3.5 Traffic and Transportation

3.5.1 Regional Road Network

The project is located on NYS Route 17M as indicated in Figure 3.5-1.

A portion of NYS Route 17, known as the Quickway, passes to the southwest of the site. The Quickway is to be upgraded to federal interstate standards in preparation of being redesignated Interstate 86. The Quickway is generally an east-west road, however in this area it is oriented north-south. The Quickway is a four-lane divided limited access highway. For purposes of this analysis. the Quickway is identified as northbound or southbound NYS Route 17. In the Town and Village of Chester NYS Route 17 is also US Route 6, however it will be simply referred to as NYS Route 17.

The Quickway originates at the I-87 New York State (NYS) Thruway interchange in Harriman, New York, and continues in a northwest direction to Corning, New York, where it connects with the existing Interstate 86 that provides access to western New York State. NYS Route 17 splits off from the Quickway prior to reaching the NYS Thruway. NYS Route 17 then continues south into New Jersey. Access to NYS Route 17 is via NYS Route 94 at Exit 126. Additional access to NYS Route 17 is available from Exit 127 which is located southeast of the Exit 126 interchange. At Exit 127, access to northbound NYS Route 17 is via Lehigh Avenue, and southbound access is provided via NYS Route 17M. NYS Route 17M parallels NYS Route 17 into the Village of Goshen and provides access to NYS Route 17 at Exits 123, 124, and 125.

NYS Route 94 is a rural minor arterial with typically one 11-foot wide travel lane in each direction with 4-foot shoulders. NYS Route 94 was recently realigned as a result of the reconstruction of the NYS Route 17/NYS Route 94 interchange (Exit 126). NYS Route 94 also provides access to NYS Route 17M which parallels NYS Route 17 to the east. From Academy Avenue eastward, NYS Route 94 turns into Main Street and then High Street. East of NYS Route 17M, NYS Route 94 will be referred to by the street name east of NYS Route 17M (Academy Avenue, High Street, or Main Street) to avoid confusion.

NYS Route 17M (Brookside Avenue) is classified by New York State Department of Transportation (NYSDOT) as a rural major collector with one 12-foot wide travel lane in each direction and with 7-foot shoulders. From West Avenue to past Main Street there are one or more turn lanes or a center turn lane. NYS Route 17M is a major road providing access to commercial uses in the Village of Chester.

Based on a scale of 1 (poor) to 10 (excellent), the pavement condition of Route 17M was rated a 7 (good) in the New York State's 2006 Highway Sufficiency Ratings by the NYSDOT.

3.5.2 Local Setting

Figure 3.5-1 illustrates the transportation network in the project vicinity.

The streets nearest the site include the following:

(1) Academy Avenue (NYS Route 94)
(2) Brookside Avenue (NYS Route 17M)
(3) Arcadia Road

(4) High Street (NYS Route 94)
(5) Hambletonian Avenue
(6) Main Street (NYS Route 94 between Academy Avenue and High Street)
(7) Ward Road
(8) West Avenue (Old NYS Route 94)

The NYS Route 17 bridges over West Avenue were expanded in 2008, as part of the improvements for the future Interstate 86, to allow for the lengthening of the NYS Route 17 southbound off ramp and NYS Route 17 northbound on ramp.

Speed limits for area roads are shown in Table 3.5-1.

Table 3.5-1
Posted Speed Limits

Road Name	Location of Road Segment	Speed limit (miles per hour)
Academy Avenue	NYS Route 17M to Main Street (NYS Route 94)	30
Arcadia Road	south of NYS Route 17M	40
High Street	Hambletonian Avenue to Main Street (NYS Route 94)	30
Hambletonian Avenue	Town of Goshen Town of Chester Village of Chester	35 30 25
Main Street	Route 17M to Academy Avenue Academy Avenue to High Street (NYS Route 94) High Street north	30 30 25
Ward Road	all	35
West Avenue	all	30
Route 17	Exit 126 to exit 127 Exit 126 to exit 125	65 55
NYS Route 17M	Main Street to Fun Castle Fun Castle to past Arcadia road	40 55
NYS Route 94	NYS Route 17M to Hambletonian Avenue (See Academy Avenue, High Street, and Main Street) NYS Route 17M to West Street West Street south	30 40 55

Based on posted speed limits February 5, 2009.

Study area traffic signals, stop signs, and warning signs are shown in Figure 3.5-2. Warning signs are intended provide warning for reasonably safe, and efficient operation of the traffic stream. The majority of warning signs in the area are intended to provide early notification to drivers of specific horizontal and vertical geometrics elements. There are also warning signs to indicate where pedestrians crossings are. Warning signs provides drivers the opportunity to adjust their driving beforehand.

This study investigates the following intersections:

1. NYS Route 17M, and West Avenue, at Chester Mall
2. NYS Route 94 and NYS Route 17M
3. NYS Route 17 & U.S. Route 6 northbound ramp and NYS Route 94
4. NYS Route 17 & U.S. Route 6 southbound ramp and NYS Route 94
5. NYS Route 17M and Main Street
6. NYS Route 17M and Ward Road
7. NYS Route 17M and Arcadia Road
8. High Street and Hambletonian Avenue

Public Transportation

The Towns of Goshen-Chester Dial-A-Ride expanded service to the Town of Hamptonburgh. Dial-A-Ride services are demand responsive and not fixed route systems. These services are provided to the general public as well as disabled and seniors. Dial-A-Ride is based on a reservation system and generally operated in the municipal boundaries.

Metro north Port Jervis Line trains can be accessed in Harriman off NYS Route 17. The trains run to Secaucus Station allowing transfer to the PATH train into New York City. Shortline Company run bus service from the park and ride lot on Nucifora Boulevard to the Harriman Railroad station and into New Jersey and New York City. Nucifora Boulevard is off of NYS Route 94 south of the NYS Route 17 Exit 126.

The Chester Union Free School District School Board may, on an individual basis, include bus transportation for adults in educational programs in the district, children under five traveling between home and day care and employees of the district if space is available. The School Board may charge a fee for such service not to exceed the cost of transporting an in-district student.

School traffic is primary focused at the time of opening and closing of the schools. As the arrival time occurs with the commuter peaks this time is the most critical to school traffic. The Hambletonian Avenue and High Street intersection is the closest intersection to the schools in the study area and thus provides insight to the effects of school traffic. Bus traffic within the study area is most concentrated at Hambletonian Avenue and High Street intersection. There the buses increase heavy vehicles by ten percent adding an additional second of delay per vehicle. The 15 minute peak volumes may add five seconds per vehicle delay. As traffic begins to spread geographically and by arrival time and the non school traffic increases, those delay effects are substantially reduced.

School Year Traffic

The Chester Union-Free School District (Chester UFSD) is comprised of the Chester Elementary School located at 2 Herbert Drive and Chester Academy at 64 Hambletonian Avenue. Much of the traffic to and from both schools could be expected to utilize High Street (NYS Route 94) and/or Ward Road.

The Chester Academy houses grades 6-12 and the Chester Elementary School serves grades K-6. The Chester Academy arrivals begin at 7:30 a.m. and regular classes end at 2:24 p.m. The Chester Elementary School has a later start, at 9:00 a.m. with dismissal at 3:15 p.m. This is not unusual since it allows some buses to handle a route from each school. These arrival and dismissal times result in most of the morning school traffic occurring during the a.m. commuter peak hour, however, much of the afternoon school traffic occurs prior to the afternoon commuter peak during the school year. As a result, during the school year, this tends to cause a traffic increase in the a.m. peak hour and early afternoon before commuter p.m. peak hour on the local traffic network. This affects only the weekday and not the weekend traffic.

The separation of the opening and closing times of the two schools splits the effect of the elementary and post-elementary traffic into separate peak hours. The effects of school generated traffic are greatest in close proximity to the school access points, especially at the beginning and end of the school day. Upon leaving school grounds, the traffic disperses into the transportation network.

The traffic volumes from the NYS Route 17 interchange with NYS Route 94 and the NYS Route 17M commercial area disperse with distance. Land uses, in particular the Castle Fun Center across from the project site, affect local area traffic volumes. As an amusement facility, the Castle Fun Center could be expected to have heavier traffic during the summer. It was based upon this proximity that turning movement counts were taken during the summer months.

Supplemental traffic counts were taken in early June 2009, while school was in session, at the crossroads of NYS Route 94 with NYS Route 17M to explore the difference in school and non-school counts for the a.m. and p.m. weekday peak hours. Table L-1 shows a comparison between the June 2009 counts and 2008 counts adjusted to reflect background traffic and the operation of Lowes home improvement store. Table L-1 indicates the a.m. peak hour is slightly higher (44 vehicles more) for school traffic and the school traffic is comparable (11 vehicles less) than the p.m. summer traffic, a negligible difference. The 44 vehicle difference in the a.m. peak hour between school and non-school still keeps the a.m. peak hour substantially below (over 700 vehicles) the p.m. peak hour traffic at the intersection.

A more detailed analysis was made of the p.m. peak hour school traffic. The leg that would be expected to have the highest increase in volume at the intersection of NYS Route 94 and NYS Route 17M is NYS Route 94 westbound. The June 2009 count indicated that the westbound NYS Route 94 movement's peak hour was after 4:30 p.m., compared to the 2:24 p.m. or the 3:15 p.m. school dismissals.

There is a discernible school peak on the westbound approach of NYS Route 94 (Academy Avenue) at NYS Route 17M. A school traffic peak from 3:30 to 3:45 p.m. is the second highest peak fifteen minutes. This peak reflects elementary school dismissal loading and transit time to the intersection. This short burst in school traffic would be perceivable to the drivers in the course of the 15 minute period and moreover in the peak hour at the NYS Route 94 and NYS Route 17M intersection, but is lower than the commuter and shopping traffic peak. Even on the westbound NYS Route 94 approach, the highest peak fifteen minutes is from 5:15 p.m. to 5:30 p.m.

To further explore the differences in traffic, a new Build Condition was projected for the p.m. peak hour. This new Build Condition examined the impact of two critical elements: the peak 15 minute flow within the hour and changes to movement volumes. Specifically, the June 2009 school count indicated peak 15 minute flows were generally higher (based upon a lower peak hour factor) and there were some volume shifts among movements. The major movement changes were the southbound through and right, a reduction of 253 vehicles and the northbound left, an increase of 188 vehicles. All the volume changes and new peak hour factors were introduced into the Revised Build Condition for NYS Route 94 and NYS Route 17M. As volume demand changes, it would be expected that there would be slight changes in the signal time based on calls for green time. Thus, slight timing changes were made including adding a second of green time to the northbound protected left phase to compensate for the additional 188 vehicles, reducing the southbound time by three seconds to reflect the 253 fewer vehicles and increasing the east-west green time by two seconds to reflect the additional peaking.

The overall difference in Build Condition intersection delay at the NY Route 17M and NYS Route 94 intersection was found to be 0.3 seconds per vehicle.

3.5.3 Existing Peak Hour Volumes

The current operations are based on the existing transportation network traffic and are referred to herein as the Existing Conditions. Figures 3.5-3, 3.5-4, and 3.5-5 show existing peak hour turning movement volumes at each individual intersection studied. The occurrence of the peak hour varied from intersection to intersection shown in Appendix L, Table L-2. The difference in time periods and intervening destinations accounts for the difference in traffic volumes between most intersections. The NYS Route 17 northbound and southbound ramp intersections had simultaneous peaks in both the p.m. peak hour and the Saturday peak hour. There are no intervening opportunities other than vehicles caught between the intersections when the count was started and stopped. Appendix L Table L-3 indicates the minor differences between counts of 5 to 18 vehicles, or 1 to 4 percent. These variations are likely a combination of human error in counting and vehicles caught between intersections (counted passing one intersection and not having passed the other). In all four cases, the upstream intersection had the higher count.

Based on consultations with the village's traffic consultant, peak hours count times were established based on 24 hour counts over a one week period. Hourly volume data was obtained on August of 2008. Weekday counts at High Street and Hambletonian Avenue were collected on February 3, 2009. This intersection was counted on a school day as nearby schools were anticipated to influence traffic more than the Fun Central recreational facility on Route 17M.

In 2008, West Avenue was not a through road. It was closed for bridge construction on NYS Route 17. June 2006 volumes at West Avenue and NYS Route 17M intersection were reviewed and traffic was reassigned as if West Avenue were open. For the Saturday conditions, 2006 volumes were used at the Route 17M intersections with West Avenue and NYS Route 94. These 2006 volumes were at least ten percent higher than expected 2008 volumes.

3.5.4 Measure of Effectiveness Criteria

'Level of service' and 'volume to capacity ratios' are used as the measure of effectiveness for traffic flow conditions. Peak hour average vehicle delays were calculated to establish the quality of operation (level of service). Level of service is identified on a scale of level of service “A” representing the most efficient conditions to level of service “F” representing the least efficient

conditions. Detailed information concerning measures of effectiveness criteria (delay, level of service and volume to capacity ratios) can be found in Appendix H.

3.5.5 Existing Levels of Service

The intersections studied were evaluated for existing delays, levels of service and volume to capacity ratios. The results of the level of service analyses for these intersections are summarized in Tables 3.5-2 and 3.5-3. Capacity analysis and level of service calculations for all conditions are provided as Appendix I of this report.

Tables 3.5-2 and 3.5-3 show all peak hour levels of service at A to D for signalized intersections. Table 3.5-3 shows that all of the studied unsignalized intersections operate at levels of service A to C during the all periods.

Table 3.5-2
Existing Condition Level of Service Summary
NYS Route 94 Signalized Intersections

Intersection Road	Lane Group Approach Direction - Movement	A.M. Weekday Peak Hour Volume to Capacity Ratio	A.M. Weekday Peak Hour Level of Service (Delay)*	P.M. Weekday Peak Hour Volume to Capacity Ratio	P.M. Weekday Peak Hour Level of Service (Delay)*	Saturday Peak Hour Volume to Capacity Ratio	Saturday Peak Hour Level of Service (Delay)*
NYS Route 94 and NYS Route 17 Southbound ramps (signalized)							
NYS Route 94	EB - T	0.13	C (20.3)	0.28	C (20.4)	0.19	B (19.6)
	EB - R	0.47	C (24.0)	0.20	B (19.7)	0.16	B (19.3)
NYS Route 94	WB - L	0.47	B (17.0)	0.19	B (14.3)	0.22	B (13.5)
	WB - T	0.14	A (5.7)	0.49	A (6.0)	0.23	A (4.8)
NYS Route 17 Southbound ramps	SB - L	0.52	C (22.3)	0.59	C (25.0)	0.45	C (22.4)
	SB - T, R	0.65	C (25.6)	0.06	B (18.5)	0.08	B (18.6)
	Overall		C (21.0)		B (16.1)		B (16.1)
NYS Route 94 and NYS Route 17 Northbound ramps (signalized)							
NYS Route 94	EB - L	0.11	B (10.7)	0.24	B (11.0)	0.05	A (9.5)
	EB - T	0.32	A (1.4)	0.32	A (1.4)	0.32	A (1.4)
NYS Route 94	WB - T	0.37	B (15.6)	0.33	B (15.2)	0.32	B (15.1)
	WB - R	0.42	B (16.2)	0.43	B (16.4)	0.47	B (16.8)
NYS Route 17 Northbound ramps	NB - L, T	0.26	C (26.8)	0.59	C (31.5)	0.20	C (26.3)
	NB - R	0.24	C (26.7)	0.49	C (29.5)	0.34	C (27.7)
	Overall		B (13.8)		B (17.0)		B (14.1)
NYS Route 94 and NYS Route 17M (signalized)							
NYS Route 94	EB - L	0.30	D (35.4)	0.62	D (40.7)	0.68	D (39.8)
	EB - L, T	0.31	D (35.4)	0.55	D (38.5)	0.39	C (33.2)
	EB - R	0.74	D (48.1)	0.56	D (39.1)	0.78	D (46.7)
NYS Route 94	WB - L	0.13	C (33.0)	0.15	C (33.2)	0.19	C (32.7)
	WB - T, R	0.70	D (43.3)	0.80	D (50.5)	0.83	D (53.0)
NYS Route 17M	NB - L	0.63	D (42.5)	0.62	D (42.3)	0.78	D (52.6)
	NB - T, R	0.46	C (27.1)	0.64	C (31.0)	0.71	D (37.3)
NYS Route 17M	SB - L	0.23	D (40.4)	0.50	D (43.2)	0.64	D (49.1)
	SB - T, R	0.51	C (32.1)	0.86	D (44.5)	0.59	C (34.8)
	Overall		D (37.3)		D (41.4)		D (42.5)

NB = Northbound, SB = Southbound, EB = Eastbound, WB = Westbound.
L = left, R= right, T = through, (e.g. WB-L = Westbound left).

