3.8 Transportation

3.8.1 Existing Conditions

Introduction

The proposed project will consist of construction 149 multifamily residential units . The project site is located on Freeland Street, north of Forshee street in the Village of Monroe, Orange County, New York. The regional transportation network is shown in Figure 3.8-1. A detailed traffic study of the proposed Hidden Creek Project, including the cumulative effects associated with this proposal and other development in the area, conducted by Harry Baker & Associates, is included as Appendix B. A summary of this Traffic Study is provided below.

A traffic study was initially conducted at the project's inception. The project originally consisted of 156 units: The project had been modified slightly, based upon site considerations and is currently proposed at 149 units: 44 one bedroom units and 105 two bedroom units. The Traffic study included as Appendix B is based upon the current project proposal of 149 units. Based upon local operating conditions, and the differences in peak hours between weekdays and Saturdays, it may be necessary to provide an additional analysis of the Saturday peak hour operating conditions as the DEIS process moves forward.

This traffic study investigated seven existing intersections in proximity to the proposed development. Figure 3.8-2 shows the location of the intersections studied. The following intersections were included in the study:

- Route 17M/Freeland Street/Still Road - signalized
- Route 17 M/Entrance to Shopping Center - signalized
- Freeland Street/Spring Street (CR 105) - unsignalized
- Freeland Street/Half Hollow Road - unsignalized
- Freeland Street/Forshee Street - unsignalized
- CR 105/Larkin Road - signalized
- CR 105/Route 208 - signalized

In order to assess the impacts of the proposed project, manual turning movement counts were taken during the morning and evening peak hour periods. For the morning peak period, counts were taken between 6:30 AM and 9:00 AM. For the evening peak period, counts were taken between 4:00 PM and 6:30 PM. These extended hours were chosen to account for commuters leaving their homes early to travel to Manhattan, Rockland County or Westchester County, via car, bus or train. The manual counts were conducted on Tuesday May 15, 2001. When these counts were taken K-Mart was in operation in the shopping center on Route 17M. Although K-Mart is no longer in business, traffic from the store is representative of trips generated by a commercial use in this shopping center. The traffic counts were conducted in 15-minute intervals, and classified as cars and trucks. For the purpose of the counts buses were considered as trucks. To supplement the manual counts, two Automatic Traffic Recorder (ATR) Counts were made at the following locations.

- Freeland Street in front of the proposed Hidden Creek Road.
- Route 17M between the shopping center driveway and the intersection with Still Road/Freeland Street.

Peak hour vehicle delays were calculated to establish the quality of operation (level of service) at intersection approach lanes under the existing conditions. Future conditions without the project and future conditions with the project were also analyzed. The project can be expected to generate approximately 66 vehicular trips in the weekday AM peak hour, and 80 vehicular trips in the PM peak hour. With the mitigation measures proposed the level of service at the intersections studied can be brought back to the levels of service under the No-Build Condition, or better.

Level of Service Criteria

The Highway Capacity Manual and the Highway Capacity Software procedures document the methodology used for modeling levels of service, delay, and volume to capacity ratios at both signalized and unsignalized intersections. Level of service is a measure of the operational quality of an intersection; level of service A is the highest, most efficient level, and level of service F is the lowest level. The operational quality of an intersection is based on the average amount of time a vehicle is delayed. Levels of service are examined by lane group, the set of lanes allowing the same movements on an approach.

The definitions of delays consider all delays including startup, deceleration and acceleration delays. The New York State Department of Transportation prefers the use of the Highway Capacity Manual methodologies over other traffic capacity methodologies.

Table 3.8-1 presents the levels of service criteria for unsignalized intersections.

Table 3.8-1
Unsignalized Intersections
Level of Service Criteria

Level of Service	Stopped Delay (Seconds Per Vehicle)
A	≤ 10
B	>10 and ≤ 15
C	>15 and ≤ 25
D	>25 and ≤ 35
E	>35 and ≤ 50
F	> 50

SOURCE: Highway Capacity Manual, Transportation Research Board, National Research Council, Washington, D.C., 2000.

Table 3.8-2 presents the levels of service criteria for signalized intersections. The New York State Department of Transportation (NYS DOT) generally seeks a minimum level of service D (delay of 55 seconds or less for a signalized intersection) for all lane groups. The NYS DOT Highway Design Manual notes, "In some cases, it may be necessary to accept Level of service E or F on individual lane groups due to unreasonable costs or impacts associated with improving the level of service." A lane group is a set of lanes on an approach having the same common movement(s).

For all intersections, the volume to capacity ratio is an indication of the unused capacity or the ability of the intersection to process more traffic. It is possible to have a movement with an adequate level of service (level of service A, B, C or D) and be at capacity for the movement. It is also possible to have a movement with an unacceptable level of service (level of service E or F) with additional capacity available on the movement. The NYS DOT goal for volume to capacity (V/C) ratios at signalized intersections for lane groups is generally below 0.95. The ability of an entire intersection to handle more traffic is a complex issue as traffic can be added to under capacity movements without impacting over capacity movements.

