

Partners

John M. Tozzi, P.E.
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August 26, 2010

Mr. Terence J. Donoghue, P.E.
Regional Highway Work Permit Coordinator
NYSDOT Region 8
4 Burnett Boulevard
Poughkeepsie, New York 12603

RE: Traffic Assessment, Croton Overlook Development, Town of Yorktown, Westchester County, New York; CME Project No. 110-154d

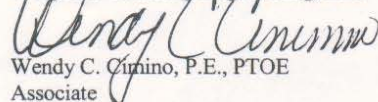
Dear Mr. Donoghue:

CME is pleased to submit to you two copies of the traffic assessment prepared for the Croton Overlook Development in the Town of Yorktown. This traffic assessment was prepared in response to your letter dated June 23, 2010 (attached) regarding the SEQRA review of the project.

It is noted that the project proposes to construct an age-restricted development with 70-units. Access to the site will be provided via Dell Avenue, which connects to NY Route 100 (Saw Mill River Road). There is no direct access to a state highway proposed by the project. The attached analysis also verifies that the proposed age restricted development will generate a low volume of traffic and will not require mitigation to the adjacent roadway network including NY Route 100 and NY Route 134. Based on the above, the Applicant is not pursuing a NYSDOT highway work permit as part of their approval. Therefore, the Perm 33 and Perm 51 (and \$2,000 review fee) referenced in your letter are not applicable to this project.

We would appreciate your response to this submittal so the Applicant can continue their review and approval process with the Town of Yorktown. If you have any questions, please feel free to contact our office.

Respectfully submitted,
Creighton Manning Engineering, LLP


Wendy C. Cimino, P.E., PTOE
Associate

C:\ TJ Muldoon, Croton Overlook Corp
Alice Roker, Town of Yorktown, Town Clerk
David Klaus, Chairman Planning Board (5 copies)

Attachments

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Engineers, Planners and Surveyors

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August 26, 2010

Mr. TJ Muldoon
Croton Overlook Corp
P.O. Box 1132
Yorktown Heights, New York 10598

RE: Traffic Assessment, Croton Overlook Development, Town of Yorktown, Westchester County, New York; CME Project No. 110-154d

Dear Mr. Muldoon:

Creighton Manning Engineering, LLP (CME) has conducted a traffic assessment for the proposed seventy lot subdivision for Croton Overlook Corporation located in the Town of Yorktown. This evaluation is based on the subdivision plan prepared by Lawrence J. Paggi, P.E., P.C., dated June 4, 2010. The purpose of this evaluation is to determine the potential increase in traffic associated with the development of seventy age-restricted homes. The following summarizes our analysis.

A. Introduction and Background

The proposed project consists of the construction of seventy age-restricted homes on Dell Avenue. Currently Dell Avenue has a connection to NY Route 100 in two locations. As part of the development, access to NY Route 100 on Dell Avenue via the northern connection will be eliminated and replaced with a gated emergency access. (see the attached site plan). The primary access to the site will be provided on Dell Avenue via the southern connection to NY Route 100 located approximately 550 feet south of NY Route 134.

B. Traffic Forecasts

Trip generation determines the quantity of traffic expected to travel to and from a given site. The Institute of Transportation Engineers' (ITE) *Trip Generation*, 8th Edition, is the industry standard used for estimating trip generation for proposed land uses. ITE land use code (LUC) 251 for Senior Adult Housing - Detached was used to estimate the number of trips that will be generated at the site with all seventy units developed. The peak hour trip generation estimate is summarized in Table 1.

Table 1 – Trip Generation Summary

Land Use	AM Peak Hour			PM Peak Hour		
	Enter	Exit	Total	Enter	Exit	Total
Age-Restricted Homes- 70 units	5	10	15	12	7	19

As shown in Table 1, the seventy lot subdivision will generate approximately 15 vehicle trips during the AM peak hour and 19 vehicle trips during the PM peak hour. This equates to one additional vehicular trip every 3 to 4 minutes during the peak travel periods. During other times of day, trips to and from the site will be less. It is noted that an age restricted developments generate approximately 3 to 4 times less traffic

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than traditional single family home developments as a percentage of the residents are retired and typically children are not part of these types of developments.

The intersections of NY Route 100 with Dell Avenue and with NY Route 134 are the key intersections that will be utilized by residents of the subdivision when traveling to and from the site. Based on a review of available traffic volume data published by the New York State Department of Transportation (NYSDOT), it is expected that approximately 60% of the site generated trips will enter and exit the site via NY Route 100 from the south and the remaining 40% will enter and exit the site from the north. This distribution pattern will result in a maximum increase in traffic volumes on a single intersection approach of 10 during the AM peak hour and 7 during the PM peak hour at the NY Route 100/Dell Avenue intersection and increases of 3 and 4 vehicles on an intersection approach at the NY Route 100/NY Route 134 intersection during the AM and PM peak hours, respectively.