*Delay in seconds per vehicle.

Table 3.5-3
Existing Condition Level of Service Summary
Unsignalized and Signalized Intersections

Intersection Road	Lane Group Approach Direction - Movement	A.M. Weekday Peak Hour		P.M. Weekday Peak Hour		Saturday Peak Hour	
		Volume to Capacity Ratio	Level of Service (Delay)*	Volume to Capacity Ratio	Level of Service (Delay)*	Volume to Capacity Ratio	Level of Service (Delay)*
Hambletonian Avenue and High Street (unsignalized)							
High Street	NB - L, T	0.10	A (8.8)	0.01	A (7.7)	0.01	A (8.0)
Hambletonian Ave.	EB - L, R	0.56	C (22.7)	0.14	B (12.3)	0.17	B (13.5)
Ward Road and NYS Route 17M (unsignalized)							
NYS Route 17M	EB - L, T	0.02	A (7.7)	0.06	A (8.3)	0.03	A (8.0)
Ward Road	EB - L, R	0.09	A (10.0)	0.11	B (11.8)	0.03	B (10.6)
Main Street and NYS Route 17M (unsignalized)							
NYS Route 17M	EB - L	0.01	A (8.8)	0.02	A (9.1)	0.02	A (8.8)
Main Street	SB - L, R	0.24	B (14.3)	0.50	C (23.4)	0.19	B (14.2)
Arcadia Road and NYS Route 17M (signalized)							
Arcadia Road	EB - L, R	0.20	B (15.0)	0.19	B (14.8)	0.13	B (14.3)
NYS Route 17M	NB - L, T	0.29	A (9.6)	0.57	B (13.3)	0.35	B (10.2)
NYS Route 17M	SB - T, R	0.25	A (9.3)	0.44	B (11.1)	0.32	A (9.8)
	Overall		B (10.6)		B (12.6)		B (10.6)
West Avenue, NYS Route 17M, and Chester Mall (signalized)							
West Avenue	EB - L, T	0.21	B (14.9)	0.46	B (16.8)	0.41	B (16.3)
	EB - R	0.30	B (15.5)	0.32	B (15.6)	0.23	B (15.1)
Chester Mall	WB - L	0.25	B (15.3)	0.70	B (23.3)	0.73	C (24.6)
	WB - T, R	0.10	B (14.3)	0.27	B (15.3)	0.27	B (15.3)
NYS Route 17M	NB - L	0.14	A (6.7)	0.20	A (7.1)	0.13	A (6.7)
	NB - T	0.11	A (6.6)	0.24	A (7.2)	0.24	A (7.2)
	NB - R	0.15	A (6.7)	0.27	A (7.3)	0.41	A (8.1)
NYS Route 17M	SB - L	0.08	A (6.5)	0.12	A (6.6)	0.16	A (6.8)
	SB - T, R	0.18	A (6.9)	0.25	A (7.2)	0.20	A (7.0)
	Overall		B (10.2)		B (12.2)		B (12.3)

NB = Northbound, SB = Southbound, EB = Eastbound, WB = Westbound.
L = left, R= right, T = through, (e.g. WB-L = Westbound left).
*Delay in seconds per vehicle.

Backup Conditions

When a traffic event such as a collision occurs on NYS Route 17, traffic backs up in the area between Exit 125 and exit 127. Drivers may attempt to use an alternative route. Since NYS Route 17M parallels NYS Route 17 in this area, NYS Route 17M is used to avoid traffic congestion on NYS Route 17. Ramps leading off of NYS Route 17 provide only a single lane toward NYS Route 17M. Thus the ramp capacity is limited at the first ramp intersection. This ramp limitation prevents two lanes of traffic in one direction on NYS Route 17 from exiting to NYS Route 17M that is typically a single lane. Whenever an exiting ramp is used to avoid the traffic incident from Exit 125 to exit 127, that ramp will be congested during and after the incident. Furthermore any down stream affected intersection lane group that does not provide at least an equivalent amount of capacity as the affected ramp lane group may also be congested. The NYS Route 94 and NYS Route 17M intersection is most likely to become congested if traffic is exiting NYS Route 17 in this area to avoid NYS Route 17 backups. Drivers on NYS Route 17M that have exited at either adjacent NYS Route 17 exit (Exits 125 and Exit 127) can chose to turn and try to reenter NYS Route 17 at Exit 126 or can continue straight to the next exit.

Typical queuing at the NYS Route 94 and the NYS Route 17 ramps and the NYS Route 17M intersection was reviewed during the p.m. peak hour because the existing approach traffic is higher at this time and because the site generated traffic would be higher at these locations as commuters return from work and shopping. During a typical day there is a heavy right turn movement on the southbound ramp during the a.m. peak period which provides access towards the industrial park. This movement is not anticipated to be significantly affected by the site development. Each ramp turning volume approaching NYS Route 94 has its own turn lane. Other than the unaffected right turn on the southbound ramp, all other ramps volumes peak during the weekday p.m. peak hour. The existing p.m. peak hour traffic at the intersection of NYS Route 94 and NYS Route 17M is slightly higher (69 vehicles) than the Saturday peak hour and much higher (740 vehicles) than the a.m. peak hour.

The typical weekday p.m. peak hour queue was reviewed on a cycle by cycle basis from 3:30 p.m. to 5:15 p.m. at NYS Route 94 and NYS Route 17M and from 4 p.m. to 6 p.m. on the ramps.

Queues were continually cleared of standing vehicles except on the northbound ramp. Occasional queuing occurred on the northbound ramp when a tractor trailer truck was near the rear of the standing queue. Under these conditions, the queue advanced clearing everything ahead of the tractor trailer, however the tractor trailer crawled toward the intersection without clearing. The cause of this slow truck movement could be lack of driver attention, driver inexperience, engine, or load related. This situation occurred three times during the review period as illustrated in Photo L-1. Regardless of the cause, the infrequency of this occurrence would not necessitate a major signal timing revision. There was no observation of the ramp queues approaching the gore areas (where the deceleration lane physically splits from NYS Route 17).

The basic design of the timing should be to prevent traffic from spilling back to the ramps along NYS Route 94 or back to NYS Route 17M. Thus, vehicle storage is primarily to occur on NYS Route 94 west of the interchange, Route 94 east of Route 17M, on NYS Route 17M, and on the ramps. By controlling the flows into this short section of NYS Route 94, the system can operate at high efficiency. Except for the NYS Route 94 eastbound approach to NYS Route 17

southbound ramp all the other approaches did cause some blockage of nearby driveways. Vehicles in queues were observed to extend the courtesy of allowing such vehicles to enter the roadway.

The dual left turn (northbound) onto NYS Route 94 peaked at 6 vehicle lengths although the distribution between the lanes varied as vehicles align themselves according to their subsequent action for turning onto the NYS Route 17 ramp or not.

NYS Route 94 eastbound right onto the southbound NYS Route 17 on-ramp had no queue over 75 percent of the time due to the heavy right-turn-on-red during the southbound ramp green phase.

3.5.6 No-Build Traffic Conditions

Future transportation operations are examined for the No Build (without BT Holdings Chester Development) and Build (with the BT Holdings Chester Development) Conditions.

Typically a project's traffic impact is determined by comparing future traffic conditions without the project's traffic (2014 No-Build Conditions) to the traffic conditions with project-generated traffic (2014 Build Conditions).

The No-Build Condition is an interim scenario that establishes a future baseline condition. No-Build Conditions are ascertained based on a number of factors: (1) improvements in the local road network that are planned or underway; (2) traffic from general population growth in the local area; and (3) traffic from identified development projects in the project site vicinity.

Network Improvements

Exit 126 of NYS Route 17 was reconstructed and improved by realigning NYS Route 94 to Academy Avenue and upgrading the NYS Route 17 ramps into a standard diamond interchange configuration. Also work on the NYS Route 17 bridges over West Avenue was completed in 2008 allowing extension of the southbound off ramp and northbound on ramp.

The New York State Department of Transportation has several projects listed in the Statewide Transportation Improvement Program (TIP). The currently approved TIP (May 2008) covers traffic improvement projects to be initiated and or completed during the period between October 1, 2008 and September 30, 2012. These projects cover improvements to NYS Route 17 and its upgrade to Interstate 86. Thus, these improvements will facilitate movement on NYS Route 17. When work is proceeding traffic may shift to the local network to avoid construction. Such work is generally done to minimize peak hour traffic disruption.

In addition there are two local projects in the Town of Chester:

- Kings Highway sidewalks from Woods Road to Demarest Road; and
- Surrey Meadow Subdivision Road.

These projects are not anticipated to affect traffic in the study area.

Other Area Projects

The Town and Village of Chester and Town of Goshen were contacted to obtain a list of proposed development projects within the project vicinity. Table 3.5-4 lists the major pending and approved projects in the study area. Traffic potentially generated by these projects was included in the No-Build traffic analysis. Trip generation rates and trips generated by these developments are indicated in Appendix L Tables L-4 and L-5.

Table 3.5-4
Pending, Approved, or Under Construction Projects

Project Name	Access Location	Project Description (status)
Non-Residential Projects		
The Castle Entertainment Complex	Route 17M near West Street	10,000 square feet expansion (under review for site plan)
Frozen Ropes Sports Center	Black Meadow Road Ext. & Kings Highway	20,200 square feet building (under review for site plan)
Coach USA	NYS Rte. 94 & Tetz Drive	191,040 square feet bus garage and office (approved, has building permit)
Best Mexican Foods	Elkay Drive & Black Meadow Road	20,000 square feet warehouse and distribution center (under construction)
Lowe's Home Improvement	Rte. 94 & Route 17	102,000 square feet and garden center (completed and open)
C&S Wholesale Foods	Elizabeth Drive	356,022 square feet warehouse expansion (approved, starting construction)
Residential Projects		
Greens of Chester	Rte 94/Conklintown Road	431 units (237 Single-family) and 194 two-family) (preliminary approval ['98]; cluster denied ['09]; revising plans)
Heritage Hills	Old Chester Road, Town of Goshen	69 single-family homes on small lots (preliminary approval)
Hills of Chester	Whispering Hills Drive, Town of Chester (near Route 17 and Town line)	20 single-family homes on lots (preliminary approval)
Hills of Goshen	Arcadia Road area, Goshen	17 vacant subdivision lots with improvements completed (approximately 80% homes built)

Source: Telephone conversations with Town of Chester Engineer, Town of Goshen Building Department, and Village of Chester Building Department.

The Lowe's project had signal retiming, rephasing, and lane reconfiguration included as traffic mitigation at the NYS Route 17M and NYS Route 94 intersection. As the Lowe's is open and these improvements are complete, the improvements are included as part of the future conditions along with Lowe's traffic.

Peak hour traffic volumes for the future No Build Condition are shown in Figures 3.5-6, 3.5-7, and 3.5-8. These figures reflect the existing traffic plus the background traffic growth of one

percent annually over six years plus other area projects. Cumulative area background trips are indicated in Figures L-1 to L-3 contained in Appendix L. Other development traffic will be attracted to NYS Route 17 and the three nearby interchanges, of which two are outside the study area. This provides access to and from the greater New York Metropolitan area as well as the City of Middletown and regional shopping in the Town of Walkill. Additional trips are assigned to the industrial park, and the Warwick area. In addition, trips are assigned to local shopping, employment and schools.

Previously accepted trip generation and distributions for Lowes and C&S were used to project traffic from these facilities.

The background traffic growth rate of one percent per year was used to establish background growth to the build year of 2014. This time period is for the site plan approval process with proposed construction anticipated to be complete during or prior to 2014. The one percent growth rate reflects existing level of development in the Village, the presence and upgrading of NYS Route 17 to allow background traffic to bypass the area, the other area developments adding growth at the access of 11 to 17 percent, and prevailing economic growth.

No Build Level of Service

Tables 3.5-5 and 3.5-6 show the level of service summary for the studied intersections for the No Build Condition. With the assumptions that all the projects will be approved and built by 2014 as proposed and considering background growth, there would be an increase in traffic which would result in increased delays for intersection movements.

Table 3.5-5
No Build Condition Level of Service Summary
NYS Route 94 Signalized Intersections

Intersection Road	Lane Group Approach Direction - Movement	A.M. Weekday Peak Hour Volume to Capacity Ratio	A.M. Weekday Peak Hour Level of Service (Delay)*	P.M. Weekday Peak Hour Volume to Capacity Ratio	P.M. Weekday Peak Hour Level of Service (Delay)*	Saturday Peak Hour Volume to Capacity Ratio	Saturday Peak Hour Level of Service (Delay)*
NYS Route 94 and NYS Route 17 Southbound ramps (signalized)							
NYS Route 94	EB - T	0.27	C (21.7)	0.50	C (23.0)	0.37	C (21.4)
	EB - R	0.63	C (27.3)	0.38	C (21.6)	0.28	C (20.5)
NYS Route 94	WB - L	0.58	C (20.7)	0.29	B (19.4)	0.31	B (17.4)
	WB - T	0.32	A (6.4)	0.67	A (8.3)	0.40	A (5.5)
NYS Route 17 Southbound ramps	SB - L	0.56	C (23.0)	0.63	C (26.0)	0.48	C (22.8)
	SB - T, R	0.91	D (44.5)	0.20	B (19.7)	0.19	B (19.7)
	Overall		C (26.9)		B (18.2)		B (16.8)
NYS Route 94 and NYS Route 17 Northbound ramps (signalized)							
NYS Route 94	EB - L	0.22	B (13.5)	0.42	B (14.6)	0.15	B (12.3)
	EB - T	0.38	A (1.5)	0.39	A (1.5)	0.39	A (1.5)
NYS Route 94	WB - T	0.47	B (16.7)	0.42	B (16.1)	0.44	B (16.4)
	WB - R	0.46	B (16.6)	0.46	B (16.7)	0.50	B (17.2)
NYS Route 17 Northbound ramps	NB - L, T	0.43	C (28.8)	0.82	D (43.0)	0.37	C (28.0)
	NB - R	0.27	C (27.0)	0.54	C (30.6)	0.38	C (28.1)
	Overall		B (15.0)		C (20.1)		B (15.1)
NYS Route 94 and NYS Route 17M (signalized)**							
NYS Route 94	EB - L	0.25	C (25.2)	0.54	C (32.0)	0.62	C (32.5)
	EB - T	0.18	B (17.7)	0.29	B (18.8)	0.23	B (15.3)
	EB - R	0.37	B (19.7)	0.29	B (18.8)	0.43	B (17.5)
NYS Route 94	WB - L	0.14	C (27.9)	0.22	C (28.7)	0.29	C (31.0)
	WB - T, R	0.61	C (34.3)	0.69	D (37.0)	0.83	D (48.1)
NYS Route 17M	NB - L	0.75	D (48.5)	0.75	D (48.3)	0.77	D (48.9)
	NB - T, R	0.48	C (26.7)	0.67	C (31.0)	0.71	D (35.7)
NYS Route 17M	SB - L	0.20	D (35.1)	0.59	D (47.7)	0.58	D (44.0)
	SB - T, R	0.57	C (32.4)	0.76	D (37.5)	0.61	D (36.7)
	Overall		C (31.7)		C (34.4)		D (35.4)

NB = Northbound, SB = Southbound, EB = Eastbound, WB = Westbound.
L = left, R= right, T = through, (e.g. WB-L = Westbound left).

*Delay in seconds per vehicle.

