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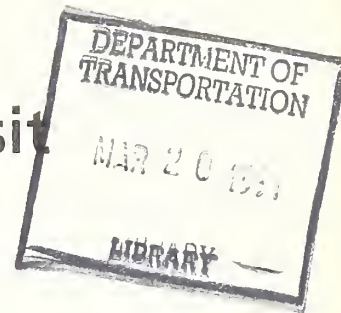


Department
Transportation

Urban Mass
Transportation
Administration

Comprehensive Transit Plan for the Virgin Islands

Technical Report



ST. THOMAS

ST. JOHN

ST. CROIX



JANUARY 1989

UMTA-MA-08-9023-88-1A
DOT-TSC-UMTA-89-3

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16. Abstract This report contains a description of the elements and recommendations of a transportation study of the islands of St. Thomas, St. Croix, and St. John in the U.S. Virgin Island archipelago. An extensive data collection effort, including traffic volume counts, turning movement counts, a cordon count (Charlotte Amalie), speed and delay runs, transit and taxivan ridership counts, and transit schedule adherence checks, was undertaken to provide the base data for the study. In addition, interviews with Government officials and private citizens concerned with transportation and environmental matters were conducted. St. Thomas transit recommendations included the purchase of new buses, the construction of new maintenance facilities, a substantial increase in service levels, and an open competition for management and operation of the service. For St. Croix, a subsidized taxivan service was recommended on a trial basis on three routes. Highway recommendations included an increase in roadway capacity along the Charlotte Amalie waterfront, reconstruction of critical intersections, traffic engineering improvements, and the implementation of a paid on-street parking program for St. Thomas. Reconstruction of major intersections, several turning movement enhancements, construction of the long-proposed Christiansted bypass, the expansion of off-street parking lots in Christiansted, and on-street parking management changes were recommended for St. Croix. The study endorsed current Department of Public Works plans to rehabilitate sections of major roadways on St. John. Of an institutional nature, it was recommended that a new governmental instrumentality be created to oversee mass transportation (including ferries), parking, and taxi services. Several possible sources of added revenue were discussed as potential means of providing the funding for the needed improvements.					
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PREFACE

The authors, Robert F. Casey and Judith C. Schwenk of the Transportation Systems Center (TSC), and Herbert S. Levinson, a transportation consultant, gratefully acknowledge the contributions of many individuals who provided information and assistance in the formulation and preparation of this report. Special thanks are due to Commissioner James C. Savage, Deputy Commissioner Verne R. Callwood, Jr., and Transit Planner Randolph Richardson of the Virgin Islands Department of Public Works for serving as our hosts, for providing much of the transportation information used in this study, for providing the manpower to conduct the data collection efforts requested by TSC for this study, and for arranging meetings with a large number of individuals and organizations.

The authors wish to thank the many individuals listed in Appendix G who gave of their time and opinions and provided the study team with the local perspective on the major transportation issues in the Virgin Islands. The information furnished was most helpful in developing the transportation alternatives and recommendations of this report.

The contribution of Michael Jacobs, Chief of TSC's Service Assessment Division, who assisted in data collection, who reviewed and commented on draft versions of the report, and who provided overall support and supervision of this study, was invaluable.

In addition, the excellent work of Mary L. Lawler of TSC, who typed the written material submitted by the consultant and tabulated many of the person and vehicle counts conducted in St. Thomas, and Michael Abegg of TSC, who produced many of the graphics for this report via computer, was most appreciated.

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METRIC / ENGLISH CONVERSION FACTORS

ENGLISH TO METRIC

LENGTH (APPROXIMATE)

1 inch (in) = 2.5 centimeters (cm)
 1 foot (ft) = 30 centimeters (cm)
 1 yard (yd) = 0.9 meter (m)
 1 mile (mi) = 1.6 kilometers (km)

AREA (APPROXIMATE)

1 square inch (sq in, in²) = 6.5 square centimeters (cm²)
 1 square foot (sq ft, ft²) = 0.09 square meter (m²)
 1 square yard (sq yd, yd²) = 0.8 square meter (m²)
 1 square mile (sq mi, mi²) = 2.6 square kilometers (km²)
 1 acre = 0.4 hectares (he) = 4,000 square meters (m²)

MASS - WEIGHT (APPROXIMATE)

1 ounce (oz) = 28 grams (gr)
 1 pound (lb) = .45 kilogram (kg)
 1 short ton = 2,000 pounds (lb) = 0.9 tonne (t)

VOLUME (APPROXIMATE)

1 teaspoon (tsp) = 5 milliliters (ml)
 1 tablespoon (tbsp) = 15 milliliters (ml)
 1 fluid ounce (fl oz) = 30 milliliters (ml)
 1 cup (c) = 0.24 liter (l)
 1 pint (pt) = 0.47 liter (l)
 1 quart (qt) = 0.96 liter (l)
 1 gallon (gal) = 3.8 liters (l)
 1 cubic foot (cu ft, ft³) = 0.03 cubic meter (m³)
 1 cubic yard (cu yd, yd³) = 0.76 cubic meter (m³)

TEMPERATURE (EXACT)

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METRIC TO ENGLISH

LENGTH (APPROXIMATE)

1 millimeter (mm) = 0.04 inch (in)
 1 centimeter (cm) = 0.4 inch (in)
 1 meter (m) = 3.3 feet (ft)
 1 meter (m) = 1.1 yards (yd)
 1 kilometer (km) = 0.6 mile (mi)

AREA (APPROXIMATE)

1 square centimeter (cm²) = 0.16 square inch (sq in, in²)
 1 square meter (m²) = 1.2 square yards (sq yd, yd²)
 1 square kilometer (km²) = 0.4 square mile (sq mi, mi²)
 1 hectare (he) = 10,000 square meters (m²) = 2.5 acres

MASS - WEIGHT (APPROXIMATE)

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 1 kilogram (kg) = 2.2 pounds (lb)
 1 tonne (t) = 1,000 kilograms (kg) = 1.1 short tons

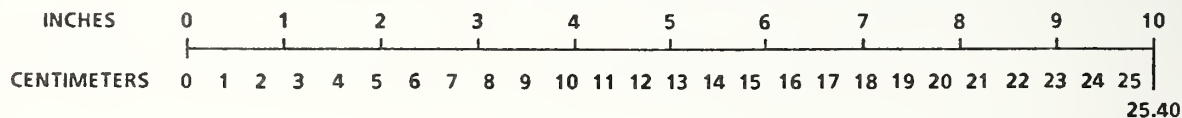
VOLUME (APPROXIMATE)

1 milliliter (ml) = 0.03 fluid ounce (fl oz)
 1 liter (l) = 2.1 pints (pt)
 1 liter (l) = 1.06 quarts (qt)
 1 liter (l) = 0.26 gallon (gal)
 1 cubic meter (m³) = 36 cubic feet (cu ft, ft³)
 1 cubic meter (m³) = 1.3 cubic yards (cu yd, yd³)

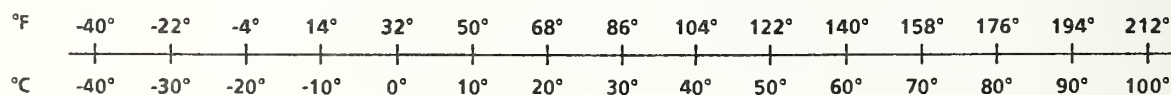
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1. INTRODUCTION

1.1 SETTING

The United States Virgin Islands are a series of islands in the vicinity of the confluence of the Atlantic Ocean and the Caribbean Sea (Figure 1-1). Only a handful of the islands are inhabited. The three largest islands are St. Thomas, St. Croix, and St. John (Figure 1-2). These islands are areas of much scenic beauty. The warm, sunny days, beautiful beaches, and dramatic views attract large numbers of tourists to the islands.

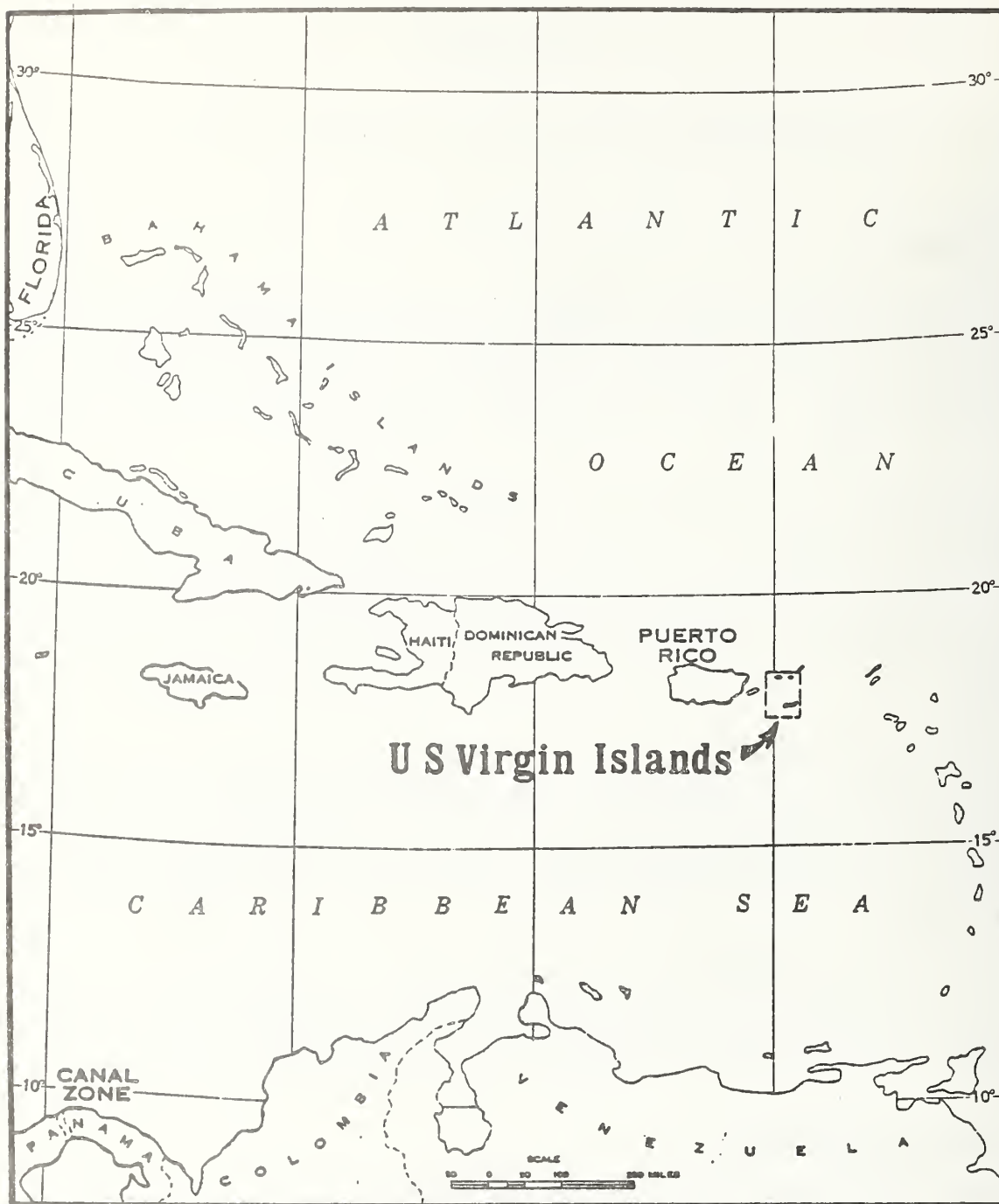
St. Thomas, with a land area of 32 square miles (Figure 1-3), is the most densely populated of the U. S. Virgin Islands, with a population in excess of 51,000 people. St. Thomas is located approximately 1,100 miles east-southeast of Miami, Florida, 1,500 miles southeast of New York City, and 40 miles east of Puerto Rico. Charlotte Amalie, the seat of the Virgin Islands Government, is located on St. Thomas. Charlotte Amalie is both the major population center and the major tourist shopping area on the duty-free islands.

St. Croix, the largest of the three islands, has a land area of approximately 84 square miles (Figure 1-4) and a population of about 57,000 people. Compared to St. Thomas and St. John, which are very mountainous, St. Croix has the greatest amount of flat land, although it, too, has hilly terrain in its eastern and northwestern sections. There are two population centers on the island, Christiansted on the north central coast, and Frederiksted on the western coast.

St. John is the smallest of the main islands. (See Figure 1-5.) Most of its 2,800 inhabitants reside in the vicinity of Cruz Bay, the only town on St. John, and the terminal for ferry service to the other islands. Over three-quarters of St. John's 20 square miles are reserved as a national park.

1.2 PURPOSE OF THE STUDY

The Virgin Islands have definite transportation problems. The steep terrain presents a natural obstacle to the building and repair of roadways, particularly on St. Thomas and St. John, and to the maintenance of transit equipment. But the highway and transit systems, both in need of substantial improvement, also suffer from neglect.



Source: 1976 Virgin Islands Mass Transit Study
Wilbur Smith and Associates

FIGURE 1-1. LOCATION OF THE U.S. VIRGIN ISLANDS

U.S. VIRGIN ISLANDS



Source: 1982 Transit Development Plan Update
Gannett Fleming

FIGURE 1-2. STUDY AREA



FIGURE 1-3. ROAD MAP OF ST. THOMAS



FIGURE 1-4. ROAD MAP OF ST. CROIX



FIGURE 1-5. ROAD MAP OF ST. JOHN

Resident and visitor alike recognize the problems of deteriorating bus service and traffic congestion in Charlotte Amalie and Christiansted. Over the last decade, a series of highway improvements, traffic engineering changes, and transit service proposals have been set forth. While some of these proposals have become a reality, such as the Melvin H. Evans Highway in St. Croix, relatively few actions have been taken to expand road capacity, reduce congestion, or improve transit services. The situation is most acute in St. Thomas -- where the community has been polarized over a waterfront highway for more than a decade -- but the lack of transport improvements to keep pace with population and economic growth persists in St. Croix and St. John as well.

How best to improve transportation in the Virgin Islands remains an important and timely challenge. There is need to develop and implement affordable improvements that reduce congestion, increase safety, and expand mobility, while minimizing adverse impacts and attaining community acceptance. These needs underlie the present study.

This study of transportation in the Virgin Islands was initiated in response to the mandate contained in Section 335 of the Surface Transportation and Uniform Relocation Assistance Act of 1987, which directed the U.S. Secretary of Transportation, in cooperation with the Virgin Islands Department of Public Works, to study and analyze the mass transportation needs of the Virgin Islands for the purpose of developing a comprehensive mass transportation plan. This study was expanded, upon instruction from the Office of the Virgin Islands' Delegate to the U.S. Congress, the Honorable Ron deLugo, to include means of reducing traffic congestion in the urban centers of the islands. This detailed Technical Report provided the technical information for the report sent to Congress.

1.3 PREVIOUS STUDIES

There have been a number of traffic and transportation studies conducted in the Virgin Islands over the past 17 years. The most significant of these include:

- "Virgin Islands Highway Functional Classification and Needs Study," by Menasco-McGuinn Associates, 1973;
- "Virgin Islands Mass Transit Study," by Wilbur Smith and Associates, 1976;
- "Transit Plan Development Update," by Gannett Fleming Engineers and Planners, 1982;
- "Report on the Implementation of a Paid Parking Program in Downtown Charlotte Amalie," by Urbitran Associates, 1986; and
- "Recommendations to Reduce Traffic Congestion for Charlotte Amalie, U.S. Virgin Islands," by the Federal Highway Administration, 1987.

A full listing of these and other transportation-related studies and reports that provided background information for this study are listed in the References section at the end of the report.

1.4 IMPLEMENTATION STATUS OF PRIOR RECOMMENDATIONS

In spite of all the studies that have been done over the years, few study recommendations have been implemented due to a combination of political and financial reasons. Very recently, there have been indications of an awareness that something must be done to improve the bus system on St. Thomas and the traffic flow in Charlotte Amalie. Public officials interviewed during this study recognize the seriousness of the transportation situation and voiced a desire to improve both the highway and transit systems. Already, plans are underway for signalizing critical intersections in Charlotte Amalie. These are merely the first steps in the improvement process that is necessary to effect major improvements in traffic in the town. No transit or parking improvements have been made as yet, but a paid parking scheme in Charlotte Amalie is being readied for a test implementation.

1.5 MAJOR STUDY ISSUES

Special attention was given in this study to the following issues.

- Status of implementation of previous recommendations.
- Reasons for lack of implementation.
- Quality of bus service on St. Thomas.
- Need for public transportation on St. Croix and St. John.
- Taxi and taxivan operations on St. Croix.
- Bus vehicle condition and maintenance capabilities.
- Traffic congestion in the urban centers of the three islands.
- Parking problems.
- Organizational structure for administration of public transportation, parking and taxi operations.
- Existing transportation legislation.
- Transportation funding.

1.6 STUDY APPROACH

The study was performed in close cooperation with the Virgin Islands community by a team consisting of U.S. DOT/Transportation Systems Center (TSC) staff and a traffic engineering consultant. An initial field visit was made to assess the extent of the transportation problems on the islands and to meet with appropriate public officials, citizens groups, and individuals to obtain their viewpoints on the problems, possible solutions, and related obstacles and constraints. Reconnaissance surveys were made on each island to pinpoint problems, and to identify likely corrective actions. The study team reviewed all available information and reports pertaining to roadway and traffic characteristics, transit fleet and operations, and planned developments.

Subsequent field visits were made to collect the traffic and transit data needed for forming conclusions and recommendations. (Basic data were either lacking or a minimum of seven years old). Traffic volumes were measured on all three islands during peak travel periods. Parking accumulations and durations were noted. Driving times to and from the centers of Charlotte Amalie and Christiansted were recorded. These data revealed the dimensions, locations, and causes of the congestion. Bus ridership on St. Thomas and taxivan ridership on St. Croix were measured by observing passengers boarding and alighting along their routes. A cordon count was made of the number of people and vehicles entering and leaving the center of Charlotte Amalie on a typical January 1988 weekday. This count indicated the numbers, modes, and routes of travelers to and from the center, and was most useful in assessing the relative importance to island travel of buses, taxis, cars and trucks.

The recommendations contained in this report were reviewed by federal government staff from TSC, the Urban Mass Transportation Administration (UMTA), and the Federal Highway Administration (FHWA), and by local officials and interest groups. Comments have been incorporated, but the final recommendations remain the responsibility of the authors.

1.7 ORGANIZATION OF THIS REPORT

The next three chapters deal separately with the three major islands. Chapter 2 discusses existing transit, highway and parking conditions on St. Thomas, plus associated problem areas, alternative solutions, recommended improvements, and cost estimates. Chapter 3 provides a comparable discussion for St. Croix, and Chapter 4, for St. John.

Chapter 5 discusses recommendations for regulation and oversight of all transportation operations. Chapter 6 discusses funding sources. Chapter 7 discusses regulatory and fiscal legislation needed to carry out the recommendations. Survey results and other supplementary material, plus more detailed discussions of certain issues, are provided in Appendices.

2. ST. THOMAS

2.1 INTRODUCTION

2.1.1 Land Use

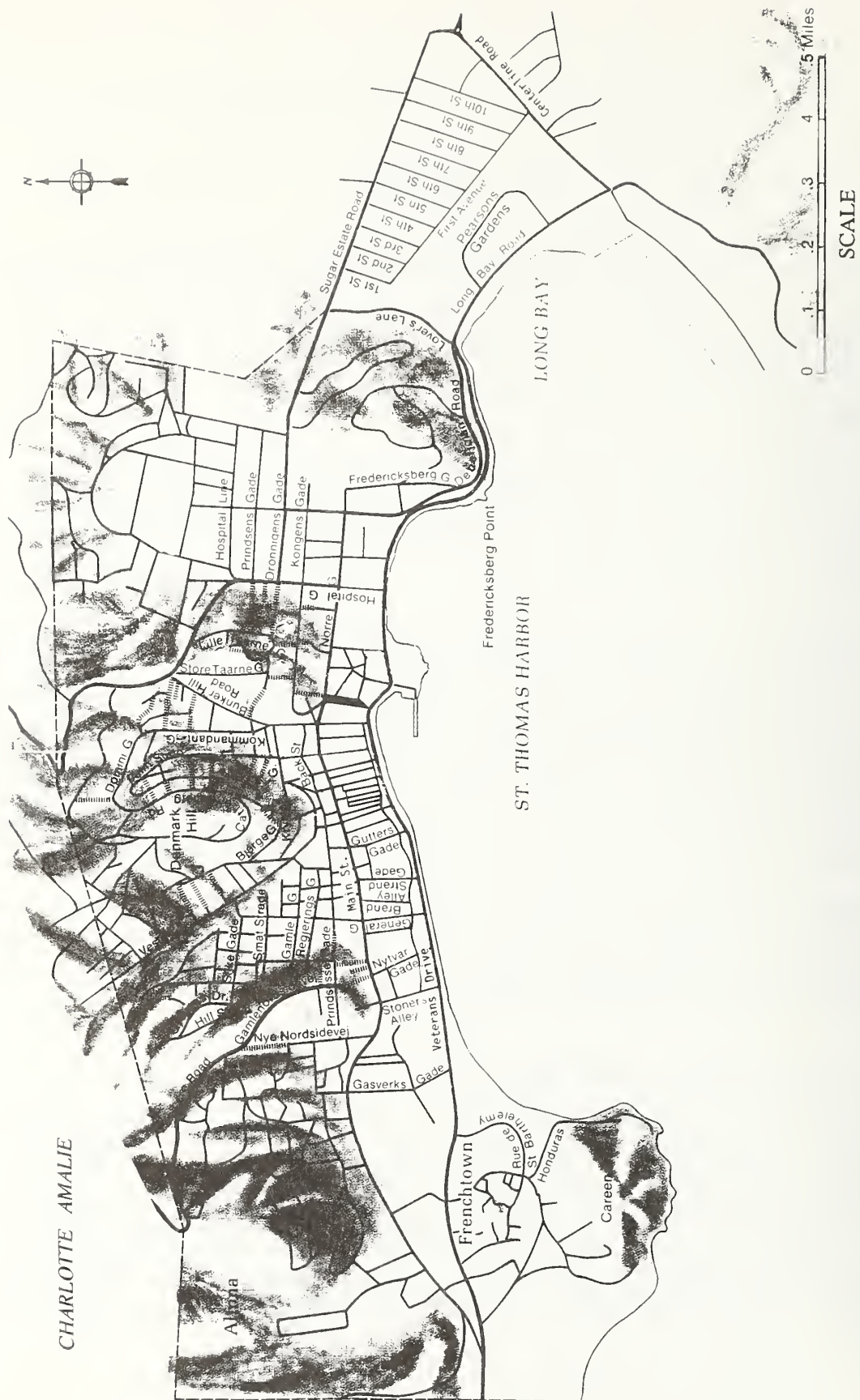
St. Thomas' beauty and attractiveness reflect the sharp contrasts between water and land. The hills virtually rise from the sea, providing magnificent views of Charlotte Amalie and Magens Bay. But these same features have produced a hilly terrain that limits settlement, inhibits road development, and concentrates travel.

The effects of terrain are most pronounced in central Charlotte Amalie. (See Figure 2-1.) A series of hills encircles the central area, which itself rises to about 100 feet above sea level a few blocks from the water. Frenchman Hill, Berg Hill, Bunker Hill, Government Hill, Bluebeard Hill, and Raphune Hill circumscribe and penetrate the town. The town's rugged terrain has limited commercial development to the flat land that mainly lies just to the north of its harbor. Within a short distance of the central city are located the major travel generators: the University of the Virgin Islands, the airport, and the sub-base to the west; the docks and malls to the south-east; and the high school and hospital to the northeast. (See Figure 2-2.)

The combined effects of the terrain and development are to concentrate most travel in an east-west direction, mainly along the waterfront. It is these topographic, development, and travel patterns that result in recurrent congestion in central Charlotte Amalie.

2.1.2 Socio-Economic Characteristics

In 1985 there were approximately 51,000 people living on the island of St. Thomas. The spatial distribution of this population and the major residential concentrations are shown in Figure 2-3. The age distribution of the population of the island, and indeed of the U.S. Virgin Islands as a whole, is lower than that of the United States, with a median age of 23.7 years. This is reflected in the high number of persons per household, 3.3, and the low employee per population ratio, 41.1 employees per 100 people. Employment rates among adults are 77 percent for males and 61 percent for females.



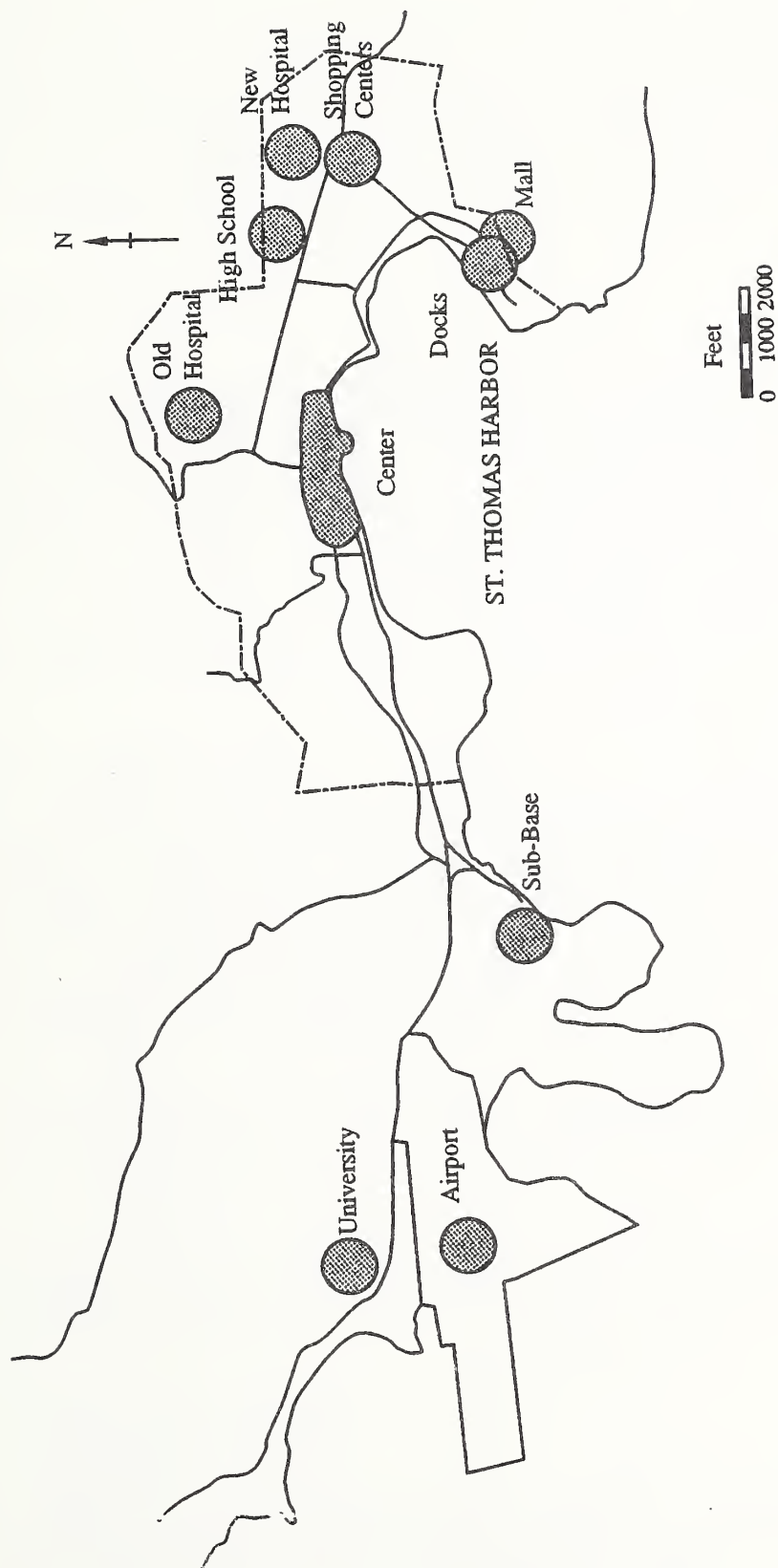


FIGURE 2-2. TRAFFIC GENERATORS IN CHARLOTTE AMALIE

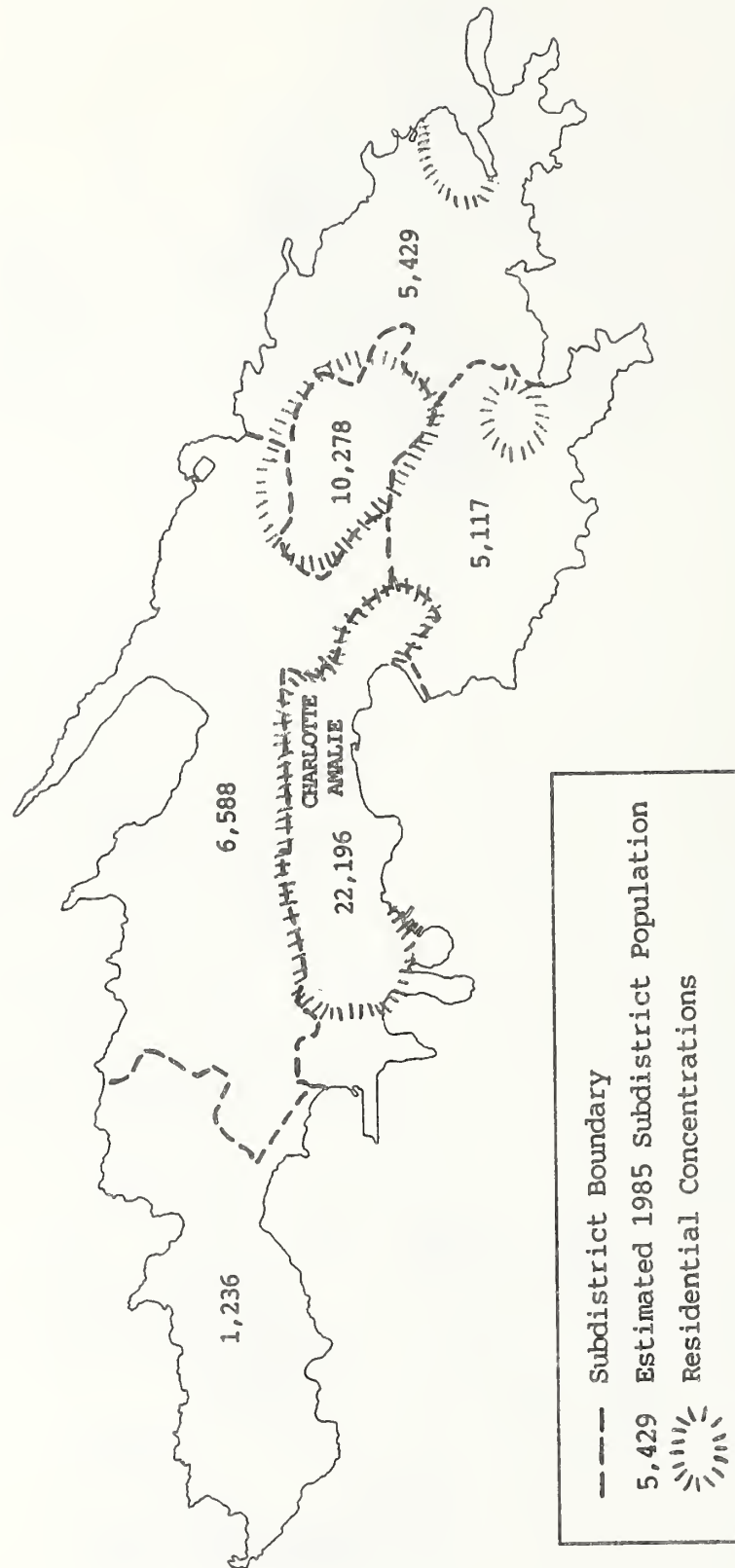


FIGURE 2-3. POPULATION DISTRIBUTION - ST. THOMAS

The Government is the largest employer on the island. Almost 36 percent of the labor force works for either the Federal or local Government. While this seems high, it should be noted that in the Virgin Islands, unlike the U.S. mainland, the Government operates the public utilities and health services, as well as a variety of air and sea port facilities. Tourism is by far the largest industry on the island. Together the agricultural, construction, and manufacturing industries account for only 12 percent of the total employment.