Table 3.8-2
Signalized Intersections
Level of Service Criteria

Level of Service	Stopped Delay (Seconds Per Vehicle)
A	≤ 10
B	>10 and ≤ 20
C	>20 and ≤ 35
D *	>35 and ≤ 55
E	>55 and ≤ 80
F	> 80.0

SOURCE: Highway Capacity Manual, Transportation Research Board, National Research Council, Washington, D.C., 2000.
* For urban areas, the minimum level of service for design of lane-groups (one or more movements) assuming reasonable costs and impacts.

Existing Roadway Network

As previously noted, the proposed residential development would be located on Freeland Street between the Ramapo Creek and Forshee Street. A description of the local roadway system is provided below.

- **New York State Route 17M** is a roadway under the jurisdiction of the NYSDOT. In the vicinity of the site, the roadway traverses in a northwesterly/southwesterly direction. The roadway originates to the south at a signalized "T"-intersection with New York State Route 17. From this point, the roadway generally traverses in a northwesterly direction through Harriman, continuing into Monroe where it intersects with Still Road/Freeland Street in the vicinity of the site. The roadway then continues in a northwesterly direction providing access to Goshen, Middletown and other areas of Orange County.

In the immediate area of the site, Route 17M consists of one lane in each direction and then widens out at the entrance to the shopping center and the intersection with Still Road/Freeland Street to provide exclusive left-turn lanes. On the north-westerly approach there is also an exclusive right-turn lane. In the northwest corner of the intersection is the Hudson United Bank and further to the north Bilt-Well Fence and Dodge Rallye Autorama. In the southwest corner is the Grand Union/K-Mart shopping center. The shopping center has a signalized driveway on Route 17M and an unsignalized driveway on Still Road. In the northeast corner of the intersection is a small strip center and ice cream stand. Further to the north is a retail building followed by the firehouse. In the southeast corner is a Gulf gas station. The posted speed limit is 40 mph. Speeds along this section of roadway were observed to be in the 45-50 mph range.

- **Still Road/Freeland Street** is also referred to County Road 19 (Still Road) and County Road 40 (Freeland Street) runs north/south in the vicinity of the site. Still Road is a two-lane roadway beginning at Route 17M and runs north. The south-bound approach widens out to provide an exclusive left-turn lane and a combination through/right-turn lane. Freeland Street is a two-lane roadway beginning at Route 17M and runs south. The northbound approach widens out to provide an exclusive left-turn lane and a combination through/right-turn lane. Freeland Street continues in a northeasterly direction past the project site providing access to Highland Mills and Route 32. The posted speed limit is 30 mph. Speeds were observed in the 35-45 mph range.

- **Spring Street**, also known as County Road 105, begins at Freeland Street and continues in a west to State Route 208. There is a cemetery, park area and single-family homes along this stretch of roadway. Spring Street is a two-lane roadway and the triangular intersection with Freeland Street is unsignalized. The posted speed limit is 30 mph. Observations show that vehicles are traveling between 35-40 mph.

- **State Route 208** begins at the terminus of County Road 105. The road runs east/west turning south at County Road 105 connecting to State Route 17M. There are commercial and residential developments along both sides of the roadway. The intersection of State Route 208/County road 105 is signalized. There is a Mobil Gas Station located in the northwest corner of the intersection and the Mombasha Fire Co. Sub-Station No.1 located in the northeast corner. Along the westbound approach there are single-family homes. Eastbound Route 208 (west of the inter-section) connects diagonally to Route 208 (south of the intersection) permitting eastbound vehicles destined to State Route 17M to by-pass the traffic signal.

- **Half Hollow Road** is a local street providing access to a major housing sub-division. The street intersects with Freeland Street to form a “T” intersection and is controlled by a stop sign. The posted speed limit is 25 mph. The street is near the crest of the hill on Freeland Street. Sight distance observations were made at the intersec-tion. Looking to the south, the sight distance could be improved by trimming the grass between the edge of the roadway and single-family house. This would increase the sight distance to 360 feet. Looking to the north, where the site

distance measures in excess of 400 feet, a vehicle needs to edge up closer to the intersection because of a fence constructed in the northeast corner. The fence does not appear to be on the County right-of-way.

- **Forshee Street** is a local street providing access to single family homes. The street intersects with Freeland Street to form a “T” intersection and is controlled by a stop sign. The posted speed limit is 25 mph. The street is only 19-feet wide providing for two-way traffic flow. Vehicles stopping at the stop bar need to edge up further in order to clearly see the northbound traffic on Freeland Street. There is shrubbery that should be trimmed that would improve the sight distance.

- **Larkin Drive** located at the northern end of the project study area connects with County Road 105 to form a “T” intersection. The intersection is controlled by a full-actuated traffic signal. Larkin Drive runs parallel with State Route 17 and provides access to Home Depot, Wal-Mart, and State Route 17. The posted speed limit is 30 mph although vehicles do travel at a higher rate of speed.

