emory Road, intersecting Oak Ridge Highway. This connection will provide an improve railroad crossing. **Figure 6** illustrates this connection and the planned intersection geometry.

**Background Traffic Volumes**

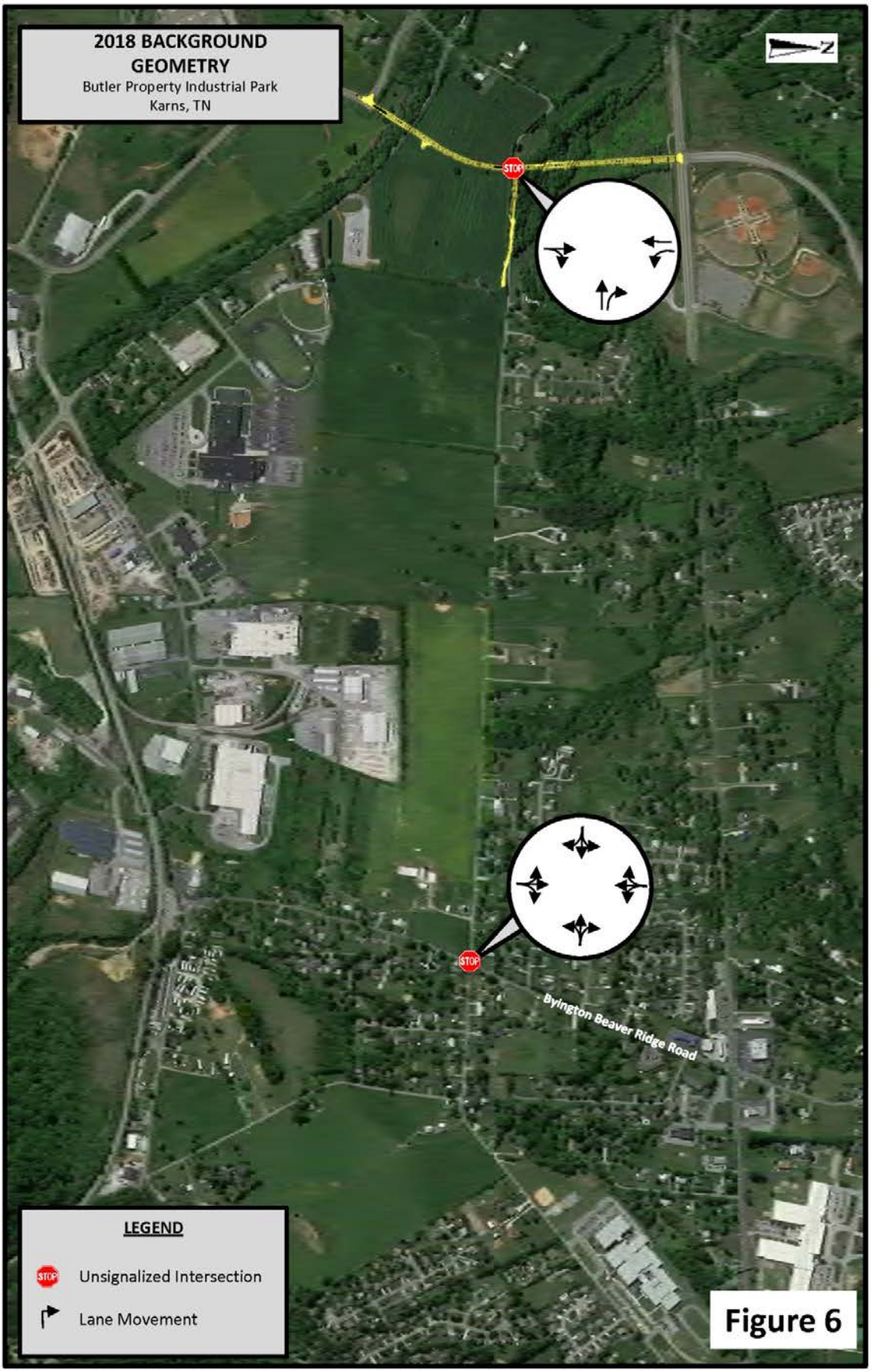
The count history available through the TDOT count station located on S.R. 131 south of the site suggests a 1.5-percent annual growth rate between 2002 and 2012. Another study in the vicinity of this site utilized a 2-percent growth rate. Therefore, for study purposes, an annual growth rate of 2-percent was assumed.

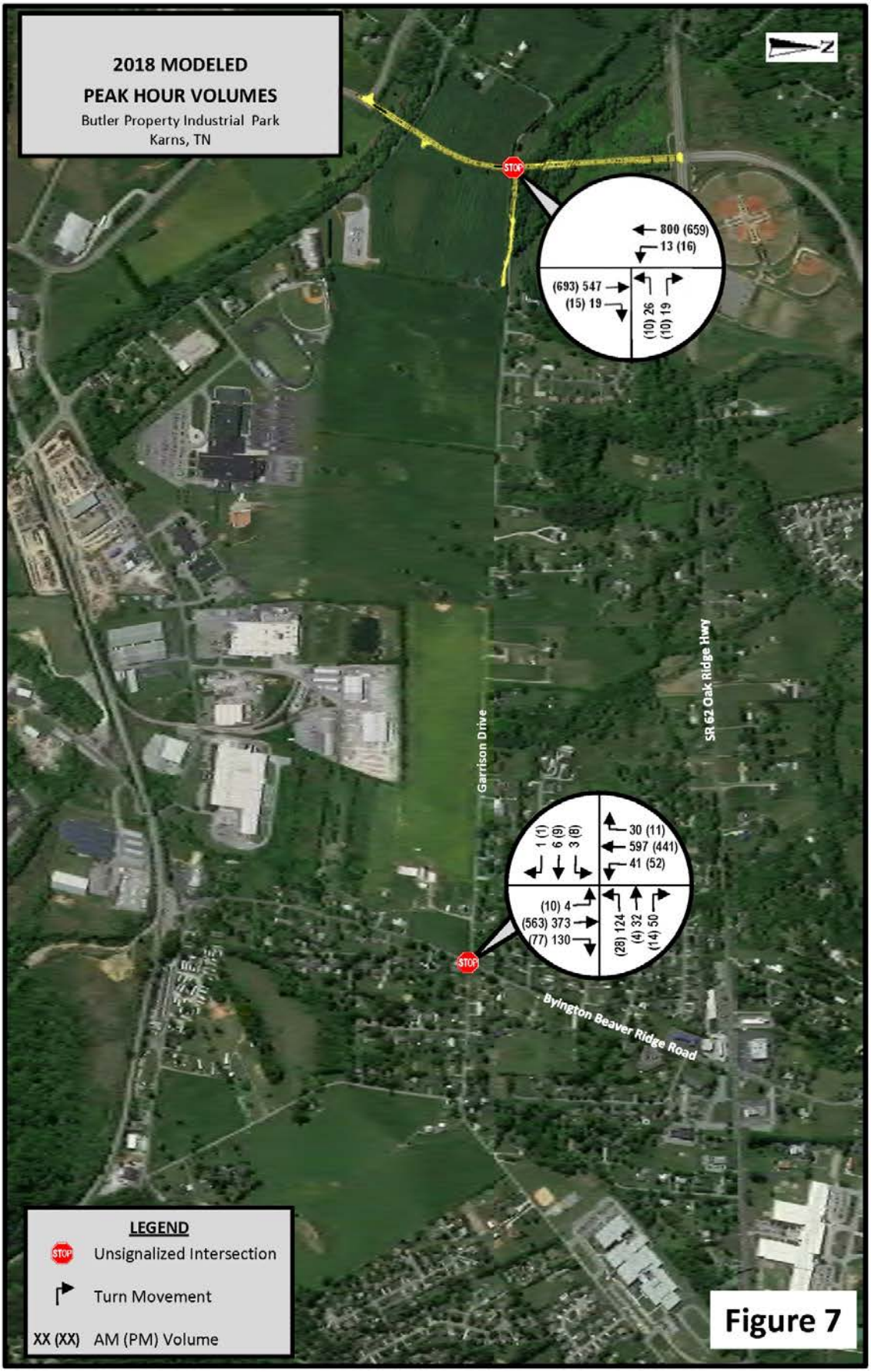
The completion of the industrial development is assumed for 2018. This actual build out of the development will depend on economic and market conditions, but should be acceptable for this study. Using the horizon years of 2018, the growth rate for the project vicinity, background traffic may be estimated for the transportation system. An annual growth rate of 2-percent results in a growth factor of 1.10 for 2018.

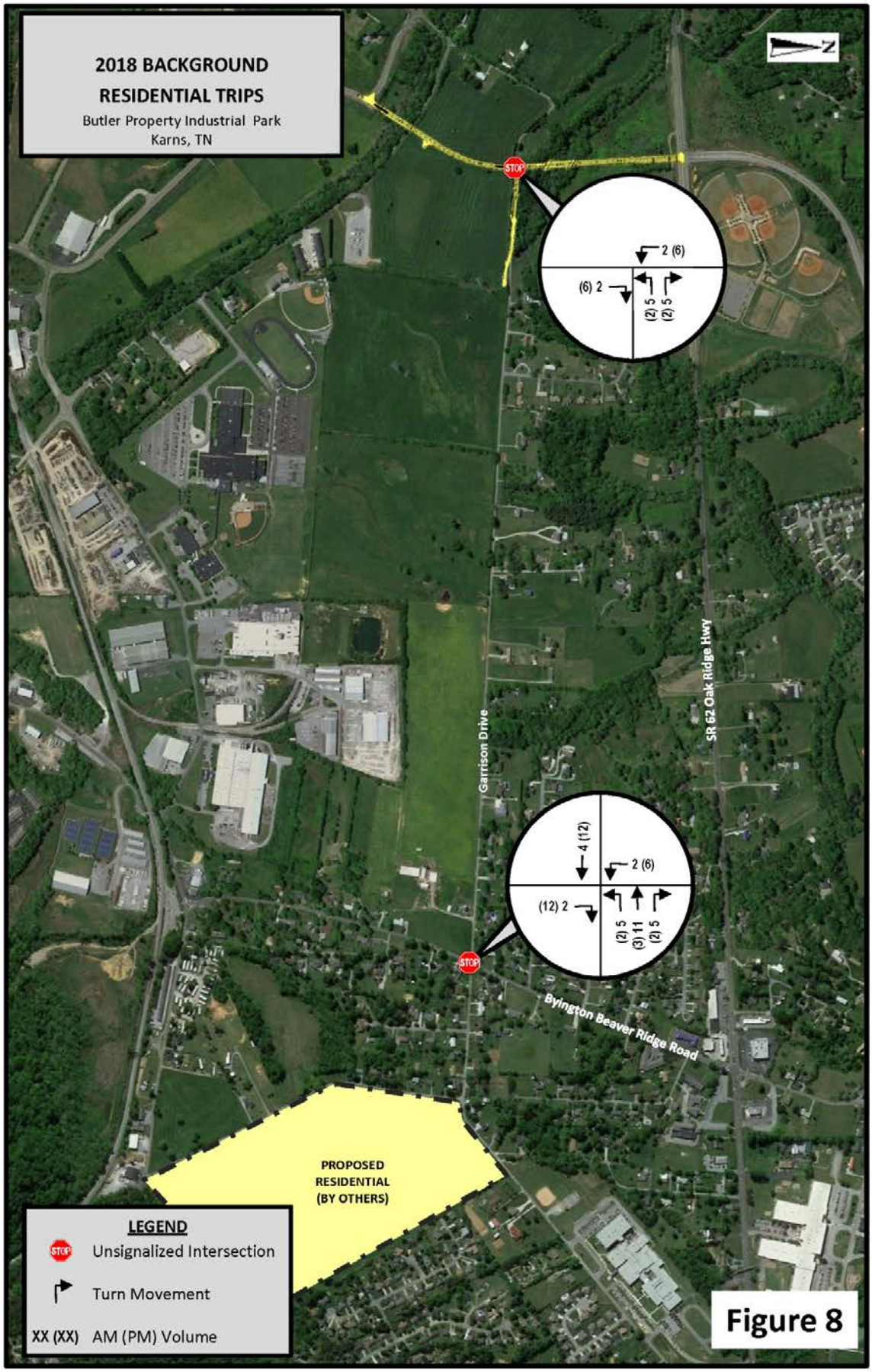
Traffic was developed for the Karns Valley Connector and Garrison Drive intersection using the MPO Travel Demand Model's 2014 traffic for the Karns Valley Connector and the intersection count conducted for Garrison Drive at Byington Beaver Ridge Road. The 2014 modeled average daily traffic for the Karns Valley Connector is 14,650 north of Garrison Drive and 14,350 to the south. Base 2018 traffic is illustrated in **Figure 7**.

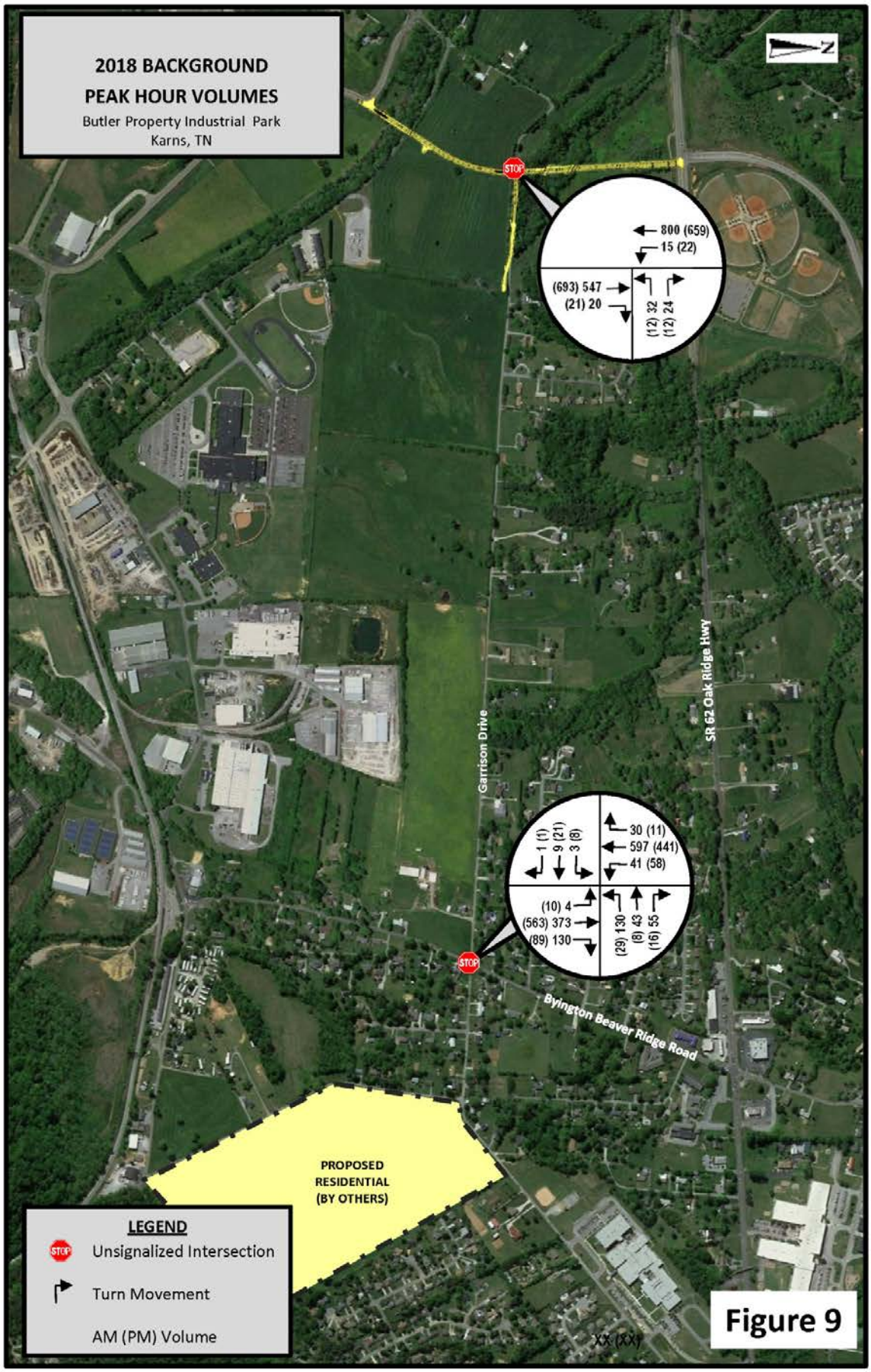
Also included in the background traffic is a planned 189 single-family unit residential subdivision, located in the southeast corner of Garrison Drive at Gray Hendrix Road. This planned development was identified by MPC for inclusion in the study. These trips were distributed to the study intersections and the site access. **Figure 8** illustrates the assignment of these trips.

**Figures 9** illustrates the total 2018 background peak-hour traffic.


2018 BACKGROUND GEOMETRY
Butler Property Industrial Park
Karns, TN
N
STOP
STOP
Byington Beaver Ridge Road
LEGEND
Unsignalized Intersection
Lane Movement
Figure 6


2018 MODELED
PEAK HOUR VOLUMES
Butler Property Industrial Park
Karns, TN
N
STOP
800 (659)
13 (16)
(693) 547
(15) 19
(10) 26
(10) 19
Garrison Drive
SR 62 Oak Ridge Hwy
1 (1)
6 (9)
3 (8)
30 (11)
597 (441)
41 (52)
(10) 4
(563) 373
(77) 130
(28) 124
(4) 32
(14) 50
STOP
Byington Beaver Ridge Road
LEGEND
STOP Unsignalized Intersection
Turn Movement
XX (XX) AM (PM) Volume
Figure 7


2018 BACKGROUND
RESIDENTIAL TRIPS
Butler Property Industrial Park
Karns, TN
N
STOP
2 (6)
(6) 2
(2) 5
(2) 5
Garrison Drive
SR 62 Oak Ridge Hwy
4 (12)
2 (6)
(12) 2
(2) 5
(3) 11
(2) 5
STOP
Byington Beaver Ridge Road
PROPOSED
RESIDENTIAL
(BY OTHERS)
LEGEND
Unsignalized Intersection
Turn Movement
XX (XX) AM (PM) Volume
Figure 8


2018 BACKGROUND
PEAK HOUR VOLUMES
Butler Property Industrial Park
Karns, TN
N
STOP
800 (659)
15 (22)
(693) 547
(21) 20
(12) 32
(12) 24
Garrison Drive
SR 62 Oak Ridge Hwy
1 (1)
9 (21)
3 (8)
30 (11)
597 (441)
41 (58)
(10) 4
(563) 373
(89) 130
(29) 130
(8) 43
(16) 55
STOP
Byington Beaver Ridge Road
PROPOSED
RESIDENTIAL
(BY OTHERS)
LEGEND
Unsignalized Intersection
Turn Movement
AM (PM) Volume
XX (XX)
Figure 9

**Background Capacity and Level of Service**

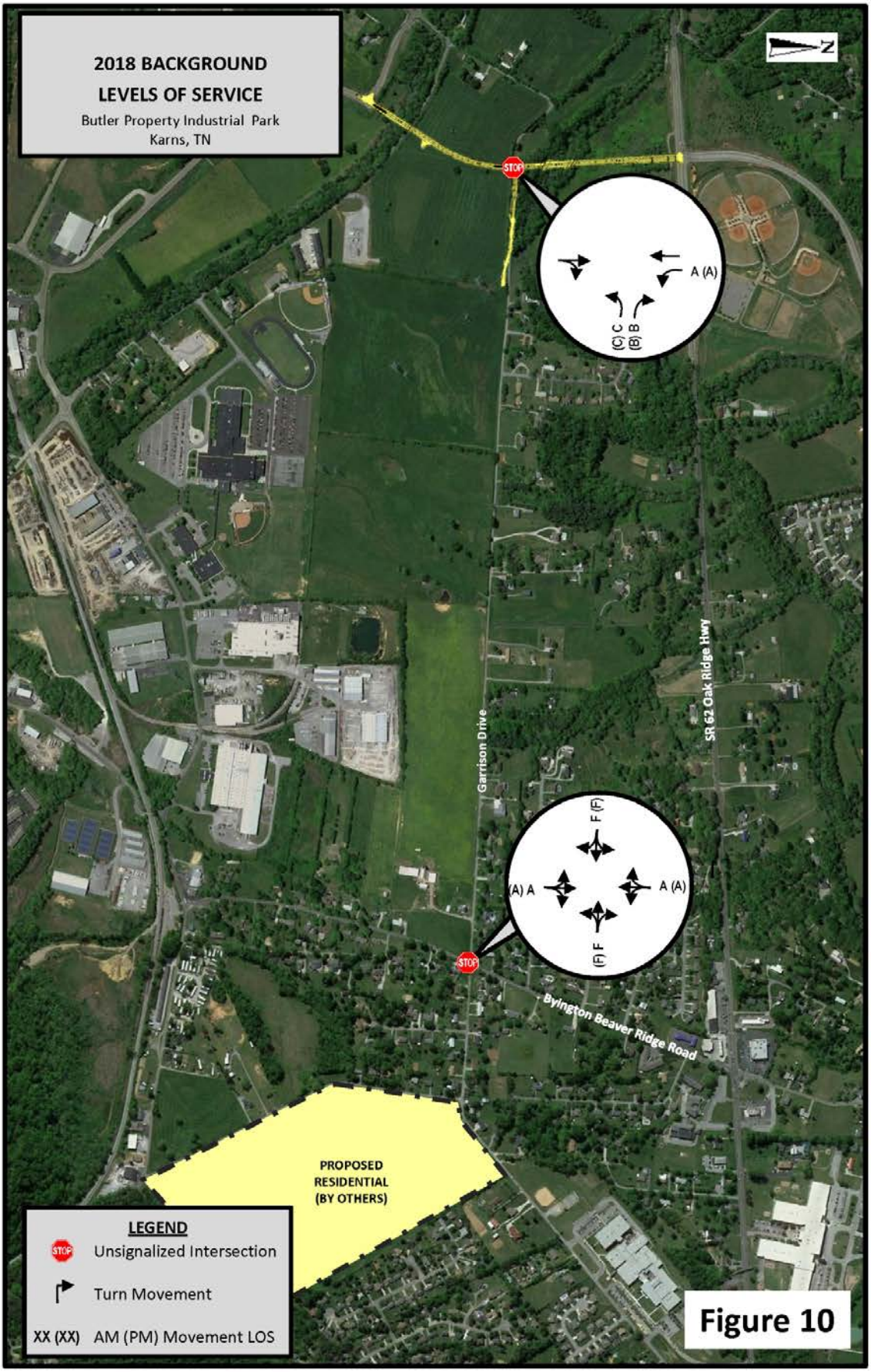
The study intersections of Garrison Drive at Byington Beaver Ridge Road and the planned Karns Valley Connector were analyzed and identified to operate at acceptable levels of service for the years of 2018. Analyses conducted for future projections use many defaults of the HCM due to the unknown conditions. **Table 4** presents the intersection 2018 background LOS summary. **Figure 10** illustrates the roadway geometrics, traffic control, and LOS by lane group for 2018.

**Table 4**
**2018 Background**
**Capacity and Levels of Service**

| INTERSECTION | TRAFFIC CONTROL | PEAK PERIOD | V/C | DELAY | LOS |
|---|---|---|---|---|---|
| **Karns Valley Connector at Garrison Drive** | **STOP WBL/WBR** | **AM** | **0.05 / 0.03** | **19.3 / 14.2** | **C / B** |
| | | **PM** | **0.13 / 0.05** | **20.6 / 12.6** | **C / B** |
| **Byington Beaver Ridge Road at Garrison Drive** | **STOP EB/WB** | **AM** | **0.41 / 0.77** | **55.5 / 88.6** | **F / F** |
| | | **PM** | **0.22 / 2.23** | **51.0 / >500.0** | **F / F** |
| *INSTALL SIGNAL* | *SIGNAL MITIGATION* | *AM* | *0.76* | *14.8* | *B* |
| | | *PM* | *0.57* | *6.1* | *A* |

**Note: Average vehicle delay estimated in seconds. STOP control analyses conducted in HCM 2010 TWSC methodology are presented by total minor approaches.**

The Karns Connector at Garrison Drive intersection should operate at a very good level of service. At the intersection of Byington Beaver Ridge Road and Garrison Drive, the eastbound and westbound approaches will operate at a LOS F. Signalization of Garrison Drive at Byington Beaver Ridge Road provides for a very good LOS.


2018 BACKGROUND
LEVELS OF SERVICE
Butler Property Industrial Park
Karns, TN
N
STOP
A (A)
(C) C
(B) B
Garrison Drive
SR 62 Oak Ridge Hwy
F (F)
(A) A
A (A)
(F) F
STOP
Bylington Beaver Ridge Road
PROPOSED
RESIDENTIAL
(BY OTHERS)
LEGEND
STOP Unsignalized Intersection
Turn Movement
XX (XX) AM (PM) Movement LOS
Figure 10

# PROJECT IMPACTS

## Trip Generation

Project traffic was determined using the publication, **Trip Generation, 8th Edition**. This reference is published by the Institute of Transportation Engineers (ITE) and represents national data collected for many different land uses including industrial, residential, and commercial uses. **Trip Generation** is an essential tool in calculating the traffic, which may be generated by a proposed development.

The light industrial land use was assumed for this development, for it was found more conservative than other possible uses including an industrial park use. Trips generated for 855,000 square feet of light industrial space were found to be 3,290 daily trips, 680 AM peak hour trips, and 650 PM peak hour trips. The manufacturing land use (LUC 140) seems most appropriate with the employment goal of approximately 580 established for the site and is the use that best identifies the use described by the Development Corporation. **Table 5** presents the trip generation for the proposed site.

**Table 5**
**TRIP GENERATION**

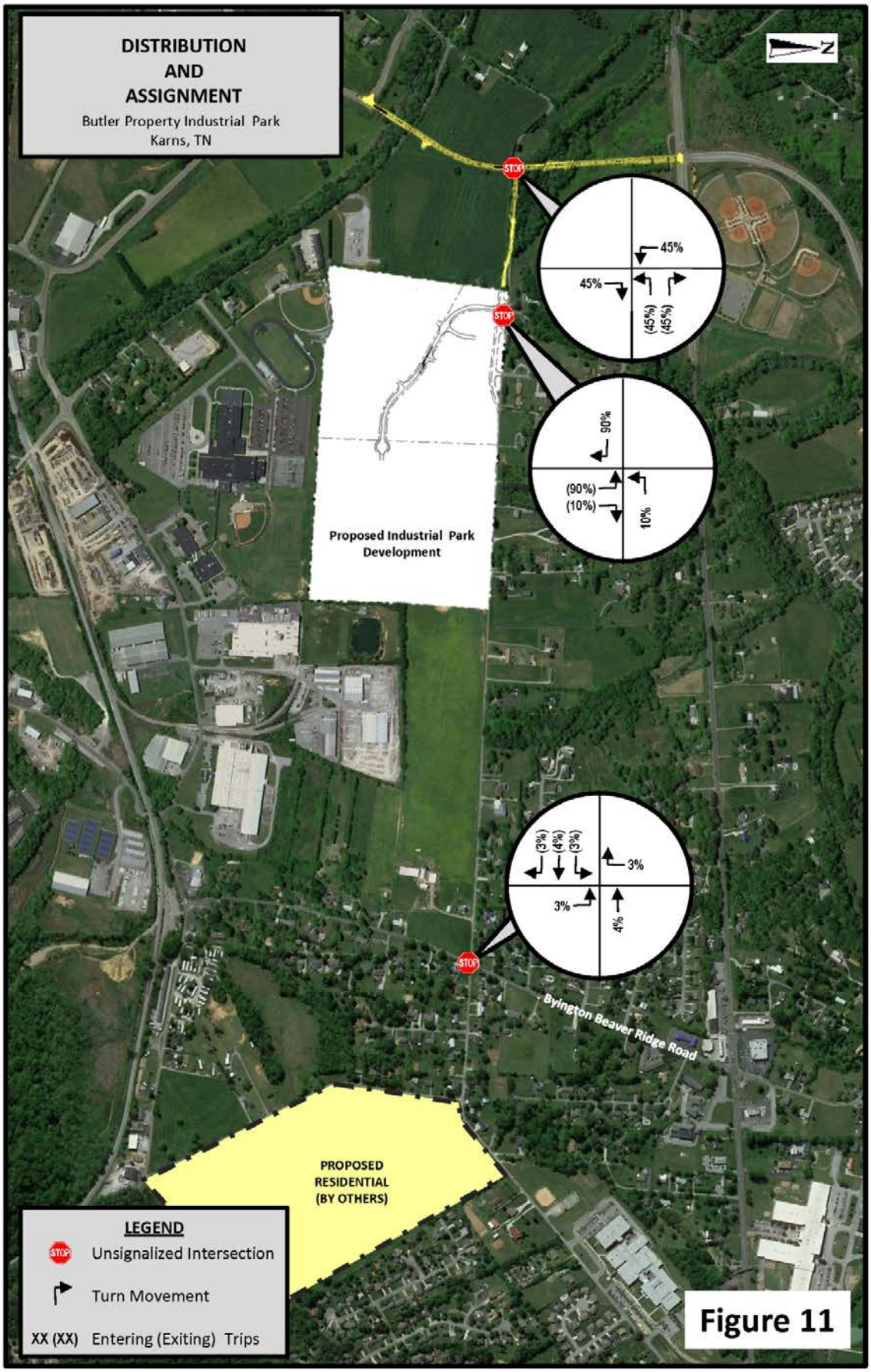
| Land Use | Land-Use Code | Density | Daily Trips | AM Peak-Hour Trips | | PM Peak-Hour Trips | |
|---|---|---|---|---|---|---|---|
| | | | | Enter | Exit | Enter | Exit |
| Manufacturing | 140 | 855,000 sqft | 3,297 | 524 | 156 | 234 | 417 |

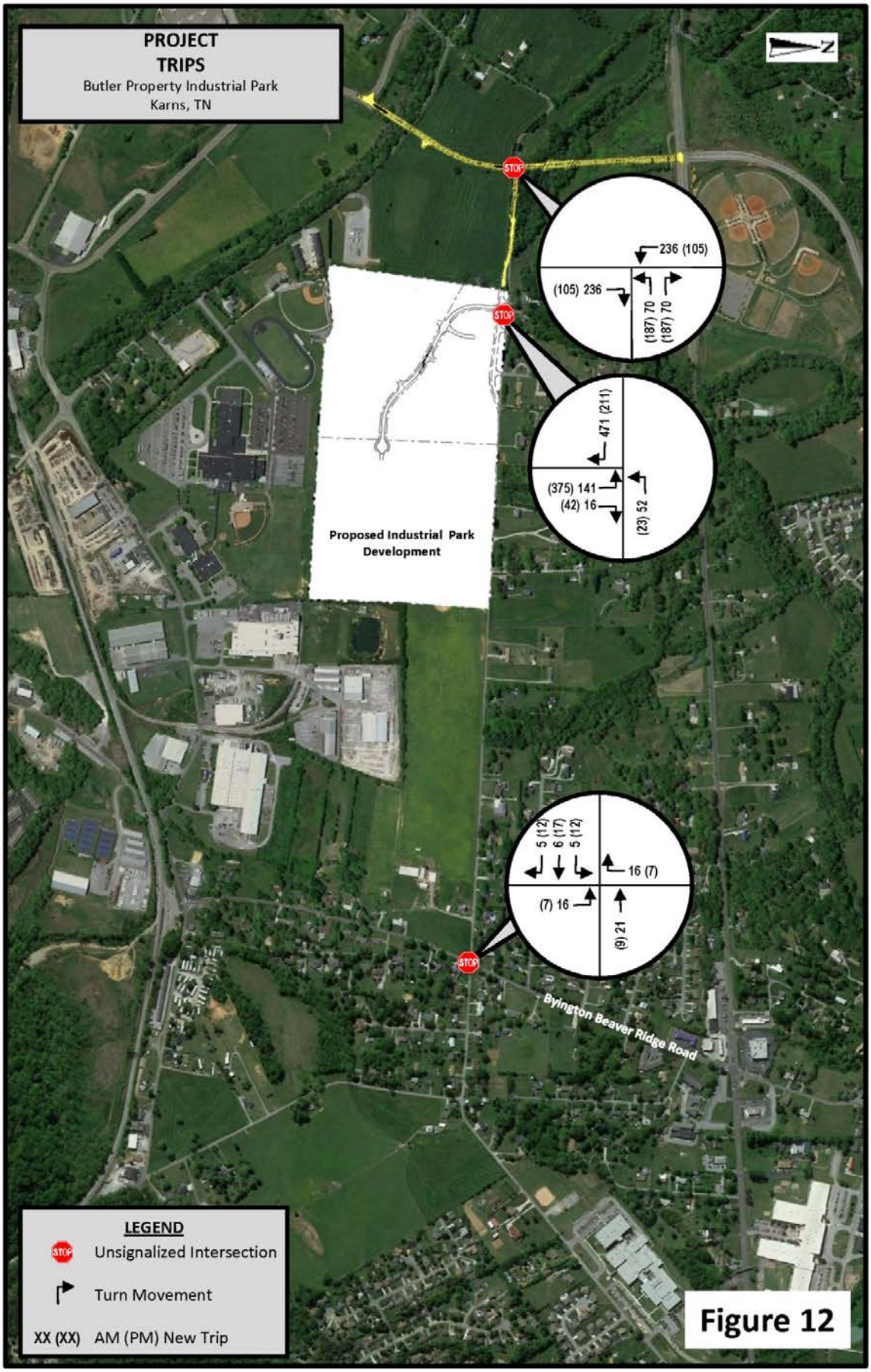
**Reference: Trip Generation, 8th Edition**

A low density residential use of this property as identified with the MPC land use plan would permit approximately 280 single-family units. The trip generation for a 280sfu residential development is approximately 2,680 daily and 265 peak-hour trips using **Trip Generation, 8th Edition** Land Use Code 210.

## Trip Distribution And Assignment

The distribution and assignment was assumed based on the existing traffic patterns on the major street network. Traffic access to the site assumes a distribution of 90-percent to the west and the planned Karns Valley Connector and a conservative 10-percent to and from the east using Garrison Drive. **Figure 11** illustrates the trip distribution for the site. **Figure 12** illustrates the proposed project trips.


DISTRIBUTION
AND
ASSIGNMENT
Butler Property Industrial Park
Karns, TN
N
STOP
45%
45%
(45%)
(45%)
90%
(90%)
(10%)
10%
Proposed Industrial Park
Development
(3%)
(4%)
(3%)
3%
3%
4%
Bylington Beaver Ridge Road
PROPOSED
RESIDENTIAL
(BY OTHERS)
LEGEND
Unsignalized Intersection
Turn Movement
XX (XX) Entering (Exiting) Trips
Figure 11


PROJECT
TRIPS
Butler Property Industrial Park
Karns, TN
STOP
STOP
STOP
236 (105)
(105) 236
(187) 70
(187) 70
471 (211)
(375) 141
(42) 16
(23) 52
Proposed Industrial Park Development
5 (12)
6 (17)
5 (12)
16 (7)
(7) 16
(9) 21
Bylington Beaver Ridge Road
LEGEND
Unsignalized Intersection
Turn Movement
XX (XX) AM (PM) New Trip
Figure 12

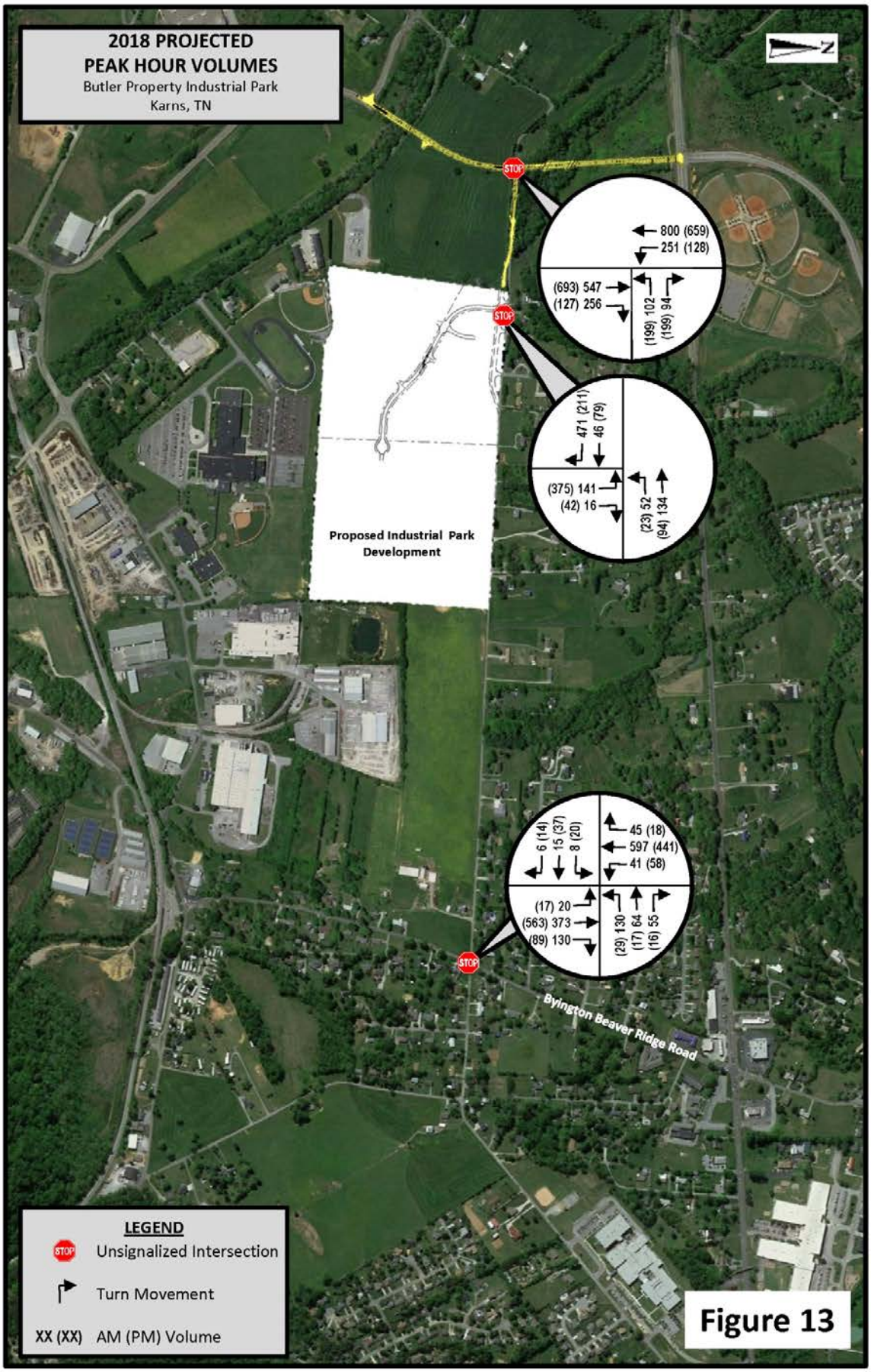

2018 PROJECTED
PEAK HOUR VOLUMES
Butler Property Industrial Park
Karns, TN
N
STOP
STOP
STOP
800 (659)
251 (128)
(693) 547
(127) 256
(199) 102
(199) 94
471 (211)
46 (79)
(375) 141
(42) 16
(23) 52
(94) 134
Proposed Industrial Park Development
6 (14)
15 (37)
8 (20)
45 (18)
597 (441)
41 (58)
(17) 20
(563) 373
(89) 130
(29) 130
(17) 64
(16) 55
Byington Beaver Ridge Road
LEGEND
Unsignalized Intersection
Turn Movement
XX (XX) AM (PM) Volume

Figure 13

## Projected Traffic Volumes

The addition of project trips to background traffic produces the total 2018 projected traffic volumes. **Figure 13** illustrates the projected traffic for study horizon year. The projected intersection volumes are used to analyze the intersection's future capacity and LOS. From the analyses and the projected traffic, measures are developed to facilitate the necessary access to and from the site. With a 2018 projected 1,111 daily traffic for Garrison Drive, the proposed development reflects approximately 30-percent of the traffic, representing a maximum impact given good access to Karns Valley Connector.