2.1.3 Cordon Count Results

On a typical mid-winter, high tourist season day, over 90,000 people enter and leave Charlotte Amalie by various means — in passenger cars, trucks, public and school buses, ferries, motorcycles and bicycles, and on foot. The distribution of this travel by mode and time of day is discussed below. All estimates were obtained from a cordon count around the city conducted on February 2-3, 1988. Data on the number of vehicles, passengers per vehicle, and mode of travel were recorded over a 12-hour period in 15-minute intervals at eight major entry and departure points around the city. The data then were expanded to produce 24-hour estimates. (Appendix A contains a description of the methodology and data.)

2.1.3(a) Peak hour person-movement

The number of people and vehicles entering central Charlotte Amalie in the morning peak hour, and leaving the area in the evening peak hour, are summarized in Table 2-1. The "car" category includes passenger cars as well as vans without taxi or commercial designations. The "truck" category includes pick-up and panel trucks as well as tractor trailers and other heavy-duty trucks. The "bus" category includes public transit buses only. School buses and human service/employer buses are included in the "other" category along with motorcycles, mopeds, and bicycles.

In the morning peak hour, from 7-8 am, around 4,100 vehicles carry over 8,200 people into the central area. About 72 percent of all people come by car, 13 percent by truck, 6 percent by taxi, 5 percent by bus, and the remainder on foot or by other means.

In the evening peak hour, from 4:30-5:30 pm, just under 4,000 vehicles carry over 8,200 people out of the central area. About 64 percent of all people depart by car, 18 percent by taxi, 9 percent by truck, 4 percent by bus, and the remainder on foot or by other means.

2.1.3(b) Peak period person-movement

Tables 2-2 and 2-3 give breakdowns of people and vehicles entering and leaving central Charlotte Amalie during the peak morning and evening periods of the day. The morning peak period occurs between 7 and 9:30 am when approximately 8,800 vehicles carrying over 17,200 people enter the central

TABLE 2-1.
PEAK HOUR CORDON MOVEMENTS
ENTERING AND LEAVING
CENTRAL CHARLOTTE AMALIE

ENTERING - 7:00 TO 8:00 AM PEAK HOUR

MODE	NUMBER VEHICLES	PERCENT	NUMBER PEOPLE	PERCENT	LOAD FACTOR
CAR	3,197	78.6	5,931	72.1	1.9
TAXI	244	6.2	530	6.4	2.2
TRUCK	572	14.1	1,041	12.7	1.8
BUS	20	0.5	405	4.9	20.3
OTHER	33	0.8	61	0.7	1.8
WALK			253	3.0	
TOTAL	4,066	100.0	8,221	100.0	

LEAVING - 4:30 TO 5:30 PM PEAK HOUR

MODE	NUMBER VEHICLES	PERCENT	NUMBER PEOPLE	PERCENT	LOAD FACTOR
CAR	3,088	77.5	5,248	63.6	1.7
TAXI	390	9.8	1,441	17.5	3.7
TRUCK	459	11.5	743	9.0	1.6
BUS	15	0.4	300	3.6	20.0
OTHER	35	0.9	75	0.9	2.1
WALK			448	5.4	
TOTAL	3,987	100.0	8,255	100.0	

TABLE 2-2.
NUMBER OF VEHICLES AND PEOPLE
ENTERING CHARLOTTE AMALIE
BY MODE OF TRAVEL DURING PEAK PERIODS

	ALL DAY	7:00-9:30 AM PEAK PERIOD	3:30-6:00 PM PEAK PERIOD
<u>VEHICLES</u>			
TOTAL	46073	8783	7870
CAR		6594	5640
TAXI		716	991
TRUCK		1332	1131
BUS		49	40
OTHER		92	68
<u>PEOPLE</u>			
TOTAL	90089	17262	15580
CAR		11333	8797
TAXI		2109	3524
TRUCK		2143	1860
BUS		791	474
OTHER		185	126
WALK		701	799
<u>LOAD FACTORS</u>			
TOTAL		1.9	1.9
CAR		1.7	1.6
TAXI		2.9	3.6
TRUCK		1.6	1.6
BUS		16.1	11.9
OTHER		2.0	1.9
<u>FERRY</u> <u>PASSENGERS</u>			
	(8:15 AM - 6:15 PM)	(8:15 AM - 9:30 AM)	(3:30 - 6:15 PM)
	2623	54	296

TABLE 2-3.
NUMBER OF VEHICLES AND PEOPLE
LEAVING CHARLOTTE AMALIE
BY MODE OF TRAVEL DURING PEAK PERIODS

	ALL DAY	7:00-9:30 AM PEAK PERIOD	3:30-6:00 PM PEAK PERIOD
<u>VEHICLES</u>			
TOTAL	43025	7555	9171
CAR		5626	6691
TAXI		691	1120
TRUCK		1106	1247
BUS		40	34
OTHER		92	79
<u>PEOPLE</u>			
TOTAL	89236	13520	19942
CAR		8425	11537
TAXI		1539	4114
TRUCK		1778	2128
BUS		741	833
OTHER		225	196
WALK		812	1134
<u>LOAD FACTORS</u>			
TOTAL		1.7	2.1
CAR		1.5	1.7
TAXI		2.2	3.7
TRUCK		1.6	1.7
BUS		18.5	24.5
OTHER		2.4	2.5
<u>FERRY PASSENGERS</u>			
	(8:15 AM - 6:15 PM)	(8:15 AM - 9:30 AM)	(3:30 - 6:15 PM)
	1755	86	793

area, and when about 7,600 vehicles carrying 13,500 people leave the central area. The evening peak period occurs between 3:30 and 6 pm, when approximately 9,200 vehicles carry almost 20,000 people out of the area, and just under 7,900 vehicles carry nearly 15,600 people into the area.

Load factors for passenger cars vary between 1.5 and 1.7 persons per car during the peak periods. Transit buses entering and leaving Charlotte Amalie maintain load factors of around 20 passengers per bus during the morning peak hour, with somewhat lower averages over the entire morning peak period. During the afternoon peak period, transit buses leaving the city are quite heavily loaded with about 24 passengers per bus; however, as the net movement is out of the city in the afternoon, buses entering the city during this time average only around 12 passengers per bus.

During the morning peak period, passenger cars comprise 75 percent of the vehicular traffic both entering and leaving Charlotte Amalie, and carry around 64 percent of the people. Taxis, representing about 9 percent of vehicles on the road at this time of day, transport 11-12 percent of the people into and out of the city. Transit buses account for fewer than 1 percent of the vehicles on the roads, but carry 4-5 percent of the people traveling in both directions.

During the afternoon peak period, passenger cars again account for most of the traffic, representing around 73 percent of the vehicles; however, the portion of people they carry drops to about 57 percent. This most likely results from the increase in taxis transporting cruise ship passengers to and from the docks and the downtown shopping area; taxis are not only more numerous in the afternoon, but also more heavily loaded. They comprise 13 percent of the traffic and carry around 22 percent of the people into and out of the city. Transit buses continue to represent fewer than 1 percent of the vehicles, but carry a smaller portion (3-4 percent) of the passengers in the evening peak period than in the morning.

2.1.3(c) Hourly profile

Figures 2-4 and 2-5 show profiles of hourly variations in vehicle traffic entering and departing Charlotte Amalie throughout the period of the cordon count (7 am - 6 pm). Vehicles entering the city peak from 7 to 8 am during the morning rush hour. After 9:30 am, traffic into the city levels off to between 700 and 800 vehicles every 15 minutes, until a slight evening rush hour peak occurs between 5 and 6 pm.

Figure 2-5 shows a distinctly different pattern for vehicles leaving the city. A morning peak period ending around 9:30 am is followed by a short period of traffic departing the city at a constant rate. At 1 pm, the number of departing vehicles begins to increase steadily throughout the afternoon until the evening rush hour from 5 to 6 pm.

The morning peak in Figure 2-5 and the afternoon peak in Figure 2-4 likely reflect commuters who must pass through Charlotte Amalie on their way to and from work. The steadily increasing stream of vehicles leaving the

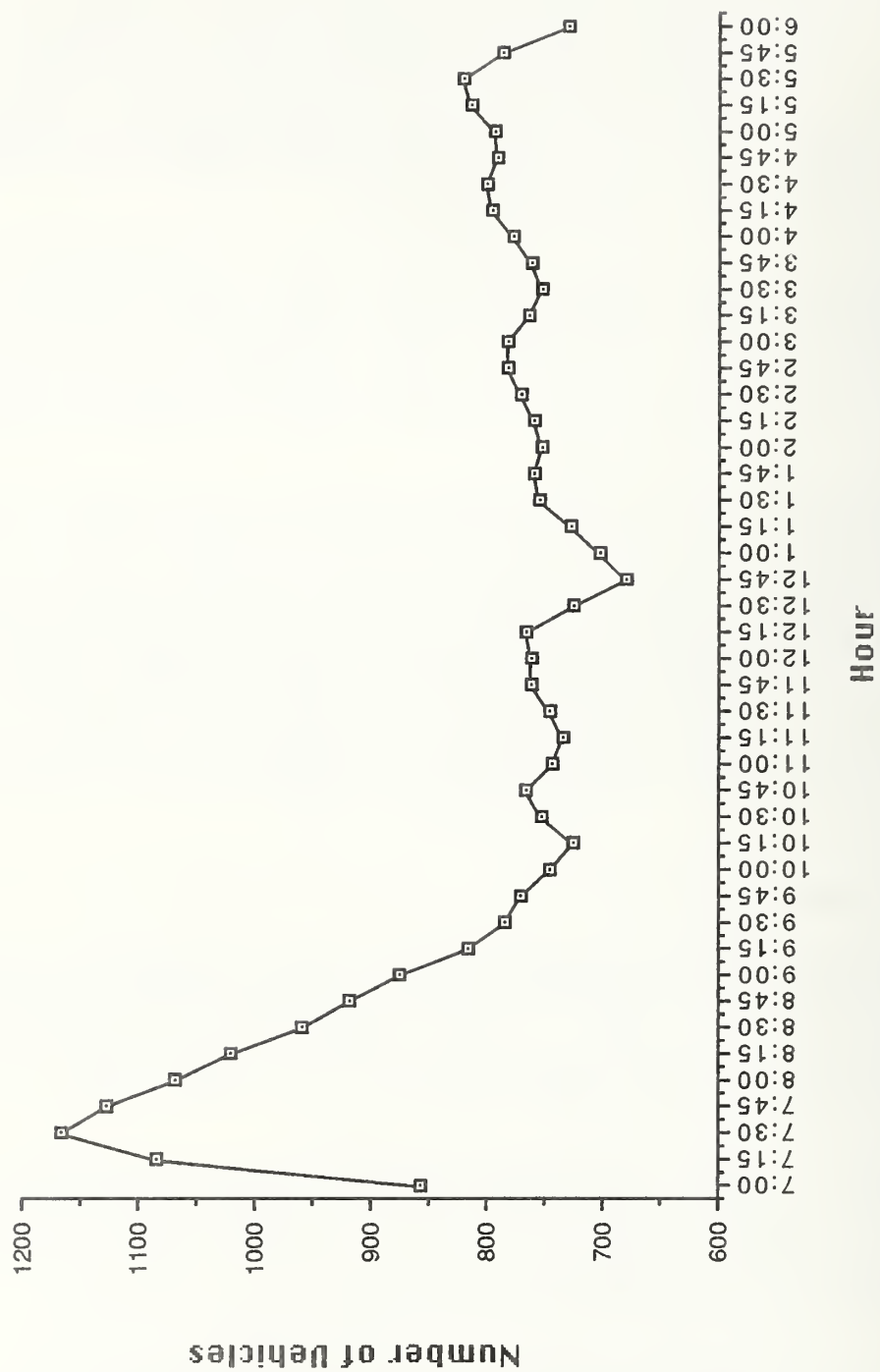


FIGURE 2-4. VEHICLES ENTERING CHARLOTTE AMALIE

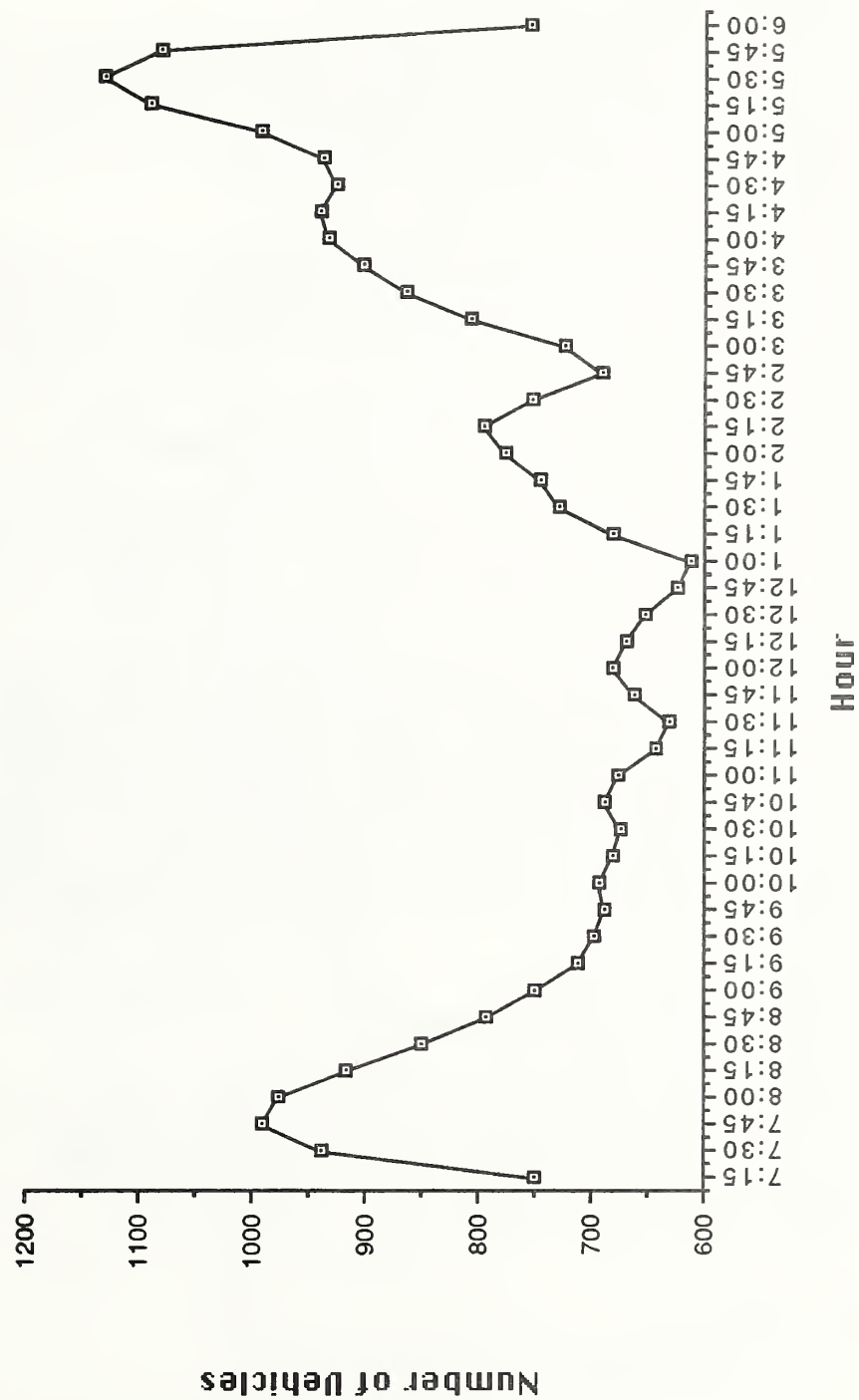


FIGURE 2-5. VEHICLES LEAVING CHARLOTTE AMALIE

city in the afternoon indicates that, although most people enter the city during the morning rush hour, many of them have short-term business in the city and begin to leave long before the evening rush hour.

2.1.3(d) Place of entry

Figure 2-6 and Table 2-4 show where people and vehicles enter and leave central Charlotte Amalie via the eight cordon count locations. On a typical weekday nearly 184,000 people enter, pass through, or leave the area. Almost half use Veterans Drive, while the remaining travelers use the other six cordon locations.

Veterans Drive bears the brunt of vehicular traffic every day, carrying over 20,000 vehicles in each direction, and accounting for about half of all vehicles. The two-lane easterly approach carries over 10,000 vehicles per lane, virtually double the volume per lane found at other locations.

2.1.3(e) Comparison of 1988 cordon count with previous studies

Although previous studies did not perform cordon counts as part of their data collection activities, two did obtain traffic counts at several of the same locations as the 1988 cordon count. A comparison of available counts at the various locations is shown in Table 2-5.

The volume of traffic on Veterans Drive has changed very little since 1981. On the western side of town, however, there was a 33 percent increase in traffic between 1972 and 1981. Observations of Veterans Drive indicate that during the peak periods of the day, the road is carrying traffic at its capacity limits. The sharper increases on Solberg, Mafolie, and Kronprinds Roads may indicate that they are serving as relief routes for vehicles attempting to enter Charlotte Amalie during peak periods when Veterans Drive has exceeded its capacity. They also may reflect population growth on the northerly side of St. Thomas.

2.1.3(f) Public transportation implications

The cordon count indicates that about 5 percent of the travelers entering Charlotte Amalie during peak hours come by bus (inbound in the morning, outbound in the evening). Thus, improved transit, although desirable, is not likely to reduce measurably the congestion problem or the need for additional road capacity.

2.2 TRANSIT SERVICE

2.2.1 Existing Conditions

Transit service on St. Thomas is operated by Mannassah Bus Line, Inc. under an exclusive franchise granted by the Virgin Islands Legislature.



FIGURE 2-6. PEOPLE ENTERING AND LEAVING CHARLOTTE AMALIE CENTER

TABLE 2-4.
24-HOUR ESTIMATES OF TRAFFIC
INTO AND OUT OF CHARLOTTE AMALIE
BY CORDON COUNT LOCATION

LOCATION	ENTERING	LEAVING
VETERANS DRIVE - WINDWARD PASSAGE		
VEHICLES	13,977	12,651
PEOPLE	26,218	24,291
KRONPRINDSENS GADE		
VEHICLES	4,793	4,797
PEOPLE	9,208	10,232
SOLBERG ROAD		
VEHICLES	1,118	1,054
PEOPLE	2,108	1,867
MAFOLIE ROAD		
VEHICLES	5,463	5,082
PEOPLE	11,801	12,168
DE BELTJEN ROAD		
VEHICLES	4,074	3,146
PEOPLE	7,740	5,051
VETERANS DRIVE - FEDERAL BUILDING		
VEHICLES	10,998	9,785
PEOPLE	22,146	20,569
SUGAR ESTATE ROAD		
VEHICLES	5,650	6,510
PEOPLE	10,868	15,058
WATERFRONT		
FERRIES	48	46
PEOPLE	2,623	1,755
<u>TOTAL</u>		
VEHICLES	46,121	43,071
PEOPLE	92,712	90,991

TABLE 2-5.
COMPARISON OF TRAFFIC VOLUMES FROM PREVIOUS STUDIES

LOCATION	1988	1981 ¹	% CHANGE 81-88	1972 ²	% CHANGE 72-88
VETERANS DR. (WINDWARD)	26,487	26,378	+0.4	19,895	+33.1
KRONPRINDESENS	9,590	7,937	+20.8		
SOLBERG RD.	2,172			823	+163.9
MAFOLIE RD.	9,215	7,167	+28.6		
VETERANS DR. (FEDERAL)	20,792	20,031	+3.8		
SUGAR ESTATE	12,160	11,457	+6.1		

1 URS Consultants, Inc.
2 "Virgin Islands Functional Classification and Needs Study," Menasco-McGuinn Associates

Mannassah has had this franchise since 1951. In 1986, Mannassah was granted an extension of this franchise until 1991. Mannassah also has the school bus contract on St. Thomas.

2.2.1(a) Coverage

Transit service is concentrated on the City of Charlotte Amalie and the residential areas of Donoe, Old and New Tutu, Hidden Valley, Bovoni, and Red Hook to the east. In addition, these eastern routes serve the St. John Ferry and several of the hotels along the shore. There is also limited service to Bordeaux on the western end of the island. There is no service to the area north of Charlotte Amalie. Figure 2-7 is a composite map showing the transit route structure.

Bus stops are marked within Charlotte Amalie. Outside the city, there are few formal bus stops, since these routes operate primarily on a demand basis -- i.e., passengers flag down the bus. "Country" route buses stop at many of the same stops as the city buses within Charlotte Amalie.

1 URS Consultants, Inc.

2 "Virgin Islands Functional Classification and Needs Study", Menasco-McGuinn Associates.

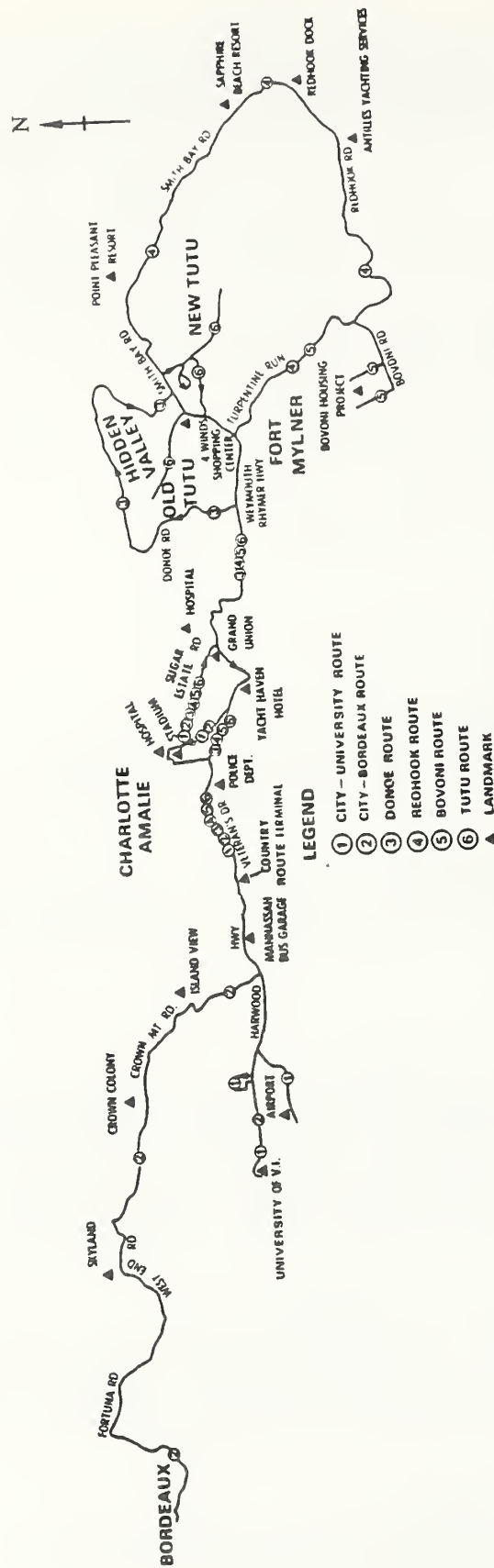


FIGURE 2-7. EXISTING TRANSIT ROUTES - ST. THOMAS

2.2.1(b) Scheduling and service frequency

Transit service is divided into two components: a "city" route; and six "country" routes. The city route (Figures 2-8 and 2-9) runs from the University of the Virgin Islands, on the west side of Charlotte Amalie, to the new St. Thomas Hospital area, on the east side, and back to the University. The schedule calls for 15-minute headways virtually all day from 6:00 am to 9:00 pm. Five buses are assigned to this route, and they circulate continuously throughout the day. In addition, the bus assigned to the Bordeaux route (Figure 2-10) serves the city route during off-peak hours. Service on the Bordeaux route is only provided during the morning and afternoon peak periods and a single mid-day trip.

One bus is assigned to each of the Donoe, Red Hook via Four Winds, Red Hook via Nadir, Bovoni and Tutu routes (Figures 2-11 through 2-14). The Donoe and Red Hook routes operate in a loop fashion on the outer end. Scheduled headways on these country routes are generally in the range of 65 to 80 minutes, although they vary throughout the day depending upon round trip travel times, and can be as low as 50 or as high as 100 minutes at specific times.

The current method of scheduling buses is to circulate a bus on the same route for the entire day. Given the shortage of buses, this is a practical method of operation. However, the actual schedules which the buses are to follow are mostly fictitious. Current schedules do not adequately reflect the traffic delays normally experienced during large portions of the day. If a bus is delayed, the next trip begins late. As a consequence, many trips are over thirty minutes late, and some trips are skipped entirely since the delay exceeds the scheduled headway. If a bus is disabled, it may take a considerable length of time for a replacement bus to be inserted, assuming that a replacement is available. Very few layovers are scheduled, making it virtually impossible for a bus to get back on schedule once it falls behind.

2.2.1(c) Fares

There are four transit fares within St. Thomas: 50 cents within the city; 75 cents for travel to, from, and within the country route areas; and reductions to 35 cents in the city and 55 cents in the country for elderly persons. There are no free or discounted transfers or student fares.

2.2.1(d) Transit equipment

The continual deterioration of the fleet is a major problem. In April 1988, Mannassah stated the fleet size as 16 buses. The breakdown of these vehicles was as follows:

1 City- St. Thomas

Public Transit serving C.V.I.,
Cyril E. King Airport, Market Square,
St. Thomas Hospital and other points
within Charlotte Amalie

Effective Date: April 1, 1986



VITRAN
Virgin Islands Public Transit

Information Call: 774-5678

To College of the Virgin Islands Monday-Saturday A.M.

Long Bay Rd. Yacht Haven Hotel	Hospital Gade C. Crim. Justice C.	Market Square	Harwood Hwy. Med. Arts Comp.	Airport	College of the Virgin Islands
A.M. 6:10	A.M. 6:17	A.M. 6:22	A.M. 6:29	A.M. 6:37	A.M. 6:45
6:24	6:31	6:36	6:43	6:51	6:59
6:38	6:45	6:50	6:57	7:05	7:13
6:52	6:59	7:04	7:11	7:19	7:27
7:06	7:13	7:18	7:25	7:33	7:41
7:20	7:27	7:32	7:39	7:47	7:55
7:34	7:41	7:46	7:53	8:01	8:09
7:48	7:55	8:00	8:07	8:15	8:23
8:02	8:09	8:14	8:21	8:29	8:37
8:16	8:23	8:28	8:35	8:43	8:51
8:30	8:37	8:42	8:49	8:57	9:05
8:44	8:51	8:56	8:63	9:11	9:19
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11:04	11:31	11:36	11:43	11:51	11:59
11:18	11:45	11:50	11:57	12:05	12:13

Sunday and Holidays

Long Bay Rd. Yacht Haven Hotel	Hospital Gade C. Crim. Justice C.	Market Square	Harwood Hwy. Med. Arts Comp.	Airport	College of the Virgin Islands
A.M. 6:22	A.M. 6:29	A.M. 6:34	A.M. 6:41	A.M. 6:49	A.M. 6:57
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23:32	23:39	23:44	23:51	23:59	24:07
23:36	23:43	23:48	23:55	24:03	24:11

Sunday and Holidays

Monday-Saturday P.M.

Monday-Saturday A.M.

