TRAFFIC IMPACT STUDY

FOR
SEVENTEEN HUNDRED RESIDENCES PUD

1700 WESTERN AVENUE
TOWN OF GUILDERLAND
ALBANY COUNTY
STATE OF NEW YORK

PREPARED FOR:
Wolanin Companies

PREPARED BY:

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I. INTRODUCTION

This report examines the traffic impacts on the surrounding highway infrastructure that may result from a proposed mixed-use development on property located at the rear of 1700 Western Avenue, Town of Guilderland. Existing conditions were quantified; proposed traffic generation volumes were developed; and the existing and proposed intersections were analyzed for capacity using methodology presented in the Highway Capacity Manual, and for adequate geometric configuration using standards presented by AASHTO and the NYSDOT.

II. SITE AND PROJECT DESCRIPTION

The proposed Project consists of the development of 22 acres as a mixed residential/office development. The property is located at the rear of 1700 Western Avenue, south of US Route 20.

The subject parcel is currently zoned RO-40 (Single-Family Residential) with an application to the Town of Guilderland for consideration of change to Planned Unit Development District. The project will include a residential component of 248 apartments, and an office component of 13,000 SF.

Vehicular access to the project will be at two unsignalized entrances, which include the existing entrance to the 1700 Apartments from Western Avenue, and an extension of the existing entrance from Johnston Road utilized by the school behind the grocery store. There is also a proposed internal connection to the adjacent "Town Center" shopping development, from which Rt.20 and Johnston Road can be accessed by an unsignalized intersection to each.

III. ANALYSIS CRITERIA

All analysis for this study was done in accordance with the methodology presented in the Highway Capacity Manual 2000. Level of Service is determined by the following criteria:

- Signalized Intersections - Time delay of approach
- Unsignalized Intersections - Time delay of approach

Intersection modeling was performed with the HCS 2000 Highway Capacity Software (McTrans), Version 4.1f.

IV. EXISTING TRAFFIC CONDITIONS

Western Avenue (US Route 20) is designated as a Principal Urban Arterial, managing the traffic inbound and outbound from Albany to local destinations through western Albany, Guilderland, and Schenectady County. Johnston Road is a local road providing access to southern Guilderland and New Scotland. Rapp Road serves as a connector to Crossgates Mall and Washington Avenue.

A traffic sampling including the following intersections will assist in understanding the usage of the roads:

- Intersections along Western Avenue (Route 20)
    - Johnston/Rapp Road (#1)

    - 1700 Residences (private driveway) (#2)
    - Crossgates Mall Road (#3)
- Intersection along Johnston Road
    - Johnston Rd/Westmere Elementary (#4)

Existing volumes (for year 2011) are derived from manual counts taken by Ingalls & Associates LLP, 2011. Counts were collected at 15-minute increments and tabulated to determine the peak hour time period for each intersection (AM and PM). (Tabulated raw counts included in Appendix). Analyzed volumes for the 2015 Estimated Time of Completion are calculated by upwardly adjusting the 2011 counts by a growth factor of 1.5% annually. This growth rate is based on previous studies (CHA 2006, W Smith 2002) in the area that indicate growth rates of 0.5% to 2.3% for the Guilderland/Route 20 area. However, there are no other proposed projects in the vicinity that would singularly contribute to any additional traffic volume escalations.

AADT volumes of 33165 (east of Johnston Road) were derived from tube counts collected by NYSDOT November 2010. These tube counts also corroborate with turning movement volumes observed in 2011 and used as basis of this study. Peak hour volumes were observed to be Weekday AM (7-9 time period) for eastbound traffic, and Weekday PM (4-6 time period) for westbound traffic. Saturday peak hour volumes are substantially lower than weekday periods.

There are no existing capacity failures related to the Adjacent Highway Segments or adjacent intersections, although at peak hours, some movements, including the mainline through-movements, are approaching capacity.

Existing Levels of Service for the analyzed intersections are presented in the following table:

Intersection	Approach	Control	2015 Existing (NoBuild) LOS (delay)	
			AM	PM
1	Western Ave EB - L	S	C *(28.6)*	D *(28.6)*
	Western Ave EB - TR		C *(23.3)*	C *(22.0)*
	Western Ave WB - L		D *(46.9)*	C *(34.4)*
	Western Ave WB - TR		B *(13.5)*	C *(34.1)*
	Johnston Road NB - L		D *(43.9)*	E *(76.7)*
	Johnston Road NB - T		E *(59.4)*	D *(48.5)*
	Johnston Road NB - R		D *(37.4)*	C *(31.7)*
	Rapp Road SB - L		D *(47.6)*	D *(39.8)*
	Rapp Road SB - T		D *(47.7)*	E *(77.5)*
	Rapp Road SB - R		D *(33.0)*	D *(41.2)*
	Overall		**C *(26.7)***	**D *(36.9)***
2	Western Ave WB - L	U	B *(13.9)*	B *(12.3)*
	1700 NB		C *(22.7)*	D *(30.9)*
3	Western Ave EB - L	S	*	*
	Western Ave EB - T		B *(12.4)*	A *(9.8)*
	Western Ave WB - T		A *(5.3)*	A *(9.3)*
	Western Ave WB - R		A *(0.1)*	A *(0.2)*
	Crossgates SB - L		C *(31.6)*	C *(34.7)*
	Crossgates SB - R		C *(31.1)*	C *(31.0)*
	Overall		**A *(9.9)***	**B *(11.9)***
4	Johnston Rd SB - L	U	A *(8.9)*	A *(7.9)*
	Westmere Elementary WB - LR		C *(18.0)*	B *(11.1)*

* Intersection left turn lane configuration allows EB left to overlap with SB left without conflict. HCS does not analyze.

V. PROPOSED TRAFFIC GENERATION AND DISTRIBUTION

TRIP GENERATION

Because the project is designed as mixed-use, trip generation rates are derived from several uses. For purposes of this study, a total maximum office area of 13,000 SF was utilized.

Traffic generation figures were taken from the ITE Trip Generation Handbook (8th edition) as follows:

Use (ITE Code)	AM Peak			PM Peak		
	Total	In	Out	Total	In	Out
Apartments (#220) 248 Units	126	26	100	154	100	54
Office (#710) 13,000 SF	21	18	3	20	3	17
Total trip ends	147	44	103	174	103	71

For this analysis, generation rates at time of peak hour of adjacent street traffic were utilized where possible. Fitted Curve equations were used, rather than the average generation rate, for the Apartments. Average rate were used for the office, as the proposed generator is of small magnitude compared to the study data.

To simplify analysis, no pass-by credit was taken. It is likely that a significant percentage of trip ends related to the commercial uses will be taken from the existing area traffic, however no credit has been taken as presented; nor has any credit been taken for internal connection with the apartment component or the adjacent commercial/retail development.

TRIP ASSIGNMENT/PROPOSED ACCESS

The site of the project is located in an area of mixed uses, including residential and commercial. Trips generated by the apartment project component will have a destination primarily to the commercial and business/office areas located in Downtown Albany, Washington Avenue, or the SUNY and State Office Campuses. There is also ready access to the Northway and NYS Thruway via Western Avenue.

The office component will draw primarily from the residential areas in the vicinity of the project.

It is proposed to utilize the existing driveway at 1700 Western Avenue for destinations to the east; and to construct an additional access road to Johnston Road, adjacent to the rear of the grocery store in the Town Center plaza for destinations to the south and west. The connection to Johnston Road external to the Price Chopper parking lot will minimize the addition of traffic through the front of the store, reducing the potential for increased conflict between vehicles and pedestrians.

The existing Intersection Sight Distances at the existing 1700 driveway are slightly deficient (445' required versus 377' available, and/or 500' required for the 45 MPH condition) for the AASHTO Case B1 (Exiting left from stop). The remaining movements (exiting right and entering left) are sufficient for the 40 MPH speed limit posted for the area. Sight Distance to the west is limited by existing vertical curvature of Route 20 (Western Avenue).

Existing sight distances are adequate (335' required versus 355' available) at the proposed Johnston Road intersection for the posted speed limit of 30 MPH. Below is a table of sight distances for the two un-signalized intersections:

Table of Sight Distances				
	Turn Condition	AASHTO Required (+5mph posted)	AASHTO Required (Posted speed)	Provided
Driveway 1 Western Ave 40 MPH Posted (45 MPH Analyzed)	B1 (Left)	500'	445'	377' to left 1020' to right
	B2 (Right)	430'	385'	377'
	F (Left In)	365'	325'	380'
Driveway 2 Johnston Rd 30 MPH Posted (35 MPH Analyzed)	B1 (Left)	390'	335'	355' to left 415' to right
	B2 (Right)	335'	290'	355'
	F (Left In)	285'	245'	360'

An internal connection from the development area to the shopping plaza is proposed. However, this is contemplated to be for internal vehicle and pedestrian cross-access only and is located in a manner such that convenient access through the shopping center parking lot will not be available. Additional traffic control measures, including speed limit and directional signage may be considered to reduce the potential for increased conflicts.

VI. RESULTS OF ANALYSIS

Level of Service and Operations

A Level of Service analysis was performed on all examined intersections for the No-Build and Build conditions. The potential impact of the proposed project is assessed based on the comparative Levels of Service between the Build and No Build options for each intersection. The results of this analysis are summarized as follows:

2015 Level of Service Analysis

Inter-section	Approach	Control	AM LOS (delay)		PM LOS (delay)	
			No-Build	Build	No-Build	Build
1	Western Ave EB - L	S	C (28.6)	C (28.6)	D (51.2)	D (54.7)
	Western Ave EB - T		C (23.3)	C (23.9)	C (22.0)	C (26.5)
	Western Ave EB - R					
	Western Ave WB - L		D (46.9)	D (48.4)	C (34.4)	D (46.8)
	Western Ave WB - T		B (13.5)	B (13.5)	C (34.1)	D (44.2)
	Western Ave WB - R					
	Johnston Road NB - L		D (43.9)	D (45.6)	E (76.7)	E (55.1)
	Johnston Road NB - T		E (59.4)	E (67.2)	D (48.5)	D (46.0)
	Johnston Road NB - R		D (37.4)	D (37.5)	C (31.7)	D (43.6)
	Rapp Road SB - L		D (47.6)	D (49.6)	D (39.8)	D (35.7)
	Rapp Road SB - T		D (47.7)	D (48.4)	E (77.5)	E (61.2)
	Rapp Road SB - R		D (33.0)	D (33.0)	D (41.2)	E (73.8)
	Overall		C (26.7)	C (29.5)	D (36.9)	D (42.9)
2	Western Ave WB - L	U	B (13.9)	C (15.4)	B (12.3)	B (14.0)
	1700 NB		C (22.7)	E (35.9)	D (30.9)	E (39.7)
3	Western Ave EB - L	S	*	*	*	*
	Western Ave EB - T		B (12.4)	B (13.5)	A (9.8)	A (10.1)
	Western Ave WB - T		A (5.3)	A (5.4)	A (9.3)	A (9.5)
	Western Ave WB - R		A (0.1)	A (0.1)	A (0.2)	A (0.3)
	Crossgates SB - L		C (31.6)	C (31.6)	C (34.7)	C (34.7)
	Crossgates SB - R		C (31.1)	C (31.1)	C (31.0)	C (31.0)
	Overall		A (9.9)	A (9.9)	B (11.9)	B (11.9)
4	Johnston Rd SB	U	A (8.9)	A (9.4)	A (7.9)	A (8.0)
	Westmere Elem. WB - LR		C (18.0)	C (21.5)	B (11.1)	B (11.6)

* Intersection left turn lane configuration allows EB left to overlap with SB left without conflict. HCS does not analyze.

It should be noted that for the Johnston/Rapp Road intersection, should timing precedence be given to the dominant through movements (EB/WB), smaller delays would occur for the majority of the traffic volume. However, this will result in increases delays for the minor approaches.

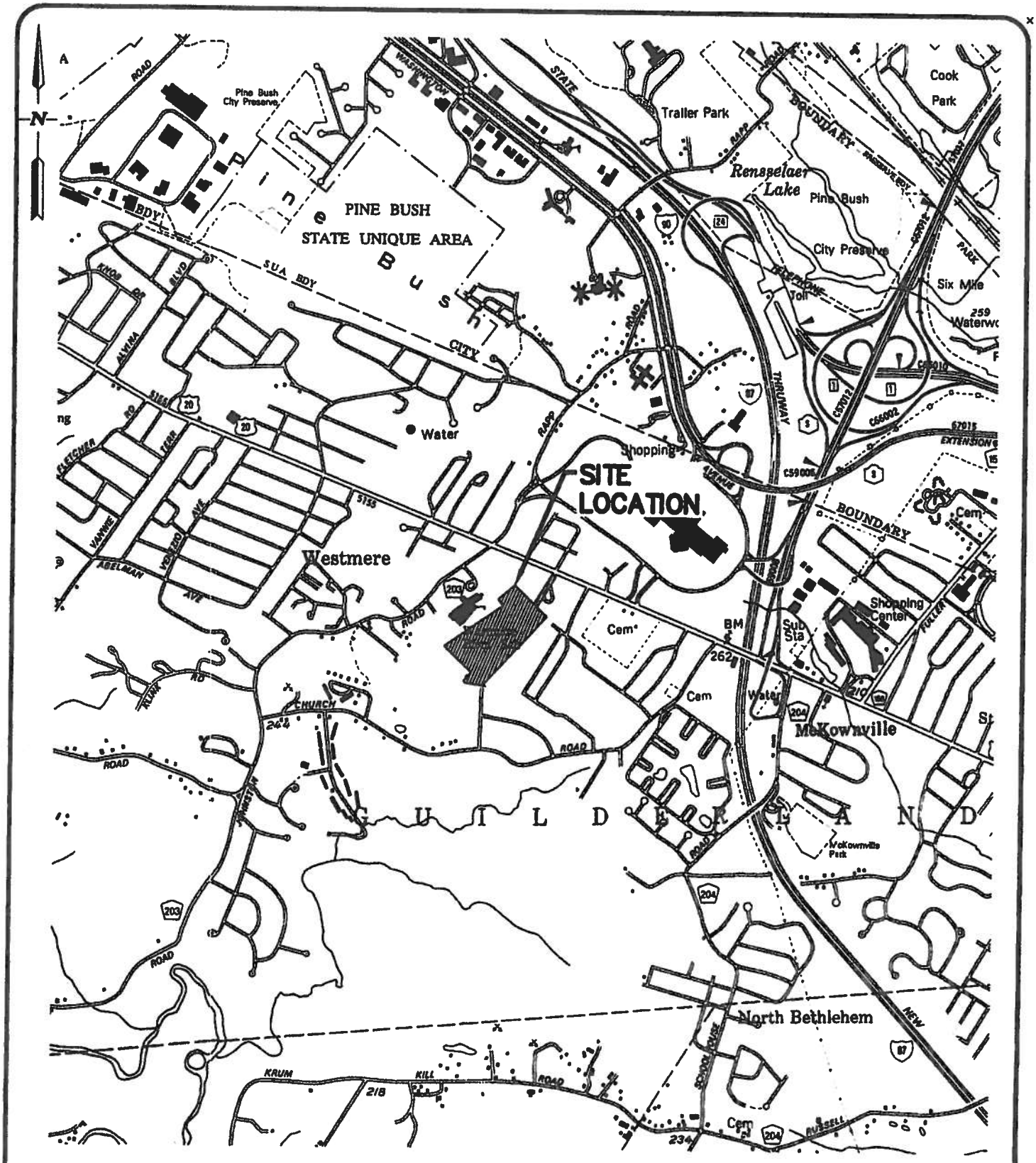
Analysis of existing site access driveways indicates that all will operate at acceptable Levels of Service with little queuing on the primary street.

Based on observations of existing traffic patterns at the 1700 driveway, the dominant exiting movement from this intersection is a right turn to the east, which has adequate sight distance for the posted speed limit. Consideration may be given to removal and minimization of any additional roadside "clutter" within the sight triangle to further protect the visibility of the intersection. The entering left-turn movement also has the opportunity to utilize the center median as refuge if necessary.

Overall, there are no significant degradations in Level of Service to the existing adjacent intersections studied as a result of this development, and each movement will continue to operate with acceptable delays. The additional traffic volumes, when analyzed as a percentage basis, are minimal in comparison to the overall traffic flow observed at the studied intersections.

