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January 29, 2020
MC Project No. 19002502A

Rapp Road Residential/Western Avenue Mixed Use Development Conceptual Improvements

As part of the potential cumulative impacts of Rapp Road Residential (Site 1), Costco (Site 2) and Future Potential Development Area (Site 3), and considering the recent VHB Rapp Road/Crossgates Mall Road Safety Evaluation Memorandum dated January 14, 2020, recommended improvements have been identified as shown on Conceptual Improvement Plan (Sheet 1 of 2) and include the following:

- Remove the right turn slip lanes and bring the right turn movements under traffic signal control at the Rapp Road/Crossgates Mall Road intersection.
- Modify the existing traffic signal at the Rapp Road/Crossgates Mall Road intersection.
- Restripe Crossgates Mall Road from Rapp Road to a location just west of the hotel driveway as a three section including a separate left turn lane.
- Relocate Gabriel Terrace opposite the Crossgates Mall western driveway.
- Provide two driveways to Rapp Road as well as a connection to//from the Crossgates Mall North Ring Road to provide additional access to I-87/I-90 as well as Washington Avenue for the Rapp Road Residential Development (Site 1).
- Provide two driveways to Rapp Road for Costco (Site 2), with the northerly access for entering left turns (a separate entering left turn lane will be provided), entering right turns, and exiting right turns only (exiting left turn will be prohibited). The southerly driveway would be for entering right turns only.



To: Sandra Misiewicz, AICP

Date: January 14, 2020
Project #: 26368.00

Memorandum

From: VHB

Re: Rapp Road/Crossgates Mall Road, Town of Guilderland, Albany
County

Introduction

VHB completed a safety evaluation for the Rapp Road/Crossgates Mall Road intersection, as shown in the aerial image below, in the Town of Guilderland. The intersection was chosen due to the number of overall crashes experienced at the intersection, especially understanding that growth continues to occur or be proposed in this area. It is noted that this intersection is being evaluated in the Traffic Impact Study for the Rapp Road Residential project which may provide an opportunity to implement safety-related recommendations as part of that project. In addition, the Capital District Transportation Authority (CDTA) has plans to upgrade transit accommodations at the intersection. This intersection is representative of other large-scale retail centers in the Capital Region. Below is a summary of our evaluation:





Memorandum

Existing Conditions

The Rapp Road/Crossgates Mall Road intersection is located on the southwest corner of Crossgates Mall, in the Town of Guilderland. Rapp Road is classified as an urban minor arterial and generally provides north/south travel from Western Avenue (US Route 20) to Washington Avenue Extension. Data collected by the New York State Department of Transportation (NYSDOT) in 2009 shows that Rapp Road serves approximately 8,630 vehicles per day (vpd) near the study intersection (the data was collected in March which is outside of the retail peak season). Crossgates Mall Road is classified as a local urban roadway providing travel around the perimeter of Crossgates Mall. The Rapp Road/Crossgates Mall Road intersection is a large, four-leg intersection currently operating under traffic signal control with right-turn slip lanes on two intersection approaches. The eastbound and southbound Rapp Road approaches each provide a single lane for shared left-turn/through movements. Right turns from eastbound Rapp Road to southbound Crossgates Mall Road are accommodated with a free-flowing slip lane. Right turns from southbound Rapp Road to westbound Rapp Road are accommodated with a yield-controlled slip lane. The northbound Crossgates Mall Road approach provides a left-turn lane and a shared through/right-turn lane. The westbound Crossgates Mall Road approach provides a shared left-turn/through lane and a shared through/right-turn lane. All four intersection approaches have a raised center median separating the directional lanes of travel. The posted speed limit on all approaches to the intersection is 30-mph. No pedestrian accommodations are provided at the intersection and trucks are restricted to Local Traffic Only on Rapp Road north of the intersection. There is no overhead lighting at the intersection. Intersection turning movement count data collected as part of the Rapp Road residential project indicates that the intersection currently serves approximately 775 vehicles during the AM peak hour and 1,075 vehicles during the PM peak hour. The traffic volumes from the traffic study for the Rapp Road Residential project are attached to this memorandum.

Crash Review

Crash data for the Rapp Road/Crossgates Mall Road intersection was provided by CDTC for the latest available eight-year period from January 1, 2011 to December 31, 2018. Review of the data shows that during the eight-year period, a total of 42 crashes occurred at this intersection. Table 1 summarizes the intersection crashes and shows that of the 42 crashes, there were 10 injury crashes, 22 property damage collisions and 10 non-reportable incidents (no injury and less than \$1,000 in property damage). There were no fatal crashes reported at this intersection during the study period. The crash data, as summarized by CDTC, is attached to this memorandum.

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Table 1 Summary of Eight-year Crash History

Crash Type	Total Crashes	Severity			
		Fatal	Injury	PDO ^a	NR ^b
Left-Turn	14	0	1	10	3
Right-Angle	12	0	3	7	2
Rear-End	9	0	3	2	4
Sideswipe	2	0	0	1	1
Head-On	1	0	1	0	0
Fixed Object	1	0	0	1	0
Other	3	0	2	1	0
Total	42	0	10	22	10

The data summary in Table 1 may be adjusted slightly from the attached CDTC summary table.

Source: CDTC crash data dated January 1, 2011 through December 31, 2018.

a Property Damage Only

b Non-Reportable

As shown in Table 1, of the 42 total crashes at the Rapp Road/Crossgates Mall Road intersection, 14 were left-turn crashes, 12 were right-angle crashes and 9 were rear-end crashes, with the remaining crashes a mix of sideswipe, head-on, fixed object, and other. The following additional characteristics of the crashes are noted:

- All of the contributing factors for the crashes at the intersection involved some level of driver error.
- The primary contributing factors of the crashes at this intersection were identified as failure to yield the right-of-way, driver inattention, following too closely, and disregard of traffic control devices.
- Of the 42 crashes that occurred at the intersection, 41 involved two (or more) vehicles.
- Of the 42 crashes, 19 (45%) occurred during dark road conditions.
- The data did not identify any patterns involving weather or roadway surface condition.
- Of the 42 crashes, 14 (33%) occurred during November and December when traffic volumes at the shopping mall peak.
- Review of the crash data did not identify a crash pattern associated with the slip lanes.
- Although the data review doesn't specifically identify traffic signal timing and clearance intervals as a contributing factor for the crashes, improper traffic signal timing and clearance intervals can contribute to crashes at a traffic signal controlled intersection.

It is noted that 5 of the 42 reported crashes appeared to have occurred when the traffic signal was operating under flashing mode. However, correspondence with the Town of Guilderland Highway Superintendent indicates that this

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Memorandum

intersection does not operate on flashing mode on a regular basis. Therefore, these crashes occurred during an unexpected power outage condition or the data was entered into the crash reporting system incorrectly, so these five crashes are not representative of a crash trend at the intersection.

Field Review

Based on the evaluation of the crash data, the primary contributing factors for the crashes are attributed to driver error. Therefore, the field review focused on recommendations that can reduce the potential for driver error like traffic signal visibility, traffic signal phasing and timing, and intersection geometry. A field visit to the study area was conducted with a representative of the Town and noted the following:

- The roadway striping and signing on all intersection approaches appears to be in generally good condition although faded and mostly worn off on the Crossgates Mall Road westbound intersection approach.
- The traffic signal operates with a four-phase signal with a Crossgates Mall Road northbound only leading phase, Crossgates Mall Road northbound and Rapp Road southbound permitted phase, Crossgates Mall Road westbound leading phase, and finally the Crossgates Mall Road westbound and Rapp Road eastbound permitted phase. Although the Crossgates Mall Road westbound approach has a leading phase, there is not a signal head with arrows present to indicate that a protected left-turn movement is present at the intersection, which causes hesitation and confusion by drivers.
- The intersection has both horizontal and vertical curves on its eastbound, westbound, and southbound approaches which results in some visibility issues as drivers are approaching the intersection, both by the geometry and vegetation. There are signal ahead warning signs on the eastbound and southbound Rapp Road approaches to the intersection.
- At the intersection itself, there is no vegetation that obstructs the signal heads.
- The intersection is geometrically large for the volume of traffic being accommodated on a regular basis. The volume of right-turn movements does not appear to be of a volume to need to be removed from the signal system, where these movements would be slower and more controlled.

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Memorandum



Crossgates Mall Road NB



Rapp Road SB



Rapp Road EB



Crossgates Mall Road WB

Recommendations

Several items are recommended for consideration to clarify right-of-way and reduce the potential for driver error. They include:

- Install a Signal Ahead warning sign on the Crossgates Mall Road westbound approach to the intersection.
- Confirm that the traffic signal phasing and timings have been optimized.



Memorandum

- Review the traffic signal timing plans and confirm that the yellow/all-red times and clearance intervals conform with current standards.
- Restripe the westbound approach to provide a left-turn and shared through/right-turn lane, install a 5-section head on the westbound approach to control left-turn movements, and widen the median (or provide hatching) on Rapp Road westbound departing the intersection so there is only one receiving lane for westbound vehicles. Review existing signal detection and install where needed to accommodate the upgrade.
- In the longer term, remove the right-turn slip lanes and bring the right-turn maneuvers into the traffic signal control reducing the speed of right turning vehicles at the intersection and providing better geometry for multimodal accommodations.
- As growth and development continue to occur in the area, a plan to provide bicycle and pedestrian connectivity from Rapp Road to the mall should be established. The installation of full pedestrian accommodations at the intersection should be included.

It is noted that a span wire evaluation should be completed prior to installation of any signs on the traffic signal span wire to confirm that the existing traffic signal system can accommodate the additional load.

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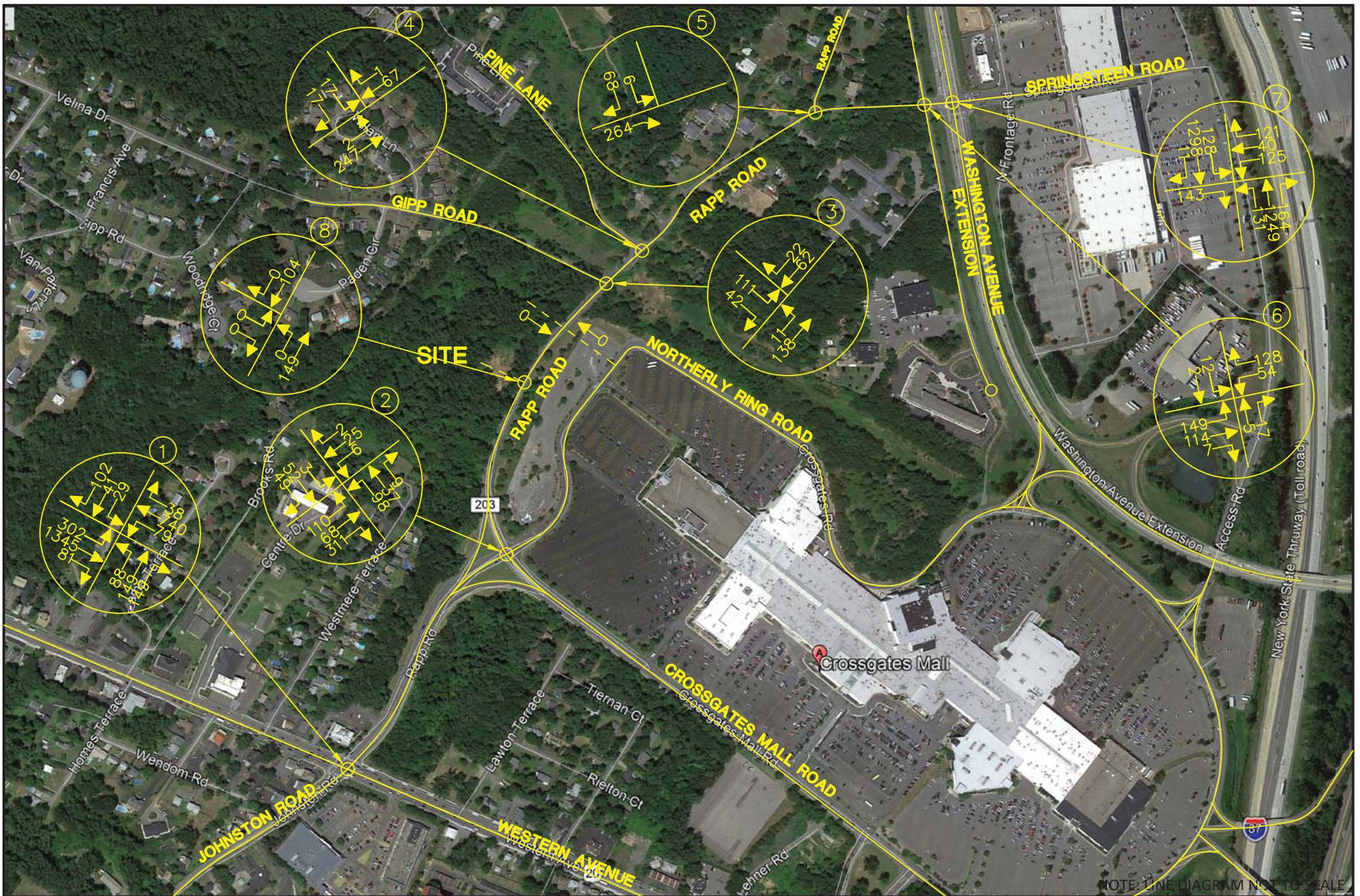
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Attachments

Traffic Volume Figures

CDTC Crash Summary Table



NOTE: LINE DIAGRAM NOT TO SCALE



Consulting, Municipal & Environmental Engineers
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RAPP ROAD RESIDENTIAL
 TOWN OF GUILDERLAND, ALBANY COUNTY, NEW YORK

YEAR 2017 EXISTING TRAFFIC VOLUMES
 WEEKDAY PEAK AM HOUR



JOB NUMBER:	DATE:
17006513A	7/18/2018
FIGURE NUMBER:	



New Jersey New York Pennsylvania Virginia
Customer Loyalty through Client Satisfaction

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RAPP ROAD RESIDENTIAL
TOWN OF GUILDERLAND, ALBANY COUNTY, NEW YORK

YEAR 2017 EXISTING TRAFFIC VOLUMES
WEEKDAY PEAK PM HOUR



JOB NUMBER:	DATE:
17006513A	7/18/2018
FIGURE NUMBER:	
3	

26368.00 REGIONAL SAFETY ACTION PLAN			CROSSGATES MALL ROAD										COUNTY MUNICIPALITY			
			AT INTERSECTION WITH / OR BETWEEN RAPP ROAD										BY DATE			
NO. OF MONTHS 96			LIGHT CONDITIONS (LC)					ROADWAY CHARACTER (RC)					ROADWAY SURFACE CONDITION (RSC)		WEATHER (WEA)	
Begin Date: JANUARY 2011 End Date: DECEMBER 2018			1. Daylight 2. Dawn 3. Dusk 4. Dark Road Lighted 5. Dark Road Unlighted					1. Straight & Level 2. Straight & Grade 3. Straight at Hillcrest 4. Curve & Level 5. Curve & Grade 6. Curve at Hillcrest					1. Dry 2. Wet 3. Muddy 4. Snow/Ice 5. Slush 10. Other		1. Clear 2. Cloudy 3. Rain 4. Snow 5. Sleet/Hail/Freezing Rain 6. Fog/Smog/Smoke 10. Other	
NO	CASE	DATE	TIME	# OF VEH	SEV	LC	RC	RSC	WEA	CONTRIB FACTORS	REF MKR	ACC TYPE	DESCRIPTION			
1	37661243	12/26/2018	17:03	2	NR	4	1	1	1	09, YY		REAR END	ON THE ABOVE DATE TIME AND LOCATION V-2 WAS AT THE LIGHT ATTEMPTING TO MAKE A RIGHT HAND TURN SOUTHBOUND PAST LOWER LEVEL MACY'S WHEN V-1 STRUCK HER FROM BEHIND. NO INJURIES.			
2	37149794	2/17/2018	18:19	2	PDO	4	1	1	1	04, 07, 17		LEFT TURN (AGAINST OTHER CAR)	ON 02/17/2018 V1 WAS DRIVING WEST BOUND ON CROSSGATES MALL ROAD WHEN V1 STATED HE HAD A GREEN ARROW TO MAKE A LEFT HAND TURN ONTO RAPP ROAD, V1 THEN STRUCK V2 AT THE INTERSECTION, V2 WHO WAS TRAVELING EAST BOUND STATED THAT HE HAD A YELLOW LIGHT AND HE ATTEMPTED TO MAKE IT THRU THE INTERSECTION. NO INJURIES REPORTED ON SCENE.			
3	37065738	12/26/2017	06:30	2	PDO	5	2	1	1	07, YY		LEFT TURN (WITH OTHER CAR)	operator of v-1 was traveling in a Northerly direction on Crossgates mall road making a left turn in to Rapp road at traffic light. operator of v-2 was traveling south on Crossgates Mall road going straight through the intersection of Rapp road and Crossgates mall road. Unknown vehicle was also traveling in a southerly direction on Crossgates Mall road unknown if making a left or going straight through said intersection and was stopped at traffic light in outside lane. Operator of v-1 stated unknown vehicle flashed his lights and operator of v-1 proceeded to make left turn not seeing v-2 traveling up the inside lane to proceed straight through said intersection. operator of v-1 failed to yield right away to v-2 and did turn in front of v-2 and crashing into v-2.			
4	37025121	12/9/2017	15:59	2	INJURY	1	1	4	4	09, YY		REAR END	OPERATOR OF V2 STATES SHE WAS STOPPED IN TRAFFIC WHEN SHE WAS REAR ENDED BY V1. SHE STATES V1 THEN CONTINUED DRIVING PAST HER AND LEFT THE SCENE. UNABLE TO LOCATE V1.			

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NO	CASE	DATE	TIME	# OF VEH	SEV	LC	RC	RSC	WEA	CONTRIB FACTORS	REF MKR	ACC TYPE	DESCRIPTION		
5	36753906	3/14/2017	11:23	1	PDO	4	5	1	1	05, 08		CURBING	on the above date time and location driver of vehicle #1 states he was traveling in a westerly direction on crossgates mall rd. when he fell asleep and went off the road into a ditch on rapp rd.		
6	36548713	1/2/2017	17:01	2	INJURY	4	1	1	1	04, 07, YY		RIGHT TURN (AGAINST OTHER CAR)	V1 WAS TRAVELING SOUTH BOUND ON CROSSGATES MALL RD WHEN V1 DRIVER FAILED TO YIELD OF THE RIGHT OF WAY OF V2 CAUSING V1 TO STRIKE V2 FRONT DRIVERS SIDE BUMPER, CAUSING DAMAGE TO V1 FRONT END AND AIR BAG DEPLOYMENT. DRIVER OF V1 STATED CHEST PAIN, DRIVER OF V2 STATED GENERAL HEAD PAIN. DRIVER OF V1 WAS TRANSPORTED BY AMBULANCE TO EILLIS HOSPITAL.		
7	36543938	12/27/2016	18:17	2	PDO	4	1	1	1	04, XX		LEFT TURN (AGAINST OTHER CAR)	V1 WAS TRAVELING EAST BOUND ON CROSSGATES MALL ROAD WHEN V2 WAS MAKING A LEFT HAND TURN V1 STRUCK V2 RIGHT FRONT END CAUSING DAMAGE, V1 SUBSTAINED FRONT END DAMAGE AS WELL. BOTH DRIVERS STATED NO INJURIES ON SCENE. V2 DRIVER STATED HE HAD THE GREEN ARROW, V1 DRIVER STATED SHE HAD THE GREEN LIGHT. UNALBE TO DETERMINE WHICH DRIVER WAS AT FAULT.		
8	36540525	12/23/2016	21:06	2	PDO	4	1	1	1	07, YY		RIGHT ANGLE	OPERATOR OF V1 STATES HE WAS ATTEMPTING A LEFT TURN ONTO RAPP ROAD AND HE DID NOT SEE V2 COMING IN THE OPPOSITE DIRECTION AND HE CRASHED INTO V2. OPERATOR OF V2 STATES V1 MADE A LEFT TURN IN FRONT OF HIM. HE STATES HE SWERVED TO THE RIGHT TO AVOID HITTING HIM BUT HE WAS NOT ABLE TO.		

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NO	CASE	DATE	TIME	# OF VEH	SEV	LC	RC	RSC	WEA	CONTRIB FACTORS	REF MKR	ACC TYPE	DESCRIPTION		
9	36174968	4/15/2016	13:06	2	NR	1	1	1	1	04, YY		REAR END	V1 AND V2 WERE BOTH NORTH ON CROSSGATES MALL ROAD AT THE INTERSECTION WITH RAPP ROAD. V2 WAS STOPPED AT THE TRAFFIC LIGHT AND V1 WAS SLOWING BEHIND V2. V2 DRIVER SAID SHE WAS ON CROSSGATES MALL ROAD AT THE INTERSECTION OF RAPP ROAD STOPPED AT THE TRAFFIC LIGHT WHEN V1 BUMPED HER FROM BEHIND. V1 DRIVER SAID SHE WAS SLOWING DOWN AS SHE WAS APPROACHING V2 AND A DRINK FELL FROM ITS HOLDER DOWN ONTO THE FLOOR. AS DRIVER 1 REACHED DOWN TO GET IT HER FOOT SLIPPED OFF THE BRAKE. V1 THEN CRASHED INTO THE REAR OF V2. NO INJURIES.		
10	36164577	4/8/2016	16:55	2	INJURY	1	1	1	2	07, YY		RIGHT ANGLE	driver for v-1 stated she had the green arrow to make a left turn. driver of v-2 stated she had the green light, and was proceeding straight through the intersection. witness stated that there was no green arrow, both lights were green, and just before the accident, lights were changing to amber. witness further stated that v-1 failed to yield the right of way to v-2. driver of v-1- was complaining of chest pain from airbag deployment. driver of v-1 was treated on scene, and was transported to albany medical center for evaluation. no other injuries were reported.		
11	36063989	1/23/2016	23:03	2	NR	4	1	1	1	03, YY		REAR END	V1 and V2 both facing NB at Rapp Rd and Crossgates Mall Rd, red traffic light. V1 backed into V2 in attempted to change lanes at the light. V2 unable to react to V1's actions.		
12	36047556	1/10/2016	17:58	2	PDO	5	1	1	1	03, 18, YY		SIDESWIPE	OPERATOR OF V1 STATES SHE WAS MAKING A LEFT TURN ONTO CROSSGATES MALL RD FROM THE CROSSGATES MALL RING RD WHEN SHE STRUCK THE MEDIAN. SHE STATES SHE THEN BEGAN BACKING UP AND SHE CRASHED INTO V2. OPERATOR OF V2 STATES SHE WAS BEHIND V1 WHEN SHE STOPPED DURING THE TURN AND BEGAN BACKING. SHE STATES V1 BACKED INTO HER VEHICLE.		

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NO	CASE	DATE	TIME	# OF VEH	SEV	LC	RC	RSC	WEA	CONTRIB FACTORS	REF MKR	ACC TYPE	DESCRIPTION		
13	36038706	1/6/2016	16:54	2	PDO	3	1	1	1	07, YY		LEFT TURN (AGAINST OTHER CAR)	V1, turning left onto Crossgates Mall Rd, steady green signal. V2 going straight through intersection steady green signal. Witness traveling westbound on Crossgates Mall Rd stopped at steady red signal. Driver of V1 states she made the left turn because the intersection was clear. Driver V2 states she saw V1 make the turn in front of her and attempted to stop to avoid a crash, but could not stop in time and hit the rear passenger side of V1.		
14	36037333	1/2/2016	19:34	2	PDO	5	1	1	2	07, YY		LEFT TURN (AGAINST OTHER CAR)	v-2 was traveling west on crossgates mall rd. driver of v-2 stated that she had the green light and was traveling straight through the intersection. driver of v-1 was making a left turn from rapp rd onto crossgates mall rd. driver of v-1 stated he did not see v-2. driver of v-1 failed to yield the right of way to v-2 and crashed into v-2. no injuries were reported. v-1 had an expired registration. driver was issued utt for unregistered motor vehicle.		
15	36028401	12/28/2015	13:49	2	PDO	1	1	1	2	07, YY		RIGHT ANGLE	Veh 1 and Veh 2 both had green light. Veh 2 was proceeding straight thru the intersection when veh 1 turned left in front of veh 2.		
16	36020732	12/21/2015	17:11	2	NR	5	1	2	3	07, YY		LEFT TURN (AGAINST OTHER CAR)	operator of v1 making left hits v2. no injuries. v2 registration was suspended for not having insurance in effect. v2 does not have insurance in effect.		
17	35947499	10/31/2015	09:36	3	PDO	1	4	1	1	07, YY		OTHER	Opr 1 failed to yield right of way at flashing red light and struck veh 2. Veh 1 then struck veh 3 that was stopped at traffic light.		
18	35857271	8/22/2015	07:39	2	NR	1	1	1	1	04, YY		RIGHT ANGLE	OPER OF V1 STATES HE WAS TRAVELING SOUTHBOUND THROUGH THE INTERSECTION ON A FLASHING RED LIGHT AND DID NOT SEE V2 APPROACHING. V2 WAS TRAVELING EASTBOUND THROUGH A FLASHING YELLOW AND WAS STRUCK B V1 AS HE PROCEEDED THROUGH THE INTERSECTION.		

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NO	CASE	DATE	TIME	# OF VEH	SEV	LC	RC	RSC	WEA	CONTRIB FACTORS	REF MKR	ACC TYPE	DESCRIPTION		
19	35736544	4/15/2015	07:47	2	PDO	1	1	1	1	07, 17, YY		RIGHT ANGLE	v2 was traveling in an easterly direction on crossgates mall rd through the intersection of rapp rd, v2 had a blinking yellow light. operator of v1 was going in a southerly direction through the intersection and failed to stop at the flashing red light and was struck by v2. neither operator complained of injuries.		
20	35653760	3/13/2015	08:16	2	INJURY	1	4	1	1	07, YY		RIGHT ANGLE	Opr 1 states he stopped at the flashing red light and proceeded after not seeing any cars. Opr 2 states she was entering the intersection on a flashing yellow light when she saw veh 1 pull out into her path.		
21	35521784	12/16/2014	17:07	2	PDO	5	4	2	3	07, YY		LEFT TURN (AGAINST OTHER CAR)	V2 WAS TRAVELING STRAIGHT AHEAD IN A WESTERLY DIRECTION ON CROSSGATES MALL ROAD AND DID ENTER THE INTERSECTION WITH RAPP ROAD TO CONTINUE TRAVELING STRAIGHT AHEAD ONTO RAPP ROAD. V1 WAS TRAVELING IN AN EASTERLY DIRECTION ON RAPP ROAD, DID APPROACH THE INTERSECTION WITH CROSSGATES MALL ROAD, AND DID MAKE A LEFT HAND TURN INTO THE INTERSECTION TRAVELING IN A NORTHEASTERLY DIRECTION. V1 AND V2 DID CRASH. BOTH OPERATORS OF THE VEHICLES REPORTED HAVING A GREEN LIGHT.		
22	35301740	6/20/2014	17:51	2	PDO	1	1	1	1	07, YY		LEFT TURN (AGAINST OTHER CAR)	DRIVER OF VEHICLE 1 STATES HE WAS TURNING ONTO RING ROAD AND DID NOT SEE VEHICLE 2. DRIVER OF VEHICLE 2 STATES HE WAS PROCEEDING THROUGH THE INTERSECTION AND VEHICLE 1 TURNED IN FRONT OF HIM.		
23	35262748	5/15/2014	20:52	2	PDO	5	1	2	3	07, 17, YY		RIGHT ANGLE	DRIVER OF VEHICLE 1 STATES SHE DID NOT SEE THE RED LIGHT, AND BEGAN TO GO THROUGH IT AND STRUCK VEHICLE 2 WHICH WAS GOING THROUGH THE LIGHT AND HAD A GREEN LIGHT		

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NO	CASE	DATE	TIME	# OF VEH	SEV	LC	RC	RSC	WEA	CONTRIB FACTORS	REF MKR	ACC TYPE	DESCRIPTION		
24	35248972	4/22/2014	19:09	2	PDO	1	1	2	3	07, YY		LEFT TURN (AGAINST OTHER CAR)	DRIVER OF VEHICLE 1 STATES SHE HAD A GREEN ARROW AND BEGAN TO TURN AND THAT VEHICLE 2 CAME THROUGH THE INTERSECTION AND STRUCK HER VEHICLE. DRIVER OF VEHICLE 2 STATES SHE HAD A GREEN LIGHT AND THAT VEHICLE 1 TURNED IN FRONT OF HER.		
25	35213394	4/1/2014	07:35	2	INJURY	1	2	1	1	05, 07, YY		HEAD ON	operator of v1 at a blinking red traffic signal does not see operator of v2 who has a blinking yellow traffic signal and collides into v2. operator of v1 taken to hospital for injury to right eye and chest pain. passenger of v1 evaluated for a cut on forehead and cut on right ear. operator of v2 evaluated for shoulder pain and transported to hospital.		
26	35138617	2/16/2014	12:22	2	PDO	1	2	1	2	07, YY		LEFT TURN (AGAINST OTHER CAR)	VEH1 MADE LEFT TURN IN FRONT OF VEH2. VEH2 UNABLE TO STOP IN TIME AND CRASHED INTO REAR OF VEH1.		
27	35063427	12/26/2013	18:29	2	PDO	4	5	2	2	07, YY		RIGHT ANGLE	OPERATOR OF V1 STATES HE WAS MAKING A LEFT HAND TURN ONTO RAPP RD AT THE INTERSECTION OF CROSSGATES MALL RD AND RAPP RD WHEN HE ENTERED THE PATH OF V2. OPERATOR OF V2 STATES SHE WAS GOING STRAIGHT THROUGH THE INTERSECTION FROM CROSSGATES MALL WHEN V1 MADE A LEFT HAND TURN INTO HER PATH. BOTH OPERATORS STATE THEY DID HAVE A GREEN LIGHT.		

26368.00 REGIONAL SAFETY ACTION PLAN			CROSSGATES MALL ROAD										COUNTY MUNICIPALITY		
			AT INTERSECTION WITH / OR BETWEEN RAPP ROAD										BY DATE		
NO. OF MONTHS 96			LIGHT CONDITIONS (LC)					ROADWAY CHARACTER (RC)					ROADWAY SURFACE CONDITION (RSC)		WEATHER (WEA)
Begin Date: JANUARY 2011 End Date: DECEMBER 2018			1. Daylight 2. Dawn 3. Dusk 4. Dark Road Lighted 5. Dark Road Unlighted					1. Straight & Level 2. Straight & Grade 3. Straight at Hillcrest 4. Curve & Level 5. Curve & Grade 6. Curve at Hillcrest					1. Dry 2. Wet 3. Muddy 4. Snow/Ice 5. Slush 10. Other		1. Clear 2. Cloudy 3. Rain 4. Snow 5. Sleet/Hail/Freezing Rain 6. Fog/Smog/Smoke 10. Other
NO	CASE	DATE	TIME	# OF VEH	SEV	LC	RC	RSC	WEA	CONTRIB FACTORS	REF MKR	ACC TYPE	DESCRIPTION		
28	35056318	12/23/2013	17:45	3	INJURY	4	1	2	2	07, 17, YY		OTHER	DRIVER OF V-1 STATED THAT SHE DID NOT KNOW HOW THE ACCIDENT HAPPENED. BOTH OPERATORS OF V-2 AND V-3, ALONG WITH TWO WITNESSES REPORT THAT DRIVER OF V-1 TRAVELING SOUTH BOUND, FAILED TO STOP AT A STEADY RED LIGHT, PROCEEDED INTO THE INTERSECTION CRASHING INTO V-2. V-2 WAS TRAVELING EAST BOUND, AFTER BEING STRUCK BY V-1, DUE TO THE WET ROAD CONDITIONS, CAUSED V-2 TO SPIN 360 DEGREES AND CAME TO FINAL REST FACING SOUTH. V-1 THEN CONTINUED INTO THE INTERSECTION AND CAME TO FINAL REST AGAINST V-3 WHICH WAS STOPPED AT THE RED SIGNAL FACING NORTH. DRIVER OF V-1 WAS TREATED BY GUILDERLAND EMS, AND TRANSPORTED TO ALBANY MEDICAL CENTER FOR EVALUATION. DRIVER OF V-2 WAS EVALUATED ON SCENE BY GUILDERLAND EMS, BUT REFUSED MEDICAL ATTENTION, AND WILL SEEK CARE FROM HER PRIMARY CARE PHYSICIAN. DRIVER OF V-3 REPORTED NO INJURIES, BUT STATED HE WOULD SEEK CARE FROM HIS PRIMARY CARE PHYSICIAN IF SYMPTOMS PRESENT. DRIVER OF V-1 WAS TICKETED		
29	35053043	12/22/2013	15:30	3	NR	1	1	2	2	04, YY		OTHER	V1 STRUCK V2 WHICH PUSHED V2 INTO V3. DRIVER 2 AND DRIVER 3 STATED THEY WAS STOPPED IN TRAFFIC WHEN V1 STRUCK V2. DRIVER 2 STATED V1 PUSHED HIS VEHICLE INTO V3. DRIVER 1 STATED HE TOOK HIS EYES OFF THE ROAD MOMENTARILY AND STRUCK V2.		
30	35028713	11/26/2013	20:45	2	NR	4	1	2	5	03, 05, YY		LEFT TURN (AGAINST OTHER CAR)	DRIVER OF VEHICLE 1 STATES SHE WAS BACKING UP AND DID NOT SEE VEHICLE 2 WHICH WAS PARKED.		
31	34907618	8/26/2013	10:10	2	NR	1	2	2	2	09, YY		REAR END	V1 STOPPED AT A RED LIGHT, V2 TRAVELING BEHIND V1, OPERATOR OF V2 STATES SHE THOUGHT SHE HIT THE BRAKE, BUT HIT THE GAS, AND HIT THE REAR OF V1. MINIMUM DAMAGE. NO INJURIES		

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			AT INTERSECTION WITH / OR BETWEEN RAPP ROAD								BY DATE				
NO. OF MONTHS 96			LIGHT CONDITIONS (LC)					ROADWAY CHARACTER (RC)				ROADWAY SURFACE CONDITION (RSC)		WEATHER (WEA)	
Begin Date: JANUARY 2011 End Date: DECEMBER 2018			1. Daylight 2. Dawn 3. Dusk 4. Dark Road Lighted 5. Dark Road Unlighted					1. Straight & Level 2. Straight & Grade 3. Straight at Hillcrest 4. Curve & Level 5. Curve & Grade 6. Curve at Hillcrest				1. Dry 2. Wet 3. Muddy 4. Snow/Ice 5. Slush 10. Other		1. Clear 2. Cloudy 3. Rain 4. Snow 5. Sleet/Hail/Freezing Rain 6. Fog/Smog/Smoke 10. Other	
NO	CASE	DATE	TIME	# OF VEH	SEV	LC	RC	RSC	WEA	CONTRIB FACTORS	REF MKR	ACC TYPE	DESCRIPTION		
32	34712768	3/26/2013	20:05	2	NR	4	2	1	1	04, 07, YY		RIGHT ANGLE	V1 SOUTHBOUND ON RING RD IN CROSSGATES MALL ATTEMPTING LEFT HAND TURN ONTO CROSSGATES MALL RD. V2 NORTHBOUND ON RAPP RD GOING STRAIGHT ONTO RING RD. OPERATOR OF V2 STATES HE WAS GOING STRAIGHT THROUGH INTERSECTION WITH GREEN LIGHT WHEN V1 MADE LEFT HAND TURN INTO HIS PATH. OPERATOR OF V1 STATES THE TRAFFIC LIGHT TURNED GREEN AND SHE WAS MAKING A LEFT HAND TURN ONTO CROSSGATES MALL RD. OPERATOR OF V1 STATES SHE DID NOT SEE V2. V1 AND V2 CRASHED CAUSING DAMAGE TO BOTH VEHICLES.		
33	34563260	12/4/2012	12:55	2	PDO	1	1	1	2	04, 09, YY		REAR END	OPERATOR OF VEHICLE 2 STATES SHE WAS STOPPED BEHIND ANOTHER VEHICLE AT THE RED LIGHT TO THE ABOVE LISTED INTERSECTION AND WAS REAR ENDED BY VEHICLE 1. OPERATOR OF VEHICLE 1 STATES THAT SHE MOMENTARILY TOOK HER EYES OFF THE ROAD, LOOKING DOWN AND BEHIND HER, LOOKING FOR HER PURSE, WHEN HER FOOT CAME OFF THE BRAKE, RESULTING IN HER VEHICLE COLLIDING WITH VEHICLE 2. NO INJURIES.		
34	34497758	10/23/2012	18:42	2	INJURY	4	5	2	3	07, 17, YY		RIGHT ANGLE	V1 EB FROM RAPP RD TO EB CROSSGATES MALL RD. V1 CRASHED INTO V2. DRIVER 2 SAID SHE WAS APPROACHING THE INTERSECTION AND THE LIGHT WAS GREEN; A V2 ENTERED THE INTERSECTION, V1 CAME OUT OF NOWHERE AND CRASHED INTO FRONT DRIVERS SIDE OF V2. DRIVER 2 HAD COMPLAINT OF PAIN/ HEADACHE AND EARACHE; PASSENGER 2 (JV F) ALSO SAID SHE BUMPED HER HEAD AND SAID IT HURT WHEN SHE TOUCHED IT, A BUMP WAS VISIBLE ON CHILD'S HEAD. DRIVER 2 DID RMA FOR HER DAUGHTER AND SELF AT SCENE AND SAID SHE WOULD SEEK TREATMENT ON HER OWN. DRIVER 1 SAID SHE WAS DRIVING ALONG AND I WENT THROUGH THE RED LIGHT"; "I WAS LOOKING AROUND AND WASN'T SURE IF I WAS TO GO THAT WAY [SOUTH ON CROSSGATES MALL RD].		

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NO	CASE	DATE	TIME	# OF VEH	SEV	LC	RC	RSC	WEA	CONTRIB FACTORS	REF MKR	ACC TYPE	DESCRIPTION			
35	34110139	11/26/2011	16:55	2	PDO	5	1	1	1	17, 19, YY		RIGHT ANGLE	OPERATOR OF VEHICLE 1 STATES THAT SHE WAS PROCEEDING WEST ON CROSSGATES MALL ROAD WHEN SHE ATTEMPTED TO "BEAT THE YELLOW LIGHT" AT THE INTERSECTION OF RAPP RD. OPERATOR OF VEHICLE 1 FURTHER STATES THAT WHEN SHE REALIZED SHE WAS NOT GOING TO BEAT THE YELLOW LIGHT AND THE LIGHT TURNED RED, SHE APPLIED HER BRAKES, CAUSING HER VEHICLE TO PULL TO THE RIGHT, DRIVE OVER A CURB, STRIKE VEHICLE 2 (WHO WAS STOPPED ON RAPP ROAD AT THE TRAFFIC LIGHT) AND COLLIDE WITH A GUARD RAIL. OPERATOR OF VEHICLE 2 STATES THAT HE WAS STOPPED ON RAPP ROAD AT THE TRAFFIC LIGHT WHEN VEHICLE 1 APPEARED AT A HIGH RATE OF SPEED, STRUCK HIS VEHICLE AND THEN DROVE INTO A GUARD RAIL. NO INJURIES			
36	34075744	10/31/2011	16:21	2	PDO	1	1	1	2	07, YY		LEFT TURN (WITH OTHER CAR)	OPR 1 STATES SHE TURNED IN FRONT OF VEH 2 AND CRASHED. OPR 2 STATES VEH 1 TURNED IN FRONT OF HIM.			
37	34058262	10/21/2011	10:56	2	NR	1	1	1	2	07, YY		LEFT TURN (AGAINST OTHER CAR)	V1 AND V2 COLLIDED IN INTERSECTION. DRIVER 1 STATED HE WAS MAKING A LEFT TURN WHEN HE WAS HIT. DRIVER 2 STATED HE COULD NOT STOP IN TIME WHEN V1 TURNED IN FRONT OF HIM. BOTH DRIVERS SAY THEY HAD A GREEN LIGHT.			
38	33937239	6/27/2011	16:42	2	PDO	1	1	1	1	05, 18, YY		RIGHT ANGLE	OPERATOR OF VEHICLE 1 STATES THAT SHE WAS ATTEMPTING TO MAKE A RIGHT TURN FROM CROSSGATES MALL ROAD ONTO RAPP RD WHEN SHE STATES SHE HIT THE THROTTLE INSTEAD OF THE CLUTCH, CAUSING THE MOTORCYCLE TO STALL. AT THAT POINT, OPERATOR OF VEHICLE 1 LOST CONTROL OF THE MOTORCYCLE, CONTINUED STRAIGHT AHEAD, STRIKING VEHICLE 2 AND THEN DROPPING THE MOTORCYCLE. OPERATOR OF VEHICLE 2 STATES THAT HE WAS STOPPED AT THE RED LIGHT AND THAT HE WATCHED WHAT OPERATOR OF VEHICLE 1 DESCRIBED, THEN WAS STRUCK BY VEHICLE 1. OPERATOR OF VEHICLE 1 FOUND TO HAVE ONLY A MOTORCYCLE PERMIT AND WAS OPERATING WITHOUT A LICENSED DRIVER WITHIN A QUARTER OF A MILE - TRAFFIC TICKET ISSUED.			

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NO	CASE	DATE	TIME	# OF VEH	SEV	LC	RC	RSC	WEA	CONTRIB FACTORS	REF MKR	ACC TYPE	DESCRIPTION		
39	33807173	3/5/2011	15:53	3	INJURY	1	4	2	2	04, 66, YY		OTHER	V3 WAS STOPPED AT A RED LIGHT AT THE INTERSECTION OF RAPP RD AND CROSSGATES MALL RD; V2 WAS STOPPED DIRECTLY BEHIND V3. V1 WAS APPROACHING V2 FROM THE REAR AND ATTEMPTING TO REDUCE HER SPEED. V1 AND V2 COLLIDED; V2 AND V3 COLLIDED. DRIVER 3 STATES HE WAS STOPPED AT THE LIGHT AND HIT UNEXPECTEDLY. DRIVER 2 STATES SHE WAS STOPPED BEHIND V3 WHEN SHE WAS STRUCK IN THE REAR OF HER VEHICLE AND PUSHED INTO V3. V1 STATES SHE SAW THE STOPPED VEHICLES AND ATTEMPTED TO SLOW BUT HER TIRES SLIPPED ON THE WET PAVEMENT. DRIVER 1 STATES HE HAS A HEADACHE FROM THE IMPACT BUT REFUSED MEDICAL TREATMENT. NO TOWS.		
40	33795431	2/28/2011	12:14	3	INJURY	1	2	2	2	18, 66, YY		OTHER	DRIVER OF V1 STATES HE WAS MAKING A LEFT TURN AND HE'S UNSURE IF THE LIGHT TURNED RED WHEN HE WAS APPROACHING OR UNDERNEATH IT. V2 HAD A GREEN LIGHT AND PROCEEDED FORWARD CRASHING INTO V1 CAUSING EXCESSIVE DAMAGE TO BOTH VEHICLES. SAID INCIDENT CAUSED V2 TO THEN CRASH INTO V3 WHO WAS STOPPED AT THE RED LIGHT. BOTH DRIVER AND PASSENGER IN V2 WERE INJURED AND TRANSPORTED TO THE HOSPITAL VIA AMBULANCE.		
41	33836765	2/8/2011		2	INJURY	1	1	1	1	ZZ		REAR END	I WAS STOPPED AT THE RED LIGHT AND WAS HIT FROM BEHIND BY ANOTHER DRIVER.		
42	33734973	1/19/2011	08:34	2	NR	1	5	4	4	19, 66, YY		SIDESWIPE	V-1 DID SLIDE ON SLIPPERY ROAD, CROSS CENTER LINE AND DID STRIKE V-2.		



Traffic Impact Study

Rapp Road Residential
and Costco
Western Avenue Mixed-Use Development
Town of Guilderland, Albany County, NY

February 17, 2020

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Associate/Project Manager

MC Project No. 19002502A





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A. INTRODUCTION

The Traffic Impact Study was prepared to evaluate the potential traffic impacts of the proposed Rapp Road Residential/Western Avenue Mixed Use Redevelopment Projects located within the Town of Guilderland Transit Oriented Development (TOD) District on the surrounding roadway network. The following sections provide a description of the Proposed Project and the tasks undertaken in completing our evaluation.

B. PROJECT DESCRIPTION AND LOCATION

(Figures No. 1, 1A)

Rapp Road Residential (Site 1) a 222-unit apartment development with some 3,900 s.f. of ancillary commercial space included within the first floor of the two five-story buildings is proposed on a ±19.8 acre site located on Rapp Road immediately west of the Crossgates Mall (the “Site 1 Project”). The Site 1 Project is located in the Town’s Transit Oriented Development (TOD) District. Access to Site 1 is proposed via two driveway connections to Rapp Road. These driveways will provide access to Crossgates Mall Road (the southerly Mall ring road) and from there directly to the I-87/I-90 highway system. As part of the development plan, a connection to/from the Crossgates Mall northerly ring road is also proposed to provide additional access to I-87/-I-90, as well as Washington Avenue Extension. A Design Year of 2022 has been utilized for the Site 1 analysis. Site 1 also identifies an area reserved for future development. As previously analyzed for the Rapp Road Residential Project, this area could support an additional 90 residential apartment units based on the proposed Project density. A Design Year of 2025 has been utilized for the potential future development area on Site 1.

The second redevelopment area (Site 2) is located on ±15 acres of the TOD at the intersection of Crossgates Mall Road and Western Avenue which is currently served by Gabriel Terrace, Lawton Terrace, Tiernan Court and Rielton Court. Site 2 is proposed for approximately 160,000 s.f. Costco retail facility with 18 fueling stations. Access to Site 2 is proposed via connector road from Western Avenue (at Gabriel Terrace) which would be extended and realigned and connect to Crossgates Mall Road opposite the westerly Crossgates Mall driveway. This connection (the “Gabriel Terrace Connector Road”) will provide direct access to Crossgates Mall, as well as access to Crossgates Mall Road (the southerly Mall Ring Road) and from there directly to the I-87/I-90 highway system. In addition two driveways to Rapp Road are also proposed, with the northerly access for entering left and right turns and exiting right turns only (exiting left turns will be prohibited) and the southerly access for entering right turns only. A Design Year of 2022 has been utilized for the Site 2 analysis.

The third redevelopment area (site 3) is located on ±11 acres of the TOD zoned property between Site 2 and the recently developed Hotel site on Western Avenue. While there are no current development plans for this Site, the DEIS analyzed ±115,000 s.f. of Retail, 50,000 s.f. of Office and 48 Residential Units. Access to Site 3 will also be provide by the Gabriel Terrace Connector Road from Western Avenue and Crossgates Mall Road as well as a driveway connection to the Hotel connector road from Western Avenue and Crossgates Mall Road. A Design Year of 2025 has been utilized for the potential future development of Site 3.

The above development areas (Sites) were included as potential future development in the Capital District Transportation Authority's ("CDTA") Traffic Studies for the CDTA Transit Center Project at Crossgates. See Section Q.

The Site Locations and Study Area Intersections are shown on Figure No. 1 and Proposed Driveways are shown on Figure No. 1A.

C. YEAR 2019 EXISTING TRAFFIC VOLUMES

(Figures No. 2, 3, 4)

In order to establish existing traffic conditions in the vicinity of the proposed Sites, the turning movement traffic counts which were conducted in November 2017 (for the previous Rapp Road Residential Traffic Impact Study dated November 14, 2018) and in November/December 2018 were supplemented with recent current traffic counts conducted in September/October 2019 to determine the Weekday Peak AM, Weekday Peak PM and Saturday Peak Hours for the following intersections (as per the Final Scope).

1. Western Avenue and Crossgates Mall Driveway
2. Western Highway and Gabriel Terrace
3. Western Avenue and Rapp Road/Johnston Road
4. Rapp Road and Crossgates Mall Road
5. Rapp Road and Gipp Road
6. Rapp Road and Pine Lane
7. Rapp Road and Springsteen Road
8. Springsteen Road and S. Frontage Road
9. Washington Avenue Extension and Springsteen Road/Crossgates Commons
10. Crossgates Mall Road and I-87 On/Off Ramp
11. Crossgates Mall Road and Crossgates Mall Entrance #1
12. Crossgates Mall Road and Crossgates Mall Entrance #2 / Hotel Access

- 13/14. Crossgates Mall Road and Crossgates Mall Driveway (from Western Avenue)
- 15. S. Frontage Road and Rapp Road
- 16. Western Avenue and Westmere Terrace

A copy of the traffic count data is contained in Appendix “E” of this Study.

Based upon a review of the above turning movement traffic counts and a review of NYSDOT historical traffic count data, the peak hours were generally identified as follows.

- Weekday Peak AM Hour 7:30 AM – 8:30 AM
- Weekday Peak PM Hour 4:30 PM – 5:30 PM
- Saturday Peak PM Hour 12:30 PM – 1:30 PM

Based on the above, the resulting Year 2019 Existing Traffic Volumes are shown on Figures No. 2, 3 and 4 for each of the Peak Hours, respectively.

D. YEAR 2022 NO-BUILD TRAFFIC VOLUMES

(Figures No. 5 - 13)

For the purpose of analysis, a Design Year of 2022 has been utilized in the completing the traffic analysis for Site 1 and Site 2.

In order to account for normal background traffic growth in the area, the Year 2019 Existing Traffic Volumes were increased by a compounded growth factor of 0.5% per year (based on NYSDOT historical data and traffic projections contained in the CDTA/Crossgates Transit Center Study) to the Year 2022 Design Year. The resulting Year 2022 Projected Traffic Volumes are shown on Figures No. 5, 6, and 7 for each of the Peak Hours, respectively.

In addition to the background growth factor, traffic generated by other planned developments in the area was also accounted for. These developments include 1700 Designer Residences (210 apartment units) and the Great Oaks Residential (120 apartment units). The resulting Other Development Traffic Volumes are shown on Figures No. 8, 9 and 10, for each of the Peak Hours, respectively.

The resulting Year 2022 No-Build Traffic Volumes are shown on Figures No. 11, 12 and 13 for each of the Peak Hours, respectively.

E. SITE 1 - SITE GENERATED TRAFFIC VOLUMES

(Table No. 1)

As discussed in Section B, a 222-unit apartment development is proposed on Rapp Road immediately west of the Crossgates Mall. To estimate the amount of traffic to be generated by Site 1, the Hourly Trip Generation Rates and Anticipated Site Generated Traffic Volumes were developed based on information contained in the Institute of Transportation Engineers (ITE) “Trip Generation Manual”, 10th Edition, September 2017 – Land Use 220 – Multifamily Housing. The Hourly Trip Generation Rates and anticipated Site Generated Traffic Volumes are shown in Table No. 1 in Appendix B of this Study.

As shown on Table No. 1, the proposed residential development (Site 1) would generate 24 entering trips and 78 exiting trips during the Weekday Peak AM Hour, 78 entering trips and 46 exiting trips during the Weekday Peak PM Hour and 78 entering trips and 78 exiting trips during the Saturday Peak Hour. In order to provide a conservative analysis, no credit (reduction in trips) have been taken for the CDTA/Crossgates Transit Center which is expected to reduce the trip generation on the adjacent roadway network by 10% to 20%. It should be noted that the ancillary commercial space is accounted for as interplay trips from the proposed residential and as pass-by trips from the existing roadway network and surrounding uses.

F. SITE 2 - SITE GENERATED TRAFFIC VOLUMES

(Table No. 2)

As discussed in Section B, Site 2 is proposed for approximately 160,000 s.f. Costco retail facility with 18 fueling stations. In order to provide a conservative analysis, estimates of the amount of traffic to be generated by Site 2 were based on the Hourly Trip Generation Rates for both the retail and 18 fueling stations components separately based on information contained in the Institute of Transportation Engineers (ITE) “Trip Generation Manual”, 10th Edition, September 2017 – Land Use 857 – for Costco and ITE Land Use 944 for the fueling stations. It should be noted that not all the trips to Costco facility would be “new” to the adjacent roadway system and a significant portion would be “interplay” between the Crossgates Mall, “interplay” between the Costco retail and fueling stations, and as “pass-by” traffic from the existing traffic stream along Western Avenue, Rapp Road and Crossgates Mall Road. The Hourly Trip Generation Rates and anticipated Site Generated Traffic Volumes are shown in Table No. 2 in Appendix B of this Study.

As shown on Table No. 2, Site 2 would generate 146 “new” entering trips and 116 “new” exiting trips during the Weekday Peak AM Hour, generate 300 “new” entering trips and 300 “new” exiting trips during the Weekday Peak PM Hour and 396 “new” entering trips and 417 “new” exiting trips during the Saturday Peak Hour.

G. SITE 1 - ARRIVAL/DEPARTURE DISTRIBUTIONS

(Figures No. 14,14A - 15,15A)

Arrival and departure distributions for Site 1 (Rapp Road Residential) were developed to assign the Site 1 site generated traffic volumes to the Study Area intersections. The distributions were based on a review of existing traffic volumes, expected travel patterns and site layout. It is anticipated that 60% of these trips will utilize the Crossgates Mall Road and northerly ring road to/from the I-87/I-90 highway system as well as Washington Avenue Extension eastbound. The remaining 40% will arrive and depart from the Project site via Rapp Road with 20% to/from the north (Washington Avenue Extension to/from the west) and 20% to/from the south (Western Avenue). The resulting Site 1 arrival/departure distributions are shown on Figures No. 14, 14A and 15, 15A, respectively.

H. SITE 2 - ARRIVAL/DEPARTURE DISTRIBUTIONS

(Figures No. 16,16A - 17,17A)

Arrival and departure distributions for Site 2 were developed to assign the site generated traffic volumes to the Study Area intersections. The distributions were based on a review of existing traffic volumes, expected travel patterns, site layout and driveway locations. It is anticipated that 65% of these trips will utilize the Crossgates Mall Road and northerly ring road to/from the I-87/I-90 highway system as well as Washington Avenue Extension eastbound. The resulting Site 2 arrival/departure distributions are shown on Figures No. 16, 16A, and 17, 17A, respectively.

I. YEAR 2022 BUILD TRAFFIC VOLUMES

(Figures No. 18, 18A – 26, 26A)

The Site 1 (Rapp Road Residential) Site Generated Traffic Volumes were assigned to the roadway network based the arrival/departure distribution shown on Figures No. 14, 14A and 15, 15A and the resulting Site Generated Traffic Volumes are shown on Figures No. 18, 18A, 19, 19A and 20, 20A, respectively. The Site 2 (Costco) Site Generated Traffic

Volumes were assigned to the roadway network based the arrival/departure distribution shown on Figures No. 16, 16A and 17, 17A and the resulting Site Generated Traffic Volumes are shown on Figures No. 21, 21A, 22, 22A and 23, 23A, respectively.

The Site Generated Traffic Volumes for Site 1 and Site 2 were added to the Year 2022 No-Build Traffic Volumes to obtain the Year 2022 Build Traffic Volumes. The resulting Year 2022 Build Traffic Volumes are shown on Figures No. 24, 24A, 25, 25A and 26, 26A for each of the Peak Hours, respectively.

