DOLAN&DEAN
CONSULTING ENGINEERS, LLC

181 WEST HIGH STREET
SOMERVILLE, NJ 08876

908 927 0100 p
908 927 0181 f

TRAFFIC IMPACT ASSESSMENT

FOR

THE ESTATES AT HURSTMONT

PROPOSED AGE RESTRICTED DEVELOPMENT

BLOCK 27, LOT 2
HARDING TOWNSHIP, MORRIS COUNTY
NEW JERSEY

MAY 1, 2023
REVISED: MAY 26, 2023

GARY W. DEAN, P.E., P.P.No.
NJ LICENSE NO. 33722

STATE OF NEW JERSEY
GARY W. DEAN
GE33722
LICENSED
PROFESSIONAL ENGINEER

RIANNA KIRCHHOF, P.E.
NJ LICENSE NO. 54558

18134
EC\RLK
Morris/Harding Township/Endeavor Properties/Documents/2023-05-01 Orig 2023-05-26 TIA

INTRODUCTION

This Traffic Impact Assessment is being submitted in connection with the preliminary and final site plan and minor subdivision application submitted to The Harding Township Planning Board for an age-restricted, independent and continuing care residential development to be located along Mount Kemble Avenue (Figure 1 in the Technical Appendix).

The proposed development includes a Senior Living Facility consisting of 210 units that will include a mix of independent living units, assisted living units, and memory care units. In addition, 28 age restricted townhouse units are also proposed divided among 11 buildings, with 12 age-restricted apartment units within 3 buildings. Site access is proposed via one full-movement driveway located along Mount Kemble Avenue.

Dolan & Dean Consulting Engineers, LLC (D&D) has been commissioned by the applicant to prepare this Traffic Impact Assessment to evaluate the impacts of new site traffic on Mount Kemble Avenue and its intersection with Tempe Wick Road/Glen Alpin Road. Based on this analysis, the unique characteristics of the proposed development will ensure that the site traffic will not be of such a volume to negatively affect overall traffic operations.

Finally, the site suitability for the proposed development has been reviewed based on a traffic engineering and safety evaluation. Accordingly, this analysis includes the following information:

- A review of the existing roadway and current traffic conditions in the site vicinity, including roadway configuration, on-street traffic volumes and operations, roadway capacities, and adjacent land uses;
- Estimation of the new traffic volume expected to be generated by proposed development;
- Evaluation of the future roadway operations including an impact assessment resulting from the additional traffic generated by the proposed development; and,
- A review of the Site Plan focusing on the access design, interior circulation, and parking adequacy.

EXISTING CONDITIONS

As noted, the subject property is located along Mount Kemble Avenue (aka, US Route 202) north of the intersection with Tempe Wick Road/Glen Alpin Road in Harding Township. The site is located adjacent to the grounds of the Glen Alpin Conservatory. Through the development proposal, The Hurstmont property will be subdivided to accommodate the proposed development.

EXISTING ROADWAY CONDITIONS

Mount Kemble Avenue is under NJDOT jurisdiction, designated as US Route 202 and has a north/south orientation. Within the general site vicinity, Mount Kemble Avenue provides one travel lane in each direction with a posted speed limit of 45 miles per hour. The roadway runs parallel to Interstate 287, which is accessible by way of Maple Avenue, located 1.8 miles south of the site. There is a traffic signal immediately south of the site at Mount Kemble Avenue and Tempe Wick Road/Glen Alpin Road.

Tempe Wick Road/Glen Alpin Road has an east/west orientation within the general site vicinity and is designated as Morris County Route 646. The roadway provides one travel lane in each direction, with a posted speed limit of 40 miles per hour.

The Mount Kemble Avenue intersection with Tempe Wick Road/Glen Alpin Road is a signalized, 4-leg intersection. The northbound, southbound and westbound approaches to the intersections provide one shared lane for left/thru/right movements, while the westbound Glen Alpin Road approach provides a shared through/left lane, and a right turn only lane.

Adjacent property to the intersection has recently been acquired by Morris County to facilitate widening of the northbound and eastbound lanes for an eastbound right turn only, and northbound left turn only lane additions. Due to chronic, existing operational constraints at the intersection, the widening will provide significant operational improvements, particularly during peak traffic hours and safety enhancements with dedicated turning lanes.

EXISTING TRAFFIC VOLUMES

To examine the existing traffic conditions in the site vicinity that could be impacted by new site traffic, manual turning movement counts were conducted during weekday morning and evening periods when area traffic is typically at peak levels. Because of the function that Mount Kemble Avenue serves during peak commuting hours, traffic volumes are typically heaviest and serve as a time of focus for this analysis. To address the traffic conditions during peak traffic periods, vehicular traffic counts were conducted on Wednesday March 8, 2023 from 7:00 a.m. to 9:00 a.m. and from 3:00 p.m. to 6:00 p.m.

The traffic counts show a one-hour interval during each time period when overall street traffic in the area reaches its highest levels. Figure 2 in the Technical Appendix illustrates the existing peak hour traffic volumes on the subject roadway network. For reference, the morning peak hour occurred from 7:45 a.m. to 8:45 a.m., and from 4:15 p.m. to 5:15 p.m. in the evening.

EXISTING TRAFFIC CONDITIONS

While traffic volumes provide a measure of activity on the area roadway system, it is also important to evaluate how well that system can accommodate those volumes – i.e., a comparison of peak hour traffic volumes with available roadway capacity. By definition capacity represents the maximum number of vehicles that can be accommodated given the constraints of roadway geometry, environment, traffic characteristics, and controls.

Intersections are usually the critical point in any road network since it is at such points that conflicts exist between through, crossing, and turning traffic. It is at these locations where congestion is most likely to occur. A description of intersection Levels of Service is noted on the following page:

INTERSECTION LEVELS OF SERVICE AND DELAY

Level of Service	Signalized Delay per Vehicle (seconds)	Unsignalized Delay per Vehicle (seconds)
A	< 10.0	<0-10
B	>10 and <20	>10 to <15
C	>20 and < 35	>15 to <25
D	>35 and < 55	> 25 to <35
E	>55 and < 80	> 35 to <50
F	> 80	>50

A volume/capacity analysis was conducted using Highway Capacity Software for the study intersections during the morning and evening peak hours. The existing traffic conditions and operations were evaluated at the subject intersection. Appended Figure 3 depicts the existing Level of Service results.

All movements at the signalized intersection are calculated to operate at Level of Service "D" or better during the morning peak hour, and Level of Service "C" or better during the evening peak hour. However, from prior analyses and observations made via "drone" during peak hours, eastbound backups on Tempe Wick Road are frequent, often requiring multiple signal cycles to clear. Because the traffic was counted only at the intersection and not indicative of additional "unmet" demand, the current conditions of certain approaches at peak hour can be characterized as Level Service F. These are the conditions the County/DOT project are intended to remedy with the additional lane widening.

TRAFFIC CHARACTERISTICS OF THE PROPOSED DEVELOPMENT

PROJECTED TRIP GENERATION

The potential traffic generation from any use is directly related to the type, size, and characteristic of the use itself. The specific location of a particular use may also affect trip generation such as volumes of passing street traffic and competing uses. Lacking specific site operational data, trip generation projections are customarily made using estimates as compiled by the Institute of Transportation Engineers (ITE) in the Trip Generation Manual, 11th Edition, 2019 for uses that closely resemble the anticipated operation.

In the current edition of the Trip Generation Manual, there is a land use category that relates to the proposed overall site use. Land Use 255 – "Continuing Care Retirement Facility" is defined as the following:

> *"a land use that provides multiple elements of senior adult living. A CCRC enables a resident to transition in place from independent living to increased care as the medical needs of the resident change. Housing options may include various combinations of senior adult housing (both single-family and multifamily), congregate care, assisted living, and nursing home."*

Alternatively, trip generation for each individual site component could be calculated separately using the following Land Use Codes: 252 - Senior Adult Housing (Multifamily), 254 – Assisted Living, and 251 – Senior Adult Housing (Single Family).

Table I summarizes the projected trip generation for the subject development forecasted using both methodologies.

TABLE I
ESTIMATED TRIP GENERATION

Land Use	Size	Morning Peak Hour			Evening Peak Hour		
		Enter	Exit	Total	Enter	Exit	Total
Continuing Care Retirement Facility	250 Units	35	19	54	34	54	88
Assisted Living	81 Units	9	6	15	8	12	20
Senior Adult Housing (Single Family)	28 Units	5	10	15	11	7	18
Senior Adult Housing (Multifamily)	141 Units	10	18	28	20	15	35
Total		24	34	58	39	34	73

As shown, the CCRC land use produces slightly lower volumes during the morning peak hour, and higher volumes during the evening peak hour, when compared to the sum of the individual land use components. For a conservative traffic analysis, the individual component trip generation was used for the morning peak hour, and the CCRC facility trip generation was used for the evening peak hour.

DISTRIBUTION OF SITE GENERATED TRAFFIC

For the new traffic expected the proximity to nearby retail/downtown areas and major roadways will largely influence the orientation of future site traffic. As most residents will not be commuting but would typically travel at peak hours to nearby retail, dining, recreational or medical facilities, the traffic patterns will be influenced by accessibility to the local highway system. As such it is expected that the proposed site traffic will adhere to the following traffic distribution along Mount Kemble Avenue and Tempe Wick Road:

- 35% to/from the north via Mount Kemble Avenue
- 35% to/from the south via Mount Kemble Avenue
- 20% originates from the west via Tempe Wick Road
- 10% to/from the East via Glen Alpin Road

The site generated traffic volumes are shown on appended Figure 4.

FUTURE TRAFFIC CONDITIONS

FUTURE "BUILD" TRAFFIC VOLUMES

It is recognized that traffic routinely fluctuates along various state and county roadways, as well as local streets, and varies not only day-to-day, but also on a monthly and yearly basis. As a result of both normal "background" traffic increases, (attributed to continued regional growth and changes in driver demographics), as well as new traffic generated by specific projects, traffic demands on the roadways in the vicinity of the site may increase over current demands (at least to some degree), even if no changes were to occur on the subject property, irrespective of the uses permitted.

Regional traffic growth patterns as compiled by the New Jersey Department of Transportation (NJDOT) were examined for this analysis. Based on NJDOT growth patterns for Morris County, traffic volumes are conservatively projected to annually increase by 1.5% during peak traffic hours. In addition to background growth, traffic from the approved, but not yet constructed S/K Mt. Kemble Associates, LLC Residential Development on Block 23.02, Lot 5, and Block 6101, Lot 4 of Harding/Morris Townships, was included to develop the future "no-build" traffic volumes shown on Figure 5.

While a traffic growth rate was used in this analysis, from data collected in 2019 when the project was first under consideration, there has been an actual decrease in peak hour traffic of approximately 13.5% and 11.5% during the morning and evening peak hours, respectively. Potentially attributed to the long-term effects of the COVID pandemic with more "remote" workplace options, increased use of "e-commerce" and changes in population demographics with increased retirement, the use of an assumed traffic growth factor results in an inherently conservative traffic analysis.

To then gauge the cumulative effects of the additional traffic generated by the proposal, it is necessary to develop composite future traffic volumes that include new site activity. The future

"build" traffic volumes were calculated by adding the estimated development trip generation to the "no-build" volumes. The total future peak hour traffic volumes are depicted on Figure 6.

FUTURE "BUILD" TRAFFIC ANALYSIS

An analysis of future driveway operations was completed with the new traffic added by the proposed development. Based on this analysis, movements entering and exiting the site onto Mt Kemble Road will operate at favorable Level of Service "B" or better during both peak hours.

Movements at the Mount Kemble Avenue intersection with Tempe Wick Road/Glen Alpin Road were analyzed for both the interim condition based on existing intersection geometry, as well as an improved condition that includes the County's pending mitigation. As shown on the appended worksheets, site traffic will have a minimal impact on intersection operating conditions, where overall intersection delay is expected to increase by only 1.1 and 2.1 seconds for the morning and evening build conditions based on the existing intersection geometry, respectively. The site traffic will have an insignificant effect on operating conditions and will not measurably change the current operations at the intersection.

With the implementation of the County improvements, all movements are projected to operate at Level of Service "D" or better during the morning peak hour, and Level of Service "C" or better during the evening peak hour.

As a result, it is concluded that the proposed development of the subject site will not have a measurable or significant impact on adjacent street traffic or operations at the off-tract intersection of Glen Alpin/Tempe Wick Road and Mt Kemble Road.

SITE ACCESS, CIRCULATION & PARKING

A traffic engineering review has been made of the Site Plans prepared by Gladstone Design with particular attention focused on the site circulation scheme and overall site access. The following items address on-site design characteristics:

- Site access will be provided via one full-movement driveway along Mount Kemble Avenue. A maintenance driveway will be provided south of the primary access, servicing a sewer treatment building. A highway access permit will be required from NJDOT. From the initial review, all geometric dimensions of the access and location meet the criteria of the State High way Access Management Code.

- Parking will be provided via 9 feet wide by 18 feet deep parking spaces served by minimum width 22-foot interior two-way access aisles. With this design, complete two-way flow will be provided throughout the parking fields and will afford convenient circulation through the sites for all vehicle types.

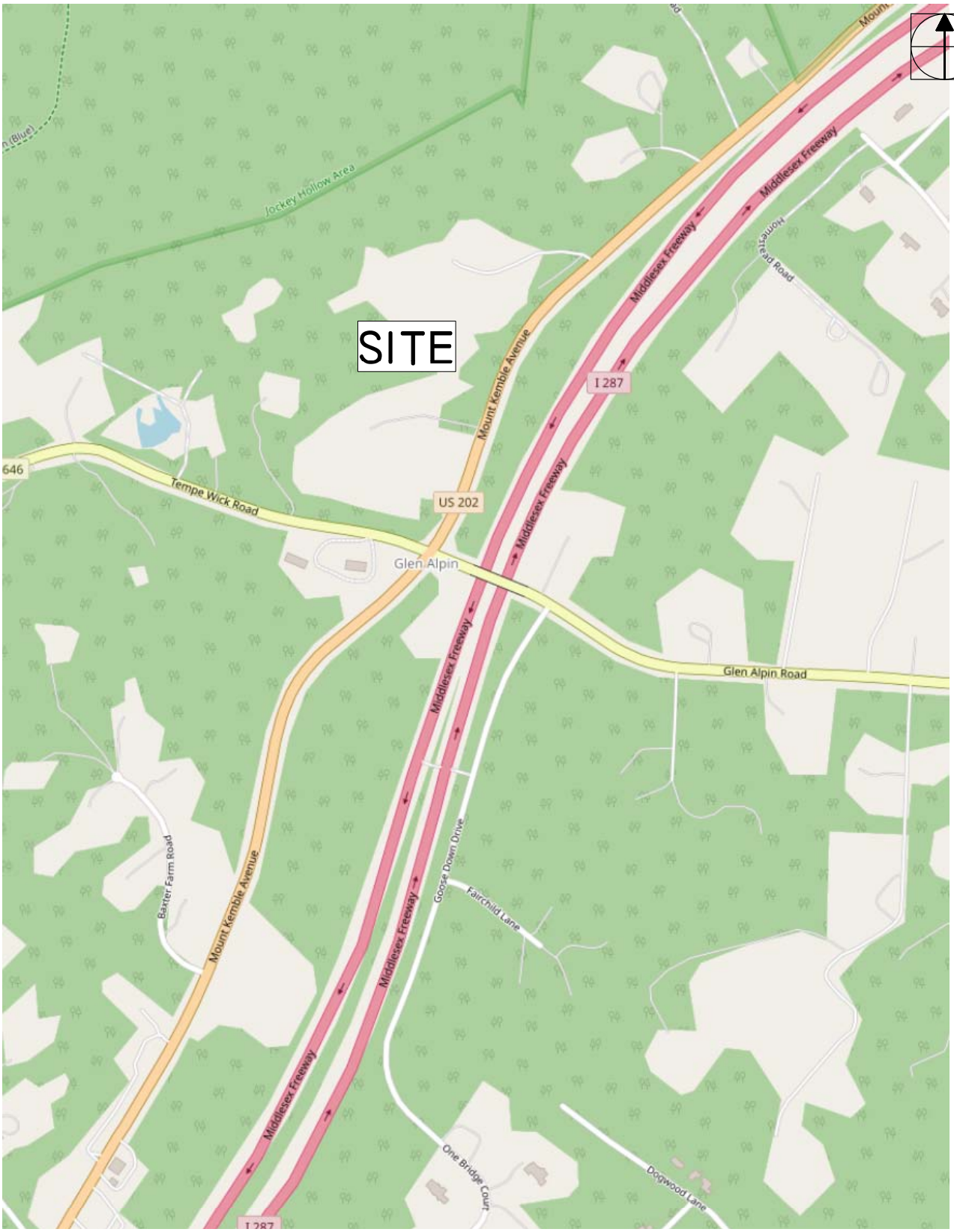
- The proposal requires 265 parking spaces for the overall facility at a rate of one-half space per memory care or assisted living unit, one space per independent living unit, 2.4 spaces per 4-bedroom townhouse, and 2.3 spaces per 2-bedroom townhouse. The site plan provides 54 surface parking spaces, 151 underbuilding spaces, and 120 driveway/garage combo spaces, for a total supply of 325 parking spaces. The proposed supply leaves a surplus of approximately 22% more than the required parking.

CONCLUSIONS

In summary, this analysis of projected future traffic conditions has confirmed that the proposed development for a senior living community would not generate significant new traffic increases that would result in deficient operating conditions in the adjacent roadway network.

The site layout will also provide safe and efficient access and circulation for the types of vehicles anticipated to frequent the site. Based on these findings, it is concluded that the site is particularly well suited for the proposed development.

