

**SUMMARY REPORT**

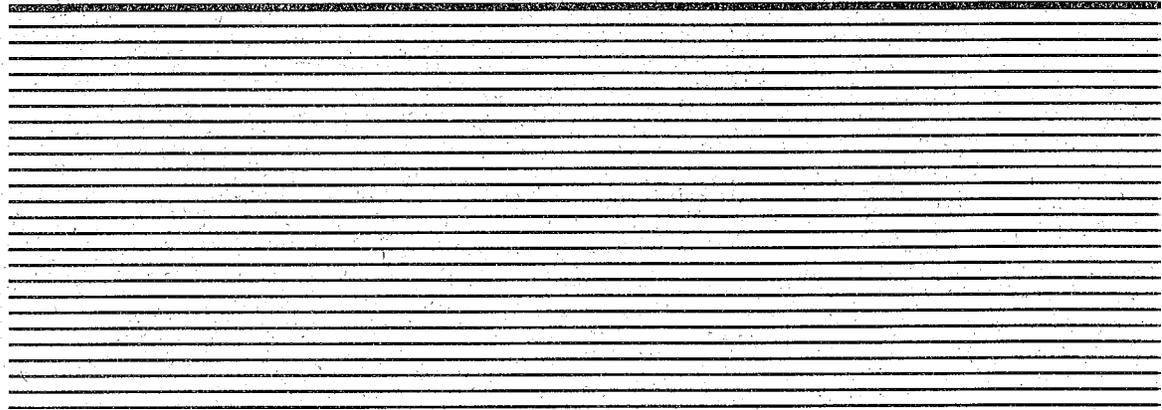
**Traffic Evaluation  
Within Town of Manlius  
New York State Route 92 &  
173 Corridor**

**Town of Manlius  
301 Brooklea Drive  
Fayetteville, New York 13066**

**May 1999**



**O'BRIEN & GERE**  
ENGINEERS, INC.



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New York State Route 92 &  
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*Town of Manlius  
301 Brooklea Drive  
Fayetteville, New York 13066*

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Peter E. Greveling, P.E.  
Vice President

May 1999



5000 Brittonfield Parkway  
East Syracuse, New York 13057

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## 1. Background

### 1.1. Existing conditions

The Town and Village of Manlius have experienced significant traffic growth from continued residential and commercial development within the eastern and southern portions of Onondaga County and the western portions of Madison County. As a result traffic conditions have deteriorated with respect to capacity, operation, and mobility, causing traffic interruptions and delays.

The following are the main areas of existing congestion within the Village of Manlius:

- The Route 92/Route 173 intersection
- Along route 92 between Route 173 and Route 257
- The Route 92/Route 257 intersection

Recent intersection modifications at Route 92 and Route 257 appear to have slightly improved traffic conditions for this immediate vicinity, though congestion continues.

New York State Department of Transportation (NYSDOT) information presented notes that "Route 92 was built in 1915 as a two lane roadway. The last significant work was performed in 1983 when the highway was widened to four lanes". In 1998 the pavement the resurfaced.

Previous NYSDOT study reports and investigations have indicated a remedy to help alleviate traffic congestion is to widen the roadways to accommodate current and projected traffic volumes within the Village limits. Other options identified were to consolidate driveways access points, reduce pedestrian/vehicular conflict points and enhance crossing opportunities.

NYSDOT indicated that the Village of Manlius have established guidelines to make the community more pedestrian friendly, strengthen and expand the economic base and increase the overall attractiveness and function of the area.

With that in mind, the Village is opposed to widening any portion of roadways within the Village limits.

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## 2. Scope

The project scope is as stated in the Letter of Authorization dated, February 4, 1999. Specifically, O'Brien & Gere will investigate population and traffic trends focused within the Town of Manlius boundary limits. In particular, the areas within the immediate vicinity of New York State Routes 92 and 173, as well as County Route 257.

The specifics of the O'Brien & Gere proposal are as follows:

1. Obtain available traffic studies previously submitted to the Town pertaining to areas within the project limits for inclusion in this analysis.
2. Obtain and review available NYSDOT and Onondaga County traffic data. Review average and peak traffic counts.
3. Research population growth/historical data and projected population forecasts.
4. Attend a meeting with the Town to identify the following:
  - a. areas of potential development based on existing zoning requirements
  - b. current submittal under review for site development
  - c. review population trends
5. Develop projected traffic volume increases as a result of potential full build-outs and present a range of volumes that may be anticipated based on minimum and maximum use of development parcels. The projections are based on the Institute of Transportation Engineers - Trip Generation Manual.
6. Develop projected traffic volume analysis for maximum and "logical" growth scenarios.
7. Attend a meeting with the Town to present results of our study and discuss public presentation format.
8. Prepare a letter report of findings with figures.

9. Attend one public information meeting to present the study results utilizing the report figures.

Assumptions

The following are assumptions and/or specific exclusions associated with our proposal:

1. The Town shall provide historical and projected population information, and identify developable parcels to be considered, and provide copies of existing traffic studies previously presented to the Town.
2. The study shall be conducted based on available information obtained or provided by the Town and existing traffic count data. No additional traffic counts were conducted.
3. The Town shall participate in the public information meeting.
4. The review of existing traffic studies as presented to the Town on various projects shall be to supplement this project only and reviewed for content only.
5. The traffic volume projections shall be based on the Institute of Transportation Engineers - Trip Generation Manual. Additional reference information and study format to be used shall be the Highway Capacity Manual by the Transportation Research Board.

Figure No.1.- General Study Area; identifies the corridor study area.

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### **3. Objective**

As a result of this investigation we have identified population trends, traffic trends, developed estimated additional traffic volumes that may be anticipated at full-build out of developable parcels within the Town, and provided a summary and recommendations.

**Traffic Evaluation**

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## 4. Analysis

### 4.1. Previous studies/reports/data

This investigation is based on readily available existing information obtained from or contained within the following:

- Town of Manlius records/reports/zoning
- NYS Department of Transportation - Highway Data Services Bureau
- US Bureau of the Census
- Reports
  - Hunter's Ridge Subdivision - Draft Environmental Impact Statement dated March 8, 1999 - Part C Appendices
  - NYS DOT: Route 92 Highway Improvements, Village of Manlius and Onondaga County dated January 1999 - Expanded Project Proposal
  - Traffic Impact and Access Study; Proposed Suburban Park Apartments, dated October 23, 1998 - TransPro Associates
  - Eastern Onondaga County Area; Existing Conditions Report - January 1997, Syracuse Metropolitan Transportation Council (SMTC)

In an effort to develop "trends" in population growth and traffic volumes, historic data dating back to 1970 was reviewed. The most recent year for which population data was available for each municipality was 1996, such that the study period is 1970 to 1996. In the case of traffic volume data, counts have historically occurred in different years for different stations. Therefore, exact correlation of data for specific years from station to station was not possible. The methodology used to correlate the data is described in Section 4.1.3.

**4.1.1. Population trends**

Table 4-1 presents information collected for the various municipalities.

**Table 4-1. Population data.**

Year	T. of Manlius w/o V. of Manlius & Fayetteville	V of Manlius	V. of Fayetteville	T. of Sullivan	T. of Cazenovia	T. of Pompey
1970	18,830	2,245	4,996	11,969	6,092	4,536
1980	20,140	3,640	4,709	13,371	5,880	4,492
1990	21,644	4,764	4,248	14,622	6,514	5,317
1996	21,925	4,924	4,085	15,523	6,700	5,722

Source: O'Brien & Gere Engineers, Inc.

From this data, the following growth rates for the period 1970 to 1996 were calculated:

	1970 to 1996 <u>% Growth Rate</u>	<u>People per year</u>
Town of Manlius	16%	119/yr.
Village of Manlius	117%	103/yr.
*Village of Fayetteville	-22%	-35/yr.
Town of Sullivan	30%	137/yr.
Town of Cazenovia	10%	23/yr.
Town of Pompey	26%	46/yr.

\*Note: The population of the Village of Fayetteville has continued to decrease, indicated by the minus sign.

