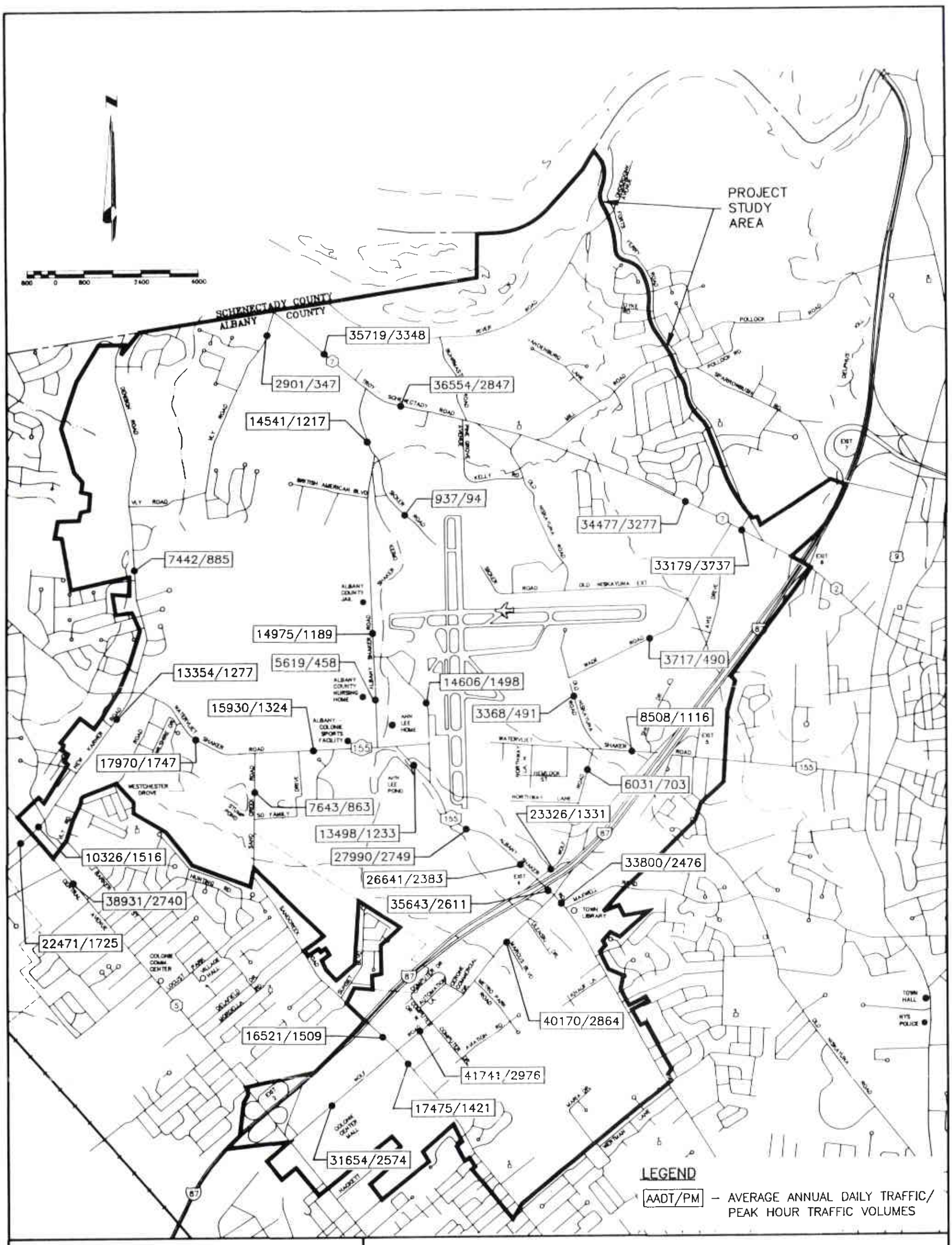
H. TRANSPORTATION

The Study Area is served by a network of highways that includes the limited access facility Interstate 87, principal arterials such as NYS Routes 5 and 7, Wolf Road, Albany Shaker Road, New Karner Road and parts of Watervliet Shaker Road, minor arterials such as Sand Creek Road and Old Wolf Road, and collector streets such as Wade Road. Direct access to the Albany County Airport is provided by the Airport Access Road which is a 4-lane highway approximately 0.6 miles long. The existing development in the area consists of commercial, industrial and airport related uses including residential uses located along Sand Creek Road, Vly Road and Old Niskayuna Road.

The private automobile is the primary means of transportation in the Study Area and unless there is a major change in the commuting patterns in the area there will be significant adverse impacts on the existing roadway network if rapid development is allowed to occur at current rates. This section will discuss the existing and projected future traffic conditions on the roadways in the Study Area. This section relies heavily on information provided in previous studies conducted by the Capital District Transportation Committee (CDTC) for the Wolf Road and Albany County Airport areas. Information gathered from these reports includes traffic volumes, background growth rates, future land uses, trip distribution patterns, and recommended roadway improvements.

Traffic volumes reported by CDTC represented 1987 conditions. Therefore, to update this information and develop 1990 traffic volumes, recent traffic count information was collected from the New York State Department of Transportation (NYSDOT) and Albany County Department of Public Works (ACDPW). To further supplement information from the NYSDOT and ACDPW, automatic traffic counts



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ENGINEERS & PLANNERS
3 WINNERS CIRCLE ALBANY, N.Y. 12205

1990 EXISTING TRAFFIC VOLUMES

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AIRPORT AREA GENERIC ENVIRONMENTAL IMPACT STATEMENT

were collected by Clough, Harbour & Associates at 11 key locations between October 16 and November 1, 1989.

1. Traffic Volumes:

Based on the traffic counts available and those collected specifically for this FGEIS, the 1990 existing daily and PM peak hour traffic volumes were determined and are presented on Exhibit II-H-1. As shown on this exhibit, Wolf Road carries the most traffic of the roadways within the Study Area, with an Average Annual Daily Traffic flow in excess of 40,000 vehicles per day (VPD) between Albany Shaker Road and Sand Creek Road. New York Routes 5 and 7 also carry a significant volume of traffic, over 35,000 VPD. Of the roads maintained by Albany County, Albany Shaker Road at I-87 Exit 4 (carries 35,650 VPD), Old Wolf Road from Exit 4 southbound ramp to Albany Shaker Road (carries 23,350 VPD), and Watervliet Shaker Road between New Karner and Sand Creek Roads (carries 17,970 VPD), have the heaviest traffic flows.

2. Operational Analyses:

To determine the ability of the roadways in the Study Area to accommodate the existing and projected traffic demands, the procedures established in the 1985 Highway Capacity Manual Special Report 209 (HCM) prepared by the Transportation Research Board were used. These procedures use volume-to-capacity ratio (V/C ratio) and average delay per vehicle to describe the operating conditions for signalized intersections, V/C ratios for midblock locations and "Reserve Capacity" for unsignalized intersections. The volume-to-capacity ratio is defined as the relationship between peak hour traffic volume and the maximum capacity of an intersection approach or midblock location.

Average intersection delay, defined as the amount of time a typical vehicle must stop and wait at an intersection prior to proceeding through the

intersection, was used to determine the level of service provided by the intersection. The level of service for a signalized intersection, as defined by the HCM ranges from "A" for very good service with little delay to "F" for very poor service characterized by very long delay at an intersection. Detailed descriptions of level of service designations are provided in Table II-H-1. A level of service "D" has been selected as the minimum acceptable level for overall intersection performance during the peak hours. This level of service rating (level of service D) has been generally accepted by CDTC and the NYSDOT as the minimum level of service which should be provided by urban roadways during peak hours.

Reserve capacity is defined as unused capacity and is used to estimate the level of service for an unsignalized intersection. A reserve capacity of at least 100 (passenger cars per hour) is required to provide level of service "D" conditions. Again, this level of service is generally accepted by CDTC and the NYSDOT as the accepted minimum for urban roadways during peak hours.

For presenting the analyses for midblock locations, or links, a location was noted as "Approaching Desired Capacity" if the calculated V/C ratio was between 0.80 and 1.00, and "Exceeds Desired Capacity" if the V/C ratio exceeded 1.00. The maximum capacity was based jointly on procedures set forth in Chapter 8 of HCM for multi-lane roadways and procedures established by CDTC staff for 2-lane roadways.

Table II-H-1

1985 HIGHWAY CAPACITY MANUAL
LEVEL OF SERVICE DESCRIPTIONS FOR SIGNALIZED INTERSECTIONS

Level of Service A describes operations with very low delay, i.e., less than 5.0 seconds per vehicle. This occurs when progression is extremely favorable, and most vehicles arrive during the green phase of the traffic signal cycle. Most vehicles do not stop at all. Short traffic signal cycle lengths may also contribute to the delay.

Level of Service B describes operations with delay in the range of 5.1 to 15.0 seconds per vehicle. This generally occurs with good progression and/or short traffic signal cycle lengths. More vehicles stop than level A, causing higher levels of average delay.

Level of Service C describes operations with delay in the range of 15.1 to 25.0 seconds per vehicle. These higher delays may result from fair progression and/or longer traffic signal cycle lengths. Individual cycle failures may begin to appear in this level. The number of vehicles stopping is significant at this level, although many still pass through the intersection without stopping.

Level of Service D describes operations with delay in the range of 25.1 to 40.0 seconds per vehicle. At level D, the influence of congestion becomes more noticeable. Longer delays may result from some combination of unfavorable progression, long cycle lengths, or high volume to capacity ratios. Many vehicles stop, and the proportion of vehicles not stopping decline. Increased cycle failures are noticeable.

Level of Service E describes operations with delay in the range of 40.1 to 60.0 seconds per vehicle. This is considered to be the limit of acceptable delay. These high delay values indicate poor progression, long cycle lengths, and high volume to capacity ratios. Individual cycle failures are frequent occurrences.

Level of Service F describes operations with delay in excess of 60.0 seconds per vehicle. This is considered to be unacceptable to most drivers. This condition often occurs with oversaturation, i.e., when arrival flow rates exceed the capacity of the intersection. It may also occur at high volume to capacity ratios below 1.0 with many individual cycle failures. Poor progression and long cycle lengths may also be major contributing causes to such delay levels.

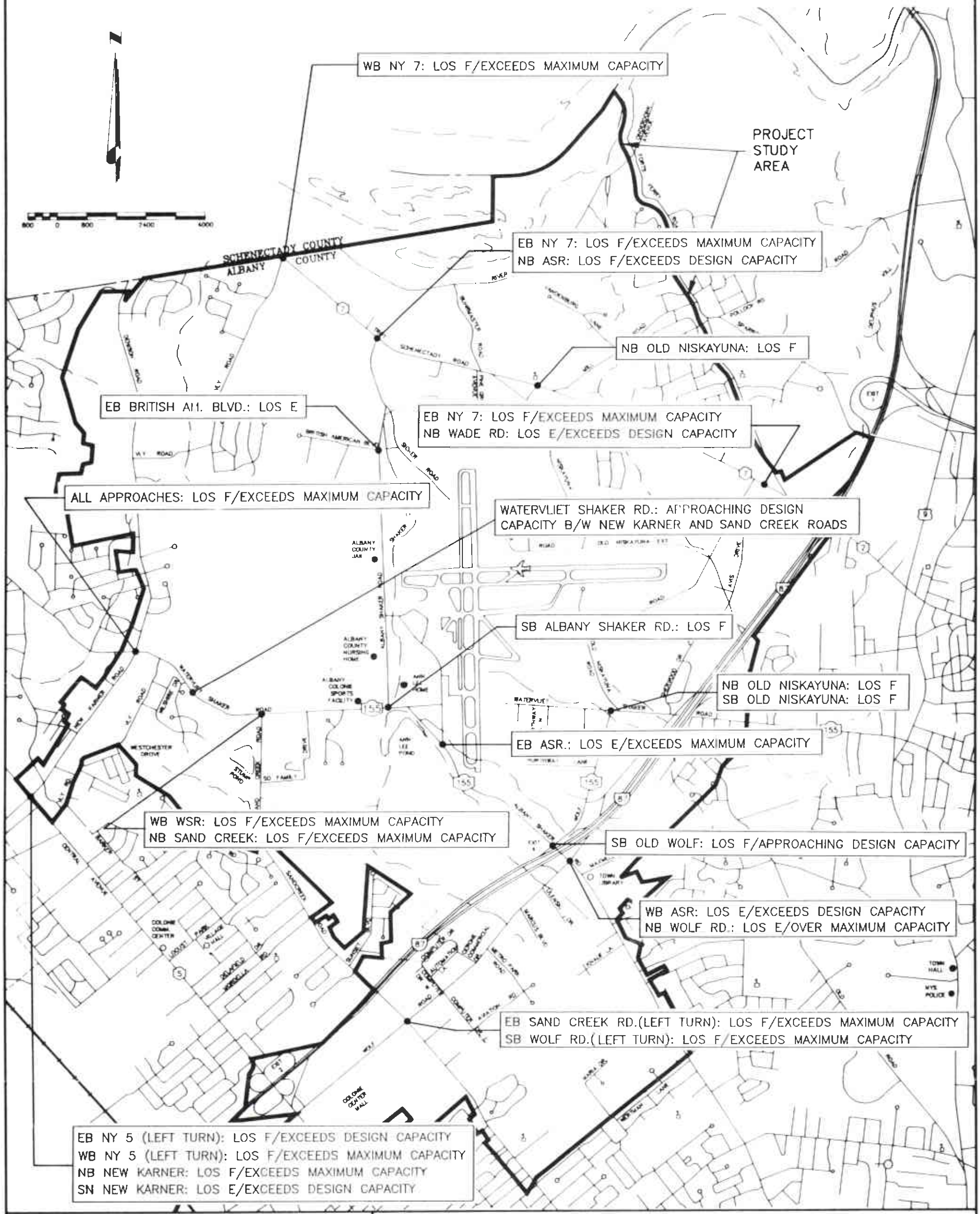
In previous studies evaluating the roadway network of the Wolf Road and Albany County Airport areas, the CDTC staff identified the need for certain roadway improvements which are necessary to address existing roadway deficiencies within the Study Area. Exhibit II-H-2 illustrates those existing highway locations that are currently experiencing operational deficiencies. The measures identified by CDTC which are required to resolve or minimize these existing deficiencies are summarized in Table II-H-2.