TECHNICAL APPENDIX

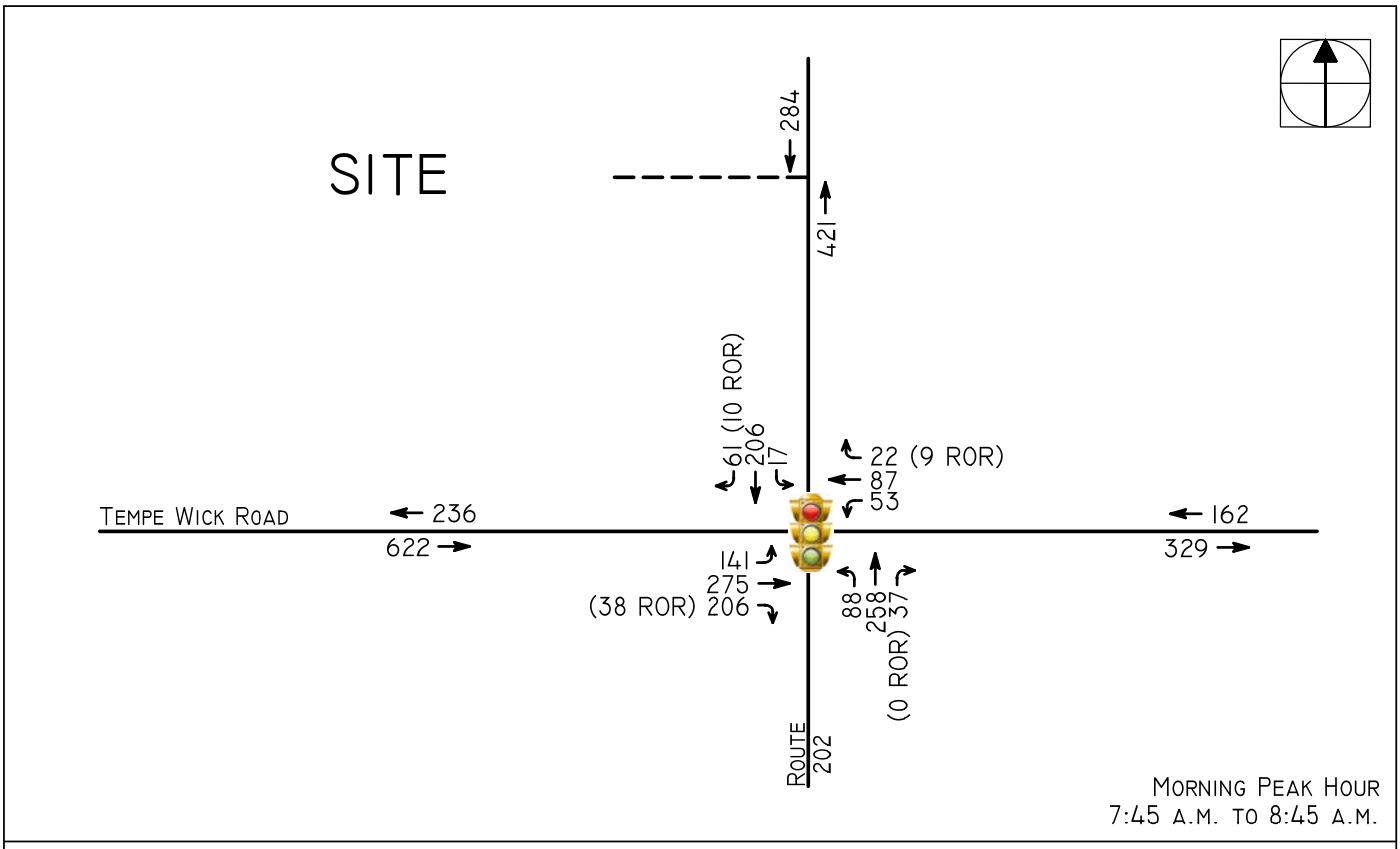


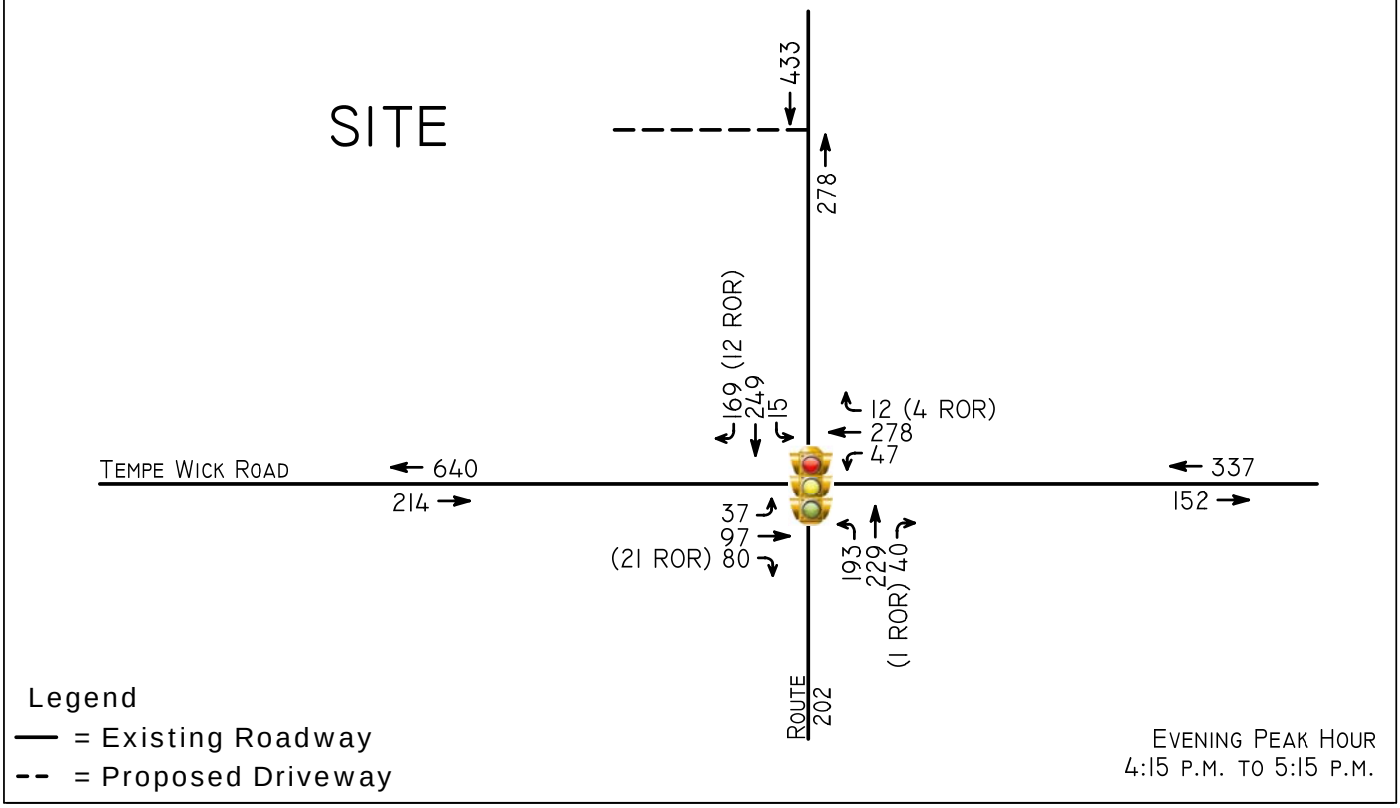
PROPOSED AGE RESTRICTED DEVELOPMENT
HARDING TOWNSHIP
MORRIS COUNTY, NEW JERSEY

FIGURE 1

DOLAN&DEAN
CONSULTING ENGINEERS, LLC

SITE LOCATION MAP



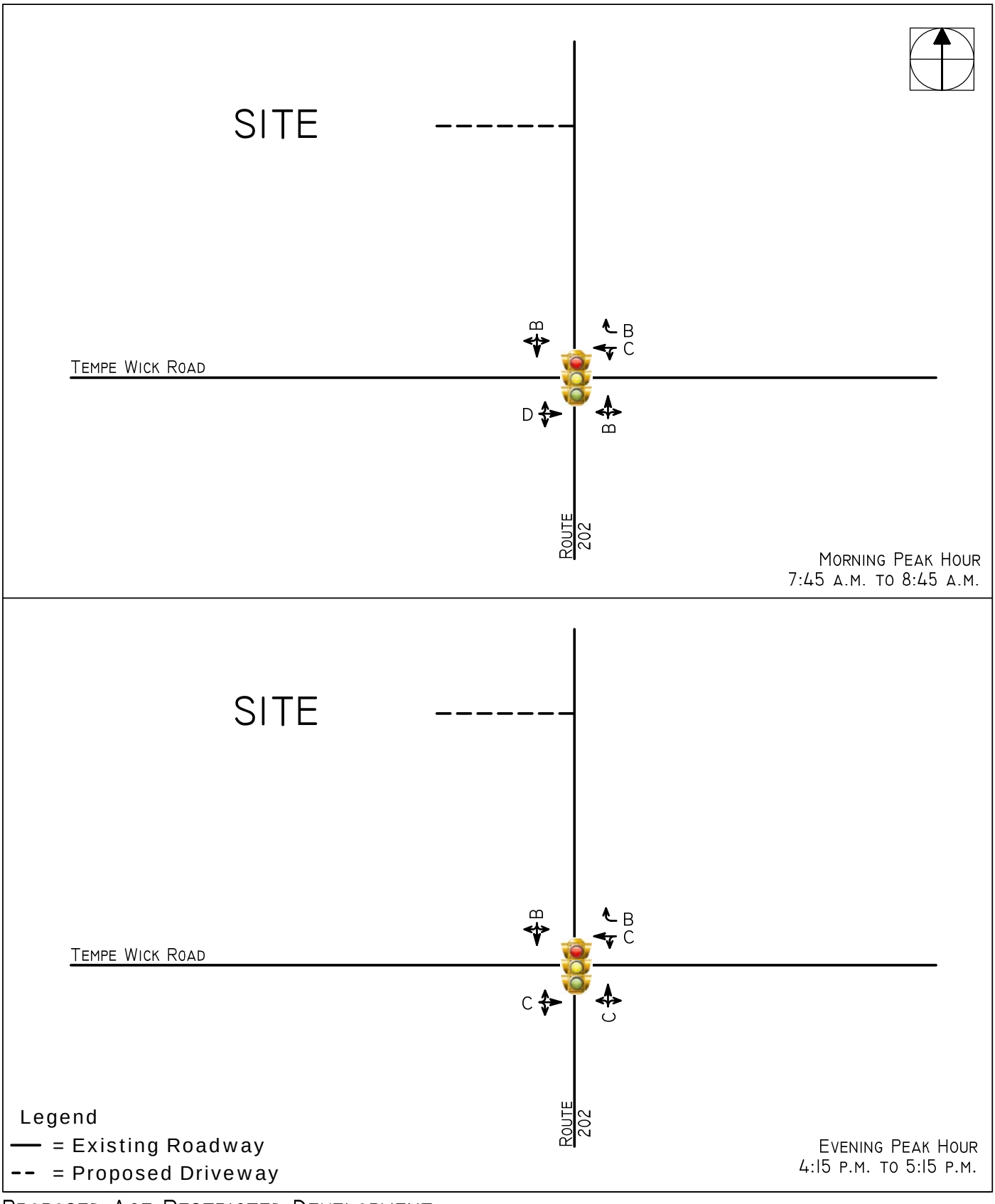


PROPOSED AGE RESTRICTED DEVELOPMENT
HARDING TOWNSHIP
MORRIS COUNTY, NEW JERSEY

FIGURE 2

DOLAN&DEAN
CONSULTING ENGINEERS, LLC

EXISTING TRAFFIC VOLUMES

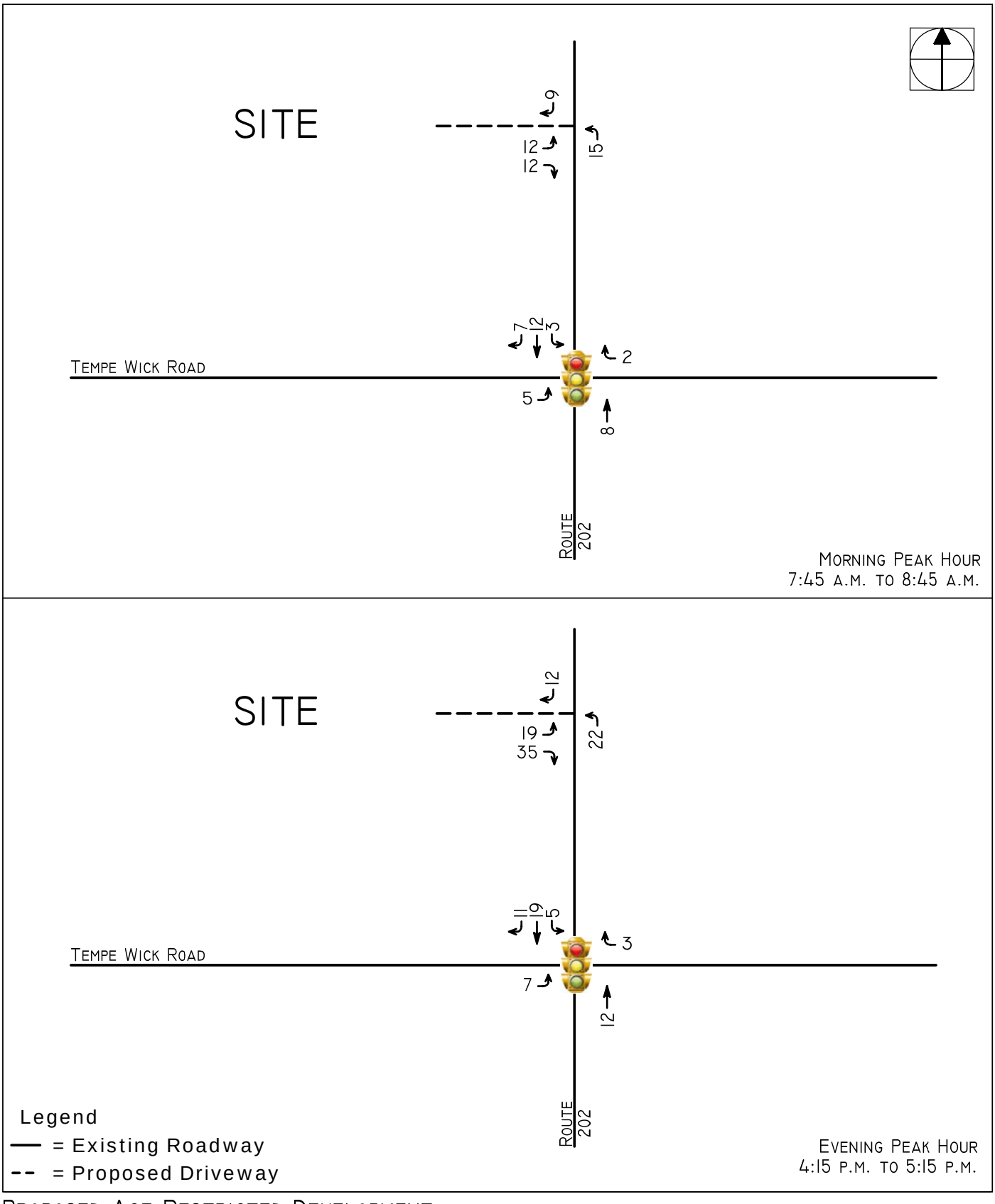


PROPOSED AGE RESTRICTED DEVELOPMENT
HARDING TOWNSHIP
MORRIS COUNTY, NEW JERSEY

FIGURE 3

DOLAN&DEAN
CONSULTING ENGINEERS, LLC

EXISTING LEVELS OF SERVICE

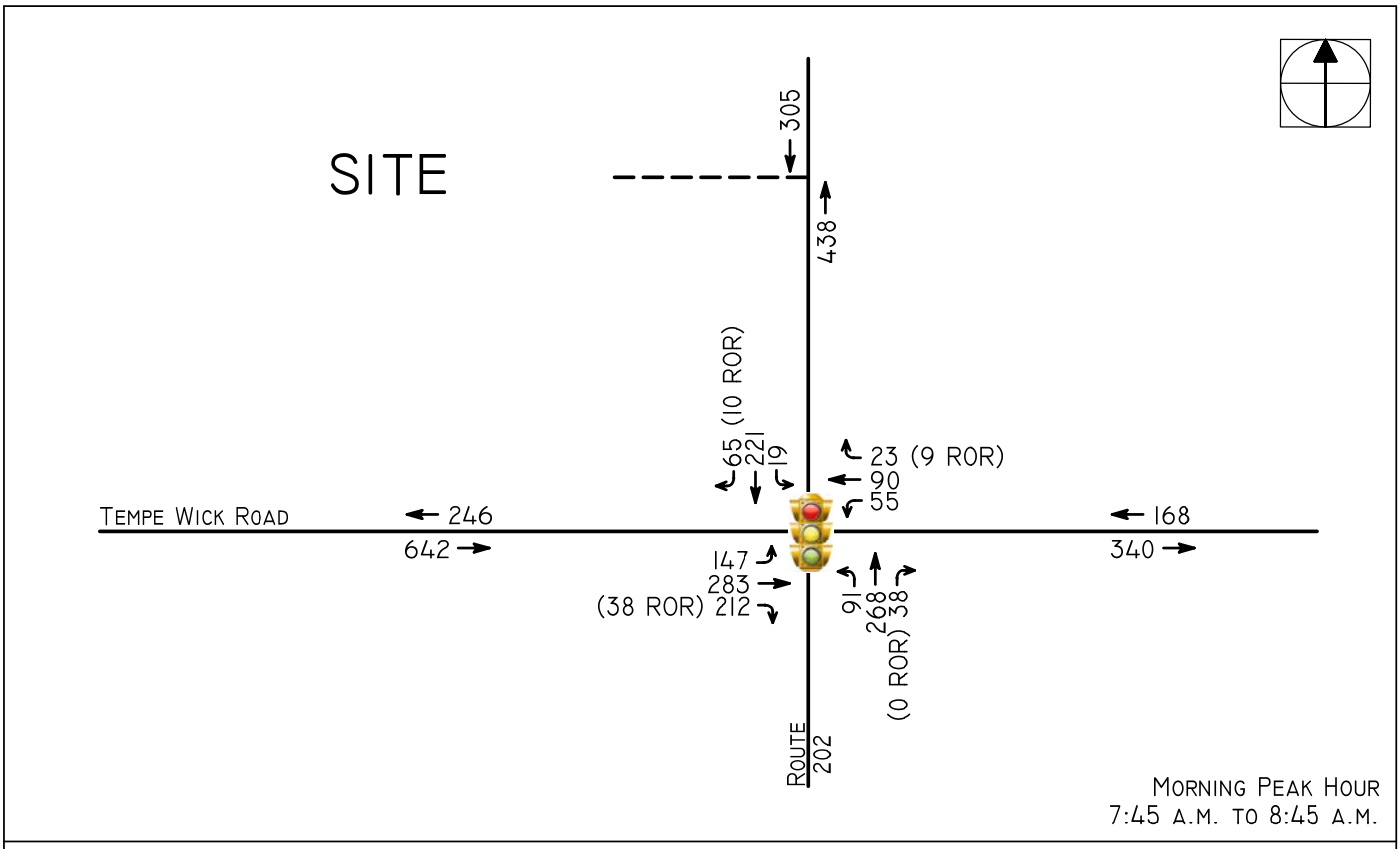


