

AMG

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CL re!

- Skytop (P) traffic study
by Ney.

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December 5, 1983

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 DEC 7 1983
 JUDGE SERPENTELLI'S CHAMBERS

Honorable Eugene D. Serpentelli
 Ocean County Court House
 CN 2191
 Toms River, New Jersey 08753

Re: AMG Realty Company vs. Township of Warren
 Docket No. L-23277-80

Dear Judge Serpentelli:

On behalf of the above plaintiffs we enclose the Traffic Impact Study--Skytop Land Corp. of Abbington-Ney Associates dated November 28, 1983.

Respectfully yours,

McDONOUGH, MURRAY & KORN
 A Professional Corporation

Joseph E. Murray
 Joseph E. Murray

JEM:bp
 Enclosures

cc: John E. Coley, Jr., Esquire
 Raymond Trombadore, Esquire
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December 7, 1983

Honorable Eugene D. Serpentelli
Court House
Toms River, New Jersey 08753

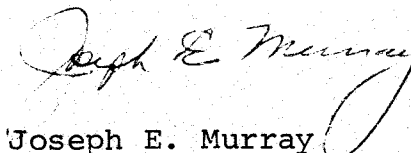
Re: AMG Realty vs. Warren Township

Dear Judge Serpentelli:

We enclose herewith the Traffic Impact Study of Abbington-Ney Associates dated November 28, 1983, as an updating of this expert's prior report. A copy of this report has been forwarded to each of the other attorneys in this matter.

Respectfully yours,

McDONOUGH, MURRAY & KORN
A Professional Corporation



Joseph E. Murray

JEM:ld
Encl.

RECEIVED

DEC 12 1983

JUDGE SERPENTELLI'S CHAMBERS

TRAFFIC IMPACT STUDY

SKYTOP LAND CORP.

Township of Warren

County of Somerset

New Jersey

PREPARED BY:

ABBINGTON-NEY ASSOCIATES
Consulting Engineers-Planners
20 Gibson Place
Freehold, N.J. 07728

November 28, 1983

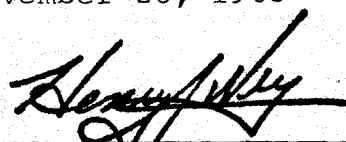

HENRY J. NEY, P.E.