The focus of the Transportation section of this FGEIS is, in part, to identify the impact which future development will have on the roadways within the Study Area through the year 2005. Existing roadway deficiencies in the Study Area cannot be attributed to development which has yet to occur. Therefore, the capital costs of the improvements identified to correct these existing deficiencies cannot be assessed to future development. However, the improvements identified by CDTC in Table II-H-2 should be implemented within the short-term (5 years) to assure the continued orderly, efficient and safe movement of traffic through the Study Area. Furthermore, unless these short-term improvements are undertaken, the formulation of any mitigation plan to alleviate traffic congestion created by future development in the Study Area will be inadequate. Therefore, in assessing the impact which future development will have on the roadway network in the Study Area, it is assumed that the short-term improvements recommended by CDTC will be implemented. The total approximate construction cost (1990 dollars) to complete the short term improvements has been estimated by CDTC at $8,420,000 - $11,780,000. These costs have not been included in the Development Mitigation Cost discussed in Section II, O, Economics.

TABLE II-H-2

DESCRIPTION OF PROPOSED IMPROVEMENT ACTIONS REQUIRED TO MINIMIZE OR RESOLVE EXISTING TRAFFIC OPERATIONAL DEFICIENCIES WITHIN THE STUDY AREA

1.	ALBANY SHAKER RD./NYS 7	Modify NYSDOT design (called for under Route 7 project) to provide 1 additional approach lane to permit 2 left-turn lanes and 1 right turn lane. Right-of-way should be reserved for future second travel lane southbound.
2.	WADE RD./NYS 7	Widen northbound approach to provide single left and dual-right turn lanes.
3.	ALBANY SHAKER RD./ WATERVLIET SHAKER RD.	Widen southbound approach to provide for exclusive left and right turn lanes. Install signal as warranted.
4.	WATERVLIET SHAKER RD./ SAND CREEK RD.	Widen all 3 legs to provide for 2-lane approaches. Upgrade signal to meet Manual of Uniform Traffic Control Devices (MUTCD) standards.
5.	WATERVLIET SHAKER RD./ NEW KARNER RD.	Widen all 4 legs to provide for 2-lane approach eastbound and southbound and 3-lanes westbound and northbound. Upgrade signal to meet MUTCD standards.
6.	NEW KARNER RD./NYS 5	Widen all 4 legs to provide 4-lane approaches eastbound, northbound, and southbound and 5-lane approaches westbound. To facilitate peak hour flows through this intersection, widen New Karner Road to 4 travel lanes with flush median between Albany Street and NYS 5 and taper to 2 northbound travel lanes beyond Consaul Road. Upgrade signal.
7.	ALBANY SHAKER RD./ BRITISH AMERICAN BLVD.	Widen northbound approach to provide left-turn bay to British American Boulevard. Install signal as warranted.
8.	WATERVLIET SHAKER RD./ OLD WOLF RD.	Widen all 4 legs to provide 2-lane approaches Retain westbound right-turn channelization as one-way northbound. Upgrade physical condition of entire intersection and install traffic signal as warranted.



CLOUGH, HARBOUR & ASSOCIATES
ENGINEERS & PLANNERS
3 WINNERS CIRCLE ALBANY, N.Y. 12205

EXISTING HIGHWAY OPERATIONAL DEFICIENCIES

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AIRPORT AREA GENERIC ENVIRONMENTAL IMPACT STATEMENT

TABLE II-H-2 (CONT.)

9.	OLD WOLF RD./ EXIT 4 SB OFF-RAMP	Recent installation of traffic signal will improve operation of this intersection. Consideration should be given to widening the off-ramp to provide double left-turn lanes to Old Wolf Road. Old Wolf Rd. should be widened between Exit 4 and Albany Shaker Rd. to provide 2 southbound travel lanes (to accommodate double left-turn movement from Exit 4).
10.	NYS 7/VLY ROAD	Improvements proposed under NYSDOT's Route 7 reconstruction project will resolve existing deficiencies. No other improvements currently warranted.
11.	NYS 7/OLD NISKAYUNA RD.	Improvements proposed under NYSDOT's Route 7 Reconstruction project will resolve existing deficiencies. No other improvements currently warranted.
12.	ALBANY SHAKER RD/ AIRPORT ACCESS RD. (SOUTH)	Retiming of existing traffic signal phasing may be sufficient to reduce delay and increase capacity.
13.	ALBANY SHAKER RD/ OLD WOLF RD	Retiming of existing traffic signal phasing may be sufficient to reduce delay and increase capacity.
14.	ALBANY SHAKER RD/ WOLF ROAD	Widen the northbound approach to provide for exclusive right turn lane, an exclusive left and thru lane; and a shared left/thru lane; widen the westbound approach to provide for an exclusive right turn lane. Signal retiming should also be considered. These improvements may not be warranted under certain future traffic conditions if Exit 3/Airport Connector is implemented.
15.	WOLF ROAD/SAND CREEK RD	Improvements to the eastbound approach to be implemented by the Town of Colonie as part of the Windsor Plaza project and retiming of the existing signal phasing would be sufficient to mitigate current level of service and capacity deficiencies.
16.	WATERVLIET SHAKER RD/ BETWEEN NEW KARNER RD AND SAND CREEK RD	Widen 0.8 miles of highway to provide for 4 12 foot travel lanes and a 10 foot flush median. Install left-turn bays at Memory's Garden, Westchester Drive, and Old Vly Road. Provide adequate taper eastbound beyond Sand Creek Road for safe transition to 2 lanes.

TABLE II-H-2 (CONT.)

17.	ALBANY SHAKER RD/ SICKER RD	Realign Sicker Road to create a 4-leg intersection at British American Boulevard. Should be implemented with Action 7.
18.	WATERVLIET SHAKER RD B/W THE NORTH AND SOUTH LEGS OF ALBANY SHAKER RD	Realign and widen to provide uninterrupted flow conditions between the 2 legs of Albany Shaker Road (four 12-foot travel lanes on a super elevated transition curve). Change signal operation at Albany Shaker Road and Airport Access Road (north) from flashing mode to 3-color operation.

Impacts and Mitigation Measures:

1. Future Traffic Projections - Target Growth Development Scenario:

a. Land Use Projections

The first step in projecting future traffic conditions is to assess the development potential of vacant lands within the Study Area. Section II, B, Land Use and Zoning, includes a description of the future land use of the Cumulative Growth Scenario for the 15-year planning period. This analysis resulted in the following projections of the total development potential of the vacant lands within the Study Area:

Land Use	Estimated Increase
Residential	1,583 Units
Office	4,837,000 SF
Retail	727,000 SF
Warehouse/Industrial/ Manufacturing	1,825,000 SF
Airport Enplanements	1,481,000 Persons

All projections of future traffic flows and roadway deficiencies were based on this development scenario.

b. Trip Generation

The second step in the planning process, known as trip generation, resulted in the estimation of the total number of peak hour vehicle trips without regard to the direction of those trips. The approach to trip generation used in this study consisted of applying a known trip rate as reported in the fourth edition (1987) of the Institute of Transportation Engineers' (ITE) report Trip Generation and were modified by CDTC to reflect local characteristics of land uses. These land uses include but are not limited to a variety retail, office, industrial, manufacturing, institutional, and residential uses. CDTC has collected

information on local trip rates for the Capital District and, where appropriate, this data was utilized in place of national trip rates developed by the ITE. Since Highway Capacity is analyzed in terms of Peak Hour Flows, the Trip Generation potential was examined for the Critical PM Peak Highway Hour, which occurs between 4:30 - 5:30 PM on a typical week day.

The range of additional peak hour trips that will be generated by land uses within the Study Area under the Cumulative Growth Scenario is as follows:

Peak PM Hour New Trips

Land Use	Trips
Residential	1,506
Office	12,269
Retail	2,354
Warehouse/Industrial/ Manufacturing	2,277
Airport Enplanements	2,502
Total New Trips	20,908

These Trip Generation Estimates were used in all subsequent traffic analyses.

c. Trip Distribution and Assignment

To determine the distribution of new trips generated, origin/destination information obtained by CDTC as part of their Wolf Road and Albany County Airport Studies was also used for this study. The new trips were then assigned to the existing street and highway system assuming the most probable routes between a trip's origin and its destination.

d. Projected Traffic Volumes

Based on the procedures noted, the anticipated traffic demand on the roadways in the Study Area were developed. Exhibit II-H-3 illustrates the Cumulative Growth Scenario projected traffic volumes for the year 2005. Table II-H-3 summarizes the existing and projected traffic volumes in the Study Area and presents the annualized growth rate based on Peak Hour Traffic Volumes anticipated for the 1990-2005 time frame under the Cumulative Growth Scenario. The anticipated traffic growth rates for this period range from 2.8 percent per year for Vly Road north of Watervliet Shaker Road to 10.1 percent per year on Albany Shaker Road between the Airport and British American Boulevard.

Based on a review of the traffic projections at key check points in the Study Area, 95 percent of the projected increase in traffic between 1990 and 2005 is attributable to new development within the Study Area under the Cumulative Growth Development Scenario. That is, of all new traffic on area roadways, 95 percent of new trips will orginate or terminate within the Study Area. The remaining 5 percent of the projected traffic growth is attributable to development outside the Study Area and a general increase in car ownership in the region.