A closer look at the population data reveals a different trend in growth rates for the period 1990 to 1996:

	1990 to 1996 <u>% Growth Rate</u>	<u>People per year</u>
Town of Manlius	1%	47/yr.
Village of Manlius	3%	27/yr.
Village of Fayetteville	-4%	-27/yr.
Town of Sullivan	6%	150/yr.
Town of Cazenovia	3%	31/yr.
Town of Pompey	8%	68/yr.

Based on the information presented above, it is interesting to note that while the Village of Manlius and the Town of Manlius indicate a lower growth rate from 1990 to 1996 than from 1970 to 1996, the surrounding Towns/Villages continue to experience an equal or higher growth rate. Figure 2 presents the population data from 1970 to 1996.

#### 4.1.2. Traffic trends

Available historic data presented are weighted Average Annual Daily Traffic Volume (AADT) counts. These counts represent the approximate number of vehicle trips expected to be generated on an average weekday.

Traffic data collection points were established by the NYS Department of Transportation and shown on Figure No. 1 with an identification reference number. Unfortunately, data collection frequency is not obtained on a set routine basis. Instead data is collected for a specific study area or particular project in that particular year.

Average annual daily traffic count data for the study years listed were compiled in a Microsoft Excel table (see Appendix A). Traffic values were plotted versus the study years and the points related by a computer generated "best fit" polynomial trendline. For those stations where data was not available for 1997, Excel was used to extend the trendline in order to extrapolate a value beyond the last available data point. For example, since the most recent traffic count available for Station 0181 is from 1994, a computer generated trendline was used to extrapolate a value for 1997. The graphs of traffic data generated for each station are presented in Appendix A.

From the data, the following growth rate for the period ±1970 to 1997 were calculated:

<u>Station</u>	<u>±1970 to 1997 % Growth Rate</u>	<u>Vehicle trips per year</u>
Rt. 92 from Rt. 257 to begin Rt. 173 overlap (0006)	46%	289/yr
Rt. 92 from Pompey Ctr. Rd. to Madison Cty. Line (0053)	104%	189/yr.
Rt. 257 from Rt. 5 to Rt. 92 (0179)	12%	28/yr.
Rt. 173 from Rt. 92 overlap to Sweet Rd. (0181)	54%	87/yr.
Rt. 92 from start Rt. 173 overlap to end Rt. 92 overlap (0182)	110%	437/yr.
Rt. 92 from end Rt. 92 overlap to Pompey Ctr. Rd. (0183)	59%	186/yr.
Rt. 173 from Rt. 92 overlap to Madison Ctr. Line (0185)	81%	35/yr.
Rt. 92 from Rt.257 to Rt. 5 (0238)	130%	439/yr.

For the period 1990 to 1997 the growth rates were calculated to be as follows:

<u>Station</u>	<u>±1990 to 1997 % Growth Rate</u>	<u>Vehicle trips per year</u>
Rt. 92 from Rt. 257 to begin Rt. 173 overlap (0006)	2%	86/yr.
Rt. 92 from Pompey Ctr. Rd. to Madison Cty. Line (0053)	-16%	-225/yr.
Rt. 257 from Rt. 5 to Rt. 92 (0179)	1%	8/yr.
Rt. 173 from Rt. 92 overlap to Sweet Rd. (0181)	44%	342/yr.
Rt. 92 from start Rt. 173 overlap to end Rt. 92 overlap (0182)	16%	500/yr.
Rt. 92 from end Rt. 92 overlap to Pompey Ctr. Rd. (0183)	-5%	-100/yr.
Rt. 173 from Rt. 92 overlap to Madison Ctr. Line (0185)	-5%	-443/yr.
Rt. 92 from Rt.257 to Rt. 5 (0238)	21%	450/yr.

**4.1.3. Traffic generation**

The Town of Manlius provided information of developable residential and commercial areas within the Town limits. These areas fall into one of the following categories:

- Parcels currently approved for full build.
- Parcels for which applications have been submitted to the Town for development (i.e., development approval is pending).
- Parcels for which partial development has been approved but full build has not yet been approved.
- Areas that are zoned for residential and commercial development but applications for development have not been received by the Town.

For each developable area, an estimate of the full build potential was calculated. For those areas zoned residential, the number of single detached units or low rise apartment units was calculated, depending on the specific zoning. For areas zoned commercial, an estimate of potential gross leasable area (GLA) was calculated.

The amount of traffic expected to be generated from future development was estimated from trip generation rates published by the Institute of Transportation Engineers in "Trip Generation, 6th Edition, ITE, 1997" (ITE Manual) and is presented in Table 4-2. Appendix B provides the calculations performed for each developable parcel based on zoning and corresponding land use codes from the ITE Manual. For each land use code, the ITE Manual provides fitted curve equations from which to calculate an estimate of trips generated from a given development, 200 single detached housing units (ITE Manual land use code 210) are approved for development. Thus, the following calculation, also provided in Appendix B, was performed:

ITE Manual equation for land use 210 =  $\ln(T) = 0.92\ln(X) + 2.707$

where T = # trips generated

X = # single detached housing units

$\ln(T) = 0.92\ln(200 \text{ units}) + 2.707$

T = 1,961 trips

**Table 4-2. Developable areas.**

Developable Area	Zoning	Full Build Potential	Projected Trip Generation
92 Brinnan Fields	Residential	59 lots	668
92 Lee Property	Residential	13 lots	159
92 Lee Property	Commercial	31 acres	7,368
92 Regiment Way	Commercial	3 acres	1,910
Spruce Ridge	Residential	18 lots	214
Quarry Road	Residential	91 lots	951
Henneberry Road	Residential	181 lots	1,789
Tinderbox Circle/ Falcon View	Residential	51 lots	558
Duguid Road	Residential	486 lots	4,440
92 92 Mallards Landing	Residential	200 lots	1,961
92 * Suburban Park	Residential	128 units	1,043
92 Hunters Ridge	Residential	31 lots	353

Figure No.3 identifies the above developable areas and their respective projected trips to be generated.

As reported in Appendix A, the 1997 traffic volume at the intersection of Rts 92 and 173 (Station 0006) is 24,800 trips. Table 4-3 below summarizes the projected traffic volumes generated with future development.

**Table 4-3. Trip generation with proposed development.**

Study Area	# Trip Generated
Rt. 92 east of Rt. 173 Intersection	13,439
Rt. 173 east of Rt. 92 Intersection	558
Rt. 173 west of Rt. 92 Intersection	<u>2,954</u>
<b>TOTAL</b>	<b>16,951</b>

24,800 2-way  
17,000  
4,800

**Traffic Evaluation**

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Therefore, subsequent to full development of deliverable area in the Town of Manlius, traffic volume at the intersection of Rts. 92 and 173 (Station 0006) will increase from 24,800 trips to 41,751 trips, a 68% increase.

10,000  
① traffic down  
② population up  
③ people are seeking alternate means.

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## 5. Conclusions

1. Traffic data indicates approximately 10,000 vehicles per day are attributed to "out of Town" commuters traveling to and from their work place via Route 92/173 through the Village of Manlius. As a result, the traffic situation lends itself to multiple Town and County jurisdictional involvement.
2. Traffic volumes from the Cazenovia and Pompey areas has leveled off or is on a reducing trend (1990 to 1997), however, population continues to grow. This deviates from the normal direct correlation between population growth and traffic growth. The traffic reduction being realized indicates motorists are seeking alternative travel routes, in an effort to avoid congested intersections and road segments. However, with continued population growth it is conceivable and likely traffic volumes will increase.
3. There could be approximately 17,000 additional vehicle trips generated by future developable areas within the Town. This volume represents a worst case scenario.
4. The Village of Manlius has established guidelines to make the community more pedestrian friendly, strengthen and expand their economic base and increase the overall attractiveness and functions of the area. With that in mind, the Village has opposed suggestions to widening any portion of roadways within the Village limits. Therefore, traffic conditions will continue to operate at or below unacceptable level of service standards.