Appendix A

Existing Traffic Volumes and Analysis



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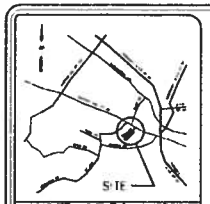
SITE LOCATION MAP

LANDS N/F OF CROSSTREE CORPORATION

TOWN OF GUILDERLAND
ALBANY COUNTY STATE OF NEW YORK

DATE: JANUARY, 2011	CHECKED BY: FJB JOB NO. 99172/10011	SCALE: 1"=2000'
DRAWN BY: TAH CADD FILE: 10011-TRAFFIC-2006		SHEET 1 OF 1



SITE LOCATION MAP

GREEN SPACE / OPEN SPACE CHART

LOCATION	AREA	EXCLUSIONS	GREENSPACE AS A PERCENTAGE OF TOTAL LAND AREA
TOTAL GREENSPACE WITHIN 50' SETBACK/BUFFER ZONE	3.60 ACRES	WETLANDS NOT INCLUDED	17.1%
TOTAL ADDITIONAL GREENSPACE WITHIN 100' RESIDENTIAL SETBACK/BUFFER (SOUTH & EAST LINES ONLY)	1.47 ACRES	WETLANDS & IMPERVIOUS AREAS NOT INCLUDED	6.8%
GREENSPACE WITHIN BUILDING SETBACK LINES ONLY	6.04 ACRES	BUILDINGS, IMPERVIOUS SURFACES (INCLUDING TRAILS), WETLANDS OR SLOPES > 10° NOT INCLUDED	28.8%
WETLANDS (PRESERVED AREAS)	1.38 ACRES	INCLUDES ONLY PRESERVED AREAS	6.5%
		TOTAL GREENSPACE AS A PERCENTAGE OF TOTAL LAND AREA	59.0%

SITE STATISTICS

TAX MAP ID# 65.00-2-6
PARCEL AREA - 21.26 ACRES

PROPOSED ZONING: PLANNED UNIT DEVELOPMENT DISTRICT

PROPOSED RESIDENTIAL USES:

TYPE A (16 UNIT/BUILDING) (288=18 UNITS)
TYPE B (12 UNIT/BUILDING) (=120=10 UNITS)
348 UNITS TOTAL

NET RESIDENTIAL DENSITY
348/21.26=16.4 DU/ACRE

RESIDENTIAL PARKING REQUIREMENTS:

PROPOSED DWELLING UNITS: 348
1.5 SPACES PER UNIT REQUIRED
REQUIRED PARKING SPACES: 522

PROPOSED RESIDENTIAL PARKING:

GARAGE SPACES: 348
SURFACE SPACES: 126
HANDICAPPED PARKING: 6
PROPOSED SPACES PROVIDED: 480

COMMERCIAL PARKING REQUIREMENTS:

1 SPACE PER 200 SF
FLOOR SF BUILDING
REQUIRED PARKING SPACES: 60

PROPOSED COMMERCIAL PARKING:

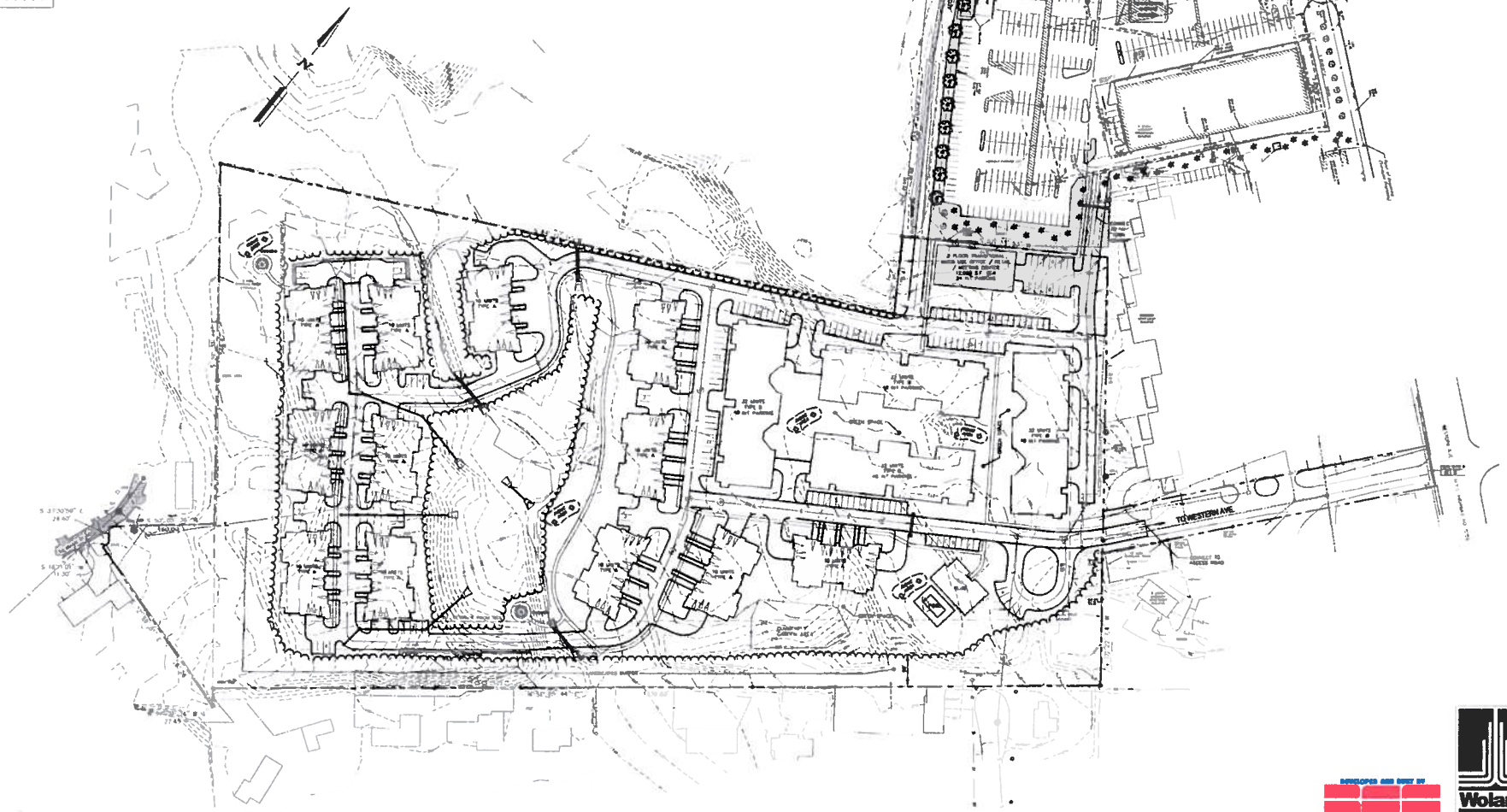
GARAGE SPACES: 24
SURFACE SPACES: 36
PROPOSED SPACES PROVIDED: 60

GREEN SPACE

REQUIRED: 200
PROPOSED: 300

LEGEND

PROPERTY LINE
EXISTING WATERMAIN
EXISTING STATION VALVE
EXISTING UTILITY POLE
EXISTING TREE
EXISTING GAS LINE GUARD
EXISTING DECIDUOUS CONIFEROUS
EXISTING DECIDUOUS TREE
EXISTING OVERHEAD WIRE
WETLAND BOUNDARY
EXISTING CONTOURS



GRAPHIC SCALE

NOTE: 48 HOURS PRIOR TO ANY CONSTRUCTION ACTIVITY, THE CONTRACTOR SHALL CONTACT DIG SAFELY NEW YORK TO LOCATE ALL UNDERGROUND UTILITIES 1-800-962-7962

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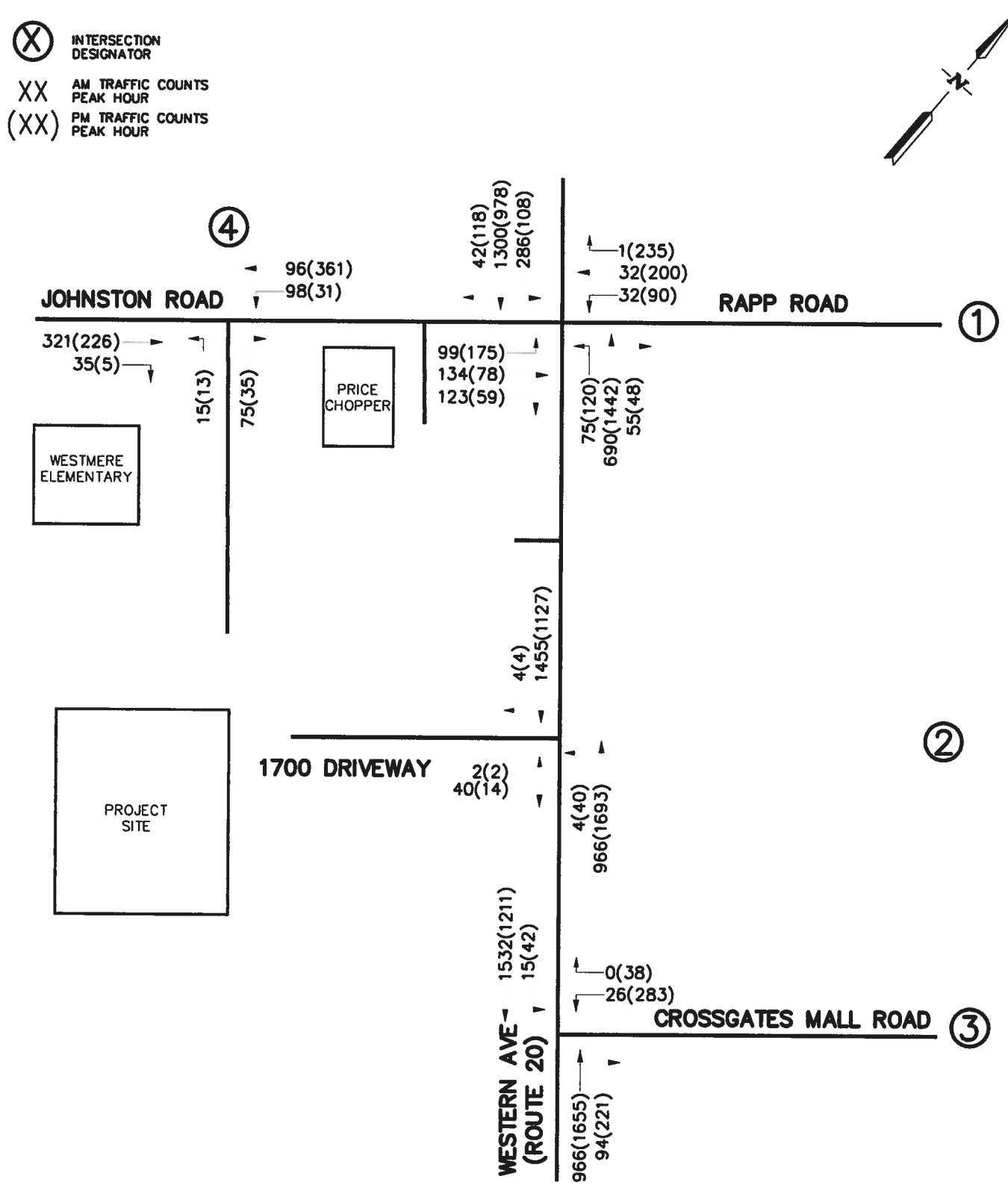
CONCEPT PLAN

WOLANIN COMPANIES LTD.
THE SEVENTEEN HUNDRED PUD

TOWN OF GUILDERLAND
COUNTY OF ALBANY STATE OF NEW YORK

SCALE: 1" = 60'

SHEET 1 OF 1



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EXISTING TRAFFIC VOLUMES 2011
LANDS N/F OF CROSSTREE CORPORATION

TOWN OF GUILDERLAND
ALBANY COUNTY STATE OF NEW YORK

DATE: JANUARY, 2011	CHECKED BY: FJB JOB NO. 99172/10011	SCALE: N.T.S.
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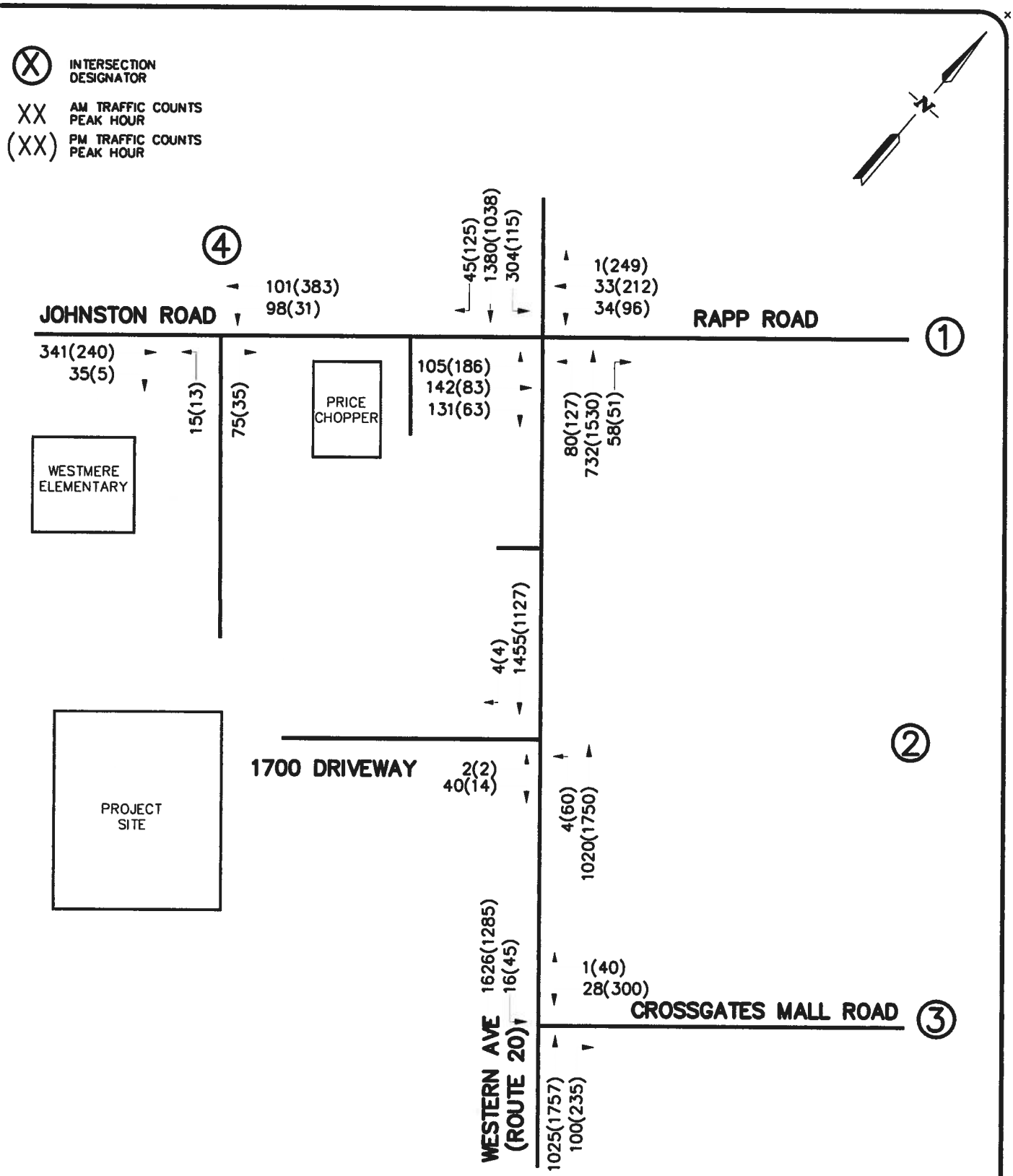

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2015 NO BUILD
LANDS N/F OF CROSSTREE CORPORATION

TOWN OF GUILDERLAND
ALBANY COUNTY STATE OF NEW YORK

DATE: JANUARY, 2011	CHECKED BY: FJB JOB NO. 99172/10011	SCALE: N.T.S.
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HCS2000™ DETAILED REPORT

General Information		Site Information	
Analyst	FJB	Intersection	US 20/Johnston-Rapp
Agency or Co.	IA	Area Type	All other areas
Date Performed	02/22/11	Jurisdiction	NYSDOT
Time Period	AM	Analysis Year	2015 No-Build
		Project ID	

