July 29, 2020

Engineering & Surveying Properties, PC
Attn: Ross Winglovitz, PE
71 Clinton Street
Montgomery, NY 12549
Ross@ep-pc.com

RE: Traffic Impact Study for Proposed BBIS Auto Auction, NYS Route 17B and Kaufman Road, Town of Thompson, Sullivan County, New York; CM Project No. 120-144

Dear Mr. Winglovitz:

Creighton Manning Engineering, LLP (CM) has completed a Traffic Impact Study for the proposed BBIS Auto Auction located at the northwest corner of NYS Route 17B and Kaufman Road (a.k.a. County Road 59). In addition to the aforementioned traffic impact study, CM has reviewed existing signage on westbound NYS Route 17B approaching Kaufman Road. This study is based on traffic engineering industry standards and the latest Sketch Plan prepared by Engineering & Surveying Properties, PC, dated June 10, 2020.

1.0 Project Description

The proposed project consists of an 8,275-square-foot office building, 2.13 acres for a vehicle load-out area, 2.47 acres for a vehicle drop-off area, and 52.20 acres for vehicle storage. The project site will be accessed by one full-movement driveway on Kaufman Road approximately 1,750 feet north of NYS Route 17B. A map illustrating the project location and adjacent roadway network is shown in Figure 1. The proposed office building will be occupied by up to 20 employees to facilitate the operations of the site during the business hours of 8:00 AM to 5:00PM on weekdays. The office building is supported by 43 parking spaces, which adheres to the Town of Thompson zoning code for "Offices" at "1 space for each 200 square feet of floor area" (Code 250-22(3)). The 52.20 acres for vehicles storage will have a capacity of 11,000 vehicles. The accumulation of vehicles for auction on the subject site will occur on a rolling basis and full occupancy is anticipated to take several months since it takes approximately 90 days to retitle a vehicle for resale in New York. Typical operations of the site will include evenly distributed deliveries and retrievals of vehicles by mostly flatbed trucks carrying 1-3 vehicles during the weekday business hours. Trucks delivering and retrieving vehicles will utilize the drop-off and load-out areas located on the north and south sides of the office building, respectively.

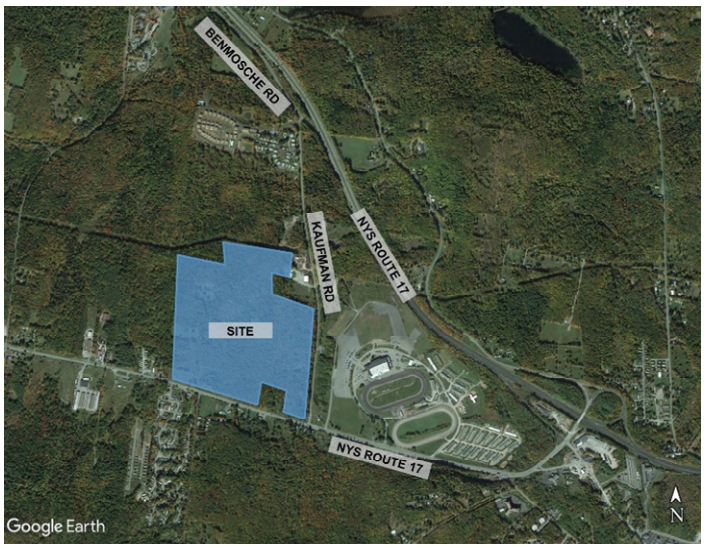


Figure 1 – Site Location

2.0 Existing Conditions

Roadways Serving the Site

NYS Route 17B is a rural minor arterial under the jurisdiction of New York State Department of Transportation (NYSDOT). Located entirely in Sullivan County, the roadway runs generally east to west connecting the Hamlet of Callicoon at its western limit and the Village of Monticello at its eastern limit. Approaching the project location from the east, i.e. from NYS Route 17, NYS Route 17B is a multi-lane highway providing one 12-foot lane with 10-foot shoulders in each direction and has a posted speed limit of 45 miles per hour. Approaching the project location from the west, NYS Route 17B is a two-lane highway providing one 12-foot lane in each direction with 10-foot shoulders, a two-way-left-turn lane, and has a posted speed limit of 55 miles per hour. In the vicinity of the project, the land uses along NYS Route 17B are a mix of commercial and residential. Sidewalks are not provided along the roadway.

Kaufman Road (County Road 59) is a local road under the jurisdiction of Sullivan County. The roadway runs north to south connecting Benmosche Road at is northern limit with NYS Route 17B at its southern limit. Kaufman Road provides one 11-foot lane with 4-foot shoulders in each direction. Left-turn lanes are not provided along the roadway. Land uses along Kaufman Road are predominantly residential on its northern sections while becoming more commercial and undeveloped on its southern section. There is no posted speed limit; therefore, the speed limit is assumed 55 miles per hour for this study. No sidewalks are provided along the roadway.

Benmosche Road is a local road under the jurisdiction of the Town of Thompson. The roadway runs along the west side of NYS Route 17 from Rapp road at its northern limit until it intersects NYS Route 17 as an on-ramp. Benmosche Road provides one 11-foot lane with variable shoulders in each direction. Left turn lanes are not provided along the roadway. Land along Benmosche Road is predominantly undeveloped with intermittent access to residential developments. There is no posted speed limit; therefore, the speed limit is assumed 55 miles per hour for this study. No sidewalks are provided along the roadway.

Study Intersection

- **NYS Route 17B and Kaufman Road:** This is a three-way unsignalized intersection operating with stop control on the southbound Kaufman Road approach. The southbound Kaufman Road approach provides one shared lane for left and right turns. The eastbound approach of NYS Route 17B provides one through lane and one exclusive left-turn lane. The westbound approach of NYS Route 17B provides one through lane and one exclusive right-turn lane. It should be noted that CM is aware that drivers sometimes utilize the exclusive right-turn lane for through movements, presenting a conflict as there is only one lane to receive the westbound through movement. CM provides traffic control recommendations herein to improve this condition. The Google Maps image to the right depicts the intersection.

- **Kaufman Road and Benmosche Road:** This is a three-way unsignalized intersection operating with stop control on the northbound Kaufman Road approach. The northbound Kaufman Road approach provides one shared lane for left and right turns. The eastbound Benmosche Road approach provides one shared lane for through and right turn movements. The eastern leg of the intersection is a one-way roadway providing access to eastbound NYS Route 17. The Google Maps image to the right depicts the intersection.

Data Collection

Due to the Novel Coronavirus/COVID-19 pandemic, the standard practice of performing turning movement counts and using automatic traffic recorders would return data that is not representative of normal conditions. Streetlight Data is a transportation data analytics company that provides a platform for analysts to study several aspects of mobility in a study area. Using Streetlight Data, CM determined the turning movement volumes by hour for the weekday morning peak period (7:00 AM to 9:00 AM), the weekday evening peak period (4:00 PM to 6:00 PM), and the Saturday midday peak period (11:00 AM to 2:00 PM) during the month of July in 2019. Therefore, the traffic volumes represent typical, pre-pandemic conditions during a summer month when recreational activity is present. The traffic volumes for the weekday AM peak hour and the weekday PM peak hour are shown on Figure 2 represent base year 2019 conditions and form the basis for traffic forecasts. The raw turning movement data is included under Attachment B.

Though the applicant does not anticipate operating the site on weekends, CM collected turning movement volumes for the Saturday midday peak hour. It was determined that traffic volumes on the roadway network increase approximately 26% in comparison to the weekday PM peak hour.

3.0 Traffic Assessment

Trip Generation

Trip generation determines the quantity of traffic expected to travel to and from a given site. The Institute of Transportation Engineers' (ITE) *Trip Generation Manual* , 10th Edition, is the industry standard used for estimating trip generation for proposed land uses based on data collected at similar uses. Upon review of the *Trip Generation Manual*, CM concluded that the proposed project is not represented by the land uses studied by the ITE. Therefore, CM developed trip generation rates according to the anticipated operations of the auto auction and site-specific data from other auto auction facilities operated by the applicant.

The proposed auto auction trip generation is based on a 52.20-acre storage area with a capacity of 11,000 vehicles. The facility will be supported by up to 20 employees during the typical business hours, Monday through Friday, 8:00 AM to 5:00 PM. These employees are anticipated to arrive and depart during the weekday AM peak hour and weekday PM peak hour respectively. Based on the site-specific data, there are 17-28 total trips generated per day for every 10 acres of vehicle storage area. The total number of trips is the sum of the arrivals and departures of vehicle carriers. CM used the average value of 24 trips per day for every 10 acres of storage area in this analysis. For the proposed site, this equates to 125 daily trips. Since these trips are anticipated to be evenly distributed throughout a typical business day, the hourly volume is anticipated to be 14 trips. Table 1 summarizes the trip generation calculations for weekday AM and weekday PM peak hours.

Table 1 – Trip Generation Summary of Proposed Auto Auction

Land Use	Weekday AM Peak Hour			Weekday PM Peak Hour		
	Enter	Exit	Total	Enter	Exit	Total
Employees	20	0	20	0	20	20
Vehicle Deliveries	7	7	14	7	7	14
Total Trips	27	7	34	7	27	34

Table 1 shows that the site is expected to generate 34 new trips during the weekday AM peak hour and 34 new trips during the weekday PM peak hour. The magnitude of the new vehicle trips generated at the site is less than the ITE and NYSDOT threshold of 100 site-generated vehicles on any one intersection approach for requiring off-site intersection analysis. This guidance was developed as a tool to identify locations where the magnitude of traffic generated has the potential to impact operations at off-site intersections and screen out locations from requiring detailed analysis that do not reach the 100-vehicle threshold. Nonetheless, this evaluation includes a capacity analysis of two off-site intersections. It should be noted that trips are not anticipated to be generated by the proposed site on weekend days or outside of typical business hours. Further, there is no pass-by traffic component associated with the site-generated trips.

Future Traffic Volumes

To evaluate the impact of the propose project, traffic projections were prepared for the anticipated year of completion – 2022. In order to forecast the 2022 traffic volumes, a 1% growth rate was applied to the 2019 existing traffic volumes and compounded annually for three years. Additionally, CM identified other development projects that, if approved and constructed, could potentially increase traffic within the study area. Table 2 summarizes the other planned development projects that are considered in this analysis.

Table 2 – Other Planned Development Projects

Project	Type	Location	Source of Trip Generation	Trips Generated in Study Area by Projects	
				Weekday AM Peak Hour	Weekday PM Peak Hour
Jefferson Street	Residential	Jefferson Street near Sturgis Road	Langan	14	17
Broadway Residential	Residential	Broadway near Dunbar Road	Creighton Manning Engineering, LLP	11	15

The 2022 No-Build traffic volumes are shown on Figure 3 and represent traffic volumes in 2022 *without* the proposed auto auction project.