The average annual daily traffic (AADT) on NY Route 100 and NY Route 134 in the vicinity of the site is approximately 8,100 and 4,500 vehicles per day, respectively. The peak hour traffic generated from the site represents less than one percent of the daily traffic volumes on these roadways. An increase in traffic volumes of the magnitude expected with the development of this age restricted facility will be accommodated by the existing roadway network. It is also noted that the NYSDOT threshold for requiring a detailed traffic impact study is 100 peak hour trips, verifying that the development of the site will not have a measurable impact on the surrounding network. The 100 vehicle per hour trip threshold is also consistent with the methodologies presented by ITE in *Transportation Impact Analysis for Site Development*. Therefore, based on NYSDOT and ITE guidelines, a more detailed traffic impact analysis is not warranted for the project site.

C. Conclusions

The project includes the construction of seventy age-restricted homes on Dell Avenue in Yorktown, NY. Based on ITE, the seventy homes will generate approximately 15 vehicle trips during the AM peak hour and 19 vehicle trips during the PM peak hour. This increase in traffic volumes will not have a measurable impact on the adjacent roadway and does not meet the thresholds of requiring a detailed traffic impact analysis.

If you have any questions regarding the above analysis, please feel free to contact our office.

Respectfully submitted,
Creighton Manning Engineering, LLP


Wendy C. Cimino, P.E., PTOE
Associate

C:\ Terence J. Donoghue, NYSDOT Region 8



May 5, 2011

Mr. TJ Muldoon
 Croton Overlook Corp
 P.O. Box 1132
 Yorktown Heights, New York 10598

**RE: Traffic Assessment, Croton Overlook Development, Town of Yorktown,
 Westchester County, New York; CME Project No. 110-154d**

Dear Mr. Muldoon:

Creighton Manning Engineering, LLP (Creighton Manning) has conducted a detailed traffic analysis of the two site access intersections with NY Route 100. This letter supplements the previous completed analysis for the site summarized in a letter to you dated August 26, 2010 and a letter to the Town Planning Board Chairman dated November 8, 2010. It is our understanding that this supplemental analysis is required to satisfy the scoping document for the Environmental Impact Statement (EIS).

A. Introduction and Background

The proposed project consists of the construction of seventy age-restricted homes on Dell Avenue. Currently Dell Avenue has a connection to NY Route 100 in two locations which will both be maintained (initially the northern access was going to become a gated emergency access). Based on the site layout, it is expected that the primary access to the site will be via the southern connection of Dell Avenue to NY Route 100 located approximately 550 feet south of NY Route 134.

B. Traffic Forecasts

The trip generation presented in the August 26, 2010 traffic assessment letter indicates that the site is expected to generate approximately 15 vehicle trips during the AM peak hour and 19 vehicle trips during the PM peak hour.

Traffic volumes on NY Route 100 adjacent to Dell Avenue were obtained from New York State Department of Transportation (NYSDOT) traffic data. The latest available hourly count data from April 2008 and May 2009 is summarized in Table 1.

Table 1 –Trip Generation Summary

Roadway	AM Peak Hour			PM Peak Hour		
	NB	SB	Total	NB	SB	Total
NY Rt 100 south of NY Rt 134	275	550	825	470	270	740
NY Rt 100 north of NY Rt 134	470	660	1,130	680	430	1,110