Volume and Timing Input

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Number of lanes, N_1	1	2	0	1	2	1	1	1	1	1	1	1
Lane group	L	TR		L	T	R	L	TR	R	L	T	R
Volume, V (vph)	304	1380	45	80	732	58	105	142	131	34	33	1
% Heavy vehicles, %HV	0	0	6	6	0	0	0	0	0	0	0	0
Peak-hour factor, PHF	0.72	0.81	0.75	0.52	0.96	0.65	0.67	0.74	0.62	0.67	0.52	0.25
Pretimed (P) or actuated (A)	P	P	P	P	P	P	A	P	P	A	P	P
Start-up lost time, l_1	2.0	2.0		2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Extension of effective green, e	2.0	2.0		2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Arrival type, AT	3	3		3	3	3	3	3	3	3	3	3
Unit extension, UE	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Filtering/metering, I	1.000	1.000		1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Initial unmet demand, Q_b	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Ped / Bike / RTOR volumes	0		20	0		25	0		50	0		0
Lane width	12.0	12.0		12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0
Parking / Grade / Parking	N	0	N	N	0	N	N	0	N	N	0	N
Parking maneuvers, N_m												
Buses stopping, N_B	0	0		0	0	0	0	0	0	0	0	0
Min. time for pedestrians, G_p	3.2			3.2			3.2			3.2		

Phasing	EW Perm	Excl. Left	03	04	NS Perm	Excl. Left	07	08
Timing	G = 75.0	G = 15.0	G =	G =	G = 20.0	G = 8.0	G =	G =
	Y = 4	Y =	Y =	Y =	Y = 4	Y =	Y =	Y =
Duration of Analysis, T = 0.25						Cycle Length, C = 126.0		

Lane Group Capacity, Control Delay, and LOS Determination

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Adjusted flow rate, v	422	1737		154	763	51	157	192	131	51	63	4
Lane group capacity, c	602	2145		314	2154	961	346	302	449	242	302	449
v/c ratio, X	0.70	0.81		0.49	0.35	0.05	0.45	0.64	0.29	0.21	0.21	0.01

1

Total green ratio, g/C	0.75	0.60		0.75	0.60	0.60	0.25	0.16	0.28	0.25	0.16	0.28
Uniform delay, d_1	21.9	19.9		42.7	13.1	10.7	42.9	49.6	35.8	47.1	46.1	32.9
Progression factor, PF	1.000	1.000		1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Delay calibration, k	0.50	0.50		0.50	0.50	0.50	0.11	0.50	0.50	0.11	0.50	0.50
Incremental delay, d_2	6.7	3.4		5.4	0.5	0.1	0.9	9.8	1.6	0.4	1.6	0.0
Initial queue delay, d_3	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control delay	28.6	23.4		48.1	13.5	10.8	43.9	59.4	37.4	47.6	47.7	33.0
Lane group LOS	C	C		D	B	B	D	E	D	D	D	C
Approach delay	24.4			18.9			48.3			47.1		
Approach LOS	C			B			D			D		
Intersection delay	26.8			X_c = 0.79			Intersection LOS			C		

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1

HCS2000™ DETAILED REPORT

General Information		Site Information	
Analyst	FJB	Intersection	US 20/Johnston-Rapp
Agency or Co.	IA	Area Type	All other areas
Date Performed	02/22/11	Jurisdiction	NYSDOT
Time Period	PM	Analysis Year	2015 No-Build
		Project ID	

Volume and Timing Input

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Number of lanes, N_1	1	2	0	1	2	0	1	1	1	1	1	1
Lane group	L	TR		L	TR		L	TR	R	L	T	R
Volume, V (vph)	115	1038	125	127	1530	51	186	83	63	96	212	249
% Heavy vehicles, %HV	0	3	0	0	3	0	0	3	0	0	3	0
Peak-hour factor, PHF	0.69	0.92	0.82	0.81	0.91	0.80	0.88	0.67	0.78	0.80	0.78	0.86
Pretimed (P) or actuated (A)	P	P	P	P	P	P	A	P	P	A	P	P
Start-up lost time, l_1	2.0	2.0		2.0	2.0		2.0	2.0	2.0	2.0	2.0	2.0
Extension of effective green, e	2.0	2.0		2.0	2.0		2.0	2.0	2.0	2.0	2.0	2.0
Arrival type, AT	3	3		3	3		3	3	3	3	3	3
Unit extension, UE	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Filtering/metering, I	1.000	1.000		1.000	1.000		1.000	1.000	1.000	1.000	1.000	1.000
Initial unmet demand, Q_b	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Ped / Bike / RTOR volumes	0		0	0		0	0		0	0		0
Lane width	12.0	12.0		12.0	12.0		12.0	12.0	12.0	12.0	12.0	12.0
Parking / Grade / Parking	N	0	N	N	0	N	N	0	N	N	0	N
Parking maneuvers, N_m												
Buses stopping, N_B	0	0		0	0		0	0	0	0	0	0
Min. time for pedestrians, G_p	3.2			3.2			3.2			3.2		

Phasing	EW Perm	Excl. Left	03	04	NS Perm	Excl. Left	07	08
Timing	G = 65.0	G = 12.0	G =	G =	G = 20.0	G = 8.0	G =	G =
	Y = 4	Y = 4	Y =	Y =	Y = 4	Y = 3	Y =	Y =
Duration of Analysis, T = 0.25					Cycle Length, C = 120.0			

Lane Group Capacity, Control Delay, and LOS Determination

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Adjusted flow rate, v	167	1280		157	1745		211	124	81	120	272	290
Lane group capacity, c	304	1875		366	1894		244	308	485	348	308	485
v/c ratio, X	0.55	0.68		0.43	0.92		0.86	0.40	0.17	0.34	0.88	0.60
	0.68	0.54		0.68	0.54		0.27	0.17	0.30	0.27	0.17	0.30

Total green ratio, g/C												
Uniform delay, d_1	44.3	20.0		30.7	25.2		50.7	44.7	31.0	39.2	48.9	35.8
Progression factor, PF	1.000	1.000		1.000	1.000		1.000	1.000	1.000	1.000	1.000	1.000
Delay calibration, k	0.50	0.50		0.50	0.50		0.39	0.50	0.50	0.11	0.50	0.50
Incremental delay, d_2	7.0	2.0		3.6	8.9		26.1	3.9	0.7	0.6	28.6	5.4
Initial queue delay, d_3	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Control delay	51.2	22.0		34.4	34.1		76.7	48.5	31.7	39.8	77.5	41.2
Lane group LOS	D	C		C	C		E	D	C	D	E	D
Approach delay	25.4			34.1			59.6			55.4		
Approach LOS	C			C			E			E		
Intersection delay	36.9			X_c = 0.90			Intersection LOS			D		

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TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	FJB/IA	Intersection	1700/Western Ave
Agency/Co.		Jurisdiction	NYSDOT
Date Performed	3/3/2011	Analysis Year	2015 No-Build
Analysis Time Period	AM		

Project Description

East/West Street: Western Ave (20)	North/South Street: 1700 Driveway
Intersection Orientation: East-West	Study Period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street	Eastbound			Westbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume (veh/h)	0	1455	4	4	1020	0
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Hourly Flow Rate (veh/h)	0	1616	4	4	1133	0
Proportion of heavy vehicles, P_{HV}	0	--	--	0	--	--
Median type	Undivided					
RT Channelized?			0			0
Lanes	0	2	0	1	2	0
Configuration		T	TR	L	T	
Upstream Signal		0			0	

Minor Street	Northbound			Southbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume (veh/h)	2	0	40	0	0	0
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Hourly Flow Rate (veh/h)	2	0	44	0	0	0
Proportion of heavy vehicles, P_{HV}	0	0	0	0	0	0
Percent grade (%)		0			0	
Flared approach		N			N	
Storage		0			0	
RT Channelized?			0			0
Lanes	0	1	0	0	0	0
Configuration		LTR				

Control Delay, Queue Length, Level of Service

Approach	EB	WB	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration		L		LTR				
Volume, v (vph)		4		46				
Capacity, c_m (vph)		407		249				
v/c ratio		0.01		0.18				
Queue length (95%)		0.03		0.66				
Control Delay (s/veh)		13.9		22.7				
LOS		B		C				
Approach delay (s/veh)	--	--	22.7					
Approach LOS	--	--	C					

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TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	FJB/IA	Intersection	1700/Western Ave
Agency/Co.		Jurisdiction	NYSDOT
Date Performed	3/3/2011	Analysis Year	2015 No-Build
Analysis Time Period	PM		

Project Description	
East/West Street: Western Ave (20)	North/South Street: 1700 Driveway
Intersection Orientation: East-West	Study Period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street	Eastbound			Westbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume (veh/h)	0	1127	4	60	1750	0
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Hourly Flow Rate (veh/h)	0	1252	4	66	1944	0
Proportion of heavy vehicles, P_{HV}	0	--	--	0	--	--
Median type	Undivided					
RT Channelized?			0			0
Lanes	0	2	0	1	2	0
Configuration		T	TR	L	T	
Upstream Signal		0			0	

Minor Street	Northbound			Southbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume (veh/h)	2	0	14	0	0	0
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Hourly Flow Rate (veh/h)	2	0	15	0	0	0
Proportion of heavy vehicles, P_{HV}	0	0	0	0	0	0
Percent grade (%)		0			0	
Flared approach		N			N	
Storage		0			0	
RT Channelized?			0			0
Lanes	0	1	0	0	0	0
Configuration		LTR				

Control Delay, Queue Length, Level of Service

Approach	EB	WB	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration		L		LTR				
Volume, v (vph)		66		17				
Capacity, c_m (vph)		561		156				
v/c ratio		0.12		0.11				
Queue length (95%)		0.40		0.36				
Control Delay (s/veh)		12.3		30.9				
LOS		B		D				
Approach delay (s/veh)	--	--	30.9					
Approach LOS	--	--	D					

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HCS2000™ DETAILED REPORT

General Information		Site Information	
Analyst	FJB	Intersection	US 20/Crossgates
Agency or Co.	IA	Area Type	All other areas
Date Performed	02/22/11	Jurisdiction	NYSDOT
Time Period	AM	Analysis Year	2015 No-Build
		Project ID	

Volume and Timing Input

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Number of lanes, N_1	1	2	0	0	3	1	0	1	0	2	0	1
Lane group	L	T			T	R		LTR		L	LR	R
Volume, V (vph)	16	1626			1025	100	0	0	0	28		1
% Heavy vehicles, %HV	0	3			3	0	0	3	0	0		0
Peak-hour factor, PHF	0.47	0.80			0.94	0.90	0.88	0.67	0.78	0.59		0.86
Pretimed (P) or actuated (A)	P	P			P	P				P		P
Start-up lost time, l_1	2.0	2.0			2.0	2.0		2.0		2.0	2.0	2.0
Extension of effective green, e	2.0	2.0			2.0	2.0		2.0		2.0	2.0	2.0
Arrival type, AT	3	3			3	3		3		3	3	3
Unit extension, UE	3.0	3.0			3.0	3.0		3.0		3.0	3.0	3.0
Filtering/metering, I	1.000	1.000			1.000	1.000		1.000		1.000	1.000	1.000
Initial unmet demand, Q_b	0.0	0.0			0.0	0.0		0.0		0.0	0.0	0.0
Ped / Bike / RTOR volumes				0		0	0		0	0		0
Lane width	12.0	12.0			12.0	12.0		12.0		12.0	12.0	12.0
Parking / Grade / Parking	N	0	N	N	0	N	N	0	N	N	0	N
Parking maneuvers, N_m												
Buses stopping, N_B	0	0			0	0		0		0	0	0
Min. time for pedestrians, G_p				3.2			3.2			3.2		

Phasing	EW Perm	02	03	04	SB Only	06	07	08
Timing	G = 70.0	G =	G =	G =	G = 20.0	G =	G =	G =
	Y = 4	Y =	Y =	Y =	Y = 4	Y =	Y =	Y =
Duration of Analysis, T = 0.25						Cycle Length, C = 98.0		

Lane Group Capacity, Control Delay, and LOS Determination

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Adjusted flow rate, v	34	2032			1090	111		0		47	0	1
Lane group capacity, c	319	2509			3589	1615		0		715	377	330
v/c ratio, X	0.11	0.81			0.30	0.07				0.07	0.00	0.00
Total green ratio, g/C	0.71	0.71			0.71	1.00		0.00		0.20	0.20	0.20

Uniform delay, d_1	4.3	9.5			5.1	0.0				31.5	31.0	31.1
Progression factor, PF	1.000	1.000			1.000	0.950				1.000	1.000	1.000
Delay calibration, k	0.50	0.50			0.50	0.50				0.50	0.50	0.50
Incremental delay, d_2	0.7	3.0			0.2	0.1				0.2	0.0	0.0
Initial queue delay, d_3	0.0	0.0			0.0	0.0		0.0		0.0	0.0	0.0
Control delay	5.0	12.4			5.3	0.1				31.6	31.0	31.1
Lane group LOS	A	B			A	A				C	C	C
Approach delay	12.3			4.8						31.6		
Approach LOS	B			A						C		
Intersection delay				$X_c = 0.64$			Intersection LOS					

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HCS2000™ DETAILED REPORT

General Information		Site Information	
Analyst	FJB	Intersection	US 20/Crossgates
Agency or Co.	IA	Area Type	All other areas
Date Performed	02/22/11	Jurisdiction	NYSDOT
Time Period	PM	Analysis Year	2015 No-Build
		Project ID	

Volume and Timing Input

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Number of lanes, N_1	1	2	0	0	3	1	0	1	0	2	0	1
Lane group	L	T			T	R		LTR		L		R
Volume, V (vph)	45	1285			1757	235	0	0	0	300		40
% Heavy vehicles, %HV	0	3			3	0	0	3	0	0		0
Peak-hour factor, PHF	0.69	0.92			0.91	0.80	0.88	0.67	0.78	0.80		0.86
Pretimed (P) or actuated (A)	P	P			P	P				P		P
Start-up lost time, l_1	2.0	2.0			2.0	2.0		2.0		2.0		2.0
Extension of effective green, e	2.0	2.0			2.0	2.0		2.0		2.0		2.0
Arrival type, AT	3	3			3	3		3		3		3
Unit extension, UE	3.0	3.0			3.0	3.0		3.0		3.0		3.0
Filtering/metering, I	1.000	1.000			1.000	1.000		1.000		1.000	1.000	1.000
Initial unmet demand, Q_b	0.0	0.0			0.0	0.0		0.0		0.0		0.0
Ped / Bike / RTOR volumes				0		0	0		0	0		0
Lane width	12.0	12.0			12.0	12.0		12.0		12.0		12.0
Parking / Grade / Parking	N	0	N	N	0	N	N	0	N	N	0	N
Parking maneuvers, N_m												
Buses stopping, N_B	0	0			0	0		0		0		0
Min. time for pedestrians, G_p				3.2			3.2			3.2		

Phasing	EW Perm	02	03	04	SB Only	06	07	08
Timing	G = 70.0	G =	G =	G =	G = 25.0	G =	G =	G =
	Y = 4	Y =	Y =	Y =	Y = 4	Y =	Y =	Y =
Duration of Analysis, T = 0.25						Cycle Length, C = 103.0		

Lane Group Capacity, Control Delay, and LOS Determination

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Adjusted flow rate, v	65	1397			1931	294		0		375		47
Lane group capacity, c	99	2387			3415	1615		0		851		392
v/c ratio, X	0.66	0.59			0.57	0.18				0.44		0.12
Total green ratio, g/C	0.68	0.68			0.68	1.00		0.00		0.24		0.24

Uniform delay, d_1	9.5	8.8			8.6	0.0				33.1		30.4
Progression factor, PF	1.000	1.000			1.000	0.950				1.000		1.000
Delay calibration, k	0.50	0.50			0.50	0.50				0.50		0.50
Incremental delay, d_2	29.2	1.1			0.7	0.2				1.7		0.6
Initial queue delay, d_3	0.0	0.0			0.0	0.0		0.0		0.0	0.0	0.0
Control delay	38.8	9.8			9.3	0.2				34.7		31.0
Lane group LOS	D	A			A	A				C		C
Approach delay	11.1			8.1					34.3			
Approach LOS	B			A					C			
Intersection delay				$X_c = 0.60$			Intersection LOS					