Traffic generated by the project was distributed on the adjacent roadways based on existing observed travel patterns in the project area and the probable origins and destinations of the employees and vehicle carriers. It is anticipated that the vehicle carriers will originate from and return to the New York Metropolitan area (southeast of the subject area). Therefore, vehicle carrier drivers will predominantly utilize the NYS Route 17-NYS Route 17B interchange (Exit 104) and intersection of NYS Route 17B and Kaufman Road when arriving to the site. When departing, vehicle carriers are anticipated to use the Benmosche Road on-ramp to access NYS Route 17 eastbound, which does not require travel through the aforementioned interchange or intersection. The majority of employee vehicles (95%) is expected to utilize NYS Route 17B.

The primary trip distribution pattern for the proposed development is shown Figure 4A (for passenger vehicles) and Figure 4B (for vehicle carriers). The associated site-generated traffic volumes are shown on Figure 5A (for passenger vehicles) and Figure 5B (for vehicles carriers). The site-generated trips were then added to the 2022 No-Build traffic volumes, resulting in the 2022 Build traffic volumes shown on Figure 6.

Traffic Operations

Intersection Level of Service (LOS) and capacity analysis relate traffic volumes to the physical characteristics of an intersection. Intersection evaluations were made using Synchro Version 10 software, which automates the procedures contained in the Highway Capacity Manual. Table 3 summarizes the results of the level of service calculations for the proposed project. The detailed level of service analyses are included in Attachment C.

Table 3 – Level of Service Summary

Intersection			Control	Weekday AM Peak Hour			Weekday PM Peak Hour		
				2019 Existing	2022 No-Build	2022 Build	2019 Existing	2022 No-Build	2022 Build
NYS Route 17B/Kaufman Road			U						
	NYS Route 17B EB	LT		A (0.0)	A (0.0)	A (0.1)	A (0.1)	A (0.0)	A (0.0)
	Kaufman Road SB	LR		B (10.2)	B (10.4)	B (10.5)	B (12.9)	B (13.3)	C (16.6)
Kaufman Road/Benmosche Road			U						
	Kaufman Road NB	LR		A (9.7)	A (9.8)	A (9.8)	B (10.4)	B (10.5)	B (10.7)
Kaufman Road/Site Driveway			U						
	Kaufman Road EB	LR		--	--	B (10.7)	--	--	A (8.9)
	Kaufman Road NB	LT		--	--	A (1.9)	--	--	A (1.6)

U = Unsignalized intersection | S = Signalized Intersection
EB, WB, NB, SB = Eastbound, Westbound, Northbound, and Southbound intersection approaches
L, T, R = Left-turn, Through, and/or Right-turn movements
X (Y.Y) = Level of service (Average delay in seconds per vehicle)

The impact of the project can be described by comparing the analysis of the No-Build and Build operating conditions. The following observations are evident from this analysis:

- NYS Route 17B and Kaufman Road: This intersection presently operates and is anticipated to operate at acceptable levels of service in the future. The change from LOS B to C in the weekday PM peak hour on the southbound approach is marginal and not considered a significant impact.
- Kaufman Road and Benmosche Road: This intersection presently operates and is anticipated to operate at acceptable levels of service in the future.
- Kaufman Road and Site Driveway: The proposed site driveway on Kaufman Road is calculated to operate at acceptable levels of service during the weekday AM and PM peak hours. It is recommended that the Site Driveway operate under stop control with a single lane entering and exiting site.

Recommendations

CM recommends that the following measures be considered:

- NYS Route 17B/Kaufman Road Intersection: As a driver moves toward this intersection in the westbound direction, the two through lanes on NYS Route 17B become one exclusive through lane and one exclusive right-turn lane. Because this is a "Lane Drop" scenario and not a "Lane Ends" scenario, CM recommends removing the existing "Lane Ends Merge Left" (W4-2) sign, shown to the right, located in advance of the intersection based on guidance in the Manual on Uniform Traffic Control Devices (MUTCD) and NYSDOT Supplement, Section 2C.42 Paragraph 00L. Additionally, CM recommends that the first of two "Right Lane Must Turn Right" (R3-7) signs in be relocated 150 feet in advance of the intersection and a "Begin Right Turn Lane" (R3-20R) sign be installed at the beginning of the taper lane, 650 feet in advance of the intersection, as shown in Figure 7. The second R3-7 sign should remain. This recommendation requires review by the NYSDOT, Region 9.

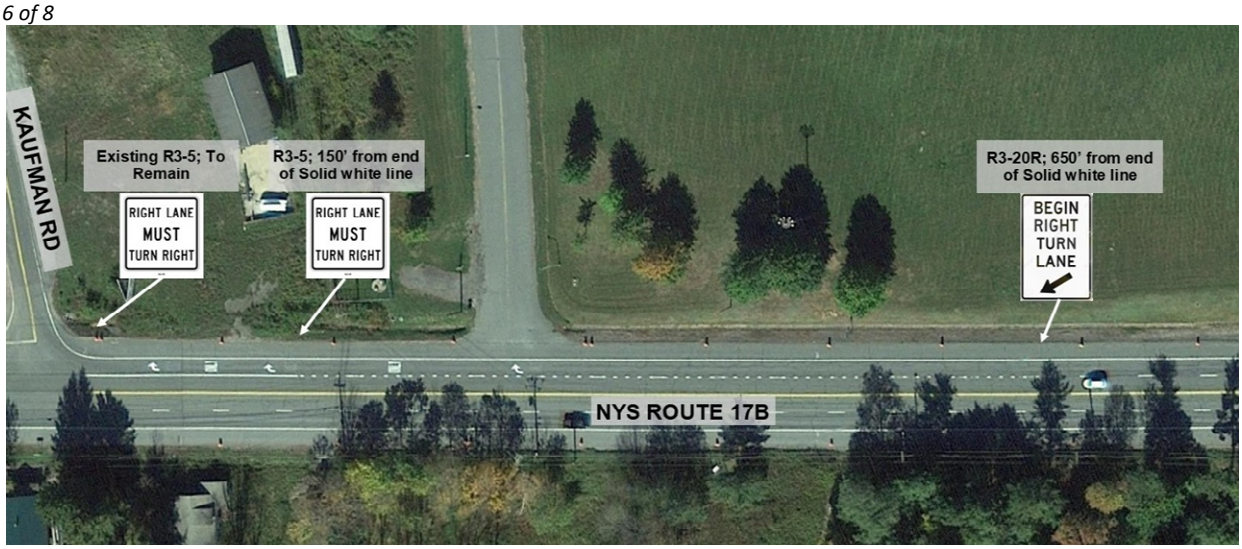


Figure 7 – Sign Relocation & Installation for Westbound NYS Route 17B Approach

- Kaufman Road/Benmosche Road Intersection: CM recommends reinforcing the shoulder area to better facilitate right-turns from Kaufman Road to the NYS Route 17 eastbound on-ramp and reduce ponding. Figure 8 to the right depicts the shoulder area.

- Kaufman Road/Site Driveway Intersection: CM recommends that a directional sign be placed opposite the site driveway to direct exiting drivers seeking to travel on NYS Route 17 East to make a left turn onto Kaufman Road where connection to the eastbound on-ramp can be made. This departure route reduces the need for site-generated traffic to use NYS Route 17B on both trip ends.

Figure 8 - Shoulder Reinforcement Area

<u>NYS Route 17 Interchange 104 Sensitivity Analysis</u>

Using the Streetlight platform, CM calculated the average daily traffic volumes on the westbound NYS Route 17 off-ramp to NYS Route 17B during June and July 2019. The proposed project will increase traffic on this portion of the interchange due to vehicle carriers arriving from the New York Metropolitan Area. A 1% growth rate was applied to the 2019 existing traffic volumes and compounded annually for three years in order to determine the 2022 No-Build volumes. Comparing the anticipated 2022 Build volumes to the 2022 No-Build volumes, the site-generated trips represent a 2.0% increase during the weekday AM peak hour and a 1.0% increase during the weekday PM peak hour. As shown in Table 4, the marginal increase in traffic volume due to vehicle carriers (<10) on the off-ramp is not anticipated to have a significant impact.

Table 4 – Analysis of Future Vehicle Carrier Traffic Using NYS Route 17 Interchange 104

	2019 Existing	2022 No-Build	2022 Build	No-Build vs. Build Percent Increase
Weekday AM Peak Hour	297	306	313	+2.0%
Weekday PM Peak Hour	629	648	655	+1.0%

4.0 Site Access, Circulation, and Parking

The project proposes one full-movement driveway on Kaufman Road to accommodate site-generated traffic. The driveway is configured to have a 30-foot width that leads to and from the 43 office parking spaces, vehicle drop-off area, and vehicle load-out area. The 43 office parking spaces complies with the Town of Thompson zoning code for "Offices" at 1 space for every 200 square feet of floor area (Code 250-22(3)).

5.0 Conclusion

The proposed project consists of an 8,275-square-foot office building, 2.13 acres for a load out area, 2.47 acres for drop off area, and 52.20 acres for car storage. The proposed office building will be occupied by up to 20 employees to facilitate the operations of the site during the business hours of 8:00 AM to 5:00PM on weekdays. The office building is supported by 43 parking spots. The 52.20 acres for car storage will be used for the storage of up to 11,000 vehicles. The accumulation of vehicles for auction on the subject site will occur on a rolling basis and full occupancy is anticipated to take several months since it takes approximately 90 days to retitle a vehicle for resale in New York. Typical operations of the site will include evenly distributed deliveries and retrievals of vehicles by mostly flatbed trucks carrying 1-3 vehicles during the weekday business hours. Trucks delivering and retrieving vehicles will utilize drop off and load out areas located on the north and south sides of the office building, respectively.

