

**WEST AVENUE AND NEW ROAD
TRAFFIC STUDY**

**PART II – WEST AVENUE TEMPORARY ROAD
CLOSURE IMPACT ANALYSIS**

**CITY OF LINWOOD
ATLANTIC COUNTY, NEW JERSEY**

March 28, 2006

PREPARED FOR:



City of Linwood
400 Poplar Avenue
Linwood, NJ 08221

PREPARED BY:



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I. INTRODUCTION

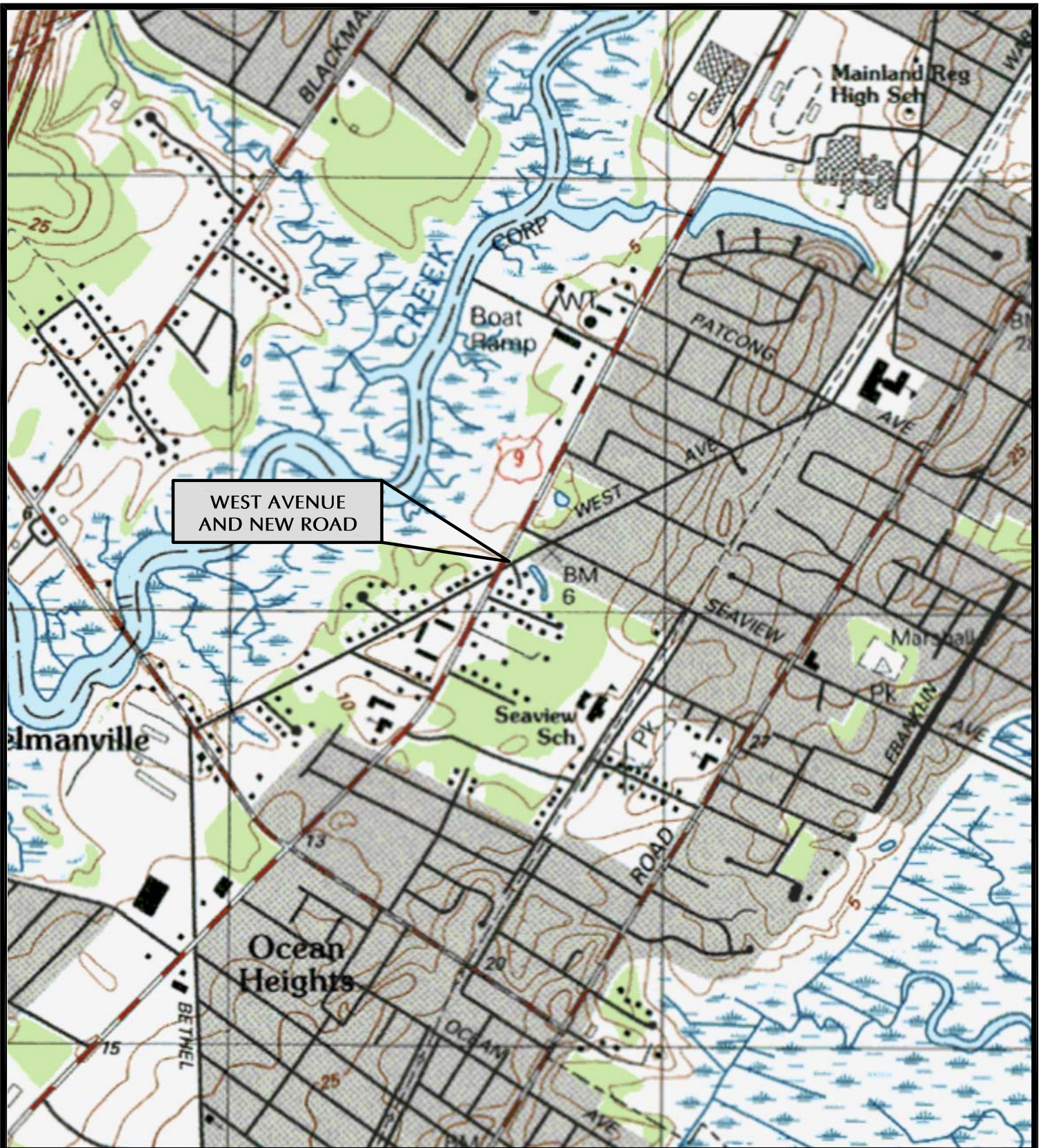
The City of Linwood conducted a study in 2005 to determine the potential traffic impacts of closing the eastern leg of West Avenue at New Road (U.S. Route 9). See Figure 1 for the intersection location. In that study, dated August 16, 2005 prepared by the City Engineer's Office, Concord Atlantic Engineers / Dixon Associates, it was found that the closure of the roadway may cause excessive delays and queuing (back-ups) at the adjacent intersection of Seaview Avenue and New Road. It was the Engineer's recommendation that if the City desired to pursue the closure of the street, a temporary closure first be put in place so that the actual impact of the closure could be measured. The report noted that drivers would most likely seek alternate routes rather than accept excessive delays at Seaview Avenue.