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TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	CDL	Intersection	Johnston Rd/School
Agency/Co.	Ingalls & Associataes, LLP	Jurisdiction	
Date Performed	9/15/2011	Analysis Year	2015 No Build
Analysis Time Period	AM Existing		
Project Description			
East/West Street: Westmere Elementary		North/South Street: Johnston Rd	
Intersection Orientation: North-South		Study Period (hrs): 0.25	

Vehicle Volumes and Adjustments

Major Street	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	0	341	35	59	101	0
Peak-Hour Factor, PHF	1.00	0.93	0.44	0.54	0.74	1.00
Hourly Flow Rate, HFR	0	366	79	109	136	0
Percent Heavy Vehicles	0	--	--	20	--	--
Median Type	Undivided					
RT Channelized			0			0
Lanes	0	1	0	0	1	0
Configuration			TR	LT		
Upstream Signal		0			0	

Minor Street	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	15	0	75	0	0	0
Peak-Hour Factor, PHF	0.34	1.00	0.40	1.00	1.00	1.00
Hourly Flow Rate, HFR	44	0	187	0	0	0
Percent Heavy Vehicles	20	0	30	0	0	0
Percent Grade (%)		0			0	
Flared Approach		N			N	
Storage		0			0	
RT Channelized			0			0
Lanes	0	1	0	0	0	0
Configuration		LTR				

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration		LT		LTR				
v (vph)		109		231				
C (m) (vph)		1026		504				
v/c		0.11		0.46				
95% queue length		0.36		2.37				
Control Delay		8.9		18.0				
LOS		A		C				
Approach Delay	--	--	18.0					
Approach LOS	--	--	C					

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TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	CDL	Intersection	Johnston Rd/School
Agency/Co.	Ingalls & Associataes, LLP	Jurisdiction	
Date Performed	9/15/2011	Analysis Year	2015 No Build
Analysis Time Period	PM Existing		
Project Description			
East/West Street:	Westmere Elementary	North/South Street:	Johnston Rd
Intersection Orientation:	North-South	Study Period (hrs):	0.25

Vehicle Volumes and Adjustments

Major Street	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	0	240	5	31	383	0
Peak-Hour Factor, PHF	1.00	0.90	0.63	0.62	0.86	1.00
Hourly Flow Rate, HFR	0	266	7	49	445	0
Percent Heavy Vehicles	0	--	--	0	--	--
Median Type	Two Way Left Turn Lane					
RT Channelized			0			0
Lanes	0	1	0	1	1	0
Configuration			TR	L	T	
Upstream Signal		0			0	

Minor Street	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	13	0	35	0	0	0
Peak-Hour Factor, PHF	0.81	1.00	0.60	1.00	1.00	1.00
Hourly Flow Rate, HFR	16	0	58	0	0	0
Percent Heavy Vehicles	0	0	0	0	0	0
Percent Grade (%)		0			0	
Flared Approach		N			N	
Storage		0			0	
RT Channelized			0			0
Lanes	0	0	0	0	0	0
Configuration		LR				

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration		L		LR				
v (vph)		49		74				
C (m) (vph)		1302		667				
v/c		0.04		0.11				
95% queue length		0.12		0.37				
Control Delay		7.9		11.1				
LOS		A		B				
Approach Delay	--	--	11.1					
Approach LOS	--	--	B					

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N/S Street: Johnston Road / Rapp Road

Date: 1/20/11 & 1/25/11 (2011 Counts)

E/W Street: Western Ave

Job Number: 10-011

	Southbound			Northbound			Westbound			Eastbound			
Start Time	Left	Straight	Right	Left	Straight	Right	Left	Straight	Right	Left	Straight	Right	Total
7:00	14	4	0	20	11	36	10	138	4	50	271	7	565
7:15	10	10	10	16	21	21	6	172	19	52	229	15	581
7:30	4	5	42	16	25	24	42	212	6	0	165	13	556
7:45	2	14	1	39	48	53	38	190	14	105	423	15	942
8:00	13	16	0	25	33	30	15	169	6	71	291	10	678
8:15	6	1	0	21	27	22	19	187	22	83	408	12	808
8:30	13	2	0	19	35	25	7	187	16	45	258	8	616
8:45	13	2	0	31	15	29	13	161	14	49	430	12	767
Total Peak (2015)	34	33	1	105	142	131	80	732	58	304	1380	45	3044
4:00	21	41	58	47	18	8	22	373	16	33	283	36	957
4:15	14	36	59	41	15	13	29	344	10	25	153	30	768
4:30	31	45	49	40	27	18	37	425	10	36	270	27	1013
4:45	24	48	67	31	22	16	32	244	12	30	232	34	792
5:00	30	68	69	53	17	18	27	343	12	41	282	33	992
5:15	27	67	72	52	31	15	39	403	10	20	237	30	1002
5:30	14	36	58	34	19	20	38	419	16	28	267	24	974
5:45	25	41	50	47	16	10	23	365	14	25	252	38	906
Total Peak (2015)	96	212	249	186	83	63	127	1530	51	115	1038	125	3875
PHF	0.67	0.52	0.25	0.67	0.74	0.62	0.52	0.96	0.65	0.72	0.81	0.75	0.81
	0.80	0.78	0.86	0.88	0.67	0.78	0.81	0.91	0.80	0.69	0.92	0.82	0.97

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N/S Street: Crossgate Mall Rd — Date: 1/27/11 (2011 Counts)

E/W Street: Western Ave — Job Number: 10-011

	Southbound			Northbound			Westbound			Eastbound			
Start Time	Left	Straight	Right	Left	Straight	Right	Left	Straight	Right	Left	Straight	Right	Total
7:00	4							448	17	1	287		757
7:15	2							207	15	1	349		574
7:30	2							274	25	1	343		645
7:45	3							273	21	3	454		755
8:00	11							264	28	3	319		625
8:15	12							214	25	8	509		769
8:30	13							200	31	2	380		625
8:45	13							193	17	3	288		514
Total Peak (2015)	28							1025	100	16	1626		2795
4:00	51		12					416	47	11	327		863
4:15	36		8					452	56	2	206		761
4:30	96		5					429	49	10	344		932
4:45	55		14					386	53	5	287		800
5:00	73		15					432	60	10	299		889
5:15	76		6					509	72	20	356		1040
5:30	62		10					435	50	12	308		876
5:45	64		13					401	56	11	274		818
Total Peak (2015)	300		40					1757	235	45	1285		3662
PHF	0.59							0.94	0.90	0.47	0.80		
	0.79		0.68					0.86	0.81	0.55	0.90		

4

ingalls

N/S Street: Johnston Road

E/W Street: Westmere Elementary

Dates: 9/13/11 & 9/14/11 (2011 Counts)

Job Number: 10-011

	Southbound			Northbound			Westbound			Eastbound			
Start Time	Left	Straight	Right	Left	Straight	Right	Left	Straight	Right	Left	Straight	Right	Total
7:00	13	16			38	8	6		4				85
7:15	27	24			50	5	3		9				118
7:30	45	19			81	11	2		13				171
7:45	41	21			76	20	11		47				216
8:00	6	24			87	3	2		11				133
8:15	6	32			77	1	0		4				120
8:30	3	26			64	0	1		1				95
8:45	1	18			67	1	0		1				88
Total Peak (2011)	98	96	0	0	321	35	15	0	75	0	0	0	640
4:00	7	68			35	2	3		8				123
4:15	7	76			42	1	1		8				135
4:30	6	88			43	1	1		5				144
4:45	9	81			50	2	1		8				151
5:00	8	94			50	1	3		14				170
5:15	12	105			63	2	4		7				193
5:30	5	86			50	1	4		7				153
5:45	6	76			63	1	2		7				155
Total Peak (2011)	31	361	0	0	226	5	13	0	35	0	0	0	671
PHF	0.54	0.75			0.92	0.44	0.34		0.40				0.74
	0.65	0.86			0.90	0.63	0.81		0.63				0.87

ingalls

N/S Street: Johnston Road
E/W Street: Westmere Elementary

Date: 2015 ETC
Job Number: 10-011

	Southbound			Northbound			Westbound			Eastbound			
Start Time	Left	Straight	Right	Left	Straight	Right	Left	Straight	Right	Left	Straight	Right	Total
7:00	13	17			40	8	6		4				88
7:15	27	25			53	5	3		9				122
7:30	45	20			86	11	2		13				177
7:45	41	22			81	20	11		47				222
8:00	6	25			92	3	2		11				139
8:15	6	34			82	1	0		4				127
8:30	3	28			68	0	1		1				101
8:45	1	19			71	1	0		1				93
Total Peak (2011)	98	101	0	0	341	35	15	0	75	0	0	0	665
4:00	7	72			37	2	3		8				129
4:15	7	81			45	1	1		8				143
4:30	6	93			46	1	1		5				152
4:45	9	86			53	2	1		8				159
5:00	8	100			53	1	3		14				179
5:15	12	111			67	2	4		7				203
5:30	5	91			53	1	4		7				161
5:45	6	81			67	1	2		7				164
Total Peak (2011)	31	383	0	0	240	5	13	0	35	0	0	0	707
PHF	0.54	0.74			0.93	0.44	0.34		0.40				0.75
	0.65	0.86			0.90	0.63	0.81		0.63				0.87

ingalls

N/S Street: Crossgate Mall Rd
E/W Street: Western Ave

Date: 2015 ETC
Job Number: 10-011

	Southbound			Northbound			Westbound			Eastbound			
Start Time	Left	Straight	Right	Left	Straight	Right	Left	Straight	Right	Left	Straight	Right	Total
7:00	4							448	17	1	287		757
7:15	2							207	15	1	349		574
7:30	2							274	25	1	343		645
7:45	3							273	21	3	454		755
8:00	11							264	28	3	319		625
8:15	12							214	25	8	509		769
8:30	13							200	31	2	380		625
8:45	13							193	17	3	288		514
Total Peak (2015)	28							1025	100	16	1626		2795
4:00	51		12					416	47	11	327		863
4:15	36		8					452	56	2	206		761
4:30	96		5					429	49	10	344		932
4:45	55		14					386	53	5	287		800
5:00	73		15					432	60	10	299		889
5:15	76		6					509	72	20	356		1040
5:30	62		10					435	50	12	308		876
5:45	64		13					401	56	11	274		818
Total Peak (2015)	300		40					1757	235	45	1285		3662
PHF	0.59							0.94	0.90	0.47	0.80		
	0.79		0.68					0.86	0.81	0.55	0.90		

ingalls

N/S Street: Crossgate Mall Rd

E/W Street: Western Ave

Date: 2015 ETC

Job Number: 10-011

	Southbound			Northbound			Westbound			Eastbound			
Start Time	Left	Straight	Right	Left	Straight	Right	Left	Straight	Right	Left	Straight	Right	Total
7:00	4							448	17	1	287		757
7:15	2							207	15	1	349		574
7:30	2							274	25	1	343		645
7:45	3							273	21	3	454		755
8:00	11							264	28	3	319		625
8:15	12							214	25	8	509		769
8:30	13							200	31	2	380		625
8:45	13							193	17	3	288		514
Total Peak (2015)	28							1025	100	16	1626		2795
4:00	51		12					416	47	11	327		863
4:15	36		8					452	56	2	206		761
4:30	96		5					429	49	10	344		932
4:45	55		14					386	53	5	287		800
5:00	73		15					432	60	10	299		889
5:15	76		6					509	72	20	356		1040
5:30	62		10					435	50	12	308		876
5:45	64		13					401	56	11	274		818
Total Peak (2015)	300		40					1757	235	45	1285		3662
PHF	0.59							0.94	0.90	0.47	0.80		
	0.79		0.68					0.86	0.81	0.55	0.90		

STATION: **110212**

New York State Department of Transportation

Traffic Count Hourly Report

ROUTE #: US 20 ROAD NAME: 20
DIRECTION: Eastbound FACTOR GROUP: 30
STATE DIR CODE: 1 WK OF YR: 17
DATE OF COUNT: 04/28/2006
NOTES LANE 0: Week 17-Eb

COUNT TAKEN BY: ORG CODE: TST INITIALS: JSV

FROM: ACC CROSSGATES MALL
REC. SERIAL #: 7393
PLACEMENT: 760' E of Mall Rd
@ REF MARKER: 20 11201107
ADDL DATA:
COUNT TYPE: AXLE PAIRS
PROCESSED BY: ORG CODE: DOT INITIALS: JJC

TO: FULLER RD ALTERNATE
FUNC. CLASS: 14
NHS: no
JURIS: State
CC Stn:
BATCH ID: DOT-R01ww18c

COUNTY: Albany
TOWN: GUILDERLAND
BIN: 1015970
RR CROSSING:
HPMS SAMPLE:

DATE	DAY	12 TO 1	1 TO 2	2 TO 3	3 TO 4	4 TO 5	5 TO 6	6 TO 7	7 TO 8	8 TO 9	9 TO 10	10 TO 11	11 TO 12	12 TO 1	1 TO 2	2 TO 3	3 TO 4	4 TO 5	5 TO 6	6 TO 7	7 TO 8	8 TO 9	9 TO 10	10 TO 11	11 TO 12	DAILY TOTAL	DAILY HIGH COUNT	DAILY HIGH HOUR
		AM												PM														
28	F															1537	1546	1514	1634	1468	1231	1037	997	535	392			
29	S	259	133	61	46	46	97	260	476	777	988	1156	1423	1429	1386	1470	1483	1405	1334	1256	1120	918	983	565	408	19479	1483	15
30	S	225	115	74	46	45	79	170	237	431	693	889	1098	1221	1295	1265	1236	1182	1047	1065	834	623	427	301	192	14790	1295	13
1	M	116	48	45	57	79	232	711	1394	1486	1075	1003	1122	1392	1342	1283	1382	1365	1341	1138	1033	824	947	380	205	20000	1486	8
2	T	94	61	38	35	81	219	757	1413	1598	1161	1034	1128	1358	1336	1330	1412	1414	1459	1307	1029	970	809	373	181	20597	1598	8
3	W	128	47	50	55	68	222	754	1440	1498	1102	961	1151	1380	1407	1364	1428	1440	1468	1324	1177	941	662	376	233	20676	1498	8
4	T	108	50	47	60	70	226	783	1411	1497	1109	953	1178	1458	1381	1388	1290	1432	1542	1282	1143	940	783	395	232	20758	1542	17
5	F	136	61	44	52	85	214	744	1386	1525	1128	1085	1188	1355	1396	1357	1498	1380	1484	1377	1232	1043	869	693	358	21690	1525	8
6	S	214	149	71	52	64	111	267	471	685	911	1160	1308	1356	1393	1439	1470	1473	1268	1138	1008	931	871	571	342	18723	1473	16
7	S	250	136	91	47	65	65	168	241	460	611	811	1005	1137	1195	1261	1235	1165	978	973	818	657	408	278	175	14230	1261	14
8	M	109	40	39	46	72	220	748	1425	1520	1029	929	1009	1222	1193	1045	1170	1279	1302	1166	1037	846	675	331	207	18659	1520	8
9	T	121	48	50	54	80	213	732	1437	1579	1066	1027	1127	1294	1266	1250	1280	1343	1390	1198	1033	935	779	401	213	19916	1579	8
10	W	103	56	56	44	66	230	731	1353										1300	1215	1112	1010	656	405	214			
11	T	104	74	38	50	74	222	732	1348	1409																		

AVERAGE WEEKDAY HOURS (Axle Factored, Mon 6AM to Fri Noon)

12 TO 1	1 TO 2	2 TO 3	3 TO 4	4 TO 5	5 TO 6	6 TO 7	7 TO 8	8 TO 9	9 TO 10	10 TO 11	11 TO 12	12 TO 1	1 TO 2	2 TO 3	3 TO 4	4 TO 5	5 TO 6	6 TO 7	7 TO 8	8 TO 9	9 TO 10	10 TO 11	11 TO 12	ADT
109	55	44	48	72	213	717	1351	1459	1057	963	1088	1302	1273	1231	1279	1329	1350	1189	1042	891	732	366	204	19364

DAYS Counted	HOURS Counted	WEEKDAYS Counted	WEEKDAY Hours	AVERAGE WEEKDAY High Hour	AVERAGE WEEKDAY % of day	Axle Adj. Factor	Seasonal/Weekday Adjustment Factor	ESTIMATED (one way)
14	298	7	168	1459	8%	0.964	1.048	AADT 18477