## Traffic Signal Warrant Evaluation

For the Garrison Drive intersection with Karns Valley Connector, an evaluation for traffic control signals was conducted for the 2018 traffic conditions. Analyses were conducted for speeds below and excess of 40mph. With a posted speed limit of 40mph or prevailing speed not exceeding 40mph for the planned Karns Valley Connector, signal warrants were evaluated with the projected 2018 traffic. The intersection was found to nearly warrant signalization with the Interruption to Continuous Traffic Flow (Warrant 1B).

Assuming a prevailing speed exceeding 40mph, the signal warrant analysis found that the projected traffic for the intersection of Garrison Drive and the Karns Valley Connector would fully satisfy the Interruption (Warrant 1B), Four-Hour (Warrant 2), and the Peak-Hour (Warrant 3B) warrants.

The following table summarizes the warrant analysis. Warrants should be met at 50-percent of the projected build out of the site.

Karns Valley Connector & Garrison Drive

| | | **40mph** | **>40mph** |
|---|---|---|---|
| Warrant 1A | Minimum Volume | 2 (0) hours | 4 (0) hours |
| Warrant 1B | Interruption to Continuous Traffic Flow | 6 (3) hours | 9 (1) hours |
| Warrant 1C | Combination of Parts A & B | 2 hours | 5 hours |
| Warrant 2 | Four Hour | 2 (0) hours | 9 (0) hours |
| Warrant 3B | Peak-hour Volume | 4 (0) hours | 4 (0) hours |

(X) denotes hours which the volume threshold is more than 90% satisfies

## Projected Capacity and Level of Service

Traffic is analyzed with the proposed development to again determine the capacity and LOS for the site access. **Table 6** presents the results of these analyses. **Table 7** presents the summary of all the capacity and LOS analyses. **Figures 14 and 15** illustrate the intersection geometrics, traffic control, and the levels of service for the intersection lane groups for the 2018.

**Table 6**
**2018 Projected**
**Capacity and Levels of Service**

| INTERSECTION | TRAFFIC CONTROL | PEAK PERIOD | V/C | DELAY | LOS |
|---|---|---|---|---|---|
| **Karns Valley Connector** | **STOP** | **AM** | **0.99 / 0.24** | **154.6 / 16.3** | **F / C** |
| **at Garrison Drive** | **WBL/WBR** | **PM** | **1.14 / 0.58** | **158.4 / 27.0** | **F / D** |
| *INSTALL SIGNAL* | *SIGNAL* | *AM* | *0.69* | *10.2* | *B* |
| | *MITIGATION* | *PM* | *0.75* | *13.8* | *B* |
| **Byington Beaver Ridge Road** | **STOP** | **AM** | **0.00 / 3.80** | **0.0 / >500.0** | **- / F** |
| **at Garrison Drive** | **EB/WB** | **PM** | **1.06 / 1.29** | **158.6 / 269.3** | **F / F** |
| *INSTALL SIGNAL* | *SIGNAL* | *AM* | *0.90* | *27.6* | *C* |
| | *MITIGATION* | *PM* | *0.58* | *8.8* | *A* |
| **Site Access** | **STOP** | **AM** | **0.36** | **16.8** | **C** |
| **at Garrison Drive** | **NB** | **PM** | **0.70** | **22.5** | **C** |
| *REALIGN GARRISON DR.* | *STOP* | *AM* | *0.33* | *13.6* | *B* |
| | *MITIGATION* | *PM* | *0.24* | *14.1* | *B* |

**Note: Average vehicle delay estimated in seconds. STOP control analyses conducted in HCM 2010 TWSC methodology are presented by total minor approaches.**

With the manufacturing development build-out of the Butler property, the site access to Garrison Drive will operate at a LOS C with a STOP control intersection traffic control. The intersection of Karns Valley Connector and Garrison Drive, at buildout of the site will fail as an unsignalized intersection, STOP controlled for the Garrison Drive approach. Karns Valley Connector and Garrison Drive, and Byington Beaver Ridge Road and Garrison Drive, these intersections can operate at a minimum LOS C during the peak hours.

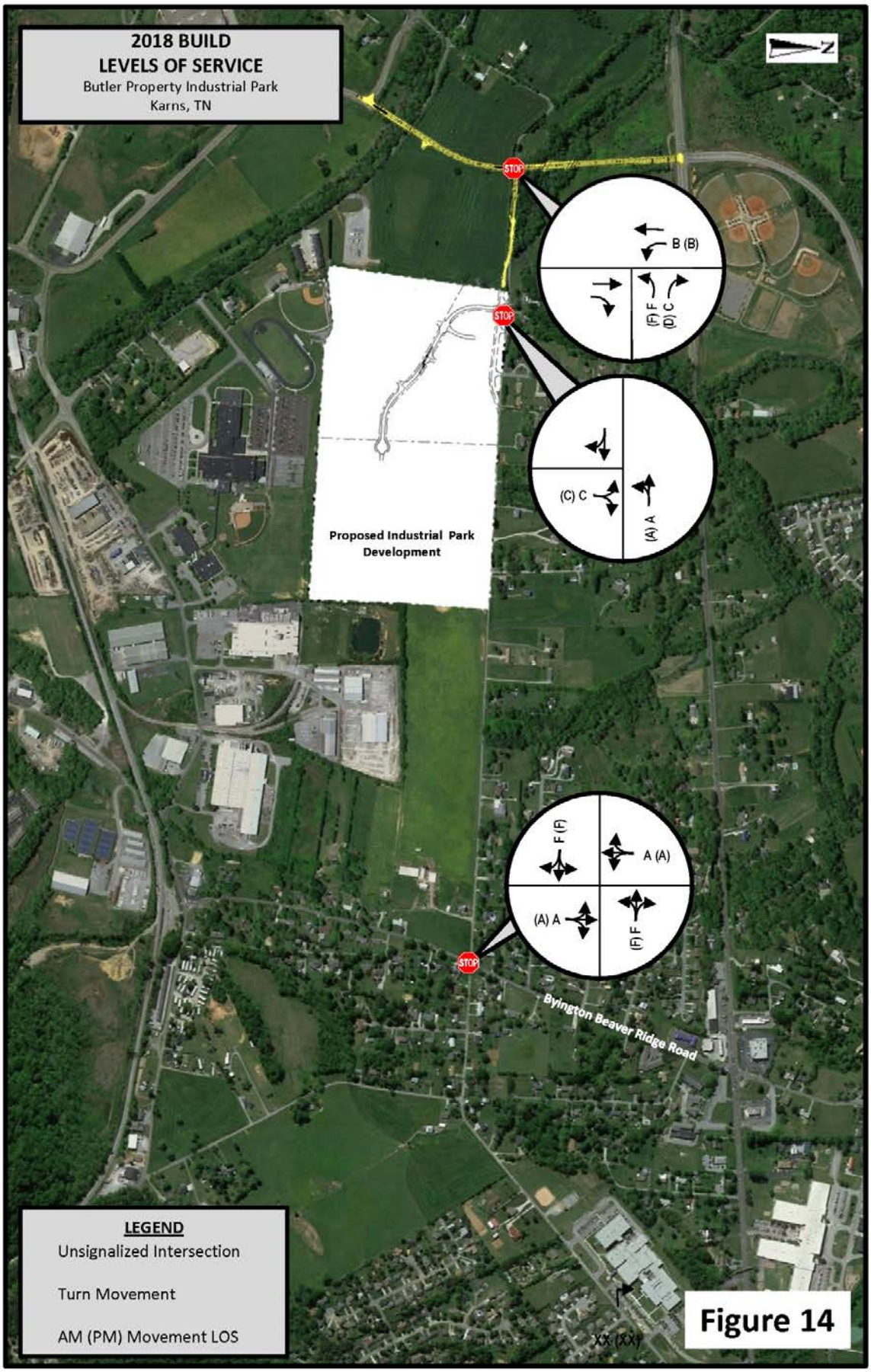

2018 BUILD
LEVELS OF SERVICE
Butler Property Industrial Park
Karns, TN
N
STOP
STOP
STOP
B (B)
(F) F
(D) C
(C) C
(A) A
Proposed Industrial Park Development
F (F)
A (A)
(A) A
(F) F
Byington Beaver Ridge Road
LEGEND
Unsignalized Intersection
Turn Movement
AM (PM) Movement LOS
XX (XX)

Figure 14

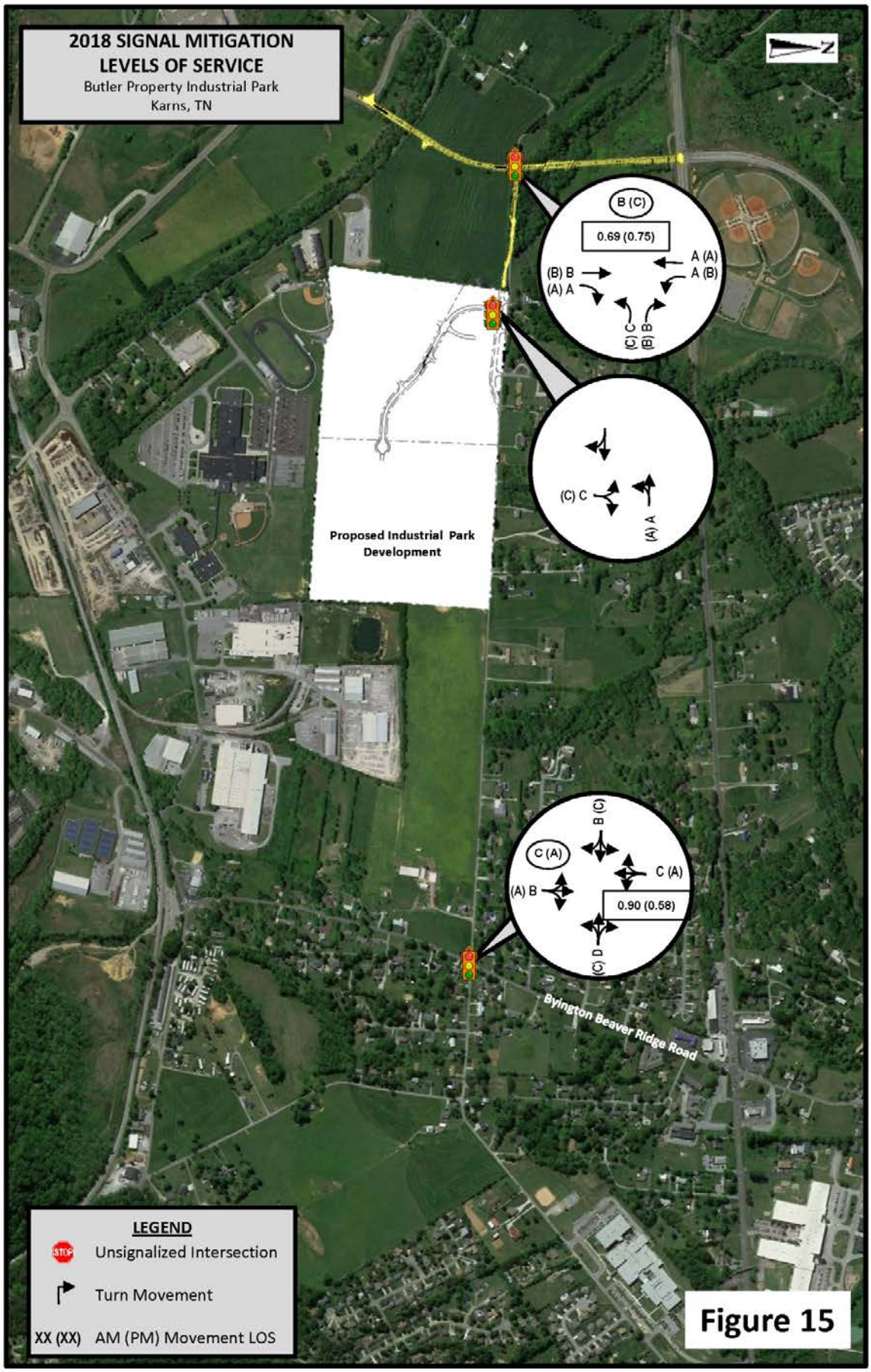

2018 SIGNAL MITIGATION
LEVELS OF SERVICE
Butler Property Industrial Park
Karns, TN
B (C)
0.69 (0.75)
A (A)
A (B)
(B) B
(A) A
(C) C
(B) B
(C) C
(A) A
Proposed Industrial Park Development
B (C)
C (A)
C (A)
(A) B
0.90 (0.58)
(C) D
Byington Beaver Ridge Road
LEGEND
Unsignalized Intersection
Turn Movement
XX (XX) AM (PM) Movement LOS

Figure 15

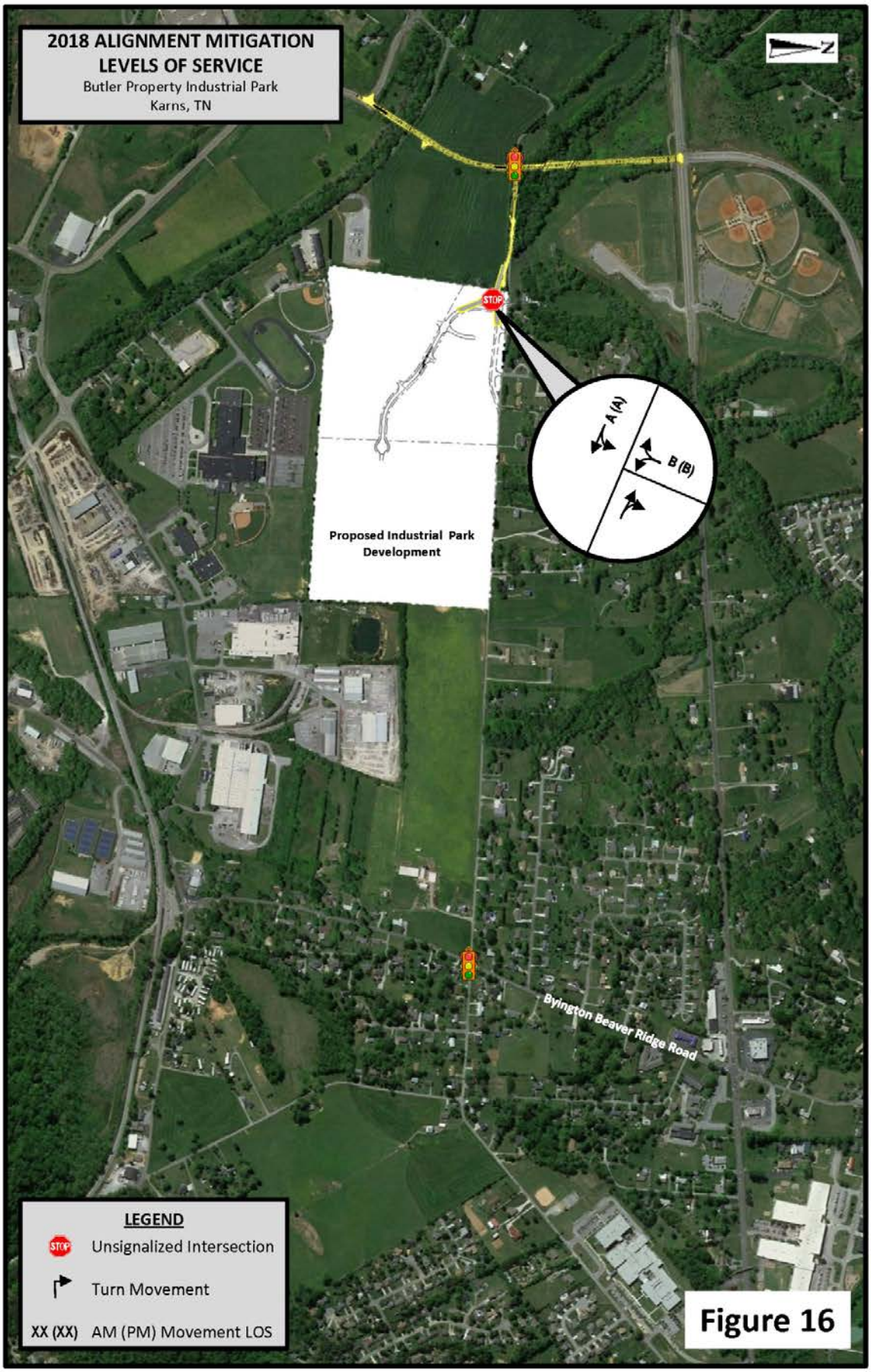
## Table 7
## SUMMARY OF
## CAPACITY AND LEVEL OF SERVICE

| INTERSECTION | TRAFFIC CONTROL | PEAK PERIOD | 2013 TRAFFIC V/C | 2013 TRAFFIC DELAY | 2013 TRAFFIC LOS | 2018 NO BUILD V/C | 2018 NO BUILD DELAY | 2018 NO BUILD LOS | 2018 BUILD V/C | 2018 BUILD DELAY | 2018 BUILD LOS |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Karns Valley Connector** | **STOP** | **AM** | | | | **0.05 / 0.03** | **19.3 / 14.2** | **C / B** | **0.99 / 0.24** | **154.6 / 16.3** | **F / C** |
| **at Garrison Drive** | **WBL/WBR** | **PM** | | | | **0.13 / 0.05** | **20.6 / 12.6** | **C / B** | **1.14 / 0.58** | **158.4 / 27.0** | **F / D** |
| *INSTALL SIGNAL* | *SIGNAL* | *AM* | | | | *0.56* | *4.5* | *A* | *0.69* | *10.2* | *B* |
| | *MITIGATION* | *PM* | | | | *0.50* | *2.8* | *A* | *0.75* | *13.8* | *B* |
| **Byington Beaver Ridge Road** | **STOP** | **AM** | **0.11 / 1.43** | **33.8 / 278.9** | **D / F** | **0.41 / 0.77** | **55.5 / 88.6** | **F / F** | **0.00 / 3.80** | **0.0 / >500.0** | **- / F** |
| **at Garrison Drive** | **EB/WB** | **PM** | **0.18 / 0.43** | **32.6 / 37.2** | **D / E** | **0.22 / 2.23** | **51.0 / >500.0** | **F / F** | **1.06 / 1.29** | **158.6 / 269.3** | **F / F** |
| *INSTALL SIGNAL* | *SIGNAL* | *AM* | *0.69* | *10.3* | *B* | *0.76* | *14.8* | *B* | *0.90* | *27.6* | *C* |
| | *MITIGATION* | *PM* | *0.49* | *5.6* | *A* | *0.57* | *6.1* | *A* | *0.58* | *8.8* | *A* |
| **Site Access** | **STOP** | **AM** | | | | | | | **0.36** | **16.8** | **C** |
| **at Garrison Drive** | **NB** | **PM** | | | | | | | **0.70** | **22.5** | **C** |
| *REALIGN GARRISON DR.* | *STOP* | *AM* | | | | | | | *0.33* | *13.6* | *B* |
| | *MITIGATION* | *PM* | | | | | | | *0.24* | *14.1* | *B* |

**Note: Average vehicle delay estimated in seconds. STOP control analyses conducted in HCM 2010 TWSC methodology are presented by total minor approaches.**

With the primary movement between Garrison Drive and the industrial access road, the intersection could be realigned with the through street being between Karns Valley Connector and the industrial access, this the Garrison Drive approach becomes the minor approach. This alignment would facilitate the primary traffic movment. The facilitation of the industrial traffic movement would be more efficient and should deter traffic from Garrison Drive. **Figure 16** illustrates the level of service with this intersection realignment.

The westbound approach to Karns Valley Connector may experience some queuing during the PM peak hour. To more effectively manage the queues for the westbound approach, separate left- and right-turn lanes should be provided of sufficient storage to efficiently distribute the turning traffic and permit right-turning access to the intersection.


2018 ALIGNMENT MITIGATION
LEVELS OF SERVICE
Butler Property Industrial Park
Karns, TN
N
STOP
A (A)
B (B)
Proposed Industrial Park
Development
Bylington Beaver Ridge Road
LEGEND
STOP Unsignalized Intersection
Turn Movement
XX (XX) AM (PM) Movement LOS
Figure 16

# RECOMMENDED IMPROVEMENTS

The projected traffic volumes, analyses conducted, and Knox County policies identified the following improvements necessary for the maintenance of an acceptable LOS during the peak hours:

1. Provide minimum 375-foot left- and right-turn lanes for the westbound approach to the Karns Valley Connector.

2. Provide a minimum 350-foot left-turn lane for the southbound movement from Karns Valley Connector to Garrison Drive.

3. Provide a minimum 250-foot right-turn lane for the northbound movement from Karns Valley Connector to Garrison Drive.

4. Signalize the intersection of Byington Beaver Ridge Road and Garrison Drive for the mitigation of existing conditions.

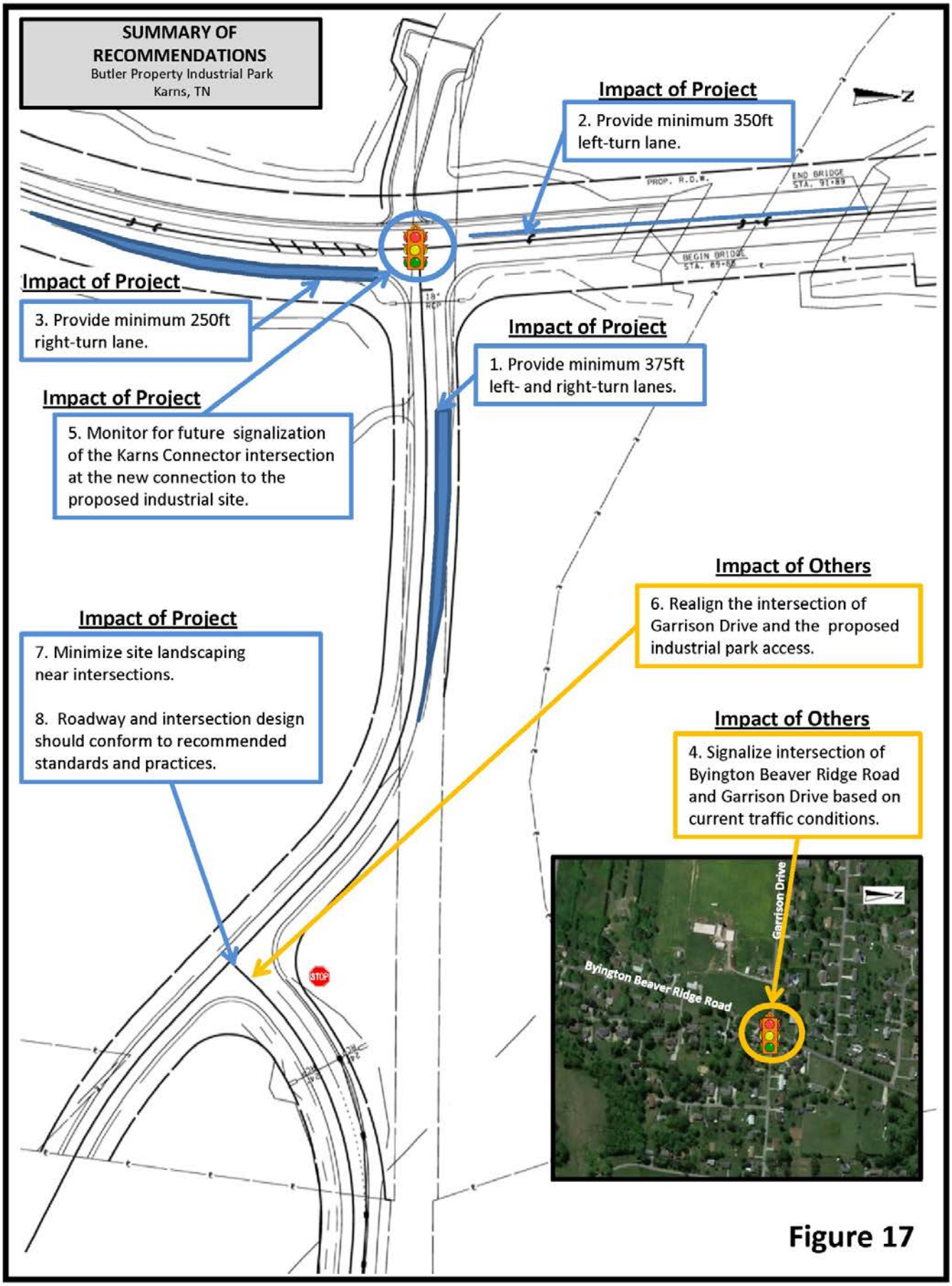
5. Monitor the intersection of Karns Valley Connector and Garrison Drive for signalization. Install a traffic signal when warrant can be satisfied and provide for right-turn overlaps to and from Garrison Drive.

6. Realign the intersection of Garrison Drive and the industrial access assigning the right of way to the industrial development.

7. Minimize landscaping, using low growing vegetation and signing at the planned accesses to insure that safe sight-distance is maintained.

8. Roadway and intersection design should conform to the recommended standards and practices adopted by the Institute of Transportation Engineers (ITE), American Association of State and Highway Officials (AASHTO), and Knox County.

A summary of recommendations are provided in **Figure 17**. The blue color represents improvements identified due to the proposed project impacts and the orange color represents improvements identified due to impacts of others.


SUMMARY OF RECOMMENDATIONS
Butler Property Industrial Park
Karns, TN
Impact of Project
2. Provide minimum 350ft left-turn lane.
Impact of Project
3. Provide minimum 250ft right-turn lane.
Impact of Project
1. Provide minimum 375ft left- and right-turn lanes.
Impact of Project
5. Monitor for future signalization of the Karns Connector intersection at the new connection to the proposed industrial site.
Impact of Others
6. Realign the intersection of Garrison Drive and the proposed industrial park access.
Impact of Project
7. Minimize site landscaping near intersections.
8. Roadway and intersection design should conform to recommended standards and practices.
Impact of Others
4. Signalize intersection of Byington Beaver Ridge Road and Garrison Drive based on current traffic conditions.
Garrison Drive
Byington Beaver Ridge Road
STOP
Figure 17

# CONCLUSION

The proposed development is an industrial park development, located in Karns, northwest Knox County, Tennessee. The study included traffic counts and projected traffic with and without the proposed development. Background traffic, traffic that may be anticipated regardless of the proposed development, was determined using a 2-percent annual growth rate until the assumed build-out year of 2018.

The manufacturing land use was assumed for this development, for it more reflected the goal employment of 580 and the uses identified by the Development Corporation. Trips generated for 855,000 square feet of light industrial space were found to be 3,300 daily trips, 680 AM peak hour trips, and 650 PM peak hour trips. A conservative 10-percent of the trips were also assigned to Garrison Drive.

Using the identified turning movements for the existing and projected traffic conditions, with and without the proposed development, capacity and level of service analyses were conducted using the **2010 Highway Capacity Manual**. The site access and study intersections were found to operate at acceptable levels of service with the recommended improvements identified in this study.

The intersection of Byington Beaver Ridge Road and Garrison Drive currently meets the Peak Hour signal warrant mitigating a failing level of service. Signalization of the Byington Beaver Ridge Road and Garrison Drive intersection should provide a very good level of service. The industrial site, at build-out, should warrant signalization of the Karns Valley Connector and Garrison Road intersection. With the realignment of the industrial access road and Garrison Drive intersection providing for the primary traffic movement between the Karns Valley Connector and the industrial access would facilitate the primary traffic movement. Teeing Garrison Drive into the industrial access with a STOP control provides for an acceptable level of service and should deter traffic on Garrison Drive. Sufficient storage should be provided for the westbound approach to Karns Valley Connector to minimize delay and queues.

*APPENDIX*

**Trip Generation**
**Traffic Signal Warrant Evaluations**
**Synchro Analysis Reports**
**Traffic Count & Delay Data**

# Land Use: 140
# Manufacturing

## Description

Manufacturing facilities are areas where the primary activity is the conversion of raw materials or parts into finished products. Size and type of activity may vary substantially from one facility to another. In addition to the actual production of goods, manufacturing facilities generally also have office, warehouse, research and associated functions. General light industrial (Land Use 110), general heavy industrial (Land Use 120) and industrial park (Land Use 130) are related uses.

## Additional Data

Average weekday transit trip ends:
— 0.09 per employee
— 0.08 per 1,000 square feet gross floor area
— 1.25 per acre

Vehicle occupancy ranged from 1.2 to 1.3 persons per automobile on an average weekday.

The peak hour of the generator typically coincided with the peak hour of the adjacent street traffic.

Facilities with employees on shift work may peak at other hours.

The sites were surveyed in the late 1960s, the early 1970s, the mid-1980s, the 1990s and the 2000s throughout the United States.

## Source Numbers

3, 7, 10, 15, 17, 74, 85, 88, 177, 184, 241, 357, 384, 418, 443, 583, 598, 611

# Manufacturing
# (140)

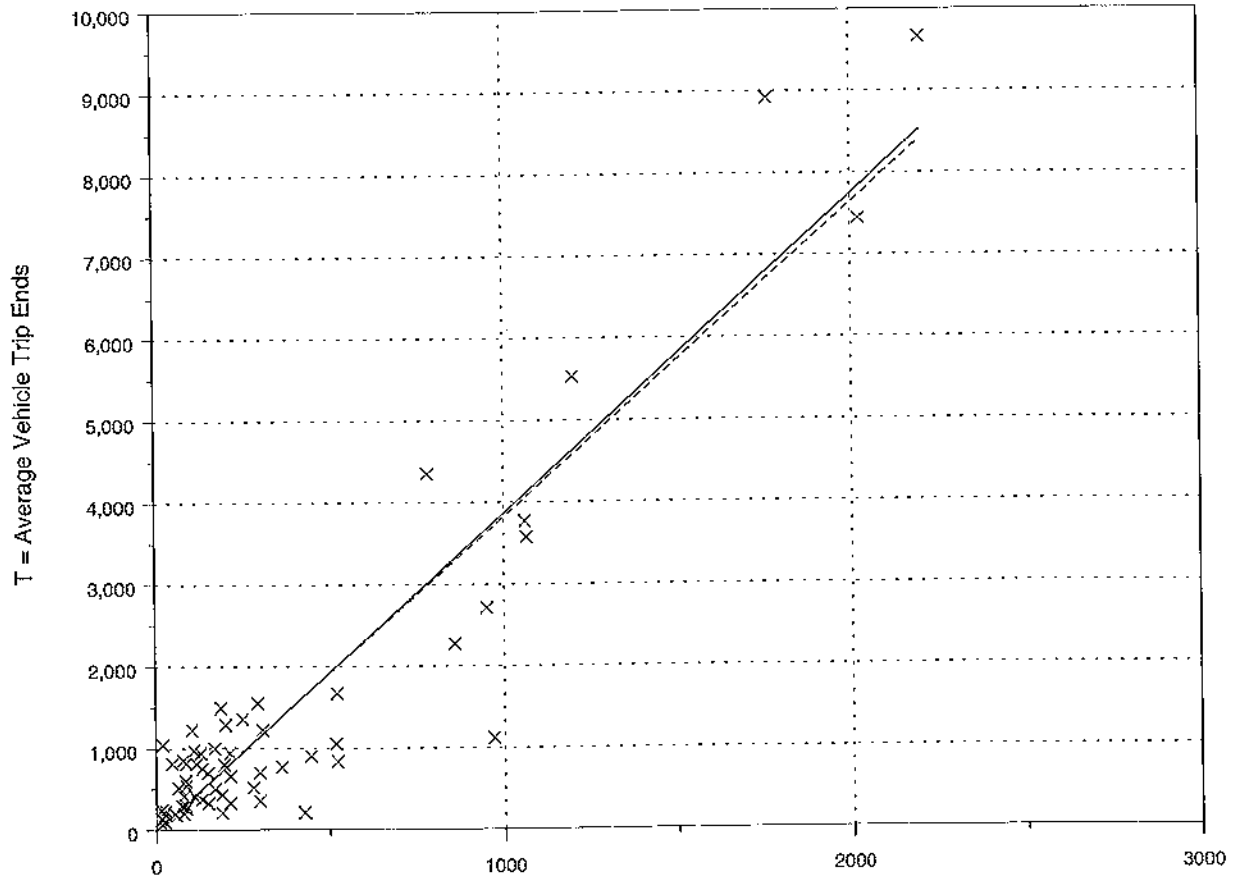
**Average Vehicle Trip Ends vs: 1000 Sq. Feet Gross Floor Area**
**On a: Weekday**

Number of Studies: 62
Average 1000 Sq. Feet GFA: 349
Directional Distribution: 50% entering, 50% exiting

## Trip Generation per 1000 Sq. Feet Gross Floor Area

| Average Rate | Range of Rates | Standard Deviation |
|---|---|---|
| 3.82 | 0.50 - 52.05 | 3.07 |

## Data Plot and Equation




**Fitted Curve Equation: T = 3.88(X) - 20.70**

**$R^2$ = 0.87**

# Manufacturing
(140)

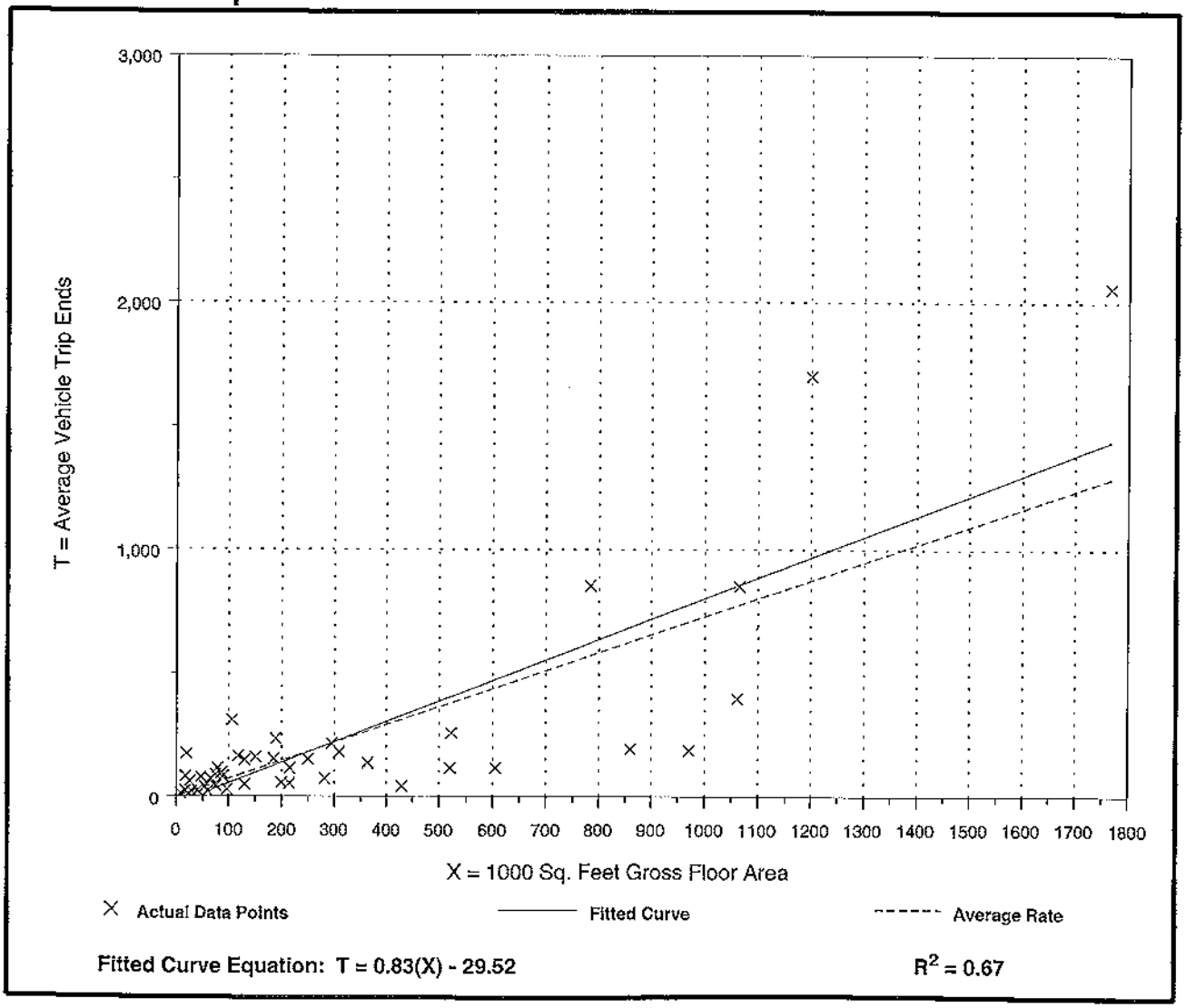
**Average Vehicle Trip Ends vs:** **1000 Sq. Feet Gross Floor Area**
**On a:** **Weekday,**
**Peak Hour of Adjacent Street Traffic,**
**One Hour Between 7 and 9 a.m.**

Number of Studies: 51
Average 1000 Sq. Feet GFA: 293
Directional Distribution: 78% entering, 22% exiting

## Trip Generation per 1000 Sq. Feet Gross Floor Area

| Average Rate | Range of Rates | Standard Deviation |
|---|---|---|
| 0.73 | 0.10 - 8.75 | 1.04 |

## Data Plot and Equation




**Fitted Curve Equation: T = 0.83(X) - 29.52**

**$R^2$ = 0.67**

# Manufacturing
(140)

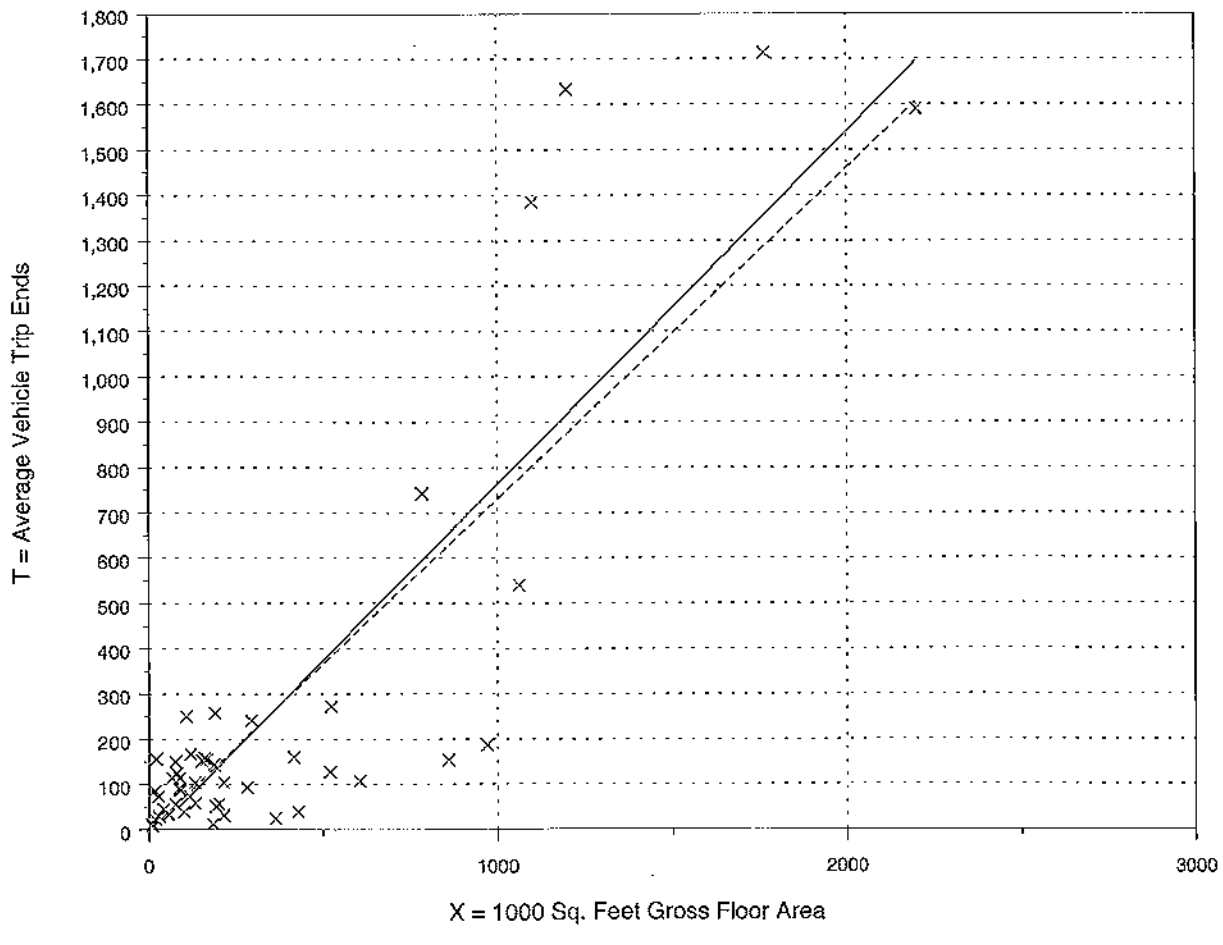
**Average Vehicle Trip Ends vs:** **1000 Sq. Feet Gross Floor Area**
**On a:** **Weekday,**
**Peak Hour of Adjacent Street Traffic,**
**One Hour Between 4 and 6 p.m.**