II. TEMPORARY CLOSURE

On the Engineer's recommendation the City of Linwood closed West Avenue between New Road and Mary Jane Lane on January 20, 2006. The roadway was reopened on March 3, 2006. The first several weeks of the closure, was used to allow traffic to adjust to the closure. During the final week of the closure, extensive traffic data was collected as follows:

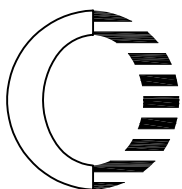
1. 24-Hour Traffic Volumes on:
 - a. West Avenue between Mary Jane Lane and Seaview Avenue
 - b. West Avenue, just South of Forest Drive
 - c. Seaview Avenue between New Road and West Avenue
 - d. Forest Drive between New Road and Kietro Drive
2. Intersection Turning Movement Counts:
 - a. New Road and Seaview Avenue
 - b. New Road and Forest Drive
 - c. New Road and Joseph Avenue
3. Stop Sign Delay Data:
 - a. Seaview Avenue at New Road

The 24-Hour traffic counts were also collected during the first week following the re-opening of the West Avenue. All traffic data is provided at the end of this report.



LOCATION MAP

SCALE: 1"=1000'



Concord Atlantic Engineers, Inc.
 Dixon Associates
 ASSOCIATED ENGINEERS

WEST AVENUE & NEW ROAD TRAFFIC STUDY

DATE: 8/16/2005

PROJ. #
 LN05006

FIG.
 1

III. DAILY TRAFFIC VOLUME COMPARISON

As noted in Section II, daily traffic counts were collected during the final week of the temporary closure from February 24, 2006 to March 2, 2006. They were also collected the week following the re-opening of the roadway from March 4, 2006 to March 8, 2006. While only limited daily traffic volume data is available for the time period prior to the closure; the data from the week following the closure provides a good measure of where traffic on West Avenue at New Road is coming from. Table I shows a comparison of the traffic volumes during these two conditions for an average weekday.

Table I
Weekday Traffic Volume Comparison

Street	24-Hour Weekday Traffic Volume ¹		
	With Closure	Without Closure	Difference
West Ave (btw Mary Jane Ln & Seaview Ave)	45	1160	+ 1115
Seaview Ave (btw New Road & West Ave)	1560	900	- 660
West Ave (just North of Forest Drive)	1065	1505	+ 440
Forest Drive (btw. New Rd & Kietro Dr)	355	285	- 70

The volumes shown in Table I indicate that about two-thirds of the traffic forced to detour due to the West Avenue closure moved to Seaview Avenue while the remaining third used other routes. Traffic on Forest Drive decreased by approximately 70 vehicles when the temporary closure was removed. These 70 vehicles represents approximately six percent of all traffic diverted due to the temporary closure of West Avenue.

¹ Traffic volumes rounded to nearest increment of 5.

IV. NEW ROAD & SEAVIEW AVENUE INTERSECTION

A manual traffic count was conducted on February 28, 2006 from 7:00 AM to 9:00 AM and from 3:00 PM to 6:00 PM at the intersection of New Road and Seaview Avenue. The count data was compared to the anticipated intersection volumes shown in the August 16, 2005 report for the two respective peak hours. The intersection volumes originally anticipated did not fully materialize given that approximately one-third of the detoured traffic did not use Seaview Avenue. A full level of service analysis was completed for the actual 2006 conditions with the closure in effect. These levels of service were compared with those in 2005 without the closure as well as those anticipated with the closure based on the 2005 traffic volumes.

Delays calculated during the level of service analysis can sometimes be conservatively high. For this reason an actual delay study was conducted on the Seaview Avenue approach to New Road on February 28, 2006 from 3:00 PM to 6:00 PM and on March 1, 2006 from 7:00 AM to 9:00 AM.