J. YEAR 2025 NO-BUILD TRAFFIC VOLUMES

(Figures No. 27, 2A – 29, 29A)

A Design Year of 2025 has been utilized for the potential future development of Site 1 and Site 3.

Following the same methodology outlined in Section D through H, the Year 2025 No-Build Traffic Volumes were developed to include normal background growth, the other development traffic volumes as well as the Site 1 and Site 2 site generated traffic volumes. The resulting Year 2025 No-Build Traffic Volumes are shown on Figures No. 27, 27A, 28, 28A and 29, 29A for each of the Peak Hours, respectively.

K. SITE 1 – POTENTIAL FUTURE SITE GENERATED TRAFFIC VOLUMES

(Table No.4)

As discussed in Section B, Site 1 (Rapp Road Residential) identifies a potential future development area that could support an additional 90 residential apartment units. The Hourly Trip Generation Rates and anticipated Site Generated Traffic Volumes are shown in Table No. 4 in Appendix B of this Study. As shown on Table No. 4, if developed, an additional 90 units would generate 10 entering trips and 31 exiting trips during the Weekday Peak AM Hour, 31 entering trips and 19 exiting trips during the Weekday Peak PM Hour and 31 entering trips and 31 exiting trips during the Saturday Peak Hour. As discussed in Section E, in order to provide a conservative analysis, no credit (reduction in trips) have been taken for the CDTA/Crossgates Transit Center which is expected to reduce the trip generation on the adjacent roadway network by 10% to 20%.

L. SITE 3 – POTENTIAL FUTURE SITE GENERATED TRAFFIC VOLUMES

(Table No.5)

As discussed in Section B, while there are no current development plans for Site 3 (Potential Western Avenue Mixed-Use Development), a zoning compliant conceptual plan was developed and analyzed for 115,000 s.f. of Retail, 50,000 s.f. of Office and 48 Residential Units. To estimate the amount of traffic to be generated by Site 3, the Hourly Trip Generation Rates and Anticipated Site Generated Traffic Volumes were developed based on information contained in the Institute of Transportation Engineers (ITE) “Trip Generation Manual”, 10th Edition, September 2017 – Land Use 820 – Shopping Center, ITE Land Use 710 – Office and ITE Land Use 220 - Multifamily Housing. It should be noted that not all the trips to Site 3 would be “new” to the adjacent roadway system and a significant portion would be “interplay” between the Crossgates Mall, “interplay” between the Costco facility, and as “retail pass-by” traffic from the existing traffic stream along Western Avenue, Rapp Road and Crossgates Mall Road. The Hourly Trip Generation Rates and anticipated Site Generated Traffic Volumes are shown in Table No. 5 in Appendix B of this Study.

As shown on Table No. 5, Site 3 would generate 122 “new” entering trips and 67 “new” exiting trips during the Weekday Peak AM Hour, generate 130 “new” entering trips and 180 “new” exiting trips during the Weekday Peak PM Hour and 179 “new” entering trips and 155 “new” exiting trips during the Saturday Peak Hour.

M. SITE 3 - ARRIVAL/DEPARTURE DISTRIBUTIONS

(Figures No. 30,30A -31A,31A)

Arrival and departure distributions for Site 3 (Potential Western Avenue Mixed-Use Development) were developed to assign the Site 3 site generated traffic volumes to the Study Area intersections. The distributions were based on a review of existing traffic volumes, expected travel patterns, site layout and driveway locations. It is anticipated that 65% of these trips will utilize the Crossgates Mall Road and northerly ring road to/from the I-87/I-90 highway system as well as Washington Avenue Extension eastbound. The resulting Site 3 arrival/departure distributions are shown on Figures No. 30, 30A, and 31, 31A, respectively.

N. YEAR 2025 BUILD TRAFFIC VOLUMES

(Figures No. 32, 32A – 40, 41A)

The potential future development area identified on Site 1 Site Generated Traffic Volumes were assigned to the roadway network based the arrival/departure distribution shown on Figures No. 14, 14A and 15, 15A and the resulting Site 1 Potential Site Generated Traffic Volumes are shown on Figures No. 32, 32A, 33, 33A and 34, 34A, respectively. The Site 3 (Potential Western Avenue Mixed-Use Development) Site Generated Traffic Volumes were assigned to the roadway network based the arrival/departure distribution shown on Figures No. 30, 30A and 31, 31A and the resulting Site 3 Potential Site Generated Traffic Volumes are shown on Figures No. 35, 35A, 36, 36A and 37, 37A, respectively.

The Potential Site Generated Traffic Volumes for Site 1 and Site 3 were added to the Year 2025 No-Build Traffic Volumes to obtain the Year 2025 Build Traffic Volumes. The resulting Year 2025 Build Traffic Volumes are shown on Figures No. 38, 38A, 39, 39A and 40, 40A for each of the Peak Hours, respectively.

O. DESCRIPTION OF ANALYSIS PROCEDURES

In order to determine existing and future traffic operating conditions at the Study Area Intersections, it was necessary to perform a Synchro analysis (capacity analyses). The following is a brief description of the analysis method utilized in this report:

Signalized Intersection Capacity Analysis

The capacity analysis for signalized intersections were performed in accordance with the procedures described in the Highway Capacity Manual – 6th Edition published by the Transportation Research Board. The terminology used in identifying traffic flow conditions is Levels of Service. A Level of Service “A” represents the best condition and a Level of Service “F” represents the worst condition. A Level of Service “C” is generally used as a design standard while a Level of Service “D” is acceptable during peak periods. A Level of Service “E” represents an operation near capacity. In order to identify an intersection’s Level of Service, the average amount of vehicle delay is computed for each approach to the intersection as well as for the overall intersection.

Unsignalized Intersection Capacity Analysis

The unsignalized intersection capacity analysis method utilized in this report was also performed in accordance with the procedures described in the Highway Capacity Manual – 6th Edition. The procedure is based on total elapsed time from when a vehicle stops at the end of the queue until the vehicle departs from the stop line. The average total delay for any particular critical movement is a function of the service rate or capacity of the approach and the degree of saturation. In order to identify the Level of Service, the average amount of vehicle delay is computed for each critical movement (major street left turns and minor street movements) to the intersection.

Additional information concerning signalized and unsignalized Levels of Service can be found in Appendix C of this Study.

P. RESULTS OF ANALYSIS

(Tables No. 3 and 6)

In order to evaluate current and future traffic operating conditions at each of the Study Area Intersections, SYNCHRO analyses were conducted utilizing the procedures described above. Summarized below is a description of the existing geometrics, traffic control and a summary of the existing and future Levels of Service for each of the Study Area Intersections. Table No. 3 summarizes the Year 2019 Existing, Year 2022 No-Build and Year 2022 Build (which includes Site 1 and Site 2) Levels of Service, delays and volume-to-capacity (v/c) ratios. Table No. 6 summarizes the Year 2025 No-Build (which includes Site 1 and Site 2) and Year 2025 Build Conditions (which includes Site 1A and Site 3). The capacity analysis (Appendix D) also shows the existing geometry including lane widths, traffic control including signal phasing/timing (where appropriate) as well as the results of the analysis.

1. Western Avenue (US Route 20) and Crossgates Mall Driveway

The Crossgates Mall driveway intersects Western Avenue at a signalized, “English Couplet System ” intersection. The Western Avenue eastbound approach consists of three lanes in the form of a separate left turn lane and two through lanes and the Western Avenue westbound approach consists of three lanes in the form of two separate through lanes and a shared through/right turn lane. The Crossgates Mall Road southbound driveway approach consists of three lanes in the form of a double left turn lane and a separate right turn lane.

Year 2019 Existing Traffic Volumes

Capacity analysis conducted utilizing the Year 2019 Existing Traffic Volumes indicates that the intersection is currently operating at an overall Level of Service “B” or better during each of the Peak Hours.

Year 2022 No-Build Traffic Volumes

Capacity analysis conducted utilizing the Year 2022 No-Build Traffic Volumes indicates that the intersection is projected to operate at an overall Level of Service “B” or better during each of the Peak Hours.

Year 2022 Build Traffic Volumes

Capacity analysis conducted utilizing the Year 2022 Build Traffic Volumes indicates that the intersection is projected to continue to operate at an overall Level of Service “B” or better during each of the Peak Hours.

Year 2025 No-Build Traffic Volumes

Capacity analysis conducted utilizing the Year 2025 No-Build Traffic Volumes indicates that the intersection is projected to operate at an overall Level of Service “B” or better during each of the Peak Hours.

Year 2025 Build Traffic Volumes

Capacity analysis conducted utilizing the Year 2025 Build Traffic Volumes indicates that the intersection is projected to continue to operate at an overall Level of Service “B” or better during each of the Peak Hours.

2. Western Avenue (US Route 20) and Gabriel Terrace/1700 Design Residences

Gabriel Terrace intersects Western Avenue opposite 1700 Design Residences at a full movement, unsignalized intersection. The Western Avenue eastbound and westbound approaches each consists of three lanes in the form of a two-way left turn lane, a separate through lane and a shared through/right turn lane. The Gabriel Terrace (southbound approach) and 1700 Designer Residences (northbound approach) each consist of one lane for left, through and right turn movements.

Year 2019 Existing Traffic Volumes

Capacity analysis conducted utilizing the Year 2019 Existing Traffic Volumes indicates that Gabriel Terrace southbound and 1700 Designer Residences northbound approaches (minor movements) are currently operating at a Level of Service “F” during both the Weekday Peak PM and Saturday Peak Hours. The Western Avenue eastbound and westbound left turns are currently operating at a Level of Service “C” or better.

Year 2022 No-Build Traffic Volumes

Capacity analysis conducted utilizing the Year 2022 No-Build Traffic Volumes indicates that Gabriel Terrace southbound and 1700 Designer Residences northbound approaches (minor movements) are projected to operate at a Level of Service “F” during each of the Peak Hours. The Western Avenue eastbound and westbound left turns are projected to operate at a Level of Service “C” or better.

Year 2022 Build Traffic Volumes

Capacity analysis conducted utilizing the Year 2022 Build Traffic Volumes indicates that 1700 Designer Residences northbound approach (minor movements) is projected to continue to operate at a Level of Service “F” during each of the peak Hours. The Gabriel Terrace Connector Road southbound approach (minor movements), if required, the Town could restrict left turns and therefore operate at a Level of Service “B” during the Weekday Peak AM Hour, operate at a Level of Service “D” during the Weekday Peak PM Hour and operate at a Level of Service “C” during the Saturday Peak Hour. It should be noted the Gabriel Terrace Connector Road will provide access to Crossgates Mall via Crossgates Mall Road (the southerly Mall Ring Road) and from there directly to the I-87/I-90 highway system. The Western Avenue eastbound and westbound left turns are projected to continue to operate at a Level of Service “C” or better.

Year 2025 No-Build Traffic Volumes

Capacity analysis conducted utilizing the Year 2025 No-Build Traffic Volumes indicates that 1700 Designer Residences northbound approach (minor movements) is projected to operate at a Level of Service “F” during each of the peak Hours. The Gabriel Terrace Connector Road southbound approach (minor movements), if required, the Town could restrict left turns and therefore operate at a Level of Service “B” during the Weekday Peak AM Hour, operate at a Level of Service “D” during the Weekday Peak PM Hour and operate at a Level of Service “C” during the Saturday Peak Hour. It should be noted the Gabriel Terrace Connector Road will provide access to Crossgates Mall via Crossgates Mall Road (the southerly Mall Ring Road) and from there directly to the I-87/I-90 highway system. The Western Avenue eastbound and westbound left turns are projected to operate at a Level of Service “C” or better.

Year 2025 Build Traffic Volumes

Capacity analysis conducted utilizing the Year 2025 Build Traffic Volumes indicates that 1700 Designer Residences northbound approach (minor movements) is projected to continue to operate at a Level of Service “F” during each of the peak Hours. The

Gabriel Terrace Connector Road southbound approach (minor movements), if required, the Town could restrict left turns and therefore operate at a Level of Service “B” during the Weekday Peak AM Hour, projected operate at a Level of Service “E” during the Weekday Peak PM Hour and projected to continue operate at a Level of Service “C” during the Saturday Peak Hour. It should be noted the Gabriel Terrace Connector Road will provide access to Crossgates Mall via Crossgates Mall Road (the southerly Mall Ring Road) and from there directly to the I-87/I-90 highway system. The Western Avenue eastbound and westbound left turns are projected to continue to operate at a Level of Service “C” or better.

3. Western Avenue (US Route 20) and Crossgates Mall Road/Johnston Road

Crossgates Mall Road intersects Western Avenue opposite Johnston Road at a full movement, signalized intersection. The Western Avenue eastbound and westbound approaches each consist of three lanes in the form of a separate left turn lane, a separate through lane and a shared through/right lane. The Crossgates Mall Road southbound approach consists of three lanes in the form of a separate left turn lane, separate through lane and a separate right turn lane. The Johnston Road northbound approach consists of three lanes in the form of a separate left turn lane, a shared through/right lane and a separate right turn lane.

Year 2019 Existing Traffic Volumes

Capacity analysis conducted utilizing the Year 2019 Existing Traffic Volumes indicates that the intersection is currently operating at an overall Level of Service “C” during the Weekday Peak AM Hour, is currently operating at an overall Level of Service “D” during the Weekday Peak PM Hour and is currently operating at an overall Level of Service “B” during the Saturday Peak Hour.

Year 2022 No-Build Traffic Volumes

Capacity analysis conducted utilizing the Year 2022 No-Build Traffic Volumes indicates that the intersection is projected to operate at an overall Level of Service “C” during the Weekday Peak AM Hour, is projected to operate at an overall Level of Service “D” during the Weekday Peak PM Hour and is projected to operate at an overall Level of Service “B” during the Saturday Peak Hour.

Year 2022 Build Traffic Volumes

Capacity analysis conducted utilizing the Year 2022 Build Traffic Volumes indicates that the intersection is projected to continue to operate at an overall Level of Service “C” during the Weekday Peak AM Hour, is projected to continue to operate at an

overall Level of Service “D” during the Weekday Peak PM Hour and projected to operate at an overall Level of Service “C” during the Saturday Peak Hour.

Year 2025 No-Build Traffic Volumes

Capacity analysis conducted utilizing the Year 2025 No-Build Traffic Volumes indicates that the intersection is projected to operate at an overall Level of Service “D” during the Weekday Peak AM Hour, is projected to operate at an overall Level of Service “D” during the Weekday Peak PM Hour and is projected to operate at an overall Level of Service “C” during the Saturday Peak Hour.

Year 2025 Build Traffic Volumes

Capacity analysis conducted utilizing the Year 2025 Build Traffic Volumes indicates that the intersection is projected to continue to operate at an overall Level of Service “D” during the Weekday Peak AM Hour, is projected to continue to operate at an overall Level of Service “D” during the Weekday Peak PM Hour and projected to continue to operate at an overall Level of Service “C” during the Saturday Peak Hour.

4. Rapp Road and Crossgates Mall Road

Rapp Road and Crossgates Mall Road intersects at a full movement, signalized intersection. The Crossgates Mall Road northbound approach consists of two lanes in the form of a shared left/through lane and a separate channelized right turn lane. The Rapp Road eastbound approach consists of two lanes in the form of a shared left/through lane and a separate channelized right turn lane. The Crossgates Mall Road westbound approach consists of two lanes in the form of a separate left turn lane and a shared through/right lane. The Crossgates Mall northerly ring road (southbound approach) consists of two lanes in the form of a shared left/through lane and a shared through/right lane.

Year 2019 Existing Traffic Volumes

Capacity analysis conducted utilizing the Year 2019 Existing Traffic Volumes indicates that the intersection is currently operating at an overall Level of Service “B” during each of the Peak Hours.

Year 2022 No-Build Traffic Volumes

Capacity analysis conducted utilizing the Year 2022 No-Build Traffic Volumes indicates that the intersection is projected to operate at an overall Level of Service “B” during each of the Peak Hours.

Year 2022 Build Traffic Volumes

It is recommended to remove the right turn slip lanes and bring the right turn movements under traffic signal control and modify/optimize the existing traffic signal. Capacity analysis conducted utilizing the Year 2022 Build Traffic Volumes indicates that the intersection is projected to continue to operate at an overall Level of Service “C” or better during each of the Peak Hours.

Year 2025 No-Build Traffic Volumes

It is recommended to remove the right turn slip lanes and bring the right turn movements under traffic signal control and modify/optimize the existing traffic signal. Capacity analysis conducted utilizing the Year 2025 No-Build Traffic Volumes indicates that the intersection is projected to operate at an overall Level of Service “C” or better during each of the Peak Hours.

Year 2025 Build Traffic Volumes

It is recommended to remove the right turn slip lanes and bring the right turn movements under traffic signal control and modify/optimize the existing traffic signal. Capacity analysis conducted utilizing the Year 2025 Build Traffic Volumes indicates that the intersection is projected to operate at an overall Level of Service “C” or better during each of the Peak Hours.

5. Rapp Road and Gipp Road

Gipp Road intersects Rapp Road at a “T” shaped, unsignalized intersection. The Rapp Road northbound approach consists of one lane for left/through movements and the Rapp Road southbound approach consists of one lane for through/right movements. The Gipp Road eastbound approach consists of one lane for left and right turn movements and is “stop” sign controlled.

Year 2019 Existing Traffic Volumes

Capacity analysis conducted utilizing the Year 2019 Existing Traffic Volumes indicates that Gipp Road eastbound approach (minor movements) is currently operating at a Level of Service “B” during each of the Peak Hours. The Rapp Road northbound left turn is currently operating at a Level of Service “A”.

Year 2022 No-Build Traffic Volumes

Capacity analysis conducted utilizing the Year 2022 No-Build Traffic Volumes indicates that Gipp Road eastbound approach (minor movements) is projected to operate at a Level of Service “B” during each of the Peak Hours. The Rapp Road northbound left turn is projected to operate at a Level of Service “A”.

Year 2022 Build Traffic Volumes

Capacity analysis conducted utilizing the Year 2022 Build Traffic Volumes indicates that Gipp Road eastbound approach (minor movements) is projected to operate at a Level of Service “C” or better during each of the Peak Hours. The Rapp Road northbound left turn is projected to continue to operate at a Level of Service “A”.

Year 2025 No-Build Traffic Volumes

Capacity analysis conducted utilizing the Year 2025 No-Build Traffic Volumes indicates that Gipp Road eastbound approach (minor movements) is projected to operate at a Level of Service “C” or better during each of the Peak Hours. The Rapp Road northbound left turn is projected to operate at a Level of Service “A”.

Year 2025 Build Traffic Volumes

Capacity analysis conducted utilizing the Year 2025 Build Traffic Volumes indicates that Gipp Road eastbound approach (minor movements) is projected to continue to operate at a Level of Service “C” or better during each of the Peak Hours. The Rapp Road northbound left turn is projected to continue to operate at a Level of Service “A”.

6. Rapp Road and Pine Lane

Pine Lane intersects Rapp Road at a “T” shaped, unsignalized intersection. The Rapp Road northbound approach consists of one lane for left/through movements and the Rapp Road southbound approach consists of one lane for through/right movements. The Pine Lane eastbound approach consists of one lane for left and right turn movements. All approaches to the intersection are “stop” sign controlled.

Year 2019 Existing Traffic Volumes

Capacity analysis conducted utilizing the Year 2019 Existing Traffic Volumes indicates that all approaches to the intersection are currently operating at a Level of Service “B” or better during each of the Peak Hours.

Year 2022 No-Build Traffic Volumes

Capacity analysis conducted utilizing the Year 2022 No-Build Traffic Volumes indicates that all approaches to the intersection are projected to operate at a Level of Service “B” or better during each of the Peak Hours.

Year 2022 Build Traffic Volumes

Capacity analysis conducted utilizing the Year 2022 Build Traffic Volumes indicates that all approaches to the intersection are projected to continue to operate at a Level of Service “B” or better during each of the Peak Hours.

Year 2025 No-Build Traffic Volumes

Capacity analysis conducted utilizing the Year 2025 No-Build Traffic Volumes indicates that all approaches to the intersection are projected to operate at a Level of Service “B” or better during each of the Peak Hours.

Year 2025 Build Traffic Volumes

Capacity analysis conducted utilizing the Year 2025 Build Traffic Volumes indicates that all approaches to the intersection are projected to continue to operate at a Level of Service “B” or better during each of the Peak Hours.

7. Rapp Road and Springsteen Road

Rapp Road intersects Springsteen Road at a “Y” shaped, unsignalized intersection. The Rapp Road northbound approach continues as Springsteen Road as a one-way road and the Rapp Road southbound approach consists of one lane for left and right turn movements and is “stop” sign controlled.

Year 2019 Existing Traffic Volumes

Capacity analysis conducted utilizing the Year 2019 Existing Traffic Volumes indicates that the Rapp Road southbound approach (minor movements) is currently operating at a Level of Service “B” or better during each of the Peak Hours.

Year 2022 No-Build Traffic Volumes

Capacity analysis conducted utilizing the Year 2022 No-Build Traffic Volumes indicates that the Rapp Road southbound approach (minor movements) is projected to operate at a Level of Service “B” or better each of the Peak Hours.

Year 2022 Build Traffic Volumes

Capacity analysis conducted utilizing the Year 2022 Build Traffic Volumes indicates that the Rapp Road southbound approach (minor movements) is projected to continue to operate at a Level of Service “B” or better during each of the Peak Hours.

Year 2025 No-Build Traffic Volumes

Capacity analysis conducted utilizing the Year 2025 No-Build Traffic Volumes indicates that the Rapp Road southbound approach (minor movements) is projected to operate at a Level of Service “B” or better each of the Peak Hours.

Year 2025 Build Traffic Volumes

Capacity analysis conducted utilizing the Year 2025 Build Traffic Volumes indicates that the Rapp Road southbound approach (minor movements) is projected to continue to operate at a Level of Service “B” or better during each of the Peak Hours.

8. Springsteen Road and S. Frontage Road

Springsteen Road intersects S. Frontage Road at an unsignalized intersection. The Springsteen Road eastbound approach consists of two lanes in the form of a separate left turn lane and a shared through/right lane and is “stop” sign controlled. The S. Frontage Road southbound approach consists of one lane for left/through movements and the S. Frontage Road northbound approach consists of one lane for through/right movements and are also “stop” sign controlled.

Year 2019 Existing Traffic Volumes

Capacity analysis conducted utilizing the Year 2019 Existing Traffic Volumes indicates that all approaches to the intersection are currently operating at a Level of Service “A” during each of the Peak Hours.

Year 2022 No-Build Traffic Volumes

Capacity analysis conducted utilizing the Year 2022 No-Build Traffic Volumes indicates that all approaches to the intersection are projected to operate at a Level of Service “A” during each of the Peak Hours.

Year 2022 Build Traffic Volumes

Capacity analysis conducted utilizing the Year 2022 Build Traffic Volumes indicates that all approaches to the intersection are projected to continue to operate at a Level of Service “A” during each of the Peak Hours.

Year 2025 No-Build Traffic Volumes

Capacity analysis conducted utilizing the Year 2025 No-Build Traffic Volumes indicates that all approaches to the intersection are projected to operate at a Level of Service “A” during each of the Peak Hours.

Year 2025 Build Traffic Volumes

Capacity analysis conducted utilizing the Year 2025 Build Traffic Volumes indicates that all approaches to the intersection are projected to operate at a Level of Service “B” or better during each of the Peak Hours.

9. Washington Avenue Extension and Springsteen Road/Crossgates Commons

Springsteen Road intersects Washington Avenue Extension opposite Crossgates Commons at a signalized intersection. The Washington Avenue Extension northbound approach consists of five lanes in the form of a separate left turn lane, three through lanes and a separate right turn lane and the Washington Avenue Extension southbound approach consists of four lanes in the form of a separate left turn lane, two through lanes and a separate right turn lane. The Springsteen Road eastbound approach consists of one lane for right turn movements only and the Crossgates Commons westbound approach consists of three lanes in the form of a double left turn lane and a shared through/right lane.

Year 2019 Existing Traffic Volumes

Capacity analysis conducted utilizing the Year 2019 Existing Traffic Volumes indicates that the intersection is currently operating at an overall Level of Service “C” during the Weekday Peak AM Hour and is currently operating at an overall Level of Service “D” during both the Weekday Peak PM and Saturday Peak Hours.

Year 2022 No-Build Traffic Volumes

Capacity analysis conducted utilizing the Year 2022 No-Build Traffic Volumes indicates that the intersection is projected to operate at an overall Level of Service “C” during the Weekday Peak AM Hour and is projected to operate at an overall Level of Service “D” during both the Weekday Peak PM Hour and Saturday Peak Hours.

Year 2022 Build Traffic Volumes

Capacity analysis conducted utilizing the Year 2022 Build Traffic Volumes indicates that the intersection is projected to continue to operate at an overall Level of Service “C” during the Weekday Peak AM Hour and continue to operate at an overall Level of Service “D” during both the Weekday Peak PM and Saturday Peak Hours.

Year 2025 No-Build Traffic Volumes

Capacity analysis conducted utilizing the Year 2025 No-Build Traffic Volumes indicates that the intersection is projected to operate at an overall Level of Service “C” during the Weekday Peak AM Hour and is projected to operate at an overall Level of Service “D” during both the Weekday Peak PM Hour and Saturday Peak Hours.

Year 2025 Build Traffic Volumes

Capacity analysis conducted utilizing the Year 2025 Build Traffic Volumes indicates that the intersection is projected to continue to operate at an overall Level of Service “C” during the Weekday Peak AM Hour and continue to operate at an overall Level of Service “D” during both the Weekday Peak PM and Saturday Peak Hours.

10. Crossgates Mall Road and I-87 On/Off Ramps

The I-87 On/Off Ramps intersects Crossgates Mall Road at a “T” type, signalized intersection. The Crossgates Mall Road northbound approach consists of two lanes in the form of a separate through lane and a channelized right turn lane and the Crossgates Mall Road southbound approach consist of two lanes in the form of a separate left turn lane and separate through lane. The I-87 Off Ramp (westbound approach) consists of three lanes in the form of a double left turn lane and a separate channelized right turn lane at Crossgates Mall Road. It should be noted for analysis purpose, the I-87 Off Ramp approach was analyzed as two lanes in the form of a separate left turn lane and shared left/right turn lane to account for short storage lanes.

Year 2019 Existing Traffic Volumes

Capacity analysis conducted utilizing the Year 2019 Existing Traffic Volumes indicates that the intersection is currently operating at an overall Level of Service “B” during the Weekday Peak AM Hour, is currently operating at an overall Level of Service “C” during the Weekday Peak PM Hour and is currently operating at an overall Level of Service “D” during Saturday Peak Hour.

Year 2022 No-Build Traffic Volumes

Capacity analysis conducted utilizing the Year 2022 No-Build Traffic Volumes indicates that the intersection is projected to operate at an overall Level of Service “B” during the Weekday Peak AM Hour, is projected to operate at an overall Level of Service “C” during the Weekday Peak PM Hour and is projected to operate at an overall Level of Service “D” during Saturday Peak Hour.

Year 2022 Build Traffic Volumes

Capacity analysis conducted utilizing the Year 2022 Build Traffic Volumes indicates that the intersection is projected to continue to operate at an overall Level of Service “B” during the Weekday Peak AM Hour, is projected to continue to operate at an overall Level of Service “C” during the Weekday Peak PM Hour and projected to continue to operate at an overall Level of Service “D” during the Saturday Peak Hour.

Year 2025 No-Build Traffic Volumes

Capacity analysis conducted utilizing the Year 2025 No-Build Traffic Volumes indicates that the intersection is projected to operate at an overall Level of Service “B” during the Weekday Peak AM Hour, is projected to operate at an overall Level of Service “C” during the Weekday Peak PM Hour and is projected to operate at an overall Level of Service “D” during Saturday Peak Hour.

Year 2025 Build Traffic Volumes

Capacity analysis conducted utilizing the Year 2025 Build Traffic Volumes indicates that the intersection is projected to continue to operate at an overall Level of Service “B” during the Weekday Peak AM Hour, is projected to operate at an overall Level of Service “D” during the Weekday Peak PM Hour and projected to continue to operate at an overall Level of Service “D” during the Saturday Peak Hour. It should be noted that it is expected that the CDTA/Crossgates Transit Center improvements will be implemented by the Year 2025 including the roundabout at this location. These improvements and analysis are discussed in Section Q of the Study.

11. Crossgates Mall Road and Mall Driveway (For Reference Driveway #1)

Crossgates Mall Driveway (For Reference Driveway #1) intersects Crossgates Mall Road at a “T” type, unsignalized intersection.

Year 2019 Existing Traffic Volumes

Capacity analysis conducted utilizing the Year 2019 Existing Traffic Volumes indicates that the Crossgates Mall Driveway (minor approach) is currently operating at a Level of Service “C or better during each of the Peak Hours. The Crossgates Mall Road eastbound left turn is currently operating at a Level of Service “A”.

Year 2022 No-Build Traffic Volumes

Capacity analysis conducted utilizing the Year 2022 No-Build Traffic Volumes indicates that the Crossgates Mall Driveway (minor approach) is projected to operate at a Level of Service “C” or better during each of the Peak Hours. The Crossgates Mall Road eastbound left turn is projected to operate at a Level of Service “A”.

Year 2022 Build Traffic Volumes with Gabriel Terrace Connector

As discussed in Section B, the Gabriel Terrace Connector Road will connect to Crossgates Mall opposite the westerly Crossgates Mall driveway. It is recommended to restripe Crossgates Mall Road from Rapp Road to a location just west of the hotel

driveway as a three lane section including a separate left turn lane. Capacity analysis conducted utilizing the Year 2022 Build Traffic Volumes indicates that the new Gabriel Terrace Connector northbound approach (minor approach) is projected to operate at a Level of Service “B” during the Weekday Peak AM Hour, is projected to operate at a Level of Service “C” during the Weekday Peak PM Hour and is projected to operate at a Level of Service “F” during the Saturday Peak Hour. The Crossgates Mall Road eastbound and westbound left turns are projected to operate at a Level of Service “A”. This intersection should be monitored in the future to determine if a traffic signal will be warranted. (Levels of Service “B” or better).

Year 2025 No-Build Traffic Volumes with Gabriel Terrace Connector

It is recommended to restripe Crossgates Mall Road from Rapp Road to a location just west of the hotel driveway as a three lane section including a separate left turn lane. Capacity analysis conducted utilizing the Year 2025 No-Build Traffic Volumes indicates that the new Gabriel Terrace Connector northbound approach (minor approach) is projected to operate at a Level of Service “B” during the Weekday Peak AM Hour, is projected to operate at a Level of Service “C” during the Weekday Peak PM Hour and is projected to operate at a Level of Service “F” during the Saturday Peak Hour. The Crossgates Mall Road eastbound and westbound left turns are projected to operate at a Level of Service “A”. This intersection should be monitored in the future to determine if a traffic signal will be warranted. (Levels of Service “B” or better).

Year 2025 Build Traffic Volumes with Gabriel Terrace Connector

It is recommended to restripe Crossgates Mall Road from Rapp Road to a location just west of the hotel driveway as a three lane section including a separate left turn lane. Capacity analysis conducted utilizing the Year 2025 Build Traffic Volumes indicates that the new Gabriel Terrace Connector northbound approach (minor approach) is projected to operate at a Level of Service “B” during the Weekday Peak AM Hour, is projected to operate at a Level of Service “F” during both the Weekday Peak PM and Saturday Peak Hours. The Crossgates Mall Road eastbound and westbound left turns are projected to operate at a Level of Service “A”. This intersection should be monitored in the future to determine if a traffic signal will be warranted. (Levels of Services “B” or better).

12. Crossgates Mall Road and Mall Driveway (For Reference Driveway #2)/Hotel

Crossgates Mall Driveway (For Reference Driveway #2) intersects Crossgates Mall Road opposite the Hotel connector road at a full movement, signalized intersection.

Year 2019 Existing Traffic Volumes

Capacity analysis conducted utilizing the Year 2019 Existing Traffic Volumes indicates that the intersection is currently operating at an overall Level of Service “B” or better during each of the Peak Hours.

Year 2022 No-Build Traffic Volumes

Capacity analysis conducted utilizing the Year 2022 No-Build Traffic Volumes indicates that the intersection is projected to operate at an overall Level of Service “B” or better during each of the Peak Hours.

Year 2022 Build Traffic Volumes

Capacity analysis conducted utilizing the Year 2022 Build Traffic Volumes indicates that the intersection is projected to continue to operate at an overall Level of Service “B” or better during each of the Peak Hours.

Year 2025 No-Build Traffic Volumes

Capacity analysis conducted utilizing the Year 2025 No-Build Traffic Volumes indicates that the intersection is projected to operate at an overall Level of Service “B” or better during each of the Peak Hours.

Year 2025 Build Traffic Volumes

Capacity analysis conducted utilizing the Year 2025 Build Traffic Volumes indicates that the intersection is projected to operate at an overall Level of Service “C” or better during each of the Peak Hours.

13/14. Crossgates Mall Road and Crossgates Mall Main Access Road

The Crossgates Mall Main Access Road from the Western Avenue couplet intersects Crossgates Mall Road at two signalized intersections.

Year 2019 Existing Traffic Volumes

Capacity analysis conducted utilizing the Year 2019 Existing Traffic Volumes indicates that the intersection is currently operating at an overall Level of Service “C” or better during each of the Peak Hours.

Year 2022 No-Build Traffic Volumes

Capacity analysis conducted utilizing the Year 2022 No-Build Traffic Volumes indicates that the intersection is projected to operate at an overall Level of Service “C” or better during each of the Peak Hours.

Year 2022 Build Traffic Volumes

Capacity analysis conducted utilizing the Year 2022 Build Traffic Volumes indicates that the intersection is projected to continue to operate at an overall Level of Service “C” or better during each of the Peak Hours.

Year 2025 No-Build Traffic Volumes

Capacity analysis conducted utilizing the Year 2025 No-Build Traffic Volumes indicates that the intersection is projected to operate at an overall Level of Service “C” or better during each of the Peak Hours.

Year 2025 Build Traffic Volumes

Capacity analysis conducted utilizing the Year 2025 Build Traffic Volumes indicates that the intersection is projected to continue to operate at an overall Level of Service “C” or better during each of the Peak Hours.

15. S. Frontage Road and Rapp Road

Rapp Road intersects Rapp Road at a “Y” shaped, unsignalized intersection. The S. Frontage Road westbound approach consists of one lane for left/through movements and the S. Frontage Road eastbound approach consists of one lane for through/right movements. The Rapp Road approach is one-way for southbound traffic only.

Year 2019 Existing Traffic Volumes

Capacity analysis conducted utilizing the Year 2019 Existing Traffic Volumes indicates that S. Frontage Road westbound left turn is currently operating at a Level of Service “A” during each of the Peak Hours.

Year 2022 No-Build Traffic Volumes

Capacity analysis conducted utilizing the Year 2022 No-Build Traffic Volumes indicates that S. Frontage Road westbound left turn is projected to operate at a Level of Service “A” during each of the Peak Hours.

Year 2022 Build Traffic Volumes

Capacity analysis conducted utilizing the Year 2022 Build Traffic Volumes indicates that S. Frontage Road westbound left turn is projected to continue to operate at a Level of Service “A” during each of the Peak Hours.

Year 2025 No-Build Traffic Volumes

Capacity analysis conducted utilizing the Year 2025 No-Build Traffic Volumes indicates that S. Frontage Road westbound left turn is projected to operate at a Level of Service “A” during each of the Peak Hours.

Year 2025 Build Traffic Volumes

Capacity analysis conducted utilizing the Year 2025 Build Traffic Volumes indicates that S. Frontage Road westbound left turn is projected to continue to operate at a Level of Service “A” during each of the Peak Hours.

16. Western Avenue (US Route 20) and Westmere Terrace

Westmere Terrace intersects Western Avenue at a “T” shaped, unsignalized intersection. The Western Avenue eastbound approach consists of three lanes in the form of a center turning lane for left turn movements and two through lanes and the Western Avenue westbound approach consists of two lanes in the form of a separate through lane and a shared through/right turn lane. The Westmere Terrace southbound approach consists of one lane for left and right turn movements and is “stop” sign controlled.

Year 2019 Existing Traffic Volumes

Capacity analysis conducted utilizing the Year 2019 Existing Traffic Volumes indicates that Westmere Terrace southbound approach (minor movements) is currently operating at a Level of Service “E-F” during each of Peak Hours.

Year 2022 No-Build Traffic Volumes

Capacity analysis conducted utilizing the Year 2022 No-Build Traffic Volumes indicates that Westmere Terrace southbound approach (minor movements) is projected to operate at a Level of Service “E-F” during each of Peak Hours.

Year 2022 Build Traffic Volumes

Capacity analysis conducted utilizing the Year 2022 Build Traffic Volumes indicates that Westmere Terrace southbound approach (minor movements) is projected to operate at a Level of Service “F” during each of Peak Hours.

Year 2025 No-Build Traffic Volumes

Capacity analysis conducted utilizing the Year 2025 No-Build Traffic Volumes indicates that Westmere Terrace southbound approach (minor movements) is projected to operate at a Level of Service “F” during each of Peak Hours.

Year 2025 Build Traffic Volumes

Capacity analysis conducted utilizing the Year 2025 Build Traffic Volumes indicates that Westmere Terrace southbound approach (minor movements) is projected to continue to operate at a Level of Service “F” during each of Peak Hours.

17/18. Rapp Road and Rapp Road Residential Site 1 Driveway(s)

As discussed in Section B, access to the Site 1 (Rapp Road Residential) is proposed via two driveway connections to Rapp Road.

Year 2022 Build Traffic Volumes

Capacity analysis conducted utilizing the Year 2022 Build Traffic Volumes indicates that the Rapp Road Residential Site Driveway(s) are projected to operate at a Level of Service “B” or better during each of the Peak Hours.

Year 2025 Build Traffic Volumes

Capacity analysis conducted utilizing the Year 2025 Build Traffic Volumes indicates that the Rapp Road Residential Site Driveway(s) are projected to operate at a Level of Service “B” or better during each of the Peak Hours.

19. Rapp Road and Site 2 Northerly Driveway

As discussed in Section B, Site 2 is proposed to have two driveways to Rapp Road, with the northerly access for entering left and right turns and exiting right turns only (exiting left turns will be prohibited).

Year 2022 Build Traffic Volumes

Capacity analysis conducted utilizing the Year 2022 Build Traffic Volumes indicates that the Site 2 Rapp Road Northerly Driveway is projected to operate at a Level of Service “B” or better during each of the Peak Hours.

Year 2025 Build Traffic Volumes

Capacity analysis conducted utilizing the Year 2025 Build Traffic Volumes indicates that the Site 2 Rapp Road Northerly Driveway is projected to operate at a Level of Service “B” or better during each of the Peak Hours.

20. Rapp Road and Site 2 Southerly Driveway

As discussed in Section B, Site 2 is proposed to have two driveways to Rapp Road, with the southerly access for entering right turns only.

Year 2022 Build Traffic Volumes

Capacity analysis conducted utilizing the Year 2022 Build Traffic Volumes indicates that the Site 2 Rapp Road Southerly Driveway is projected to operate at a Level of Service “A” during each of the Peak Hours.

Year 2025 Build Traffic Volumes

Capacity analysis conducted utilizing the Year 2025 Build Traffic Volumes indicates that the Site 2 Rapp Road Southerly Driveway is projected to operate at a Level of Service “A” during each of the Peak Hours.

21. Gabriel Terrace Connector Road and Site 2 Driveway

As discussed in Section B, access to Site 2 is also proposed via the Gabriel Terrace Connector Road.

Year 2022 Build Traffic Volumes

Capacity analysis conducted utilizing the Year 2022 Build Traffic Volumes indicates that the Site 2 Driveway to the Gabriel Terrace Connector Road is projected to operate at a Level of Service “C” or better during each of the Peak Hours.

Year 2025 Build Traffic Volumes

Capacity analysis conducted utilizing the Year 2025 Build Traffic Volumes indicates that the Site 2 Driveway to the Gabriel Terrace Connector Road is projected to operate at a Level of Service “D” or better during each of the Peak Hours.

22. Gabriel Terrace Connector Road and Western Avenue Mixed-Use Site 3 Driveway

As discussed in Section B, access to the Potential Western Avenue Mixed-Use Development (Site 3) is also proposed via the Gabriel Terrace Connector Road.

Year 2025 Build Traffic Volumes

Capacity analysis conducted utilizing the Year 2025 Build Traffic Volumes indicates that the Western Avenue Mixed-Use Site 3 Driveway is projected to operate at a Level of Service “C” or better during each of the Peak Hours.

23. Hotel Connector Road and Western Avenue Mixed-Use Site 3 Driveway

As discussed in Section B, access to Potential Western Avenue Mixed-Use Development (Site 3) is also proposed via the Hotel Connector Road.

Year 2025 Build Traffic Volumes

Capacity analysis conducted utilizing the Year 2025 Build Traffic Volumes indicates that the Western Avenue Mixed-Use Site 3 Driveway is projected to operate at a Level of Service “A” during each of the Peak Hours.

Q. CDTA/CROSSGATES TRANSIT CENTER STUDY

(Table No. 7)

Crossgates Mall is currently the busiest bus-stop on the Capital District Transportation Authority regional bus transportation service map. CDTA has proposed to develop a bus rapid transit express line, to be known as CDTA’s “BRT Line”, from Downtown Albany to a terminus as a new Transit Center at Crossgates Mall. The improvements associated with the Crossgates Transit Center include a state-of-the-art, climate-controlled passenger waiting area connected to the Mall food court, a ten bus parking deck on the south side of the shopping center, and improvements to Crossgates Mall Road and its connections to Western Avenue and the interstate highway system.

In connection with the development of the CDTA/Crossgates Transit Center, CDTA retained Creighton Manning Engineers to evaluate area traffic conditions following the construction of the Transit Center and related traffic improvements. The Creighton Manning traffic report (“CME Report”) provided an analysis of various potential development zones in the area and evaluated potential traffic impacts at the Crossgates main driveway on Western Avenue and the Ring Road/highway ramp intersections. As part of CDTA Project, improvements were proposed; a roundabout at the Crossgates Mall Road/I-87 On/Off Ramps, a roundabout at the Crossgates Mall Road and the Crossgates Mall Road at its two signalized intersections with Crossgates Mall Main Access Road from Western Avenue, and replacement of the couplet intersection at Western Avenue with a standard “T” intersection. Access to the Transit Center would be provided via the northern leg of the roundabout proposed at the intersection of Crossgates Mall Road and the Crossgates Mall Main Access Road from Western Avenue.

1. Western Avenue (US Route 20) and Crossgates Mall Driveway

Capacity analysis conducted utilizing the Year 2025 Build Traffic Volumes indicates that the intersection as a standard “T” intersection is projected to operate at an overall Level of Service “C” or better during each of the Peak Hours.

10. Crossgates Mall Road and I-87 On/Off Ramps

Capacity analysis conducted utilizing the Year 2025 Build Traffic Volumes with the Roundabout indicated the intersection is projected to operate at an overall Level of Service “C” or better during each of the Peak Hours.

13/14. Crossgates Mall Road and Crossgates Mall Main Access Road

Capacity analysis conducted utilizing the Year 2025 Build Traffic Volumes with the Roundabout indicated the intersection is projected to operate at an overall Level of Service “B” or better during each of the Peak Hours.

A copy of the Level of Service Summary Table (Table No. 7) and capacity analysis are contained in Appendix F.

R. CONCLUSION AND RECOMMENDATIONS

As summarized in this Study and as shown on the Level of Service Summary Table No. 3, the proposed Rapp Road Residential (Site 1) and Costco (Site 2) developments will not result in a significant impact on the existing roadway network. Similar Levels of Service and delays will be experienced under Future 2022 No-Build and 2022 Future Build Conditions. In addition, as also analyzed in this Study and as shown on Level of Service Summary Table No. 6, the future potential Rapp Road Residential development area identified on Site 1 and future potential Western Avenue Mixed-Use (Site 3) will not result in a significant impact on the existing roadway network. Similar Levels of Service and delays will be experienced under Future 2025 No-Build and 2025 Future Build Conditions.

As part of the potential cumulative impacts of Rapp Road Residential (Site 1), Costco (Site 2) and Future Potential Development Area (Site 3), and considering the recent VHB Rapp Road/Crossgates Mall Road Safety Evaluation Memorandum dated January 14, 2020, recommended improvements have been identified as shown on Conceptual Improvement Plan (Sheet 1 of 2 in Appendix A) and include the following:

- Remove the right turn slip lanes and bring the right turn movements under traffic signal control at the Rapp Road/Crossgates Mall Road intersection.

- Modify the existing traffic signal at the Rapp Road/Crossgates Mall Road intersection.
- Restripe Crossgates Mall Road from Rapp Road to a location just west of the hotel driveway as a three section including a separate left turn lane.
- Relocate Gabriel Terrace opposite the Crossgates Mall western driveway.
- Provide two driveways to Rapp Road as well as a connection to//from the Crossgates Mall North Ring Road to provide additional access to I-87/I-90 as well as Washington Avenue for the Rapp Road Residential Development (Site 1).
- Provide two driveways to Rapp Road for Costco (Site 2), with the northerly access for entering left turns (a separate entering left turn lane will be provided), entering right turns, and exiting right turns only (exiting left turn will be prohibited). The southerly driveway would be for entering right turns only.
- If required, a traffic signal at the Crossgates Mall Road and Gabriel Terrace Connector will be installed.
- If required, the Town could restrict left turns at the Gabriel Terrace Connector Road southbound approach to Western Avenue.

In addition, as outlined in Section Q, the three development sites would be compatible with the future CDTA Project improvements.

While not part of the recommended improvements above, in connection with the development of the CDTA/Crossgates Transit Center, at such time as significant new bus traffic is produced at the CDTA Transit Center, the following improvements were recommended by Creighton Manning as shown on Conceptual Improvement plan (Sheet 2 of 2 in Appendix F):

- A roundabout at the Crossgates Mall Road/I-87 On/Off Ramps
- A roundabout at the Crossgates Mall Road and the Crossgates Mall Road at its two signalized intersections with Crossgates Mall Main Access Road from Western Avenue
- Replacement of the couplet intersection at Western Avenue with a standard “T” intersection

- Access to the Transit Center would be provided via the northern leg of the roundabout proposed at the intersection of Crossgates Mall Road and the Crossgates Mall Main Access Road from Western Avenue

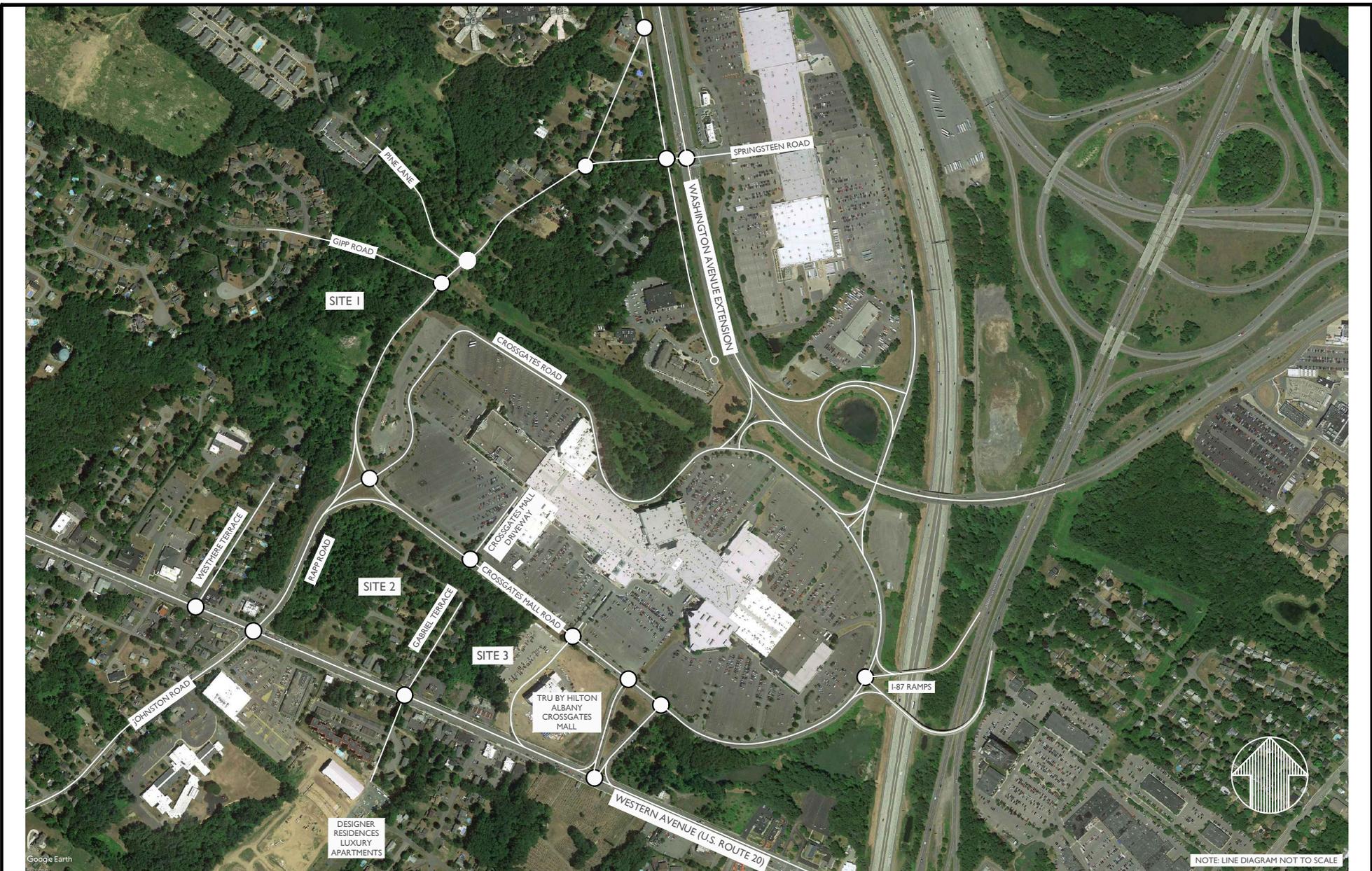
The Conceptual Improvement Plans and VHB Rapp Road/Crossgates Mall Road Safety Evaluation memorandum are contained Appendix C of the DEIS.