The following is noted regarding the proposed project:

- The proposed project is expected to generate 34 trips in the weekday AM peak hour and 34 trips in the weekday PM peak hour. These volumes are is less than the ITE and NYSDOT threshold of 100 site-generated vehicles on any one intersection approach for requiring off-site intersection analysis.
- Vehicle carriers are anticipated to arrive from and return to the New York Metropolitan area via NYS Route 17. These carriers will utilize the Exit 104 interchange of NYS Route 17 and NYS Route 17B when arriving to the subject site. When departing, the carriers are anticipated to utilize the on-ramp at the intersection of Kaufman Road and Benmosche Road to access NYS Route 17 eastbound, eliminating the need for trucks to have to utilize NYS Route 17B for both trip ends.
- The analysis conducted for the intersection of NYS Route 17B and Kaufman Road demonstrates that operations will not be significantly impacted by site-generated traffic.
- On the westbound NYS Route 17B approach of the NYS Route 17B/Kaufman Road intersection, CM recommends that the existing W4-2 sign be removed in order to be in compliance with the MUTCD. Additionally, the existing R3-7 sign placed in advance of the intersection be relocated to the upstream end of the mandatory movement lane. Lastly, CM recommends that a R3-20R sign be placed at the upstream end of the turn lane taper of the mandatory right-turn lane.
- The analysis conducted for the intersection of Kaufman Road and Benmosche Road demonstrates that operations will not be significantly impacted by site-generated traffic.
- At the Kaufman Road/Benmosche Road intersection, CM recommends that the shoulder on the southeast corner of the intersection be reinforced to facilitate the increase in right turn movements from Kaufman Road.
- The analysis conducted for the intersection of Kaufman Road and the Site Driveway demonstrates that the intersection will operate acceptable levels of service. It is recommended that the Site Driveway operate under stop control with a single lane entering and exiting site.
- At the Kaufman Road/Site Driveway intersection, CM recommends that a directional sign be placed opposite the Site Driveway to direct exiting vehicles to NYS Route 17 East via left turn to the Kaufman Road/Benmosche Road/NYS Route 17 On-ramp intersection.

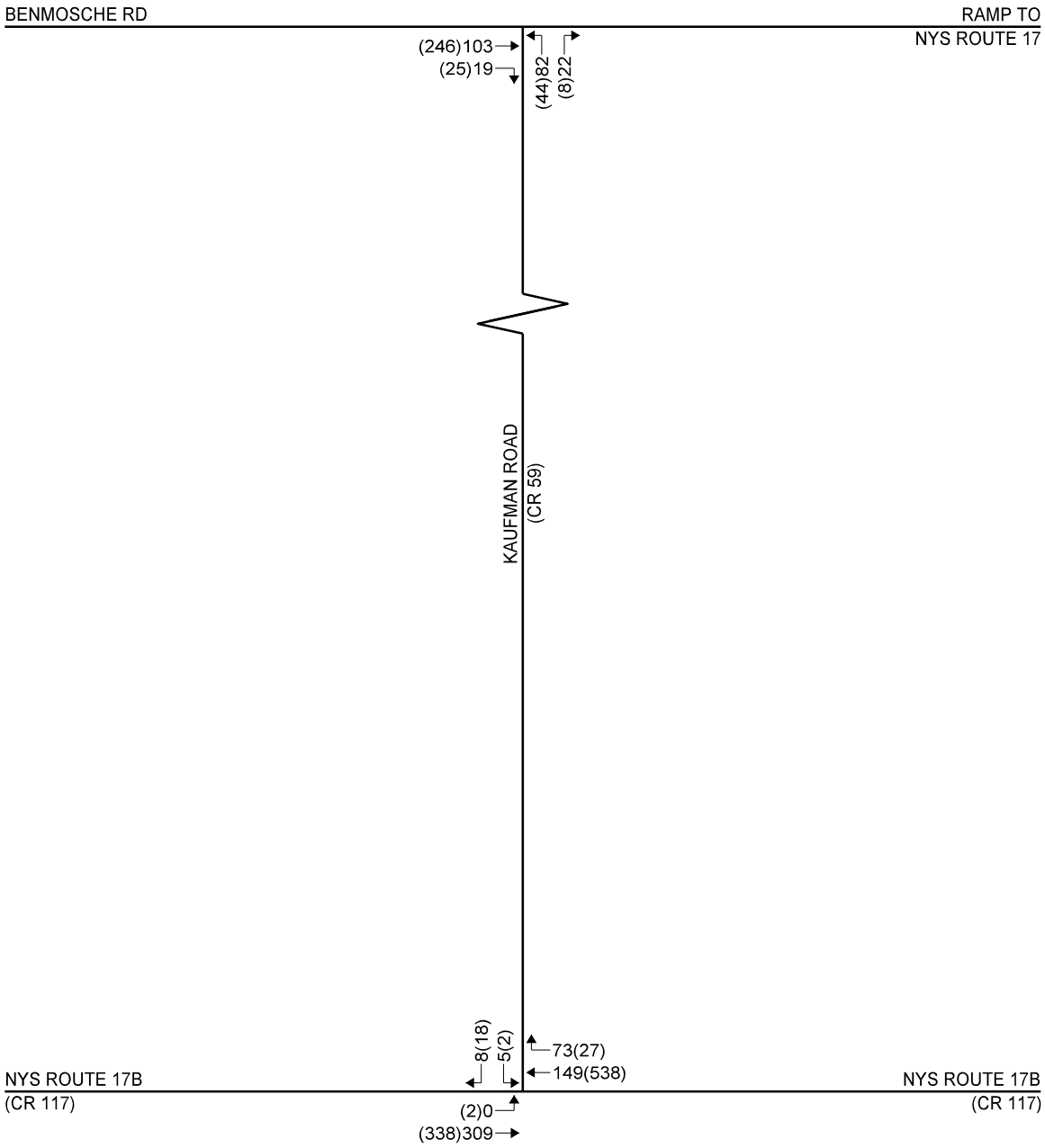
- Site-generated traffic will increase traffic at the NYS Route 17 Interchange 104 by 2.0% during the weekday AM peak hour and 1.0% during the weekday PM peak hour. This marginal increase in traffic volume on the off-ramp is not anticipated to have a significant impact.

Please do not hesitate to call our office if you have any questions or comments, or require additional information.

Respectfully submitted,
Creighton Manning Engineering, LLP

Frank A. Filiciotto, PE
Branch Manager

Starke Hipp
Assistant Project Engineer



AM PEAK HOUR (PM PEAK HOUR)

2019 EXISTING
TRAFFIC VOLUMES

BBIS AUTO AUCTION
TOWN OF THOMPSON, NEW YORK

Creighton Manning

PROJECT: 120-144	DATE: 7/2020	FIGURE: 02

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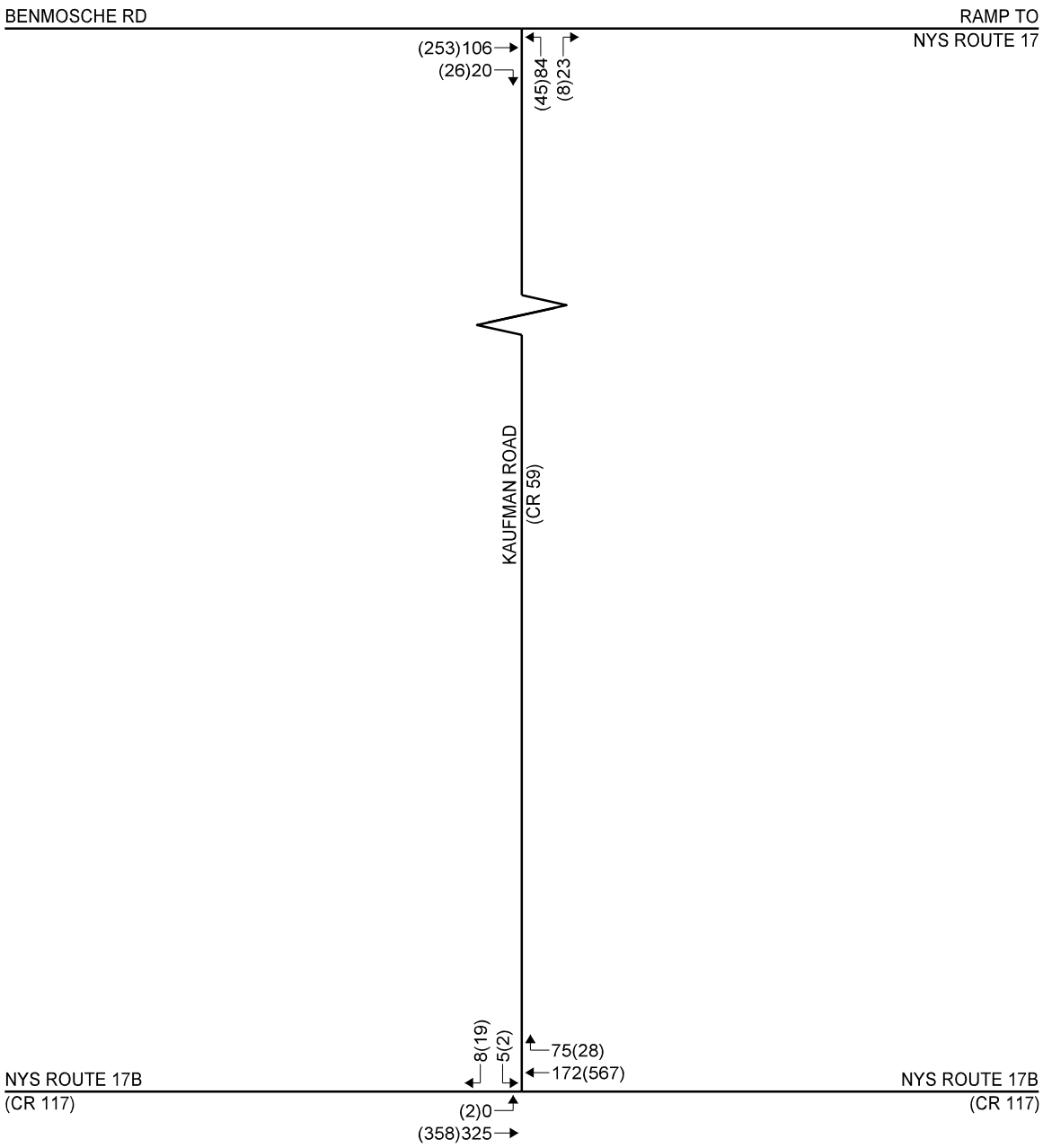

AM PEAK HOUR (PM PEAK HOUR)