Existing Conditions

A summary of the capacity analysis for signalized intersections under Existing Conditions is provided in Table 3.8-3. A similar summary is provided for unsignalized intersections in Table 3.8-4. The results of the capacity analysis show that for the Route 17M / Freeland Street/Still Road intersection, the Still Road northbound through and right turn combination lane currently operates at Level of Service (LOS) "D" in the morning peak hour and LOS “E” in the evening peak hour. The southbound through and right turn combination also operates at Level of Service (LOS) "D" in the morning peak hour and LOS “E” in the evening peak hour. The remainder of the approaches operate at LOS “D” or better. On Freeland Street and Still Road, vehicles often have to double cycle to pass through the intersection. Because of the double cycling, vehicles queue on the approaches. The overall Level of Service for this intersection is a LOS “D” .

For the Route 17M / Shopping Center Driveway / Vista Lane intersection, all of the approaches operate at LOS "C" or better except for the Shopping Center Exit combination northbound left and through lane that operates at LOS "E" during the PM peak hour.

At the County Road 105 / Larkin Drive intersection, all of the approaches operate at LOS “C” or better.

For the Route 208 / Main Street /Forest Street intersection the approaches operate at LOS “E” or "F", with the exception of the northbound Route 208, which operates at a LOS “C”. Many of the vehicles have to double cycle before proceeding through the intersection.

For the unsignalized intersections of Freeland Street/Forshee Street and Freeland Street/Half Hollow Road, all of the turning movements operate at LOS "C". or better.

At the intersection of Freeland Street/Spring Street (CR105) the eastbound left turn from Spring Street to County Road 105 northbound is currently a LOS “E” during the AM peak and a LOS “F” during the PM peak hour. This intersection is currently undergoing signalization by the Orange County Department of Public Works. Upon completion of the signalization of this

intersection, the projected LOS can be expected to be a LOS "C" or better, during both peak hour periods, with the exception of the northbound left/through movement from Freeland Street which will operate at LOS "D".

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Peak Hour Factor is a measure of the traffic demand fluctuation within the peak hour, the Peak Hour Factors used for this analysis were evaluated for the actual counts taken in May of 2001. The peak hour factors for these counts ranged between .75 and .96. The Highway Capacity Manual states "In the absence of field measurements of peak-hour factors (PHF) approximations can be used for congested conditions, .92 is a reasonable approximation...". The closer the peak 15 minute volume approaches a uniform flow, throughout the peak hour, the closer the PHF will approach 1. Utilization of a PHF of .92 was used based upon the recommendation of the Traffic Engineer for the Village of Monroe.

A standard unit of measure for traffic on a roadway is Average Daily Traffic (ADT). The ADT is an average amount of traffic over a day. The Average Annual Daily Traffic (AADT) is defined as the average daily traffic over a year or the total volume over a year divided by the number of days in the year. For heavy commuter routes (NYS DOT Factor Group 30) as Route 17M in Monroe; a work-week ADT, a week ADT (seven day) and the AADT are approximately the same.

An AADT of 16,045 vehicles is estimated based on a seasonal factor of 1.046 for the month of May applied to the seven day ADT (16,783 vehicles[1]) May count for Route 17M between Still Road and the Shopping Center access. The weekday ADT of 16,757 is within four percent of the AADT. The NYS DOT Highway Data Services Bureau's (April 30, 2003) seven-day seasonal factors are based on 2000 to 2002 Continuous Count data.

A seasonal factor for May of 1.046 was also applied to the May counted weekly ADT of 11,329 vehicles for Freeland Street traffic between Forshee Street and Half Hollow Road establishing an AADT of 10,831.

[1] See page 5 of the Traffic Impact Study in Appendix B

TABLE 3.8-3
Existing Conditions, Signalized Intersections
Level of Service Summary