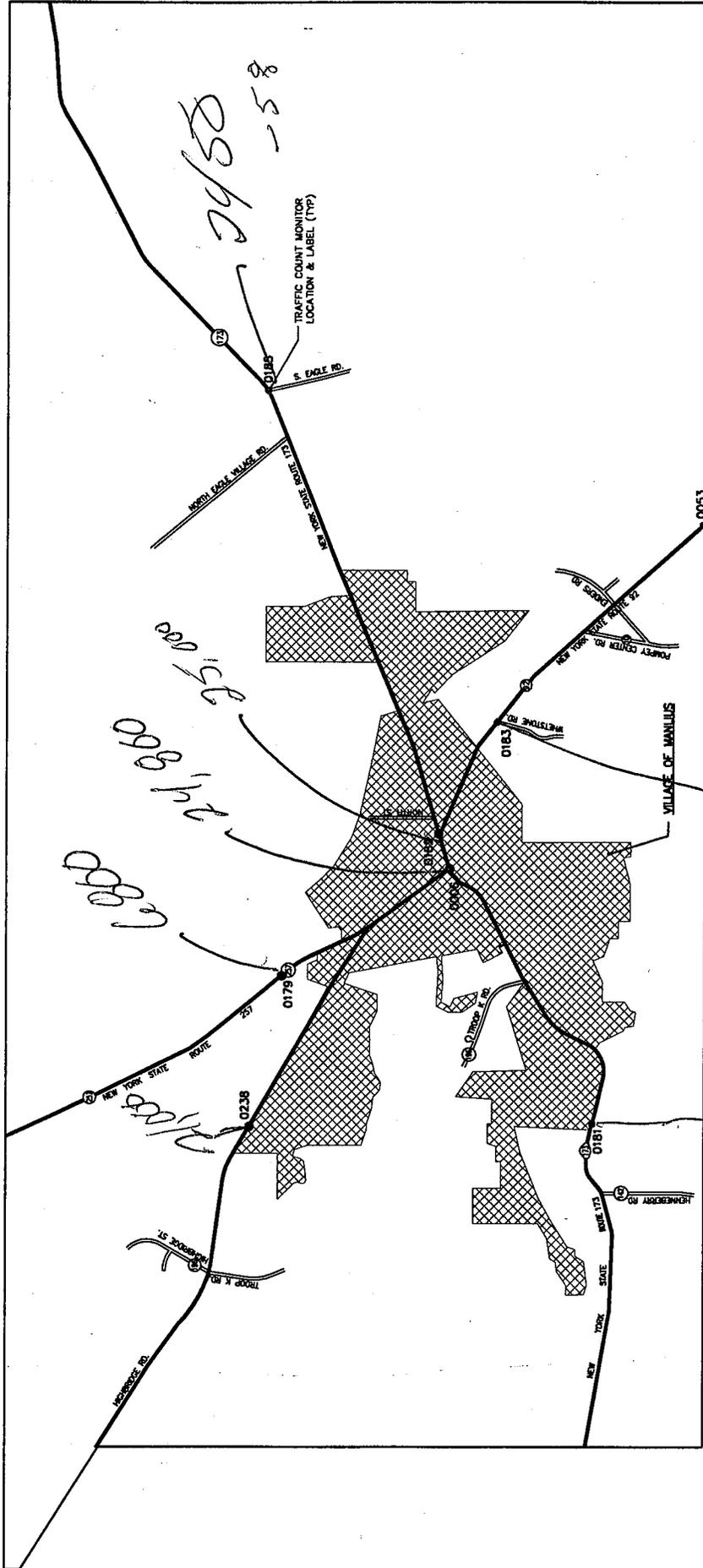


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## 6. Recommendations

1. Traffic congestion within the Town and Village is a multi jurisdictional problem. The Town should utilize the information contained herein to seek funding agencies help to obtain additional traffic data information, develop alternatives, and construct by-pass alternatives or modifications to existing roadways.
2. The Town may want to consider re-zoning some of the associated developable parcels to minimize projected traffic volumes by controlling the type of development to be approved.
3. The NYSDOT Project Report - Route 92 Highway Improvements, Village of Manlius, dated January 1999, identified a NEEDS listing. The Town should work with the Village to implement most or all of the suggestions reported. Because the traffic congestion is a multi jurisdictional problem, New York State or Federal funds may be available to study, design alternatives and implement modifications.