Table II
Level of Service Comparison
Seaview Avenue approach to New Road

STUDY CONDITION	AM Peak Hour			PM Peak Hour		
	Delay	Maximum Queue	Level of Service	Delay	Maximum Queue	Level of Service
2005 Without Closure	26 sec.	3 veh.	D	47 sec.	3 veh.	E
2005 Anticipated With Closure	81 sec.	7 veh.	F	201 sec.	8 veh.	F
2006 With Closure (Volume Count)	21 sec.	1 veh.	C	80 sec.	5 veh.	F
2006 With Closure (Delay Count)²	20 sec.	5 veh.	C	47 sec.	6 veh.	E

As shown in Table II, the anticipated delays and queuing anticipated in the August 16, 2005 study were not realized. The delays experienced were consistent with the delays experienced at other intersections on New Road.

² Delay and Maximum (95% Queue) calculated using Highway Capacity Software for all conditions except for the 2006 With Closure (Delay Count) where delays and maximum queues were those actually measured.

In addition to the data collection and observation by the City Engineer's Office the Linwood Police Department routinely monitored the intersection during the closure. No backups were observed at the intersection. A memo stating such is provided at the end of this report.

V. NEW ROAD & FOREST AVENUE INTERSECTION

Forest Avenue is the next intersection north of Seaview Avenue on New Road. As such it was noted in the August 16, 2005 report that as drivers began to experience significant delays at Seaview Avenue once West Avenue was closed, those drivers might divert to other streets including Forest Drive. Traffic volumes counted during the final week of the closure and the first week of the reopening of West Avenue indicated that approximately 70 vehicles per day diverted to Forest Drive with approximately 5 peak hour vehicles. These volume increases are minimal. The traffic patterns on Forest Drive are consistent with volumes that would be expected based on the number of homes on both Forest Drive and Kietro Drive. The level of service of the Forest Drive approach to New Road is a "D" during both peak hours. This level of service is generally acceptable in urban areas such as Linwood. Furthermore this level of service is typical of stop-controlled intersections on New Road in Linwood.

VI. NEW ROAD & JOSEPH AVENUE INTERSECTION

Joseph Avenue is the next intersection north of Forest Drive on New Road. A manual intersection turning movement count was conducted at the intersection while the West Avenue closure was in place. Traffic volumes on Joseph Avenue were measured at 25 vehicles during the AM peak hour and 22 vehicles during the PM peak hour. The 25 homes on Joseph Avenue alone would be expected to generate 19 and 25 vehicles during the AM and PM peak hours respectively. The cut through traffic is minimal regardless of whether it could be attributed to the West Avenue closure. Likewise the level of service of the Joseph Avenue approach to New Road is "C" during both peak hours.

VII. CONCLUSIONS

Concord Atlantic Engineers / Dixon Associates has found through this study that the temporary closure of the eastern leg of West Avenue at New Road (West Avenue between Mary Jane Lane and New Road) has had no significant negative impact on the intersections of Seaview Avenue or Forest Avenue with New Road. The closure of West Avenue resulted in a reduction in traffic on West Avenue North of Seaview Avenue, of approximately 30 percent without any significant increase in Traffic on other local streets. Other collector streets, such as Seaview Avenue (between West Avenue and New Road) realized increases in traffic, but not to the extent originally anticipated in the August 16, 2005 report.

It is the professional opinion of Concord Atlantic / Dixon Associate that the closure of West Avenue between New Road and Mary Jane Lane can occur with no detriment to the safety and well being of the residents of the City of Linwood.

Should the City of Linwood desire to move forward with the closure of West Avenue a demolition plan would be required and a street improvement application made to the New Jersey Department of Transportation. If the closure is put permanently into place the stop signs at the intersection of Seaview Avenue and West Avenue should be removed from the Seaview Avenue approaches and installed on the West Avenue approaches. It will also be necessary to remove the painted stop bars from Seaview Avenue.

Concord Atlantic / Dixon Associates recommends that should the City move forward with the closure that intersection improvements including drainage at the intersection of New Road and Seaview Avenue also be considered. Regardless of whether the subject section of West Avenue is closed, the sight triangle at the intersection of New Road and Seaview Avenue should be cleared. This would involve the removal of some trees and brush to improve the sight lines at the intersection.

APPENDIX A

Linwood Police Department Memorandum

APPENDIX B
Manual Turning Movement Counts

APPENDIX C
Automatic Traffic Recorder Data

APPENDIX D
Seaview Avenue Stop Sign Delay Data

APPENDIX E

Highway Capacity Software Worksheets