** Lowe's mitigation includes signal retiming, rephasing, and eastbound lane group reconfiguration.

Table 3.5-6
No Build Condition Level of Service Summary
Unsignalized and Signalized Intersections

Intersection Road	Lane Group Approach Direction - Movement	A.M. Weekday Peak Hour		P.M. Weekday Peak Hour		Saturday Peak Hour	
		Volume to Capacity Ratio	Level of Service (Delay)*	Volume to Capacity Ratio	Level of Service (Delay)*	Volume to Capacity Ratio	Level of Service (Delay)*
Hambletonian Avenue and High Street (unsignalized)							
High Street	NB - L, T	0.12	A (9.1)	0.01	A (7.7)	0.02	A (8.1)
Hambletonian Ave.	EB - L, R	0.73	E (35.0)	0.16	B (13.1)	0.20	B (14.6)
Ward Road and NYS Route 17M (unsignalized)							
NYS Route 17M	EB - L, T	0.02	A (7.8)	0.06	A (8.5)	0.03	A (8.2)
Ward Road	EB - L, R	0.11	B (10.4)	0.13	B (12.7)	0.04	B (11.3)
Main Street and NYS Route 17M (unsignalized)							
NYS Route 17M	EB - L	0.01	A (9.0)	0.03	A (9.3)	0.02	A (9.1)
Main Street	SB - L, R	0.27	C (15.5)	0.61	D (29.5)	0.23	C (15.5)
Arcadia Road and NYS Route 17M (signalized)							
Arcadia Road	EB - L, R	0.24	B (15.4)	0.21	B (15.1)	0.16	B (14.6)
NYS Route 17M	NB - L, T	0.35	B (10.2)	0.70	B (16.6)	0.44	B (11.2)
NYS Route 17M	SB - T, R	0.31	A (9.8)	0.51	B (12.1)	0.40	B (10.6)
	Overall		B (11.1)		B (14.6)		B (11.4)
West Avenue, NYS Route 17M, and Chester Mall (signalized)							
West Avenue	EB - L, T	0.31	B (15.6)	0.60	B (19.5)	0.53	B (17.6)
	EB - R	0.35	B (15.9)	0.36	B (15.9)	0.28	B (15.4)
Chester Mall	WB - L	0.28	B (15.4)	0.81	C (31.5)	0.84	D (35.0)
	WB - T, R	0.13	B (14.5)	0.34	B (15.7)	0.30	B (15.5)
NYS Route 17M	NB - L	0.16	A (6.8)	0.23	A (7.2)	0.15	A (6.8)
	NB - T	0.13	A (6.7)	0.28	A (7.3)	0.28	A (7.4)
	NB - R	0.16	A (6.8)	0.28	A (7.4)	0.44	A (8.3)
NYS Route 17M	SB - L	0.09	A (6.5)	0.14	A (6.7)	0.18	A (6.9)
	SB - T, R	0.24	A (7.2)	0.30	A (7.5)	0.27	A (7.3)
	Overall		B (10.4)		B (13.9)		B (14.1)

NB = Northbound, SB = Southbound, EB = Eastbound, WB = Westbound.
L = left, R= right, T = through, (e.g. WB-L = Westbound left).
*Delay in seconds per vehicle.

3.5.7 Future Conditions with the Project

Description of Site

The proposed action includes development of 358 townhouses and 100 senior dwelling units. Access to the proposed development will be provided through a single access road off NYS Route 17M.

Internal Traffic Circulation

The site is designed with all buildings accessible from either loop roads or loops through the parking lots making truck access easier within the site.

The BT Holdings development private road system would be owned by a Homeowners Association that would be responsible for the maintenance of other common facilities.

The proposed entrance from Route 17M is located north of the entrance to the Chester Mall. Directly across Route 17M from the proposed site access is a road to a small single-family development.

Although the Chester Mall is adjacent to the southwestern boundary of the site, vehicular access is not proposed to connect with this commercial development. There is a wetland in the central portion of the site's western boundary and steeply sloped terrain on the Mall property adjacent to the southern part of the site's boundary. The northern boundary has detention basins and a separate parcel that would need to be negotiated. These topographic features would limit the potential for vehicular access. Access from the site to the Chester Mall would have to enter at the back of the property, facing the back of buildings and truck loading areas and drivers entering would then have to drive around to the front of the Mall to park and enter the stores. Such access provides little convenience to future residents.

The entrance is two 24 foot-wide one-way roadways and sidewalks on both sides with a planted median. The remaining on-site roads and the driveway to the senior apartments consist of 24 foot-wide two-lane (12 foot-wide lanes) roads. On the length of Road B that is a boulevard, the travel lanes on each side of the planted median are 12 foot wide. The only exception is the loop at the end of Road A, which traveled way is 21 feet wide including 2 lanes. The entrance design is subject to NYS DOT approval and would be part of the highway work permit as well as the maintenance access. The 24 foot wide exit is the width of two lanes or a single lane with shoulders. There is additional frontage should the NYS DOT require a wider driveway access.

Pedestrian Access

Pedestrian access is provided internally between buildings with sidewalks. Sidewalks are also provided along the site access. Trails are provided to gazebos, along basins 'A', 'B', and 'C', along much of the properties boundary and within the central road loop formed by Roads 'A', 'B', and 'C'. No pedestrian access is provided between the site and Chester Mall or along NYS Route 17M.

The emergency access in combination with local streets Oakland Street and Main Street provide pedestrian access into the Village downtown and Heritage Trail. Pedestrian access is

also provided directly to or across an internal road to the 10 guest parking areas for the non-senior housing and to the Road 'B' on-street parking.

Picnic areas, outdoor play areas and gazebos are located on the sidewalk and trail system. Sidewalks follow the boulevard that provides the primary access to the development allowing future residents safe pedestrian access to NYS Route 17M. The emergency only access in the eastern end of the site would provide pedestrian access to the adjoining neighborhood. Additionally, the internal private roads provide a network for biking.

The applicant believes that sidewalks leading from the site to the adjacent Chester Mall, as well as from the site to Main Street via Oakland Avenue, would be a benefit to the project and its residents. To that end, the applicant proposes to construct, subject to NYS DOT's review and approval, a sidewalk within the existing Route 17M right-of-way on the east side of Route 17M from the project's main driveway to the Chester Mall's northernmost driveway entrance. The applicant has approached the owner of the Chester Mall to make arrangements to continue the sidewalk along the Mall's driveway, and to connect to the Mall storefronts on Mall property. This portion of the sidewalk would be on property that the applicant does not own or control, therefore its construction is subject to the approval and consent of Mall owner. Alternatively, or possibly in addition to, the Route 17M sidewalk, the applicant may also seek to construct a sidewalk or walking trail connection from the project site southerly through the northern boundary of the Mall property. This access would also be subject to the Mall owner's approval.

A pedestrian connection from the site to Main Street and the historic Village center, via Oakland Avenue is also being investigated. The right-of-way for Oakland Avenue between the site and Main Street is almost entirely occupied by Oakland Avenue itself. Given the width of the road, the trucks that frequently travel on it, and the steep grades adjacent to the road, there is not enough room within the existing right-of-way to construct a properly sized and sloped sidewalk. Should the Village obtain additional right-of-way width, or easements having the same effect, the applicant would agree to construct a sidewalk on the south and east side of Oakland Avenue from the project site to Main Street. The on-site walking trails and sidewalks would be maintained by the Homeowners Association.

Emergency Access

At the discretion of the Village of Chester and its emergency service responders, a gated emergency access would be proposed at the rear of the site from the corner of Oakland Avenue and Woodland Terrace which would provide fire, ambulance, and police access from Main Street. This road will be restricted to emergency access only and is not proposed for use by the future residents of the BT Holdings development. The specific mechanism to permit access to emergency service vehicles will be determined during site plan review in consultation with local fire, ambulance, and police agencies.

The primary site access is designed in a boulevard style with 24' road widths which would be wide enough to allow two way traffic on either side should one side be closed Only buildings 1 and 2 (senior apartments) cannot be accessed from two directions by vehicle. The parking areas or roads allow vehicle to loop around the buildings hence there are no cul-sacs, hammer heads or similar dead-end treatments on-site.

Trip Generation

The project trip rates are summarized in Table 3.5-7. The land uses trip rates utilized were discussed with the Village's traffic consultant and found acceptable on Friday February 6, 2009.

The proposed action is expected to generate 215 and 245 external trips during the weekday a.m. and p.m. peak hours, respectively, and 218 external trips at the Saturday peak hour. The trips exiting and entering the development are shown in Table 3.5-8.

Table 3.5-7
Project Site Trip Rate Summary

Land Uses {ITE Code}	Trip Rates					
	A.M. Weekday Peak Hour		P.M. Weekday Peak Hour		Saturday Peak Hour	
	IN (Trips/ Units)	OUT (Trips/ Units)	IN (Trips/ Units)	OUT (Trips/ Units)	IN (Trips/ Units)	OUT (Trips/ Units)
Senior attached 100 dwelling units * {252}	0.097	0.173	0.186	0.124	0.150	0.150
Townhouses, 76 one and two bedroom dwelling units *** {230}	0.068	0.332	0.320	0.158	0.221	0.188
Townhouses, 282 more than two bedroom dwelling units ** {233}	0.129	0.431	0.397	0.233	0.300	0.255

Trip Generation, Institute of Transportation Engineers, 8th edition, Washington, DC, 2008.

*Rates for weekdays based on maximum Senior Adult Housing attached Occupied Dwelling units

**Rates for weekday a.m. based on average luxury townhouse rates, weekday p.m. based on maximum luxury townhouse rate, Saturday uses average weekday luxury rate.

***Rates base on total number of townhouses

Table 3.5-8
Site Trips Generated

Land Uses	Trips								
	A.M. Weekday Peak Hour			P.M. Weekday Peak Hour			Saturday Peak Hour		
	IN (Trips)	OUT (Trips)	Total Trips	IN (Trips)	OUT (Trips)	Total Trips	IN (Trips)	OUT (Trips)	Total Trips
Senior attached 100 dwelling units	10	17	27	19	12	31	15	15	30
Townhouses, 76 one and two bedroom dwelling units	5	25	30	24	12	36	17	14	31
Townhouses, 282 more than two bedroom dwelling units	36	122	158	112	66	178	85	72	157
Site Total	51	164	215	155	90	245	117	101	218
Trip Generation, Institute of Transportation Engineers, 8th edition, Washington, DC, 2008.									
See trip rate Table 3.5-7.									

Based on discussions with the Village's traffic consultant, trip generation from the Townhouse units were increased using higher rates for luxury townhouses to represent the units with more than two bedrooms. Additionally, the senior housing weekday trips were projected using maximum trip rates which are approximately double the average rates for occupied attached senior dwelling units. The same trip generation rate structure was also used in the Alternatives section. Table 3.5-9 indicates how the rates utilized in this study provide a very conservative evaluation of the traffic effects of the proposed residential units both for the townhouses and senior units.

The trip distribution from the site is shown in Figures 3.5-9 to 3.5-11 for the weekday a.m., weekday p.m., and Saturday peak hours. In some cases, trip distributions do not add up due to rounding. A worst case approach was used at Hambletonian Avenue and High Street by assigning all site traffic using Academy Avenue to this intersection. The site generated trips during these periods are shown in Figures 3.5-12 to 3.5-14. The site generated trips are added to No Build trips (Figures 3.5-6 to 3.5-8) to obtain Build Condition trips (Figure 3.5-15 to 3.5-17) for the development.

Table 3.5-9 Non-Senior Site Trips Generated			
	Trip Generation		
Rates used for Land Uses	Weekday A.M. Peak Hour TOTAL (Trips)	Weekday P.M. Peak Hour TOTAL (Trips)	Saturday Peak Hour TOTAL (Trips)
Using Standard Rates for residential townhouses 358 dwelling units	143	172	146
Using Conservative Study Rates for Residential Townhouses 282 luxury units (3 or more bedrooms) and 76 regular units (2 or less bedrooms) ****	**188***	**214****	**188*****
Percent increase from Standard Residential townhouses rates.	31%	24%	29%
* Luxury portion uses average luxury rate. ** Luxury portion uses maximum luxury rate. *** Luxury portion uses average peak hour weekday rate for luxury units. No luxury Saturday rate. **** Use rate for 358 townhouse units			

Build Condition Level of Service

Tables 3.5-10 and 3.5-11 show the level of service summary for the studied intersections for the future Build Condition with the project.

Table 3.5-10
Build Condition Level of Service Summary
NYS Route 94 Signalized Intersections

Intersection Road	Lane Group Approach Direction - Movement	A.M. Weekday Peak Hour Volume to Capacity Ratio	A.M. Weekday Peak Hour Level of Service (Delay)*	P.M. Weekday Peak Hour Volume to Capacity Ratio	P.M. Weekday Peak Hour Level of Service (Delay)*	Saturday Peak Hour Volume to Capacity Ratio	Saturday Peak Hour Level of Service (Delay)*
NYS Route 94 and NYS Route 17 Southbound ramps (signalized)							
NYS Route 94	EB - T	0.27	C (21.7)	0.50	C (23.0)	0.37	C (21.4)
	EB - R	0.63	C (27.3)	0.38	C (21.6)	0.28	C (20.5)
NYS Route 94	WB - L	0.67	C (23.3)	0.30	B (19.6)	0.33	B (17.6)
	WB - T	0.32	A (6.4)	0.67	A (8.3)	0.40	A (5.5)
NYS Route 17 Southbound ramps	SB - L	0.58	C (23.4)	0.68	C (27.7)	0.51	C (23.3)
	SB - T, R	0.91	D (44.5)	0.20	B (19.7)	0.19	B (19.7)
	Overall		C (27.3)		B (18.7)		B (17.0)
NYS Route 94 and NYS Route 17 Northbound ramps (signalized)							
NYS Route 94	EB - L	0.24	B (14.7)	0.42	B (14.8)	0.15	B (12.5)
	EB - T	0.39	A (1.5)	0.42	A (1.6)	0.41	A (1.6)
NYS Route 94	WB - T	0.52	B (17.4)	0.42	B (16.2)	0.45	B (16.5)
	WB - R	0.50	B (17.2)	0.48	B (16.9)	0.53	B (17.7)
NYS Route 17 Northbound ramps	NB - L, T	0.43	C (28.8)	0.82	D (43.0)	0.37	C (28.0)
	NB - R	0.28	C (27.1)	0.59	C (31.7)	0.41	C (28.5)
	Overall		B (15.4)		C (20.2)		B (15.3)
NYS Route 94 and NYS Route 17M (signalized)							
NYS Route 94	EB - L	0.29	C (26.1)	0.65	D (36.0)	0.70	D (35.8)
	EB - T	0.18	B (17.7)	0.29	B (18.8)	0.23	B (15.3)
	EB - R	0.37	B (19.7)	0.29	B (18.8)	0.43	B (17.5)
NYS Route 94	WB - L	0.14	C (27.9)	0.22	C (28.7)	0.29	C (31.0)
	WB - T, R	0.62	C (34.4)	0.71	D (38.1)	0.85	D (50.6)
NYS Route 17M	NB - L	0.75	D (48.5)	0.75	D (48.3)	0.77	D (48.9)
	NB - T, R	0.51	C (27.2)	0.75	C (34.7)	0.79	D (40.3)
NYS Route 17M	SB - L	0.22	D (36.1)	0.62	D (49.2)	0.62	D (45.4)
	SB - T, R	0.71	D (36.0)	0.81	D (40.1)	0.68	D (38.3)
	Overall		C (32.8)		D (36.3)		D (37.2)

NB = Northbound, SB = Southbound, EB = Eastbound, WB = Westbound.
L = left, R= right, T = through, (e.g. WB-L = Westbound left).

*Delay in seconds per vehicle.