College of the Virgin Islands	Crown Mtn. Rd.	AQ Supermarket	Frenchtown	Radetis Gade	Blue Parrot	Race-track Rd.	C. Amalie H.S.	Long Bay Rd.	Yacht Haven Hotel
A.M. 6:00	A.M. 6:06	A.M. 6:10	A.M. 6:13	A.M. 6:13	P.M. 12:32	P.M. 12:41	P.M. 12:41	P.M. 12:49	P.M. 12:49
6:10	6:18	6:23	6:26	6:26	1:00	1:09	1:09	1:18	1:18
8:20	8:28	8:32	8:37	8:37	1:14	1:23	1:23	1:30	1:30
8:31	8:40	8:45	8:50	8:50	1:28	1:37	1:37	1:44	1:44
6:45	8:54	8:59	9:04	9:04	1:42	1:51	1:51	1:58	1:58
6:59	9:08	9:13	9:18	9:18	1:46	1:55	1:55	2:02	2:02
7:13	7:22	7:27	7:32	7:32	1:51	2:00	2:00	2:07	2:07
7:27	7:36	7:41	7:46	7:46	2:05	2:14	2:14	2:21	2:21
7:41	7:50	7:55	8:00	8:00	2:19	2:28	2:28	2:35	2:35
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8:37	8:46	8:51	8:56	8:56	3:15	3:24	3:24	3:31	3:31
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					12:33	12:42	12:42	12:49	12:49
					12:37	12:46	12:46	12:53	12:53
					12:41	12:50	12:50	12:57	12:57
					12:45	12:54	12:54	13:01	13:01
					12:49	12:58	12:58	13:05	13:05
					12:53	13:02	13:02	13:09	13:09
					12:57	13:06	13:06	13:13	13:13
					13:01	13:10	13:10	13:17	13:17
					13:05	13:14	13:14	13:21	13:21
					13:09	13:18	13:18	13:25	13:25
					13:13	13:22	13:22	13:29	13:29
					13:17	13:26	13:26	13:33	13:33
					13:21	13:30	13:30	13:37	13:37
					13:25	13:34	13:34	13:41	13:41
					13:29	13:38	13:38	13:45	13:45
					13:33	13:42	13:42	13:49	13:49
					13:37	13:46	13:46	13:53	13:53
					13:41	13:50	13:50	13:57	13:57
					13:45	13:54	13:54	14:01	14:01
					13:49	13:58	13:58	14:05	14:05
					13:53	14:02	14:02	14:09	14:09
					13:57	14:06	14:06	14:13	14:13
					14:01	14:10	14:10	14:17	14:17
					14:05	14:14	14:14	14:21	14:21
					14:09	14:18	14:18	14:25	14:25
					14:13	14:22	14:22	14:29	14:29
					14:17	14:26	14:26	14:33	14:33
					14:21	14:30	14:30	14:37	14:37
					14:25	14:34	14:34	14:41	14:41
					14:29	14:38	14:38	14:45	14:45
					14:33	14:42	14:42	14:49	14:49
					14:37	14:46	14:46	14:53	14:53
					14:41	14:50	14:50	14:57	14:57
					14:45	14:54	14:54	15:01	15:01
					14:49	14:58	14:58	15:05	15:05
					14:53	15:02	15:02	15:09	15:09
					14:57	15:06	15:06	15:13	15:13
					15:01	15:10	15:10	15:17	15

FIGURE 2-9. CITY ROUTE SCHEDULE - EASTBOUND

Information Call: 774-5678

2-20

**Public Transit serving Frenchtown,
downtown Charlotte Amalie,
St. Thomas Hospital, Donoe
and Hidden Valley**

Effective Date: April 1, 1986



VITRAN
Virgin Islands Public Transit
Information Call: 774-5678

Frerchtown	Gutlets Gade	Hospital Ground	St. Thomas Hospital	Donoe Rd.	Donoe Project	By-Pass Rd.	Hidden Valley
A.M.	A.M.	A.M.	A.M.	A.M.	A.M.	A.M.	A.M.
6:00	6:05	6:10	6:14	6:17	6:20	6:25	6:30
6:55	7:00	7:05	7:09	7:12	7:15	7:20	7:25
6:00	6:05	6:13	6:20	6:27	6:30	6:35	6:40
9:15	9:20	9:25	9:29	9:32	9:35	9:40	9:45
10:35	10:40	10:45	10:49	10:52	10:55	11:00	11:05
11:35	11:40	11:45	11:49	11:52	11:55	12:00	12:05
P.M.	P.M.	P.M.	P.M.	P.M.	P.M.	P.M.	P.M.
12:35	12:40	12:47	12:54	12:57	1:00	1:05	1:10
2:00	2:05	2:12	2:19	2:22	2:25	2:30	2:35
3:10	3:15	3:22	3:29	3:32	3:35	3:40	3:45
4:20	4:25	4:32	4:39	4:42	4:45	4:50	4:55
5:35	5:42	5:51	5:58	6:07	6:10	6:15	6:20
7:00	7:05	7:10	7:14	7:17	7:20	7:25	7:30
8:20	8:25	8:32	8:39	8:42	8:45	8:50	8:55

Hidden Valley	A.M. 6:30 7:25 6:40 9:45 11:05 P.M.	A.M. 6:33 7:26 6:43 9:46 11:06 P.M.	A.M. 6:36 7:31 6:46 9:51 11:11 P.M.	A.M. 6:39 7:34 6:49 9:54 11:14 P.M.	A.M. 6:42 7:37 6:52 9:57 11:17 P.M.	A.M. 6:45 7:40 6:55 10:00 11:20 P.M.	A.M. 6:49 7:44 6:59 10:04 11:24 P.M.	Federal Building	Frenchtown
Four Winds	A.M. 6:33 7:26 6:43 9:46 11:06 P.M.	A.M. 6:36 7:31 6:46 9:51 11:11 P.M.	A.M. 6:39 7:34 6:49 9:54 11:14 P.M.	A.M. 6:42 7:37 6:52 9:57 11:17 P.M.	A.M. 6:45 7:40 6:55 10:00 11:20 P.M.	A.M. 6:49 7:44 6:59 10:04 11:24 P.M.	A.M. 6:55 6:00 9:15 10:20 11:35 P.M.	Long Bay Rd.	Wheatley
Flt. Myliner	A.M. 6:33 7:26 6:43 9:46 11:06 P.M.	A.M. 6:36 7:31 6:46 9:51 11:11 P.M.	A.M. 6:39 7:34 6:49 9:54 11:14 P.M.	A.M. 6:42 7:37 6:52 9:57 11:17 P.M.	A.M. 6:45 7:40 6:55 10:00 11:20 P.M.	A.M. 6:49 7:44 6:59 10:04 11:24 P.M.	A.M. 6:55 6:00 9:15 10:20 11:35 P.M.	Donee Rd.	Frenchtown
Four Winds	A.M. 6:33 7:26 6:43 9:46 11:06 P.M.	A.M. 6:36 7:31 6:46 9:51 11:11 P.M.	A.M. 6:39 7:34 6:49 9:54 11:14 P.M.	A.M. 6:42 7:37 6:52 9:57 11:17 P.M.	A.M. 6:45 7:40 6:55 10:00 11:20 P.M.	A.M. 6:49 7:44 6:59 10:04 11:24 P.M.	A.M. 6:55 6:00 9:15 10:20 11:35 P.M.	Wheatley	Federal Building
Flt. Myliner	A.M. 6:33 7:26 6:43 9:46 11:06 P.M.	A.M. 6:36 7:31 6:46 9:51 11:11 P.M.	A.M. 6:39 7:34 6:49 9:54 11:14 P.M.	A.M. 6:42 7:37 6:52 9:57 11:17 P.M.	A.M. 6:45 7:40 6:55 10:00 11:20 P.M.	A.M. 6:49 7:44 6:59 10:04 11:24 P.M.	A.M. 6:55 6:00 9:15 10:20 11:35 P.M.	Long Bay Rd.	Frenchtown
Hidden Valley	A.M. 6:30 7:25 6:40 9:45 11:05 P.M.	A.M. 6:33 7:26 6:43 9:46 11:06 P.M.	A.M. 6:36 7:31 6:46 9:51 11:11 P.M.	A.M. 6:39 7:34 6:49 9:54 11:14 P.M.	A.M. 6:42 7:37 6:52 9:57 11:17 P.M.	A.M. 6:45 7:40 6:55 10:00 11:20 P.M.	A.M. 6:49 7:44 6:59 10:04 11:24 P.M.	Federal Building	Frenchtown

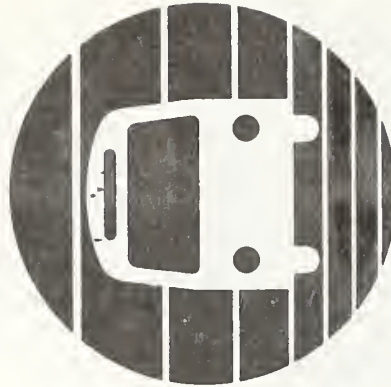


FIGURE 2-11. DONOE ROUTE MAP AND SCHEDULE

4 Red Hook

Public Transit serving Frenchtown,
downtown Charlotte Amalie,
St. Thomas Hospital, Fort Mylner
and Four Winds Shopping Centers,
Smith Bay and Red Hook

Effective Date: April 1, 1986



VITRAN
Virgin Islands Public Transit
Information Call: 774-5678

To Red Hook Sunday-Saturday

Frenchtown	Gutlets Gade	Hospital Ground	St. Thomas Hospital	Donoe Rd.	Ft. Mylner	Four Winds	Cassil Hill	Smith Bay	Red Hook
A.M. 6:00 7:05 8:25 9:55 11:30 P.M. 12:35 2:00 3:20 4:40 6:00 7:10 8:25	A.M. 6:05 7:10 8:35 10:02 11:37 P.M. 12:42 2:07 3:27 4:47 6:07 7:15 8:30	A.M. 6:10 7:15 8:45 10:17 11:44 P.M. 12:49 2:15 3:35 4:55 6:15 7:20 8:35	A.M. 6:14 7:19 8:55 10:17 11:49 P.M. 12:54 2:22 3:42 5:02 6:22 7:24 8:39	A.M. 6:17 7:22 8:02 10:22 11:52 P.M. 12:57 2:27 3:47 5:07 6:27 7:29 8:42	A.M. 6:19 7:24 8:04 10:24 11:54 P.M. 12:59 2:29 3:49 5:09 6:29 7:29 8:44	A.M. 6:21 7:26 8:06 10:26 11:56 P.M. 1:01 2:31 3:51 5:11 6:31 7:31 8:46	A.M. 6:23 7:28 8:08 10:28 11:58 P.M. 1:03 2:33 3:53 5:13 6:33 7:33 8:48	A.M. 6:25 7:30 8:10 10:30 12:00 P.M. 1:05 2:35 3:55 5:15 6:35 7:35 8:50	A.M. 6:30 7:35 8:15 10:35 12:05 P.M. 1:10 2:40 4:00 5:20 6:40 7:40 8:55

To Frenchtown Sunday-Saturday

Red Hook	Frydenhol	Nadir	Brookman	Ft. Mylner	Donoe Rd.	Wheatley	Long Bay Rd.	Federal Building	Frenchtown
A.M. 6:30 7:35 8:15 9:15 10:35 P.M. 12:05 1:10 2:40 4:00 5:20 6:40 7:40 8:55	A.M. 6:33 7:36 8:16 9:16 10:38 P.M. 12:08 1:13 2:43 4:03 5:23 6:43 7:43 8:56	A.M. 6:36 7:41 8:21 9:21 10:41 P.M. 12:11 1:16 2:46 4:06 5:26 6:46 7:46 9:01	A.M. 6:36 7:43 8:23 9:23 10:43 P.M. 12:13 1:16 2:46 4:06 5:26 6:46 7:46 9:03	A.M. 6:41 7:48 8:26 9:26 10:46 P.M. 12:16 1:21 2:51 4:11 5:31 6:51 7:51 9:06	A.M. 6:43 7:55 8:31 9:31 10:51 P.M. 12:16 1:23 2:56 4:16 5:36 6:53 7:53 9:06	A.M. 6:46 7:59 8:34 9:34 10:54 P.M. 12:21 1:26 2:59 4:19 5:39 6:56 7:56 9:11	A.M. 6:49 8:03 8:38 9:38 10:56 P.M. 12:24 1:29 3:01 4:21 5:41 6:59 7:59 9:14	A.M. 6:53 8:10 8:59 9:59 10:59 P.M. 12:26 1:33 3:04 4:24 5:44 7:03 8:03 9:18	A.M. 7:05 8:25 9:55 11:15 12:35 P.M. 1:40 3:20 4:40 6:00 7:10 8:10 9:30

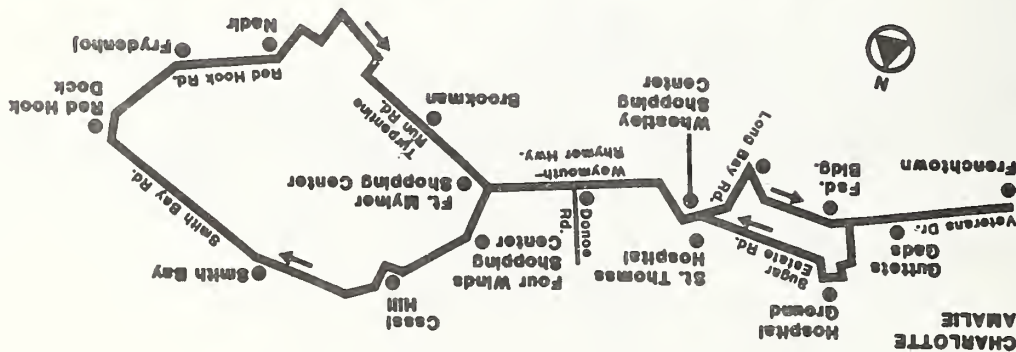


FIGURE 2-12. RED HOOK ROUTE MAP AND SCHEDULE

To Thomasville Sunday-Saturday

Frenchtown	Gutlets Gade	Hospital Ground	St. Thomas Hospital	Donoe Rd.	Ft. Mylner	Brookman	Nadir	Bovoni Housing	Thomasville
A.M. 6:00	A.M. 6:03	A.M. 6:06	A.M. 6:09	A.M. 6:12	A.M. 6:14	A.M. 6:17	A.M. 6:19	A.M. 6:22	A.M. 6:25
6:50	6:55	7:02	7:09	7:12	7:14	7:17	7:19	7:22	7:25
8:00	8:05	8:12	8:19	8:22	8:24	8:27	8:29	8:32	8:35
9:10	9:15	9:20	9:24	9:27	9:29	9:32	9:34	9:37	9:40
10:10	10:15	10:20	10:24	10:27	10:29	10:32	10:34	10:37	10:40
11:25	11:30	11:35	11:39	11:42	11:44	11:47	11:49	11:52	11:55
P.M. 12:25	P.M. 12:30	P.M. 12:35	P.M. 12:39	P.M. 12:42	P.M. 12:44	P.M. 12:47	P.M. 12:49	P.M. 12:52	P.M. 12:55
1:45	1:50	1:57	2:04	2:07	2:09	2:12	2:14	2:17	2:20
2:55	3:00	3:07	3:14	3:19	3:24	3:27	3:29	3:32	3:35
4:15	4:20	4:27	4:34	4:39	4:44	4:47	4:49	4:52	4:55
5:20	5:25	5:32	5:39	5:48	5:53	5:57	5:59	6:02	6:05
6:35	6:40	6:47	6:54	6:57	6:59	7:02	7:04	7:07	7:10
8:05	8:08	8:11	8:14	8:17	8:19	8:22	8:24	8:27	8:30

To Frenchtown Sunday-Saturday

Thomasville	Bovoni Housing	Nadir	Brookman	Ft. Mylner	Donoe Rd.	Wheatley	Long Bay Rd.	Federal Building	Frenchtown
A.M. 6:25	A.M. 6:28	A.M. 6:31	A.M. 6:33	A.M. 6:36	A.M. 6:38	A.M. 6:41	A.M. 6:44	A.M. 6:47	A.M. 6:50
7:25	7:28	7:31	7:33	7:36	7:38	7:41	7:44	7:48	7:55
8:35	8:38	8:41	8:43	8:46	8:48	8:51	8:54	8:58	9:10
9:40	9:43	9:46	9:48	9:51	9:53	9:56	9:59	10:03	10:10
10:40	10:43	10:46	10:48	10:51	10:53	10:56	10:59	11:03	11:10
11:55	11:58	12:01	12:03	12:06	12:08	12:11	12:14	12:18	12:25
P.M. 12:55	P.M. 12:58	P.M. 1:01	P.M. 1:03	P.M. 1:06	P.M. 1:08	P.M. 1:11	P.M. 1:14	P.M. 1:18	P.M. 1:25
2:20	2:23	2:26	2:28	2:31	2:33	2:36	2:39	2:43	2:55
3:35	3:38	3:41	3:43	3:46	3:51	3:54	3:58	4:03	4:15
4:55	4:58	5:01	5:03	5:08	5:08	5:11	5:14	5:17	5:20
6:05	6:08	6:11	6:13	6:18	6:23	6:26	6:29	6:32	6:35
7:10	7:13	7:16	7:18	7:21	7:23	7:26	7:29	7:32	7:35
8:30	8:33	8:36	8:38	8:41	8:43	8:46	8:49	8:53	9:00



5 Bovoni

Public Transit serving Frenchtown, downtown Charlotte Amalie, St. Thomas Hospital, Fort Mylner Shopping Center, Nadir, Bovoni and Thomasville Housing

Effective Date: April 1, 1986



VITRAN
Virgin Islands Public Transit

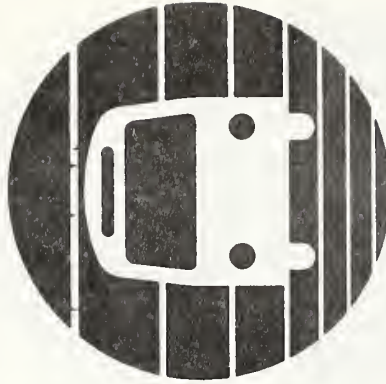
Information Call: 774-5678

FIGURE 2-13. BOVONI ROUTE MAP AND SCHEDULE

6 Tutu

Public Transit serving Frenchtown, downtown Charlotte Amalie, St. Thomas Hospital, Fort Myner and Four Winds Shopping Centers, and Tutu

Effective Date: April 1, 1986



VITRAN
Virgin Islands Public Transit
Information Call: 774-5678

To Tutu Valley Sunday-Saturday

Frenchtown	Gutlets Gade	Hospital Ground	St. Thomas Hospital	Donoe Rd.	Fl. Myner	Four Winds	Old Tutu	New Tutu	Tutu Valley
A.M. 5:55	A.M. 6:02	A.M. 6:09	A.M. 6:14	A.M. 6:17	A.M. 6:19	A.M. 6:21	A.M. 6:24	A.M. 6:27	A.M. 6:30
8:55	7:02	7:10	7:17	7:22	7:24	7:26	7:29	7:32	7:35
8:05	8:15	8:25	8:35	8:42	8:44	8:48	8:49	8:52	8:55
9:25	9:33	9:42	9:51	9:57	9:59	10:01	10:04	10:07	10:10
11:00	11:08	11:17	11:26	11:32	11:34	11:38	11:39	11:42	11:45
P.M. 12:25	P.M. 12:32	P.M. 12:40	P.M. 12:47	P.M. 12:52	P.M. 12:54	P.M. 12:56	P.M. 12:59	P.M. 1:02	P.M. 1:05
2:00	2:07	2:15	2:22	2:27	2:29	2:31	2:34	2:37	2:40
3:15	3:22	3:30	3:37	3:42	3:44	3:48	3:49	3:52	3:55
4:30	4:37	4:45	4:52	4:57	4:59	5:01	5:04	5:07	5:10
5:35	5:45	5:55	6:05	6:12	6:14	6:18	6:19	6:22	6:25
7:00	7:07	7:14	7:19	7:22	7:24	7:28	7:29	7:32	7:35
8:25	8:32	8:39	8:44	8:47	8:49	8:51	8:54	8:57	9:00

To Frenchtown Sunday-Saturday

Tutu Valley	New Tutu	Rhymer Hwy.	Fl. Myner	Donoe Rd.	Whealley	Long Bay Rd.	Federal Building	Strand Gade	Frenchtown
A.M. 6:30	A.M. 6:32	A.M. 6:34	A.M. 6:36	A.M. 6:39	A.M. 6:42	A.M. 6:45	A.M. 6:49	A.M. 6:52	A.M. 6:55
7:35	7:37	7:39	7:41	7:44	7:47	7:50	7:54	8:00	8:05
8:55	8:57	8:59	9:01	9:04	9:07	9:10	9:14	9:20	9:25
10:10	10:12	10:14	10:16	10:19	10:22	10:25	10:29	10:38	10:45
11:45	11:47	11:49	11:51	11:54	11:57	12:00	12:04	12:17	12:25
P.M. 1:05	P.M. 1:07	P.M. 1:09	P.M. 1:11	P.M. 1:14	P.M. 1:17	P.M. 1:20	P.M. 1:24	P.M. 1:37	P.M. 1:45
2:40	2:42	2:44	2:46	2:49	2:52	2:55	2:59	3:08	3:15
3:55	3:57	3:59	4:01	4:04	4:07	4:10	4:14	4:23	4:30
5:10	5:12	5:14	5:16	5:19	5:22	5:25	5:29	5:32	5:35
6:25	6:27	6:29	6:31	6:34	6:37	6:40	6:44	6:53	7:00
7:35	7:37	7:39	7:41	7:44	7:47	7:50	7:54	8:03	8:10
9:00	9:02	9:04	9:06	9:09	9:12	9:15	9:19	9:25	9:30

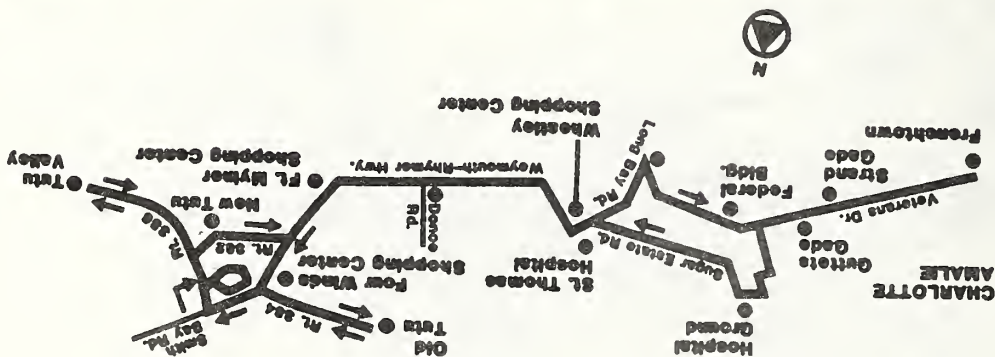


FIGURE 2-14. TUTU ROUTE MAP AND SCHEDULE

<u>Manufacturer</u>	<u>Number</u>	<u>Year</u>	<u>Seating Capacity</u>
Flxette	3	1982	31
Thomas	4	1983	21
Thomas	1	1973	51
Ford	6	1985	17
Superior	2	1980	23

However, many of the buses were not available for service each day due to mechanical or structural defects. Because of their poor condition, these buses spent considerable time in maintenance. Mannassah felt fortunate if it had 10 of the buses available for service on a given day. During April 1988, the service normally was operated with only nine buses. This 43 percent out-of-service rate is extremely high. A 10 to 15 percent spare ratio is normal.

The best of the vehicles were the six new small Ford buses purchased from Mahogany Run, a condominium development in bankruptcy. However, Mannassah claims that these buses are not appropriate for the rugged terrain of the country routes and, thus, are restricted to the city route. Eight Flxettes (Figure 2-15) and four Thomas buses (Figure 2-16) were received in 1982 and 1983. The Flxette buses were supposedly designed for the St. Thomas terrain. However, they have experienced severe structural problems due to the alleged poor design of their body structures and their interface with the GMC chassis. Only three of the eight six-year old Flxettes were still operable in April.

2.2.1(e) Maintenance facilities and equipment

Mannassah Bus Lines operates both school bus and transit service from the same facility, which is located on Harwood Highway to the west of the downtown area of Charlotte Amalie. Most of the approximately one acre site is unpaved. On this property are located the administrative offices (Figure 2-17), maintenance area (Figure 2-18), gas pumps and a tire shed (Figure 2-19), and active and dead bus storage areas (Figure 2-20). The maintenance area consists of a covered, open-air work area capable of handling 4 buses at a time (Figure 2-21), an uncovered, narrow inspection pit (Figure 2-22), a covered, open-air bench repair and equipment storage area (Figure 2-23), and an enclosed tool and parts storage room (Figure 2-24).

Repairs are accomplished under cover when possible. However, repairs often have to be made out in the open due to the unavailability of covered work space. In either case, the repair work is subject to moisture and dust or other foreign substances. Neither drainage nor lighting is provided in the inspection pit. Maintenance tools and equipment are generally old. Overall, the maintenance facilities are small, dirty, cluttered, and generally inadequate for carrying out a good maintenance operation.



FIGURE 2-15. FLXETTE BUS

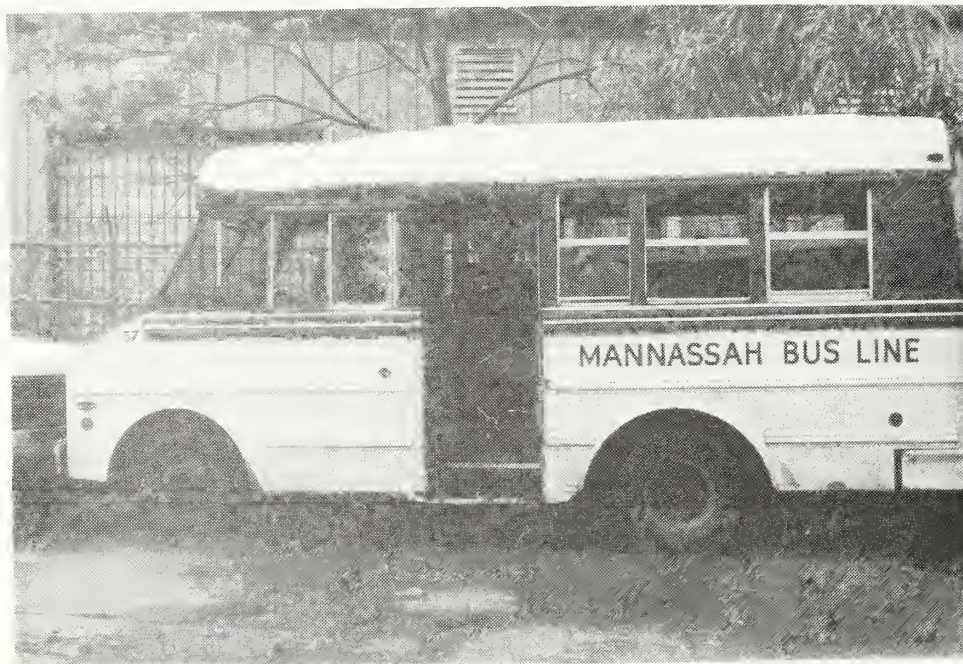


FIGURE 2-16. THOMAS BUS



FIGURE 2-17. ADMINISTRATIVE OFFICES



FIGURE 2-18. MAINTENANCE FACILITIES



FIGURE 2-19. TIRE SHED AND GAS PUMP



FIGURE 2-20. BUS STORAGE AREA

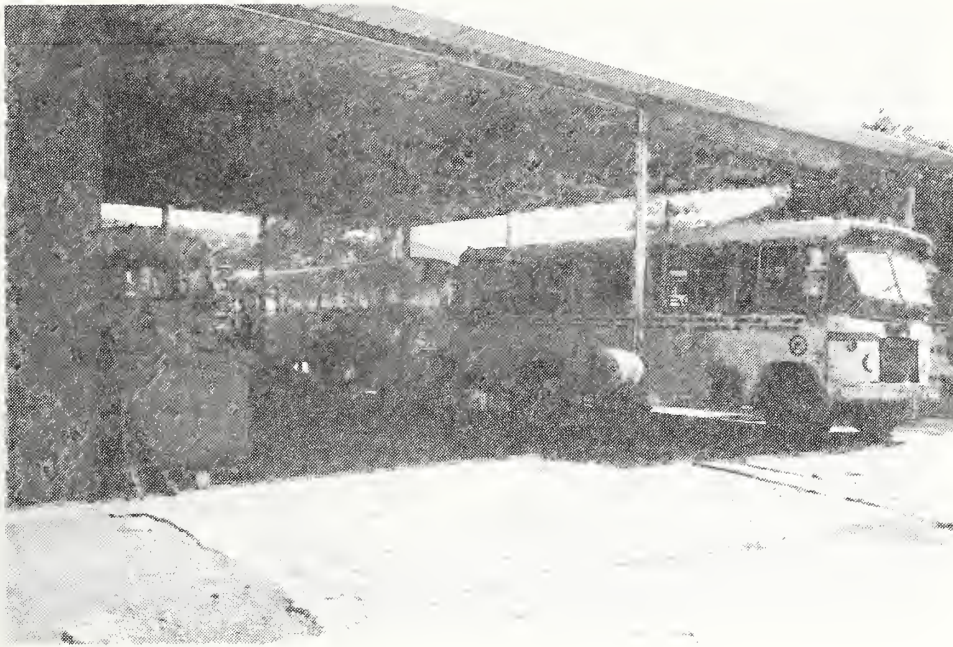


FIGURE 2-21. COVERED WORK AREA



FIGURE 2-22. INSPECTION PIT



FIGURE 2-23. BENCH REPAIR AND EQUIPMENT STORAGE AREA

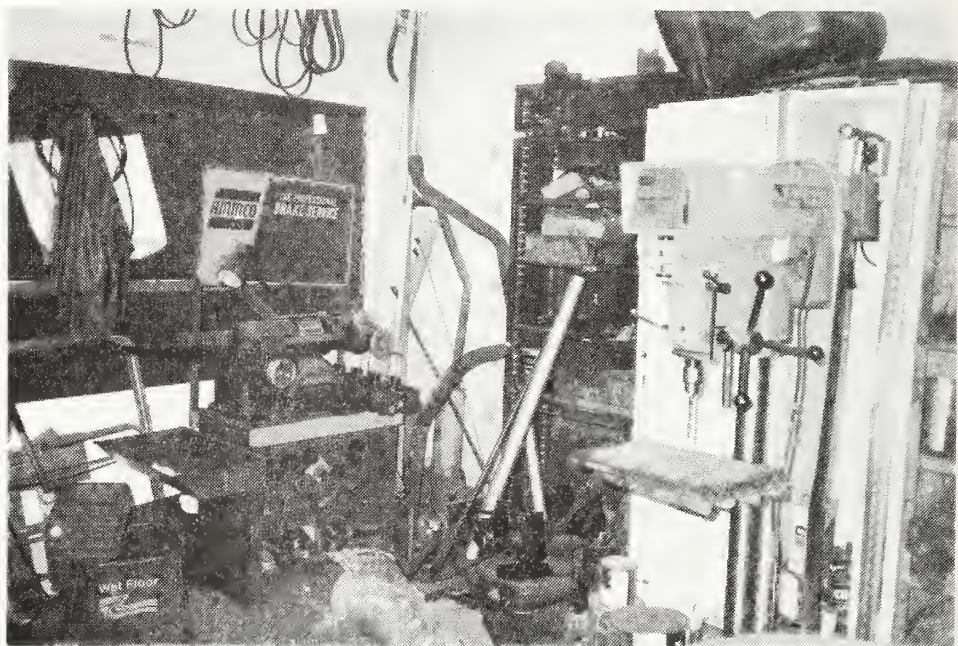


FIGURE 2-24. TOOL AND PARTS STORAGE ROOM

2.2.1(f) Maintenance practices

The maintenance performed on the bus fleet is very often only that needed to keep the buses running. Although preventive maintenance procedures are outlined in an operations manual, they are rarely followed due to a shortage of spare buses and the need to get 10 buses out on the street each day. Proper maintenance also is inhibited by inadequate facilities, old tools and equipment, and a limited spare parts inventory.

2.2.1(g) Transit management and operations

There has been much local criticism of the transit system. A great deal of this criticism has been directed at management. Mannassah Bus Line upper management staff consists of four salaried persons: president; treasurer; head bus driver supervisor; and an accountant. Remaining office and management personnel are on an hourly wage schedule, and include three bus driver supervisors, a head mechanic supervisor, a bookkeeper, and a secretary. This staff oversees a total employee roster of 42 drivers, 14 mechanics, and 8 utility personnel. Fourteen of the bus drivers and all of the management staff, mechanics, and utility personnel split their time between the school bus and the transit services.

Transit service has been run by the current president's family since its inception in 1951. The operator claims that a lack of adequate funding for transit and the poor condition of the transit fleet have significantly hampered the company in its efforts to provide good transit service.

2.2.1(h) Transit ridership

A count of transit ridership was conducted for this study. The count was taken over a several day period during February and March of 1988. Ridership by route is shown in Table 2-6. Over 6,300 passengers are carried on a typical peak season weekday. Approximately 56 percent of all transit

TABLE 2-6.
TYPICAL 1988 PEAK SEASON DAILY TRANSIT RIDERSHIP

<u>Route</u>	<u>Passengers</u>	<u>Percent</u>
City	3,561	56.1
Tutu	442	7.0
Red Hook	654	10.3
Red Hook (Nadir)	462	7.3
Bovoni	544	8.5
Donoe	528	8.3
Bordeaux	158	2.5
TOTAL	6,349	100.0

riders are carried on city route buses. In addition, many of the riders of country route buses board and alight within the city route service area. Ridership on the city route is fairly heavy throughout the day. Loads during the 7:00-9:30 am and 1:00-5:00 pm periods average 70-90 passengers per round trip, while mid-day trips average 40-60 passengers. Ridership on the country routes is more sharply peaked, with the heaviest ridership occurring between the hours of 6:00-7:00 am and 3:00-5:00 pm. Also, the Donoe and Tutu routes experience a surge between 11:00 am and noon.

Most bus trips carry more passengers than the seated capacity. On the city route, 15 percent of the counted trips carried a passenger volume (boardings) of over three times the seated capacity on at least one leg of the round trip. However, passenger turnover is high, and a passenger volume of as much as twice the seated capacity can sometimes be accommodated without standees. Nevertheless, some buses become severely overcrowded, and passengers have been observed to be unable to get on a bus because of overcrowded conditions.

The Gannett Fleming Transit Development Plan Up-Date stated that Saturday, Sunday, and holiday ridership averaged 90 percent, 38 percent and 20 percent, respectively, of weekday ridership. Using these percentages to expand the weekday total counted during this study would result in an annual total of over 1,937,400 passengers.

It is hard to judge the validity of this figure, since there are no other detailed ridership data available. Revenue figures are available, but these are difficult to convert to passenger totals without data on the number of elderly and country route riders. Using reported passenger revenue data from 1985 to 1987, and assuming an average fare of \$0.50, ridership would have declined from 2,027,400 in 1985 to 1,548,000 in 1987. In order for the 1987 passenger figure to equal the 1988 expanded sample count, the average fare would have to have been \$0.40, an unlikely situation. It is possible that peak season ridership is higher than during the rest of the year. The transit operator claims this to be the case, but very few tourists were observed riding the buses. Also, monthly revenue data from 1985 and 1986 do not conclusively support this claim. Consequently, the count of transit ridership conducted for this study will have to stand only as a picture of 1988 peak season ridership.

2.2.1(i) Quality of service

Transit service on St. Thomas is perceived to be poor, although the new Mahogany Run vehicles have improved its image somewhat. The Mahogany Run vehicles have only longitudinal wooden slat type seating, making the ride over rough roads uncomfortable. These buses are air-conditioned, however, a feature lacking on the rest of the fleet. The older buses generally present a poor appearance.

No transit route information is provided at marked bus stops. There are a limited number of bus shelters located on the island. A typical bus shelter is shown in Figure 2-25.