Intersection Roads	Lane Group (Approach Direction -Movement)	AM Weekday Peak Hour			PM Weekday Peak Hour		
		Volume to Capacity Ratio	Delay seconds/ vehicle	Level of Service	Volume to Capacity Ratio	Delay seconds/ vehicle	Level of Service
Rt 17M/Freeland St/Still Rd							
Route 17M	EB-L	0.13	15.6	B	0.26	20.1	C
	EB-TR	0.65	33.3	C	0.77	35.8	D
	WB-L	0.08	23.1	C	0.17	20.5	C
	WB-T	0.28	26.4	C	0.71	32.8	C
	WB-R	0.05	13.0	B	0.07	9.1	A
Still Road	NB-L	0.23	33.8	C	0.45	40.0	D
	NB-TR	0.60	45.9	D	0.87	65.3	E
Freeland Street	SB-L	0.25	31.1	C	0.46	40.6	D
	SB-TR	0.73	52.3	D	0.80	56.7	E
Total			35.5	D		40.6	D
County Road 105/Larkin Dr							
Larkin Dr	WB-L	0.27	13.7	B	0.16	18.5	B
	WB-R	0.17	13.0	B	0.22	18.9	B
County Rd 105	NB-T	0.72	14.5	B	0.60	7.3	A
	NB-R	0.08	0.0	A	0.10	0.0	A
	SB-LT	0.50	10.6	B	0.97	32.0	C
Total			12.1	B		19.9	B
Route 208/Main Street							
Route 208	EB-LTR	1.16	>120.0	F	1.05	104.1	F
Main St	WB-LTR	0.84	60.5	E	1.44	>120	F
Route 208	NB-LTR	0.80	25.6	C	0.88	32.5	C
Forest St	SB-LTR	1.19	>120.0	F	0.58	45.4	D
Total			78.4	E		101.8	F
Route 17M/K-Mart/Vista Ln							
Route 17M	EB-L	0.01	3.1	A	0.00	0.0	A
	EB-TR	0.43	9.9	A	0.58	11.7	B
	WB-L	0.04	4.9	A	0.23	9.1	A
	WB-T	0.24	8.5	A	0.55	11.2	B
K-Mart Drive	NB-LT	0.22	33.8	C	0.80	58.4	E
	NB-R	0.11	22.0	C	0.24	23.8	C
Vista Lane	SB-LTR	0.04	31.6	C	0.04	31.6	C
Total			11.2	B		16.2	B

Level of Service (see page 5 in the Traffic Report, Appendix B for level of service criteria).

NB = Northbound, SB = Southbound, EB = Eastbound, WB = Westbound

L = left, R = right, T = through, TR = through and right, (e.g. WB-L = Westbound left).

TABLE 3.8-4
Existing Conditions, Unsignalized Intersections
Level of Service Summary

Intersection Roads	Lane Group (Approach Direction -Movement)	AM Weekday Peak Hour		PM Weekday Peak Hour	
		Delay seconds/ vehicle	Level of Service	Delay seconds/ vehicle	Level of Service
Freeland St/Forshee St					
Freeland St.	NB-L	7.8	A	8.5	A
Forshee St.	EB-LR	12.1	B	15.2	C
Freeland St/Half Hollow Rd.					
Freeland St.	SB-L	9.0	A	8.7	A
Half Hollow Rd	WB-LR	13.9	B	19.4	C
Freeland St/Spring St (CR 105)					
Spring St	EB-L	40.4	E	>120.0	F
Freeland St/Top of Triangle					
Freeland St	NB-L	8.0	A	8.4	A
Top of Triangle	EB-R	10.2	B	12.0	B

Level of Service (see page 5 in the Traffic Report, Appendix B for level of service criteria).

NB = Northbound, SB = Southbound, EB = Eastbound, WB = Westbound

L = left, R = right, T = through, TR = through and right, (e.g. WB-L = Westbound left).

3.8.2 No-Build Condition

The No-Build traffic volumes represent the traffic condition in the year the proposed multifamily residential development will be entirely occupied. Given the time necessary to construct and sell the units a time frame of three years has been used. When the initial Traffic Impact Study was done the build year was projected to be 2003, however due to circumstances; the project completion date has been extended to 2007.

Orange County is in the process of reconfiguring the intersection of Freeland Street/Spring Street(CR105), and installing a new traffic signal to improve traffic flow and safety. For the purpose of this study it was assumed that signalization would be complete by the design year of 2007. It is anticipated that this intersection will operate at a level of service B or better once all the improvements are complete. Information for this intersection has been included in the Level of Service Summary for Signalized Intersections, for both the No-Build and the Build condition. A summary of the capacity analysis for signalized intersections under No-Build Conditions is provided in Table 3.8-5. A similar summary is provided for unsignalized intersections in Table 3.8-6. The results of the capacity analysis are as follows. The results of the capacity analysis show a decline in the level of service from the existing condition for several approaches as a result of the combination of background growth and project proposed in the area. These approaches are marked with an asterisk * in the table.

There was an overall decline in the level of service for the intersection of Freeland Street and Half Hollow Road, these are also designated by asterisks in the table for unsignalized intersections. .

TABLE 3.8-5
No-Build Conditions, Signalized Intersections
Level of Service Summary