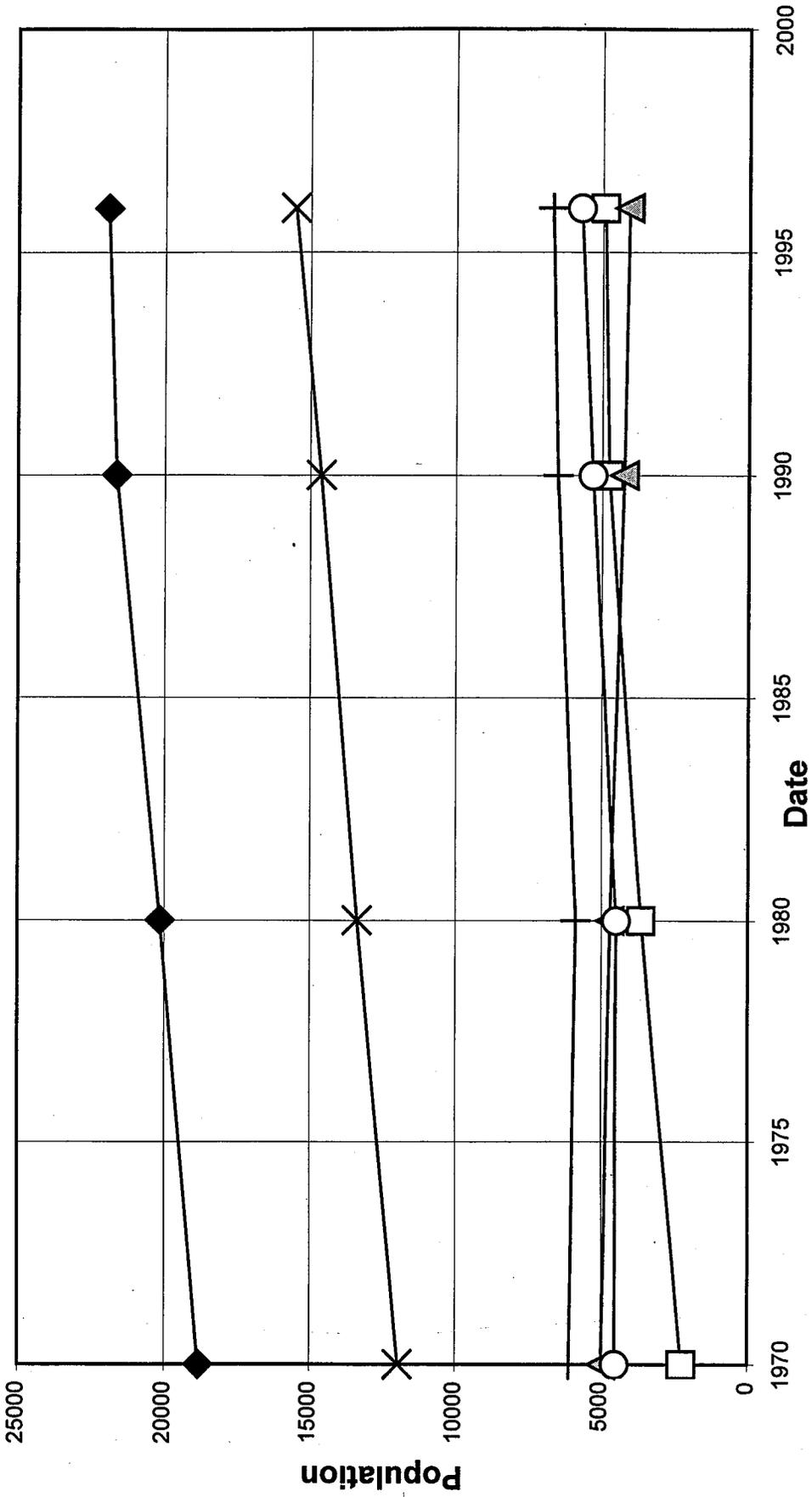
FIGURE NO. 1



TOWN OF MANLIUS  
TRAFFIC INVESTIGATION  
GENERAL STUDY AREA

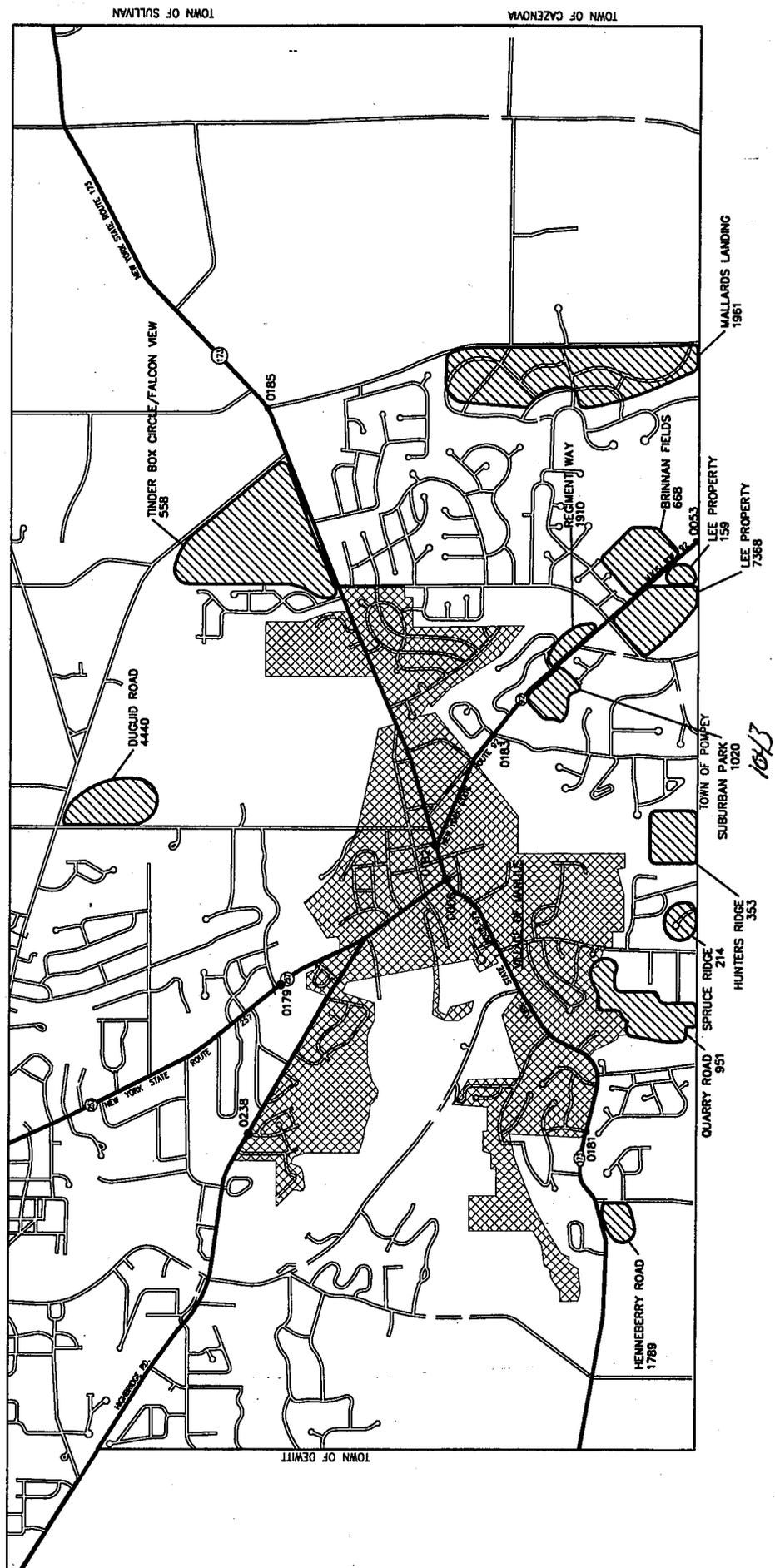
MAY 7, 1989  
FILE: 23336-FIG1

**Figure No. 2**  
**Population Data**



—◆— T. of Manlius (w/out Vill. #s) —□— V. of Manlius —▲— V. of Fayetteville —×— T. of Sullivan —+— T. of Cazenovia —○— T. of Pompey

FIGURE NO. 3



TOWN OF MANLIUS  
TRAFFIC INVESTIGATION  
PROJECTED TRIP GENERATION  
MAY 7, 1999  
FILE: 23336-FIG3

**APPENDIX A**

TRAFFIC DATA

Station 0006 - Rt 92 from Rt 257 to begin 173 olap

year	AADT
1970	17000
1973	13700
1976	16500
1979	17700
1985	20600
1987	21600
1990	24200
1996	22400
*1997	24800

Station 0053 - Rt 92 from Pompey Center Road to Madison County Line

year	AADT
1970	4900
1978	7800
1979	8750
1980	5400
1983	6600
1985	7250
1989	8850
1991	8350
1994	7050
1997	7000

Station 0179 - Rt 257 from Rt 5 to Rt 92

year	AADT
1970	6050
1973	5950
1976	8300
1979	6650
1983	6550
1987	7650
1991	6750
1994	7450
1997	6800

Station 0181 - Rt 173 from 92 olap to Sweet Road

year	AADT
1970	4350
1973	7650
1976	9550
1979	3500
1982	3100
1988	8250
1989	13500

1991	4650
1994	6100
*1997	6700

Station 0182 - Rt 92 from start 173 olap to end 173 olap  
year

1967	11900
1973	11500
1976	16000
1979	15700
1982	16400
1987	19300
1990	21500
1994	22800
*1997	25000

Station 0183 - Rt 92 from end 173 olap to Pompey Center Road  
year

1968	9100
1976	9650
1977	9100
1979	8850
1982	10600
1984	9600
1987	13300
1989	15300
1993	16000
1996	15400
1997	14500

Station 0185 Rt 173 from olap to Madison County Line  
year

1966	1350
1975	1600
1976	2000
1979	3300
1981	2900
1988	2650
1989	2650
1990	5550
1991	2800
1997	2450

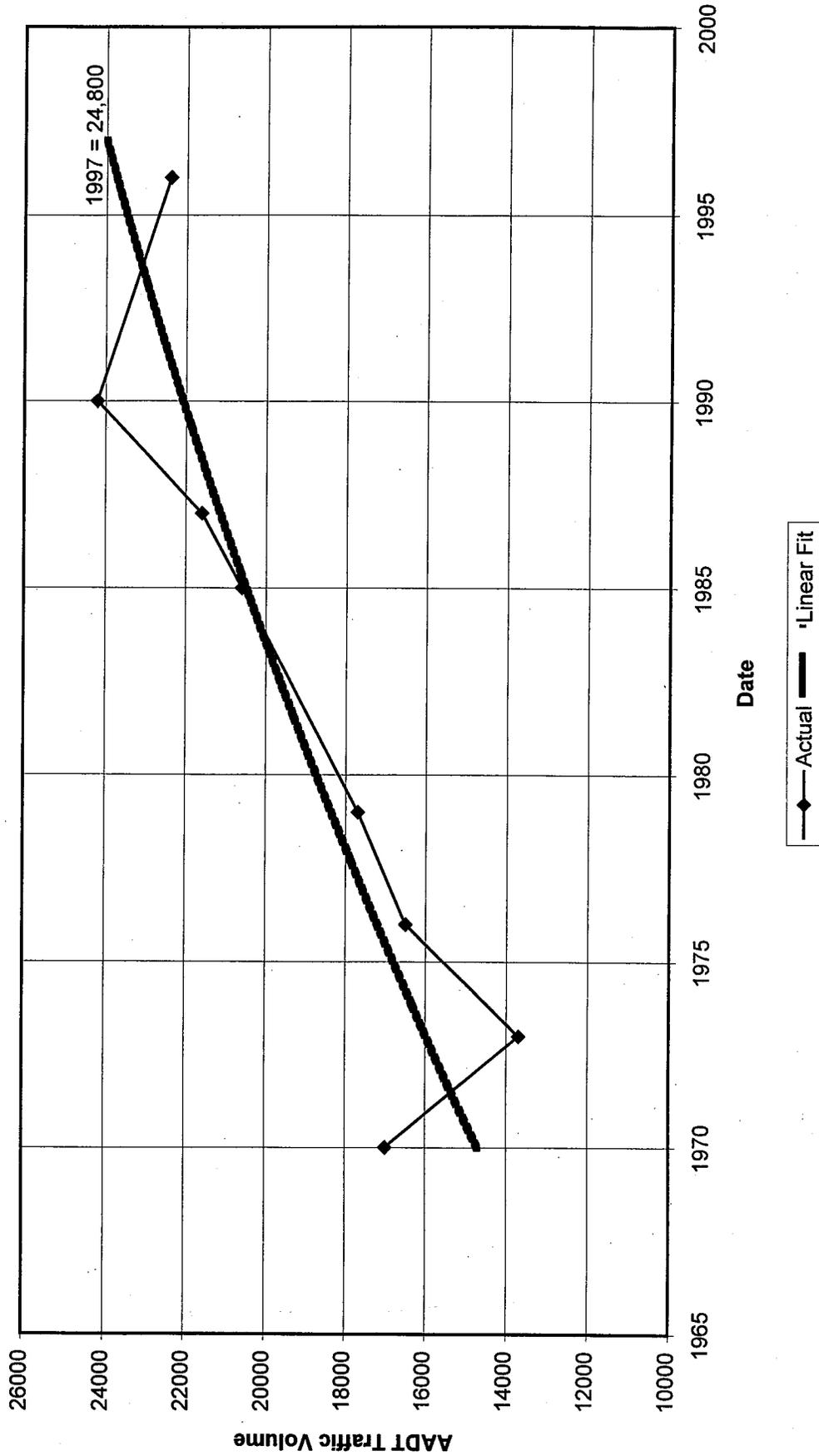
Station 0238 - Rt 92 from Rt 257 to Rt 5  
year