***RAPP ROAD RESIDENTIAL
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WESTERN AVENUE MIXED-USE DEVELOPMENT***

APPENDIX A

FIGURES



NOTE: LINE DIAGRAM NOT TO SCALE



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SHEET TITLE:
STUDY AREA INTERSECTIONS

SHEET NUMBER:
FIGURE NO. 1




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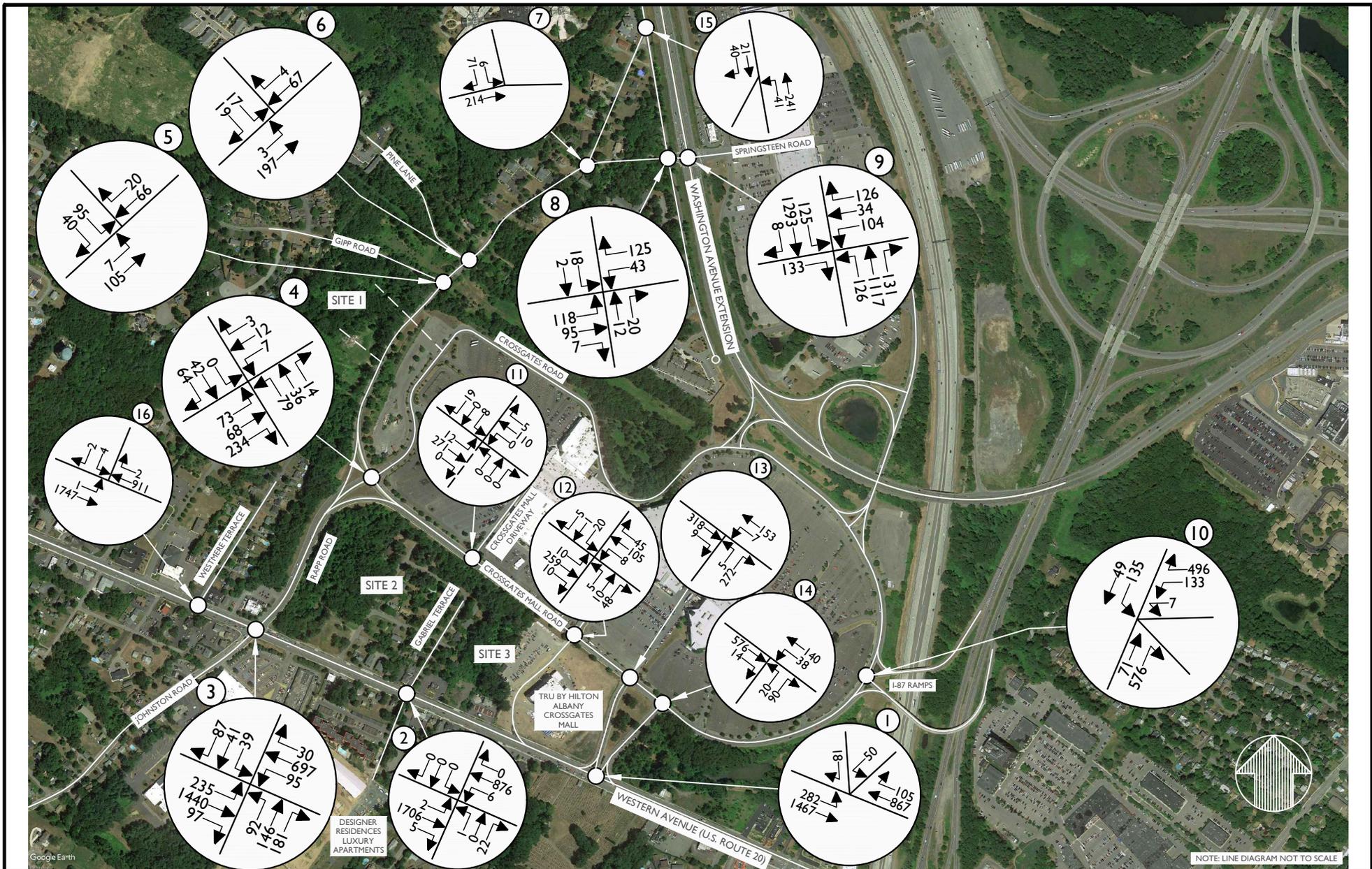
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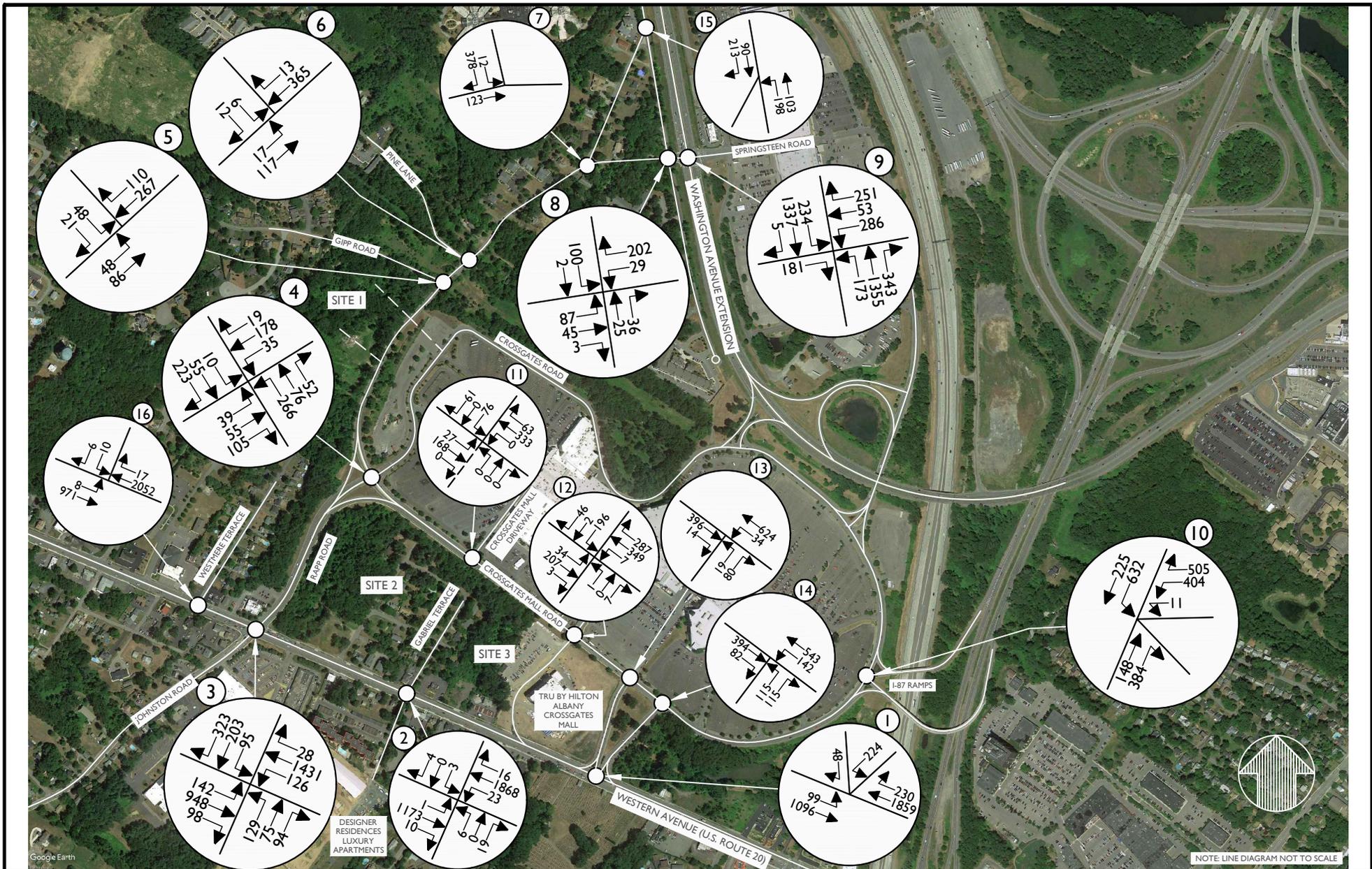
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FIGURE NO. 2			



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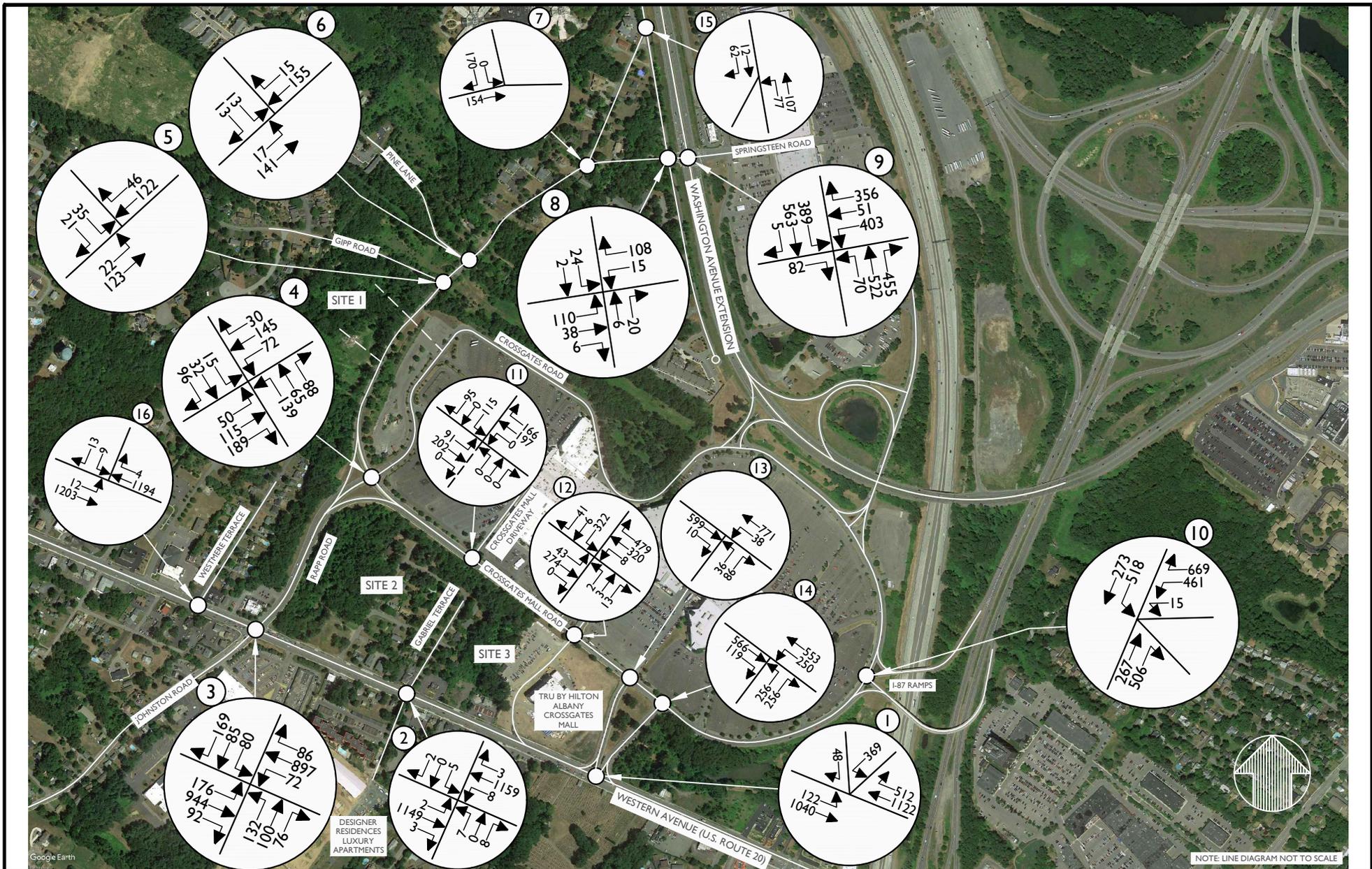
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FIGURE NO. 3			



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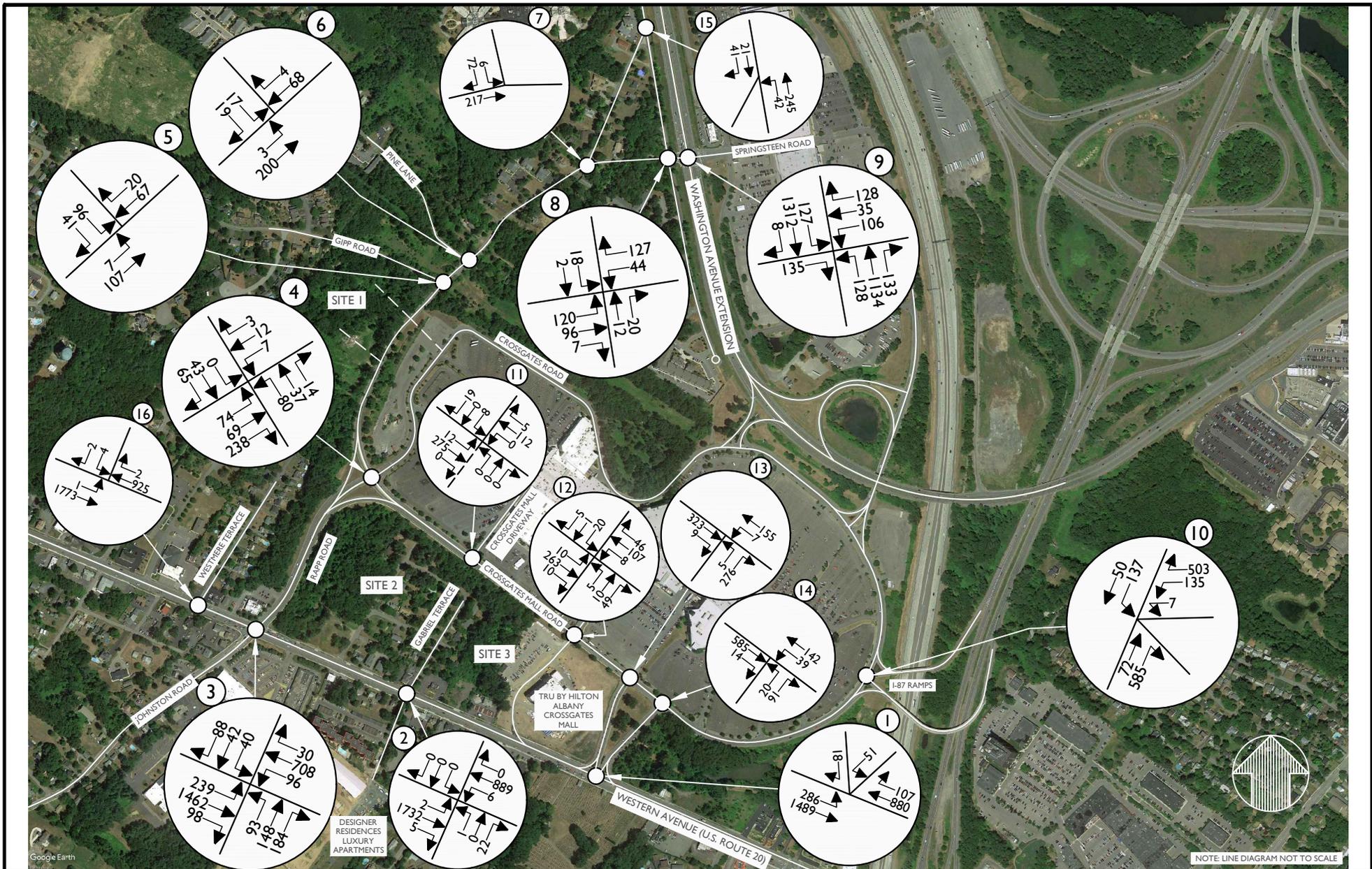
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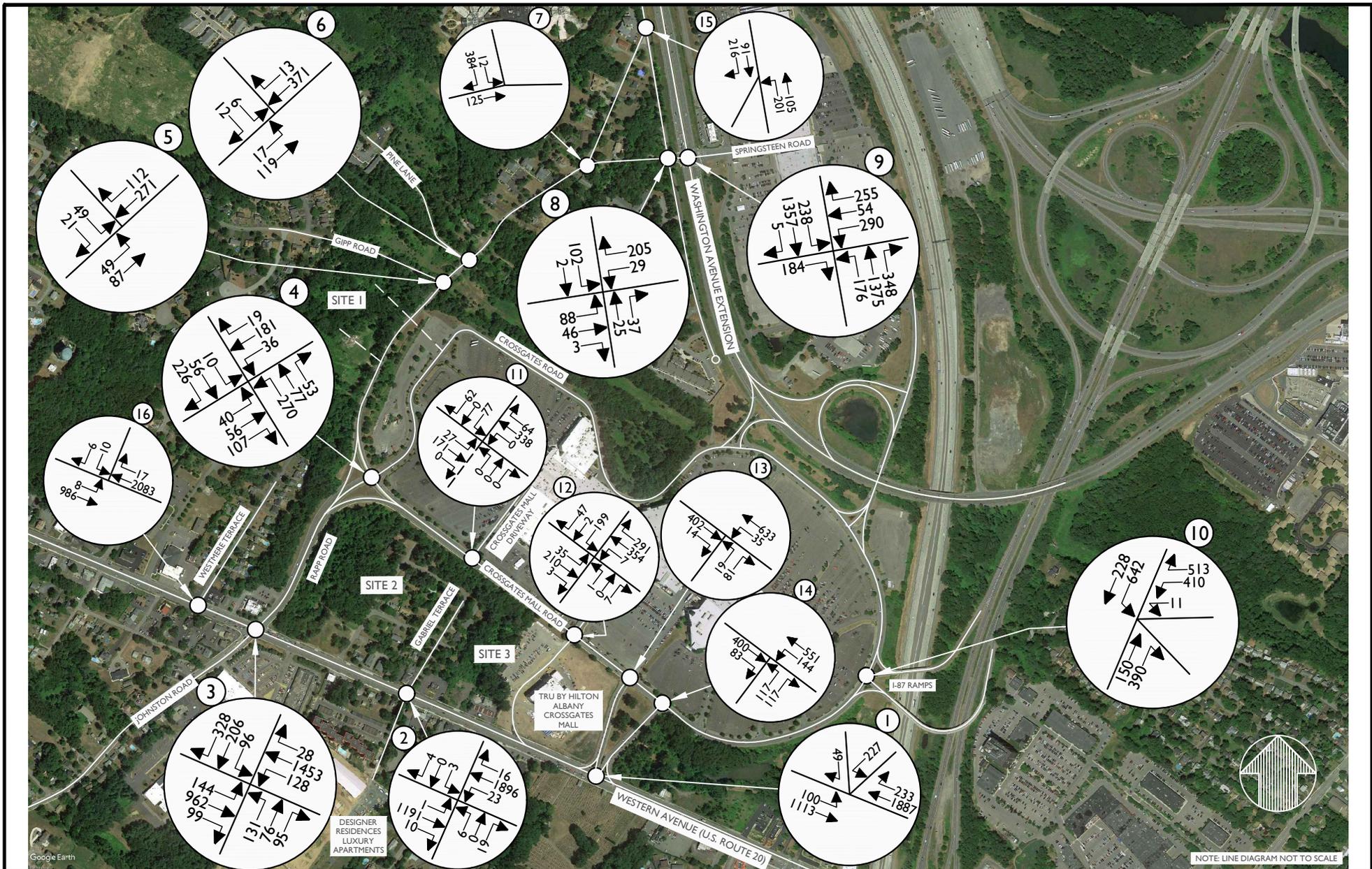
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FIGURE NO. 5			



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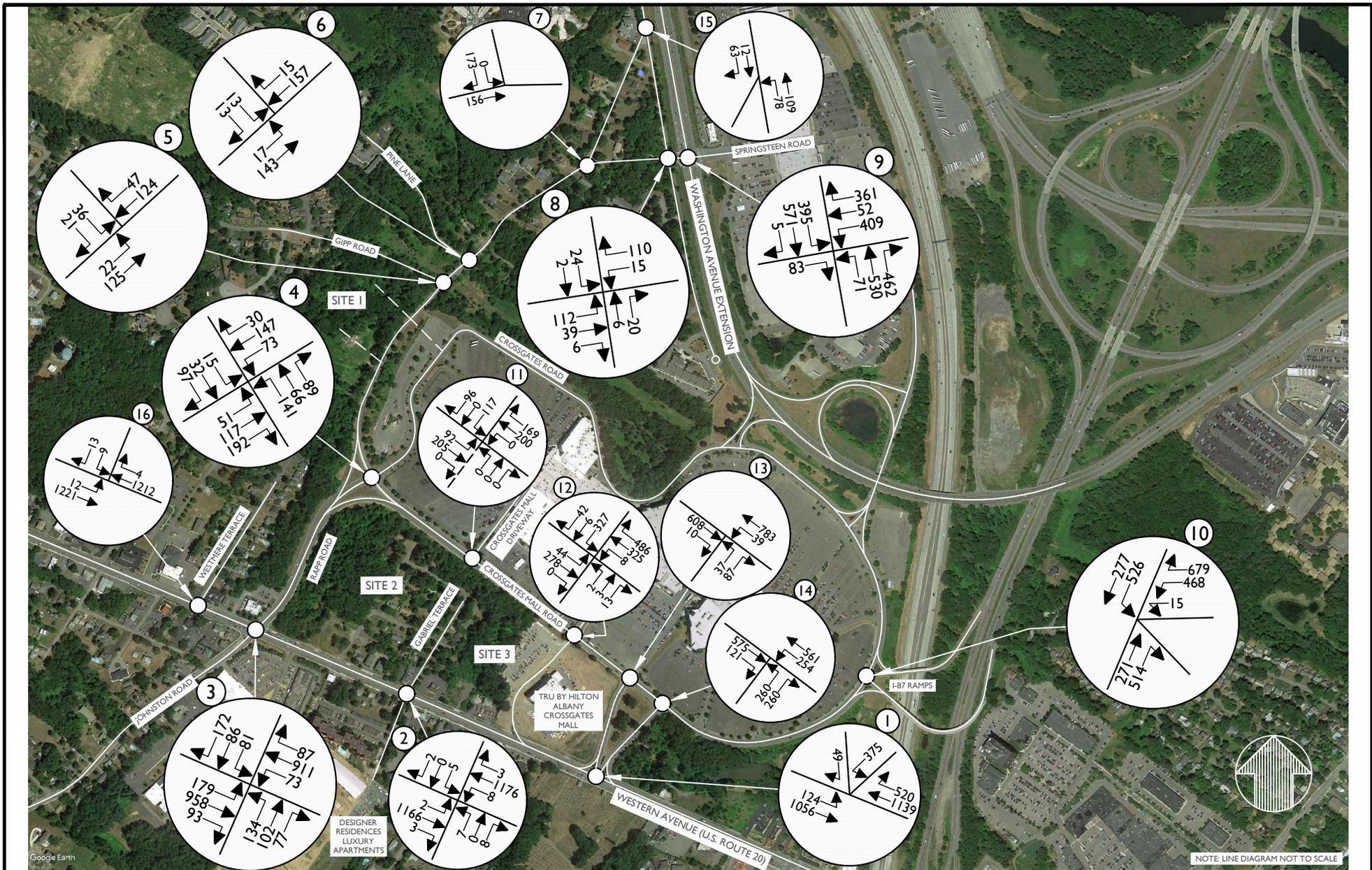
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19002502A	191021JFM_FIGURES - 02.17.2020		
SHEET TITLE:			
2022 PROJECTED TRAFFIC VOLUMES WEEKDAY PEAK PM HOUR			
SHEET NUMBER:			
FIGURE NO. 6			



NOTE: LINE DIAGRAM NOT TO SCALE



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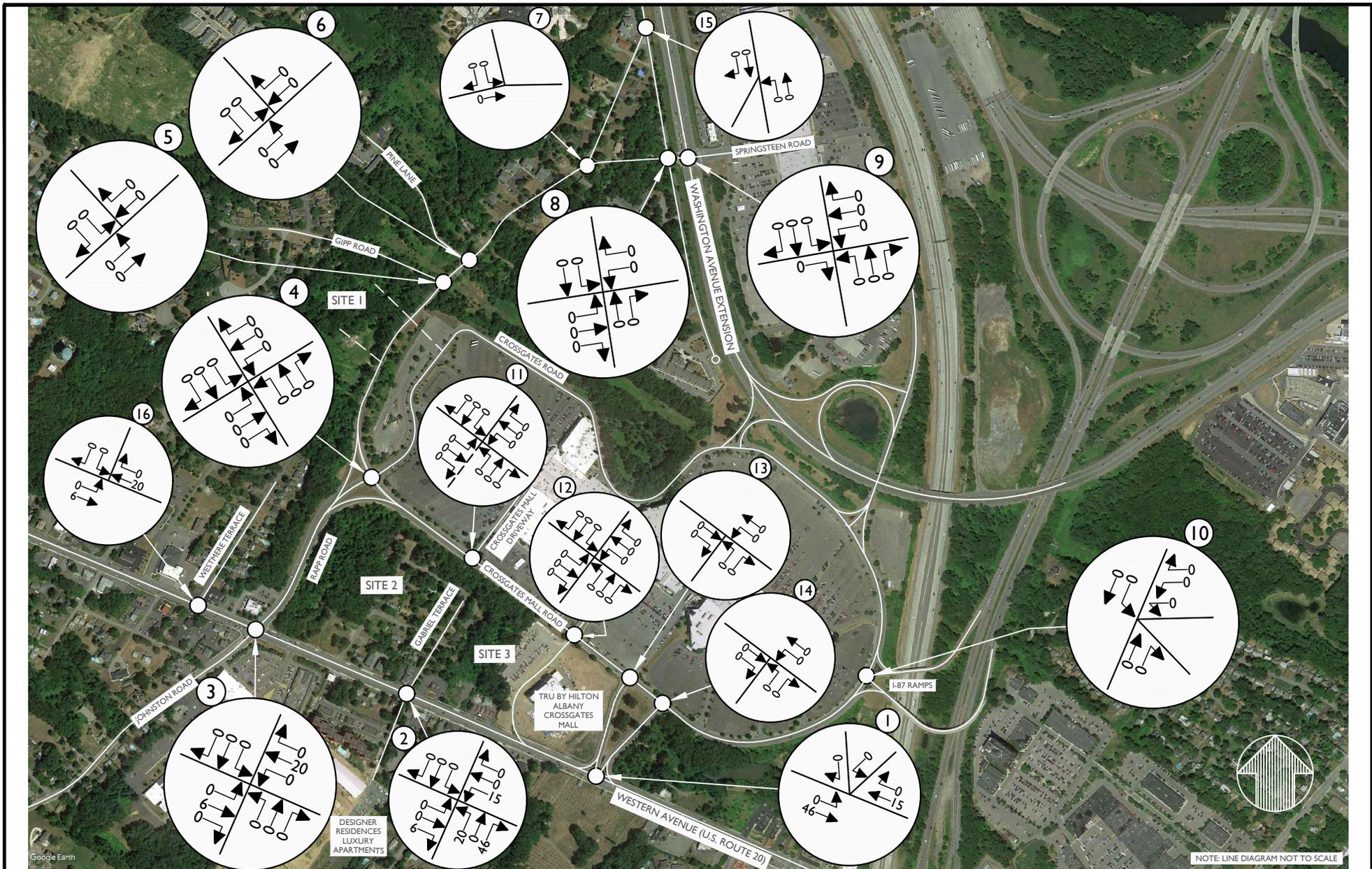


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2022 PROJECTED TRAFFIC VOLUMES SATURDAY PEAK HOUR			
SHEET NUMBER:			
FIGURE NO. 7			



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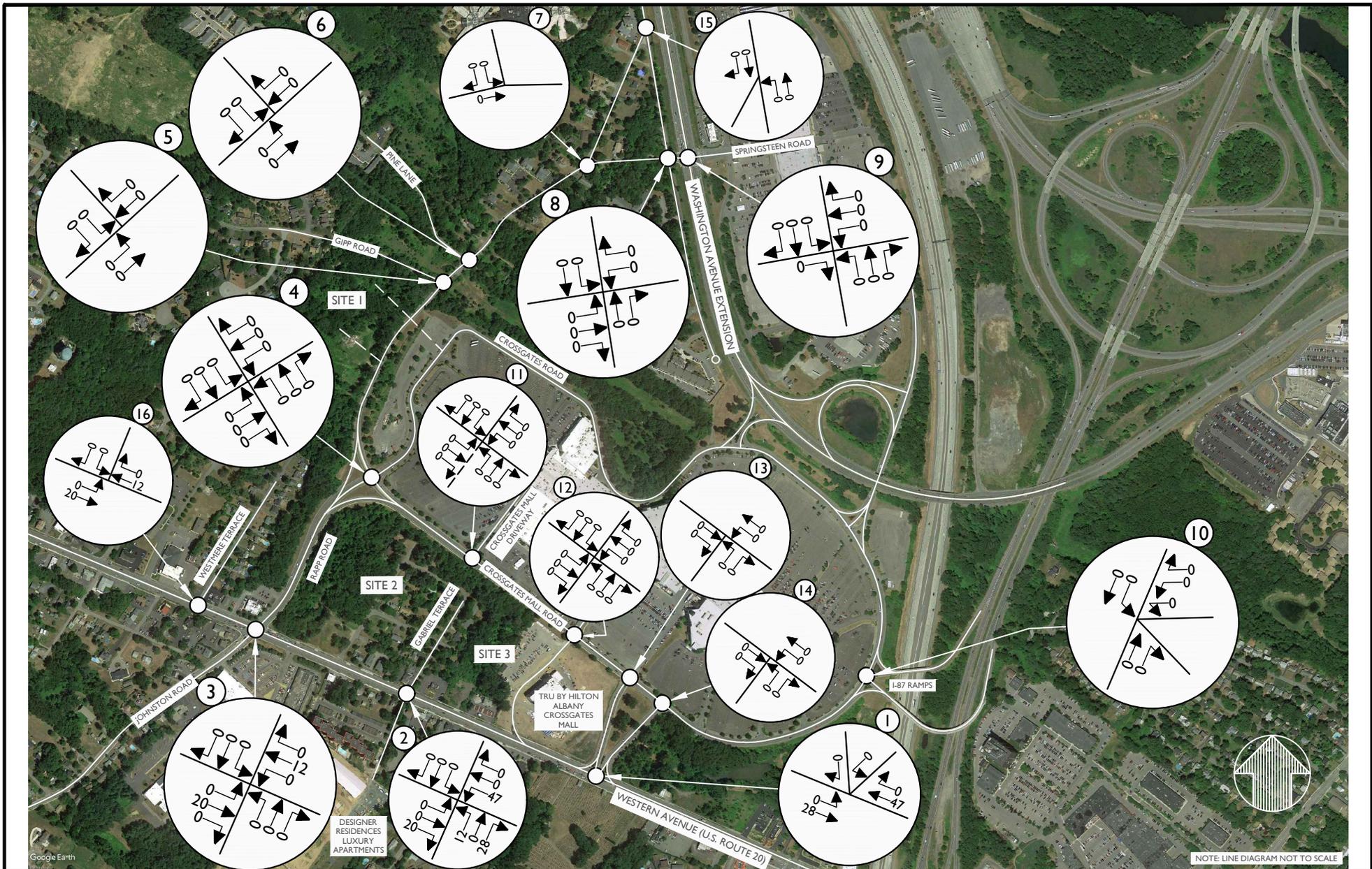
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PROJECT NUMBER 19002502A	DRAWING NAME 191021JFM_FIGURES - 02.17.2020		
SHEET TITLE OTHER DEVELOPMENT TRAFFIC VOLUMES WEEKDAY PEAK AM HOUR			
SHEET NUMBER: FIGURE NO. 8			



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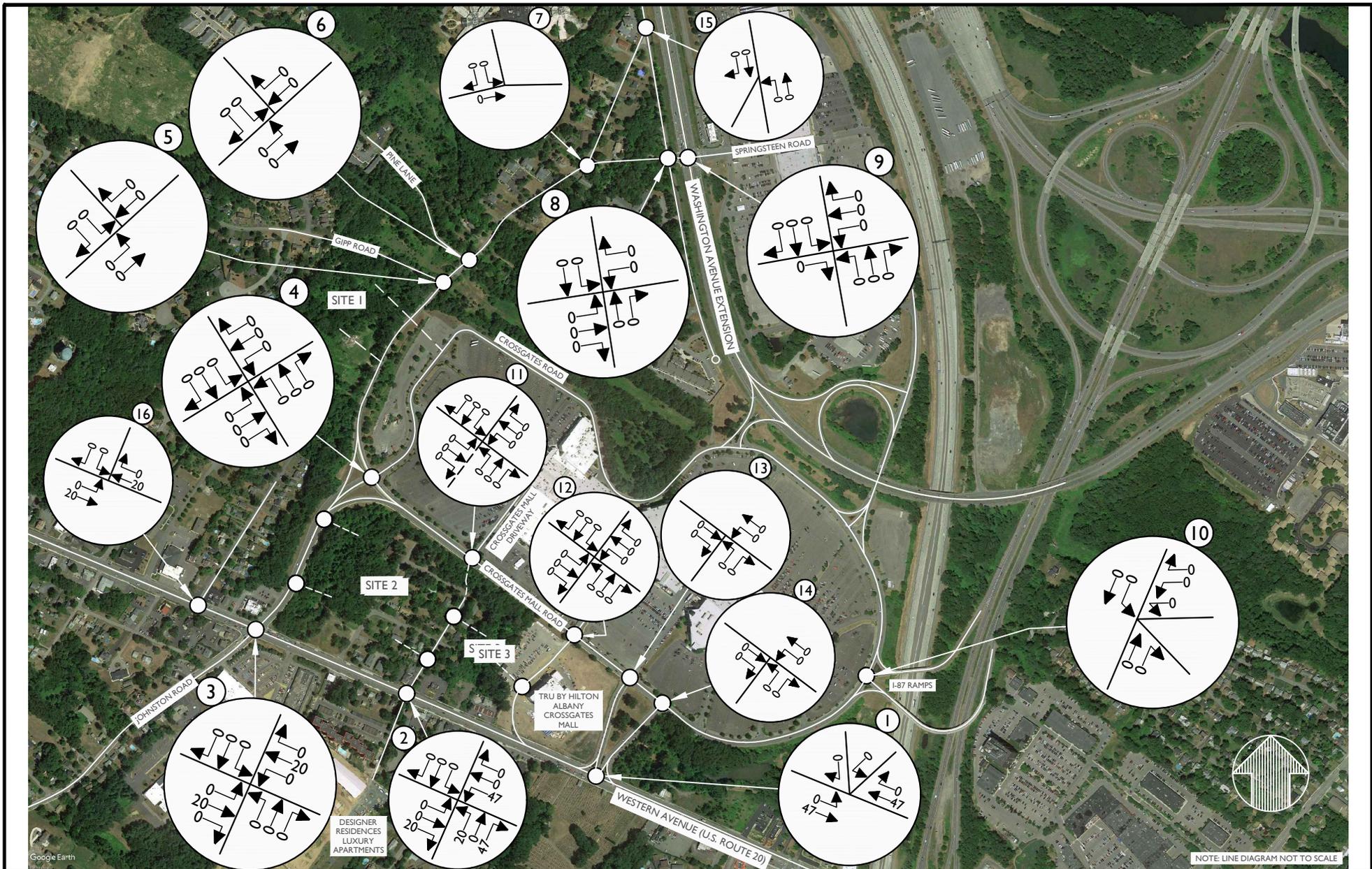
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SHEET TITLE:
**OTHER DEVELOPMENT
TRAFFIC VOLUMES
WEEKDAY PEAK PM HOUR**

SHEET NUMBER:
FIGURE NO. 9



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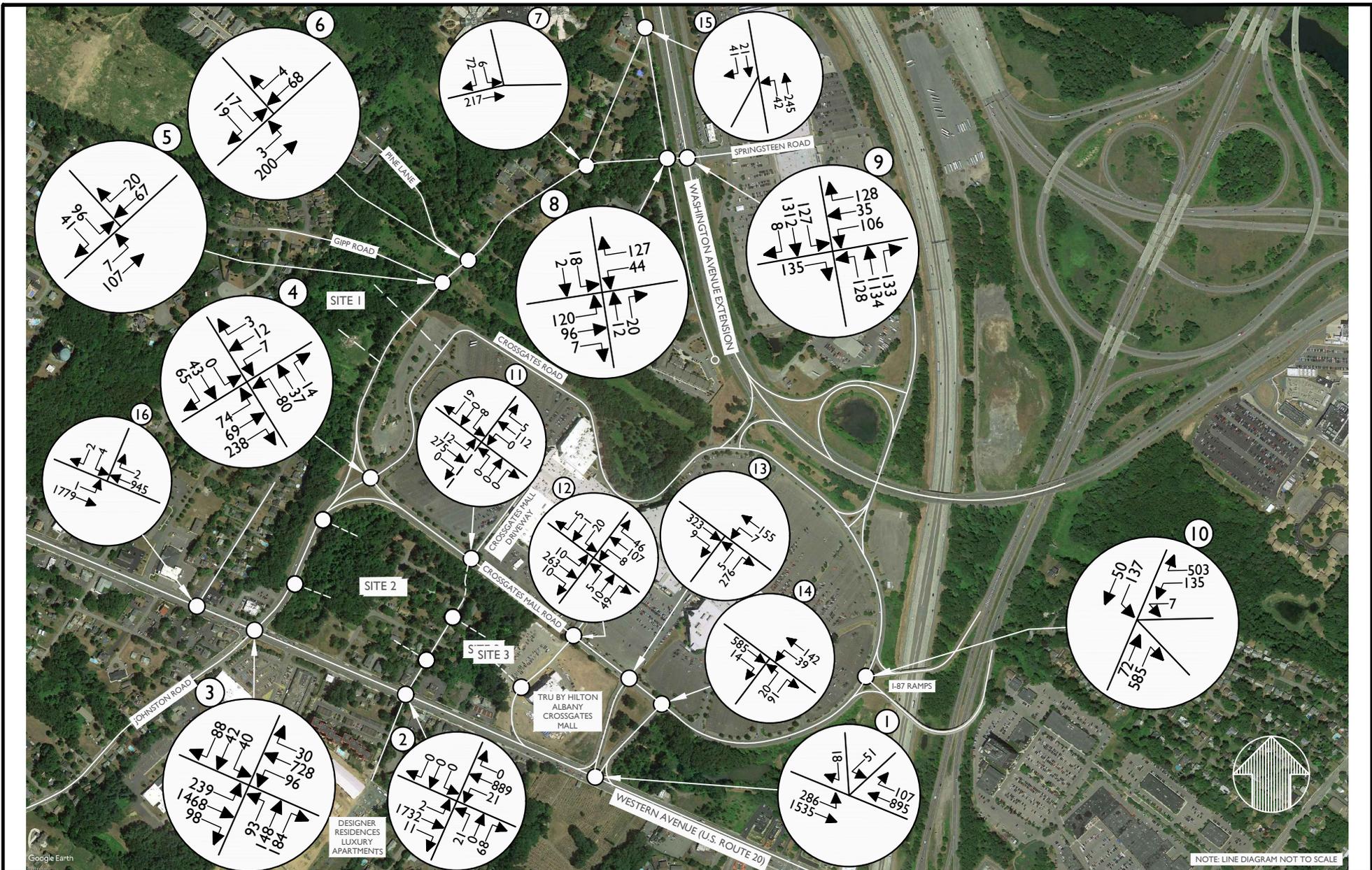
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SHEET TITLE OTHER DEVELOPMENT TRAFFIC VOLUMES SATURDAY PEAK HOUR			
SHEET NUMBER: FIGURE NO. 10			



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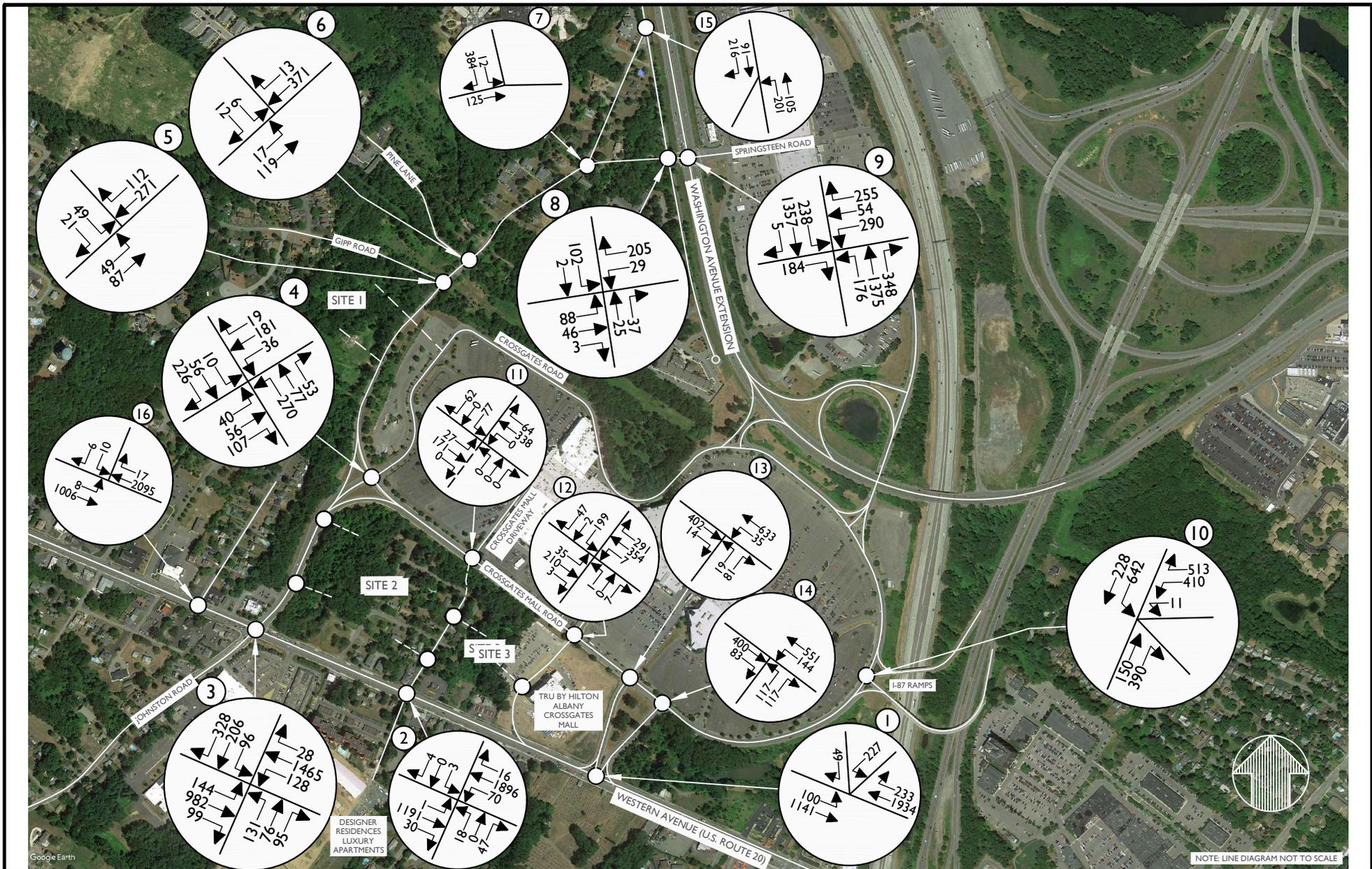
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SHEET TITLE:
**2022 NO-BUILD TRAFFIC VOLUMES
WEEKDAY PEAK AM HOUR**

SHEET NUMBER:
FIGURE NO. 11



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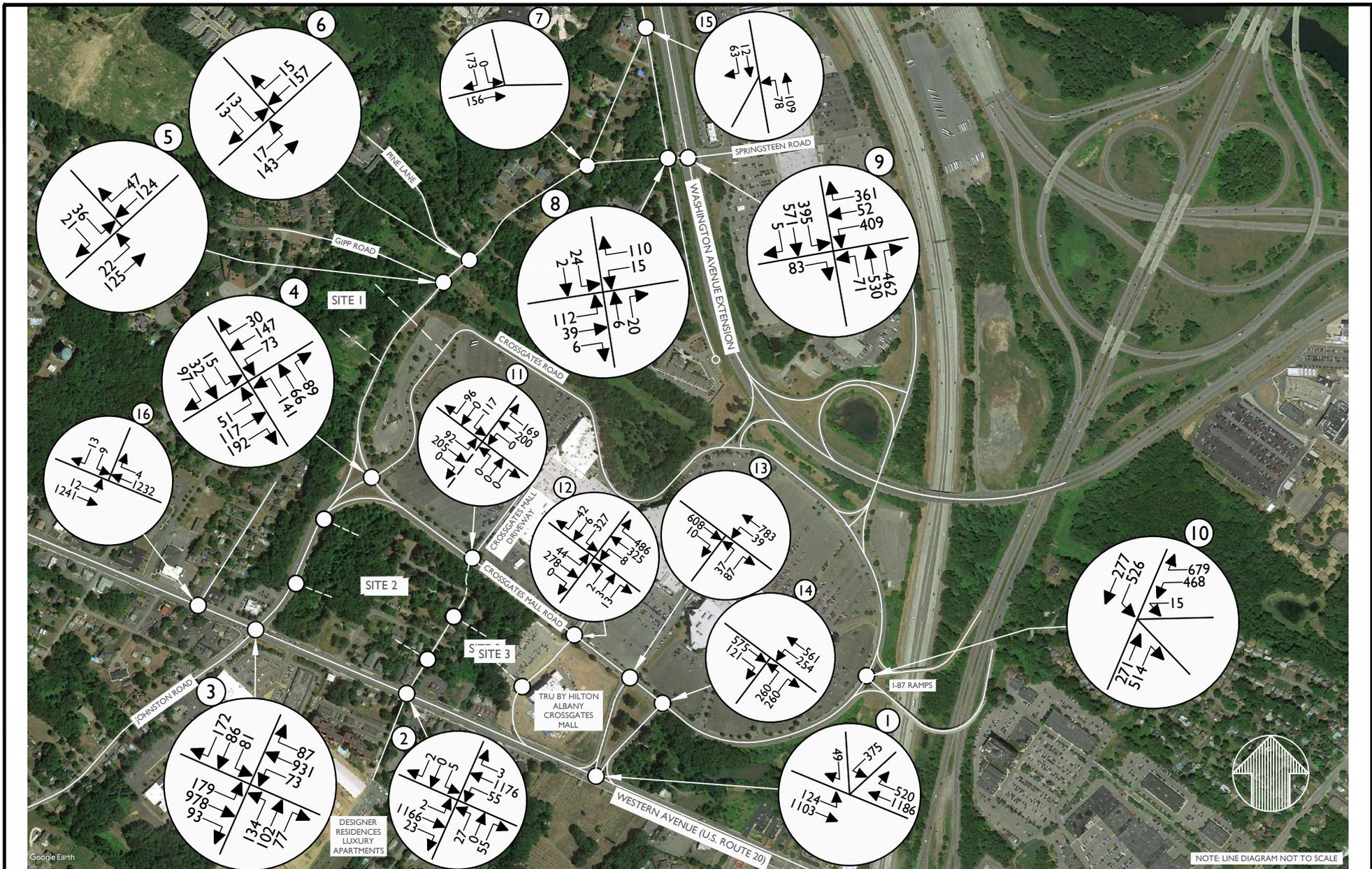
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SHEET TITLE:			
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SHEET NUMBER:			
FIGURE NO. 12			



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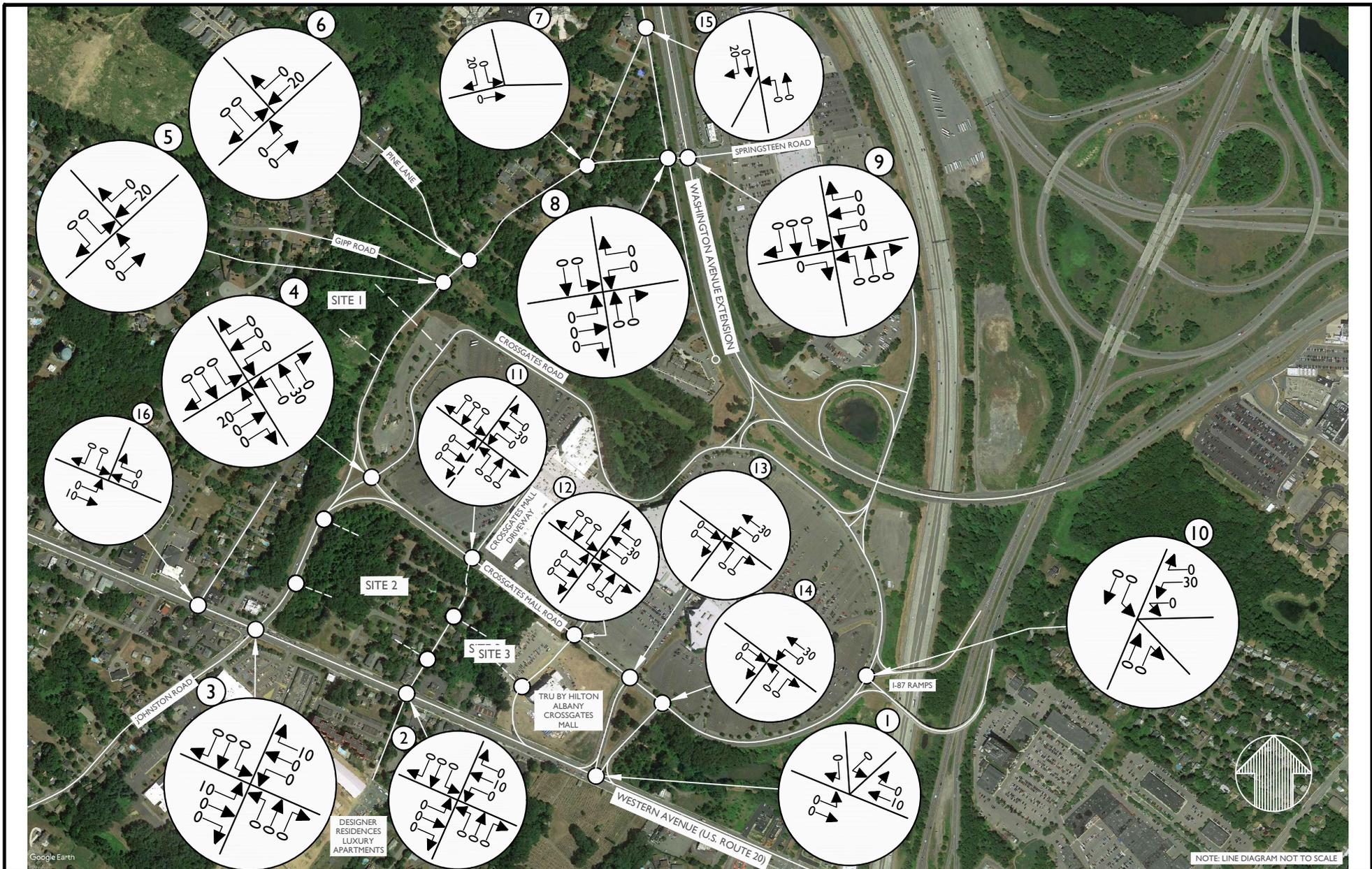


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SHEET TITLE: 2022 NO-BUILD TRAFFIC VOLUMES SATURDAY PEAK HOUR			
SHEET NUMBER: FIGURE NO. 13			



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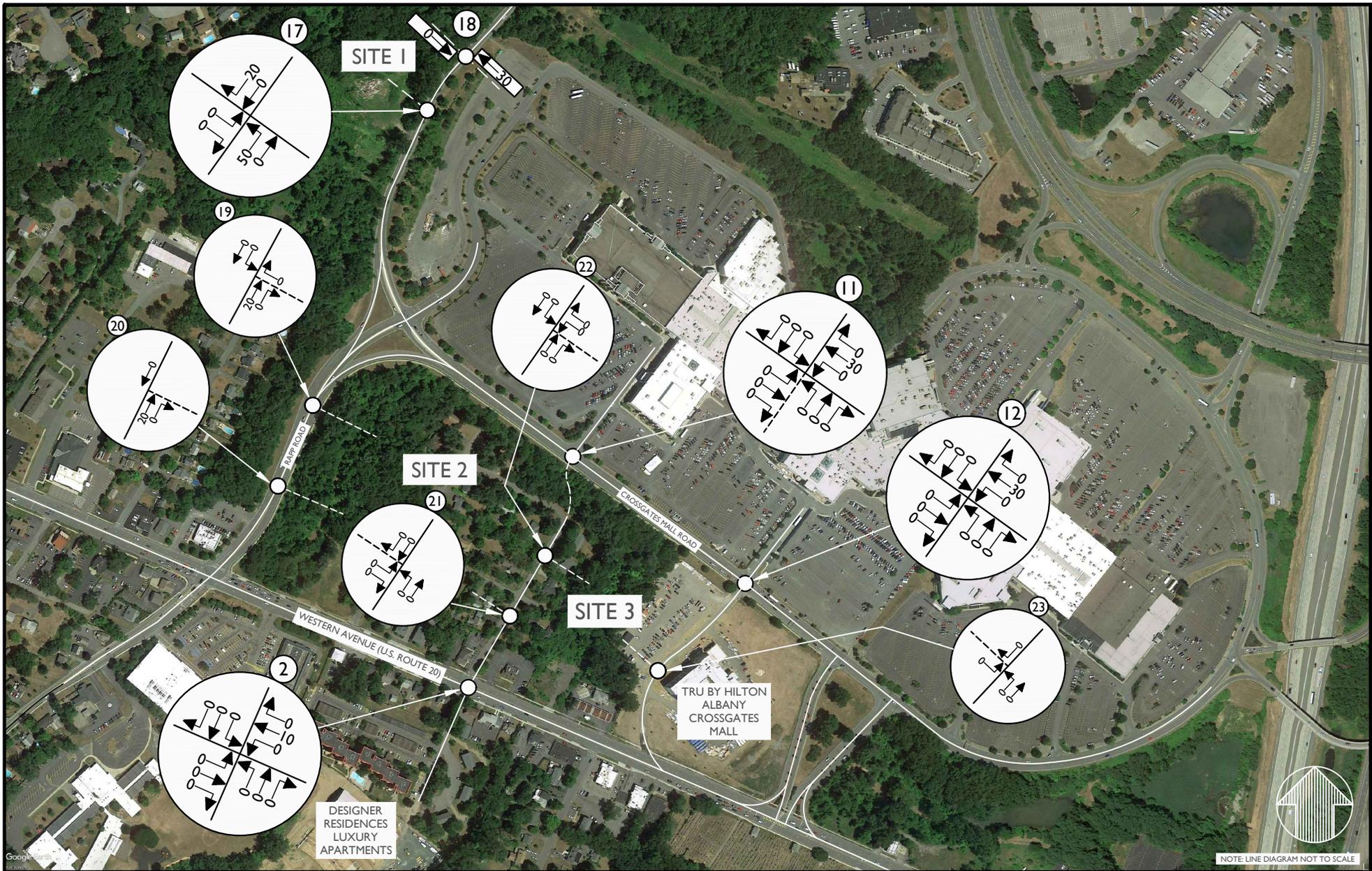