Number of Studies: 56
Average 1000 Sq. Feet GFA: 318
Directional Distribution: 36% entering, 64% exiting

## Trip Generation per 1000 Sq. Feet Gross Floor Area

| Average Rate | Range of Rates | Standard Deviation |
|---|---|---|
| 0.73 | 0.07 - 7.85 | 1.01 |

## Data Plot and Equation




**Fitted Curve Equation: T = 0.78(X) - 15.97**

**$R^2$ = 0.75**

INTERSECTION: **Byington Beaver Ridge Road (S.R. 131) & Garrison Drive ( YR 2013)**
JOB NUMBER: **101299**
DATE: 11/08/2013

| | | | | | |
|---|---|---|---|---|---|
| | | | PEDESTRIAN GAPS/HOUR : | 28 | |
| | | | ESTABLISHED SCHOOL CROSSING, MINIMUM 20 Xing (YES/NO): | NO | |
| 85TH PERCENTILE SPEED: | 41 | | NEAREST SIGNALIZED INTERSECTION: | 1000 | |
| POPULATION: | 350,000 | | IMPROVE PROGRESSION-PLATOONING (YES/NO): | NO | |
| NUMBER OF APPROACHES: | 4 | | MAJOR ROUTES (YES/NO): | NO | |
| LANES ON MAIN STREET: | 1 | | WARRANTS IN 5 YRS (YES/NO): | NO | |
| MINOR STREET APPROACH LANES: | 1 | | | | |
| | | | ALTERNATIVES TO A SIGNAL EXPLORED: | YES | |
| PEDESTRIANS: | N/A | | NUMBER OF ACCIDENTS: | 0 | |
| K-HOUR VOLUME (4-CONSECUTIVE 15MIN PERIODS) | YES | | PEAK HOUR DELAY (VEH-HR): | 2.76 | |
| MAJOR: | 1066 | | | | |
| 278% MINOR: | 187 | | PROXIMITY OF RR ON MINOR APPROACH TO MAJOR STREET: | 0 | |
| | | | RAIL TRAFFIC FREQUENCY: | 0 | 0 |
| | | | MINOR APPROACH HIGH-OCCCUPACY BUSES : | 0.0% | 0 |
| EXISTING OR PROPOSED SIGNAL SYSTEM (YES/NO): | N/A | | TRACTOR-TRAILER PERCENTAGE | 0.0% | 0 |

| | MAIN STREET | | | MINOR STREET | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| HOUR | MAIN STREET VOLUME | PERCENT OF WARRANT 1A 420 | PERCENT OF WARRANT 1B 525 | MINOR STREET VOLUME | MINIMUM VOLUME WARRANT 1A 140 | | INTERRUPTION WARRANT 1B 53 | | COMBINATION WARRANT A&B | 4-HOUR WARRANT 2 | | PEAK HOUR WARRANT 3B | |
| 24-1 | 0 | 0% | 0% | 0 | 0% | NO | 0% | NO | NO | 0% | NO | 0% | NO |
| 1-2 | 0 | 0% | 0% | 0 | 0% | NO | 0% | NO | NO | 0% | NO | 0% | NO |
| 2-3 | 0 | 0% | 0% | 0 | 0% | NO | 0% | NO | NO | 0% | NO | 0% | NO |
| 3-4 | 0 | 0% | 0% | 0 | 0% | NO | 0% | NO | NO | 0% | NO | 0% | NO |
| 4-5 | 0 | 0% | 0% | 0 | 0% | NO | 0% | NO | NO | 0% | NO | 0% | NO |
| 5-6 | 0 | 0% | 0% | 0 | 0% | NO | 0% | NO | NO | 0% | NO | 0% | NO |
| 6-7 | 0 | 0% | 0% | 0 | 0% | NO | 0% | NO | NO | 0% | NO | 0% | NO |
| 7-8 | 976 | 232% | 186% | 171 | 122% | YES | 325% | YES | YES | 284% | YES | 214% | YES |
| 8-9 | 768 | 183% | 146% | 120 | 86% | NO | 228% | YES | YES | 216% | YES | 95% | YES/NO |
| 9-10 | 569 | 135% | 108% | 13 | 9% | NO | 25% | NO | NO | 13% | NO | 7% | NO |
| 10-11 | 595 | 142% | 113% | 15 | 10% | NO | 28% | NO | NO | 15% | NO | 8% | NO |
| 11-12 | 586 | 140% | 112% | 15 | 11% | NO | 28% | NO | NO | 15% | NO | 8% | NO |
| 12-13 | 537 | 128% | 102% | 16 | 12% | NO | 31% | NO | NO | 14% | NO | 8% | NO |
| 13-14 | 646 | 154% | 123% | 16 | 12% | NO | 31% | NO | NO | 20% | NO | 10% | NO |
| 14-15 | 656 | 156% | 125% | 31 | 22% | NO | 59% | NO | NO | 39% | NO | 19% | NO |
| 15-16 | 853 | 203% | 162% | 122 | 87% | NO | 233% | YES | YES | 204% | YES | 117% | YES |
| 16-17 | 599 | 143% | 114% | 28 | 20% | NO | 54% | NO | NO | 30% | NO | 16% | NO |
| 17-18 | 1,049 | 250% | 200% | 46 | 33% | NO | 88% | NO | NO | 77% | NO | 67% | NO |
| 18-19 | 0 | 0% | 0% | 19 | 14% | NO | 37% | NO | NO | 5% | NO | 4% | NO |
| 19-20 | 0 | 0% | 0% | 16 | 12% | NO | 31% | NO | NO | 4% | NO | 3% | NO |
| 20-21 | 0 | 0% | 0% | 13 | 10% | NO | 25% | NO | NO | 4% | NO | 3% | NO |
| 21-22 | 0 | 0% | 0% | 10 | 7% | NO | 20% | NO | NO | 3% | NO | 2% | NO |
| 22-23 | 0 | 0% | 0% | 7 | 5% | NO | 14% | NO | NO | 2% | NO | 1% | NO |
| 23-24 | 0 | 0% | 0% | 0 | 0% | NO | 0% | NO | NO | 0% | NO | 0% | NO |

SUMMARY

| WARRANT | WARRANT DESCRIPTION | WARRANT OBTAINED? | HOURS | >=90% HOURS | PRIORITY POINTS |
|---|---|---|---|---|---|
| 1 A | MINIMUM VOLUME: | NO | 1 | 0 | 11 |
| B | INTERUPTION: | NO | 3 | 0 | 30 |
| A & B | COMBINATION: | NO | 3 | N/A | 27 |
| 2 | FOUR-HOUR: | NO | 3 | 0 | 48 |
| 3 A | PEAK HOUR DELAY: | NO | N/A | N/A | 0 |
| B | PEAK HOUR VOLUME: | YES | 2 | 1 | 112 |
| 4 No data collected | MINIMUM PED. VOLUMES: | N/A | N/A | N/A | N/A |
| 5 | SCHOOL CROSSING: | NO | N/A | N/A | 0 |
| 6 | CORD. SIGNAL SYSTEM: | NO | N/A | N/A | 0 |
| 7 | ACCIDENT EXPERIENCE: | NO | 4 | N/A | 0 |
| 8 | ROADWAY NETWORK: | NO | 3 | N/A | 0 |
| 9 | INTERSECTION NEAR A GRADE CROSS | N/A | 0 | 0 | 0 |
| | | | PRIORITY VALUE | | 228 |

INTERSECTION: **Garrison Drive & Industrial Park Access ( YR 2018)**
JOB NUMBER: **101299**
DATE: 11/08/2013

| | | | | | |
|---|---|---|---|---|---|
| | | | PEDESTRIAN GAPS/HOUR : | 28 | |
| | | | ESTABLISHED SCHOOL CROSSING, MINIMUM 20 Xing (YES/NO): | NO | |
| 85TH PERCENTILE SPEED: | 30 | | NEAREST SIGNALIZED INTERSECTION: | 1000 | |
| POPULATION: | 350,000 | | IMPROVE PROGRESSION-PLATOONING (YES/NO): | NO | |
| NUMBER OF APPROACHES: | 3 | | MAJOR ROUTES (YES/NO): | NO | |
| LANES ON MAIN STREET: | 1 | | WARRANTS IN 5 YRS (YES/NO): | NO | |
| MINOR STREET APPROACH LANES: | 1 | | | | |
| | | | ALTERNATIVES TO A SIGNAL EXPLORED: | YES | |
| PEDESTRIANS: | N/A | | NUMBER OF ACCIDENTS: | 0 | |
| K-HOUR VOLUME (4-CONSECUTIVE 15MIN PERIODS) | N/A | | PEAK HOUR DELAY (VEH-HR): | 0 | |
| MAJOR: | 0 | | | | |
| 0% MINOR: | 0 | | PROXIMITY OF RR ON MINOR APPROACH TO MAJOR STREET: | 0 | |
| | | | RAIL TRAFFIC FREQUENCY: | 0 | 0 |
| | | | MINOR APPROACH HIGH-OCCCUPACY BUSES : | 0.0% | 0 |
| EXISTING OR PROPOSED SIGNAL SYSTEM (YES/NO): | N/A | | TRACTOR-TRAILER PERCENTAGE | 0.0% | 0 |

| | MAIN STREET | | | MINOR STREET | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| HOUR | MAIN STREET VOLUME | PERCENT OF WARRANT 1A 600 | PERCENT OF WARRANT 1B 750 | MINOR STREET VOLUME | MINIMUM VOLUME WARRANT 1A 200 | | INTERRUPTION WARRANT 1B 75 | | COMBINATION WARRANT A&B | 4-HOUR WARRANT 2 | | PEAK HOUR WARRANT 3B | |
| 24-1 | 0 | 0% | 0% | 0 | 0% | NO | 0% | NO | NO | 0% | NO | 0% | NO |
| 1-2 | 0 | 0% | 0% | 0 | 0% | NO | 0% | NO | NO | 0% | NO | 0% | NO |
| 2-3 | 0 | 0% | 0% | 0 | 0% | NO | 0% | NO | NO | 0% | NO | 0% | NO |
| 3-4 | 0 | 0% | 0% | 0 | 0% | NO | 0% | NO | NO | 0% | NO | 0% | NO |
| 4-5 | 0 | 0% | 0% | 0 | 0% | NO | 0% | NO | NO | 0% | NO | 0% | NO |
| 5-6 | 0 | 0% | 0% | 0 | 0% | NO | 0% | NO | NO | 0% | NO | 0% | NO |
| 6-7 | 0 | 0% | 0% | 0 | 0% | NO | 0% | NO | NO | 0% | NO | 0% | NO |
| 7-8 | 110 | 18% | 15% | 536 | 268% | NO | 714% | NO | NO | 114% | YES | 81% | NO |
| 8-9 | 110 | 18% | 15% | 531 | 266% | NO | 708% | NO | NO | 113% | YES | 80% | NO |
| 9-10 | 204 | 34% | 27% | 223 | 111% | NO | 297% | NO | NO | 54% | NO | 37% | NO |
| 10-11 | 236 | 39% | 31% | 139 | 70% | NO | 186% | NO | NO | 35% | NO | 24% | NO |
| 11-12 | 314 | 52% | 42% | 298 | 149% | NO | 397% | NO | NO | 85% | NO | 56% | NO |
| 12-13 | 314 | 52% | 42% | 299 | 150% | NO | 399% | NO | NO | 85% | NO | 57% | NO |
| 13-14 | 189 | 31% | 25% | 200 | 100% | NO | 267% | NO | NO | 47% | NO | 33% | NO |
| 14-15 | 189 | 31% | 25% | 147 | 73% | NO | 196% | NO | NO | 35% | NO | 24% | NO |
| 15-16 | 251 | 42% | 34% | 154 | 77% | NO | 205% | NO | NO | 40% | NO | 27% | NO |
| 16-17 | 497 | 83% | 66% | 164 | 82% | NO | 219% | NO | NO | 62% | NO | 39% | NO |
| 17-18 | 497 | 83% | 66% | 162 | 81% | NO | 216% | NO | NO | 61% | NO | 38% | NO |
| 18-19 | 94 | 16% | 13% | 76 | 38% | NO | 101% | NO | NO | 16% | NO | 11% | NO |
| 19-20 | 63 | 10% | 8% | 73 | 36% | NO | 97% | NO | NO | 15% | NO | 10% | NO |
| 20-21 | 47 | 8% | 6% | 56 | 28% | NO | 74% | NO | NO | 11% | NO | 8% | NO |
| 21-22 | 16 | 3% | 2% | 24 | 12% | NO | 33% | NO | NO | 5% | NO | 3% | NO |
| 22-23 | 0 | 0% | 0% | 7 | 4% | NO | 10% | NO | NO | 1% | NO | 1% | NO |
| 23-24 | 0 | 0% | 0% | 0 | 0% | NO | 0% | NO | NO | 0% | NO | 0% | NO |

SUMMARY

| WARRANT | WARRANT DESCRIPTION | WARRANT OBTAINED? | HOURS | >=90% HOURS | PRIORITY POINTS |
|---|---|---|---|---|---|
| 1 A | MINIMUM VOLUME: | NO | 0 | 0 | 0 |
| B | INTERUPTION: | NO | 0 | 0 | 0 |
| A & B | COMBINATION: | NO | 0 | N/A | 0 |
| 2 | FOUR-HOUR: | NO | 2 | 0 | 32 |
| 3 A | PEAK HOUR DELAY: | N/A | N/A | N/A | 0 |
| B | PEAK HOUR VOLUME: | NO | 0 | 0 | 0 |
| 4 No data collected | MINIMUM PED. VOLUMES: | N/A | N/A | N/A | N/A |
| 5 | SCHOOL CROSSING: | NO | N/A | N/A | 0 |
| 6 | CORD. SIGNAL SYSTEM: | NO | N/A | N/A | 0 |
| 7 | ACCIDENT EXPERIENCE: | NO | 2 | N/A | 0 |
| 8 | ROADWAY NETWORK: | NO | 0 | N/A | 0 |
| 9 | INTERSECTION NEAR A GRADE CROSS | N/A | 0 | 0 | 0 |
| | | | PRIORITY VALUE | | 32 |

INTERSECTION: **Karns Connector & Garrison Drive ( YR 2018)**
JOB NUMBER: **101299**
DATE: 12/16/2013

| | | | | | |
|---|---|---|---|---|---|
| | | | PEDESTRIAN GAPS/HOUR : | 28 | |
| | | | ESTABLISHED SCHOOL CROSSING, MINIMUM 20 Xing (YES/NO): | NO | |
| 85TH PERCENTILE SPEED: | 40 | | NEAREST SIGNALIZED INTERSECTION: | 1000 | |
| POPULATION: | 350,000 | | IMPROVE PROGRESSION-PLATOONING (YES/NO): | NO | |
| NUMBER OF APPROACHES: | 3 | | MAJOR ROUTES (YES/NO): | NO | |
| LANES ON MAIN STREET: | 1 | | WARRANTS IN 5 YRS (YES/NO): | NO | |
| MINOR STREET APPROACH LANES: | 2 | | | | |
| | | | ALTERNATIVES TO A SIGNAL EXPLORED: | YES | |
| PEDESTRIANS: | N/A | | NUMBER OF ACCIDENTS: | 0 | |
| K-HOUR VOLUME (4-CONSECUTIVE 15MIN PERIODS) | N/A | | PEAK HOUR DELAY (VEH-HR): | 0 | |
| MAJOR: | 0 | | | | |
| 0% MINOR: | 0 | | PROXIMITY OF RR ON MINOR APPROACH TO MAJOR STREET: | 0 | |
| | | | RAIL TRAFFIC FREQUENCY: | 0 | 0 |
| | | | MINOR APPROACH HIGH-OCCCUPACY BUSES : | 0.0% | 0 |
| EXISTING OR PROPOSED SIGNAL SYSTEM (YES/NO): | N/A | | TRACTOR-TRAILER PERCENTAGE | 0.0% | 0 |

| | MAIN STREET | | | MINOR STREET | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| HOUR | MAIN STREET VOLUME | PERCENT OF WARRANT 1A 600 | PERCENT OF WARRANT 1B 750 | MINOR STREET VOLUME | MINIMUM VOLUME WARRANT 1A 200 | | INTERRUPTION WARRANT 1B 100 | | COMBINATION WARRANT A&B | 4-HOUR WARRANT 2 | | PEAK HOUR WARRANT 3B | |
| 24-1 | 0 | 0% | 0% | 0 | 0% | NO | 0% | NO | NO | 0% | NO | 0% | NO |
| 1-2 | 0 | 0% | 0% | 0 | 0% | NO | 0% | NO | NO | 0% | NO | 0% | NO |
| 2-3 | 0 | 0% | 0% | 0 | 0% | NO | 0% | NO | NO | 0% | NO | 0% | NO |
| 3-4 | 0 | 0% | 0% | 0 | 0% | NO | 0% | NO | NO | 0% | NO | 0% | NO |
| 4-5 | 0 | 0% | 0% | 0 | 0% | NO | 0% | NO | NO | 0% | NO | 0% | NO |
| 5-6 | 0 | 0% | 0% | 0 | 0% | NO | 0% | NO | NO | 0% | NO | 0% | NO |
| 6-7 | 0 | 0% | 0% | 0 | 0% | NO | 0% | NO | NO | 0% | NO | 0% | NO |
| 7-8 | 1,265 | 211% | 169% | 67 | 34% | NO | 67% | NO | NO | 58% | NO | 33% | NO |
| 8-9 | 1,077 | 180% | 144% | 60 | 30% | NO | 60% | NO | NO | 49% | NO | 23% | NO |
| 9-10 | 956 | 159% | 127% | 95 | 47% | NO | 95% | YES/NO | NO | 61% | NO | 31% | NO |
| 10-11 | 918 | 153% | 122% | 109 | 55% | NO | 109% | YES | NO | 66% | NO | 34% | NO |
| 11-12 | 909 | 152% | 121% | 141 | 70% | NO | 141% | YES | NO | 84% | NO | 43% | NO |
| 12-13 | 909 | 152% | 121% | 142 | 71% | NO | 142% | YES | NO | 85% | NO | 43% | NO |
| 13-14 | 943 | 157% | 126% | 92 | 46% | NO | 92% | YES/NO | NO | 58% | NO | 29% | NO |
| 14-15 | 902 | 150% | 120% | 92 | 46% | NO | 92% | YES/NO | NO | 54% | NO | 28% | NO |
| 15-16 | 871 | 145% | 116% | 119 | 59% | NO | 119% | YES | NO | 66% | NO | 35% | NO |
| 16-17 | 1,125 | 188% | 150% | 218 | 109% | YES | 218% | YES | YES | 193% | YES | 88% | NO |
| 17-18 | 1,118 | 186% | 149% | 220 | 110% | YES | 220% | YES | YES | 192% | YES | 88% | NO |
| 18-19 | 965 | 161% | 129% | 57 | 29% | NO | 57% | NO | NO | 38% | NO | 19% | NO |
| 19-20 | 730 | 122% | 97% | 41 | 21% | NO | 41% | NO | NO | 18% | NO | 10% | NO |
| 20-21 | 645 | 108% | 86% | 32 | 16% | NO | 32% | NO | NO | 12% | NO | 7% | NO |
| 21-22 | 554 | 92% | 74% | 17 | 8% | NO | 17% | NO | NO | 5% | NO | 3% | NO |
| 22-23 | 392 | 65% | 52% | 7 | 4% | NO | 7% | NO | NO | 2% | NO | 1% | NO |
| 23-24 | 0 | 0% | 0% | 0 | 0% | NO | 0% | NO | NO | 0% | NO | 0% | NO |

SUMMARY

| WARRANT | | WARRANT DESCRIPTION | WARRANT OBTAINED? | HOURS | >=90% HOURS | PRIORITY POINTS |
|---|---|---|---|---|---|---|
| 1 | A | MINIMUM VOLUME: | NO | 2 | 0 | 22 |
| | B | INTERUPTION: | NO | 6 | 3 | 60 |
| | A & B | COMBINATION: | NO | 2 | N/A | 18 |
| 2 | | FOUR-HOUR: | NO | 2 | 0 | 32 |
| 3 | A | PEAK HOUR DELAY: | N/A | N/A | N/A | 0 |
| | B | PEAK HOUR VOLUME: | NO | 0 | 0 | 0 |
| 4 | No data collected | MINIMUM PED. VOLUMES: | N/A | N/A | N/A | N/A |
| 5 | | SCHOOL CROSSING: | NO | N/A | N/A | 0 |
| 6 | | CORD. SIGNAL SYSTEM: | NO | N/A | N/A | 0 |
| 7 | | ACCIDENT EXPERIENCE: | NO | 9 | N/A | 0 |
| 8 | | ROADWAY NETWORK: | NO | 10 | N/A | 0 |
| 9 | | INTERSECTION NEAR A GRADE CROSS | N/A | 0 | 0 | 0 |
| | | | | PRIORITY VALUE | | 132 |

INTERSECTION: **Karns Connector & Garrison Drive ( YR 2018)**
JOB NUMBER: **101299**
DATE: 12/16/2013

| | | | | | |
|---|---|---|---|---|---|
| | | | PEDESTRIAN GAPS/HOUR : | 28 | |
| | | | ESTABLISHED SCHOOL CROSSING, MINIMUM 20 Xing (YES/NO): | NO | |
| 85TH PERCENTILE SPEED: | 41 | | NEAREST SIGNALIZED INTERSECTION: | 1000 | |
| POPULATION: | 350,000 | | IMPROVE PROGRESSION-PLATOONING (YES/NO): | NO | |
| NUMBER OF APPROACHES: | 3 | | MAJOR ROUTES (YES/NO): | NO | |
| LANES ON MAIN STREET: | 1 | | WARRANTS IN 5 YRS (YES/NO): | NO | |
| MINOR STREET APPROACH LANES: | 2 | | | | |
| | | | ALTERNATIVES TO A SIGNAL EXPLORED: | YES | |
| PEDESTRIANS: | N/A | | NUMBER OF ACCIDENTS: | 0 | |
| K-HOUR VOLUME (4-CONSECUTIVE 15MIN PERIODS) | N/A | | PEAK HOUR DELAY (VEH-HR): | 0 | |
| MAJOR: | 0 | | | | |
| 0% MINOR: | 0 | | PROXIMITY OF RR ON MINOR APPROACH TO MAJOR STREET: | 0 | |
| | | | RAIL TRAFFIC FREQUENCY: | 0 | 0 |
| | | | MINOR APPROACH HIGH-OCCCUPACY BUSES : | 0.0% | 0 |
| EXISTING OR PROPOSED SIGNAL SYSTEM (YES/NO): | N/A | | TRACTOR-TRAILER PERCENTAGE | 0.0% | 0 |

| | MAIN STREET | | | MINOR STREET | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| HOUR | MAIN STREET VOLUME | PERCENT OF WARRANT 1A 420 | PERCENT OF WARRANT 1B 525 | MINOR STREET VOLUME | MINIMUM VOLUME WARRANT 1A 140 | | INTERRUPTION WARRANT 1B 70 | | COMBINATION WARRANT A&B | 4-HOUR WARRANT 2 | | PEAK HOUR WARRANT 3B | |
| 24-1 | 0 | 0% | 0% | 0 | 0% | NO | 0% | NO | NO | 0% | NO | 0% | NO |
| 1-2 | 0 | 0% | 0% | 0 | 0% | NO | 0% | NO | NO | 0% | NO | 0% | NO |
| 2-3 | 0 | 0% | 0% | 0 | 0% | NO | 0% | NO | NO | 0% | NO | 0% | NO |
| 3-4 | 0 | 0% | 0% | 0 | 0% | NO | 0% | NO | NO | 0% | NO | 0% | NO |
| 4-5 | 0 | 0% | 0% | 0 | 0% | NO | 0% | NO | NO | 0% | NO | 0% | NO |
| 5-6 | 0 | 0% | 0% | 0 | 0% | NO | 0% | NO | NO | 0% | NO | 0% | NO |
| 6-7 | 0 | 0% | 0% | 0 | 0% | NO | 0% | NO | NO | 0% | NO | 0% | NO |
| 7-8 | 1,265 | 301% | 241% | 67 | 48% | NO | 96% | YES/NO | NO | 84% | NO | 67% | NO |
| 8-9 | 1,077 | 257% | 205% | 60 | 43% | NO | 86% | NO | NO | 75% | NO | 64% | NO |
| 9-10 | 956 | 228% | 182% | 95 | 68% | NO | 136% | YES | NO | 119% | YES | 80% | NO |
| 10-11 | 918 | 219% | 175% | 109 | 78% | NO | 156% | YES | NO | 136% | YES | 85% | NO |
| 11-12 | 909 | 216% | 173% | 141 | 101% | YES | 201% | YES | YES | 176% | YES | 107% | YES |
| 12-13 | 909 | 216% | 173% | 142 | 102% | YES | 203% | YES | YES | 178% | YES | 109% | YES |
| 13-14 | 943 | 225% | 180% | 92 | 66% | NO | 131% | YES | NO | 115% | YES | 75% | NO |
| 14-15 | 902 | 215% | 172% | 92 | 65% | NO | 131% | YES | NO | 114% | YES | 69% | NO |
| 15-16 | 871 | 207% | 166% | 119 | 85% | NO | 169% | YES | YES | 148% | YES | 84% | NO |
| 16-17 | 1,125 | 268% | 214% | 218 | 156% | YES | 311% | YES | YES | 273% | YES | 254% | YES |
| 17-18 | 1,118 | 266% | 213% | 220 | 157% | YES | 315% | YES | YES | 275% | YES | 253% | YES |
| 18-19 | 965 | 230% | 184% | 57 | 41% | NO | 81% | NO | NO | 71% | NO | 49% | NO |
| 19-20 | 730 | 174% | 139% | 41 | 30% | NO | 59% | NO | NO | 44% | NO | 22% | NO |
| 20-21 | 645 | 154% | 123% | 32 | 23% | NO | 46% | NO | NO | 27% | NO | 15% | NO |
| 21-22 | 554 | 132% | 106% | 17 | 12% | NO | 24% | NO | NO | 11% | NO | 6% | NO |
| 22-23 | 392 | 93% | 75% | 7 | 5% | NO | 11% | NO | NO | 3% | NO | 2% | NO |
| 23-24 | 0 | 0% | 0% | 0 | 0% | NO | 0% | NO | NO | 0% | NO | 0% | NO |

SUMMARY

| WARRANT | WARRANT DESCRIPTION | WARRANT OBTAINED? | HOURS | >=90% HOURS | PRIORITY POINTS |
|---|---|---|---|---|---|
| 1 A | MINIMUM VOLUME: | NO | 4 | 0 | 44 |
| B | INTERUPTION: | YES | 9 | 1 | 90 |
| A & B | COMBINATION: | NO | 5 | N/A | 45 |
| 2 | FOUR-HOUR: | YES | 9 | 0 | 144 |
| 3 A | PEAK HOUR DELAY: | N/A | N/A | N/A | 0 |
| B | PEAK HOUR VOLUME: | YES | 4 | 0 | 224 |
| 4 No data collected | MINIMUM PED. VOLUMES: | N/A | N/A | N/A | N/A |
| 5 | SCHOOL CROSSING: | NO | N/A | N/A | 0 |
| 6 | CORD. SIGNAL SYSTEM: | NO | N/A | N/A | 0 |
| 7 | ACCIDENT EXPERIENCE: | NO | 12 | N/A | 0 |
| 8 | ROADWAY NETWORK: | NO | 10 | N/A | 0 |
| 9 | INTERSECTION NEAR A GRADE CROSS | N/A | 0 | 0 | 0 |
| | | | PRIORITY VALUE | | 547 |

| Intersection | |
|---|---|
| Intersection Delay, s/veh | 40.7 |

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Vol, veh/h | 3 | 5 | 1 | 113 | 29 | 45 | 4 | 339 | 117 | 36 | 543 | 27 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Stop | Stop | Stop | Stop | Free | Free | Free | Free | Free | Free |
| RT Channelized | - | - | None | - | - | None | - | - | None | - | - | None |
| Storage Length | - | - | - | - | - | - | - | - | - | - | - | - |
| Veh in Median Storage, # | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Grade, % | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Peak Hour Factor | 75 | 63 | 25 | 88 | 66 | 87 | 33 | 79 | 79 | 75 | 89 | 36 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 4 | 8 | 4 | 128 | 44 | 52 | 12 | 429 | 148 | 48 | 610 | 75 |

| Major/Minor | Minor2 | | | Minor1 | | | Major1 | | | Major2 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Conflicting Flow All | 1319 | 1345 | 648 | 1277 | 1308 | 503 | 685 | 0 | 0 | 577 | 0 | 0 |
| Stage 1 | 744 | 744 | - | 527 | 527 | - | - | - | - | - | - | - |
| Stage 2 | 575 | 601 | - | 750 | 781 | - | - | - | - | - | - | - |
| Follow-up Headway | 3.518 | 4.018 | 3.318 | 3.518 | 4.018 | 3.318 | 2.218 | - | - | 2.218 | - | - |
| Pot Capacity-1 Maneuver | 134 | 151 | 470 | 143 | 159 | 569 | 908 | - | - | 996 | - | - |
| Stage 1 | 407 | 421 | - | 535 | 528 | - | - | - | - | - | - | - |
| Stage 2 | 503 | 489 | - | 403 | 405 | - | - | - | - | - | - | - |
| Time blocked-Platoon, % | | | | | | | | - | - | | - | - |
| Mov Capacity-1 Maneuver | 86 | 136 | 470 | # 125 | 144 | 569 | 908 | - | - | 996 | - | - |
| Mov Capacity-2 Maneuver | 86 | 136 | - | # 125 | 144 | - | - | - | - | - | - | - |
| Stage 1 | 399 | 388 | - | 524 | 517 | - | - | - | - | - | - | - |
| Stage 2 | 410 | 479 | - | 360 | 373 | - | - | - | - | - | - | - |

| Approach | EB | WB | NB | SB |
|---|---|---|---|---|
| HCM Control Delay, s | 33.8 | 278.9 | 0.2 | 0.6 |
| HCM LOS | D | F | | |

| Minor Lane / Major Mvmt | NBL | NBT | NBR | EBLn1 | WBLn1 | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|
| Capacity (veh/h) | 908 | - | - | 141 | 157 | 996 | - | - |
| HCM Lane V/C Ratio | 0.013 | - | - | 0.113 | 1.427 | 0.048 | - | - |
| HCM Control Delay (s) | 9.018 | 0 | - | 33.8 | 278.9 | 8.797 | 0 | - |
| HCM Lane LOS | A | A | | D | F | A | A | |
| HCM 95th %tile Q(veh) | 0.041 | - | - | 0.373 | 14.272 | 0.152 | - | - |

| Notes |
|---|
| ~ : Volume Exceeds Capacity; $ : Delay Exceeds 300 Seconds; Error : Computation Not Defined |

| Intersection | |
|---|---|
| Intersection Delay, s/veh | 3.7 |

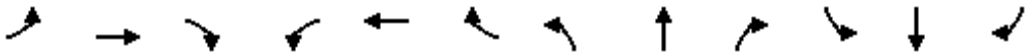
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Vol, veh/h | 7 | 8 | 1 | 25 | 4 | 13 | 9 | 512 | 70 | 47 | 401 | 10 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Stop | Stop | Stop | Stop | Free | Free | Free | Free | Free | Free |
| RT Channelized | - | - | None | - | - | None | - | - | None | - | - | None |
| Storage Length | - | - | - | - | - | - | - | - | - | - | - | - |
| Veh in Median Storage, # | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Grade, % | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Peak Hour Factor | 58 | 67 | 25 | 57 | 50 | 41 | 56 | 91 | 80 | 73 | 94 | 83 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 12 | 12 | 4 | 44 | 8 | 32 | 16 | 563 | 88 | 64 | 427 | 12 |

| Major/Minor | Minor2 | | | Minor1 | | | Major1 | | | Major2 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Conflicting Flow All | 1219 | 1243 | 433 | 1208 | 1206 | 606 | 439 | 0 | 0 | 650 | 0 | 0 |
| Stage 1 | 561 | 561 | - | 639 | 639 | - | - | - | - | - | - | - |
| Stage 2 | 658 | 682 | - | 569 | 567 | - | - | - | - | - | - | - |
| Follow-up Headway | 3.518 | 4.018 | 3.318 | 3.518 | 4.018 | 3.318 | 2.218 | - | - | 2.218 | - | - |
| Pot Capacity-1 Maneuver | 157 | 174 | 623 | 160 | 184 | 497 | 1121 | - | - | 936 | - | - |
| Stage 1 | 512 | 510 | - | 464 | 470 | - | - | - | - | - | - | - |
| Stage 2 | 453 | 450 | - | 507 | 507 | - | - | - | - | - | - | - |
| Time blocked-Platoon, % | | | | | | | | - | - | | - | - |
| Mov Capacity-1 Maneuver | 129 | 155 | 623 | 137 | 163 | 497 | 1121 | - | - | 936 | - | - |
| Mov Capacity-2 Maneuver | 129 | 155 | - | 137 | 163 | - | - | - | - | - | - | - |
| Stage 1 | 500 | 464 | - | 453 | 459 | - | - | - | - | - | - | - |
| Stage 2 | 407 | 440 | - | 446 | 461 | - | - | - | - | - | - | - |

| Approach | EB | WB | NB | SB |
|---|---|---|---|---|
| HCM Control Delay, s | 32.6 | 37.2 | 0.2 | 1.2 |
| HCM LOS | D | E | | |

| Minor Lane / Major Mvmt | NBL | NBT | NBR | EBLn1 | WBLn1 | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|
| Capacity (veh/h) | 1121 | - | - | 158 | 193 | 936 | - | - |
| HCM Lane V/C Ratio | 0.014 | - | - | 0.177 | 0.433 | 0.069 | - | - |
| HCM Control Delay (s) | 8.258 | 0 | - | 32.6 | 37.2 | 9.13 | 0 | - |
| HCM Lane LOS | A | A | | D | E | A | A | |
| HCM 95th %tile Q(veh) | 0.044 | - | - | 0.623 | 1.999 | 0.221 | - | - |

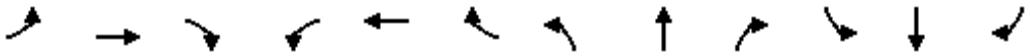
| Notes |
|---|
| ~ : Volume Exceeds Capacity; $ : Delay Exceeds 300 Seconds; Error : Computation Not Defined |