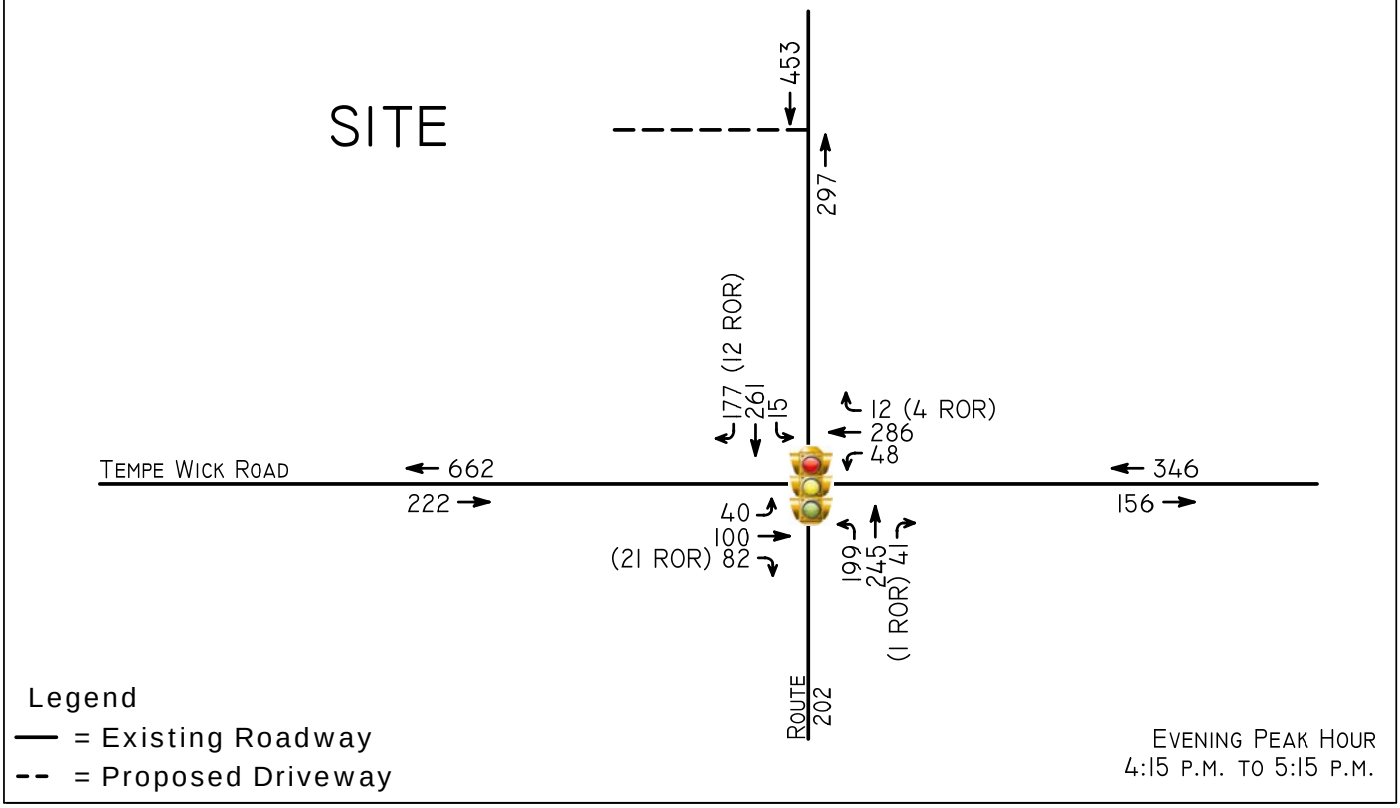
PROPOSED AGE RESTRICTED DEVELOPMENT
HARDING TOWNSHIP
MORRIS COUNTY, NEW JERSEY

FIGURE 4

DOLAN&DEAN CONSULTING ENGINEERS, LLC

SITE GENERATED TRAFFIC VOLUMES



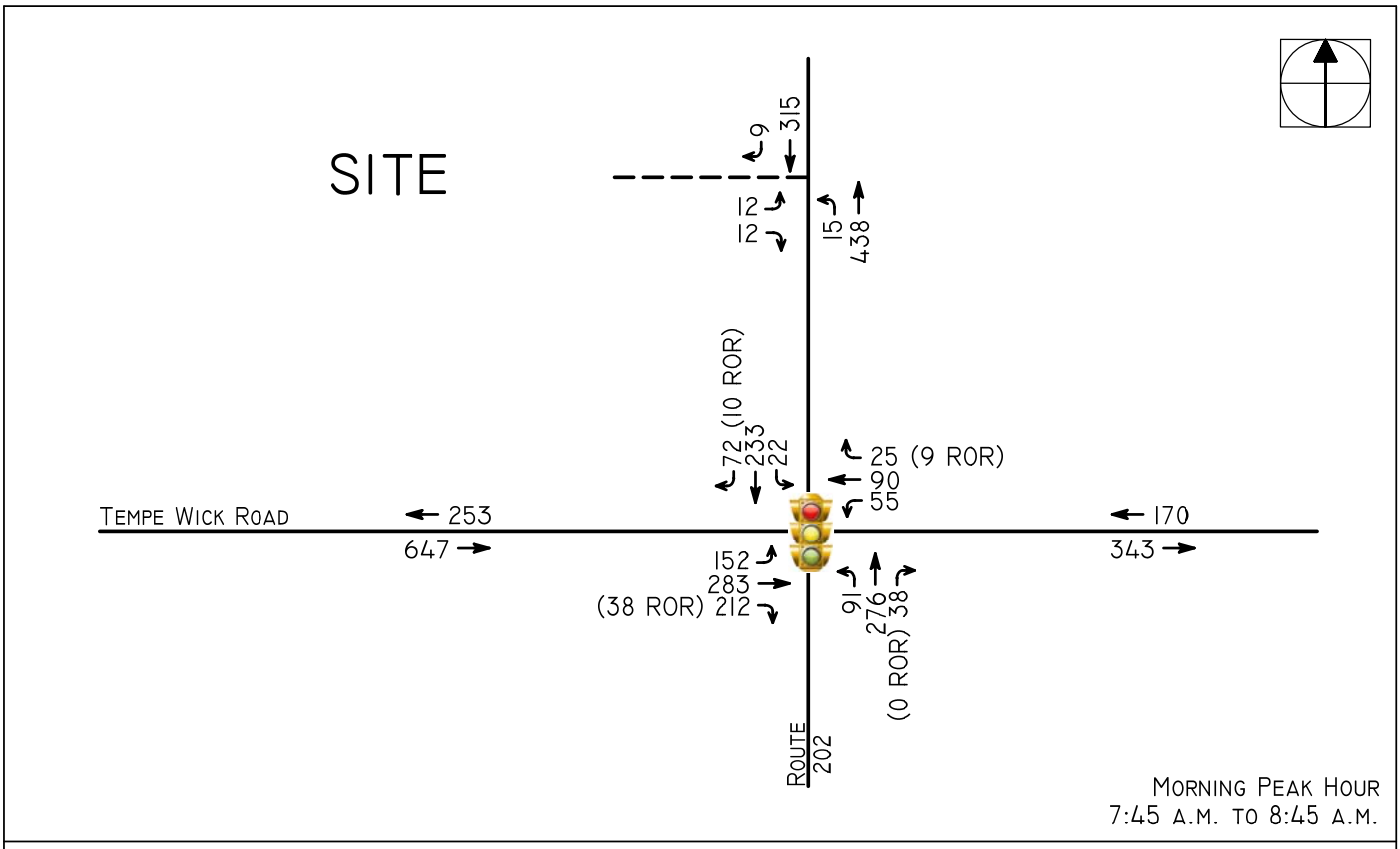


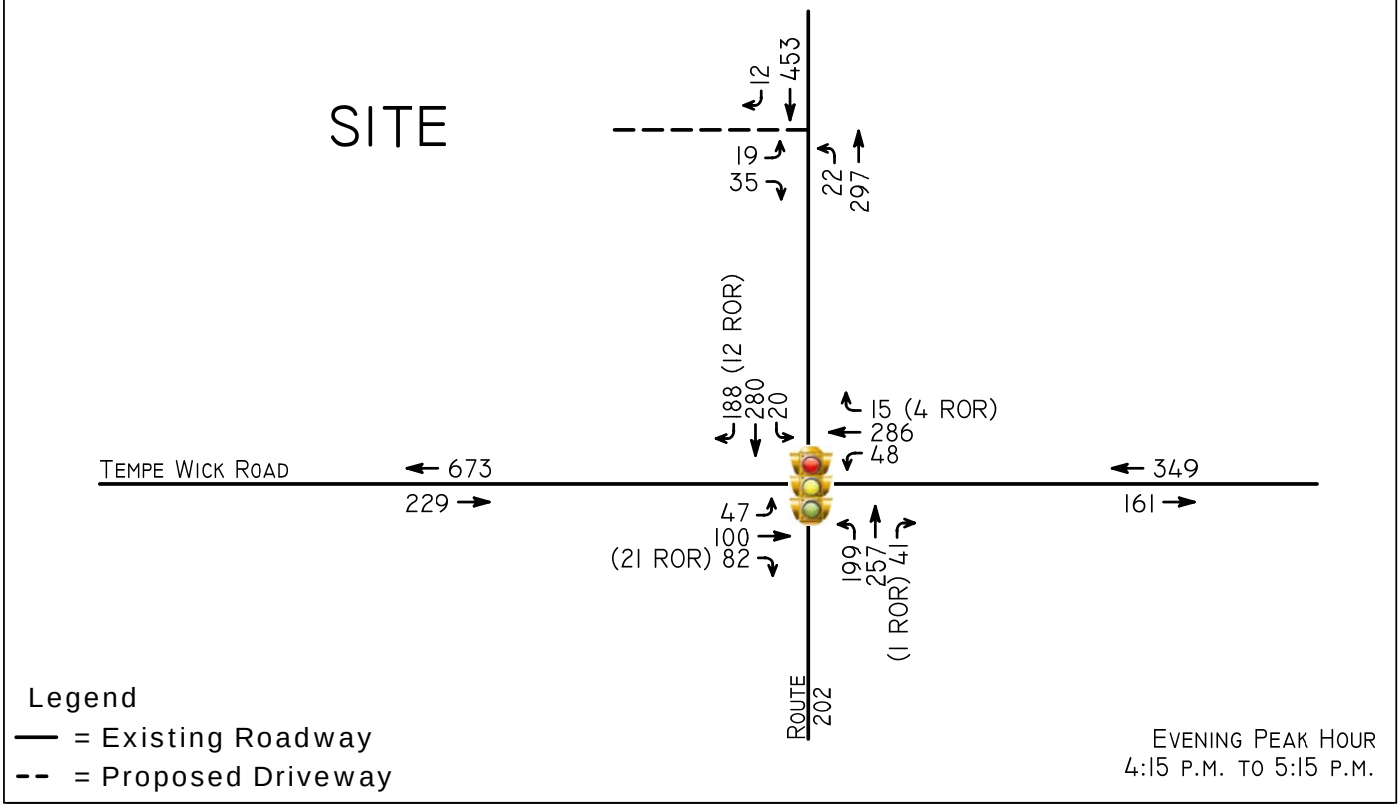
PROPOSED AGE RESTRICTED DEVELOPMENT
HARDING TOWNSHIP
MORRIS COUNTY, NEW JERSEY

FIGURE 5

DOLAN&DEAN CONSULTING ENGINEERS, LLC

NO BUILD TRAFFIC VOLUMES



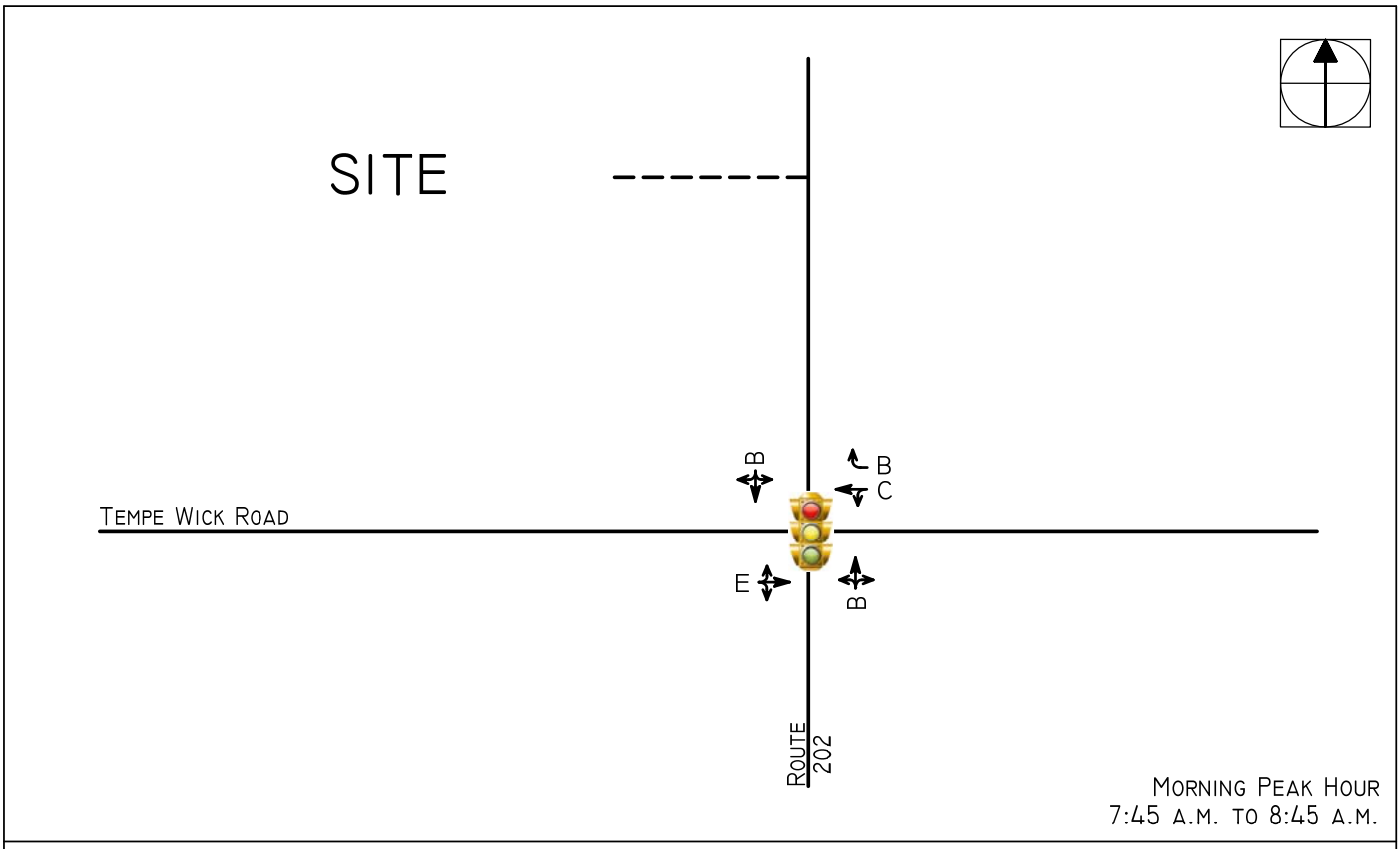


PROPOSED AGE RESTRICTED DEVELOPMENT
HARDING TOWNSHIP
MORRIS COUNTY, NEW JERSEY

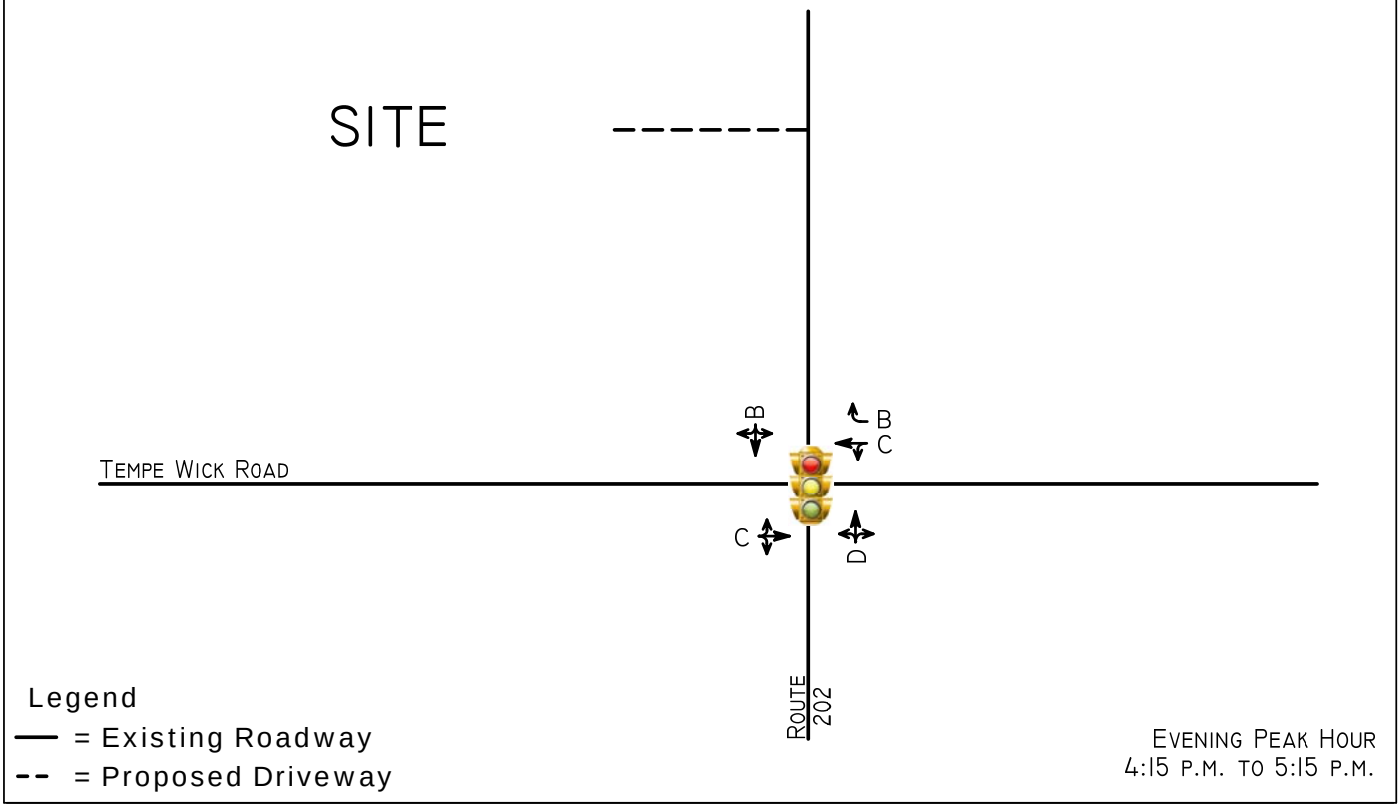
FIGURE 6

DOLAN&DEAN
CONSULTING ENGINEERS, LLC

BUILD TRAFFIC VOLUMES



MORNING PEAK HOUR
7:45 A.M. TO 8:45 A.M.