STATION: **110212**

New York State Department of Transportation

Traffic Count Hourly Report

ROUTE #: US 20 ROAD NAME: 20
DIRECTION: Westbound FACTOR GROUP: 30
STATE DIR CODE: 2 WK OF YR: 18
DATE OF COUNT: 05/04/2006
NOTES LANE 0: Week 18-Wb

COUNT TAKEN BY: ORG CODE: TST INITIALS: JSV

FROM: ACC CROSSGATES MALL
REC. SERIAL #: 9026
PLACEMENT: 760' E of Mall Road
@ REF MARKER: 20 11201107
ADDL DATA:
COUNT TYPE: AXLE PAIRS
PROCESSED BY: ORG CODE: DOT INITIALS: JJC

TO: FULLER RD ALTERNATE
FUNC. CLASS: 14
NHS: no
JURIS: State
CC Stn:
BATCH ID: DOT-R01ww18c

COUNTY: Albany
TOWN: GUILDERLAND
BIN: 1015970
RR CROSSING:
HPMS SAMPLE:

DATE	DAY	12 TO 1	1 TO 2	2 TO 3	3 TO 4	4 TO 5	5 TO 6	6 TO 7	7 TO 8	8 TO 9	9 TO 10	10 TO 11	11 TO 12	12 TO 1	1 TO 2	2 TO 3	3 TO 4	4 TO 5	5 TO 6	6 TO 7	7 TO 8	8 TO 9	9 TO 10	10 TO 11	11 TO 12	DAILY TOTAL	DAILY HIGH COUNT	DAILY HIGH HOUR
		AM												PM														
1	M																											
2	T																											
3	W																											
4	T																1787	1962	2081	1518	1154	973	719	412	264			
5	F	137	83	47	56	82	187	519	1146	1065	1064	1204	1310	1641	1552	1551	1686	1917	1973	1479	1151	965	795	592	427	22629	1973	17
6	S	278	157	94	84	66	87	275	416	681	990	1202	1319	1474	1455	1392	1373	1271	1198	1049	916	769	643	485	383	18057	1474	12
7	S	246	143	95	65	76	74	153	251	414	632	878	1072	1392	1409	1199	1155	1136	1009	910	821	696	427	297	172	14722	1409	13
8	M	102	48	39	25	69	165	481	1057	1068	909	976	1202	1452	1344	1359	1707	1925	1971	1434	1047	842	606	319	239	20386	1971	17
9	T	107	67	45	36	88	184	452	1091	1068	974	1067	1200	1504	1370	1459	1640	1980	2083	1526	1093	925	611	351	247	21168	2083	17
10	W	159	69	56	37	83	187	522	1151	1171	1111	1101	1252	1525	1473	1424	1804	2067	2061	1600	1071	914	671	382	227	22118	2067	16
11	T	169	74	39	45	87	188	508	1169	1012																		
12	F																											
13	S																											
14	S																											
15	M																											
16	T																											
17	W																											
18	T																											
19	F																											
20	S																											
21	S																											
22	M																											
23	T																											
24	W																											
25	T																											
26	F																											
27	S																											
28	S																											
29	M																											
30	T																											
31	W																											

AVERAGE WEEKDAY HOURS (Axle Factored, Mon 6AM to Fri Noon)

138	70	45	42	82	179	478	1083	1038	977	1048	1196	1440	1346	1363	1672	1913	1975	1465	1052	881	629	353	235	ADT 20700

DAYS Counted	HOURS Counted	WEEKDAYS Counted	WEEKDAY Hours	AVERAGE WEEKDAY High Hour	AVERAGE WEEKDAY % of day	Axle Adj. Factor	Seasonal/Weekday Adjustment Factor	ESTIMATED (one way)
8	162	5	96	1975	10%	0.964	1.084	AADT 19096

New York State Department of Transportation
Traffic Count Hourly Report

ROUTE #: US 20 ROAD NAME:
DIRECTION: Eastbound FACTOR GROUP: 30
STATE DIR CODE: 6 WK OF YR: 43
DATE OF COUNT: 10/22/2010
NOTES LANE 0: Week 43 East Bound

COUNT TAKEN BY: ORG CODE: TST INITIALS: —

FROM: RT 155 WESTMERE
REC. SERIAL #: 0014
PLACEMENT: 250 Ft W of Palma Blvd
@ REF MARKER: 20 11201095
ADDL DATA:
COUNT TYPE: AXLE PAIRS
PROCESSED BY: ORG CODE: DOT INITIALS: JSR

TO: ACC CROSSGATES MALL
FUNC. CLASS: 14
NHS: no
JURIS: NYSDOT
CC Stn:
BATCH ID: DOT-R1_SC_WW43a

COUNTY: Albany
TOWN: GUILDERLAND
LION#:
BIN:
RR CROSSING:
HPMS SAMPLE:

DATE	DAY	12 TO 1 AM	1 TO 2	2 TO 3	3 TO 4	4 TO 5	5 TO 6	6 TO 7	7 TO 8	8 TO 9	9 TO 10	10 TO 11	11 TO 12	12 TO 1 PM	1 TO 2	2 TO 3	3 TO 4	4 TO 5	5 TO 6	6 TO 7	7 TO 8	8 TO 9	9 TO 10	10 TO 11	11 TO 12	DAILY TOTAL	DAILY HIGH COUNT	DAILY HIGH HOUR
1	F																											
2	S																											
3	S																											
4	M																											
5	T																											
6	W																											
7	T																											
8	F																											
9	S																											
10	S																											
11	M																											
12	T																											
13	W																											
14	T																											
15	F																											
16	S																											
17	S																											
18	M																											
19	T																											
20	W																											
21	T																											
22	F													1254	1102	1187	1323	1226	1283	1108	763	484	464	306	199			
23	S	80	63	33	31	42	89	242	415	634	915	1019	1241	1222	1038	1016	923	950	954	876	627	519	463	310	223	13925	1241	11
24	S	160	72	37	37	35	66	167	187	359	565	747	941	965	964	856	904	771	719	592	462	353	207	157	92	10415	965	12
25	M	58	23	46	32	68	218	761	1492	1568	965	901	937	1068	1021	1023	1183	1051	1167	927	580	429	317	175	147	16157	1568	8
26	T	72	34	22	30	73	193	773	1649	1673	1083	932	970	1088	1016	1002	1087	1159	1163	936	666	465	336	227	135	16784	1673	8
27	W	82	50	25	34	67	185	764	1628	1550	1114	921	1093	1123	1051	1014	1104	1210	1182	1058	683	546	330	201	155	17170	1628	7
28	T	62	46	32	41	66	220	787	1547	1650	1151	1002	1070	1188	1056	1102	1170	1240	1344	1181	729	534	360	222	154	17954	1650	8
29	F	70	47	22	38	62	193	669																				
30	S																											
31	S																											

AVERAGE WEEKDAY HOURS (Axle Factored, Mon 6AM to Fri Noon)

70	43	24	35	65	192	730	1535	1565	1048	913	989	1086	1007	1006	1104	1132	1180	997	645	480	327	200	144	ADT 16517

DAYS Counted	HOURS Counted	WEEKDAYS Counted	WEEKDAY Hours	AVERAGE WEEKDAY High Hour	AVERAGE WEEKDAY % of day	Axle Adj. Factor	Seasonal/Weekday Adjustment Factor	ESTIMATED
8	163	4	97	1565	9%	0.972	1.074	AADT 15379

New York State Department of Transportation
Traffic Count Hourly Report

ROUTE #: US 20 ROAD NAME:
DIRECTION: Westbound FACTOR GROUP: 30
STATE DIR CODE: 7 WK OF YR: 43
DATE OF COUNT: 10/22/2010
NOTES LANE 0: Week 43 West Bound

COUNT TAKEN BY: ORG CODE: TST INITIALS: ---

FROM: RT 155 WESTMERE
REC. SERIAL #: 0055
PLACEMENT: 250 Ft W of Palma Blvd
@ REF MARKER: 20 11201095
ADDL DATA:
COUNT TYPE: AXLE PAIRS
PROCESSED BY: ORG CODE: DOT INITIALS: JSR

TO: ACC CROSSGATES MALL
FUNC. CLASS: 14
NHS: no
JURIS: NYSDOT
CC Stn:
BATCH ID: DOT-R1_SC_WW43a

COUNTY: Albany
TOWN: GUILDERLAND
LION#:
BIN:
RR CROSSING:
HPMS SAMPLE:

DATE	DAY	12 TO 1 AM	1 TO 2	2 TO 3	3 TO 4	4 TO 5	5 TO 6	6 TO 7	7 TO 8	8 TO 9	9 TO 10	10 TO 11	11 TO 12	12 TO 1 PM	1 TO 2	2 TO 3	3 TO 4	4 TO 5	5 TO 6	6 TO 7	7 TO 8	8 TO 9	9 TO 10	10 TO 11	11 TO 12	DAILY TOTAL	DAILY HIGH COUNT	DAILY HIGH HOUR
1	F																											
2	S																											
3	S																											
4	M																											
5	T																											
6	W																											
7	T																											
8	F																											
9	S																											
10	S																											
11	M																											
12	T																											
13	W																											
14	T																											
15	F																											
16	S																											
17	S																											
18	M																											
19	T																											
20	W																											
21	T																											
22	F													1279	1283	1333	1411	1599	1661	1193	877	721	765	517	323			
23	S	188	100	61	49	53	76	178	330	515	650	872	1012	1081	1056	1123	1058	1059	1017	945	739	689	619	516	318	14304	1123	14
24	S	183	111	61	49	58	47	91	218	319	519	573	796	921	944	955	964	965	843	750	576	408	289	228	157	11025	965	16
25	M	76	44	39	30	51	137	435	921	920	783	774	895	1057	1172	1406	1322	1599	1703	1131	783	676	482	274	171	16881	1703	17
26	T	96	49	23	31	71	154	446	950	958	772	938	1015	1082	1198	1145	1366	1588	1774	1236	831	725	556	328	178	17510	1774	17
27	W	84	52	27	32	58	147	449	966	930	707	834	1021	1174	1123	1133	1390	1685	1677	1245	894	790	612	328	193	17551	1685	16
28	T	102	67	37	36	61	172	422	907	610	451	492	480	673	594	590	649	780	847	587	443	386	280	161	105	9932	907	7
29	F	65	32	15	32	38	92	173																				
30	S																											
31	S																											

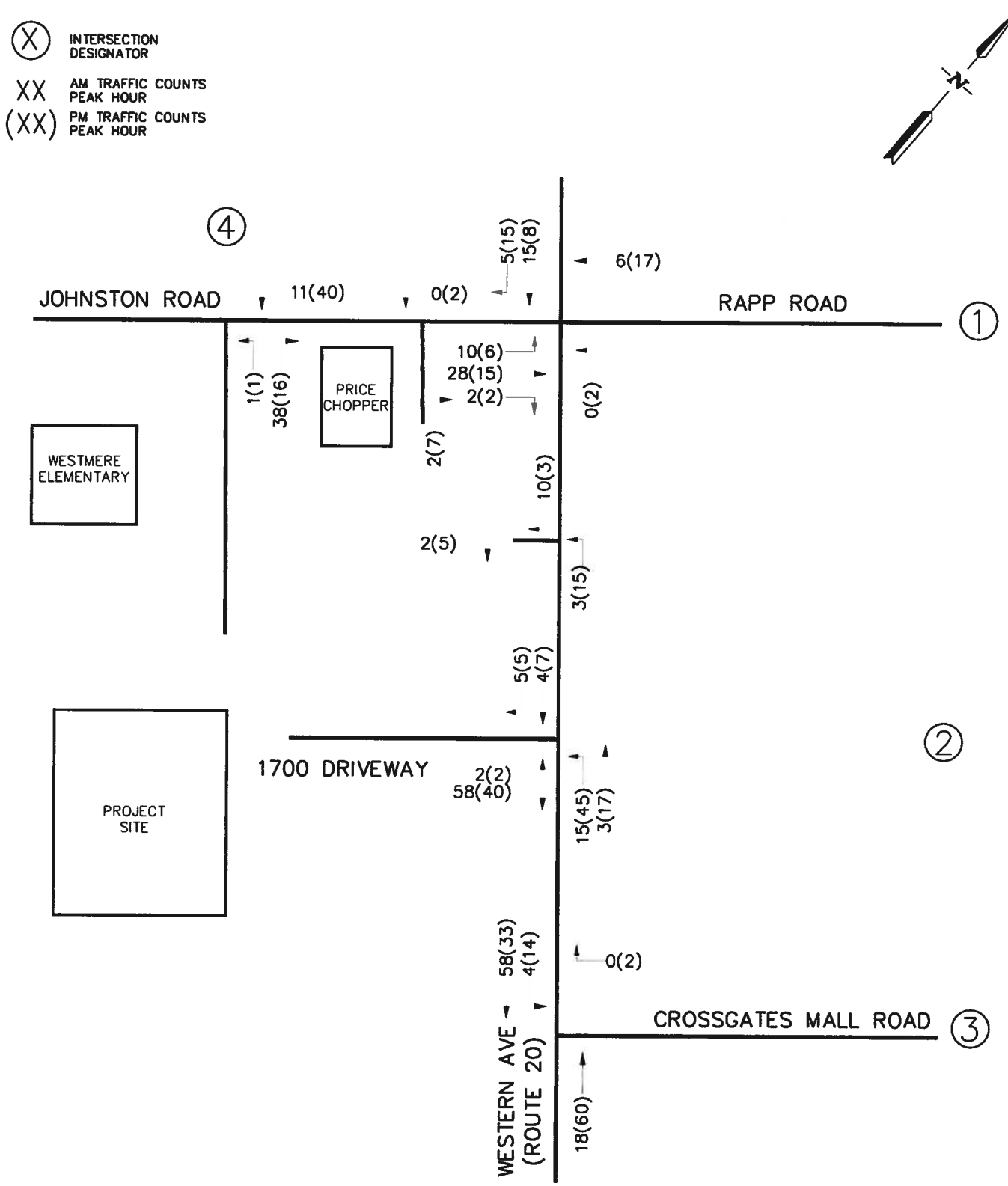
AVERAGE WEEKDAY HOURS (Axle Factored, Mon 6AM to Fri Noon)

85	49	25	32	55	137	374	910	830	659	739	829	968	993	1038	1149	1373	1458	1021	717	626	469	265	157	ADT 14958

DAYS Counted	HOURS Counted	WEEKDAYS Counted	WEEKDAY Hours	AVERAGE WEEKDAY High Hour	AVERAGE WEEKDAY % of day	Axle Adj. Factor	Seasonal/Weekday Adjustment Factor	ESTIMATED
8	163	4	97	1458	10%	0.972	1.074	AADT 13927