1970	9150
1973	8400
1975	12900
1979	10500

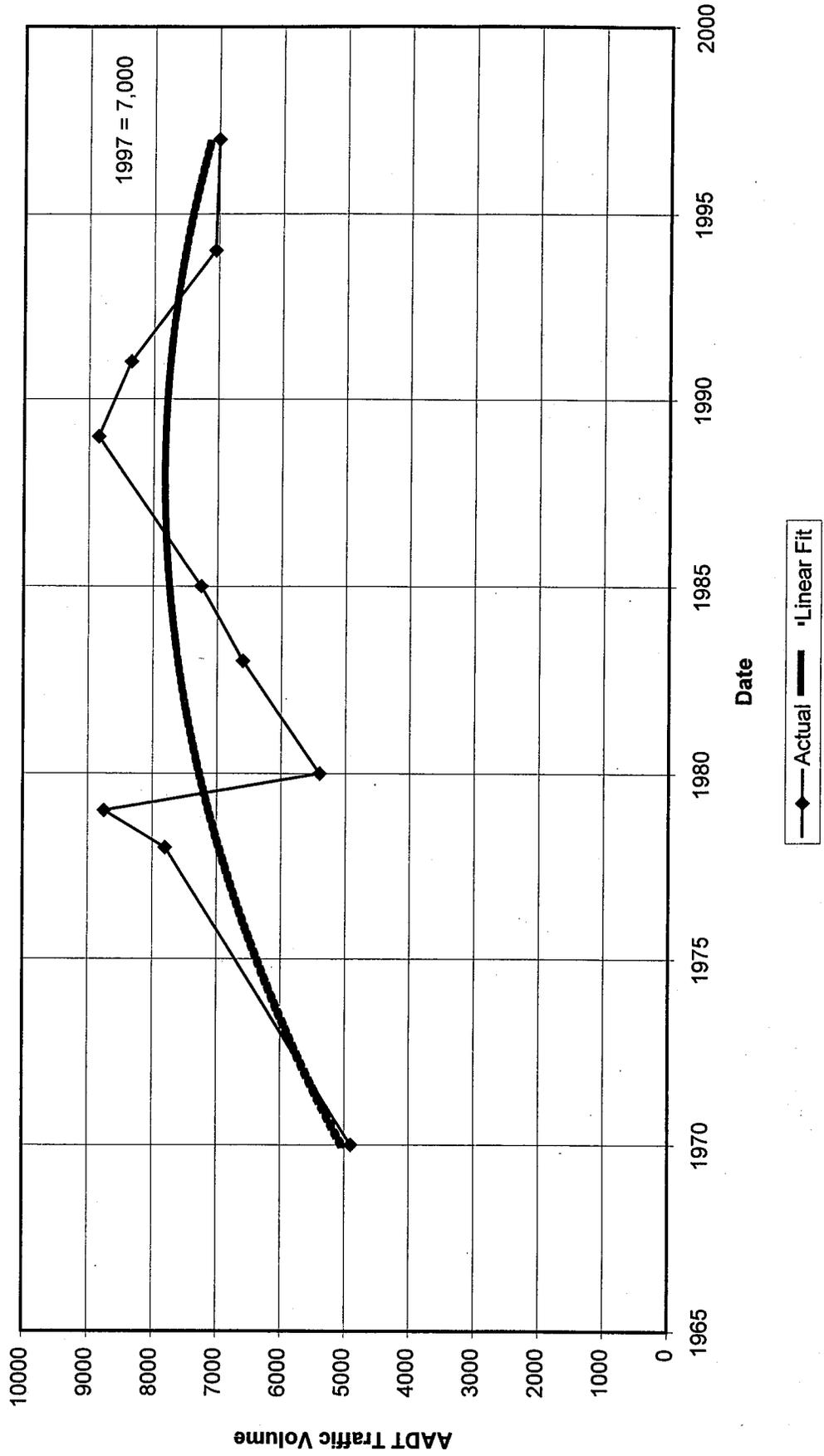
1983	15000
1984	13800
1986	15700
1989	17400
1996	20000
*1997	21000

\* Indicates estimate based on computer generated extrapolation

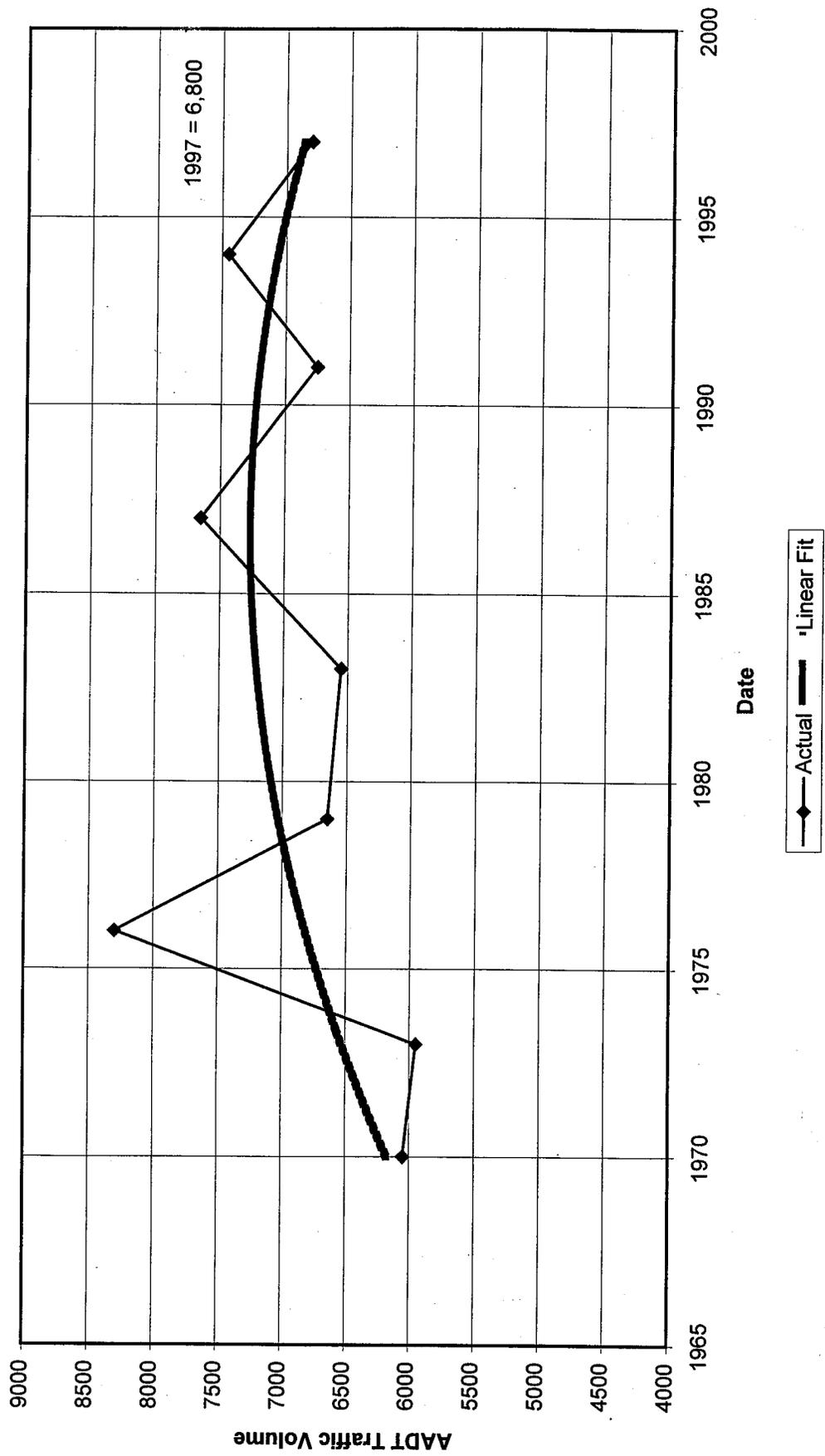
# Rt 92 from Rt 257 to Begin Rt 173 Overlap NYSDOT Station 0006