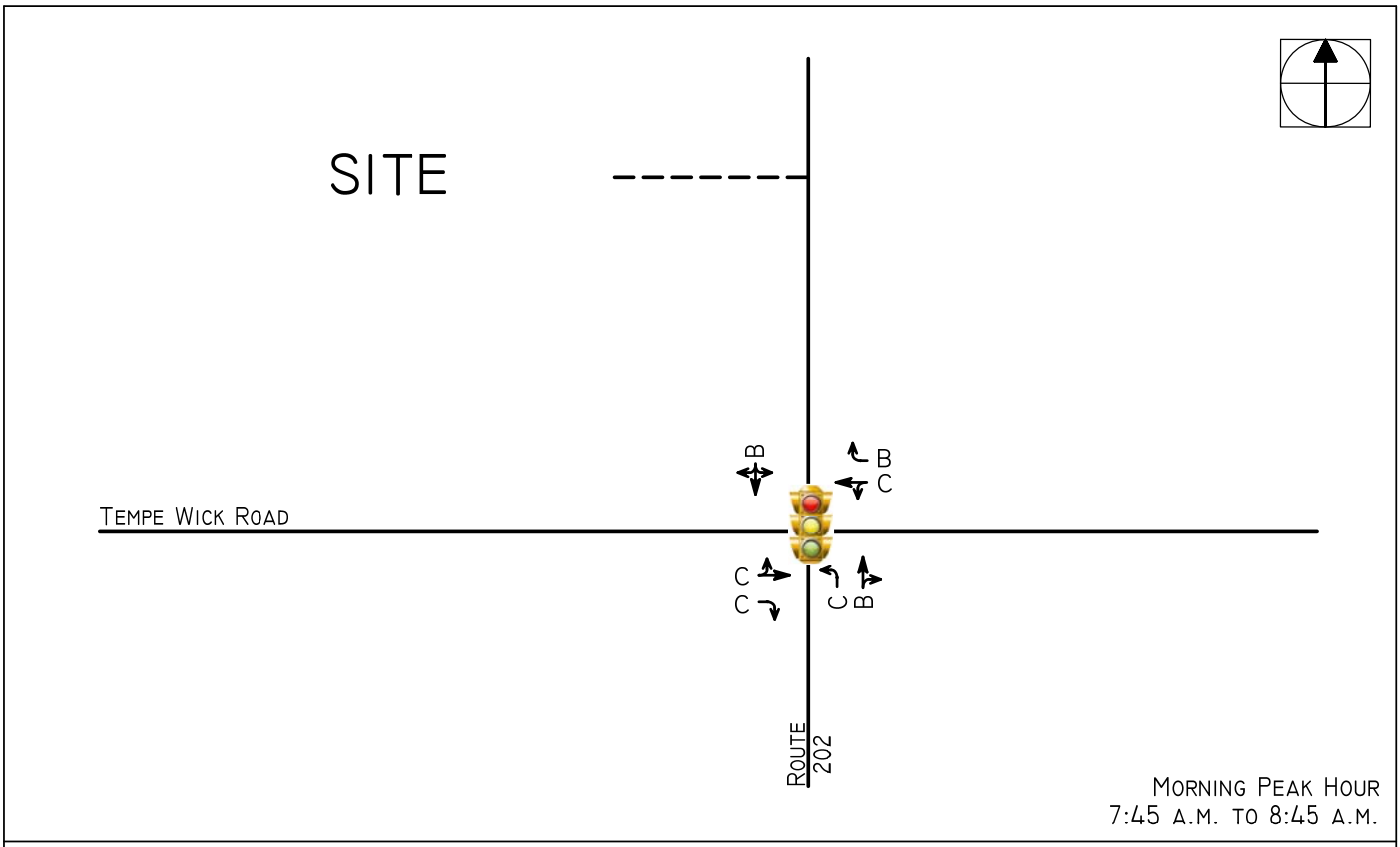
EVENING PEAK HOUR
4:15 P.M. TO 5:15 P.M.

PROPOSED AGE RESTRICTED DEVELOPMENT
HARDING TOWNSHIP
MORRIS COUNTY, NEW JERSEY

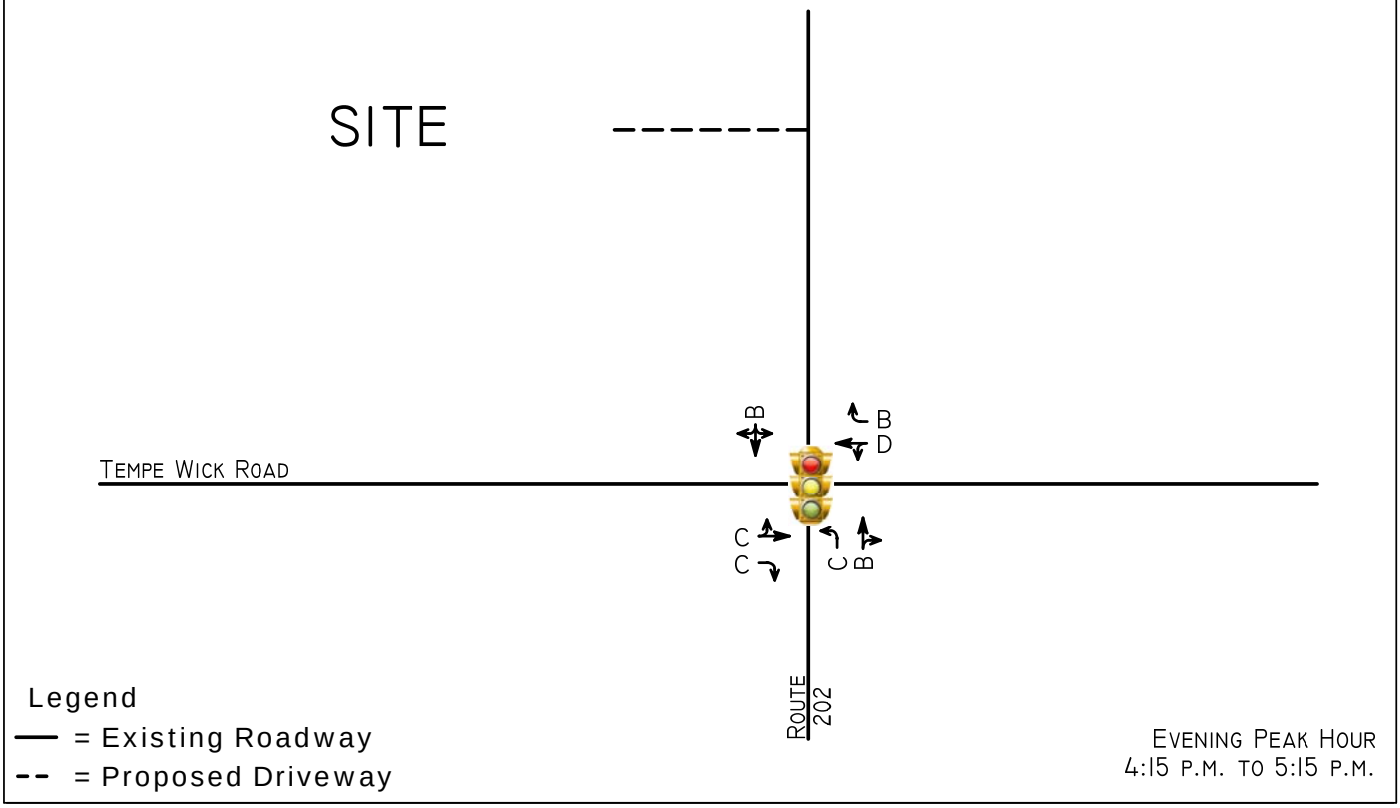
FIGURE 7A

DOLAN&DEAN
CONSULTING ENGINEERS, LLC

NO BUILD LEVELS OF SERVICE



MORNING PEAK HOUR
7:45 A.M. TO 8:45 A.M.



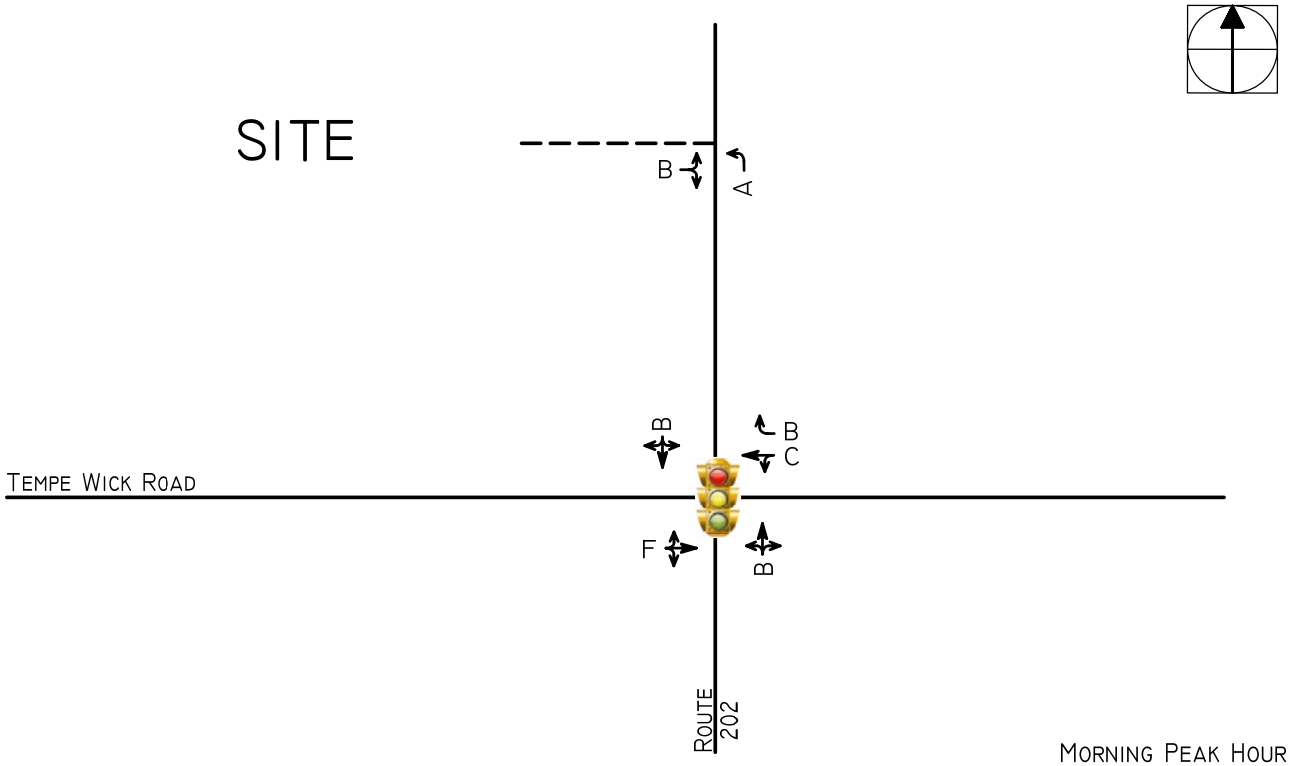
EVENING PEAK HOUR
4:15 P.M. TO 5:15 P.M.

PROPOSED AGE RESTRICTED DEVELOPMENT
HARDING TOWNSHIP
MORRIS COUNTY, NEW JERSEY

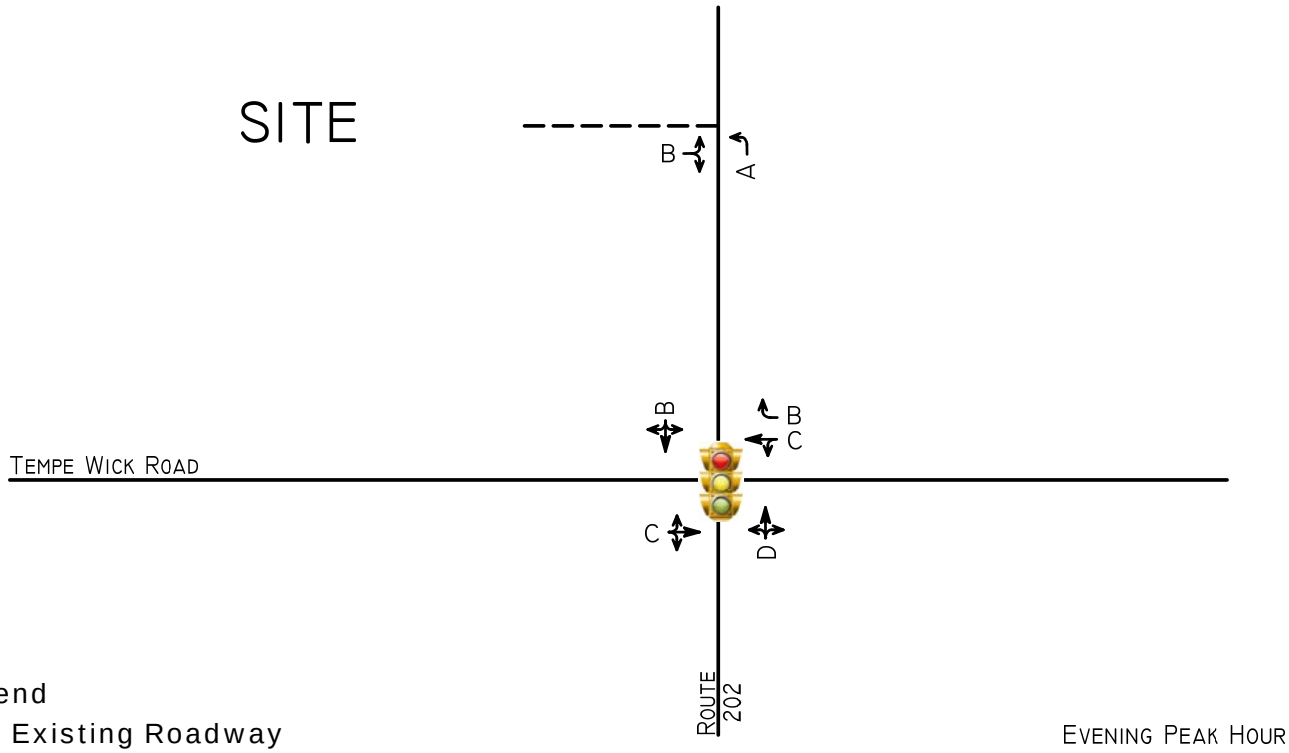
FIGURE 7B

DOLAN&DEAN
CONSULTING ENGINEERS, LLC

NO BUILD LEVELS OF SERVICE
WITH MITIGATION



MORNING PEAK HOUR
7:45 A.M. TO 8:45 A.M.



Legend
— = Existing Roadway
-- = Proposed Driveway

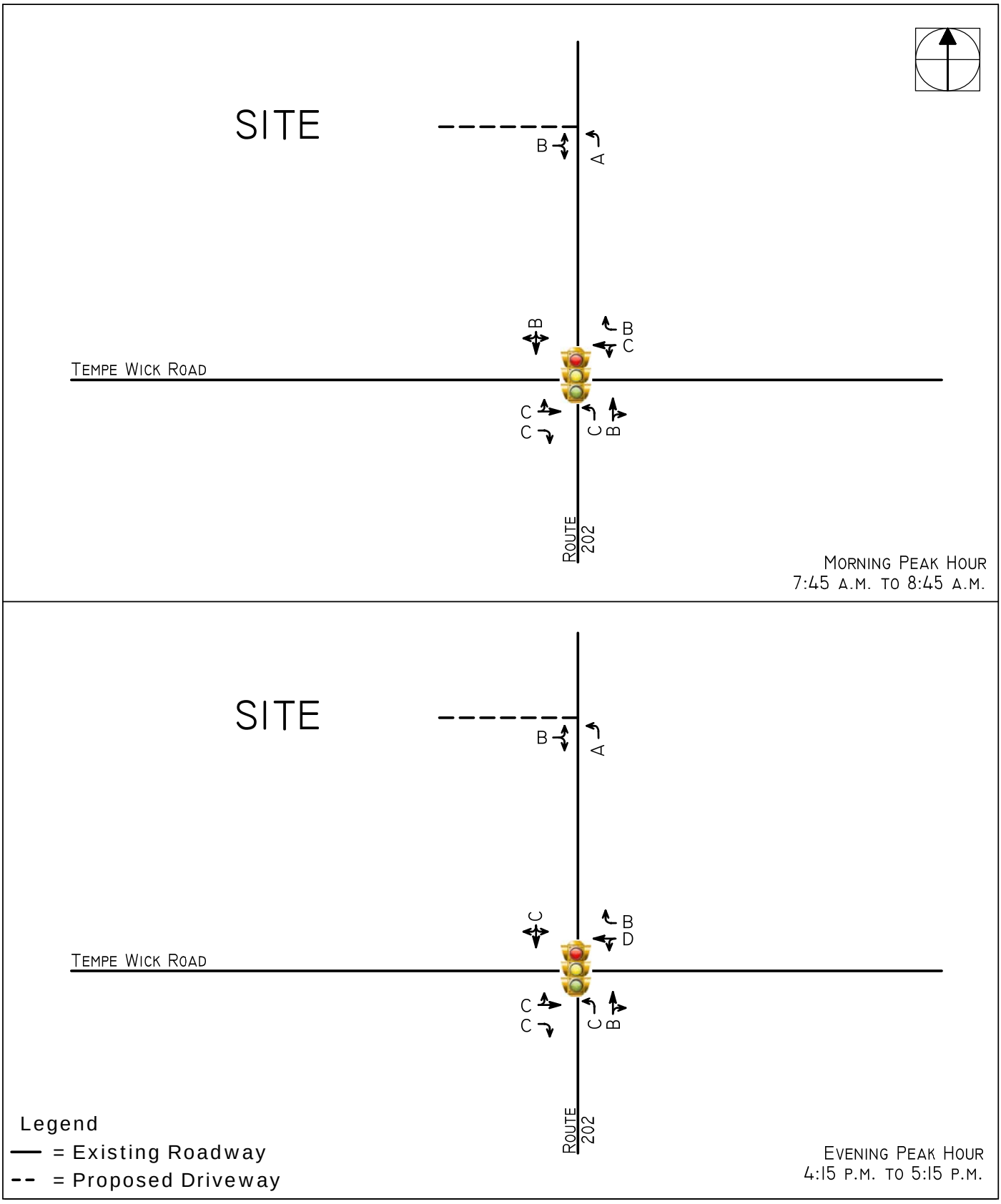
EVENING PEAK HOUR
4:15 P.M. TO 5:15 P.M.