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INTRODUCTION

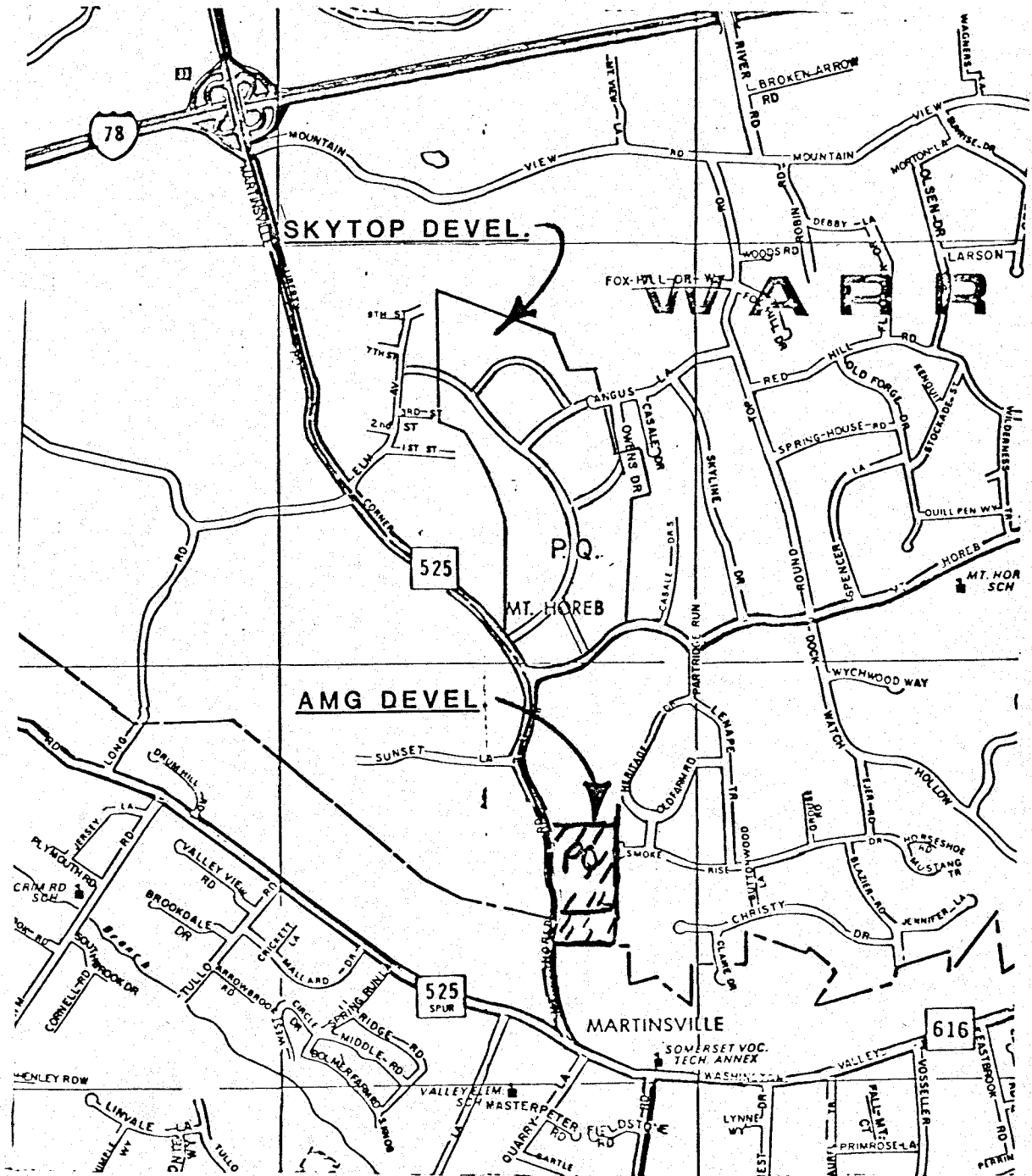
AMG Realty Company has filed suit against the Township of Warren to permit the development of a total of 1,850 residential dwelling units on two parcels of land in the Township of Warren. The two properties are known as AMG Realty and Skytop Land. A traffic impact study was formerly prepared for the AMG Realty portion of the plan, for some 450 townhouse units. This report provides a traffic impact analysis of the Skytop Land portion which will provide for a total of 1,400 residential dwelling units consisting of 1,030 townhouse units and 370 condominium flat or apartment type units which shall be provided for low and moderate income families.

The scope of our study involved an inspection of the proposed site access points and the surrounding road system to establish existing highway geometry, sight distances, traffic controls, et cetera. Traffic volume information on the surrounding roadways was obtained through a series of traffic counting programs and from historical traffic information available from both State and County officials. To analyze the access requirements for the development, estimates of the volume of traffic to be generated by the 1,400 units was prepared utilizing acceptable traffic generation standards. Traffic volume was distributed across the adjacent road system on the basis of the anticipated distribution of morning and evening peak hour traffic.

Detailed capacity and volume analyses were prepared based upon anticipated future traffic conditions in the area and access requirements determined for the proposed project.

Since a site plan was not available at the time of the preparation of this report, a general review was made of the developer's criteria for interior roads and streets, their width, general alignment and sidewalk standards. In addition, the general parking standards proposed were reviewed and, where appropriate, recommendations made to modify the proposal to meet acceptable traffic engineering standards.

FIGURE 1
SITE LOCATION MAP



EXISTING CONDITIONS

The subject property lies in the westerly portion of Warren Township and is located immediately east of Martinsville-Liberty Corner Road (County Route 525) and north of Mount Horeb Road (County Route 618). These two roadways will provide for access to and from the subject property as well as service as a collector roadway feeding the major arterials servicing the subject property. These arterials are I-78, which has a full interchange with Martinsville-Liberty Corner Road approximately $1\frac{1}{2}$ miles to the north and Route 22 which is located approximately 7 miles to the south. The major north-south arterial which will service traffic in this area is I-287 which is located approximately 5 miles to the west and is serviced through a full interchange with I-78.