TABLE II-H-3

SUMMARY OF TRAFFIC VOLUME PROJECTIONS

LINK	PM PEAK HOUR TRAFFIC VOLUME		ANNUALIZED TRAFFIC GROWTH
	1990 EXISTING	2005 CUMUL. GROWTH	1990-2005 CUMUL. GROWTH
ROUTE 7			
VLY RD. TO ALBANY SHAKER RD.	3,350	6,710	4.7%
ALBANY SHAKER RD. TO OLD NISKAYUNA RD	2,850	5,790	4.8%
OLD NISKAYUNA RD. TO WADE RD.	3,280	7,030	5.2%
WADE RD. TO I-87 EXIT 6	3,740	7,790	5.0%
WOLF ROAD			
ALBANY SHAKER RD. TO METRO PARK RD.	2,860	4,540	3.1%
METRO PARK RD. TO SAND CREEK RD.	2,980	4,760	3.2%
SAND CREEK RD. TO CENTRAL AVE.	2,570	4,840	4.3%
ALBANY SHAKER ROAD			
MAXWELL RD. TO WOLF RD.	2,480	4,050	3.3%
WOLF RD. TO OLD WOLF RD.	2,610	7,600	7.4%
OLD WOLF RD. TO AIRPORT ACCESS RD. (SOUTH)	2,750	8,930	8.2%
AIRPORT ACCESS RD. (SOUTH) TO WATERVLIET SHAKER RD.	1,230	2,800	5.6%
WATERVLIET SHAKER RD. TO AIRPORT ACCESS RD. (NORTH)	460	1,620	8.8%

TABLE II-H-3 (CONT.)
SUMMARY OF TRAFFIC VOLUME PROJECTIONS

LINK	PM PEAK HOUR TRAFFIC VOLUME		ANNUALIZED TRAFFIC GROWTH
	1990 EXISTING	2005 CUMUL. GROWTH	1990-2005 CUMUL. GROWTH
AIRPORT ACCESS NORTH TO BRITISH AMERICAN BLVD.	1,190	5,050	10.1%
BRITISH AMERICAN BLVD. TO ROUTE 7	1,220	4,820	9.6%
NEW KARNER RD.			
CENTRAL AVE. TO WATERVLIET SHAKER RD.	1,400	2,320	3.4%
WADE RD.			
ROUTE 7 TO WATERVLIET SHAKER RD.	490	1,610	8.3%
VLY RD.			
WATERVLIET SHAKER RD. TO DENISON RD.	890	1,340	2.8%
DENISON RD. TO ROUTE 7	350	620	3.9%
WATERVLIET SHAKER RD.			
NEW KARNER RD TO SAND CREEK RD.	1,750	3,420	4.6%
SAND CREEK RD. TO ALBANY SHAKER RD.	1,320	3,550	6.8%
OLD WOLF RD. TO I-87 EXIT 5	1,120	2,860	6.4%
SAND CREEK RD.			
WATERVLIET SHAKER RD. TO HUNTING RD.	860	1,650	4.4%
HUNTING RD. TO WOLF RD.	1,510	2,470	3.3%
WOLF RD. TO COLONIE CENTER RD.	1,420	2,560	4.0%

TABLE II-H-3 (CONT.)
SUMMARY OF TRAFFIC VOLUME PROJECTIONS

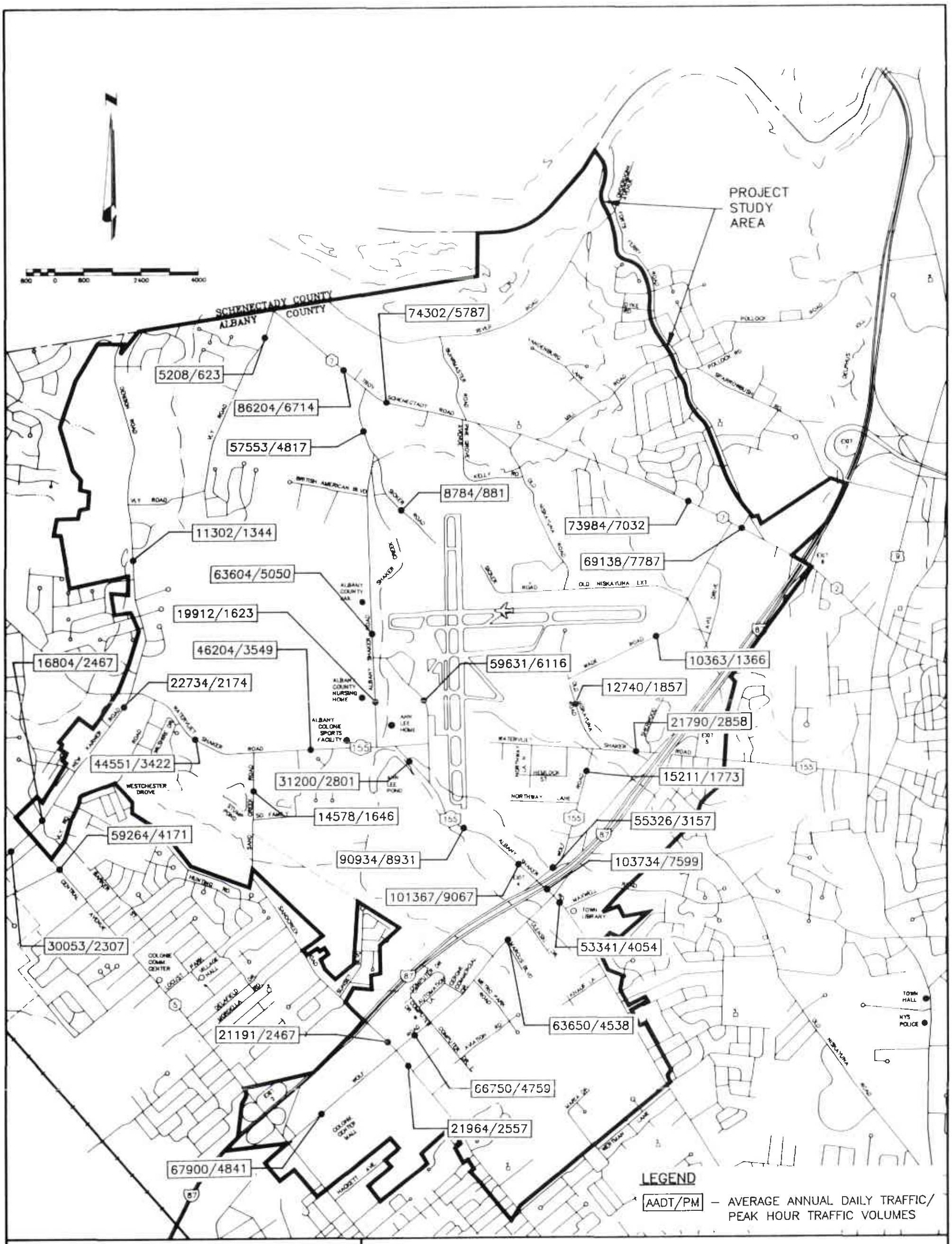
LINK	PM PEAK HOUR TRAFFIC VOLUME		ANNUALIZED TRAFFIC GROWTH
	1990 EXISTING	2005 CUMUL. GROWTH	1990-2005 CUMUL. GROWTH
OLD WOLF RD.			
WATERVLIET SHAKER RD. TO I-87 EXIT 4 OFF RAMP	700	1,770	6.4%
I-87 EXIT 4 OFF RAMP TO ALBANY SHAKER RD.	1,330	3,160	5.9%

2. Projected Traffic Conditions:

To determine the likely future traffic conditions, traffic operational analyses were conducted along Study Area highway links for the Cumulative Growth Scenario.

During the early stages of analyzing the impacts of the Cumulative Growth Scenario on the Study Area roadways, it was recognized that developing feasible improvements at certain locations could not be accomplished to provide an acceptable Level of Service D. Therefore, it was determined that an aggressive Transportation Systems Management (TSM) Program must be implemented to reduce the additional Peak Hour Demand for roadway capacity that will be created by projected development included in the Cumulative Growth Scenario. It was further determined that a 25 percent reduction in the additional traffic demand would be required to provide desirable levels of service.

To achieve a 25 percent reduction in the additional Peak Hour traffic demand in the Study Area, the implementation of very aggressive TSM Programs will



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ENGINEERS & PLANNERS
3 WINNERS CIRCLE ALBANY, N.Y. 12205

2005 PROJECTED TRAFFIC VOLUMES TARGET GROWTH SCENARIO

EXHIBIT NO.

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AIRPORT AREA GENERIC ENVIRONMENTAL IMPACT STATEMENT

be required. Failure to achieve this reduction will mean that roadways in the Study Area will operate at less than desirable levels of service i.e. levels of service E or F) during peak hours. With this in mind, the following is a listing of measures required to address the highway deficiencies for the Cumulative Growth Scenario, assuming a TSM Program is implemented in the Study Area. A discussion of various TSM Programs and strategies is provided later in this section.

A key feature of the overall improvement package is the construction of a new north-south arterial similar to what was reported in previous CDTC studies. The potential impacts of a new north-south arterial on the Watervliet Shaker Historic District and NYSDEC regulated wetlands surrounding Ann Lee Pond resulted in two separate improvement options being developed for the Cumulative Growth Scenario. Option 1 provides the most cost effective solution to the roadway improvement needs without regard to the environmental and historical impacts in the immediate area of the airport. Option 2 provides a solution to the roadway improvement needs that minimizes the impacts on the environment and historic district in the immediate vicinity of the airport, without regard to the construction costs.

As discussed in other portions of Section II of this FGEIS, Option 1 roadway improvements will have significant impacts on the environment and cultural resources within the Study Area which cannot be entirely mitigated. However, a new north-south arterial is required to accommodate future traffic anticipated under the Cumulative Growth Scenario. Therefore, Option 2 has been developed as a possible alternative which attempts to avoid the environmentally sensitive areas traversed by the north-south arterial under Option 1. However, as will be discussed, the improvements required under Option 2 will only be accomplished at a significantly higher capital cost.

The following is a listing of measures required for each option to address the highway needs anticipated for the Cumulative Growth Scenario. This list also includes an assessment of the estimated construction costs presented for each option, in 1990 dollars, with an allowance provided for R.O.W. needs. Also included in this estimate are the required engineering and inspection services, which typically require 20 percent of the construction cost.

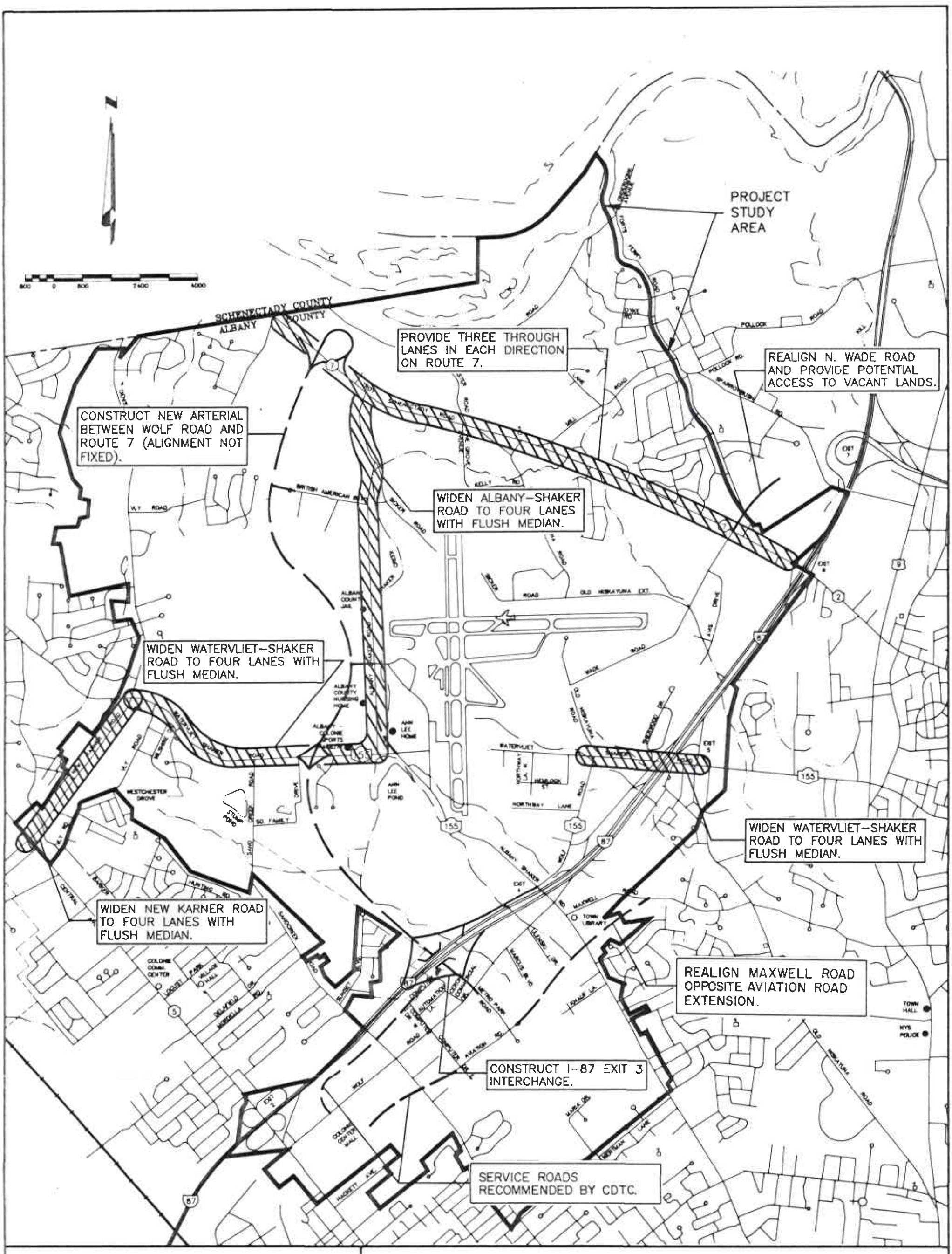
a. Option 1 Requirements (Exhibit II-H-4)

The following is a description of the improvements included under Option 1 and the costs associated with implementing these improvements.

i) I-87 Exit 3 and North-South Arterial

The construction of I-87 Exit 3 and a connecting road to NYS Route 7 and Wolf Road will provide additional north-south access through the heart of the Study Area and will significantly improve operating conditions along Albany Shaker Road and at Exit 4 of I-87. This new roadway will serve traffic from Wolf Road and anticipated development to the west of the airport. It will also provide a better link between the airport and I-87. It is anticipated that Exit 3 will be a full-diamond interchange while the new roadway will be constructed to principal arterial standards providing 4 lanes (2 lanes in each direction) with a flush median, and with limited access to adjacent development.