Appendix B

Proposed Trip Generation and Assignment



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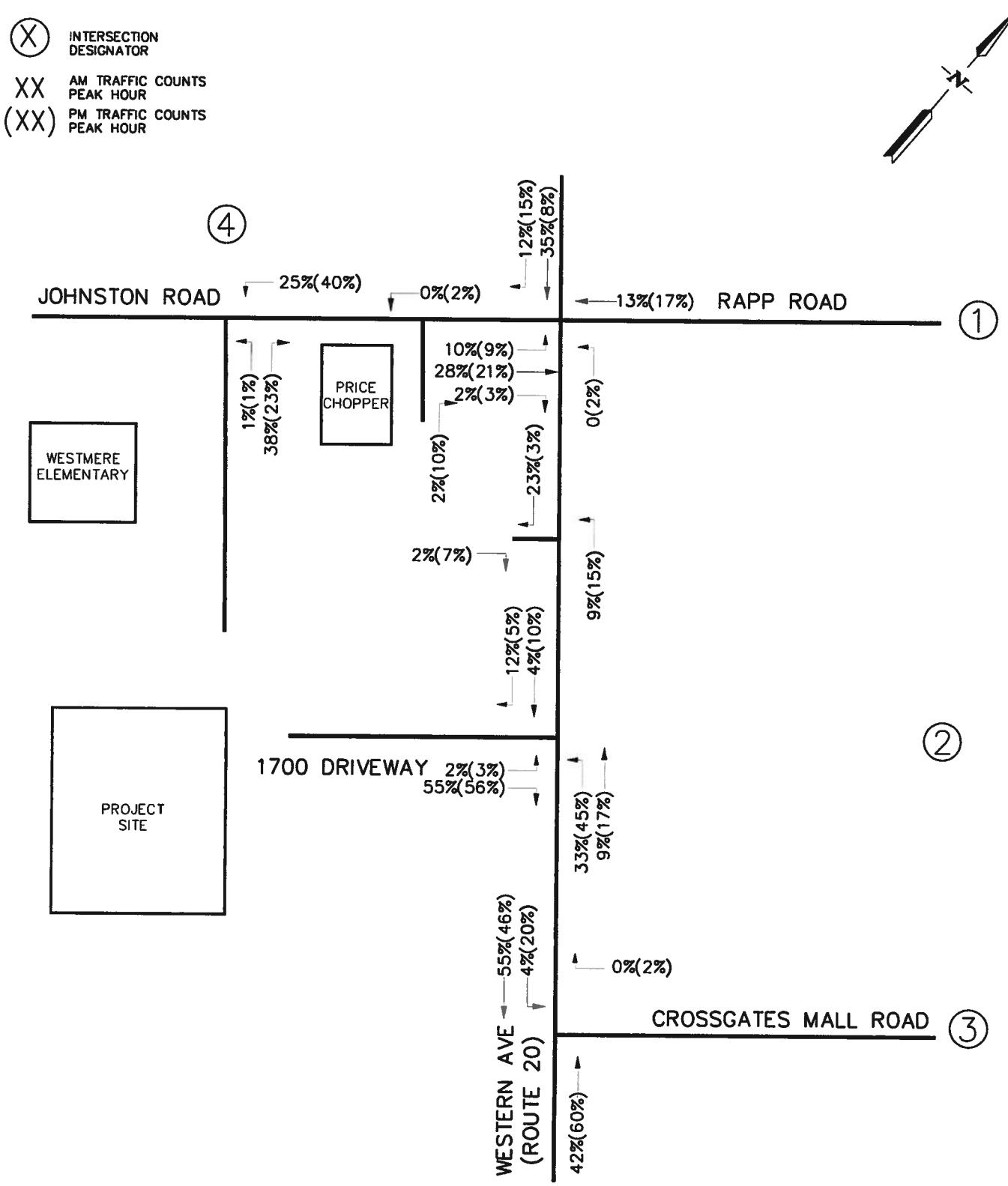
GENERATED TRIPS
LANDS N/F OF CROSSTREE CORPORATION

TOWN OF GUILDERLAND
ALBANY COUNTY STATE OF NEW YORK

DATE: JANUARY, 2011	CHECKED BY: FJB JOB NO. 99172/10011	SCALE: N.T.S.
DRAWN BY: TAH CADD FILE: 10011-TRAFFIC-2006		SHEET 1 OF 1



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TRIP DISTRIBUTION

LANDS N/F OF CROSSTREE CORPORATION

TOWN OF GUILDERLAND
ALBANY COUNTY STATE OF NEW YORK

DATE: JANUARY, 2011	CHECKED BY: FJB JOB NO. 99172/10011	SCALE: N.T.S.
DRAWN BY: TAH CADD FILE: 10011-TRAFFIC-2006		SHEET 1 OF 1

BY	DATE	INGALLS & ASSOCIATES, LLP	SHEET 1 OF
CKD	DATE	SUBJECT	SUB-SHEET NO.
OWNER		PROJECT NAME Seventeen Hundred	

Trips Generated (ITE 8th Ed)

Apartment (Use #220) 248 units

Peak of Adjacent Traffic

AM ⇒ $T = 0.49(x) + 3.73$
$= 0.49(248) + 3.73$
$= 125.25$

126 (100 out, 26 In)

PM ⇒ $T = 0.55(x) + 17.65$
$= 0.55(248) + 17.65$
$= 154.05$

154 (54 out, 100 In)

SAT ⇒ $T = 0.41(248) + 19.23$
$= 121$ (60 out, 61 In)

Office (Use #710) 15,000 SF

AM ⇒ $Ln(T) = 0.80\,Ln(x) + 1.55$
$= 41$ (5 out, 36 I)

PM ⇒ $T = 1.12(x) + 78.81$
$= 1.12(15) + 78.81$
95.61 7 (80 out, 17 In

Sat ⇒ $(T) = 0.81\,n(x) - 0.12$
$= 8$ (4 out, 4 In)

(2) Office Building (ITE 710) 13,000 SF

AM Peak $Ln(T) = 0.80 Ln(x) + 1.55$

$T = 36.6$ or Avg $1.55 \times 13 = 20.15$

PM Peak $T = 1.12(x) + 78.81$

$T = 93.4$

or Avg rate of 1.49

$1.49 \times 13 = 19.37$

Use 21 AM 8 In, 3 Out

20 PM 3 In, 7 Out

TOTAL TRIP GEN for Site

AM	126	26, 100
	21	18, 3
	147	44 In, 103 out
PM	154	100, 54
	20	3, 17
	174	103 In, 71 out

Apartment
(220)

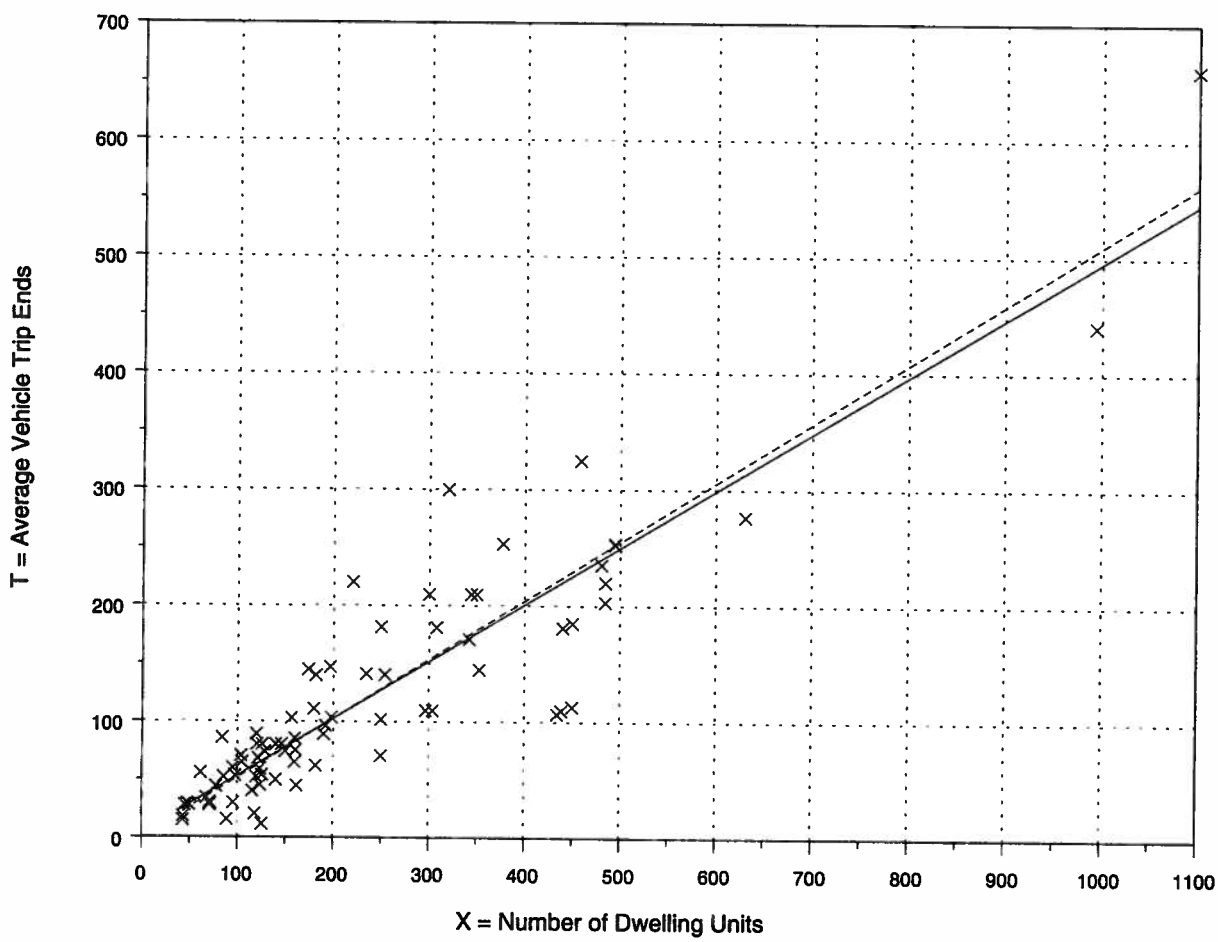
Average Vehicle Trip Ends vs: Dwelling Units
On a: Weekday,
Peak Hour of Adjacent Street Traffic,
One Hour Between 7 and 9 a.m.

Number of Studies: 78
Avg. Number of Dwelling Units: 235
Directional Distribution: 20% entering, 80% exiting

Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.51	0.10 - 1.02	0.73

Data Plot and Equation



Fitted Curve Equation: T = 0.49(X) + 3.73

R^2 = 0.83

Apartment
(220)

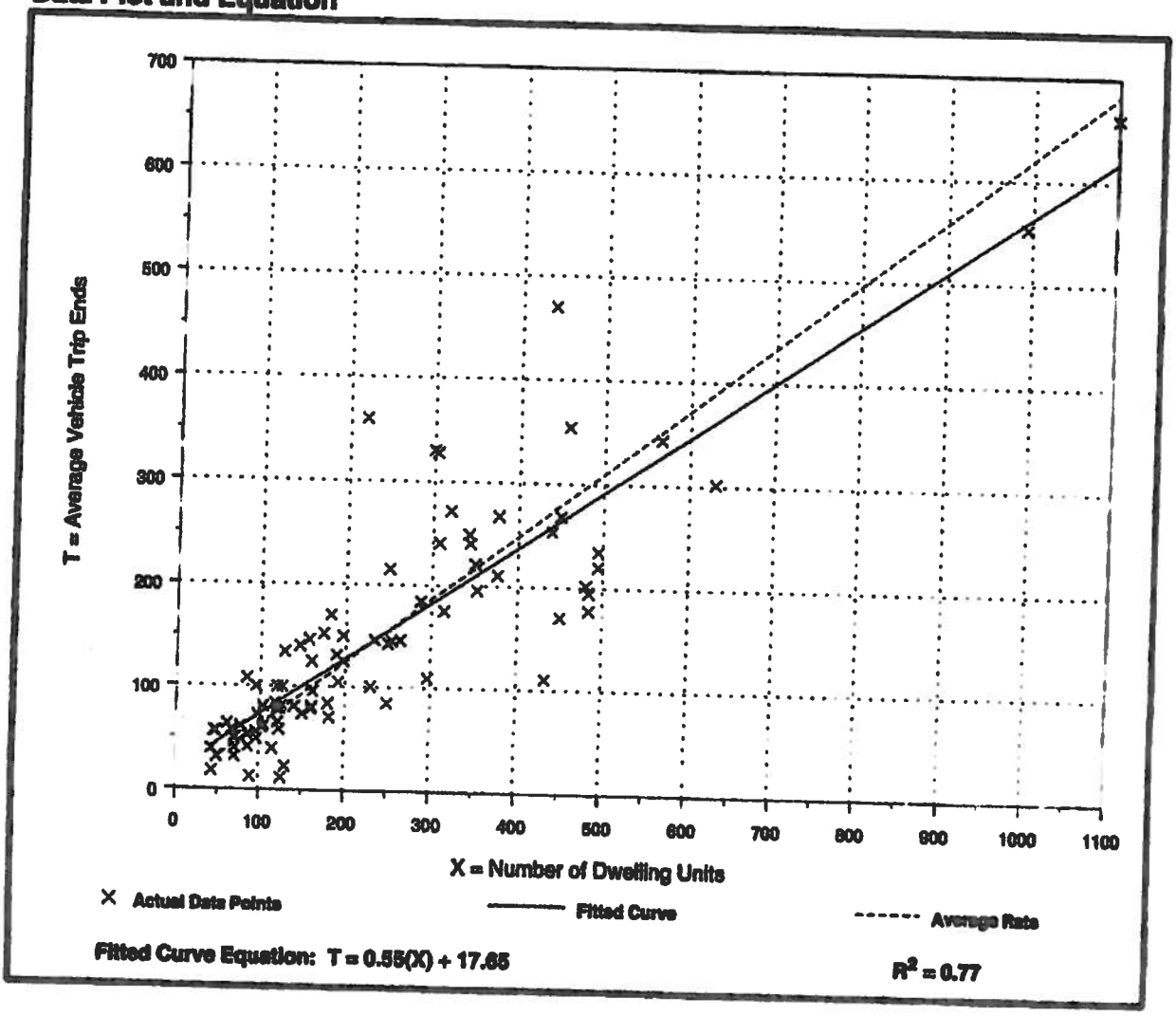
Average Vehicle Trip Ends vs: Dwelling Units
On a: Weekday,
Peak Hour of Adjacent Street Traffic,
One Hour Between 4 and 6 p.m.

Number of Studies: 90
Avg. Number of Dwelling Units: 233
Directional Distribution: 65% entering, 35% exiting

Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.62	0.10 - 1.64	0.82

Data Plot and Equation



Apartment
(220)

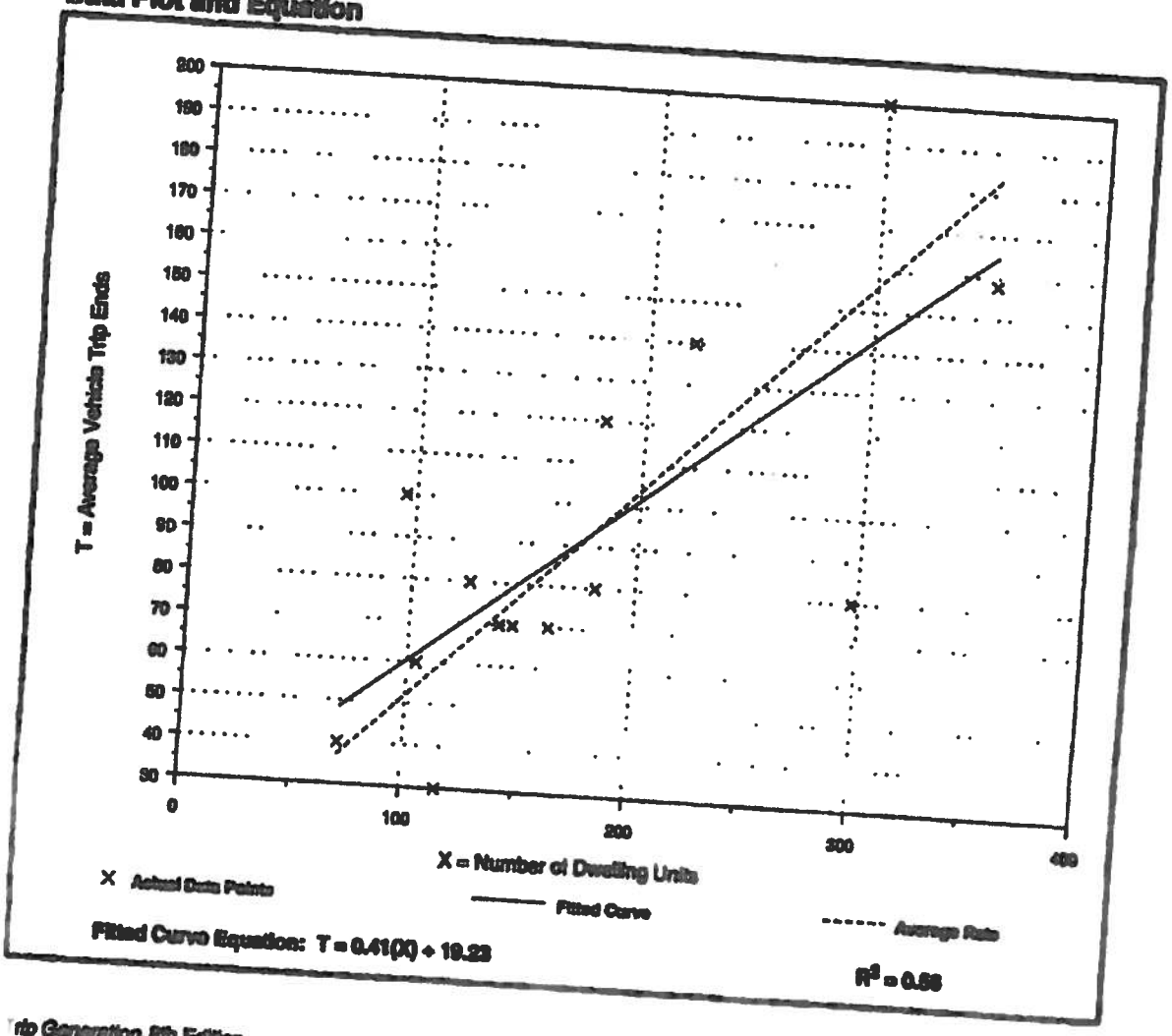
Average Vehicle Trip Ends vs: Dwelling Units
On a: Saturday,
Peak Hour of Generator