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SHEET NUMBER: FIGURE NO. 14			



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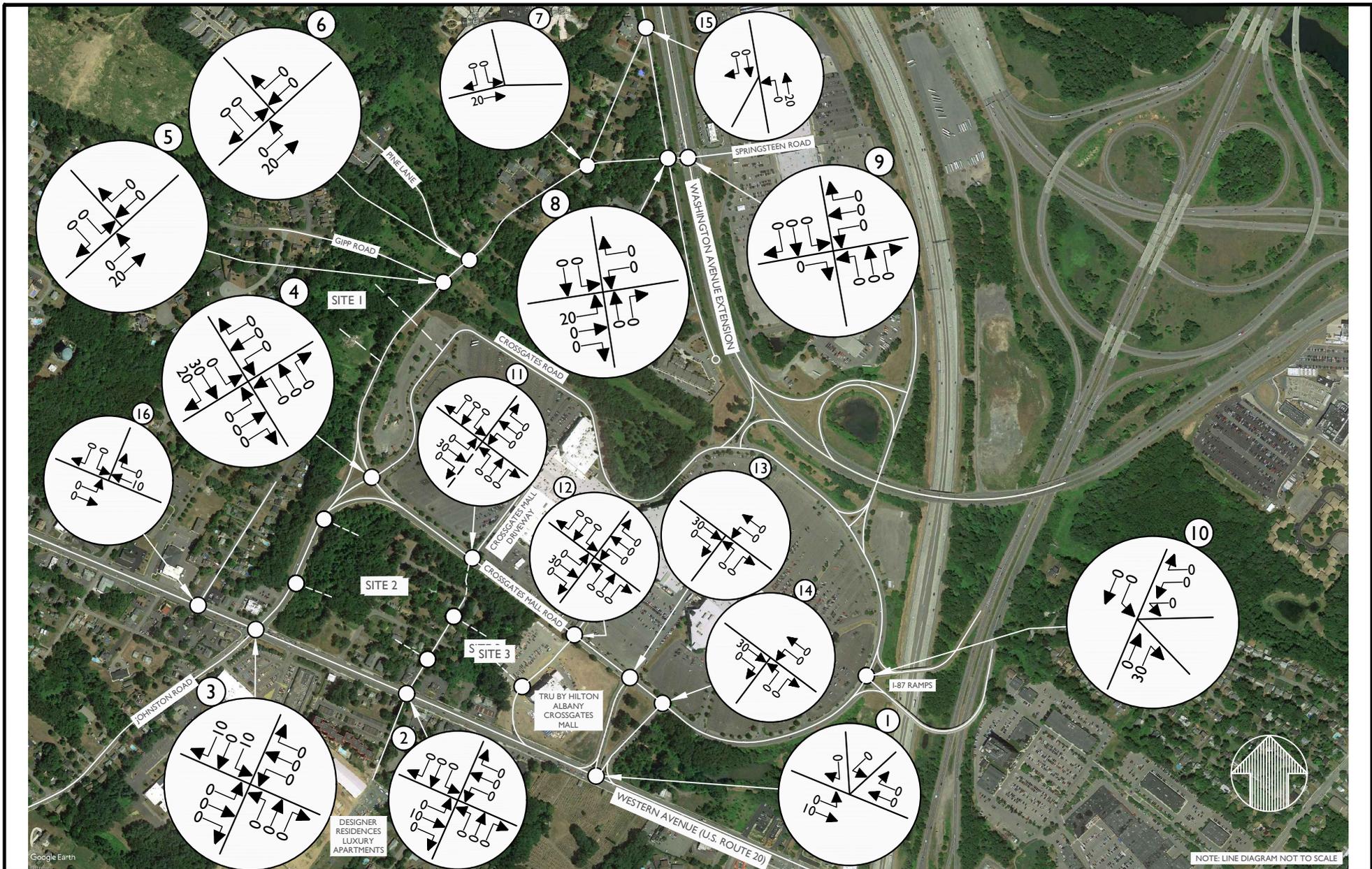
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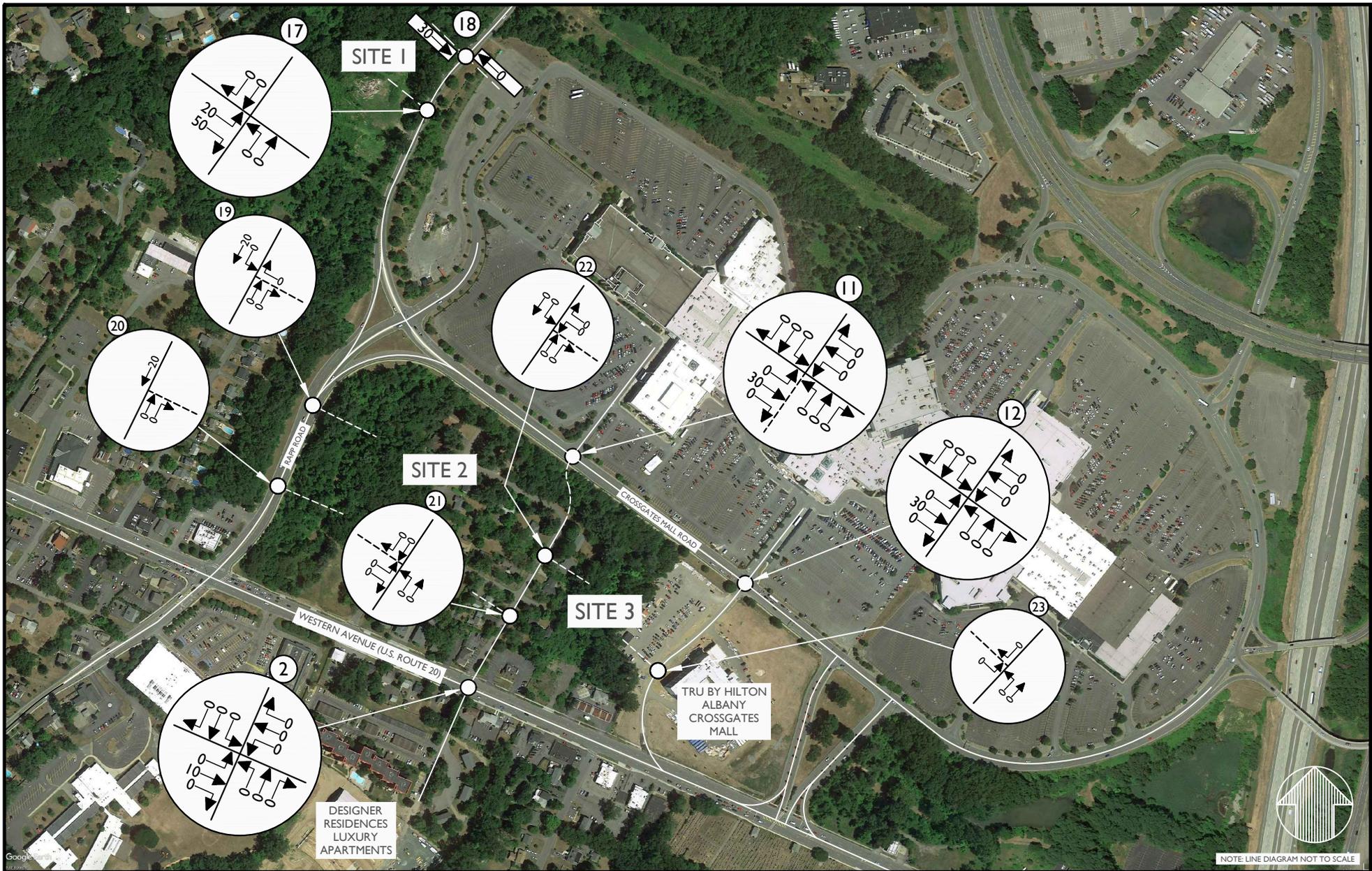
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SHEET TITLE DEPARTURE DISTRIBUTION SITE I - RAPP ROAD RESIDENTIAL (EXPRESSED AS A %)			
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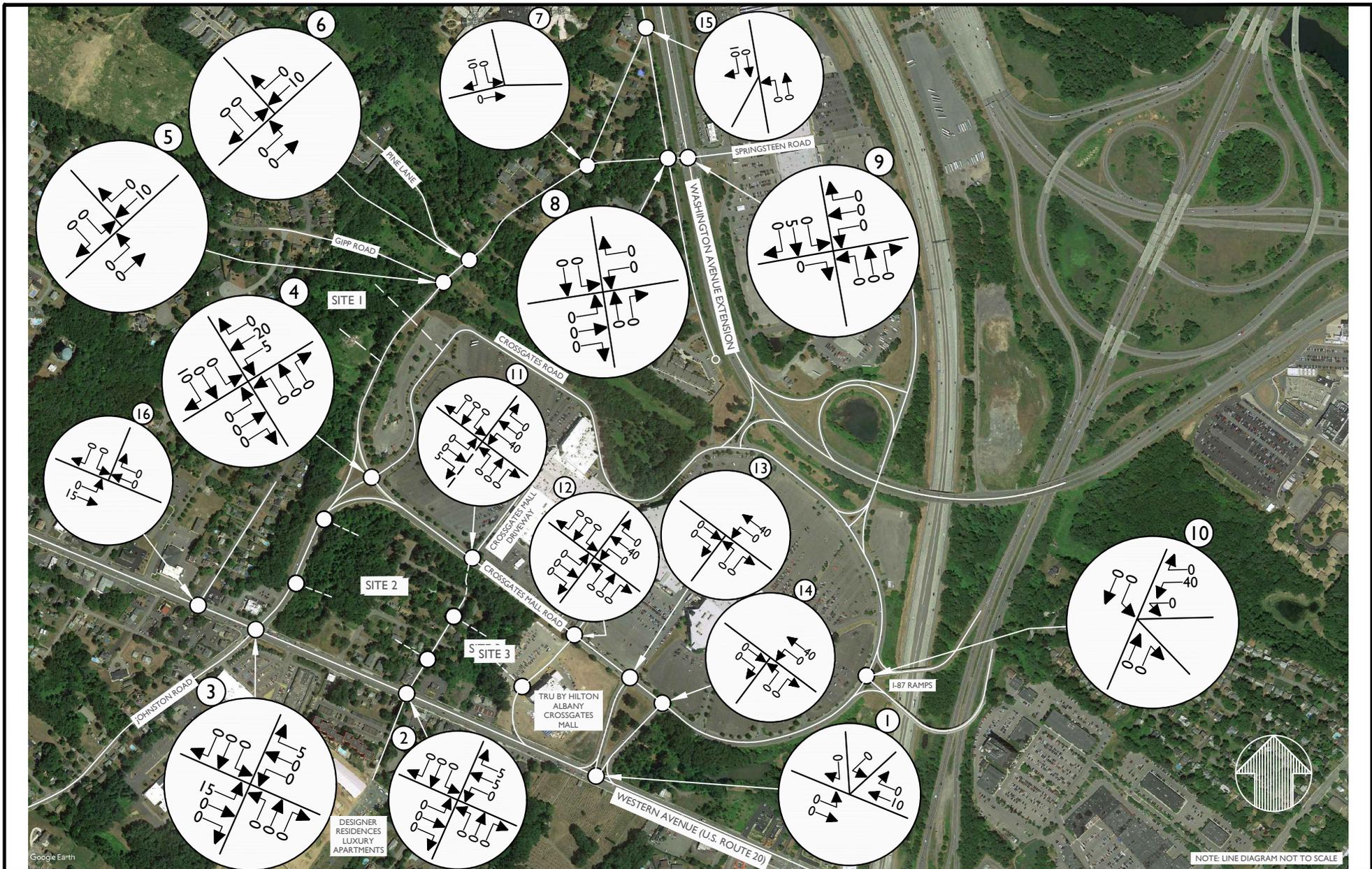
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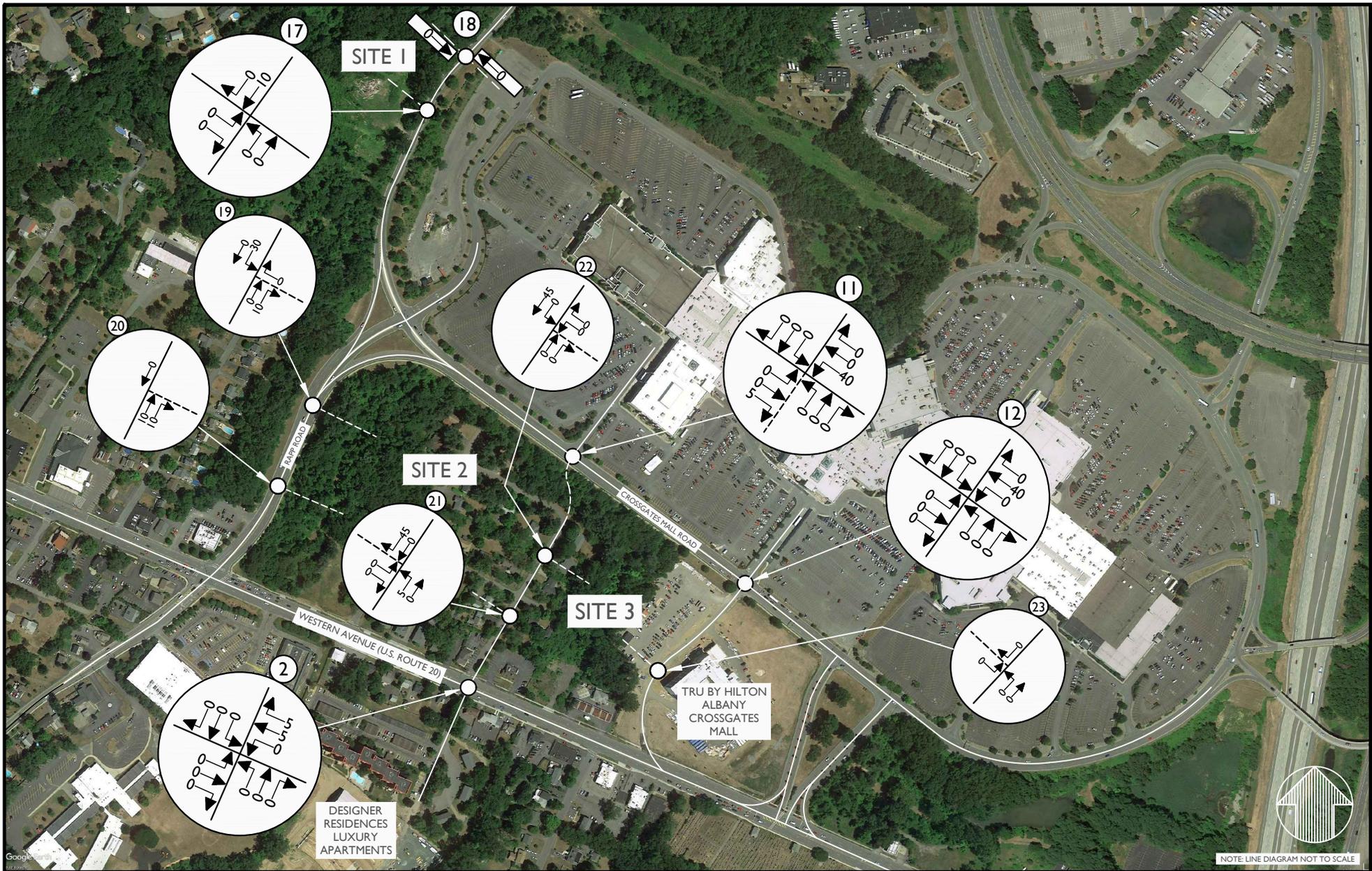
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PROJECT NUMBER 19002502A	DRAWING NAME 191021JFM_FIGURES - 02.17.2020		
SHEET TITLE ARRIVAL DISTRIBUTION SITE 2 - COSTCO (EXPRESSED AS A %)			
SHEET NUMBER: FIGURE NO. 16			



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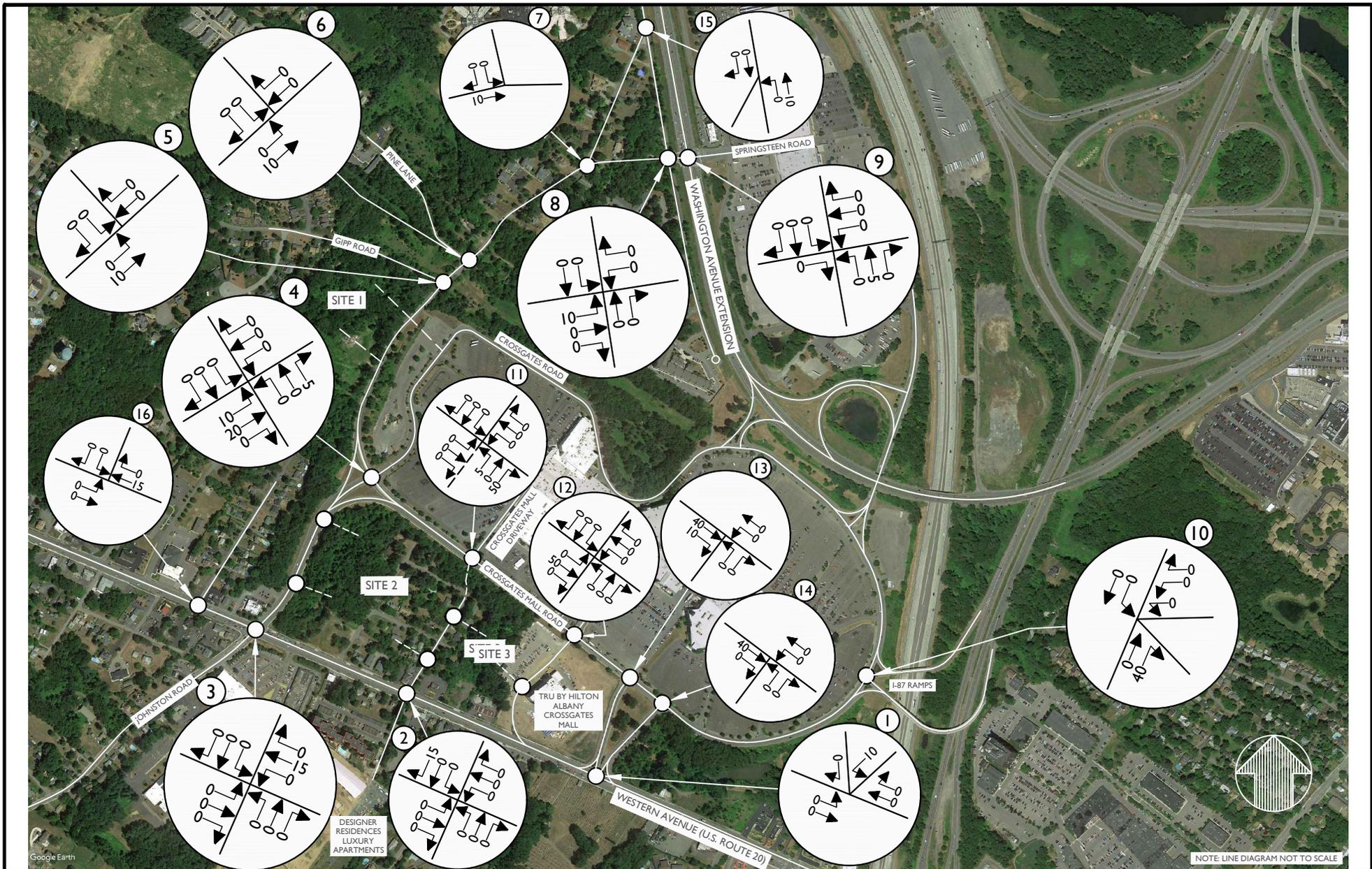
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19002502A	191021JFM FIGURES - 02.17.2020		

SHEET TITLE:
**ARRIVAL DISTRIBUTION
SITE 2 - COSTCO
(EXPRESSED AS A %)**

SHEET NUMBER:
FIGURE NO. 16-A



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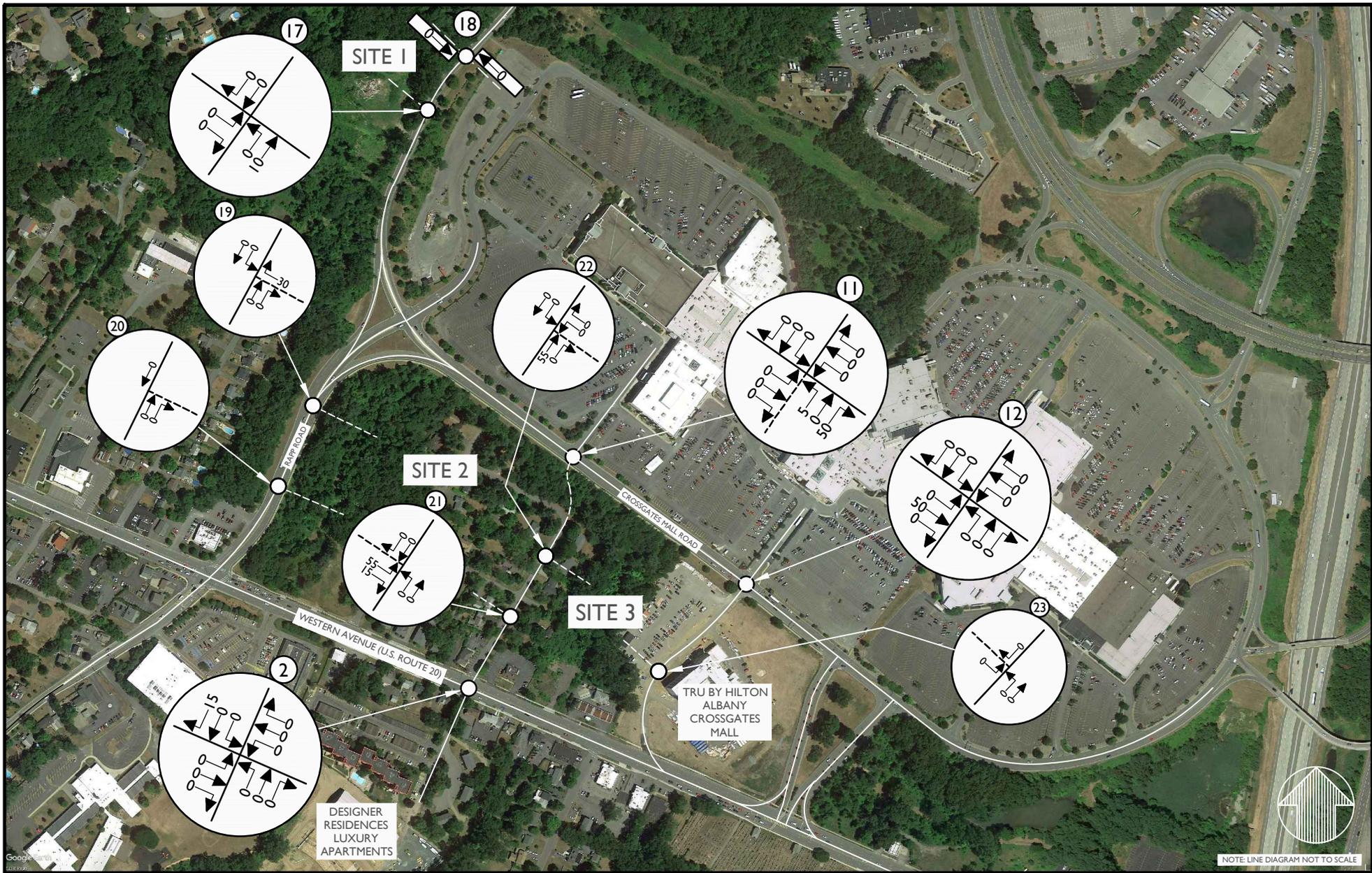


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SHEET NUMBER: FIGURE NO. 17			



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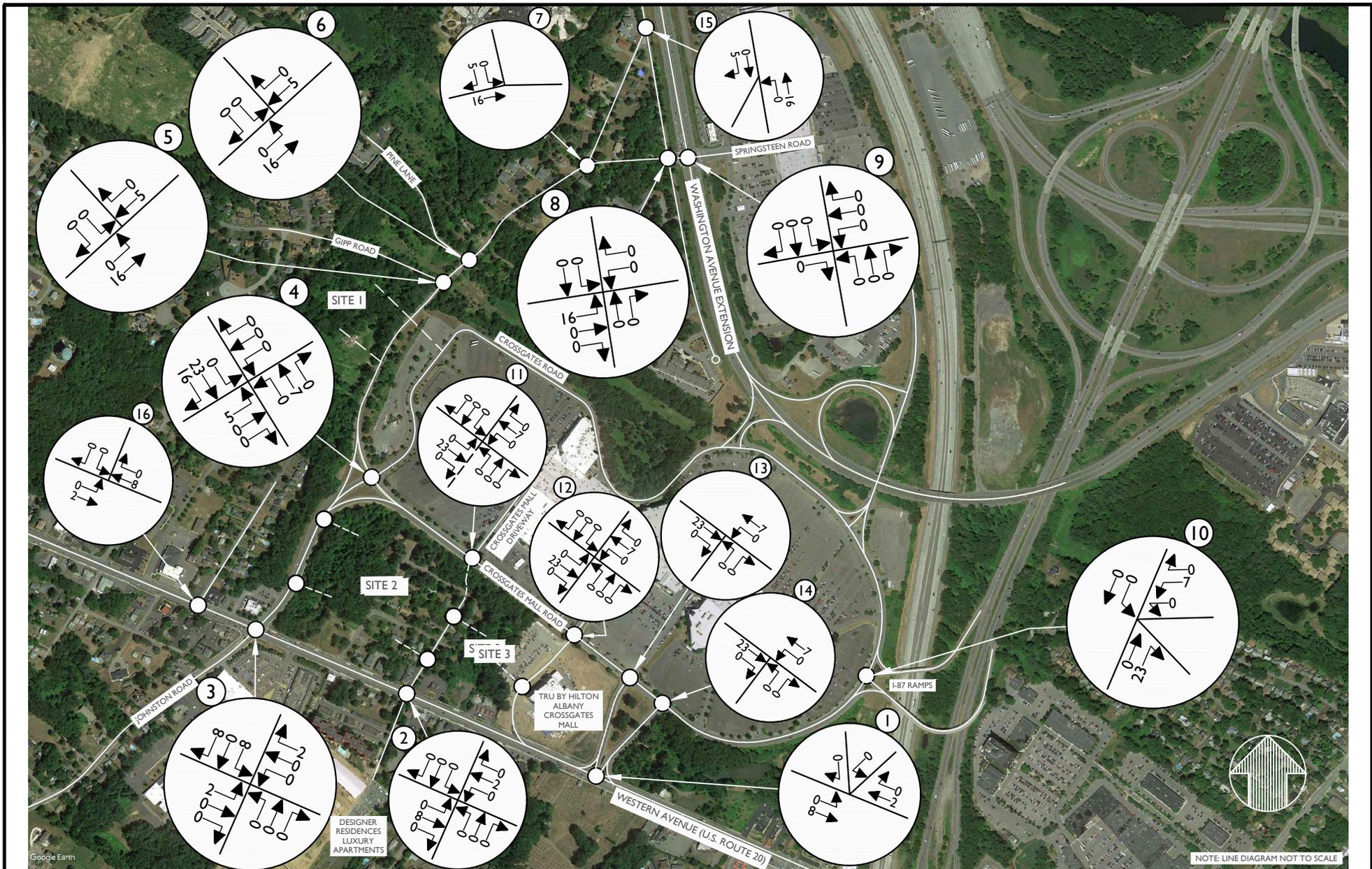
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FIGURE NO. 17-A			



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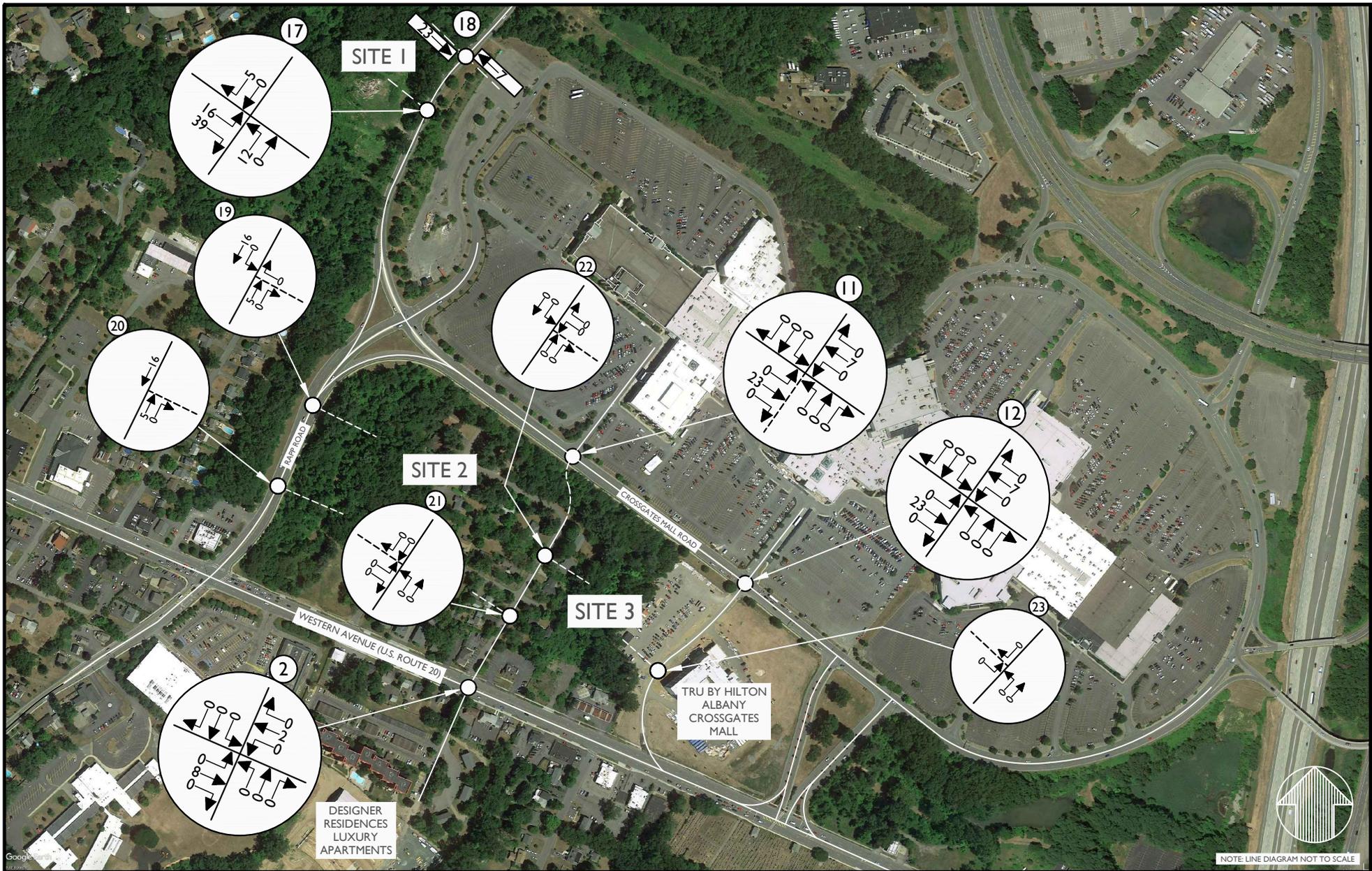
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SITE GENERATED TRAFFIC VOLUMES SITE 1 - RAPP ROAD RESIDENTIAL WEEKDAY PEAK AM HOUR			
SHEET NUMBER:			
FIGURE NO. 18			



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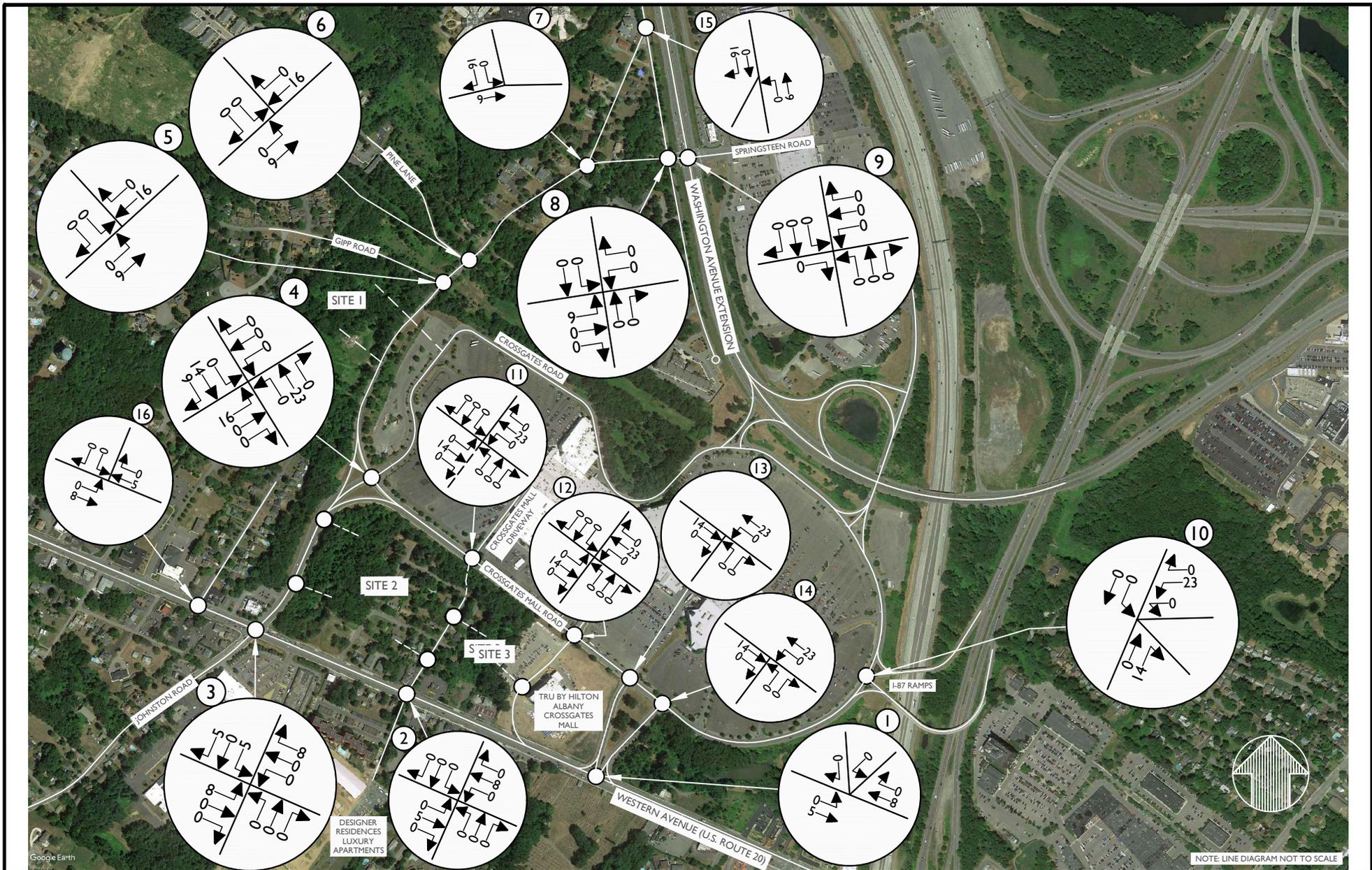
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SHEET TITLE SITE GENERATED TRAFFIC VOLUMES SITE I - RAPP ROAD RESIDENTIAL WEEKDAY PEAK AM HOUR			
SHEET NUMBER: FIGURE NO. 18-A			



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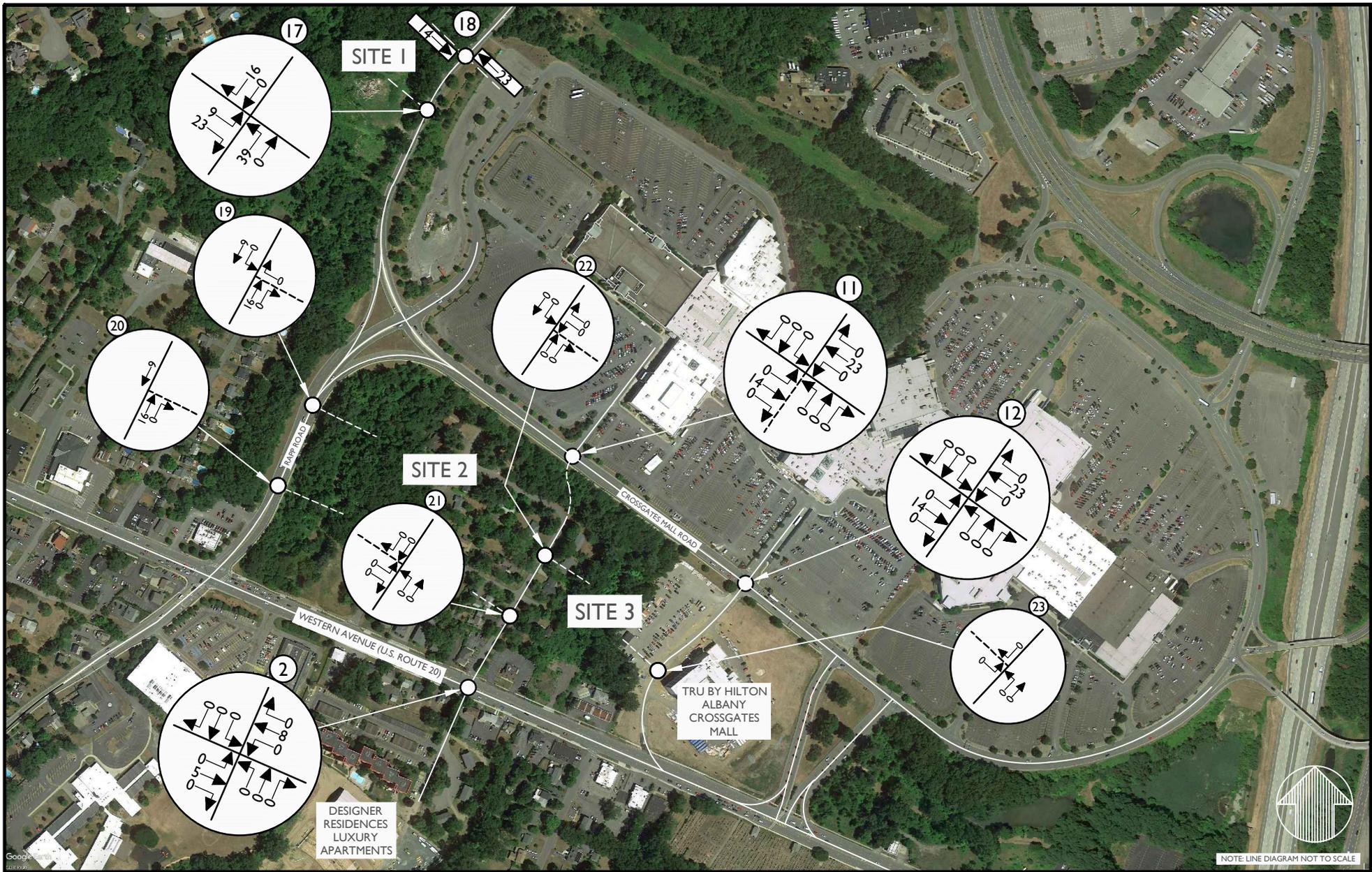
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SHEET NUMBER: FIGURE NO. 19			



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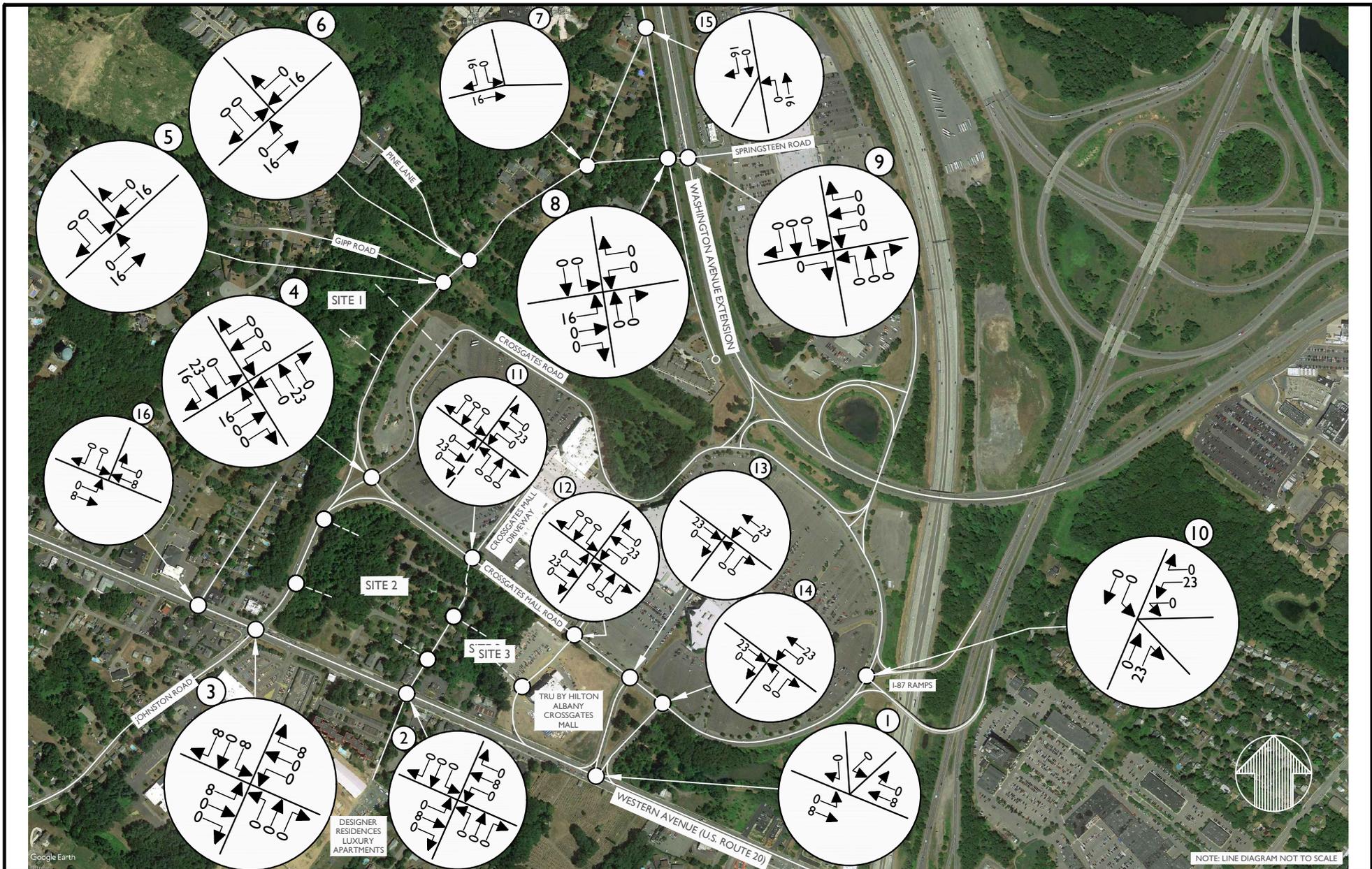
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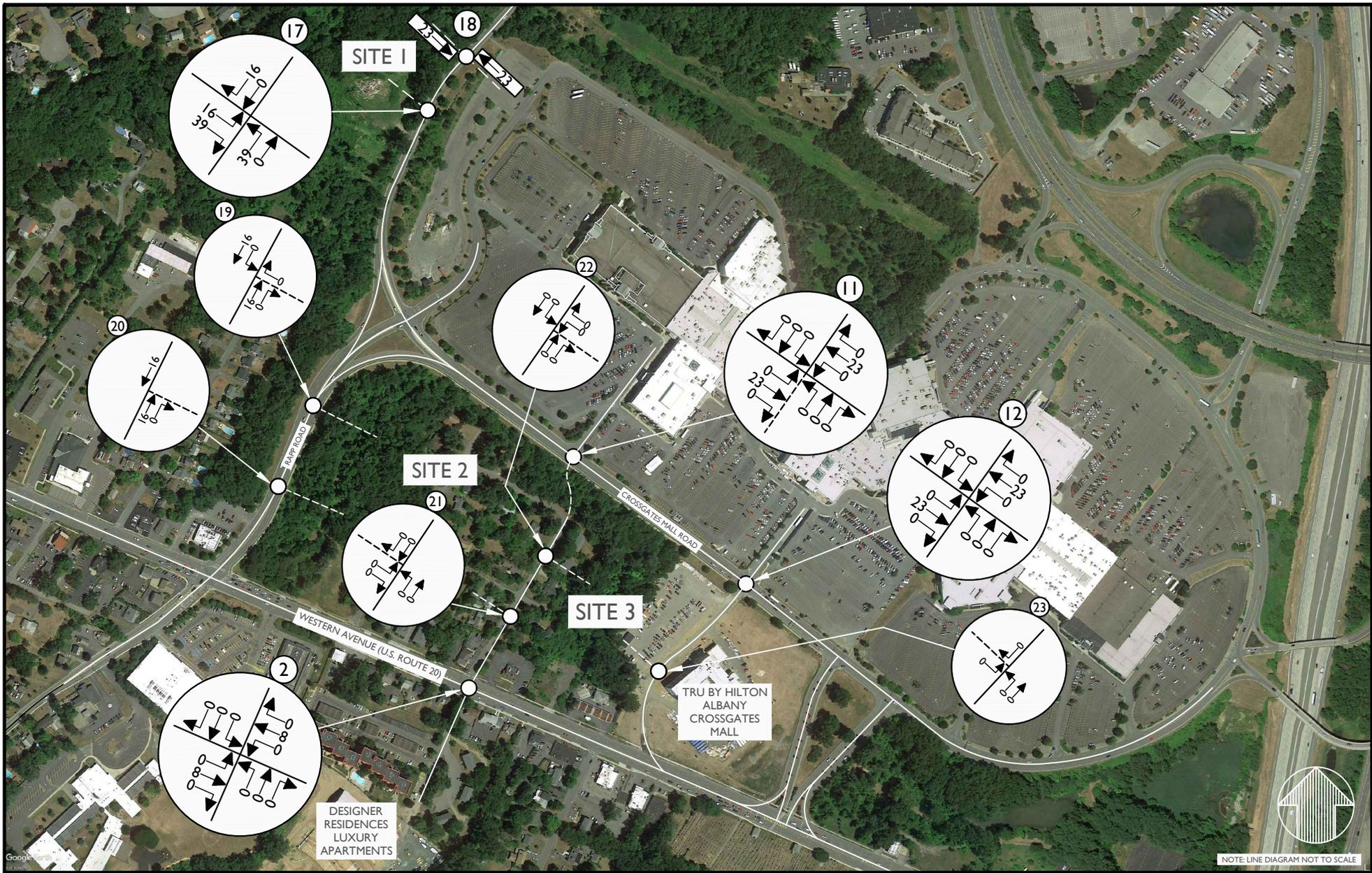


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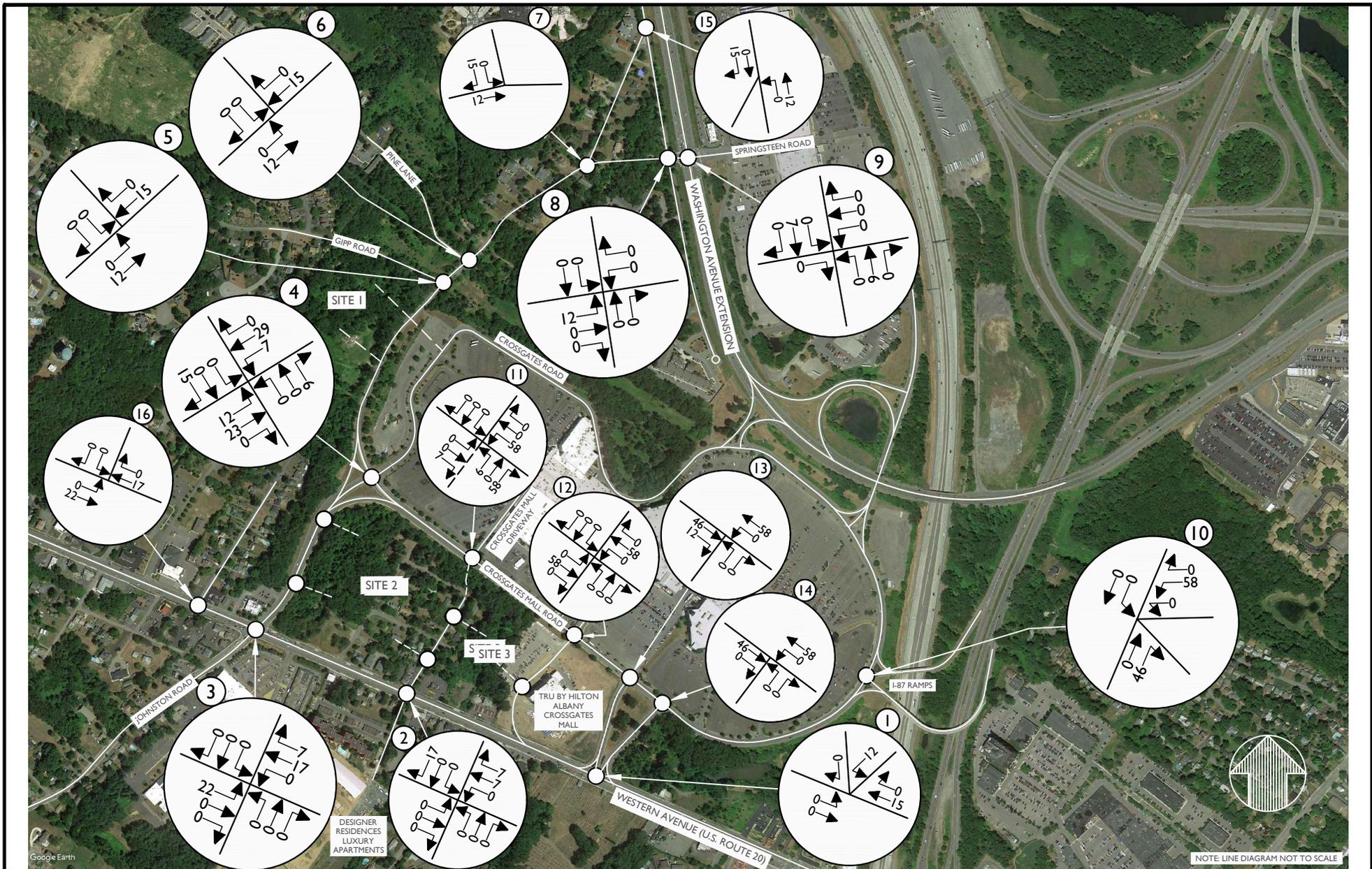
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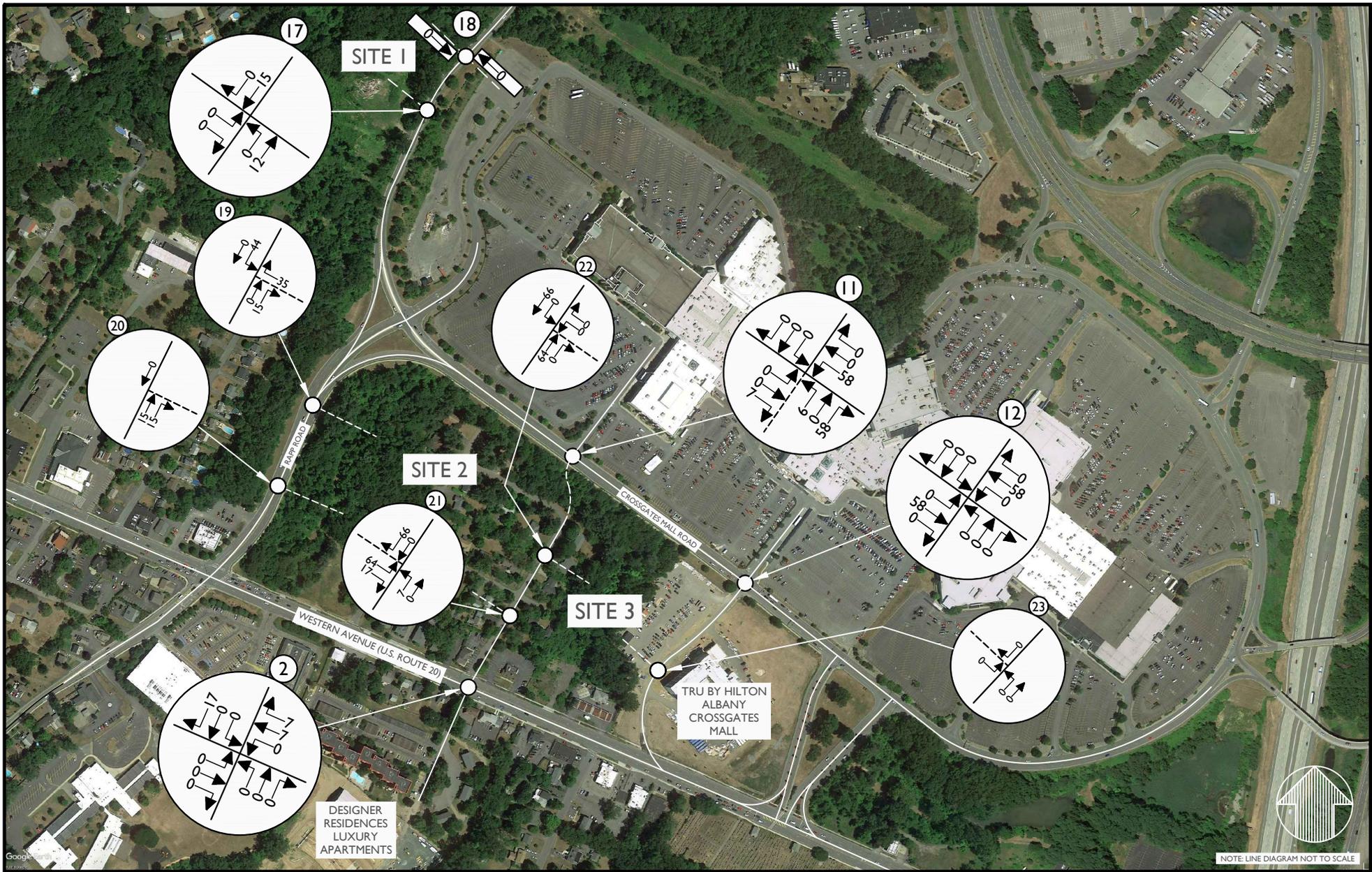


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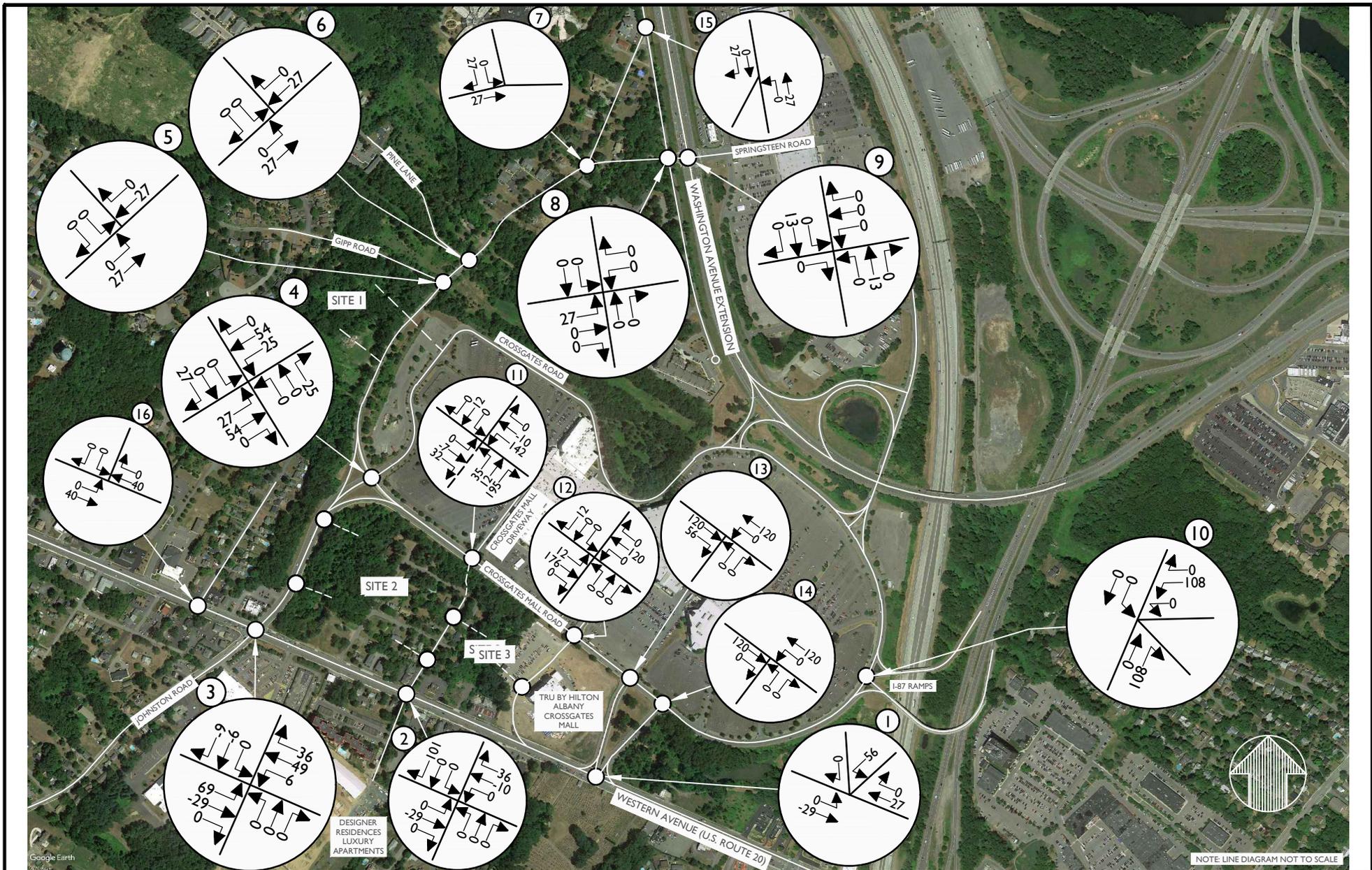
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PROJECT NUMBER: 19002502A	DRAWING NAME: 191021JFM_FIGURES - 02.17.2020		
SHEET TITLE: SITE GENERATED TRAFFIC VOLUMES SITE 2 - COSTCO WEEKDAY PEAK AM HOUR			
SHEET NUMBER: FIGURE NO. 21-A			