Exhibit II-H-4 illustrates this option. Although the exact alignment cannot be determined at this preliminary stage, it is anticipated this new road would extend northward from Metro Park Road, meet Watervliet Shaker Road at a grade separated interchange, intersect with the Airport Access Road and British American Boulevard at grade and end at NYS Route 7 with another grade separated interchange; a total distance of approximately 4 miles.



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ENGINEERS & PLANNERS
3 WINNERS CIRCLE ALBANY, N.Y. 12205

LEVEL OF IMPROVEMENTS FOR
OPTION ONE
2005 CUMULATIVE GROWTH SCENARIO

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AIRPORT AREA GENERIC
ENVIRONMENTAL IMPACT STATEMENT

Intersections along the new Exit 3 to NYS Route 7 arterial will require the following geometrics:

- **Wolf Road/Metro Park Road**

  - a 6 lane approach to Wolf Road from the arterial will be required to provide a double left turn lane, 2 through lanes and a double right turn lane;
  - construct a second left turn lane on the Wolf Road northbound approach;
  - construct separate right turn lanes on both Wolf Road approaches; and
  - reconstruct the Metro Park Road approach to provide 4 lanes, a separate left turn lane, 2 through lanes, and a separate right turn lane.

- ***New Arterial/Exit 3 Northbound Ramps***

  - construct eastbound arterial approach to include double left turn lane and 2 through lanes;
  - construct westbound arterial approach to provide 2 through lanes and a free-flow right turn lane onto the northbound ramp to I-87;
  - construct the northbound off-ramp from I-87 to provide double left and double right turn lanes; and
  - install fully-actuated traffic signal.

- **New Arterial/Exit 3 Southbound Ramps**

  - construct eastbound arterial approach to include 2 through lanes and a free-flow right turn lane onto the southbound ramp to I-87;
  - construct westbound arterial approach to provide double left turn lanes and 2 through lanes;
  - Exit 3 southbound off-ramp should consist of a double left turn lane and a separate right turn lane; and
  - install fully-actuated traffic signal.

- **New Arterial/Connection to Airport Access Road.**

  - in addition to 2 through lanes in each direction, provide double right turn lane from arterial northbound approach onto the connection to the access road;

  - construct double left turn lane and separate right turn lane on the westbound approach to the arterial; and

  - install fully-actuated traffic signal.

- **New Arterial/British American Boulevard.**

  - in addition to 2 through lanes on the arterial, provide separate right turn lanes on the northbound and westbound approaches;

  - construct double left turn lane on the westbound approach; and

  - install fully-actuated traffic signal.

The total construction cost including engineering and construction inspection services for this new arterial and Exit 3 of I-87 is $49,056,000 and includes the acquisition of approximately 54 acres of R.O.W.

ii) **NYS Route 7**

A roadway cross section providing 3 through lanes in each direction are required on NYS Route 7 from I-87 Exit 6 interchange to Vly Road-Rosendale Road and extending into Schenectady County. Providing a 6 lane arterial facility in this area would likely alter the character of roadside development. To provide a fully functional 6 lane arterial it would be desirable to eliminate individual driveways to adjacent properties and, instead, provide a series of service roads to concentrate turning movements on and off the arterial to a few well designed signalized intersections. Not providing this type of controlled access will significantly limit the effectiveness of providing additional lanes on Route 7. The following intersections with NYS Route 7 require additional improvements to address potential deficiencies:

- **Vly Road - Rosendale Road**

  - improvements proposed under NYSDOT's Route 7 widening project will be sufficient to handle projected deficiencies.

- **Albany Shaker Road**

  - construct double left turn lanes on NYS Route 7 westbound approach;

  - construct separate right turn lane on NYS Route 7 eastbound approach; and

  - construct double left and double right turn lane on Albany Shaker Road approach to NYS Route 7.

- **Wade Road - North Wade Road**

  - realign North Wade Road directly opposite Wade Road to form a conventional 4-way intersection. This realignment will also provide direct access to undeveloped land on the north side of Forts Ferry Road;

  - construct double left and right turn lanes on the Wade Road northbound approach; and

  - construct separate left turn lanes on other 3 approaches and a separate right turn lane on NYS Route 7 eastbound approach.

Even with the improvements discussed at Wade Road and NYS Route 7, the link between Wade Road and the I-87 Exit 6 interchange will continue to operate at level of service F during peak hour conditions. Additional significant improvements to NYS Route 7 along this link are likely not feasible. However, potential options for providing major facility improvements that could divert significant traffic volumes away from this location are discussed later in Section 3, Impacts to Interstate 87. Another option of improving the operation of this segment of the roadway is to reduce the level of development throughout the Study Area which is projected under the Cumulative Growth Scenario.

The construction costs including engineering and construction inspection services for widening NYS Route 7 to 3 lanes in each direction and providing the required turning lanes is estimated to be approximately $18,355,000. This figure includes an allowance for additional R.O.W. takings along Route 7.

Currently, the NYSDOT plans to reconstruct a portion of NYS Route 7 from Wade Road, in the Town of Colonie, to St. David's Lane in the Town of Niskayuna. Improvements are to include the widening of the roadway by ± 5 feet on both sides to provide a flush median/left turn lane and resurfacing/reconstruction of the existing pavement as well as improvements to the Route 7/Albany Shaker Road intersection. This intersection improvement is similar to the required improvement listed under Albany Shaker Road on the previous page with the exception of the recommendation of the double-right turn lane on the Albany Shaker Road approach to Route 7. These improvements will require the acquisition of additional R.O.W., but this acquisition will not be sufficient to accommodate an additional through lanes as described above. Therefore, the reconstruction of NYS Route 7, as proposed by the NYSDOT, will not be adequate to serve the traffic demands which will result under the Cumulative Growth Scenario.

iii) **Albany Shaker Road**

There are two major improvements required for Albany Shaker Road to address projected needs: 1) widen this road to provide 2 lanes in each direction with a flush median from Old Wolf Road to NYS Route 7, and 2) limit traffic on the Airport Access Road to airport related traffic only. Past studies by CDTC have indicated that in 1987, as much as 46 percent of traffic on the Airport Access Road is through traffic (non-airport related). Eliminating through traffic will insure that the Airport Access Road can serve the level of traffic anticipated under the Cumulative Growth Scenario without being reconstructed and/or widened. The

improvements called for at the Albany Shaker Road/Watervliet Shaker Road Intersection will be sufficient to accommodate the expected increase in traffic flow due to the closing off of the Airport Access Road to through traffic.

The following is a listing of the improvements required at intersections along Albany Shaker Road:

- **British American Boulevard**
  - construct double left turn lane from British American Boulevard and separate left turn lanes on the other 3 approaches;
  - construct separate right turn lanes on Albany Shaker Road southbound approach and the realigned Sicker Road westbound approach; and
  - install fully-actuated traffic signal.
- **Airport Access Road North**
  - provide direct at grade connection to new north-south arterial by extending Airport Access Road to the west of Albany Shaker Road;
  - construct separate left turn lanes on all approaches and separate right turn lane on the Airport Access Road northbound approach; and
  - provide 2 through lanes on each approach and install a fully-actuated traffic signal.
- **Watervliet Shaker Road**
  - realign Albany Shaker Road southbound approach to provide a 4-way intersection with Watervliet Shaker Road and the north-south and east-west segments of Albany Shaker Road;
  - provide double left turn lanes on Albany Shaker Road northbound approach;
  - construct double right turn lanes on Watervliet Shaker Road eastbound approach and on Albany Shaker Road southbound approach. Two through lanes are also required on the southbound approach of Albany Shaker Road; and
  - install fully-actuated traffic signal.

- **Airport Access Road South**

  - provide double right turn lanes on Albany Shaker Road, westbound approach onto Airport Access Road; and

  - install fully-actuated traffic signal.

- **Old Wolf Road**

  - construct an additional lane on the Old Wolf Road southbound approach to provide a double left turn lane, separate through lane, and separate right turn lane; and

  - construct separate right turn lane on Albany Shaker Road eastbound approach.

- **Wolf Road**

  - improvements recommended by CDTC to mitigate existing deficiencies will be sufficient to handle Cumulative Growth Scenario projected traffic volumes. These improvements include:

    - widen Wolf Road northbound approach to provide for exclusive right turn lane, an exclusive left and thru lane and, a shared left/thru lane;

    - widen Albany Shaker Road westbound approach to provide for an exclusive right turn lane; and

    - signal retiming should also be considered.

Approximate construction cost of these improvements is $12,860,000.

iv) Watervliet Shaker Road

CDTC has recommended Watervliet Shaker Road be widened to 2 lanes in each direction with a flush median from New Karner Road to Albany Shaker Road. This road also needs to be widened to 2 lanes in each direction with a flush median between Old Wolf Road and Exit 5 of I-87. In addition to Watervliet Shaker Road being widened, the following intersections along Watervliet Shaker Road will require the improvements listed below to address the projected needs:

- **New Karner Road - Vly Road**

  - construct double left turn lane on Watervliet Shaker Road westbound approach and single left turn lanes on each of the 3 other approaches; and

  - provide separate right turn lanes on New Karner Road northbound approach and the Watervliet Shaker Road westbound approach.

- **Sand Creek Road**

  - provide separate right turn lanes on Watervliet Shaker Road eastbound approach and Sand Creek Road northbound approach; and

  - construct double left turn lane on Sand Creek Road northbound approach.

- **Old Wolf Road - Old Niskayuna Road**

  - double left turn lanes are required on Old Niskayuna Road southbound approach and single left turn lanes on each of the 3 other approaches;

  - construct separate right turn lanes on both the eastbound and westbound approaches of Watervliet Shaker Road;

  - provide double right turn lanes on the Old Wolf Road northbound approach; and

  - install fully-actuated traffic signal.

Estimated construction costs for improvements along Watervliet Shaker Road are $7,200,000.

v) Wolf Road Area

- as recommended by CDTC, extend Aviation Road between Sand Creek and Albany Shaker Road for service road on east side of Wolf Road;

- as recommended by CDTC, widen and realign existing private driveways between Sand Creek Road and Shop Rite for service road on west side of Wolf Road; and

- realign southern portion of Maxwell Drive directly opposite Aviation Road extension at Albany Shaker Road.

Approximate construction costs are $2,810,000 in the Wolf Road area.

vi) Other Intersections

- **Central Avenue/New Karner Road**

  - in addition to improvements recommended by CDTC to mitigate existing conditions, Central Avenue will be required to be widened to provide 3 through lanes in each direction in the vicinity of this intersection; and

  - as recommended by CDTC, widen New Karner Road between Watervliet Shaker Road and Central Avenue to 2 lanes in each direction with a flush median.

Construction cost of this additional widening is approximately $5,731,000.

- **Wade Road/Old Niskayuna Road**

  - provide separate left turn lane on Wade Road southbound approach.

  - provide separate right turn lane on Old Niskayuna westbound approach.

  - install fully-actuated traffic signal.

Approximate construction costs are $204,000.

- **Wolf Road/Sand Creek Road**

  - improvements currently programmed for the intersection as a result of the construction Windsor Plaza Shopping Center (i.e. construction of separate right turn lanes on the northbound, southbound, and eastbound approaches) will be sufficient to handle projected traffic volumes.

- **Central Avenue/Wolf Road/I-87 NB Ramps**

  - additional improvements are required at the Wolf Road southbound approach, however, due to the physical constraints in this area, widening Wolf Road would not

be feasible and the intersection would operate at undesirable conditions for the Cumulative Growth Scenario.

The total construction costs including R.O.W. acquisition for the measures required to address projected highway needs associated with the Cumulative Growth Development Scenario (under improvement Option 1) is approximately $96,216,000.

As noted previously, 95 percent of the projected traffic growth is attributable to the development anticipated within the limits of the Study Area. Assuming there is a direct relationship between traffic growth and mitigation costs throughout the Study Area, then 95 percent of the total cost for the roadway improvements for Option 1, or $91,405,200 may be attributed to directly anticipated development under the Cumulative Growth Scenario .