Martinsville-Liberty Corner Road is a 2 lane major county arterial servicing north-south traffic in this area. In the vicinity of the subject property, the roadway provides for two 12 foot travel lanes between 2 to 4 foot wide blacktop paved shoulders. To the north of Elm Lane, the speed limit on Martinsville-Liberty Corner Road is 50 miles per hour. South of Elm Avenue the speed limit reduces to 40 miles per hour. There are numerous curve warning signs located along Martinsville-Liberty Corner Road in this area. To the north, at its interchange with I-78, Martinsville-Liberty Corner Road has recently been widened in conjunction with the recent development of the Chubb Insurance Headquarters. A traffic signal has been installed at the intersection of Mountain View Road and Martinsville-Liberty Corner Road. With the exception of Mountain View Road, there are really no major intersections along Martinsville-Liberty Corner Road. Site access, as previously mentioned, will be provided through Elm Avenue and Mount Horeb Road. Mount Horeb Road forms a T-type intersection with Martinsville-Liberty Corner Road approximately $\frac{8}{10}$ of a mile south of Elm Avenue. Martinsville-Liberty Corner Road becomes Mount Horeb Road south of its intersection with that roadway. That section of roadway and its intersections have been described in our previous report for the AMG Realty parcel.

Mount Horeb Road is an east-west collector roadway also known as County Route 618. The roadway basically provides for one lane in each direction and has a 40 mile an hour speed limit. There are numerous curve and turn warning signs located along Mount Horeb Road between its intersection with Martinsville-Liberty Corner Road and its terminus at Mount Bethel Road, approximately a distance of $3\frac{1}{2}$ miles. At its intersection with Martinsville-Liberty Corner Road,

Mount Horeb Road has been channelized with a large triangular island. Two way traffic operates on either side of this triangular island with the Mount Horeb Road traffic having to stop at its intersection with Martinsville-Liberty Corner Road.

Elm Avenue, at its intersection with Martinsville-Liberty Corner Road, measures approximately 22 feet in width. Proceeding easterly the roadway narrows so that at its terminus it is only approximately 12 to 14 feet in width. The total length of Elm Lane is approximately 3/4 of a mile and there is a volunteer firehouse located approximately 1/4 of a mile east of Martinsville-Liberty Corner Road.

Opposite Elm Avenue, Mountain Road intersects Martinsville-Liberty Corner Road from the west, forming a basic right angle type intersection. Traffic on both approaches to Martinsville-Liberty Corner Road is controlled by STOP signs at this intersection.

Recent traffic counts conducted by this firm show current volumes on Mount Horeb Road to be approximately 2,000 vehicles per day in the site vicinity and on Martinsville-Liberty Corner Road to be approximately 4,000 vehicles per day. These traffic volumes have shown a recent increase due to the completion of the Chubb Headquarters. Currently access to the Chubb Headquarters is limited due to the failure to complete I-78 through the Watchung Reservation area. This roadway is presently under construction and when completed studies have shown that the vast majority of the traffic to that facility will access via I-78. Currently, all traffic coming from the east and southeast utilizes Route 22 to Warrenville Road, then to Mount Horeb Road and then to Martinsville-Liberty Corner Road.

As stated in our report for the AMG Realty parcel, there are significant land holdings by major corporations and pending developments in the immediate area. Immediately to the west of the subject property, in Bernards Township, AT&T Long Lines has a large parcel of land. As it is currently planned, access to this parcel will occur in the vicinity of Mountain View Road adjacent to the Chubb parcel. This will occur approximately one mile north of Elm Avenue. To the north of the interchange of Martinsville-Liberty Corner Road and I-78, Bellemead has proposed an office complex of approximately 500,000 square feet. This complex is presently being reviewed by the Warren Township and Somerset County Planning Boards.

TRAFFIC GENERATION AND TRIP DISTRIBUTION

Traffic generation is the term utilized by traffic engineers and transportation planners in describing the volume of traffic that can be attributed to various types of land development. The Institute of Transportation Engineers, as well as other professional organizations have, through research, established traffic volume generating characteristics for different land development modes. In order to determine the access requirements and offsite impact for the development, these published research studies were utilized, along with studies conducted by this firm of townhouse and condominium type developments, in estimating the volumes of traffic associated with the project. It is recognized that the figures utilized in our analysis are estimates and that traffic generation and its assumed distribution across the road system cannot be forecasted with 100% accuracy. However, the methods utilized in this report are consistent with established traffic engineering practice and form a reasonable basis for this study.