2022 NO-BUILD
TRAFFIC VOLUMES

BBIS AUTO AUCTION
TOWN OF THOMPSON, NEW YORK

Creighton Manning

PROJECT: 120-086	DATE: 6/2020	FIGURE: 03

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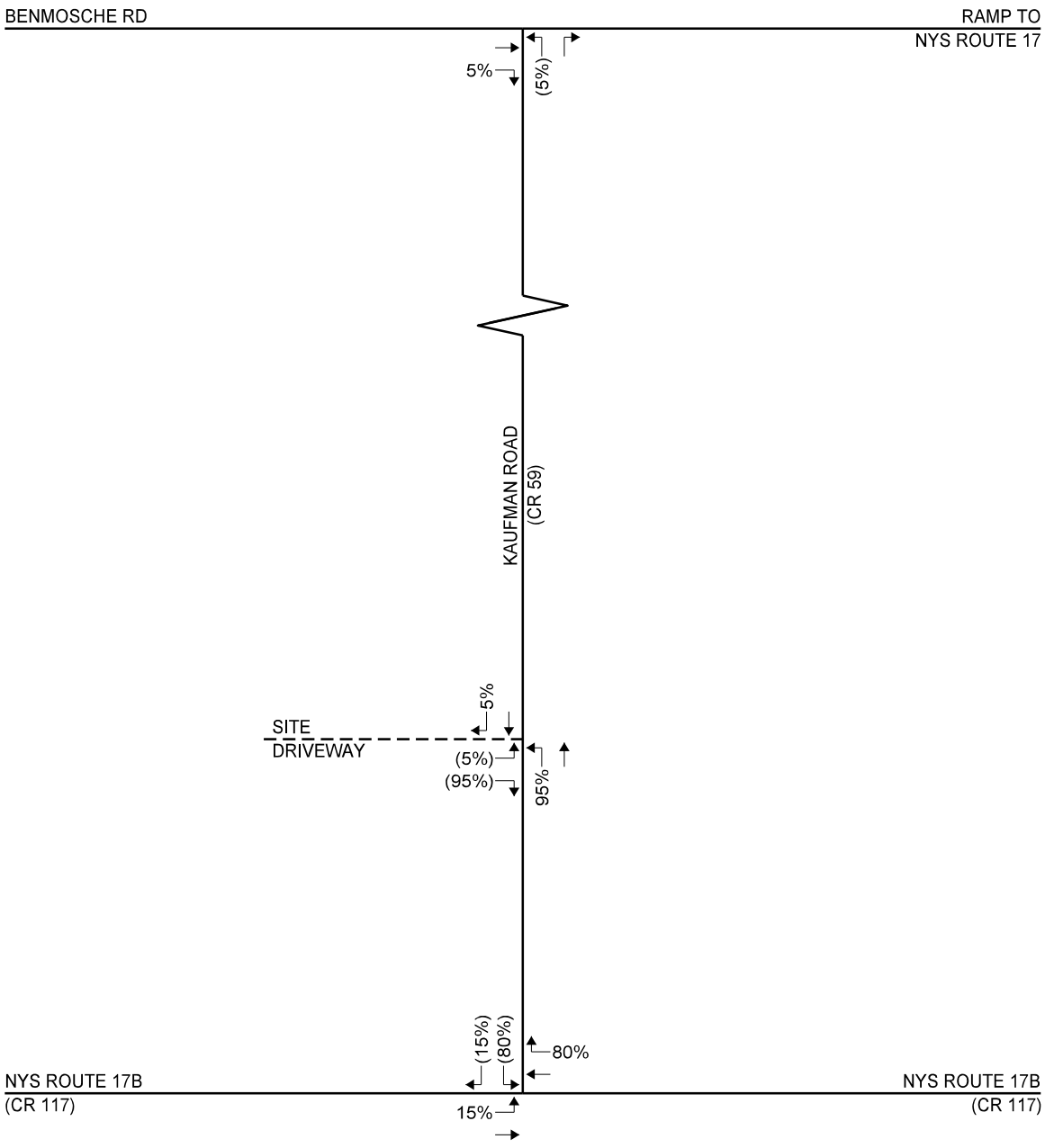

ENTERING (EXITING)

PASSENGER VEHICLE
TRIP DISTRIBUTION

BBIS AUTO AUCTION
TOWN OF THOMPSON, NEW YORK

Creighton Manning

PROJECT: 120-144	DATE: 7/2020	FIGURE: 04-A

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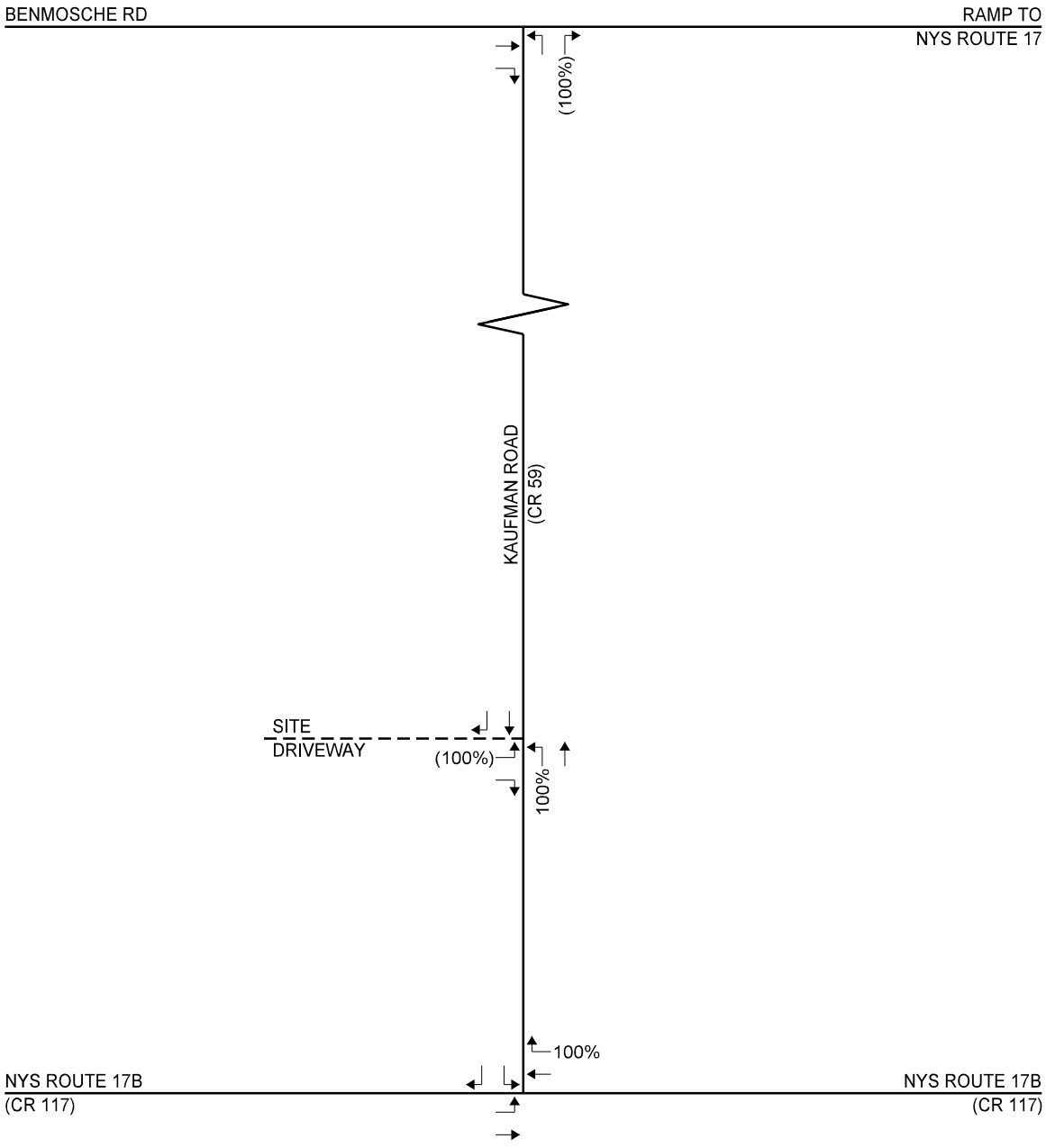

ENTERING (EXITING)

TRUCK
TRIP DISTRIBUTION

BBIS AUTO AUCTION
TOWN OF THOMPSON, NEW YORK

Creighton Manning

PROJECT: 120-144	DATE: 7/2020	FIGURE: 04-B

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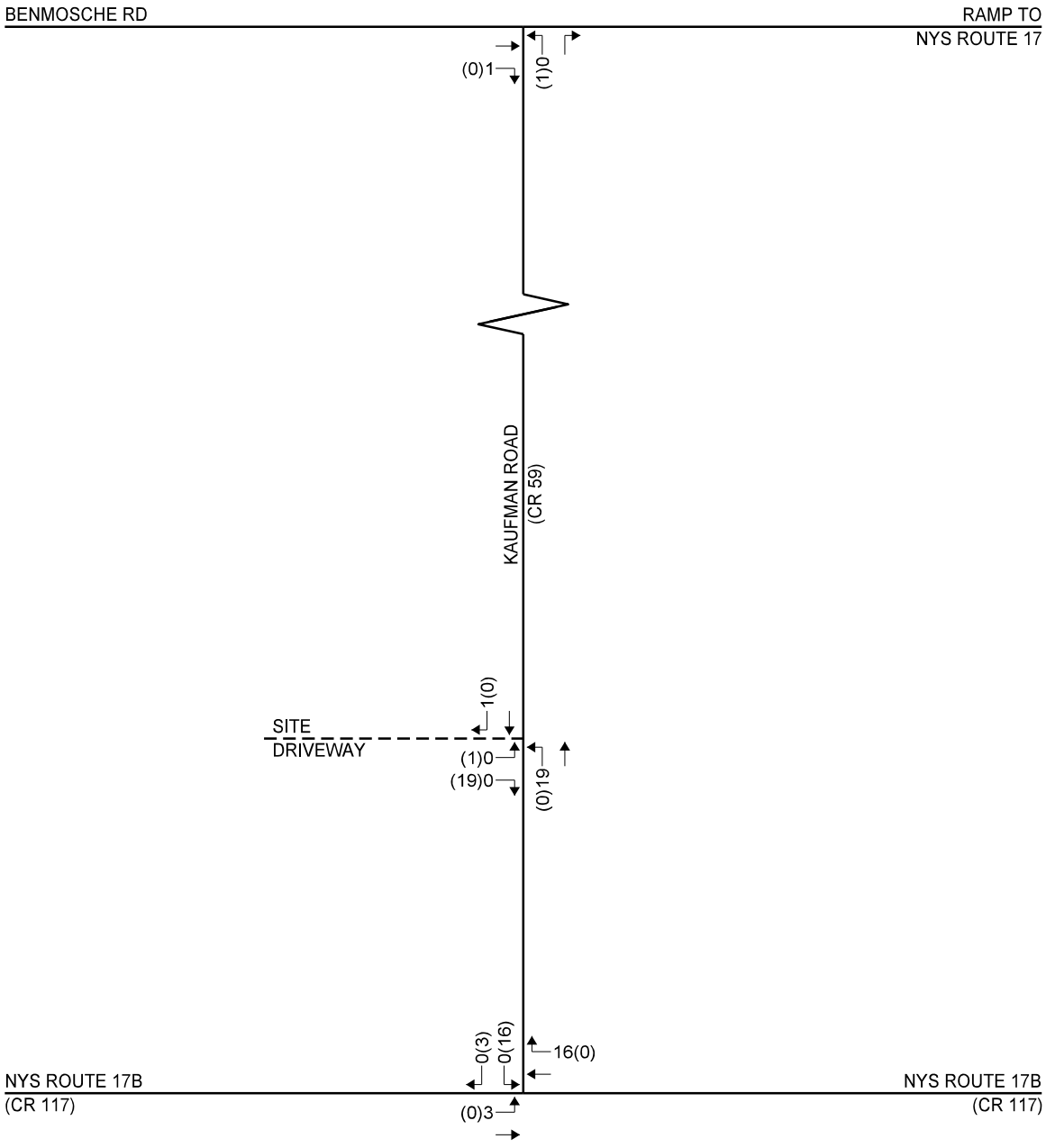