Developers who receive approval for projects within the Study Area during the 15-year planning period should be required to pay for their proportionate share of the $91,405,200 in roadway improvements directly attributed to the new development. The remaining $4,810,800 in roadway improvements necessitated by the increase in background traffic (5 percent) would have to be borne by either the Town, Village, County, or New York State. For a detailed discussion of Development Mitigation Costs, turn to Section II,O, Economics.

b. Option 2 Requirements (Exhibit II-H-5)

The intent of Option 2 roadway improvements is to minimize the impact on the sensitive environmental area surrounding Ann Lee Pond and the Watervliet Shaker Historic District (see Section II, K). Major components of this option include a new north-south arterial connecting Watervliet Shaker Road to NYS Route 7, construction of a tunnel under the north-south runway of the Albany County

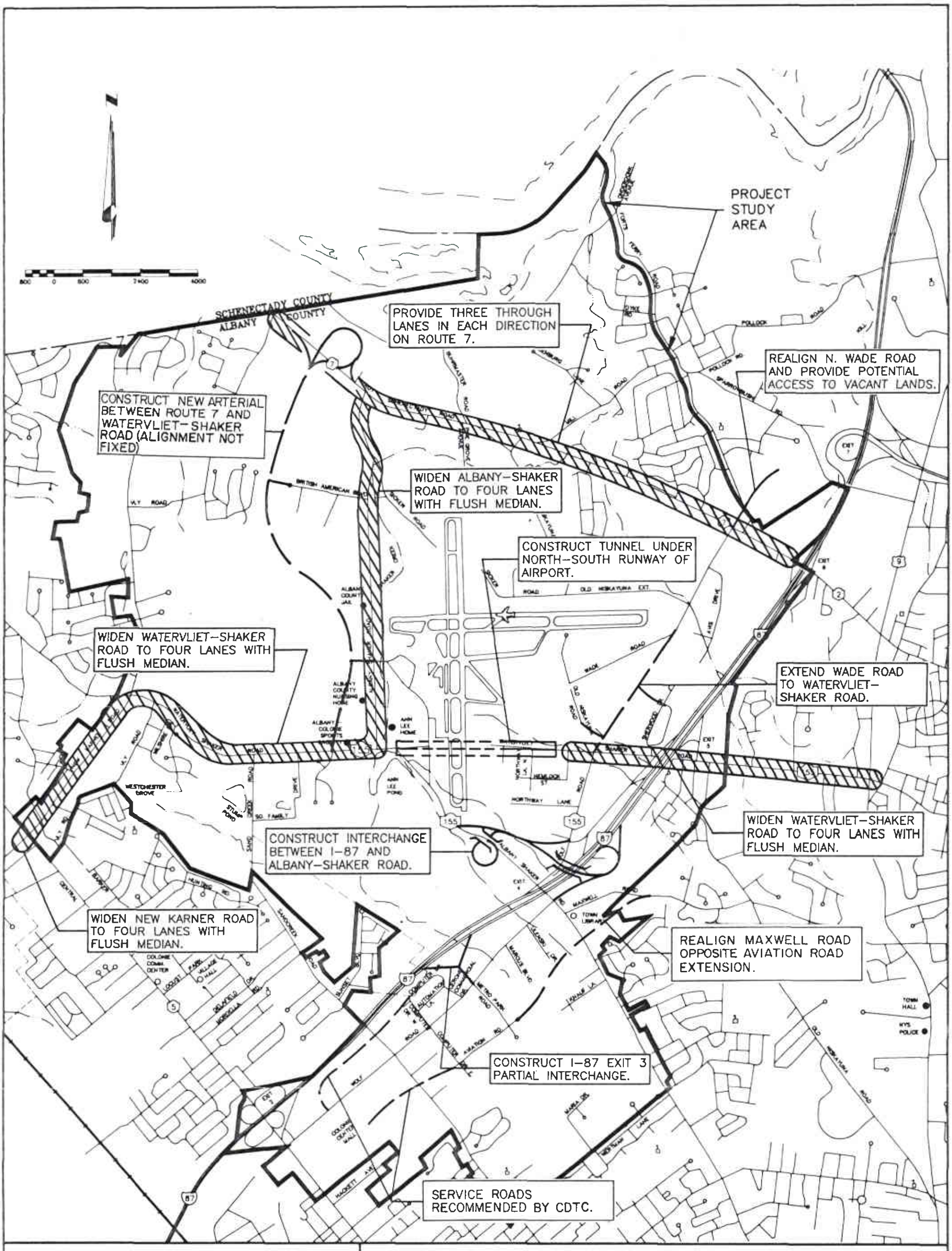
Airport to reconnect Watervliet Shaker Road, development of a partial diamond interchange to service Wolf Road and a redesigned Exit 4 to between I-87 and Albany Shaker Road to provide better access to the Airport. The following is a description of these improvements along with their associated costs.

i) **New North-South Arterial**

The construction of a new north-south arterial roadway is required to serve and to relieve congestion on Albany Shaker Road and provide access to the development west of Albany Shaker Road. However, in Option 2, the southern terminus of this new roadway is Watervliet Shaker Road. Construction of this roadway would largely avoid wetlands adjacent to Ann Lee Pond. The alignment of this arterial would extend between NYS Route 7 and Watervliet Shaker Road for a distance of approximately 2.5 miles. The road will be designed to principal arterial standards, providing 2 lanes in each direction with a flush median. Access will be limited to only a few well designed intersections. It is anticipated that at-grade intersections will be provided at Watervliet Shaker Road, Airport Access Road, and British American Boulevard, and a grade separated interchange will be constructed at NYS Route 7. The following improvements are required at each of these intersections.

- **Watervliet Shaker Road**

  - align the southern terminus of the new arterial opposite the intersection of Watervliet Shaker Road and Airline Drive;
  - construct the southbound arterial approach to provide a double left turn lane, 1 through lane and a separate right turn lane;
  - construct a single left turn lane, 1 through lane and a double right turn lane on Airline Drive northbound;
  - construct separate left turn and right turn lanes in addition to 2 through lanes on both approaches of Watervliet Shaker Road; and



CLOUGH, HARBOUR & ASSOCIATES
ENGINEERS & PLANNERS
3 WINNERS CIRCLE ALBANY, N.Y., 12205

LEVEL OF IMPROVEMENTS FOR
OPTION TWO
2005 CUMULATIVE GROWTH SCENARIO

EXHIBIT NO.

II-H-5

AIRPORT AREA GENERIC
ENVIRONMENTAL IMPACT STATEMENT

- install a fully-actuated traffic signal.

o **Connection to Airport Access Road**

- in addition to the 2 through lanes proposed on the arterial, construct separate right turn lane on the northbound approach;
- construct separate left turn lane and double right turn lane on the westbound approach of Airport Access Road; and
- install fully-actuated traffic signal.

o **British American Boulevard**

- construct intersection as stated in Option 1.

The approximate construction cost for this new road is $25,344,000 which includes the acquisition of approximately 54 acres of R.O.W.

ii) **Exit 3 Interchange**

The partial diamond interchange for Exit 3 under this option will allow northbound on and off movements only and will be aligned opposite Metro Park Road. The intersection of Wolf Road and Metro Park Road will consist of the following geometry:

- o on both Wolf Road approaches, construct double left turn lanes, 2 through lanes and a separate right turn lane;
- o on the approaches from Metro Park Road and Exit 3, provide separate left turn lanes, 2 through lanes and a separate right turn lane.

The approximate construction costs including engineering and construction inspection services for the partial interchange and intersection improvements at Metro Park Road are $3,912,000.

iii) NYS Route 7

The improvements required for NYS Route 7 and associated intersections listed in Option 1 will also be required under Option 2. These improvements include the construction of 3 through lanes on NYS Route 7 in each direction from the I-87 Exit 6 interchange to Vly Road - Rosendale Road and extending into Schenectady County. The following intersections with NYS Route 7 require the following improvements to address potential deficiencies:

- **Vly Road - Rosendale Road**
  - improvements proposed under NYSDOT's Route 7 widening project will be sufficient to handle projected deficiencies.
- **Albany Shaker Road**
  - construct double left turn lanes on NYS Route 7 westbound approach;
  - construct separate right turn lane on NYS Route 7 eastbound approach; and
  - construct double left and double right turn lane on Albany Shaker Road approach to NYS Route 7.
- **Wade Road - North Wade Road**
  - realign North Wade Road directly opposite Wade Road to form a conventional 4-leg intersection. This realignment will also provide direct access to undeveloped land on the north side of Forts Ferry Road;
  - construct double left and right turn lanes on the Wade Road northbound approach; and
  - construct separate left turn lanes on each of the other 3 approaches and a separate right turn lane on NYS Route 7 eastbound approach.

As was the case with NYS Route 7 improvements under Option 1, even with the improvements described above and those planned by the NYSDOT, the segment of NYS Route 7 between Wade Road and the I-87 Exit 6 interchange will

continue to operate at level of service F during peak hour conditions. Additional significant improvements at this location are likely not feasible. However, potential options for providing major facility improvements that could divert significant traffic volumes away from this location are discussed later in Section 3, Impacts to Interstate 87. One way of improving the operation of this segment of roadway is to reduce the projected level of development which is projected under the Cumulative Growth Scenario.

The estimated construction costs for the widening of NYS Route 7 (including engineering and construction inspection services) is $18,355,000. As mentioned under Option 1 improvements, the NYSDOT plans to reconstruct NYS Route 7 will not be adequate to serve the traffic demands anticipated under the Cumulative Growth Scenario.

iv) Albany Shaker Road

To mitigate the projected traffic-related impacts, Albany Shaker Road will need to be widened to provide 2 through lanes in each direction with a flush median from NYS Route 7 to Old Wolf Road (a portion of this roadway is already 4 lanes, however, a flush median is required). As part of Option 2, a reconstructed I-87 Exit 4 interchange will be required to reduce congestion on Albany Shaker Road between I-87 and the Airport Access Road. This new interchange will provide better access to the Albany County Airport and will serve to separate airport related traffic from traffic destined for Wolf Road. As illustrated on Exhibit II-H-6, the reconstruction in this area will include a connector road between Albany Shaker Road and the new Exit 4 interchange. This connector road will require a grade separated interchange with Albany Shaker Road to accommodate the projected traffic flows. However, it is located just south of the north-south Runway and may violate FAA restrictions limiting the height of structures in the

vicinity of airports. Therefore, the construction of a below grade interchange at Albany Shaker Road will be required to provide adequate approach clearance for aircraft.

The following intersections along Albany Shaker Road also require improvements to address the projected needs:

- **British American Boulevard**
  - improvements cited in Option 1 are also required for Option 2. These include:
    - construct double left turn lane from British American Boulevard and separate left turn lanes on the other 3 approaches; and
    - construct separate right turn lanes on Albany Shaker Road southbound approach and the realigned Sicker Road westbound approach.
- **Airport Access Road North**
  - construct at grade connection to new north-south arterial by extending road to the west of Albany Shaker Road;
  - construct double left turn lane on the northbound approach of Albany Shaker Road and install separate left turn lanes on the 3 other approaches; and
  - install fully-actuated traffic signal.
- **Watervliet Shaker Road**
  - realign the southbound approach of Albany Shaker Road to form a conventional 4-way intersection with Watervliet Shaker Road and the north-south and east-west segments of Albany Shaker Road;
  - construct double left turn lanes on the northbound approach and single left turn lanes on the 3 other approaches;
  - construct double right turn lane on the eastbound approach and a single right turn lane on the southbound approach;

- construct 2 through lanes on Albany Shaker Road in each direction and 1 lane in each direction on Watervliet Shaker Road; and

- install fully-actuated traffic signal.

o **Airport Access Road South**

- construct 3 through lanes on Albany Shaker Road eastbound approach; and

- construct 2 through lanes and a double right turn lane on Albany Shaker Road westbound approach.

o **Old Wolf Road**

- provide the improvements to this intersection as listed in Option 1. These include:

  - construct an additional lane on the Old Wolf Road southbound approach to provide a double left turn lane, separate through lane, and separate right right turn lane; and

  - construct separate right turn lane on Albany Shaker Road eastbound approach.

o **Wolf Road**

- improvements listed below as recommended by CDTC to mitigate existing deficiencies will be sufficient to handle Cumulative Growth Scenario traffic volumes:

  - widen Wolf Road northbound approach to provide for exclusive right turn lane, an exclusive left and thru lane and, a shared left/thru lane;

  - widen Albany Shaker Road westbound approach to provide for an exclusive right turn lane; and

  - signal retiming should also be considered.