Intersection Roads	Lane Group (Approach Direction -Movement)	AM Weekday Peak Hour			PM Weekday Peak Hour		
		Volume to Capacity Ratio	Delay seconds/ vehicle	Level of Service	Volume to Capacity Ratio	Delay seconds/ vehicle	Level of Service
Rt 17M/Freeland St/Still Rd							
Route 17M	EB-L	0.16	19.7	B	0.38	31.3	C
	EB-TR	0.82	46.4	D*	0.96	64.5	E*
	WB-L	0.15	31.2	C	0.35	32.1	C
	WB-T	0.35	30.5	C	0.90	52.2	D*
	WB-R	0.06	15.5	B	0.21	13.0	B*
Still Road	NB-L	0.26	29.4	C	0.53	43.1	D
	NB-TR	0.91	66.7	E*	0.87	60.2	E
Freeland Street	SB-L	0.28	37.1	D*	0.23	37.6	D
	SB-TR	0.60	42.2	D	0.93	71.3	E
Total			43.9	D		53.2	E*
County Road 105/Larkin Dr							
Larkin Dr	WB-L	0.54	23.5	C*	0.38	21.6	C*
	WB-R	0.35	21.5	C*	0.38	21.7	C*
County Rd 105	NB-T	0.65	7.1	A	0.69	7.9	A
	NB-R	0.10	0.0	A	0.14	0.0	A
	SB-LT	0.41	4.9	A	1.11	73.8	E*
Total			8.5	A		39.3	D*
Route 208/Main Street							
Route 208	EB-LTR	1.33	>120.0	F	1.22	>120.0	F
Main St	WB-LTR	1.00	99.9	F*	1.71	>120	F
Route 208	NB-LTR	0.89	33.7	C	0.98	50.7	D*
Forest St	SB-LTR	1.33	>120.0	F	0.65	49.8	D
Total			111.4	F*		>120	F
Route 17M/K-Mart/Vista Ln							
Route 17M	EB-L	0.01	3.4	A	0.00	0.0	A
	EB-TR	0.51	10.8	B*	0.68	13.7	B
	WB-L	0.05	6.2	A	0.29	12.8	B*
	WB-T	0.28	8.8	A	0.66	13.2	B
K-Mart Drive	NB-LT	0.24	34.0	C	0.90	76.8	E
	NB-R	0.13	22.1	C	0.27	24.0	C
Vista Lane	SB-LTR	0.04	31.6	C	0.04	31.6	C
Total			11.7	B		19.4	C

Level of Service (see page 5 in the Traffic Report, Appendix B for level of service criteria).

NB = Northbound, SB = Southbound, EB = Eastbound, WB = Westbound

L = left, R = right, T = through, TR = through and right, (e.g. WB-L = Westbound left).

* Denotes a decline in the Level of service from the Existing Condition

TABLE 3.8-6
No-Build Conditions, Unsignalized Intersections
Level of Service Summary

Intersection Roads	Lane Group (Approach Direction -Movement)	AM Weekday Peak Hour		PM Weekday Peak Hour	
		Delay seconds/ vehicle	Level of Service	Delay seconds/ vehicle	Level of Service
Freeland St/Forshee St					
Freeland St.	NB-L	7.8	A	8.7	A
Forshee St.	EB-LR	13.8	B	17.2	C
Freeland St/Half Hollow Rd.					
Freeland St.	SB-L	9.4	A	10.7	B*
Half Hollow Rd	WB-LR	15.5	C*	31.5	D*

Level of Service (see page 5 in the Traffic Report, Appendix B for level of service criteria).

NB = Northbound, SB = Southbound, EB = Eastbound, WB = Westbound

L = left, R = right, T = through, TR = through and right, (e.g. WB-L = Westbound left).

* Denotes a decline in the Level of service from the Existing Condition

3.8.3 Build Condition

This traffic study was conducted based upon the proposed project consisting of 149 multifamily residential units. The number of vehicular trips anticipated to be generated from the proposed development was calculated using the Institute of Transportation Engineer's "Trip Generation Manual" 6th Edition (see Table 3.8-7). Table 3.8-8 summarizes the anticipated Trip Generation.

TABLE 3.8-7
Project Site's Trip Generation Rates

Potential Land Use and Size {ITE Code}	Trips Rates [1]			
	AM Peak Hour		PM Peak Hour	
	IN (Trips/ Unit)	OUT (Trips/ Unit)	IN (Trips/ Unit)	OUT (Trips/ Unit)
Condo Residential Unit - 156 Units {230}	0.17	0.83	0.67	0.33

[1] Trip Generation, Institute of Transportation Engineers, 6th edition, Washington DC, 1997.

TABLE 3.8-8
Project Site Trip Generation

Land Uses (size) {ITE Code}[1]	Trips			
	AM Peak Hour		PM Peak Hour	
	IN (Trips)	OUT (Trips)	IN (Trips)	OUT (Trips)
Condo Residential Unit (156) {230}	11	55	54	26

[1]Trip Generation, Institute of Transportation Engineers, 6th edition, Washington DC, 1997.

Note: See Table 3.8-7 for rates.

The proposed trips for both peak hours were distributed over the project network. Figures 6 and 7 of the Traffic Report, found in Appendix B of this DEIS show the project traffic distributed over the street network. The trip distribution was based on the existing traffic patterns for the traffic entering and exiting Forshee Street and Half Hollow Turn. It was further assumed that the traffic from this proposed development would be destined for the NYS Thruway, Route 17, Route 17M (north and south) and Still Road to the south. Percentages for turning movements were derived based on the existing traffic volumes at the key intersections.