Table 3.5-11
Build Condition Level of Service Summary
Unsignalized and Signalized Intersections

Intersection Road	Lane Group Approach Direction - Movement	A.M. Weekday Peak Hour		P.M. Weekday Peak Hour		Saturday Peak Hour	
		Volume to Capacity Ratio	Level of Service (Delay)*	Volume to Capacity Ratio	Level of Service (Delay)*	Volume to Capacity Ratio	Level of Service (Delay)*
Hambletonian Avenue and High Street (unsignalized)							
High Street	NB - L, T	0.12	A (9.1)	0.01	A (7.8)	0.02	A (8.1)
Hambletonian Ave.	EB - L, R	0.73	E (35.5)	0.16	B (13.3)	0.21	B (14.9)
Ward Road and NYS Route 17M (unsignalized)							
NYS Route 17M	EB - L, T	0.02	A (7.9)	0.06	A (8.6)	0.03	A (8.2)
Ward Road	EB - L, R	0.11	B (10.6)	0.13	B (13.0)	0.04	B (11.5)
Main Street and NYS Route 17M (unsignalized)							
NYS Route 17M	EB - L	0.01	A (9.1)	0.03	A (9.5)	0.02	A (9.2)
Main Street	SB - L, R	0.28	C (15.9)	0.64	D (33.1)	0.24	C (16.2)
Arcadia Road and NYS Route 17M (signalized)							
Arcadia Road	EB - L, R	0.25	B (15.5)	0.22	B (15.2)	0.16	B (14.6)
NYS Route 17M	NB - L, T	0.38	B (10.5)	0.76	B (19.0)	0.44	B (11.2)
NYS Route 17M	SB - T, R	0.32	A (9.8)	0.55	B (12.6)	0.40	B (10.6)
	Overall		B (11.3)		B (15.9)		B (11.4)
West Avenue, NYS Route 17M, and Chester Mall (signalized)							
West Avenue	EB - L, T	0.33	B (15.8)	0.69	C (22.8)	0.60	B (19.1)
	EB - R	0.35	B (15.9)	0.36	B (15.9)	0.28	B (15.4)
Chester Mall	WB - L	0.28	B (15.5)	0.88	D (41.2)	0.89	D (43.3)
	WB - T, R	0.13	B (14.5)	0.35	B (15.8)	0.31	B (15.5)
NYS Route 17M	NB - L	0.20	A (7.1)	0.25	A (7.4)	0.17	A (6.9)
	NB - T	0.17	A (6.8)	0.38	A (8.0)	0.37	A (7.9)
	NB - R	0.16	A (6.8)	0.28	A (7.4)	0.44	A (8.3)
NYS Route 17M	SB - L	0.11	A (6.6)	0.17	A (6.9)	0.22	A (7.1)
	SB - T, R	0.39	A (8.0)	0.36	A (7.8)	0.35	A (7.8)
	Overall		B (10.3)		B (15.3)		B (15.0)
Site Access and NYS Route 17M (unsignalized)							
NYS Route 17M	SB - L, T	0.01	A (8.0)	0.04	A (9.0)	0.02	A (8.6)
Site Access	WB - L, R	0.38	C (17.1)	0.36	C (24.9)	0.32	C (20.1)

NB = Northbound, SB = Southbound, EB = Eastbound, WB = Westbound.
L = left, R= right, T = through, (e.g. WB-L = Westbound left).

*Delay in seconds per vehicle.

Parking

Table 3.5-12 below indicates the number of parking spaces, parking spaces per unit, and code requirements. To estimate actual demand, Parking Generation[1] was reviewed. The Senior units parking surveys had limited sample sizes so information on apartments was provided as a more conservative estimate of parking demand for senior units. Surveys indicate the proposed parking would meet the on-site demand for parking. The Town of Chester recently adopted revised parking requirements that in some ways are more stringent than previous standards. The parking spaces meet projected parking demand and town requirements for multiple dwellings but not senior units. However, based on the unit types, the project's overall 2.53 parking spaces per unit exceeds the overall Town parking requirement of 2.059 spaces per unit. The proposed 2.53 parking spaces per unit does not meet Village requirements of 3.338 spaces per unit.

Table 3.5-12
Parking Summary

Land Uses	Proposed Parking Spaces	Parking Rate (Spaces per Dwelling Unit)	Zoning Requirement (Spaces per Dwelling Unit)		Parking Generation[1] (includes guests)
			TOWN	VILLAGE	
SENIORS					
75 1-Bedroom Affordable/Market-rate units	125	1.25	1.25/1.50	2.25*	0.50 per dwelling unit[2] (1.20 spaces per unit average peak demand for low/mid rise suburban apartments)
25 2-Bedroom Affordable/Market-rate units			1.50/1.75		
TOWNHOUSE					
76 2-Bedroom Townhouse units	812	2.77***	2.00**	3.25*	1.68 per dwelling unit (95th percentile rate)
282 3-Bedroom Townhouse units			2.25**	3.75*	
Guest Parking	179		included above	included above	included above
CLUBHOUSE					
Clubhouse	41	0.09****	none	none	included above
TOTAL					
Total [3]	**1157**	**2.53****	**2.059**	**3.338**	**1.576**

* Includes 0.75 spaces per unit for guests.

** Includes 0.25 spaces per unit for guests.

*** Total spaces for all dwelling units including guest parking (991 spaces / 358 townhouses).

**** 41 spaces over 458 units.

[1] Parking Generation, Institute of Transportation Engineers, 3rd edition, 2004.

[2] Peak rate based on only two samples includes guests.

[3] Based on proposed units.

[1] Parking Generation, Institute of Transportation Engineers, 3rd edition, 2004.

Level of Service Summary

Tables 3.5-13 to 3.5-14 summarize level of service for all conditions. For a summary of level of service, delay, and volume to capacity ratios, see Appendix I, Table I-1 to I-3. Levels of service at the NYS Route 17M and NYS Route 94 intersection are shown improving in the No Build Condition as a result of the signal improvements installed as part of the Lowe's improvement store development.

The only lane groups to have a reduced level of service between the No Build Condition and the Build Condition were as follows:

- In the weekday p.m. and Saturday peak hours for the NYS Route 94 at NYS Route 17M eastbound left turn movement from level of service C to D;
- In the a.m. peak hour for the NYS Route 17M southbound right and through movements at NYS Route 94 from level of service C to D;
- In the p.m. peak hour for West Avenue eastbound left and through movements at NYS Route 17M from level of service B to C; and
- In the p.m. peak hour for the Chester Mall westbound left at NYS Route 17M from level of service C to D.

Table 3.5-13
Level of Service Summary All Conditions
NYS Route 94 Signalized Intersections

Intersection Road	Lane Group Approach Direction - Movement	Levels of Service								
		A.M. Weekday Peak Hour			P.M. Weekday Peak Hour			Saturday Peak Hour		
		Existing	No Build	Build	Existing	No Build	Build	Existing	No Build	Build
NYS Route 94 and NYS Route 17 Southbound ramps										
NYS Route 94	EB - T	C	C	C	C	C	C	B	C	C
	EB - R	C	C	C	B	C	C	B	C	C
NYS Route 94	WB - L	B	C	C	B	B	B	B	B	B
	WB - T	A	A	A	A	A	A	A	A	A
NYS Route 17 Southbound ramps	SB - L	C	C	C	C	C	C	C	C	C
	SB - T, R	C	D	D	B	B	B	B	B	B
	Overall	C	C	C	B	B	B	B	B	B
NYS Route 94 and NYS Route 17 Northbound ramps										
NYS Route 94	EB - L	B	B	B	B	B	B	A	B	B
	EB - T	A	A	A	A	A	A	A	A	A
NYS Route 94	WB - T	B	B	B	B	B	B	B	B	B
	WB - R	B	B	B	B	B	B	B	B	B
NYS Route 17 Northbound ramps	NB - L, T	C	C	C	C	D	D	C	C	C
	NB - R	C	C	C	C	C	C	C	C	C
	Overall	B	B	B	B	C	C	B	B	B
NYS Route 94 and NYS Route 17M										
NYS Route 94	EB - L	D	C	C	D	C	D	D	C	D
	EB - T	D*	B	B	D*	B	B	C*	B	B
	EB - R	D	B	B	D	B	B	D	B	B
NYS Route 94	WB - L	C	C	C	C	C	C	C	C	C
	WB - T, R	D	C	C	D	D	D	D	D	D
NYS Route 17M	NB - L	D	D	D	D	D	D	D	D	D
	NB - T, R	C	C	C	C	C	C	D	D	D
NYS Route 17M	SB - L	D	D	D	D	D	D	D	D	D
	SB - T, R	C	C	D	D	D	D	C	D	D
	Overall	D	C	C	D	C	D	D	D	D

NB = Northbound, SB = Southbound, EB = Eastbound, WB = Westbound.
L = left, R= right, T = through, (e.g. WB-L = Westbound left).

*Combined left and through lane group was changed as part of Lowe's development mitigation.

Table 3.5-14
Level of Service Summary All Conditions
Unsignalized and Signalized Intersections

Intersection Road	Lane Group Approach Direction - Movement	Levels of Service								
		A.M. Weekday Peak Hour			P.M. Weekday Peak Hour			Saturday Peak Hour		
		Existing	No Build	Build	Existing	No Build	Build	Existing	No Build	Build
Hambletonian Avenue and High Street										
High Street	NB - L, T	A	A	A	A	A	A	A	A	A
Hambletonian Ave.	EB - L, R	C	E	E	B	B	B	B	B	B
Ward Road and NYS Route 17M										
NYS Route 17M	EB - L, T	A	A	A	A	A	A	A	A	A
Ward Road	EB - L, R	A	B	B	B	B	B	B	B	B
Main Street and NYS Route 17M										
NYS Route 17M	EB - L	A	A	A	A	A	A	A	A	A
Main Street	SB - L, R	B	C	C	C	D	D	B	C	C
Arcadia Road and NYS Route 17M										
Arcadia Road	EB - L, R	B	B	B	B	B	B	B	B	B
NYS Route 17M	NB - L, T	A	B	B	B	B	B	B	B	B
NYS Route 17M	SB - T, R	A	A	A	B	B	B	A	B	B
	Overall	B	B	B	B	B	B	B	B	B
West Avenue, NYS Route 17M, and Chester Mall										
West Avenue	EB - L, T	B	B	B	B	B	C	B	B	B
	EB - R	B	B	B	B	B	B	B	B	B
Chester Mall	WB - L	B	B	B	B	C	D	C	D	D
	WB - T, R	B	B	B	B	B	B	B	B	B
NYS Route 17M	NB - L	A	A	A	A	A	A	A	A	A
	NB - T	A	A	A	A	A	A	A	A	A
	NB - R	A	A	A	A	A	A	A	A	A
NYS Route 17M	SB - L	A	A	A	A	A	A	A	A	A
	SB - T, R	A	A	A	A	A	A	A	A	A
	Overall	B	B	B	B	B	B	B	B	B
Site Access and NYS Route 17M										
NYS Route 17M	SB - L, T	--	--	A	--	--	A	--	--	A
Site Access	WB - L, R	--	--	C	--	--	C	--	--	C

NB = Northbound, SB = Southbound, EB = Eastbound, WB = Westbound.
L = left, R= right, T = through, (e.g. WB-L = Westbound left).

The Applicant understands that traffic continues to be a planning issue in the area, and recognizes that a project like the one BT Holdings is proposing has the potential to increase traffic delays.

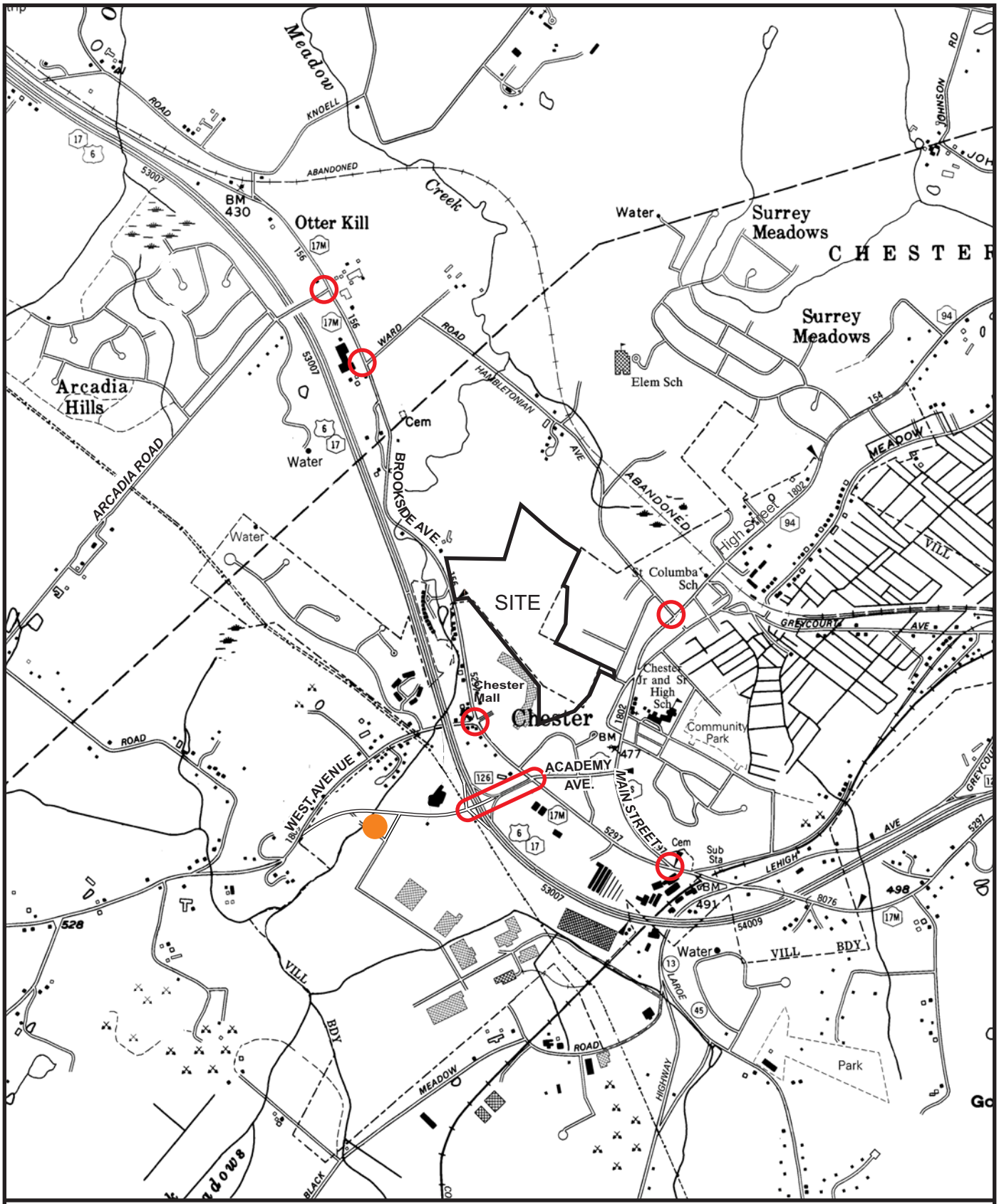
All studied signalized intersections should perform at or better than level of service D (see Tables 3.5-13 and 3.5-14), the minimum level of service recommended by NYSDOT for signalized intersections. All studied unsignalized intersections are anticipated to perform at level of service D or better. The only exception is Hambletonian Avenue and High Street in the a.m. peak hour, which should perform at level of service E as is anticipated in the No-Build Condition. This condition reflects a short period when schools open in conjunction with peak a.m. commuter traffic. Therefore, the additional traffic from the proposed development (Build Condition) will not result in the studied intersections performing at an unsatisfactory level of service.

Proposed Mitigation Measures

As NYS Route 17 is brought up to interstate standards the frequency of incidents may decline and the incident removal may occur more quickly. The Quickway corridor is not designed for the local network to handle peak hour Quickway traffic expeditiously. The increasing availability of near real-time incident information through the communication and tracking technology improvements will lead to drivers avoiding backups earlier. The earlier the drivers receive information, the more alternative routing choices are available, thus increasing the area effected and decreasing the intensity.

Expanding the NYS Route 17 off ramp capacity to handle incident traffic would be counter-productive as it would put more traffic on the local network than the network could handle and hence tie up the local network also.

Based on the traffic and parking analysis, the Applicant has proposed no additional external traffic improvements and no additional parking beyond the 1,157 spaces shown on the plan.