AM PEAK HOUR (PM PEAK HOUR)

PASSENGER VEHICLE
TRIP ASSIGNMENT

BBIS AUTO AUCTION
TOWN OF THOMPSON, NEW YORK

Creighton Manning

PROJECT: 120-144	DATE: 7/2020	FIGURE: 05-A

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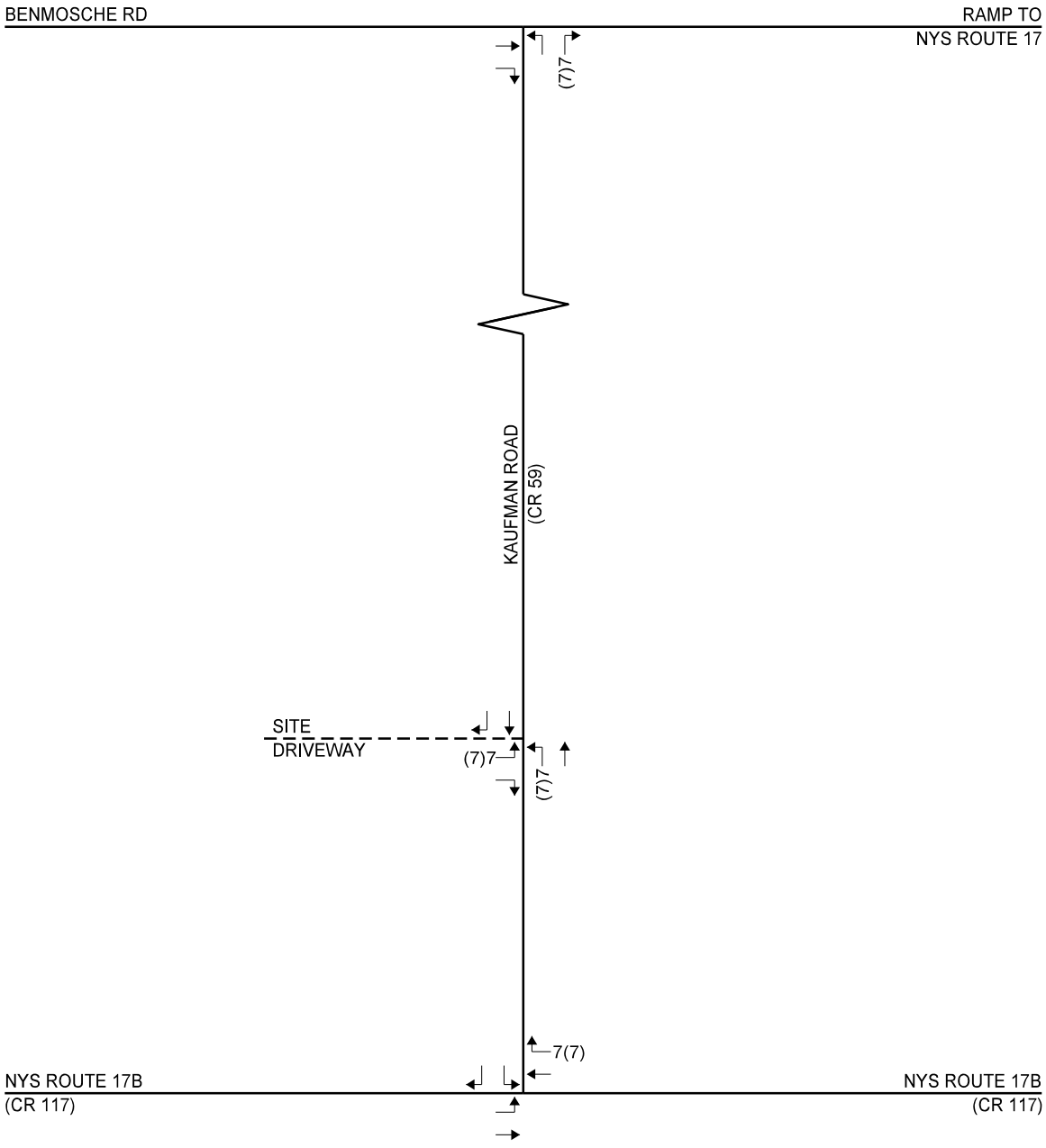

AM PEAK HOUR (PM PEAK HOUR)

TRUCK
TRIP ASSIGNMENT

BBIS AUTO AUCTION
TOWN OF THOMPSON, NEW YORK

Creighton Manning

PROJECT: 120-144	DATE: 7/2020	FIGURE: 05-B

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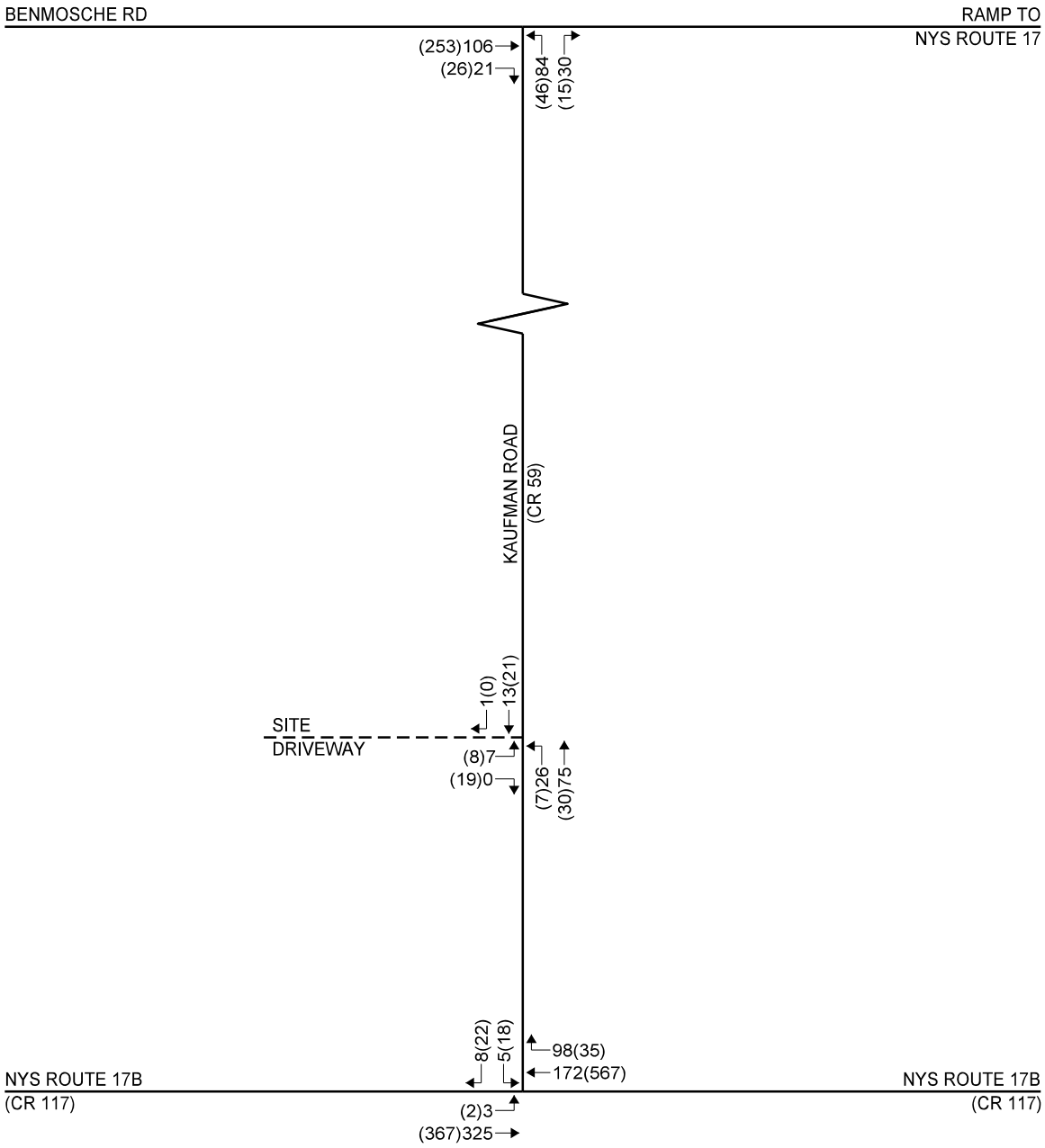

AM PEAK HOUR (PM PEAK HOUR)