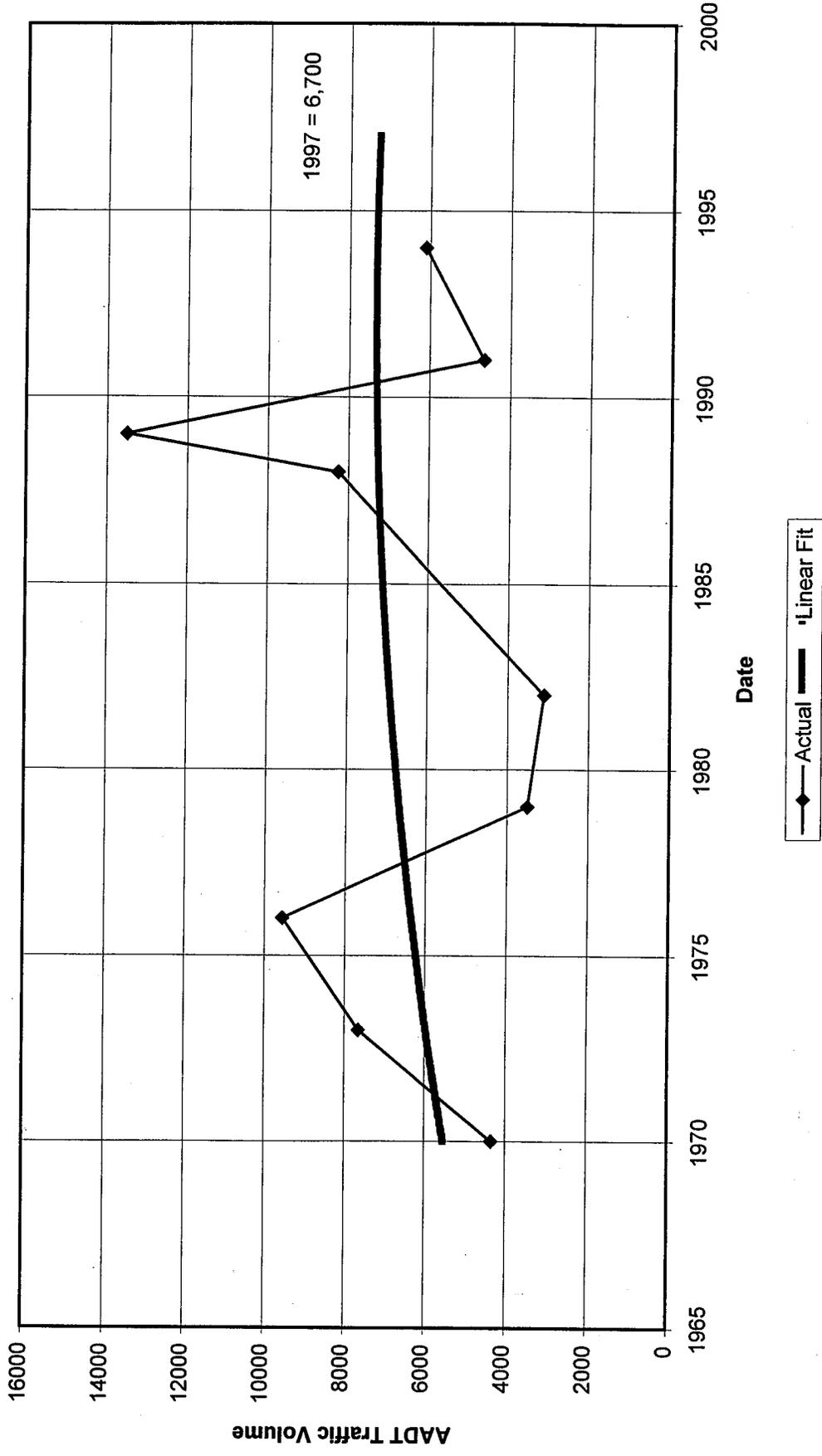
# Rt 92 from Pompey Center Rd to Madison Cty Line NYSDOT Station 0053



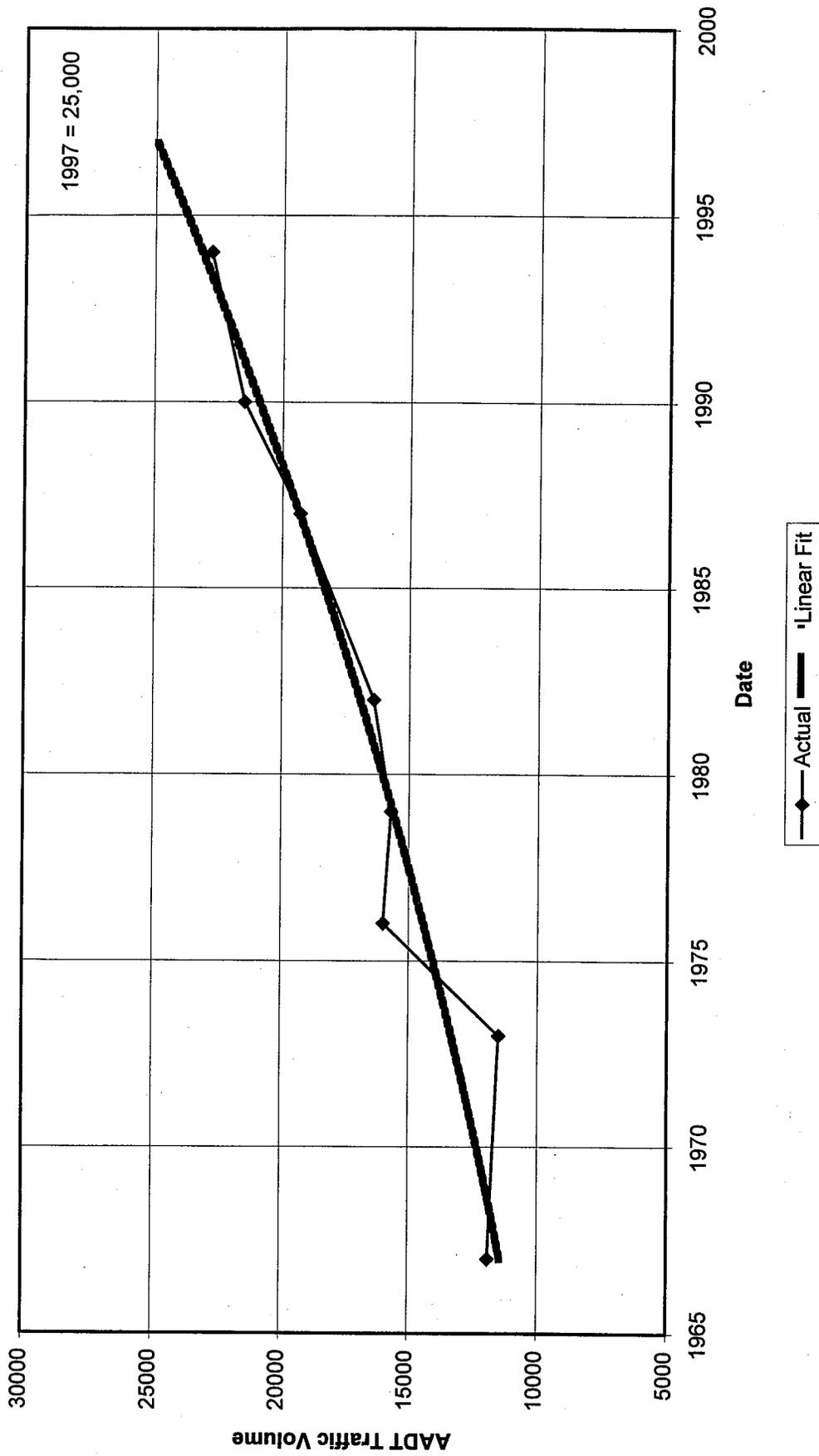
# Rt 257 from Rt 5 to Rt 92 NYSDOT Station 0179