PROPOSED AGE RESTRICTED DEVELOPMENT
HARDING TOWNSHIP
MORRIS COUNTY, NEW JERSEY

FIGURE 8A

DOLAN&DEAN
CONSULTING ENGINEERS, LLC

BUILD LEVELS OF SERVICE



PROPOSED AGE RESTRICTED DEVELOPMENT
HARDING TOWNSHIP
MORRIS COUNTY, NEW JERSEY

FIGURE 8B

DOLAN&DEAN
CONSULTING ENGINEERS, LLC

BUILD LEVELS OF SERVICE
WITH MITIGATION

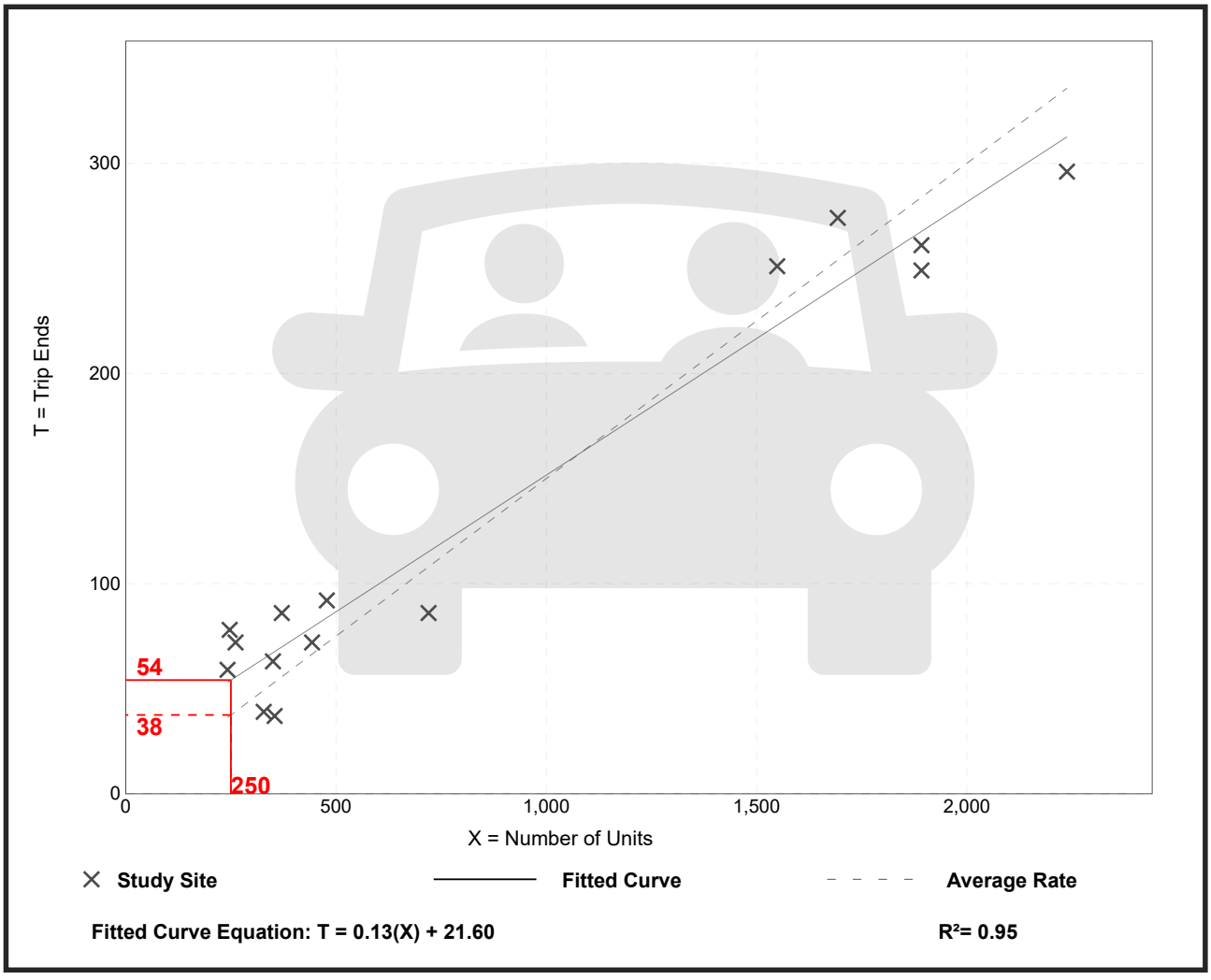
Continuing Care Retirement Community
(255)

Vehicle Trip Ends vs: **Units**
On a: **Weekday,**
Peak Hour of Adjacent Street Traffic,
One Hour Between 7 and 9 a.m.
Setting/Location: **General Urban/Suburban**
Number of Studies: 15
Avg. Num. of Units: 871
Directional Distribution: 65% entering, 35% exiting

Vehicle Trip Generation per Unit

Average Rate	Range of Rates	Standard Deviation
0.15	0.10 - 0.32	0.04

Data Plot and Equation



Fitted Curve Equation: T = 0.13(X) + 21.60

R^2= 0.95

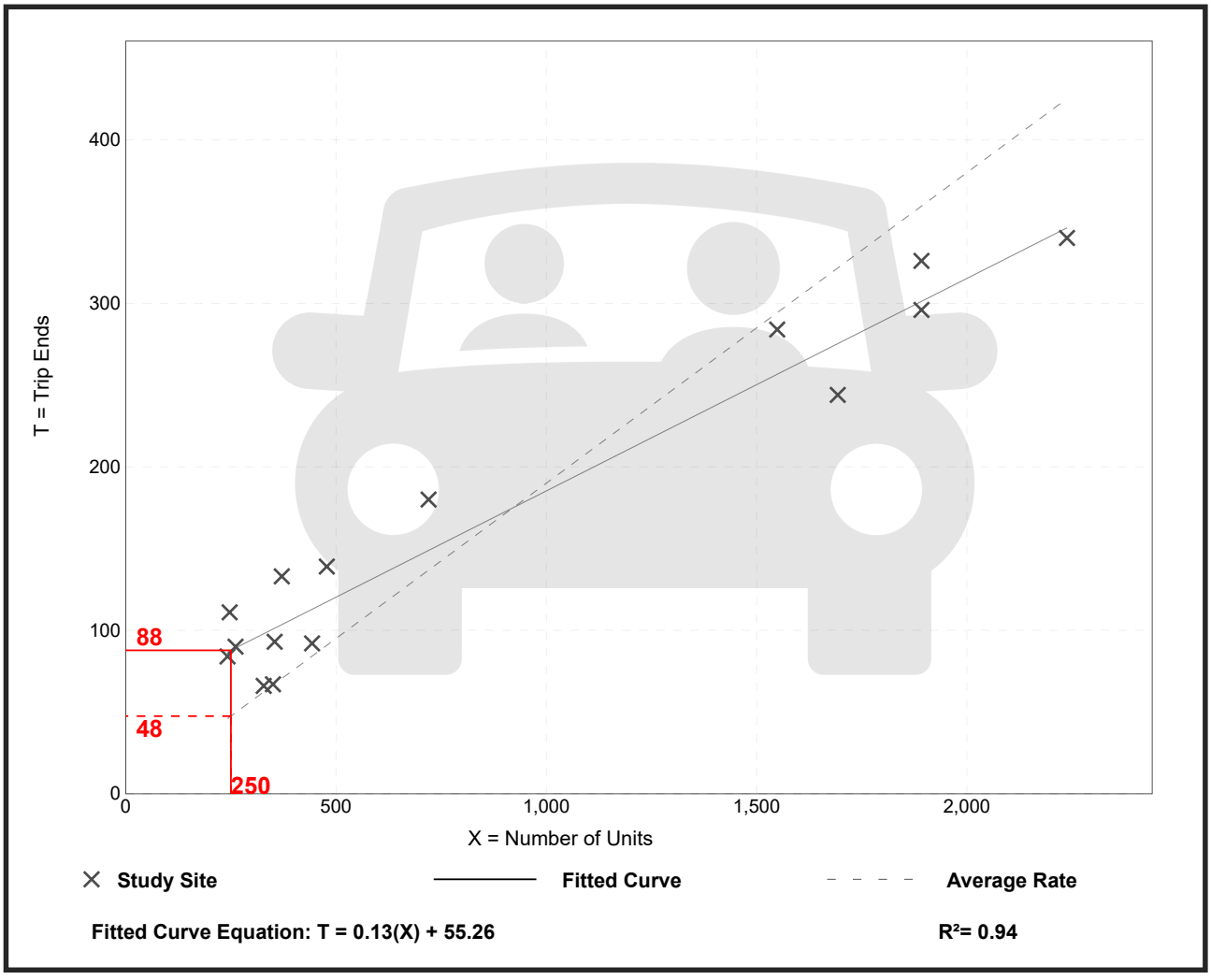
Continuing Care Retirement Community
(255)

Vehicle Trip Ends vs: **Units**
On a: **Weekday,**
Peak Hour of Adjacent Street Traffic,
One Hour Between 4 and 6 p.m.
Setting/Location: **General Urban/Suburban**
Number of Studies: 15
Avg. Num. of Units: 871
Directional Distribution: 39% entering, 61% exiting

Vehicle Trip Generation per Unit

Average Rate	Range of Rates	Standard Deviation
0.19	0.14 - 0.45	0.07

Data Plot and Equation



Fitted Curve Equation: T = 0.13(X) + 55.26

R^2= 0.94

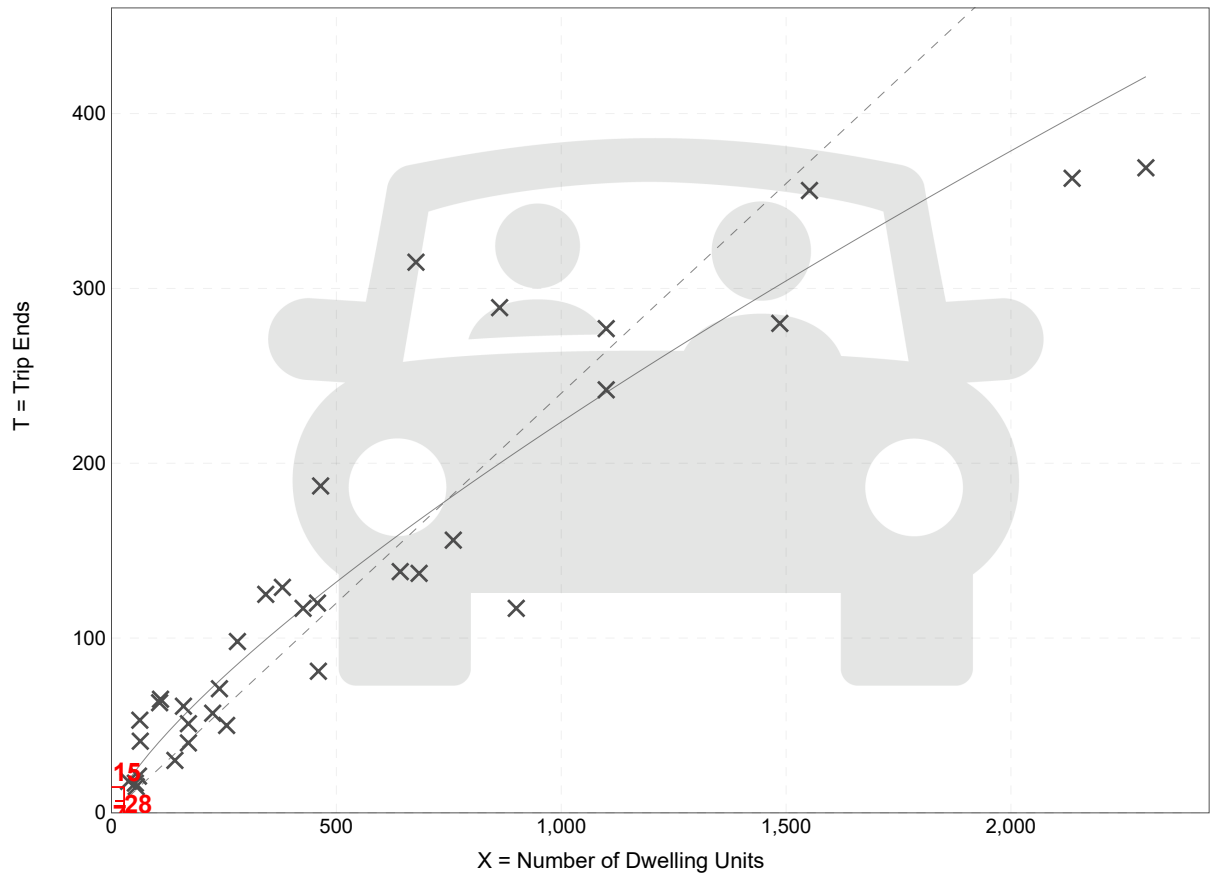
Senior Adult Housing - Single-Family
(251)

Vehicle Trip Ends vs:	**Dwelling Units**
On a:	**Weekday,**
	Peak Hour of Adjacent Street Traffic,
	One Hour Between 7 and 9 a.m.
Setting/Location:	**General Urban/Suburban**
Number of Studies:	34
Avg. Num. of Dwelling Units:	557
Directional Distribution:	33% entering, 67% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.24	0.13 - 0.84	0.10

Data Plot and Equation



Fitted Curve Equation: Ln(T) = 0.76 Ln(X) + 0.16 **R^2= 0.88**

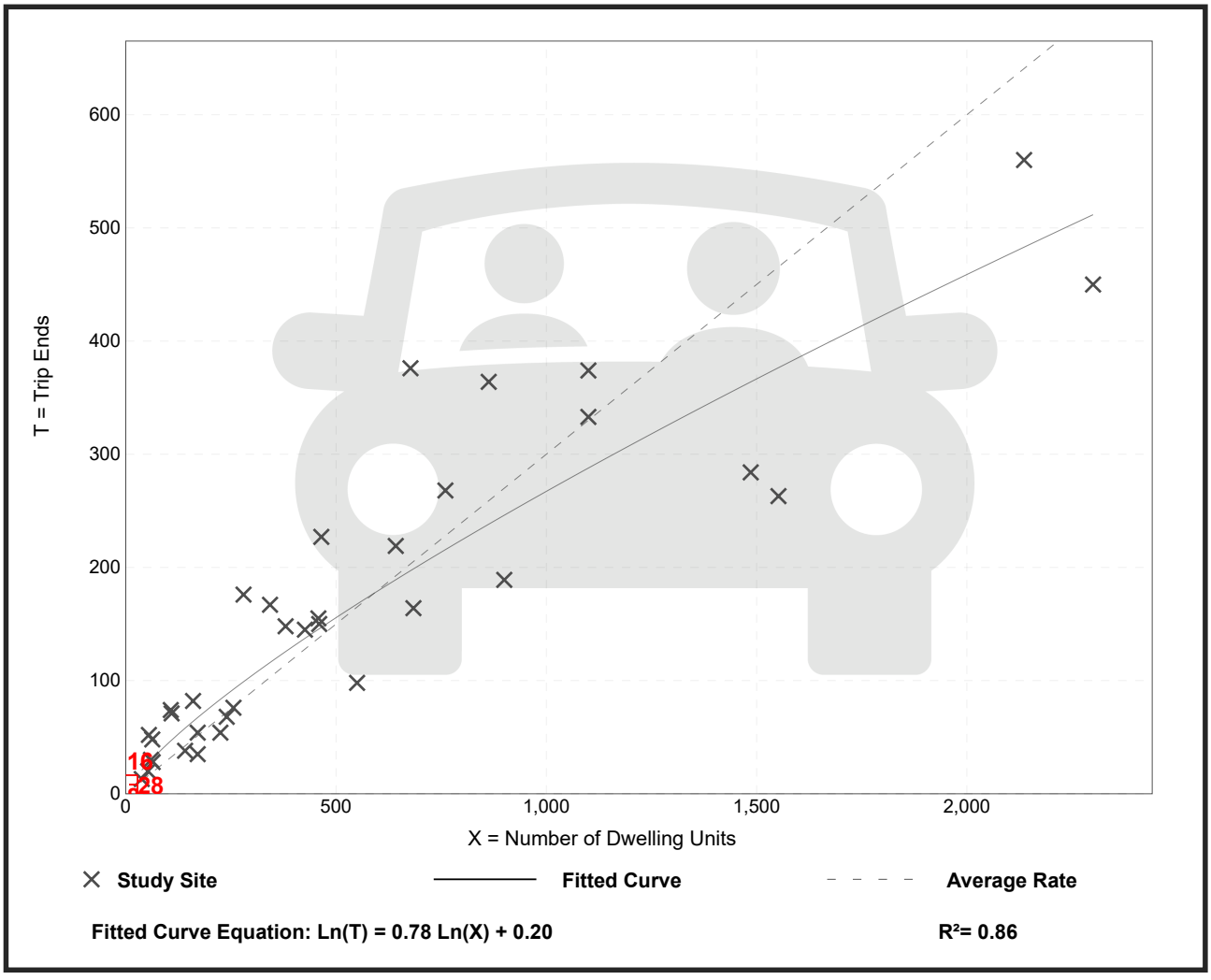
Senior Adult Housing - Single-Family
(251)