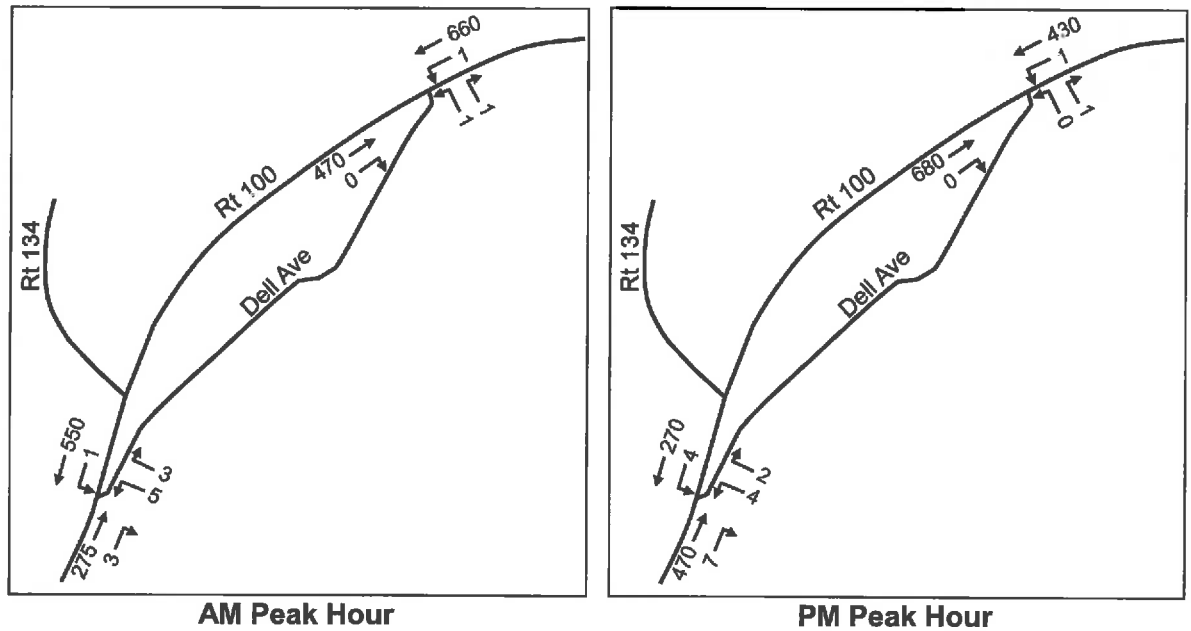
NB= Northbound, SB=Southbound

A review of additional NYSDOT historical data indicated that volumes on NY Route 100 and NY Route 134 adjacent to the project site have remained relatively constant over the last several years. In addition, the Town of Yorktown planning department has indicated that there are no known development projects in the vicinity of the site that would add traffic to the study corridor. Therefore, it is expected that the 2008/2009 traffic volumes collected by

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NYSDOT are a good representation of the traffic volumes expected on NY Route 100 through the design and construction of the proposed project.

The site generated trips were distributed onto the site access roadway (Dell Avenue) intersections to determine Build conditions traffic volumes. As noted in the August 26, 2010 traffic assessment, it is expected that approximately 60% of the site generated trips will enter and exit the site via NY Route 100 from the south and the remaining 40% will enter and exit the site from the north. The Build condition traffic volumes for the AM and PM peak hours are illustrated below.



Intersection level of service (LOS) and capacity analysis relate traffic volumes to the physical characteristics of an intersection. Intersection evaluations were made using the Highway Capacity Software (HCS+, version 5.4) which automates the procedures contained in the 2000 Highway Capacity Manual. Levels of service range from A to F with LOS A conditions considered excellent with very little delay while LOS F generally represents conditions with very long delays. In general, LOS D or better conditions are considered acceptable operations during peak travel times. Table 2 summarizes the results of the intersection analysis for the AM and PM peak hours.

Table 2 – Unsignalized Intersection Analysis

Intersection		AM Peak Hour	PM Peak Hour
NY Rt 100/Dell Ave (south)			
Rt 100 SB	L	A (7.9)	A (8.4)
Dell Ave (south) WB	LR	B (14.4)	B (14.4)
NY Rt 100/Dell Ave (north)			
Rt 100 SB	L	A (8.4)	A (9.2)
Dell Ave (north) WB	LR	B (11.7)	B (13.8)

SB, WB = Southbound and Westbound intersection approaches
 L, R = Left or Right-turn movements
 X (Y.Y) = Level of service (Average delay in seconds per vehicle)

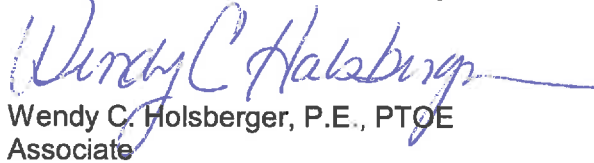
The level of service and capacity analysis shows that the two study intersections will operate with good levels of service (LOS B or better) during both the AM and PM peak hours with construction of the proposed project. No improvements are needed.

C. Conclusions

The project includes the construction of seventy age-restricted homes on Dell Avenue in the Town of Yorktown, NY. Based on ITE, the seventy homes will generate approximately 15 vehicle trips during the AM peak hour and 19 vehicle trips during the PM peak hour. The level of service analysis shows that the study intersections will operate with good levels of service (LOS B or better) with construction of the proposed project during the AM and PM peak hours. No capacity related improvements are recommended. It is noted, however, that some geometric improvements will likely be needed on Dell Avenue at NY Route 100 to improve the intersection approaches.