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Volume (vph) | 3 | 5 | 1 | 113 | 29 | 45 | 4 | 339 | 117 | 36 | 543 | 27 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Lane Width | 8 | 8 | 8 | 8 | 8 | 8 | 12 | 12 | 12 | 12 | 12 | 12 |
| Total Lost time (s) | | 4.0 | | | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Util. Factor | | 1.00 | | | 1.00 | | | 1.00 | | | 1.00 | |
| Frt | | 0.97 | | | 0.97 | | | 0.97 | | | 0.99 | |
| Flt Protected | | 0.99 | | | 0.97 | | | 1.00 | | | 1.00 | |
| Satd. Flow (prot) | | 1541 | | | 1520 | | | 1798 | | | 1831 | |
| Flt Permitted | | 0.93 | | | 0.81 | | | 0.99 | | | 0.94 | |
| Satd. Flow (perm) | | 1450 | | | 1273 | | | 1774 | | | 1734 | |
| Peak-hour factor, PHF | 0.75 | 0.63 | 0.25 | 0.88 | 0.66 | 0.87 | 0.33 | 0.79 | 0.79 | 0.75 | 0.89 | 0.36 |
| Adj. Flow (vph) | 4 | 8 | 4 | 128 | 44 | 52 | 12 | 429 | 148 | 48 | 610 | 75 |
| RTOR Reduction (vph) | 0 | 3 | 0 | 0 | 19 | 0 | 0 | 20 | 0 | 0 | 7 | 0 |
| Lane Group Flow (vph) | 0 | 13 | 0 | 0 | 205 | 0 | 0 | 569 | 0 | 0 | 726 | 0 |
| Turn Type | Perm | NA | | Perm | NA | | Perm | NA | | Perm | NA | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | | 12.5 | | | 12.5 | | | 28.9 | | | 28.9 | |
| Effective Green, g (s) | | 12.5 | | | 12.5 | | | 28.9 | | | 28.9 | |
| Actuated g/C Ratio | | 0.25 | | | 0.25 | | | 0.59 | | | 0.59 | |
| Clearance Time (s) | | 4.0 | | | 4.0 | | | 4.0 | | | 4.0 | |
| Vehicle Extension (s) | | 3.0 | | | 3.0 | | | 3.0 | | | 3.0 | |
| Lane Grp Cap (vph) | | 366 | | | 322 | | | 1037 | | | 1014 | |
| v/s Ratio Prot | | | | | | | | | | | | |
| v/s Ratio Perm | | 0.01 | | | c0.16 | | | 0.32 | | | c0.42 | |
| v/c Ratio | | 0.04 | | | 0.64 | | | 0.55 | | | 0.72 | |
| Uniform Delay, d1 | | 13.9 | | | 16.4 | | | 6.3 | | | 7.3 | |
| Progression Factor | | 1.00 | | | 1.00 | | | 1.00 | | | 1.00 | |
| Incremental Delay, d2 | | 0.0 | | | 4.1 | | | 0.6 | | | 2.4 | |
| Delay (s) | | 13.9 | | | 20.5 | | | 6.9 | | | 9.8 | |
| Level of Service | | B | | | C | | | A | | | A | |
| Approach Delay (s) | | 13.9 | | | 20.5 | | | 6.9 | | | 9.8 | |
| Approach LOS | | B | | | C | | | A | | | A | |

| Intersection Summary | | | |
|---|---|---|---|
| HCM 2000 Control Delay | 10.3 | HCM 2000 Level of Service | B |
| HCM 2000 Volume to Capacity ratio | 0.69 | | |
| Actuated Cycle Length (s) | 49.4 | Sum of lost time (s) | 8.0 |
| Intersection Capacity Utilization | 77.9% | ICU Level of Service | D |
| Analysis Period (min) | 15 | | |

c Critical Lane Group



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Volume (vph) | 7 | 8 | 1 | 25 | 4 | 13 | 9 | 512 | 70 | 47 | 401 | 10 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Lane Width | 8 | 8 | 8 | 8 | 8 | 8 | 12 | 12 | 12 | 12 | 12 | 12 |
| Total Lost time (s) | | 4.0 | | | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Util. Factor | | 1.00 | | | 1.00 | | | 1.00 | | | 1.00 | |
| Frt | | 0.98 | | | 0.95 | | | 0.98 | | | 1.00 | |
| Flt Protected | | 0.98 | | | 0.97 | | | 1.00 | | | 0.99 | |
| Satd. Flow (prot) | | 1550 | | | 1492 | | | 1827 | | | 1845 | |
| Flt Permitted | | 0.89 | | | 0.82 | | | 0.99 | | | 0.88 | |
| Satd. Flow (perm) | | 1415 | | | 1257 | | | 1808 | | | 1638 | |
| Peak-hour factor, PHF | 0.58 | 0.67 | 0.25 | 0.57 | 0.50 | 0.41 | 0.56 | 0.91 | 0.80 | 0.73 | 0.94 | 0.83 |
| Adj. Flow (vph) | 12 | 12 | 4 | 44 | 8 | 32 | 16 | 563 | 88 | 64 | 427 | 12 |
| RTOR Reduction (vph) | 0 | 4 | 0 | 0 | 29 | 0 | 0 | 6 | 0 | 0 | 1 | 0 |
| Lane Group Flow (vph) | 0 | 24 | 0 | 0 | 55 | 0 | 0 | 661 | 0 | 0 | 502 | 0 |
| Turn Type | Perm | NA | | Perm | NA | | Perm | NA | | Perm | NA | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | | 5.4 | | | 5.4 | | | 36.6 | | | 36.6 | |
| Effective Green, g (s) | | 5.4 | | | 5.4 | | | 36.6 | | | 36.6 | |
| Actuated g/C Ratio | | 0.11 | | | 0.11 | | | 0.73 | | | 0.73 | |
| Clearance Time (s) | | 4.0 | | | 4.0 | | | 4.0 | | | 4.0 | |
| Vehicle Extension (s) | | 3.0 | | | 3.0 | | | 3.0 | | | 3.0 | |
| Lane Grp Cap (vph) | | 152 | | | 135 | | | 1323 | | | 1199 | |
| v/s Ratio Prot | | | | | | | | | | | | |
| v/s Ratio Perm | | 0.02 | | | c0.04 | | | c0.37 | | | 0.31 | |
| v/c Ratio | | 0.16 | | | 0.41 | | | 0.50 | | | 0.42 | |
| Uniform Delay, d1 | | 20.2 | | | 20.8 | | | 2.8 | | | 2.6 | |
| Progression Factor | | 1.00 | | | 1.00 | | | 1.00 | | | 1.00 | |
| Incremental Delay, d2 | | 0.5 | | | 2.0 | | | 1.3 | | | 1.1 | |
| Delay (s) | | 20.7 | | | 22.8 | | | 4.2 | | | 3.7 | |
| Level of Service | | C | | | C | | | A | | | A | |
| Approach Delay (s) | | 20.7 | | | 22.8 | | | 4.2 | | | 3.7 | |
| Approach LOS | | C | | | C | | | A | | | A | |

| Intersection Summary | | | |
|---|---|---|---|
| HCM 2000 Control Delay | 5.6 | HCM 2000 Level of Service | A |
| HCM 2000 Volume to Capacity ratio | 0.49 | | |
| Actuated Cycle Length (s) | 50.0 | Sum of lost time (s) | 8.0 |
| Intersection Capacity Utilization | 59.8% | ICU Level of Service | B |
| Analysis Period (min) | 15 | | |

c Critical Lane Group

| Intersection | |
|---|---|
| Intersection Delay, s/veh | 0.8 |

| Movement | WBL | WBR | NBT | NBR | SBL | SBT |
|---|---|---|---|---|---|---|
| Vol, veh/h | 32 | 24 | 547 | 20 | 15 | 800 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Free | Free | Free | Free |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | 0 | 100 | - | - | 100 | - |
| Veh in Median Storage, # | 0 | - | 0 | - | - | 0 |
| Grade, % | 0 | - | 0 | - | - | 0 |
| Peak Hour Factor | 92 | 92 | 92 | 92 | 92 | 92 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 35 | 26 | 595 | 22 | 16 | 870 |

| Major/Minor | Minor1 | | Major1 | | Major2 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 1507 | 605 | 0 | 0 | 616 | 0 |
| Stage 1 | 605 | - | - | - | - | - |
| Stage 2 | 902 | - | - | - | - | - |
| Follow-up Headway | 3.518 | 3.318 | - | - | 2.218 | - |
| Pot Capacity-1 Maneuver | 133 | 498 | - | - | 964 | - |
| Stage 1 | 545 | - | - | - | - | - |
| Stage 2 | 396 | - | - | - | - | - |
| Time blocked-Platoon, % | | | - | - | | - |
| Mov Capacity-1 Maneuver | 131 | 498 | - | - | 964 | - |
| Mov Capacity-2 Maneuver | 265 | - | - | - | - | - |
| Stage 1 | 545 | - | - | - | - | - |
| Stage 2 | 389 | - | - | - | - | - |

| Approach | WB | NB | SB |
|---|---|---|---|
| HCM Control Delay, s | 17.2 | 0 | 0.2 |
| HCM LOS | C | | |

| Minor Lane / Major Mvmt | NBT | NBR | WBLn1 | WBLn2 | SBL | SBT |
|---|---|---|---|---|---|---|
| Capacity (veh/h) | - | - | 265 | 498 | 964 | - |
| HCM Lane V/C Ratio | - | - | 0.131 | 0.052 | 0.017 | - |
| HCM Control Delay (s) | - | - | 20.6 | 12.6 | 8.799 | - |
| HCM Lane LOS | | | C | B | A | |
| HCM 95th %tile Q(veh) | - | - | 0.446 | 0.165 | 0.052 | - |

Notes

~ : Volume Exceeds Capacity; $ : Delay Exceeds 300 Seconds; Error : Computation Not Defined

| Intersection | |
|---|---|
| Intersection Delay, s/veh | 100.8 |

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Vol, veh/h | 3 | 9 | 1 | 130 | 42 | 55 | 4 | 373 | 130 | 41 | 597 | 30 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Stop | Stop | Stop | Stop | Free | Free | Free | Free | Free | Free |
| RT Channelized | - | - | None | - | - | None | - | - | None | - | - | None |
| Storage Length | - | - | - | - | - | - | - | - | - | - | - | - |
| Veh in Median Storage, # | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Grade, % | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Peak Hour Factor | 75 | 63 | 25 | 88 | 66 | 87 | 33 | 79 | 79 | 75 | 89 | 36 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 4 | 14 | 4 | 148 | 64 | 63 | 12 | 472 | 165 | 55 | 671 | 83 |

| Major/Minor | Minor2 | | | Minor1 | | | Major1 | | | Major2 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Conflicting Flow All | 1464 | 1483 | 712 | 1410 | 1442 | 554 | 754 | 0 | 0 | 637 | 0 | 0 |
| Stage 1 | 822 | 822 | - | 579 | 579 | - | - | - | - | - | - | - |
| Stage 2 | 642 | 661 | - | 831 | 863 | - | - | - | - | - | - | - |
| Follow-up Headway | 3.518 | 4.018 | 3.318 | 3.518 | 4.018 | 3.318 | 2.218 | - | - | 2.218 | - | - |
| Pot Capacity-1 Maneuver | 106 | 125 | 432 | # 116 | 132 | 532 | 856 | - | - | 947 | - | - |
| Stage 1 | 368 | 388 | - | 501 | 501 | - | - | - | - | - | - | - |
| Stage 2 | 463 | 460 | - | 364 | 372 | - | - | - | - | - | - | - |
| Time blocked-Platoon, % | | | | | | | | - | - | | - | - |
| Mov Capacity-1 Maneuver | 48 | 110 | 432 | # 94 | 116 | 532 | 856 | - | - | 947 | - | - |
| Mov Capacity-2 Maneuver | 48 | 110 | - | # 94 | 116 | - | - | - | - | - | - | - |
| Stage 1 | 360 | 348 | - | 490 | 490 | - | - | - | - | - | - | - |
| Stage 2 | 347 | 450 | - | 311 | 334 | - | - | - | - | - | - | - |

| Approach | EB | WB | NB | SB |
|---|---|---|---|---|
| HCM Control Delay, s | 51 | $ 637.6 | 0.2 | 0.6 |
| HCM LOS | F | F | | |

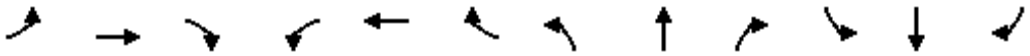
| Minor Lane / Major Mvmt | NBL | NBT | NBR | EBLn1 | WBLn1 | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|
| Capacity (veh/h) | 856 | - | - | 100 | 123 | 947 | - | - |
| HCM Lane V/C Ratio | 0.014 | - | - | 0.223 | 2.232 | 0.058 | - | - |
| HCM Control Delay (s) | 9.266 | 0 | - | 51 | $ 637.6 | 9.034 | 0 | - |
| HCM Lane LOS | A | A | | F | F | A | A | |
| HCM 95th %tile Q(veh) | 0.043 | - | - | 0.795 | 23.356 | 0.183 | - | - |

| Notes |
|---|
| ~ : Volume Exceeds Capacity; $ : Delay Exceeds 300 Seconds; Error : Computation Not Defined |

| Movement | WBL | WBR | NBT | NBR | SBL | SBT |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Volume (vph) | 32 | 24 | 547 | 20 | 15 | 800 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Lane Width | 9 | 9 | 12 | 12 | 12 | 12 |
| Total Lost time (s) | 4.0 | 4.0 | 4.0 | | 4.0 | 4.0 |
| Lane Util. Factor | 1.00 | 1.00 | 1.00 | | 1.00 | 1.00 |
| Frt | 1.00 | 0.85 | 1.00 | | 1.00 | 1.00 |
| Flt Protected | 0.95 | 1.00 | 1.00 | | 0.95 | 1.00 |
| Satd. Flow (prot) | 1593 | 1425 | 1854 | | 1770 | 1863 |
| Flt Permitted | 0.95 | 1.00 | 1.00 | | 0.41 | 1.00 |
| Satd. Flow (perm) | 1593 | 1425 | 1854 | | 761 | 1863 |
| Peak-hour factor, PHF | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Adj. Flow (vph) | 35 | 26 | 595 | 22 | 16 | 870 |
| RTOR Reduction (vph) | 0 | 24 | 1 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 35 | 2 | 616 | 0 | 16 | 870 |
| Turn Type | NA | Perm | NA | | Perm | NA |
| Protected Phases | 8 | | 2 | | | 6 |
| Permitted Phases | | 8 | | | 6 | |
| Actuated Green, G (s) | 4.5 | 4.5 | 49.1 | | 49.1 | 49.1 |
| Effective Green, g (s) | 4.5 | 4.5 | 49.1 | | 49.1 | 49.1 |
| Actuated g/C Ratio | 0.07 | 0.07 | 0.80 | | 0.80 | 0.80 |
| Clearance Time (s) | 4.0 | 4.0 | 4.0 | | 4.0 | 4.0 |
| Vehicle Extension (s) | 3.0 | 3.0 | 3.0 | | 3.0 | 3.0 |
| Lane Grp Cap (vph) | 116 | 104 | 1477 | | 606 | 1484 |
| v/s Ratio Prot | c0.02 | | 0.33 | | | c0.47 |
| v/s Ratio Perm | | 0.00 | | | 0.02 | |
| v/c Ratio | 0.30 | 0.02 | 0.42 | | 0.03 | 0.59 |
| Uniform Delay, d1 | 27.1 | 26.5 | 1.9 | | 1.3 | 2.4 |
| Progression Factor | 1.00 | 1.00 | 1.00 | | 1.00 | 1.00 |
| Incremental Delay, d2 | 1.5 | 0.1 | 0.9 | | 0.1 | 1.7 |
| Delay (s) | 28.5 | 26.6 | 2.8 | | 1.4 | 4.1 |
| Level of Service | C | C | A | | A | A |
| Approach Delay (s) | 27.7 | | 2.8 | | | 4.0 |
| Approach LOS | C | | A | | | A |

| Intersection Summary | | | |
|---|---|---|---|
| HCM 2000 Control Delay | 4.5 | HCM 2000 Level of Service | A |
| HCM 2000 Volume to Capacity ratio | 0.56 | | |
| Actuated Cycle Length (s) | 61.6 | Sum of lost time (s) | 8.0 |
| Intersection Capacity Utilization | 52.1% | ICU Level of Service | A |
| Analysis Period (min) | 15 | | |

c Critical Lane Group



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Volume (vph) | 3 | 9 | 1 | 130 | 42 | 55 | 4 | 373 | 130 | 41 | 597 | 30 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Lane Width | 9 | 9 | 9 | 9 | 9 | 9 | 12 | 12 | 12 | 12 | 12 | 12 |
| Total Lost time (s) | | 4.0 | | | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Util. Factor | | 1.00 | | | 1.00 | | | 1.00 | | | 1.00 | |
| Frt | | 0.98 | | | 0.97 | | | 0.97 | | | 0.99 | |
| Flt Protected | | 0.99 | | | 0.97 | | | 1.00 | | | 1.00 | |
| Satd. Flow (prot) | | 1621 | | | 1582 | | | 1797 | | | 1831 | |
| Flt Permitted | | 0.94 | | | 0.82 | | | 0.99 | | | 0.93 | |
| Satd. Flow (perm) | | 1545 | | | 1332 | | | 1774 | | | 1713 | |
| Peak-hour factor, PHF | 0.75 | 0.63 | 0.25 | 0.88 | 0.66 | 0.87 | 0.33 | 0.79 | 0.79 | 0.75 | 0.89 | 0.36 |
| Adj. Flow (vph) | 4 | 14 | 4 | 148 | 64 | 63 | 12 | 472 | 165 | 55 | 671 | 83 |
| RTOR Reduction (vph) | 0 | 3 | 0 | 0 | 18 | 0 | 0 | 19 | 0 | 0 | 6 | 0 |
| Lane Group Flow (vph) | 0 | 19 | 0 | 0 | 257 | 0 | 0 | 630 | 0 | 0 | 803 | 0 |
| Turn Type | Perm | NA | | Perm | NA | | Perm | NA | | Perm | NA | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | | 14.6 | | | 14.6 | | | 38.2 | | | 38.2 | |
| Effective Green, g (s) | | 14.6 | | | 14.6 | | | 38.2 | | | 38.2 | |
| Actuated g/C Ratio | | 0.24 | | | 0.24 | | | 0.63 | | | 0.63 | |
| Clearance Time (s) | | 4.0 | | | 4.0 | | | 4.0 | | | 4.0 | |
| Vehicle Extension (s) | | 3.0 | | | 3.0 | | | 3.0 | | | 3.0 | |
| Lane Grp Cap (vph) | | 371 | | | 319 | | | 1114 | | | 1076 | |
| v/s Ratio Prot | | | | | | | | | | | | |
| v/s Ratio Perm | | 0.01 | | | c0.19 | | | 0.36 | | | c0.47 | |
| v/c Ratio | | 0.05 | | | 0.80 | | | 0.57 | | | 0.75 | |
| Uniform Delay, d1 | | 17.8 | | | 21.8 | | | 6.5 | | | 7.9 | |
| Progression Factor | | 1.00 | | | 1.00 | | | 1.00 | | | 1.00 | |
| Incremental Delay, d2 | | 0.1 | | | 13.7 | | | 2.1 | | | 4.7 | |
| Delay (s) | | 17.8 | | | 35.5 | | | 8.6 | | | 12.6 | |
| Level of Service | | B | | | D | | | A | | | B | |
| Approach Delay (s) | | 17.8 | | | 35.5 | | | 8.6 | | | 12.6 | |
| Approach LOS | | B | | | D | | | A | | | B | |

| Intersection Summary | | | |
|---|---|---|---|
| HCM 2000 Control Delay | 14.8 | HCM 2000 Level of Service | B |
| HCM 2000 Volume to Capacity ratio | 0.76 | | |
| Actuated Cycle Length (s) | 60.8 | Sum of lost time (s) | 8.0 |
| Intersection Capacity Utilization | 87.0% | ICU Level of Service | E |
| Analysis Period (min) | 15 | | |

c Critical Lane Group

| Intersection | |
|---|---|
| Intersection Delay, s/veh | 0.4 |

| Movement | WBL | WBR | NBT | NBR | SBL | SBT |
|---|---|---|---|---|---|---|
| Vol, veh/h | 12 | 12 | 693 | 21 | 22 | 659 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Free | Free | Free | Free |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | 0 | 100 | - | - | 100 | - |
| Veh in Median Storage, # | 0 | - | 0 | - | - | 0 |
| Grade, % | 0 | - | 0 | - | - | 0 |
| Peak Hour Factor | 92 | 92 | 92 | 92 | 92 | 92 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 13 | 13 | 753 | 23 | 24 | 716 |

| Major/Minor | Minor1 | | Major1 | | Major2 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 1529 | 765 | 0 | 0 | 776 | 0 |
| Stage 1 | 765 | - | - | - | - | - |
| Stage 2 | 764 | - | - | - | - | - |
| Follow-up Headway | 3.518 | 3.318 | - | - | 2.218 | - |
| Pot Capacity-1 Maneuver | 129 | 403 | - | - | 840 | - |
| Stage 1 | 459 | - | - | - | - | - |
| Stage 2 | 460 | - | - | - | - | - |
| Time blocked-Platoon, % | | | - | - | | - |
| Mov Capacity-1 Maneuver | 125 | 403 | - | - | 840 | - |
| Mov Capacity-2 Maneuver | 264 | - | - | - | - | - |
| Stage 1 | 459 | - | - | - | - | - |
| Stage 2 | 447 | - | - | - | - | - |

| Approach | WB | NB | SB |
|---|---|---|---|
| HCM Control Delay, s | 16.8 | 0 | 0.3 |
| HCM LOS | C | | |

| Minor Lane / Major Mvmt | NBT | NBR | WBLn1 | WBLn2 | SBL | SBT |
|---|---|---|---|---|---|---|
| Capacity (veh/h) | - | - | 264 | 403 | 840 | - |
| HCM Lane V/C Ratio | - | - | 0.049 | 0.032 | 0.028 | - |
| HCM Control Delay (s) | - | - | 19.3 | 14.2 | 9.411 | - |
| HCM Lane LOS | | | C | B | A | |
| HCM 95th %tile Q(veh) | - | - | 0.155 | 0.1 | 0.088 | - |

Notes

~ : Volume Exceeds Capacity; $ : Delay Exceeds 300 Seconds; Error : Computation Not Defined

| Intersection | |
|---|---|
| Intersection Delay, s/veh | 8.8 |

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Vol, veh/h | 8 | 20 | 1 | 29 | 8 | 16 | 10 | 563 | 89 | 57 | 441 | 11 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Stop | Stop | Stop | Stop | Free | Free | Free | Free | Free | Free |
| RT Channelized | - | - | None | - | - | None | - | - | None | - | - | None |
| Storage Length | - | - | - | - | - | - | - | - | - | - | - | - |
| Veh in Median Storage, # | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Grade, % | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Peak Hour Factor | 58 | 67 | 25 | 57 | 50 | 41 | 56 | 91 | 80 | 73 | 94 | 83 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 14 | 30 | 4 | 51 | 16 | 39 | 18 | 619 | 111 | 78 | 469 | 13 |

| Major/Minor | Minor2 | | | Minor1 | | | Major1 | | | Major2 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Conflicting Flow All | 1370 | 1398 | 476 | 1359 | 1349 | 674 | 482 | 0 | 0 | 730 | 0 | 0 |
| Stage 1 | 632 | 632 | - | 710 | 710 | - | - | - | - | - | - | - |
| Stage 2 | 738 | 766 | - | 649 | 639 | - | - | - | - | - | - | - |
| Follow-up Headway | 3.518 | 4.018 | 3.318 | 3.518 | 4.018 | 3.318 | 2.218 | - | - | 2.218 | - | - |
| Pot Capacity-1 Maneuver | 124 | 141 | 589 | 126 | 151 | 455 | 1081 | - | - | 874 | - | - |
| Stage 1 | 468 | 474 | - | 424 | 437 | - | - | - | - | - | - | - |
| Stage 2 | 410 | 412 | - | 458 | 470 | - | - | - | - | - | - | - |
| Time blocked-Platoon, % | | | | | | | | - | - | | - | - |
| Mov Capacity-1 Maneuver | 91 | 120 | 589 | 90 | 129 | 455 | 1081 | - | - | 874 | - | - |
| Mov Capacity-2 Maneuver | 91 | 120 | - | 90 | 129 | - | - | - | - | - | - | - |
| Stage 1 | 454 | 416 | - | 412 | 424 | - | - | - | - | - | - | - |
| Stage 2 | 350 | 400 | - | 371 | 413 | - | - | - | - | - | - | - |

| Approach | EB | WB | NB | SB |
|---|---|---|---|---|
| HCM Control Delay, s | 55.5 | 88.6 | 0.2 | 1.3 |
| HCM LOS | F | F | | |

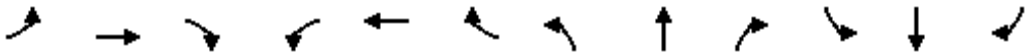
| Minor Lane / Major Mvmt | NBL | NBT | NBR | EBLn1 | WBLn1 | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|
| Capacity (veh/h) | 1081 | - | - | 117 | 137 | 874 | - | - |
| HCM Lane V/C Ratio | 0.017 | - | - | 0.407 | 0.773 | 0.089 | - | - |
| HCM Control Delay (s) | 8.386 | 0 | - | 55.5 | 88.6 | 9.523 | 0 | - |
| HCM Lane LOS | A | A | | F | F | A | A | |
| HCM 95th %tile Q(veh) | 0.05 | - | - | 1.72 | 4.651 | 0.293 | - | - |

| Notes |
|---|
| ~ : Volume Exceeds Capacity; $ : Delay Exceeds 300 Seconds; Error : Computation Not Defined |

| Movement | WBL | WBR | NBT | NBR | SBL | SBT |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Volume (vph) | 12 | 12 | 693 | 21 | 22 | 659 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Lane Width | 9 | 9 | 12 | 12 | 12 | 12 |
| Total Lost time (s) | 4.0 | 4.0 | 4.0 | | 4.0 | 4.0 |
| Lane Util. Factor | 1.00 | 1.00 | 1.00 | | 1.00 | 1.00 |
| Frt | 1.00 | 0.85 | 1.00 | | 1.00 | 1.00 |
| Flt Protected | 0.95 | 1.00 | 1.00 | | 0.95 | 1.00 |
| Satd. Flow (prot) | 1593 | 1425 | 1855 | | 1770 | 1863 |
| Flt Permitted | 0.95 | 1.00 | 1.00 | | 0.35 | 1.00 |
| Satd. Flow (perm) | 1593 | 1425 | 1855 | | 648 | 1863 |
| Peak-hour factor, PHF | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Adj. Flow (vph) | 13 | 13 | 753 | 23 | 24 | 716 |
| RTOR Reduction (vph) | 0 | 13 | 1 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 13 | 0 | 775 | 0 | 24 | 716 |
| Turn Type | NA | Perm | NA | | Perm | NA |
| Protected Phases | 8 | | 2 | | | 6 |
| Permitted Phases | | 8 | | | 6 | |
| Actuated Green, G (s) | 1.2 | 1.2 | 46.3 | | 46.3 | 46.3 |
| Effective Green, g (s) | 1.2 | 1.2 | 46.3 | | 46.3 | 46.3 |
| Actuated g/C Ratio | 0.02 | 0.02 | 0.83 | | 0.83 | 0.83 |
| Clearance Time (s) | 4.0 | 4.0 | 4.0 | | 4.0 | 4.0 |
| Vehicle Extension (s) | 3.0 | 3.0 | 3.0 | | 3.0 | 3.0 |
| Lane Grp Cap (vph) | 34 | 30 | 1547 | | 540 | 1554 |
| v/s Ratio Prot | c0.01 | | c0.42 | | | 0.38 |
| v/s Ratio Perm | | 0.00 | | | 0.04 | |
| v/c Ratio | 0.38 | 0.01 | 0.50 | | 0.04 | 0.46 |
| Uniform Delay, d1 | 26.8 | 26.6 | 1.3 | | 0.8 | 1.2 |
| Progression Factor | 1.00 | 1.00 | 1.00 | | 1.00 | 1.00 |
| Incremental Delay, d2 | 7.0 | 0.1 | 1.2 | | 0.2 | 1.0 |
| Delay (s) | 33.8 | 26.7 | 2.5 | | 0.9 | 2.2 |
| Level of Service | C | C | A | | A | A |
| Approach Delay (s) | 30.3 | | 2.5 | | | 2.2 |
| Approach LOS | C | | A | | | A |

| Intersection Summary | | | |
|---|---|---|---|
| HCM 2000 Control Delay | 2.8 | HCM 2000 Level of Service | A |
| HCM 2000 Volume to Capacity ratio | 0.50 | | |
| Actuated Cycle Length (s) | 55.5 | Sum of lost time (s) | 8.0 |
| Intersection Capacity Utilization | 47.7% | ICU Level of Service | A |
| Analysis Period (min) | 15 | | |

c Critical Lane Group



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Volume (vph) | 8 | 20 | 1 | 29 | 8 | 16 | 10 | 563 | 89 | 57 | 441 | 11 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Lane Width | 9 | 9 | 9 | 9 | 9 | 9 | 12 | 12 | 12 | 12 | 12 | 12 |
| Total Lost time (s) | | 4.0 | | | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Util. Factor | | 1.00 | | | 1.00 | | | 1.00 | | | 1.00 | |
| Frt | | 0.99 | | | 0.95 | | | 0.98 | | | 1.00 | |
| Flt Protected | | 0.99 | | | 0.98 | | | 1.00 | | | 0.99 | |
| Satd. Flow (prot) | | 1634 | | | 1556 | | | 1823 | | | 1844 | |
| Flt Permitted | | 0.89 | | | 0.82 | | | 0.99 | | | 0.85 | |
| Satd. Flow (perm) | | 1471 | | | 1311 | | | 1800 | | | 1581 | |
| Peak-hour factor, PHF | 0.58 | 0.67 | 0.25 | 0.57 | 0.50 | 0.41 | 0.56 | 0.91 | 0.80 | 0.73 | 0.94 | 0.83 |
| Adj. Flow (vph) | 14 | 30 | 4 | 51 | 16 | 39 | 18 | 619 | 111 | 78 | 469 | 13 |
| RTOR Reduction (vph) | 0 | 3 | 0 | 0 | 33 | 0 | 0 | 9 | 0 | 0 | 1 | 0 |
| Lane Group Flow (vph) | 0 | 45 | 0 | 0 | 73 | 0 | 0 | 739 | 0 | 0 | 559 | 0 |
| Turn Type | Perm | NA | | Perm | NA | | Perm | NA | | Perm | NA | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | | 6.4 | | | 6.4 | | | 28.0 | | | 28.0 | |
| Effective Green, g (s) | | 6.4 | | | 6.4 | | | 28.0 | | | 28.0 | |
| Actuated g/C Ratio | | 0.15 | | | 0.15 | | | 0.66 | | | 0.66 | |
| Clearance Time (s) | | 4.0 | | | 4.0 | | | 4.0 | | | 4.0 | |
| Vehicle Extension (s) | | 3.0 | | | 3.0 | | | 3.0 | | | 3.0 | |
| Lane Grp Cap (vph) | | 222 | | | 197 | | | 1188 | | | 1044 | |
| v/s Ratio Prot | | | | | | | | | | | | |
| v/s Ratio Perm | | 0.03 | | | c0.06 | | | c0.41 | | | 0.35 | |
| v/c Ratio | | 0.20 | | | 0.37 | | | 0.62 | | | 0.54 | |
| Uniform Delay, d1 | | 15.8 | | | 16.2 | | | 4.2 | | | 3.8 | |
| Progression Factor | | 1.00 | | | 1.00 | | | 1.00 | | | 1.00 | |
| Incremental Delay, d2 | | 0.4 | | | 1.2 | | | 1.0 | | | 0.5 | |
| Delay (s) | | 16.2 | | | 17.4 | | | 5.2 | | | 4.3 | |
| Level of Service | | B | | | B | | | A | | | A | |
| Approach Delay (s) | | 16.2 | | | 17.4 | | | 5.2 | | | 4.3 | |
| Approach LOS | | B | | | B | | | A | | | A | |

| Intersection Summary | | | |
|---|---|---|---|
| HCM 2000 Control Delay | 6.1 | HCM 2000 Level of Service | A |
| HCM 2000 Volume to Capacity ratio | 0.57 | | |
| Actuated Cycle Length (s) | 42.4 | Sum of lost time (s) | 8.0 |
| Intersection Capacity Utilization | 70.3% | ICU Level of Service | C |
| Analysis Period (min) | 15 | | |

c Critical Lane Group

| Intersection | |
|---|---|
| Intersection Delay, s/veh | 20.6 |

| Movement | WBL | WBR | NBT | NBR | SBL | SBT |
|---|---|---|---|---|---|---|
| Vol, veh/h | 81 | 74 | 547 | 385 | 379 | 800 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Free | Free | Free | Free |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | 0 | 100 | - | - | 100 | - |
| Veh in Median Storage, # | 0 | - | 0 | - | - | 0 |
| Grade, % | 0 | - | 0 | - | - | 0 |
| Peak Hour Factor | 92 | 92 | 92 | 92 | 92 | 92 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 88 | 80 | 595 | 418 | 412 | 870 |

| Major/Minor | Minor1 | | Major1 | | Major2 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 2497 | 804 | 0 | 0 | 1013 | 0 |
| Stage 1 | 804 | - | - | - | - | - |
| Stage 2 | 1693 | - | - | - | - | - |
| Follow-up Headway | 3.518 | 3.318 | - | - | 2.218 | - |
| Pot Capacity-1 Maneuver | # 32 | 383 | - | - | 684 | - |
| Stage 1 | 440 | - | - | - | - | - |
| Stage 2 | 164 | - | - | - | - | - |
| Time blocked-Platoon, % | | | - | - | | - |
| Mov Capacity-1 Maneuver | # 13 | 383 | - | - | 684 | - |
| Mov Capacity-2 Maneuver | # 54 | - | - | - | - | - |
| Stage 1 | 440 | - | - | - | - | - |
| Stage 2 | # 65 | - | - | - | - | - |

| Approach | WB | NB | SB |
|---|---|---|---|
| HCM Control Delay, s | 257 | 0 | 5.8 |
| HCM LOS | F | | |

| Minor Lane / Major Mvmt | NBT | NBR | WBLn1 | WBLn2 | SBL | SBT |
|---|---|---|---|---|---|---|
| Capacity (veh/h) | - | - | 54 | 383 | 684 | - |
| HCM Lane V/C Ratio | - | - | 1.63 | 0.21 | 0.602 | - |
| HCM Control Delay (s) | - | - | $ 476.3 | 16.9 | 17.907 | - |
| HCM Lane LOS | | | F | C | C | |
| HCM 95th %tile Q(veh) | - | - | 8.255 | 0.781 | 4.059 | - |

| Notes |
|---|
| ~ : Volume Exceeds Capacity; $ : Delay Exceeds 300 Seconds; Error : Computation Not Defined |

| Intersection | |
|---|---|
| Intersection Delay, s/veh | 399.6 |

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Vol, veh/h | 7 | 13 | 4 | 130 | 75 | 55 | 29 | 373 | 130 | 41 | 597 | 54 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Stop | Stop | Stop | Stop | Free | Free | Free | Free | Free | Free |
| RT Channelized | - | - | None | - | - | None | - | - | None | - | - | None |
| Storage Length | - | - | - | - | - | - | - | - | - | - | - | - |
| Veh in Median Storage, # | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Grade, % | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Peak Hour Factor | 58 | 67 | 25 | 57 | 50 | 41 | 56 | 91 | 80 | 73 | 94 | 83 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 12 | 19 | 16 | 228 | 150 | 134 | 52 | 410 | 162 | 56 | 635 | 65 |

| Major/Minor | Minor2 | | | Minor1 | | | Major1 | | | Major2 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Conflicting Flow All | 1517 | 1456 | 668 | 1393 | 1407 | 491 | 700 | 0 | 0 | 572 | 0 | 0 |
| Stage 1 | 780 | 780 | - | 595 | 595 | - | - | - | - | - | - | - |
| Stage 2 | 737 | 676 | - | 798 | 812 | - | - | - | - | - | - | - |
| Follow-up Headway | 3.518 | 4.018 | 3.318 | 3.518 | 4.018 | 3.318 | 2.218 | - | - | 2.218 | - | - |
| Pot Capacity-1 Maneuver | 98 | 130 | 458 | # 119 | # 139 | 578 | 897 | - | - | 1001 | - | - |
| Stage 1 | 388 | 406 | - | 491 | 492 | - | - | - | - | - | - | - |
| Stage 2 | 410 | 453 | - | 380 | 392 | - | - | - | - | - | - | - |
| Time blocked-Platoon, % | | | | | | | | - | - | | - | - |
| Mov Capacity-1 Maneuver | - | 108 | 458 | # 86 | # 115 | 578 | 897 | - | - | 1001 | - | - |
| Mov Capacity-2 Maneuver | - | 108 | - | # 86 | # 115 | - | - | - | - | - | - | - |
| Stage 1 | 354 | 368 | - | 448 | 449 | - | - | - | - | - | - | - |
| Stage 2 | 191 | 414 | - | 315 | 356 | - | - | - | - | - | - | - |

| Approach | EB | WB | NB | SB |
|---|---|---|---|---|
| HCM Control Delay, s | + | $ 1511.6 | 0.8 | 0.7 |
| HCM LOS | - | F | | |

| Minor Lane / Major Mvmt | NBL | NBT | NBR | EBLn1 | WBLn1 | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|
| Capacity (veh/h) | 897 | - | - | + | 122 | 1001 | - | - |
| HCM Lane V/C Ratio | 0.058 | - | - | + | 4.198 | 0.056 | - | - |
| HCM Control Delay (s) | 9.259 | 0 | - | + | $ 1511.6 | 8.81 | 0 | - |
| HCM Lane LOS | A | A | | + | F | A | A | |
| HCM 95th %tile Q(veh) | 0.183 | - | - | + | 52.44 | 0.178 | - | - |

| Notes |
|---|
| ~ : Volume Exceeds Capacity; $ : Delay Exceeds 300 Seconds; Error : Computation Not Defined |

| Intersection | |
|---|---|
| Intersection Delay, s/veh | 2.9 |

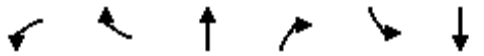
| Movement | EBT | EBR | WBL | WBT | NBL | NBR |
|---|---|---|---|---|---|---|
| Vol, veh/h | 46 | 728 | 81 | 134 | 99 | 11 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Stop | Stop |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | - | - | - | - | 0 | - |
| Veh in Median Storage, # | 0 | - | - | 0 | 0 | - |
| Grade, % | 0 | - | - | 0 | 0 | - |
| Peak Hour Factor | 92 | 92 | 92 | 92 | 92 | 92 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 50 | 791 | 88 | 146 | 108 | 12 |

| Major/Minor | Major1 | | Major2 | | Minor1 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 0 | 0 | 841 | 0 | 768 | 446 |
| Stage 1 | - | - | - | - | 446 | - |
| Stage 2 | - | - | - | - | 322 | - |
| Follow-up Headway | - | - | 2.218 | - | 3.518 | 3.318 |
| Pot Capacity-1 Maneuver | - | - | 794 | - | 370 | 612 |
| Stage 1 | - | - | - | - | 645 | - |
| Stage 2 | - | - | - | - | 735 | - |
| Time blocked-Platoon, % | - | - | | - | | |
| Mov Capacity-1 Maneuver | - | - | 794 | - | 325 | 612 |
| Mov Capacity-2 Maneuver | - | - | - | - | 325 | - |
| Stage 1 | - | - | - | - | 645 | - |
| Stage 2 | - | - | - | - | 646 | - |

| Approach | EB | WB | NB |
|---|---|---|---|
| HCM Control Delay, s | 0 | 3.8 | 21.2 |
| HCM LOS | | | C |

| Minor Lane / Major Mvmt | NBLn1 | EBT | EBR | WBL | WBT |
|---|---|---|---|---|---|
| Capacity (veh/h) | 341 | - | - | 794 | - |
| HCM Lane V/C Ratio | 0.351 | - | - | 0.111 | - |
| HCM Control Delay (s) | 21.2 | - | - | 10.099 | 0 |
| HCM Lane LOS | C | | | B | A |
| HCM 95th %tile Q(veh) | 1.535 | - | - | 0.373 | - |