N
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Park-N-Ride Lot

Study Intersections

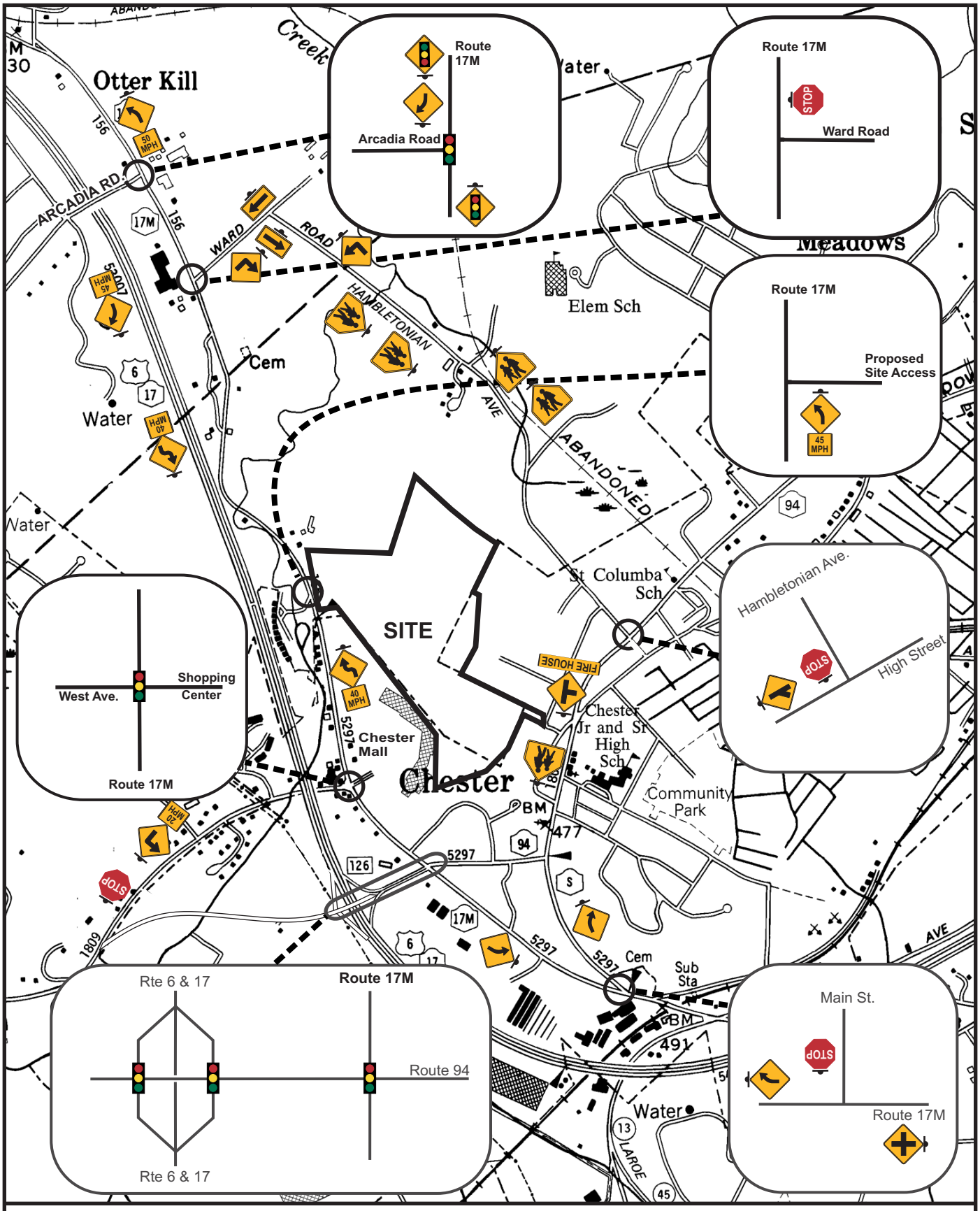
Figure 3.5-1: Transportation Network
BT Holdings - Chester
Village of Chester, Town of Chester, Orange County, New York

Base Map: US DOT Planimetric Map, Warwick Quad

Scale: 1 inch = 2,000 feet

File 05009 2/06/09
JS:\05009\

Tim Miller Associates, Inc.,10 North Street, Cold Spring, New York 10516 (845) 265-4400 Fax (845) 265-4418



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Traffic Signal

STOP Stop Sign

Warning Sign

40 MPH Advisory Speed Plate

Figure 3.5-2: Traffic Controls and Warning Signs
BT Holdings - Chester
Village of Chester, Town of Chester, Orange County, New York
Base Map: US DOT Planimetric Map, Warwick Quad
Scale: 1 inch = 1,000 feet

File 05009 2/11/09
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Tim Miller Associates, Inc.,10 North Street, Cold Spring, New York 10516 (845) 265-4400 Fax (845) 265-4418

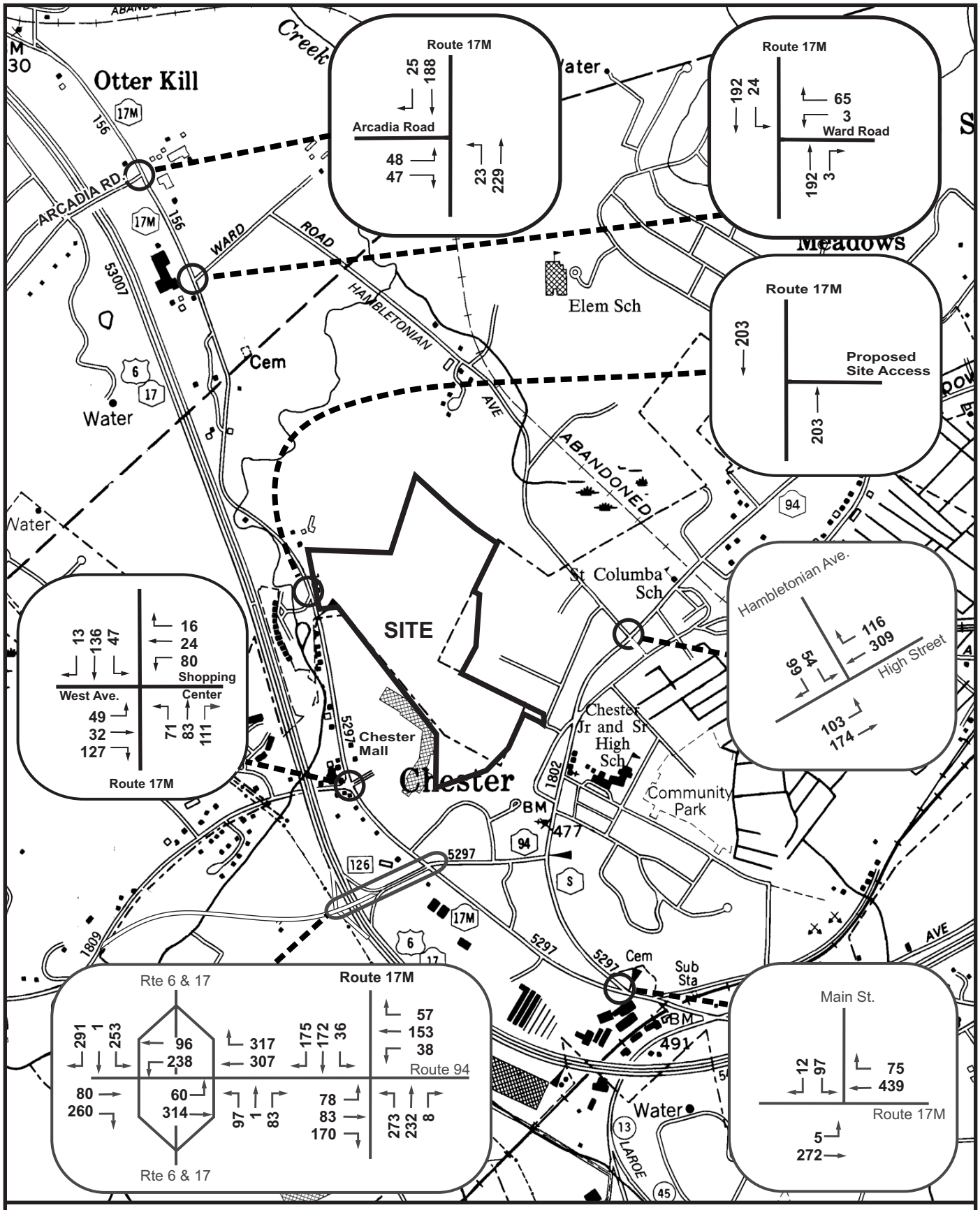

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Figure: 3.5-3 Existing AM Peak Hour Traffic
BT Holdings - Chester
Village of Chester, Town of Chester, Orange County, New York
Base Map: US DOT Planimetric Map, Warwick Quad
Scale: 1 inch = 1,000 feet

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Tim Miller Associates, Inc.,10 North Street, Cold Spring, New York 10516 (845) 265-4400 Fax (845) 265-4418

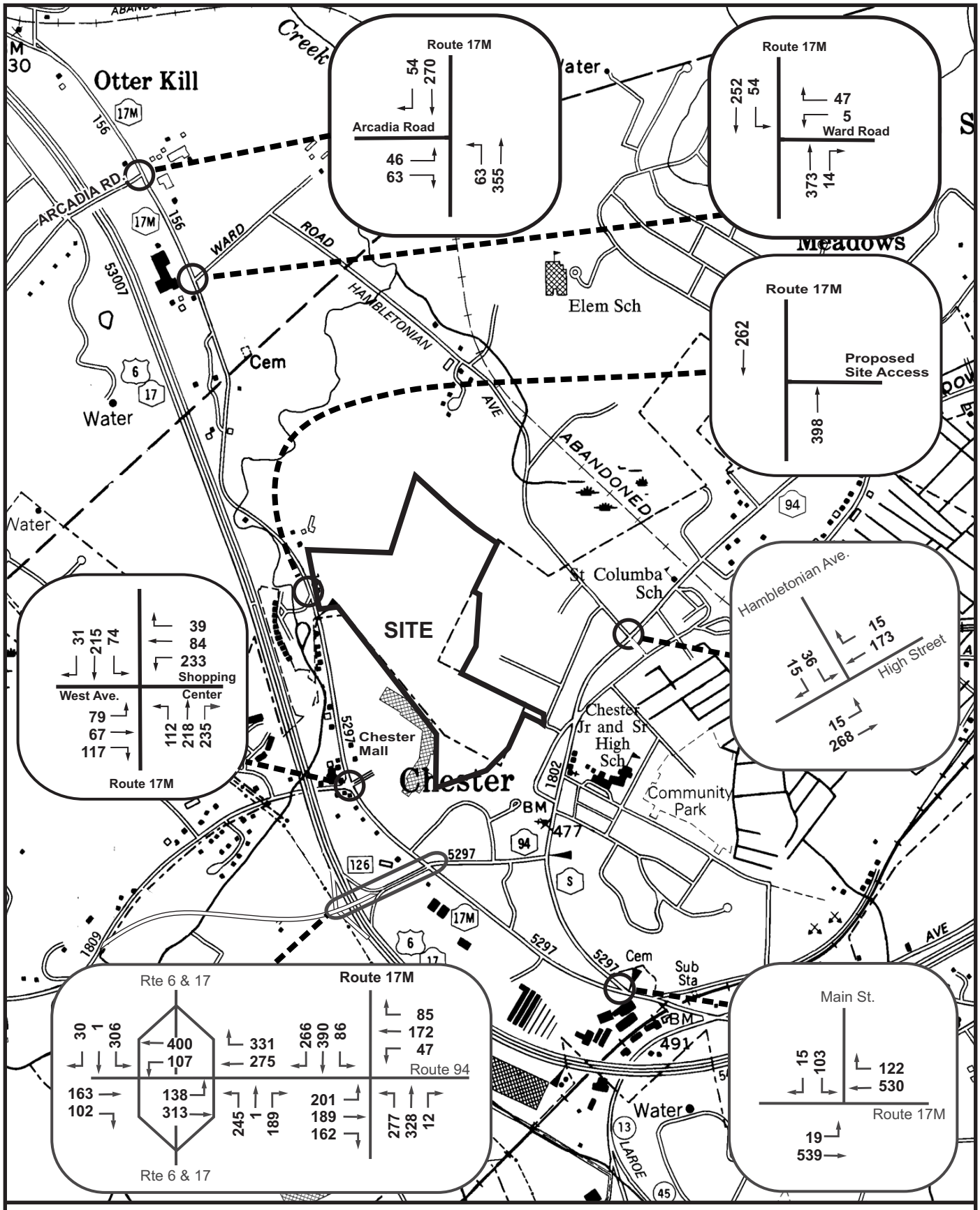

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Figure: 3.5-4 Existing PM Peak Hour Traffic
BT Holdings - Chester
Village of Chester, Town of Chester, Orange County, New York
Base Map: US DOT Planimetric Map, Warwick Quad
Scale: 1 inch = 1,000 feet

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Tim Miller Associates, Inc.,10 North Street, Cold Spring, New York 10516 (845) 265-4400 Fax (845) 265-4418

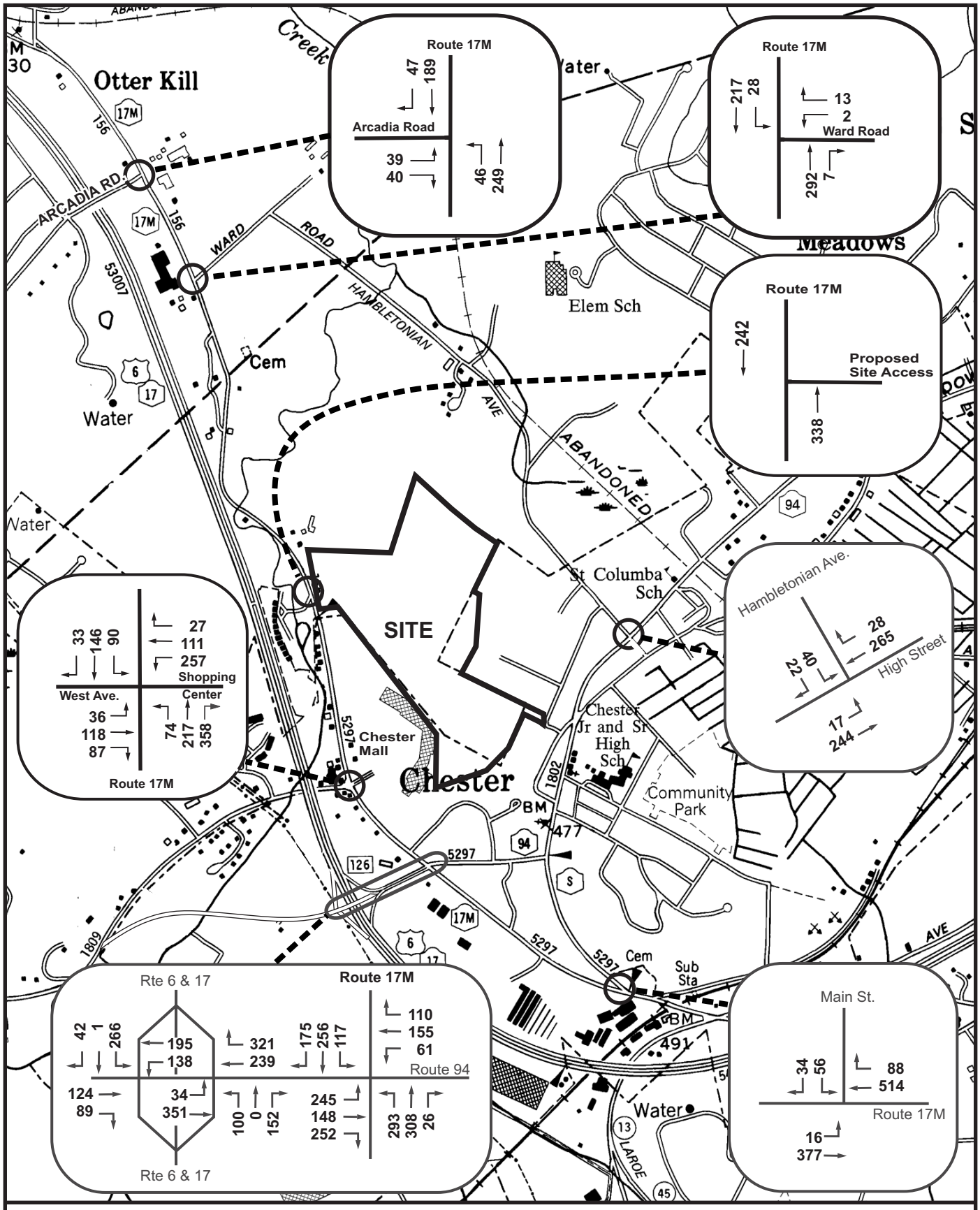

Figure: 3.5-5 Existing Saturday Peak Hour Traffic
BT Holdings - Chester
Village of Chester, Town of Chester, Orange County, New York
Base Map: US DOT Planimetric Map, Warwick Quad
Scale: 1 inch = 1,000 feet

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Tim Miller Associates, Inc.,10 North Street, Cold Spring, New York 10516 (845) 265-4400 Fax (845) 265-4418