The project traffic was then added to the No-Build traffic to produce the Build traffic condition. Figures 8 and 9 of the Traffic Report, found in Appendix B of this DEIS, show composite traffic volumes for the Build condition. Traffic from the 98 unallocated parking spaces is included in the overall Trip Generation Rate. The capacity analysis was recalculated for the Build condition. A summary of the capacity analysis for signalized intersections under Build Conditions is provided in Table 3.8-9. A similar summary is provided for unsignalized intersections in Table 3.8-10.

TABLE 3.8-9
Build Conditions, Signalized Intersections
Level of Service Summary

Intersection Roads	Lane Group (Approach Direction -Movement)	AM Weekday Peak Hour			PM Weekday Peak Hour		
		Volume to Capacity Ratio	Delay seconds/ vehicle	Level of Service	Volume to Capacity Ratio	Delay seconds/ vehicle	Level of Service
Rt 17M/Freeland St/Still Rd							
Route 17M	EB-L	0.16	19.7	B	0.39	31.4	C
	EB-TR	0.82	46.4	D	0.98	68.9	E
	WB-L	0.15	31.2	C	0.35	32.4	C
	WB-T	0.35	30.5	C	0.90	52.2	D
	WB-R	0.06	15.5	B	0.21	13.0	B
Still Road	NB-L	0.27	29.8	C	0.54	43.5	D
	NB-TR	0.91	67.2	E	0.88	61.8	E
Freeland Street	SB-L	0.30	37.6	D	0.25	38.2	D
	SB-TR	0.61	42.7	D	0.94	73.8	E
Total			44.1	D		54.9	D
County Road 105/Larkin Dr							
Larkin Dr	WB-L	0.55	23.8	C	0.38	21.6	C
	WB-R	0.35	21.5	C	0.38	21.7	C
County Rd 105	NB-T	0.67	7.5	A	0.70	6.7	A
	NB-R	0.10	0.0	A	0.14	0.0	A
	SB-LT	0.42	4.9	A	1.14	85.9	F*
Total			8.7	A		45.2	D
Route 208/Main Street							
Route 208	EB-LTR	1.36	>120.0	F	1.27	>120	F
Main St	WB-LTR	1.04	111.0	F	1.79	>120	F
Route 208	NB-LTR	0.89	33.7	C	0.98	50.7	D
Forest St	SB-LTR	1.33	>120.0	F	0.65	49.8	D
Total			116.3	F		>120	F
Route 17M/K-Mart/Vista Ln							
Route 17M	EB-L	0.01	3.4	A	0.00	0.0	A
	EB-TR	0.52	10.9	B	0.68	13.8	B
	WB-L	0.05	6.3	A	0.29	13.0	B
	WB-T	0.28	8.8	A	0.67	13.4	B
K-Mart Drive	NB-LT	0.24	34.0	C	0.90	76.8	E
	NB-R	0.13	22.1	C	0.27	24.0	C
Vista Lane	SB-LTR	0.04	31.6	C	0.04	31.6	C
Total			11.8	B		19.5	B

Level of Service (see page 5 in the Traffic Report, Appendix B for level of service criteria).

NB = Northbound, SB = Southbound, EB = Eastbound, WB = Westbound

L = left, R = right, T = through, TR = through and right, (e.g. WB-L = Westbound left).

* Denotes a decline in the Level of service from the No-Build Condition

TABLE 3.8-10
Build Conditions, Unsignalized Intersections
Level of Service Summary

Intersection Roads	Lane Group (Approach Direction -Movement)	AM Weekday Peak Hour		PM Weekday Peak Hour	
		Delay seconds/ vehicle	Level of Service	Delay seconds/ vehicle	Level of Service
Freeland St/Forshee St					
Freeland St.	NB-L	7.9	A	8.7	A
Forshee St.	EB-LR	14.5	B	17.5	C
Freeland St/Half Hollow Rd.					
Freeland St.	SB-L	9.4	A	10.8	B
Half Hollow Rd	WB-LR	17.3	C	46.6	E*
Freeland Street/Secondary Access					
Secondary Access	EB-R	1.2	B	13.0	B

Level of Service (see page 5 in the Traffic Report, Appendix B for level of service criteria).

NB = Northbound, SB = Southbound, EB = Eastbound, WB = Westbound

L = left, R = right, T = through, TR = through and right, (e.g. WB-L = Westbound left).

A significant impact is defined as a change in the LOS to "E" or worse or a change in the delay of more than 5 seconds when the LOS changes from "D" to "E" or "E" to "F". Based on these criteria, the intersection of County Road 105 / Larkin Drive would require mitigation measures for the evening peak hour.

Half Hollow Road westbound can be expected to decline to a LOS “E” during the PM peak hour.

The Route 208 / Main Street intersection is currently failing and would continue to fail in the future. As discussed in the Traffic Impact Study, should NYS DOT plan to improve this intersection the applicant is willing to contribute a proportional fair share of the improvement costs.