As in Option 1, the Airport Access Road will be restricted to airport related traffic by routing all vehicles through the terminal roadway/loading and unloading area in front of the terminal building. All other traffic that would normally use this road will be required to travel along Albany

Shaker Road. Estimated construction costs including engineering and construction inspection services for improvements along Albany Shaker Road and the new Exit 4 interchange are $39,237,000.

v) **Watervliet Shaker Road**

The major component of Option 2 along Watervliet Shaker Road is the construction of a tunnel under the airport's north-south runway to reestablish the historical route of NYS Route 155 prior to it being re-routed by the runway extension of 1967. By providing this connection, traffic for anticipated development on the west side of Albany Shaker Road will now have an easy, direct route to Exit 5 of I-87. The new roadway link will serve as a major east-west arterial within the Study Area. Additional improvements are also required at the following intersections:

- **New Karner Road - Vly Road**
  - improvements listed in Option 1 are sufficient to handle the projected needs. These include
    - construct double left turn lane on Watervliet Shaker Road westbound approach and single left turn lanes on each of the 3 other approaches; and
    - provide separate right turn lanes on New Karner Road northbound approach and the Watervliet Shaker Road westbound approach.
- **Sand Creek Road**
  - improvements listed in Option 1 are sufficient to handle the projected needs. These include:
    - provide separate right turn lanes on Watervliet Shaker Road eastbound approach and Sand Creek Road northbound approach; and
    - construct double left turn lane on Sand Creek Road northbound approach.

- **Old Wolf Road - Old Niskayuna Road**

  - realign the southern portion of Wade Road directly opposite Old Wolf Road and establish new at grade intersections with Old Niskayuna Road and the residential development along Sherwood Drive to this realigned road. The existing Sherwood Drive connection to Watervliet Shaker Road would be closed to improve the Exit 5 operating conditions;

  - in addition to providing separate turn lanes on each approach as listed in Option 1, 2 through lanes in each direction on Watervliet Shaker Road are also required. The proposed 4 lane Watervliet Shaker Road should extend from New Karner Road to US Route 9; and

  - install fully-actuated traffic signal.

It should be noted that the proposed realignment of Wade Road, as discussed above, will result in the R.O.W. acquisition of approximately 5.5 acres of land which is projected for new residential development. Estimated construction costs of these improvements includes provision for R.O.W. acquisition, engineering and construction inspection services and the construction of the tunnel under the airport runway. Total costs are $29,894,000.

vi) Wolf Road Area

- Recommendations cited in Option 1 are also recommended for Option 2 as follows:

  - as recommended by CDTC extend Aviation Road between Sand Creek and Albany Shaker Road for service road on east side of Wolf Road;

  - as recommended by CDTC widen and realign existing private driveways between Sand Creek Road and Shop Rite supermarket for service road on west side of Wolf Road; and

  - realign southern portion of Maxwell Drive directly opposite Aviation Road extension at Albany Shaker Road.

Approximate construction costs are $2,810,000.

vii) Other Intersections

- **Central Avenue/New Karner Road**

  - improvements are the same as listed in Option 1. These include:

    - in addition to improvements recommended by CDTC to mitigate existing conditions, Central Avenue will be required to be widened to provide 3 through lanes in each direction in the vicinity of this intersection; and

    - as recommended by CDTC, widen New Karner Road between Watervliet Shaker Road and Central Avenue to 2 lanes in each direction with a flush median.

Construction cost of this additional widening is approximately $5,731,000.

- **Wade Road/Old Niskayuna Road**

  - no improvements are required at this intersection with the realignment of Wade Road to meet Watervliet Shaker Road.

- **Wolf Road/Sand Creek Road**

  - improvements currently programmed for the intersection as a result of the construction of Windsor Plaza Shopping Center (i.e., construction of separate right turn lanes on the northbound, southbound, and eastbound approaches) will be sufficient to handle projected traffic volumes.

- **Central Avenue/Wolf Road**

  - this intersection will operate at undesirable conditions for Option 2 also. Because of the physical constraints, additional roadway improvements are not feasible.

- **Exit 4 Southbound Off-Ramp/ Old Wolf Road**

  - construct a 1-way connection westbound opposite the off- ramp to the new Albany Shaker Road interchange.

- construct double left turn lanes from the off-ramp and a separate shared through/right turn lane.
- widen Old Wolf Road to provide 2 through lanes southbound and 1 lane northbound.

Estimated construction costs are included in costs of the interchange along Albany Shaker Road.

To construct the improvements required for Option 2 of the Cumulative Growth Scenario, it is estimated that 107 acres of R.O.W. adjacent to proposed and existing roadways will need to be acquired. The total construction cost of the measures required to address the projected highway needs is $125,283,000. As noted previously, 95 percent of the total roadway improvement costs may be attributed directly to anticipated development under the Cumulative Growth Scenario. Therefore, under Option 2, total estimated improvement costs attributable to new development are $119,018,850. The remaining $6,264,150 in roadway improvements necessitated by the increase in background traffic (5 percent) would have to be bourne by either the Town, Village, County, or New York State.

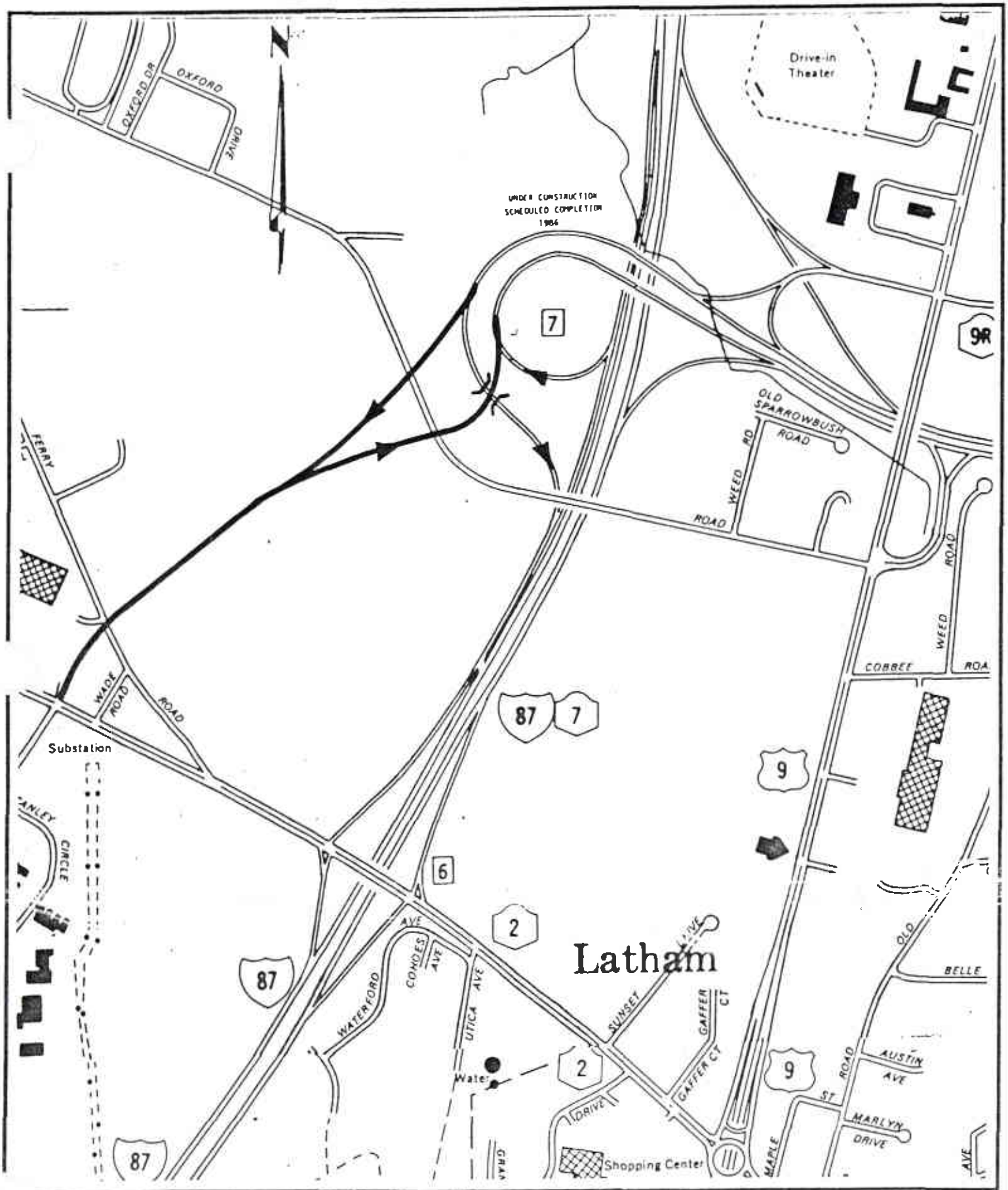
3. Impacts to Interstate 87:

As noted in the previous section, several I-87 ramp intersections will operate at undesirable (level of service F) congestion levels under the Cumulative Growth Scenario even with extensive roadway improvements presented above. Also, the traffic analyses have not attempted to address the more regional needs that may develop along the mainline of I-87 due to the increased traffic demand that is expected through development within the Study Area. This is beyond the scope of this FGEIS. Recent studies by CDTC has shown that I-87 between Exits 6 and 8, is currently approaching capacity during the peak hours of 7-9 am and 4-6 pm.

To completely address all the future transportation needs along the I-87 mainline from Albany to Saratoga Springs will require a much greater planning effort than can be accomplished within this GEIS process. However, as part of the analyses conducted, two potential improvements have been identified that may warrant further discussion/consideration when evaluating future transportation needs as they relate to I-87. First, developing a connection between the I-87 Exit 7 ramps located to the west of I-87 mainline to the realigned North Wade Road Extension will provide more direct access between NYS Route 7 (Troy-Schenectady Road) and Alternate Route 7. One possible method of providing this connection is illustrated on Exhibit II-H-6. Depending on the type of connection that can be accomplished in this area, this improvement will relieve some of the congestion anticipated at the I-87 Exit 6 interchange. The exact levels of relief cannot be determined without further detailed study.

Another alternative is to completely reconstruct the I-87 Exit 6 interchange to eliminate the left-turn movements to and from the ramps and Route 7. This could be accomplished by constructing a cloverleaf, partial cloverleaf, directional or semi-directional interchange at this location. Figures II-H-7 through II-H-11 provide several schematic illustrations of these types of interchanges. Further consideration of any of these concepts will require additional study to determine the benefits that each alternative would provide and the associated costs.

Another more extensive improvement that may be worthy of further consideration involves the construction of a new bridge crossing the Mohawk River that would serve as an extension of the new north/south arterial illustrated on Exhibits II-H-4 and II-H-5. A new river crossing in this area will serve to reduce the traffic on the I-87 crossing of the Mohawk River. This crossing will likely require a connection to Grooms Road or Vischer Ferry Road in



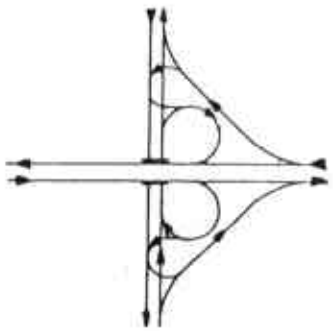
CLOUGH, HARBOUR & ASSOCIATES
ENGINEERS & PLANNERS
3 WINNERS CIRCLE ALBANY, N.Y., 12205

ROUTE 7 CONNECTOR CONCEPT

AIRPORT AREA GENERIC ENVIRONMENTAL IMPACT STATEMENT

EXHIBIT NO. II - H - 6

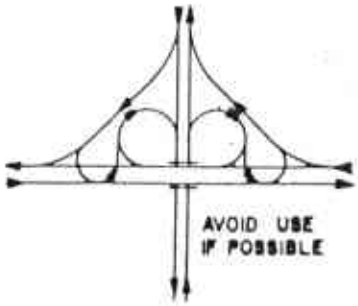
-A-



ON BOTH SIDES OF MAJOR ROAD

LEFT TURNS: NONE ON MAJOR ROAD
FOUR ON MINOR ROAD

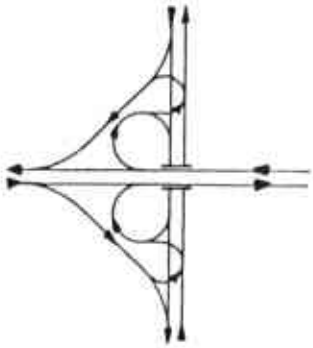
-B-



ON SAME SIDE OF MAJOR ROAD

LEFT TURNS: FOUR ON MAJOR ROAD
NONE ON MINOR ROAD

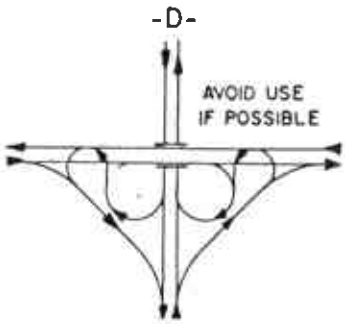
-C-



ON BOTH SIDES OF MAJOR ROAD

LEFT TURNS: NONE ON MAJOR ROAD
FOUR ON MINOR ROAD

-D-



ON SAME SIDE OF MAJOR ROAD

LEFT TURNS: FOUR ON MAJOR ROAD
NONE ON MINOR ROAD

Schematic of partial cloverleaf ramp arrangements, exit and entrance turns.