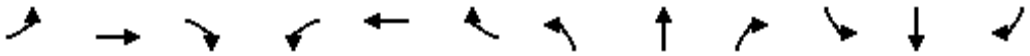
| Notes |
|---|
| ~ : Volume Exceeds Capacity; $ : Delay Exceeds 300 Seconds; Error : Computation Not Defined |



| Movement | WBL | WBR | NBT | NBR | SBL | SBT |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Volume (vph) | 81 | 74 | 547 | 385 | 379 | 800 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Lane Width | 9 | 9 | 12 | 12 | 12 | 12 |
| Total Lost time (s) | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 |
| Lane Util. Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Frt | 1.00 | 0.85 | 1.00 | 0.85 | 1.00 | 1.00 |
| Flt Protected | 0.95 | 1.00 | 1.00 | 1.00 | 0.95 | 1.00 |
| Satd. Flow (prot) | 1593 | 1425 | 1863 | 1583 | 1770 | 1863 |
| Flt Permitted | 0.95 | 1.00 | 1.00 | 1.00 | 0.20 | 1.00 |
| Satd. Flow (perm) | 1593 | 1425 | 1863 | 1583 | 371 | 1863 |
| Peak-hour factor, PHF | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Adj. Flow (vph) | 88 | 80 | 595 | 418 | 412 | 870 |
| RTOR Reduction (vph) | 0 | 52 | 0 | 64 | 0 | 0 |
| Lane Group Flow (vph) | 88 | 28 | 595 | 354 | 412 | 870 |
| Turn Type | NA | pm+ov | NA | pm+ov | pm+pt | NA |
| Protected Phases | 8 | 1 | 2 | 8 | 1 | 6 |
| Permitted Phases | | 8 | | 2 | 6 | |
| Actuated Green, G (s) | 8.7 | 20.5 | 25.3 | 34.0 | 41.1 | 41.1 |
| Effective Green, g (s) | 8.7 | 20.5 | 25.3 | 34.0 | 41.1 | 41.1 |
| Actuated g/C Ratio | 0.15 | 0.35 | 0.44 | 0.59 | 0.71 | 0.71 |
| Clearance Time (s) | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 |
| Vehicle Extension (s) | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 |
| Lane Grp Cap (vph) | 239 | 604 | 815 | 1040 | 549 | 1324 |
| v/s Ratio Prot | 0.06 | 0.01 | 0.32 | c0.05 | c0.15 | 0.47 |
| v/s Ratio Perm | | 0.01 | | 0.17 | c0.38 | |
| v/c Ratio | 0.37 | 0.05 | 0.73 | 0.34 | 0.75 | 0.66 |
| Uniform Delay, d1 | 22.1 | 12.2 | 13.4 | 6.1 | 8.7 | 4.5 |
| Progression Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Incremental Delay, d2 | 1.0 | 0.0 | 5.7 | 0.2 | 5.7 | 2.6 |
| Delay (s) | 23.0 | 12.3 | 19.1 | 6.3 | 14.4 | 7.1 |
| Level of Service | C | B | B | A | B | A |
| Approach Delay (s) | 17.9 | | 13.8 | | | 9.4 |
| Approach LOS | B | | B | | | A |

| Intersection Summary | | | |
|---|---|---|---|
| HCM 2000 Control Delay | 11.8 | HCM 2000 Level of Service | B |
| HCM 2000 Volume to Capacity ratio | 0.74 | | |
| Actuated Cycle Length (s) | 57.8 | Sum of lost time (s) | 12.0 |
| Intersection Capacity Utilization | 64.3% | ICU Level of Service | C |
| Analysis Period (min) | 15 | | |

c Critical Lane Group



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Volume (vph) | 7 | 13 | 4 | 130 | 75 | 55 | 29 | 373 | 130 | 41 | 597 | 54 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Lane Width | 9 | 9 | 9 | 9 | 9 | 9 | 12 | 12 | 12 | 12 | 12 | 12 |
| Total Lost time (s) | | 4.0 | | | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Util. Factor | | 1.00 | | | 1.00 | | | 1.00 | | | 1.00 | |
| Frt | | 0.95 | | | 0.96 | | | 0.96 | | | 0.99 | |
| Flt Protected | | 0.99 | | | 0.98 | | | 1.00 | | | 1.00 | |
| Satd. Flow (prot) | | 1579 | | | 1582 | | | 1790 | | | 1834 | |
| Flt Permitted | | 0.89 | | | 0.83 | | | 0.92 | | | 0.93 | |
| Satd. Flow (perm) | | 1417 | | | 1349 | | | 1645 | | | 1714 | |
| Peak-hour factor, PHF | 0.58 | 0.67 | 0.25 | 0.57 | 0.50 | 0.41 | 0.56 | 0.91 | 0.80 | 0.73 | 0.94 | 0.83 |
| Adj. Flow (vph) | 12 | 19 | 16 | 228 | 150 | 134 | 52 | 410 | 162 | 56 | 635 | 65 |
| RTOR Reduction (vph) | 0 | 10 | 0 | 0 | 22 | 0 | 0 | 21 | 0 | 0 | 6 | 0 |
| Lane Group Flow (vph) | 0 | 37 | 0 | 0 | 490 | 0 | 0 | 603 | 0 | 0 | 751 | 0 |
| Turn Type | Perm | NA | | Perm | NA | | Perm | NA | | Perm | NA | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | | 22.0 | | | 22.0 | | | 30.0 | | | 30.0 | |
| Effective Green, g (s) | | 22.0 | | | 22.0 | | | 30.0 | | | 30.0 | |
| Actuated g/C Ratio | | 0.37 | | | 0.37 | | | 0.50 | | | 0.50 | |
| Clearance Time (s) | | 4.0 | | | 4.0 | | | 4.0 | | | 4.0 | |
| Vehicle Extension (s) | | 3.0 | | | 3.0 | | | 3.0 | | | 3.0 | |
| Lane Grp Cap (vph) | | 519 | | | 494 | | | 822 | | | 857 | |
| v/s Ratio Prot | | | | | | | | | | | | |
| v/s Ratio Perm | | 0.03 | | | c0.36 | | | 0.37 | | | c0.44 | |
| v/c Ratio | | 0.07 | | | 0.99 | | | 0.73 | | | 0.88 | |
| Uniform Delay, d1 | | 12.4 | | | 18.9 | | | 11.8 | | | 13.3 | |
| Progression Factor | | 1.00 | | | 1.00 | | | 1.00 | | | 1.00 | |
| Incremental Delay, d2 | | 0.1 | | | 38.4 | | | 5.8 | | | 12.2 | |
| Delay (s) | | 12.4 | | | 57.4 | | | 17.6 | | | 25.5 | |
| Level of Service | | B | | | E | | | B | | | C | |
| Approach Delay (s) | | 12.4 | | | 57.4 | | | 17.6 | | | 25.5 | |
| Approach LOS | | B | | | E | | | B | | | C | |

| Intersection Summary | | | |
|---|---|---|---|
| HCM 2000 Control Delay | 31.1 | HCM 2000 Level of Service | C |
| HCM 2000 Volume to Capacity ratio | 0.92 | | |
| Actuated Cycle Length (s) | 60.0 | Sum of lost time (s) | 8.0 |
| Intersection Capacity Utilization | 75.9% | ICU Level of Service | D |
| Analysis Period (min) | 15 | | |

c Critical Lane Group

| Movement | EBT | EBR | WBL | WBT | NBL | NBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Volume (vph) | 46 | 728 | 81 | 134 | 99 | 11 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Lane Width | 9 | 9 | 9 | 9 | 12 | 12 |
| Total Lost time (s) | 4.0 | | | 4.0 | 4.0 | |
| Lane Util. Factor | 1.00 | | | 1.00 | 1.00 | |
| Frt | 0.87 | | | 1.00 | 0.99 | |
| Flt Protected | 1.00 | | | 0.98 | 0.96 | |
| Satd. Flow (prot) | 1464 | | | 1646 | 1758 | |
| Flt Permitted | 1.00 | | | 0.31 | 0.96 | |
| Satd. Flow (perm) | 1464 | | | 526 | 1758 | |
| Peak-hour factor, PHF | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Adj. Flow (vph) | 50 | 791 | 88 | 146 | 108 | 12 |
| RTOR Reduction (vph) | 422 | 0 | 0 | 0 | 8 | 0 |
| Lane Group Flow (vph) | 419 | 0 | 0 | 234 | 112 | 0 |
| Turn Type | NA | | Perm | NA | NA | |
| Protected Phases | 4 | | | 8 | 2 | |
| Permitted Phases | | | 8 | | | |
| Actuated Green, G (s) | 21.0 | | | 21.0 | 16.0 | |
| Effective Green, g (s) | 21.0 | | | 21.0 | 16.0 | |
| Actuated g/C Ratio | 0.47 | | | 0.47 | 0.36 | |
| Clearance Time (s) | 4.0 | | | 4.0 | 4.0 | |
| Vehicle Extension (s) | 3.0 | | | 3.0 | 3.0 | |
| Lane Grp Cap (vph) | 683 | | | 245 | 625 | |
| v/s Ratio Prot | 0.29 | | | | c0.06 | |
| v/s Ratio Perm | | | | c0.44 | | |
| v/c Ratio | 0.61 | | | 0.96 | 0.18 | |
| Uniform Delay, d1 | 9.0 | | | 11.5 | 10.0 | |
| Progression Factor | 1.00 | | | 1.00 | 1.00 | |
| Incremental Delay, d2 | 1.6 | | | 44.7 | 0.6 | |
| Delay (s) | 10.6 | | | 56.3 | 10.6 | |
| Level of Service | B | | | E | B | |
| Approach Delay (s) | 10.6 | | | 56.3 | 10.6 | |
| Approach LOS | B | | | E | B | |

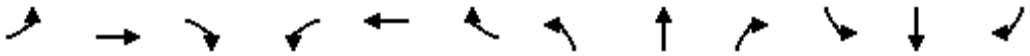
| Intersection Summary | | | |
|---|---|---|---|
| HCM 2000 Control Delay | 19.6 | HCM 2000 Level of Service | B |
| HCM 2000 Volume to Capacity ratio | 0.62 | | |
| Actuated Cycle Length (s) | 45.0 | Sum of lost time (s) | 8.0 |
| Intersection Capacity Utilization | 75.1% | ICU Level of Service | D |
| Analysis Period (min) | 15 | | |

c Critical Lane Group

| Movement | WBL | WBR | NBT | NBR | SBL | SBT |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Volume (vph) | 81 | 74 | 547 | 385 | 379 | 800 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Lane Width | 9 | 9 | 12 | 12 | 12 | 12 |
| Total Lost time (s) | 4.0 | 4.0 | 4.0 | | 4.0 | 4.0 |
| Lane Util. Factor | 1.00 | 1.00 | 1.00 | | 1.00 | 1.00 |
| Frt | 1.00 | 0.85 | 0.94 | | 1.00 | 1.00 |
| Flt Protected | 0.95 | 1.00 | 1.00 | | 0.95 | 1.00 |
| Satd. Flow (prot) | 1593 | 1425 | 1759 | | 1770 | 1863 |
| Flt Permitted | 0.95 | 1.00 | 1.00 | | 0.06 | 1.00 |
| Satd. Flow (perm) | 1593 | 1425 | 1759 | | 114 | 1863 |
| Peak-hour factor, PHF | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Adj. Flow (vph) | 88 | 80 | 595 | 418 | 412 | 870 |
| RTOR Reduction (vph) | 0 | 72 | 22 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 88 | 8 | 991 | 0 | 412 | 870 |
| Turn Type | NA | Perm | NA | | pm+pt | NA |
| Protected Phases | 8 | | 2 | | 1 | 6 |
| Permitted Phases | | 8 | | | 6 | |
| Actuated Green, G (s) | 11.1 | 11.1 | 61.1 | | 86.1 | 86.1 |
| Effective Green, g (s) | 11.1 | 11.1 | 61.1 | | 86.1 | 86.1 |
| Actuated g/C Ratio | 0.11 | 0.11 | 0.58 | | 0.82 | 0.82 |
| Clearance Time (s) | 4.0 | 4.0 | 4.0 | | 4.0 | 4.0 |
| Vehicle Extension (s) | 3.0 | 3.0 | 3.0 | | 3.0 | 3.0 |
| Lane Grp Cap (vph) | 168 | 150 | 1021 | | 423 | 1524 |
| v/s Ratio Prot | c0.06 | | 0.56 | | c0.19 | 0.47 |
| v/s Ratio Perm | | 0.01 | | | c0.60 | |
| v/c Ratio | 0.52 | 0.06 | 0.97 | | 0.97 | 0.57 |
| Uniform Delay, d1 | 44.5 | 42.3 | 21.2 | | 36.0 | 3.3 |
| Progression Factor | 1.00 | 1.00 | 1.00 | | 1.00 | 1.00 |
| Incremental Delay, d2 | 2.9 | 0.2 | 22.0 | | 36.7 | 1.6 |
| Delay (s) | 47.5 | 42.5 | 43.1 | | 72.7 | 4.8 |
| Level of Service | D | D | D | | E | A |
| Approach Delay (s) | 45.1 | | 43.1 | | | 26.6 |
| Approach LOS | D | | D | | | C |

| Intersection Summary | | | |
|---|---|---|---|
| HCM 2000 Control Delay | 34.7 | HCM 2000 Level of Service | C |
| HCM 2000 Volume to Capacity ratio | 0.95 | | |
| Actuated Cycle Length (s) | 105.2 | Sum of lost time (s) | 12.0 |
| Intersection Capacity Utilization | 87.8% | ICU Level of Service | E |
| Analysis Period (min) | 15 | | |

c Critical Lane Group



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Volume (vph) | 7 | 13 | 4 | 130 | 75 | 55 | 29 | 373 | 130 | 41 | 597 | 54 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Lane Width | 9 | 9 | 9 | 9 | 9 | 9 | 12 | 12 | 12 | 12 | 12 | 12 |
| Total Lost time (s) | | 4.0 | | | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Util. Factor | | 1.00 | | | 1.00 | | | 1.00 | | | 1.00 | |
| Frt | | 0.95 | | | 0.96 | | | 0.96 | | | 0.99 | |
| Flt Protected | | 0.99 | | | 0.98 | | | 1.00 | | | 1.00 | |
| Satd. Flow (prot) | | 1579 | | | 1582 | | | 1790 | | | 1834 | |
| Flt Permitted | | 0.89 | | | 0.83 | | | 0.92 | | | 0.93 | |
| Satd. Flow (perm) | | 1417 | | | 1349 | | | 1645 | | | 1714 | |
| Peak-hour factor, PHF | 0.58 | 0.67 | 0.25 | 0.57 | 0.50 | 0.41 | 0.56 | 0.91 | 0.80 | 0.73 | 0.94 | 0.83 |
| Adj. Flow (vph) | 12 | 19 | 16 | 228 | 150 | 134 | 52 | 410 | 162 | 56 | 635 | 65 |
| RTOR Reduction (vph) | 0 | 10 | 0 | 0 | 22 | 0 | 0 | 21 | 0 | 0 | 6 | 0 |
| Lane Group Flow (vph) | 0 | 37 | 0 | 0 | 490 | 0 | 0 | 603 | 0 | 0 | 751 | 0 |
| Turn Type | Perm | NA | | Perm | NA | | Perm | NA | | Perm | NA | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | | 22.0 | | | 22.0 | | | 30.0 | | | 30.0 | |
| Effective Green, g (s) | | 22.0 | | | 22.0 | | | 30.0 | | | 30.0 | |
| Actuated g/C Ratio | | 0.37 | | | 0.37 | | | 0.50 | | | 0.50 | |
| Clearance Time (s) | | 4.0 | | | 4.0 | | | 4.0 | | | 4.0 | |
| Vehicle Extension (s) | | 3.0 | | | 3.0 | | | 3.0 | | | 3.0 | |
| Lane Grp Cap (vph) | | 519 | | | 494 | | | 822 | | | 857 | |
| v/s Ratio Prot | | | | | | | | | | | | |
| v/s Ratio Perm | | 0.03 | | | c0.36 | | | 0.37 | | | c0.44 | |
| v/c Ratio | | 0.07 | | | 0.99 | | | 0.73 | | | 0.88 | |
| Uniform Delay, d1 | | 12.4 | | | 18.9 | | | 11.8 | | | 13.3 | |
| Progression Factor | | 1.00 | | | 1.00 | | | 1.00 | | | 1.00 | |
| Incremental Delay, d2 | | 0.1 | | | 38.4 | | | 5.8 | | | 12.2 | |
| Delay (s) | | 12.4 | | | 57.4 | | | 17.6 | | | 25.5 | |
| Level of Service | | B | | | E | | | B | | | C | |
| Approach Delay (s) | | 12.4 | | | 57.4 | | | 17.6 | | | 25.5 | |
| Approach LOS | | B | | | E | | | B | | | C | |

| Intersection Summary | | | |
|---|---|---|---|
| HCM 2000 Control Delay | 31.1 | HCM 2000 Level of Service | C |
| HCM 2000 Volume to Capacity ratio | 0.92 | | |
| Actuated Cycle Length (s) | 60.0 | Sum of lost time (s) | 8.0 |
| Intersection Capacity Utilization | 75.9% | ICU Level of Service | D |
| Analysis Period (min) | 15 | | |

c Critical Lane Group

| Intersection | |
|---|---|
| Intersection Delay, s/veh | 4.3 |

| Movement | NBT | NBR | SBL | SBT | SWL | SWR |
|---|---|---|---|---|---|---|
| Vol, veh/h | 99 | 11 | 46 | 728 | 81 | 134 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Stop | Stop |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | - | - | - | - | 0 | - |
| Veh in Median Storage, # | 0 | - | - | 0 | 0 | - |
| Grade, % | 0 | - | - | 0 | 0 | - |
| Peak Hour Factor | 92 | 92 | 92 | 92 | 92 | 92 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 108 | 12 | 50 | 791 | 88 | 146 |

| Major/Minor | Major1 | | Major2 | | Minor1 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 0 | 0 | 120 | 0 | 1005 | 114 |
| Stage 1 | - | - | - | - | 114 | - |
| Stage 2 | - | - | - | - | 891 | - |
| Follow-up Headway | - | - | 2.218 | - | 3.518 | 3.318 |
| Pot Capacity-1 Maneuver | - | - | 1468 | - | 268 | 939 |
| Stage 1 | - | - | - | - | 911 | - |
| Stage 2 | - | - | - | - | 401 | - |
| Time blocked-Platoon, % | - | - | | - | | |
| Mov Capacity-1 Maneuver | - | - | 1468 | - | 252 | 939 |
| Mov Capacity-2 Maneuver | - | - | - | - | 252 | - |
| Stage 1 | - | - | - | - | 911 | - |
| Stage 2 | - | - | - | - | 377 | - |

| Approach | NB | SB | SW |
|---|---|---|---|
| HCM Control Delay, s | 0 | 0.4 | 20.4 |
| HCM LOS | | | C |

| Minor Lane / Major Mvmt | NBT | NBR | SBL | SBT | SWLn1 |
|---|---|---|---|---|---|
| Capacity (veh/h) | - | - | 1468 | - | 463 |
| HCM Lane V/C Ratio | - | - | 0.034 | - | 0.505 |
| HCM Control Delay (s) | - | - | 7.539 | 0 | 20.4 |
| HCM Lane LOS | | | A | A | C |
| HCM 95th %tile Q(veh) | - | - | 0.106 | - | 2.787 |

| Notes |
|---|
| ~ : Volume Exceeds Capacity; $ : Delay Exceeds 300 Seconds; Error : Computation Not Defined |

| Intersection | |
|---|---|
| Intersection Delay, s/veh | 128.5 |

| Movement | WBL | WBR | NBT | NBR | SBL | SBT |
|---|---|---|---|---|---|---|
| Vol, veh/h | 433 | 433 | 693 | 79 | 80 | 659 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Free | Free | Free | Free |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | 0 | 100 | - | - | 100 | - |
| Veh in Median Storage, # | 0 | - | 0 | - | - | 0 |
| Grade, % | 0 | - | 0 | - | - | 0 |
| Peak Hour Factor | 92 | 92 | 92 | 92 | 92 | 92 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 471 | 471 | 753 | 86 | 87 | 716 |

| Major/Minor | Minor1 | | Major1 | | Major2 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 1686 | 796 | 0 | 0 | 839 | 0 |
| Stage 1 | 796 | - | - | - | - | - |
| Stage 2 | 890 | - | - | - | - | - |
| Follow-up Headway | 3.518 | 3.318 | - | - | 2.218 | - |
| Pot Capacity-1 Maneuver | # 103 | # 387 | - | - | 796 | - |
| Stage 1 | # 444 | - | - | - | - | - |
| Stage 2 | # 401 | - | - | - | - | - |
| Time blocked-Platoon, % | | | - | - | | - |
| Mov Capacity-1 Maneuver | # 92 | # 387 | - | - | 796 | - |
| Mov Capacity-2 Maneuver | # 222 | - | - | - | - | - |
| Stage 1 | # 444 | - | - | - | - | - |
| Stage 2 | # 357 | - | - | - | - | - |

| Approach | WB | NB | SB |
|---|---|---|---|
| HCM Control Delay, s | $ 351.8 | 0 | 1.1 |
| HCM LOS | F | | |

| Minor Lane / Major Mvmt | NBT | NBR | WBLn1 | WBLn2 | SBL | SBT |
|---|---|---|---|---|---|---|
| Capacity (veh/h) | - | - | 222 | 387 | 796 | - |
| HCM Lane V/C Ratio | - | - | 2.12 | 1.216 | 0.109 | - |
| HCM Control Delay (s) | - | - | $ 554.3 | 149.3 | 10.076 | - |
| HCM Lane LOS | | | F | F | B | |
| HCM 95th %tile Q(veh) | - | - | 35.986 | 19.505 | 0.366 | - |

| Notes |
|---|
| ~ : Volume Exceeds Capacity; $ : Delay Exceeds 300 Seconds; Error : Computation Not Defined |

| Intersection | |
|---|---|
| Intersection Delay, s/veh | 104.2 |

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Vol, veh/h | 36 | 58 | 29 | 29 | 13 | 16 | 14 | 563 | 89 | 57 | 441 | 15 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Stop | Stop | Stop | Stop | Free | Free | Free | Free | Free | Free |
| RT Channelized | - | - | None | - | - | None | - | - | None | - | - | None |
| Storage Length | - | - | - | - | - | - | - | - | - | - | - | - |
| Veh in Median Storage, # | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Grade, % | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Peak Hour Factor | 58 | 67 | 25 | 57 | 50 | 41 | 56 | 91 | 80 | 73 | 94 | 83 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 62 | 87 | 116 | 51 | 26 | 39 | 25 | 619 | 111 | 78 | 469 | 18 |

| Major/Minor | Minor2 | | | Minor1 | | | Major1 | | | Major2 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Conflicting Flow All | 1391 | 1414 | 478 | 1460 | 1367 | 674 | 487 | 0 | 0 | 730 | 0 | 0 |
| Stage 1 | 634 | 634 | - | 724 | 724 | - | - | - | - | - | - | - |
| Stage 2 | 757 | 780 | - | 736 | 643 | - | - | - | - | - | - | - |
| Follow-up Headway | 3.518 | 4.018 | 3.318 | 3.518 | 4.018 | 3.318 | 2.218 | - | - | 2.218 | - | - |
| Pot Capacity-1 Maneuver | 120 | 138 | 587 | 107 | 147 | 455 | 1076 | - | - | 874 | - | - |
| Stage 1 | 467 | 473 | - | 417 | 430 | - | - | - | - | - | - | - |
| Stage 2 | 400 | 406 | - | 411 | 468 | - | - | - | - | - | - | - |
| Time blocked-Platoon, % | | | | | | | | - | - | | - | - |
| Mov Capacity-1 Maneuver | 81 | 116 | 587 | # 30 | 124 | 455 | 1076 | - | - | 874 | - | - |
| Mov Capacity-2 Maneuver | 81 | 116 | - | # 30 | 124 | - | - | - | - | - | - | - |
| Stage 1 | 448 | 415 | - | 400 | 413 | - | - | - | - | - | - | - |
| Stage 2 | 329 | 390 | - | 229 | 410 | - | - | - | - | - | - | - |

| Approach | EB | WB | NB | SB |
|---|---|---|---|---|
| HCM Control Delay, s | $ 395.2 | $ 617.7 | 0.3 | 1.3 |
| HCM LOS | F | F | | |

| Minor Lane / Major Mvmt | NBL | NBT | NBR | EBLn1 | WBLn1 | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|
| Capacity (veh/h) | 1076 | - | - | 155 | 58 | 874 | - | - |
| HCM Lane V/C Ratio | 0.023 | - | - | 1.707 | 1.998 | 0.089 | - | - |
| HCM Control Delay (s) | 8.425 | 0 | - | $ 395.2 | $ 617.7 | 9.523 | 0 | - |
| HCM Lane LOS | A | A | | F | F | A | A | |
| HCM 95th %tile Q(veh) | 0.071 | - | - | 18.943 | 11.139 | 0.293 | - | - |

| Notes |
|---|
| ~ : Volume Exceeds Capacity; $ : Delay Exceeds 300 Seconds; Error : Computation Not Defined |

| Intersection | |
|---|---|
| Intersection Delay, s/veh | 161.3 |

| Movement | EBT | EBR | WBL | WBT | NBL | NBR |
|---|---|---|---|---|---|---|
| Vol, veh/h | 79 | 115 | 13 | 94 | 844 | 94 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Stop | Stop |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | - | - | - | - | 0 | - |
| Veh in Median Storage, # | 0 | - | - | 0 | 0 | - |
| Grade, % | 0 | - | - | 0 | 0 | - |
| Peak Hour Factor | 92 | 92 | 92 | 92 | 92 | 92 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 86 | 125 | 14 | 102 | 917 | 102 |

| Major/Minor | Major1 | | Major2 | | Minor1 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 0 | 0 | 211 | 0 | 278 | 148 |
| Stage 1 | - | - | - | - | 148 | - |
| Stage 2 | - | - | - | - | 130 | - |
| Follow-up Headway | - | - | 2.218 | - | 3.518 | 3.318 |
| Pot Capacity-1 Maneuver | - | - | 1360 | - | # 712 | 899 |
| Stage 1 | - | - | - | - | # 880 | - |
| Stage 2 | - | - | - | - | # 896 | - |
| Time blocked-Platoon, % | - | - | | - | | |
| Mov Capacity-1 Maneuver | - | - | 1360 | - | # 704 | 899 |
| Mov Capacity-2 Maneuver | - | - | - | - | # 704 | - |
| Stage 1 | - | - | - | - | # 880 | - |
| Stage 2 | - | - | - | - | # 886 | - |

| Approach | EB | WB | NB |
|---|---|---|---|
| HCM Control Delay, s | 0 | 0.9 | 212.9 |
| HCM LOS | | | F |

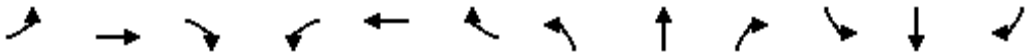
| Minor Lane / Major Mvmt | NBLn1 | EBT | EBR | WBL | WBT |
|---|---|---|---|---|---|
| Capacity (veh/h) | 720 | - | - | 1360 | - |
| HCM Lane V/C Ratio | 1.416 | - | - | 0.01 | - |
| HCM Control Delay (s) | 212.9 | - | - | 7.675 | 0 |
| HCM Lane LOS | F | | | A | A |
| HCM 95th %tile Q(veh) | 45.795 | - | - | 0.031 | - |

| Notes |
|---|
| ~ : Volume Exceeds Capacity; $ : Delay Exceeds 300 Seconds; Error : Computation Not Defined |

| Movement | WBL | WBR | NBT | NBR | SBL | SBT |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Volume (vph) | 433 | 433 | 693 | 79 | 80 | 659 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Lane Width | 9 | 9 | 12 | 12 | 12 | 12 |
| Total Lost time (s) | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 |
| Lane Util. Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Frt | 1.00 | 0.85 | 1.00 | 0.85 | 1.00 | 1.00 |
| Flt Protected | 0.95 | 1.00 | 1.00 | 1.00 | 0.95 | 1.00 |
| Satd. Flow (prot) | 1593 | 1425 | 1863 | 1583 | 1770 | 1863 |
| Flt Permitted | 0.95 | 1.00 | 1.00 | 1.00 | 0.13 | 1.00 |
| Satd. Flow (perm) | 1593 | 1425 | 1863 | 1583 | 233 | 1863 |
| Peak-hour factor, PHF | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Adj. Flow (vph) | 471 | 471 | 753 | 86 | 87 | 716 |
| RTOR Reduction (vph) | 0 | 74 | 0 | 21 | 0 | 0 |
| Lane Group Flow (vph) | 471 | 397 | 753 | 65 | 87 | 716 |
| Turn Type | NA | pm+ov | NA | pm+ov | pm+pt | NA |
| Protected Phases | 8 | 1 | 2 | 8 | 1 | 6 |
| Permitted Phases | | 8 | | 2 | 6 | |
| Actuated Green, G (s) | 23.0 | 29.0 | 34.0 | 57.0 | 44.0 | 44.0 |
| Effective Green, g (s) | 23.0 | 29.0 | 34.0 | 57.0 | 44.0 | 44.0 |
| Actuated g/C Ratio | 0.31 | 0.39 | 0.45 | 0.76 | 0.59 | 0.59 |
| Clearance Time (s) | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 |
| Vehicle Extension (s) | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 |
| Lane Grp Cap (vph) | 488 | 627 | 844 | 1287 | 259 | 1092 |
| v/s Ratio Prot | c0.30 | 0.05 | c0.40 | 0.02 | 0.03 | c0.38 |
| v/s Ratio Perm | | 0.23 | | 0.03 | 0.17 | |
| v/c Ratio | 0.97 | 0.63 | 0.89 | 0.05 | 0.34 | 0.66 |
| Uniform Delay, d1 | 25.6 | 18.7 | 18.8 | 2.2 | 24.3 | 10.4 |
| Progression Factor | 0.86 | 0.70 | 1.00 | 1.00 | 1.00 | 1.00 |
| Incremental Delay, d2 | 24.5 | 1.4 | 13.8 | 0.0 | 0.8 | 3.1 |
| Delay (s) | 46.6 | 14.5 | 32.6 | 2.3 | 25.0 | 13.5 |
| Level of Service | D | B | C | A | C | B |
| Approach Delay (s) | 30.6 | | 29.5 | | | 14.7 |
| Approach LOS | C | | C | | | B |

| Intersection Summary | | | |
|---|---|---|---|
| HCM 2000 Control Delay | 25.3 | HCM 2000 Level of Service | C |
| HCM 2000 Volume to Capacity ratio | 0.92 | | |
| Actuated Cycle Length (s) | 75.0 | Sum of lost time (s) | 12.0 |
| Intersection Capacity Utilization | 74.9% | ICU Level of Service | D |
| Analysis Period (min) | 15 | | |

c Critical Lane Group



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Volume (vph) | 36 | 58 | 29 | 29 | 13 | 16 | 14 | 563 | 89 | 57 | 441 | 15 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Lane Width | 9 | 9 | 9 | 9 | 9 | 9 | 12 | 12 | 12 | 12 | 12 | 12 |
| Total Lost time (s) | | 4.0 | | | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Util. Factor | | 1.00 | | | 1.00 | | | 1.00 | | | 1.00 | |
| Frt | | 0.94 | | | 0.95 | | | 0.98 | | | 1.00 | |
| Flt Protected | | 0.99 | | | 0.98 | | | 1.00 | | | 0.99 | |
| Satd. Flow (prot) | | 1559 | | | 1566 | | | 1823 | | | 1842 | |
| Flt Permitted | | 0.91 | | | 0.73 | | | 0.98 | | | 0.84 | |
| Satd. Flow (perm) | | 1442 | | | 1170 | | | 1785 | | | 1565 | |
| Peak-hour factor, PHF | 0.58 | 0.67 | 0.25 | 0.57 | 0.50 | 0.41 | 0.56 | 0.91 | 0.80 | 0.73 | 0.94 | 0.83 |
| Adj. Flow (vph) | 62 | 87 | 116 | 51 | 26 | 39 | 25 | 619 | 111 | 78 | 469 | 18 |
| RTOR Reduction (vph) | 0 | 50 | 0 | 0 | 31 | 0 | 0 | 9 | 0 | 0 | 2 | 0 |
| Lane Group Flow (vph) | 0 | 215 | 0 | 0 | 85 | 0 | 0 | 746 | 0 | 0 | 563 | 0 |
| Turn Type | Perm | NA | | Perm | NA | | Perm | NA | | Perm | NA | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | | 12.7 | | | 12.7 | | | 38.1 | | | 38.1 | |
| Effective Green, g (s) | | 12.7 | | | 12.7 | | | 38.1 | | | 38.1 | |
| Actuated g/C Ratio | | 0.22 | | | 0.22 | | | 0.65 | | | 0.65 | |
| Clearance Time (s) | | 4.0 | | | 4.0 | | | 4.0 | | | 4.0 | |
| Vehicle Extension (s) | | 3.0 | | | 3.0 | | | 3.0 | | | 3.0 | |
| Lane Grp Cap (vph) | | 311 | | | 252 | | | 1156 | | | 1014 | |
| v/s Ratio Prot | | | | | | | | | | | | |
| v/s Ratio Perm | | c0.15 | | | 0.07 | | | c0.42 | | | 0.36 | |
| v/c Ratio | | 0.69 | | | 0.34 | | | 0.65 | | | 0.56 | |
| Uniform Delay, d1 | | 21.2 | | | 19.5 | | | 6.3 | | | 5.7 | |
| Progression Factor | | 1.00 | | | 1.00 | | | 1.00 | | | 1.00 | |
| Incremental Delay, d2 | | 6.5 | | | 0.8 | | | 2.8 | | | 2.2 | |
| Delay (s) | | 27.7 | | | 20.3 | | | 9.0 | | | 7.9 | |
| Level of Service | | C | | | C | | | A | | | A | |
| Approach Delay (s) | | 27.7 | | | 20.3 | | | 9.0 | | | 7.9 | |
| Approach LOS | | C | | | C | | | A | | | A | |

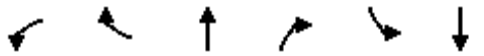
| Intersection Summary | | | |
|---|---|---|---|
| HCM 2000 Control Delay | 12.3 | HCM 2000 Level of Service | B |
| HCM 2000 Volume to Capacity ratio | 0.66 | | |
| Actuated Cycle Length (s) | 58.8 | Sum of lost time (s) | 8.0 |
| Intersection Capacity Utilization | 68.9% | ICU Level of Service | C |
| Analysis Period (min) | 15 | | |

c Critical Lane Group

| Movement | EBT | EBR | WBL | WBT | NBL | NBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Volume (vph) | 79 | 115 | 13 | 94 | 844 | 94 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Lane Width | 9 | 9 | 9 | 9 | 12 | 12 |
| Total Lost time (s) | 4.0 | | | 4.0 | 4.0 | |
| Lane Util. Factor | 1.00 | | | 1.00 | 1.00 | |
| Frt | 0.92 | | | 1.00 | 0.99 | |
| Flt Protected | 1.00 | | | 0.99 | 0.96 | |
| Satd. Flow (prot) | 1542 | | | 1666 | 1758 | |
| Flt Permitted | 1.00 | | | 0.88 | 0.96 | |
| Satd. Flow (perm) | 1542 | | | 1481 | 1758 | |
| Peak-hour factor, PHF | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Adj. Flow (vph) | 86 | 125 | 14 | 102 | 917 | 102 |
| RTOR Reduction (vph) | 75 | 0 | 0 | 0 | 4 | 0 |
| Lane Group Flow (vph) | 136 | 0 | 0 | 116 | 1015 | 0 |
| Turn Type | NA | | Perm | NA | NA | |
| Protected Phases | 4 | | | 8 | 2 | |
| Permitted Phases | | | 8 | | | |
| Actuated Green, G (s) | 11.4 | | | 11.4 | 55.6 | |
| Effective Green, g (s) | 11.4 | | | 11.4 | 55.6 | |
| Actuated g/C Ratio | 0.15 | | | 0.15 | 0.74 | |
| Clearance Time (s) | 4.0 | | | 4.0 | 4.0 | |
| Vehicle Extension (s) | 3.0 | | | 3.0 | 3.0 | |
| Lane Grp Cap (vph) | 234 | | | 225 | 1303 | |
| v/s Ratio Prot | c0.09 | | | | c0.58 | |
| v/s Ratio Perm | | | | 0.08 | | |
| v/c Ratio | 0.58 | | | 0.52 | 0.78 | |
| Uniform Delay, d1 | 29.6 | | | 29.3 | 5.9 | |
| Progression Factor | 0.74 | | | 1.00 | 1.00 | |
| Incremental Delay, d2 | 3.4 | | | 2.0 | 4.6 | |
| Delay (s) | 25.3 | | | 31.3 | 10.6 | |
| Level of Service | C | | | C | B | |
| Approach Delay (s) | 25.3 | | | 31.3 | 10.6 | |
| Approach LOS | C | | | C | B | |

| Intersection Summary | | | |
|---|---|---|---|
| HCM 2000 Control Delay | 14.7 | HCM 2000 Level of Service | B |
| HCM 2000 Volume to Capacity ratio | 0.74 | | |
| Actuated Cycle Length (s) | 75.0 | Sum of lost time (s) | 8.0 |
| Intersection Capacity Utilization | 75.0% | ICU Level of Service | D |
| Analysis Period (min) | 15 | | |

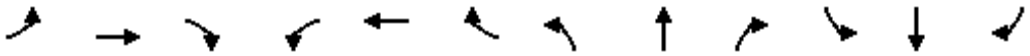
c Critical Lane Group



| Movement | WBL | WBR | NBT | NBR | SBL | SBT |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Volume (vph) | 433 | 433 | 693 | 79 | 80 | 659 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Lane Width | 9 | 9 | 12 | 12 | 12 | 12 |
| Total Lost time (s) | 4.0 | 4.0 | 4.0 | | 4.0 | 4.0 |
| Lane Util. Factor | 1.00 | 1.00 | 1.00 | | 1.00 | 1.00 |
| Frt | 1.00 | 0.85 | 0.99 | | 1.00 | 1.00 |
| Flt Protected | 0.95 | 1.00 | 1.00 | | 0.95 | 1.00 |
| Satd. Flow (prot) | 1593 | 1425 | 1837 | | 1770 | 1863 |
| Flt Permitted | 0.95 | 1.00 | 1.00 | | 0.10 | 1.00 |
| Satd. Flow (perm) | 1593 | 1425 | 1837 | | 184 | 1863 |
| Peak-hour factor, PHF | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Adj. Flow (vph) | 471 | 471 | 753 | 86 | 87 | 716 |
| RTOR Reduction (vph) | 0 | 165 | 6 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 471 | 306 | 833 | 0 | 87 | 716 |
| Turn Type | NA | Perm | NA | | pm+pt | NA |
| Protected Phases | 8 | | 2 | | 1 | 6 |
| Permitted Phases | | 8 | | | 6 | |
| Actuated Green, G (s) | 22.0 | 22.0 | 36.6 | | 43.8 | 43.8 |
| Effective Green, g (s) | 22.0 | 22.0 | 36.6 | | 43.8 | 43.8 |
| Actuated g/C Ratio | 0.30 | 0.30 | 0.50 | | 0.59 | 0.59 |
| Clearance Time (s) | 4.0 | 4.0 | 4.0 | | 4.0 | 4.0 |
| Vehicle Extension (s) | 3.0 | 3.0 | 3.0 | | 3.0 | 3.0 |
| Lane Grp Cap (vph) | 474 | 424 | 911 | | 177 | 1105 |
| v/s Ratio Prot | c0.30 | | c0.45 | | 0.02 | c0.38 |
| v/s Ratio Perm | | 0.21 | | | 0.27 | |
| v/c Ratio | 0.99 | 0.72 | 0.91 | | 0.49 | 0.65 |
| Uniform Delay, d1 | 25.8 | 23.2 | 17.2 | | 14.3 | 9.9 |
| Progression Factor | 1.00 | 1.00 | 1.00 | | 1.00 | 1.00 |
| Incremental Delay, d2 | 39.5 | 6.0 | 15.2 | | 2.1 | 2.9 |
| Delay (s) | 65.3 | 29.1 | 32.4 | | 16.5 | 12.9 |
| Level of Service | E | C | C | | B | B |
| Approach Delay (s) | 47.2 | | 32.4 | | | 13.2 |
| Approach LOS | D | | C | | | B |

| Intersection Summary | | | |
|---|---|---|---|
| HCM 2000 Control Delay | 31.8 | HCM 2000 Level of Service | C |
| HCM 2000 Volume to Capacity ratio | 0.94 | | |
| Actuated Cycle Length (s) | 73.8 | Sum of lost time (s) | 12.0 |
| Intersection Capacity Utilization | 79.7% | ICU Level of Service | D |
| Analysis Period (min) | 15 | | |

c Critical Lane Group



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Volume (vph) | 36 | 58 | 29 | 29 | 13 | 16 | 14 | 563 | 89 | 57 | 441 | 15 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Lane Width | 9 | 9 | 9 | 9 | 9 | 9 | 12 | 12 | 12 | 12 | 12 | 12 |
| Total Lost time (s) | | 4.0 | | | 4.0 | | | 4.0 | | | 4.0 | |
| Lane Util. Factor | | 1.00 | | | 1.00 | | | 1.00 | | | 1.00 | |
| Frt | | 0.94 | | | 0.95 | | | 0.98 | | | 1.00 | |
| Flt Protected | | 0.99 | | | 0.98 | | | 1.00 | | | 0.99 | |
| Satd. Flow (prot) | | 1559 | | | 1566 | | | 1823 | | | 1842 | |
| Flt Permitted | | 0.91 | | | 0.73 | | | 0.98 | | | 0.84 | |
| Satd. Flow (perm) | | 1442 | | | 1170 | | | 1785 | | | 1565 | |
| Peak-hour factor, PHF | 0.58 | 0.67 | 0.25 | 0.57 | 0.50 | 0.41 | 0.56 | 0.91 | 0.80 | 0.73 | 0.94 | 0.83 |
| Adj. Flow (vph) | 62 | 87 | 116 | 51 | 26 | 39 | 25 | 619 | 111 | 78 | 469 | 18 |
| RTOR Reduction (vph) | 0 | 50 | 0 | 0 | 31 | 0 | 0 | 9 | 0 | 0 | 2 | 0 |
| Lane Group Flow (vph) | 0 | 215 | 0 | 0 | 85 | 0 | 0 | 746 | 0 | 0 | 563 | 0 |
| Turn Type | Perm | NA | | Perm | NA | | Perm | NA | | Perm | NA | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | | 12.7 | | | 12.7 | | | 38.1 | | | 38.1 | |
| Effective Green, g (s) | | 12.7 | | | 12.7 | | | 38.1 | | | 38.1 | |
| Actuated g/C Ratio | | 0.22 | | | 0.22 | | | 0.65 | | | 0.65 | |
| Clearance Time (s) | | 4.0 | | | 4.0 | | | 4.0 | | | 4.0 | |
| Vehicle Extension (s) | | 3.0 | | | 3.0 | | | 3.0 | | | 3.0 | |
| Lane Grp Cap (vph) | | 311 | | | 252 | | | 1156 | | | 1014 | |
| v/s Ratio Prot | | | | | | | | | | | | |
| v/s Ratio Perm | | c0.15 | | | 0.07 | | | c0.42 | | | 0.36 | |
| v/c Ratio | | 0.69 | | | 0.34 | | | 0.65 | | | 0.56 | |
| Uniform Delay, d1 | | 21.2 | | | 19.5 | | | 6.3 | | | 5.7 | |
| Progression Factor | | 1.00 | | | 1.00 | | | 1.00 | | | 1.00 | |
| Incremental Delay, d2 | | 6.5 | | | 0.8 | | | 2.8 | | | 2.2 | |
| Delay (s) | | 27.7 | | | 20.3 | | | 9.0 | | | 7.9 | |
| Level of Service | | C | | | C | | | A | | | A | |
| Approach Delay (s) | | 27.7 | | | 20.3 | | | 9.0 | | | 7.9 | |
| Approach LOS | | C | | | C | | | A | | | A | |

| Intersection Summary | | | |
|---|---|---|---|
| HCM 2000 Control Delay | 12.3 | HCM 2000 Level of Service | B |
| HCM 2000 Volume to Capacity ratio | 0.66 | | |
| Actuated Cycle Length (s) | 58.8 | Sum of lost time (s) | 8.0 |
| Intersection Capacity Utilization | 68.9% | ICU Level of Service | C |
| Analysis Period (min) | 15 | | |

c Critical Lane Group

| Intersection | |
|---|---|
| Intersection Delay, s/veh | 3 |

| Movement | WBL | WBR | NBT | NBR | SBL | SBT |
|---|---|---|---|---|---|---|
| Vol, veh/h | 13 | 94 | 844 | 94 | 79 | 115 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Free | Free | Free | Free |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | 0 | - | - | - | - | - |
| Veh in Median Storage, # | 0 | - | 0 | - | - | 0 |
| Grade, % | 0 | - | 0 | - | - | 0 |
| Peak Hour Factor | 92 | 92 | 92 | 92 | 92 | 92 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 14 | 102 | 917 | 102 | 86 | 125 |

| Major/Minor | Minor1 | | Major1 | | Major2 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 1265 | 968 | 0 | 0 | 1020 | 0 |
| Stage 1 | 968 | - | - | - | - | - |
| Stage 2 | 297 | - | - | - | - | - |
| Follow-up Headway | 3.518 | 3.318 | - | - | 2.218 | - |
| Pot Capacity-1 Maneuver | 187 | 308 | - | - | 680 | - |
| Stage 1 | 368 | - | - | - | - | - |
| Stage 2 | 754 | - | - | - | - | - |
| Time blocked-Platoon, % | | | - | - | | - |
| Mov Capacity-1 Maneuver | 162 | 308 | - | - | 680 | - |
| Mov Capacity-2 Maneuver | 162 | - | - | - | - | - |
| Stage 1 | 368 | - | - | - | - | - |
| Stage 2 | 651 | - | - | - | - | - |

| Approach | WB | NB | SB |
|---|---|---|---|
| HCM Control Delay, s | 27 | 0 | 4.5 |
| HCM LOS | D | | |

| Minor Lane / Major Mvmt | NBT | NBR | WBLn1 | SBL | SBT |
|---|---|---|---|---|---|
| Capacity (veh/h) | - | - | 278 | 680 | - |
| HCM Lane V/C Ratio | - | - | 0.418 | 0.126 | - |
| HCM Control Delay (s) | - | - | 27 | 11.058 | 0 |
| HCM Lane LOS | | | D | B | A |
| HCM 95th %tile Q(veh) | - | - | 1.967 | 0.431 | - |

| Notes |
|---|
| ~ : Volume Exceeds Capacity; $ : Delay Exceeds 300 Seconds; Error : Computation Not Defined |