Number of Studies: 14
Avg. Number of Dwelling Units: 178
Directional Distribution: Not available

Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.62	0.28 - 1.05	0.74

Data Plot and Equation



Fitted Curve Equation: $T = 0.41(X) + 19.23$

$R^2 = 0.58$

General Office Building
(710)

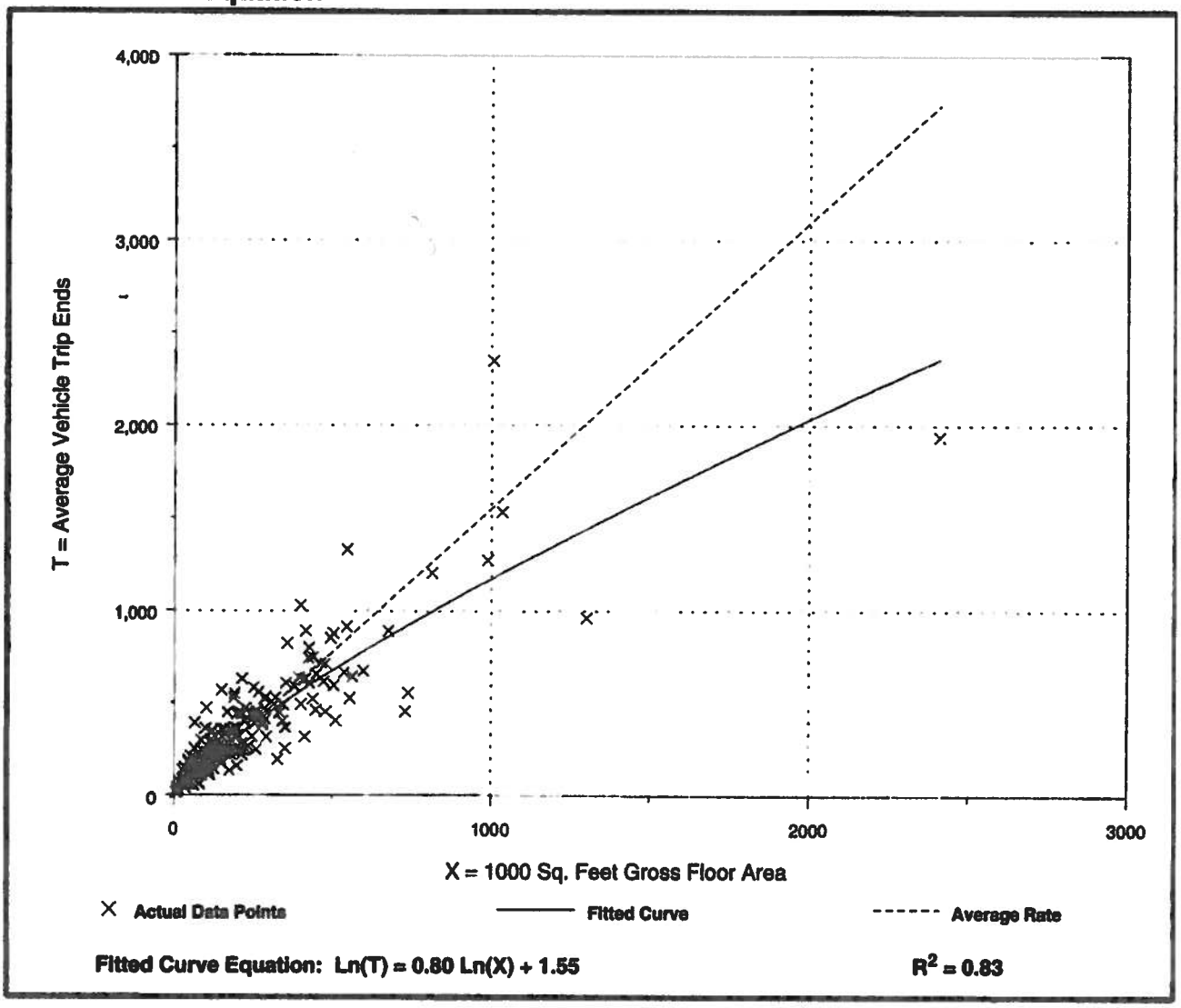
Average Vehicle Trip Ends vs: 1000 Sq. Feet Gross Floor Area
On a: Weekday,
A.M. Peak Hour

Number of Studies: 217
Average 1000 Sq. Feet GFA: 223
Directional Distribution: 88% entering, 12% exiting

Trip Generation per 1000 Sq. Feet Gross Floor Area

Average Rate	Range of Rates	Standard Deviation
1.55	0.60 - 5.98	1.39

Data Plot and Equation



Fitted Curve Equation: Ln(T) = 0.80 Ln(X) + 1.55 $R^2 = 0.83$

General Office Building
(710)

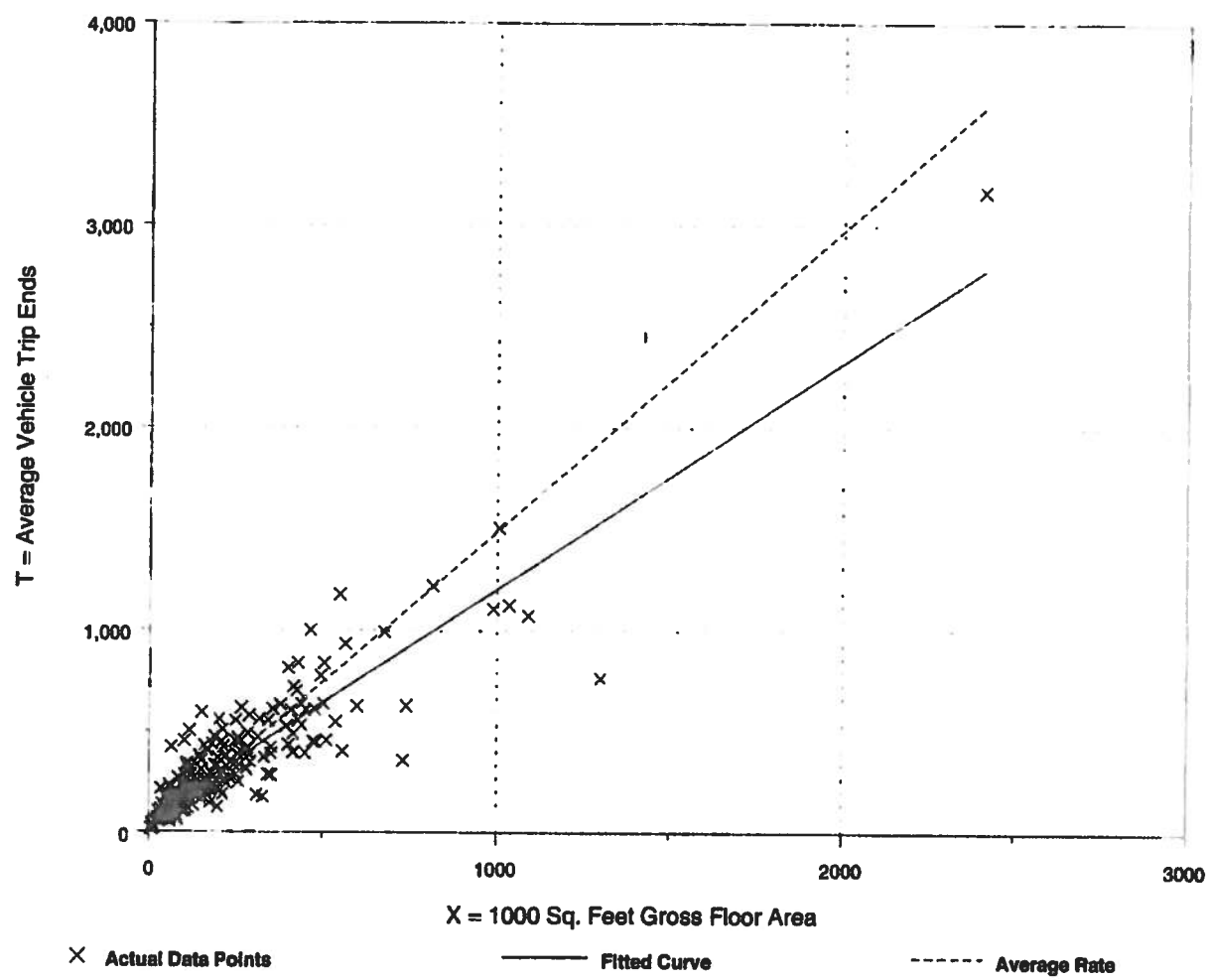
Average Vehicle Trip Ends vs: 1000 Sq. Feet Gross Floor Area
On a: Weekday,
P.M. Peak Hour

Number of Studies: 235
Average 1000 Sq. Feet GFA: 216
Directional Distribution: 17% entering, 83% exiting

Trip Generation per 1000 Sq. Feet Gross Floor Area

Average Rate	Range of Rates	Standard Deviation
1.49	0.49 - 6.39	1.37

Data Plot and Equation

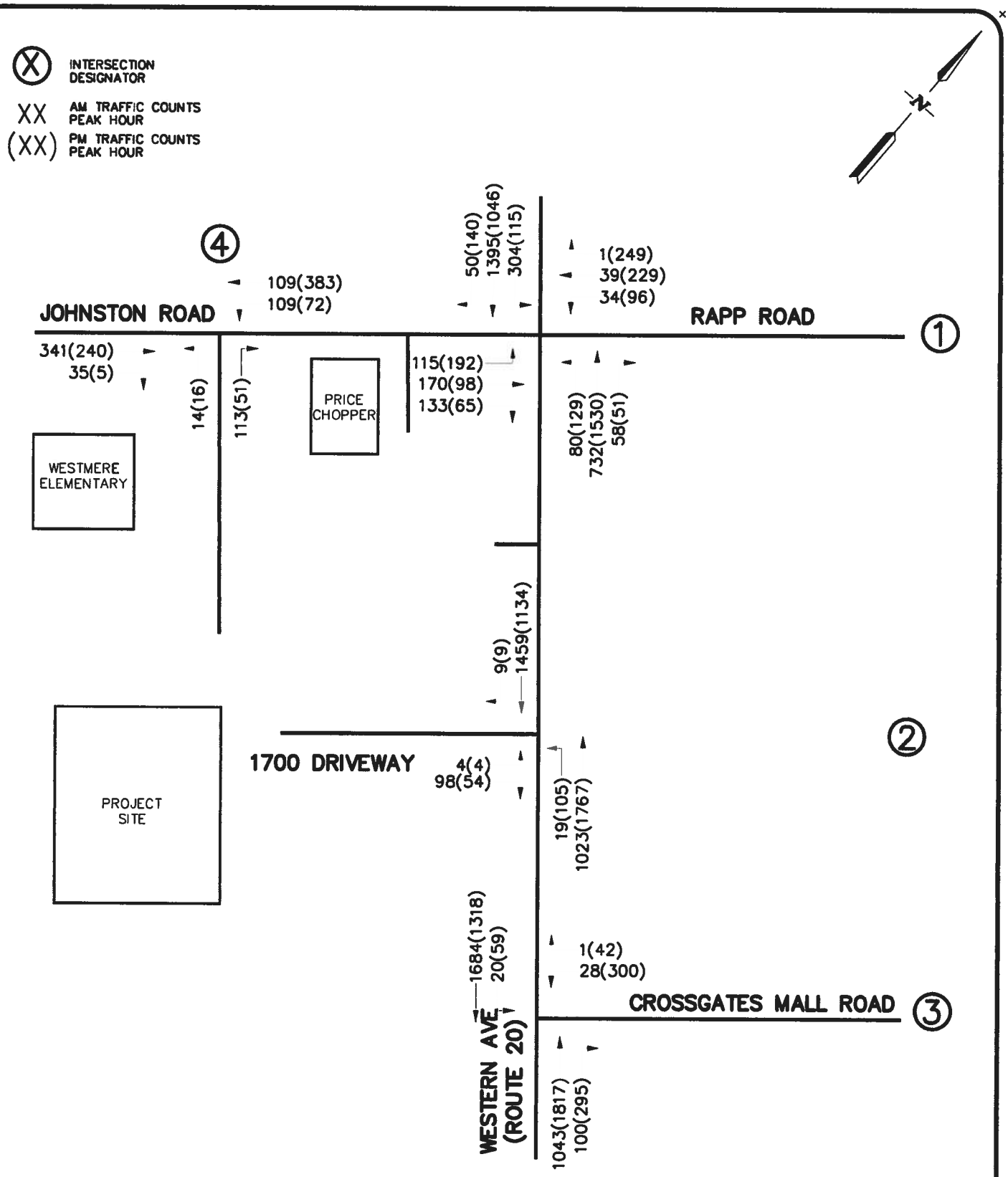


Fitted Curve Equation: T = 1.12(X) + 78.81

R^2 = 0.82

Appendix C

Proposed Traffic Volumes and Analysis



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2015 BUILD
LANDS N/F OF CROSSTREE CORPORATION

TOWN OF GUILDERLAND
ALBANY COUNTY STATE OF NEW YORK

DATE: JANUARY, 2011	CHECKED BY: FJB JOB NO. 99172/10011	SCALE: N.T.S.
DRAWN BY: TAH CADD FILE: 10011-TRAFFIC-2006		SHEET 1 OF 1

①

SHORT REPORT

General Information		Site Information	
Analyst	FJB	Intersection	US 20/Johnston-Rapp
Agency or Co.	IA	Area Type	All other areas
Date Performed	02/22/11	Jurisdiction	NYSDOT
Time Period	AM	Analysis Year	2015 Build

Volume and Timing Input

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Num. of Lanes	1	2	0	1	2	0	1	1	1	1	1	1
Lane group	L	TR		L	T		L	TR	R	L	T	R
Volume (vph)	304	1395	50	80	732		115	170	133	34	39	1
% Heavy veh	0	0	6	6	0		0	0	0	0	0	0
PHF	0.72	0.81	0.75	0.52	0.96		0.67	0.74	0.62	0.67	0.52	0.25
Actuated (P/A)	P	P	P	P	P	P	A	P		A	P	P
Startup lost time	2.0	2.0		2.0	2.0		2.0	2.0	2.0	2.0	2.0	2.0
Ext. eff. green	2.0	2.0		2.0	2.0		2.0	2.0	2.0	2.0	2.0	2.0
Arrival type	3	3		3	3		3	3	3	3	3	3
Unit Extension	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Ped/Bike/RTOR Volume	0		20	0			0		50	0		0
Lane Width	12.0	12.0		12.0	12.0		12.0	12.0	12.0	12.0	12.0	12.0
Parking/Grade/Parking	N	0	N	N	0	N	N	0	N	N	0	N
Parking/hr												
Bus stops/hr	0	0		0	0		0	0	0	0	0	0
Unit Extension	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0

Phasing	EW Perm	Excl. Left	03	04	NS Perm	Excl. Left	07	08
Timing	G = 75.0	G = 15.0	G =	G =	G = 20.0	G = 8.0	G =	G =
	Y = 4	Y =	Y =	Y =	Y = 4	Y =	Y =	Y =
Duration of Analysis (hrs) = 0.25					Cycle Length C = 126.0			