SOURCE: A POLICY ON GEOMETRIC DESIGN OF HIGHWAYS AND STREETS, AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS, 1990

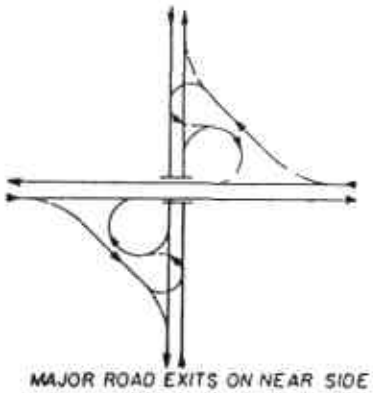
CHA CLOUGH, HARBOUR & ASSOCIATES
ENGINEERS & PLANNERS
3 WINNERS CIRCLE ALBANY, N.Y., 12205

I - 87 EXIT 6 INTERCHANGE ALTERNATIVES

EXHIBIT NO. II - H - 7

AIRPORT AREA GENERIC ENVIRONMENTAL IMPACT STATEMENT

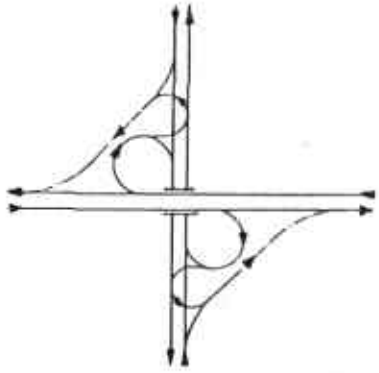
-E-



MAJOR ROAD EXITS ON NEAR SIDE

LEFT TURNS: NONE ON MAJOR ROAD
FOUR ON MINOR ROAD

-F-

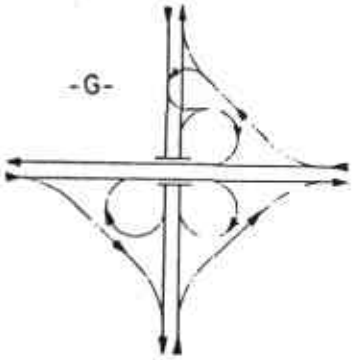


MAJOR ROAD EXITS ON FAR SIDE

LEFT TURNS: NONE ON MAJOR ROAD
FOUR ON MINOR ROAD

TWO QUADRANTS DIAGONALLY OPPOSITE

-G-

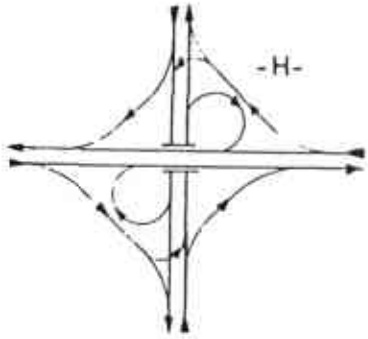


TWO MAJOR ROAD EXITS ON NEAR SIDE
ONE ON FAR SIDE

LEFT TURNS: NONE ON MAJOR ROAD
FOUR ON MINOR ROAD

THREE QUADRANTS

-H-



MAJOR ROAD EXITS ON NEAR SIDE

LEFT TURNS NONE ON MAJOR ROAD
FOUR ON MINOR ROAD

FOUR QUADRANTS

Schematic of partial cloverleaf ramp arrangements, exit and entrance turns.

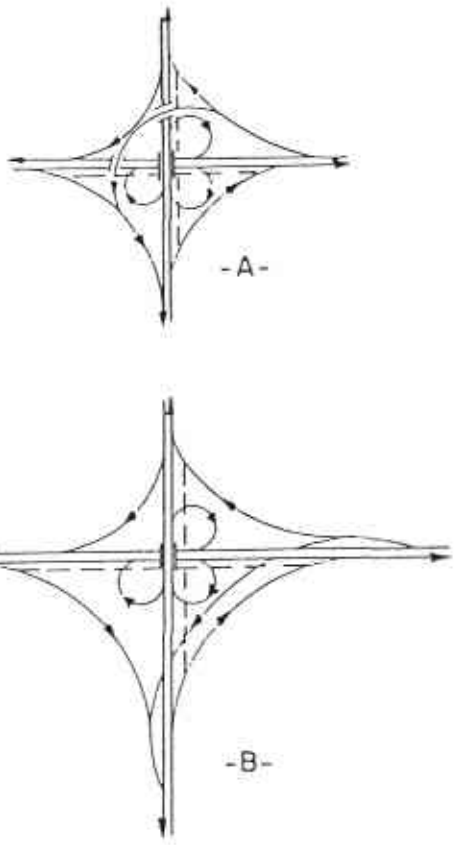
SOURCE: A POLICY ON GEOMETRIC DESIGN OF HIGHWAYS AND STREETS, AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS, 1990

CHA CLOUGH, HARBOUR & ASSOCIATES
ENGINEERS & PLANNERS
3 WINNERS CIRCLE ALBANY, N.Y., 12205

I - 87 EXIT 6 INTERCHANGE ALTERNATIVES

EXHIBIT NO. II - H - 8

AIRPORT AREA GENERIC ENVIRONMENTAL IMPACT STATEMENT



NOTE: WEAVING ADJACENT TO THE THROUGH LANES IS ELIMINATED BY PROVIDING COLLECTOR-DISTRIBUTOR ROADS AS SHOWN BY DOTTED LINES.

Semidirect interchanges with weaving.

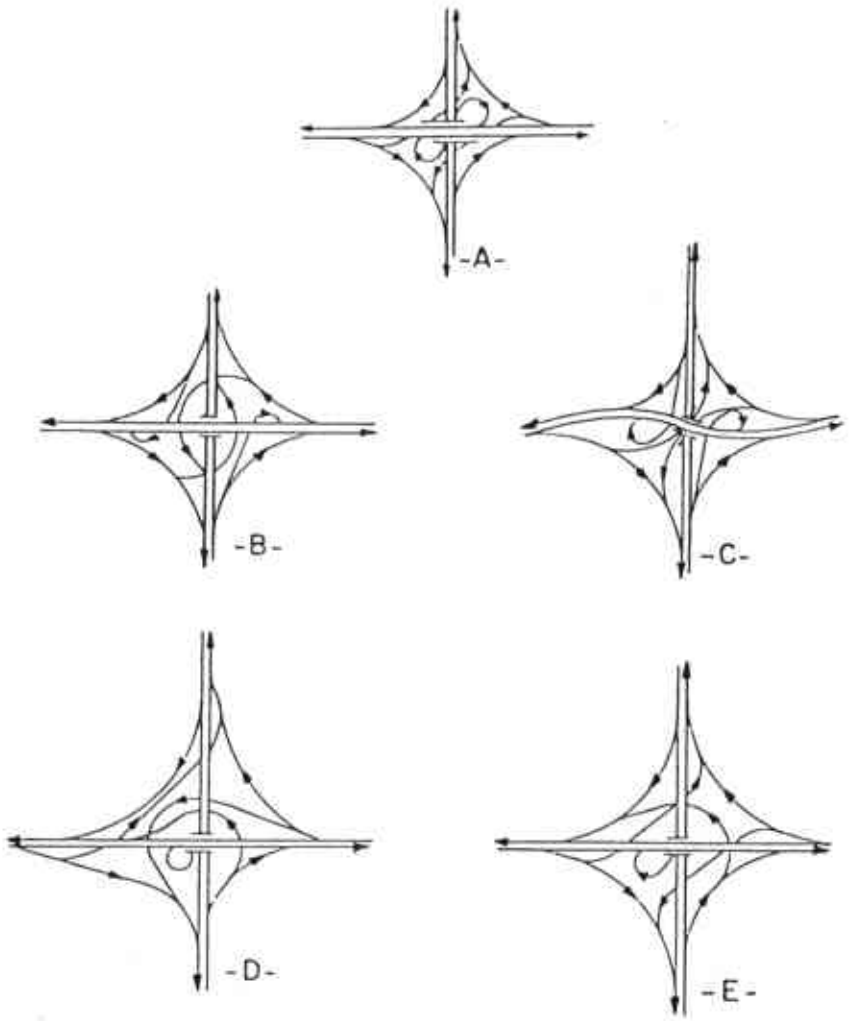
SOURCE: A POLICY ON GEOMETRIC DESIGN OF HIGHWAYS AND STREETS, AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS, 1990

CHA CLOUGH, HARBOUR & ASSOCIATES
ENGINEERS & PLANNERS
3 WINNERS CIRCLE ALBANY, N.Y., 12205

I - 87 EXIT 6 INTERCHANGE ALTERNATIVES

EXHIBIT NO. II - H - 9

AIRPORT AREA GENERIC ENVIRONMENTAL IMPACT STATEMENT



Semidirect interchanges with no weaving.

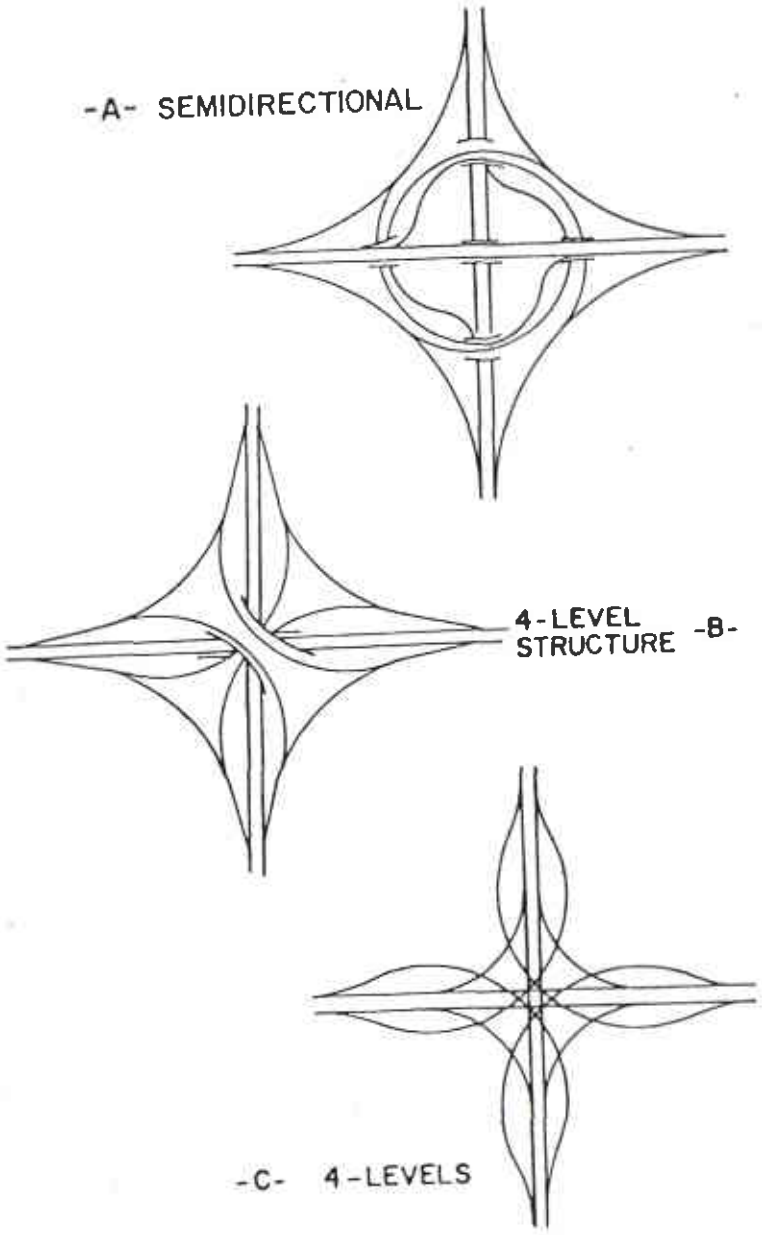
SOURCE: A POLICY ON GEOMETRIC DESIGN OF HIGHWAYS AND STREETS, AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS, 1990

CLOUGH, HARBOUR & ASSOCIATES
ENGINEERS & PLANNERS
3 WINNERS CIRCLE • ALBANY, N.Y., 12205

I - 87 EXIT 6 INTERCHANGE ALTERNATIVES

EXHIBIT NO. II - H - 10

AIRPORT AREA GENERIC ENVIRONMENTAL IMPACT STATEMENT



Semidirectional and directional Interchanges—multilevel structures.