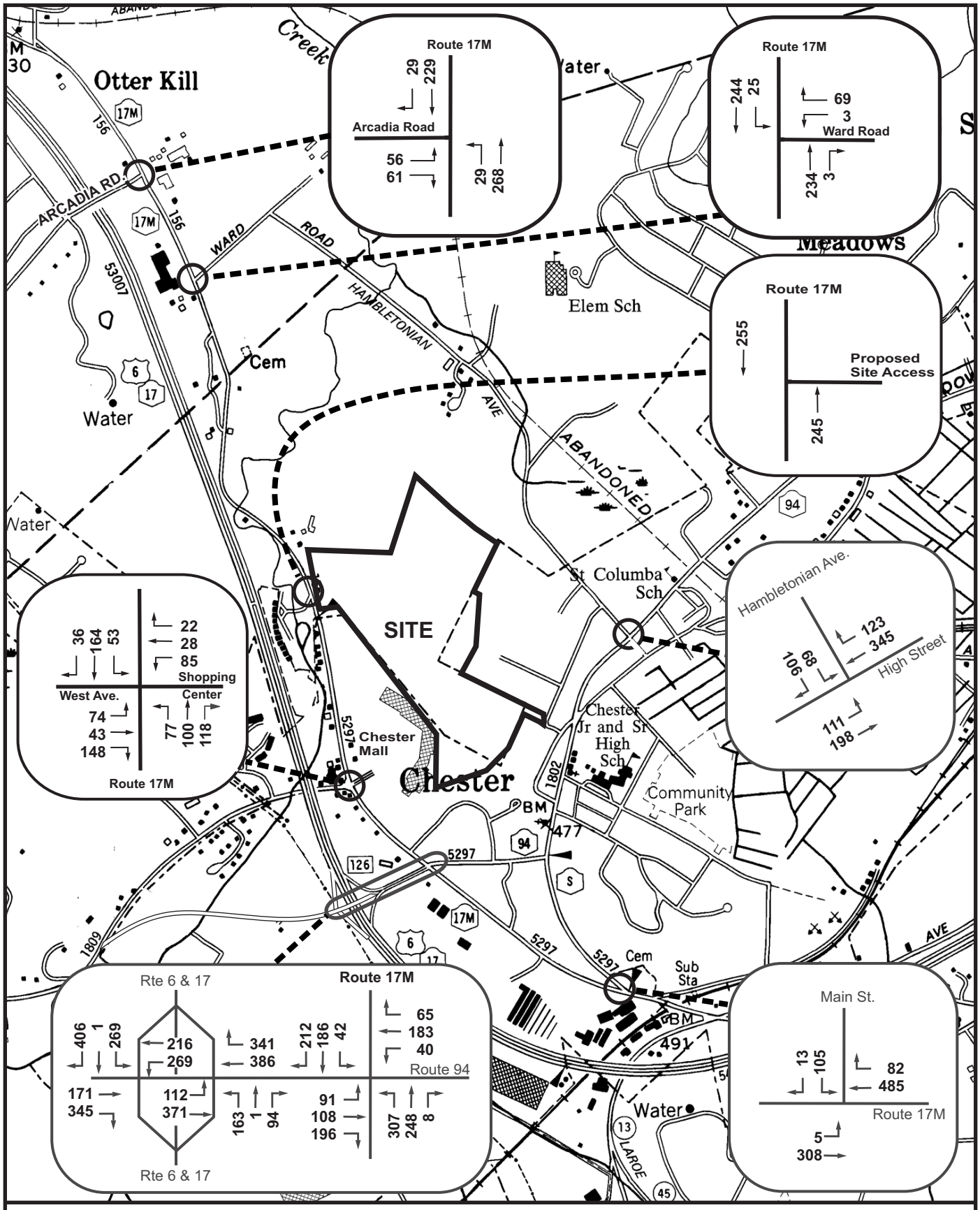

Figure: 3.5-6: No Build AM Peak Hour Traffic
BT Holdings - Chester
Village of Chester, Town of Chester, Orange County, New York
Base Map: US DOT Planimetric Map, Warwick Quad
Scale: 1 inch = 1,000 feet

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Tim Miller Associates, Inc.,10 North Street, Cold Spring, New York 10516 (845) 265-4400 Fax (845) 265-4418

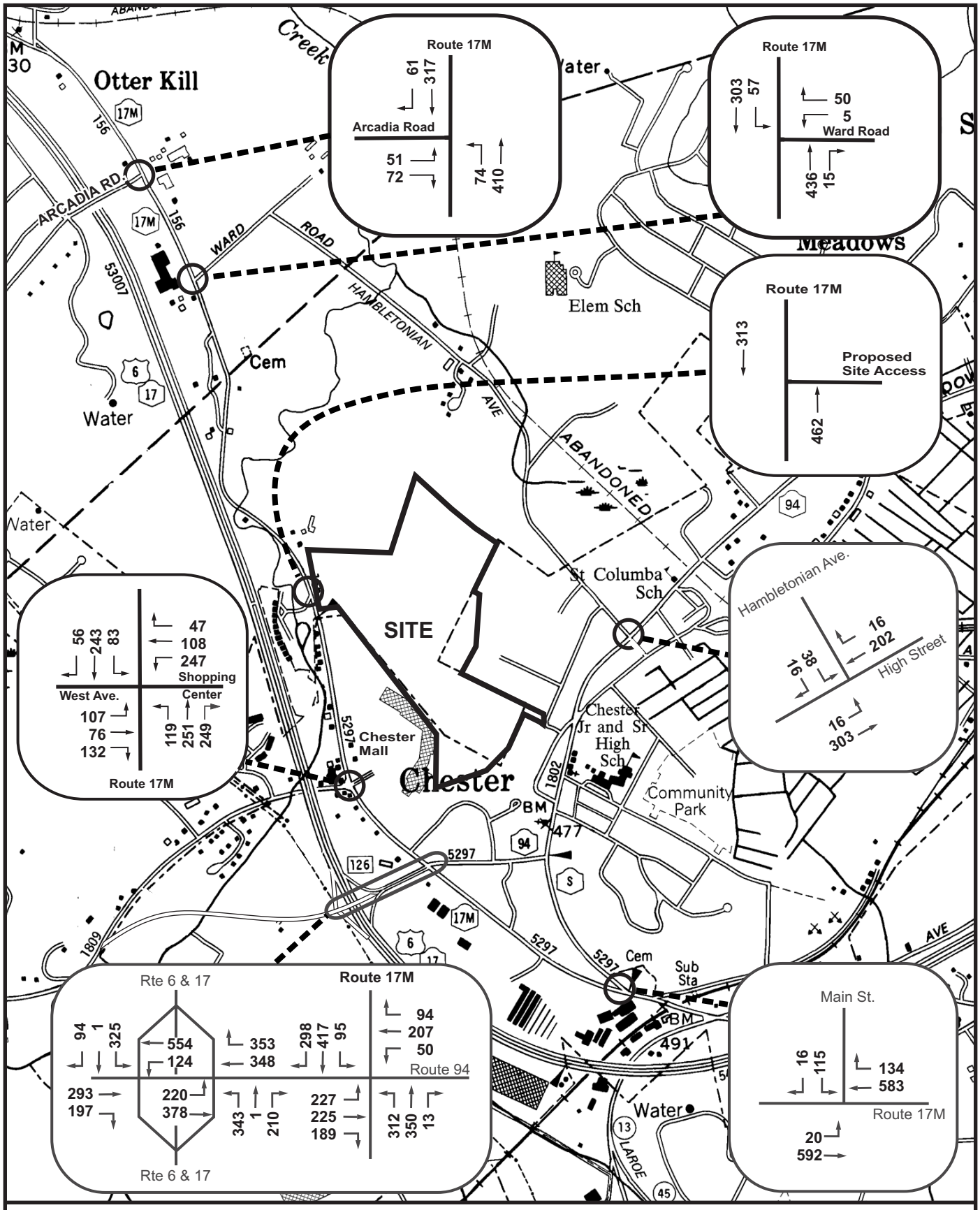

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Figure: 3.5-7: No Build PM Peak Hour Traffic
BT Holdings - Chester
Village of Chester, Town of Chester, Orange County, New York
Base Map: US DOT Planimetric Map, Warwick Quad
Scale: 1 inch = 1,000 feet

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Tim Miller Associates, Inc.,10 North Street, Cold Spring, New York 10516 (845) 265-4400 Fax (845) 265-4418

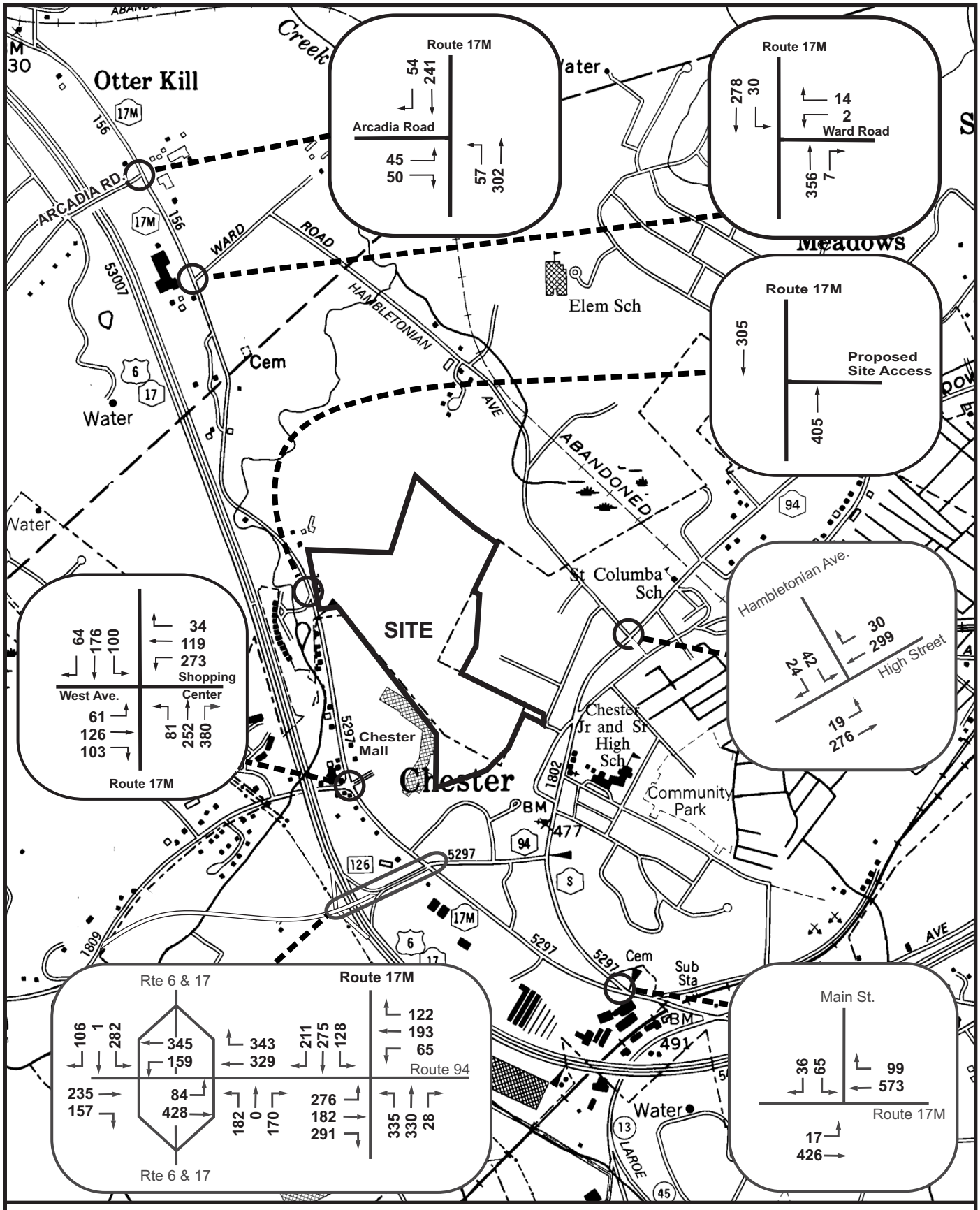

Figure: 3.5-8 No Build Saturday Peak Hour Traffic
BT Holdings - Chester
Village of Chester, Town of Chester, Orange County, New York
Base Map: US DOT Planimetric Map, Warwick Quad
Scale: 1 inch = 1,000 feet

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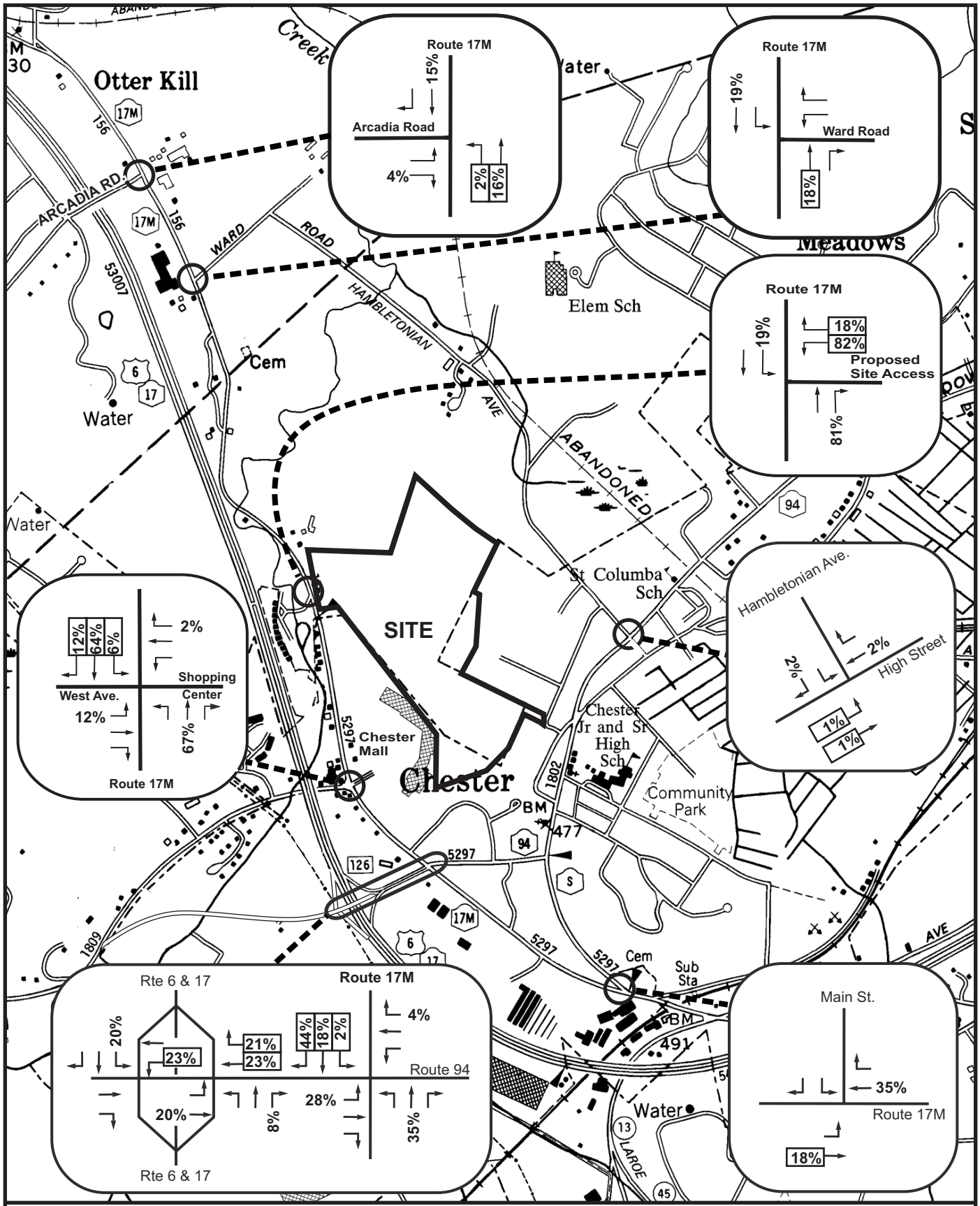
Tim Miller Associates, Inc.,10 North Street, Cold Spring, New York 10516 (845) 265-4400 Fax (845) 265-4418



N

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LEGEND

XX% Outbound

XX% Inbound

Figure: 3.5-9: Distribution Site AM Peak Hour Traffic
BT Holdings - Chester
Village of Chester, Town of Chester, Orange County, New York