Mitigation measures to address these issues are discussed below. A summary of the resultant level of service for the signalized intersections in the build condition with mitigation is provided in Table 3.8-11.

3.8.4 Mitigation Measures

The unsignalized intersection of Freeland Street and Forshee Street, operate at a level of service C or better for all approaches under the Existing, No-Build and Build Conditions. Based upon this level of service no mitigation measures are proposed for this unsignalized intersection.

Mitigation Measures for signalized intersections can vary from changes in signal timing and phasing to the construction of additional approach lanes. For this project, signal timing and phasing modifications were examined to bring LOS back to the No-Build conditions, as discussed below. Where signal timing modifications are proposed on roadways controlled by NYS DOT, NYS DOT must approve these changes prior to implementation. The DEIS will be forwarded to the NYS DOT as an involved agency as soon as the document is released to the public, this will enable NYS DOT to have involvement in the planning process of this project at a very early stage and thus ensuring their participation in the overall design. The proposed mitigation measures will be submitted to NYS DOT Region 8 in Poughkeepsie for approval.

County Road 105 / Larkin Drive - The intersection of County Road and Larkin Drive will require a change in the operation of the traffic signal to improve the LOS back to the No-Build Condition. The intersection is currently operating on a 60 second cycle length. By increasing the cycle length to 70 seconds, the southbound combination thru/left turn movement would improve to LOS “D” from “F”, and the overall intersection would improve from LOS ”D” to “C” with an overall savings in delay of 18.1 seconds in the evening peak hour. During the AM peak hour, there would be no change in the LOS for the approaches. The overall intersection delay would increase by 1.1 seconds.

Route 208/Main Street - Improvements to this intersection can only be made by widening the approaches. . As discussed in the Traffic Impact Study, should NYS DOT plan to improve this intersection the applicant is willing to contribute a proportional fair share of the improvement cost.

County Road 105/Freeland Street - The Freeland Street northbound approach would change from a LOS “D” in the No-Build Condition to a LOS “E” in the Build Condition during the PM peak hour. Mitigating the problem will require shifting one second of green time from Spring Street approach and adding it to the Freeland Street approach. The cycle length will remain the same. With this change the LOS will improve to “D”.

Freeland Street / Half Hollow Road - As discussed in the Traffic Impact Study, the Half Hollow Road approach to Freeland Street will decline to a LOS “E” during the PM peak hour. A traffic signal warrant analysis was conducted to determine the feasibility of installing a traffic signal at this location. The analysis will be sent to Orange County Department of Public Works for review. Upon approval of construction of a signal at this location, the applicant is willing to fund the capital and installation costs of the signal. The projected level of service at this intersection, if a new semi-actuated traffic signal was to be installed with a 60 second cycle length, the AM peak hour LOS could be expected to be a LOS “A” and the PM peak hour could be expected to be a LOS “B”.

Route 17M / Shopping Center Driveway / Vista Lane The projected LOS for this intersection under the No-Build Condition is a Level of service "D" or "E" for several of the approaches at this intersection. NYS DOT is in the process of conducting a regional traffic study for the Route 17M corridor. Compared to the volume of traffic on Route 17M, the trips generated by the proposed Hidden Creek project do not cause any further decline to the level of service, and as such no mitigation is required for this intersection.

Table 3.8-11 summarizes the capacity analysis results with recommended mitigations.

TABLE 3.8-11
Build Conditions with Mitigations,
Signalized Intersections
Level of Service Summary

Intersection Roads	Lane Group (Approach Direction -Movement)	AM Weekday Peak Hour			PM Weekday Peak Hour		
		Volume to Capacity Ratio	Delay seconds/ vehicle	Level of Service	Volume to Capacity Ratio	Delay seconds/ vehicle	Level of Service
County Road 105/Larkin Dr							
County Rd 105	NB-T	0.62	7.5	A	0.69	7.9	A
	NB-R	0.10	0.2	A	0.14	0.0	A
	SB-LT	0.40	4.2	A	1.11	73.8	D
Larkin Dr	WB-L	0.64	32.4	C	0.38	21.6	C
	WB-R	0.41	27.1	C	0.38	21.7	C
Total			9.8	A		39.3	C
Freeland Street/Spring Street/CR 105							
Freeland Street	NB-LT	0.71	14.8	B	0.98	42.7	D
CR 105	SB-T	0.30	8.1	A	0.60	12.0	B
Spring Street	EB-L	0.60	19.2	B	0.81	27.9	C
Total			14.5	B		28.9	C
Freeland Street/ Half Hollow Rd							
Freeland Street	NB-LTR	0.49	8.0	A	0.73	12.4	B
	SB-LTR	0.36	6.7	A	0.75	13.8	B
Half Hollow Rd.	WB-LTR	0.03	17.0	B	0.02	17.0	B
Secondary Drive	EB-LTR	0.23	18.2	B	0.15	17.7	B
Total			8.5	B		13.3	B

Level of Service (see page 5 in the Traffic Report, Appendix B for level of service criteria).