2022 BUILD
TRAFFIC VOLUMES

BBIS AUTO AUCTION
TOWN OF THOMPSON, NEW YORK

Creighton Manning

PROJECT: 120-144	DATE: 7/2020	FIGURE: 06

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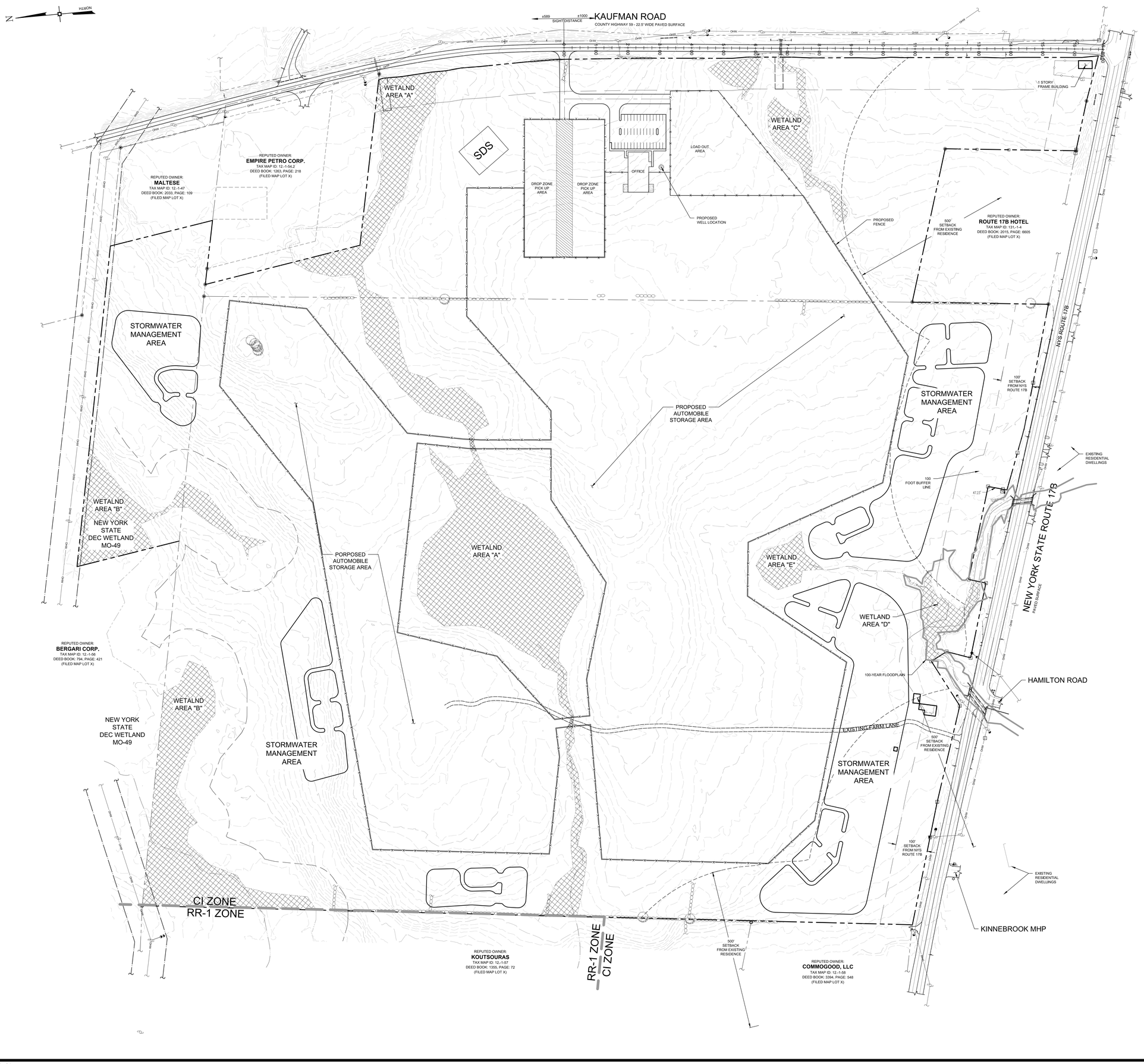
Attachment A
Site Plan

BBIS Auto Auction
Town of Thompson
Sullivan County, New York



LOCATION MAP

GENERAL NOTES

1. TAX MAP IDENTIFICATION NUMBER: SECTION 12, BLOCK 1, LOT 54.1 & 55
2. TOTAL AREA OF SUBJECT PARCEL: 157.2± ACRES.
3. BOUNDARY AND PLANIMETRIC INFORMATION BASED UPON DEED PLOTS.
4. THE TOPOGRAPHY SHOWN HEREON WAS COMPILED BY ENGINEERING & SURVEYING PROPERTIES PC, FROM USGS 1M HYDRO-FLATTENED DIGITAL ELEVATION MODELS (DEMS) AS DERIVED FROM 2014 SOURCE LIDAR. THE DEMS WERE PROVIDED BY NYS.GIS.GOV. CONTOURS ARE BASED ON NORTH AMERICAN VERTICAL DATUM OF 1988.
5. APPLICANT: SERIES 11, A SEPERATE SERIES OF BBIS INVESTMENT 767, LLC
   PO BOX 262
   COPPELL, TEXAS, 75019
6. OWNER: ESTATE OF ELIAS LIEBOWITZ
   P.O. BOX 2758
   BRIARCLIFF MANOR, NEW YORK, 10510

   BERGARI CORP
   P.O. BOX 425
   WHITE LAKE, NEW YORK, 12786

WETLAND AREA CALCULATIONS

WETLAND AREA "A"	8.16 ACRES
WETLAND AREA "B"	4.32 ACRES
WETLAND AREA "C"	0.96 ACRES
WETLAND AREA "D"	0.51 ACRES
WETLAND AREA "E"	0.44 ACRES

BULK REQUIREMENTS

TOWN OF THOMPSON - ZONING DISTRICT CI - COMMERCIAL INDUSTRIAL

PROPOSED USES: A. JUNKYARD, OR SALVAGE YARDS, IN ACCORDANCE WITH §250-35

MINIMUM BUILDING REQUIREMENTS	REQUIRED	PROPOSED
LOT AREA	10 ACRES	160.88 ACRES

REQUIRED SETBACKS FOR JUNKYARDS, OR SALVAGE YARDS, MUST BE NOT LESS THAN 500 FEET FROM ANY PREXISTING DWELLING

No.	DATE	DESCRIPTION

DRAWING STATUS	ISSUE DATE: 06/10/2020		
THIS SHEET IS PART OF THE PLAN SET ISSUED FOR	SHEET NUMBER		
☑ CONCEPT APPROVAL	1	OF	1
☐ PLANNING BOARD APPROVAL	N/A	OF	N/A
☐ SCDOH REALTY SUBDIVISION APPROVAL	N/A	OF	N/A
☐ SCDOH WATERMAIN EXTENSION APPROVAL	N/A	OF	N/A
☐ NYSDEC APPROVAL	N/A	OF	N/A
☐ NYSDOT APPROVAL	N/A	OF	N/A
☐ OTHER	N/A	OF	N/A
☐ FOR BID	N/A	OF	N/A
☐ FOR CONSTRUCTION	N/A	OF	N/A

THIS PLAN SET HAS BEEN ISSUED SPECIFICALLY FOR THE APPROVAL OR ACTION NOTED ABOVE AND SHALL NOT BE USED FOR ANY OTHER PURPOSE.
THIS SHEET SHALL BE CONSIDERED INVALID UNLESS ACCOMPANIED BY ALL SHEETS OF THE DENOTED PLAN SET(S).

ROSS WINGLOVITZ, P.E.
NEW YORK LICENSE # 071701

100 0 50 100 200
1 inch = 100 ft.

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SKETCH PLAN

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ROUTE 17B
TOWN OF THOMPSON
SULLIVAN COUNTY, NEW YORK

JOB #:	DRAWN BY:	
1225.03	ZS	
DATE:	SCALE:	SK-7
06/10/2020	1"=100'	
REVISION:	TAX LOT:	
0	12-1-54.1 & 55	

Attachment B
Streetlight Turning Movement Matrices

BBIS Auto Auction
Town of Thompson
Sullivan County, New York

Day Type	1: Weekday (Tu-Th)
Day Part	2: AM Peak 2 (8am-9am)

Sum of Average Daily O-D Traffic (StL Volume)	**Column Labels**			
Row Labels	**Kaufman Rd - North of NYS Route 17B**	**NYS Route 17B - East of Kaufman Rd**	**NYS Route 17B - West of Kaufman Rd**	**Grand Total**
Kaufman Rd - North of NYS Route 17B		5	8	13
NYS Route 17B - East of Kaufman Rd	73		149	222
NYS Route 17B - West of Kaufman Rd		309		309
Grand Total	**73**	**314**	**157**	**544**

Day Type	1: Weekday (Tu-Th)
Day Part	2: AM Peak 2 (8am-9am)

Sum of Average Daily O-D Traffic (StL Volume)	**Column Labels**			
Row Labels	**Benmosche Rd - East of Kaufman Rd**	**Benmosche Rd - West of Kaufman Rd**	**Kaufman Rd - South of Benmosche Rd**	**Grand Total**
Benmosche Rd - West of Kaufman Rd	103		19	122
Kaufman Rd - South of Benmosche Rd	22	82		104
Grand Total	**125**	**82**	**19**	**226**

Day Type	1: Weekday (Tu-Th)
Day Part	7: PM Peak 2 (5pm-6pm)

Sum of Average Daily O-D Traffic (StL Volume)	**Column Labels**			
Row Labels	**Kaufman Rd - North of NYS Route 17B**	**NYS Route 17B - East of Kaufman Rd**	**NYS Route 17B - West of Kaufman Rd**	**Grand Total**
Kaufman Rd - North of NYS Route 17B		2	18	20
NYS Route 17B - East of Kaufman Rd	27		538	565
NYS Route 17B - West of Kaufman Rd	2	338		340
Grand Total	**29**	**340**	**556**	**925**

Day Type	1: Weekday (Tu-Th)
Day Part	6: Peak PM 1 (4pm-5pm)

Sum of Average Daily O-D Traffic (StL Volume)	**Column Labels**			
Row Labels	**Benmosche Rd - East of Kaufman Rd**	**Benmosche Rd - West of Kaufman Rd**	**Kaufman Rd - South of Benmosche Rd**	**Grand Total**
Benmosche Rd - West of Kaufman Rd	246		25	271
Kaufman Rd - South of Benmosche Rd	8	44		52
Grand Total	**254**	**44**	**25**	**323**

Day Type	3: Weekend Day (Sa-Sa)
Day Part	3: Mid-Day Peak 1 (11am-12noon)

Sum of Average Daily O-D Traffic (StL Volume)	**Column Labels**			
Row Labels	**Kaufman Rd - North of NYS Route 17B**	**NYS Route 17B - East of Kaufman Rd**	**NYS Route 17B - West of Kaufman Rd**	**Grand Total**
Kaufman Rd - North of NYS Route 17B		6	5	11
NYS Route 17B - East of Kaufman Rd	24		605	629
NYS Route 17B - West of Kaufman Rd		526		526
Grand Total	**24**	**532**	**610**	**1166**

Day Type	3: Weekend Day (Sa-Sa)
Day Part	5: Mid-Day Peak 3 (1pm-2pm)

Sum of Average Daily O-D Traffic (StL Volume)	**Column Labels**		
Row Labels	**Benmosche Rd - East of Kaufman Rd**	**Benmosche Rd - West of Kaufman Rd**	**Grand Total**
Benmosche Rd - West of Kaufman Rd	71		71
Kaufman Rd - South of Benmosche Rd	23	25	48
Grand Total	**94**	**25**	**119**

Day Part	1: AM Peak 1 (7am-8am)
Day Type	1: Weekday (Tu-Th)

Row Labels	**Sum of Average Daily Zone Traffic (StL Volume)**
NYS Route 17 Exit to NYS Route 17B	297
Grand Total	**297**

Day Part	6: Peak PM 1 (4pm-5pm)
Day Type	1: Weekday (Tu-Th)

Row Labels	**Sum of Average Daily Zone Traffic (StL Volume)**
NYS Route 17 Exit to NYS Route 17B	629
Grand Total	**629**

Attachment C
Level of Service Analysis

BBIS Auto Auction
Town of Thompson
Sullivan County, New York

LOS Definitions

The following is an excerpt from the Highway Capacity Manual, 6th Edition (HCM).