Vehicle Trip Ends vs: **Dwelling Units**
On a: **Weekday,**
Peak Hour of Adjacent Street Traffic,
One Hour Between 4 and 6 p.m.
Setting/Location: **General Urban/Suburban**
Number of Studies: 35
Avg. Num. of Dwelling Units: 556
Directional Distribution: 61% entering, 39% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.30	0.17 - 0.95	0.12

Data Plot and Equation



Fitted Curve Equation: Ln(T) = 0.78 Ln(X) + 0.20 **R^2= 0.86**

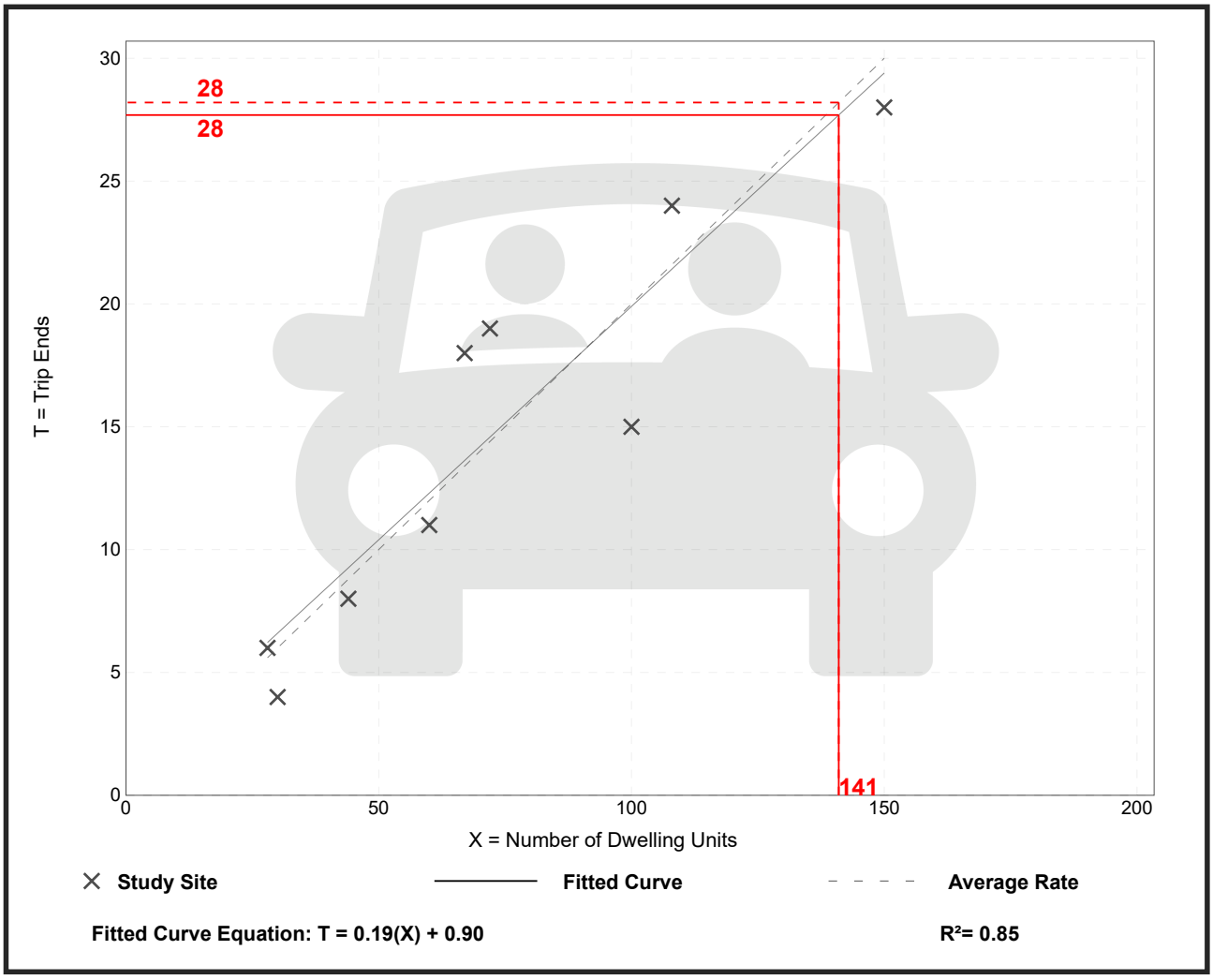
Senior Adult Housing - Multifamily
(252)

Vehicle Trip Ends vs: **Dwelling Units**
On a: **Weekday,**
Peak Hour of Adjacent Street Traffic,
One Hour Between 7 and 9 a.m.
Setting/Location: **General Urban/Suburban**
Number of Studies: 9
Avg. Num. of Dwelling Units: 73
Directional Distribution: 34% entering, 66% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.20	0.13 - 0.27	0.04

Data Plot and Equation



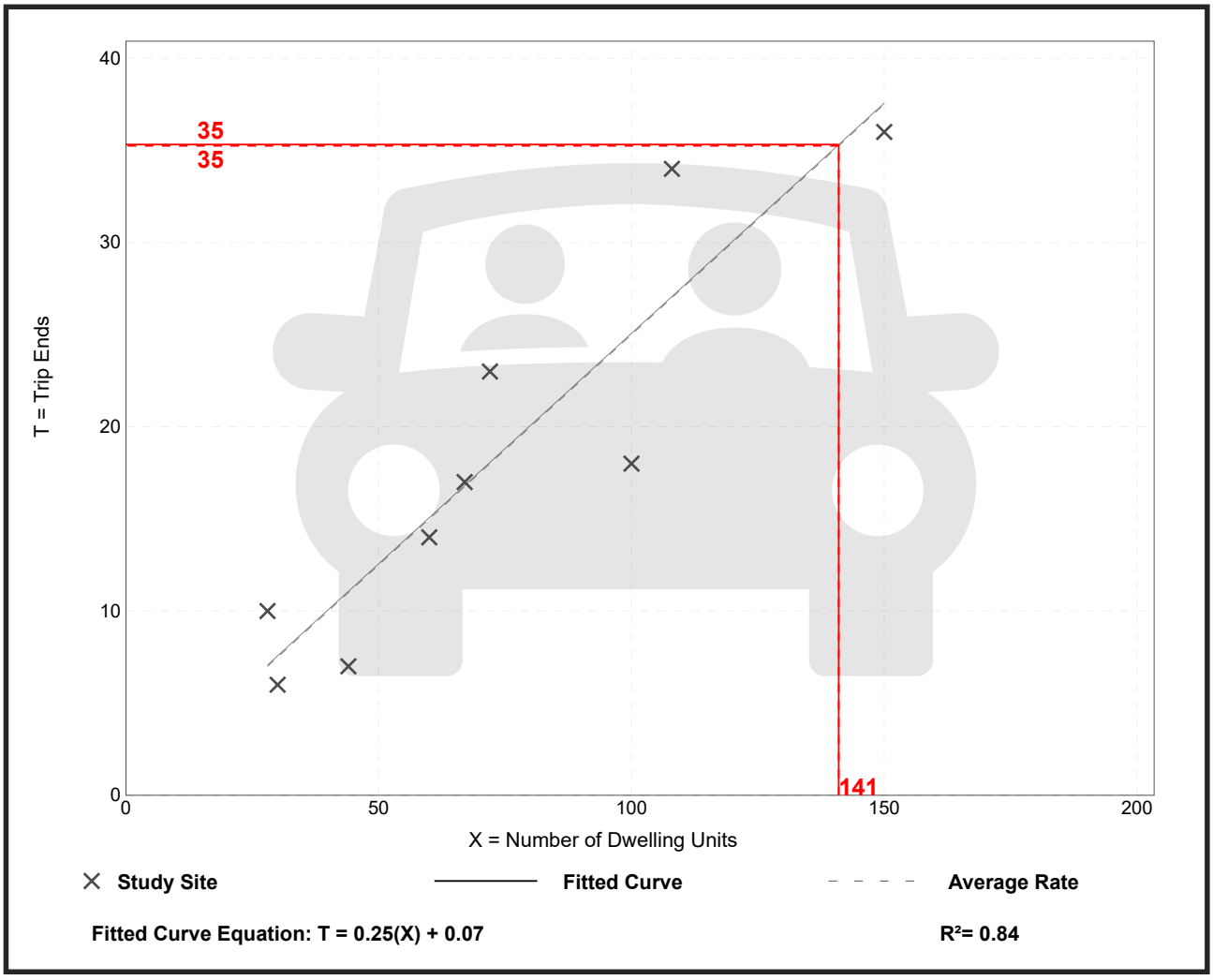
Senior Adult Housing - Multifamily
(252)

Vehicle Trip Ends vs:	**Dwelling Units**
On a:	**Weekday,**
	Peak Hour of Adjacent Street Traffic,
	One Hour Between 4 and 6 p.m.
Setting/Location:	**General Urban/Suburban**
Number of Studies:	9
Avg. Num. of Dwelling Units:	73
Directional Distribution:	56% entering, 44% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.25	0.16 - 0.36	0.06

Data Plot and Equation



Fitted Curve Equation: T = 0.25(X) + 0.07

R^2= 0.84

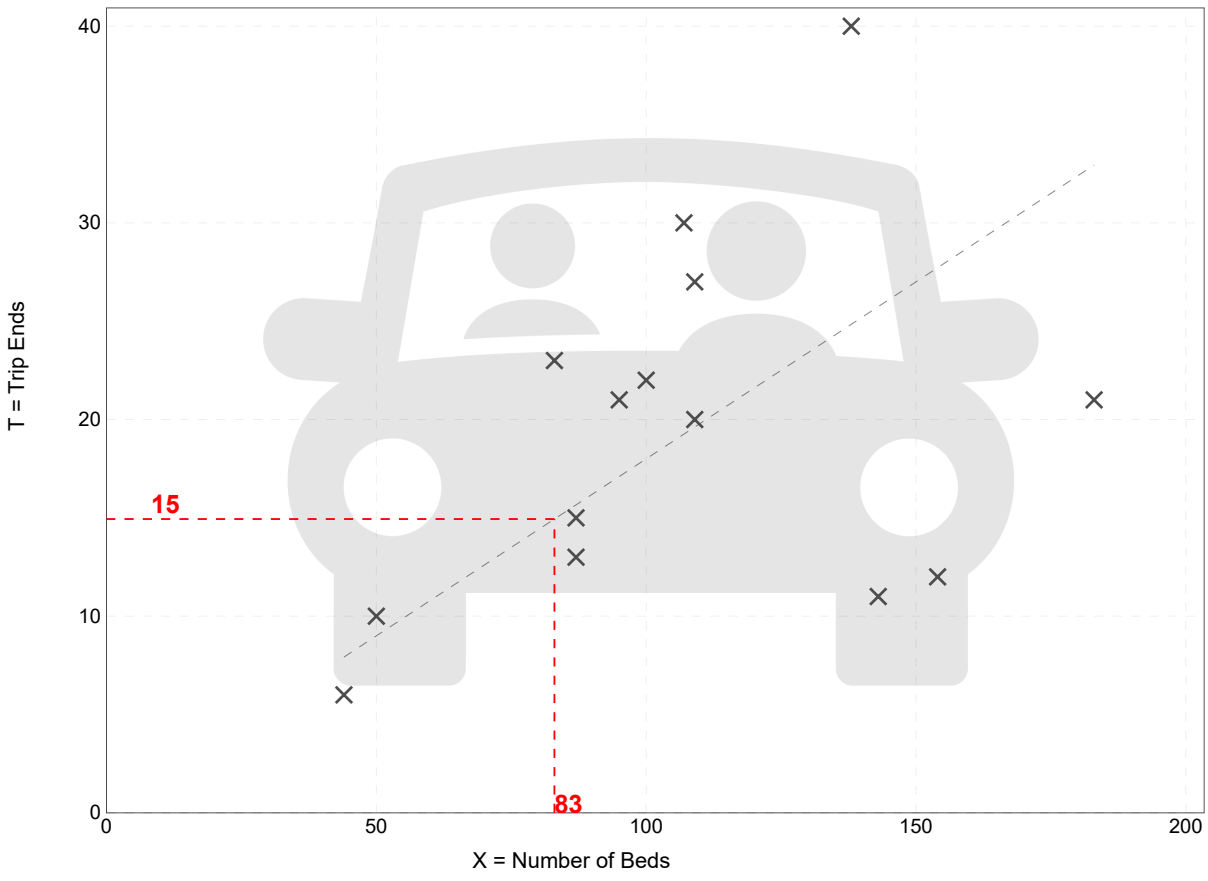
Assisted Living
(254)

Vehicle Trip Ends vs:	**Beds**
On a:	**Weekday,** **Peak Hour of Adjacent Street Traffic,** **One Hour Between 7 and 9 a.m.**
Setting/Location:	**General Urban/Suburban**
Number of Studies:	14
Avg. Num. of Beds:	106
Directional Distribution:	60% entering, 40% exiting

Vehicle Trip Generation per Bed

Average Rate	Range of Rates	Standard Deviation
0.18	0.08 - 0.29	0.08

Data Plot and Equation



Fitted Curve Equation: Not Given

R^2= ****

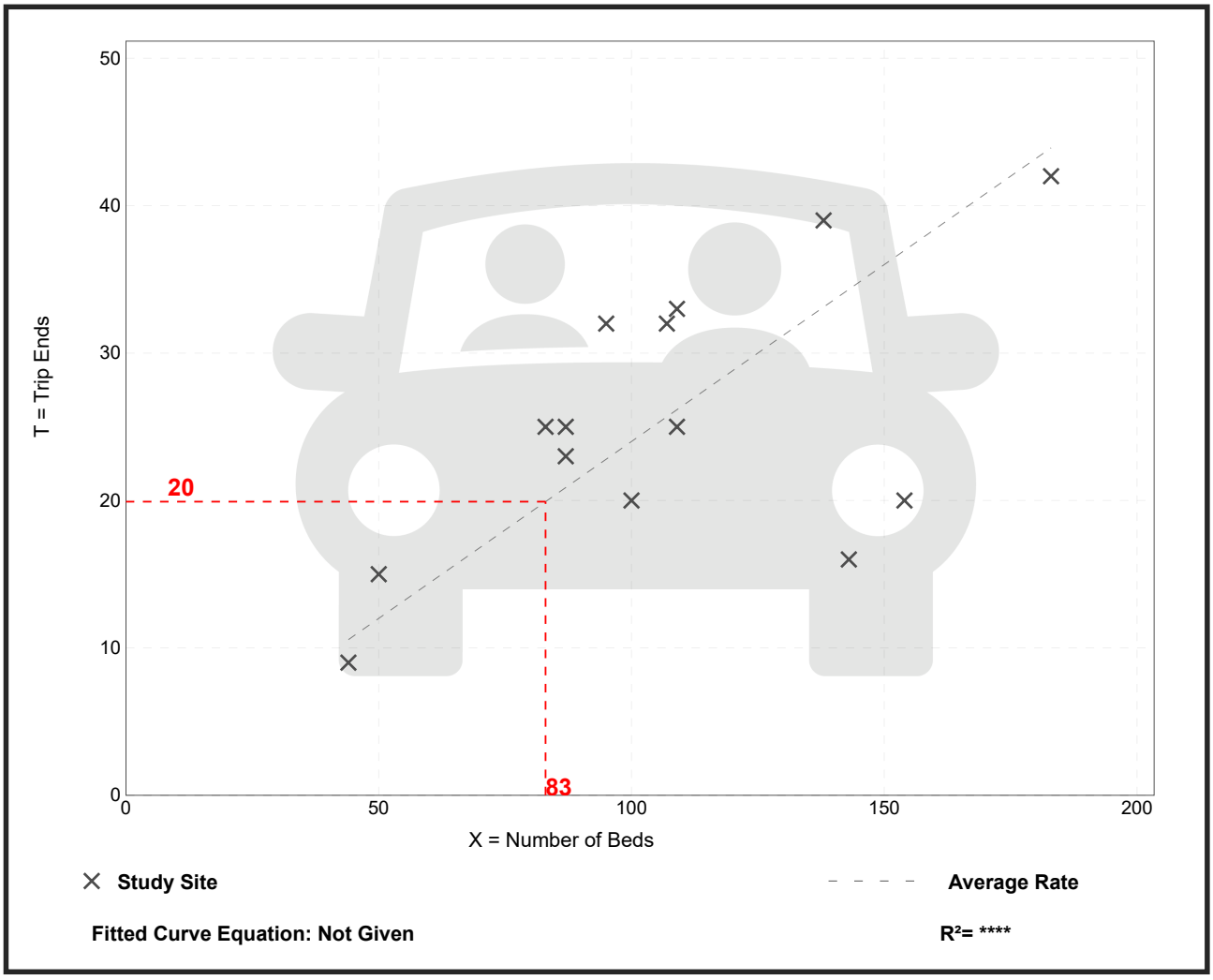
Assisted Living
(254)

Vehicle Trip Ends vs: **Beds**
On a: **Weekday,**
Peak Hour of Adjacent Street Traffic,
One Hour Between 4 and 6 p.m.
Setting/Location: **General Urban/Suburban**
Number of Studies: 14
Avg. Num. of Beds: 106
Directional Distribution: 39% entering, 61% exiting

Vehicle Trip Generation per Bed

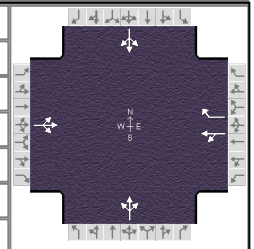
Average Rate	Range of Rates	Standard Deviation
0.24	0.11 - 0.34	0.07

Data Plot and Equation



HCS7 Signalized Intersection Results Summary

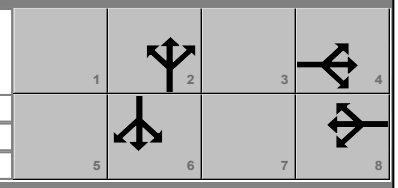
General Information				Intersection Information	
Agency				Duration, h	0.250
Analyst		Analysis Date	5/7/2019	Area Type	Other
Jurisdiction		Time Period		PHF	0.92
Urban Street		Analysis Year	2019	Analysis Period	1> 7:00
Intersection	Route 202 & Tempe Wick	File Name	Am Ex.xus		
Project Description	Am Existing				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	141	275	206	53	87	22	88	258	37	17	206	61

Signal Information			
Cycle, s	100.0	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	50.0	38.0	0.0	0.0	0.0	0.0	
Yellow	5.0	3.0	0.0	0.0	0.0	0.0	
Red	2.0	2.0	0.0	0.0	0.0	0.0	