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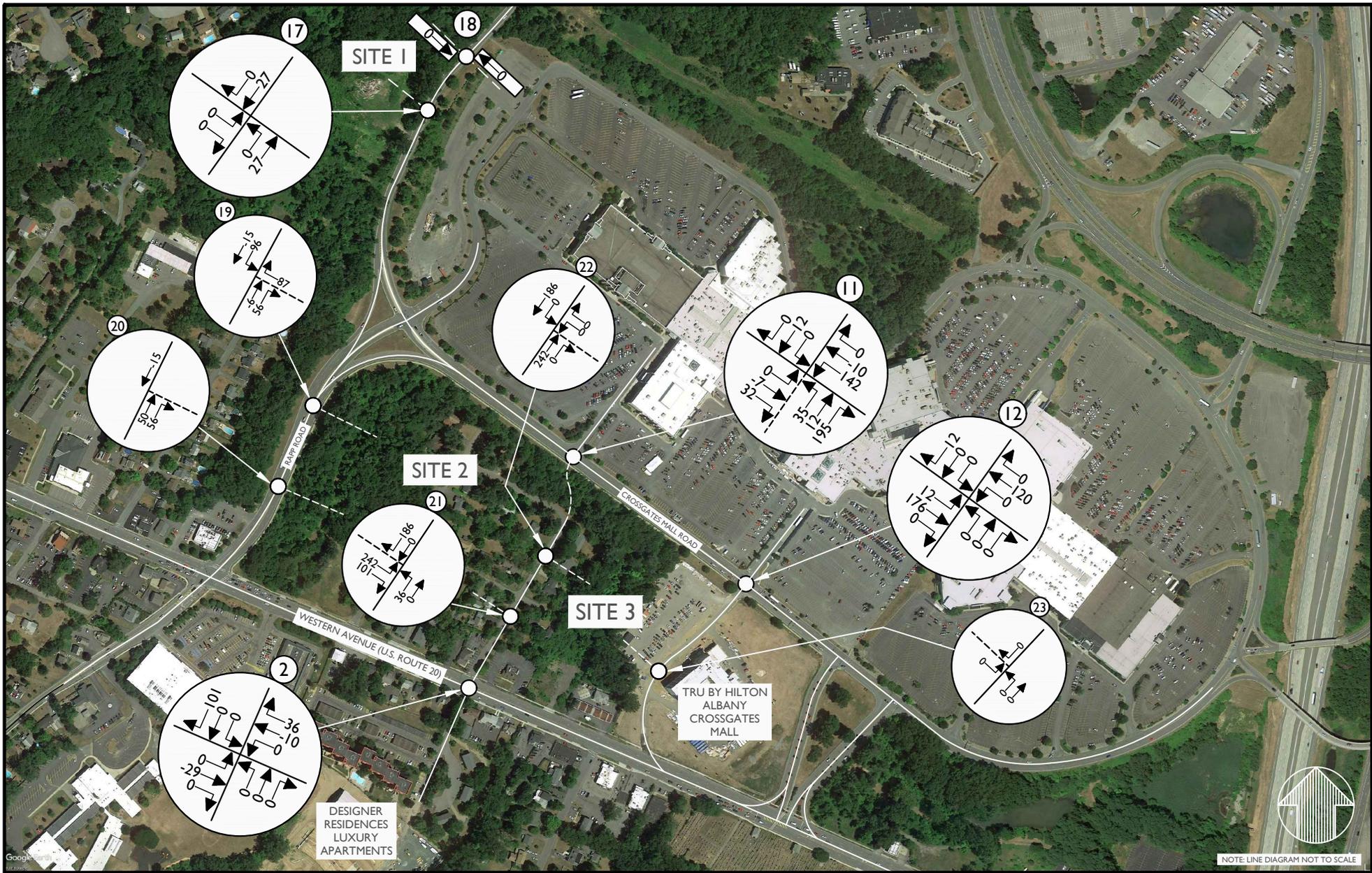


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SHEET NUMBER:			
FIGURE NO. 22			



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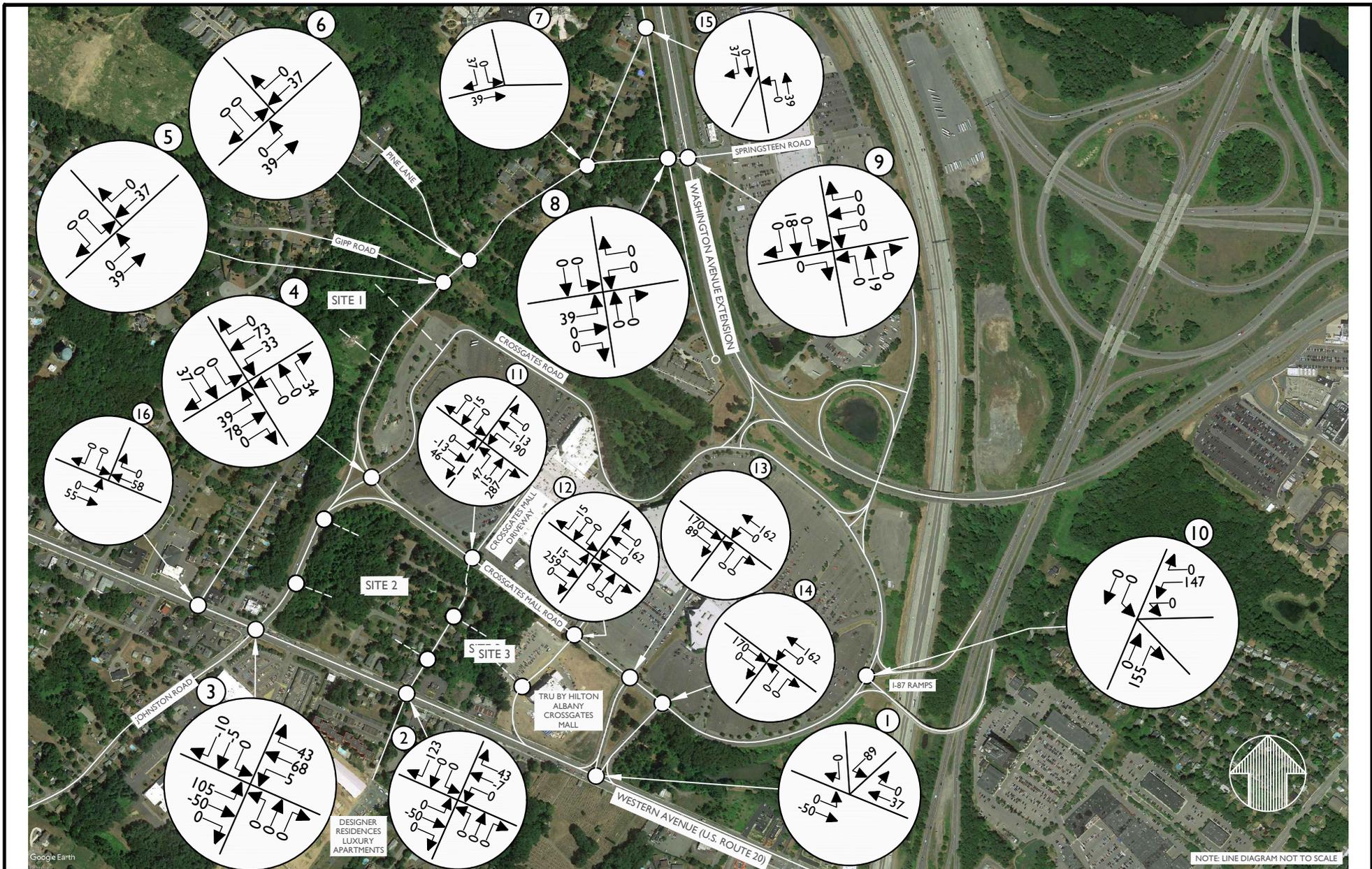
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SHEET TITLE			
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SHEET NUMBER:			
FIGURE NO. 22-A			



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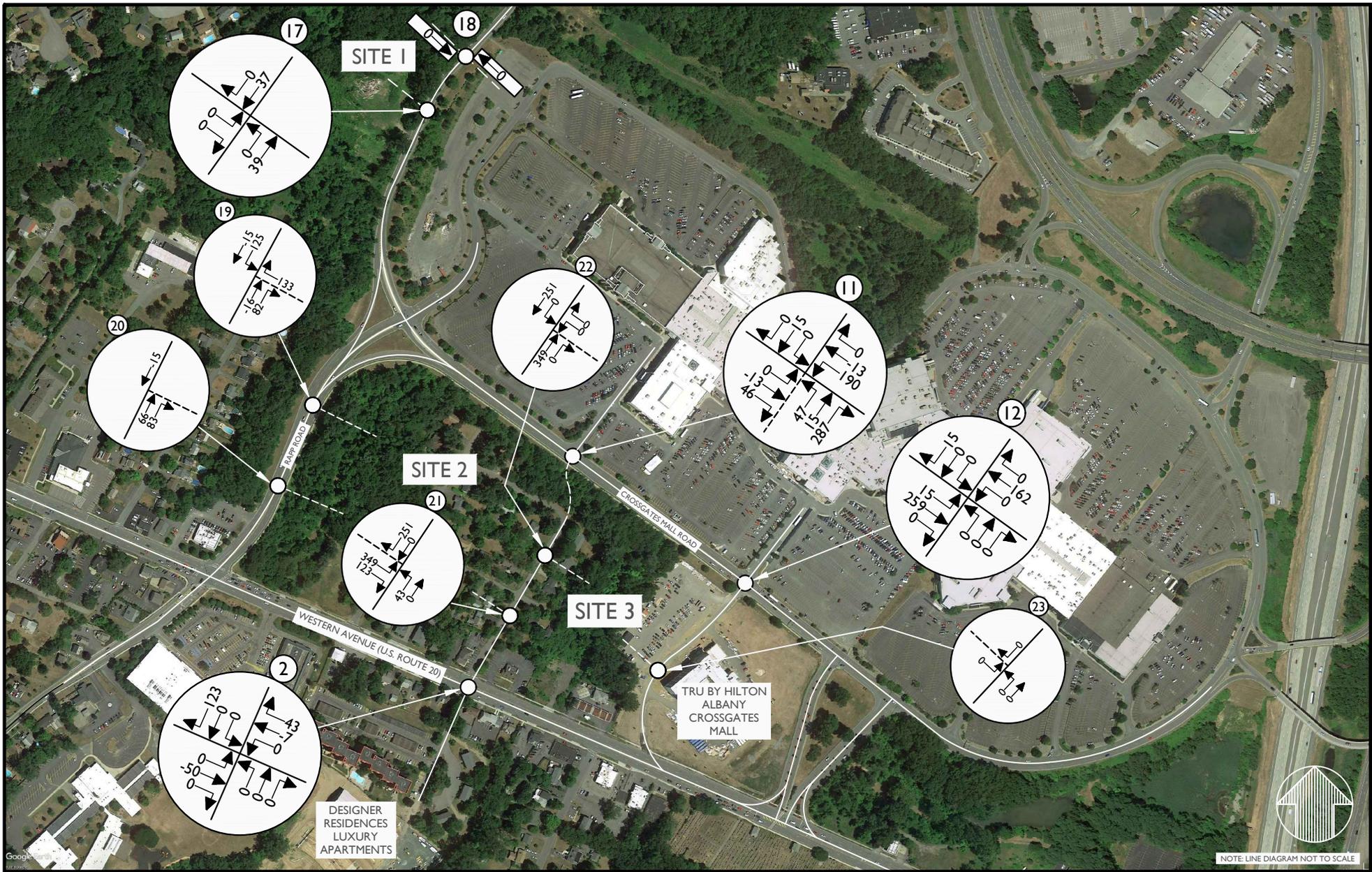
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SITE GENERATED TRAFFIC VOLUMES SITE 2 - COSTCO SATURDAY PEAK HOUR			
SHEET NUMBER:			
FIGURE NO. 23			



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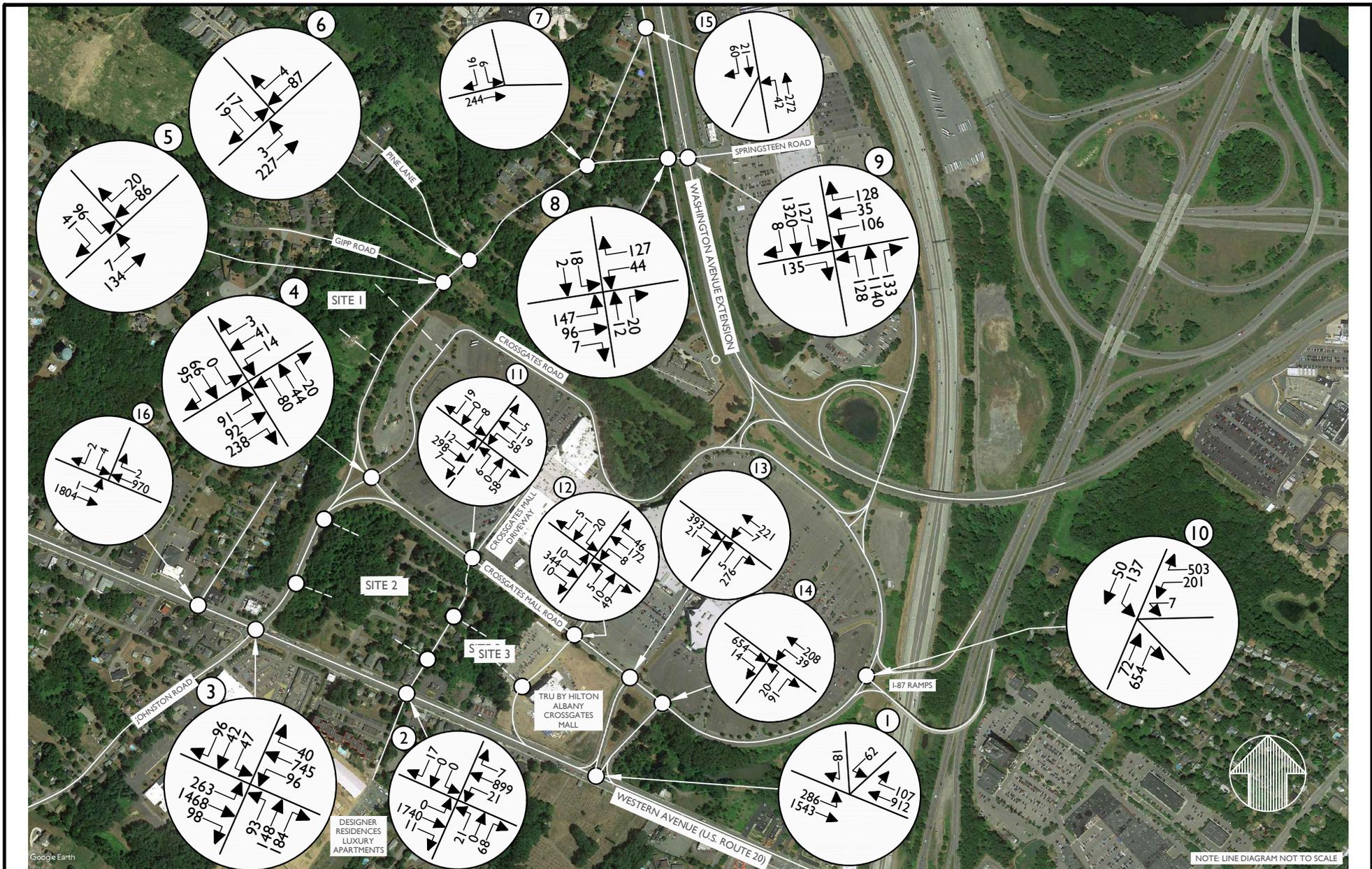
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SHEET TITLE: SITE GENERATED TRAFFIC VOLUMES SITE 2 - COSTCO SATURDAY PEAK HOUR			
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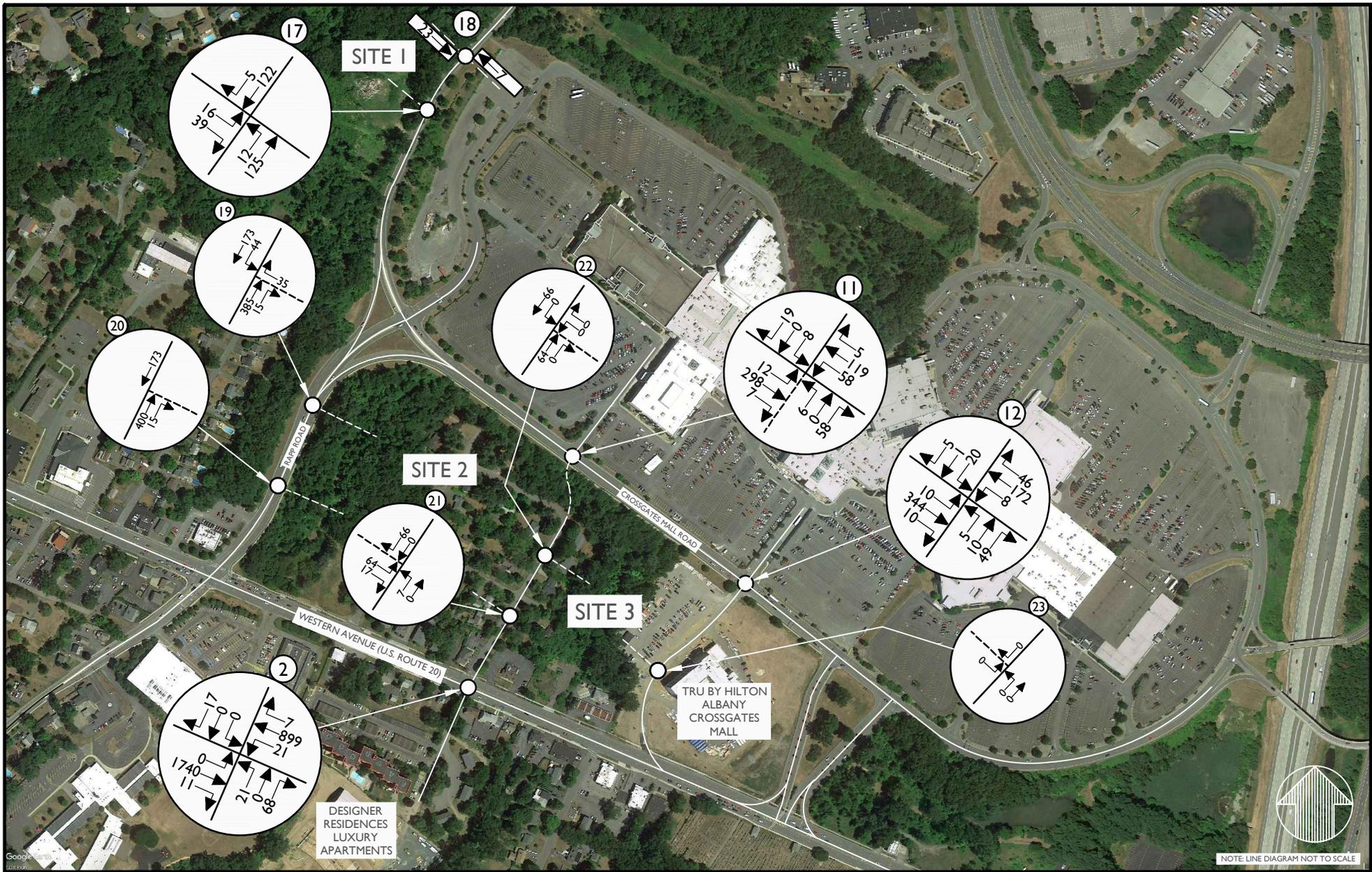
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2022 BUILD TRAFFIC VOLUMES WEEKDAY PEAK AM HOUR			
SHEET NUMBER:			
FIGURE NO. 24			



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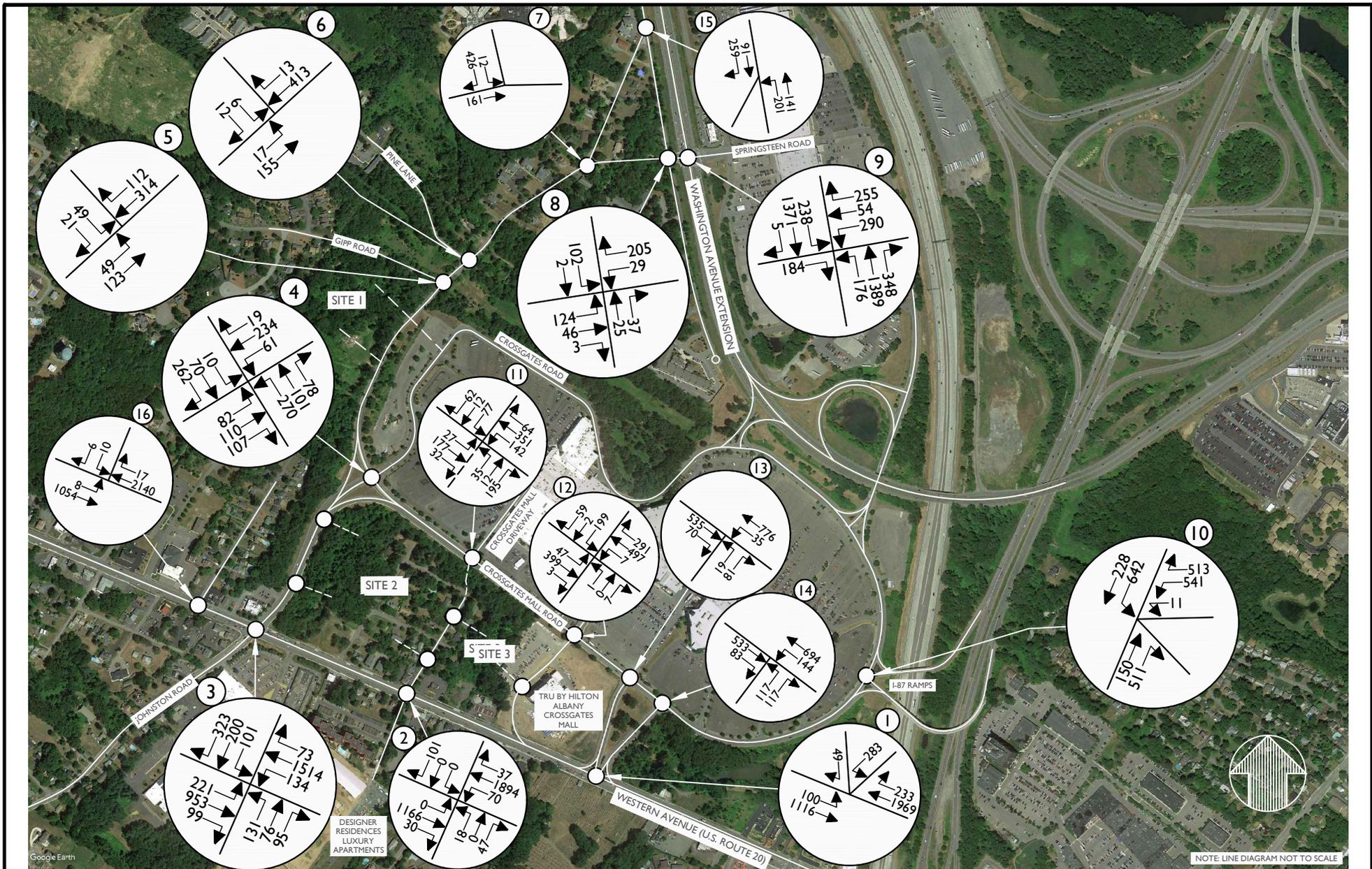
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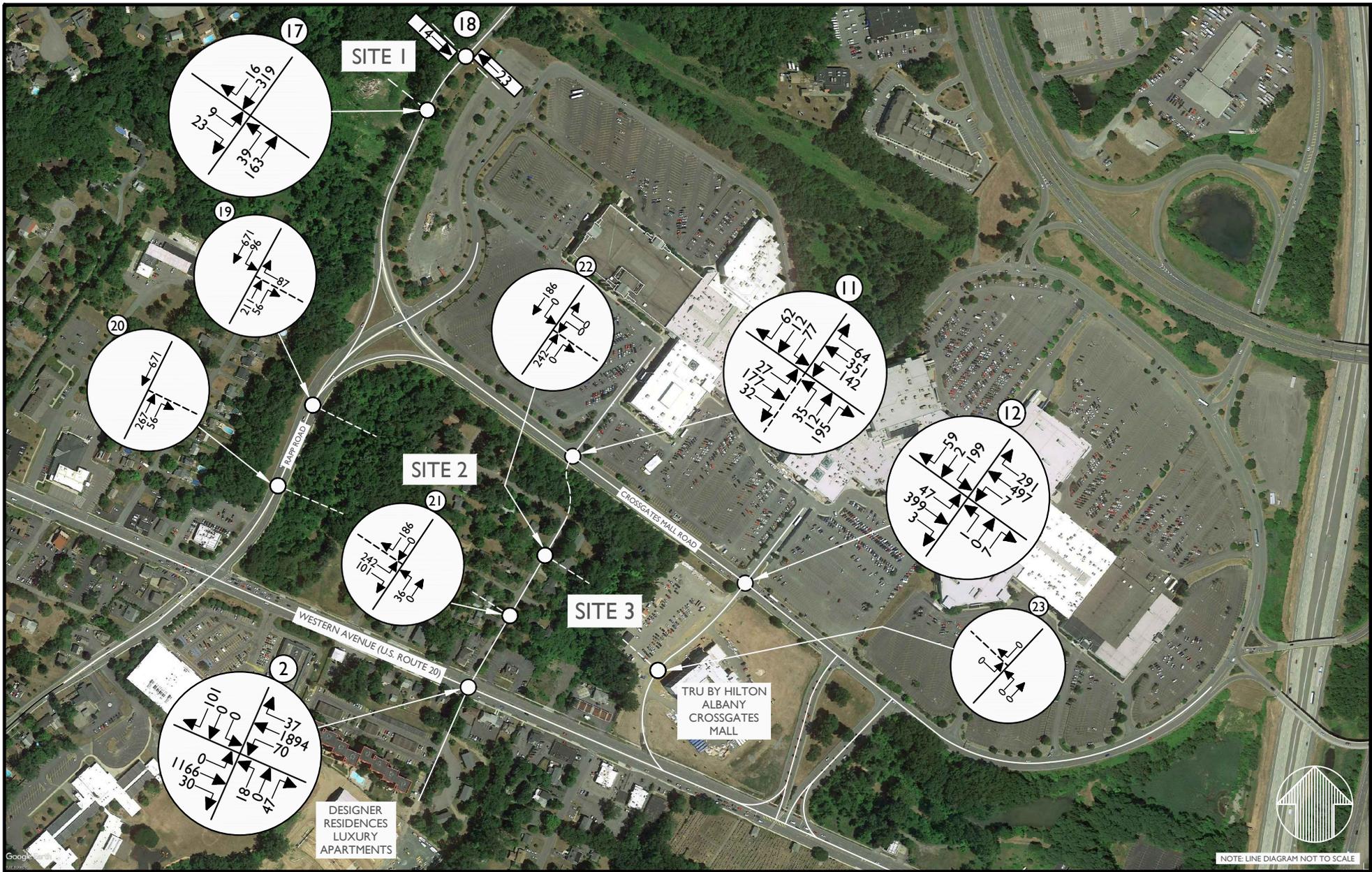


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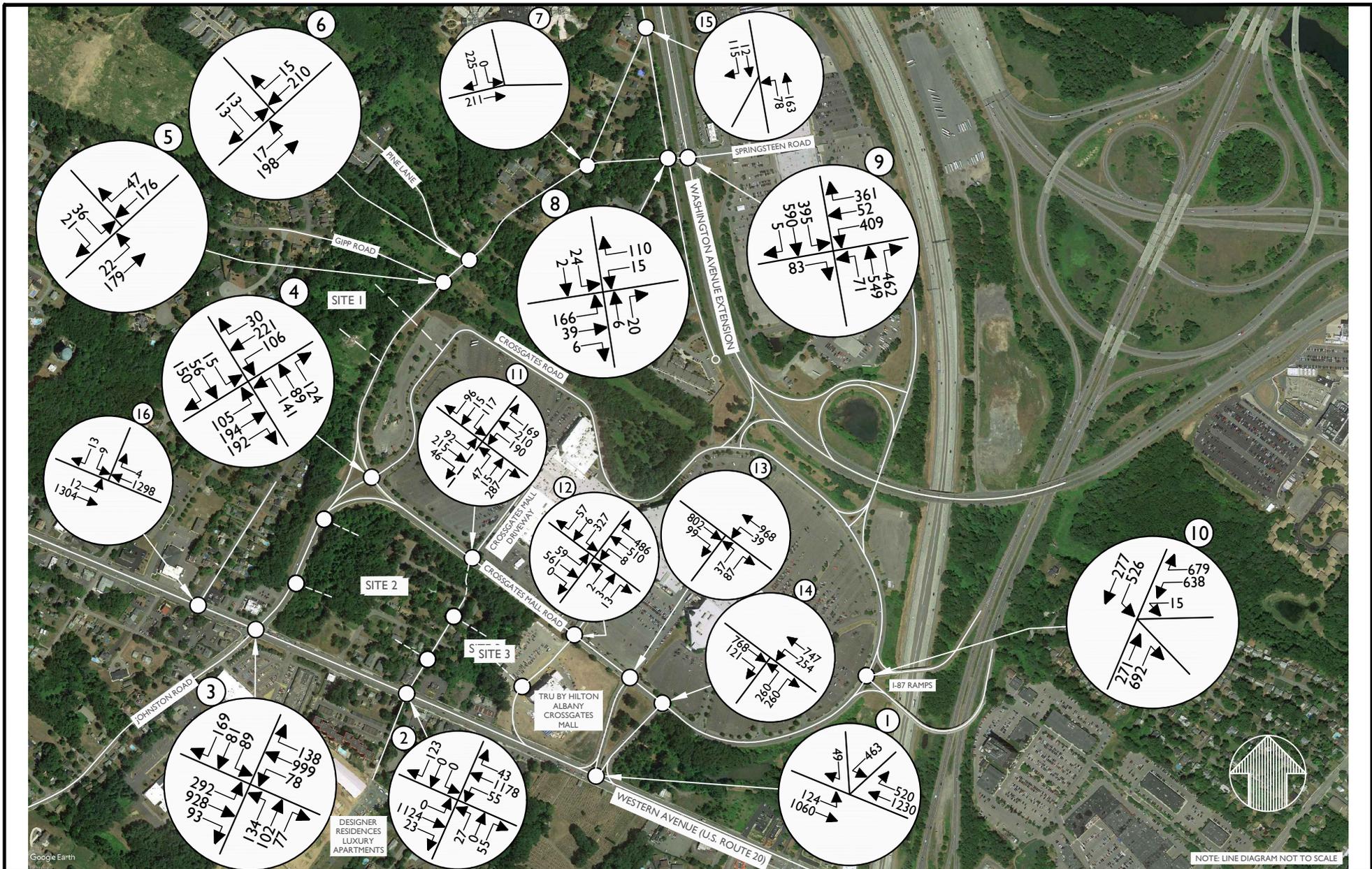
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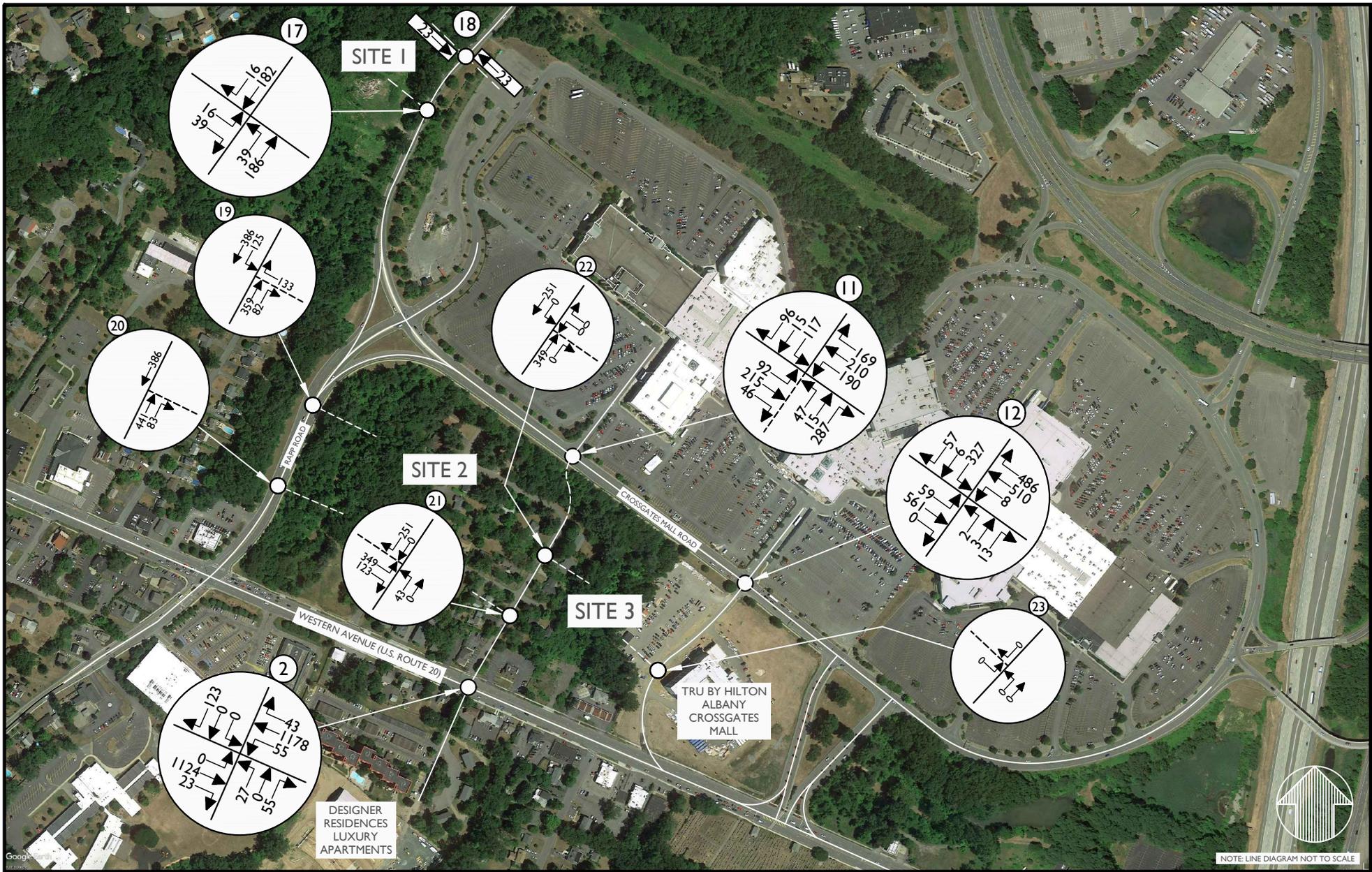
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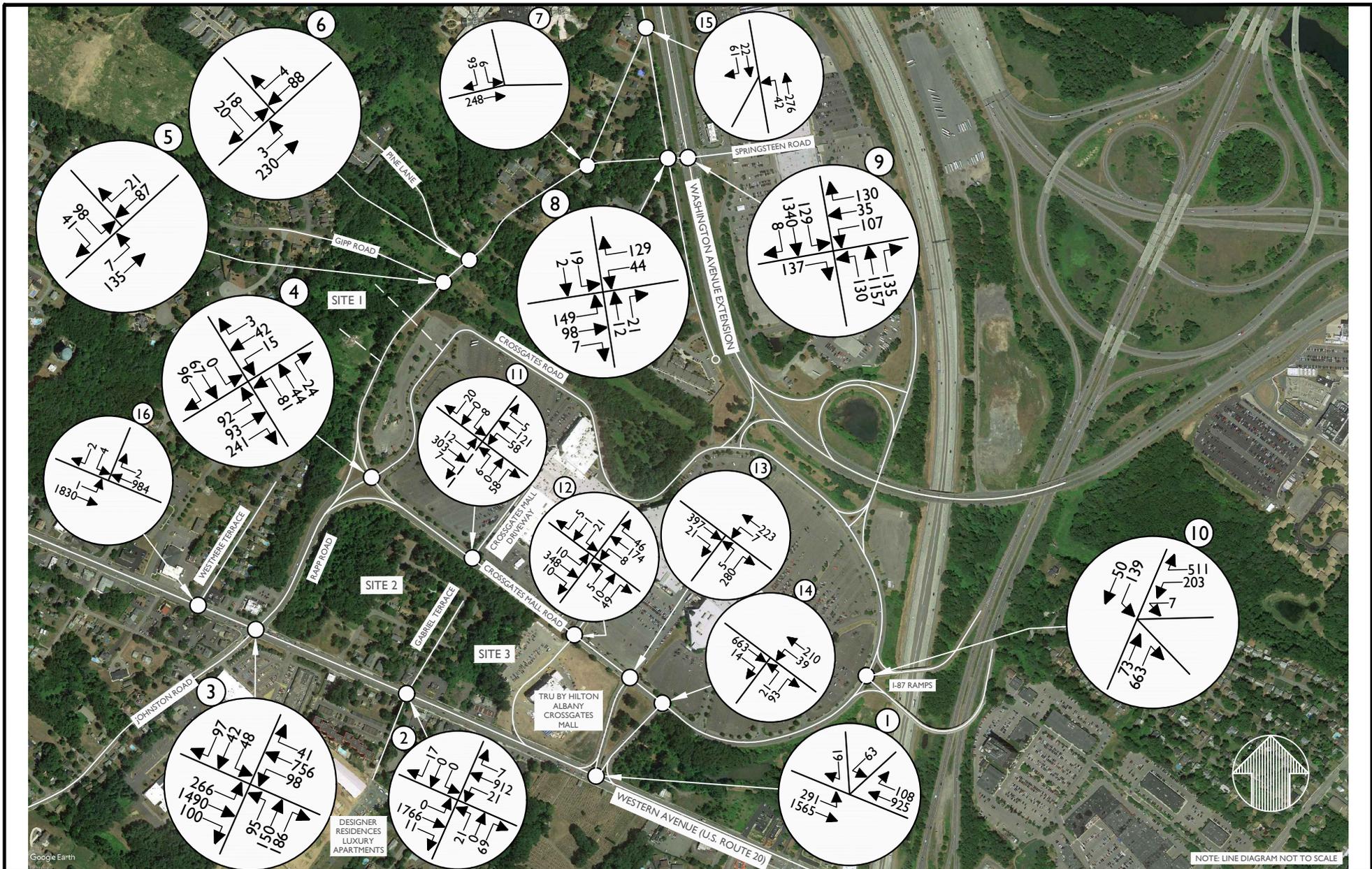
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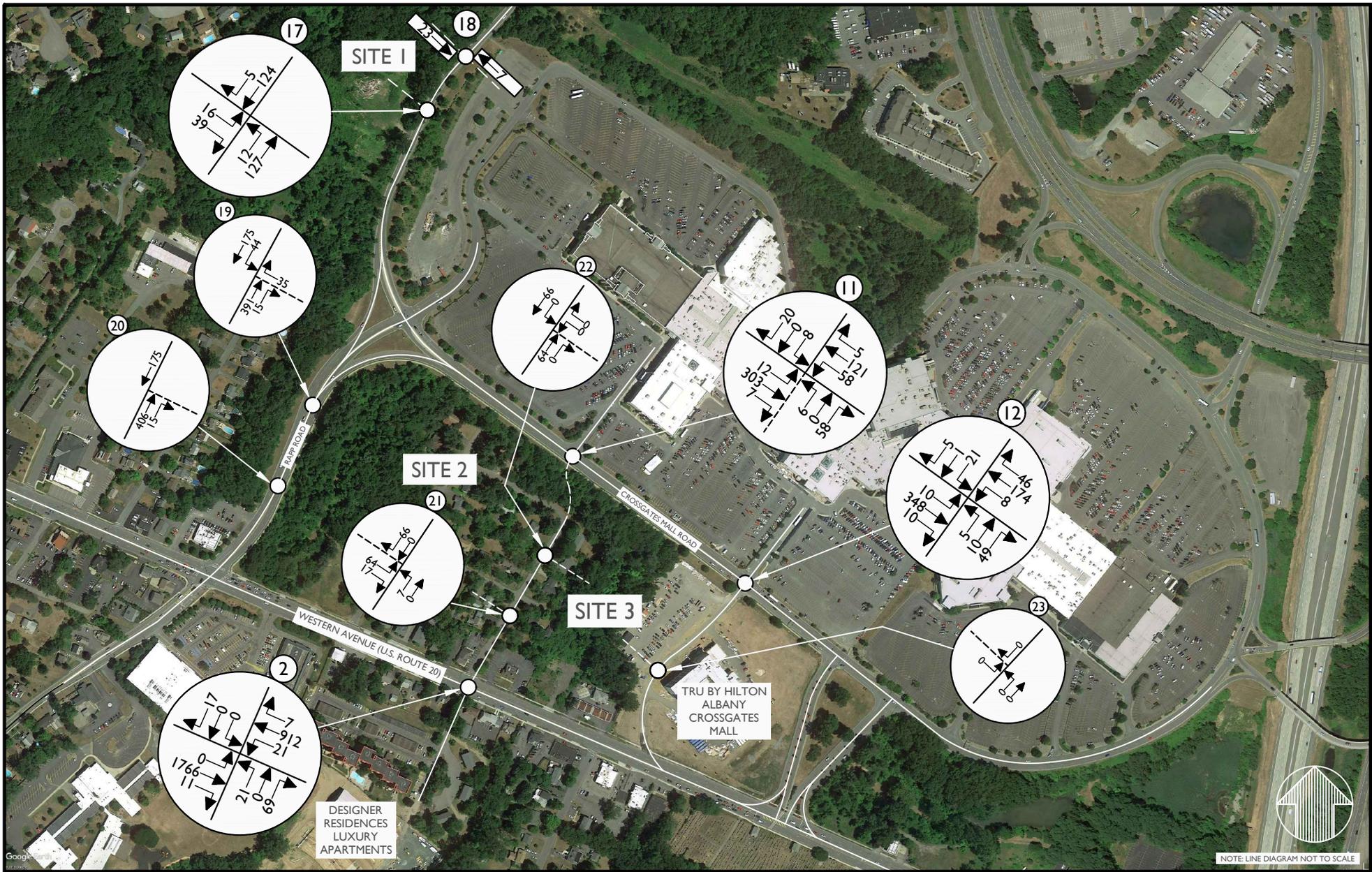


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PROJECT NUMBER: 19002502A	DRAWING NAME: 191021JFM_FIGURES - PHASE 2 - 02.17.2020		
SHEET TITLE: 2025 NO-BUILD TRAFFIC VOLUMES WEEKDAY PEAK AM HOUR			
SHEET NUMBER: FIGURE NO. 27			



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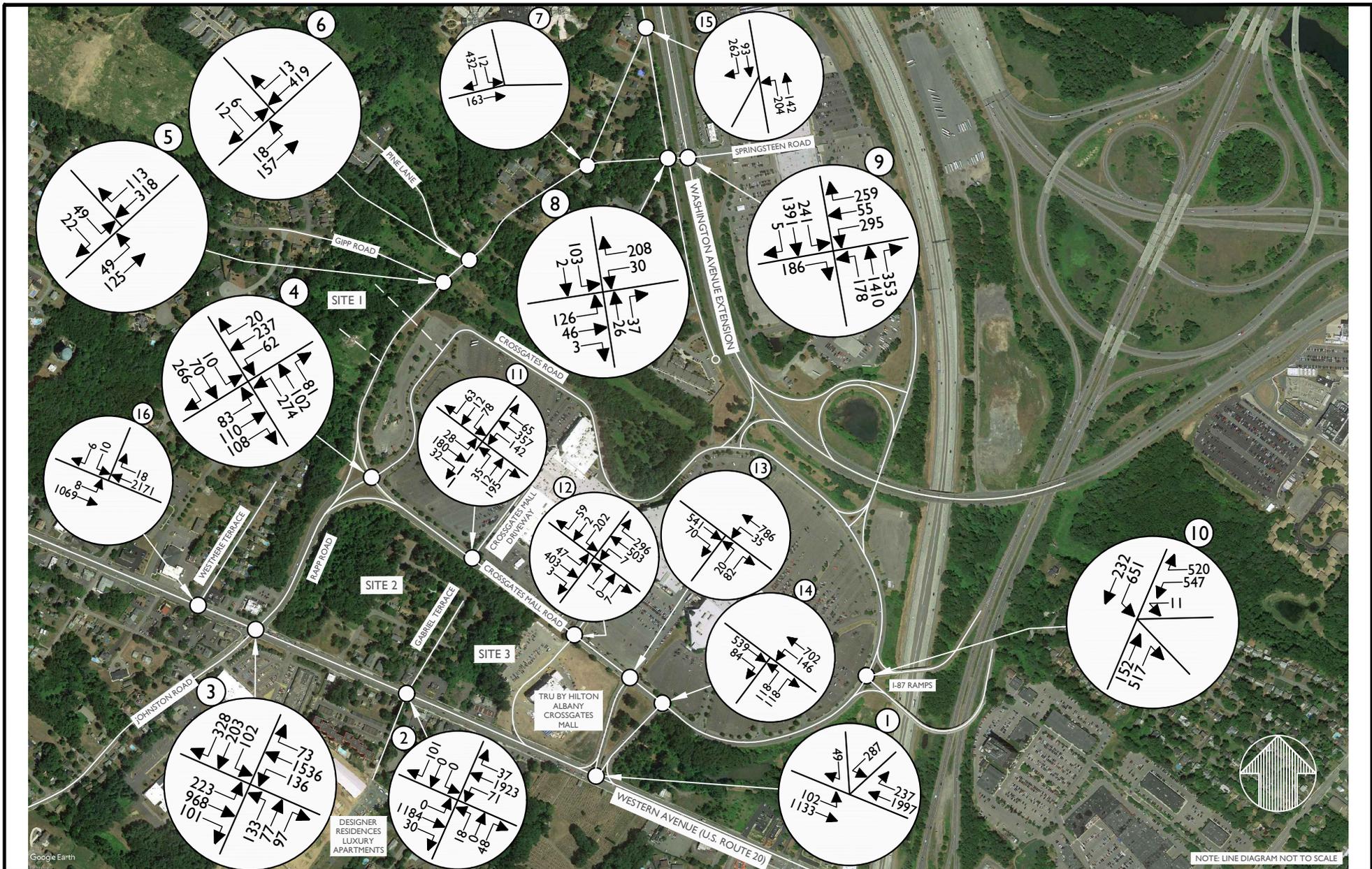
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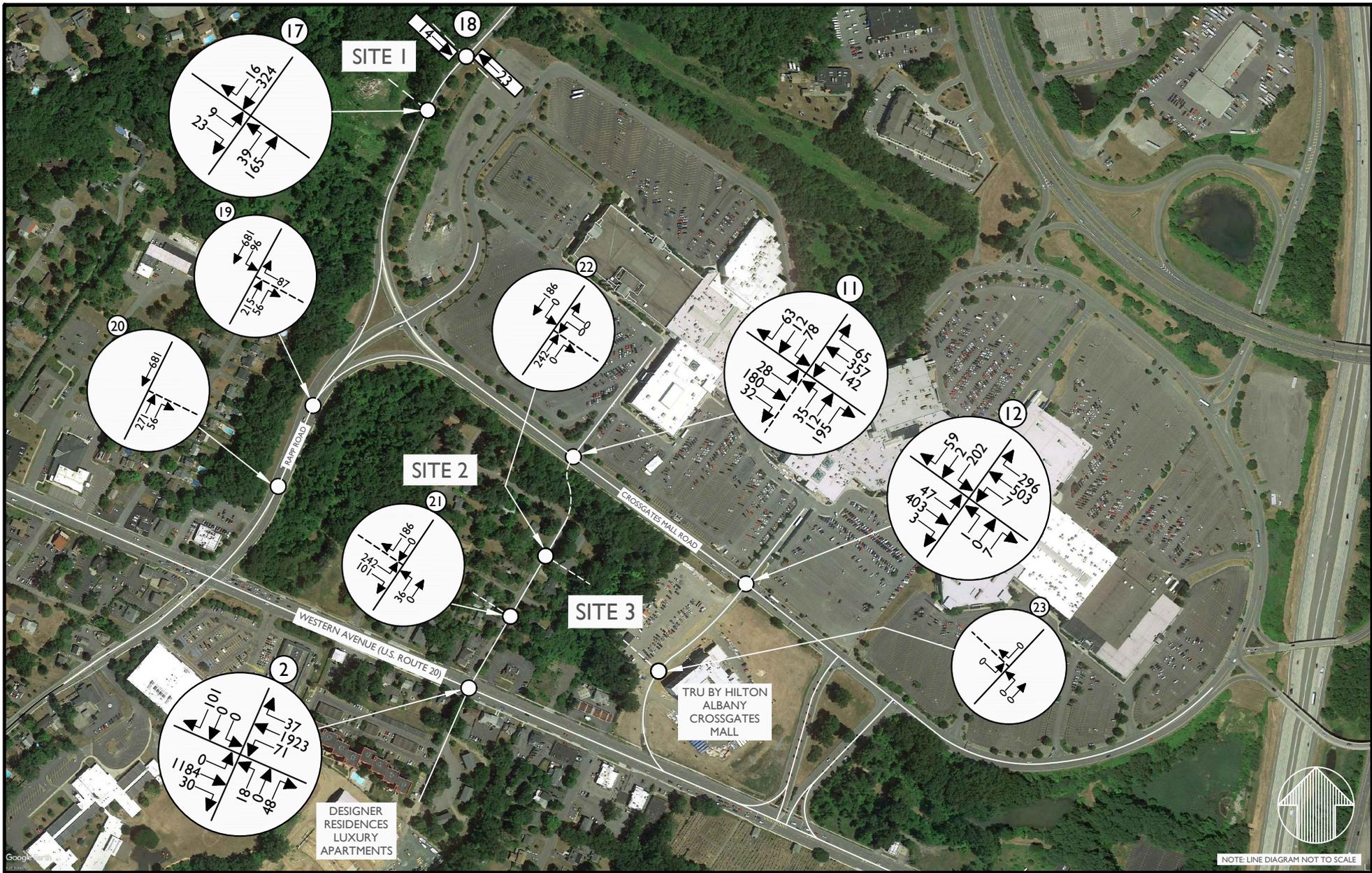


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PROJECT NUMBER 19002502A	DRAWING NAME 191021JFM FIGURES - PHASE 2 - 02.17.2020		
SHEET TITLE 2025 NO-BUILD TRAFFIC VOLUMES WEEKDAY PEAK PM HOUR			
SHEET NUMBER FIGURE NO. 28			



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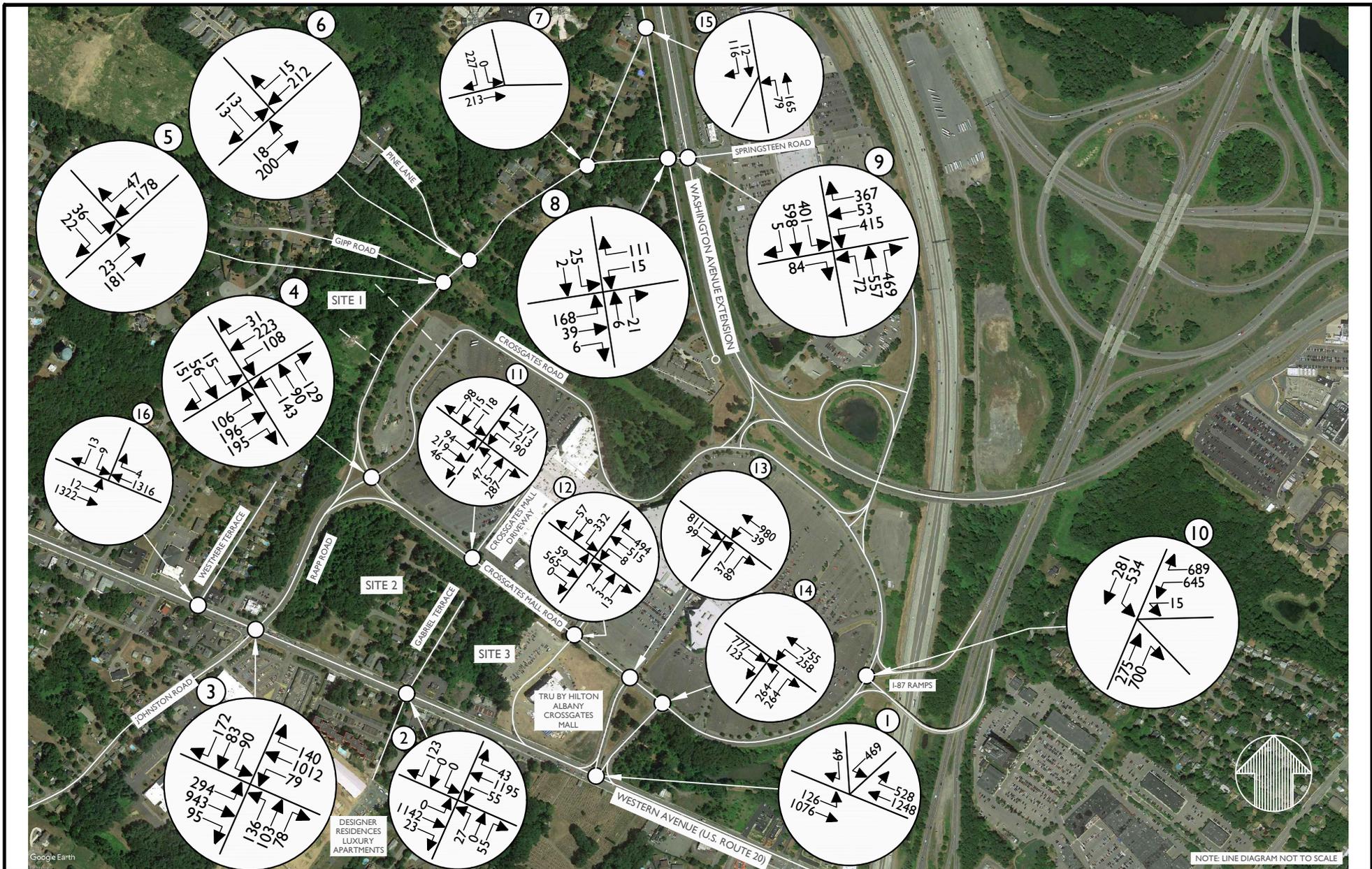
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2025 NO-BUILD TRAFFIC VOLUMES WEEKDAY PEAK PM HOUR			
SHEET NUMBER:			
FIGURE NO. 28-A			



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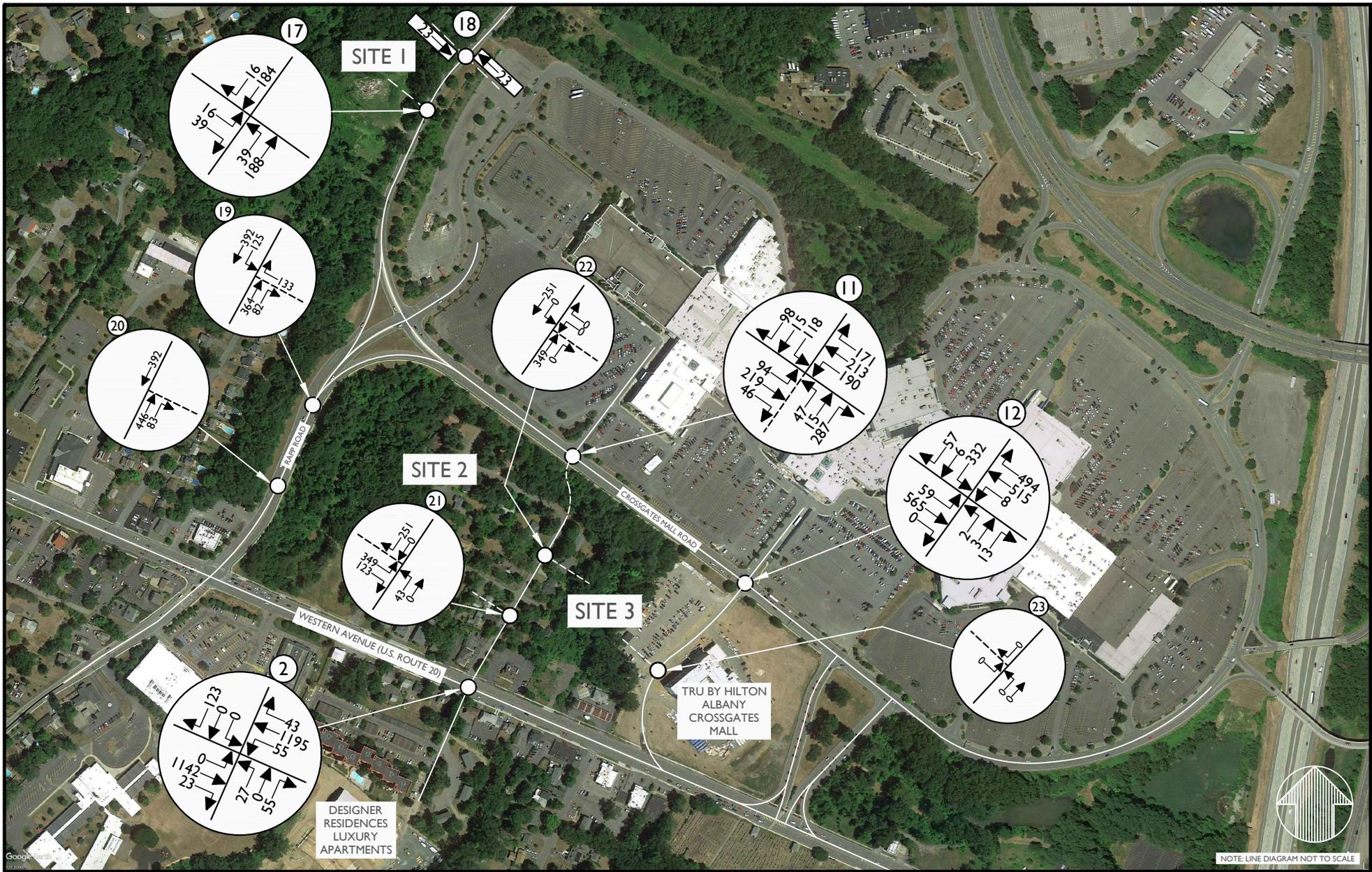