FIGURE 2-25. TYPICAL BUS SHELTER

On-time performance is poor. A schedule adherence check, conducted as part of this study's data collection effort, revealed a large number of country route buses (58 percent) more than 10 minutes early or late. Nearly 40 percent of the buses were either more than 25 minutes ahead or behind schedule, or did not run at all. A major reason for this is that the schedules do not properly take into account the traffic congestion occurring during much of the day in the downtown area. However, many patrons are probably unaware of the poor schedule adherence, since bus schedules have been published only recently and are not widely distributed. What both city and country route riders are aware of is the amount of variation in wait times. This situation is most acute on the country routes, where a single bus is assigned to a route. In the city, the ability of some passengers to use the country route buses on the portion of these routes within the city helps to mitigate the effect of the lack of schedule or headway adherence.

Another contributing factor to poor schedule adherence is the frequency of bus malfunctions on the road. During the study's ridership counting effort, amounting to the equivalent of one day's runs, three country and four city buses had to return to the maintenance facility because of mechanical problems or flat tires. If a bus breaks down on one of the country routes, as is fairly common, patrons in that area can wait hours for another bus. None of the buses are equipped with radios, a factor which causes added delays in responding to breakdowns or service interruptions. Due to the assignment of a single bus to the country routes, once a bus gets behind schedule, it is difficult to get back on schedule. What often happens is that a bus becomes so far behind schedule that a full headway is exceeded and a complete round trip is not operated.

When significant delays occur, passenger loads on the first bus to come along become excessive. This currently happens on a much too frequent basis. Considering the existing level of service, it is surprising that the system carries as many riders as it does. This is undoubtedly an indication of a large transit dependent population (despite the high auto ownership rate on the island).

A 1986 marketing study, conducted for the DPW by Wilbur Smith and Associates, covered several user information aids and promotional recommendations. Recommendations regarding a name for the transit system, a new paint scheme for the buses, the production of route schedules, and installation of bus stop signs have been or are in the process of being implemented. Other recommendations are being held in abeyance pending the improvement of transit service.

2.2.1(j) Operating deficit

As will be shown more fully in Chapter 6, transit deficits have been increasing steadily since 1984. The percent of operating costs recovered from farebox revenues dropped from 78 percent in 1984 to 51 percent in 1987. The service contract between Mannassah and the Department of Public Works requires the Department to pay to Mannassah a sum not more than the difference between gross transit revenues and the cost of providing transit

service (called the "operating subsidy"). A six percent bonus on gross revenues is to be paid in addition to the operating subsidy. During Fiscal Year 1987, the operating deficit exceeded \$758,000.

Using an operating deficit of \$758,000 and an annual ridership of 1,937,000, the subsidy per passenger would be just under \$0.40. This is probably a conservative figure.

2.2.1(k) Transit potential

A greater market exists for transit patronage on St. Thomas than is currently being tapped. The ridership potential is not being reached due to the poor quality of service currently offered. An improved level of service would appear to have an excellent chance of recapturing former riders and attracting new ones.

2.2.2 Transit Alternatives

There are three basic options for transit service on St. Thomas: elimination of transit service; continuation of present service; and service and equipment improvements. The elimination of transit service does not appear to be a viable political choice considering that the transit system carries over 1.5 million, and perhaps close to 2 million, passengers a year. Similarly, continuation of the existing situation also does not appear to be a feasible option, as its selection would have the same result - an eventual cessation of transit service. Consequently, for purposes of this report, it is assumed that improvement to the transit system will be the chosen option. The alternatives for improving the transit operation are discussed in the following sections.

2.2.2(a) Transit equipment

Replacements are urgently needed for a large percentage of the existing transit fleet. The most obvious solution is to purchase new buses, and specifications for new buses are currently being prepared by a contractor (Lea & Elliott) for the DPW. These specifications have to be finalized, and a grant request submitted to UMTA for funding of the purchase. The bus purchase then would have to be approved by UMTA, advertised for bids, a manufacturer selected, and the buses fabricated. This process is estimated to take a minimum of eighteen months, but very likely would take longer. This would not solve the immediate problem of insufficient equipment to provide even the minimum level of service now scheduled.

Short term solutions to the bus shortage problem do exist, however. One is to purchase used buses from other U.S. transit systems. Used buses could be purchased quickly if local funds are used. This option would be feasible only if UMTA agreed to reimburse the V.I. Government for this purchase. Any used buses purchased would have to be modified for left side boarding. This

would delay the introduction of the acquired buses into revenue service, which reduces the desirability of this option.

Another potential short term solution is to restore unused St. Croix transit buses to operating condition and bring them to St. Thomas. These buses would require reconditioning, as they have been parked in a field since 1984. (Weeds have been growing up through the engine compartments and into the buses as shown in Figure 2-26). Nevertheless, Lea & Elliott feels that this could be done relatively quickly and cheaply.

Three obstacles to this last option exist. First, there is considerable political resistance to removing the buses from St. Croix. This would be publicly viewed as a final abandonment of transit service on St. Croix. Secondly, the Department of Human Services wishes to use these buses on St. Croix to transport their clientele. Thirdly, Abramson Enterprises, Inc., the former transit operator, is not willing to relinquish the buses until: (1) it is paid for their storage for over four years; and (2) the dispute is resolved concerning the transit operator's claimed expenses to prepare the buses for service in 1985 (although service was never reinstituted). At this time, the transit operator is claiming storage fees owed of \$13,860. Claimed preparation expenses are in the vicinity of \$70,000. As of April 1988, negotiations were in progress over these issues.

2.2.2(b) Maintenance facilities and equipment

Existing maintenance facilities and equipment are inadequate to properly maintain the existing fleet, much less an expanded fleet comprised of used or new buses. Alternatives for the provision of adequate maintenance are basically two-fold: improvement of the existing facilities on the existing site; or the construction of new facilities on another site.

Improvement of existing facilities to the extent necessary to provide for the proper maintenance of an expanded fleet of new buses might be difficult. The current site is limited in size, and is shared with the school bus operation. Nevertheless, Lea and Elliott believes that the current site could accommodate an expanded fleet. Gannett Fleming believed that the site should be expanded.

Although the V.I. Government owns most of the land used in the transit and school bus maintenance and storage activity, a portion of the property is leased from another landowner. A further complication is that the transit operator owns the maintenance facilities and the building which houses the administrative offices.

Major improvements would require substantial construction activity. Continued utilization of the maintenance facilities while these major modifications are in progress would be awkward. Also, if UMTA were to award a grant for improvements to the existing facilities, usage of the facilities by the school bus operation would be an issue. UMTA would only contribute to the share of the improvements used for transit.



FIGURE 2-26. ST. CROIX BUSES

Construction of new maintenance facilities on a new site would be more costly and would take longer than improvement of existing facilities. A site would have to be found that would be suitable for a transit maintenance facility and close to the City bus route. A location between the sub-base area and the airport would be ideal. Regardless of the location, unless Government-owned land could be utilized, land would have to be purchased. The DPW claims that there are extremely few suitable sites in the city of Charlotte Amalie.

At a site utilized only for transit, the transit operation no longer would be competing with school bus services for maintenance attention, and better transit bus maintenance should result. Proper maintenance is an absolute necessity in order to avoid another fleet deterioration situation. A new building layout also would be more efficient than the present operation.

Another advantage to a new facility at a separate site is the flexibility to consider other managerial and operational options than are now possible. Also, the Government would have full ownership and control over the maintenance facilities. A disadvantage is that costs such as maintenance facilities, administrative offices, and some personnel, now shared with the school bus service, would have to be borne entirely by the transit operation.

Regardless of the means of providing essential long term maintenance facilities, several improvements are needed immediately. These include: (1) more paved surface area and adequate drainage; (2) additional maintenance bays; and (3) enclosure of all work areas, including the inspection pit, to prevent the entry of dirt and moisture.

2.2.2(c) Coverage

Opportunities for service changes or expansion are severely restricted given the current condition of the transit fleet and the frequent inability to meet the present schedule requirement. However, when additional, reliable equipment is obtained, service changes and new service could be implemented.

The easiest and potentially most useful service enhancement would be service to the sub-base area. This could be accomplished with a simple diversion of trips from the city route to the sub-base area. Buses on this route would continue along Route 304 to Lindbergh Bay, serve the airport, and then rejoin Route 30 (Moravian Highway) and operate the remainder of the city route to the University of the Virgin Islands. This routing would serve visitors from an increasing cruise ship business at the Crown Bay docks as well as providing useful service to the airport. This diversion to the sub-base and airport would operate in both directions, as opposed to current airport service which exists only on outbound trips. It would increase the travel time for this alternate city route service, but it has the potential for significant added patronage. It would serve one new and one poorly served market, while bypassing only a few sparingly used bus stops on Route 30. If this routing were operated without added buses, headways on the city route would increase.

The Bordeaux area is currently provided with a limited service operating two trips in the morning, one trip during mid-afternoon, and two trips in the evening. Questions have been raised concerning the desirability of this service. The transit ridership counts conducted for this study found 32 persons traveling outbound just on the Bordeaux segment of the route, and 52 persons traveling inbound, primarily in the morning. Total ridership is relatively low, averaging 16 persons on the round trip segment beginning and ending at the intersection of Route 30 and Crown Mountain Road. This ridership is comparable to ridership at certain periods of the day on other routes, but much lower than during peak periods. However, it does not require much transit equipment to operate. Buses used for Bordeaux trips are utilized on the city route when not operating to and from Bordeaux.

Service to Bovoni is currently provided via a routing along Routes 38, 32, and 30. Route 30 (Frenchman's Bay Road and Bovoni Road) between Route 315 and Bovoni is avoided presently because of steep grades and the poor condition of the roadway. However, Route 30 is under design for improvement at this time. When improvements are completed, Route 30 service along the south shore would be relatively easy to provide. This route would allow service to be offered to previously unserved areas, and would provide a faster trip to the downtown area for Bovoni residents due to avoidance of the congested Weymouth Rhymer Highway. Additional buses would not necessarily be needed for this route.

The third potential area for service expansion would be more difficult, and would require additional equipment. Service to the north side of the island between Mandal and Santa Maria is not provided. Access to the area is difficult, with Route 33 (Crown Mountain Road) and Route 35 (Mafolie Road) being the only feasible access roads. Both are steep, and contain sharp curves. Furthermore, since this area has not been served previously, the potential transit market is uncertain.

A recent initiative from one of the Legislators from Charlotte Amalie requested that transit service through the Frenchtown area be operated. The one-way street patterns in Frenchtown would require the buses to make a clockwise loop through the area. Eastbound buses would have to retrace the segment of the route which traverses Veterans Drive. Such service would add several minutes to the trip time of each bus to serve what is expected to be limited additional patronage. In addition, most of the populated area of Frenchtown is less than 1000 feet from Veterans Drive, or not much more than the 800-foot recommended distance between transit stops. A large portion of the heavily populated area of Charlotte Amalie is much more distant from a transit route than are the residents of Frenchtown.

2.2.2(d) Scheduling and service frequency

The current method of scheduling buses is to circulate a bus on the same route for the entire day. When additional buses are obtained, other operational schemes can be considered. Interlining of buses between routes may be possible. Interlining is a procedure in which a bus finishing one route is assigned to operate on a different route. This is particularly

effective when schedules are staggered and running times are fairly consistent. Layover times can be minimized with this technique. Interlining would provide the opportunity to have buses begin a route on schedule even if the previous bus on that route is late. Combined with appropriate layovers and more accurate running times, schedule adherence could be dramatically improved. Interlining does not work as well when running times are highly variable, as delays can have a ripple effect throughout the schedule.

Another option is to continue the current form of operation but revise the schedules to incorporate realistic running times and to include layover times for recovery from traffic delays. Such schedules will result in higher headways unless more buses are deployed on the routes.

A third option, which has been considered by the transit operator, is to terminate the country routes at the Grand Union shopping center and St. Thomas Hospital area. This would save a substantial amount of running time for the country route buses, allowing a 60 to 100 percent increase in service in the outer areas with the same number of buses. However, it would require many country route passengers to transfer between city and country buses to continue their trip into or out of the city, and would place an even greater load on already crowded city route buses. Transfers reduce the appeal of transit, and would result in lower ridership than a comparable service without transfers.

Service frequencies are inadequate during much of the day. Load factors of more than twice the seated capacity are common. Except for the option just discussed, there is little chance to increase the amount of service provided with the existing fleet. Virtually every available bus is utilized all day long. In fact, on some days there are insufficient buses to operate all the routes. Until additional buses are acquired, service frequency increases would not seem possible.

2.2.2(e) Fares

The current fare structure levels are in line with those typically charged in the U.S. There are inequities in the existing structure, however. For example, the same length trip costs 25 cents more outside of Charlotte Amalie than it does inside. Students do not have the benefit of reduced fares in either location.

A fare increase would be helpful in reducing the transit deficit, but also would reduce transit ridership. Lower income people, who make up the majority of transit riders, would bear the brunt of a fare increase. This is the segment of the population least able to afford an increase in transportation costs.

2.2.2(f) Transit management and operations

Under the current environment, it does not appear desirable to change the management and operations structure of the transit system. Once any

long term maintenance facility improvement or new construction is completed, consideration of changes in the transit management and operations structure becomes practical. Alternatives include: (1) continuation of the existing structure; (2) management and operation by the V.I. Government; and (3) solicitation of bids for management and operation (either as a package or separately).

Some local officials have been very critical of Mannassah's management of the transit operation, while others have praised the company's efforts to keep the service running despite the bus and maintenance facility deficiencies. Considering the poor structural and mechanical condition of the buses and the inadequacy of the maintenance facilities, it is difficult to judge the management performance of the current transit operator. Nor can a reliable assessment be made of the ability of the current operator to perform satisfactorily in a new environment. Consequently, it is uncertain whether the selection of the option to continue the existing structure would lead to the introduction of new or innovative transit operations and maintenance procedures which would be expected to result in better transit service.

Management and operation by the V.I. Government would put the Government in total control of the transit operation, a condition which does not presently exist. On occasion, the transit operator has changed service without the approval or even the knowledge of the Government. Government control would have the advantage of requiring a financial commitment to transit commensurate with the level of service desired, as opposed to the current situation wherein the operator is not fully paid for the amount of service provided. To make up for the deficiency in subsidy payments, the operator does not pay certain fees and taxes owed to the Government. This results in the operator deciding how much service can be provided based on anticipated operating revenues, subsidy payments, and tax relief.

Government control also has disadvantages, however. Transit management expertise does not currently exist in the Government, and it likely would be difficult to attract fully qualified individuals to run the transit system under the V.I. Government's salary structure. On the other hand, lower level transit employees also would be civil servants, and their salaries almost certainly would be higher than those of the contractor's employees. It is unlikely that Government operation would be more efficient or productive; when all costs are considered, this option likely would be more costly than a contract operation. Also, this option is counter to current Federal policies, which encourage increased competition and private sector involvement to achieve productivity and efficiency gains.

The option of soliciting bids for the management and/or operation of the transit system provides the greatest flexibility to the Government. When new buses are purchased, and new or substantially improved maintenance facilities are provided, the opportunity will exist -- perhaps the only opportunity that will be available for the foreseeable future -- to change the image of transit on St. Thomas. This option would provide the chance to get the best possible management team. It also is consistent with UMTA requirements concerning contracting for transit services.

Within this option, three major alternatives exist for the amount of service to be provided by a single contractor. Bids could be solicited: (1) for each route; (2) for two segments -- country service and city service plus Bordeaux; and (3) for the entire service. Transit vehicles, maintenance facilities, dispatching and overall management could be furnished either by a contractor or by the Government.

- (1) Soliciting bids for each route would maximize the number of potential bidders. In theory, this competition might result in the lowest operating cost. However, in practice, this arrangement would limit the flexibility of system operations and inhibit the ability to introduce operational efficiencies, and might make maintenance more difficult due to the conflicting demands of several contractors. Since each route would be operated independently, each contractor would have to employ spare bus drivers.

At a minimum, this arrangement would require a high degree of Governmental monitoring, as each route would have to be carefully observed. At the other extreme, the Government might perform management and maintenance functions. In addition to the limitations on efficient operations, this option would be expected to result in a higher, rather than lower, cost of operations.

- (2) The alternative of separating the service into two components alleviates, but does not eliminate, some of the negative aspects of the individual route alternative. A separate contract for maintenance, dispatching, and overall management also would be necessary, unless these services are provided by the Government. Allowing one of the service contractors to provide these ancillary services could result in favoritism towards the routes this contractor operates. Excess spare bus drivers still would be employed, and operational flexibility still would be restricted, although to a lesser degree than in the previous alternative.
- (3) The solicitation of bids for operation of the entire system provides the most flexibility and the opportunity to implement efficient operational practices. This alternative would result in the fewest number of spare bus drivers and the least amount of Governmental monitoring. It also should result in the lowest system operating cost.

Any contract awarded under this procedure should contain performance clauses that would permit removal of the contractor for non-performance. The current franchise arrangement and operating contract has no provision for penalizing the operator for poor performance.

The current franchise agreement will expire in 1991. The solicitation of bids and selection of a contractor for system operation should be timed to coincide with the availability of new buses and an improved maintenance capability. It is anticipated that this would occur after the expiration of the existing franchise. Consequently, the existing franchise agreement is not expected to be an obstacle to selection of a service provider.

2.2.3 Transit Recommendations

Viable transit service cannot be continued very long under present conditions. Improvements are required with respect to buses, maintenance facilities, and operations. The following sections contain recommended changes and improvements.

2.2.3(a) Transit equipment

As a near term solution, refurbish seven 28-foot Flxettes currently on St. Croix for use on St. Thomas. There is a desperate need for more buses on St. Thomas, where patronage currently is in the range of 6,300 riders per day and undoubtedly would be higher if service were more dependable and attractive. If no replacement buses were purchased for eighteen months or more, there would be few of the current fleet still capable of operating, and transit service could very well cease. The cheapest and quickest method of obtaining replacement buses is to refurbish the unused buses from St. Croix and use them on St. Thomas. According to the Lea & Elliott report, these buses will perform better on St. Thomas than the buses previously ordered specifically for St. Thomas, because the latter were improperly designed for the terrain.

Therefore, it is recommended that all seven of the 28-foot Flxettes on St. Croix be refurbished and used as an interim measure to alleviate the critical bus shortage that presently exists on St. Thomas. The St. Croix transit buses, purchased with UMTA funds, could not be transferred to the Department of Health and Human Services (HHS) without UMTA's consent. Presumably, UMTA would prefer that these buses be used in transit service, if possible. It is recommended that the two longer Flxettes still operable be left on St. Croix for use by HHS. The suitability of these two buses for the St. Thomas terrain is poor; they are much better suited for the terrain on St. Croix. It is anticipated that UMTA would agree to this arrangement.

(Since this report was drafted, the DPW has settled the claim with Abramson Enterprises and six of the buses have been transferred to St. Thomas. Only five of these buses are operable; the sixth is to be used for parts. The remaining buses are being prepared for use by HHS.)

For the longer term, purchase additional buses. Any buses obtained as a short term solution to the bus shortage situation will have a limited remaining life on St. Thomas, due in large measure to the condition of the roads over which they must travel. It is estimated that the Mahogany Run and the refurbished St. Croix buses will have a useful life of only two to three more years. Consequently, new buses will be required within a short period of time. Buses in the 30-foot range, with seating for about 30 persons, would seem to be the best choice for St. Thomas. However, the capability of the maintenance operation to handle new buses is a major consideration with regard to their purchase. Until an improved maintenance capability is provided, it does not seem prudent to acquire new equipment. Therefore, the recommendation is to acquire new buses, properly designed for the St. Thomas

terrain, but only if an adequate capability to maintain them will be available.

2.2.3(b) Maintenance facilities and equipment

Implement short term improvements to the current maintenance facility. Since major improvements to maintenance facilities are a few years away, it is desirable to implement certain interim improvements. It is recommended that a large portion of the land used for active bus storage and movement be paved, and that adequate drainage of the entire area be provided. All areas used for working on buses should be covered. Both of these improvements would reduce the amount of dirt and moisture entering the maintenance work areas. Limited observation of the maintenance operation indicated a considerable amount of maintenance activity in open areas. It is recommended that two more covered work bays be provided in addition to covering and lighting the inspection pit.

For the longer term, build a new maintenance facility. The recommended long term solution is the construction of a new maintenance facility at a site to be selected. A location between the sub-base area and the airport would be best, if available. An added advantage to a new facility at a new site is that the Virgin Islands Government would have full control over it. This contrasts with the existing situation wherein the transit operator owns the building which rests on Government owned-land.

Gannett Fleming, in their 1982 Transit Development Plan Update, proposed a layout for a new maintenance facility. This basic layout still appears to be appropriate. It has been modified slightly to accommodate one additional maintenance bay, although the overall building dimensions have not been changed. Figure 2-27 depicts the recommended layout.

2.2.3(c) Maintenance personnel

The recommended staffing of the maintenance activity (for transit buses only) would be the equivalent of the following number of full time employees:

- 1 maintenance supervisor
- 6 vehicle maintenance and inspection personnel
- 2 vehicle maintenance support personnel

Vehicle maintenance and inspection personnel would perform minor repairs to bus components, make road calls, rebuild or overhaul repairable components, and perform inspections and preventive maintenance. Maintenance support personnel would perform servicing functions (cleaning, washing, fueling, oiling, etc.), repair damage to buses resulting from accidents or vandalism, and assist the maintenance and inspection personnel when needed.

The recommended maintenance staffing level is about 1.3 full time equivalents less than are currently employed in transit bus maintenance according to data supplied by Mannassah. However, the new buses to be

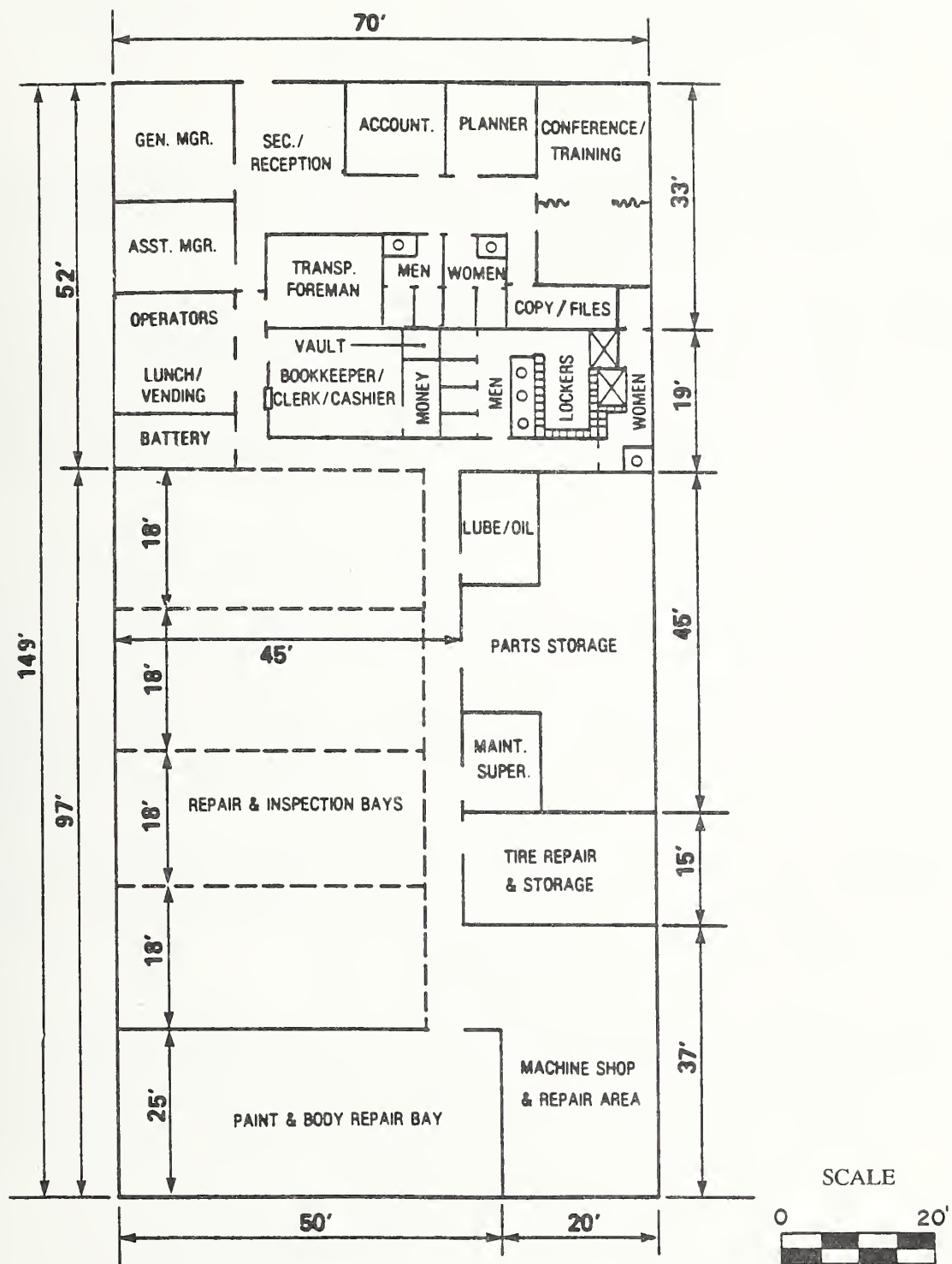


FIGURE 2-27. MAINTENANCE FACILITY LAYOUT - ST. THOMAS

purchased should require far less maintenance than the existing run-down fleet. The recommended staffing level also is consistent with that of similar sized transit systems on the U.S. mainland.

2.2.3(d) Coverage

Two route changes are desirable once the transit bus shortage is solved with the procurement of reliable equipment. These changes are described below and are shown in Figure 2-28.

Expand service to the sub-base and the airport. The current level of activity at the sub-base and the potential market at the airport warrant transit service to these areas. It is recommended that the existing city route be split into two circuits. One circuit would serve the sub-base area and the airport, but would not divert to Moravian Highway in the vicinity of Mannassah's bus depot. The second circuit would use Moravian Highway, but would not serve the sub-base and the airport. The remainder of the route would remain as is. Each circuit would receive every other bus.

Re-route the Bovoni route. When Route 30 has been improved, it is recommended that the Bovoni Route be operated along Route 30 between Frenchtown and the Route 32 junction in Nadir. This will open up a new transit market along the south shore as well as providing a faster travel time to the downtown area. Passengers wishing to go from Bovoni to the Fort Mylner area would transfer to the Red Hook via Four Winds Route at the Route 32 junction. Bovoni passengers desiring to go to the Grand Union shopping center and St. Thomas Hospital area could either transfer to the Red Hook via Four Winds Route at the Route 32 junction or to the city route at Centerline Road.

Maintain service to Bordeaux. Service to Bordeaux is offered on a limited basis. Ridership is comparable to that of off-peak ridership on other country routes. Since the service is provided with buses that also travel the City Route, and the route does not require extra buses, it is recommended that this service be maintained.

Conduct a market analysis for northside service. The need for service to the northside of the island is unclear. This area does not have the high dwelling unit density that characterizes the transit coverage areas on the east end of the island. However, the type of detailed information needed to forecast transit ridership for this area was not available for this study. Therefore, it is recommended that a market analysis of this area be conducted to determine whether this area warrants transit service.

Transit service to Frenchtown does not appear warranted. Service to Frenchtown would appear to add few transit riders while penalizing other riders with extra travel time. Since the majority of Frenchtown residents live within 1,000 feet of Veterans Drive, which is served by the city route buses, it is not recommended that buses be diverted through this area.

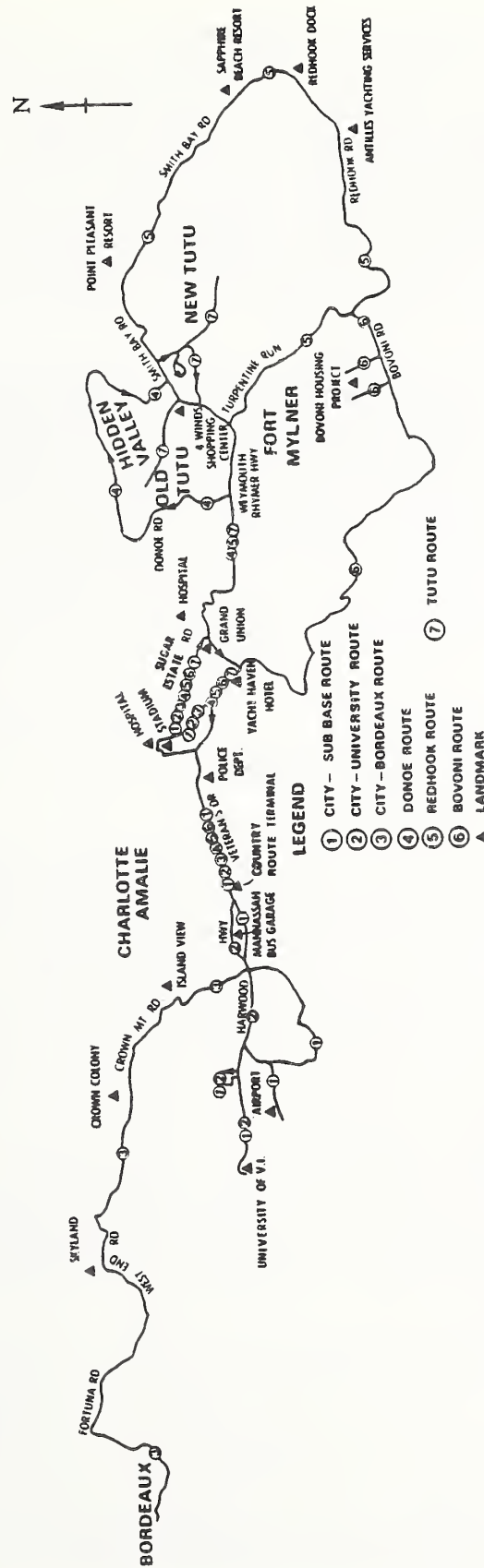


FIGURE 2-28. RECOMMENDED TRANSIT ROUTES - ST. THOMAS

2.2.3(e) Scheduling and service frequency

Allocate ten buses to the country routes east of Charlotte Amalie. Existing bus dispatching methods are dictated by the bus shortage. The situation wherein one bus circulates continuously on a route, with no back-up bus available, has severe service consequences when a bus breaks down or is delayed due to traffic congestion. Large gaps in service often result. The procurement of additional, reliable equipment is the only means by which the service reliability problem can be solved. Once added buses are available, they can be used to provide the additional service that is needed.

It is recommended that 10 buses be used to operate the country routes to the east of Charlotte Amalie, providing 45-minute headways from 6:00 am to 7:00 pm, with one last run at about 8:30 pm. Existing running times on the country routes average between 60 and 90 minutes over much of the day. Therefore, two buses assigned to each of the routes would be able to supply the desired 45-minute service, except for infrequent instances of excessive delay. Even then, service should be able to get back on schedule very quickly. This level of service would be considerably higher than currently offered. However, the increased reliability and relief of peak period overcrowding is expected to increase ridership sufficiently to warrant the increase in service.

Stagger country bus departures. The schedule for the country routes should be staggered somewhat so that all country buses are not beginning their run out of the city at the same time.

Coordinate Bovoni and Red Hook service. Coordination of service between the Bovoni route and the Red Hook routes should be accomplished at the junction of Routes 30 and 32 in Nadir to accommodate transfers. The Red Hook routes also should be coordinated, to the extent possible, with the ferry schedule.

Interlining of buses on the country routes is not recommended at this time. Although interlining might permit the country routes to be operated with less than ten buses, it would be difficult to accurately schedule these buses, given the differing running time patterns on each route and the daily variability in these times. Furthermore, under this scheme, a delay on one route could affect schedule reliability on other routes. Schedule reliability would be much easier to control under the recommended scheme. However, once the new schedules are in place, and ridership and running time patterns are established, the interlining option could be re-examined. Any buses saved through interlining could be either used as spares or to provide additional service, either to the northside area or on the city route.