SOURCE: A POLICY ON GEOMETRIC DESIGN OF HIGHWAYS AND STREETS, AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS, 1990

CHA CLOUGH, HARBOUR & ASSOCIATES
ENGINEERS & PLANNERS
3 WINNERS CIRCLE ALBANY, N.Y., 12205

I - 87 EXIT 6 INTERCHANGE ALTERNATIVES

EXHIBIT NO. II - H - 11

AIRPORT AREA GENERIC ENVIRONMENTAL IMPACT STATEMENT

the Town of Clifton Park on the north side of the Mohawk River. The 1989 Master Plan of Development prepared for the Town of Clifton Park has identified the need for a river crossing in this general area to serve future transportation needs with the Town of Clifton Park.

While these two concepts appear to warrant further consideration at this time, additional planning studies will be required to determine the desirability and feasibility of implementing these improvements or any other improvements to I-87 mainline.

4. Transportation Systems Management:

As stated earlier in this section, during the early stages of analyzing the impacts of the Cumulative Growth Scenario on the Study Area roadways, it was recognized that developing feasible improvements at certain locations could not be accomplished without the aggressive implementation of Transportation Systems Management (TSM) Programs. Simply put, TSM Programs are methods that reduce traffic impacts by reducing the Peak Hour Demand for Roadway Capacity.

For the purposes of evaluating traffic impacts associated with the Cumulative Growth Scenario, it was assumed that an aggressive TSM Program would be implemented that would result in a 25 percent reduction of the traffic that would be created by new development. If a TSM Program fails to achieve the goal of reducing new traffic by 25 percent, the proposed roadway improvements will not be adequate to provide an acceptable level of service (level of service D) during peak hours. Either more significant and costly roadway improvements will be required to accommodate additional traffic or the roadway network within the Study Area will continue to function at an unacceptable level of service (level of service E or F) during peak hours.

Work related trips offer the greatest potential for successful TSM programs. Under the Cumulative Growth Scenario, which includes approximately 5,000,000 square feet of new office space and 2,000,000 square feet of new warehouse/industrial/manufacturing space, new work trips will account for a significant portion of the traffic growth. Based on the number of new office trips generated as a result of the land use scenario, 77 percent of the peak hour traffic increase is attributable to commuting between home and work.

Three TSM programs that are relatively easy to implement and have a high potential for success are ride-sharing programs, variable work hour programs, and transit programs. Each are described below.

a. Ride Sharing Programs

Ride-sharing techniques are focused upon increasing vehicle occupancy by the sharing of rides to work through the use of carpools, vanpools, and Subscription Buses. Ride sharing techniques are probably the most easily implemented of all Transportation Systems Management Programs and are appropriate where large numbers of workers share common travel routes to and from their place of employment.

Some factors which enhance the implementation of a ride-sharing program are:

- Arrival and departure times of employees concentrated within a fairly short period - typical of office developments;
- Long commuting distances - present in urban areas due to economic and lifestyle considerations;

- o Recurring roadway congestion; and
- o Personal characteristics, such as employees who cannot or do not wish to drive or who lack access to a motor-vehicle. This is particularly applicable to residents of older urban areas.

i) Program Descriptions

Carpools

The most common form of Ride-sharing is the Carpool. This method of Ride-sharing involves two or more employees sharing a private motor vehicle for the trip to and from work. Carpooling is readily implementable as it involves no new costs and may be applied to as few as two workers traveling in the same corridor. CDTC has already established a Ride-matching program and prints a regular bulletin in a newspaper format in which people can advertise either for a ride or to offer rides to and from various locations in the Capital District.

Vanpools

Vanpools are a relatively new form of Ride-sharing which involves the utilization of a passenger van capable of carrying 10 to 15 employees. Such pools require common origin and destination routes for larger numbers of employees and generally have been found to be more applicable for those which commute longer distances. Because of the acquisition of the vans, some costs and delays in implementation are encountered. Some vanpools are subsidized by employers, usually through van ownership, while others are operated by users on a break-even basis. In either case, the cost savings realized by commuters who no longer use their automobile can be substantial depending upon the distance they travel to/from their work.

Buspools

Subscription Buses, or Buspools, are also used as a Ride-sharing method. These programs generally involve the utilization of a bus to carry 20 or more employees to and from their place of employment and depend upon large numbers of employees having similar travel routes.

A disadvantage of buspooling is the additional cost of buses and professional drivers. As a result, buspooling is often subsidized by employers.

ii) Implementation

Organizational efforts for Ride-sharing Programs vary considerably, from simple co-worker agreements through intensive employer-oriented programs. It has been found through research conducted by the Transportation Research Board that the level of Ride-sharing achieved corresponds to the amount of employer involvement in the program.

The least intensive efforts usually involve a bulletin board upon which employees communicate and coordinate travel patterns. More intensive programs involve the matching of potential ride-sharers by residence location and work shift. This matching may be accomplished through either manual or computer-based techniques and may list only those employees who volunteer for Ride-sharing, or may list the entire work force. The latter approach is usually preferred, because it exposes all employees to the direct possibilities of Ride-sharing. In addition, employer efforts to "sell" Ride-sharing and to maintain an updated Ride-sharing data base have proven important to the initiation and the continuation of this method.

Preferential parking for carpool and vanpool vehicles can be a very visible and effective means of promoting Ride-sharing. While preferential spaces for vanpools are relatively simple to provide because the vehicle can be readily identified, preferential parking for carpools may involve some difficulties due to the problem of accurately identifying carpool vehicles.

iii) **Application**

Successful Ride-sharing Programs have been employed throughout the United States in many varied settings. These techniques have been most successful when large individual employers are involved. However, good results have also been shown in areas of intensive employment, whether they are central business districts, office parks, or industrial parks.

iv) **Benefits**

Besides reduction in peak period traffic congestion, other benefits are associated with Ride-sharing Programs. The primary benefit is a cost savings to employees resulting from reductions in operating costs of motor vehicles. Fixed costs may also be reduced if the Ride-sharing results in a reduction in vehicle ownership. Benefits also accrue to employers, many of whom have noted better on-time performance of employees involved in Ride-sharing Programs. An increase in the labor supply is also possible by attracting employees from larger areas and individuals who do not have access to a motor vehicle.

b. Variable Work Hour Programs

Variable work hour techniques redistribute the times during which trips to and from employment are made. This TSM strategy reduces peak traffic congestion by eliminating sharp peaks in traffic demand.

i) Program Descriptions

Staggered Hours

Staggered Hour Programs are perhaps the most common form of variable work hour techniques. These programs are instituted by scheduling employees on different work shifts so that their arrival and departure times are distributed over a longer period. The number of staggered shifts, the percentage of employees on each shift, and the time between shifts can be tailored to suit employment demands and required reductions in peak period traffic. The time between shifts may vary from as little as 5 minutes to as much as 1 hour or more. In general, uncomplicated programs of 2 or 4 work shifts separated by half-hour intervals have been shown to provide substantial peak period traffic reductions. More complex systems have been shown to provide only marginal improvements over the basic Staggered Hours Programs, while complicating business operations.

Flexible Hours

Flexible Hour Programs (Flex-Time) are a form of variable work hours in which employees choose their own working hours. In general, employers designate a basic "Core Period" in the middle of the day during which all employees must be at their place of employment. Employees are then free to choose starting and finishing times which encompasses their "Core". In some Flexible Work Hour Programs, employees may change their schedules on a day to day basis, while in other Programs employees must pre-determine their work schedules.

A problem has been noted regarding Flexible Work Hour Programs. In some instances, most employees choose the same basic set of working hours. As this set of working hours may not correspond to the best time period for commuter

travel, and this time period may concentrate too large a portion of traffic in one period, Flexible Work Hours do not allow the degree of control and fine-tuning that Staggered Work Hour Programs permit.

Other Work Schedules

Other work schedule techniques may also contribute to reducing peak traffic congestion.

Adopting a 4 day work week can decrease commuter travel by 20%. This strategy works in two ways to reduce the peak period congestion. First commuter trips are eliminated on the day of the week that employees do not work. Second, because of the generally longer working hours on each of the 4 other days, employees arrive and depart before and after the normal commuter peaks.

Another Variable Work Program can be implemented for those types of employment not directly associated with a "daytime" work schedule. While originally limited to "blue collar" occupations, many businesses have been adopting alternate afternoon or evening work shifts. This benefits the employer by providing multiple shift utilization of office systems while also providing employment for personnel who might not be able to work the standard day shift. The data processing and computer service industries have been prominent in adopting this strategy.

Other means, not related to work schedules, can be utilized to alter employee arrival and departure times. The availability of food services on-site, tend to bring a significant portion of employees onto the site before the normal morning rush hour.

ii) **Implementation**

The implementation of Variable Work Hour Programs usually requires that an "educational" effort be undertaken to explain the concept. Both employees and management often have distorted views regarding the impacts of such programs. In most instances, it is possible to tailor these techniques to meet peak period traffic reduction goals without adversely impacting businesses.

iii) **Application**

The application of such programs is largely tied to the flexibility of the employer and the overall operation of a given company. Research oriented employers tend to be most flexible, while service oriented businesses tend to require their employees to work hours coinciding with the normal work force.

iv) **Benefits**

Variable Work Hour Programs have generally been well accepted by employees. Businesses were initially opposed to the idea of variable work hours, but they are growing in popularity. The most important factor from an employer's standpoint is that the alternate work schedule adopted does not significantly disrupt the office operations. Some studies have suggested that variable Work Hours Programs result in higher employee morale, decreased sick leave, reduced employee turnover, and increased productivity.

c. **Transit Programs**

The use of Transit for the commuting trip is a very effective means of traveling to and from work. A description of this method is provided below.

i) Program Description

The utilization of Transit as a TSM technique reduces peak period traffic congestion based upon improved utilization of the existing and future transit infrastructure through promotion, incentives, and adjustments to service patterns (e.g. routing and frequency)..

ii) Implementation

An important means to develop transit ridership is the provision of good, safe, and efficient service. It can be expected that most employees will have little knowledge of what transit services are available to them. Thus, it is important to make this information available. Pamphlets showing bus schedules and routes can be distributed throughout the area initially. Subsequently, the information can be placed on bulletin boards and at bus stops.

Another incentive to transit utilization is the provision of adequate transit facilities on-site. Whether transit stops exist as integral parts of planned buildings, or as completely separate structures, they should provide an amiable environment for the transit rider and the obvious amenity of shelter from weather. Security is a very important consideration, and adequate lighting and telephone service should be considered at transit stop locations.

Transit utilization can also be improved through the provision of partial or full subsidization of transit fares. This subsidy usually involves the employer providing a monthly transit pass either free or at a reduced cost to the employee. The subsidy may be partially or fully paid via discounts provided by a transit agency to an employer or organization which purchases a quantity of passes. Employers sometimes directly subsidize any remaining portion of the cost.

iii) Application

An important consideration in determining the applicability of Transit Programs is the basic provision of transit service to the site. It is important that the transit routes serve the actual travel desires of the employees. This is critical with regard to service area, travel time, and frequency of service. Better transit service will encourage more transit riders to use the service. Off-site service provisions are also important to accommodate employees who plan to arrive or depart work early or late, particularly if Variable Work Hours are available.

Packaging of Transportation System Management Techniques

There have been many recent studies and much discussion within the transportation planning community concerning the effects of combining, or "packaging", TSM measures. Of particular interest is the basic question of whether or not all measures should be simultaneously pursued.

For example, Staggered Hours and Carpooling Programs are both proven methods of reducing peak period traffic demands. Their interaction, however, is not so clearly defined. It is generally agreed that since Carpooling Programs depend upon common arrival and departure times, some Staggered Hour Programs may detract from Carpooling potential. On the other hand, carefully managed Staggered Hour Programs, such as flex-time, might enable employees who previously worked on different shifts to coordinate their schedules to begin Carpooling. It is also been noted that Ride-sharing Programs may attract riders from transit. Similar dichotomies are present in the consideration of combinations of other TSM measures.

Cost of Implementing TSM Programs

Although implementing TSM Programs do not normally require the level of investment typically associated with the construction of highways, there is some cost involved in implementing these strategies. In addition to the physical improvements required (e.g. the construction of Park and Ride lots) there is also certain administrative costs required to implement car pooling and van pooling programs. For example, CDTC is administering a Ride Share Program by periodically publishing a newsletter to match riders and drivers.

Since 77 percent of all new traffic to be generated under the Cumulative Growth Scenario is related to office development, an opportunity exists to require developers to incorporate mandatory TSM Programs as part of the project plans. The incentive for developers to implement TSM Programs will be to avoid significantly "down sizing" their development to reduce traffic impacts. The incentive to local authorities will be to transfer the cost of implementing these programs to the private developer. Local authorities will also be motivated to encourage TSM Programs as a means to preclude the large capital investment required to construct or improve Study Area roadways.