On the basis of the aforementioned studies, the following table has been prepared to depict the estimated traffic generation on both a peak hour and daily basis.

TABLE I

	TRAFFIC GENERATION 1030 Townhouses 370 Condo/Apt Units			TRAFFIC GENERATION 1030 Townhouses 370 Condo/Apt Units		
	A.M. Peak Street Hour <u>In</u>	Out	Total	P.M. Peak Street Hour <u>In</u>	Out	Total
1030 Townhouses	125	455	580	455	230	685
370 Condo/Apt. Units	40	150	190	150	75	225
Total	<u>165</u>	<u>605</u>	<u>770</u>	<u>605</u>	<u>305</u>	<u>910</u>

Once the magnitude of the traffic volumes to be generated by the development have been established, it is necessary to distribute that traffic over the various access points proposed and the surrounding street system. This enables a comparison of the existing traffic conditions with the conditions that will occur upon completion of the project. In preparing our traffic distribution modeling,

we utilized traffic counts that were conducted by this firm on Mountain View Road prior to the construction of the Chubb Insurance Headquarters. The traffic counts were conducted at both the easterly and westerly terminus of that roadway and enabled a determination of how existing traffic distributed itself from the area in question. Based on that analysis, we have determined that under the present roadway conditions approximately 60% of the site generated traffic will be northbound towards the I-78 interchange, 35% will utilize Mount Horeb Road to Mount Bethel Road and access Route 22 eastbound, with the remaining 5% proceeding southbound on Martinsville-Liberty Corner Road to utilize Route 22 westbound.

With the completion of I-78, it is anticipated that there will be significant shifts in the distribution of traffic from this site. It is our opinion that the proximity of the full interchange of I-78 and Martinsville-Liberty Corner Road will have a significant influence on work trips. Therefore, we have also analyzed the site with the completion of I-78. Our analysis would indicate that at that time the Mount Horeb traffic would be reduced to only 15% of the site traffic, while the northbound Martinsville-Liberty Corner Road traffic will increase to approximately 80% of site generated traffic.

OFF SITE TRAFFIC IMPACT

In order to determine the impact of site generated traffic on the surrounding street system, capacity analyses were done of the various access points to Mount Horeb Road and Martinsville-Liberty Corner Road. In conducting our analysis, we increased the existing traffic volumes along both of these roadways to account for future growth, utilizing a design year of 1990. The figures used represent reasonable estimates of growth absent any major traffic generators such as the AT&T Long Lines facility. Major developments such as that would require their own traffic study and off-site access improvements.

Once the base volume traffic was established, along with the anticipated turning movements from the various access points, capacity analyses were made based upon the methodology outlined in Highway Research Board Circular No. 212 "Interim Materials on Highway Capacity". It was determined that each access point to either Martinsville-Liberty Corner Road or Mount Horeb Road would require two approach lanes, one for right turning and one for left turning vehicles. Utilizing that analysis, it was found

that the two direct access points would operate at acceptable levels of service without off tract improvements based on an unsignalized intersection capacity analysis.

For the access to Elm Ave. it was determined that a minimum 36 foot wide collector roadway should be used and that Elm Avenue would have to be improved from Sixth Avenue, or alternately 3rd Avenue, if that were chosen for access to Elm Ave., to Martinsville-Liberty Corner Road. At its intersection with Martinsville-Liberty Corner Road, our capacity analysis shows that it would be necessary to provide for two lanes of approach traffic. Therefore, Elm Ave. would have to be widened an additional 4 feet, to 40 feet in width, for a distance of approximately 200 feet from Martinsville-Liberty Corner Road. It was also determined that it would be necessary to widen the northerly leg of Martinsville-Liberty Corner Road to provide for a thru lane and a left turn lane for traffic approaching from the north turning left into Elm Avenue. Utilizing the improved geometry, acceptable levels of service are provided, with the exception of the westbound approach, Mountain Road. That particular approach would have a "D" level of service during the A.M. peak street hour. It is felt that this level of service is acceptable since the main reason for the degradation to a "D" level is the traffic growth factors for traffic on Martinsville-Liberty Corner Road. Our analysis would indicate that signalization will not be required in the immediate future for any of the access points.