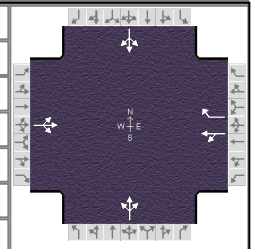
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		4		8		2		6
Case Number		8.0		7.0		8.0		8.0
Phase Duration, s		43.0		43.0		57.0		57.0
Change Period, ($Y+R_c$), s		5.0		5.0		7.0		7.0
Max Allow Headway (*MAH*), s		3.2		3.2		0.0		0.0
Queue Clearance Time (g_s), s		40.0		10.8				
Green Extension Time (g_e), s		0.0		1.9		0.0		0.0
Phase Call Probability		1.00		1.00				
Max Out Probability		1.00		0.00				

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	7	4	14	3	8	18	5	2	12	1	6	16
Adjusted Flow Rate (*v*), veh/h		635			152	14		416			298	
Adjusted Saturation Flow Rate (*s*), veh/h/ln		1635			952	1434		1584			1755	
Queue Service Time (g_s), s		29.2			0.0	0.6		6.9			0.0	
Cycle Queue Clearance Time (g_c), s		38.0			8.8	0.6		16.9			9.9	
Green Ratio (*g/C*)		0.38			0.38	0.38		0.50			0.50	
Capacity (*c*), veh/h		666			411	545		836			916	
Volume-to-Capacity Ratio (*X*)		0.953			0.370	0.026		0.498			0.325	
Back of Queue (*Q*), ft/ln (85 th percentile)		596.5			106.5	10.1		236.6			158.5	
Back of Queue (*Q*), veh/ln (85 th percentile)		23.5			4.1	0.4		9.1			6.2	
Queue Storage Ratio (*RQ*) (85 th percentile)		0.00			0.00	0.00		0.00			0.00	
Uniform Delay (d_1), s/veh		31.2			21.4	19.4		16.5			15.0	
Incremental Delay (d_2), s/veh		23.6			0.2	0.0		2.1			0.9	
Initial Queue Delay (d_3), s/veh		0.0			0.0	0.0		0.0			0.0	
Control Delay (*d*), s/veh		54.8			21.6	19.4		18.6			15.9	
Level of Service (LOS)		D			C	B		B			B	
Approach Delay, s/veh / LOS	54.8	D		21.4	C		18.6	B		15.9	B	
Intersection Delay, s/veh / LOS	33.6						C					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS								
Bicycle LOS Score / LOS								

HCS7 Signalized Intersection Results Summary

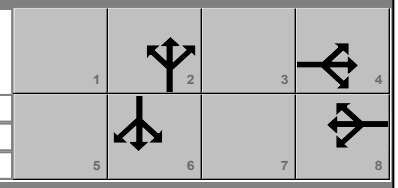
General Information				Intersection Information	
Agency				Duration, h	0.250
Analyst		Analysis Date	5/7/2019	Area Type	Other
Jurisdiction		Time Period		PHF	0.94
Urban Street		Analysis Year	2019	Analysis Period	1> 7:00
Intersection	Route 202 & Tempe Wick	File Name	Pm Ex.xus		
Project Description	Pm Existing				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	37	97	80	47	278	12	193	229	40	15	249	169

Signal Information			
Cycle, s	100.0	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	50.0	38.0	0.0	0.0	0.0	0.0	
Yellow	5.0	3.0	0.0	0.0	0.0	0.0	
Red	2.0	2.0	0.0	0.0	0.0	0.0	



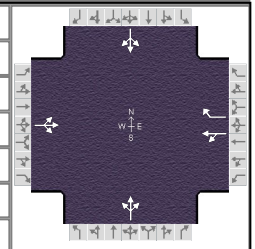
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		4		8		2		6
Case Number		8.0		7.0		8.0		8.0
Phase Duration, s		43.0		43.0		57.0		57.0
Change Period, ($Y+R_c$), s		5.0		5.0		7.0		7.0
Max Allow Headway (*MAH*), s		3.2		3.2		0.0		0.0
Queue Clearance Time (g_s), s		10.4		16.6				
Green Extension Time (g_e), s		1.1		1.1		0.0		0.0
Phase Call Probability		1.00		1.00				
Max Out Probability		0.00		0.00				

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	7	4	14	3	8	18	5	2	12	1	6	16
Adjusted Flow Rate (*v*), veh/h		205			346	9		490			448	
Adjusted Saturation Flow Rate (*s*), veh/h/ln		1585			1759	1296		1188			1755	
Queue Service Time (g_s), s		0.0			4.1	0.4		20.4			0.0	
Cycle Queue Clearance Time (g_c), s		8.4			14.6	0.4		37.5			17.2	
Green Ratio (*g/C*)		0.38			0.38	0.38		0.50			0.50	
Capacity (*c*), veh/h		645			710	493		645			915	
Volume-to-Capacity Ratio (*X*)		0.318			0.487	0.017		0.760			0.490	
Back of Queue (*Q*), ft/ln (85 th percentile)		135			220.1	6.6		364.9			246.4	
Back of Queue (*Q*), veh/ln (85 th percentile)		5.2			8.6	0.2		14.4			9.7	
Queue Storage Ratio (*RQ*) (85 th percentile)		0.00			0.00	0.00		0.00			0.00	
Uniform Delay (d_1), s/veh		21.8			23.7	19.3		23.0			16.8	
Incremental Delay (d_2), s/veh		0.1			0.2	0.0		8.2			1.9	
Initial Queue Delay (d_3), s/veh		0.0			0.0	0.0		0.0			0.0	
Control Delay (*d*), s/veh		21.9			23.8	19.4		31.2			18.7	
Level of Service (LOS)		C			C	B		C			B	
Approach Delay, s/veh / LOS	21.9	C		23.7	C		31.2	C		18.7	B	
Intersection Delay, s/veh / LOS	24.4						C					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS								
Bicycle LOS Score / LOS								

HCS7 Signalized Intersection Results Summary

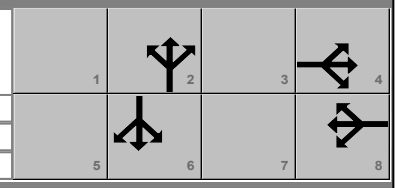
General Information				Intersection Information	
Agency				Duration, h	0.250
Analyst		Analysis Date	5/7/2019	Area Type	Other
Jurisdiction		Time Period		PHF	0.92
Urban Street		Analysis Year	2019	Analysis Period	1> 7:00
Intersection	Route 202 & Tempe Wick	File Name	Am Nb.xus		
Project Description	Am NoBuild				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	147	283	212	55	90	23	91	268	38	19	221	65

Signal Information			
Cycle, s	100.0	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	50.0	38.0	0.0	0.0	0.0	0.0	
Yellow	5.0	3.0	0.0	0.0	0.0	0.0	
Red	2.0	2.0	0.0	0.0	0.0	0.0	



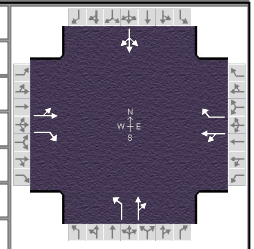
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		4		8		2		6
Case Number		8.0		7.0		8.0		8.0
Phase Duration, s		43.0		43.0		57.0		57.0
Change Period, ($Y+R_c$), s		5.0		5.0		7.0		7.0
Max Allow Headway (*MAH*), s		3.3		3.3		0.0		0.0
Queue Clearance Time (g_s), s		40.0		11.4				
Green Extension Time (g_e), s		0.0		2.0		0.0		0.0
Phase Call Probability		1.00		1.00				
Max Out Probability		1.00		0.00				

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	7	4	14	3	8	18	5	2	12	1	6	16
Adjusted Flow Rate (*v*), veh/h		657			158	15		432			321	
Adjusted Saturation Flow Rate (*s*), veh/h/ln		1626			954	1434		1577			1751	
Queue Service Time (g_s), s		28.6			0.0	0.7		7.0			0.0	
Cycle Queue Clearance Time (g_c), s		38.0			9.4	0.7		17.8			10.9	
Green Ratio (*g/C*)		0.38			0.38	0.38		0.50			0.50	
Capacity (*c*), veh/h		663			412	545		833			914	
Volume-to-Capacity Ratio (*X*)		0.991			0.382	0.028		0.518			0.351	
Back of Queue (*Q*), ft/ln (85 th percentile)		667.8			110.2	10.9		247			170.8	
Back of Queue (*Q*), veh/ln (85 th percentile)		26.3			4.2	0.4		9.5			6.7	
Queue Storage Ratio (*RQ*) (85 th percentile)		0.00			0.00	0.00		0.00			0.00	
Uniform Delay (d_1), s/veh		32.0			21.5	19.4		16.7			15.2	
Incremental Delay (d_2), s/veh		32.5			0.2	0.0		2.3			1.1	
Initial Queue Delay (d_3), s/veh		0.0			0.0	0.0		0.0			0.0	
Control Delay (*d*), s/veh		64.5			21.7	19.4		19.0			16.3	
Level of Service (LOS)		E			C	B		B			B	
Approach Delay, s/veh / LOS	64.5	E		21.5	C		19.0	B		16.3	B	
Intersection Delay, s/veh / LOS	37.6						D					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS								
Bicycle LOS Score / LOS								

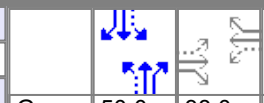
HCS7 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency				Duration, h	0.250
Analyst		Analysis Date	5/7/2019	Area Type	Other
Jurisdiction		Time Period		PHF	0.92
Urban Street		Analysis Year	2019	Analysis Period	1> 7:00
Intersection	Route 202 & Tempe Wick	File Name	Am Nb - With Mit.xus		
Project Description	Am NoBuild - With Mitigation				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	147	283	212	55	90	23	91	268	38	19	221	65

Signal Information			
Cycle, s	100.0	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On



							1	2	3	4
Green	50.0	38.0	0.0	0.0	0.0	0.0	5	6	7	8
Yellow	5.0	3.0	0.0	0.0	0.0	0.0				
Red	2.0	2.0	0.0	0.0	0.0	0.0				

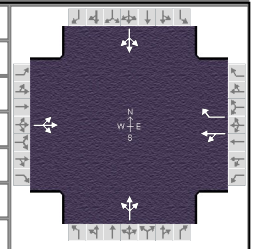
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		4		8		2		6
Case Number		7.0		7.0		6.0		8.0
Phase Duration, s		43.0		43.0		57.0		57.0
Change Period, ($Y+R_c$), s		5.0		5.0		7.0		7.0
Max Allow Headway (*MAH*), s		3.2		3.2		0.0		0.0
Queue Clearance Time (g_s), s		27.2		9.9				
Green Extension Time (g_e), s		1.5		1.8		0.0		0.0
Phase Call Probability		1.00		1.00				
Max Out Probability		0.05		0.00				

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	7	4	14	3	8	18	5	2	12	1	6	16
Adjusted Flow Rate (*v*), veh/h		467	189		158	15	99	333			321	
Adjusted Saturation Flow Rate (*s*), veh/h/ln		1619	1610		1268	1434	1096	1786			1751	
Queue Service Time (g_s), s		17.4	8.3		0.0	0.7	6.0	11.4			0.0	
Cycle Queue Clearance Time (g_c), s		25.2	8.3		7.9	0.7	16.9	11.4			10.9	
Green Ratio (*g/C*)		0.38	0.38		0.38	0.38	0.50	0.50			0.50	
Capacity (*c*), veh/h		664	612		532	545	501	893			914	
Volume-to-Capacity Ratio (*X*)		0.704	0.309		0.296	0.028	0.198	0.372			0.351	
Back of Queue (*Q*), ft/ln (85 th percentile)		331.3	121.3		108.6	10.9	73.2	181.2			171.1	
Back of Queue (*Q*), veh/ln (85 th percentile)		13.0	4.9		4.1	0.4	2.9	7.0			6.7	
Queue Storage Ratio (*RQ*) (85 th percentile)		0.00	0.00		0.00	0.00	0.00	0.00			0.00	
Uniform Delay (d_1), s/veh		27.1	21.8		21.3	19.4	20.4	15.4			15.2	
Incremental Delay (d_2), s/veh		2.9	0.1		0.1	0.0	0.9	1.2			1.1	
Initial Queue Delay (d_3), s/veh		0.0	0.0		0.0	0.0	0.0	0.0			0.0	
Control Delay (*d*), s/veh		29.9	21.9		21.4	19.4	21.3	16.6			16.3	
Level of Service (LOS)		C	C		C	B	C	B			B	
Approach Delay, s/veh / LOS	27.6	C		21.3	C		17.6	B		16.3	B	
Intersection Delay, s/veh / LOS	21.9						C					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS								
Bicycle LOS Score / LOS								

HCS7 Signalized Intersection Results Summary

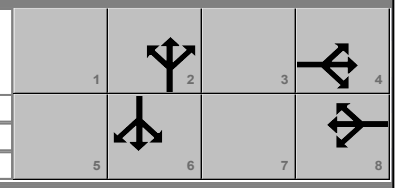
General Information				Intersection Information	
Agency				Duration, h	0.250
Analyst		Analysis Date	5/7/2019	Area Type	Other
Jurisdiction		Time Period		PHF	0.94
Urban Street		Analysis Year	2019	Analysis Period	1> 7:00
Intersection	Route 202 & Tempe Wick	File Name	Pm Ex.xus		
Project Description	Pm NoBuild				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	40	100	82	48	286	12	199	245	41	15	261	177

Signal Information			
Cycle, s	100.0	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	50.0	38.0	0.0	0.0	0.0	0.0	
Yellow	5.0	3.0	0.0	0.0	0.0	0.0	
Red	2.0	2.0	0.0	0.0	0.0	0.0	



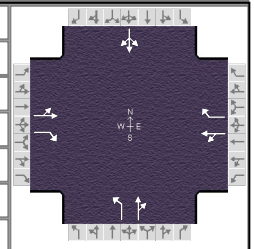
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		4		8		2		6
Case Number		8.0		7.0		8.0		8.0
Phase Duration, s		43.0		43.0		57.0		57.0
Change Period, ($Y+R_c$), s		5.0		5.0		7.0		7.0
Max Allow Headway (*MAH*), s		3.2		3.2		0.0		0.0
Queue Clearance Time (g_s), s		10.8		17.1				
Green Extension Time (g_e), s		1.1		1.1		0.0		0.0
Phase Call Probability		1.00		1.00				
Max Out Probability		0.00		0.00				

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	7	4	14	3	8	18	5	2	12	1	6	16
Adjusted Flow Rate (*v*), veh/h		214			355	9		515			469	
Adjusted Saturation Flow Rate (*s*), veh/h/ln		1571			1758	1296		1156			1760	
Queue Service Time (g_s), s		0.0			4.9	0.4		23.8			0.0	
Cycle Queue Clearance Time (g_c), s		8.8			15.1	0.4		42.1			18.3	
Green Ratio (*g/C*)		0.38			0.38	0.38		0.50			0.50	
Capacity (*c*), veh/h		640			709	493		629			917	
Volume-to-Capacity Ratio (*X*)		0.334			0.501	0.017		0.819			0.512	
Back of Queue (*Q*), ft/ln (85 th percentile)		140.2			226.5	6.6		410			260.2	
Back of Queue (*Q*), veh/ln (85 th percentile)		5.4			8.8	0.2		16.1			10.2	
Queue Storage Ratio (*RQ*) (85 th percentile)		0.00			0.00	0.00		0.00			0.00	
Uniform Delay (d_1), s/veh		21.9			23.8	19.3		24.6			17.1	
Incremental Delay (d_2), s/veh		0.1			0.2	0.0		11.4			2.0	
Initial Queue Delay (d_3), s/veh		0.0			0.0	0.0		0.0			0.0	
Control Delay (*d*), s/veh		22.0			24.0	19.4		36.0			19.1	
Level of Service (LOS)		C			C	B		D			B	
Approach Delay, s/veh / LOS	22.0	C		23.9	C		36.0	D		19.1	B	
Intersection Delay, s/veh / LOS	26.2						C					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS								
Bicycle LOS Score / LOS								

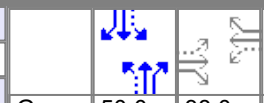
HCS7 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency				Duration, h	0.250
Analyst		Analysis Date	5/7/2019	Area Type	Other
Jurisdiction		Time Period		PHF	0.94
Urban Street		Analysis Year	2019	Analysis Period	1> 7:00
Intersection	Route 202 & Tempe Wick	File Name	Pm Nb - With Mit.xus		
Project Description	Pm NoBuild - With Mitigation				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	40	100	82	48	286	12	199	245	41	15	261	177

Signal Information			
Cycle, s	100.0	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On



							1	2	3	4
Green	50.0	38.0	0.0	0.0	0.0	0.0	5	6	7	8
Yellow	5.0	3.0	0.0	0.0	0.0	0.0				
Red	2.0	2.0	0.0	0.0	0.0	0.0				

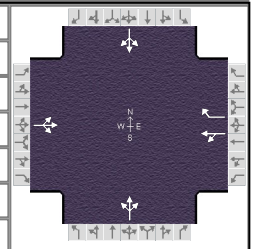
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		4		8		2		6
Case Number		7.0		7.0		6.0		8.0
Phase Duration, s		43.0		43.0		57.0		57.0
Change Period, ($Y+R_c$), s		5.0		5.0		7.0		7.0
Max Allow Headway (*MAH*), s		3.1		3.1		0.0		0.0
Queue Clearance Time (g_s), s		7.7		17.0				
Green Extension Time (g_e), s		1.1		1.1		0.0		0.0
Phase Call Probability		1.00		1.00				
Max Out Probability		0.00		0.00				