Lane Group Capacity, Control Delay, and LOS Determination

	EB			WB			NB			SB		
Adj. flow rate	422	1762		154	763		172	230	134	51	75	4
Lane group cap.	602	2143		314	2154		336	302	192	232	302	449
v/c ratio	0.70	0.82		0.49	0.35		0.51	0.76	0.70	0.22	0.25	0.01
Green ratio	0.75	0.60		0.75	0.60		0.25	0.16	0.12	0.25	0.16	0.28
Unif. delay d1	21.9	20.2		43.0	13.1		44.2	50.7	53.3	49.1	46.4	32.9
Delay factor k	0.50	0.50		0.50	0.50		0.12	0.50	0.50	0.11	0.50	0.50
Increm. delay d2	6.7	3.7		5.4	0.5		1.3	16.5	19.0	0.5	2.0	0.0
PF factor	1.000	1.000		1.000	1.000		1.000	1.000	1.000	1.000	1.000	1.000
Control delay	28.6	23.9		48.4	13.5		45.6	67.2	72.3	49.6	48.4	33.0
Lane group LOS	C	C		D	B		D	E	E	D	D	C
Apprch. delay	24.8			19.4			61.5			48.4		
Approach LOS	C			B			E			D		
Intersec. delay	29.5			Intersection LOS						C		

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1

SHORT REPORT

General Information		Site Information	
Analyst	FJB	Intersection	US 20/Johnston-Rapp
Agency or Co.	IA	Area Type	All other areas
Date Performed	02/22/11	Jurisdiction	NYSDOT
Time Period	PM	Analysis Year	2015 Build

Volume and Timing Input

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Num. of Lanes	1	2	0	1	2	0	1	1	1	1	1	1
Lane group	L	TR		L	TR		L	TR	R	L	T	R
Volume (vph)	115	1046	140	129	1530	51	192	98	65	96	229	249
% Heavy veh	0	3	0	0	3	0	0	3	0	0	3	0
PHF	0.69	0.92	0.82	0.81	0.91	0.80	0.88	0.67	0.78	0.80	0.78	0.86
Actuated (P/A)	P	P	P	P	P	P	A	P	P	A	P	P
Startup lost time	2.0	2.0		2.0	2.0		2.0	2.0	2.0	2.0	2.0	2.0
Ext. eff. green	2.0	2.0		2.0	2.0		2.0	2.0	2.0	2.0	2.0	2.0
Arrival type	3	3		3	3		3	3	3	3	3	3
Unit Extension	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Ped/Bike/RTOR Volume	0		0	0		0	0		0	0		0
Lane Width	12.0	12.0		12.0	12.0		12.0	12.0	12.0	12.0	12.0	12.0
Parking/Grade/Parking	N	0	N	N	0	N	N	0	N	N	0	N
Parking/hr												
Bus stops/hr	0	0		0	0		0	0	0	0	0	0
Unit Extension	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0

Phasing	EW Perm	Excl. Left	03	04	NS Perm	Excl. Left	07	08
Timing	G = 65.0	G = 12.0	G =	G =	G = 26.0	G = 12.0	G =	G =
	Y = 4	Y =	Y =	Y =	Y = 4	Y = 3	Y =	Y =
Duration of Analysis (hrs) = 0.25					Cycle Length C = 126.0			

Lane Group Capacity, Control Delay, and LOS Determination

	EB			WB			NB			SB		
Adj. flow rate	167	1308		159	1745		218	146	83	120	294	290
Lane group cap.	289	1783		316	1804		312	381	333	431	381	333
v/c ratio	0.58	0.73		0.50	0.97		0.70	0.38	0.25	0.28	0.77	0.87
Green ratio	0.64	0.52		0.64	0.52		0.33	0.21	0.21	0.33	0.21	0.21
Unif. delay d1	46.5	23.8		41.2	29.5		48.3	43.1	41.8	35.4	47.2	48.4
Delay factor k	0.50	0.50		0.50	0.50		0.27	0.50	0.50	0.11	0.50	0.50
Increm. delay d2	8.2	2.7		5.6	14.7		6.8	2.9	1.8	0.4	14.0	25.4
PF factor	1.000	1.000		1.000	1.000		1.000	1.000	1.000	1.000	1.000	1.000
Control delay	54.7	26.5		46.8	44.2		55.1	46.0	43.6	35.7	61.2	73.8
Lane group LOS	D	C		D	D		E	D	D	D	E	E
Apprch. delay	29.7			44.4			50.0			62.0		
Approach LOS	C			D			D			E		
Intersec. delay	42.9			Intersection LOS						D		

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2

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	FJB/IA	Intersection	1700/Western Ave
Agency/Co.		Jurisdiction	NYSDOT
Date Performed	3/3/2011	Analysis Year	2015 Build
Analysis Time Period	AM		

Project Description

East/West Street: *Western Ave (20)*	North/South Street: *1700 Driveway*
Intersection Orientation: *East-West*	Study Period (hrs): *0.25*

Vehicle Volumes and Adjustments

Major Street	Eastbound			Westbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume (veh/h)	0	1552	9	19	1030	0
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Hourly Flow Rate (veh/h)	0	1724	10	21	1144	0
Proportion of heavy vehicles, P_{HV}	0	--	--	0	--	--
Median type	Undivided					
RT Channelized?			0			0
Lanes	0	2	0	1	2	0
Configuration		T	TR	L	T	
Upstream Signal		0			0	

Minor Street	Northbound			Southbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume (veh/h)	4	0	98	0	0	0
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Hourly Flow Rate (veh/h)	4	0	108	0	0	0
Proportion of heavy vehicles, P_{HV}	0	0	0	0	0	0
Percent grade (%)	0			0		
Flared approach		N			N	
Storage		0			0	
RT Channelized?			0			0
Lanes	0	1	0	0	0	0
Configuration		LTR				

Control Delay, Queue Length, Level of Service

Approach	EB	WB	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration		L		LTR				
Volume, v (vph)		21		112				
Capacity, c_m (vph)		368		225				
v/c ratio		0.06		0.50				
Queue length (95%)		0.18		2.52				
Control Delay (s/veh)		15.4		35.9				
LOS		C		E				
Approach delay (s/veh)	--	--	35.9					
Approach LOS	--	--	E					

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(2)

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	FJB/IA	Intersection	1700/Western Ave
Agency/Co.		Jurisdiction	NYSDOT
Date Performed	3/3/2011	Analysis Year	2015 Build
Analysis Time Period	PM		

Project Description

East/West Street: Western Ave (20)	North/South Street: 1700 Driveway
Intersection Orientation: East-West	Study Period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street	Eastbound			Westbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume (veh/h)	0	1206	9	105	1767	0
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Hourly Flow Rate (veh/h)	0	1340	10	116	1963	0
Proportion of heavy vehicles, P_{HV}	0	--	--	0	--	--
Median type	Undivided					
RT Channelized?			0			0
Lanes	0	2	0	1	2	0
Configuration		T	TR	L	T	
Upstream Signal		0			0	

Minor Street	Northbound			Southbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume (veh/h)	4	0	54	0	0	0
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Hourly Flow Rate (veh/h)	4	0	60	0	0	0
Proportion of heavy vehicles, P_{HV}	0	0	0	0	0	0
Percent grade (%)		0			0	
Flared approach		N			N	
Storage		0			0	
RT Channelized?			0			0
Lanes	0	1	0	0	0	0
Configuration		LTR				

Control Delay, Queue Length, Level of Service

Approach	EB	WB	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration		L		LTR				
Volume, v (vph)		116		64				
Capacity, c_m (vph)		516		166				
v/c ratio		0.22		0.39				
Queue length (95%)		0.86		1.66				
Control Delay (s/veh)		14.0		39.7				
LOS		B		E				
Approach delay (s/veh)	--	--	39.7					
Approach LOS	--	--	E					

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SHORT REPORT

General Information		Site Information	
Analyst	FJB	Intersection	US 20/Crossgates
Agency or Co.	IA	Area Type	All other areas
Date Performed	02/22/11	Jurisdiction	NYSDOT
Time Period	AM	Analysis Year	2015 Build

Volume and Timing Input

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Num. of Lanes	1	2	0	0	3	1	0	1	0	2	0	1
Lane group	L	T			T	R		LTR		L	LR	R
Volume (vph)	20	1684			1043	100	0	0	0	28		1
% Heavy veh	0	3			3	0	0	0	0	0		0
PHF	0.47	0.80			0.94	0.90	0.88	0.67	0.78	0.59		0.86
Actuated (P/A)	P	P			P	P	A	A	A	P		P
Startup lost time	2.0	2.0			2.0	2.0		2.0		2.0	2.0	2.0
Ext. eff. green	2.0	2.0			2.0	2.0		2.0		2.0	2.0	2.0
Arrival type	3	3			3	3		3		3	3	3
Unit Extension	3.0	3.0			3.0	3.0		3.0		3.0	3.0	3.0
Ped/Bike/RTOR Volume				0		0	0		0	0		0
Lane Width	12.0	12.0			12.0	12.0		16.0		12.0	12.0	12.0
Parking/Grade/Parking	N	0	N	N	0	N	N	0	N	N	0	N
Parking/hr												
Bus stops/hr	0	0			0	0		0		0	0	0
Unit Extension	3.0	3.0			3.0	3.0		3.0		3.0	3.0	3.0

Phasing	EW Perm	02	03	04	NS Perm	06	07	08
Timing	G = 70.0	G =	G =	G =	G = 20.0	G =	G =	G =
	Y = 4	Y =	Y =	Y =	Y = 4	Y =	Y =	Y =

Duration of Analysis (hrs) = 0.25 | Cycle Length C = 98.0

Lane Group Capacity, Control Delay, and LOS Determination

	EB			WB			NB			SB		
Adj. flow rate	43	2105			1110	111		0		47	0	1
Lane group cap.	311	2509			3589	1615		439			377	330
v/c ratio	0.14	0.84			0.31	0.07		0.00			0.00	0.00
Green ratio	0.71	0.71			0.71	1.00		0.20		0.20	0.20	0.20
Unif. delay d1	4.4	10.0			5.1	0.0		31.0			31.0	31.1
Delay factor k	0.50	0.50			0.50	0.50		0.11		0.50	0.50	0.50
Increm. delay d2	0.9	3.6			0.2	0.1		0.0			0.0	0.0
PF factor	1.000	1.000			1.000	0.950		1.000			1.000	1.000
Control delay	5.4	13.5			5.4	0.1		31.0			31.0	31.1
Lane group LOS	A	B			A	A		C			C	C
Apprch. delay	13.4			4.9								
Approach LOS	B			A								
Intersec. delay				Intersection LOS								

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HCS2000™ DETAILED REPORT

General Information		Site Information	
Analyst	FJB	Intersection	US 20/Crossgates
Agency or Co.	IA	Area Type	All other areas
Date Performed	02/22/11	Jurisdiction	NYSDOT
Time Period	PM	Analysis Year	2015 Build
		Project ID	

Volume and Timing Input

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Number of lanes, N_1	1	2	0	0	3	1	0	1	0	2	0	1
Lane group	L	T			T	R		LTR		L		R
Volume, V (vph)	59	1318			1817	295	0	0	0	300		42
% Heavy vehicles, %HV	0	3			3	0	0	3	0	0		0
Peak-hour factor, PHF	0.69	0.92			0.91	0.80	0.88	0.67	0.78	0.80		0.86
Pretimed (P) or actuated (A)	P	P			P	P				P		P
Start-up lost time, l_1	2.0	2.0			2.0	2.0		2.0		2.0		2.0
Extension of effective green, e	2.0	2.0			2.0	2.0		2.0		2.0		2.0
Arrival type, AT	3	3			3	3		3		3		3
Unit extension, UE	3.0	3.0			3.0	3.0		3.0		3.0		3.0
Filtering/metering, I	1.000	1.000			1.000	1.000		1.000		1.000	1.000	1.000
Initial unmet demand, Q_b	0.0	0.0			0.0	0.0		0.0		0.0		0.0
Ped / Bike / RTOR volumes				0		0	0		0	0		0
Lane width	12.0	12.0			12.0	12.0		12.0		12.0		12.0
Parking / Grade / Parking	N	0	N	N	0	N	N	0	N	N	0	N
Parking maneuvers, N_m												
Buses stopping, N_B	0	0			0	0		0		0		0
Min. time for pedestrians, G_p				3.2			3.2			3.2		

Phasing	EW Perm	02	03	04	SB Only	06	07	08
Timing	G = 70.0	G =	G =	G =	G = 25.0	G =	G =	G =
	Y = 4	Y =	Y =	Y =	Y = 4	Y =	Y =	Y =
Duration of Analysis, T = 0.25						Cycle Length, C = 103.0		

Lane Group Capacity, Control Delay, and LOS Determination

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Adjusted flow rate, v	86	1433			1997	369		0		375		49
Lane group capacity, c	90	2387			3415	1615		0		851		392
v/c ratio, X	0.96	0.60			0.58	0.23				0.44		0.13
Total green ratio, g/C	0.68	0.68			0.68	1.00		0.00		0.24		0.24

Uniform delay, d_1	15.1	8.9			8.8	0.0				33.1		30.5
Progression factor, PF	1.000	1.000			1.000	0.950				1.000		1.000
Delay calibration, k	0.50	0.50			0.50	0.50				0.50		0.50
Incremental delay, d_2	83.3	1.1			0.7	0.3				1.7		0.7
Initial queue delay, d_3	0.0	0.0			0.0	0.0		0.0		0.0	0.0	0.0
Control delay	98.4	10.1			9.5	0.3				34.7		31.1
Lane group LOS	F	B			A	A				C		C
Approach delay	15.1			8.1						34.3		
Approach LOS	B			A						C		
Intersection delay				$X_c = 0.82$			Intersection LOS					

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TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	CDL	Intersection	Johnston Rd/School
Agency/Co.	Ingalls & Associataes, LLP	Jurisdiction	
Date Performed	9/15/2011	Analysis Year	2015 Build
Analysis Time Period	AM Proposed		
Project Description			
East/West Street:	Westmere Elementary	North/South Street:	Johnston Rd
Intersection Orientation:	North-South	Study Period (hrs):	0.25

Vehicle Volumes and Adjustments

Major Street	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	0	341	35	109	109	0
Peak-Hour Factor, PHF	1.00	0.93	0.44	0.54	0.74	1.00
Hourly Flow Rate, HFR	0	366	79	201	147	0
Percent Heavy Vehicles	0	--	--	20	--	--
Median Type	Two Way Left Turn Lane					
RT Channelized			0			0
Lanes	0	1	0	0	1	0
Configuration			TR	LT		
Upstream Signal		0			0	

Minor Street	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	14	0	113	0	0	0
Peak-Hour Factor, PHF	0.34	1.00	0.40	1.00	1.00	1.00
Hourly Flow Rate, HFR	41	0	282	0	0	0
Percent Heavy Vehicles	20	0	30	0	0	0
Percent Grade (%)		0			0	
Flared Approach		N			N	
Storage		0			0	
RT Channelized			0			0
Lanes	0	1	0	0	0	0
Configuration		LTR				

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration		LT		LTR				
v (vph)		201		323				
C (m) (vph)		1026		534				
v/c		0.20		0.60				
95% queue length		0.73		3.99				
Control Delay		9.4		21.5				
LOS		A		C				
Approach Delay	--	--	21.5					
Approach LOS	--	--	C					

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TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	CDL	Intersection	Johnston Rd/School
Agency/Co.	Ingalls & Associataes, LLP	Jurisdiction	
Date Performed	9/15/2011	Analysis Year	2015 Build
Analysis Time Period	PM Proposed		
Project Description			
East/West Street: Westmere Elementary		North/South Street: Johnston Rd	
Intersection Orientation: North-South		Study Period (hrs): 0.25	

Vehicle Volumes and Adjustments

Major Street	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	0	240	5	72	383	0
Peak-Hour Factor, PHF	1.00	0.90	0.63	0.62	0.86	1.00
Hourly Flow Rate, HFR	0	266	7	116	445	0
Percent Heavy Vehicles	0	--	--	0	--	--
Median Type	Two Way Left Turn Lane					
RT Channelized			0			0
Lanes	0	1	0	1	1	0
Configuration			TR	L	T	
Upstream Signal		0			0	

Minor Street	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	16	0	51	0	0	0
Peak-Hour Factor, PHF	0.81	1.00	0.60	1.00	1.00	1.00
Hourly Flow Rate, HFR	19	0	84	0	0	0
Percent Heavy Vehicles	0	0	0	0	0	0
Percent Grade (%)		0			0	
Flared Approach		N			N	
Storage		0			0	
RT Channelized			0			0
Lanes	0	0	0	0	0	0
Configuration		LR				

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration		L		LR				
v (vph)		116		103				
C (m) (vph)		1302		646				
v/c		0.09		0.16				
95% queue length		0.29		0.56				
Control Delay		8.0		11.6				
LOS		A		B				
Approach Delay	--	--	11.6					
Approach LOS	--	--	B					

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