**CDM SMITH Inc.**
1100 Marion Street, Suite 200
Knoxville, TN 37921
(865) 963-4300

Counted by: Allyson Foster

File Name : byington at garrison total
Site Code : 101
Start Date : 10/29/2013
Page No : 1

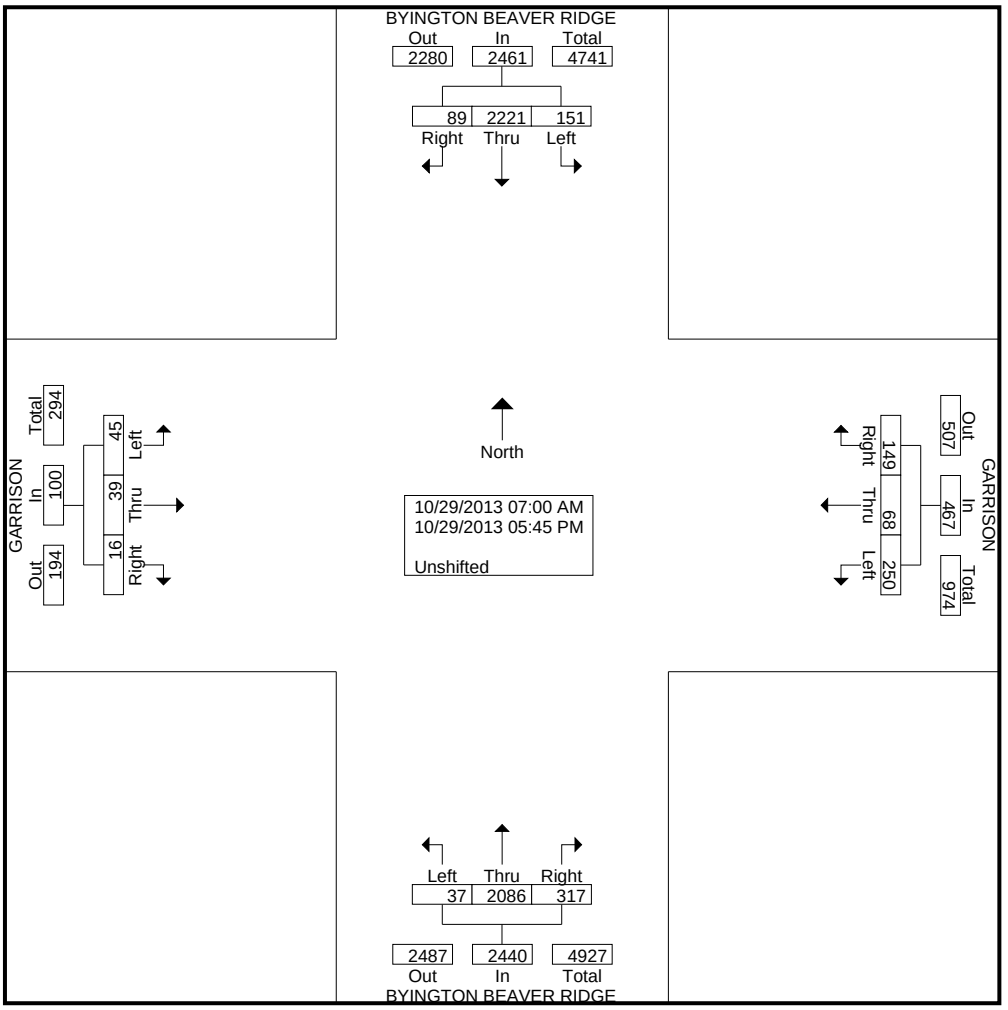
**Groups Printed- Unshifted**

| | BYINGTON BEAVER RIDGE Southbound | | | | GARRISON Westbound | | | | BYINGTON BEAVER RIDGE Northbound | | | | GARRISON Eastbound | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Start Time | Left | Thru | Right | App. Total | Left | Thru | Right | App. Total | Left | Thru | Right | App. Total | Left | Thru | Right | App. Total | Int. Total |
| 07:00 AM | 0 | 59 | 9 | 68 | 2 | 17 | 0 | 19 | 3 | 95 | 1 | 99 | 7 | 8 | 8 | 23 | 209 |
| 07:15 AM | 9 | 145 | 3 | 157 | 24 | 0 | 13 | 37 | 0 | 107 | 19 | 126 | 1 | 0 | 0 | 1 | 321 |
| 07:30 AM | 7 | 126 | 2 | 135 | 26 | 7 | 12 | 45 | 1 | 97 | 30 | 128 | 1 | 2 | 1 | 4 | 312 |
| 07:45 AM | 12 | 152 | 3 | 167 | 31 | 11 | 12 | 54 | 0 | 65 | 31 | 96 | 1 | 1 | 0 | 2 | 319 |
| Total | 28 | 482 | 17 | 527 | 83 | 35 | 37 | 155 | 4 | 364 | 81 | 449 | 10 | 11 | 9 | 30 | 1161 |
| 08:00 AM | 8 | 120 | 19 | 147 | 32 | 11 | 8 | 51 | 3 | 70 | 37 | 110 | 0 | 2 | 0 | 2 | 310 |
| 08:15 AM | 5 | 107 | 11 | 123 | 20 | 7 | 13 | 40 | 1 | 69 | 27 | 97 | 0 | 1 | 0 | 1 | 261 |
| 08:30 AM | 2 | 110 | 2 | 114 | 14 | 1 | 0 | 15 | 0 | 36 | 4 | 40 | 3 | 2 | 1 | 6 | 175 |
| 08:45 AM | 1 | 93 | 1 | 95 | 1 | 0 | 2 | 3 | 0 | 39 | 3 | 42 | 0 | 0 | 0 | 0 | 140 |
| Total | 16 | 430 | 33 | 479 | 67 | 19 | 23 | 109 | 4 | 214 | 71 | 289 | 3 | 5 | 1 | 9 | 886 |
| *** BREAK *** | | | | | | | | | | | | | | | | | |
| 02:00 PM | 5 | 72 | 1 | 78 | 1 | 0 | 2 | 3 | 0 | 79 | 2 | 81 | 6 | 0 | 0 | 6 | 168 |
| 02:15 PM | 4 | 62 | 1 | 67 | 4 | 3 | 1 | 8 | 0 | 80 | 6 | 86 | 0 | 0 | 1 | 1 | 162 |
| 02:30 PM | 3 | 65 | 1 | 69 | 4 | 2 | 3 | 9 | 3 | 82 | 10 | 95 | 1 | 0 | 0 | 1 | 174 |
| 02:45 PM | 6 | 100 | 1 | 107 | 4 | 0 | 4 | 8 | 1 | 64 | 8 | 73 | 3 | 2 | 1 | 6 | 194 |
| Total | 18 | 299 | 4 | 321 | 13 | 5 | 10 | 28 | 4 | 305 | 26 | 335 | 10 | 2 | 2 | 14 | 698 |
| 03:00 PM | 5 | 97 | 3 | 105 | 3 | 0 | 0 | 3 | 0 | 75 | 11 | 86 | 2 | 3 | 0 | 5 | 199 |
| 03:15 PM | 10 | 84 | 5 | 99 | 6 | 1 | 7 | 14 | 0 | 78 | 13 | 91 | 1 | 0 | 0 | 1 | 205 |
| 03:30 PM | 3 | 103 | 3 | 109 | 32 | 2 | 36 | 70 | 2 | 125 | 18 | 145 | 4 | 3 | 0 | 7 | 331 |
| 03:45 PM | 5 | 84 | 5 | 94 | 11 | 1 | 12 | 24 | 2 | 112 | 10 | 124 | 5 | 5 | 0 | 10 | 252 |
| Total | 23 | 368 | 16 | 407 | 52 | 4 | 55 | 111 | 4 | 390 | 52 | 446 | 12 | 11 | 0 | 23 | 987 |
| 04:00 PM | 6 | 78 | 5 | 89 | 2 | 1 | 3 | 6 | 10 | 85 | 2 | 97 | 2 | 0 | 2 | 4 | 196 |
| 04:15 PM | 0 | 40 | 1 | 41 | 1 | 0 | 6 | 7 | 1 | 59 | 1 | 61 | 1 | 1 | 0 | 2 | 111 |
| 04:30 PM | 4 | 42 | 0 | 46 | 5 | 0 | 0 | 5 | 0 | 55 | 0 | 55 | 0 | 0 | 0 | 0 | 106 |
| 04:45 PM | 9 | 81 | 3 | 93 | 2 | 0 | 2 | 4 | 1 | 102 | 14 | 117 | 0 | 1 | 1 | 2 | 216 |
| Total | 19 | 241 | 9 | 269 | 10 | 1 | 11 | 22 | 12 | 301 | 17 | 330 | 3 | 2 | 3 | 8 | 629 |
| 05:00 PM | 10 | 99 | 3 | 112 | 11 | 2 | 8 | 21 | 1 | 133 | 12 | 146 | 1 | 3 | 0 | 4 | 283 |
| 05:15 PM | 16 | 96 | 3 | 115 | 2 | 1 | 1 | 4 | 4 | 140 | 22 | 166 | 1 | 1 | 0 | 2 | 287 |
| 05:30 PM | 9 | 107 | 3 | 119 | 4 | 1 | 4 | 9 | 1 | 135 | 18 | 154 | 3 | 2 | 1 | 6 | 288 |
| 05:45 PM | 12 | 99 | 1 | 112 | 8 | 0 | 0 | 8 | 3 | 104 | 18 | 125 | 2 | 2 | 0 | 4 | 249 |
| Total | 47 | 401 | 10 | 458 | 25 | 4 | 13 | 42 | 9 | 512 | 70 | 591 | 7 | 8 | 1 | 16 | 1107 |
| Grand Total | 151 | 2221 | 89 | 2461 | 250 | 68 | 149 | 467 | 37 | 2086 | 317 | 2440 | 45 | 39 | 16 | 100 | 5468 |
| Apprch % | 6.1 | 90.2 | 3.6 | | 53.5 | 14.6 | 31.9 | | 1.5 | 85.5 | 13 | | 45 | 39 | 16 | | |
| Total % | 2.8 | 40.6 | 1.6 | 45 | 4.6 | 1.2 | 2.7 | 8.5 | 0.7 | 38.1 | 5.8 | 44.6 | 0.8 | 0.7 | 0.3 | 1.8 | |

**CDM SMITH Inc.**
1100 Marion Street, Suite 200
Knoxville, TN 37921
(865) 963-4300

Counted by: Allyson Foster

File Name : byington at garrison total
Site Code : 101
Start Date : 10/29/2013
Page No : 2




| | BYINGTON BEAVER RIDGE Southbound | | | | GARRISON Westbound | | | | BYINGTON BEAVER RIDGE Northbound | | | | GARRISON Eastbound | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Start Time | Left | Thru | Right | App. Total | Left | Thru | Right | App. Total | Left | Thru | Right | App. Total | Left | Thru | Right | App. Total | Int. Total |
| Peak Hour Analysis From 07:00 AM to 11:45 AM - Peak 1 of 1 | | | | | | | | | | | | | | | | | |
| Peak Hour for Entire Intersection Begins at 07:15 AM | | | | | | | | | | | | | | | | | |
| 07:15 AM | 9 | 145 | 3 | 157 | 24 | 0 | **13** | 37 | 0 | **107** | 19 | 126 | **1** | 0 | 0 | 1 | **321** |
| 07:30 AM | 7 | 126 | 2 | 135 | 26 | 7 | 12 | 45 | 1 | 97 | 30 | **128** | 1 | **2** | **1** | **4** | 312 |
| 07:45 AM | **12** | **152** | 3 | **167** | 31 | **11** | 12 | **54** | 0 | 65 | 31 | 96 | 1 | 1 | 0 | 2 | 319 |
| 08:00 AM | 8 | 120 | **19** | 147 | **32** | 11 | 8 | 51 | **3** | 70 | **37** | 110 | 0 | 2 | 0 | 2 | 310 |
| Total Volume | 36 | 543 | 27 | 606 | 113 | 29 | 45 | 187 | 4 | 339 | 117 | 460 | 3 | 5 | 1 | 9 | 1262 |
| % App. Total | 5.9 | 89.6 | 4.5 | | 60.4 | 15.5 | 24.1 | | 0.9 | 73.7 | 25.4 | | 33.3 | 55.6 | 11.1 | | |
| PHF | .750 | .893 | .355 | .907 | .883 | .659 | .865 | .866 | .333 | .792 | .791 | .898 | .750 | .625 | .250 | .563 | .983 |

**CDM SMITH Inc.**
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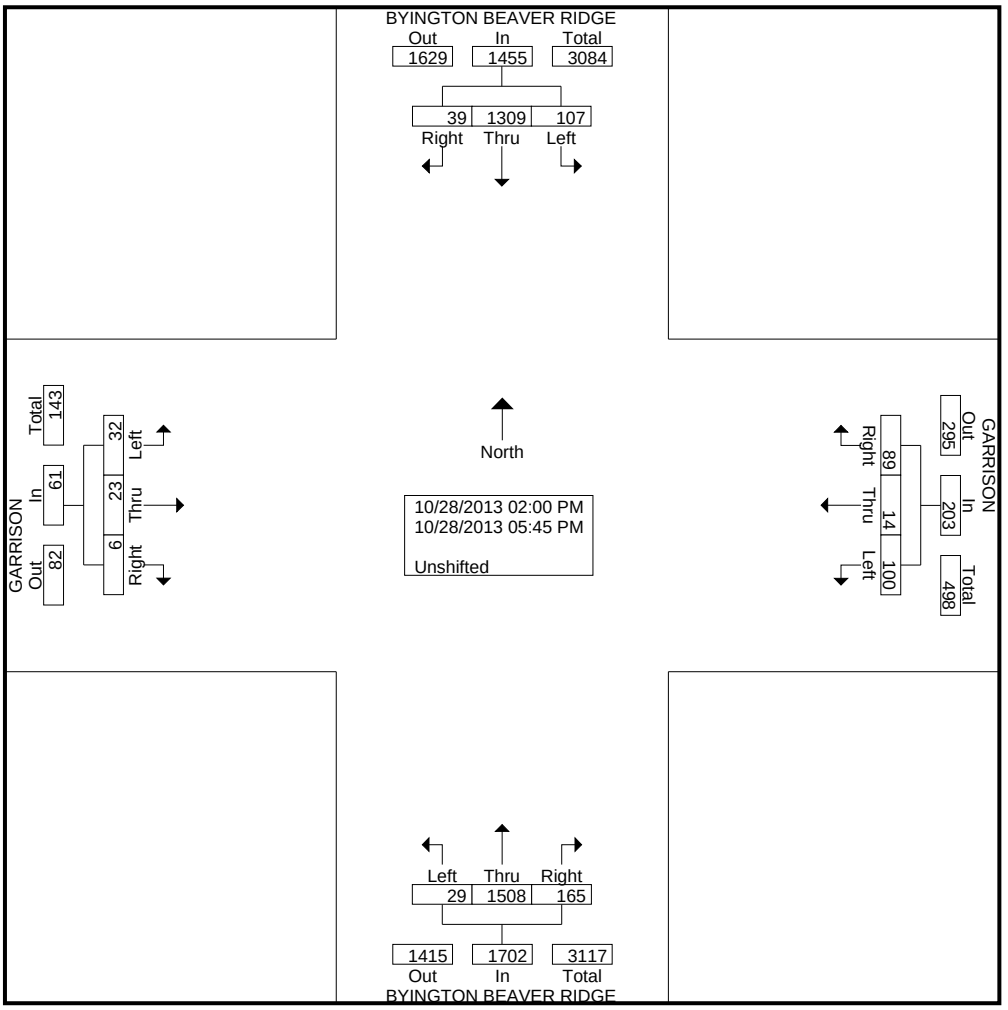
File Name : byington at garrison total
Site Code : 101
Start Date : 10/29/2013
Page No : 3

| | BYINGTON BEAVER RIDGE Southbound | | | | GARRISON Westbound | | | | BYINGTON BEAVER RIDGE Northbound | | | | GARRISON Eastbound | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Start Time | Left | Thru | Right | App. Total | Left | Thru | Right | App. Total | Left | Thru | Right | App. Total | Left | Thru | Right | App. Total | Int. Total |
| Peak Hour Analysis From 12:00 PM to 05:45 PM - Peak 1 of 1 | | | | | | | | | | | | | | | | | |
| Peak Hour for Entire Intersection Begins at 05:00 PM | | | | | | | | | | | | | | | | | |
| 05:00 PM | 10 | 99 | **3** | 112 | **11** | **2** | **8** | **21** | 1 | 133 | 12 | 146 | 1 | **3** | 0 | 4 | 283 |
| 05:15 PM | **16** | 96 | 3 | 115 | 2 | 1 | 1 | 4 | **4** | **140** | **22** | **166** | 1 | 1 | 0 | 2 | 287 |
| 05:30 PM | 9 | **107** | 3 | **119** | 4 | 1 | 4 | 9 | 1 | 135 | 18 | 154 | **3** | 2 | **1** | **6** | **288** |
| 05:45 PM | 12 | 99 | 1 | 112 | 8 | 0 | 0 | 8 | 3 | 104 | 18 | 125 | 2 | 2 | 0 | 4 | 249 |
| Total Volume | 47 | 401 | 10 | 458 | 25 | 4 | 13 | 42 | 9 | 512 | 70 | 591 | 7 | 8 | 1 | 16 | 1107 |
| % App. Total | 10.3 | 87.6 | 2.2 | | 59.5 | 9.5 | 31 | | 1.5 | 86.6 | 11.8 | | 43.8 | 50 | 6.2 | | |
| PHF | .734 | .937 | .833 | .962 | .568 | .500 | .406 | .500 | .563 | .914 | .795 | .890 | .583 | .667 | .250 | .667 | .961 |

**CDM SMITH Inc.**
1100 Marion Street, Suite 200
Knoxville, TN 37921
(865) 963-4300

Counted by: Allyson Foster

File Name : Byington at Garrison PM
Site Code : 101
Start Date : 10/28/2013
Page No : 2



**CDM SMITH Inc.**
1100 Marion Street, Suite 200
Knoxville, TN 37921
(865) 963-4300

Counted by: Allyson Foster

Lane 1- EB Garrison Drive
Lane 2- WB Garrison Drive

File Name : Garrison Stop Delay
Site Code : 101
Start Date : 10/29/2013


| Ln. | No. | Joined Queue | Released From Queue | Delay |
|---|---|---|---|---|
| 1 | 1 | 6:56:52 AM | 6:56:54 AM | 2 |
| 1 | 2 | 6:57:00 AM | 6:57:05 AM | 5 |
| 1 | 3 | 7:07:19 AM | 7:07:27 AM | 8 |
| 1 | 4 | 7:10:05 AM | 7:10:33 AM | 28 |
| 1 | 5 | 7:11:36 AM | 7:12:12 AM | 36 |
| 1 | 6 | 7:19:07 AM | 7:19:26 AM | 19 |
| 1 | 7 | 7:21:50 AM | 7:23:08 AM | 78 |
| 1 | 8 | 7:27:21 AM | 7:27:56 AM | 35 |
| 1 | 9 | 7:27:41 AM | 7:28:20 AM | 39 |
| 1 | 10 | 7:27:42 AM | 7:28:42 AM | 60 |
| 1 | 11 | 7:33:00 AM | 7:33:09 AM | 9 |
| 1 | 12 | 7:34:26 AM | 7:34:52 AM | 26 |
| 1 | 13 | 7:35:04 AM | 7:35:31 AM | 27 |
| 1 | 14 | 7:39:28 AM | 7:39:46 AM | 18 |
| 1 | 15 | 7:41:49 AM | 7:42:05 AM | 16 |
| 1 | 16 | 7:46:50 AM | 7:47:13 AM | 23 |
| 1 | 17 | 7:52:00 AM | 7:52:21 AM | 21 |
| 1 | 18 | 8:09:28 AM | 8:09:46 AM | 18 |
| 1 | 19 | 8:11:55 AM | 8:12:59 AM | 64 |
| 1 | 20 | 8:12:54 AM | 8:13:04 AM | 10 |
| 1 | 21 | 8:21:06 AM | 8:21:34 AM | 28 |
| 1 | 22 | 8:23:42 AM | 8:24:08 AM | 26 |
| 1 | 23 | 8:25:09 AM | 8:25:58 AM | 49 |
| 1 | 24 | 8:26:30 AM | 8:26:49 AM | 19 |
| 1 | 25 | 8:27:08 AM | 8:27:15 AM | 7 |
| 1 | 26 | 8:29:04 AM | 8:29:07 AM | 3 |
| 1 | 27 | 8:30:09 AM | 8:30:45 AM | 36 |
| 1 | 28 | 8:30:10 AM | 8:30:47 AM | 37 |
| 1 | 29 | 8:31:48 AM | 8:31:53 AM | 5 |
| 1 | 30 | 8:32:52 AM | 8:32:58 AM | 6 |
| 1 | 31 | 8:37:07 AM | 8:37:23 AM | 16 |
| 1 | 32 | 8:37:57 AM | 8:38:32 AM | 35 |
| 1 | 33 | 8:54:10 AM | 8:54:18 AM | 8 |
| 2 | 1 | 6:56:00 AM | 6:56:04 AM | 4 |
| 2 | 2 | 7:01:43 AM | 7:01:45 AM | 2 |
| 2 | 3 | 7:03:18 AM | 7:03:23 AM | 5 |
| 2 | 4 | 7:05:50 AM | 7:06:15 AM | 25 |
| 2 | 5 | 7:06:36 AM | 7:06:49 AM | 13 |
| 2 | 6 | 7:08:16 AM | 7:08:20 AM | 4 |
| 2 | 7 | 7:08:18 AM | 7:08:37 AM | 19 |
| 2 | 8 | 7:10:09 AM | 7:10:13 AM | 4 |
| 2 | 9 | 7:10:17 AM | 7:10:22 AM | 5 |
| 2 | 10 | 7:12:17 AM | 7:12:23 AM | 6 |
| 2 | 11 | 7:13:31 AM | 7:13:34 AM | 3 |
| 2 | 12 | 7:14:02 AM | 7:14:03 AM | 1 |
| 2 | 13 | 7:16:50 AM | 7:17:11 AM | 21 |
| 2 | 14 | 7:18:11 AM | 7:18:21 AM | 10 |
| 2 | 15 | 7:18:46 AM | 7:18:52 AM | 6 |
| 2 | 16 | 7:18:59 AM | 7:19:25 AM | 26 |
| 2 | 17 | 7:19:32 AM | 7:19:44 AM | 12 |
| 2 | 18 | 7:19:49 AM | 7:19:51 AM | 2 |
| 2 | 19 | 7:20:12 AM | 7:20:14 AM | 2 |
| 2 | 20 | 7:20:26 AM | 7:20:28 AM | 2 |
| 2 | 21 | 7:20:58 AM | 7:21:03 AM | 5 |
| 2 | 22 | 7:21:10 AM | 7:21:14 AM | 4 |
| 2 | 23 | 7:21:18 AM | 7:21:21 AM | 3 |
| 2 | 24 | 7:21:36 AM | 7:22:41 AM | 65 |
| 2 | 25 | 7:22:18 AM | 7:22:45 AM | 27 |
| 2 | 26 | 7:22:19 AM | 7:23:15 AM | 56 |
| 2 | 27 | 7:23:10 AM | 7:23:33 AM | 23 |
| 2 | 28 | 7:23:12 AM | 7:23:37 AM | 25 |

**CDM SMITH Inc.**
1100 Marion Street, Suite 200
Knoxville, TN 37921
(865) 963-4300

Counted by: Allyson Foster

Lane 1- EB Garrison Drive
Lane 2- WB Garrison Drive

File Name : Garrison Stop Delay
Site Code : 101
Start Date : 10/29/2013


| Ln. | No. | Joined Queue | Released From Queue | Delay |
|---|---|---|---|---|
| 2 | 29 | 7:23:25 AM | 7:23:59 AM | 34 |
| 2 | 30 | 7:24:23 AM | 7:24:25 AM | 2 |
| 2 | 31 | 7:25:02 AM | 7:25:05 AM | 3 |
| 2 | 32 | 7:25:09 AM | 7:25:20 AM | 11 |
| 2 | 33 | 7:25:12 AM | 7:25:27 AM | 15 |
| 2 | 34 | 7:25:39 AM | 7:25:49 AM | 10 |
| 2 | 35 | 7:25:44 AM | 7:26:13 AM | 29 |
| 2 | 36 | 7:26:06 AM | 7:26:22 AM | 16 |
| 2 | 37 | 7:26:27 AM | 7:26:32 AM | 5 |
| 2 | 38 | 7:26:35 AM | 7:26:43 AM | 8 |
| 2 | 39 | 7:26:38 AM | 7:26:48 AM | 10 |
| 2 | 40 | 7:27:00 AM | 7:27:56 AM | 56 |
| 2 | 41 | 7:27:25 AM | 7:28:00 AM | 35 |
| 2 | 42 | 7:27:27 AM | 7:28:03 AM | 36 |
| 2 | 43 | 7:27:34 AM | 7:28:07 AM | 33 |
| 2 | 44 | 7:27:48 AM | 7:28:18 AM | 30 |
| 2 | 45 | 7:27:50 AM | 7:28:43 AM | 53 |
| 2 | 46 | 7:28:06 AM | 7:29:01 AM | 55 |
| 2 | 47 | 7:28:13 AM | 7:29:06 AM | 53 |
| 2 | 48 | 7:29:13 AM | 7:29:17 AM | 4 |
| 2 | 49 | 7:29:37 AM | 7:30:07 AM | 30 |
| 2 | 50 | 7:29:46 AM | 7:30:23 AM | 37 |
| 2 | 51 | 7:31:07 AM | 7:31:20 AM | 13 |
| 2 | 52 | 7:31:08 AM | 7:31:26 AM | 18 |
| 2 | 53 | 7:31:50 AM | 7:31:54 AM | 4 |
| 2 | 54 | 7:32:01 AM | 7:32:08 AM | 7 |
| 2 | 55 | 7:33:08 AM | 7:33:25 AM | 17 |
| 2 | 56 | 7:33:17 AM | 7:33:34 AM | 17 |
| 2 | 57 | 7:33:20 AM | 7:34:09 AM | 49 |
| 2 | 58 | 7:33:52 AM | 7:34:17 AM | 25 |
| 2 | 59 | 7:33:53 AM | 7:34:23 AM | 30 |
| 2 | 60 | 7:34:12 AM | 7:34:27 AM | 15 |
| 2 | 61 | 7:34:13 AM | 7:34:33 AM | 20 |
| 2 | 62 | 7:34:29 AM | 7:34:53 AM | 24 |
| 2 | 63 | 7:34:51 AM | 7:34:56 AM | 5 |
| 2 | 64 | 7:35:40 AM | 7:35:46 AM | 6 |
| 2 | 65 | 7:35:45 AM | 7:35:58 AM | 13 |
| 2 | 66 | 7:35:53 AM | 7:36:06 AM | 13 |
| 2 | 67 | 7:35:55 AM | 7:36:32 AM | 37 |
| 2 | 68 | 7:36:08 AM | 7:36:37 AM | 29 |
| 2 | 69 | 7:36:24 AM | 7:36:47 AM | 23 |
| 2 | 70 | 7:36:49 AM | 7:37:23 AM | 34 |
| 2 | 71 | 7:36:57 AM | 7:37:34 AM | 37 |
| 2 | 72 | 7:37:02 AM | 7:37:45 AM | 43 |
| 2 | 73 | 7:37:04 AM | 7:37:49 AM | 45 |
| 2 | 74 | 7:37:07 AM | 7:37:52 AM | 45 |
| 2 | 75 | 7:37:17 AM | 7:38:02 AM | 45 |
| 2 | 76 | 7:37:22 AM | 7:38:47 AM | 85 |
| 2 | 77 | 7:38:22 AM | 7:38:49 AM | 27 |
| 2 | 78 | 7:38:41 AM | 7:38:56 AM | 15 |
| 2 | 79 | 7:39:23 AM | 7:39:30 AM | 7 |
| 2 | 80 | 7:39:27 AM | 7:39:48 AM | 21 |
| 2 | 81 | 7:39:43 AM | 7:39:53 AM | 10 |
| 2 | 82 | 7:40:20 AM | 7:40:21 AM | 1 |
| 2 | 83 | 7:41:41 AM | 7:41:55 AM | 14 |
| 2 | 84 | 7:42:09 AM | 7:42:35 AM | 26 |
| 2 | 85 | 7:42:10 AM | 7:43:41 AM | 91 |
| 2 | 86 | 7:42:36 AM | 7:43:53 AM | 77 |
| 2 | 87 | 7:42:38 AM | 7:43:59 AM | 81 |
| 2 | 88 | 7:42:51 AM | 7:44:07 AM | 76 |
| 2 | 89 | 7:42:55 AM | 7:44:12 AM | 77 |

**CDM SMITH Inc.**
1100 Marion Street, Suite 200
Knoxville, TN 37921
(865) 963-4300

Counted by: Allyson Foster

Lane 1- EB Garrison Drive
Lane 2- WB Garrison Drive

File Name : Garrison Stop Delay
Site Code : 101
Start Date : 10/29/2013


| Ln. | No. | Joined Queue | Released From Queue | Delay |
|---|---|---|---|---|
| 2 | 90 | 7:43:06 AM | 7:44:16 AM | 70 |
| 2 | 91 | 7:43:20 AM | 7:44:21 AM | 61 |
| 2 | 92 | 7:43:43 AM | 7:44:25 AM | 42 |
| 2 | 93 | 7:43:46 AM | 7:44:30 AM | 44 |
| 2 | 94 | 7:44:11 AM | 7:44:39 AM | 28 |
| 2 | 95 | 7:44:18 AM | 7:45:08 AM | 50 |
| 2 | 96 | 7:44:57 AM | 7:45:17 AM | 20 |
| 2 | 97 | 7:45:23 AM | 7:46:03 AM | 40 |
| 2 | 98 | 7:45:38 AM | 7:46:08 AM | 30 |
| 2 | 99 | 7:45:47 AM | 7:46:15 AM | 28 |
| 2 | 100 | 7:45:58 AM | 7:47:40 AM | 102 |
| 2 | 101 | 7:45:59 AM | 7:47:56 AM | 117 |
| 2 | 102 | 7:46:04 AM | 7:48:05 AM | 121 |
| 2 | 103 | 7:46:05 AM | 7:48:19 AM | 134 |
| 2 | 104 | 7:46:16 AM | 7:48:41 AM | 145 |
| 2 | 105 | 7:46:46 AM | 7:48:58 AM | 132 |
| 2 | 106 | 7:47:00 AM | 7:49:04 AM | 124 |
| 2 | 107 | 7:47:03 AM | 7:49:07 AM | 124 |
| 2 | 108 | 7:47:08 AM | 7:49:10 AM | 122 |
| 2 | 109 | 7:47:18 AM | 7:49:14 AM | 116 |
| 2 | 110 | 7:47:54 AM | 7:49:17 AM | 83 |
| 2 | 111 | 7:48:22 AM | 7:49:20 AM | 58 |
| 2 | 112 | 7:48:24 AM | 7:49:25 AM | 61 |
| 2 | 113 | 7:48:32 AM | 7:49:47 AM | 75 |
| 2 | 114 | 7:48:48 AM | 7:49:57 AM | 69 |
| 2 | 115 | 7:48:56 AM | 7:50:23 AM | 87 |
| 2 | 116 | 7:49:12 AM | 7:50:30 AM | 78 |
| 2 | 117 | 7:49:45 AM | 7:50:36 AM | 51 |
| 2 | 118 | 7:49:49 AM | 7:51:05 AM | 76 |
| 2 | 119 | 7:50:05 AM | 7:51:52 AM | 107 |
| 2 | 120 | 7:50:09 AM | 7:51:57 AM | 108 |
| 2 | 121 | 7:50:27 AM | 7:52:16 AM | 109 |
| 2 | 122 | 7:50:27 AM | 7:52:33 AM | 126 |
| 2 | 123 | 7:50:40 AM | 7:52:44 AM | 124 |
| 2 | 124 | 7:50:58 AM | 7:53:04 AM | 126 |
| 2 | 125 | 7:50:58 AM | 7:53:08 AM | 130 |
| 2 | 126 | 7:51:12 AM | 7:53:12 AM | 120 |
| 2 | 127 | 7:51:21 AM | 7:53:16 AM | 115 |
| 2 | 128 | 7:51:39 AM | 7:53:21 AM | 102 |
| 2 | 129 | 7:51:45 AM | 7:53:32 AM | 107 |
| 2 | 130 | 7:51:55 AM | 7:54:19 AM | 144 |
| 2 | 131 | 7:52:46 AM | 7:54:22 AM | 96 |
| 2 | 132 | 7:52:52 AM | 7:54:27 AM | 95 |
| 2 | 133 | 7:53:23 AM | 7:54:32 AM | 69 |
| 2 | 134 | 7:53:26 AM | 7:54:43 AM | 77 |
| 2 | 135 | 7:53:39 AM | 7:54:53 AM | 74 |
| 2 | 136 | 7:53:39 AM | 7:55:06 AM | 87 |
| 2 | 137 | 7:53:40 AM | 7:55:11 AM | 91 |
| 2 | 138 | 7:53:55 AM | 7:55:44 AM | 109 |
| 2 | 139 | 7:54:10 AM | 7:56:02 AM | 112 |
| 2 | 140 | 7:54:15 AM | 7:56:29 AM | 134 |
| 2 | 141 | 7:54:21 AM | 7:56:32 AM | 131 |
| 2 | 142 | 7:54:34 AM | 7:56:53 AM | 139 |
| 2 | 143 | 7:54:38 AM | 7:57:09 AM | 151 |
| 2 | 144 | 7:54:51 AM | 7:57:25 AM | 154 |
| 2 | 145 | 7:55:30 AM | 7:57:28 AM | 118 |
| 2 | 146 | 7:55:30 AM | 7:57:34 AM | 124 |
| 2 | 147 | 7:55:31 AM | 7:58:04 AM | 153 |
| 2 | 148 | 7:55:45 AM | 7:58:07 AM | 142 |
| 2 | 149 | 7:56:10 AM | 7:58:10 AM | 120 |
| 2 | 150 | 7:56:16 AM | 7:58:13 AM | 117 |