If you have any questions regarding the above analysis, please feel free to contact our office.

Respectfully submitted,
Creighton Manning Engineering, LLP



Wendy C. Holsberger, P.E., PTOE
Associate

Attachments

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TWO-WAY STOP CONTROL SUMMARY							
General Information				Site Information			
Analyst	wch			Intersection	Route 100/S. Dell Ave		
Agency/Co.	CME buildam			Jurisdiction	Yorktown		
Date Performed	5/5/2011			Analysis Year	Build		
Analysis Time Period	AM Peak Hour						
Project Description Croton Overlook site access Build AM							
East/West Street: Dell Avenue				North/South Street: Route 100			
Intersection Orientation: North-South				Study Period (hrs): 0.25			
Vehicle Volumes and Adjustments							
Major Street	Northbound			Southbound			
Movement	1	2	3	4	5	6	
	L	T	R	L	T	R	
Volume (veh/h)		275	3	1	550		
Peak-Hour Factor, PHF	1.00	0.90	0.90	0.90	0.90	1.00	
Hourly Flow Rate, HFR (veh/h)	0	305	3	1	611	0	
Percent Heavy Vehicles	0	--	--	0	--	--	
Median Type	Undivided						
RT Channelized			0				0
Lanes	0	1	0	0	1	0	
Configuration			TR	LT			
Upstream Signal		0			0		
Minor Street	Eastbound			Westbound			
Movement	7	8	9	10	11	12	
	L	T	R	L	T	R	
Volume (veh/h)				5		3	
Peak-Hour Factor, PHF	1.00	1.00	1.00	0.90	1.00	0.90	
Hourly Flow Rate, HFR (veh/h)	0	0	0	5	0	3	
Percent Heavy Vehicles	0	0	0	0	0	0	
Percent Grade (%)	0			0			
Flared Approach		N			N		
Storage		0			0		
RT Channelized			0			0	
Lanes	0	0	0	0	0	0	
Configuration					LR		
Delay, Queue Length, and Level of Service							
Approach	Northbound	Southbound	Westbound			Eastbound	
Movement	1	4	7	8	9	10	11 12
Lane Configuration		LT		LR			
v (veh/h)		1		8			
C (m) (veh/h)		1264		390			
v/c		0.00		0.02			
95% queue length		0.00		0.06			
Control Delay (s/veh)		7.9		14.4			
LOS		A		B			
Approach Delay (s/veh)	--	--	14.4				
Approach LOS	--	--	B				

TWO-WAY STOP CONTROL SUMMARY								
General Information					Site Information			
Analyst	wch				Intersection	Route 100/S. Dell Ave		
Agency/Co.	CME buildpm				Jurisdiction	Yorktown		
Date Performed	5/5/2011				Analysis Year	Build		
Analysis Time Period	PM Peak Hour							
Project Description								
East/West Street: Dell Avenue					North/South Street: Route 100			
Intersection Orientation: North-South					Study Period (hrs): 0.25			
Vehicle Volumes and Adjustments								
Major Street	Northbound			Southbound				
Movement	1	2	3	4	5	6		
	L	T	R	L	T	R		
Volume (veh/h)		470	7	4	270			
Peak-Hour Factor, PHF	1.00	0.90	0.90	0.90	0.90	1.00		
Hourly Flow Rate, HFR (veh/h)	0	522	7	4	300	0		
Percent Heavy Vehicles	0	--	--	0	--	--		
Median Type	Undivided							
RT Channelized			0			0		
Lanes	0	1	0	0	1	0		
Configuration			TR	LT				
Upstream Signal		0			0			
Minor Street	Eastbound			Westbound				
Movement	7	8	9	10	11	12		
	L	T	R	L	T	R		
Volume (veh/h)				4		2		
Peak-Hour Factor, PHF	1.00	1.00	1.00	0.90	1.00	0.90		
Hourly Flow Rate, HFR (veh/h)	0	0	0	4	0	2		
Percent Heavy Vehicles	0	0	0	0	0	0		
Percent Grade (%)	0			0				
Flared Approach		N			N			
Storage		0			0			
RT Channelized			0			0		
Lanes	0	0	0	0	0	0		
Configuration					LR			
Delay, Queue Length, and Level of Service								
Approach	Northbound	Southbound	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration		LT		LR				
v (veh/h)		4		6				
C (m) (veh/h)		1048		391				
v/c		0.00		0.02				
95% queue length		0.01		0.05				
Control Delay (s/veh)		8.4		14.4				
LOS		A		B				
Approach Delay (s/veh)	--	--	14.4					
Approach LOS	--	--	B					