With regard to the capacity of the two lane section of both Martinsville-Liberty Corner Road and Mount Horeb Road, our analysis shows that these roadways will be operating at "C"- "D" levels of service for the design year 1990. These levels of service are considered acceptable.

The other area investigated was the interchange of Martinsville-Liberty Corner Road and I-78. Our analysis shows that with the projected growth in the area, this interchange will operate beyond its capacity, especially the two lane overpass of I-78. However, it has been determined that steps are currently being taken to insure that the major corporate developers within the immediate interchange area will provide for an improved cross section of Martinsville-Liberty Corner Road over I-78, along with modifications to the present interchange to provide for a full cloverleaf design. The benefits to the residential development in the area from this improvement are significant. The residential traffic will be countercyclical to the office commercial traffic that will utilize the I-78 interchange. Therefore, when traffic is leaving the

residential areas to go to work in the morning, it will be traveling on relatively traffic-free arteries which have been improved to accommodate the evening departure hours from the office developments. During the evening peak hours the reverse of this situation will be true.

In addition to the immediate improvements outlined above, at the time of site plan approval, certain off tract improvements will be necessary to improve sight distance at the Elm Lane access and at the Martinsville-Liberty Corner Road access. These improvements will largely involve removal of trees, etc., which restrict clear sight distance and some regrading in the intersection areas to provide adequate sight triangles.

SITE PLAN

As mentioned previously, at the time of preparing this report, a detailed site plan was not available. It is our understanding that the basic site plan will provide for a main road access which shall be a maximum of 36 feet in width and may be divided. Internal collector and feeder roads are proposed at a width of 24 to 30 feet and concrete sidewalks will be provided on one side of the road. It is further understood that parking will be provided at a minimum of 1-2/3 parking spaces per unit.

A review of the developer's standards would indicate that the 36 foot collector roadway will be adequate to accommodate site generated traffic. Similarly, the 24 to 30 foot wide residential streets within the development are again considered adequate. With regard to off street parking, the ratio of 1-2/3 parking space per unit is considered inadequate. We would recommend that for the townhouse units a minimum of two parking spaces per unit be provided if the design encompasses parking in at-grade parking lots. If garage units are proposed and one of the parking spaces provided for the townhouse units will be behind the garage, then we would recommend that 2-1/3 parking spaces as a minimum be provided. These parking ratios will insure adequate parking for visitors.

With regard to the condominium or apartment/flat area, the parking ratio of 1-2/3 spaces per unit for one and two bedroom units would meet the minimum standards. If three or more bedrooms are to be provided in these units, then two spaces per unit should be provided.

CONCLUSIONS

As a result of the traffic studies conducted and our analyses, the following conclusions and recommendations have been reached with regard to this project:

- A. With the recommended access scheme, and off tract improvements as outlined in this report, adequate traffic access can be provided.
- B. Access to three separate locations will help disperse site generated traffic and reduce off tract impacts.
- C. The traffic volumes generated by the residential development will be countercyclical to the traffic generated by the existing and proposed office buildings in the vicinity of the subject property.
- D. Elm Ave. should be improved from the proposed site access to Martinsville-Liberty Corner Road. The roadway should be a minimum width of 36 feet and widened to 40 feet at its intersection with Martinsville-Liberty Corner Road.
- E. The access approach to Martinsville-Liberty Corner Road and Mount Horeb Road from the subject property should provide for two lanes.
- F. Martinsville-Liberty Corner Road should be widened at its intersection with Elm Avenue to provide for a left turn lane for southbound traffic.
- G. The townhouse units should provide parking at a minimum of two spaces per unit or 2-1/3 spaces a unit if garages are utilized.
- H. The internal collector roadway width of 36 feet and the residential street widths of 24 to 30 feet with sidewalk on one side is considered adequate for the intended use.