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2025 NO-BUILD TRAFFIC VOLUMES SATURDAY PEAK HOUR			
SHEET NUMBER:			
FIGURE NO. 29			



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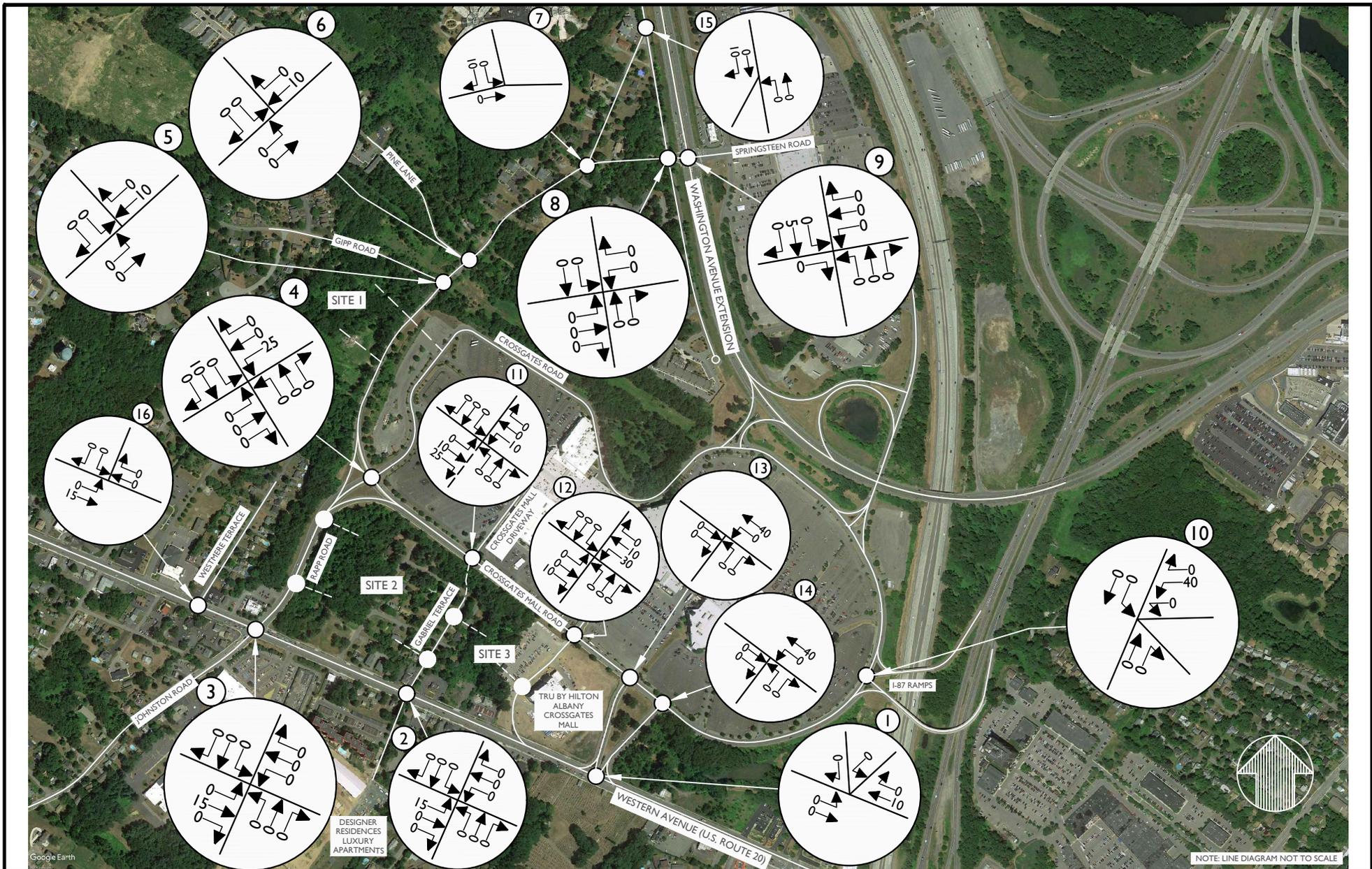
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FIGURE NO. 29-A			



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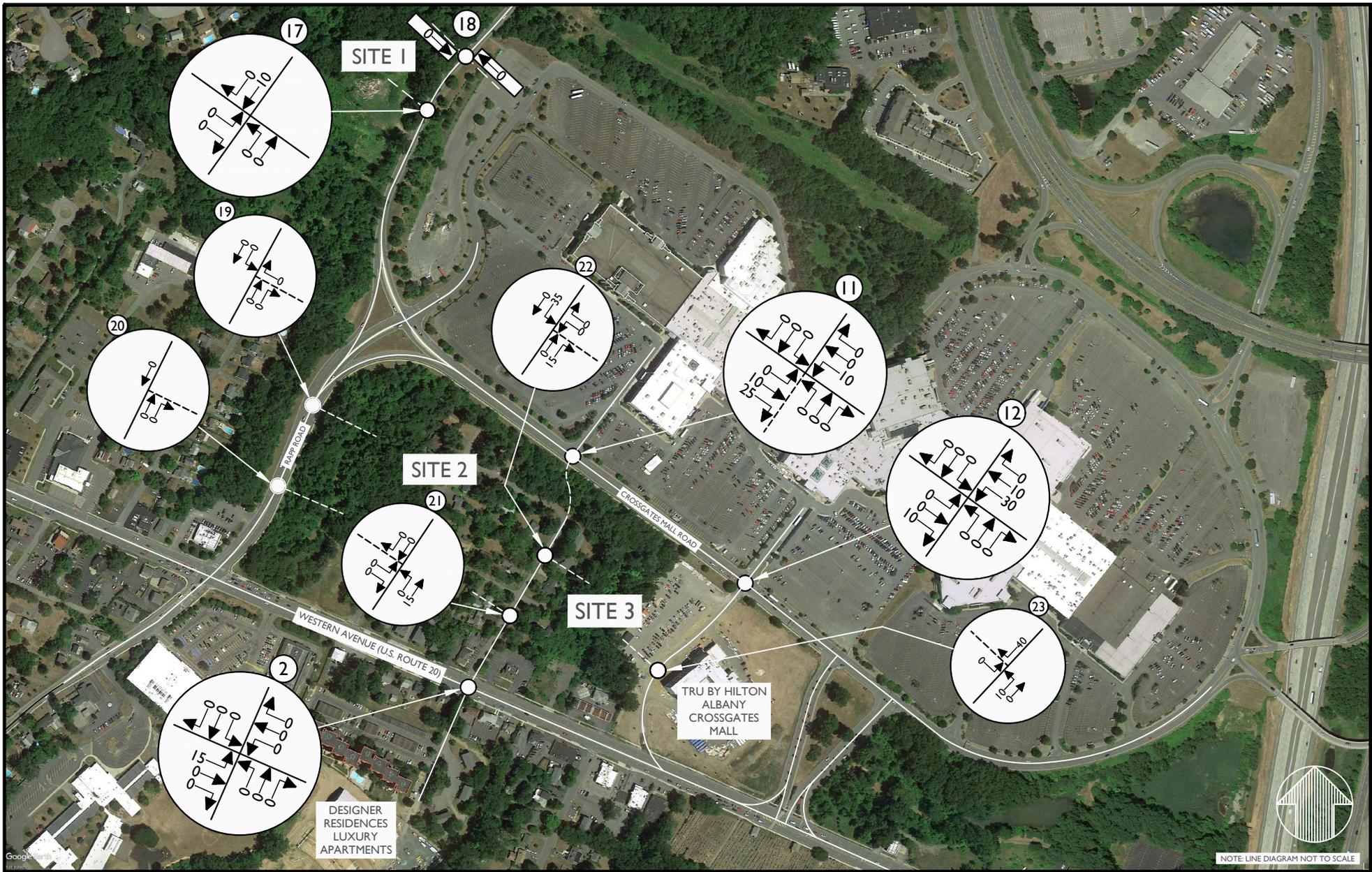


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SHEET TITLE ARRIVAL DISTRIBUTION SITE 3 POTENTIAL FUTURE MIXED-USE (EXPRESSED AS A %)			
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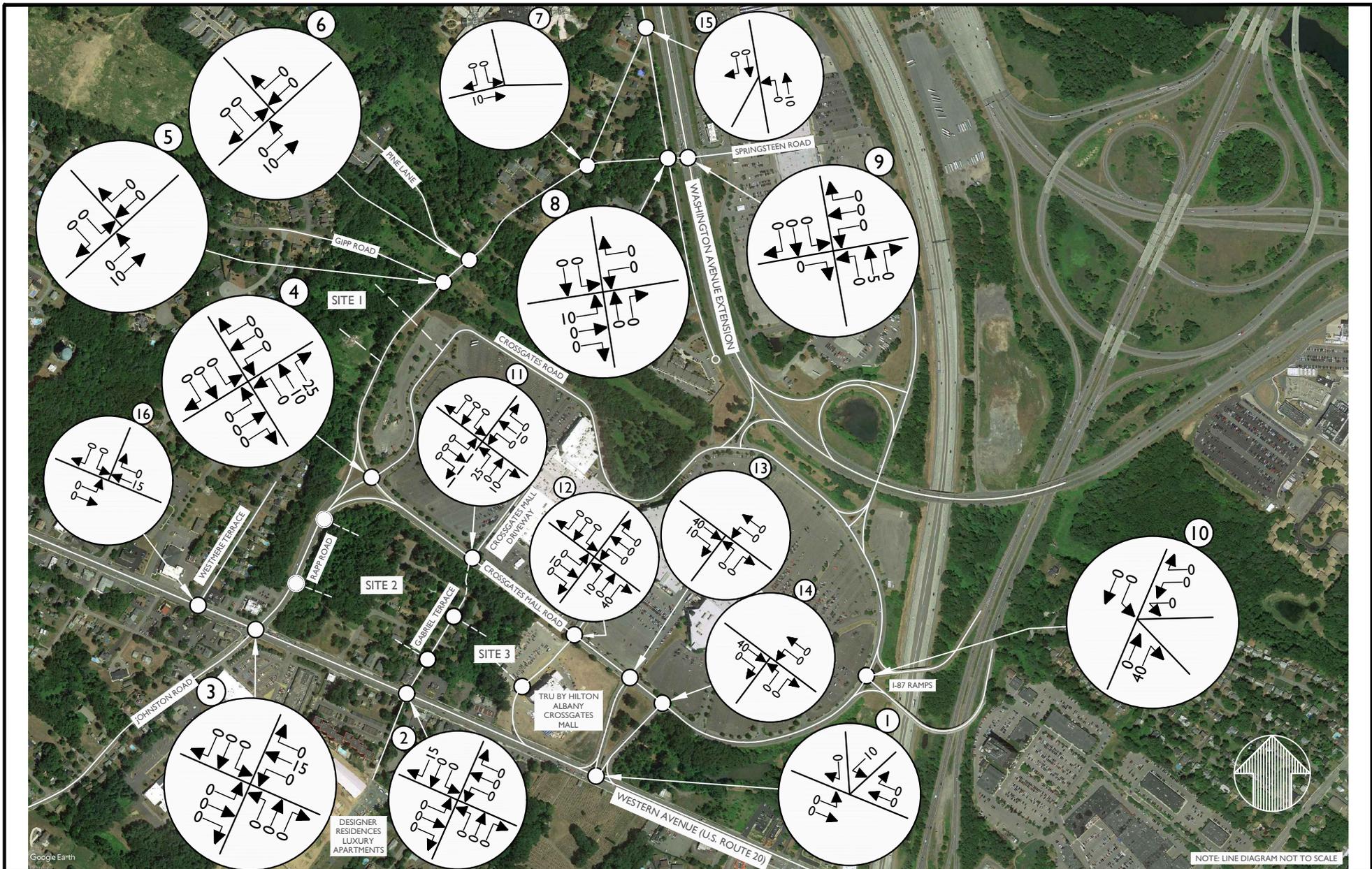
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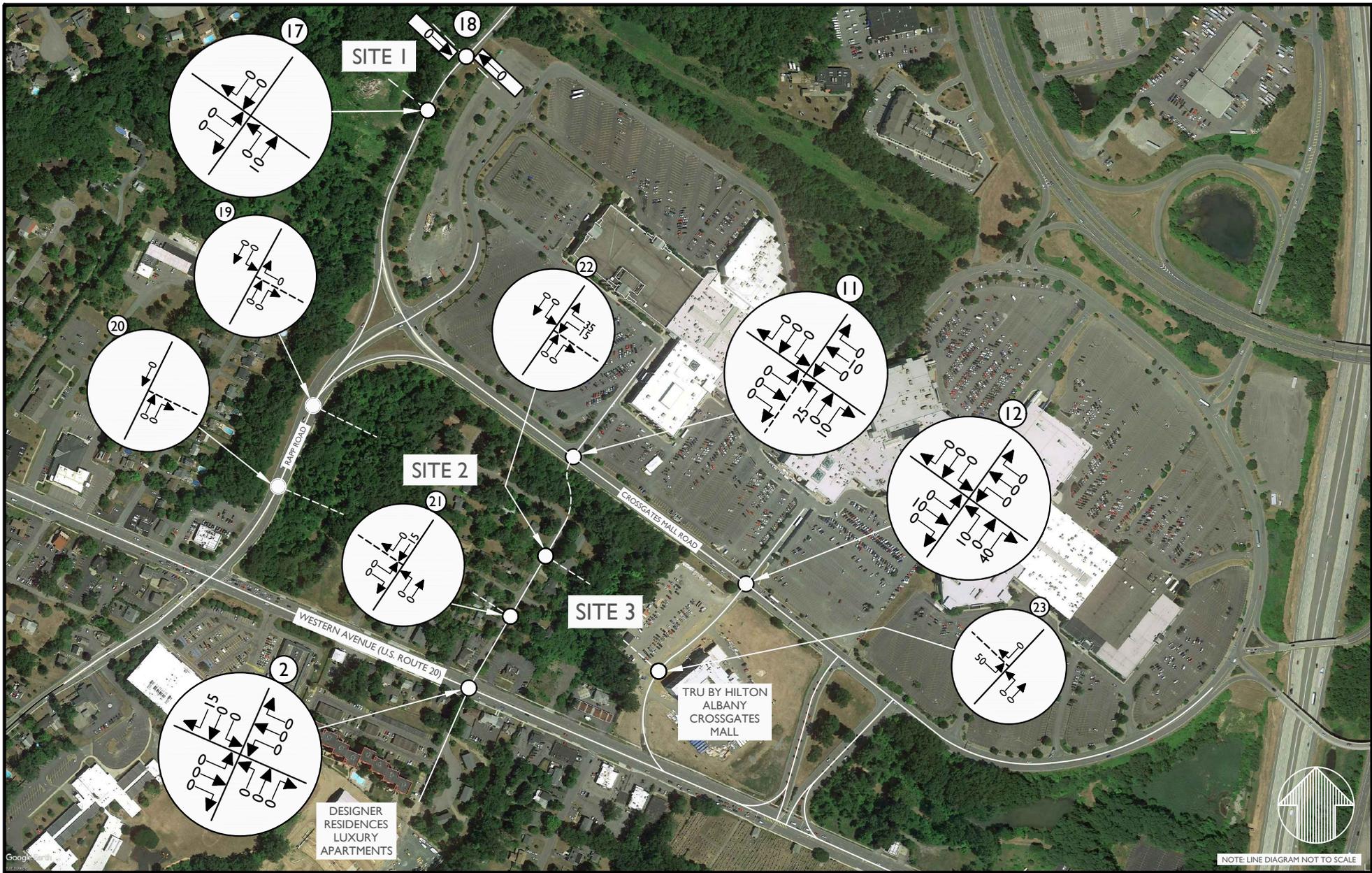
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SHEET **DEPARTURE DISTRIBUTION**
SITE 3
POTENTIAL MIXED-USE
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SHEET NUMBER:
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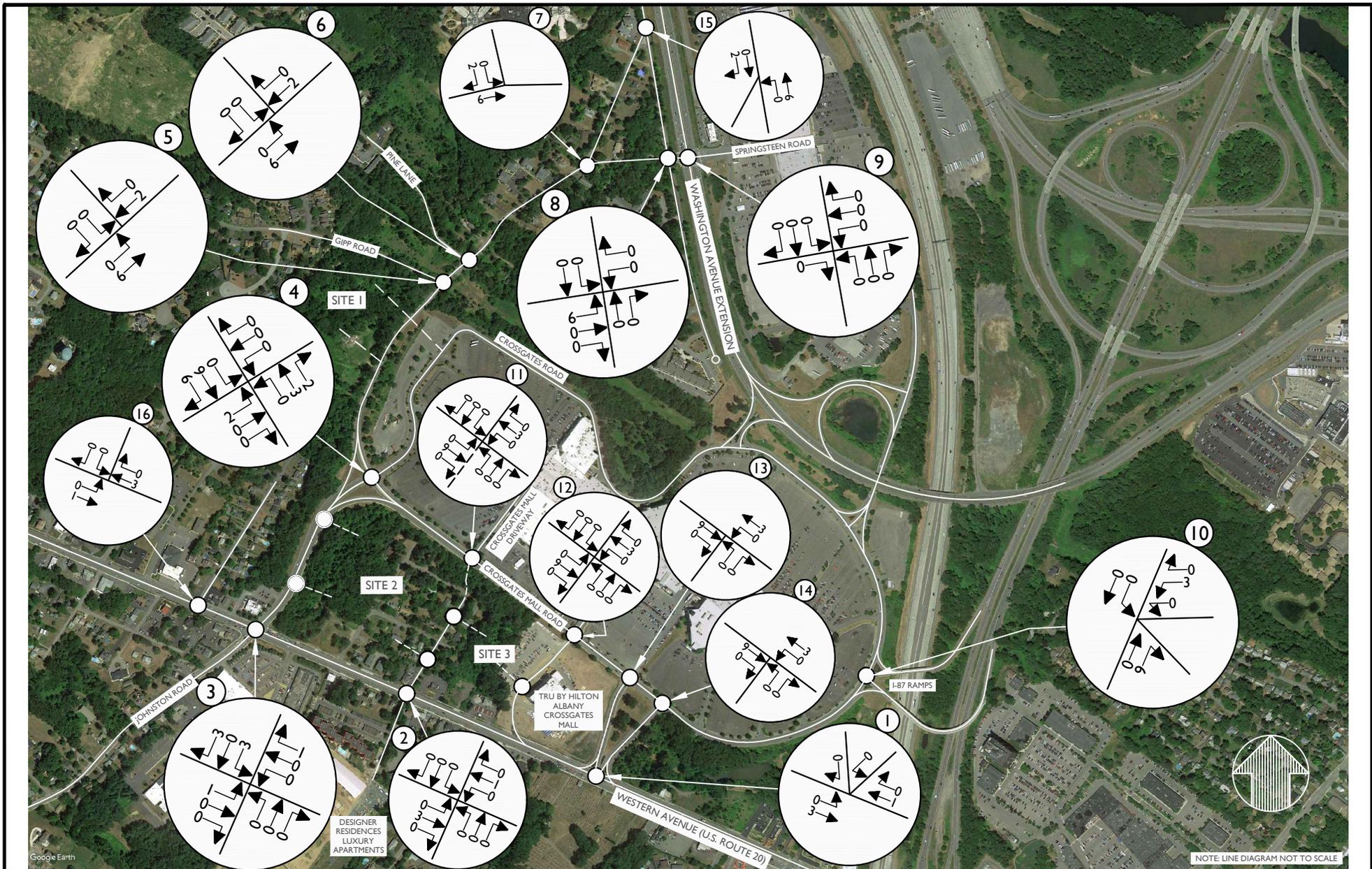
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SITE 3			
POTENTIAL MIXED-USE (EXPRESSED AS A %)			
SHEET NUMBER:			
FIGURE NO. 31-A			



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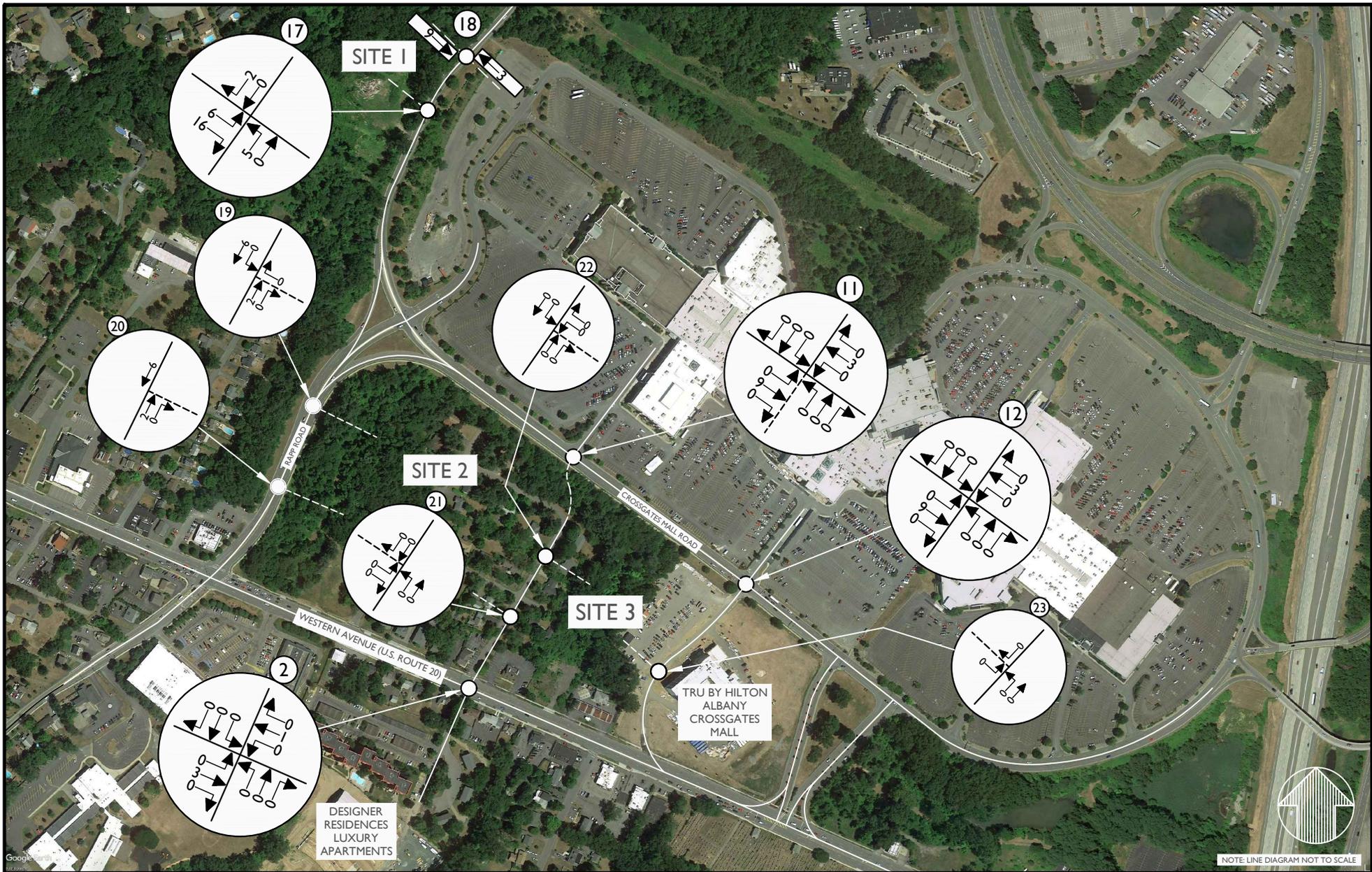
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PROJECT NUMBER 19002502A	DRAWING NAME 191021JFM FIGURES - PHASE 2 - 02.17.2020		
SHEET TITLE SITE GENERATED TRAFFIC VOLUMES SITE 1 POTENTIAL FUTURE DEVELOPMENT AREA WEEKDAY PEAK AM HOUR			
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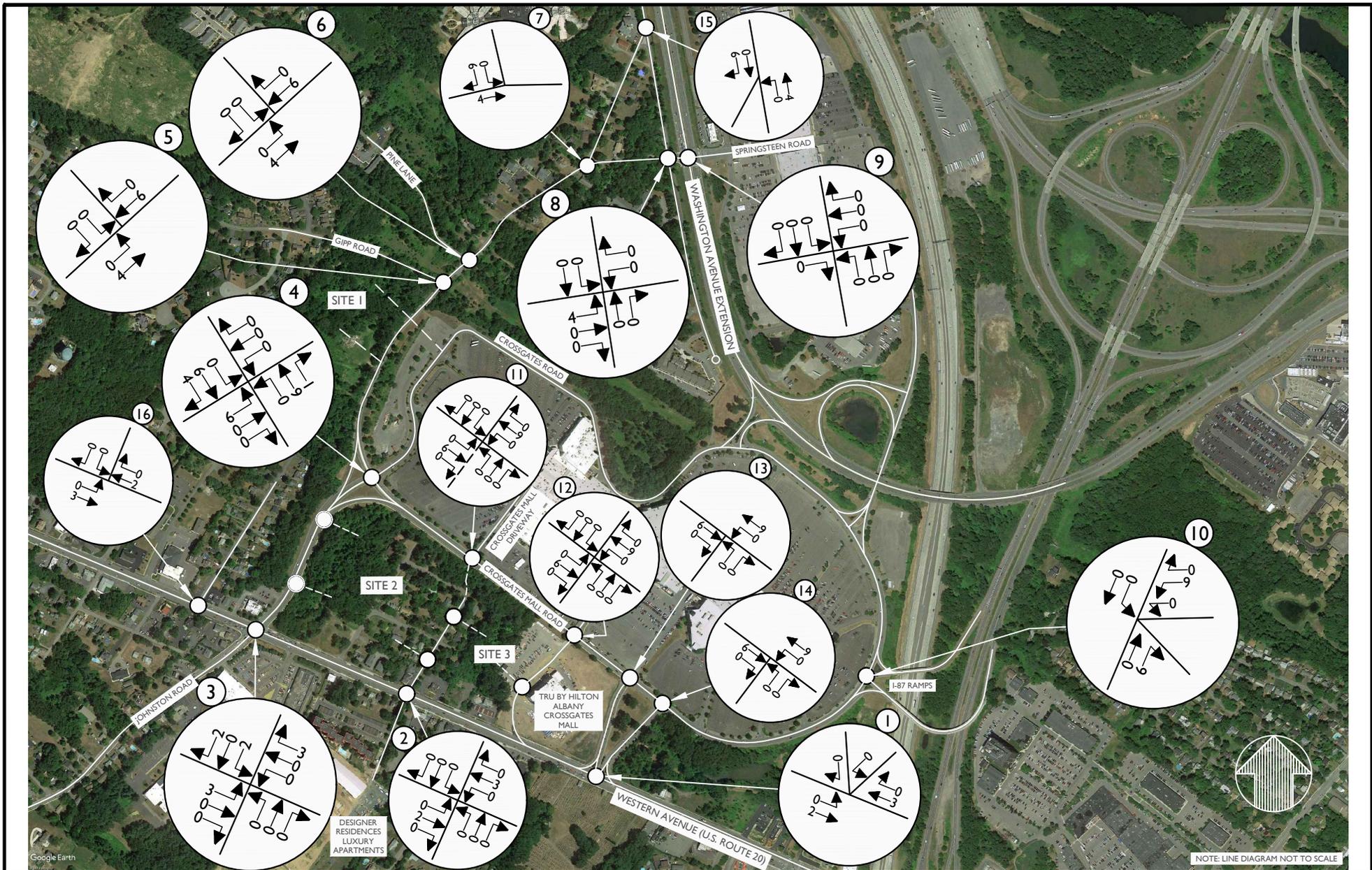
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19002502A	191021JFM FIGURES - PHASE 2 - 02.17.2020		
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SITE GENERATED TRAFFIC VOLUMES SITE 1 POTENTIAL FUTURE DEVELOPMENT AREA WEEKDAY PEAK AM HOUR			
SHEET NUMBER:			
FIGURE NO. 32-A			



NOTE: LINE DIAGRAM NOT TO SCALE



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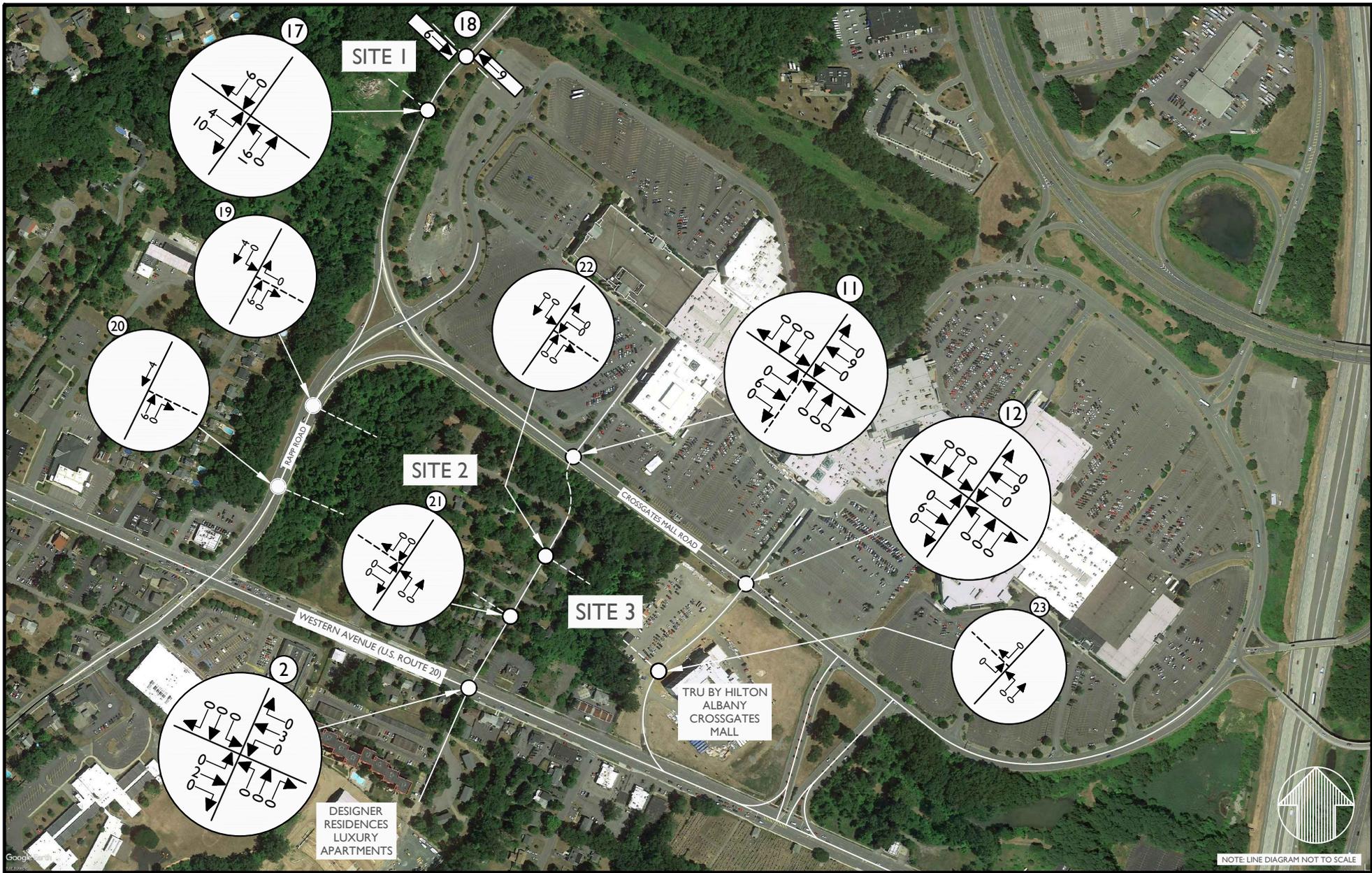
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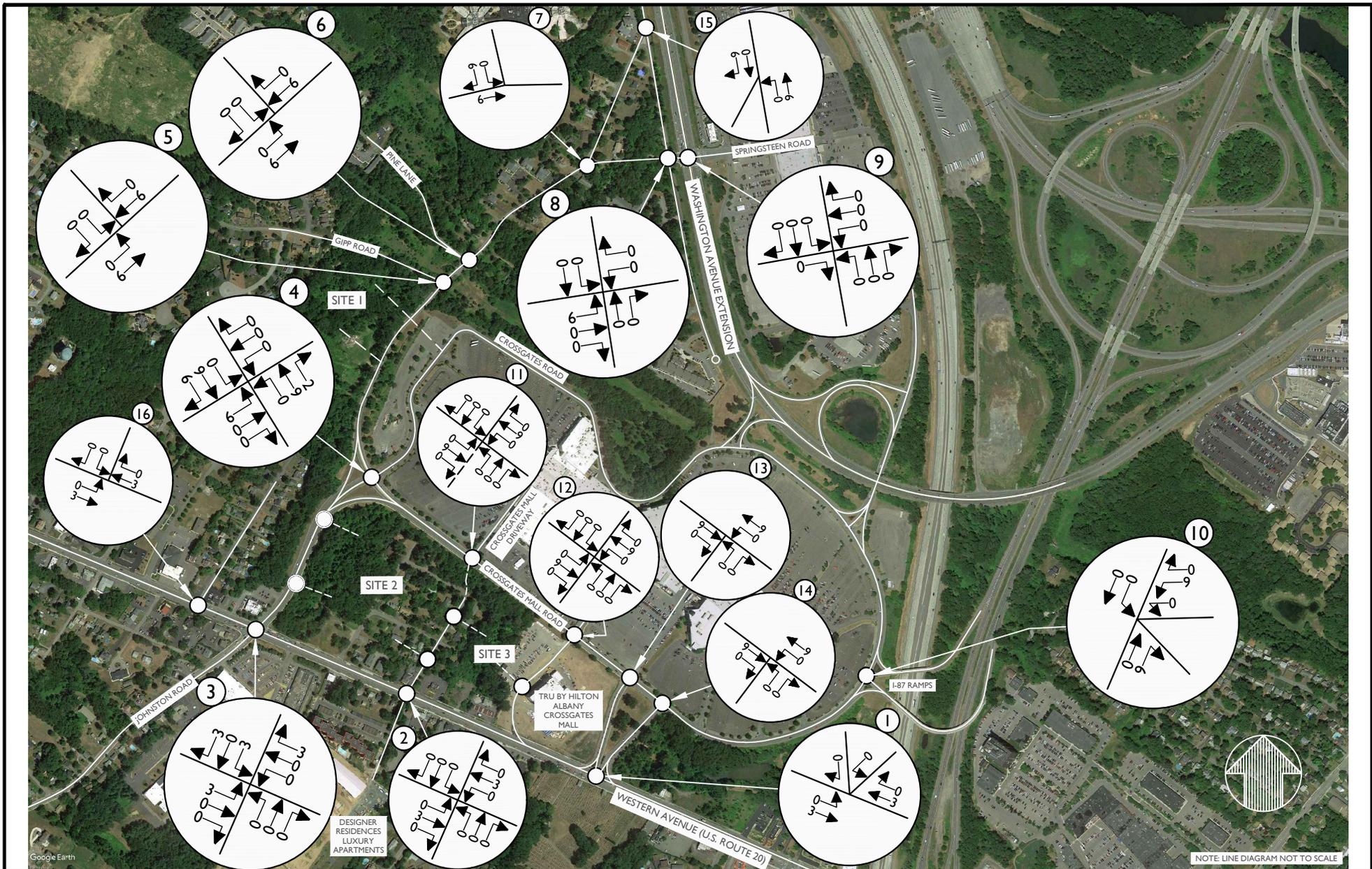
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SHEET NUMBER:			
FIGURE NO. 33-A			



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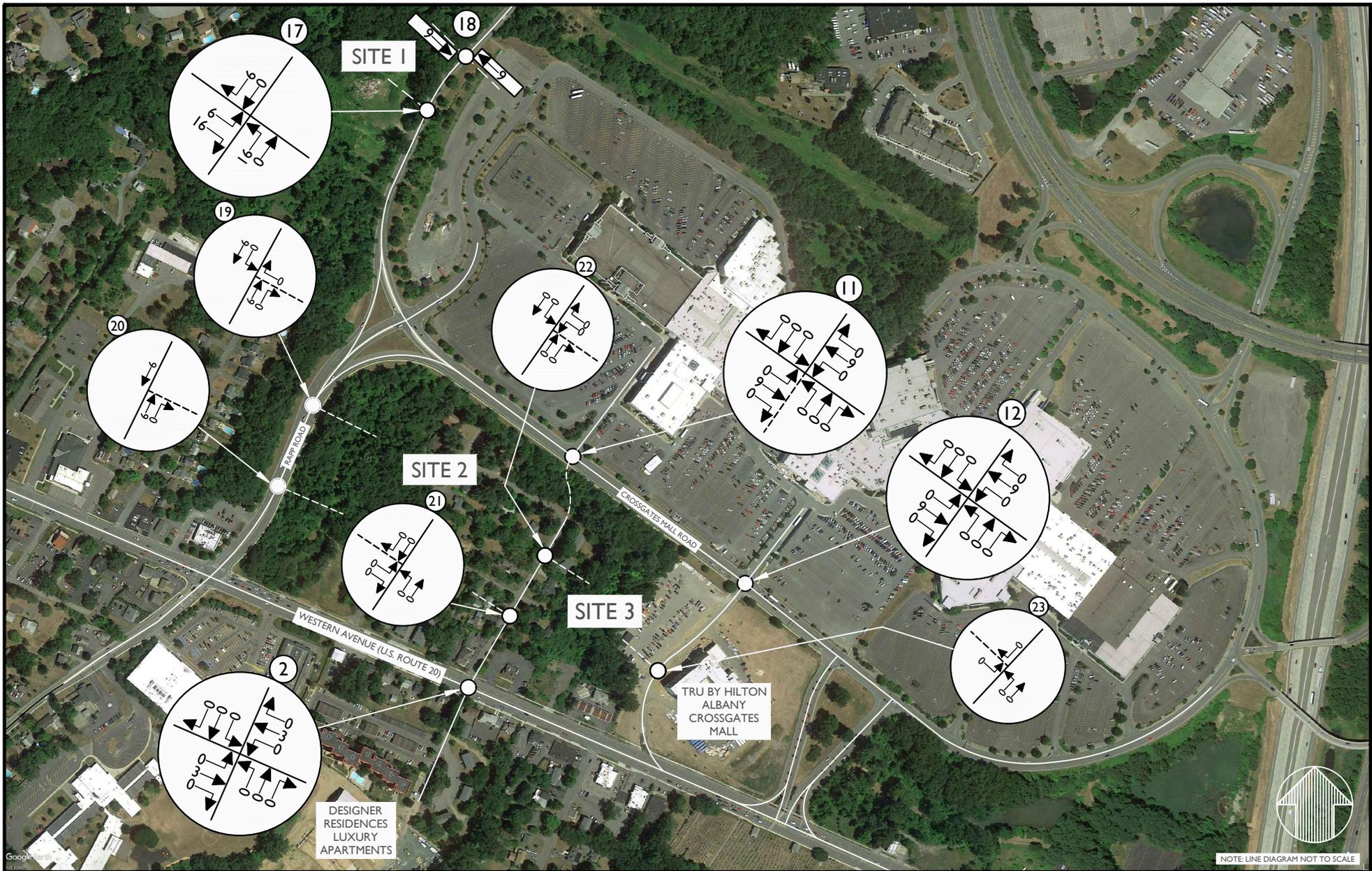
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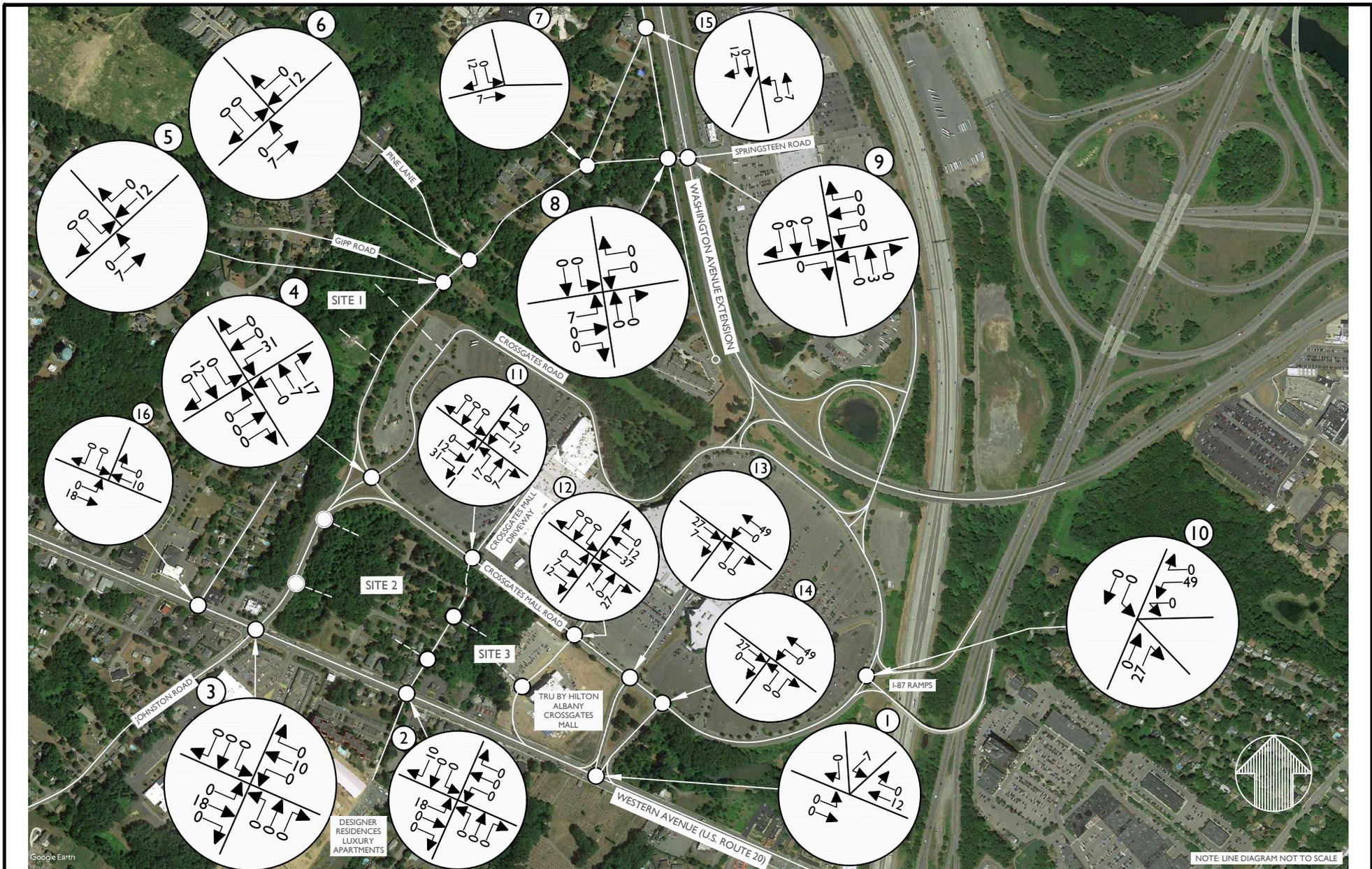
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FIGURE NO. 34-A			



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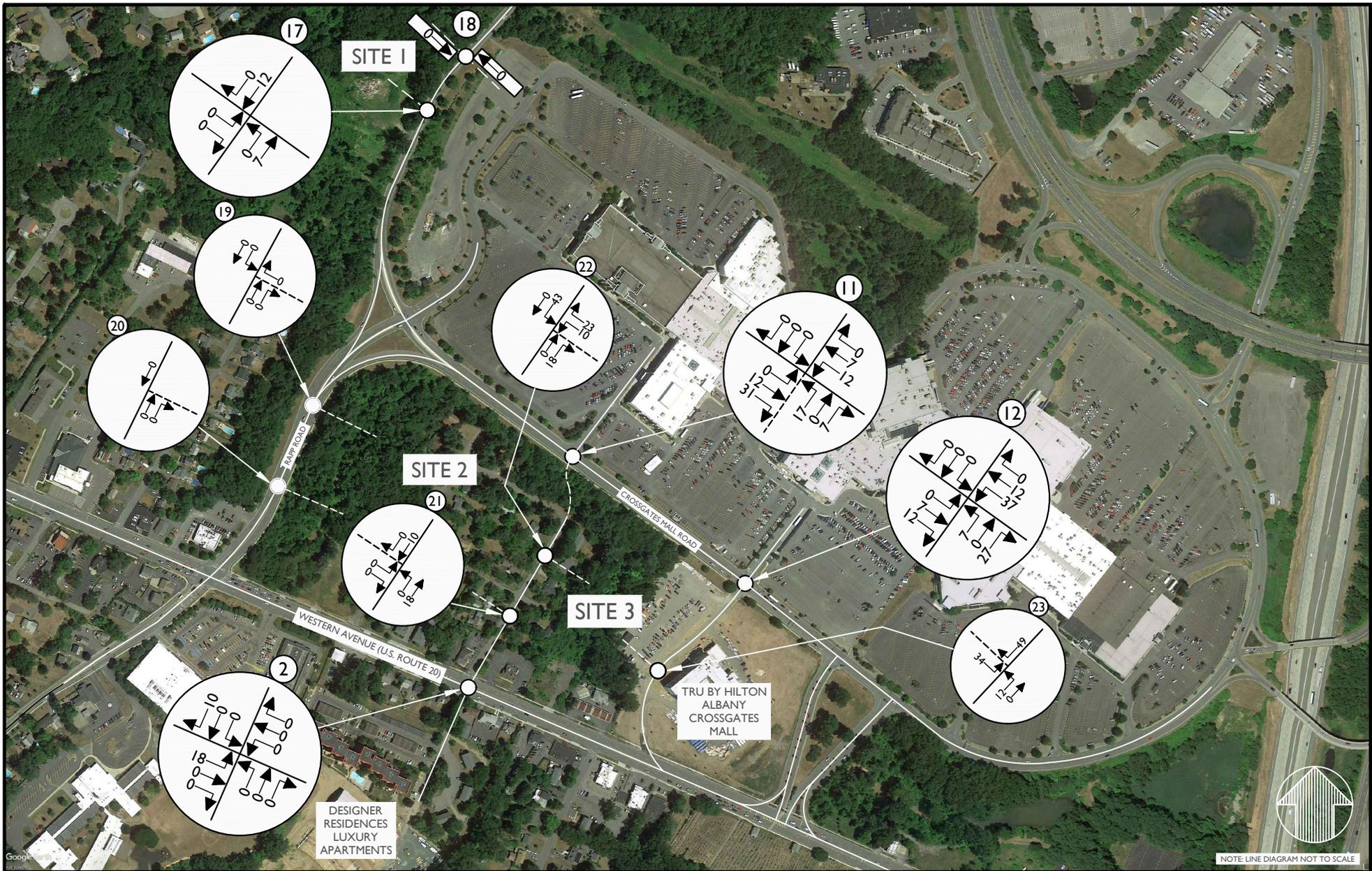


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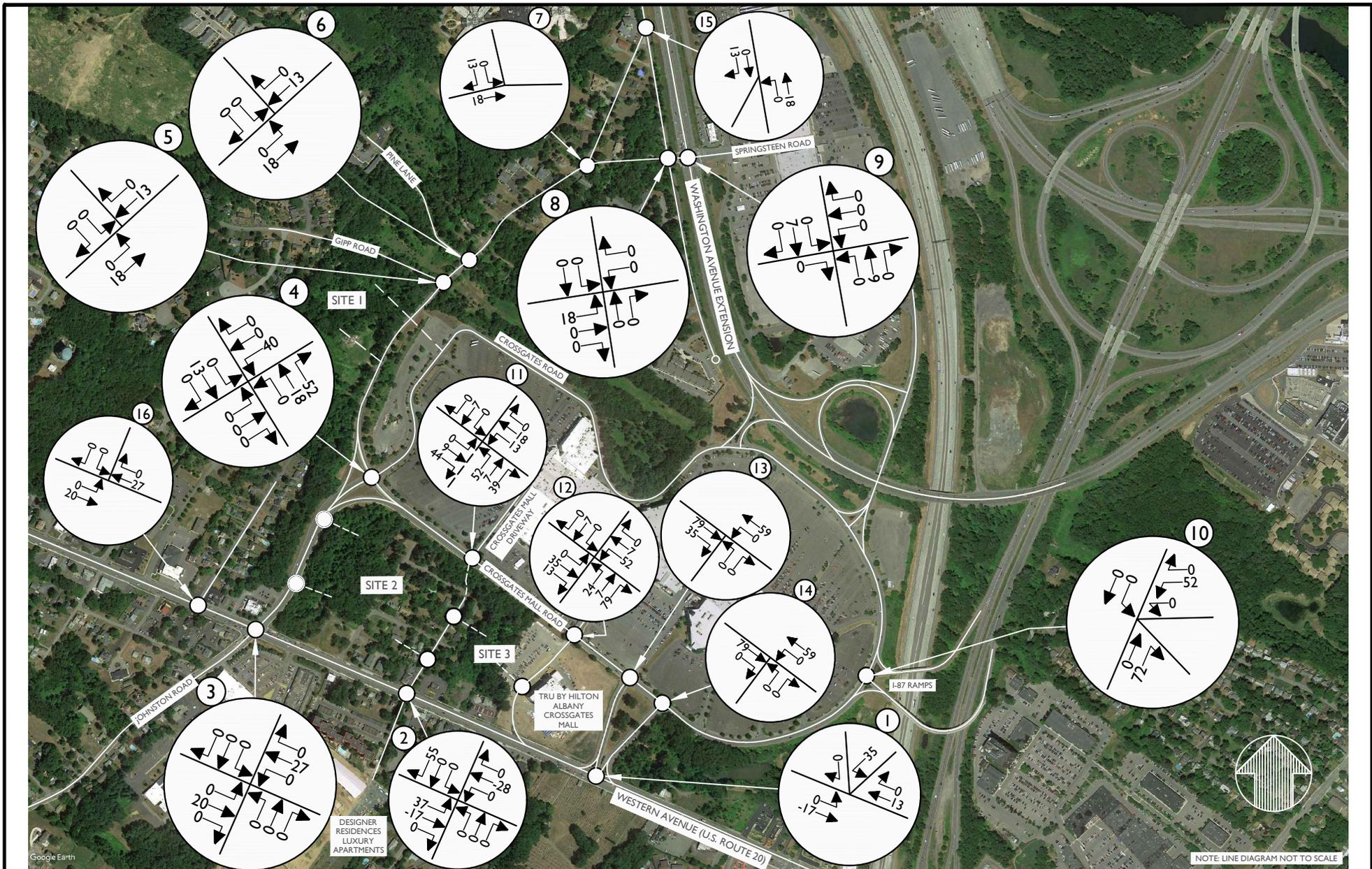
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FIGURE NO. 35-A			



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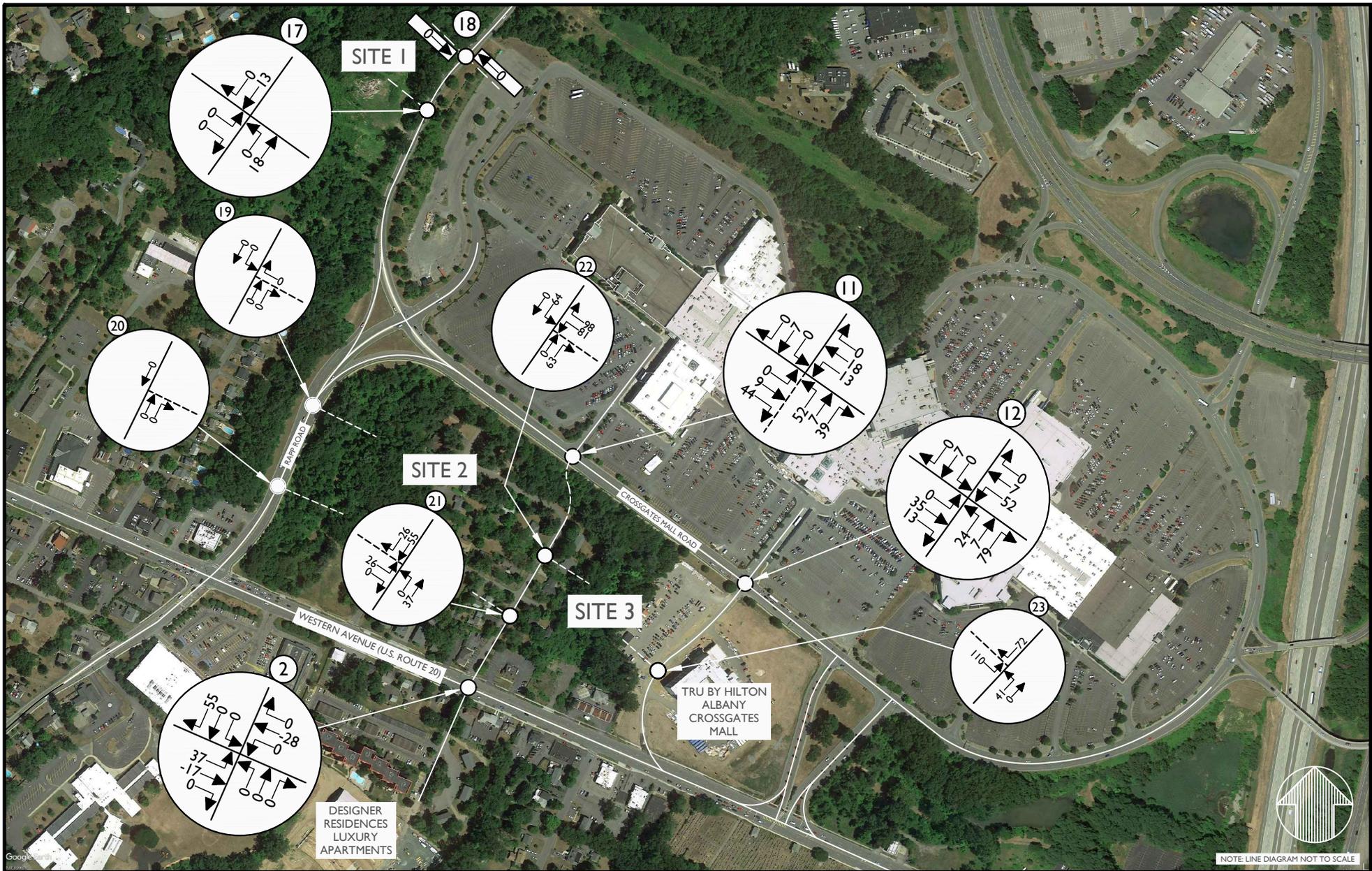