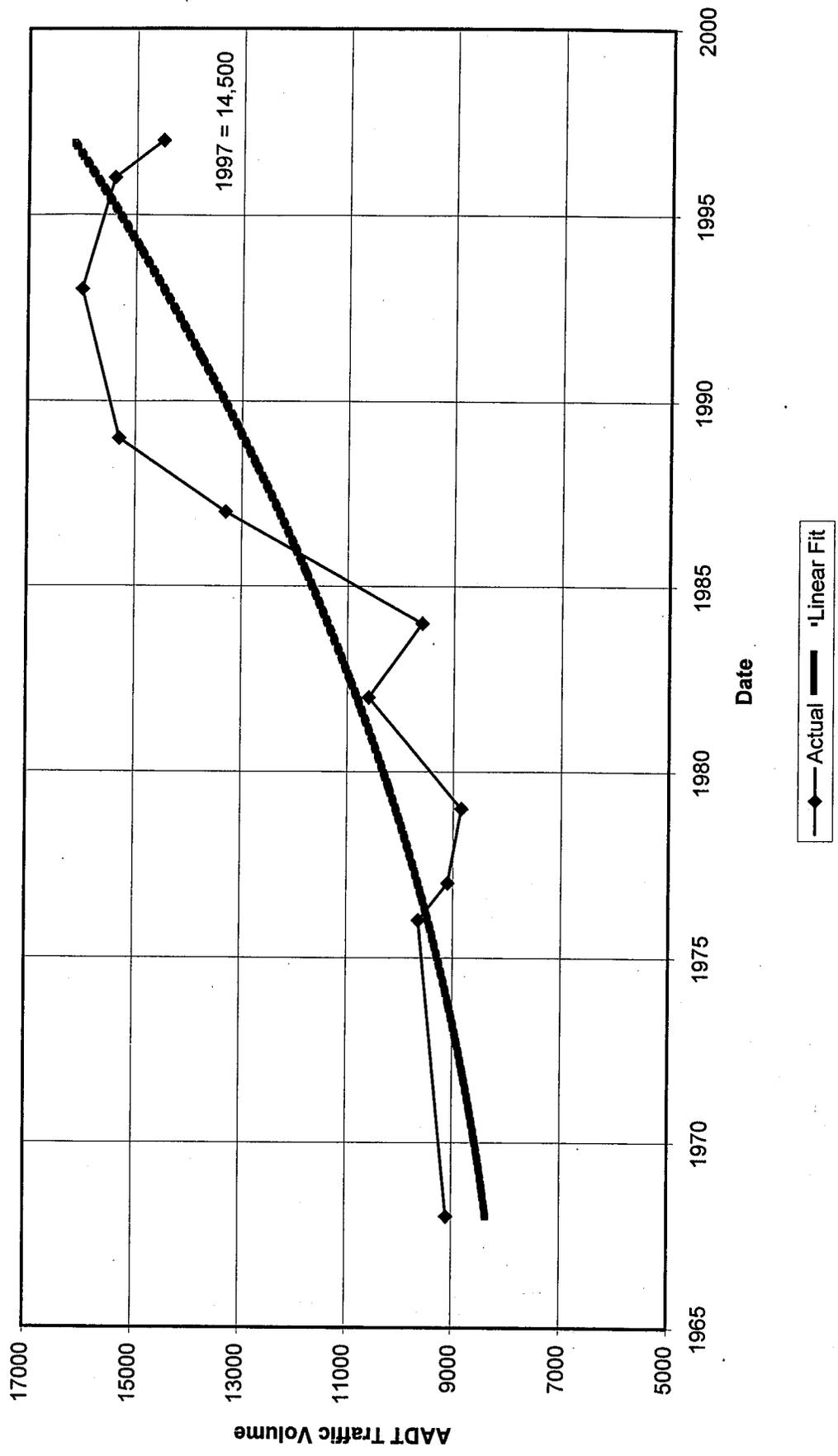
# Rt 173 from Rt 92 Overlap to Sweet Road NYSDOT Station 0181



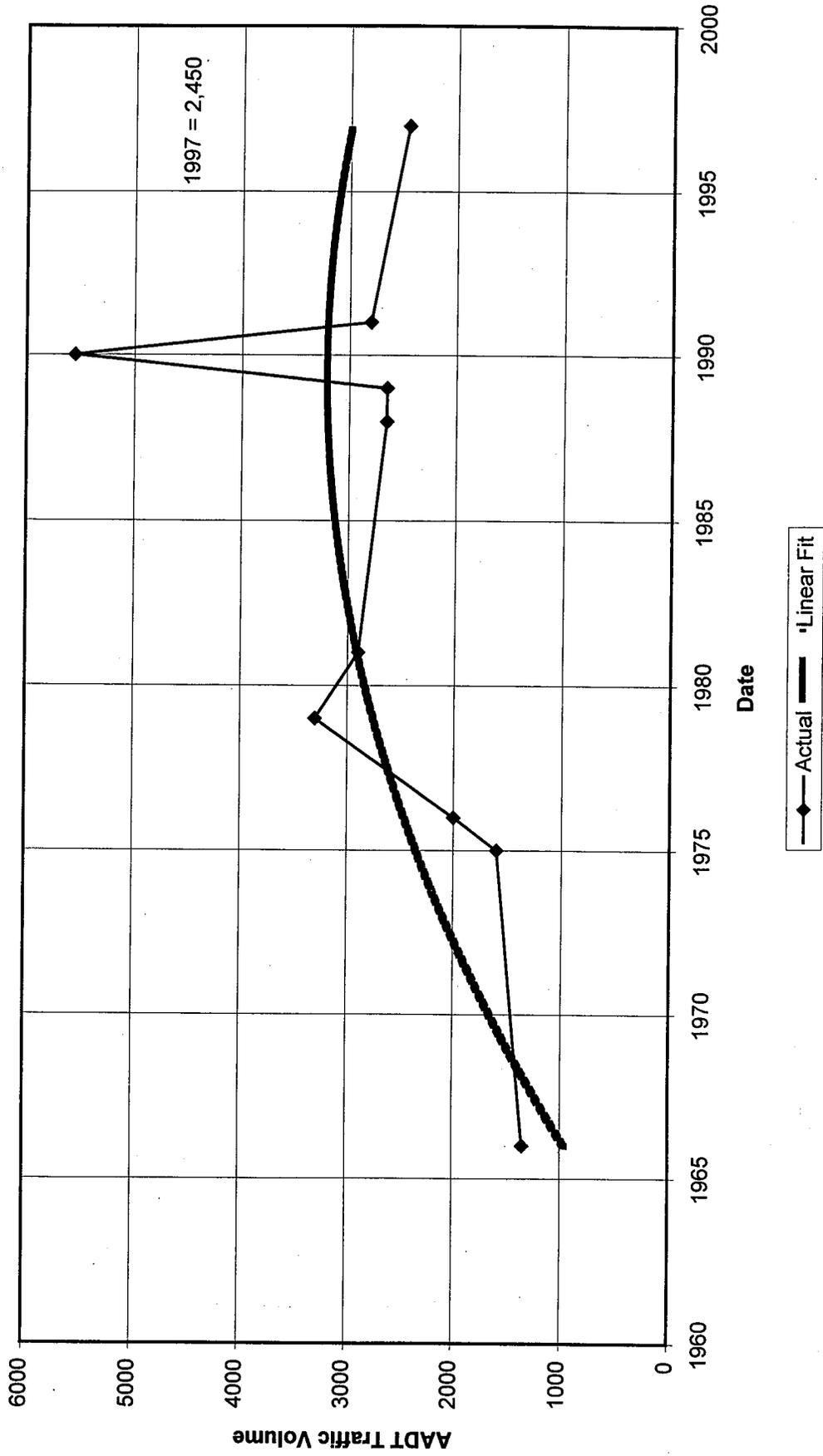
# Rt 92 from Start Rt 173 Overlap to End Rt 92 Overlap NYSDOT Station 0182