Level of Service for Signalized Intersections

Level of Service (LOS) can be characterized for the entire intersection, each intersection approach, and each lane group. Control delay alone is used to characterize LOS for the entire intersection or an approach. Control delay *and* volume-to-capacity (v/c) ratio are used to characterize LOS for a lane group. Delay quantifies the increase in travel time due to traffic signal control. It is also a surrogate measure of driver discomfort and fuel consumption. The v/c ratio quantifies the degree to which a phase's capacity is utilized by a lane group. The following paragraphs describe each LOS.

LOS A describes operations with a control delay of 10 s/veh or less and a v/c ratio no greater than 1.0. This level is typically assigned when the v/c ratio is low and either progression is exceptionally favorable or the cycle length is very short. If it is due to favorable progression, most vehicles arrive during the green indication and travel through the intersection without stopping.

LOS B describes operations with control delay between 10 and 20 s/veh and a v/c ratio no greater than 1.0. This level is typically assigned when the v/c ratio is low and either progression is highly favorable or the cycle length is short. More vehicles stop than with LOS A.

LOS C describes operations with control delay between 20 and 35 s/veh and a v/c ratio no greater than 1.0. This level is typically assigned when progression is favorable or the cycle length is moderate. Individual *cycle failures* (i.e., one or more queued vehicles are not able to depart as a result of insufficient capacity during the cycle) may begin to appear at this level. The number of vehicles stopping is significant, although many vehicles still pass through the intersection without stopping.

LOS D describes operations with control delay between 35 and 55 s/veh and a v/c ratio no greater than 1.0. This level is typically assigned when the v/c ratio is high and either progression is ineffective or the cycle length is long. Many vehicles stop and individual cycle failures are noticeable.

LOS E describes operations with control delay between 55 and 80 s/veh and a v/c ratio no greater than 1.0. This level is typically assigned when the v/c ratio is high, progression is unfavorable, and the cycle length is long. Individual cycle failures are frequent.

LOS F describes operations with control delay exceeding 80 s/veh or a v/c ratio greater than 1.0. This level is typically assigned when the v/c ratio is very high, progression is very poor, and the cycle length is long. Most cycles fail to clear the queue.

A lane group can incur a delay less than 80 s/veh when the v/c ratio exceeds 1.0. This condition typically occurs when the cycle length is short, the signal progression is favorable, or both. As a result, both the delay and v/c ratio are considered when lane group LOS is established. A ratio of 1.0 or more indicates that cycle capacity is fully utilized and represents failure from a capacity perspective (just as delay in excess of 80 s/veh represents failure from a delay perspective).

Average control delay and queue length at roundabout controlled intersections are calculated using SIDRA Intersection. The physical geometry such as entry lane width and approach flare, and traffic volume at the roundabout are factors that influence the intersection's performance. The average delay reported using SIDRA Intersection is based on the signalized HCM Method of Delay for Level-of-Service.

Level of Service Criteria for Unsignalized Intersections

Level of service (LOS) for Two-Way Stop-Controlled (TWSC) intersections is determined by the computed or measured control delay. For motor vehicles, LOS is determined for each minor-street movement (or shared movement) as well as major-street left turns by using criteria given in Exhibit 20-2. LOS is not defined for the intersection as a whole or for major-street approaches for three primary reasons: (a) major-street through vehicles are assumed to experience zero delay; (b) the disproportionate number of major-street through vehicles at a typical TWSC intersection skews the weighted average of all movements, resulting in a very low overall average delay for all vehicles; and (c) the resulting low delay can mask important LOS deficiencies for minor movements. LOS F is assigned to the movement if the volume-to-capacity (v/c) ratio for the movement exceeds 1.0, regardless of the control delay.

The LOS criteria for TWSC intersections are somewhat different from the criteria used in Chapter 18 for signalized intersections, primarily because user perceptions differ among transportation facility types. The expectation is that a signalized intersection is designed to carry higher traffic volumes and will present greater delay than an unsignalized intersection. Unsignalized intersections are also associated with more uncertainty for users, as delays are less predictable than they are at signals, which can reduce users' delay tolerance.

The LOS criteria for All-Way Stop-Controlled (AWSC) intersections are given in Exhibit 21-8. LOS F is assigned if the v/c ratio of a lane exceeds 1.0, regardless of the control delay. For assessment of LOS at the approach and intersection levels, LOS is based solely on control delay.

Exhibits 20-2/21-8:
Level-of-Service Criteria for Stop Controlled Intersections

Control Delay (s/veh)	LOS by Volume-to-Capacity Ratio	
	v/c ≤ 1.0	v/c ≥ 1.0
10.0	A	F
>10.0 and ≤ 15.0	B	F
>15.0 and ≤ 25.0	C	F
>25.0 and ≤ 35.0	D	F
>35.0 and ≤ 50.0	E	F
>50.0	F	F

Intersection	
Int Delay, s/veh	0.2

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	0	309	149	73	5	8
Future Vol, veh/h	0	309	149	73	5	8
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	60	-	-	0	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	12	17	16	0	0
Mvmt Flow	0	336	162	79	5	9

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	241	0	-	0	498	162
Stage 1	-	-	-	-	162	-
Stage 2	-	-	-	-	336	-
Critical Hdwy	4.1	-	-	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	2.2	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	1337	-	-	-	535	888
Stage 1	-	-	-	-	872	-
Stage 2	-	-	-	-	728	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1337	-	-	-	535	888
Mov Cap-2 Maneuver	-	-	-	-	535	-
Stage 1	-	-	-	-	872	-
Stage 2	-	-	-	-	728	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	10.2
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1337	-	-	-	708
HCM Lane V/C Ratio	-	-	-	-	0.02
HCM Control Delay (s)	0	-	-	-	10.2
HCM Lane LOS	A	-	-	-	B
HCM 95th %tile Q(veh)	0	-	-	-	0.1

Intersection						
Int Delay, s/veh	4.4					

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	103	19	0	0	81	22
Future Vol, veh/h	103	19	0	0	81	22
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	-	-	16983	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	12	0	2	2	0	12
Mvmt Flow	112	21	0	0	88	24

Major/Minor	Major1			Minor1	
Conflicting Flow All	0	0		123	123
Stage 1	-	-		123	-
Stage 2	-	-		0	-
Critical Hdwy	-	-		6.4	6.32
Critical Hdwy Stg 1	-	-		5.4	-
Critical Hdwy Stg 2	-	-		-	-
Follow-up Hdwy	-	-		3.5	3.408
Pot Cap-1 Maneuver	-	-		877	902
Stage 1	-	-		907	-
Stage 2	-	-		-	-
Platoon blocked, %	-	-			
Mov Cap-1 Maneuver	-	-		877	902
Mov Cap-2 Maneuver	-	-		877	-
Stage 1	-	-		907	-
Stage 2	-	-		-	-

Approach	EB	NB
HCM Control Delay, s	0	9.7
HCM LOS		A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR
Capacity (veh/h)	882	-	-
HCM Lane V/C Ratio	0.127	-	-
HCM Control Delay (s)	9.7	-	-
HCM Lane LOS	A	-	-
HCM 95th %tile Q(veh)	0.4	-	-

Intersection	
Int Delay, s/veh	0.3

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	2	338	538	27	2	18
Future Vol, veh/h	2	338	538	27	2	18
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	60	-	-	0	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	7	7	0	0	0
Mvmt Flow	2	367	585	29	2	20

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	614	0	-	0	956	585
Stage 1	-	-	-	-	585	-
Stage 2	-	-	-	-	371	-
Critical Hdwy	4.1	-	-	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	2.2	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	975	-	-	-	289	515
Stage 1	-	-	-	-	561	-
Stage 2	-	-	-	-	702	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	975	-	-	-	288	515
Mov Cap-2 Maneuver	-	-	-	-	288	-
Stage 1	-	-	-	-	560	-
Stage 2	-	-	-	-	702	-

Approach	EB	WB	SB
HCM Control Delay, s	0.1	0	12.9
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	975	-	-	-	477
HCM Lane V/C Ratio	0.002	-	-	-	0.046
HCM Control Delay (s)	8.7	-	-	-	12.9
HCM Lane LOS	A	-	-	-	B
HCM 95th %tile Q(veh)	0	-	-	-	0.1

Intersection						
Int Delay, s/veh	1.7					

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	246	25	0	0	44	8
Future Vol, veh/h	246	25	0	0	44	8
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	-	-	16983	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	4	0	0	0	0	0
Mvmt Flow	267	27	0	0	48	9

Major/Minor	Major1			Minor1	
Conflicting Flow All	0	0		281	281
Stage 1	-	-		281	-
Stage 2	-	-		0	-
Critical Hdwy	-	-		6.4	6.2
Critical Hdwy Stg 1	-	-		5.4	-
Critical Hdwy Stg 2	-	-		-	-
Follow-up Hdwy	-	-		3.5	3.3
Pot Cap-1 Maneuver	-	-		713	763
Stage 1	-	-		771	-
Stage 2	-	-		-	-
Platoon blocked, %	-	-			
Mov Cap-1 Maneuver	-	-		713	763
Mov Cap-2 Maneuver	-	-		713	-
Stage 1	-	-		771	-
Stage 2	-	-		-	-

Approach	EB	NB
HCM Control Delay, s	0	10.4
HCM LOS		B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR
Capacity (veh/h)	720	-	-
HCM Lane V/C Ratio	0.079	-	-
HCM Control Delay (s)	10.4	-	-
HCM Lane LOS	B	-	-
HCM 95th %tile Q(veh)	0.3	-	-

Intersection	
Int Delay, s/veh	0.2

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	0	325	172	75	5	8
Future Vol, veh/h	0	325	172	75	5	8
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	60	-	-	0	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	12	17	16	0	0
Mvmt Flow	0	353	187	82	5	9

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	269	0	-	0	540	187
Stage 1	-	-	-	-	187	-
Stage 2	-	-	-	-	353	-
Critical Hdwy	4.1	-	-	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	2.2	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	1306	-	-	-	506	860
Stage 1	-	-	-	-	850	-
Stage 2	-	-	-	-	716	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1306	-	-	-	506	860
Mov Cap-2 Maneuver	-	-	-	-	506	-
Stage 1	-	-	-	-	850	-
Stage 2	-	-	-	-	716	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	10.4
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1306	-	-	-	678
HCM Lane V/C Ratio	-	-	-	-	0.021
HCM Control Delay (s)	0	-	-	-	10.4
HCM Lane LOS	A	-	-	-	B
HCM 95th %tile Q(veh)	0	-	-	-	0.1