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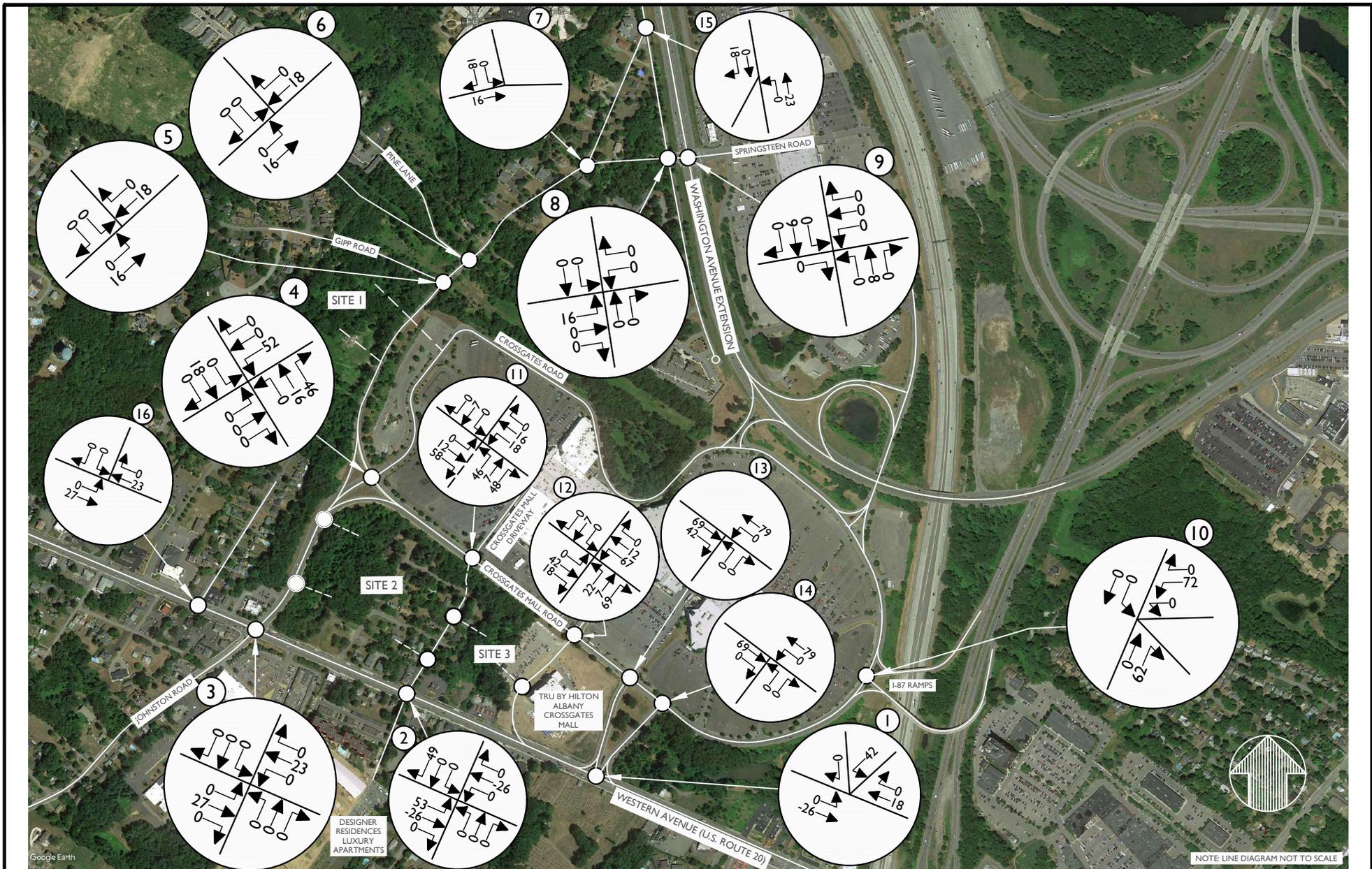
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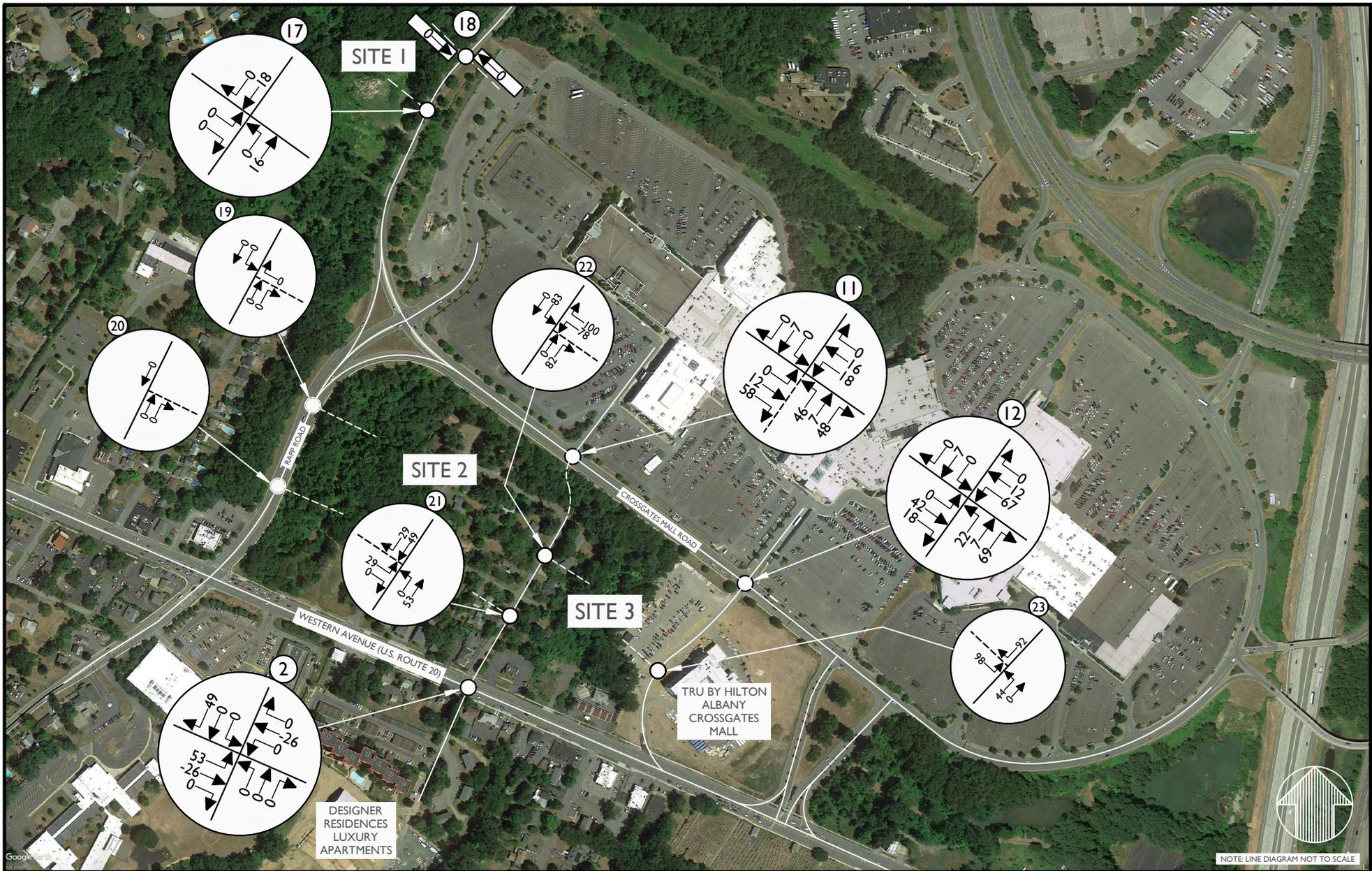
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SITE GENERATED TRAFFIC VOLUMES SITE 3 POTENTIAL MIXED-USE DEVELOPMENT SATURDAY PEAK HOUR			
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FIGURE NO. 37			



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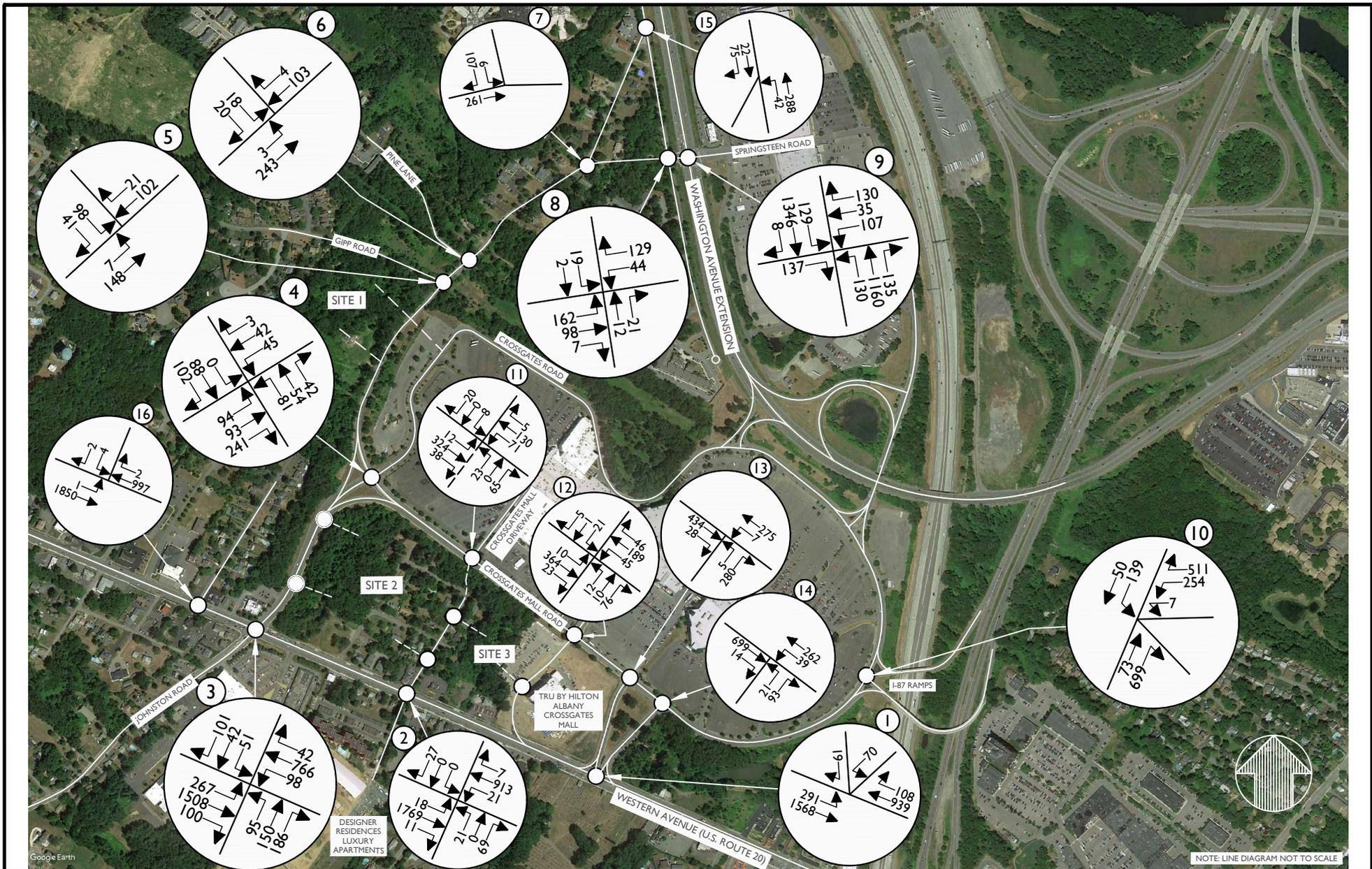
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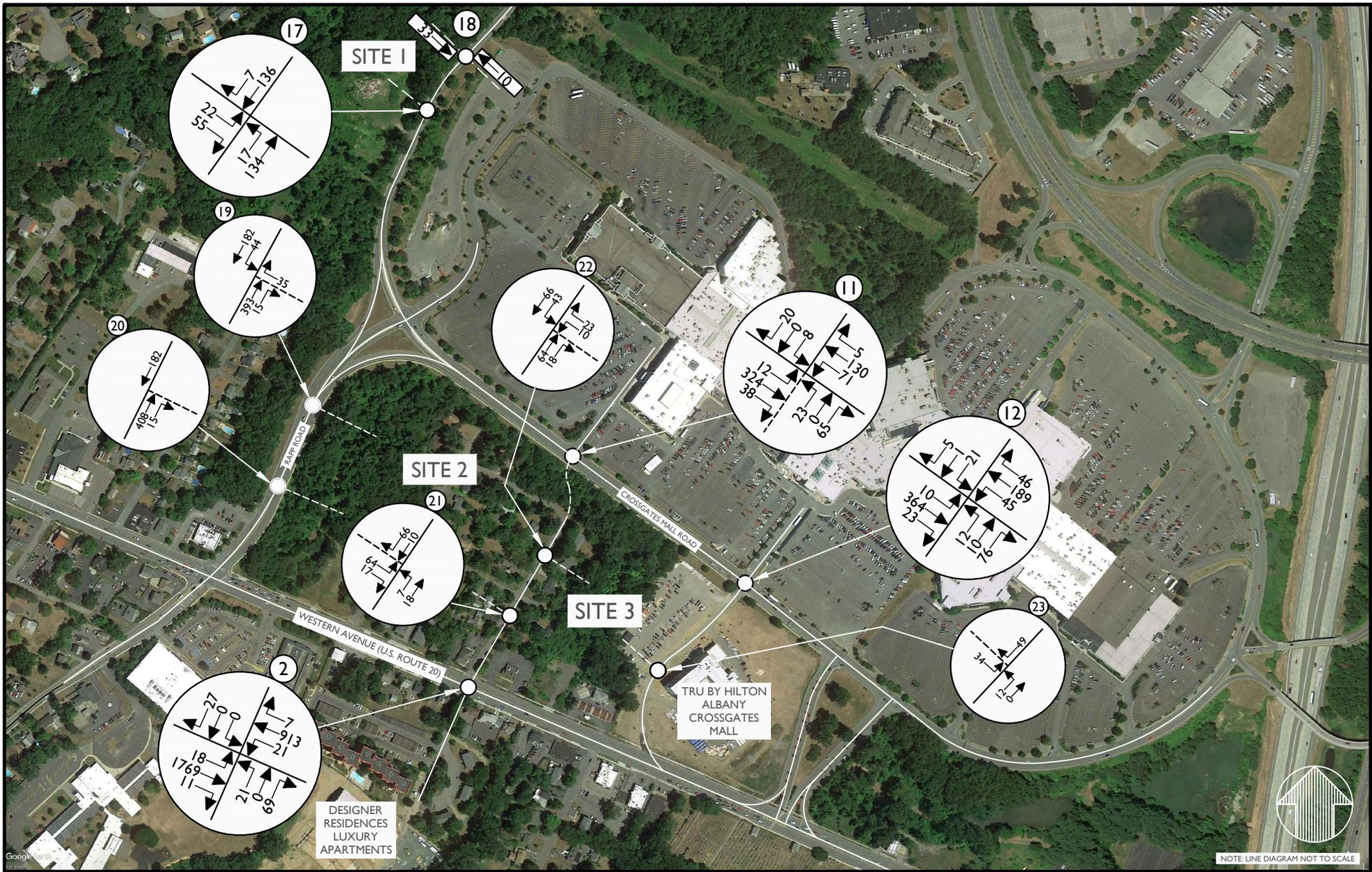


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FIGURE NO. 38			



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**RAPP ROAD RESIDENTIAL
COSTCO
WESTERN AVENUE
MIXED-USE DEVELOPMENT**

TOWN OF GUILDERLAND
ALBANY COUNTY
NEW YORK

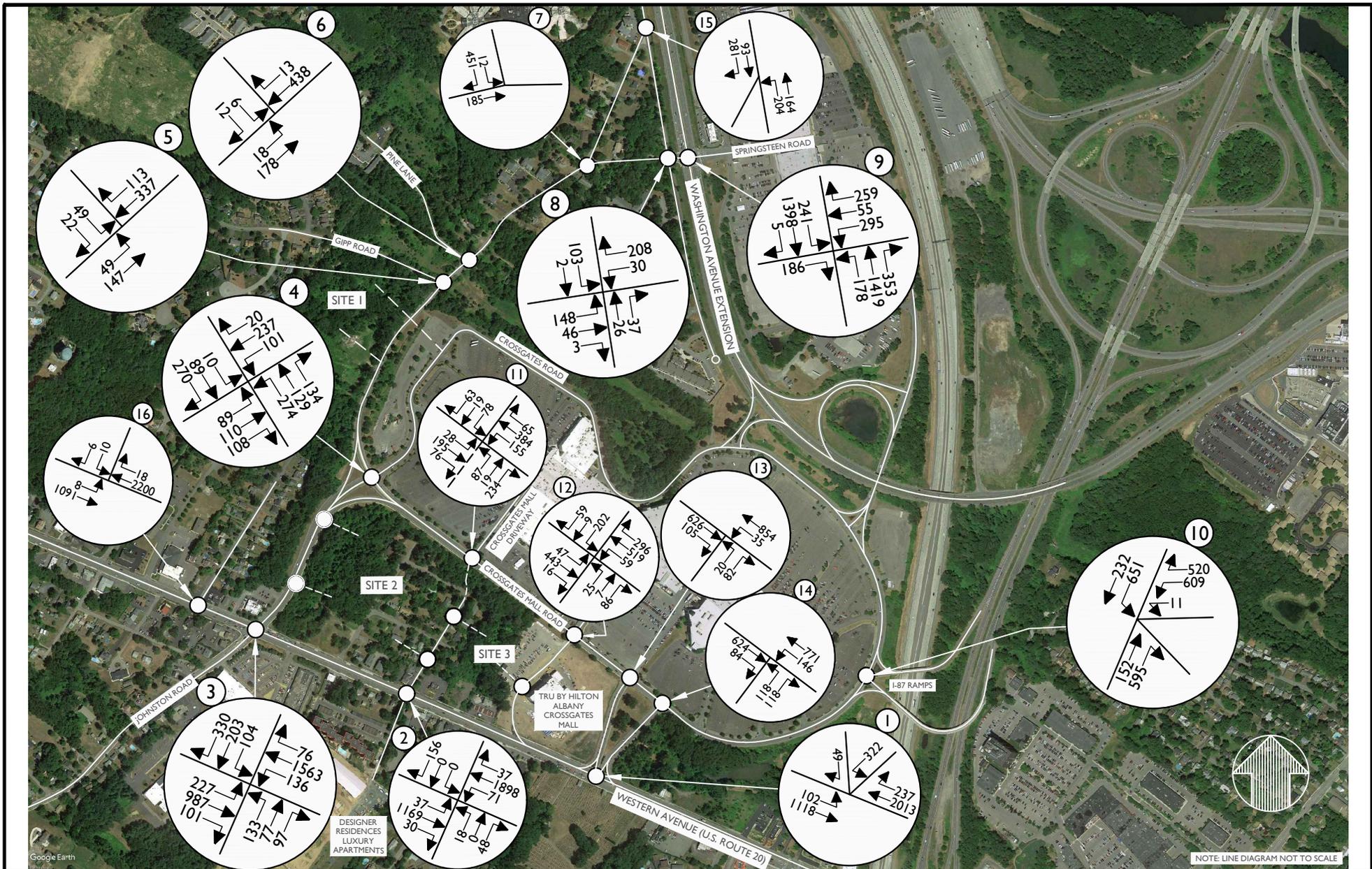
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N.T.S.	02/17/20	N.S.T.	R.P.R.
PROJECT NUMBER	DRAWING NAME		
19002502A	191021JFM FIGURES - PHASE 2 - 02.17.2020		
SHEET TITLE:			
2025 BUILD TRAFFIC VOLUMES WEEKDAY PEAK AM HOUR			
SHEET NUMBER:			
FIGURE NO. 38-A			



NOTE: LINE DIAGRAM NOT TO SCALE



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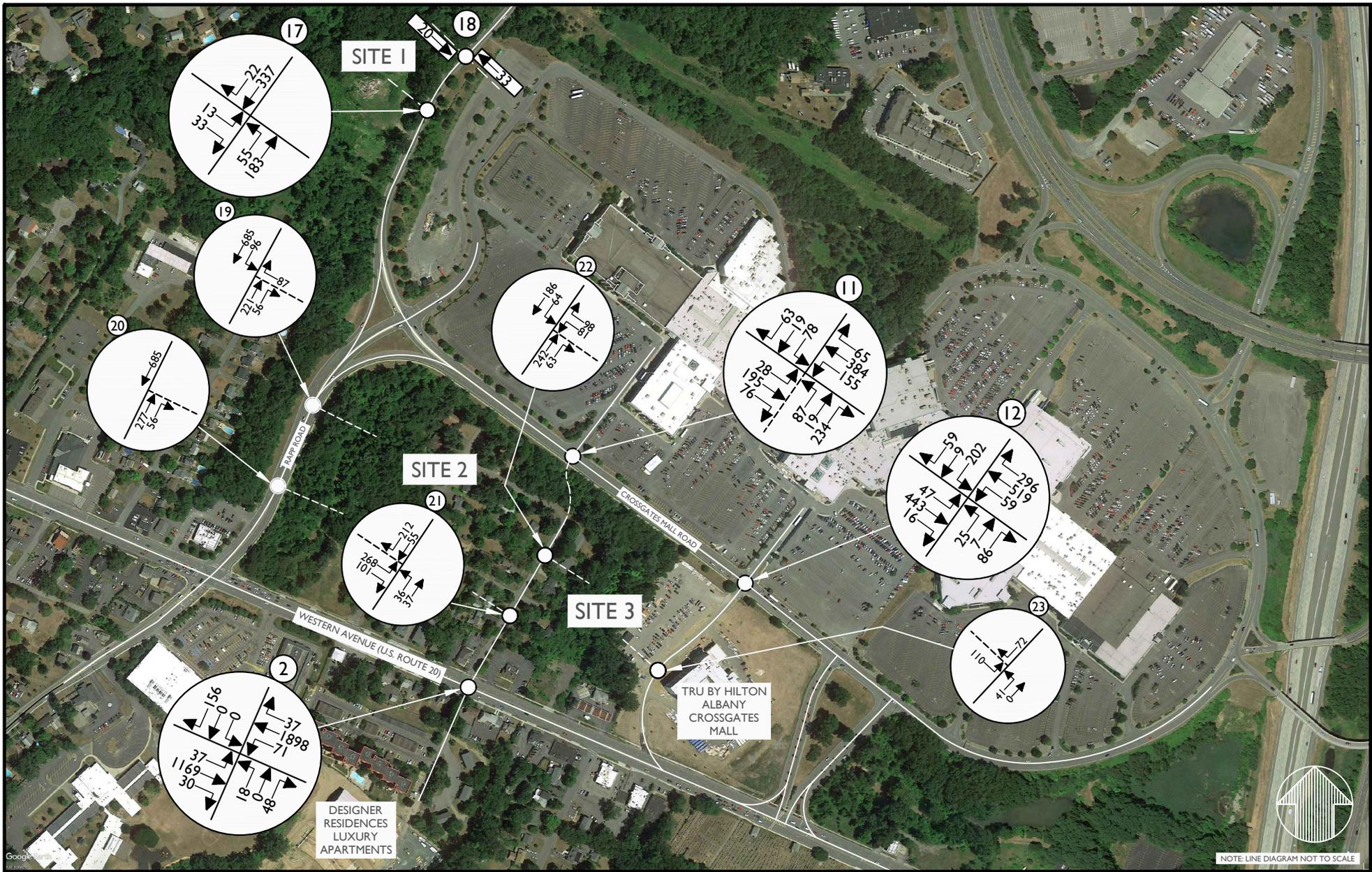


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PROJECT NUMBER 19002502A	DRAWING NAME 191021JFM FIGURES - PHASE 2 - 02.17.2020		
SHEET TITLE: 2025 BUILD TRAFFIC VOLUMES WEEKDAY PEAK PM HOUR			
SHEET NUMBER: FIGURE NO. 39			



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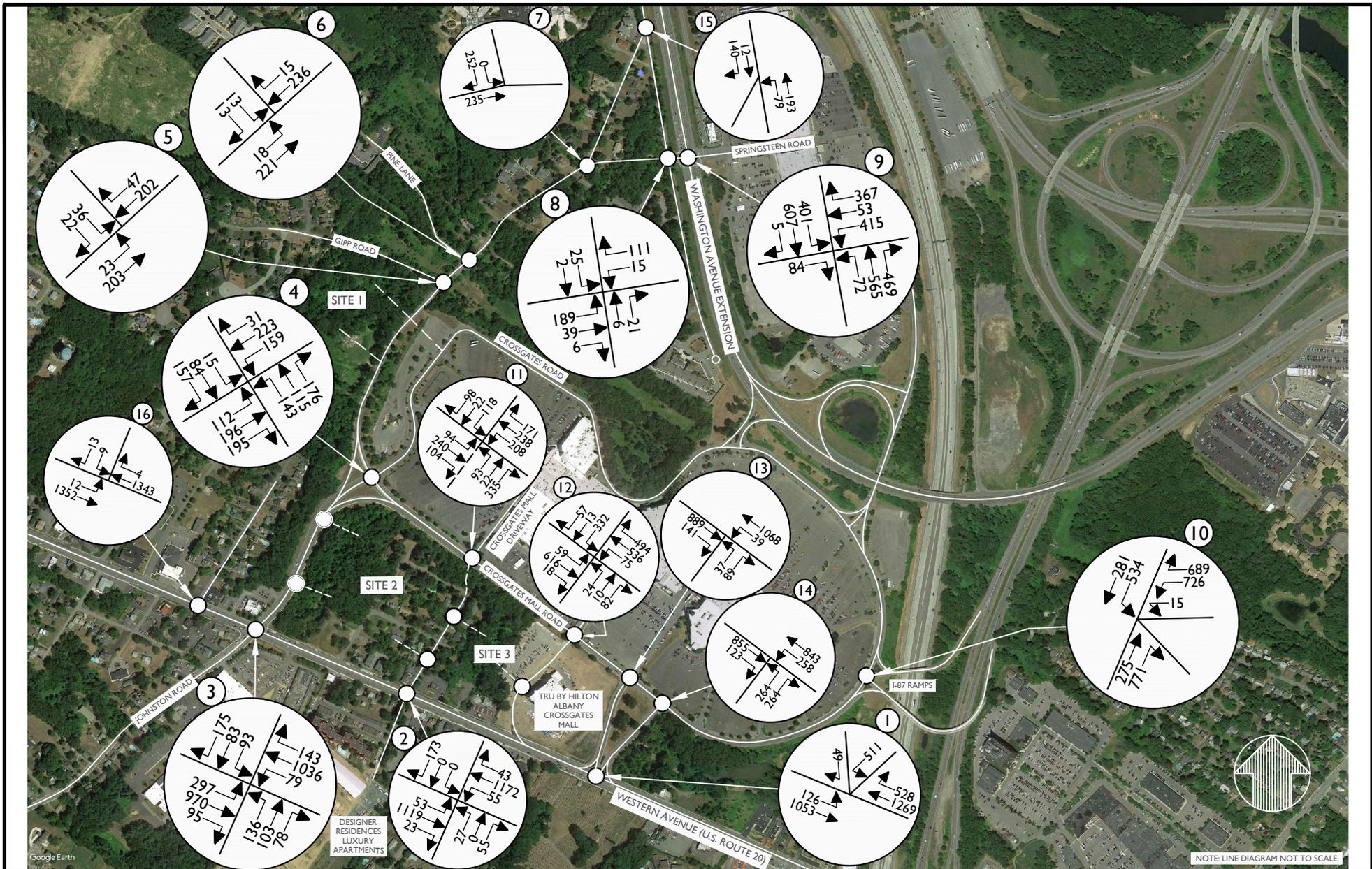
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PROJECT NUMBER	DRAWING NAME		
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SHEET TITLE:			
2025 BUILD TRAFFIC VOLUMES WEEKDAY PEAK PM HOUR			
SHEET NUMBER:			
FIGURE NO. 39-A			



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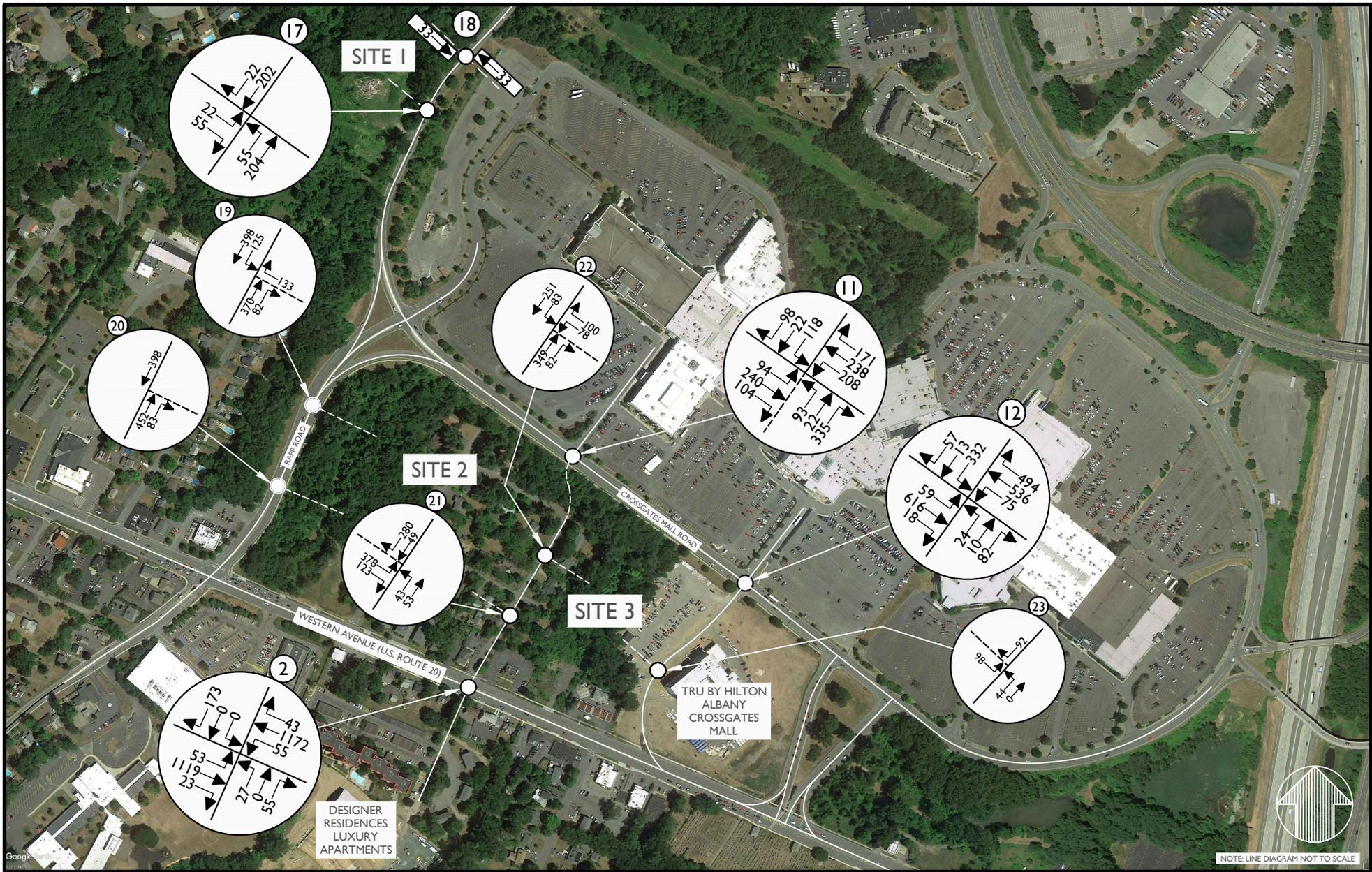
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SHEET TITLE:			
2025 BUILD TRAFFIC VOLUMES SATURDAY PEAK HOUR			
SHEET NUMBER:			
FIGURE NO. 40			



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PROJECT NUMBER	DRAWING NAME		
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SHEET TITLE:			
2025 BUILD TRAFFIC VOLUMES SATURDAY PEAK HOUR			
SHEET NUMBER:			
FIGURE NO. 40-A			



Traffic Impact Study
Rapp Road Residential / Costco
Western Avenue Mixed-Use Development
MC Project No.: 19002502A
Appendix

***RAPP ROAD RESIDENTIAL
COSTCO
WESTERN AVENUE MIXED-USE DEVELOPMENT***

APPENDIX B

TABLES

TABLE NO. 1
HOURLY TRIP GENERATION RATES
AND ANTICIPATED SITE GENERATED TRAFFIC VOLUMES

SITE 1 RAPP ROAD RESIDENTIAL	ENTRY		EXIT		TOTAL	
	HTGR*	VOLUME	HTGR*	VOLUME	HTGR*	VOLUME
222 APARTMENT UNITS						
WEEKDAY PEAK AM HOUR	0.11	24	0.35	78	0.46	102
WEEKDAY PEAK PM HOUR	0.35	78	0.21	46	0.56	124
SATURDAY PEAK HOUR	0.35	78	0.35	78	0.70	156

THE ABOVE HOURLY TRIP GENERATION RATES (HTGR) ARE BASED ON DATA PUBLISHED BY THE
INSTITUTE OF TRANSPORTATION ENGINEERS (ITE) AS CONTAINED IN THE TRIP GENERATION HANDBOOK, 10th EDITION, 2017.
* ITE LAND USE 220 - MULTIFAMILY HOUSING (LOW-RISE)

TABLE NO. 2

HOURLY TRIP GENERATION RATES
AND ANTICIPATED SITE GENERATED TRAFFIC VOLUMES

SITE 2 COSTCO	ENTRY		EXIT		TOTAL	
	HTGR*	VOLUME	HTGR*	VOLUME	HTGR*	VOLUME
160,000 S.F.						
WEEKDAY PEAK AM HOUR	0.34	54	0.15	24	0.49	78
WEEKDAY PEAK PM HOUR	2.09	334	2.09	334	4.18	668
SATURDAY PEAK HOUR	3.12	499	3.25	520	6.37	1019
W/ 10% INTERPLAY W/ MALL						
WEEKDAY PEAK AM HOUR	----	----	----	----	----	----
WEEKDAY PEAK PM HOUR	----	-33	----	-33	----	-66
SATURDAY PEAK HOUR	----	-51	----	-51	----	-102
W/ 25 % PASS-BY						
WEEKDAY PEAK AM HOUR	----	----	----	----	----	----
WEEKDAY PEAK PM HOUR	----	-83	----	-83	----	-166
SATURDAY PEAK HOUR	----	-127	----	-127	----	-254
18 FUEING STATIONS						
WEEKDAY PEAK AM HOUR	5.14	92	5.14	92	10.28	184
WEEKDAY PEAK PM HOUR	7.015	126	7.015	126	14.03	252
SATURDAY PEAK HOUR	6.385	115	6.385	115	12.77	230
W/ 10% INTERPLAY W/ MALL						
WEEKDAY PEAK AM HOUR	----	----	----	----	----	----
WEEKDAY PEAK PM HOUR	----	-13	----	-13	----	-26
SATURDAY PEAK HOUR	----	-11	----	-11	----	-22
W/ 25% INTERPLAY W/ COSTCO						
WEEKDAY PEAK AM HOUR	----	----	----	----	----	----
WEEKDAY PEAK PM HOUR	----	-31	----	-31	----	-62
SATURDAY PEAK HOUR	----	-29	----	-29	----	-58
W/ 25 % PASS-BY						
WEEKDAY PEAK AM HOUR	----	----	----	----	----	----
WEEKDAY PEAK PM HOUR	----	-31	----	-31	----	-62
SATURDAY PEAK HOUR	----	-29	----	-29	----	-58
"NEW" TRIPS						
WEEKDAY PEAK AM HOUR	----	146	----	116	----	262
WEEKDAY PEAK PM HOUR	----	269	----	269	----	538
SATURDAY PEAK HOUR	----	367	----	388	----	755

THE ABOVE HOURLY TRIP GENERATION RATES (HTGR) ARE BASED ON DATA PUBLISHED BY THE INSTITUTE OF TRANSPORTATION ENGINEERS (ITE) AS CONTAINED IN THE TRIP GENERATION HANDBOOK, 10th EDITION, 2017.
* ITE LAND USE 857 - DISCOUNT CLUB & ITE LAND USE 944 - GASOLINE/SERVICE STATION

TABLE NO. 3

LEVEL OF SERVICE SUMMARY TABLE

	LOCATION	YEAR 2019 EXISTING									YEAR 2022 NO-BUILD									YEAR 2022 BUILD								
		WEEKDAY AM			WEEKDAY PM			SATURDAY			WEEKDAY AM			WEEKDAY PM			SATURDAY			WEEKDAY AM			WEEKDAY PM			SATURDAY		
		LOS	DELAY	V/C	LOS	DELAY	V/C	LOS	DELAY	V/C	LOS	DELAY	V/C	LOS	DELAY	V/C	LOS	DELAY	V/C	LOS	DELAY	V/C	LOS	DELAY	V/C	LOS	DELAY	V/C
1	WESTERN AVENUE (U.S. ROUTE 20) & CROSSGATES MALL DRIVEWAY <u>SIGNALIZED (COUPLET)</u> WESTERN AVENUE (U.S. ROUTE 20) EB T / T EB APPROACH WESTERN AVENUE (U.S. ROUTE 20) WB T / T WB T-R WB APPROACH CROSSGATES MALL DRIVEWAY SB L / L SB R SB APPROACH OVERALL INTERSECTION	A	8.5	0.64	A	6.5	0.47	A	6.3	0.44	A	9.0	0.67	A	6.7	0.48	A	6.5	0.47	A	9.0	0.67	A	6.6	0.47	A	6.4	0.45
		A	8.5	----	A	6.5	----	A	6.3	----	A	9.0	----	A	6.7	----	A	6.5	----	A	9.0	----	A	6.6	----	A	6.4	----
		A	5.1	0.30	A	7.5	0.61	A	6.3	0.50	A	5.1	0.31	A	7.8	0.64	A	6.5	0.52	A	5.2	0.32	A	7.9	0.64	A	6.6	0.53
		A	5.2	0.30	A	8.1	0.62	A	6.5	0.50	A	5.2	0.31	A	8.5	0.65	A	6.8	0.53	A	5.2	0.32	A	8.7	0.66	A	6.9	0.54
		A	5.1	----	A	7.7	----	A	6.4	----	A	5.2	----	A	8.0	----	A	6.6	----	A	5.2	----	A	8.1	----	A	6.7	----
		C	34.5	0.09	D	38.4	0.41	D	43.2	0.68	C	34.5	0.09	D	38.5	0.42	D	43.5	0.69	C	34.7	0.11	D	40.2	0.52	D	49.3	0.85
		C	34.6	0.07	D	36.3	0.19	D	36.1	0.19	C	34.6	0.07	D	36.4	0.20	D	36.1	0.20	C	34.6	0.07	D	36.4	0.20	D	35.9	0.20
		C	34.5	----	D	38.0	----	D	42.4	----	C	34.5	----	D	38.1	----	D	42.7	----	C	34.7	----	D	39.6	----	D	48.0	----
		A	7.9	----	A	9.7	----	B	11.2	----	A	8.2	----	A	9.9	----	B	11.3	----	A	8.3	----	B	10.5	----	B	13.0	----
2	WESTERN AVENUE (U.S. ROUTE 20) & GABRIEL TERRACE / 1700 DESIGNER RESIDENCES <u>UNSIGNALIZED</u> WESTERN AVENUE (U.S. ROUTE 20) EB L WESTERN AVENUE (U.S. ROUTE 20) WB L 1700 DESIGNER RESIDENCES NB L-T-R GABRIEL TERRACE SB L-T-R	B	12.2	0.004	C	17.5	0.004	B	11.3	0.004	B	12.3	0.004	C	17.8	0.004	B	11.4	0.004	A	0.00	0.000	A	0.0	0.000	A	0.0	0.000
		C	18.1	0.022	B	11.7	0.044	B	11.3	0.014	C	19.4	0.081	B	12.7	0.138	B	12.1	0.103	C	19.5	0.082	B	12.5	0.135	B	11.8	0.099
		D	28.8	0.138	F	127.9	0.502	F	59.9	0.195	F	473.1	1.644	F	732.1	2.034	F	205.4	1.053	F	518.8	1.735	F	1413.5	3.293	F	320.9	1.308
		A	0.0	0.000	F	191.8	0.286	F	65.3	0.110	A	0.000	0.000	F	306.8	0.414	F	100.1	0.164	B	11.8	0.033	D	31.2	0.444	C	17.0	0.302
3	WESTERN AVENUE (U.S. ROUTE 20) & JOHNSTON ROAD / RAPP ROAD <u>SIGNALIZED</u> WESTERN AVENUE (U.S. ROUTE 20) EB L EB T EB T-R EB APPROACH WESTERN AVENUE (U.S. ROUTE 20) WB L WB T WB T-R WB APPROACH JOHNSTON ROAD NEB L NEB T-R NEB R RAPP ROAD NEB APPROACH SWB L SWB T SWB R SWB APPROACH OVERALL INTERSECTION	C	25.6	0.37	E	55.5	0.83	C	22.5	0.49	C	26.9	0.39	E	57.8	0.84	C	23.2	0.51	C	28.5	0.44	E	66.0	0.90	C	30.3	0.85
		C	22.9	0.81	D	35.9	0.80	B	15.5	0.67	C	23.8	0.82	D	36.8	0.81	B	15.5	0.68	C	24.0	0.82	D	44.3	0.83	B	19.8	0.71
		C	23.4	0.82	D	35.8	0.80	B	15.5	0.67	C	24.4	0.83	D	36.7	0.81	B	15.5	0.68	C	24.7	0.84	D	44.2	0.83	B	19.7	0.71
		C	23.4	----	D	38.2	----	B	16.5	----	C	24.5	----	D	39.2	----	B	16.6	----	C	25.0	----	D	48.0	----	C	22.1	----
		E	58.8	0.81	D	35.6	0.29	C	20.4	0.23	E	60.4	0.81	D	37.6	0.30	C	20.9	0.24	E	60.7	0.82	D	36.2	0.25	B	19.5	0.18
		D	44.7	0.81	C	29.0	0.83	B	16.5	0.67	D	45.3	0.81	C	31.1	0.84	B	16.6	0.68	D	44.7	0.81	D	42.1	0.90	B	17.7	0.71
		D	44.5	0.81	C	28.9	0.83	B	16.5	0.67	D	45.1	0.81	C	31.1	0.85	B	16.5	0.68	D	44.5	0.81	D	42.8	0.91	B	17.7	0.71
		D	46.3	----	C	29.5	----	B	16.7	----	D	46.9	----	C	31.6	----	B	16.8	----	D	46.4	----	D	42.0	----	B	17.8	----
		D	46.8	0.38	E	56.5	0.82	C	25.7	0.45	D	48.3	0.39	E	58.7	0.83	C	26.6	0.46	D	48.3	0.38	E	72.4	0.85	C	30.8	0.51
		D	47.6	0.66	D	47.8	0.43	C	27.0	0.56	D	49.2	0.67	D	50.0	0.43	C	27.8	0.57	D	49.5	0.68	E	57.7	0.46	C	32.1	0.60
		D	43.5	0.61	C	28.9	0.18	C	22.9	0.31	D	44.8	0.62	C	30.6	0.19	C	23.5	0.32	D	45.0	0.62	C	28.7	0.15	C	21.5	0.20
		D	45.9	----	D	46.2	----	C	25.4	----	D	47.3	----	D	48.3	----	C	26.2	----	D	47.5	----	E	55.9	----	C	28.9	----
		E	55.9	0.40	D	42.7	0.31	C	25.7	0.29	E	57.7	0.42	D	44.2	0.31	C	26.6	0.30	E	58.0	0.48	D	53.9	0.39	C	31.3	0.39
		D	49.1	0.25	D	43.2	0.59	C	26.9	0.49	D	50.6	0.25	D	45.4	0.61	C	27.7	0.50	D	50.9	0.25	E	56.7	0.71	C	32.0	0.51
		B	19.2	0.14	D	49.1	0.84	C	23.9	0.61	C	20.2	0.14	D	52.6	0.86	C	24.6	0.63	C	21.3	0.16	D	50.8	0.78	C	26.9	0.58
		D	35.1	----	D	46.2	----	C	25.1	----	D	36.5	----	D	49.0	----	C	25.9	----	D	37.3	----	D	53.2	----	C	29.3	----
		C	33.0	----	D	36.5	----	B	18.5	----	C	34.0	----	D	38.3	----	B	18.7	----	C	34.3	----	D	46.8	----	C	21.9	----

TABLE NO. 3
LEVEL OF SERVICE SUMMARY TABLE

ID	LOCATION		YEAR 2019 EXISTING									YEAR 2022 NO-BUILD									YEAR 2022 BUILD																	
			WEEKDAY AM			WEEKDAY PM			SATURDAY			WEEKDAY AM			WEEKDAY PM			SATURDAY			WEEKDAY AM			WEEKDAY PM			SATURDAY											
			LOS	DELAY	V/C	LOS	DELAY	V/C	LOS	DELAY	V/C	LOS	DELAY	V/C	LOS	DELAY	V/C	LOS	DELAY	V/C	LOS	DELAY	V/C	LOS	DELAY	V/C	LOS	DELAY	V/C	LOS	DELAY	V/C						
4	RAPP ROAD & CROSSGATES MALL ROAD																																					
	<u>SIGNALIZED</u>																																					
	RAPP ROAD	EB L-T	B	19.4	0.27	B	18.3	0.18	B	19.3	0.27	B	19.4	0.27	B	18.4	0.19	B	19.4	0.28	B	18.5	0.31	C	22.1	0.40	B	17.0	0.43									
		EB R	A	0.0	0.00	A	0.0	0.00	A	0.0	0.00	A	0.0	0.00	A	0.0	0.00	A	0.0	0.00	C	20.7	0.45	B	18.1	0.21	B	14.4	0.28									
	CROSSGATES MALL ROAD	WB L-T	B	19.4	0.27	B	18.3	0.18	B	19.3	0.27	B	19.4	0.27	B	18.4	0.19	B	19.4	0.28	B	19.7	0.31	C	20.6	0.40	B	16.0	0.43									
		WB T-R	B	16.9	0.02	B	18.8	0.22	B	18.9	0.23	B	16.9	0.02	B	18.9	0.22	B	18.9	0.23	B	16.0	0.07	C	23.6	0.40	C	22.8	0.39									
	RAPP ROAD	WB APPROACH	B	16.9	0.02	B	19.0	0.23	B	19.0	0.23	B	16.9	0.02	B	19.1	0.23	B	19.1	0.23	B	15.9	0.06	B	23.6	0.40	C	19.6	0.33	B	14.5	0.29						
		SEB L-T	B	16.9	0.02	B	18.9	0.22	B	19.0	0.23	B	16.9	0.02	B	19.0	0.23	B	19.0	0.23	B	15.9	0.06	C	21.5	0.40	B	18.2	0.43									
	CROSSGATES MALL ROAD	SEB R	C	21.1	0.10	C	21.5	0.13	C	21.1	0.10	C	21.1	0.10	C	21.5	0.14	C	21.1	0.10	B	18.5	0.12	C	21.8	0.17	C	22.4	0.15									
		NWB L	C	0.0	0.00	A	0.0	0.00	A	0.0	0.00	A	0.0	0.00	A	0.0	0.00	A	0.0	0.00	B	19.4	0.20	C	32.2	0.67	C	25.6	0.37									
	CROSSGATES MALL ROAD	NWB T-R	C	21.1	0.10	C	21.5	0.13	C	21.1	0.10	C	21.1	0.10	C	21.5	0.14	C	21.1	0.10	B	19.0	0.12	C	29.8	0.67	C	24.6	0.37									
		NWB APPROACH	A	10.1	0.13	B	12.2	0.35	B	10.4	0.17	B	10.1	0.13	B	12.3	0.36	B	10.4	0.17	B	11.9	0.14	B	14.3	0.46	B	16.1	0.27									
	OVERALL INTERSECTION		A	8.6	0.07	A	9.3	0.16	A	9.4	0.18	A	8.6	0.07	A	9.3	0.16	A	9.5	0.18	A	9.7	0.08	B	10.4	0.23	B	15.3	0.31									
			A	9.5	0.07	B	11.3	0.35	A	9.9	0.18	A	9.5	0.07	B	11.3	0.35	A	9.9	0.18	B	10.9	0.23	B	12.7	0.46	B	15.6	0.31									
5	RAPP ROAD & GIPP ROAD																																					
	<u>UNSIGNALIZED</u>																																					
	RAPP ROAD	NEB L-T	A	7.4	0.005	A	8.3	0.049	A	7.6	0.018	A	7.4	0.005	A	8.4	0.050	A	7.7	0.018	A	7.5	0.006	A	8.5	0.052	A	7.8	0.019									
GIPP ROAD	EB L-R	B	10.6	0.195	B	13.6	0.160	B	10.7	0.092	B	10.6	0.198	B	13.8	0.165	B	10.7	0.095	B	11.0	0.211	C	15.1	0.184	B	11.7	0.108										
6	RAPP ROAD & PINE LANE																																					
	<u>UNSIGNALIZED</u>																																					
	RAPP ROAD	NEB L-T	A	8.5	0.256	A	8.6	0.195	A	8.1	0.190	A	8.5	0.261	A	8.6	0.198	A	8.1	0.192	A	8.8	0.296	A	9.1	0.253	A	8.7	0.261									
	RAPP ROAD	SWB T-R	A	7.7	0.096	A	8.3	0.030	A	7.9	0.035	A	7.7	0.097	B	11.2	0.506	A	8.1	0.202	A	7.9	0.123	B	12.3	0.568	A	8.6	0.268									
	PINE LANE	EB L-R	A	7.6	0.049	B	11.0	0.498	A	8.1	0.200	A	7.6	0.050	A	8.3	0.030	A	7.9	0.035	A	7.7	0.051	A	8.5	0.031	A	8.1	0.037									
OVERALL INTERSECTION		A	8.2	0.049	B	10.3	0.498	A	8.1	0.200	A	8.2	0.050	B	10.4	0.506	A	8.1	0.202	B	11.3	0.568	A	8.6	0.268													
7	RAPP ROAD & SPRINGSTEEN ROAD																																					
	<u>UNSIGNALIZED</u>																																					
RAPP ROAD	SB L-R	A	8.8	0.08	B	10.8	0.426	A	9.0	0.166	A	8.8	0.084	B	10.9	0.433	A	9.0	0.169	A	8.9	0.104	B	11.4	0.479	A	9.2	0.220										
8	SPRINGSTEEN ROAD & S. FRONTAGE ROAD																																					
	<u>UNSIGNALIZED</u>																																					
	SPRINGSTEEN ROAD	EB L	A	9.3	0.201	A	9.4	0.150	A	9.0	0.174	A	9.4	0.204	A	9.4	0.151	A	9.1	0.177	A	8.8	0.249	A	9.9	0.213	A	9.8	0.261									
	SPRINGSTEEN ROAD	EB T-R	A	8.3	0.155	A	8.2	0.074	A	7.6	0.062	A	8.3	0.156	A	8.3	0.076	A	7.6	0.063	A	8.3	0.156	A	8.3	0.076	A	7.6	0.063									
	SPRINGSTEEN ROAD	WB L-R	A	8.4	0.224	A	8.8	0.289	A	7.5	0.142	A	8.4	0.229	A	8.9	0.293	A	7.5	0.144	A	8.5	0.231	A	9.0	0.298	A	7.6	0.147									
	S. FRONTAGE ROAD	NB T-R	A	7.9	0.048	A	8.1	0.085	A	7.3	0.032	A	8.0	0.048	A	8.1	0.087	A	7.3	0.032	A	8.0	0.049	A	8.2	0.089	A	7.5	0.034									
	S. FRONTAGE ROAD	SB L-T	A	8.4	0.033	A	9.1	0.157	A	8.0	0.037	A	8.4	0.034	A	9.1	0.161	A	8.0	0.037	A	8.5	0.034	A	9.3	0.164	A	8.2	0.039									
	OVERALL INTERSECTION		A	8.6	0.033	A	8.8	0.157	A	8.0	0.037	A	8.6	0.034	A	8.9	0.161	A	8.1	0.037	A	8.8	0.164	A	9.1	0.164	A	8.6	0.039									
	9	WASHINGTON AVENUE EXTENSION & SPRINGSTEEN ROAD / CROSSGATES COMMONS																																				
<u>SIGNALIZED</u>																																						
SPRINGSTEEN ROAD		EB R	C	29.3	0.44	D	37.1	0.48	D	39.9	0.40	C	29.9	0.44	D	38.1	0.49	D	40.4	0.40	C	30.1	0.44	D	38.5	0.49	D	40.4	0.40									
CROSSGATES COMMONS		EB APPROACH	C	29.3	0.44	D	37.1	0.48	D	39.9	0.40	C	29.9	0.44	D	38.1	0.49	D	40.4	0.40	C	30.1	0.44	D	38.5	0.49	D	40.4	0.40									
		WB L / L	D	39.4	0.61	D	50.3	0.81	D	41.8	0.82	D	40.3	0.62	D	51.8	0.81	D	42.6	0.62	D	40.5	0.62	D	52.4	0.81	D	42.7	0.82									
WASHINGTON AVE. EXT.		WB T-R	C	27.7	0.47	D	36.4	0.69	D	37.4	0.92	C	28.5	0.49	D	37.6	0.70	D	37.9	0.92	C	28.7	0.49	D	38.0	0.70	D	40.0	0.92									
		WB APPROACH	C	32.3	0.47	D	43.1	0.69	D	39.6	0.40	C	33.2	0.49	D	44.5	0.69	D	40.3	0.49	C	33.4	0.49	D	45.0	0.69	D	48.0	0.92									
WASHINGTON AVE. EXT.		NB L	D	39.7	0.79	E	58.2	0.86	D	50.8	0.77	D	40.5	0.80	E	61.7	0.86	D	51.6	0.77	D	40.8	0.80	E	62.8	0.86	D	51.6	0.77									
		NB T / T / T	B	15.8	0.52	C	29.2	0.69	C	24.0	0.31	B	16.1	0.52	C	29.0	0.70	C	24.2	0.31	B	16.1	0.52	C	29.2	0.70	C	24.3	0.32									
WASHINGTON AVE. EXT.		NB APPROACH	B	13.3	0.21	C	27.0	0.57	D	36.2	0.87	B	13.5	0.21	C	27.6	0.58	D	36.7	0.87	B	13.5	0.21	C	27.6	0.58	D	36.7	0.87	D	38.6	0.87						
		SB L	B	17.8	0.41	C	30.7	0.69	C	31.1	0.69	B	18.1	0.41	C	31.8	0.69	C	31.5	0.69	B	18.1	0.41	C	32.0	0.69	C	31.4	0.69									
OVERALL INTERSECTION		SB T / T	D	39.8	0.80	E	69.1	0.90	F	111.1	1.09	D	40.6	0.80	E	72.8	0.90	F	125.2	1.12	D	40.9	0.80	E	73.9	0.90	F	126.0	1.13									
		SB R	C	21.6	0.85	C	34.6	0.90	B	15.2	0.33	C	22.2	0.85	D	36.2	0.90	B	15.6	0.33	C	22.3	0.85	D	36.9	0.91	B	15.7	0.35									
		SB APPROACH	B	11.9	0.01	B	17.5	0.01	B	12.7	0.01	B	12.0	0.01	B	17.9	0.01	B	13.0	0.01	B	12.0	0.01	B	17.9	0.01	B	13.0	0.01									
		OVERALL INTERSECTION	C	23.2	0.85	D	39.7	0.90	D	54.2	0.90	C	23.8	0.85	D	41.6	0.90	E	60.2	0.90	C	23.9	0.85	D	42.3	0.90	E	59.7	0.90									
10		CROSSGATES MALL ROAD & I-87 ON/OFF RAMP																																				
		<u>SIGNALIZED</u>																																				
	I-87 OFF RAMP	WB L	A	7.4	0.22	C	22.8	0.68	C	23.3	0.63	A	7.4	0.22	C	23.6	0.69	C	24.1	0.64	A	7.8	0.31	C	32.4	0.85	D	35.6	0.86									
		WB L-R	B	11.7	0.79	D	35.8	0.89	D	49.7	0.96	B	11.8	0.79	D	38.2	0.90	D	54.0	0.97	B	11.6	0.79	D	41.9	0.92	D	54.0	0.97									
	CROSSGATES MALL ROAD	WB APPROACH	B	10.7	0.41	C	29.9	0.81	D	38.7	0.81	B	10.8	0.41	C	31.6	0.81	D	41.6	0.81	B	10.5	0.41	D	37.2	0.81	D	45.0	0.81									
		NB T	B	16.0	0.37	D	36.0	0.71	E	59.1	0.88	B	16.3	0.38	D	37.1	0.72	E	61.7	0.88	B	16.5	0.39	D	38.4	0.73	E	61.7	0.88									
	CROSSGATES MALL ROAD	NB R	A	0.0	0.00	A	0.0	0.00	A	0.0	0.00	A	0.0	0.00	A	0.0	0.00	A	0.0	0.00	A	0.0	0.00	A	0.0	0.00	A	0.0	0.00									
		NB APPROACH	B	16.0	0.37	D	36.0	0.71	E	59.1	0.88	B	16.3	0.38	D	37.1	0.72	E	61.7	0.88	B	16.5	0.39	D	38.4	0.73	E	61.7	0.88									
	OVERALL INTERSECTION	SB L	B	11.1	0.32	C	24.6	0.87	D	47.7	0.95	B	11.2	0.32	C	26.4	0.88	D	52.1	0.96	B	11.4	0.33	C	28.3	0.89	D	52.1	0.96									
		SB T	A	8.5	0.10	B	10.2	0.26	B	16.2	0.33	A	8.6	0.10	B	10.4	0.26	B	16.5	0.33	A	8.8																