**CDM SMITH Inc.**
1100 Marion Street, Suite 200
Knoxville, TN 37921
(865) 963-4300

Counted by: Allyson Foster

Lane 1- EB Garrison Drive
Lane 2- WB Garrison Drive

File Name : Garrison Stop Delay
Site Code : 101
Start Date : 10/29/2013


| Ln. | No. | Joined Queue | Released From Queue | Delay |
|---|---|---|---|---|
| 2 | 151 | 7:56:20 AM | 7:58:23 AM | 123 |
| 2 | 152 | 7:57:11 AM | 7:58:30 AM | 79 |
| 2 | 153 | 7:57:37 AM | 7:58:45 AM | 68 |
| 2 | 154 | 7:57:42 AM | 7:58:55 AM | 73 |
| 2 | 155 | 7:57:45 AM | 7:59:56 AM | 131 |
| 2 | 156 | 7:57:58 AM | 8:00:03 AM | 125 |
| 2 | 157 | 7:58:10 AM | 8:00:11 AM | 121 |
| 2 | 158 | 7:58:25 AM | 8:00:55 AM | 150 |
| 2 | 159 | 7:59:02 AM | 8:01:11 AM | 129 |
| 2 | 160 | 7:59:33 AM | 8:01:19 AM | 106 |
| 2 | 161 | 7:59:35 AM | 8:01:27 AM | 112 |
| 2 | 162 | 7:59:44 AM | 8:01:40 AM | 116 |
| 2 | 163 | 7:59:44 AM | 8:02:00 AM | 136 |
| 2 | 164 | 7:59:54 AM | 8:02:29 AM | 155 |
| 2 | 165 | 8:00:10 AM | 8:02:37 AM | 147 |
| 2 | 166 | 8:00:47 AM | 8:03:03 AM | 136 |
| 2 | 167 | 8:00:52 AM | 8:03:28 AM | 156 |
| 2 | 168 | 8:01:08 AM | 8:03:44 AM | 156 |
| 2 | 169 | 8:01:14 AM | 8:03:49 AM | 155 |
| 2 | 170 | 8:01:49 AM | 8:03:51 AM | 122 |
| 2 | 171 | 8:02:34 AM | 8:03:56 AM | 82 |
| 2 | 172 | 8:02:59 AM | 8:04:00 AM | 61 |
| 2 | 173 | 8:03:00 AM | 8:04:20 AM | 80 |
| 2 | 174 | 8:03:00 AM | 8:04:23 AM | 83 |
| 2 | 175 | 8:03:05 AM | 8:05:07 AM | 122 |
| 2 | 176 | 8:03:18 AM | 8:05:13 AM | 115 |
| 2 | 177 | 8:03:19 AM | 8:06:07 AM | 168 |
| 2 | 178 | 8:03:20 AM | 8:06:17 AM | 177 |
| 2 | 179 | 8:04:18 AM | 8:06:21 AM | 123 |
| 2 | 180 | 8:04:28 AM | 8:06:25 AM | 117 |
| 2 | 181 | 8:04:41 AM | 8:06:44 AM | 123 |
| 2 | 182 | 8:04:43 AM | 8:06:47 AM | 124 |
| 2 | 183 | 8:04:47 AM | 8:06:49 AM | 122 |
| 2 | 184 | 8:05:31 AM | 8:07:08 AM | 97 |
| 2 | 185 | 8:05:31 AM | 8:07:26 AM | 115 |
| 2 | 186 | 8:05:32 AM | 8:07:44 AM | 132 |
| 2 | 187 | 8:06:09 AM | 8:07:57 AM | 108 |
| 2 | 188 | 8:06:31 AM | 8:08:04 AM | 93 |
| 2 | 189 | 8:06:54 AM | 8:08:26 AM | 92 |
| 2 | 190 | 8:06:55 AM | 8:08:53 AM | 118 |
| 2 | 191 | 8:06:55 AM | 8:08:59 AM | 124 |
| 2 | 192 | 8:07:01 AM | 8:09:09 AM | 128 |
| 2 | 193 | 8:07:50 AM | 8:09:12 AM | 82 |
| 2 | 194 | 8:07:55 AM | 8:09:22 AM | 87 |
| 2 | 195 | 8:08:14 AM | 8:09:25 AM | 71 |
| 2 | 196 | 8:08:15 AM | 8:09:32 AM | 77 |
| 2 | 197 | 8:08:21 AM | 8:09:47 AM | 86 |
| 2 | 198 | 8:08:22 AM | 8:09:50 AM | 88 |
| 2 | 199 | 8:08:52 AM | 8:09:53 AM | 61 |
| 2 | 200 | 8:09:04 AM | 8:10:17 AM | 73 |
| 2 | 201 | 8:09:11 AM | 8:10:47 AM | 96 |
| 2 | 202 | 8:09:11 AM | 8:10:52 AM | 101 |
| 2 | 203 | 8:09:29 AM | 8:11:10 AM | 101 |
| 2 | 204 | 8:10:11 AM | 8:11:14 AM | 63 |
| 2 | 205 | 8:10:12 AM | 8:11:40 AM | 88 |
| 2 | 206 | 8:10:16 AM | 8:12:53 AM | 157 |
| 2 | 207 | 8:10:20 AM | 8:12:58 AM | 158 |
| 2 | 208 | 8:10:31 AM | 8:13:01 AM | 150 |
| 2 | 209 | 8:10:32 AM | 8:13:14 AM | 162 |
| 2 | 210 | 8:10:36 AM | 8:13:52 AM | 196 |
| 2 | 211 | 8:11:17 AM | 8:13:56 AM | 159 |

**CDM SMITH Inc.**
1100 Marion Street, Suite 200
Knoxville, TN 37921
(865) 963-4300

Counted by: Allyson Foster

Lane 1- EB Garrison Drive
Lane 2- WB Garrison Drive

File Name : Garrison Stop Delay
Site Code : 101
Start Date : 10/29/2013


| Ln. | No. | Joined Queue | Released From Queue | Delay |
|---|---|---|---|---|
| 2 | 212 | 8:11:24 AM | 8:14:39 AM | 195 |
| 2 | 213 | 8:11:28 AM | 8:14:55 AM | 207 |
| 2 | 214 | 8:12:05 AM | 8:14:57 AM | 172 |
| 2 | 215 | 8:13:10 AM | 8:15:04 AM | 114 |
| 2 | 216 | 8:13:11 AM | 8:15:09 AM | 118 |
| 2 | 217 | 8:13:12 AM | 8:15:26 AM | 134 |
| 2 | 218 | 8:13:19 AM | 8:15:29 AM | 130 |
| 2 | 219 | 8:13:20 AM | 8:15:52 AM | 152 |
| 2 | 220 | 8:13:23 AM | 8:16:47 AM | 204 |
| 2 | 221 | 8:14:25 AM | 8:16:50 AM | 145 |
| 2 | 222 | 8:14:25 AM | 8:16:54 AM | 149 |
| 2 | 223 | 8:14:26 AM | 8:16:57 AM | 151 |
| 2 | 224 | 8:14:26 AM | 8:17:21 AM | 175 |
| 2 | 225 | 8:14:27 AM | 8:17:42 AM | 195 |
| 2 | 226 | 8:15:20 AM | 8:17:45 AM | 145 |
| 2 | 227 | 8:15:41 AM | 8:17:51 AM | 130 |
| 2 | 228 | 8:15:42 AM | 8:17:56 AM | 134 |
| 2 | 229 | 8:16:29 AM | 8:18:02 AM | 93 |
| 2 | 230 | 8:16:30 AM | 8:18:04 AM | 94 |
| 2 | 231 | 8:16:42 AM | 8:18:07 AM | 85 |
| 2 | 232 | 8:16:56 AM | 8:18:09 AM | 73 |
| 2 | 233 | 8:17:26 AM | 8:18:16 AM | 50 |
| 2 | 234 | 8:17:27 AM | 8:18:19 AM | 52 |
| 2 | 235 | 8:17:42 AM | 8:18:27 AM | 45 |
| 2 | 236 | 8:17:42 AM | 8:19:07 AM | 85 |
| 2 | 237 | 8:17:58 AM | 8:19:15 AM | 77 |
| 2 | 238 | 8:18:14 AM | 8:19:21 AM | 67 |
| 2 | 239 | 8:18:49 AM | 8:19:58 AM | 69 |
| 2 | 240 | 8:19:25 AM | 8:20:03 AM | 38 |
| 2 | 241 | 8:19:26 AM | 8:20:06 AM | 40 |
| 2 | 242 | 8:20:46 AM | 8:21:10 AM | 24 |
| 2 | 243 | 8:20:51 AM | 8:21:23 AM | 32 |
| 2 | 244 | 8:21:16 AM | 8:21:28 AM | 12 |
| 2 | 245 | 8:22:34 AM | 8:22:40 AM | 6 |
| 2 | 246 | 8:23:03 AM | 8:23:14 AM | 11 |
| 2 | 247 | 8:23:18 AM | 8:23:23 AM | 5 |
| 2 | 248 | 8:23:35 AM | 8:23:44 AM | 9 |
| 2 | 249 | 8:24:13 AM | 8:24:18 AM | 5 |
| 2 | 250 | 8:24:29 AM | 8:24:34 AM | 5 |
| 2 | 251 | 8:24:59 AM | 8:25:16 AM | 17 |
| 2 | 252 | 8:25:13 AM | 8:25:31 AM | 18 |
| 2 | 253 | 8:25:17 AM | 8:25:55 AM | 38 |
| 2 | 254 | 8:25:32 AM | 8:26:51 AM | 79 |
| 2 | 255 | 8:25:33 AM | 8:27:03 AM | 90 |
| 2 | 256 | 8:25:49 AM | 8:27:07 AM | 78 |
| 2 | 257 | 8:26:00 AM | 8:27:41 AM | 101 |
| 2 | 258 | 8:26:39 AM | 8:27:44 AM | 65 |
| 2 | 259 | 8:27:34 AM | 8:28:17 AM | 43 |
| 2 | 260 | 8:28:25 AM | 8:28:29 AM | 4 |
| 2 | 261 | 8:28:50 AM | 8:28:58 AM | 8 |
| 2 | 262 | 8:29:47 AM | 8:30:02 AM | 15 |
| 2 | 263 | 8:29:48 AM | 8:30:07 AM | 19 |
| 2 | 264 | 8:30:00 AM | 8:30:08 AM | 8 |
| 2 | 265 | 8:31:11 AM | 8:31:18 AM | 7 |
| 2 | 266 | 8:31:39 AM | 8:31:43 AM | 4 |
| 2 | 267 | 8:33:37 AM | 8:33:53 AM | 16 |
| 2 | 268 | 8:33:39 AM | 8:34:04 AM | 25 |
| 2 | 269 | 8:33:41 AM | 8:34:10 AM | 29 |
| 2 | 270 | 8:33:45 AM | 8:34:12 AM | 27 |
| 2 | 271 | 8:34:08 AM | 8:34:16 AM | 8 |
| 2 | 272 | 8:35:32 AM | 8:35:34 AM | 2 |

**CDM SMITH Inc.**
1100 Marion Street, Suite 200
Knoxville, TN 37921
(865) 963-4300

Counted by: Allyson Foster

Lane 1- EB Garrison Drive
Lane 2- WB Garrison Drive

File Name : Garrison Stop Delay
Site Code : 101
Start Date : 10/29/2013


| Ln. | No. | Joined Queue | Released From Queue | Delay |
|---|---|---|---|---|
| 2 | 273 | 8:36:16 AM | 8:36:19 AM | 3 |
| 2 | 274 | 8:37:20 AM | 8:37:25 AM | 5 |
| 2 | 275 | 8:37:54 AM | 8:37:59 AM | 5 |
| 2 | 276 | 8:39:13 AM | 8:39:44 AM | 31 |
| 2 | 277 | 8:39:38 AM | 8:39:55 AM | 17 |
| 2 | 278 | 8:40:03 AM | 8:40:06 AM | 3 |
| 2 | 279 | 8:42:37 AM | 8:42:47 AM | 10 |
| 2 | 280 | 8:42:51 AM | 8:43:02 AM | 11 |
| 2 | 281 | 8:45:47 AM | 8:46:06 AM | 19 |
| 2 | 282 | 8:47:10 AM | 8:47:13 AM | 3 |
| 2 | 283 | 8:47:40 AM | 8:47:42 AM | 2 |
| 2 | 284 | 8:48:40 AM | 8:48:41 AM | 1 |
| 2 | 285 | 8:54:36 AM | 8:54:39 AM | 3 |

**Summary Information:**

| 6:56:00 AM - 8:55:00 AM | Lane 1 | Lane 2 |
|---|---|---|
| Total Vehicle Count: | 33 | 285 |
| Delayed Vehicle Count: | 33 | 285 |
| Through Vehicle Count: | 0 | 0 |
| Average Stopped Time: | 24.76 | 68.993 |
| Maximum Stopped Time: | 78 | 207 |
| Min. Secs. for Delay: | 0 | 0 |
| Average Queue: | 0.12 | 2.762 |
| Queue Density: | 1.13 | 5.307 |
| Maximum Queue: | 3 | 14 |
| Delay in Vehicle Hour: | 0.12 | 2.76 |
| Total Delay: | 817 | 19663 |

CDM SMITH Inc.
1100 MARION STREET, SUITE 200
KNOXVILLE, TN 37921
865-963-4300

Counted by: Allyson Foster

File Name : Garrison Stop Delay AM
Site Code : 101
Start Date : 10/29/2013
Page No : 1

Lane 1- EB Garrison Drive
Lane 2- WB Garrison Drive

| Ln. | No. | Joined Queue | Released From Queue | Delay |
|---|---|---|---|---|
| 1 | 6 | 7:19:07 AM | 7:19:26 AM | 19 |
| 1 | 7 | 7:21:50 AM | 7:23:08 AM | 78 |
| 1 | 8 | 7:27:21 AM | 7:27:56 AM | 35 |
| 1 | 9 | 7:27:41 AM | 7:28:20 AM | 39 |
| 1 | 10 | 7:27:42 AM | 7:28:42 AM | 60 |
| 1 | 11 | 7:33:00 AM | 7:33:09 AM | 9 |
| 1 | 12 | 7:34:26 AM | 7:34:52 AM | 26 |
| 1 | 13 | 7:35:04 AM | 7:35:31 AM | 27 |
| 1 | 14 | 7:39:28 AM | 7:39:46 AM | 18 |
| 1 | 15 | 7:41:49 AM | 7:42:05 AM | 16 |
| 1 | 16 | 7:46:50 AM | 7:47:13 AM | 23 |
| 1 | 17 | 7:52:00 AM | 7:52:21 AM | 21 |
| 1 | 18 | 8:09:28 AM | 8:09:46 AM | 18 |
| 1 | 19 | 8:11:55 AM | 8:12:59 AM | 64 |
| 1 | 20 | 8:12:54 AM | 8:13:04 AM | 10 |
| 2 | 13 | 7:16:50 AM | 7:17:11 AM | 21 |
| 2 | 14 | 7:18:11 AM | 7:18:21 AM | 10 |
| 2 | 15 | 7:18:46 AM | 7:18:52 AM | 6 |
| 2 | 16 | 7:18:59 AM | 7:19:25 AM | 26 |
| 2 | 17 | 7:19:32 AM | 7:19:44 AM | 12 |
| 2 | 18 | 7:19:49 AM | 7:19:51 AM | 2 |
| 2 | 19 | 7:20:12 AM | 7:20:14 AM | 2 |
| 2 | 20 | 7:20:26 AM | 7:20:28 AM | 2 |
| 2 | 21 | 7:20:58 AM | 7:21:03 AM | 5 |
| 2 | 22 | 7:21:10 AM | 7:21:14 AM | 4 |
| 2 | 23 | 7:21:18 AM | 7:21:21 AM | 3 |
| 2 | 24 | 7:21:36 AM | 7:22:41 AM | 65 |
| 2 | 25 | 7:22:18 AM | 7:22:45 AM | 27 |
| 2 | 26 | 7:22:19 AM | 7:23:15 AM | 56 |
| 2 | 27 | 7:23:10 AM | 7:23:33 AM | 23 |
| 2 | 28 | 7:23:12 AM | 7:23:37 AM | 25 |
| 2 | 29 | 7:23:25 AM | 7:23:59 AM | 34 |
| 2 | 30 | 7:24:23 AM | 7:24:25 AM | 2 |
| 2 | 31 | 7:25:02 AM | 7:25:05 AM | 3 |
| 2 | 32 | 7:25:09 AM | 7:25:20 AM | 11 |
| 2 | 33 | 7:25:12 AM | 7:25:27 AM | 15 |
| 2 | 34 | 7:25:39 AM | 7:25:49 AM | 10 |
| 2 | 35 | 7:25:44 AM | 7:26:13 AM | 29 |
| 2 | 36 | 7:26:06 AM | 7:26:22 AM | 16 |
| 2 | 37 | 7:26:27 AM | 7:26:32 AM | 5 |
| 2 | 38 | 7:26:35 AM | 7:26:43 AM | 8 |
| 2 | 39 | 7:26:38 AM | 7:26:48 AM | 10 |
| 2 | 40 | 7:27:00 AM | 7:27:56 AM | 56 |
| 2 | 41 | 7:27:25 AM | 7:28:00 AM | 35 |
| 2 | 42 | 7:27:27 AM | 7:28:03 AM | 36 |
| 2 | 43 | 7:27:34 AM | 7:28:07 AM | 33 |
| 2 | 44 | 7:27:48 AM | 7:28:18 AM | 30 |
| 2 | 45 | 7:27:50 AM | 7:28:43 AM | 53 |
| 2 | 46 | 7:28:06 AM | 7:29:01 AM | 55 |
| 2 | 47 | 7:28:13 AM | 7:29:06 AM | 53 |
| 2 | 48 | 7:29:13 AM | 7:29:17 AM | 4 |
| 2 | 49 | 7:29:37 AM | 7:30:07 AM | 30 |
| 2 | 50 | 7:29:46 AM | 7:30:23 AM | 37 |
| 2 | 51 | 7:31:07 AM | 7:31:20 AM | 13 |
| 2 | 52 | 7:31:08 AM | 7:31:26 AM | 18 |
| 2 | 53 | 7:31:50 AM | 7:31:54 AM | 4 |
| 2 | 54 | 7:32:01 AM | 7:32:08 AM | 7 |
| 2 | 55 | 7:33:08 AM | 7:33:25 AM | 17 |
| 2 | 56 | 7:33:17 AM | 7:33:34 AM | 17 |
| 2 | 57 | 7:33:20 AM | 7:34:09 AM | 49 |
| 2 | 58 | 7:33:52 AM | 7:34:17 AM | 25 |
| 2 | 59 | 7:33:53 AM | 7:34:23 AM | 30 |
| 2 | 60 | 7:34:12 AM | 7:34:27 AM | 15 |

CDM SMITH Inc.
1100 MARION STREET, SUITE 200
KNOXVILLE, TN 37921
865-963-4300

Counted by: Allyson Foster

File Name : Garrison Stop Delay AM
Site Code : 101
Start Date : 10/29/2013
Page No : 2

Lane 1- EB Garrison Drive
Lane 2- WB Garrison Drive

| Ln. | No. | Joined Queue | Released From Queue | Delay |
|---|---|---|---|---|
| 2 | 61 | 7:34:13 AM | 7:34:33 AM | 20 |
| 2 | 62 | 7:34:29 AM | 7:34:53 AM | 24 |
| 2 | 63 | 7:34:51 AM | 7:34:56 AM | 5 |
| 2 | 64 | 7:35:40 AM | 7:35:46 AM | 6 |
| 2 | 65 | 7:35:45 AM | 7:35:58 AM | 13 |
| 2 | 66 | 7:35:53 AM | 7:36:06 AM | 13 |
| 2 | 67 | 7:35:55 AM | 7:36:32 AM | 37 |
| 2 | 68 | 7:36:08 AM | 7:36:37 AM | 29 |
| 2 | 69 | 7:36:24 AM | 7:36:47 AM | 23 |
| 2 | 70 | 7:36:49 AM | 7:37:23 AM | 34 |
| 2 | 71 | 7:36:57 AM | 7:37:34 AM | 37 |
| 2 | 72 | 7:37:02 AM | 7:37:45 AM | 43 |
| 2 | 73 | 7:37:04 AM | 7:37:49 AM | 45 |
| 2 | 74 | 7:37:07 AM | 7:37:52 AM | 45 |
| 2 | 75 | 7:37:17 AM | 7:38:02 AM | 45 |
| 2 | 76 | 7:37:22 AM | 7:38:47 AM | 85 |
| 2 | 77 | 7:38:22 AM | 7:38:49 AM | 27 |
| 2 | 78 | 7:38:41 AM | 7:38:56 AM | 15 |
| 2 | 79 | 7:39:23 AM | 7:39:30 AM | 7 |
| 2 | 80 | 7:39:27 AM | 7:39:48 AM | 21 |
| 2 | 81 | 7:39:43 AM | 7:39:53 AM | 10 |
| 2 | 82 | 7:40:20 AM | 7:40:21 AM | 1 |
| 2 | 83 | 7:41:41 AM | 7:41:55 AM | 14 |
| 2 | 84 | 7:42:09 AM | 7:42:35 AM | 26 |
| 2 | 85 | 7:42:10 AM | 7:43:41 AM | 91 |
| 2 | 86 | 7:42:36 AM | 7:43:53 AM | 77 |
| 2 | 87 | 7:42:38 AM | 7:43:59 AM | 81 |
| 2 | 88 | 7:42:51 AM | 7:44:07 AM | 76 |
| 2 | 89 | 7:42:55 AM | 7:44:12 AM | 77 |
| 2 | 90 | 7:43:06 AM | 7:44:16 AM | 70 |
| 2 | 91 | 7:43:20 AM | 7:44:21 AM | 61 |
| 2 | 92 | 7:43:43 AM | 7:44:25 AM | 42 |
| 2 | 93 | 7:43:46 AM | 7:44:30 AM | 44 |
| 2 | 94 | 7:44:11 AM | 7:44:39 AM | 28 |
| 2 | 95 | 7:44:18 AM | 7:45:08 AM | 50 |
| 2 | 96 | 7:44:57 AM | 7:45:17 AM | 20 |
| 2 | 97 | 7:45:23 AM | 7:46:03 AM | 40 |
| 2 | 98 | 7:45:38 AM | 7:46:08 AM | 30 |
| 2 | 99 | 7:45:47 AM | 7:46:15 AM | 28 |
| 2 | 100 | 7:45:58 AM | 7:47:40 AM | 102 |
| 2 | 101 | 7:45:59 AM | 7:47:56 AM | 117 |
| 2 | 102 | 7:46:04 AM | 7:48:05 AM | 121 |
| 2 | 103 | 7:46:05 AM | 7:48:19 AM | 134 |
| 2 | 104 | 7:46:16 AM | 7:48:41 AM | 145 |
| 2 | 105 | 7:46:46 AM | 7:48:58 AM | 132 |
| 2 | 106 | 7:47:00 AM | 7:49:04 AM | 124 |
| 2 | 107 | 7:47:03 AM | 7:49:07 AM | 124 |
| 2 | 108 | 7:47:08 AM | 7:49:10 AM | 122 |
| 2 | 109 | 7:47:18 AM | 7:49:14 AM | 116 |
| 2 | 110 | 7:47:54 AM | 7:49:17 AM | 83 |
| 2 | 111 | 7:48:22 AM | 7:49:20 AM | 58 |
| 2 | 112 | 7:48:24 AM | 7:49:25 AM | 61 |
| 2 | 113 | 7:48:32 AM | 7:49:47 AM | 75 |
| 2 | 114 | 7:48:48 AM | 7:49:57 AM | 69 |
| 2 | 115 | 7:48:56 AM | 7:50:23 AM | 87 |
| 2 | 116 | 7:49:12 AM | 7:50:30 AM | 78 |
| 2 | 117 | 7:49:45 AM | 7:50:36 AM | 51 |
| 2 | 118 | 7:49:49 AM | 7:51:05 AM | 76 |
| 2 | 119 | 7:50:05 AM | 7:51:52 AM | 107 |
| 2 | 120 | 7:50:09 AM | 7:51:57 AM | 108 |
| 2 | 121 | 7:50:27 AM | 7:52:16 AM | 109 |
| 2 | 122 | 7:50:27 AM | 7:52:33 AM | 126 |
| 2 | 123 | 7:50:40 AM | 7:52:44 AM | 124 |
| 2 | 124 | 7:50:58 AM | 7:53:04 AM | 126 |

CDM SMITH Inc.
1100 MARION STREET, SUITE 200
KNOXVILLE, TN 37921
865-963-4300

Counted by: Allyson Foster

File Name : Garrison Stop Delay AM
Site Code : 101
Start Date : 10/29/2013


Lane 1- EB Garrison Drive
Lane 2- WB Garrison Drive

| Ln. | No. | Joined Queue | Released From Queue | Delay |
|---|---|---|---|---|
| 2 | 125 | 7:50:58 AM | 7:53:08 AM | 130 |
| 2 | 126 | 7:51:12 AM | 7:53:12 AM | 120 |
| 2 | 127 | 7:51:21 AM | 7:53:16 AM | 115 |
| 2 | 128 | 7:51:39 AM | 7:53:21 AM | 102 |
| 2 | 129 | 7:51:45 AM | 7:53:32 AM | 107 |
| 2 | 130 | 7:51:55 AM | 7:54:19 AM | 144 |
| 2 | 131 | 7:52:46 AM | 7:54:22 AM | 96 |
| 2 | 132 | 7:52:52 AM | 7:54:27 AM | 95 |
| 2 | 133 | 7:53:23 AM | 7:54:32 AM | 69 |
| 2 | 134 | 7:53:26 AM | 7:54:43 AM | 77 |
| 2 | 135 | 7:53:39 AM | 7:54:53 AM | 74 |
| 2 | 136 | 7:53:39 AM | 7:55:06 AM | 87 |
| 2 | 137 | 7:53:40 AM | 7:55:11 AM | 91 |
| 2 | 138 | 7:53:55 AM | 7:55:44 AM | 109 |
| 2 | 139 | 7:54:10 AM | 7:56:02 AM | 112 |
| 2 | 140 | 7:54:15 AM | 7:56:29 AM | 134 |
| 2 | 141 | 7:54:21 AM | 7:56:32 AM | 131 |
| 2 | 142 | 7:54:34 AM | 7:56:53 AM | 139 |
| 2 | 143 | 7:54:38 AM | 7:57:09 AM | 151 |
| 2 | 144 | 7:54:51 AM | 7:57:25 AM | 154 |
| 2 | 145 | 7:55:30 AM | 7:57:28 AM | 118 |
| 2 | 146 | 7:55:30 AM | 7:57:34 AM | 124 |
| 2 | 147 | 7:55:31 AM | 7:58:04 AM | 153 |
| 2 | 148 | 7:55:45 AM | 7:58:07 AM | 142 |
| 2 | 149 | 7:56:10 AM | 7:58:10 AM | 120 |
| 2 | 150 | 7:56:16 AM | 7:58:13 AM | 117 |
| 2 | 151 | 7:56:20 AM | 7:58:23 AM | 123 |
| 2 | 152 | 7:57:11 AM | 7:58:30 AM | 79 |
| 2 | 153 | 7:57:37 AM | 7:58:45 AM | 68 |
| 2 | 154 | 7:57:42 AM | 7:58:55 AM | 73 |
| 2 | 155 | 7:57:45 AM | 7:59:56 AM | 131 |
| 2 | 156 | 7:57:58 AM | 8:00:03 AM | 125 |
| 2 | 157 | 7:58:10 AM | 8:00:11 AM | 121 |
| 2 | 158 | 7:58:25 AM | 8:00:55 AM | 150 |
| 2 | 159 | 7:59:02 AM | 8:01:11 AM | 129 |
| 2 | 160 | 7:59:33 AM | 8:01:19 AM | 106 |
| 2 | 161 | 7:59:35 AM | 8:01:27 AM | 112 |
| 2 | 162 | 7:59:44 AM | 8:01:40 AM | 116 |
| 2 | 163 | 7:59:44 AM | 8:02:00 AM | 136 |
| 2 | 164 | 7:59:54 AM | 8:02:29 AM | 155 |
| 2 | 165 | 8:00:10 AM | 8:02:37 AM | 147 |
| 2 | 166 | 8:00:47 AM | 8:03:03 AM | 136 |
| 2 | 167 | 8:00:52 AM | 8:03:28 AM | 156 |
| 2 | 168 | 8:01:08 AM | 8:03:44 AM | 156 |
| 2 | 169 | 8:01:14 AM | 8:03:49 AM | 155 |
| 2 | 170 | 8:01:49 AM | 8:03:51 AM | 122 |
| 2 | 171 | 8:02:34 AM | 8:03:56 AM | 82 |
| 2 | 172 | 8:02:59 AM | 8:04:00 AM | 61 |
| 2 | 173 | 8:03:00 AM | 8:04:20 AM | 80 |
| 2 | 174 | 8:03:00 AM | 8:04:23 AM | 83 |
| 2 | 175 | 8:03:05 AM | 8:05:07 AM | 122 |
| 2 | 176 | 8:03:18 AM | 8:05:13 AM | 115 |
| 2 | 177 | 8:03:19 AM | 8:06:07 AM | 168 |
| 2 | 178 | 8:03:20 AM | 8:06:17 AM | 177 |
| 2 | 179 | 8:04:18 AM | 8:06:21 AM | 123 |
| 2 | 180 | 8:04:28 AM | 8:06:25 AM | 117 |
| 2 | 181 | 8:04:41 AM | 8:06:44 AM | 123 |
| 2 | 182 | 8:04:43 AM | 8:06:47 AM | 124 |
| 2 | 183 | 8:04:47 AM | 8:06:49 AM | 122 |
| 2 | 184 | 8:05:31 AM | 8:07:08 AM | 97 |
| 2 | 185 | 8:05:31 AM | 8:07:26 AM | 115 |
| 2 | 186 | 8:05:32 AM | 8:07:44 AM | 132 |
| 2 | 187 | 8:06:09 AM | 8:07:57 AM | 108 |
| 2 | 188 | 8:06:31 AM | 8:08:04 AM | 93 |

CDM SMITH Inc.
1100 MARION STREET, SUITE 200
KNOXVILLE, TN 37921
865-963-4300

Counted by: Allyson Foster

File Name : Garrison Stop Delay AM
Site Code : 101
Start Date : 10/29/2013
Page No : 4

Lane 1- EB Garrison Drive
Lane 2- WB Garrison Drive

| Ln. | No. | Joined Queue | Released From Queue | Delay |
|---|---|---|---|---|
| 2 | 189 | 8:06:54 AM | 8:08:26 AM | 92 |
| 2 | 190 | 8:06:55 AM | 8:08:53 AM | 118 |
| 2 | 191 | 8:06:55 AM | 8:08:59 AM | 124 |
| 2 | 192 | 8:07:01 AM | 8:09:09 AM | 128 |
| 2 | 193 | 8:07:50 AM | 8:09:12 AM | 82 |
| 2 | 194 | 8:07:55 AM | 8:09:22 AM | 87 |
| 2 | 195 | 8:08:14 AM | 8:09:25 AM | 71 |
| 2 | 196 | 8:08:15 AM | 8:09:32 AM | 77 |
| 2 | 197 | 8:08:21 AM | 8:09:47 AM | 86 |
| 2 | 198 | 8:08:22 AM | 8:09:50 AM | 88 |
| 2 | 199 | 8:08:52 AM | 8:09:53 AM | 61 |
| 2 | 200 | 8:09:04 AM | 8:10:17 AM | 73 |
| 2 | 201 | 8:09:11 AM | 8:10:47 AM | 96 |
| 2 | 202 | 8:09:11 AM | 8:10:52 AM | 101 |
| 2 | 203 | 8:09:29 AM | 8:11:10 AM | 101 |
| 2 | 204 | 8:10:11 AM | 8:11:14 AM | 63 |
| 2 | 205 | 8:10:12 AM | 8:11:40 AM | 88 |
| 2 | 206 | 8:10:16 AM | 8:12:53 AM | 157 |
| 2 | 207 | 8:10:20 AM | 8:12:58 AM | 158 |
| 2 | 208 | 8:10:31 AM | 8:13:01 AM | 150 |
| 2 | 209 | 8:10:32 AM | 8:13:14 AM | 162 |
| 2 | 210 | 8:10:36 AM | 8:13:52 AM | 196 |
| 2 | 211 | 8:11:17 AM | 8:13:56 AM | 159 |
| 2 | 212 | 8:11:24 AM | 8:14:39 AM | 195 |
| 2 | 213 | 8:11:28 AM | 8:14:55 AM | 207 |
| 2 | 214 | 8:12:05 AM | 8:14:57 AM | 172 |

**Summary Information:**

| 7:15:00 AM - 8:15:00 AM | Lane 1 | Lane 2 |
|---|---|---|
| Total Vehicle Count: | 15 | 213 |
| Delayed Vehicle Count: | 15 | 213 |
| Through Vehicle Count: | 0 | 0 |
| Average Stopped Time: | 30.87 | 81.559 |
| Maximum Stopped Time: | 78 | 207 |
| Min. Secs. for Delay: | 0 | 0 |
| Average Queue: | 0.14 | 4.757 |
| Queue Density: | 1.14 | 5.792 |
| Maximum Queue: | 3 | 14 |
| Delay in Vehicle Hour: | 0.14 | 4.756845 |
| Total Delay: | 463 | 17372 |

**CDM SMITH Inc.**
1100 Marion Street, Suite 200
Knoxville, TN 37921
(865) 963-4300

Counted by: Allyson Foster

Lane 1- EB Garrison Drive
Lane 2- WB Garrison Drive

File Name : Garrison Stop Delay PM
Site Code : 101
Start Date : 10/28/2013
Page No : 1

| Ln. | No. | Joined Queue | Released From Queue | Delay |
|---|---|---|---|---|
| 1 | 3 | 2:01:12 PM | 2:01:14 PM | 2 |
| 1 | 4 | 2:01:37 PM | 2:01:40 PM | 3 |
| 1 | 5 | 2:04:51 PM | 2:05:01 PM | 10 |
| 1 | 6 | 2:05:10 PM | 2:05:13 PM | 3 |
| 1 | 7 | 2:05:37 PM | 2:05:51 PM | 14 |
| 1 | 8 | 2:09:01 PM | 2:09:17 PM | 16 |
| 1 | 9 | 2:10:58 PM | 2:10:59 PM | 1 |
| 1 | 10 | 2:13:06 PM | 2:13:12 PM | 6 |
| 1 | 11 | 2:30:32 PM | 2:30:33 PM | 1 |
| 1 | 12 | 2:44:40 PM | 2:44:47 PM | 7 |
| 1 | 13 | 2:46:48 PM | 2:47:50 PM | 62 |
| 1 | 14 | 2:47:42 PM | 2:48:56 PM | 74 |
| 1 | 15 | 2:48:31 PM | 2:49:05 PM | 34 |
| 1 | 16 | 2:49:40 PM | 2:50:13 PM | 33 |
| 1 | 17 | 2:50:37 PM | 2:50:51 PM | 14 |
| 1 | 18 | 2:53:59 PM | 2:54:01 PM | 2 |
| 1 | 19 | 2:56:33 PM | 2:56:36 PM | 3 |
| 1 | 20 | 3:05:18 PM | 3:05:21 PM | 3 |
| 1 | 21 | 3:06:31 PM | 3:06:39 PM | 8 |
| 1 | 22 | 3:07:27 PM | 3:07:51 PM | 24 |
| 1 | 23 | 3:07:27 PM | 3:08:03 PM | 36 |
| 1 | 24 | 3:11:20 PM | 3:12:02 PM | 42 |
| 1 | 25 | 3:11:21 PM | 3:12:05 PM | 44 |
| 1 | 26 | 3:13:32 PM | 3:13:45 PM | 13 |
| 1 | 27 | 3:24:35 PM | 3:24:44 PM | 9 |
| 1 | 28 | 3:26:27 PM | 3:26:38 PM | 11 |
| 1 | 29 | 3:35:27 PM | 3:36:26 PM | 59 |
| 1 | 30 | 3:37:46 PM | 3:37:58 PM | 12 |
| 1 | 31 | 3:39:13 PM | 3:39:25 PM | 12 |
| 1 | 32 | 3:39:14 PM | 3:39:34 PM | 20 |
| 1 | 33 | 3:40:01 PM | 3:40:08 PM | 7 |
| 1 | 34 | 3:40:31 PM | 3:40:40 PM | 9 |
| 1 | 35 | 3:42:21 PM | 3:42:41 PM | 20 |
| 1 | 36 | 3:42:42 PM | 3:42:47 PM | 5 |
| 1 | 37 | 3:42:53 PM | 3:43:18 PM | 25 |
| 1 | 38 | 3:50:10 PM | 3:50:16 PM | 6 |
| 1 | 39 | 3:50:23 PM | 3:50:50 PM | 27 |
| 1 | 40 | 3:54:12 PM | 3:54:19 PM | 7 |
| 1 | 41 | 3:54:40 PM | 3:55:30 PM | 50 |
| 1 | 42 | 3:55:12 PM | 3:55:46 PM | 34 |
| 1 | 43 | 4:05:58 PM | 4:06:06 PM | 8 |
| 1 | 44 | 4:06:01 PM | 4:06:12 PM | 11 |
| 1 | 45 | 4:10:38 PM | 4:11:13 PM | 35 |
| 1 | 46 | 4:12:02 PM | 4:12:13 PM | 11 |
| 1 | 47 | 4:12:18 PM | 4:12:21 PM | 3 |
| 1 | 48 | 4:21:42 PM | 4:22:16 PM | 34 |
| 1 | 49 | 4:30:59 PM | 4:31:31 PM | 32 |
| 1 | 50 | 4:35:04 PM | 4:35:15 PM | 11 |
| 1 | 51 | 4:35:28 PM | 4:35:35 PM | 7 |
| 1 | 52 | 4:37:53 PM | 4:37:56 PM | 3 |
| 1 | 53 | 5:03:57 PM | 5:04:21 PM | 24 |
| 1 | 54 | 5:04:36 PM | 5:05:15 PM | 39 |
| 1 | 55 | 5:12:43 PM | 5:13:53 PM | 70 |
| 1 | 56 | 5:15:46 PM | 5:15:55 PM | 9 |
| 1 | 57 | 5:25:26 PM | 5:25:31 PM | 5 |
| 1 | 58 | 5:29:50 PM | 5:30:01 PM | 11 |
| 1 | 59 | 5:32:13 PM | 5:32:53 PM | 40 |
| 1 | 60 | 5:35:22 PM | 5:35:35 PM | 13 |
| 1 | 61 | 5:38:17 PM | 5:38:19 PM | 2 |
| 1 | 62 | 5:42:52 PM | 5:42:58 PM | 6 |
| 1 | 63 | 5:44:02 PM | 5:44:39 PM | 37 |

**CDM SMITH Inc.**
1100 Marion Street, Suite 200
Knoxville, TN 37921
(865) 963-4300

Counted by: Allyson Foster

Lane 1- EB Garrison Drive
Lane 2- WB Garrison Drive

File Name : Garrison Stop Delay PM
Site Code : 101
Start Date : 10/28/2013


| Ln. | No. | Joined Queue | Released From Queue | Delay |
|---|---|---|---|---|
| 1 | 64 | 5:44:55 PM | 5:44:58 PM | 3 |
| 1 | 65 | 5:46:16 PM | 5:46:26 PM | 10 |
| 1 | 66 | 5:48:23 PM | 5:48:26 PM | 3 |
| 1 | 67 | 5:48:32 PM | 5:48:33 PM | 1 |
| 1 | 68 | 5:53:08 PM | 5:54:06 PM | 58 |
| 2 | 2 | 2:00:39 PM | 2:00:45 PM | 6 |
| 2 | 3 | 2:01:48 PM | 2:02:12 PM | 24 |
| 2 | 4 | 2:15:00 PM | 2:15:10 PM | 10 |
| 2 | 5 | 2:15:48 PM | 2:15:57 PM | 9 |
| 2 | 6 | 2:18:05 PM | 2:18:09 PM | 4 |
| 2 | 7 | 2:18:06 PM | 2:18:13 PM | 7 |
| 2 | 8 | 2:18:50 PM | 2:19:15 PM | 25 |
| 2 | 9 | 2:19:11 PM | 2:19:22 PM | 11 |
| 2 | 10 | 2:22:13 PM | 2:22:18 PM | 5 |
| 2 | 11 | 2:28:22 PM | 2:28:34 PM | 12 |
| 2 | 12 | 2:31:49 PM | 2:31:55 PM | 6 |
| 2 | 13 | 2:34:51 PM | 2:34:52 PM | 1 |
| 2 | 14 | 2:35:13 PM | 2:35:21 PM | 8 |
| 2 | 15 | 2:35:16 PM | 2:35:24 PM | 8 |
| 2 | 16 | 2:35:38 PM | 2:35:59 PM | 21 |
| 2 | 17 | 2:37:10 PM | 2:37:32 PM | 22 |
| 2 | 18 | 2:40:33 PM | 2:40:40 PM | 7 |
| 2 | 19 | 2:41:16 PM | 2:41:19 PM | 3 |
| 2 | 20 | 2:42:44 PM | 2:42:58 PM | 14 |
| 2 | 21 | 2:42:47 PM | 2:43:05 PM | 18 |
| 2 | 22 | 2:43:31 PM | 2:43:32 PM | 1 |
| 2 | 23 | 2:46:40 PM | 2:46:42 PM | 2 |
| 2 | 24 | 2:49:23 PM | 2:49:24 PM | 1 |
| 2 | 25 | 2:51:02 PM | 2:55:31 PM | 269 |
| 2 | 26 | 2:55:00 PM | 2:56:32 PM | 92 |
| 2 | 27 | 2:56:29 PM | 2:57:06 PM | 37 |
| 2 | 28 | 2:56:48 PM | 2:57:08 PM | 20 |
| 2 | 29 | 3:01:22 PM | 3:01:24 PM | 2 |
| 2 | 30 | 3:09:46 PM | 3:09:54 PM | 8 |
| 2 | 31 | 3:13:17 PM | 3:13:18 PM | 1 |
| 2 | 32 | 3:15:00 PM | 3:15:05 PM | 5 |
| 2 | 33 | 3:17:07 PM | 3:17:19 PM | 12 |
| 2 | 34 | 3:17:54 PM | 3:17:57 PM | 3 |
| 2 | 35 | 3:20:13 PM | 3:20:16 PM | 3 |
| 2 | 36 | 3:22:12 PM | 3:22:18 PM | 6 |
| 2 | 37 | 3:23:19 PM | 3:23:30 PM | 11 |
| 2 | 38 | 3:23:51 PM | 3:23:54 PM | 3 |
| 2 | 39 | 3:24:06 PM | 3:24:16 PM | 10 |
| 2 | 40 | 3:24:37 PM | 3:24:40 PM | 3 |
| 2 | 41 | 3:25:52 PM | 3:25:55 PM | 3 |
| 2 | 42 | 3:26:10 PM | 3:26:13 PM | 3 |
| 2 | 43 | 3:27:17 PM | 3:27:24 PM | 7 |
| 2 | 44 | 3:28:44 PM | 3:28:49 PM | 5 |
| 2 | 45 | 3:28:48 PM | 3:28:53 PM | 5 |
| 2 | 46 | 3:28:55 PM | 3:28:59 PM | 4 |
| 2 | 47 | 3:28:57 PM | 3:29:11 PM | 14 |
| 2 | 48 | 3:29:12 PM | 3:29:14 PM | 2 |
| 2 | 49 | 3:29:15 PM | 3:29:25 PM | 10 |
| 2 | 50 | 3:29:16 PM | 3:29:37 PM | 21 |
| 2 | 51 | 3:29:34 PM | 3:29:44 PM | 10 |
| 2 | 52 | 3:29:35 PM | 3:29:50 PM | 15 |
| 2 | 53 | 3:29:48 PM | 3:29:55 PM | 7 |
| 2 | 54 | 3:30:56 PM | 3:31:00 PM | 4 |
| 2 | 55 | 3:30:57 PM | 3:31:07 PM | 10 |
| 2 | 56 | 3:30:59 PM | 3:31:16 PM | 17 |
| 2 | 57 | 3:31:00 PM | 3:31:29 PM | 29 |