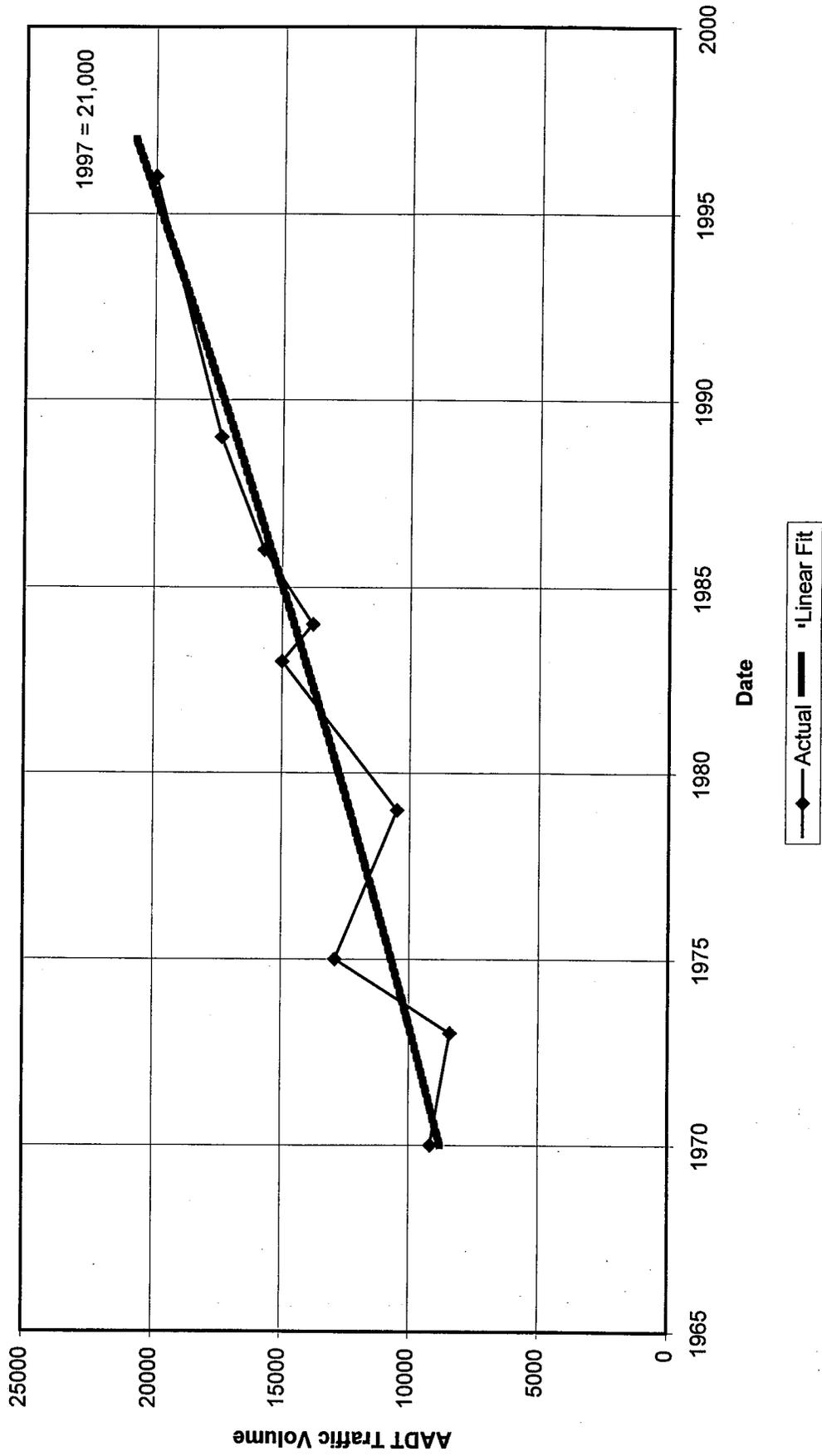
# Rt 92 from End Rt 92 Overlap to Pompey Center Road NYSDOT Station 0183



# Rt 173 from Rt 92 Overlap to Madison Cty Line NYSDOT Station 0185



# Rt 92 from Rt 257 to Rt 5 NYSDOT Station 0238



**APPENDIX B**

TOWN OF MANLIUS  
TRAFFIC ESTIMATES

## #117.01.081 - Brinnan Fields

44 lots - single family detached (210)

$$\text{Weekday} = \ln(T) = 0.920 \ln x + 2.707$$

$$T = \underline{487}$$

## #117.01.082 - Brinnan Fields

15 lots - single family detached (210)

$$\text{Weekday} = \ln(T) = 0.920 \ln x + 2.707$$

$$T = \underline{181}$$

## #113.04.03.01 = Lee Property

13 lots - single family detached (210)

$$\text{Weekday} = \ln(T) = 0.920 \ln x + 2.707$$

$$T = \underline{159}$$

31 acres Comm. A.

Assume 130,000 ft.<sup>2</sup> GLA

$$T = \underline{8069}$$

Alt 1- Shopping Center (820)

$$\ln(T) = 0.643 \ln(x) + 5.866$$

Alt 2- Discount Club (861) - No equation available

$$\text{Average Rate} = 41.8 / 1000 \text{ ft.}^2 \text{ GLA}$$

$$T = (41.8)(130) = \underline{5434}$$

Alt 3 - Home Improvement Superstore (862)

$$T = 37.403(x) - 235.069$$

$$T = \underline{4627}$$

Average for three = 6043-25% Passby = 4532+40,000ft.<sup>2</sup> GLA Outparcel - assume Shopping Center (820)

$$\ln(+)= 0.643 \ln(x) + 5.866$$

$$T = 3782 - 25\% = \underline{2836}$$

## #114.04.01.1 - Regiment Way

Commercial A - assume Specialty Retail Center

$$3.08 \text{ acres} \times 43560 \text{ ft}^2/\text{acre} \times 35\% = 46,958$$

No equation available

$$\text{Average Rate} = 40.67/1000 \text{ ft.}^2 \text{ GLA}$$

$$T = 46.958 \times 40.67 = \underline{1910}$$

## #111.06.31 - Spruce Ridge = 18 lots

$$\ln(T) = 0.920 \ln(x) + 2.707$$

$$T = \underline{214}$$

## #110.03.12 - Quarry Road = 91 lots

$$\ln(T) = 0.920 \ln(x) + 2.707$$

$$T = \underline{951}$$

#109.02.07.1 - Henneberry Road

Assume R-3 => 181 lots

$$\ln(T) = 0.920 \ln(x) + 2.707$$

$$T = \underline{1789}$$

#99.01 Tinderbox Circle/Falcon View = 51 lots

$$\ln(T) = 0.920 \ln(x) + 2.707$$

$$T = \underline{558}$$

#99.01.03 - Duguid Road

225 acres of RA - assume R3 development

$$(225 \text{ acres})(80\%) = 180 \div 37 \text{ acres/lot} = 486 \text{ lots}$$

$$\ln(T) = 0.920 \ln x + 2.707$$

$$T = \underline{4440}$$

Mallards Landing = 200 units

$$\ln(T) = 0.920 \ln x + 2.707$$

$$T = \underline{1961}$$

Suburban Park = 128 low rise units (#221)

$$T = 5.124 \times 387.526$$

$$T = \underline{1043} \text{ vs } 1020 \text{ from Report}$$

Hunters Ridge = 31 units single

From report provided = 353

$$\ln(T) = 0.920 \ln x + 2.707$$

$$T = \underline{353}$$

I:\div83\projects\423\23336\5\_rpts\manest.wpd