TABLE NO. 3
LEVEL OF SERVICE SUMMARY TABLE

ID	LOCATION	YEAR 2019 EXISTING									YEAR 2022 NO-BUILD									YEAR 2022 BUILD														
		WEEKDAY AM			WEEKDAY PM			SATURDAY			WEEKDAY AM			WEEKDAY PM			SATURDAY			WEEKDAY AM			WEEKDAY PM			SATURDAY								
		LOS	DELAY	V/C	LOS	DELAY	V/C	LOS	DELAY	V/C	LOS	DELAY	V/C	LOS	DELAY	V/C	LOS	DELAY	V/C	LOS	DELAY	V/C	LOS	DELAY	V/C	LOS	DELAY	V/C						
11	CROSSGATES MALL ROAD & MALL DRIVEWAY #1																																	
	<u>UN SIGNALIZED</u>																																	
	CROSSGATES MALL ROAD SEB L-T	A	7.5	0.008	A	8.3	0.026	A	8.4	0.085	A	7.5	0.008	A	8.3	0.026	A	8.4	0.086	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	MALL DRIVEWAY #1 SWB L-R	B	10.7	0.043	C	15.5	0.306	C	21.0	0.508	B	10.8	0.043	C	15.7	0.313	C	21.8	0.524	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	<u>W/ GABRIEL TERRACE CONNECTOR ROAD</u>																																	
	CROSSGATES MALL ROAD SEB L	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	A	7.5	0.009	A	8.3	0.027	A	8.4	0.087	---	---	---	---	---	---
	CROSSGATES MALL ROAD NWB L	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	A	8.1	0.052	A	8.0	0.115	A	8.4	0.162	---	---	---	---	---	---
	GABRIEL TERRACE CONNECTOR ROAD NEB L-T-R	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	B	11.2	0.106	C	22.7	0.571	F	110.8	1.093	---	---	---	---	---	---
	MALL DRIVEWAY #1 SWB L-T-R	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	B	12.1	0.055	F	170.4	1.120	F	1176.0	3.349	---	---	---	---	---	---
	<u>W/ SIGNALIZATION</u>																																	
	CROSSGATES MALL ROAD SEB L	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	A	6.3	0.020	A	9.8	0.080	B	12.3	0.270	---	---	---	---	---	---
SEB T-R	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	A	8.9	0.600	B	11.8	0.450	B	16.4	0.620	---	---	---	---	---	---	
<u>SEB APPROACH</u>																																		
CROSSGATES MALL ROAD NWB L	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	A	8.8	---	B	---	---	B	15.3	---	---	---	---	---	---	---	
NWB T-R	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	A	6.2	0.120	A	8.7	0.280	B	11.2	0.420	---	---	---	---	---	---	
<u>NWB APPROACH</u>																																		
CROSSGATES MALL ROAD NWB T-R	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	A	6.4	0.220	B	12.6	0.740	B	16.7	0.780	---	---	---	---	---	---	
<u>NWB APPROACH</u>																																		
GABRIEL TERRACE CONNECTOR ROAD NEB L-T-R	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	A	6.3	---	B	11.7	---	B	14.9	---	---	---	---	---	---	---	
<u>NEB APPROACH</u>																																		
MALL DRIVEWAY #1 SWB L	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	B	12.1	---	B	14.2	---	B	15.7	---	---	---	---	---	---	---	
SWB T-R	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	B	11.5	0.100	B	12.7	0.330	B	14.2	0.500	---	---	---	---	---	---	
<u>SWB APPROACH</u>																																		
MALL DRIVEWAY #1 SWB L-T-R	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	B	11.5	---	B	12.7	---	B	14.2	---	---	---	---	---	---	---	
<u>OVERALL INTERSECTION</u>																																		
A	8.5	---	B	12.3	---	B	15.0	---																										
12	CROSSGATES MALL ROAD & HOTEL CONNECTOR ROAD / MALL DRIVEWAY #2																																	
	<u>SIGNALIZED</u>																																	
	CROSSGATES MALL ROAD SEB L-T	A	8.3	0.18	A	8.2	0.17	B	11.2	0.35	A	8.3	0.18	A	8.3	0.18	B	11.5	0.37	A	8.6	0.23	A	9.2	0.31	B	15.6	0.64	---	---	---			
	SEB T-R	A	8.4	0.20	A	8.3	0.17	A	9.0	0.27	A	8.5	0.20	A	8.3	0.18	A	9.1	0.28	A	8.9	0.26	A	9.4	0.32	B	11.5	0.49	---	---	---			
	<u>SEB APPROACH</u>																																	
	CROSSGATES MALL ROAD NWB L-T	A	8.3	---	A	8.2	---	B	10.0	---	A	8.4	---	A	8.3	---	B	10.2	---	A	8.8	---	A	9.3	---	B	13.4	---	---	---	---			
	NWB T-R	A	7.8	0.11	B	10.5	0.43	B	10.4	0.42	A	7.8	0.11	B	10.6	0.44	B	10.4	0.42	A	8.1	0.15	B	11.9	0.54	B	14.2	0.66	---	---	---			
	<u>NWB APPROACH</u>																																	
	CROSSGATES MALL ROAD NWB L	A	8.0	0.13	B	12.2	0.51	C	28.9	0.88	A	8.0	0.13	B	12.3	0.51	C	30.4	0.90	A	8.4	0.18	B	14.0	0.60	C	30.4	0.90	---	---	---			
	NWB T-R	A	7.9	---	B	11.3	---	C	21.4	---	A	7.9	---	B	11.4	---	C	22.3	---	A	8.2	---	B	12.9	---	C	22.1	---	---	---	---			
	<u>NWB APPROACH</u>																																	
HOTEL CONNECTOR ROAD NEB L-T-R	A	9.3	0.19	A	7.3	0.01	A	7.3	0.03	A	9.4	0.20	A	7.3	0.01	A	7.3	0.03	A	9.4	0.20	A	7.3	0.01	A	7.3	0.03	---	---	---				
NEB T-R	A	9.3	---	A	7.3	---	A	7.3	---	A	9.4	---	A	7.3	---	A	7.3	---	A	9.4	---	A	7.3	---	A	7.3	---	---	---	---				
<u>NEB APPROACH</u>																																		
MALL DRIVEWAY #2 SWB L	A	7.4	0.03	A	9.3	0.27	B	11.5	0.46	A	7.4	0.03	A	9.3	0.27	B	11.6	0.47	A	7.4	0.03	A	9.3	0.27	B	11.6	0.47	---	---	---				
SWB T-R	A	7.3	0.01	A	7.7	0.08	A	7.7	0.08	A	7.3	0.01	A	7.7	0.08	A	7.7	0.08	A	7.3	0.01	A	7.8	0.10	A	7.8	0.10	---	---	---				
<u>SWB APPROACH</u>																																		
MALL DRIVEWAY #2 SWB L-T-R	A	7.3	---	A	8.9	---	B	11.1	---	A	7.3	---	A	9.0	---	B	11.1	---	A	7.3	---	A	8.9	---	B	11.0	---	---	---	---				
<u>OVERALL INTERSECTION</u>																																		
A	8.3	---	B	10.1	---	B	16.3	---	A	8.3	---	B	10.2	---	B	16.8	---	A	8.6	---	B	11.1	---	B	17.2	---								
13/14	CROSSGATES MALL ROAD & CROSSGATES MALL MAIN DRIVEWAY																																	
	<u>SIGNALIZED</u>																																	
	CROSSGATES MALL ROAD SEB T	A	7.9	0.16	A	8.0	0.20	B	17.1	0.38	B	12.0	0.19	A	8.2	0.20	B	17.5	0.39	B	12.5	0.24	A	9.0	0.30	C	20.4	0.57	---	---	---			
	SEB T-R	A	7.9	0.16	A	8.1	0.20	B	17.2	0.38	B	12.0	0.19	A	8.2	0.21	B	17.6	0.39	B	12.5	0.24	A	9.0	0.30	C	20.5	0.57	---	---	---			
	<u>SEB APPROACH</u>																																	
	CROSSGATES MALL ROAD NWB L	A	7.9	---	A	8.0	---	B	17.1	---	B	12.0	---	A	8.2	---	B	17.5	---	B	12.5	---	A	9.0	---	C	20.4	---	---	---	---			
	NWB T	A	6.1	0.01	A	5.1	0.25	B	11.0	0.55	A	8.7	0.08	A	5.2	0.26	B	11.2	0.56	A	8.9	0.09	A	5.6	0.31	B	15.2	0.71	---	---	---			
	NWB T	A	5.6	0.14	A	5.2	0.39	A	9.6	0.44	A	7.9	0.13	A	5.3	0.39	A	9.8	0.45	A	8.3	0.20	A	6.1	0.50	B	11.7	0.61	---	---	---			
	<u>NWB APPROACH</u>																																	
	CROSSGATES MALL DRIVEWAY NEB L	A	31.1	0.02	D	39.9	0.52	D	36.3	0.68	C	26.8	0.06	D	39.8	0.51	D	36.4	0.69	C	26.8	0.06	D	39.8	0.51	D	36.4	0.69	---	---	---			
	NEB R	D	52.9	0.90	D	47.9	0.84	D	53.9	0.90	E	59.3	0.93	D	47.8	0.84	D	54.3	0.90	E	59.3	0.93	D	47.8	0.84	D	54.3	0.90	---	---	---			
<u>NEB APPROACH</u>																																		
MALL DRIVEWAY #2 SWB L	D	52.5	---	D	44.7	---	D	45.8	---	E	57.3	---	D	44.6	---	D	46.0	---	E	57.3	---	D	44.6	---	D	46.0	---	---	---	---				
<u>OVERALL INTERSECTION</u>																																		
C	23.6	---	B	15.1	---	C	23.3	---	C	30.8	---	B	15.2	---	C	23.5	---	C	28.2	---	B	14.3	---	C	23.9	---								
15	S. FRONTAGE ROAD & RAPP ROAD																																	
	<u>UN SIGNALIZED</u>																																	
S. FRONTAGE ROAD NB L	A	7.4	0.03	A	8.6	0.18	A	7.5	0.06	A	7.4	0.03	A	8.6	0.18	A	7.5	0.06	A	7.5	0.03	A	8.8	0.19	A	7.6	0.06							
16	WESTERN AVENUE (U.S. ROUTE 20) & WESTMERE TERRACE																																	
	<u>UN SIGNALIZED</u>																																	
WESTERN AVENUE (U.S. ROUTE 20) EB L	B	10.2	0.002	C	19.4	0.03	B	11.5	0.02	B	10.3	0.002	C	20.0	0.03	B	11.7	0.02	B	10.5	0.002	C	20.7	0.035	B	12.2	0.024	---	---	---				
WESTMERE TERRACE SB L-R	F	54.0	0.08	F	261.3	0.61	E	40.5	0.19	F	58.4	0.09	F	276.4	0.634	E	43.9	0.20	F	61.7	0.094	F	331.5	0.717	F	51.4	0.229	---	---	---				
17/18	RAPP ROAD & SITE 1 DRIVEWAY																																	
	<u>UN SIGNALIZED</u>																																	
SITE 1 DRIVEWAY EB L-R	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	A	9.7	0.072	B	11.5	0.059	B	10.5	0.084	---	---	---				
RAPP ROAD NEB L-T	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	A	7.5	0.009	A	8.1	0.035	A	7.7	0.031	---	---	---				
19	RAPP ROAD & SITE 2 NORTHERLY DRIVEWAY																																	
	<u>UN SIGNALIZED</u>																																	
RAPP ROAD SB L-T	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	A	8.4	0.043	A	8.1	0.082	A	8.8	0.126	---	---	---				
PHASE 1 DRIVEWAY (NW) WB R	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	A	9.8	0.048	A	9.6	0.108	B	10.8	0.190	---	---	---				
20	RAPP ROAD & SITE 2 SOUTHERLY DRIVEWAY																																	
	<u>UN SIGNALIZED</u>																																	
PHASE 1 DRIVEWAY (SW) NB R	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	A	---	---	A	---	---	A	---	---	---	---	---				
21	GABRIEL TERRACE CONNECTOR ROAD & SITE 2 DRIVEWAY																																	
	<u>UN SIGNALIZED</u>																																	
GABRIEL TERRACE NB L-T	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	A	7.4	0.005	A	7.7	0.029	A	7.9	0.036	---	---	---				
PHASE 1 DRIVEWAY (E) EB L-R	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	A	9.1	0.091	B	12.8	0.449	C	18.5	0.666	---	---	---				

THE ABOVE REPRESENTS THE LEVELS OF SERVICE, VEHICLE DELAY IN SECONDS AND VOLUME-TO-CAPACITY (V/C) RATIO FOR THE ABOVE INTERSECTIONS.

TABLE NO. 4
HOURLY TRIP GENERATION RATES
AND ANTICIPATED SITE GENERATED TRAFFIC VOLUMES

SITE 1A RAPP ROAD RESIDENTIAL	ENTRY		EXIT		TOTAL	
	HTGR*	VOLUME	HTGR*	VOLUME	HTGR*	VOLUME
POTENTIAL FUTURE DEVELOPMENT +90 APARTMENT UNITS						
WEEKDAY PEAK AM HOUR	0.11	10	0.35	31	0.46	41
WEEKDAY PEAK PM HOUR	0.35	31	0.21	19	0.56	50
SATURDAY PEAK HOUR	0.35	31	0.35	31	0.70	62

THE ABOVE HOURLY TRIP GENERATION RATES (HTGR) ARE BASED ON DATA PUBLISHED BY THE
INSTITUTE OF TRANSPORTATION ENGINEERS (ITE) AS CONTAINED IN THE TRIP GENERATION HANDBOOK, 10th EDITION, 2017.
* ITE LAND USE 220 - MULTIFAMILY HOUSING (LOW-RISE)

TABLE NO. 5

HOURLY TRIP GENERATION RATES
AND ANTICIPATED SITE GENERATED TRAFFIC VOLUMES

SITE 3 POTENTIAL WESTERN AVENUE MIXED-USE DEVELOPMENT	ENTRY		EXIT		TOTAL	
	HTGR*	VOLUME	HTGR*	VOLUME	HTGR*	VOLUME
RETAIL - 115,000 S.F						
WEEKDAY PEAK AM HOUR	0.58	67	0.36	42	0.94	109
WEEKDAY PEAK PM HOUR	1.83	211	1.98	228	3.81	439
SATURDAY PEAK HOUR	2.34	270	2.16	249	4.50	519
OFFICE - 50,000 S.F.						
WEEKDAY PEAK AM HOUR	1.00	50	0.16	8	1.16	58
WEEKDAY PEAK PM HOUR	0.18	9	0.97	49	1.15	58
SATURDAY PEAK HOUR	0.29	15	0.24	12	0.53	27
RESIDENTIAL - 48 UNITS						
WEEKDAY PEAK AM HOUR	0.11	5	0.35	17	0.46	22
WEEKDAY PEAK PM HOUR	0.35	17	0.21	10	0.56	27
SATURDAY PEAK HOUR	0.35	17	0.35	17	0.70	34
W/ 10% INTERPLAY W/ MALL						
WEEKDAY PEAK AM HOUR	----	----	----	----	----	----
WEEKDAY PEAK PM HOUR	----	-26	----	-26	----	-52
SATURDAY PEAK HOUR	----	-29	----	-29	----	-58
W/ 10 % INTERPLAY WITH COSTCO						
WEEKDAY PEAK AM HOUR	----	----	----	----	----	----
WEEKDAY PEAK PM HOUR	----	-26	----	-26	----	-52
SATURDAY PEAK HOUR	----	-29	----	-29	----	-58
W/ 25 % RETAIL PASS-BY						
WEEKDAY PEAK AM HOUR	----	----	----	----	----	----
WEEKDAY PEAK PM HOUR	----	-55	----	-55	----	-110
SATURDAY PEAK HOUR	----	-65	----	-65	----	-130
"NEW" TRIPS						
WEEKDAY PEAK AM HOUR	----	122	----	67	----	189
WEEKDAY PEAK PM HOUR	----	130	----	180	----	310
SATURDAY PEAK HOUR	----	179	----	155	----	334

THE ABOVE HOURLY TRIP GENERATION RATES (HTGR) ARE BASED ON DATA PUBLISHED BY THE INSTITUTE OF TRANSPORTATION ENGINEERS (ITE) AS CONTAINED IN THE TRIP GENERATION HANDBOOK, 10th EDITION, 2017.
* ITE LAND USE 820 - SHOPPING CENTER; ITE LAND USE 710 - OFFICE; ITE LAND USE 220 - MULTIFAMILY HOUSING

TABLE NO. 6

LEVEL OF SERVICE SUMMARY TABLE

	LOCATION	YEAR 2025 NO-BUILD									YEAR 2025 BUILD								
		WEEKDAY AM			WEEKDAY PM			SATURDAY			WEEKDAY AM			WEEKDAY PM			SATURDAY		
		LOS	DELAY	V/C	LOS	DELAY	V/C	LOS	DELAY	V/C	LOS	DELAY	V/C	LOS	DELAY	V/C	LOS	DELAY	V/C
1	WESTERN AVENUE (U.S. ROUTE 20) & CROSSGATES MALL DRIVEWAY	<u>SIGNALIZED (COUPLET)</u>																	
	WESTERN AVENUE (U.S. ROUTE 20) EB T / T	A	9.2	0.68	A	6.7	0.48	A	6.4	0.46	A	9.2	0.68	A	6.6	0.47	A	6.4	0.45
	WESTERN AVENUE (U.S. ROUTE 20) EB APPROACH	A	9.2	----	A	6.7	----	A	6.4	----	A	9.2	----	A	6.6	----	A	6.4	----
	WESTERN AVENUE (U.S. ROUTE 20) WB T / T	A	5.2	0.32	A	8.1	0.65	A	6.7	0.54	A	5.2	0.32	A	8.1	0.66	A	6.7	0.55
	WESTERN AVENUE (U.S. ROUTE 20) WB T-R	A	5.3	0.32	A	9.0	0.67	A	7.0	0.55	A	5.3	0.33	A	9.1	0.67	A	7.1	0.55
	WESTERN AVENUE (U.S. ROUTE 20) WB APPROACH	A	5.2	----	A	8.4	----	A	6.8	----	A	5.2	----	A	8.5	----	A	6.8	----
	CROSSGATES MALL DRIVEWAY SB L / L	C	34.7	0.11	D	40.3	0.53	D	49.9	0.86	C	34.8	0.13	D	41.7	0.59	E	55.7	0.94
	CROSSGATES MALL DRIVEWAY SB R	C	34.6	0.08	D	36.4	0.20	D	35.8	0.20	C	34.6	0.08	D	36.3	0.20	D	35.7	0.20
	CROSSGATES MALL DRIVEWAY SB APPROACH	C	34.7	----	D	39.8	----	D	48.6	----	C	34.8	----	D	41.0	----	D	53.9	----
	OVERALL INTERSECTION	A	8.4	----	B	10.7	----	B	13.1	----	A	8.5	----	B	11.1	----	B	14.4	----
2	WESTERN AVENUE (U.S. ROUTE 20) & GABRIEL TERRACE / 1700 DESIGNER RESIDENCES	<u>UNSIGNALIZED</u>																	
	WESTERN AVENUE (U.S. ROUTE 20) EB L	A	0.0	0.000	A	0.0	0.000	A	0.0	0.000	B	12.9	0.040	C	20.2	0.143	B	12.3	0.101
	WESTERN AVENUE (U.S. ROUTE 20) WB L	C	19.9	0.084	B	12.7	0.139	B	11.9	0.101	C	20.0	0.084	B	12.6	0.137	B	11.8	0.098
	1700 DESIGNER RESIDENCES NB L-T-R	F	578.8	1.858	F	1739.2	3.901	F	372.6	1.415	F	637.6	1.974	F	5090.7	10.03	F	671.7	2.007
	GABRIEL TERRACE SB L-T-R	B	11.9	0.033	D	32.4	0.455	C	17.2	0.306	B	12.0	0.053	E	47.5	0.689	C	19.4	0.424
3	WESTERN AVENUE (U.S. ROUTE 20) & JOHNSTON ROAD / RAPP ROAD	<u>SIGNALIZED</u>																	
	WESTERN AVENUE (U.S. ROUTE 20) EB L	C	29.2	0.44	E	68.3	0.90	C	30.7	0.85	C	29.7	0.44	E	70.6	0.90	C	31.6	0.86
	WESTERN AVENUE (U.S. ROUTE 20) EB T	C	25.0	0.83	D	44.7	0.83	B	19.9	0.71	C	25.6	0.84	D	45.1	0.83	C	20.3	0.72
	WESTERN AVENUE (U.S. ROUTE 20) EB T-R	C	25.8	0.84	D	44.7	0.83	B	19.9	0.71	C	26.4	0.85	D	45.1	0.83	C	20.2	0.72
	WESTERN AVENUE (U.S. ROUTE 20) EB APPROACH	C	25.9	----	D	48.7	----	C	22.3	----	C	26.5	----	D	49.5	----	C	22.7	----
	WESTERN AVENUE (U.S. ROUTE 20) WB L	E	62.1	0.82	D	37.4	0.26	B	19.8	0.18	E	63.0	0.82	D	38.3	0.27	C	20.4	0.18
	WESTERN AVENUE (U.S. ROUTE 20) WB T	D	45.7	0.82	D	44.9	0.92	B	17.9	0.71	D	46.1	0.82	D	48.4	0.93	B	18.2	0.72
	WESTERN AVENUE (U.S. ROUTE 20) WB T-R	D	45.5	0.82	D	45.9	0.93	B	17.9	0.72	D	45.9	0.82	D	49.8	0.94	B	18.2	0.72
	WESTERN AVENUE (U.S. ROUTE 20) WB APPROACH	D	47.4	----	D	44.8	----	B	18.0	----	D	47.9	----	D	48.3	----	B	18.3	----
	JOHNSTON ROAD NEB L	D	49.7	0.39	E	75.5	0.85	C	31.5	0.53	D	50.4	0.40	E	77.4	0.86	C	32.5	0.54
	JOHNSTON ROAD NEB T-R	D	50.9	0.68	E	58.9	0.46	C	32.7	0.60	D	51.7	0.69	E	59.8	0.47	C	33.7	0.61
	JOHNSTON ROAD NEB R	D	46.1	0.62	C	29.7	0.16	C	21.8	0.21	D	46.8	0.62	C	30.5	0.16	C	22.4	0.21
	JOHNSTON ROAD NEB APPROACH	D	48.8	----	E	57.8	----	C	29.5	----	D	49.6	----	E	59.1	----	C	30.4	----
	RAPP ROAD SWB L	E	59.6	0.51	D	54.6	0.39	C	31.9	0.40	E	60.7	0.54	E	55.5	0.39	C	33.0	0.42
	RAPP ROAD SWB T	D	52.3	0.25	E	58.3	0.72	C	32.6	0.52	D	53.1	0.26	E	59.5	0.73	C	33.6	0.53
	RAPP ROAD SWB R	C	21.8	0.16	D	52.3	0.79	C	27.3	0.58	C	22.2	0.16	D	53.0	0.79	C	28.0	0.58
	RAPP ROAD SWB APPROACH	D	38.4	----	D	54.6	----	C	29.8	----	D	39.0	----	E	55.5	----	C	30.7	----
	OVERALL INTERSECTION	D	35.3	----	D	48.7	----	C	22.2	----	D	35.9	----	D	50.6	----	C	22.6	----

TABLE NO. 6

LEVEL OF SERVICE SUMMARY TABLE

ID	LOCATION	YEAR 2025 NO-BUILD						YEAR 2025 BUILD											
		WEEKDAY AM		WEEKDAY PM		SATURDAY		WEEKDAY AM		WEEKDAY PM		SATURDAY							
		LOS	DELAY	V/C	LOS	DELAY	V/C	LOS	DELAY	V/C	LOS	DELAY	V/C						
4	RAPP ROAD & CROSSGATES MALL ROAD	<u>SIGNALIZED</u>																	
		<u>W/ EB & SB RIGHT TURNERS UNDER SIGNAL CONTROL</u>																	
		<u>OPTIMIZED</u>			<u>OPTIMIZED</u>			<u>OPTIMIZED</u>			<u>OPTIMIZED</u>								
	RAPP ROAD EB L-T	B	17.2	0.31	C	23.5	0.43	B	17.1	0.44	B	17.0	0.29	C	23.8	0.45	B	18.3	0.47
	RAPP ROAD EB R	B	19.4	0.45	B	18.9	0.22	B	14.4	0.28	B	18.9	0.42	B	18.1	0.21	B	14.4	0.28
	RAPP ROAD EB APPROACH	B	18.4	----	C	21.8	----	B	16.1	----	B	18.1	----	C	21.8	----	B	16.8	----
	CROSSGATES MALL ROAD WB L-T	B	14.8	0.07	C	25.5	0.43	C	23.3	0.40	B	19.9	0.13	C	34.0	0.57	C	31.4	0.53
	CROSSGATES MALL ROAD WB T-R	B	14.6	0.06	C	20.6	0.35	B	14.6	0.30	B	14.8	0.08	C	20.4	0.39	B	15.2	0.35
	RAPP ROAD WB APPROACH	B	14.7	----	C	22.9	----	B	18.4	----	B	17.3	----	C	26.6	----	C	22.0	----
	RAPP ROAD SEB L-T	C	20.9	0.15	C	21.8	0.17	C	21.6	0.14	B	19.7	0.17	C	22.3	0.21	C	21.3	0.19
	RAPP ROAD SEB R	C	22.1	0.24	C	32.6	0.68	C	24.5	0.36	C	20.4	0.23	C	33.1	0.69	C	23.6	0.35
	CROSSGATES MALL ROAD SEB APPROACH	C	21.6	----	C	30.1	----	C	23.6	----	C	20.1	----	C	30.2	----	C	22.7	----
	CROSSGATES MALL ROAD NWB L	B	13.2	0.16	B	14.4	0.47	B	17.0	0.29	B	12.6	0.15	B	15.5	0.50	B	17.3	0.31
CROSSGATES MALL ROAD NWB T-R	B	10.9	0.10	A	9.8	0.22	B	15.4	0.32	B	11.1	0.13	B	11.5	0.33	B	16.9	0.42	
CROSSGATES MALL ROAD NWB APPROACH	B	12.2	----	B	12.6	----	B	16.1	----	B	11.8	----	B	13.5	----	B	17.0	----	
OVERALL INTERSECTION	B	17.6	----	C	21.1	----	B	17.8	----	B	17.2	----	C	22.0	----	B	19.1	----	
5	RAPP ROAD & GIPP ROAD	<u>UNSIGNALIZED</u>																	
	RAPP ROAD NEB L-T	A	7.5	0.006	A	8.5	0.052	A	7.8	0.020	A	7.5	0.006	A	8.6	0.053	A	7.9	0.021
	GIPP ROAD EB L-R	B	11.1	0.215	C	15.2	0.188	B	11.7	0.111	B	11.4	0.223	C	15.9	0.199	B	12.2	0.118
6	RAPP ROAD & PINE LANE	<u>UNSIGNALIZED</u>																	
	RAPP ROAD NEB L-T	A	8.9	0.301	A	9.1	0.256	A	8.7	0.265	A	9.0	0.320	A	9.5	0.289	A	9.0	0.293
	RAPP ROAD SWB T-R	A	7.9	0.126	B	12.5	0.574	A	8.7	0.271	A	8.1	0.147	A	13.2	0.606	A	8.9	0.302
	PINE LANE EB L-R	A	7.7	0.053	A	8.5	0.031	A	8.1	0.037	A	7.8	0.054	A	8.6	0.032	A	8.2	0.038
	OVERALL INTERSECTION	A	8.5	----	B	11.4	----	A	8.7	----	A	8.6	----	B	12.0	----	A	8.9	----
7	RAPP ROAD & SPRINGSTEEN ROAD	<u>UNSIGNALIZED</u>																	
	RAPP ROAD SB L-R	A	8.9	0.107	B	11.5	0.485	A	9.2	0.222	A	8.9	0.121	B	11.7	0.507	A	9.4	0.246
8	SPRINGSTEEN ROAD & S. FRONTAGE ROAD	<u>UNSIGNALIZED</u>																	
	SPRINGSTEEN ROAD EB L	A	9.8	0.253	A	10.0	0.217	A	9.8	0.266	B	10.1	0.275	B	10.4	0.255	B	10.2	0.298
	SPRINGSTEEN ROAD EB T-R	A	8.4	0.160	A	8.3	0.076	A	7.6	0.063	A	8.4	0.160	A	8.3	0.076	A	7.7	0.063
	SPRINGSTEEN ROAD WB L-R	A	8.5	0.234	A	9.1	0.304	A	7.6	0.148	A	8.6	0.235	A	9.2	0.307	A	7.6	0.150
	S. FRONTAGE ROAD NB T-R	A	8.1	0.051	A	8.3	0.091	A	7.5	0.035	A	8.1	0.051	A	8.4	0.092	A	7.6	0.035
	S. FRONTAGE ROAD SB L-T	A	8.6	0.036	A	9.3	0.166	A	8.2	0.040	A	8.6	0.036	A	9.4	0.168	A	8.3	0.041
	OVERALL INTERSECTION	A	8.8	----	A	9.2	----	A	8.6	----	A	9.0	----	A	9.4	----	A	8.8	----
9	WASHINGTON AVENUE EXTENSION & SPRINGSTEEN ROAD / CROSSGATES COMMONS	<u>SIGNALIZED</u>																	
	SPRINGSTEEN ROAD EB R	C	30.7	0.44	D	39.3	0.49	D	40.9	0.39	C	30.9	0.44	D	39.5	0.49	D	40.9	0.39
	CROSSGATES COMMONS EB APPROACH	C	30.7	----	D	39.3	----	D	40.9	----	C	30.9	----	D	39.5	----	D	40.9	----
	CROSSGATES COMMONS WB L / L	D	41.5	0.62	D	53.6	0.82	D	43.6	0.83	D	41.7	0.62	D	53.9	0.82	D	43.6	0.83
	CROSSGATES COMMONS WB T-R	C	29.5	0.50	D	39.2	0.72	D	38.7	0.92	C	29.7	0.50	D	39.4	0.72	D	38.7	0.92
	WASHINGTON AVE. EXT. WB APPROACH	C	34.2	----	D	46.2	----	D	41.1	----	C	34.4	----	D	46.4	----	D	41.1	----
	WASHINGTON AVE. EXT. NB L	D	41.6	0.80	E	65.8	0.87	D	52.6	0.77	D	41.8	0.80	E	66.2	0.87	D	52.6	0.77
	WASHINGTON AVE. EXT. NB T / T / T	B	16.2	0.52	C	29.9	0.71	C	24.6	0.32	B	16.2	0.52	C	30.1	0.71	C	24.6	0.33
	WASHINGTON AVE. EXT. NB R	B	13.6	0.21	C	28.3	0.58	D	37.7	0.87	B	13.5	0.21	C	28.3	0.58	D	37.7	0.87
	WASHINGTON AVE. EXT. NB APPROACH	B	18.3	----	C	32.9	----	C	32.0	----	B	18.3	----	C	33.0	----	C	32.0	----
	WASHINGTON AVE. EXT. SB L	D	41.7	0.81	E	77.1	0.91	F	142.9	1.17	D	41.9	0.81	E	77.6	0.91	F	143.3	1.17
	WASHINGTON AVE. EXT. SB T / T	C	22.9	0.86	D	38.5	0.92	B	16.2	0.35	C	23.0	0.86	D	38.9	0.92	B	16.2	0.36
	WASHINGTON AVE. EXT. SB R	B	12.0	0.01	B	18.1	0.01	B	13.3	0.01	B	12.0	0.01	B	18.2	0.01	B	13.3	0.01
WASHINGTON AVE. EXT. SB APPROACH	C	24.5	----	D	44.1	----	E	66.8	----	C	24.6	----	D	44.5	----	E	66.5	----	
OVERALL INTERSECTION	C	22.9	----	D	39.2	----	D	46.3	----	C	23.0	----	D	39.5	----	D	46.3	----	
10	CROSSGATES MALL ROAD & I-87 ON/OFF RAMP	<u>SIGNALIZED</u>																	
	I-87 OFF RAMP WB L	A	7.7	0.31	C	34.1	0.86	D	37.0	0.88	A	8.1	0.39	D	38.8	0.89	D	48.0	0.95
	I-87 OFF RAMP WB L-R	B	11.7	0.79	D	44.3	0.93	E	58.5	0.99	B	11.6	0.78	D	54.4	0.97	F	69.2	1.03
	CROSSGATES MALL ROAD WB APPROACH	B	10.5	----	D	39.2	----	D	48.0	----	B	10.4	----	D	46.6	----	E	58.6	----
	CROSSGATES MALL ROAD NB T	B	16.8	0.40	D	39.1	0.73	E	62.4	0.89	B	16.9	0.40	D	40.1	0.74	E	62.4	0.89
	CROSSGATES MALL ROAD NB R	A	0.0	0.00	A	0.0	0.00	A	0.0	0.00	A	0.0	0.00	A	0.0	0.00	A	0.0	0.00
	CROSSGATES MALL ROAD NB APPROACH	B	16.8	----	D	39.1	----	E	62.4	----	B	16.9	----	D	40.1	----	E	62.4	----
	CROSSGATES MALL ROAD SB L	B	11.5	0.33	C	29.9	0.90	E	56.7	0.98	B	11.6	0.33	C	31.6	0.91	E	56.7	0.98
	CROSSGATES MALL ROAD SB T	A	8.9	0.10	B	11.0	0.27	B	16.5	0.33	A	9.0	0.10	B	11.4	0.27	B	16.5	0.33
	CROSSGATES MALL ROAD SB APPROACH	B	10.8	----	C	25.0	----	D	42.8	----	B	10.9	----	C	26.3	----	D	42.8	----
	OVERALL INTERSECTION	B	11.1	----	C	33.3	----	D	47.9	----	B	10.9	----	D	37.9	----	D	53.9	----

TABLE NO. 6

LEVEL OF SERVICE SUMMARY TABLE

ID	LOCATION	YEAR 2025 NO-BUILD									YEAR 2025 BUILD											
		WEEKDAY AM			WEEKDAY PM			SATURDAY			WEEKDAY AM			WEEKDAY PM			SATURDAY					
		LOS	DELAY	V/C	LOS	DELAY	V/C	LOS	DELAY	V/C	LOS	DELAY	V/C	LOS	DELAY	V/C	LOS	DELAY	V/C			
11	CROSSGATES MALL ROAD & MALL DRIVEWAY #1	<u>UN SIGNALIZED</u>																				
	CROSSGATES MALL ROAD SEB L-T	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----		
	MALL DRIVEWAY #1 SWB L-R	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----		
	<u>W/ GABRIEL TERRACE CONNECTOR ROAD</u>																					
	CROSSGATES MALL ROAD SEB L	A	7.5	0.009	A	8.3	0.028	A	8.5	0.089	A	7.5	0.009	A	8.4	0.028	A	8.5	0.091	A	8.5	0.191
	CROSSGATES MALL ROAD NWB L	A	8.1	0.049	A	8.1	0.117	A	8.4	0.162	A	8.3	0.066	A	8.3	0.133	A	8.8	0.191	A	8.8	0.191
	GABRIEL TERRACE CONNECTOR ROAD NEB L-T-R	B	11.0	0.100	C	23.8	0.590	F	119.0	1.116	F	13.5	0.184	F	178.2	1.261	F	680.6	2.398	F	680.6	2.398
	MALL DRIVEWAY #1 SWB L-T-R	B	13.4	0.064	F	195.1	1.184	F	1263.9	3.536	B	12.9	0.063	F	426.5	1.705	F	2442.3	6.016	F	2442.3	6.016
	<u>W/ SIGNALIZATION</u>																					
	CROSSGATES MALL ROAD SEB L	A	6.3	0.020	A	9.9	0.080	B	12.3	0.280	A	6.3	0.020	B	11.9	0.100	B	14.3	0.300	B	14.3	0.300
	CROSSGATES MALL ROAD SEB T-R	A	8.7	0.570	B	11.9	0.440	B	16.3	0.610	A	9.4	0.640	B	15.3	0.600	C	21.4	0.800	C	21.4	0.800
	CROSSGATES MALL ROAD SEB APPROACH	A	8.6	----	B	11.7	----	B	15.3	----	A	9.3	----	B	14.9	----	B	19.9	----	B	19.9	----
	CROSSGATES MALL ROAD NWB L	A	6.1	0.110	A	8.7	0.280	B	11.2	0.420	A	6.2	0.150	B	10.7	0.350	B	13.6	0.540	B	13.6	0.540
	CROSSGATES MALL ROAD NWB T-R	A	6.4	0.210	B	12.7	0.730	B	16.7	0.770	A	6.2	0.210	B	15.4	0.790	B	19.7	0.800	B	19.7	0.800
	CROSSGATES MALL ROAD NWB APPROACH	A	6.3	----	B	11.7	----	B	14.9	----	A	6.2	----	B	14.2	----	B	17.7	----	B	17.7	----
GABRIEL TERRACE CONNECTOR ROAD NEB L-T-R	B	12.0	0.240	B	14.5	0.550	B	15.9	0.660	B	13.3	0.320	B	15.7	0.660	B	17.8	0.750	B	17.8	0.750	
GABRIEL TERRACE CONNECTOR ROAD NEB APPROACH	B	12.0	----	B	14.5	----	B	15.9	----	B	13.3	----	B	15.7	----	B	17.8	----	B	17.8	----	
MALL DRIVEWAY #1 SWB L-T-R	B	11.5	0.100	B	13.0	0.340	B	14.5	0.510	B	12.3	0.100	B	13.0	0.340	B	14.8	0.530	B	14.8	0.530	
MALL DRIVEWAY #1 SWB APPROACH	B	11.5	----	B	13.0	----	B	14.5	----	B	12.3	----	B	13.0	----	B	14.8	----	B	14.8	----	
OVERALL INTERSECTION	A	8.4	----	B	12.4	----	B	15.2	----	A	9.0	----	B	14.6	----	B	17.9	----	B	17.9	----	
12	CROSSGATES MALL ROAD & HOTEL CONNECTOR ROAD / MALL DRIVEWAY #2	<u>SIGNALIZED</u>																				
	CROSSGATES MALL ROAD SEB L-T	A	8.7	0.23	A	9.3	0.31	B	16.3	0.66	A	8.8	0.25	A	9.7	0.35	C	20.1	0.75	C	20.1	0.75
	CROSSGATES MALL ROAD SEB T-R	A	8.9	0.26	A	9.4	0.32	B	11.5	0.50	A	9.1	0.28	A	9.8	0.36	B	12.0	0.54	B	12.0	0.54
	CROSSGATES MALL ROAD SEB APPROACH	A	8.8	----	A	9.4	----	B	13.8	----	A	8.9	----	A	9.7	----	B	15.9	----	B	15.9	----
	CROSSGATES MALL ROAD NWB L-T	A	8.1	0.16	B	12.1	0.55	B	14.4	0.66	A	8.5	0.21	B	13.1	0.60	C	27.4	0.89	C	27.4	0.89
	CROSSGATES MALL ROAD NWB T-R	A	8.4	0.18	B	14.2	0.61	C	32.5	0.91	A	8.7	0.22	B	15.9	0.68	D	35.7	0.93	D	35.7	0.93
	CROSSGATES MALL ROAD NWB APPROACH	A	8.3	----	B	13.0	----	C	23.2	----	A	8.6	----	B	14.4	----	C	31.2	----	C	31.2	----
	HOTEL CONNECTOR ROAD NEB L-T-R	A	9.4	0.20	A	7.3	0.01	A	7.3	0.03	B	10.9	0.30	A	8.2	0.16	A	8.2	0.16	A	8.2	0.16
	HOTEL CONNECTOR ROAD NEB APPROACH	A	9.4	----	A	7.3	----	A	7.3	----	B	10.9	----	B	8.2	----	A	8.2	----	A	8.2	----
	MALL DRIVEWAY #2 SWB L	A	7.4	0.03	A	9.3	0.28	A	11.8	0.48	A	7.4	0.03	A	9.2	0.28	B	11.7	0.49	B	11.7	0.49
	MALL DRIVEWAY #2 SWB T-R	A	7.3	0.01	A	7.8	0.10	A	7.8	0.10	A	7.3	0.01	A	7.8	0.11	A	7.9	0.11	A	7.9	0.11
	MALL DRIVEWAY #2 SWB APPROACH	A	7.4	----	A	9.0	----	B	11.1	----	A	7.4	----	A	8.9	----	B	11.1	----	B	11.1	----
OVERALL INTERSECTION	A	8.6	----	B	11.2	----	B	17.9	----	A	9.0	----	B	11.8	----	C	22.0	----	C	22.0	----	
13/14	CROSSGATES MALL ROAD & CROSSGATES MALL MAIN DRIVEWAY	<u>SIGNALIZED</u>																				
	CROSSGATES MALL ROAD SEB T	B	12.7	0.24	A	9.1	0.30	C	21.0	0.58	B	13.0	0.27	A	9.7	0.36	C	22.5	0.66	C	22.5	0.66
	CROSSGATES MALL ROAD SEB T-R	B	12.7	0.24	A	9.1	0.30	C	21.1	0.58	B	13.0	0.27	A	9.7	0.36	C	22.6	0.66	C	22.6	0.66
	CROSSGATES MALL ROAD SEB APPROACH	B	12.7	----	A	9.1	----	C	21.1	----	B	13.0	----	A	9.7	----	C	22.5	----	C	22.5	----
	CROSSGATES MALL ROAD NWB L	A	9.1	0.09	A	5.7	0.32	B	16.0	0.73	A	9.1	0.09	A	6.1	0.35	B	19.4	0.80	B	19.4	0.80
	CROSSGATES MALL ROAD NWB T	A	8.5	0.20	A	6.2	0.51	B	12.0	0.62	A	8.9	0.25	A	6.7	0.56	B	13.2	0.70	B	13.2	0.70
	CROSSGATES MALL ROAD NWB APPROACH	A	8.6	----	A	6.1	----	B	13.2	----	A	9.0	----	A	6.5	----	B	14.9	----	B	14.9	----
	CROSSGATES MALL DRIVEWAY NEB L	C	26.5	0.06	D	39.7	0.52	D	36.2	0.69	C	26.5	0.06	D	39.7	0.52	D	36.2	0.69	D	36.2	0.69
	CROSSGATES MALL DRIVEWAY NEB R	E	59.8	0.93	D	47.7	0.84	D	54.8	0.91	E	59.8	0.93	D	47.7	0.84	D	54.8	0.91	D	54.8	0.91
	CROSSGATES MALL DRIVEWAY NEB APPROACH	E	57.7	----	D	44.5	----	D	46.2	----	E	57.7	----	D	44.5	----	D	46.2	----	D	46.2	----
OVERALL INTERSECTION	C	28.6	----	B	14.3	----	C	24.4	----	C	27.3	----	B	14.2	----	C	25.1	----	C	25.1	----	
15	S. FRONTAGE ROAD & RAPP ROAD	<u>UN SIGNALIZED</u>																				
	S. FRONTAGE ROAD NB L	A	7.5	0.03	A	8.8	0.19	A	7.6	0.06	A	7.5	0.03	A	8.9	0.19	A	7.7	0.06	A	7.7	0.06
16	WESTERN AVENUE (U.S. ROUTE 20) & WESTMERE TERRACE	<u>UN SIGNALIZED</u>																				
	WESTERN AVENUE (U.S. ROUTE 20) EB L	B	10.5	0.002	C	21.2	0.04	B	12.3	0.03	B	10.6	0.002	C	21.6	0.037	B	12.5	0.025	B	12.5	0.025
WESTMERE TERRACE SB L-R	F	65.5	0.10	F	354.0	0.75	F	53.9	0.24	F	66.5	0.101	F	407.0	0.825	F	57.4	0.252	F	57.4	0.252	
17/18	RAPP ROAD & SITE 1 DRIVEWAY	<u>UN SIGNALIZED</u>																				
	SITE 1 DRIVEWAY EB L-R	----	----	----	----	----	----	----	----	B	10.0	0.104	B	12.2	0.091	B	11.2	0.126	B	11.2	0.126	
RAPP ROAD NEB L-T	----	----	----	----	----	----	----	----	A	7.6	0.013	A	8.2	0.051	A	7.8	0.045	A	7.8	0.045		
19	RAPP ROAD & SITE 2 NORTHERLY DRIVEWAY	<u>UN SIGNALIZED</u>																				
	RAPP ROAD SB L-T	----	----	----	----	----	----	----	----	A	8.4	0.043	A	8.1	0.083	A	8.9	0.127	A	8.9	0.127	
PHASE 1 DRIVEWAY (NW) WB R	----	----	----	----	----	----	----	----	A	9.8	0.049	A	9.7	0.109	B	10.9	0.192	B	10.9	0.192		
20	RAPP ROAD & SITE 2 SOUTHERLY DRIVEWAY	<u>UN SIGNALIZED</u>																				
	PHASE 1 DRIVEWAY (SW) NB R	----	----	----	----	----	----	----	----	A	----	----	A	----	----	A	----	----	A	----	----	
21	GABRIEL TERRACE CONNECTOR ROAD & SITE 2 DRIVEWAY	<u>UN SIGNALIZED</u>																				
	GABRIEL TERRACE NB L-T	----	----	----	----	----	----	----	----	A	7.4	0.005	A	7.9	0.031	A	8.1	0.039	A	8.1	0.039	
PHASE 1 DRIVEWAY (E) EB L-R	----	----	----	----	----	----	----	----	A	9.3	0.094	C	16.1	0.557	D	31.2	0.828	D	31.2	0.828		

TABLE NO. 6

LEVEL OF SERVICE SUMMARY TABLE

	LOCATION	YEAR 2025 NO-BUILD									YEAR 2025 BUILD																	
		WEEKDAY AM			WEEKDAY PM			SATURDAY			WEEKDAY AM			WEEKDAY PM			SATURDAY											
		LOS	DELAY	V/C	LOS	DELAY	V/C	LOS	DELAY	V/C	LOS	DELAY	V/C	LOS	DELAY	V/C	LOS	DELAY	V/C									
22	GABRIEL TERRACE CONNECTOR ROAD & SITE 3 DRIVEWAY <u>UN SIGNALIZED</u> GABRIEL TERRACE SB L-T PHASE 2 DRIVEWAY (W) WB L-R	---	---	---	---	---	---	---	---	---	A	7.5	0.031	A	8.1	0.057	A	8.6	0.082	A	9.3	0.041	C	15.2	0.357	C	21.1	0.467
23	HOTEL CONNECTOR ROAD & SITE 3 DRIVEWAY <u>UN SIGNALIZED</u> PHASE 2 DRIVEWAY (E) EB L	---	---	---	---	---	---	---	---	---	A	8.8	0.037	A	9.6	0.131	A	9.5	0.118									

THE ABOVE REPRESENTS THE LEVELS OF SERVICE, VEHICLE DELAY IN SECONDS AND VOLUME-TO-CAPACITY (V/C) RATIO FOR THE ABOVE INTERSECTIONS.



Traffic Impact Study
Rapp Road Residential / Costco
Western Avenue Mixed-Use Development
MC Project No.: 19002502A
Appendix

***RAPP ROAD RESIDENTIAL
COSTCO
WESTERN AVENUE MIXED-USE DEVELOPMENT***

APPENDIX C
LEVEL OF SERVICE STANDARDS

LEVEL OF SERVICE STANDARDS

LEVEL OF SERVICE FOR SIGNALIZED INTERSECTIONS

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

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

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

LOS C describes operations with control delay between 20 and 35 s/veh and a volume-to-capacity ratio no greater than 1.0. This level is typically assigned when progression is favorable or the cycle length is moderate.

LOS D describes operations with control delay between 35 and 55 s/veh and a volume-to-capacity ratio no greater than 1.0. This level is typically assigned when the volume-to-capacity ratio is high and either progression is ineffective or the cycle length is long.



LOS E describes operations with control delay between 55 and 80 s/veh and a volume-to-capacity ratio no greater than 1.0. This level is typically assigned when the volume-to-capacity ratio is high, progression is unfavorable, and the cycle length is long.

LOS F describes operations with control delay exceeding 80 s/veh or a volume-to-capacity ratio greater than 1.0. This level is typically assigned when the volume-to-capacity ratio is very high, progression is very poor, and the cycle length is long.

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

The Level of Service Criteria for signalized intersections are given in Exhibit 18-4 from the *2010 Highway Capacity Manual* published by the Transportation Research Board.

Exhibit 18-4

Control Delay (s/veh)	LOS by Volume-to-Capacity Ratio	
	v/c ≤1.0	v/c >1.0
≤10	A	F
>10-20	B	F
>20-35	C	F
>35-55	D	F
>55-80	E	F
>80	F	F

For approach-based and intersection wide assessments, LOS is defined solely by control delay.



LEVEL OF SERVICE CRITERIA
FOR TWO-WAY STOP-CONTROLLED (TWSC) UNSIGNALIZED INTERSECTIONS

Level of Service (LOS) for a two-way stop-controlled (TWSC) intersection is determined by the computed or measured control delay. For motor vehicles, LOS is determined for each minor-street movement (or shared movement) as well as major-street left turns. LOS is not defined for the intersection as a whole or for major-street approaches.

The Level of Service Criteria for TWSC unsignalized intersections are given in Exhibit 19-1 from the *2010 Highway Capacity Manual* published by the Transportation Research Board.

Exhibit 19-1

Control Delay (s/veh)	LOS by Volume-to-Capacity Ratio	
	v/c ≤1.0	v/c >1.0
0-10	A	F
>10-15	B	F
>15-25	C	F
>25-35	D	F
>35-50	E	F
>50	F	F

The LOS criteria apply to each lane on a given approach and to each approach on the minor street.
 LOS is not calculated for major-street approaches or for the intersection as a whole.

As Exhibit 19-1 notes, LOS F is assigned to the movement if the volume-to-capacity ratio for the movement exceeds 1.0, regardless of the control delay.

The Level of Service Criteria for unsignalized intersections are somewhat different from the criteria for signalized intersections.



LEVEL OF SERVICE CRITERIA
FOR ALL-WAY STOP-CONTROLLED (AWSC) UNSIGNALIZED INTERSECTIONS

The Levels of Service (LOS) for all-way stop-controlled (AWSC) intersections are given in Exhibit 20-2. As the exhibit notes, LOS F is assigned if the volume-to-capacity (v/c) ratio of a lane exceeds 1.0, regardless of the control delay. For assessment of LOS at the approach and intersection levels, LOS is based solely on control delay.

The Level of Service Criteria for AWSC unsignalized intersections are given in Exhibit 20-2 from the *2010 Highway Capacity Manual* published by the Transportation Research Board.

Exhibit 20-2

Control Delay (s/veh)	LOS by Volume-to-Capacity Ratio	
	v/c ≤1.0	v/c >1.0
0-10	A	F
>10-15	B	F
>15-25	C	F
>25-35	D	F
>35-50	E	F
>50	F	F

For approaches and intersection wide assessment, LOS is defined solely by control delay.



While not part of the recommended improvements above, in connection with the development of the CDTA/Crossgates Transit Center, at such time as significant new bus traffic is produced at the CDTA Transit Center, the following improvements were recommended by Creighton Manning as shown on Conceptual Improvement plan (Sheet 2 of 2):

- A roundabout at the Crossgates Mall Road/I-87 On/Off Ramps
- A roundabout at the Crossgates Mall Road and the Crossgates Mall Road at its two signalized intersections with Crossgates Mall Main Access Road from Western Avenue
- Replacement of the couplet intersection at Western Avenue with a standard “T” intersection
- Access to the Transit Center would be provided via the northern leg of the roundabout proposed at the intersection of Crossgates Mall Road and the Crossgates Mall Main Access Road from Western Avenue