Use eight buses to operate the city route circuits and the Bordeaux service. With city route running times ranging from 65 to 90 minutes over most of the day, eight buses would permit 12-minute or less headways through downtown, with a maximum of 24-minute headways to the sub-base and the airport. The method of dispatching buses on this route might have to change, depending on the extra travel time the sub-base/airport circuit may take. It is possible that buses may not be able to circulate all day on the same

circuit of the city route. Approximately the same amount of Bordeaux service as presently offered could be provided with these buses.

Purchase four buses as spares. The recommended service (city plus country routes) would require 18 buses. A 20 percent spare ratio increases the requirement to 22 buses. This is an increase of six buses over the present theoretical fleet size of 16 buses, but a virtual doubling of the actual number of regularly available buses.

2.2.3(f) Fares

It is recommended that the basic fare structure be continued. While a 25-cent fare increase would be likely to increase annual revenues by over \$200,000, the ridership decline experienced over the past two years would be accelerated. A fare increase would impact most heavily on low income, captive transit riders, the segment of the population least able to afford it. Increasing fares at the present time also seems unwarranted in light of the existing state of transit service.

Provide free transfers. With the restructuring of transit service to the Bovoni area, transfers will be required for trips to some destinations. These transfers should be free.

Reduce student fares to the level of those charged for elderly passengers.

2.2.3(g) Bus turnouts

Provide bus turnouts at all bus stops located on Veterans Drive and at key locations on other major highways. Presently, buses often must stop in a travel lane to board or alight passengers. This has both safety and traffic congestion impacts.

2.2.3(h) Publicity

Implement a marketing program. Once sufficient buses are acquired and the new schedules developed, appropriate elements of the marketing program developed by Wilbur Smith and Associates should be implemented. Thorough distribution and publication of information concerning the new equipment and schedules are a necessity.

Put schedule information on bus stop signs. Schedule information should be included on bus stop signs in busy patronage areas outside as well as inside Charlotte Amalie.

2.2.3(i) Transit management and operations

Solicit bids for the management and operation of the transit system as a single entity. A competitive procurement is consistent with the requirements

of UMTA Circular C 4220.1B, "Third Party Contracting Guidelines," which requires full and open competition for all procurements undertaken in support of mass transportation operations by grantees receiving UMTA operating assistance grants. A competitive procurement also is consistent with the goal of obtaining the best transit service possible for St. Thomas. A contract for operation of the entire system by a single contractor should result in the most efficient and reliable service.

The advertisement for and selection of transit management and operations services should be executed to coincide with the availability of new buses and new or substantially improved maintenance facilities. A contract should be awarded for a two or three year period, with a continuation option. The contract also should contain performance clauses that penalize performance that fails to meet specified standards.

Government management and operation of the transit system is not recommended due to a lack of transit operating expertise within the Government and the expectation that this option would result in lower productivity and higher costs.

2.2.4 Implementation Plan

2.2.4(a) Implementation costs

There are three major transit costs associated with the recommendations: buses; maintenance facilities and equipment; and additional service. There are two distinct bus costs: overhaul of the St. Croix buses; and purchase of new buses. It is the opinion of Lea & Elliott that the overhaul of the St. Croix buses would not be very costly. It is estimated that a figure of \$1,500 per bus likely would cover restoration of the buses and their shipment to St. Thomas. It should be noted, however, that this estimate was made without the benefit of an engineering assessment of the condition of the buses.

Twenty-two new buses are recommended for purchase for St. Thomas. Recent bids on buses of the type needed in St. Thomas have been in the range of \$125,000 to \$140,000. Transportation to the Virgin Islands could add up to \$5,500 to the cost per bus, depending upon the manufacturing location. In three years, it is estimated that a bus delivered to St. Thomas would cost \$150,800. Wheelchair lifts would add another \$10,500 per bus. UMTA could fund 75 percent of the capital cost, leaving the V.I. Government with a local share of \$829,400 plus \$57,750 for wheelchair lifts, if desired.

The 1982 Transit Development Plan (TDP) Update estimated that existing site improvements and paving would cost \$391,700. Those improvements were more extensive than the recommendations of this study, which considered the site improvements as an interim step. A figure in the vicinity of \$300,000 appears reasonable for the type of interim improvements recommended. However, if the construction of a new maintenance facility is postponed for several years, more comprehensive improvements would be required at a cost probably higher than the Gannett Fleming estimates.

The costs of a new maintenance facility and associated equipment were estimated in the 1982 TDP Update. The maintenance facility was estimated at \$926,000 for the building and architectural and engineering expenses. The estimated cost, in 1991 dollars, of this new building and necessary maintenance equipment is contained in Table 2-7. These costs were derived by factoring Gannett Fleming's 1982 cost estimates to account for a three percent annual increase in construction and equipment costs between 1982 and 1991. Site acquisition, site preparation, and paving costs are not included in these cost estimates, since they are very much site dependent. Land, site improvements, and paving easily could add \$1 million to the cost estimate unless Government owned land could be utilized.

TABLE 2-7.
MAINTENANCE FACILITY AND EQUIPMENT COSTS

	1982	1991
Administrative Offices	213,800	278,900
Employee Facilities	90,300	117,800
Maintenance Areas	351,700	458,900
Service Area	60,000	78,300
Subtotal	715,800	933,900
Architectural/Engineering Services		
Design	113,200	147,700
Construction	48,500	63,300
Construction Inspection	48,500	63,300
Total	926,000	1,208,200
Maintenance Equipment	362,000	472,100

The 1982 Gannett Fleming estimate of equipment cost was \$362,000. Extrapolating this figure to 1991 would yield a value of \$472,300. UMTA could fund 75 percent of the facility and equipment costs. The local share required then would be \$420,200, exclusive of site acquisition and preparation costs.

Transit expenses for 1986 and 1987 were between \$1.5 and \$1.6 million. The recommended service would increase the annual vehicle miles by approximately one-third. Weighing the counterbalancing factors of inflation and more efficient operation, the estimated annual operating costs for 1991 likely would be in the range of \$2,730,000. Passenger revenues would be expected to cover only 40 to 50 percent of this cost. The remainder would have to be raised through local sources and limited UMTA grant program funding.

The implementation costs are summarized in Table 2-8, together with the potential UMTA funding level and the resulting local funding requirement.

TABLE 2-8. SUMMARY OF IMPLEMENTATION COSTS (1991 Dollars)			
	Total Cost	Potential UMTA Share	Local Funds
CAPITAL COST ITEMS:			
Bus Manufacturing	3,185,600	2,389,200	796,400
Transportation	132,000	99,000	33,000
Subtotal	3,317,600	2,488,200	829,400
Maintenance Building	1,208,200	906,100	302,100
Maintenance Equipment	472,300	354,200	118,100
Subtotal	1,680,500	1,260,300	420,200
Existing Site Improvements	300,000	225,000	75,000
TOTAL CAPITAL	5,298,100	3,973,500	1,324,600
Potential Additional Items:			
Wheelchair Lifts	231,000	173,250	57,750
New Site Improvements	1,000,000	750,000	250,000
ANNUAL OPERATING DEFICIT	1,365,000	125,000	1,240,000

Other recommendations also will have some cost impacts. The construction of bus turnouts on Veterans Drive would cost an estimated \$20,000 each, and possibly some small amount of land-taking. A fare reduction for students will lower transit revenues. However, these costs will be minor in comparison with the capital and operating costs described above.

2.2.4(b) Implementation schedule

Recommendations are grouped into three stages, representing immediate action, short range, and longer range activities.

Stage I: first year

- (1) Recovery and renovation of seven transit buses from St. Croix and transfer to St. Thomas.
- (2) Reconfiguration of city route into two routings: one serving the existing bus depot; the other serving the sub-base area and the airport.
- (3) Interim improvements to the existing maintenance facilities.
- (4) Selection of site for new maintenance facility.
- (5) Submission of grant applications for new buses and a new maintenance facility.

- (6) Passage of legislation to create a new governmental transportation organization to oversee and regulate transit, ferries, parking and taxis.
- (7) Passage of legislation to secure additional funding for transit and highways.

Stage II: second and third years

- (8) Implementation of the new governmental transportation organization.
- (9) Delivery of new buses.
- (10) Initiation of construction of a new maintenance facility.
- (11) Construction of bus turnouts at all bus stops on Veterans Drive and at key locations along other roadways.
- (12) Selection of a contractor for management and operation of the transit system.

Stage III: fourth year and beyond

- (13) Additional service on existing routes.
- (14) Switch of Bovoni service to Route 30.
- (15) Implementation of marketing program and erection of bus stop signs containing schedule information.
- (16) Service and scheduling adjustments as ridership patterns emerge.
- (17) Service to areas north of Charlotte Amalie (contingent upon ridership estimates justifying service).

2.3 HIGHWAY SYSTEM

2.3.1 Existing Conditions

The transportation facilities, travel patterns, and traffic problems in urban St. Thomas reflect the island's rugged terrain, the limited areas suitable for development, and the historic concentrations of activity along the Charlotte Amalie waterfront. This section analyzes these factors and their interactions, and provides a basis for the recommendations that follow.

2.3.1(a) Street system

The streets and roadways in Charlotte Amalie and its environs have been strongly influenced by the terrain. The town is essentially rectangular in shape, and lies along an east-west axis. There are six gateways into the town, and five major routes within it. Of the streets within the town, only Veterans Drive (west of Fort Christian) is more than two lanes wide, and many are less than 20-feet in width.

Figure 2-29 shows the major roadways, entering, leaving, and traversing the town. The six gateways into the town are: Moravian Highway and Crown Mountain Road on the west; Solberg Road and Mafolie Road on the north; and

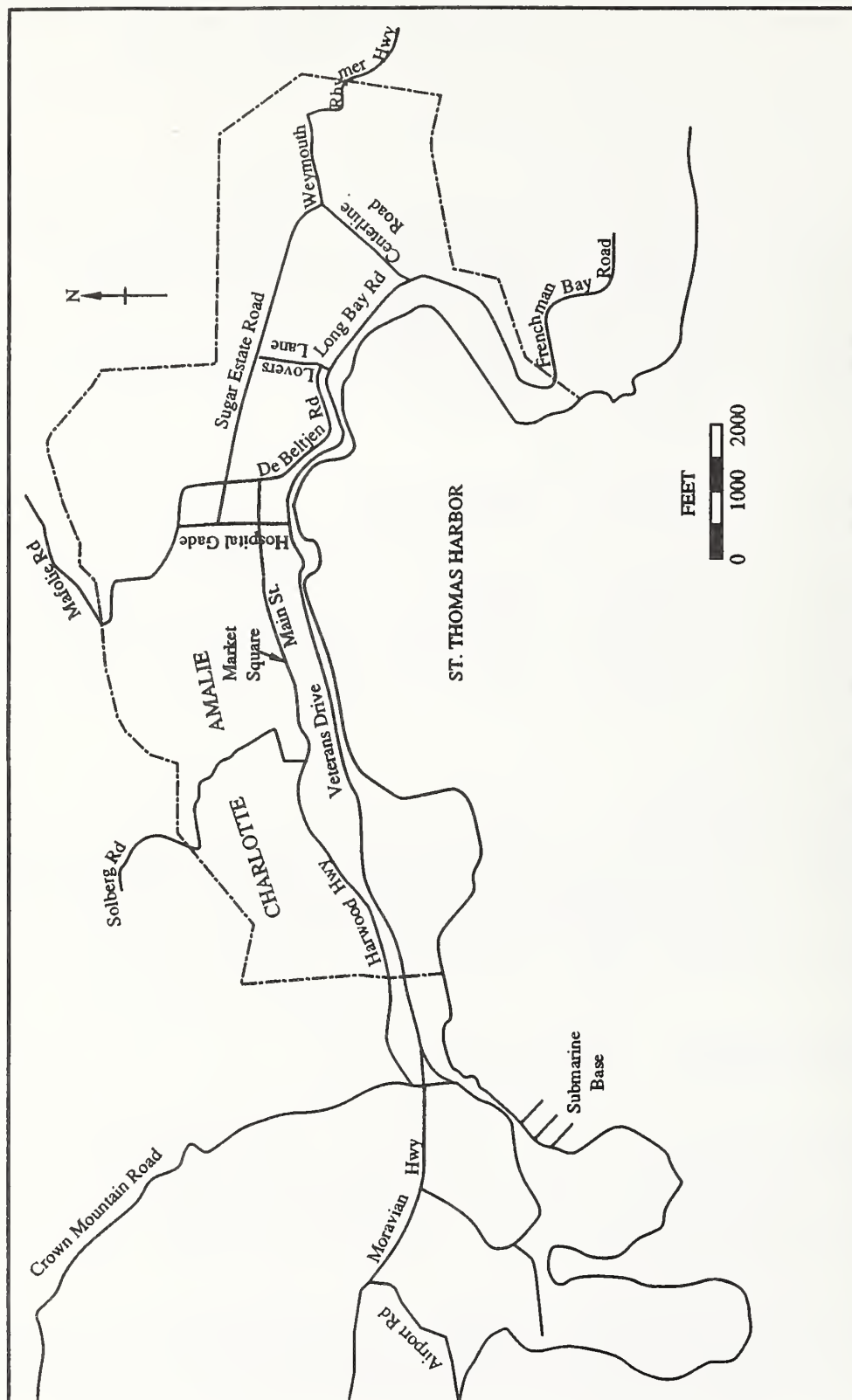


FIGURE 2-29. MAJOR ROADWAYS AROUND CHARLOTTE AMALIE

Weymouth Rhymer Highway and Frenchman Bay Road on the east. Of these, Solberg and Crown Mountain Roads are lightly used and do not directly enter the town.

The principal streets and routes within Charlotte Amalie are as follows.

- Veterans Drive, running along the waterfront, is the only truly continuous east-west route through town. It connects Moravian Highway on the west with Long Bay Road and Frenchman Bay Road on the east.
- Main Street and De Beltjen Road form a second east-west route. However, both roadways are narrow. Main Street is one-way through the center of town.
- Mafolie Road cuts across the mountains, to connect with Hospital Gade, the main north-south street in central Charlotte Amalie.
- Sugar Estate Road (formerly Race Track Road) connects the town with the Raphune Hill-Weymouth Rhymer Highway route to Tutu on the east. Centerline Road and Lovers Lane serve as connecting links between this route and Veterans Drive/Long Bay Road along the waterfront.

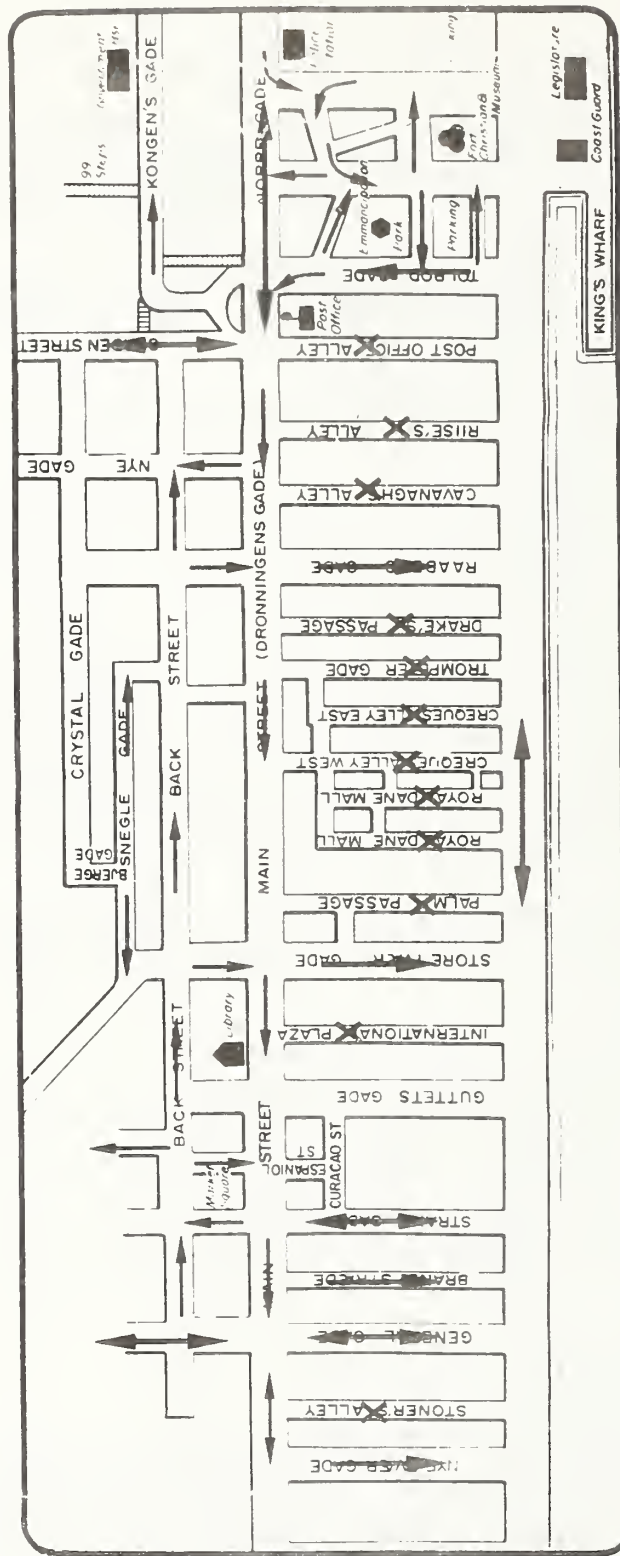
The downtown area of Charlotte Amalie is bounded by the St. Thomas Harbor on the south, Back Street and Kongens Gade on the north, Nye Tvaer Gade on the west, and Bjerge Gade on the east. Veterans Drive, the principal east-west artery, is a four-lane highway west of Tolbod Gade, but from Forts Pladsen eastward it is only a two-lane facility. The other downtown streets vary in width from 15 feet to 24 feet except for Tolbod Gade and Tolbod Pladsen. The area is built to a pedestrian scale.

Within central Charlotte Amalie, street continuity is limited by the terrain. It is difficult to provide easy and convenient around-the-block circulation.

Most of the streets in the central area are one-way because of the narrow width and curb parking (one side only) that restricts traffic flow to a single lane. The one-way street system is shown in Figure 2-30. It includes one-way circulation in the Emancipation Park area, a Main Street-Back Street one-way couplet, and one-way routings on Kongens, Dronningens, and Prindsens Gades. Bunker Hill Road operates as a reversible one way street -- southbound in the morning and northbound in the evening. Thus, it serves as a commuter route between Garden Street and Mafolie Road.

2.3.1(b) Traffic signals

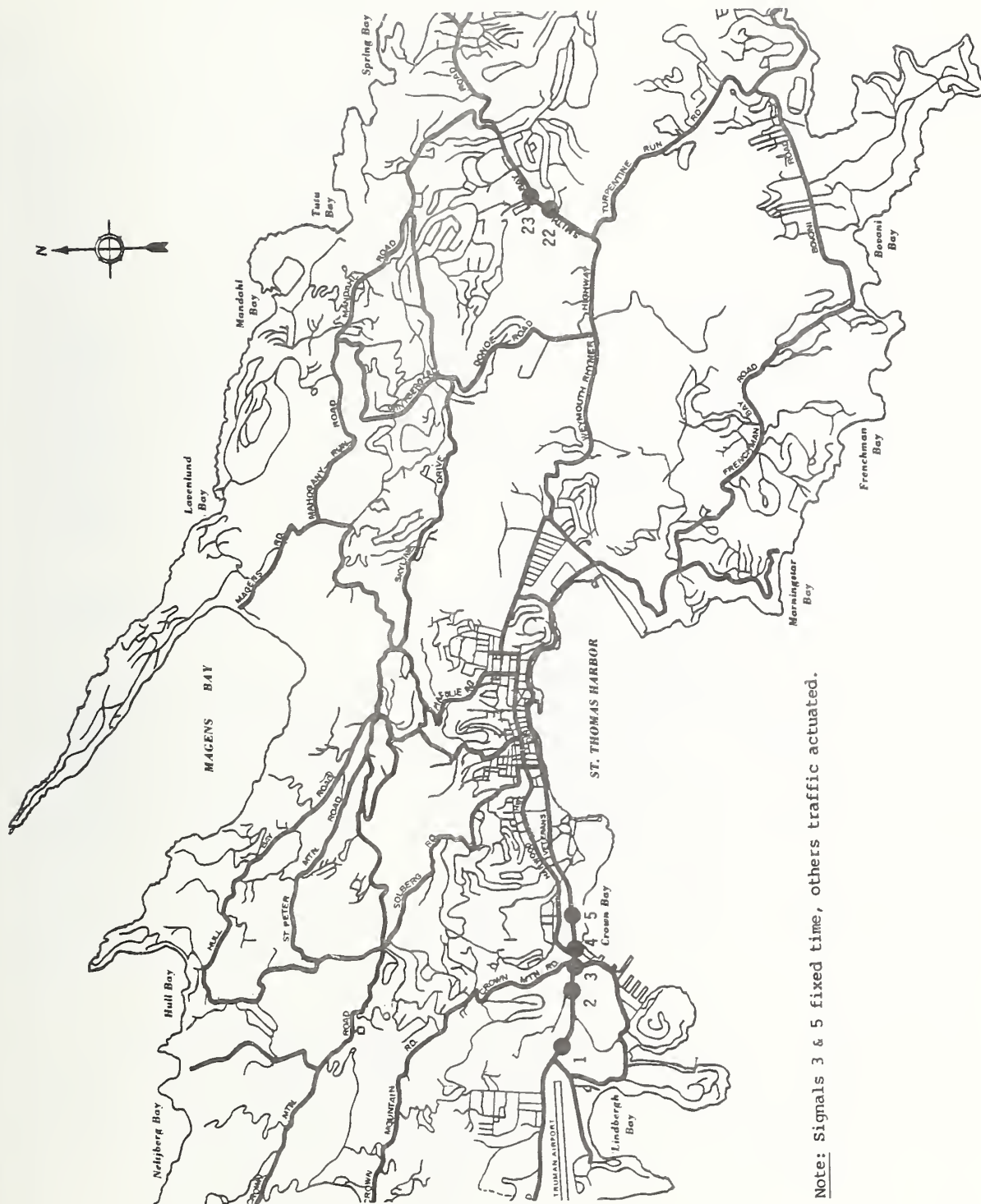
Traffic signals control movements at 23 intersections on St. Thomas. (See Figures 2-31 and 2-32). Most of the signals are located along Moravian Highway, Veterans Drive, Main Street, Weymouth Rhymer Highway and Route 38. Both pre-timed and traffic-actuated controllers are used; some units are modern, while others are obsolete. Modern mast-arm units with dual



X Pedestrian Way
 → Traffic Direction

Not to Scale

FIGURE 2-30. STREET DIRECTIONS - CENTRAL CHARLOTTE AMALIE



Note: Signals 3 & 5 fixed time, others traffic actuated.

FIGURE 2-31. TRAFFIC SIGNALS - OUTLYING AREAS OF ST. THOMAS

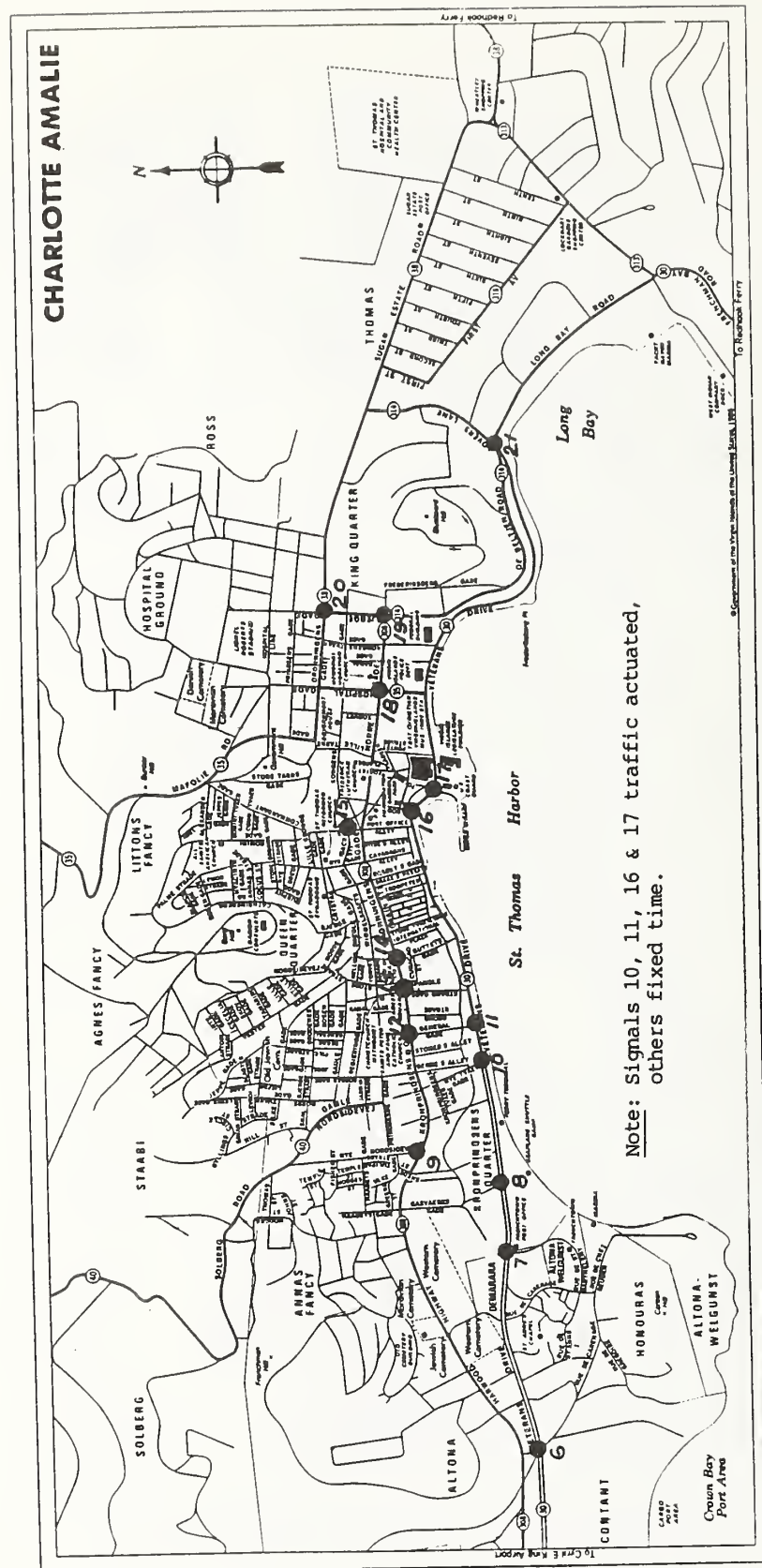


FIGURE 2-32. TRAFFIC SIGNALS - CHARLOTTE AMALIE

indicators are found along Veterans Drive, Moravian Highway, Weymouth Rhymer Highway, and Route 38. In contrast, the traffic signal displays in the center of town generally are non-standard and do not conform to the criteria set forth in the Manual on Uniform Traffic Control Devices.

Signal timing is reasonably well related to traffic demands. Cycle lengths range from 50 to 60 seconds on streets within town to about 80 seconds on the major highways. However, adjacent signals are not coordinated with each other, thereby precluding effective "progression" or movement of traffic.

2.3.1(c) Traffic volumes

The daily, am peak hour, and pm peak hour traffic volumes on the major streets in Charlotte Amalie are shown in Figures 2-33, 2-34, and 2-35 respectively. These flows reflect the town's linkages with surrounding areas, its land use patterns, and the configuration of its streets. They were derived from a variety of sources: the 1972 volumes were reported in the Virgin Islands Functional Classification and Needs Study (Menasco-McGuinn Associates); the 1981-1982 volumes were obtained by URS-Dalton as part of their Environmental Impact Statement for the proposed waterfront highway and Raphune Hill Bypass; and the 1988 volumes were based on counts taken January to March 1988 as part of this study.

The three sets of data identify the growths in daily and peak hour traffic by location.

Daily volumes. The heaviest traffic flows in Charlotte Amalie are found along Veterans Drive/Long Bay Road between Windward Passage and Centerline Road (Figure 33). Flows along these roadways range from 20,000 to 26,000 vehicles per day. Flows of almost 20,000 vehicles per day are found on Weymouth Rhymer Highway, and volumes of 10,000 to 15,000 vehicles per day are found on Mafolie Road, Kronprindsens Gade, Norre Gade, Sugar Estate Road, and Centerline Road.

On a per lane basis, Veterans Drive east of Fort Christian and Long Bay Road carry over 10,000 vehicles per day, while most other roads carry 5,000 to 7,500 vehicles per lane per day.

AM peak hour volumes. The am peak hour volumes (about 7:30-8:30 am) are oriented into Charlotte Amalie from Weymouth Rhymer Highway, Mafolie Road, and Veterans Drive (Figure 2-34). However, volumes on Veterans Drive in the center of town, Sugar Estate Road, and Long Bay Road are balanced in magnitude. The heaviest volumes (1988) are shown in Table 2-9.