Base Map: US DOT Planimetric Map, Warwick Quad

Scale: 1 inch = 1,000 feet

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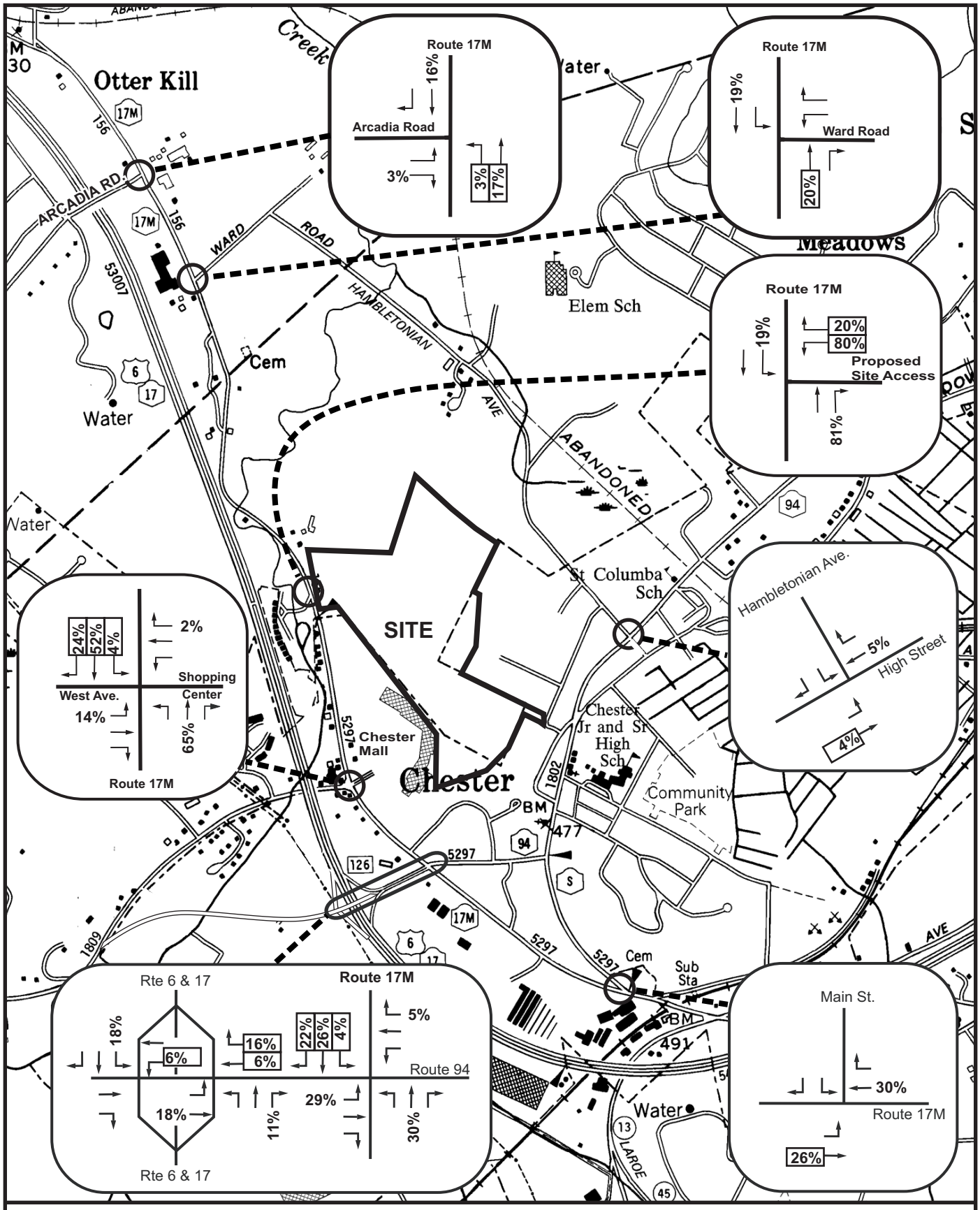
Tim Miller Associates, Inc.,10 North Street, Cold Spring, New York 10516 (845) 265-4400 Fax (845) 265-4418



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LEGEND

XX% Outbound

XX% Inbound

Figure: 3.5-10: Distribution Site PM Peak Hour Traffic

BT Holdings - Chester

Village of Chester, Town of Chester, Orange County, New York

Base Map: US DOT Planimetric Map, Warwick Quad

Scale: 1 inch = 1,000 feet

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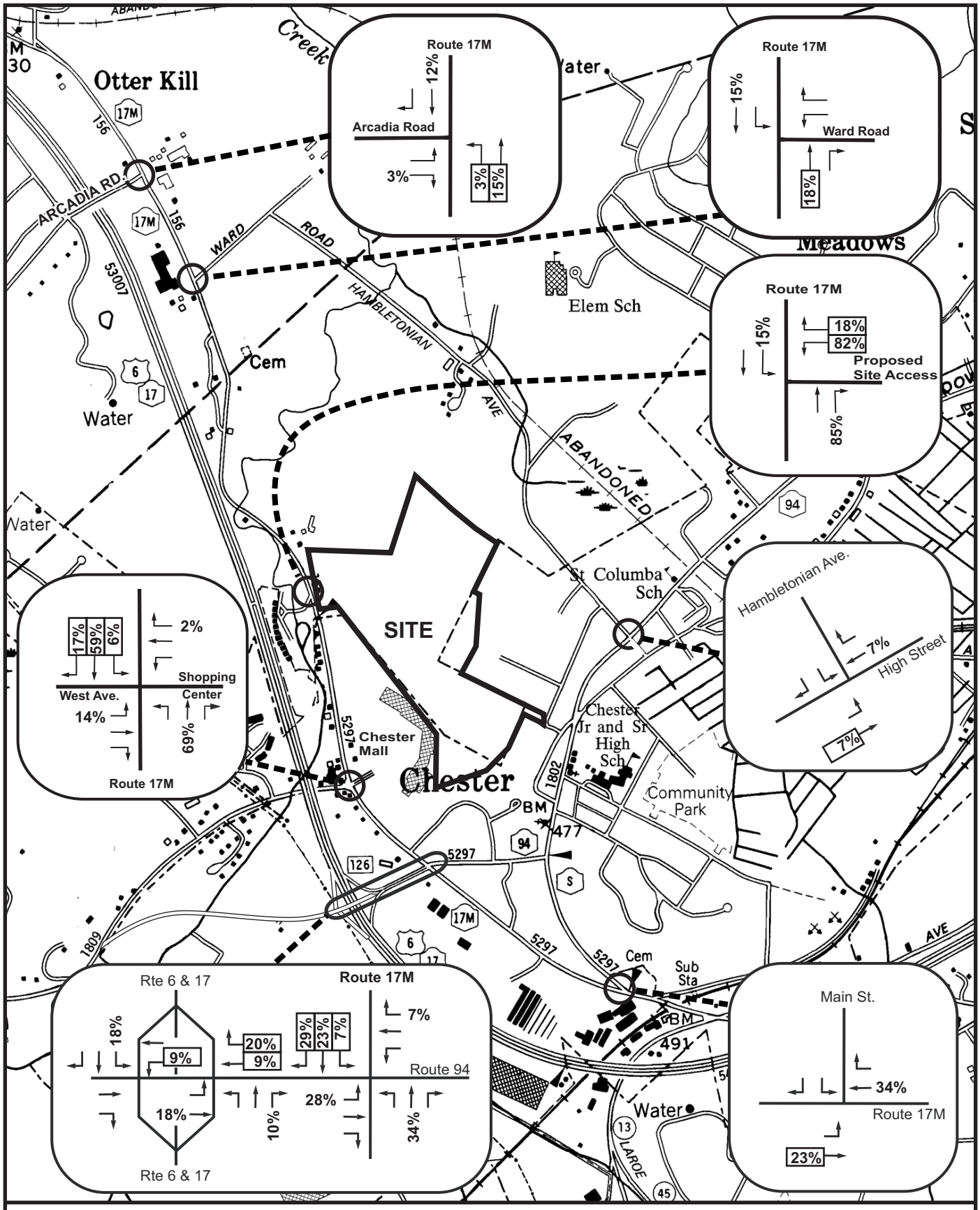
Tim Miller Associates, Inc.,10 North Street, Cold Spring, New York 10516 (845) 265-4400 Fax (845) 265-4418



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LEGEND

XX% Outbound

XX% Inbound

Figure: 3.5-11: Distribution Site Saturday Peak Hour Traffic

BT Holdings - Chester

Village of Chester, Town of Chester, Orange County, New York

Base Map: US DOT Planimetric Map, Warwick Quad

Scale: 1 inch = 1,000 feet

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Tim Miller Associates, Inc.,10 North Street, Cold Spring, New York 10516 (845) 265-4400 Fax (845) 265-4418

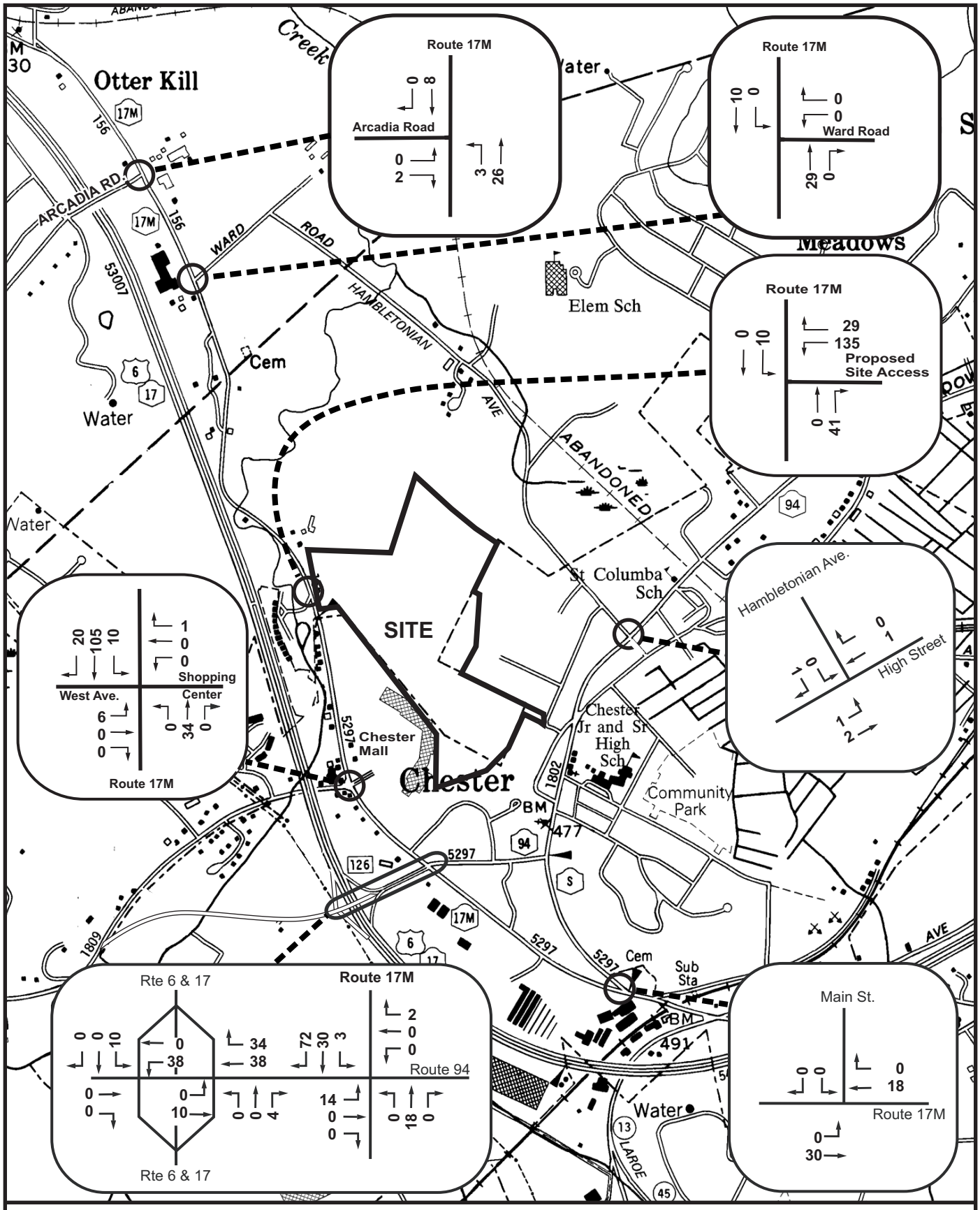

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Figure: 3.5-12: Site Generated AM Peak Hour Traffic
BT Holdings - Chester
Village of Chester, Town of Chester, Orange County, New York
Base Map: US DOT Planimetric Map, Warwick Quad
Scale: 1 inch = 1,000 feet

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Tim Miller Associates, Inc.,10 North Street, Cold Spring, New York 10516 (845) 265-4400 Fax (845) 265-4418

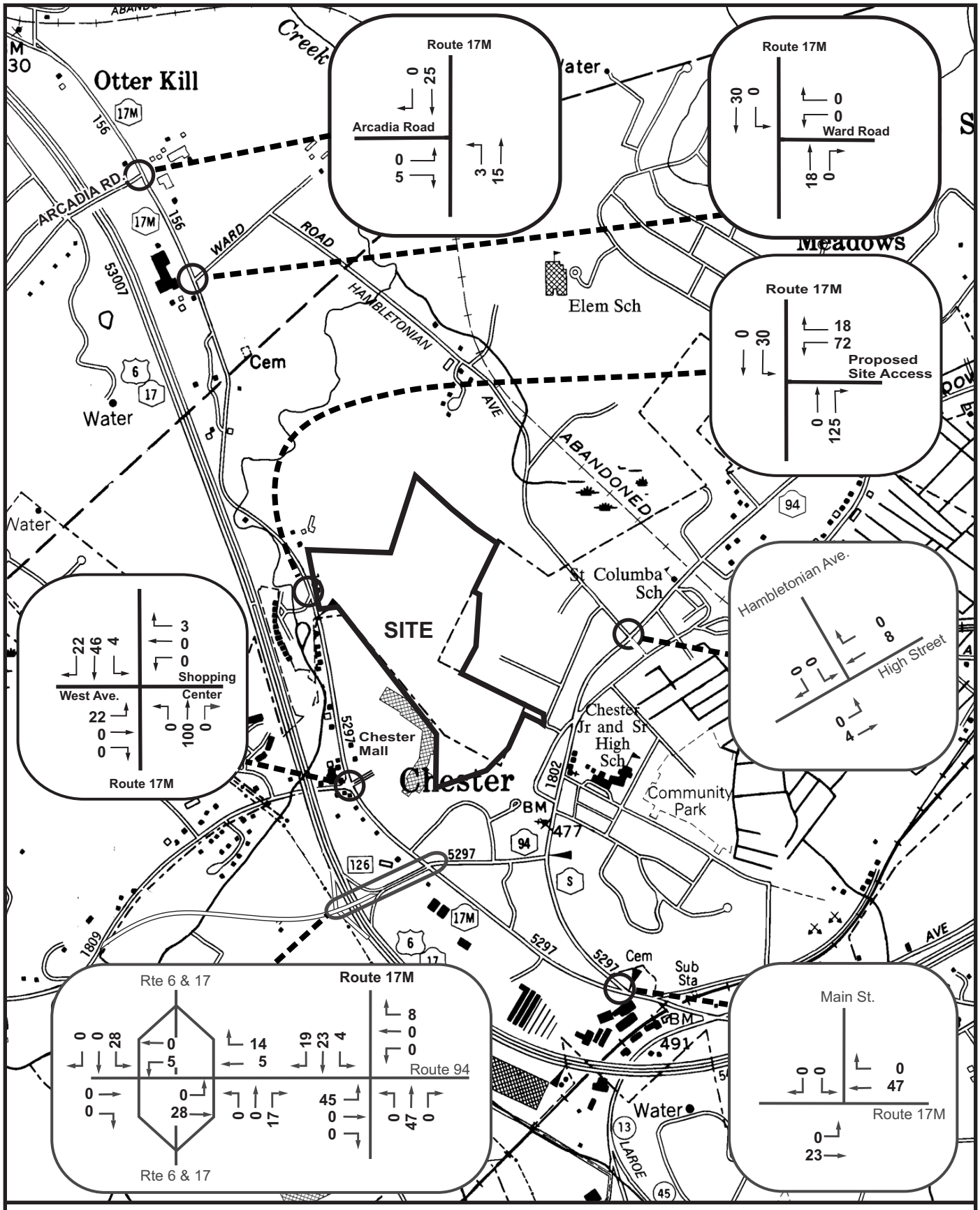

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Figure: 3.5-13: Site Generated PM Peak Hour Traffic
BT Holdings - Chester
Village of Chester, Town of Chester, Orange County, New York
Base Map: USGS Topographic Map, Warwick Quad
Scale: 1 inch = 1,000 feet

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Tim Miller Associates, Inc.,10 North Street, Cold Spring, New York 10516 (845) 265-4400 Fax (845) 265-4418