Intersection						
Int Delay, s/veh	4.5					

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	106	20	0	0	83	23
Future Vol, veh/h	106	20	0	0	83	23
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	-	-	16983	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	12	0	0	0	12	0
Mvmt Flow	115	22	0	0	90	25

Major/Minor	Major1			Minor1	
Conflicting Flow All	0	0		126	126
Stage 1	-	-		126	-
Stage 2	-	-		0	-
Critical Hdwy	-	-		6.52	6.2
Critical Hdwy Stg 1	-	-		5.52	-
Critical Hdwy Stg 2	-	-		-	-
Follow-up Hdwy	-	-		3.608	3.3
Pot Cap-1 Maneuver	-	-		845	930
Stage 1	-	-		876	-
Stage 2	-	-		-	-
Platoon blocked, %	-	-			
Mov Cap-1 Maneuver	-	-		845	930
Mov Cap-2 Maneuver	-	-		845	-
Stage 1	-	-		876	-
Stage 2	-	-		-	-

Approach	EB	NB
HCM Control Delay, s	0	9.8
HCM LOS		A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR
Capacity (veh/h)	862	-	-
HCM Lane V/C Ratio	0.134	-	-
HCM Control Delay (s)	9.8	-	-
HCM Lane LOS	A	-	-
HCM 95th %tile Q(veh)	0.5	-	-

Intersection	
Int Delay, s/veh	0.3

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	2	367	567	28	2	19
Future Vol, veh/h	2	367	567	28	2	19
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	60	-	-	0	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	7	7	0	0	0
Mvmt Flow	2	399	616	30	2	21

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	646	0	-	0	1019	616
Stage 1	-	-	-	-	616	-
Stage 2	-	-	-	-	403	-
Critical Hdwy	4.1	-	-	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	2.2	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	949	-	-	-	265	494
Stage 1	-	-	-	-	543	-
Stage 2	-	-	-	-	679	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	949	-	-	-	264	494
Mov Cap-2 Maneuver	-	-	-	-	264	-
Stage 1	-	-	-	-	542	-
Stage 2	-	-	-	-	679	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	13.3
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	949	-	-	-	456
HCM Lane V/C Ratio	0.002	-	-	-	0.05
HCM Control Delay (s)	8.8	-	-	-	13.3
HCM Lane LOS	A	-	-	-	B
HCM 95th %tile Q(veh)	0	-	-	-	0.2

Intersection						
Int Delay, s/veh	1.7					

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	253	26	0	0	45	8
Future Vol, veh/h	253	26	0	0	45	8
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	-	-	16983	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	4	0	0	0	0	0
Mvmt Flow	275	28	0	0	49	9

Major/Minor	Major1			Minor1	
Conflicting Flow All	0	0		289	289
Stage 1	-	-		289	-
Stage 2	-	-		0	-
Critical Hdwy	-	-		6.4	6.2
Critical Hdwy Stg 1	-	-		5.4	-
Critical Hdwy Stg 2	-	-		-	-
Follow-up Hdwy	-	-		3.5	3.3
Pot Cap-1 Maneuver	-	-		706	755
Stage 1	-	-		765	-
Stage 2	-	-		-	-
Platoon blocked, %	-	-			
Mov Cap-1 Maneuver	-	-		706	755
Mov Cap-2 Maneuver	-	-		706	-
Stage 1	-	-		765	-
Stage 2	-	-		-	-

Approach	EB	NB
HCM Control Delay, s	0	10.5
HCM LOS		B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR
Capacity (veh/h)	713	-	-
HCM Lane V/C Ratio	0.081	-	-
HCM Control Delay (s)	10.5	-	-
HCM Lane LOS	B	-	-
HCM 95th %tile Q(veh)	0.3	-	-

Intersection	
Int Delay, s/veh	0.3

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	3	325	172	98	5	8
Future Vol, veh/h	3	325	172	98	5	8
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	60	-	-	0	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	11	15	19	0	0
Mvmt Flow	3	353	187	107	5	9

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	294	0	-	0	546	187
Stage 1	-	-	-	-	187	-
Stage 2	-	-	-	-	359	-
Critical Hdwy	4.1	-	-	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	2.2	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	1279	-	-	-	502	860
Stage 1	-	-	-	-	850	-
Stage 2	-	-	-	-	711	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1279	-	-	-	501	860
Mov Cap-2 Maneuver	-	-	-	-	501	-
Stage 1	-	-	-	-	848	-
Stage 2	-	-	-	-	711	-

Approach	EB	WB	SB
HCM Control Delay, s	0.1	0	10.5
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1279	-	-	-	674
HCM Lane V/C Ratio	0.003	-	-	-	0.021
HCM Control Delay (s)	7.8	-	-	-	10.5
HCM Lane LOS	A	-	-	-	B
HCM 95th %tile Q(veh)	0	-	-	-	0.1

Intersection	
Int Delay, s/veh	4.6

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	106	21	0	0	83	30
Future Vol, veh/h	106	21	0	0	83	30
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	-	-	16983	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	11	0	0	0	0	32
Mvmt Flow	115	23	0	0	90	33

Major/Minor	Major1			Minor1	
Conflicting Flow All	0	0		127	127
Stage 1	-	-		127	-
Stage 2	-	-		0	-
Critical Hdwy	-	-		6.4	6.52
Critical Hdwy Stg 1	-	-		5.4	-
Critical Hdwy Stg 2	-	-		-	-
Follow-up Hdwy	-	-		3.5	3.588
Pot Cap-1 Maneuver	-	-		872	849
Stage 1	-	-		904	-
Stage 2	-	-		-	-
Platoon blocked, %	-	-			
Mov Cap-1 Maneuver	-	-		872	849
Mov Cap-2 Maneuver	-	-		872	-
Stage 1	-	-		904	-
Stage 2	-	-		-	-

Approach	EB	NB
HCM Control Delay, s	0	9.8
HCM LOS		A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR
Capacity (veh/h)	866	-	-
HCM Lane V/C Ratio	0.142	-	-
HCM Control Delay (s)	9.8	-	-
HCM Lane LOS	A	-	-
HCM 95th %tile Q(veh)	0.5	-	-

Intersection	
Int Delay, s/veh	2.2

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	7	0	26	75	13	1
Future Vol, veh/h	7	0	26	75	13	1
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, %	100	0	27	11	0	0
Mvmt Flow	8	0	28	82	14	1

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	153	15	15	0	-	0
Stage 1	15	-	-	-	-	-
Stage 2	138	-	-	-	-	-
Critical Hdwy	7.4	6.2	4.37	-	-	-
Critical Hdwy Stg 1	6.4	-	-	-	-	-
Critical Hdwy Stg 2	6.4	-	-	-	-	-
Follow-up Hdwy	4.4	3.3	2.443	-	-	-
Pot Cap-1 Maneuver	655	1070	1454	-	-	-
Stage 1	804	-	-	-	-	-
Stage 2	696	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	642	1070	1454	-	-	-
Mov Cap-2 Maneuver	642	-	-	-	-	-
Stage 1	788	-	-	-	-	-
Stage 2	696	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	10.7	1.9	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1454	-	642	-	-
HCM Lane V/C Ratio	0.019	-	0.012	-	-
HCM Control Delay (s)	7.5	0	10.7	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0.1	-	0	-	-

Intersection	
Int Delay, s/veh	0.7

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	2	367	567	35	18	22
Future Vol, veh/h	2	367	567	35	18	22
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	60	-	-	0	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	7	7	20	0	0
Mvmt Flow	2	399	616	38	20	24

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	654	0	-	0	1019	616
Stage 1	-	-	-	-	616	-
Stage 2	-	-	-	-	403	-
Critical Hdwy	4.1	-	-	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	2.2	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	943	-	-	-	265	494
Stage 1	-	-	-	-	543	-
Stage 2	-	-	-	-	679	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	943	-	-	-	264	494
Mov Cap-2 Maneuver	-	-	-	-	264	-
Stage 1	-	-	-	-	542	-
Stage 2	-	-	-	-	679	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	16.6
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	943	-	-	-	355
HCM Lane V/C Ratio	0.002	-	-	-	0.122
HCM Control Delay (s)	8.8	-	-	-	16.6
HCM Lane LOS	A	-	-	-	C
HCM 95th %tile Q(veh)	0	-	-	-	0.4

Intersection	
Int Delay, s/veh	1.9

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	253	26	0	0	46	15
Future Vol, veh/h	253	26	0	0	46	15
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	-	-	16983	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	4	0	0	0	0	47
Mvmt Flow	275	28	0	0	50	16

Major/Minor	Major1			Minor1	
Conflicting Flow All	0	0		289	289
Stage 1	-	-		289	-
Stage 2	-	-		0	-
Critical Hdwy	-	-		6.4	6.67
Critical Hdwy Stg 1	-	-		5.4	-
Critical Hdwy Stg 2	-	-		-	-
Follow-up Hdwy	-	-		3.5	3.723
Pot Cap-1 Maneuver	-	-		706	655
Stage 1	-	-		765	-
Stage 2	-	-		-	-
Platoon blocked, %	-	-			
Mov Cap-1 Maneuver	-	-		706	655
Mov Cap-2 Maneuver	-	-		706	-
Stage 1	-	-		765	-
Stage 2	-	-		-	-

Approach	EB	NB
HCM Control Delay, s	0	10.7
HCM LOS		B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR
Capacity (veh/h)	693	-	-
HCM Lane V/C Ratio	0.096	-	-
HCM Control Delay (s)	10.7	-	-
HCM Lane LOS	B	-	-
HCM 95th %tile Q(veh)	0.3	-	-

Intersection	
Int Delay, s/veh	3.5

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	8	19	7	30	21	0
Future Vol, veh/h	8	19	7	30	21	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	88	0	100	0	0	0
Mvmt Flow	9	21	8	33	23	0

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	72	23	23	0	-	0
Stage 1	23	-	-	-	-	-
Stage 2	49	-	-	-	-	-
Critical Hdwy	7.28	6.2	5.1	-	-	-
Critical Hdwy Stg 1	6.28	-	-	-	-	-
Critical Hdwy Stg 2	6.28	-	-	-	-	-
Follow-up Hdwy	4.292	3.3	3.1	-	-	-
Pot Cap-1 Maneuver	757	1060	1135	-	-	-
Stage 1	817	-	-	-	-	-
Stage 2	793	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	752	1060	1135	-	-	-
Mov Cap-2 Maneuver	752	-	-	-	-	-
Stage 1	811	-	-	-	-	-
Stage 2	793	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	8.9	1.6	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1135	-	945	-	-
HCM Lane V/C Ratio	0.007	-	0.031	-	-
HCM Control Delay (s)	8.2	0	8.9	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	0.1	-	-