TWO-WAY STOP CONTROL SUMMARY							
General Information				Site Information			
Analyst	wch			Intersection	Route 100/S. Dell Ave		
Agency/Co.	CME buildam northern			Jurisdiction	Yorktown		
Date Performed	5/5/2011			Analysis Year	Build		
Analysis Time Period	AM Peak Hour						
Project Description Croton Overlook site access Build AM							
East/West Street: Dell Avenue				North/South Street: Route 100			
Intersection Orientation: North-South				Study Period (hrs): 0.25			
Vehicle Volumes and Adjustments							
Major Street	Northbound			Southbound			
Movement	1	2	3	4	5	6	
	L	T	R	L	T	R	
Volume (veh/h)		470	0	1	0		
Peak-Hour Factor, PHF	1.00	0.90	0.90	0.90	0.90	1.00	
Hourly Flow Rate, HFR (veh/h)	0	522	0	1	0	0	
Percent Heavy Vehicles	0	--	--	0	--	--	
Median Type	Undivided						
RT Channelized			0			0	
Lanes	0	1	0	0	1	0	
Configuration			TR	LT			
Upstream Signal		0			0		
Minor Street	Eastbound			Westbound			
Movement	7	8	9	10	11	12	
	L	T	R	L	T	R	
Volume (veh/h)				1		1	
Peak-Hour Factor, PHF	1.00	1.00	1.00	0.90	1.00	0.90	
Hourly Flow Rate, HFR (veh/h)	0	0	0	1	0	1	
Percent Heavy Vehicles	0	0	0	0	0	0	
Percent Grade (%)	0			0			
Flared Approach		N			N		
Storage		0			0		
RT Channelized			0			0	
Lanes	0	0	0	0	0	0	
Configuration					LR		
Delay, Queue Length, and Level of Service							
Approach	Northbound	Southbound	Westbound			Eastbound	
Movement	1	4	7	8	9	10	11 12
Lane Configuration		LT		LR			
v (veh/h)		1		2			
C (m) (veh/h)		1055		537			
v/c		0.00		0.00			
95% queue length		0.00		0.01			
Control Delay (s/veh)		8.4		11.7			
LOS		A		B			
Approach Delay (s/veh)	--	--	11.7				
Approach LOS	--	--	B				

TWO-WAY STOP CONTROL SUMMARY								
General Information				Site Information				
Analyst	wch			Intersection	Route 100/S. Dell Ave			
Agency/Co.	CME buildpm northern			Jurisdiction	Yorktown			
Date Performed	5/5/2011			Analysis Year	Build			
Analysis Time Period	PM Peak Hour							
Project Description Croton Overlook site access Build PM								
East/West Street: Dell Avenue				North/South Street: Route 100				
Intersection Orientation: North-South				Study Period (hrs): 0.25				
Vehicle Volumes and Adjustments								
Major Street	Northbound			Southbound				
Movement	1	2	3	4	5	6		
	L	T	R	L	T	R		
Volume (veh/h)		680	0	1	430			
Peak-Hour Factor, PHF	1.00	0.90	0.90	0.90	0.90	1.00		
Hourly Flow Rate, HFR (veh/h)	0	755	0	1	477	0		
Percent Heavy Vehicles	0	--	--	0	--	--		
Median Type	Undivided							
RT Channelized			0			0		
Lanes	0	1	0	0	1	0		
Configuration			TR	LT				
Upstream Signal		0			0			
Minor Street	Eastbound			Westbound				
Movement	7	8	9	10	11	12		
	L	T	R	L	T	R		
Volume (veh/h)				0		1		
Peak-Hour Factor, PHF	1.00	1.00	1.00	0.90	1.00	0.90		
Hourly Flow Rate, HFR (veh/h)	0	0	0	0	0	1		
Percent Heavy Vehicles	0	0	0	0	0	0		
Percent Grade (%)	0			0				
Flared Approach		N			N			
Storage		0			0			
RT Channelized			0			0		
Lanes	0	0	0	0	0	0		
Configuration					LR			
Delay, Queue Length, and Level of Service								
Approach	Northbound	Southbound	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration		LT		LR				
v (veh/h)		1		1				
C (m) (veh/h)		865		412				
v/c		0.00		0.00				
95% queue length		0.00		0.01				
Control Delay (s/veh)		9.2		13.8				
LOS		A		B				
Approach Delay (s/veh)	--	--	13.8					
Approach LOS	--	--	B					