NB = Northbound, SB = Southbound, EB = Eastbound, WB = Westbound

L = left, R = right, T = through, TR = through and right, (e.g. WB-L = Westbound left).

Internal Circulation and Driveway Sight Distance

Primary access for the proposed Hidden Creek project will be from Freeland Street onto Boulevard A. A Secondary access will be provided also from Freeland Street. The existing driveway south of Half Hollow Turn will be realigned to form a four way intersection with Half Hollow Road. This secondary access will be right turn only both into and out of the Hidden Creek development. The proposed driveway (Boulevard A) would be located at the bottom of the hill on Freeland Street. This point was chosen because it provides the maximum sight distance for vehicles approaching from the north or south. Boulevard A is 50 feet wide with one travel lane in each direction. There would be a raised landscaped median dividing the entering and exiting traffic. Boulevard A would connect to a circular drive, Hidden Creek Road, that would traverse the site and connect to small loop roads. Direct access to the individual townhouse units is via these loop roads. The main roadway, Hidden Creek Road, will be 30 feet wide and provide for two-way traffic. The parking loop roads will be 20 feet in width. Stop signs will be installed at all of the internal intersections. The posted speed limit on the internal roadways will be 25 mph.

The sight distance calculation was done in accordance with the American Association of State Highway Officials (AASHTO) handbook. The sight distance is measured from the point where a car exiting Boulevard A would stop and could see an object six inches high off the ground. The stopping sight distance calculation takes into account the slope of the road and roadway operating conditions. To be conservative, the sight distance calculation assumes a wet roadway surface. The AASHTO handbook requires a sight distance for a prevailing speed of 40 mph to be 395 feet if approaching from the south and 345 feet if approaching from the north. The available distance from the crest of the hill approaching from the south is 400 feet and 700 feet if approaching from the north. Within the sight triangle, there would be no vegetation over two feet high.

Sight distance was measured for the secondary access across from Half Hollow Road. Field measurements were made regarding this proposed driveway. Looking to the north from the driveway, the sight distance measured 380 feet. The operating speed for cars traveling on Freeland Street is 40 mph as discussed in the Traffic Impact Study. For a speed of 40 mph, the required sight distance is 345 feet if approaching from the north due to the upgrade. The 380 feet is more than is required by appropriate design standards in ASSHTO.

Pedestrian Activity

The project as proposed includes sidewalks along the inside loop of Hidden Creek Road to allow for pedestrian activity between clusters of units. Footpaths have been included to facilitate access to the Orange County Trailway, and to provide pedestrian access to the downtown area of the Village via Clarke Street. Maintenance and security of all roads and paths including both footbridges is the responsibility of the Home Owner's Association.

Pedestrian and bicycle traffic is not expected along Freeland Sstreet near the project site. Freeland Street does not have sidewalks for bicyclists and the narrowness of the roadway is not conducive to providing a safe travel way for bicyclists.

Traffic from Construction Activity

The proposed project will result in construction activity taking place. It is anticipated that a stabilized rough grade of the proposed Hidden Creek Road will serve as access for the project during construction. This access is off of Freeland street, shown on the proposed site plan. All construction vehicles will use this access for ingress and egress. Construction vehicles and employees will park on-site at all times possible. Materials and equipment storage will be located on site.

Construction traffic consists primarily of construction vehicles arriving at the beginning of the construction period, trucks carrying and delivering supplies, and daily trips of construction workers. Construction workers typically arrive and depart the site prior to standard commutation peak hours Trucks delivering construction supplies would generally arrive and leave during the day.

Due to the size of the site development, construction traffic to and from the site is not expected to be excessive, as building will generally be constructed in small clusters. The heaviest volume of construction traffic is expected to occur at the beginning of the construction as site clearing and rough grading is conducted, and when asphalt and building materials are transported to the site. Based upon engineering estimates, It is anticipated that material will be imported for construction of the road beds. It is anticipated that most construction trips would travel to and from the site via Route 17M to Freeland Street.

3.8.5 Conclusions

Traffic for the proposed project was analyzed for 149 unit townhouse units. It can be anticipated that the proposed project would generate 66 vehicular trips in the morning peak hour and 80 in the evening peak hour.

At the intersection of County Road/Larkin Drive, the cycle length should be changed from 60 seconds to 70 seconds.

At the intersection of Freeland Street/Spring Street (CR105), shift one second of green time from the Spring Street approach to Freeland Street approach.

The Orange County Department of Public Works will be contacted to assess the possibility of installing a semi-actuated traffic signal at the Half Hollow Road / Freeland Street intersection. Upon approval of a signal at this location, the applicant is willing to fund the capital and installation costs of the signal.

The sight distance at Boulevard A is sufficient to permit a vehicle traveling on Freeland Street to stop safely in accordance with AASHTO standard for wet pavements.

The internal circulation roadway network permits two-way traffic and provides sufficient sight distance for vehicles turning within the development. Signing would be in accordance with NYS DOT regulations.