**CDM SMITH Inc.**
1100 Marion Street, Suite 200
Knoxville, TN 37921
(865) 963-4300

Counted by: Allyson Foster

Lane 1- EB Garrison Drive
Lane 2- WB Garrison Drive

File Name : Garrison Stop Delay PM
Site Code : 101
Start Date : 10/28/2013


| Ln. | No. | Joined Queue | Released From Queue | Delay |
|---|---|---|---|---|
| 2 | 58 | 3:31:27 PM | 3:31:35 PM | 8 |
| 2 | 59 | 3:31:36 PM | 3:31:47 PM | 11 |
| 2 | 60 | 3:31:37 PM | 3:31:56 PM | 19 |
| 2 | 61 | 3:32:08 PM | 3:32:14 PM | 6 |
| 2 | 62 | 3:32:11 PM | 3:32:28 PM | 17 |
| 2 | 63 | 3:32:15 PM | 3:32:39 PM | 24 |
| 2 | 64 | 3:32:28 PM | 3:32:53 PM | 25 |
| 2 | 65 | 3:32:32 PM | 3:33:02 PM | 30 |
| 2 | 66 | 3:32:34 PM | 3:33:10 PM | 36 |
| 2 | 67 | 3:32:43 PM | 3:33:35 PM | 52 |
| 2 | 68 | 3:32:49 PM | 3:33:39 PM | 50 |
| 2 | 69 | 3:32:52 PM | 3:34:00 PM | 68 |
| 2 | 70 | 3:33:04 PM | 3:34:13 PM | 69 |
| 2 | 71 | 3:33:19 PM | 3:34:16 PM | 57 |
| 2 | 72 | 3:33:22 PM | 3:34:23 PM | 61 |
| 2 | 73 | 3:33:26 PM | 3:34:27 PM | 61 |
| 2 | 74 | 3:33:40 PM | 3:34:34 PM | 54 |
| 2 | 75 | 3:33:50 PM | 3:34:38 PM | 48 |
| 2 | 76 | 3:34:20 PM | 3:34:54 PM | 34 |
| 2 | 77 | 3:34:26 PM | 3:34:57 PM | 31 |
| 2 | 78 | 3:34:28 PM | 3:35:08 PM | 40 |
| 2 | 79 | 3:34:31 PM | 3:35:21 PM | 50 |
| 2 | 80 | 3:34:42 PM | 3:35:25 PM | 43 |
| 2 | 81 | 3:34:46 PM | 3:35:28 PM | 42 |
| 2 | 82 | 3:34:49 PM | 3:35:57 PM | 68 |
| 2 | 83 | 3:35:05 PM | 3:36:29 PM | 84 |
| 2 | 84 | 3:35:12 PM | 3:36:36 PM | 84 |
| 2 | 85 | 3:35:33 PM | 3:36:40 PM | 67 |
| 2 | 86 | 3:35:54 PM | 3:37:07 PM | 73 |
| 2 | 87 | 3:35:56 PM | 3:37:11 PM | 75 |
| 2 | 88 | 3:36:41 PM | 3:37:14 PM | 33 |
| 2 | 89 | 3:36:53 PM | 3:37:19 PM | 26 |
| 2 | 90 | 3:36:55 PM | 3:37:22 PM | 27 |
| 2 | 91 | 3:37:03 PM | 3:37:41 PM | 38 |
| 2 | 92 | 3:37:09 PM | 3:37:48 PM | 39 |
| 2 | 93 | 3:37:16 PM | 3:37:52 PM | 36 |
| 2 | 94 | 3:37:37 PM | 3:37:59 PM | 22 |
| 2 | 95 | 3:37:38 PM | 3:38:02 PM | 24 |
| 2 | 96 | 3:37:39 PM | 3:38:23 PM | 44 |
| 2 | 97 | 3:38:00 PM | 3:38:53 PM | 53 |
| 2 | 98 | 3:38:07 PM | 3:39:02 PM | 55 |
| 2 | 99 | 3:38:11 PM | 3:39:07 PM | 56 |
| 2 | 100 | 3:38:14 PM | 3:39:26 PM | 72 |
| 2 | 101 | 3:38:18 PM | 3:39:34 PM | 76 |
| 2 | 102 | 3:38:23 PM | 3:39:56 PM | 93 |
| 2 | 103 | 3:38:25 PM | 3:40:01 PM | 96 |
| 2 | 104 | 3:39:06 PM | 3:40:08 PM | 62 |
| 2 | 105 | 3:39:08 PM | 3:40:15 PM | 67 |
| 2 | 106 | 3:39:08 PM | 3:40:22 PM | 74 |
| 2 | 107 | 3:39:16 PM | 3:40:26 PM | 70 |
| 2 | 108 | 3:39:23 PM | 3:40:33 PM | 70 |
| 2 | 109 | 3:39:23 PM | 3:40:38 PM | 75 |
| 2 | 110 | 3:39:23 PM | 3:41:00 PM | 97 |
| 2 | 111 | 3:39:33 PM | 3:41:03 PM | 90 |
| 2 | 112 | 3:40:09 PM | 3:41:06 PM | 57 |
| 2 | 113 | 3:40:13 PM | 3:41:09 PM | 56 |
| 2 | 114 | 3:40:28 PM | 3:41:22 PM | 54 |
| 2 | 115 | 3:40:31 PM | 3:41:27 PM | 56 |
| 2 | 116 | 3:40:59 PM | 3:42:01 PM | 62 |
| 2 | 117 | 3:41:00 PM | 3:42:43 PM | 103 |
| 2 | 118 | 3:41:19 PM | 3:43:01 PM | 102 |

**CDM SMITH Inc.**
1100 Marion Street, Suite 200
Knoxville, TN 37921
(865) 963-4300

Counted by: Allyson Foster

Lane 1- EB Garrison Drive
Lane 2- WB Garrison Drive

File Name : Garrison Stop Delay PM
Site Code : 101
Start Date : 10/28/2013


| Ln. | No. | Joined Queue | Released From Queue | Delay |
|---|---|---|---|---|
| 2 | 119 | 3:41:33 PM | 3:43:19 PM | 106 |
| 2 | 120 | 3:42:20 PM | 3:43:23 PM | 63 |
| 2 | 121 | 3:42:26 PM | 3:43:27 PM | 61 |
| 2 | 122 | 3:43:05 PM | 3:43:31 PM | 26 |
| 2 | 123 | 3:43:24 PM | 3:44:28 PM | 64 |
| 2 | 124 | 3:43:26 PM | 3:44:46 PM | 80 |
| 2 | 125 | 3:43:29 PM | 3:44:52 PM | 83 |
| 2 | 126 | 3:43:50 PM | 3:45:17 PM | 87 |
| 2 | 127 | 3:44:02 PM | 3:45:35 PM | 93 |
| 2 | 128 | 3:44:14 PM | 3:45:38 PM | 84 |
| 2 | 129 | 3:44:39 PM | 3:45:54 PM | 75 |
| 2 | 130 | 3:44:53 PM | 3:46:08 PM | 75 |
| 2 | 131 | 3:44:55 PM | 3:46:19 PM | 84 |
| 2 | 132 | 3:45:35 PM | 3:46:21 PM | 46 |
| 2 | 133 | 3:45:56 PM | 3:46:26 PM | 30 |
| 2 | 134 | 3:46:15 PM | 3:46:51 PM | 36 |
| 2 | 135 | 3:46:15 PM | 3:47:00 PM | 45 |
| 2 | 136 | 3:46:36 PM | 3:47:06 PM | 30 |
| 2 | 137 | 3:46:48 PM | 3:47:26 PM | 38 |
| 2 | 138 | 3:47:09 PM | 3:47:32 PM | 23 |
| 2 | 139 | 3:47:21 PM | 3:47:38 PM | 17 |
| 2 | 140 | 3:47:26 PM | 3:47:43 PM | 17 |
| 2 | 141 | 3:47:36 PM | 3:47:48 PM | 12 |
| 2 | 142 | 3:48:22 PM | 3:48:25 PM | 3 |
| 2 | 143 | 3:48:23 PM | 3:48:29 PM | 6 |
| 2 | 144 | 3:48:24 PM | 3:48:41 PM | 17 |
| 2 | 145 | 3:48:39 PM | 3:48:45 PM | 6 |
| 2 | 146 | 3:49:24 PM | 3:49:30 PM | 6 |
| 2 | 147 | 3:49:44 PM | 3:50:07 PM | 23 |
| 2 | 148 | 3:50:28 PM | 3:50:59 PM | 31 |
| 2 | 149 | 3:50:42 PM | 3:51:07 PM | 25 |
| 2 | 150 | 3:51:38 PM | 3:51:46 PM | 8 |
| 2 | 151 | 3:51:59 PM | 3:52:11 PM | 12 |
| 2 | 152 | 3:52:09 PM | 3:52:21 PM | 12 |
| 2 | 153 | 3:52:51 PM | 3:52:54 PM | 3 |
| 2 | 154 | 3:53:53 PM | 3:54:20 PM | 27 |
| 2 | 155 | 3:54:05 PM | 3:54:25 PM | 20 |
| 2 | 156 | 3:54:26 PM | 3:54:36 PM | 10 |
| 2 | 157 | 3:54:27 PM | 3:55:16 PM | 49 |
| 2 | 158 | 3:55:34 PM | 3:55:46 PM | 12 |
| 2 | 159 | 3:57:36 PM | 3:57:39 PM | 3 |
| 2 | 160 | 3:58:04 PM | 3:58:06 PM | 2 |
| 2 | 161 | 3:59:06 PM | 3:59:27 PM | 21 |
| 2 | 162 | 4:00:22 PM | 4:00:32 PM | 10 |
| 2 | 163 | 4:00:45 PM | 4:01:17 PM | 32 |
| 2 | 164 | 4:02:15 PM | 4:02:19 PM | 4 |
| 2 | 165 | 4:03:36 PM | 4:04:16 PM | 40 |
| 2 | 166 | 4:07:47 PM | 4:08:01 PM | 14 |
| 2 | 167 | 4:10:38 PM | 4:11:07 PM | 29 |
| 2 | 168 | 4:13:11 PM | 4:13:27 PM | 16 |
| 2 | 169 | 4:13:54 PM | 4:13:56 PM | 2 |
| 2 | 170 | 4:14:48 PM | 4:15:21 PM | 33 |
| 2 | 171 | 4:15:21 PM | 4:15:24 PM | 3 |
| 2 | 172 | 4:18:23 PM | 4:18:35 PM | 12 |
| 2 | 173 | 4:18:44 PM | 4:18:51 PM | 7 |
| 2 | 174 | 4:20:34 PM | 4:20:56 PM | 22 |
| 2 | 175 | 4:20:57 PM | 4:21:05 PM | 8 |
| 2 | 176 | 4:21:13 PM | 4:21:40 PM | 27 |
| 2 | 177 | 4:21:35 PM | 4:21:47 PM | 12 |
| 2 | 178 | 4:24:48 PM | 4:24:54 PM | 6 |
| 2 | 179 | 4:25:51 PM | 4:25:53 PM | 2 |

**CDM SMITH Inc.**
1100 Marion Street, Suite 200
Knoxville, TN 37921
(865) 963-4300

Counted by: Allyson Foster

Lane 1- EB Garrison Drive
Lane 2- WB Garrison Drive

File Name : Garrison Stop Delay PM
Site Code : 101
Start Date : 10/28/2013


| Ln. | No. | Joined Queue | Released From Queue | Delay |
|---|---|---|---|---|
| 2 | 180 | 4:26:03 PM | 4:26:06 PM | 3 |
| 2 | 181 | 4:30:43 PM | 4:30:57 PM | 14 |
| 2 | 182 | 4:36:20 PM | 4:36:30 PM | 10 |
| 2 | 183 | 4:36:41 PM | 4:36:43 PM | 2 |
| 2 | 184 | 4:41:28 PM | 4:41:40 PM | 12 |
| 2 | 185 | 4:42:59 PM | 4:43:00 PM | 1 |
| 2 | 186 | 4:43:15 PM | 4:43:19 PM | 4 |
| 2 | 187 | 4:44:52 PM | 4:45:10 PM | 18 |
| 2 | 188 | 4:45:56 PM | 4:46:00 PM | 4 |
| 2 | 189 | 4:51:21 PM | 4:51:23 PM | 2 |
| 2 | 190 | 4:54:40 PM | 4:54:45 PM | 5 |
| 2 | 191 | 4:58:15 PM | 4:58:16 PM | 1 |
| 2 | 192 | 4:58:15 PM | 4:58:18 PM | 3 |
| 2 | 193 | 5:00:31 PM | 5:00:35 PM | 4 |
| 2 | 194 | 5:00:59 PM | 5:02:17 PM | 78 |
| 2 | 195 | 5:02:11 PM | 5:02:31 PM | 20 |
| 2 | 196 | 5:02:23 PM | 5:02:48 PM | 25 |
| 2 | 197 | 5:02:29 PM | 5:02:52 PM | 23 |
| 2 | 198 | 5:02:47 PM | 5:02:56 PM | 9 |
| 2 | 199 | 5:03:13 PM | 5:03:31 PM | 18 |
| 2 | 200 | 5:03:59 PM | 5:04:13 PM | 14 |
| 2 | 201 | 5:05:19 PM | 5:05:22 PM | 3 |
| 2 | 202 | 5:05:30 PM | 5:05:49 PM | 19 |
| 2 | 203 | 5:07:48 PM | 5:07:53 PM | 5 |
| 2 | 204 | 5:08:10 PM | 5:08:13 PM | 3 |
| 2 | 205 | 5:08:19 PM | 5:08:22 PM | 3 |
| 2 | 206 | 5:08:51 PM | 5:08:53 PM | 2 |
| 2 | 207 | 5:09:24 PM | 5:10:29 PM | 65 |
| 2 | 208 | 5:11:07 PM | 5:11:12 PM | 5 |
| 2 | 209 | 5:11:46 PM | 5:12:03 PM | 17 |
| 2 | 210 | 5:12:37 PM | 5:13:21 PM | 44 |
| 2 | 211 | 5:15:30 PM | 5:15:41 PM | 11 |
| 2 | 212 | 5:15:44 PM | 5:15:52 PM | 8 |
| 2 | 213 | 5:17:29 PM | 5:17:29 PM | 0 |
| 2 | 214 | 5:18:45 PM | 5:18:53 PM | 8 |
| 2 | 215 | 5:21:50 PM | 5:23:10 PM | 80 |
| 2 | 216 | 5:23:15 PM | 5:23:23 PM | 8 |
| 2 | 217 | 5:26:32 PM | 5:26:36 PM | 4 |
| 2 | 218 | 5:28:58 PM | 5:29:01 PM | 3 |
| 2 | 219 | 5:29:25 PM | 5:29:58 PM | 33 |
| 2 | 220 | 5:29:27 PM | 5:30:08 PM | 41 |
| 2 | 221 | 5:33:02 PM | 5:33:21 PM | 19 |
| 2 | 222 | 5:35:06 PM | 5:35:07 PM | 1 |
| 2 | 223 | 5:35:12 PM | 5:35:32 PM | 20 |
| 2 | 224 | 5:36:36 PM | 5:36:51 PM | 15 |
| 2 | 225 | 5:37:12 PM | 5:37:21 PM | 9 |
| 2 | 226 | 5:37:42 PM | 5:38:02 PM | 20 |
| 2 | 227 | 5:38:28 PM | 5:38:34 PM | 6 |
| 2 | 228 | 5:38:47 PM | 5:39:00 PM | 13 |
| 2 | 229 | 5:42:59 PM | 5:43:37 PM | 38 |
| 2 | 230 | 5:52:39 PM | 5:53:03 PM | 24 |
| 2 | 231 | 5:52:52 PM | 5:54:02 PM | 70 |
| 2 | 232 | 5:54:34 PM | 5:56:45 PM | 131 |

**CDM SMITH Inc.**
1100 Marion Street, Suite 200
Knoxville, TN 37921
(865) 963-4300

Counted by: Allyson Foster

Lane 1- EB Garrison Drive
Lane 2- WB Garrison Drive

File Name : Garrison Stop Delay PM
Site Code : 101
Start Date : 10/28/2013


**Summary Information:**

| 2:00:00 PM - 5:57:00 PM | Lane 1 | Lane 2 |
|---|---|---|
| Total Vehicle Count: | 66 | 231 |
| Delayed Vehicle Count: | 66 | 231 |
| Through Vehicle Count: | 0 | 0 |
| Average Stopped Time: | 19.00 | 30.286 |
| Maximum Stopped Time: | 74 | 269 |
| Min. Secs. for Delay: | 0 | 0 |
| Average Queue: | 0.09 | 0.494 |
| Queue Density: | 1.12 | 2.222 |
| Maximum Queue: | 2 | 11 |
| Delay in Vehicle Hour: | 0.09 | 0.49 |
| Total Delay: | 1254 | 6996 |

CDM SMITH Inc.
1100 MARION STREET, SUITE 200
KNOXVILLE, TN 37921
865-963-4300

Counted by: Allyson Foster

File Name : Garrison Stop Delay PM
Site Code : 101
Start Date : 10/28/2013
Page No : 1

Lane 1- EB Garrison Drive
Lane 2- WB Garrison Drive

| Ln. | No. | Joined Queue | Released From Queue | Delay |
|---|---|---|---|---|
| 1 | 20 | 3:05:18 PM | 3:05:21 PM | 3 |
| 1 | 21 | 3:06:31 PM | 3:06:39 PM | 8 |
| 1 | 22 | 3:07:27 PM | 3:07:51 PM | 24 |
| 1 | 23 | 3:07:27 PM | 3:08:03 PM | 36 |
| 1 | 24 | 3:11:20 PM | 3:12:02 PM | 42 |
| 1 | 25 | 3:11:21 PM | 3:12:05 PM | 44 |
| 1 | 26 | 3:13:32 PM | 3:13:45 PM | 13 |
| 1 | 27 | 3:24:35 PM | 3:24:44 PM | 9 |
| 1 | 28 | 3:26:27 PM | 3:26:38 PM | 11 |
| 1 | 29 | 3:35:27 PM | 3:36:26 PM | 59 |
| 1 | 30 | 3:37:46 PM | 3:37:58 PM | 12 |
| 1 | 31 | 3:39:13 PM | 3:39:25 PM | 12 |
| 1 | 32 | 3:39:14 PM | 3:39:34 PM | 20 |
| 1 | 33 | 3:40:01 PM | 3:40:08 PM | 7 |
| 1 | 34 | 3:40:31 PM | 3:40:40 PM | 9 |
| 1 | 35 | 3:42:21 PM | 3:42:41 PM | 20 |
| 1 | 36 | 3:42:42 PM | 3:42:47 PM | 5 |
| 1 | 37 | 3:42:53 PM | 3:43:18 PM | 25 |
| 1 | 38 | 3:50:10 PM | 3:50:16 PM | 6 |
| 1 | 39 | 3:50:23 PM | 3:50:50 PM | 27 |
| 1 | 40 | 3:54:12 PM | 3:54:19 PM | 7 |
| 1 | 41 | 3:54:40 PM | 3:55:30 PM | 50 |
| 1 | 42 | 3:55:12 PM | 3:55:46 PM | 34 |
| 2 | 29 | 3:01:22 PM | 3:01:24 PM | 2 |
| 2 | 30 | 3:09:46 PM | 3:09:54 PM | 8 |
| 2 | 31 | 3:13:17 PM | 3:13:18 PM | 1 |
| 2 | 32 | 3:15:00 PM | 3:15:05 PM | 5 |
| 2 | 33 | 3:17:07 PM | 3:17:19 PM | 12 |
| 2 | 34 | 3:17:54 PM | 3:17:57 PM | 3 |
| 2 | 35 | 3:20:13 PM | 3:20:16 PM | 3 |
| 2 | 36 | 3:22:12 PM | 3:22:18 PM | 6 |
| 2 | 37 | 3:23:19 PM | 3:23:30 PM | 11 |
| 2 | 38 | 3:23:51 PM | 3:23:54 PM | 3 |
| 2 | 39 | 3:24:06 PM | 3:24:16 PM | 10 |
| 2 | 40 | 3:24:37 PM | 3:24:40 PM | 3 |
| 2 | 41 | 3:25:52 PM | 3:25:55 PM | 3 |
| 2 | 42 | 3:26:10 PM | 3:26:13 PM | 3 |
| 2 | 43 | 3:27:17 PM | 3:27:24 PM | 7 |
| 2 | 44 | 3:28:44 PM | 3:28:49 PM | 5 |
| 2 | 45 | 3:28:48 PM | 3:28:53 PM | 5 |
| 2 | 46 | 3:28:55 PM | 3:28:59 PM | 4 |
| 2 | 47 | 3:28:57 PM | 3:29:11 PM | 14 |
| 2 | 48 | 3:29:12 PM | 3:29:14 PM | 2 |
| 2 | 49 | 3:29:15 PM | 3:29:25 PM | 10 |
| 2 | 50 | 3:29:16 PM | 3:29:37 PM | 21 |
| 2 | 51 | 3:29:34 PM | 3:29:44 PM | 10 |
| 2 | 52 | 3:29:35 PM | 3:29:50 PM | 15 |
| 2 | 53 | 3:29:48 PM | 3:29:55 PM | 7 |
| 2 | 54 | 3:30:56 PM | 3:31:00 PM | 4 |
| 2 | 55 | 3:30:57 PM | 3:31:07 PM | 10 |
| 2 | 56 | 3:30:59 PM | 3:31:16 PM | 17 |
| 2 | 57 | 3:31:00 PM | 3:31:29 PM | 29 |
| 2 | 58 | 3:31:27 PM | 3:31:35 PM | 8 |
| 2 | 59 | 3:31:36 PM | 3:31:47 PM | 11 |
| 2 | 60 | 3:31:37 PM | 3:31:56 PM | 19 |
| 2 | 61 | 3:32:08 PM | 3:32:14 PM | 6 |
| 2 | 62 | 3:32:11 PM | 3:32:28 PM | 17 |
| 2 | 63 | 3:32:15 PM | 3:32:39 PM | 24 |
| 2 | 64 | 3:32:28 PM | 3:32:53 PM | 25 |
| 2 | 65 | 3:32:32 PM | 3:33:02 PM | 30 |
| 2 | 66 | 3:32:34 PM | 3:33:10 PM | 36 |
| 2 | 67 | 3:32:43 PM | 3:33:35 PM | 52 |
| 2 | 68 | 3:32:49 PM | 3:33:39 PM | 50 |

CDM SMITH Inc.
1100 MARION STREET, SUITE 200
KNOXVILLE, TN 37921
865-963-4300

Counted by: Allyson Foster

File Name : Garrison Stop Delay PM
Site Code : 101
Start Date : 10/28/2013
Page No : 2

Lane 1- EB Garrison Drive
Lane 2- WB Garrison Drive

| Ln. | No. | Joined Queue | Released From Queue | Delay |
|---|---|---|---|---|
| 2 | 69 | 3:32:52 PM | 3:34:00 PM | 68 |
| 2 | 70 | 3:33:04 PM | 3:34:13 PM | 69 |
| 2 | 71 | 3:33:19 PM | 3:34:16 PM | 57 |
| 2 | 72 | 3:33:22 PM | 3:34:23 PM | 61 |
| 2 | 73 | 3:33:26 PM | 3:34:27 PM | 61 |
| 2 | 74 | 3:33:40 PM | 3:34:34 PM | 54 |
| 2 | 75 | 3:33:50 PM | 3:34:38 PM | 48 |
| 2 | 76 | 3:34:20 PM | 3:34:54 PM | 34 |
| 2 | 77 | 3:34:26 PM | 3:34:57 PM | 31 |
| 2 | 78 | 3:34:28 PM | 3:35:08 PM | 40 |
| 2 | 79 | 3:34:31 PM | 3:35:21 PM | 50 |
| 2 | 80 | 3:34:42 PM | 3:35:25 PM | 43 |
| 2 | 81 | 3:34:46 PM | 3:35:28 PM | 42 |
| 2 | 82 | 3:34:49 PM | 3:35:57 PM | 68 |
| 2 | 83 | 3:35:05 PM | 3:36:29 PM | 84 |
| 2 | 84 | 3:35:12 PM | 3:36:36 PM | 84 |
| 2 | 85 | 3:35:33 PM | 3:36:40 PM | 67 |
| 2 | 86 | 3:35:54 PM | 3:37:07 PM | 73 |
| 2 | 87 | 3:35:56 PM | 3:37:11 PM | 75 |
| 2 | 88 | 3:36:41 PM | 3:37:14 PM | 33 |
| 2 | 89 | 3:36:53 PM | 3:37:19 PM | 26 |
| 2 | 90 | 3:36:55 PM | 3:37:22 PM | 27 |
| 2 | 91 | 3:37:03 PM | 3:37:41 PM | 38 |
| 2 | 92 | 3:37:09 PM | 3:37:48 PM | 39 |
| 2 | 93 | 3:37:16 PM | 3:37:52 PM | 36 |
| 2 | 94 | 3:37:37 PM | 3:37:59 PM | 22 |
| 2 | 95 | 3:37:38 PM | 3:38:02 PM | 24 |
| 2 | 96 | 3:37:39 PM | 3:38:23 PM | 44 |
| 2 | 97 | 3:38:00 PM | 3:38:53 PM | 53 |
| 2 | 98 | 3:38:07 PM | 3:39:02 PM | 55 |
| 2 | 99 | 3:38:11 PM | 3:39:07 PM | 56 |
| 2 | 100 | 3:38:14 PM | 3:39:26 PM | 72 |
| 2 | 101 | 3:38:18 PM | 3:39:34 PM | 76 |
| 2 | 102 | 3:38:23 PM | 3:39:56 PM | 93 |
| 2 | 103 | 3:38:25 PM | 3:40:01 PM | 96 |
| 2 | 104 | 3:39:06 PM | 3:40:08 PM | 62 |
| 2 | 105 | 3:39:08 PM | 3:40:15 PM | 67 |
| 2 | 106 | 3:39:08 PM | 3:40:22 PM | 74 |
| 2 | 107 | 3:39:16 PM | 3:40:26 PM | 70 |
| 2 | 108 | 3:39:23 PM | 3:40:33 PM | 70 |
| 2 | 109 | 3:39:23 PM | 3:40:38 PM | 75 |
| 2 | 110 | 3:39:23 PM | 3:41:00 PM | 97 |
| 2 | 111 | 3:39:33 PM | 3:41:03 PM | 90 |
| 2 | 112 | 3:40:09 PM | 3:41:06 PM | 57 |
| 2 | 113 | 3:40:13 PM | 3:41:09 PM | 56 |
| 2 | 114 | 3:40:28 PM | 3:41:22 PM | 54 |
| 2 | 115 | 3:40:31 PM | 3:41:27 PM | 56 |
| 2 | 116 | 3:40:59 PM | 3:42:01 PM | 62 |
| 2 | 117 | 3:41:00 PM | 3:42:43 PM | 103 |
| 2 | 118 | 3:41:19 PM | 3:43:01 PM | 102 |
| 2 | 119 | 3:41:33 PM | 3:43:19 PM | 106 |
| 2 | 120 | 3:42:20 PM | 3:43:23 PM | 63 |
| 2 | 121 | 3:42:26 PM | 3:43:27 PM | 61 |
| 2 | 122 | 3:43:05 PM | 3:43:31 PM | 26 |
| 2 | 123 | 3:43:24 PM | 3:44:28 PM | 64 |
| 2 | 124 | 3:43:26 PM | 3:44:46 PM | 80 |
| 2 | 125 | 3:43:29 PM | 3:44:52 PM | 83 |
| 2 | 126 | 3:43:50 PM | 3:45:17 PM | 87 |
| 2 | 127 | 3:44:02 PM | 3:45:35 PM | 93 |
| 2 | 128 | 3:44:14 PM | 3:45:38 PM | 84 |
| 2 | 129 | 3:44:39 PM | 3:45:54 PM | 75 |
| 2 | 130 | 3:44:53 PM | 3:46:08 PM | 75 |
| 2 | 131 | 3:44:55 PM | 3:46:19 PM | 84 |
| 2 | 132 | 3:45:35 PM | 3:46:21 PM | 46 |

CDM SMITH Inc.
1100 MARION STREET, SUITE 200
KNOXVILLE, TN 37921
865-963-4300

Counted by: Allyson Foster

File Name : Garrison Stop Delay PM
Site Code : 101
Start Date : 10/28/2013


Lane 1- EB Garrison Drive
Lane 2- WB Garrison Drive

| Ln. | No. | Joined Queue | Released From Queue | Delay |
|---|---|---|---|---|
| 2 | 133 | 3:45:56 PM | 3:46:26 PM | 30 |
| 2 | 134 | 3:46:15 PM | 3:46:51 PM | 36 |
| 2 | 135 | 3:46:15 PM | 3:47:00 PM | 45 |
| 2 | 136 | 3:46:36 PM | 3:47:06 PM | 30 |
| 2 | 137 | 3:46:48 PM | 3:47:26 PM | 38 |
| 2 | 138 | 3:47:09 PM | 3:47:32 PM | 23 |
| 2 | 139 | 3:47:21 PM | 3:47:38 PM | 17 |
| 2 | 140 | 3:47:26 PM | 3:47:43 PM | 17 |
| 2 | 141 | 3:47:36 PM | 3:47:48 PM | 12 |
| 2 | 142 | 3:48:22 PM | 3:48:25 PM | 3 |
| 2 | 143 | 3:48:23 PM | 3:48:29 PM | 6 |
| 2 | 144 | 3:48:24 PM | 3:48:41 PM | 17 |
| 2 | 145 | 3:48:39 PM | 3:48:45 PM | 6 |
| 2 | 146 | 3:49:24 PM | 3:49:30 PM | 6 |
| 2 | 147 | 3:49:44 PM | 3:50:07 PM | 23 |
| 2 | 148 | 3:50:28 PM | 3:50:59 PM | 31 |
| 2 | 149 | 3:50:42 PM | 3:51:07 PM | 25 |
| 2 | 150 | 3:51:38 PM | 3:51:46 PM | 8 |
| 2 | 151 | 3:51:59 PM | 3:52:11 PM | 12 |
| 2 | 152 | 3:52:09 PM | 3:52:21 PM | 12 |
| 2 | 153 | 3:52:51 PM | 3:52:54 PM | 3 |
| 2 | 154 | 3:53:53 PM | 3:54:20 PM | 27 |
| 2 | 155 | 3:54:05 PM | 3:54:25 PM | 20 |
| 2 | 156 | 3:54:26 PM | 3:54:36 PM | 10 |
| 2 | 157 | 3:54:27 PM | 3:55:16 PM | 49 |
| 2 | 158 | 3:55:34 PM | 3:55:46 PM | 12 |
| 2 | 159 | 3:57:36 PM | 3:57:39 PM | 3 |
| 2 | 160 | 3:58:04 PM | 3:58:06 PM | 2 |
| 2 | 161 | 3:59:06 PM | 3:59:27 PM | 21 |

**Summary Information:**

| 3:00:00 PM - 4:00:00 PM | Lane 1 | Lane 2 |
|---|---|---|
| Total Vehicle Count: | 23 | 133 |
| Delayed Vehicle Count: | 23 | 133 |
| Through Vehicle Count: | 0 | 0 |
| Average Stopped Time: | 21.00 | 38.165 |
| Maximum Stopped Time: | 59 | 106 |
| Min. Secs. for Delay: | 0 | 0 |
| Average Queue: | 0.16 | 1.456 |
| Queue Density: | 1.24 | 3.654 |
| Maximum Queue: | 2 | 11 |
| Delay in Vehicle Hour: | 0.16 | 1.456528 |
| Total Delay: | 483 | 5076 |

CDM SMITH Inc.
1100 MARION STREET, SUITE 200
KNOXVILLE, TN 37921
865-963-4300

Counted by: Allyson Foster

File Name : Garrison Stop Delay PM
Site Code : 101
Start Date : 10/28/2013
Page No : 1

Lane 1- EB Garrison Drive
Lane 2- WB Garrison Drive

| Ln. | No. | Joined Queue | Released From Queue | Delay |
|---|---|---|---|---|
| 1 | 53 | 5:03:57 PM | 5:04:21 PM | 24 |
| 1 | 54 | 5:04:36 PM | 5:05:15 PM | 39 |
| 1 | 55 | 5:12:43 PM | 5:13:53 PM | 70 |
| 1 | 56 | 5:15:46 PM | 5:15:55 PM | 9 |
| 1 | 57 | 5:25:26 PM | 5:25:31 PM | 5 |
| 1 | 58 | 5:29:50 PM | 5:30:01 PM | 11 |
| 1 | 59 | 5:32:13 PM | 5:32:53 PM | 40 |
| 1 | 60 | 5:35:22 PM | 5:35:35 PM | 13 |
| 1 | 61 | 5:38:17 PM | 5:38:19 PM | 2 |
| 1 | 62 | 5:42:52 PM | 5:42:58 PM | 6 |
| 1 | 63 | 5:44:02 PM | 5:44:39 PM | 37 |
| 1 | 64 | 5:44:55 PM | 5:44:58 PM | 3 |
| 1 | 65 | 5:46:16 PM | 5:46:26 PM | 10 |
| 1 | 66 | 5:48:23 PM | 5:48:26 PM | 3 |
| 1 | 67 | 5:48:32 PM | 5:48:33 PM | 1 |
| 1 | 68 | 5:53:08 PM | 5:54:06 PM | 58 |
| 2 | 191 | 4:58:15 PM | 4:58:16 PM | 1 |
| 2 | 192 | 4:58:15 PM | 4:58:18 PM | 3 |
| 2 | 193 | 5:00:31 PM | 5:00:35 PM | 4 |
| 2 | 194 | 5:00:59 PM | 5:02:17 PM | 78 |
| 2 | 195 | 5:02:11 PM | 5:02:31 PM | 20 |
| 2 | 196 | 5:02:23 PM | 5:02:48 PM | 25 |
| 2 | 197 | 5:02:29 PM | 5:02:52 PM | 23 |
| 2 | 198 | 5:02:47 PM | 5:02:56 PM | 9 |
| 2 | 199 | 5:03:13 PM | 5:03:31 PM | 18 |
| 2 | 200 | 5:03:59 PM | 5:04:13 PM | 14 |
| 2 | 201 | 5:05:19 PM | 5:05:22 PM | 3 |
| 2 | 202 | 5:05:30 PM | 5:05:49 PM | 19 |
| 2 | 203 | 5:07:48 PM | 5:07:53 PM | 5 |
| 2 | 204 | 5:08:10 PM | 5:08:13 PM | 3 |
| 2 | 205 | 5:08:19 PM | 5:08:22 PM | 3 |
| 2 | 206 | 5:08:51 PM | 5:08:53 PM | 2 |
| 2 | 207 | 5:09:24 PM | 5:10:29 PM | 65 |
| 2 | 208 | 5:11:07 PM | 5:11:12 PM | 5 |
| 2 | 209 | 5:11:46 PM | 5:12:03 PM | 17 |
| 2 | 210 | 5:12:37 PM | 5:13:21 PM | 44 |
| 2 | 211 | 5:15:30 PM | 5:15:41 PM | 11 |
| 2 | 212 | 5:15:44 PM | 5:15:52 PM | 8 |
| 2 | 213 | 5:17:29 PM | 5:17:29 PM | 0 |
| 2 | 214 | 5:18:45 PM | 5:18:53 PM | 8 |
| 2 | 215 | 5:21:50 PM | 5:23:10 PM | 80 |
| 2 | 216 | 5:23:15 PM | 5:23:23 PM | 8 |
| 2 | 217 | 5:26:32 PM | 5:26:36 PM | 4 |
| 2 | 218 | 5:28:58 PM | 5:29:01 PM | 3 |
| 2 | 219 | 5:29:25 PM | 5:29:58 PM | 33 |
| 2 | 220 | 5:29:27 PM | 5:30:08 PM | 41 |
| 2 | 221 | 5:33:02 PM | 5:33:21 PM | 19 |
| 2 | 222 | 5:35:06 PM | 5:35:07 PM | 1 |
| 2 | 223 | 5:35:12 PM | 5:35:32 PM | 20 |
| 2 | 224 | 5:36:36 PM | 5:36:51 PM | 15 |
| 2 | 225 | 5:37:12 PM | 5:37:21 PM | 9 |
| 2 | 226 | 5:37:42 PM | 5:38:02 PM | 20 |
| 2 | 227 | 5:38:28 PM | 5:38:34 PM | 6 |
| 2 | 228 | 5:38:47 PM | 5:39:00 PM | 13 |
| 2 | 229 | 5:42:59 PM | 5:43:37 PM | 38 |
| 2 | 230 | 5:52:39 PM | 5:53:03 PM | 24 |
| 2 | 231 | 5:52:52 PM | 5:54:02 PM | 70 |
| 2 | 232 | 5:54:34 PM | 5:56:45 PM | 131 |

CDM SMITH Inc.
1100 MARION STREET, SUITE 200
KNOXVILLE, TN 37921
865-963-4300

Counted by: Allyson Foster

File Name : Garrison Stop Delay PM
Site Code : 101
Start Date : 10/28/2013
Page No : 2

Lane 1- EB Garrison Drive
Lane 2- WB Garrison Drive

**Summary Information:**

| 4:57:00 PM - 5:57:00 PM | Lane 1 | Lane 2 |
|---|---|---|
| Total Vehicle Count: | 16 | 42 |
| Delayed Vehicle Count: | 16 | 42 |
| Through Vehicle Count: | 0 | 0 |
| Average Stopped Time: | 20.69 | 21.976 |
| Maximum Stopped Time: | 70 | 131 |
| Min. Secs. for Delay: | 0 | 0 |
| Average Queue: | 0.11 | 0.262 |
| Queue Density: | 1.00 | 1.095 |
| Maximum Queue: | 1 | 3 |
| Delay in Vehicle Hour: | 0.11 | 0.262963 |
| Total Delay: | 331 | 923 |

CDM Smith