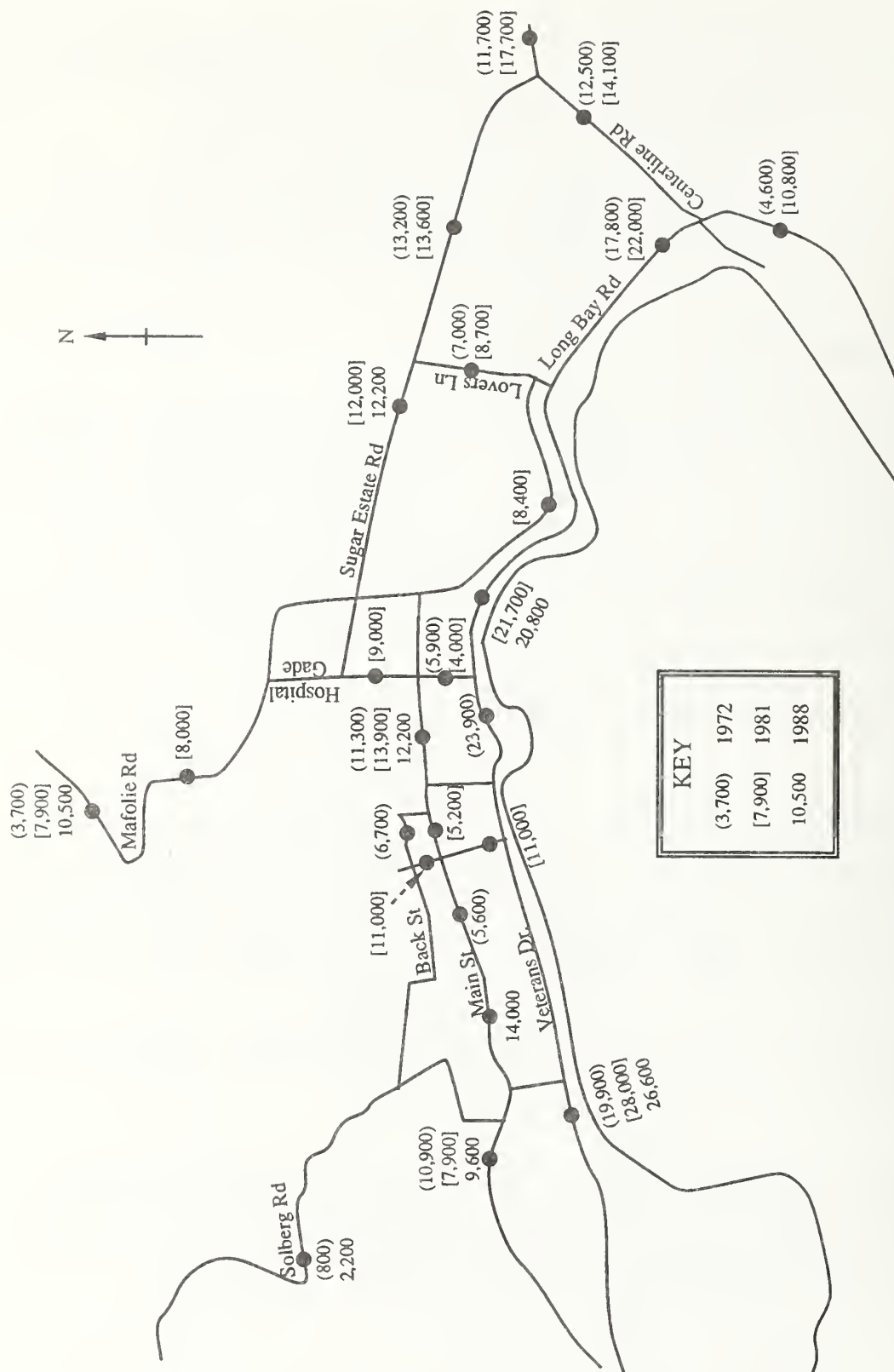


FIGURE 2-33. DAILY TRAFFIC VOLUMES - CHARLOTTE AMALIE

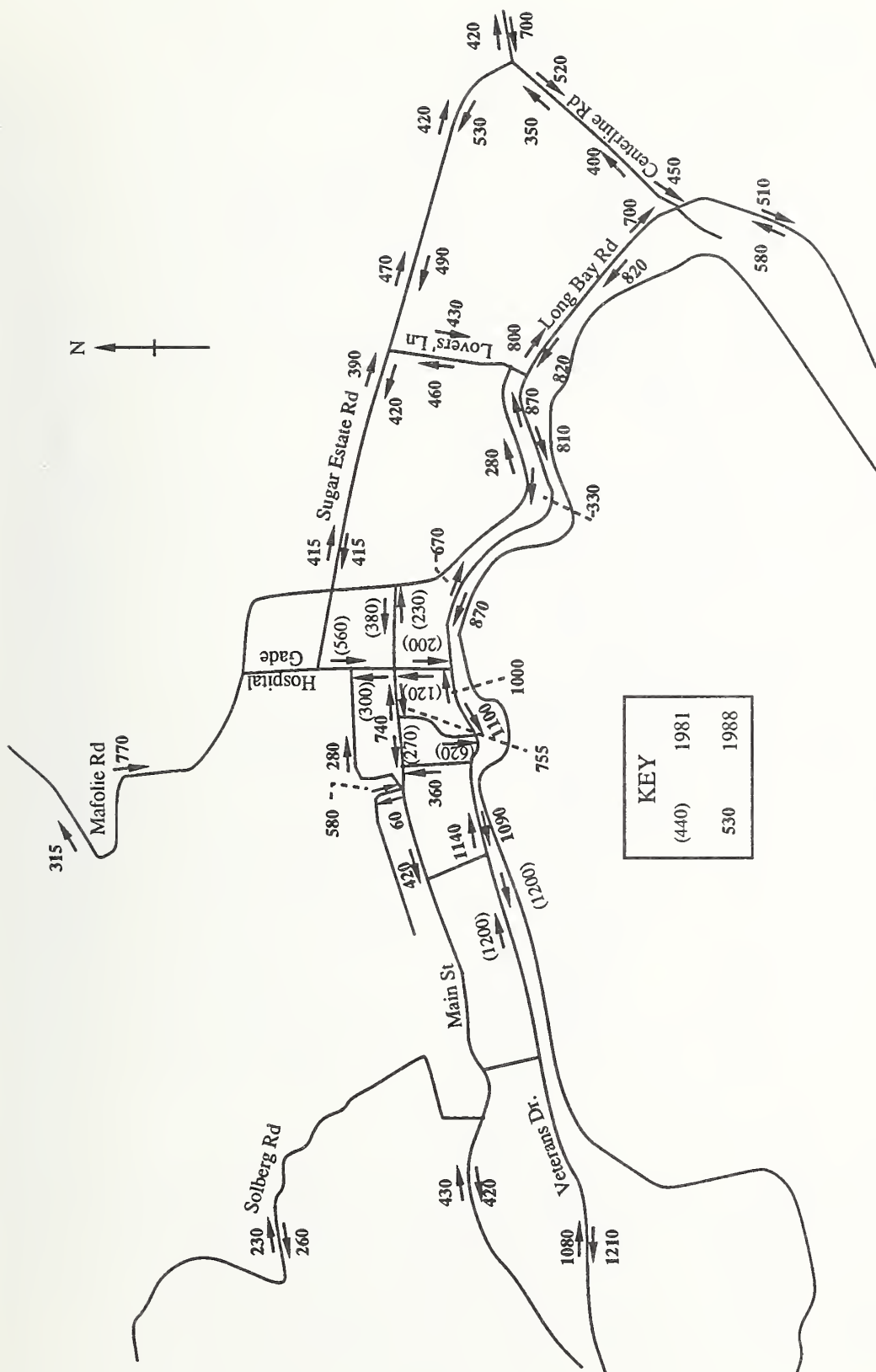


FIGURE 2-34. AM PEAK HOUR TRAFFIC VOLUMES - CHARLOTTE AMALIE

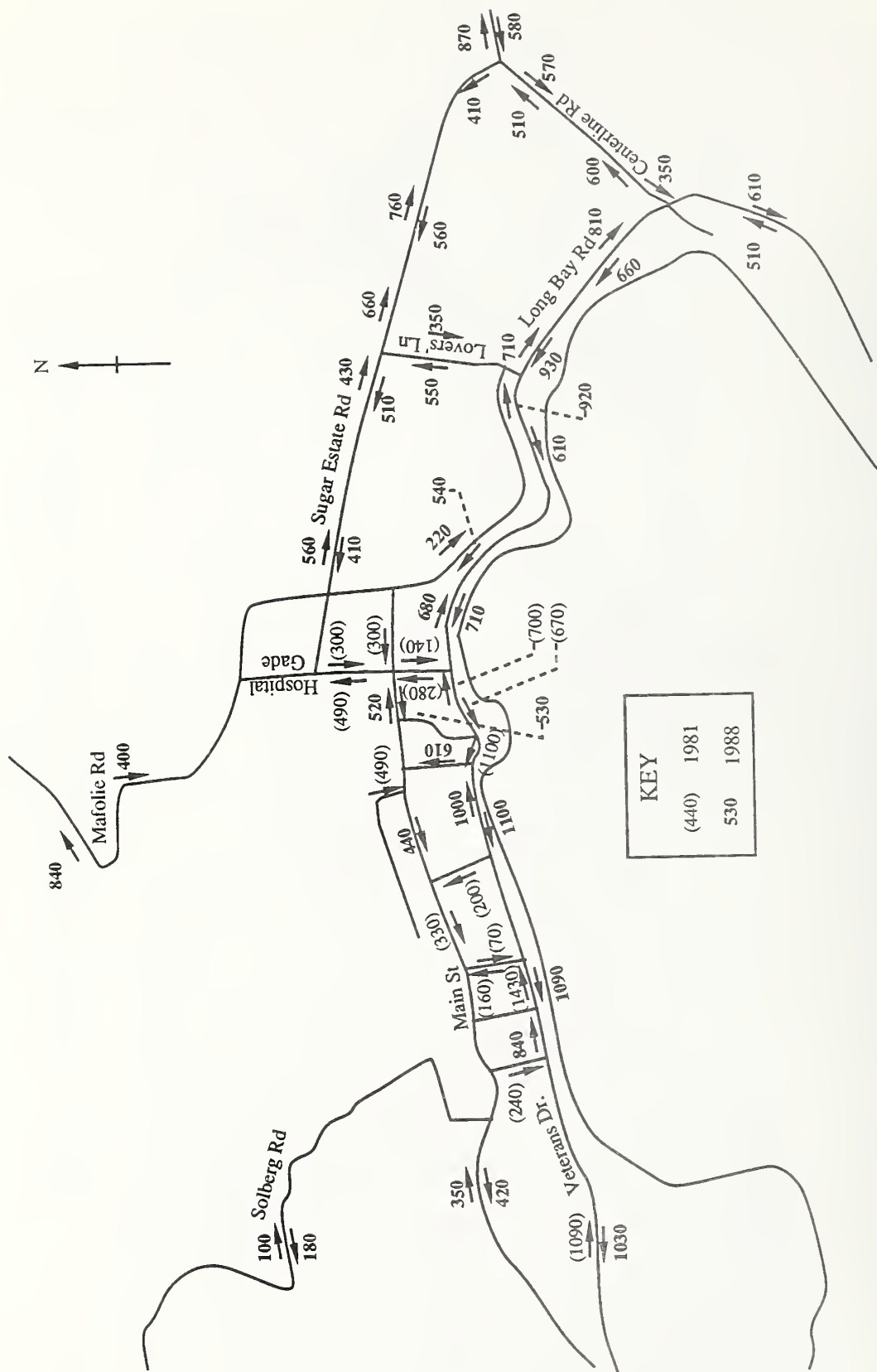


FIGURE 2-35. PM PEAK HOUR TRAFFIC VOLUMES - CHARLOTTE AMALIE

TABLE 2-9.
AM PEAK HOUR TRAFFIC VOLUMES ON COMMUTATION ROUTES

<u>Street</u>	<u>EB/NB</u>	<u>WB/SB</u>	<u>Total</u>
Veterans Drive at Windward Passage (4 lanes)	1,140	1,090	2,230
Veterans Drive at Lovers Lane (2 lanes)	870	810	1,680
Long Bay Road	800	820	1,620
Mafolie Road	315	770	1,145
Weymouth Rhymer Highway	420	700	1,120
Sugar Estate Road	470	530	1,000
Centerline Road	400	520	920

PM peak hour volumes. The pm peak hour volumes are heaviest outbound from Charlotte Amalie on Mafolie Road and Weymouth Rhymer Highway (Figure 2-35). However, volumes on other roadways are generally balanced by direction, reflecting the major traffic generators to the east and west of the town. The heaviest 1988 volumes are shown in Table 2-10.

TABLE 2-10.
PM PEAK HOUR TRAFFIC VOLUMES ON COMMUTATION ROUTES

<u>Street</u>	<u>EB/NB</u>	<u>WB/SB</u>	<u>Total</u>
Veterans Drive at Windward Passage (4 lanes)	1,000	1,100	2,100
Veterans Drive at Lovers Lane (2 lanes)	920	610	1,630
Long Bay Road	810	930	1,740
Mafolie Road	840	400	1,240
Weymouth Rhymer Highway	870	580	1,450
Sugar Estate Road	760	560	1,320
Centerline Road	600	570	1,170

Volume trends. Peak hour traffic volumes have changed relatively little on most roadways since 1981. This reflects: (1) modest population and employment growth; and (2) capacity limitations on the roadways. Major east-west roads reached their capacity limits a decade ago, and there is little capacity available to accommodate additional peak hour traffic.

Traffic did grow, however, on Frenchman Bay Road as a result of development in the Havensight area. It also grew on Mafolie Road, reflecting

a population growth on the north side of the island as well as the use of Mafolie Road as a bypass of Raphune Hill.

2.3.1(d) Traffic problems and congestion

The heavy traffic volumes on Charlotte Amalie streets result in congested movements throughout peak periods, and in some cases -- as along Veterans Drive -- throughout most of the day. Special field observations and travel time studies were made to identify the locations, causes, and amounts of traffic congestion and other operational problems.

Observed problems. The observed traffic and parking problems in Charlotte Amalie and its environs are delineated in Figure 2-36.

- (1) Veterans Drive Lane Reduction at Fort Christian and Legislature. The most serious and pervasive problem is the narrowing of Veterans Drive from four to two lanes east of Tolbod Gade in order that it fit in the narrow right-of-way between Fort Christian and the Legislature Building. This lane reduction cuts the eastbound capacity in half, produces eastbound queues of almost a mile, and causes some drivers to use Norre Gade as an alternate route .
- (2) Norre Gade Congestion. The right turn from the Government parking lot onto Norre Gade creates a "spillback" condition that results in "grid-lock" between Tolbod and Hospital Gades during the pm peak hours.
- (3) Main and Garden Street Congestion. The complex junction of Tolbod Gade, Main Street, Garden Street, and Kongens Gade results in several conflicting movements and contributes to congestion. All traffic from Tolbod Gade must turn west onto Main Street, "double loading" the westbound movement.
- (4) Taxis on Main Street. Cruising and waiting taxis block moving traffic along Main Street in the shopping area, further contributing to congestion along Main Street.
- (5) Congested Intersections. Heavy traffic volumes together with poor intersection geometry result in peak-hour congestion in the eastern part of town.
 - At Lovers Lane and Veterans Drive, heavy turning movements must negotiate awkward alignments, with major conflicts.
 - At Long Bay Road and Centerline Road, eastbound traffic is diverted around a pole that is located in the middle of the intersection. There is no separation of turning traffic from through traffic.
 - At Weymouth Rhymer Highway near Centerline Road, a grass island with a tree in the center of the intersection results in three closely

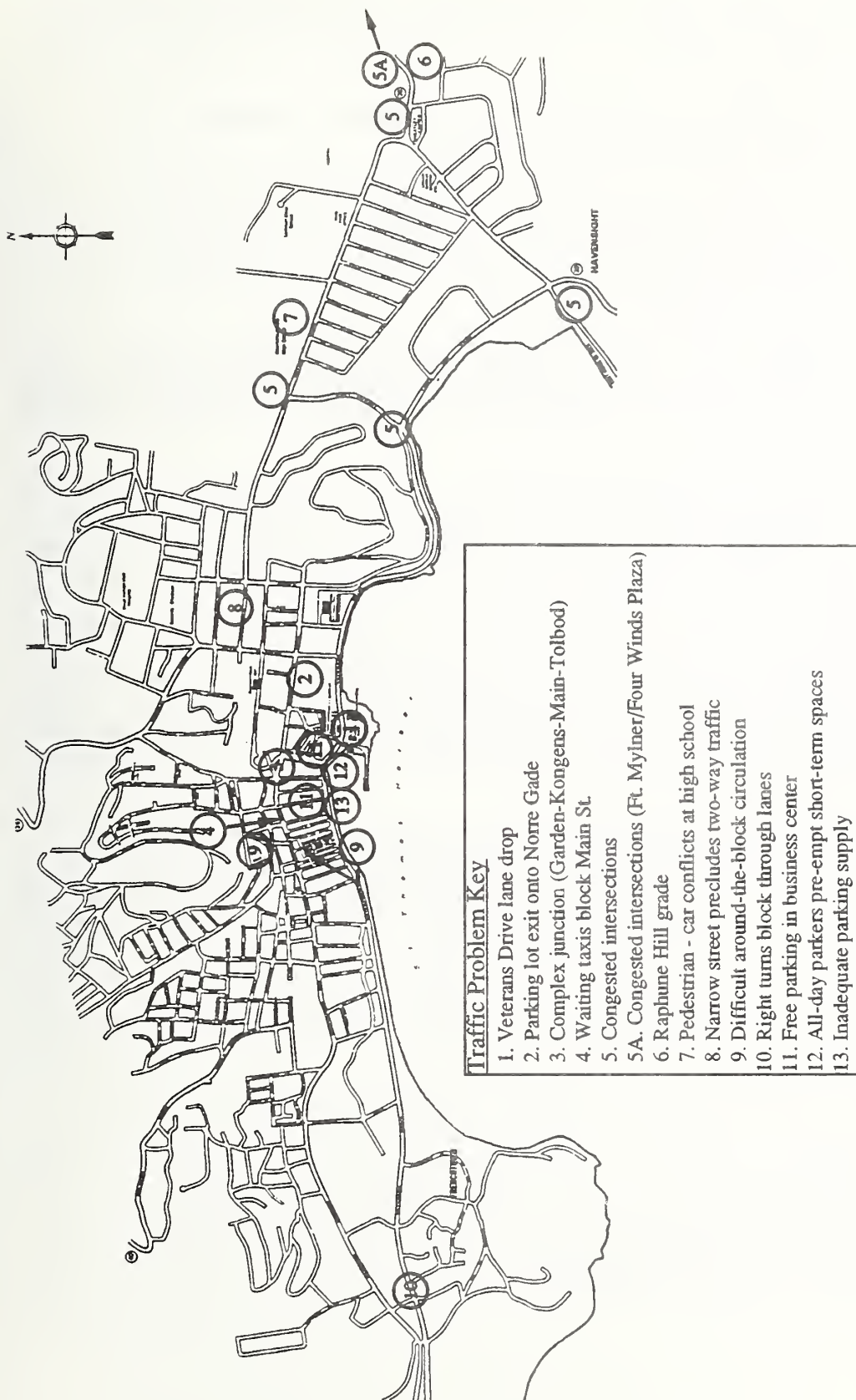


FIGURE 2-36. OBSERVED TRAFFIC AND PARKING PROBLEMS

spaced junctions. Single-lane westbound traffic coming down Raphune Hill is further impeded by traffic entering and leaving the Wheatley Shopping Center.

- At Sugar Estate Road and Lovers Lane, there are no bypass opportunities around right turning vehicles.
 - In the Ft. Mylner and Four Winds Plaza area, key intersections along Route 38 do not adequately separate through and turning traffic. During the evening peak hours queues result. It is these junctions, rather than Raphune Hill, that limit the eastbound capacity along Weymouth Rhymer Highway.
- (6) Raphune Hill Grade. The steep grades (up to 15 percent) and sharp curves on Raphune Hill slow traffic in both directions. When coupled with peak-hour intersection delays at both ends of the grade, queues on the grade result.
 - (7) Delays at Charlotte Amalie High School. Pedestrian-car conflicts result at the Charlotte Amalie High School when drivers receive or discharge students in the main travel lanes. In addition, crossing guards ("pink ladies") stop traffic to enable students to cross Sugar Estate Road.
 - (8) One-way Dronningens Gade. The narrow road width on Dronningens Gade between Bjerger and Hospital Gades, and the need to allow parking on one side of the street, precludes two-way traffic flow. The street operates one-way eastbound, requiring westbound traffic desiring to reach Hospital Gade to turn right or left at Bjerger Gade. This increases conflicts during the peak travel periods.
 - (9) Limited Downtown Circulation. Around-the-block circulation in the retail area is limited by narrow streets and alleys and the hilly terrain. Consequently, cruising taxis and vehicles searching for parking tend to circulate on Veterans Drive, Tolbod Gade, Main Street, and Raadet's Gade.
 - (10) Veterans Drive at Frenchtown. Right turns from the through traffic lanes limit the capacity and effectiveness of these lanes.
 - (11) Free Parking in the Business Center. This policy encourages motorists to park on-street.
 - (12) All-Day Parking. These parkers preempt parking spaces adjacent to Veterans Drive shops, where high turnover parking is desired.
 - (13) Insufficient Parking Spaces Downtown. The downtown parking supply is not adequate to meet the demand.

Delays and congestion. The recurrent traffic congestion along the Charlotte Amalie waterfront and the major gateways into the town result primarily from:

- the lane-drop and imbalanced lane use eastbound on Veterans Drive;
- ineffective intersection treatments;
- cruising vehicles; and
- illegally parked vehicles and ineffective enforcement.

The traffic congestion on the major roadways approaches major proportions. The locations and extent of this congestion are shown in Figure 2-37. During the peak hours, the congestion extends over much of the area from Windward Passage on the west to beyond Raphune Hill and Havensight on the east.

Congestion and queues occur mainly westbound in the morning peak hours (7-9 am) and eastbound in the evening peak hours (4-6 pm). However, the eastbound congestion along Veterans Drive, from Windward Passage to Fort Christian, occurs in both periods, as well as throughout the day; it reflects the lane reduction just west of the Fort, and the resulting imbalanced use of the eastbound lanes.

In the westbound direction, the Weymouth Rhymer Highway-Centerline Road, Centerline Road-Long Bay Road, and Long Bay Road-Lovers Lane junctions meter the traffic entering Veterans Drive. Eastbound traffic is metered, first by the Veterans Drive lane-reduction, and second by the Long Bay Road-Centerline Road intersection.

Table 2-11 shows the travel times during the morning and evening peak hours. Eastbound travel through town averages about 20 minutes in the morning peak hours (7-9 am) and about 35 minutes in the evening peak hours (4-6 pm). Westbound travel times average about 20 minutes during both periods. However, there is considerable variation in the amount of time required; westbound travel times of over 35 minutes, and eastbound times as high as 30 minutes in the morning and 50 minutes in the evening were observed. In comparison, the travel time without congestion approximates 9 to 12 minutes.

As can be seen, a considerable amount of travel time is lost due to traffic congestion. Eastbound motorists lose almost 10 minutes in the morning and over 20 minutes in the evening. Westbound motorists lose about 8 minutes during both peaks. Detailed estimates of the time lost are given in Table 2-12 for the trips between Veterans Drive at the pedestrian overpass near the Wayne Aspinall School and: (1) Weymouth Rhymer Highway and Route 39 junction; and (2) Frenchman Bay Road and the Route 315 junction. As described by traffic engineers, the road system operates at Level of Service "F" during peak traffic periods.

TABLE 2-11.
TRAVEL TIMES, 1988 (minutes)

	<u>AM Peak</u>		<u>PM Peak</u>	
	<u>Range</u>	<u>Avg</u>	<u>Range</u>	<u>Avg</u>
<u>ROAD SEGMENT -- WESTBOUND</u>				
A. Route 39 - Centerline & Long Bay via Weymouth Rhymer Highway	7-16	10.0	5-11	8.0
B. Route 315 - Centerline & Long Bay via Frenchman Bay Road	2-27	10.3	4-8	6.3
C. Centerline - Tobold	4-6	4.5	4-8	6.6
D. Tobold - Overpass	3-4	3.3	4-6	4.8
TOTAL via Weymouth Rhymer Highway	14-26	17.8	13-25	19.4
TOTAL via Frenchman Bay Road	9-37	18.1	12-22	17.7
<u>ROAD SEGMENT -- EASTBOUND</u>				
M. Overpass - Tobold	3-11	7.3	11-30	19.2
N. Tobold - Centerline & Long Bay	4-10	7.7	7-10	8.8
O. Centerline & Long Bay - Rt. 315 via Frenchman Bay Road	2-3	2.3	3-3	3
P. Centerline & Long Bay - Rt. 30 via Weymouth Rhymer Highway	7-8	7.7	11-11	11
TOTAL via Weymouth Rhymer Highway	14-29	22.7	21-51	39
TOTAL via Frenchman Bay Road	9-24	17.4	21-43	31

Source: TSC Studies.

TABLE 2-12.
ESTIMATED AVERAGE TIME LOST PER TRIP DUE TO TRAFFIC CONGESTION¹

	MINUTES LOST DURING:	
	AM Peak	PM Peak
	<u>Hours</u>	<u>Hours</u>
Veterans Drive at Pedestrian Overpass to Weymouth Rhymer Highway at Route 39 Junction		
Eastbound	11 ²	27
Westbound	6	7
Veterans Drive at Pedestrian Overpass to Frenchman Bay Road at Route 315 Junction		
Eastbound	8	22
Westbound	9	9

It is clear that the most serious and recurrent congestion occurs east-bound along Veterans Drive as it approaches Tolbod Gade. The congestion breaks down the town's entire access system, and it must be alleviated if mobility is to be maintained and economic growth is to continue.

Implications. The traffic congestion in Charlotte Amalie -- especially along Veterans Drive -- has reached alarming levels. It is far beyond what normally occurs in a community of 50,000 persons. It has become a major concern to the entire island, and its elimination ranks high on the Government's agenda. The discussions that follow suggest how this congestion can be alleviated.

2.3.2 Traffic Improvement Plan

This section sets forth a strategic traffic improvement plan for urban St. Thomas. The plan is based on an analysis of existing conditions, a review of previous proposals, and discussions with the Virgin Islands public and private sectors. It contains both early (immediate) action and longer term proposals. These proposals complement the public transport and parking recommendations, as well as the transportation system management actions suggested in the FHWA report.

¹Assumed base travel time without congestion: 9 minutes to Route 315; 12 minutes to Route 39.

²Based on Table 2-11. A more likely value in the height of the peak period is about 10+ minutes.

2.3.2(a) Context

There is general consensus within the Charlotte Amalie community regarding the need to alleviate congestion, and to do so in a cost-effective way that preserves the character of the waterfront and town center. But the community has been divided over how to achieve these objectives. The resulting inaction has been both costly and counterproductive. Accordingly, the plan sets forth several options to deal with this issue.

The plan calls for an integrated system of improvements that increase traffic capacities along Veterans Drive and on roadways entering downtown Charlotte Amalie from the east. These capacity gains are essential if traffic congestion is to be reduced. They are achieved in an affordable, implementable and environmentally acceptable manner. The systems approach is necessary to avoid merely transferring problems from one place to another.

The general structure of the plan's proposals has been recognized since 1972; moreover, many of the recommended treatments improve the high-hazard intersections cited a decade ago. Most proposals are straightforward and reflect the specific physical and traffic conditions at each location. However, some of the details of earlier proposals have been changed to obtain better traffic performance, reduce costs, and/or minimize environmental impacts, and better preserve the waterfront.

Better traffic engineering and transportation system management actions will help reduce congestion in several areas. By alleviating recurrent congestion, they will permit more productive and reliable public transport service. They are designed to benefit both residents and tourists, and to preserve the character of downtown Charlotte Amalie. However, these actions, in themselves, will not alleviate the Veterans Drive problem. Expansion of road capacity and physical changes will be required. The early action changes, therefore, should be viewed as interim measures until plans can be prepared, funding obtained, and construction completed on the more costly proposals.

2.3.2(b) Early action plan

The recommended early action traffic improvement plan for Charlotte Amalie is shown in Figure 2-38. The various proposals are accomplished within the available rights-of-way and require little physical construction. They can and should be implemented within a two-year time frame.

Principal features. Principal features of the plan are described below. The numbers correspond to the numbered locations shown in Figure 2-38.

- (1) Change Mafolie Road Traffic Controls. The present "stop" for southbound Mafolie Road is eliminated to enable the heavy southbound traffic to move continuously. To assure safe operation, an overhead flasher should be installed; it should display yellow for Mafolie Road and red for other approaches.

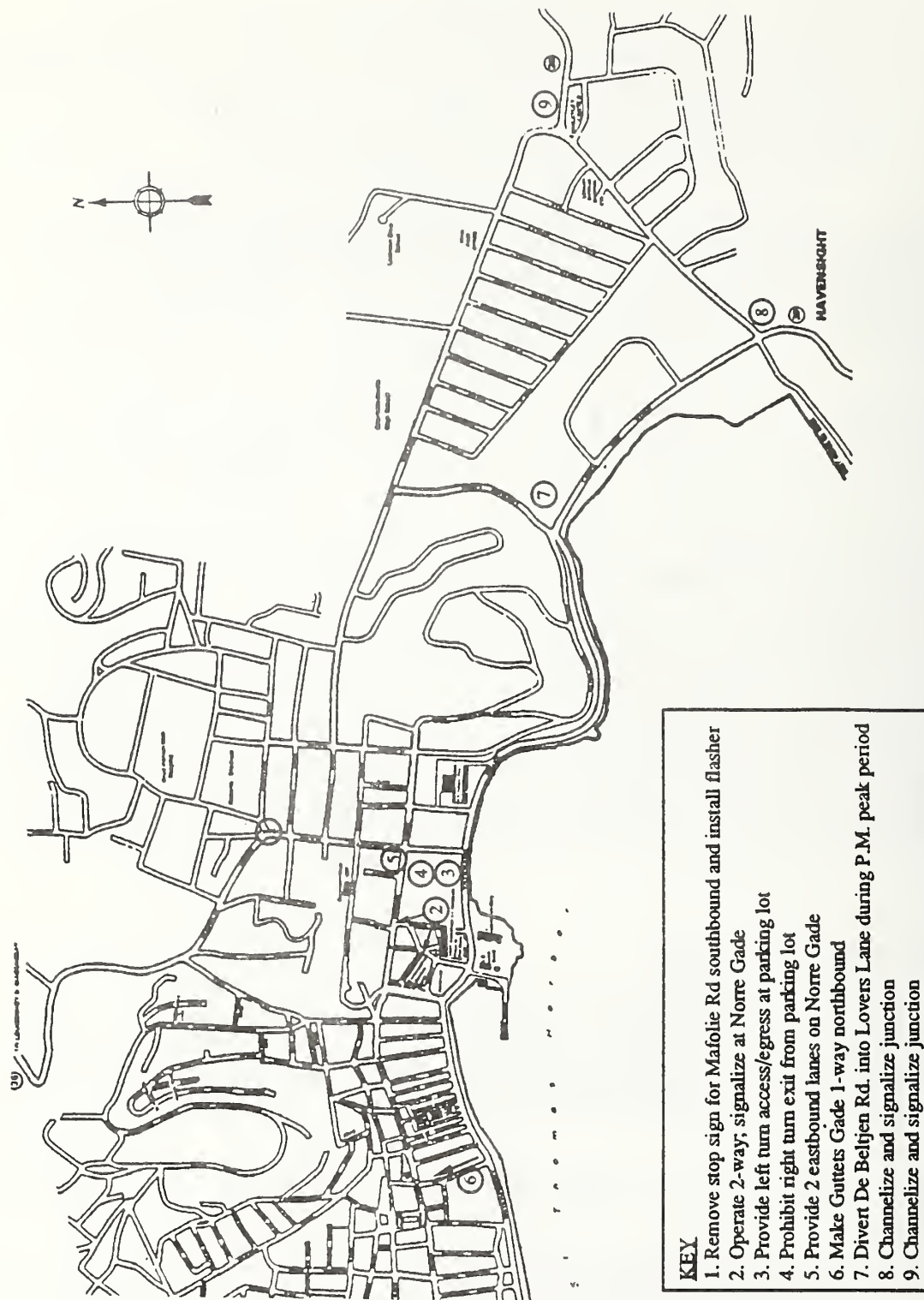


FIGURE 2-38. EARLY ACTION TRAFFIC IMPROVEMENT PLAN - ST. THOMAS

- (2) Improved Veterans Drive Access to Norre Gade. Make Forts Pladsen (alongside the fire station), Tolbod Pladsen, and Fortet Strade two-way streets to provide a direct connection from eastbound Veterans Drive to Norre Gade. The intersection of Fortet Strade with Norre Gade should be signalized to assure safe entry of traffic onto Norre Gade. However, eastbound right turns from Norre Gade into Fortet Strade should be restricted during the peak hours as needed.
- (3) Provide Government Parking Lot Access to Veterans Drive. Provide left turn entry and exit for eastbound traffic between Veterans Drive and the Government parking lot. This access will reduce the concentration of parking lot traffic on Norre Gade, and afford direct, convenient connection to Veterans Drive for eastbound traffic. Right turn entry and exit for westbound traffic should not be permitted.
- (4) Prohibit Peak Period Right Turns Between Norre Gade and the Government Parking Lot. Right turns into and out of the Government parking lot should be prohibited at Norre Gade during peak travel periods (7-9 am and 4-6 pm). These turn restrictions will reduce the spillback which causes gridlock along Norre Gade; these turns largely will be obviated by the proposed left turn access on Veterans Drive.
- (5) Increase Eastbound Lanes on Norre Gade. Provide two eastbound lanes by taking advantage of the extra pavement width between Torvet and Hospital Gades. This increased capacity will reduce the spillback, and accommodate additional traffic. One lane would be reserved for vehicles turning left onto Hospital Gade, and the other for through and right turning traffic.
- (6) Make Guttets Gade One-Way Northbound. Guttets Gade should operate one-way northbound from Veterans Drive to Main Street once the current construction project is completed. This will reduce intersection conflicts at Veterans Drive.
- (7,8,9) Channelize Key Intersections. Three key intersections in the eastern part of Charlotte Amalie should be channelized to provide more orderly traffic flow and better protection for right turning vehicles: (7) Veterans Drive, Long Bay Road, and Lovers Lane; (8) Long Bay Road and Centerline Road; and (9) Sugar Estate Road, Weymouth Rhymer Highway, and Centerline Road. The improvements can be located within existing rights of way; they will reduce, but not eliminate, peak hour congestion.