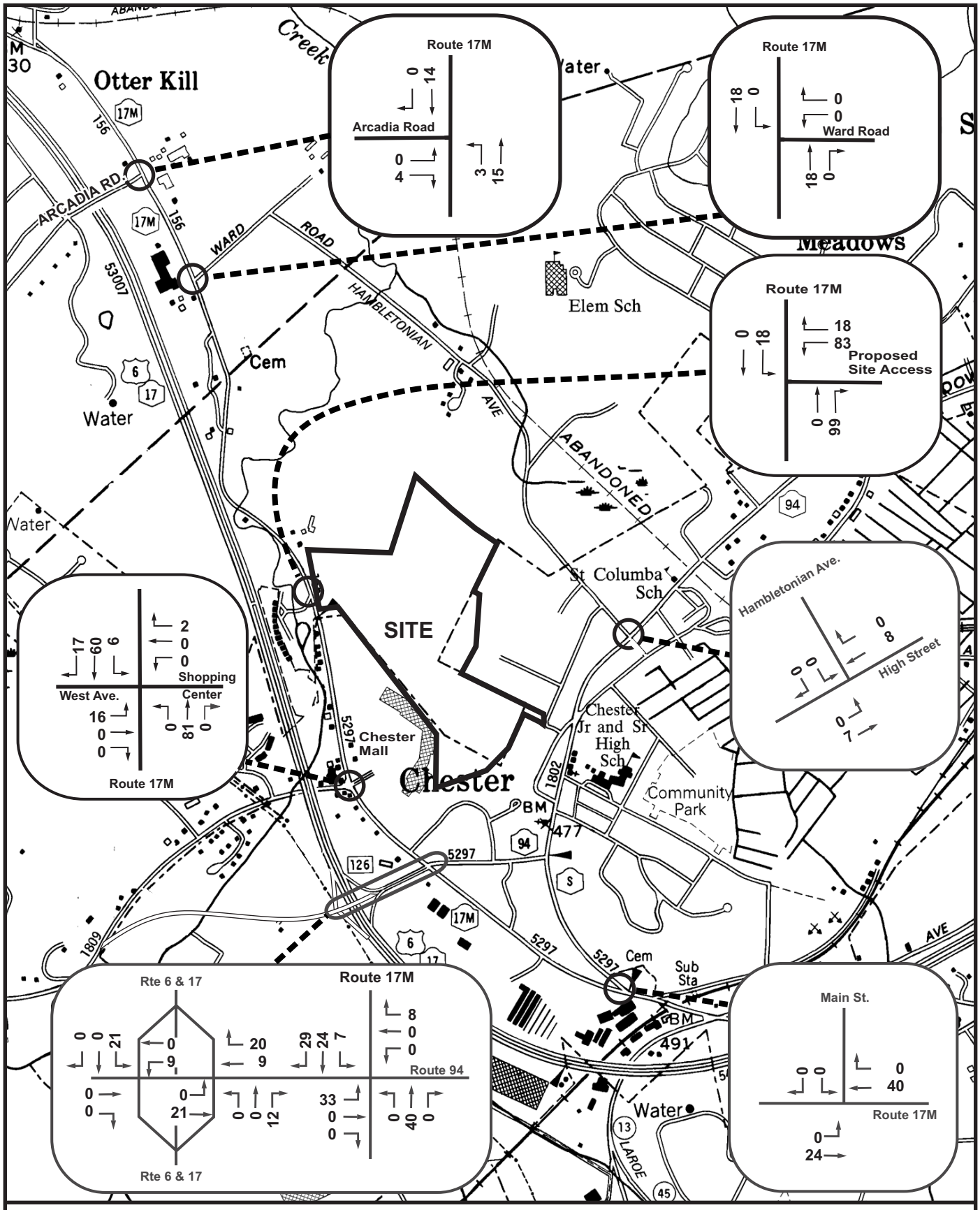

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Figure: 3.5-14: Site Generated Saturday Peak Hour Traffic
BT Holdings - Chester
Village of Chester, Town of Chester, Orange County, New York
Base Map: US DOT Planimetric Map, Warwick Quad
Scale: 1 inch = 1,000 feet

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Tim Miller Associates, Inc.,10 North Street, Cold Spring, New York 10516 (845) 265-4400 Fax (845) 265-4418

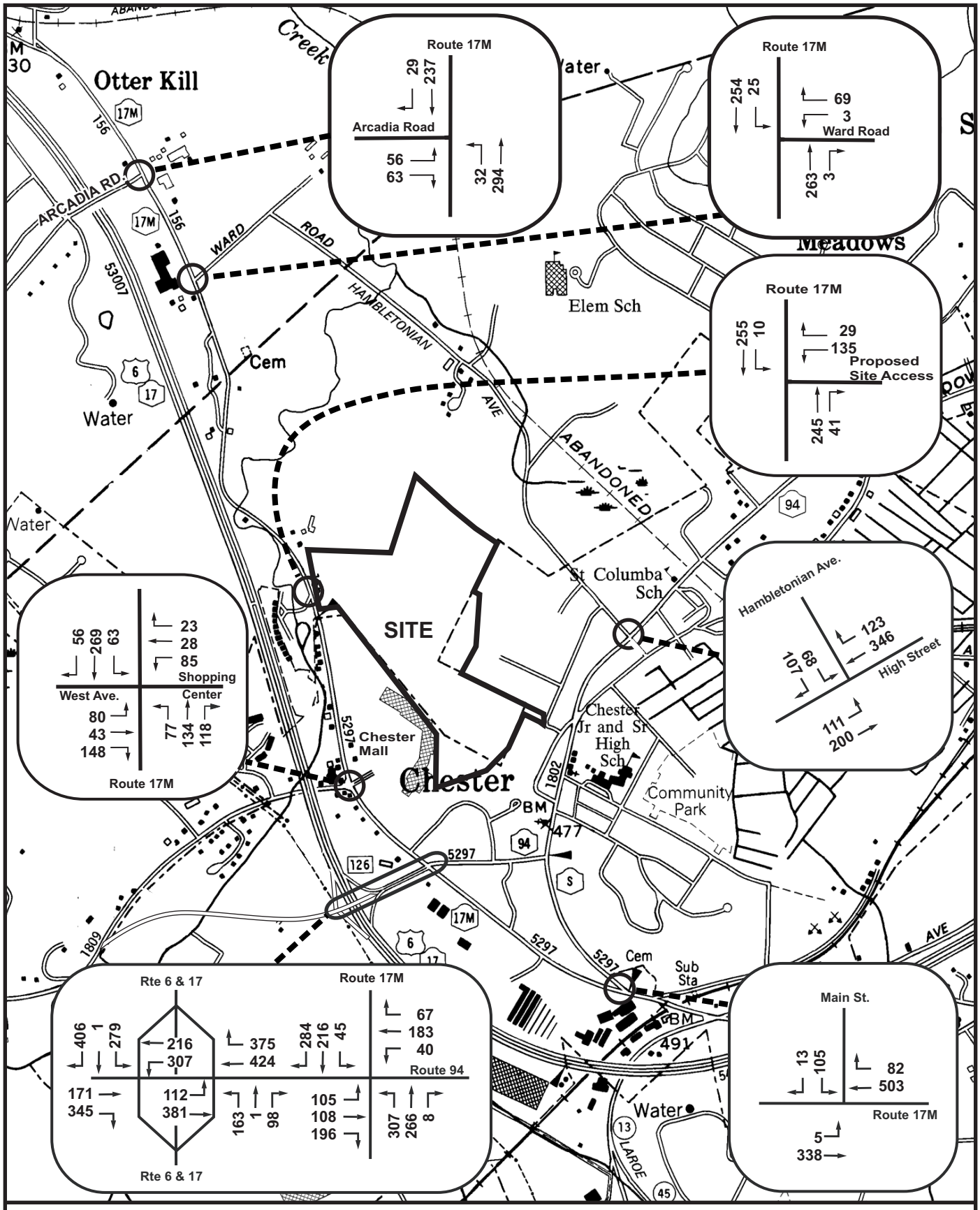

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Figure: 3.5-15: Build AM Peak Hour Traffic
BT Holdings - Chester
Village of Chester, Town of Chester, Orange County, New York
Base Map: US DOT Planimetric Map, Warwick Quad
Scale: 1 inch = 1,000 feet

File 05009 6/29/09
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Tim Miller Associates, Inc.,10 North Street, Cold Spring, New York 10516 (845) 265-4400 Fax (845) 265-4418

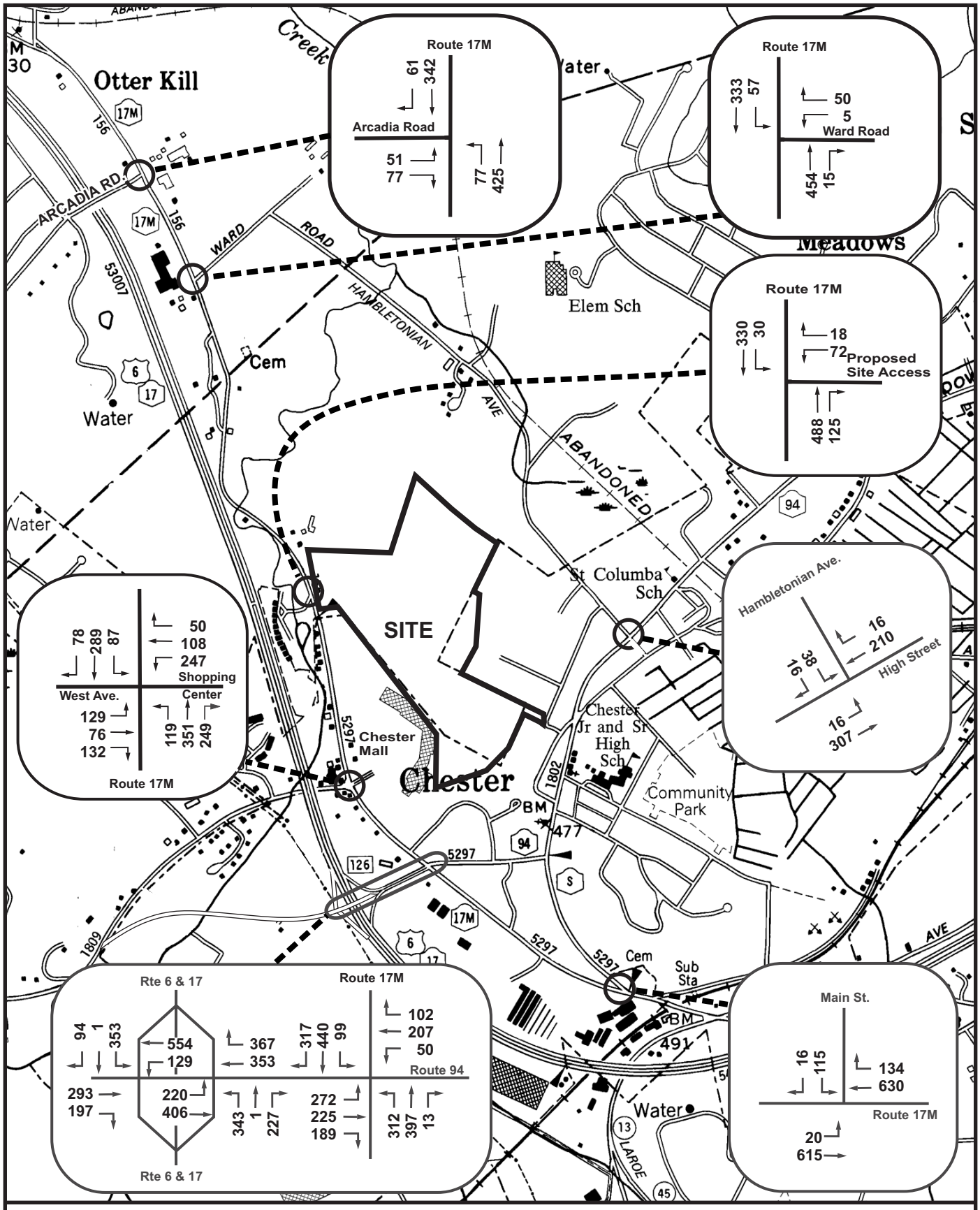

Figure: 3.5-16: Build PM Peak Hour Traffic
BT Holdings - Chester
Village of Chester, Town of Chester, Orange County, New York
Base Map: US DOT Planimetric Map, Warwick Quad
Scale: 1 inch = 1,000 feet

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Tim Miller Associates, Inc.,10 North Street, Cold Spring, New York 10516 (845) 265-4400 Fax (845) 265-4418

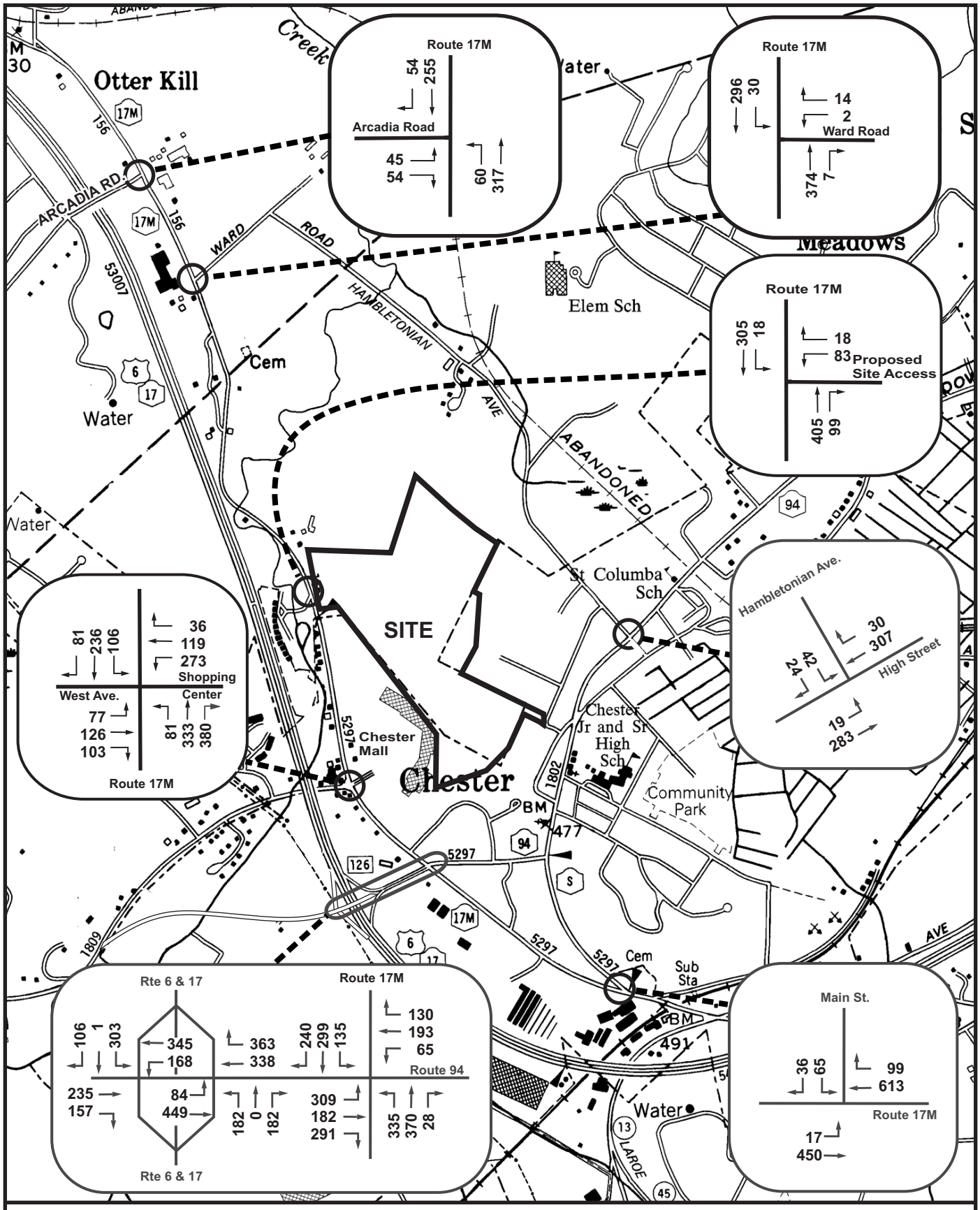

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Figure: 3.5-17: Build Saturday Peak Hour Traffic
BT Holdings - Chester
Village of Chester, Town of Chester, Orange County, New York
Base Map: US DOT Planimetric Map, Warwick Quad
Scale: 1 inch = 1,000 feet

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Tim Miller Associates, Inc.,10 North Street, Cold Spring, New York 10516 (845) 265-4400 Fax (845) 265-4418