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	7	4	14	3	8	18	5	2	12	1	6	16
Adjusted Flow Rate (*v*), veh/h		149	65		355	9	212	303			469	
Adjusted Saturation Flow Rate (*s*), veh/h/ln		1493	1610		1773	1296	953	1824			1735	
Queue Service Time (g_s), s		0.0	2.6		4.8	0.4	19.5	10.0			0.0	
Cycle Queue Clearance Time (g_c), s		5.7	2.6		15.0	0.4	37.8	10.0			18.3	
Green Ratio (*g/C*)		0.38	0.38		0.38	0.38	0.50	0.50			0.50	
Capacity (*c*), veh/h		614	612		715	493	374	912			904	
Volume-to-Capacity Ratio (*X*)		0.243	0.106		0.497	0.017	0.566	0.332			0.519	
Back of Queue (*Q*), ft/ln (85 th percentile)		100.8	43.1		226.5	6.6	181.8	160			261.4	
Back of Queue (*Q*), veh/ln (85 th percentile)		3.9	1.7		8.8	0.2	7.3	6.3			10.3	
Queue Storage Ratio (*RQ*) (85 th percentile)		0.00	0.00		0.00	0.00	0.00	0.00			0.00	
Uniform Delay (d_1), s/veh		20.9	20.0		23.8	19.3	30.0	15.0			17.1	
Incremental Delay (d_2), s/veh		0.1	0.0		0.2	0.0	6.1	1.0			2.1	
Initial Queue Delay (d_3), s/veh		0.0	0.0		0.0	0.0	0.0	0.0			0.0	
Control Delay (*d*), s/veh		21.0	20.1		24.0	19.4	36.1	16.0			19.2	
Level of Service (LOS)		C	C		C	B	D	B			B	
Approach Delay, s/veh / LOS	20.7	C		23.9	C		24.3	C		19.2	B	
Intersection Delay, s/veh / LOS	22.2						C					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS								
Bicycle LOS Score / LOS								

HCS7 Signalized Intersection Results Summary

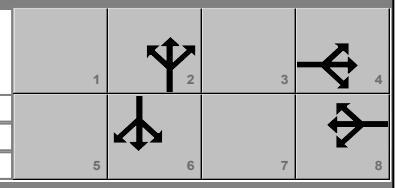
General Information				Intersection Information	
Agency				Duration, h	0.250
Analyst		Analysis Date	5/7/2019	Area Type	Other
Jurisdiction		Time Period		PHF	0.92
Urban Street		Analysis Year	2019	Analysis Period	1> 7:00
Intersection	Route 202 & Tempe Wick	File Name	Am B.xus		
Project Description	Am Build				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	152	283	212	55	90	25	91	276	38	22	233	72

Signal Information			
Cycle, s	100.0	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	50.0	38.0	0.0	0.0	0.0	0.0	
Yellow	5.0	3.0	0.0	0.0	0.0	0.0	
Red	2.0	2.0	0.0	0.0	0.0	0.0	



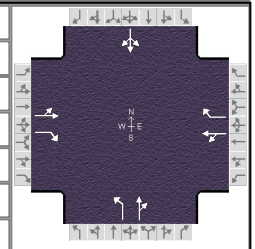
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		4		8		2		6
Case Number		8.0		7.0		8.0		8.0
Phase Duration, s		43.0		43.0		57.0		57.0
Change Period, ($Y+R_c$), s		5.0		5.0		7.0		7.0
Max Allow Headway (*MAH*), s		3.3		3.3		0.0		0.0
Queue Clearance Time (g_s), s		40.0		11.3				
Green Extension Time (g_e), s		0.0		2.0		0.0		0.0
Phase Call Probability		1.00		1.00				
Max Out Probability		1.00		0.00				

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	7	4	14	3	8	18	5	2	12	1	6	16
Adjusted Flow Rate (*v*), veh/h		662			158	17		440			345	
Adjusted Saturation Flow Rate (*s*), veh/h/ln		1621			965	1434		1574			1742	
Queue Service Time (g_s), s		28.7			0.0	0.8		6.5			0.0	
Cycle Queue Clearance Time (g_c), s		38.0			9.3	0.8		18.4			11.9	
Green Ratio (*g/C*)		0.38			0.38	0.38		0.50			0.50	
Capacity (*c*), veh/h		661			416	545		831			910	
Volume-to-Capacity Ratio (*X*)		1.002			0.378	0.032		0.530			0.379	
Back of Queue (*Q*), ft/ln (85 th percentile)		689.1			110.2	12.5		253.2			184.3	
Back of Queue (*Q*), veh/ln (85 th percentile)		27.1			4.2	0.4		9.7			7.2	
Queue Storage Ratio (*RQ*) (85 th percentile)		0.00			0.00	0.00		0.00			0.00	
Uniform Delay (d_1), s/veh		32.2			21.5	19.5		16.9			15.5	
Incremental Delay (d_2), s/veh		35.4			0.2	0.0		2.4			1.2	
Initial Queue Delay (d_3), s/veh		0.0			0.0	0.0		0.0			0.0	
Control Delay (*d*), s/veh		67.6			21.7	19.5		19.3			16.7	
Level of Service (LOS)		F			C	B		B			B	
Approach Delay, s/veh / LOS	67.6	E		21.5	C		19.3	B		16.7	B	
Intersection Delay, s/veh / LOS	38.7						D					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS								
Bicycle LOS Score / LOS								

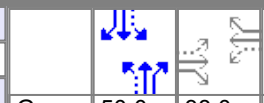
HCS7 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency				Duration, h	0.250
Analyst		Analysis Date	5/7/2019	Area Type	Other
Jurisdiction		Time Period		PHF	0.92
Urban Street		Analysis Year	2019	Analysis Period	1> 7:00
Intersection	Route 202 & Tempe Wick	File Name	Am B - With Mit.xus		
Project Description	Am Build - With Mitigation				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	152	283	212	55	90	25	91	276	38	22	233	72

Signal Information			
Cycle, s	100.0	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On



							1	2	3	4
Green	50.0	38.0	0.0	0.0	0.0	0.0	5	6	7	8
Yellow	5.0	3.0	0.0	0.0	0.0	0.0				
Red	2.0	2.0	0.0	0.0	0.0	0.0				

Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		4		8		2		6
Case Number		7.0		7.0		6.0		8.0
Phase Duration, s		43.0		43.0		57.0		57.0
Change Period, ($Y+R_c$), s		5.0		5.0		7.0		7.0
Max Allow Headway (*MAH*), s		3.2		3.2		0.0		0.0
Queue Clearance Time (g_s), s		27.9		9.9				
Green Extension Time (g_e), s		1.5		1.8		0.0		0.0
Phase Call Probability		1.00		1.00				
Max Out Probability		0.07		0.00				

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	7	4	14	3	8	18	5	2	12	1	6	16
Adjusted Flow Rate (*v*), veh/h		473	189		158	17	99	341			345	
Adjusted Saturation Flow Rate (*s*), veh/h/ln		1610	1610		1266	1434	1076	1787			1742	
Queue Service Time (g_s), s		18.0	8.3		0.0	0.8	6.3	11.8			0.0	
Cycle Queue Clearance Time (g_c), s		25.9	8.3		7.9	0.8	18.2	11.8			11.9	
Green Ratio (*g/C*)		0.38	0.38		0.38	0.38	0.50	0.50			0.50	
Capacity (*c*), veh/h		661	612		531	545	482	893			910	
Volume-to-Capacity Ratio (*X*)		0.716	0.309		0.297	0.032	0.205	0.382			0.379	
Back of Queue (*Q*), ft/ln (85 th percentile)		338.8	121.3		108.6	12.5	74.8	185.6			184.3	
Back of Queue (*Q*), veh/ln (85 th percentile)		13.3	4.9		4.1	0.4	3.0	7.1			7.2	
Queue Storage Ratio (*RQ*) (85 th percentile)		0.00	0.00		0.00	0.00	0.00	0.00			0.00	
Uniform Delay (d_1), s/veh		27.3	21.8		21.3	19.5	21.1	15.5			15.5	
Incremental Delay (d_2), s/veh		3.2	0.1		0.1	0.0	1.0	1.2			1.2	
Initial Queue Delay (d_3), s/veh		0.0	0.0		0.0	0.0	0.0	0.0			0.0	
Control Delay (*d*), s/veh		30.5	21.9		21.4	19.5	22.1	16.7			16.7	
Level of Service (LOS)		C	C		C	B	C	B			B	
Approach Delay, s/veh / LOS	28.0	C		21.2	C		17.9	B		16.7	B	
Intersection Delay, s/veh / LOS	22.1						C					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS								
Bicycle LOS Score / LOS								

HCS7 Two-Way Stop-Control Report

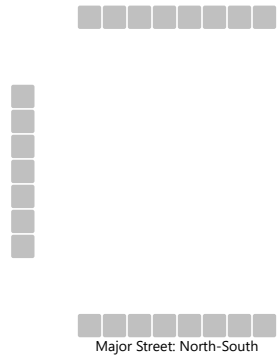
General Information

Analyst	EIC
Agency/Co.	DD
Date Performed	4/28/2023
Analysis Year	2023
Time Analyzed	Am Build
Intersection Orientation	North-South
Project Description	

Site Information

Intersection	Route 202 Site Dw
Jurisdiction	
East/West Street	Site Dw
North/South Street	Route 202
Peak Hour Factor	0.92
Analysis Time Period (hrs)	0.25

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	1	0		0	0	0	0	0	1	0	0	0	1	0
Configuration			LR							LT						TR
Volume (veh/h)		12		12						15	438				315	9
Percent Heavy Vehicles (%)		3		3						3						
Proportion Time Blocked																
Percent Grade (%)		0														
Right Turn Channelized																
Median Type | Storage		Undivided														

Critical and Follow-up Headways

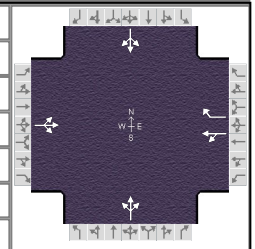
Base Critical Headway (sec)		7.1		6.2						4.1						
Critical Headway (sec)		6.43		6.23						4.13						
Base Follow-Up Headway (sec)		3.5		3.3						2.2						
Follow-Up Headway (sec)		3.53		3.33						2.23						

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)			26							16						
Capacity, c (veh/h)			439							1201						
v/c Ratio			0.06							0.01						
95% Queue Length, Q_{95} (veh)			0.2							0.0						
Control Delay (s/veh)			13.7							8.0						
Level of Service (LOS)			B							A						
Approach Delay (s/veh)		13.7								0.4						
Approach LOS		B														

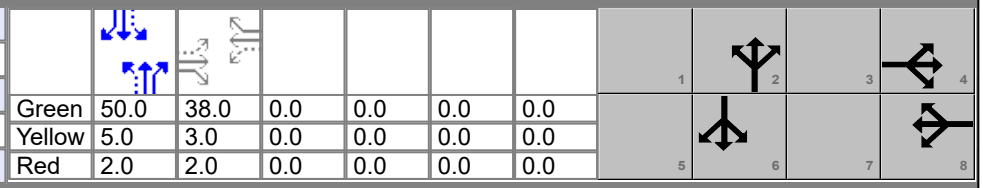
HCS7 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency				Duration, h	0.250
Analyst		Analysis Date	5/7/2019	Area Type	Other
Jurisdiction		Time Period		PHF	0.94
Urban Street		Analysis Year	2019	Analysis Period	1> 7:00
Intersection	Route 202 & Tempe Wick	File Name	Pm B.xus		
Project Description	Pm Build				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	47	100	82	48	286	15	199	257	41	20	280	188

Signal Information			
Cycle, s	100.0	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On



Green	50.0	38.0	0.0	0.0	0.0	0.0						
Yellow	5.0	3.0	0.0	0.0	0.0	0.0						
Red	2.0	2.0	0.0	0.0	0.0	0.0						

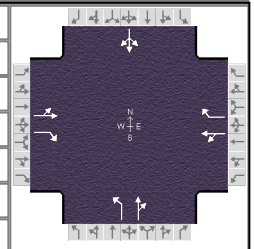
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		4		8		2		6
Case Number		8.0		7.0		8.0		8.0
Phase Duration, s		43.0		43.0		57.0		57.0
Change Period, ($Y+R_c$), s		5.0		5.0		7.0		7.0
Max Allow Headway (*MAH*), s		3.2		3.2		0.0		0.0
Queue Clearance Time (g_s), s		11.6		17.1				
Green Extension Time (g_e), s		1.2		1.2		0.0		0.0
Phase Call Probability		1.00		1.00				
Max Out Probability		0.00		0.00				

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	7	4	14	3	8	18	5	2	12	1	6	16
Adjusted Flow Rate (*v*), veh/h		221			355	12		528			506	
Adjusted Saturation Flow Rate (*s*), veh/h/ln		1532			1758	1296		1112			1756	
Queue Service Time (g_s), s		0.0			4.9	0.6		26.0			0.0	
Cycle Queue Clearance Time (g_c), s		9.6			15.1	0.6		46.3			20.3	
Green Ratio (*g/C*)		0.38			0.38	0.38		0.50			0.50	
Capacity (*c*), veh/h		626			709	493		606			916	
Volume-to-Capacity Ratio (*X*)		0.353			0.501	0.024		0.870			0.553	
Back of Queue (*Q*), ft/ln (85 th percentile)		145.1			226.5	9		452.8			286.2	
Back of Queue (*Q*), veh/ln (85 th percentile)		5.6			8.8	0.3		17.8			11.3	
Queue Storage Ratio (*RQ*) (85 th percentile)		0.00			0.00	0.00		0.00			0.00	
Uniform Delay (d_1), s/veh		22.1			23.8	19.4		26.1			17.6	
Incremental Delay (d_2), s/veh		0.1			0.2	0.0		15.7			2.4	
Initial Queue Delay (d_3), s/veh		0.0			0.0	0.0		0.0			0.0	
Control Delay (*d*), s/veh		22.2			24.0	19.4		41.8			20.0	
Level of Service (LOS)		C			C	B		D			B	
Approach Delay, s/veh / LOS	22.2	C		23.9	C		41.8	D		20.0	B	
Intersection Delay, s/veh / LOS	28.3						C					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS								
Bicycle LOS Score / LOS								

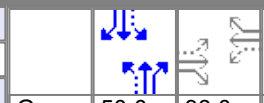
HCS7 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency				Duration, h	0.250
Analyst		Analysis Date	5/7/2019	Area Type	Other
Jurisdiction		Time Period		PHF	0.94
Urban Street		Analysis Year	2019	Analysis Period	1> 7:00
Intersection	Route 202 & Tempe Wick	File Name	Pm B - With Mit.xus		
Project Description	Pm Build - With Mitigation				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	47	100	82	48	286	15	199	257	41	20	280	188

Signal Information			
Cycle, s	100.0	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On



							1	2	3	4
Green	50.0	38.0	0.0	0.0	0.0	0.0	5	6	7	8
Yellow	5.0	3.0	0.0	0.0	0.0	0.0				
Red	2.0	2.0	0.0	0.0	0.0	0.0				

Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		4		8		2		6
Case Number		7.0		7.0		6.0		8.0
Phase Duration, s		43.0		43.0		57.0		57.0
Change Period, ($Y+R_c$), s		5.0		5.0		7.0		7.0
Max Allow Headway (*MAH*), s		3.2		3.2		0.0		0.0
Queue Clearance Time (g_s), s		8.7		17.0				
Green Extension Time (g_e), s		1.2		1.1		0.0		0.0
Phase Call Probability		1.00		1.00				
Max Out Probability		0.00		0.00				

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	7	4	14	3	8	18	5	2	12	1	6	16
Adjusted Flow Rate (*v*), veh/h		156	65		355	12	212	316			506	
Adjusted Saturation Flow Rate (*s*), veh/h/ln		1441	1610		1773	1296	925	1826			1728	
Queue Service Time (g_s), s		0.0	2.6		4.8	0.6	20.9	10.5			0.0	
Cycle Queue Clearance Time (g_c), s		6.7	2.6		15.0	0.6	41.2	10.5			20.3	
Green Ratio (*g/C*)		0.38	0.38		0.38	0.38	0.50	0.50			0.50	
Capacity (*c*), veh/h		595	612		715	493	346	913			902	
Volume-to-Capacity Ratio (*X*)		0.263	0.106		0.497	0.024	0.611	0.346			0.562	
Back of Queue (*Q*), ft/ln (85 th percentile)		105.6	43.1		226.5	9	191.2	166.8			287.3	
Back of Queue (*Q*), veh/ln (85 th percentile)		4.1	1.7		8.8	0.3	7.6	6.6			11.3	
Queue Storage Ratio (*RQ*) (85 th percentile)		0.00	0.00		0.00	0.00	0.00	0.00			0.00	
Uniform Delay (d_1), s/veh		21.1	20.0		23.8	19.4	32.1	15.1			17.6	
Incremental Delay (d_2), s/veh		0.1	0.0		0.2	0.0	7.8	1.0			2.5	
Initial Queue Delay (d_3), s/veh		0.0	0.0		0.0	0.0	0.0	0.0			0.0	
Control Delay (*d*), s/veh		21.2	20.1		24.0	19.4	39.9	16.2			20.1	
Level of Service (LOS)		C	C		C	B	D	B			C	
Approach Delay, s/veh / LOS	20.8	C		23.9	C		25.7	C		20.1	C	
Intersection Delay, s/veh / LOS	22.9						C					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS								
Bicycle LOS Score / LOS								

HCS7 Two-Way Stop-Control Report

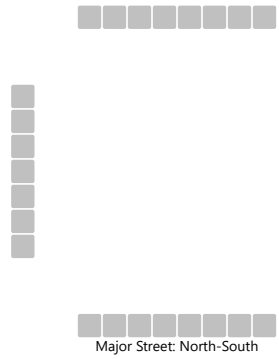
General Information

Analyst	EIC
Agency/Co.	DD
Date Performed	4/28/2023
Analysis Year	2023
Time Analyzed	Pm Build
Intersection Orientation	North-South
Project Description	

Site Information

Intersection	Route 202 Site Dw
Jurisdiction	
East/West Street	Site Dw
North/South Street	Route 202
Peak Hour Factor	0.92
Analysis Time Period (hrs)	0.25

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	1	0		0	0	0	0	0	1	0	0	0	1	0
Configuration			LR							LT						TR
Volume (veh/h)		19		33						22	297				453	12
Percent Heavy Vehicles (%)		2		2						2						
Proportion Time Blocked																
Percent Grade (%)		0														
Right Turn Channelized																
Median Type | Storage		Undivided														

Critical and Follow-up Headways

Base Critical Headway (sec)		7.1		6.2						4.1						
Critical Headway (sec)		6.42		6.22						4.12						
Base Follow-Up Headway (sec)		3.5		3.3						2.2						
Follow-Up Headway (sec)		3.52		3.32						2.22						

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)			57							24						
Capacity, c (veh/h)			439							1059						
v/c Ratio			0.13							0.02						
95% Queue Length, Q_{95} (veh)			0.4							0.1						
Control Delay (s/veh)			14.4							8.5						
Level of Service (LOS)			B							A						
Approach Delay (s/veh)		14.4								0.8						
Approach LOS		B														