(As a short-term measure to alleviate the traffic bottleneck in the Fort area, the DPW currently is considering the routing of two lanes of eastbound traffic from Veterans Drive via Forts Pladsen, Tolbod Pladsen, and Fortet Strade to Norre Gade, along Norre Gade to Hospital Gade, and along Hospital Gade back to Veterans Drive. This routing would force a heavy vehicular flow through the Emancipation Gardens Park area and concentrate traffic at the already congested Norre Gade-Hospital Gade intersection.)

Specific intersection improvements. Further descriptions of the early action intersection improvements follow.

- (1) Veterans Drive-Lovers Lane-Long Bay Road [7]. About 2,400 vehicles enter the intersection each peak hour, of which almost half travel between Veterans Drive and Long Bay Road (Figure 2-39).

The recommended early action treatment for the intersection is shown in Figure 2-40. It is designed to reduce the peak-hour traffic conflicts at the heavily-traveled oblique-crossing intersection. The recommended treatment calls for eliminating all crossing conflicts during weekday evening peak hours (4-6 pm) when warranted by traffic flows and/queues. This is accomplished by the police placing cones or moveable barriers in the intersection to direct Veteran Drive traffic onto Long Bay Road and De Beltjen Road traffic onto Lovers lane.

This type of traffic diversion is a logical extension of the current police controls that often prohibit the southbound movement from Lovers Lane into Veterans Drive, the eastbound movement from De Beltjen Road onto Long Bay Road, and the westbound right turns from Long Bay Road onto Lovers Lane during the evening peak hours. Under the proposed treatment, the southbound left turns from Lovers Lane into Long Bay Road would be permitted, while all other conflicting flows would be prohibited.

It also is desirable to widen the north side of Long Bay Road to provide an additional westbound lane for right turns. This 8 to 10 foot widening can be done within the existing right of way without impacting the posts and fence separating the road from the Lucinda Millin Home. It will require a gradual transition to the existing cross section, including the possible removal of the island separating Long Bay Road from the westbound passenger drop-off lane.

The present signal displays and traffic signal controller need updating. However, in modernizing the signal controls and phasing, care should be exercised to avoid unduly complex phasing and long cycle lengths.

- (2) Long Bay Road-Centerline Road-Frenchman Bay Road [8]. During each peak hour, almost 2,000 vehicles enter the intersection, essentially on single lane approaches (Figure 2-41). These movements are impeded by the existing light pole in the middle of the intersection which requires eastbound traffic to divert around it.

The recommended early action treatment for this intersection is shown in Figure 2-42. It is designed to reduce travel frictions, and to produce more direct alignments at this heavily traveled intersection, which currently is a major point of congestion. The recommended treatment can be accomplished within the existing curb lines. The necessary actions are:

- Removal of the pole in the middle of the intersection.

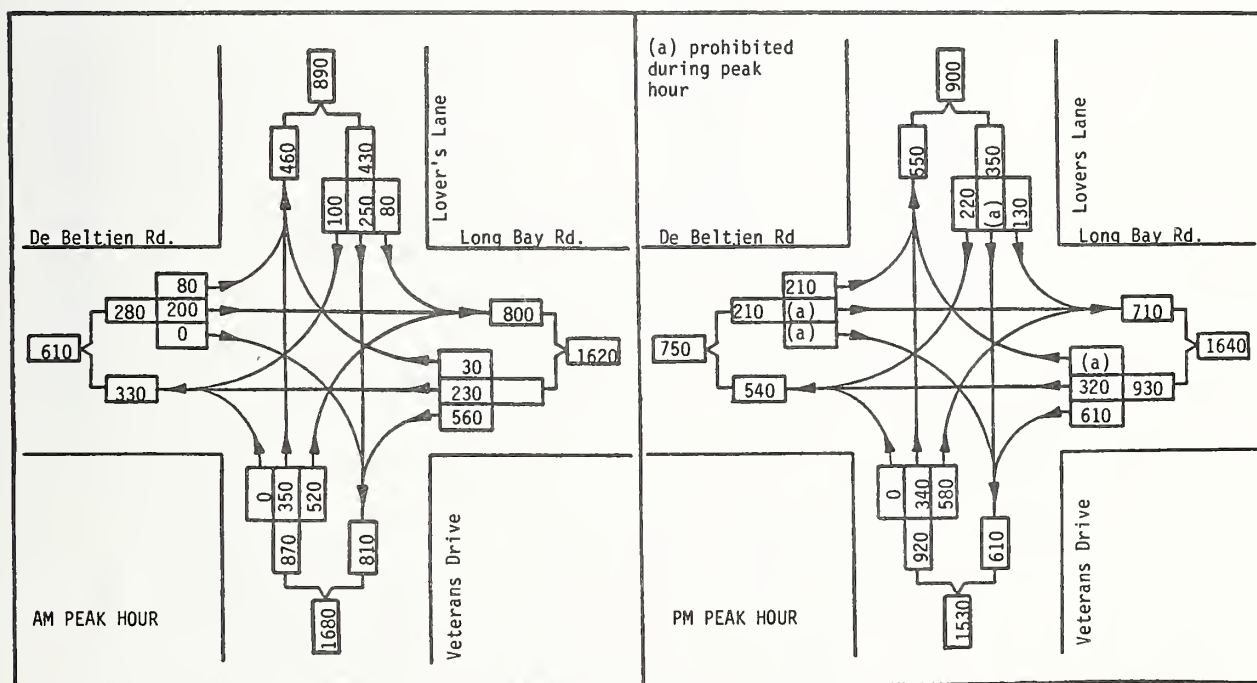


FIGURE 2-39. INTERSECTION PHOTO AND 1988 PEAK HOUR TRAFFIC VOLUMES-
 LOVERS LANE / VETERANS DRIVE / LONG BAY ROAD / DE BELTJEN ROAD

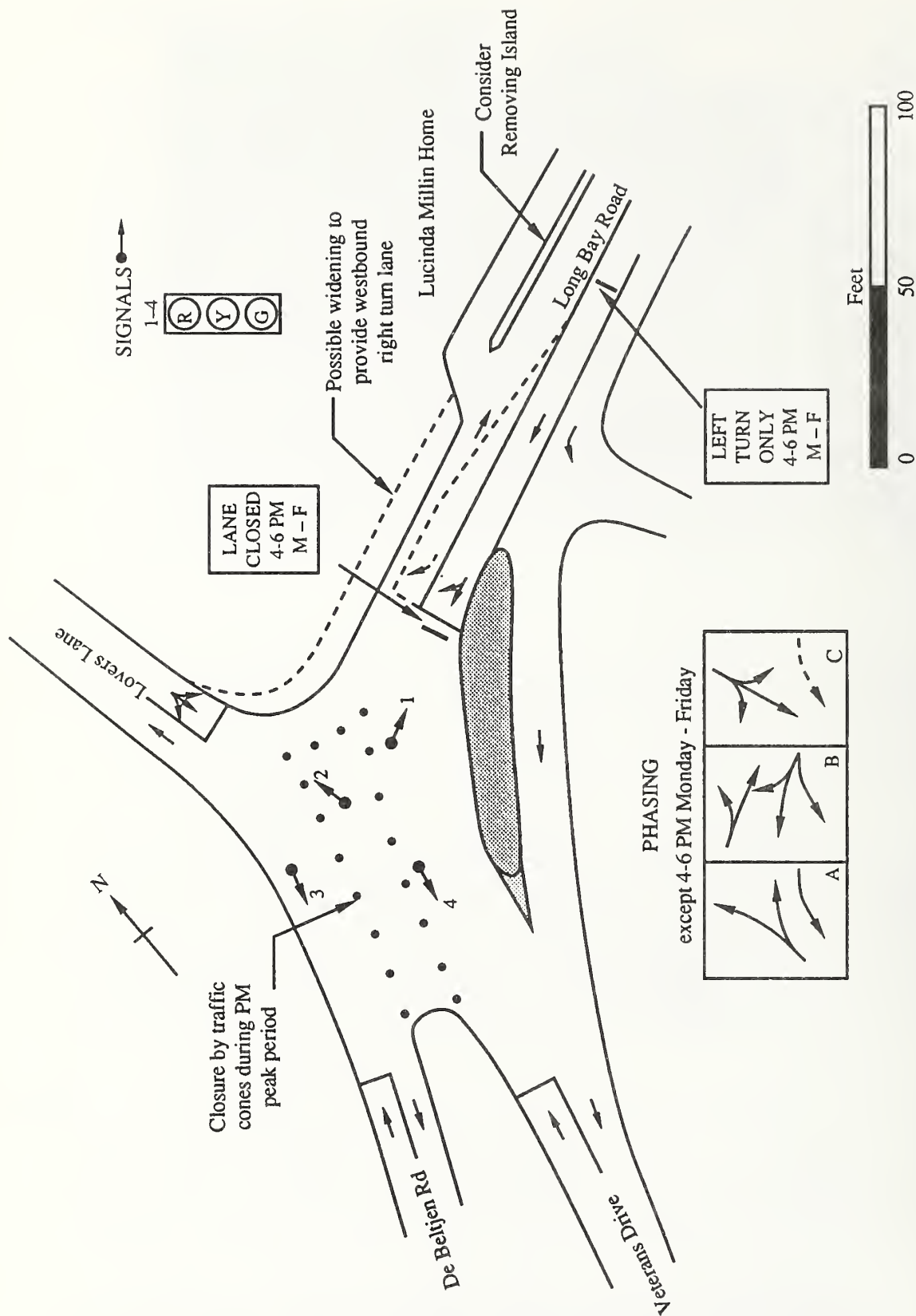


FIGURE 2-40. RECOMMENDED EARLY ACTION TREATMENT - LOVERS LANE / VETERANS DRIVE / LONG BAY ROAD / DE BELTJEN ROAD INTERSECTION

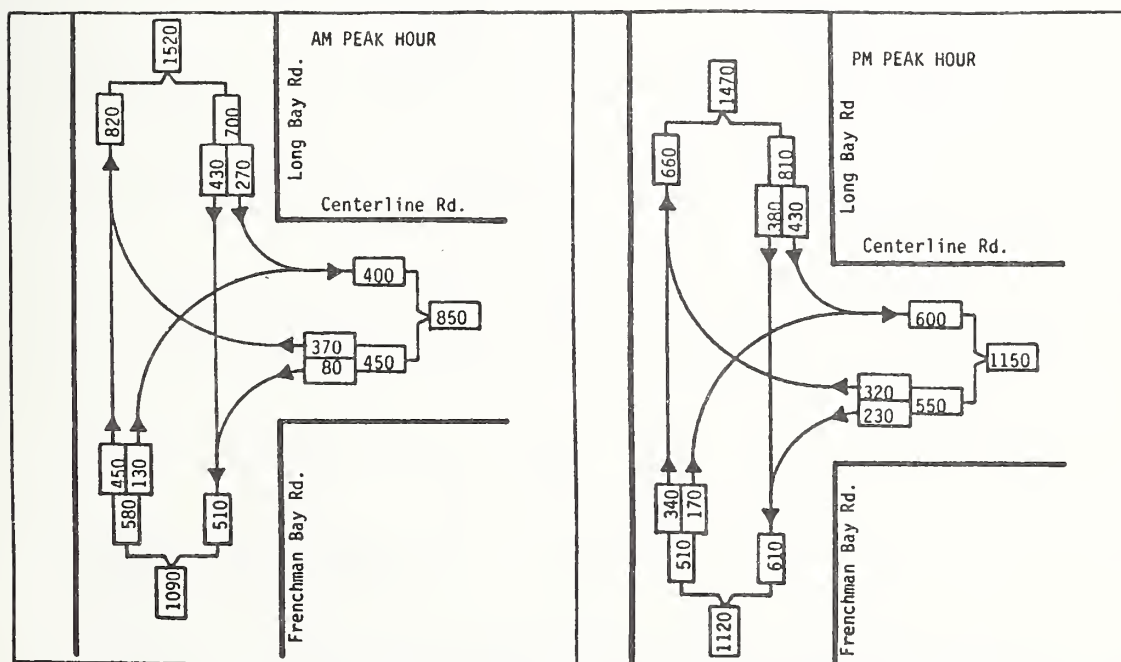


FIGURE 2-41. INTERSECTION PHOTO AND 1988 PEAK HOUR TRAFFIC VOLUMES - LONG BAY ROAD / CENTERLINE ROAD / FRENCHMAN BAY ROAD

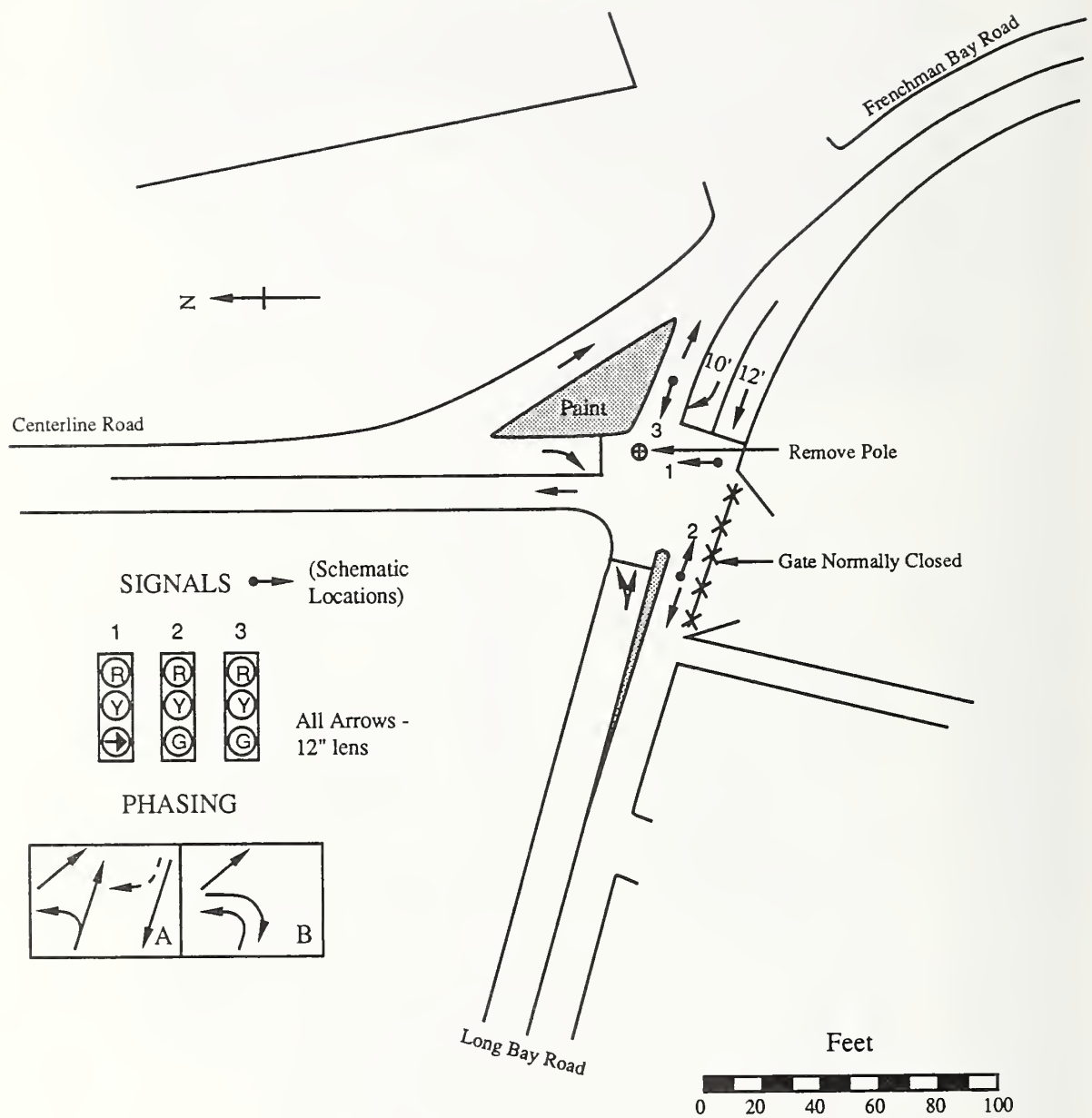


FIGURE 2-42. RECOMMENDED EARLY ACTION TREATMENT - LONG BAY ROAD / CENTERLINE ROAD / FRENCHMAN BAY ROAD INTERSECTION

- Signalization of the intersection. A simple two-phase signal operation should suffice. Since the traffic flows entering Long Bay Road from Frenchman Bay Road and Centerline Road are about equal, and the distance from the Lovers Lane traffic actuated signal is about 1,500 feet, traffic actuated controls should be considered here.
- Provision of three travel lanes -- two through lanes and an eastbound right turn lane -- from the Frenchman Bay Road entry direction. The right turn lane will provide storage for about three vehicles, thereby removing most of the right turning vehicles from the through travel lanes. The right turn lane is necessary because the westbound traffic from Frenchman Bay Road is too heavy to be carried in a single lane.

- (3) Sugar Estate Road-Weymouth Rhymer Highway-Centerline Road [9]. This intersection, located at the western end of Raphune Hill and adjacent to the Wheatley Shopping Center, is the cause of extensive congestion during the morning peak hour. The recommended treatment is designed to reduce the stoppage of the heavy westbound traffic flows (more than 700 vehicles per hour in the morning peak as shown in Figure 2-43) by separating westbound Weymouth Rhymer Highway-Sugar Estate Road traffic from Weymouth Rhymer Highway-Centerline Road left turn traffic and by reducing side frictions.

These objectives can be accomplished within the existing right of way by replacing the "Y" junction with a "T" junction, installing traffic signals, and some minor road widening to ease the westbound left turn onto Centerline Road (Figure 2-44). Specific proposals include the following:

- Remove the tree and grass island in the center of Weymouth Rhymer Highway.
- Replace the three "Y" intersections with a single "T" junction that concentrates conflicting movements in a single area.
- Provide painted islands to separate the lanes for westbound left turns from Weymouth Rhymer Highway into Centerline Road, and southbound left turns from Sugar Estate Road into Weymouth Rhymer Highway. The westbound left turn lane would extend as far as possible.
- Widen the westbound left turn roadway slightly (within the existing right-of-way) to provide a wider, easier movement from Weymouth Rhymer Highway onto Centerline Road.
- Signalize the intersection to control conflicts better. One phase would provide for east-west traffic, and the other for north-south traffic. To accommodate the heavy north-to-east right turning traffic in the evening, an advance or leading green should be provided for Centerline Road traffic. Southbound left turns from Weymouth Rhymer Highway and westbound left turns from Centerline Road would operate at all times. Fully actuated signal controls are

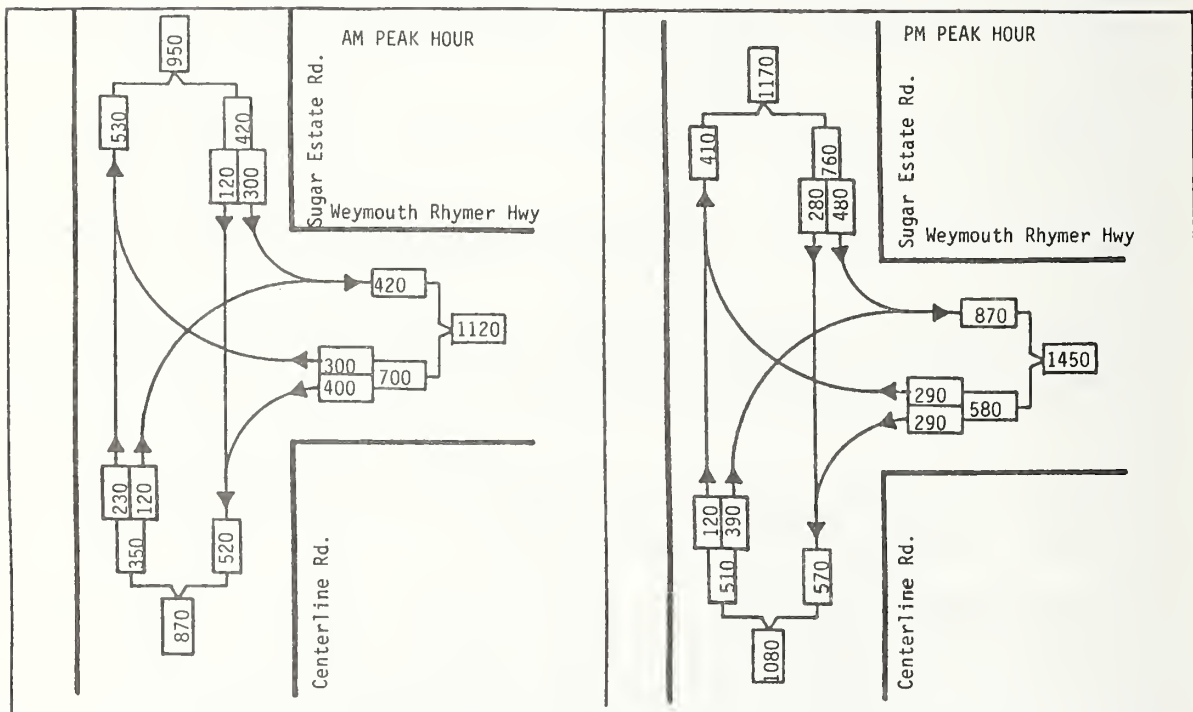


FIGURE 2-43. INTERSECTION PHOTO AND 1988 PEAK HOUR TRAFFIC VOLUMES-WEYMOUTH RHYMER HIGHWAY / SUGAR ESTATE ROAD / CENTERLINE ROAD

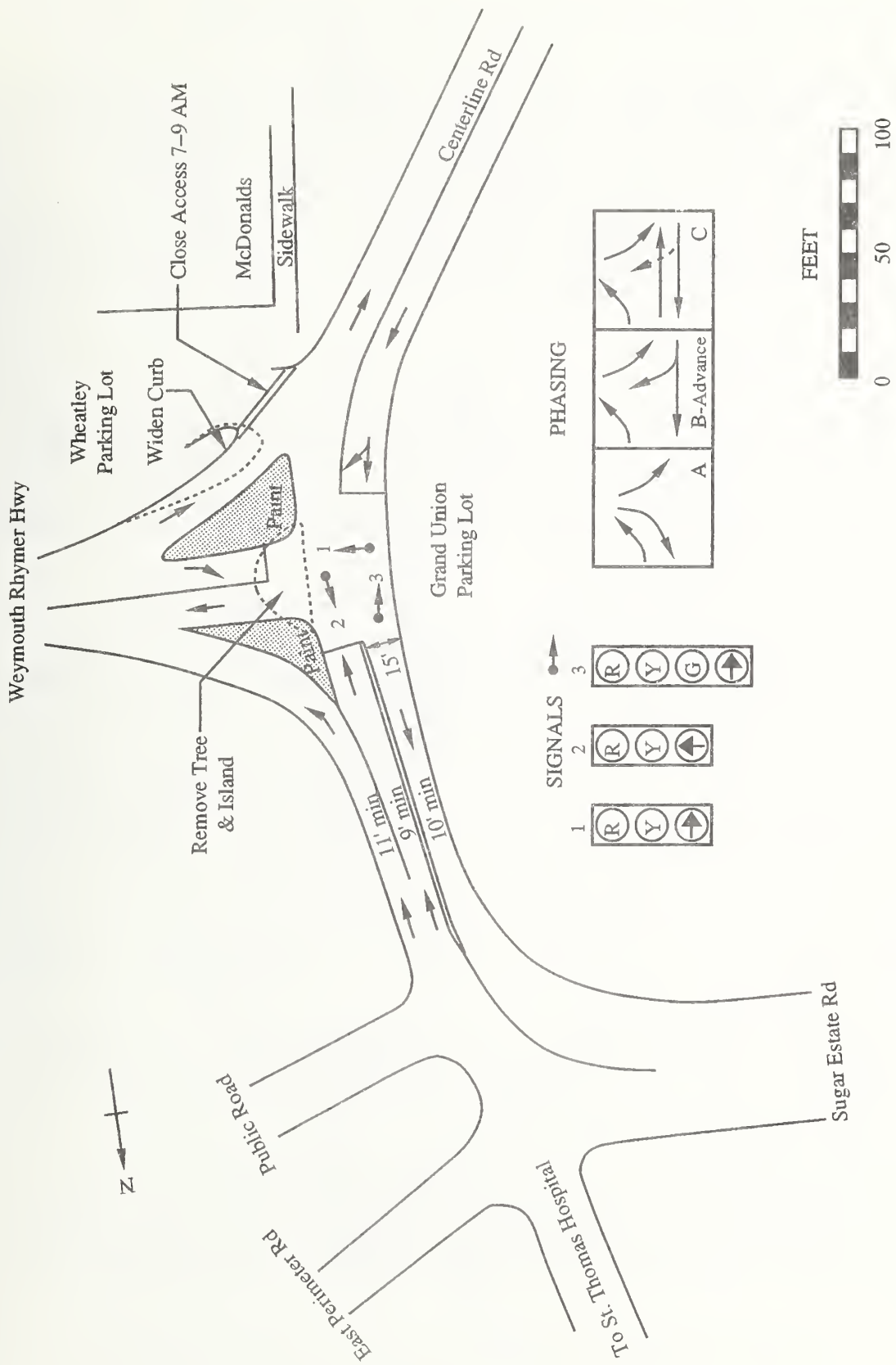


FIGURE 2-44. RECOMMENDED EARLY ACTION TREATMENT - WEYMOUTH RHYMER HIGHWAY / SUGAR ESTATE ROAD / CENTERLINE ROAD INTERSECTION

recommended, with at least two distinct timing patterns -- one for the morning and the other for the evening peak periods.

- Reduce interruptions to the heavy westbound left turns by closing Centerline Road access to the Wheatley Shopping Center from 7-9 am on weekdays. In order for traffic to flow most smoothly through this intersection, it would be desirable to close this access permanently and require traffic to use other access points.

The early action plan provides a framework for future widening at this intersection to increase capacity further. The traffic signals are placed to accommodate this widening.

2.3.2(c) Longer range plan

The recommended overall traffic improvement plan for urban St. Thomas/Charlotte Amalie is shown in Figures 2-45 and 2-46. Figure 2-45 shows the general improvement concept, while Figure 2-46 identifies the specific improvements. While the short range proposals will provide relief in certain areas, implementation of these longer range proposals is essential to relieve traffic congestion in Charlotte Amalie.

The recommended plan calls for the following major improvements:

- Intersection expansion and channelization at key junctions along Long Bay Road, Sugar Estate Road, Weymouth Rhymer Highway, and along Veterans Drive to the west of the center of town.
- Widening of Sugar Estate and Centerline Roads.
- A four-lane Veterans Drive-Long Bay Road from Windward Passage to the Havensight area.
- Coordination of traffic signals along Veterans Drive.
- Improvement of Weymouth Rhymer Highway (or construction of a Raphune Hill Bypass).

The following specific proposals are identified in Figure 2-46 and Table 2-13. Figure 2-47 shows the number of travel lanes that will be available for moving traffic. This system of improvements is necessary to provide continuity of capacity and to avoid transferring problems from one area to another. These proposals are described below.

Lovers Lane-Veterans Drive-Long Bay Road-De Beltjen Road [1]. The recommended treatment for this intersection (shown in Figure 2-48) is based upon the URS-Dalton Plan for the Veterans Drive-Lovers Lane Expansion. It modifies the plan to increase capacity, improve certain road alignments, and reduce costs.

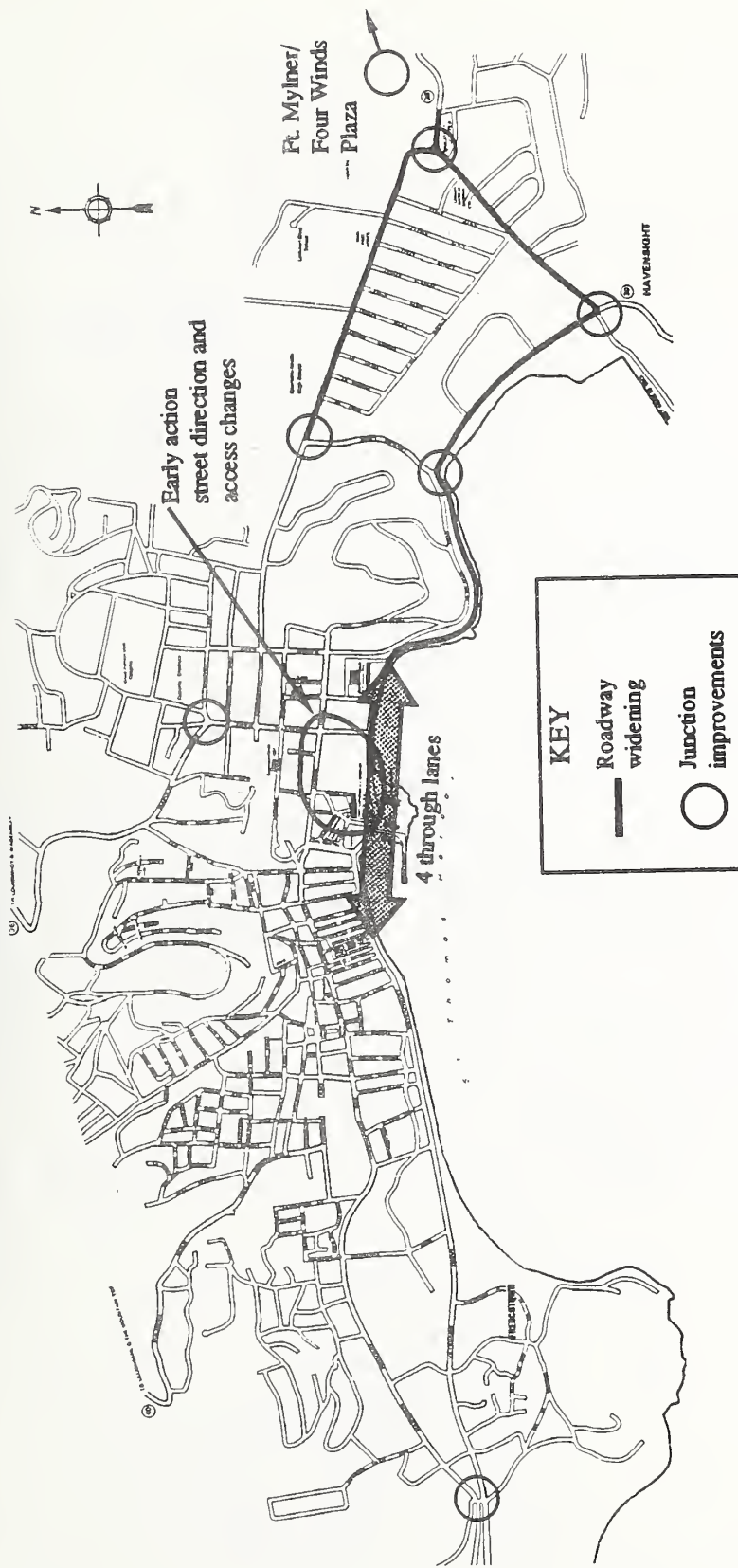


FIGURE 2-45. GENERALIZED CHARLOTTE AMALIE TRAFFIC IMPROVEMENT CONCEPT



FIGURE 2-46. TRAFFIC IMPROVEMENT PLAN - CHARLOTTE AMALIE

TABLE 2-13.
CHARLOTTE AMALIE TRAFFIC IMPROVEMENT PLAN

A - Early actions

Street direction and access changes. See Figure 2-38.

B - Longer range actions

- (1) Four lane operation at Fort/Legislature via one-way couplet
 - (a) Along water
 - (b) North of Fort
 - (c) Existing alignment (impacts Legislature)
- (2) Widen Veterans Drive to 4 thru lanes to Lovers Lane
- (3) Expand/channelize/signalize Veterans Drive-Lovers Lane junction
- (4) Widen Long Bay Road to 4 lanes
- (5) Expand/channelize/signalize Long Bay Road-Centerline Road Junction
- (6) Widen Frenchman Bay Road to 4 lanes; expand/channelize Havensite junction
- (7) Widen Centerline Road to 3 lanes
- (8) Expand/channelize/signalize Weymouth Rhymer Highway-Sugar Estate Road-Centerline Road junction; widen Weymouth Rhymer Hwy. to 4 lanes at base of hill
- (9) Expand/channelize/signalize Lovers Lane-Sugar Estate Road junction
- (10) Widen Sugar Estate Road to 3 lanes
- (11) Improve/expand Weymouth Rhymer Highway junctions - Ft. Mylner, Four Winds Shopping Center
- (12) Provide dual right turn lanes on northbound exit from Sub-base
- (13) Install right turn lanes
- (14) Coordinate Veterans Drive traffic signals

C - Future actions

- (101) Widen Lovers Lane
- (102) Weymouth Rhymer Hwy. improvement (or Raphune Hill Bypass)



FIGURE 2-47. PROPOSED TRAFFIC LANES

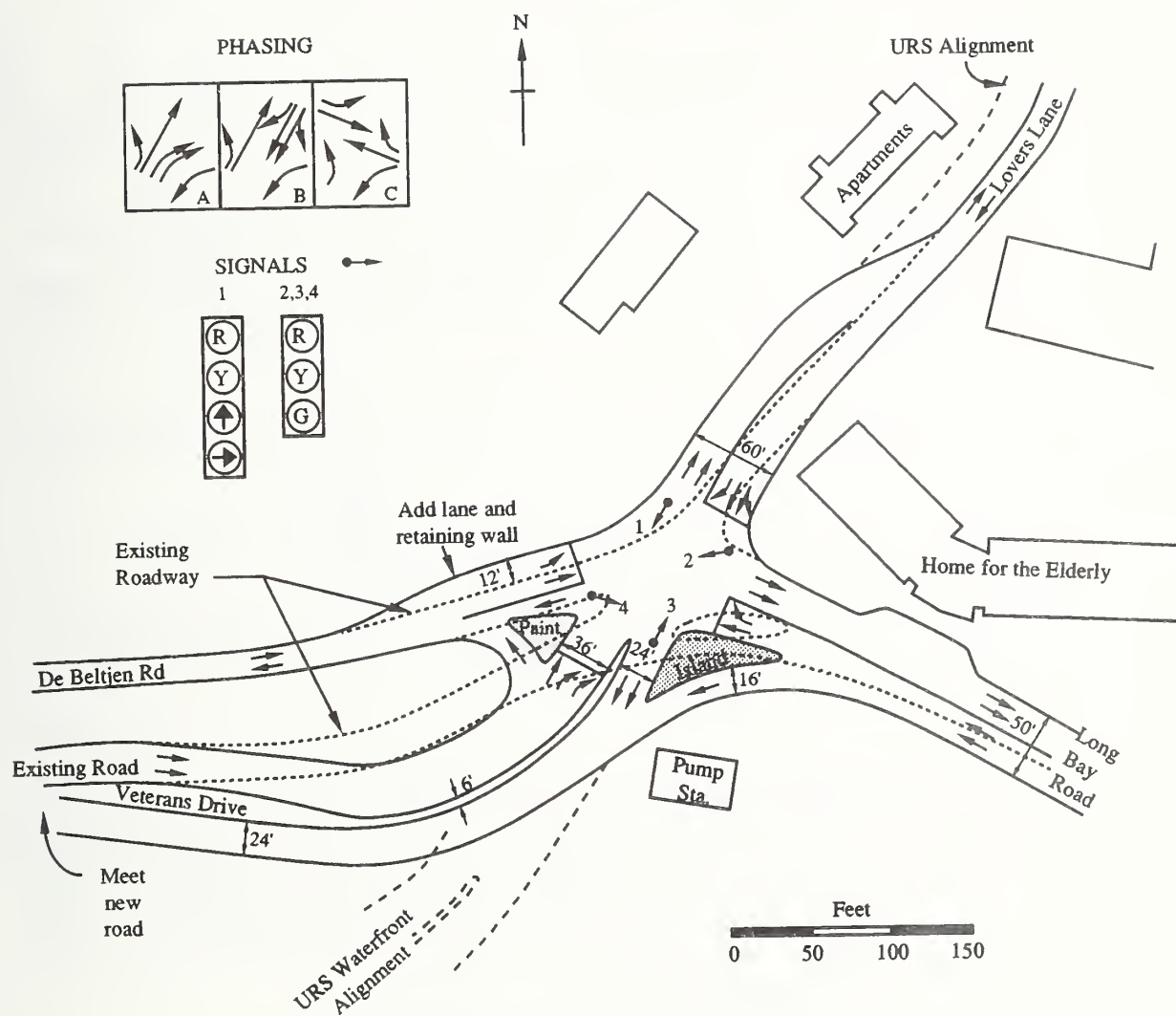


FIGURE 2-48. RECOMMENDED TREATMENT - LOVERS LANE / VETERANS DRIVE / LONG BAY ROAD / DE BELTJEN ROAD INTERSECTION

The treatment will match the road capacities to the east and west that will result from the widening of Veterans Drive and Long Bay Road. It is designed to facilitate the heavy east-west flow between Veterans Drive and Lovers Lane -- about 1,200 vehicles during each peak hour. Specific recommendations are as follows.

- Provision of three lanes on the Veterans Drive approach: two for the heavy right turn into Long Bay Road, and one for Lovers Lane traffic.
- Widening of De Beltjen Road (on the north side) to provide two eastbound lanes into the intersection. Because of the steep hill to the immediate north, some additional retaining walls may be needed.
- Provision of five lanes on the Lovers Lane approach: three southbound and two northbound. In contrast to the URS design, a transition is made to the existing roadway about 250 feet north of the intersection. Several structures along the west side of Lovers Lane are acquired, as in the URS design, to achieve the needed right-of-way.
- Provision of five lanes on the Long Bay Road approach: three into the intersection and two out. One of these lanes permits continuous left turns from Long Bay Road onto Veterans Drive.
- A three phase traffic signal cycle with the following phasing:
 1. All northbound traffic; westbound left turns.
 2. Northbound through and all southbound traffic; westbound left turns.
 3. All eastbound and westbound traffic.

Long Bay Road widening (Lovers Lane to Centerline Road) [2]. The Plan calls for widening Long Bay Road to four lanes between Lovers Lane and Centerline Road. At each of these junctions, a fifth lane would be provided for right turns. The widening has been incorporated into the DFW's ongoing road program. It is essential to: (1) serve the heavy traffic flows -- over 800 vehicles per hour -- in the heavy directions during peak hours; and (2) complement the Veterans Drive improvement.

Long Bay Road-Centerline Road-Frenchman Bay Road intersection [3]. The recommended treatment for this intersection is shown in Figure 2-49. It is designed to serve the 2,000 vehicles that enter the intersection during each peak hour plus the additional traffic that will be generated by further commercial development of the West Indian Company property. It is an enlargement of the plan initially developed by Alton Adams Associates, August 1, 1982. The recommended treatment is as follows.

- Three lanes into the intersection and two out of the intersection on the Long Bay Road and Frenchman Bay Road approaches: two lanes on

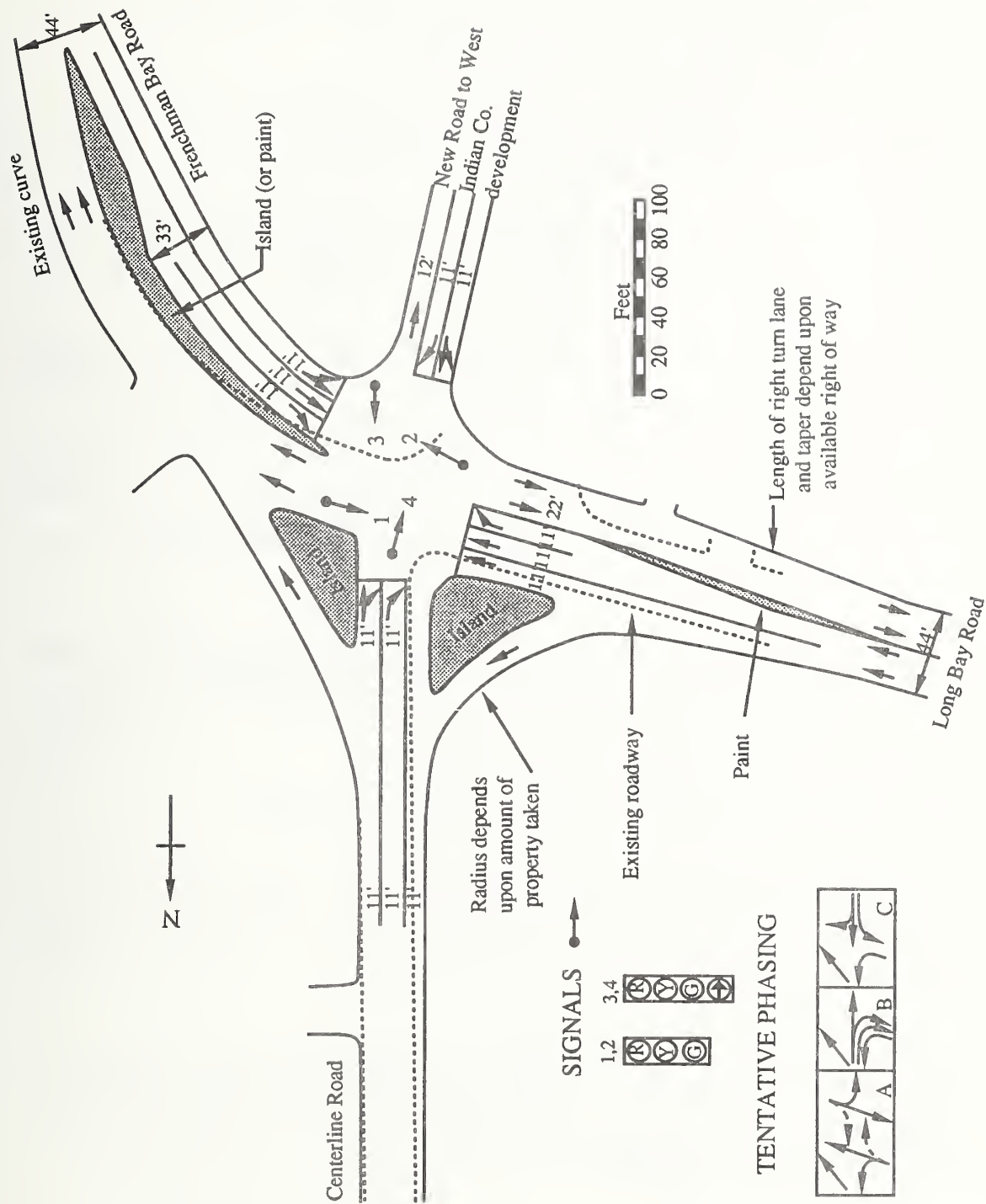


FIGURE 2-49. RECOMMENDED TREATMENT - LONG BAY ROAD / CENTERLINE ROAD / FRENCHMAN BAY ROAD INTERSECTION

each approach are for through traffic and one lane is for right turns.

- A new three-lane extension of Centerline Road to the south connecting with the West Indian Company development area, and serving as a main access point to this planned development.
- Three lanes are provided on the Centerline Road approach: two for through (West Indian Company) and right turning traffic, and one for left turns onto Frenchman Bay Road.
- A new continuous left turn lane from Long Bay Road into Centerline Road (provided by acquiring some of the property on the northwest corner of the intersection). The specific design will depend upon the amount of property acquired.
- A three-phase traffic signal operation in which the east-west traffic moves on the first phase, the southbound traffic on the second phase, and the northbound traffic on the third phase. Eastbound and northbound left turns move continuously. The separate phases for northbound and southbound traffic make it possible to operate double right turn lanes from Centerline Road into Long Bay Road. These dual lanes are desirable to serve the heavy right turns -- over 300 vehicles during the peak-hour. This turn volume would be heavier if not constrained by capacity.

Frenchman Bay Road widening (Centerline Road to Havensight) [4]. The recommended treatment calls for widening Frenchman Bay Road east of its intersection with Centerline Road. The proposed widenings are as follows.

- At Centerline Road junction -- 5 lanes.
- Centerline Road to North Access Havensight -- 4 lanes.
- North access Havensight to South Access -- 3 lanes.

The widening would be accomplished on the southeast side of the road, and would require taking some trees on the West Indian Company land. It provides capacity consistent with travel demands (up to half of all traffic along Frenchman Bay Road is to or from Havensight), and it separates through and right turning traffic.

Centerline Road widening (Long Bay Road to Weymouth Rhymer Highway) [5]. The recommended treatment calls for widening Centerline Road to 33 feet (the widening initially set forth in the Alton Adams Associates designs of 1982-1983), thus making it possible to provide protected right turn lanes at First Avenue and other intersecting streets.

Weymouth Rhymer Highway-Sugar Estate Road-Centerline Road intersection [6]. The recommended treatment for this intersection is shown in Figure 2-50. The overall geometry and traffic signal placement/phasing are similar

to those for the early action treatment and to those developed by Alton Adams Associates. However, additional lanes are provided on Centerline Road and Weymouth Rhymer Highway to better separate movements.

- Four lanes on Weymouth Rhymer Highway approaching the intersection. The added width makes it possible to more effectively separate right and left turn movements. Providing these lanes will impact the parking area near the Pizza Hut.
- Four lanes on Centerline Road south of the intersection. The northbound right turns and through movements each have a separate lane; the westbound left turn from Weymouth Rhymer Highway merges into a separate lane on Centerline Road.
- Transition to a three-lane Centerline Road would take place about 300 feet south of Weymouth Rhymer Highway.

Lovers Lane-Sugar Estate Road intersection [7]. During peak hours 1,100 to 1,300 vehicles enter the intersection, and one-way flows on Sugar Estate Road range from 500 to 700 vph (Figure 2-51). The recommended treatment for this intersection (Figure 2-52) is based upon the Alton Adams Associates July 1982 plans. It is designed to better segregate right turns from other traffic, especially along Sugar Estate Road.

The principal features of the recommended plan are as follows.

- Widening of Sugar Estate Road to 33 feet to provide a protected right turn lane for both directions.
- Turning radii for left turns to and from Lovers Lane are increased to at least 50 feet. The channelized northbound left turn lane is shown as suggested in the Adams' Plan; however, a tighter, more space-saving design could be provided.
- A simple two-phase traffic signal. Semi-actuated controls may be desirable in which Lovers Lane traffic is on call.

The plan also shows how Lovers Lane might be widened and extended to connect with a possible future Raphune Hill Bypass. The future design would provide five north-south lanes at the junction; one of these lanes would be for right turns and four would be for through traffic.

Sugar Estate Road widening (Lovers Lane to Centerline Road) [8]. The plan calls for widening Sugar Estate Road to 33 feet west of Lovers Lane to the point where the road widens adjacent to the Hospital. The widening would provide a through travel lane in each direction plus a shared right turn lane. It would provide more road space at the Charlotte Amalie High School, thereby reducing the congestion that occurs when standing or waiting vehicles block the through travel lanes.

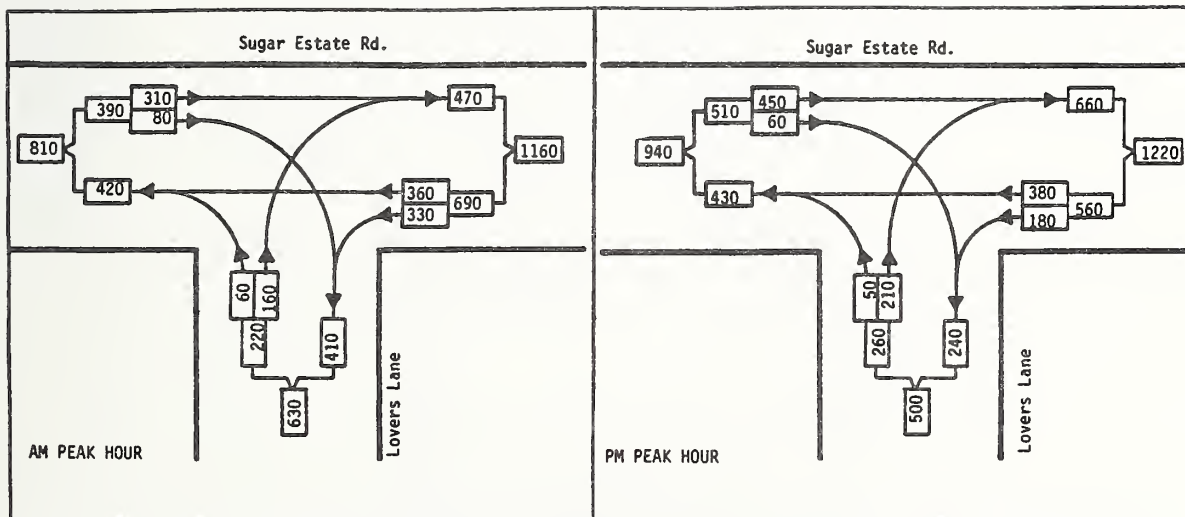
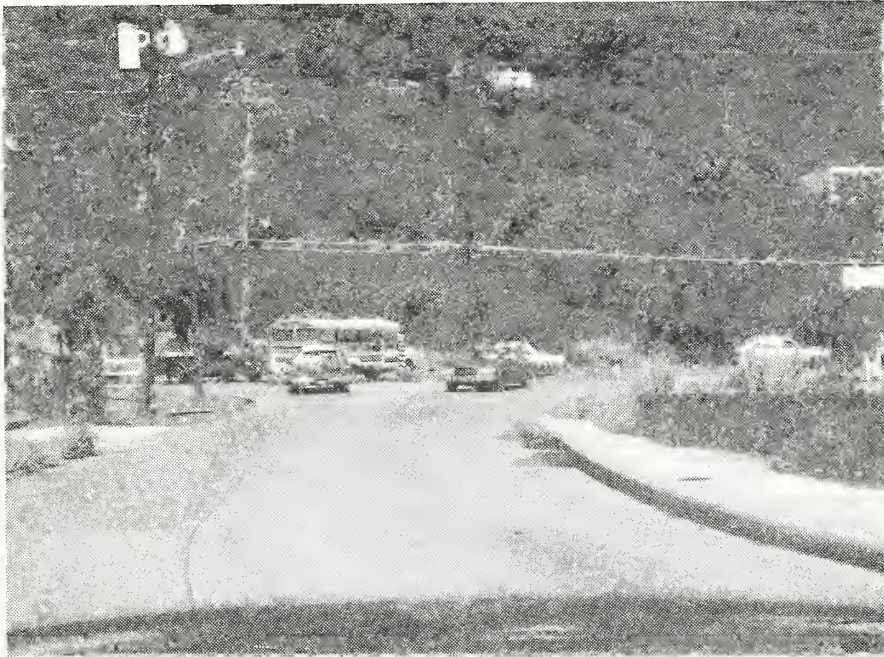


FIGURE 2-51. INTERSECTION PHOTO AND 1988 PEAK HOUR TRAFFIC VOLUMES-
LOVERS LANE / SUGAR ESTATE ROAD

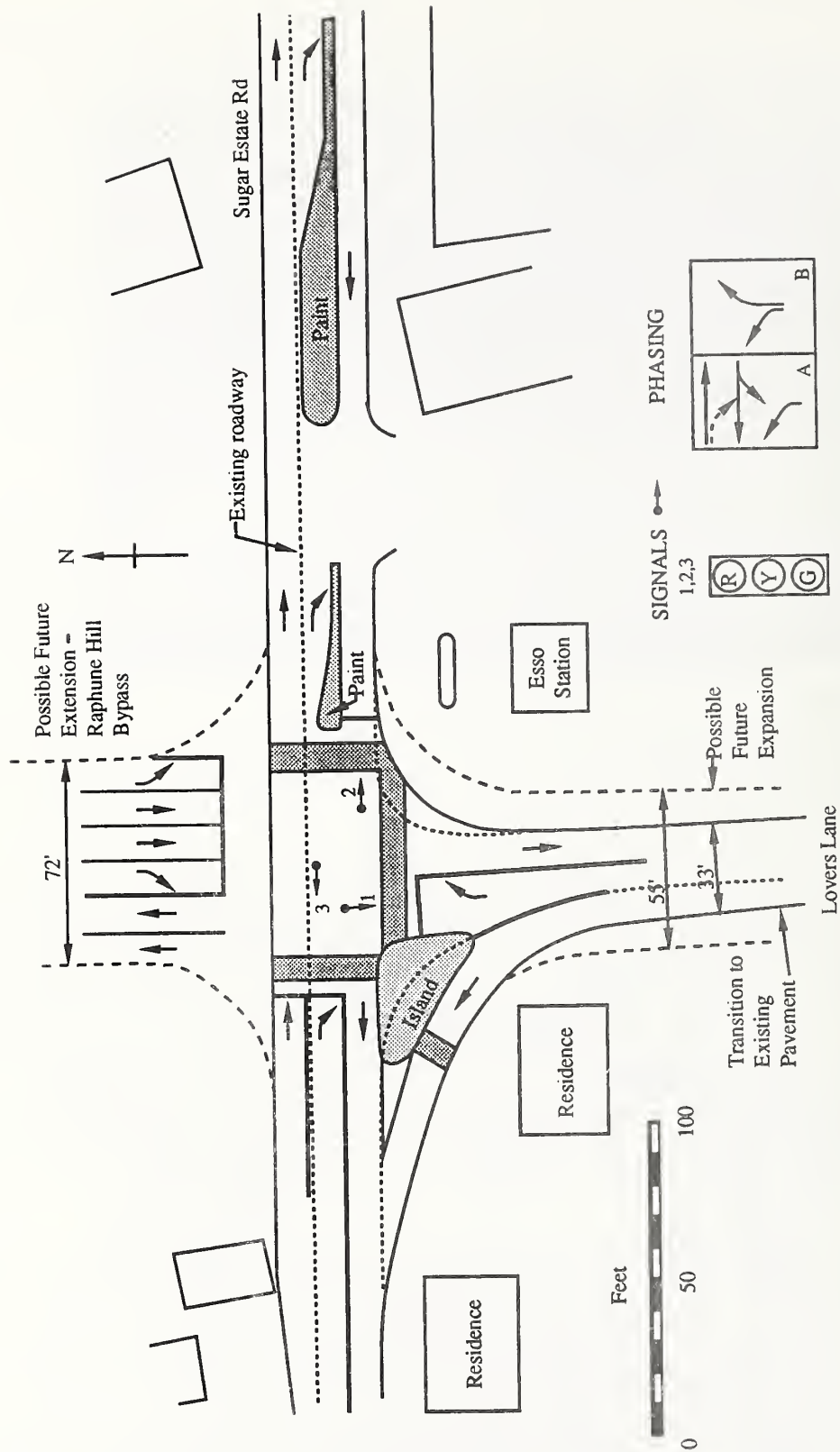


FIGURE 2-52. RECOMMENDED TREATMENT - LOVERS LANE / SUGAR ESTATE ROAD INTERSECTION

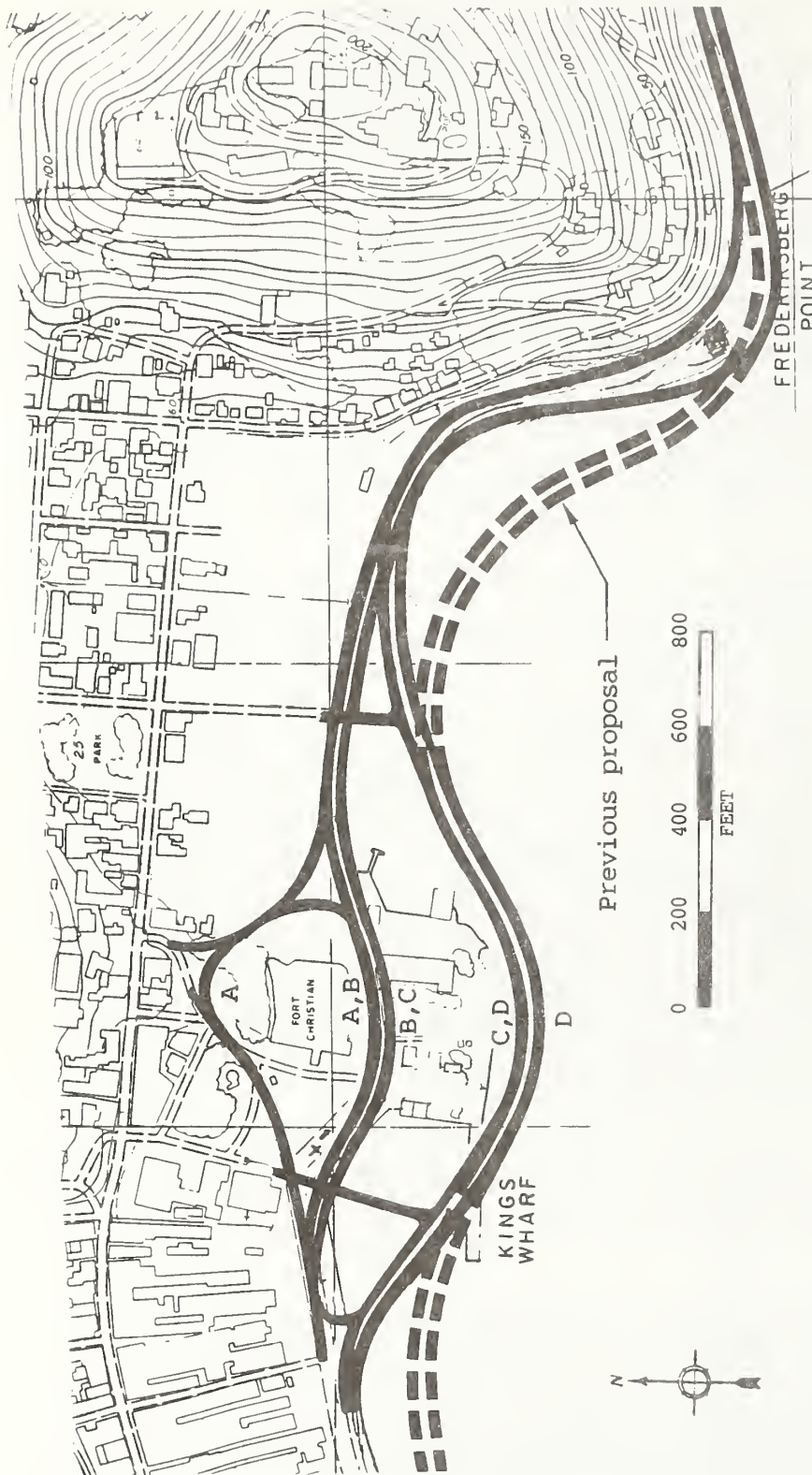
Veterans Drive in the vicinity of Fort Christian [9,10]. The provision of additional east-west capacity through the center of Charlotte Amalie is the key to untangling the gridlock. However, differing views on how the increased capacity best could be provided has led to inaction for more than a decade. The proposed solutions have varied widely in terms of their nature, design, costs, impacts, and effectiveness. These past proposals have included:

- (1) The four-lane waterfront highway. This was proposed initially in the 1972 Highway Needs Study, supported by the Virgin Islands Department of Public Works, and thoroughly analyzed in an environmental impact statement. This four lane highway would extend on reclaimed waterfront land from Windward Passage to Lovers Lane; it would serve through traffic, while traffic to/from the central business district (CBD) of Charlotte Amalie would utilize the existing road. It provides sufficient capacity for future growth, and is operationally viable, even though it creates several new major intersections that could impede traffic flow along the waterfront. It also adds a lineal park to the city center.

It is a costly highway, however, and serious questions arise concerning the Government's ability to finance its construction. It would cause serious disruption to the central area during its construction, and it could create a barrier between the town and the waterfront.

- (2) The "one way loop" scheme. Proposed by the League of Women Voters, this concept pairs Norre Gade and De Beltjen Road with Veterans Drive, as a one-way east-west pair. To permit the free flow of traffic, a one-way loop is created in the eastern part of town by operating Lovers Lane one-way northbound; Sugar Estate Road one-way eastbound; Centerline Road one-way Southbound; and Long Bay Road one-way westbound. This concept avoids impacting the Charlotte Amalie waterfront. However, it does not increase the number of east-west traffic lanes. Furthermore, it: (1) places undue pressure on Norre Gade at Hospital Gade; (2) increases travel distances; (3) requires trucks to traverse relatively steep grades on De Beltjen Road; and (4) routes the heavy eastbound traffic through the Emancipation Gardens Park area. It is not a practical way to add capacity. (See Appendix B for details.)
- (3) An inland bypass. Initially proposed in 1972, this bypass would circumscribe the town on the north. It is not a viable option because of its impact on development, indirect travel, steep grades, and costs. More importantly, it would create capacity problems where it intersects Mafolie Road.

Because of the various problems associated with the initial concepts, alternative proposals were developed. These options, as shown in Figure 2-53, include: an "inland one-way system" proposed by the Federal Highway Administration; a widened two-way Veterans Drive on its present alignment (requires taking part of the Legislature Building); a waterside one-way system (a scaled down version of the 1974 deJongh proposal); and a waterside two-way system (the deJongh proposal). Each concept provides the needed



Note: Federal Highway Administration, U.S. Department of Transportation Recommendation is Alignment A.

FIGURE 2-53. ALTERNATE ALIGNMENTS - VETERANS DRIVE EXPANSION

capacity, and would relieve the waterfront gridlock. The concepts differ mainly in their environmental and land use impacts.

The three concepts are similar from east of Hospital Gade to Lovers Lane. They provide four travel lanes between these points on land created by filling in a portion of the Harbor. (The precise alignment would depend upon whether it is more economical to bypass or relocate the pumping station.) Each concept extends a widened Hospital Gade to connect with both directions of the widened Veterans Drive at a traffic signal controlled intersection.

- A. The inland one-way scheme. This option develops a new two-to-three lane eastbound one-way road around the north side of Fort Christian starting from Tolbod Gade to a point west of Hospital Gade (Figure 2-54). The existing Veterans Drive would provide two westbound lanes to Forts Pladsen, and three westbound lanes to Tolbod Gade. Tolbod Gade would operate one-way northbound, and a new one-way southbound street would be developed just east of the Fort. Thus, a clockwise one-way loop is provided around the Fort.

The new eastbound road follows an elliptical alignment to minimize the impact on Emancipation Park, the landscaped areas north of the Fort, and existing commercial buildings east of Fortet Strade. However, to maintain at least a 200-foot radius of curvature, it requires taking a portion of the existing Government parking lot, and possibly one building.

This option minimizes the impact on the waterfront, and its one-way operation facilitates right turns. However, it has a sharp alignment, impacts the Government parking lot, separates the Fort from Main Street, and cuts through a historic district and an area considered for commercial development.

- B. Widened two-way Veterans Drive on existing alignment. This concept develops a four lane, two-way Veterans Drive on the existing alignment (Figure 2-55). The sharp curve at Tolbod Gade is eased by extending the widened Veterans Drive almost due west. This is accomplished by filling in a very small part of the Harbor. It makes it possible to remove the existing Veterans Drive roadway between Tolbod Gade and Forts Pladsen. The widened and relocated Veterans Drive intersects with Tolbod Gade, Forts Pladsen and Hospital Gade.

This concept provides the best alignment for Veterans Drive, permits the Emancipation Park area to be expanded southerly, has minimum impact on the waterfront, and probably costs the least to develop. However, it requires removing a section of the Legislature Building, or requires relocating the entire building.

- C. Waterside one-way system. This option develops a new two-to-three lane westbound one-way road around the south side of the Legislature Building from a point west of Tolbod Gade to a point east of Hospital Gade (Figure 2-56). The existing Veterans Drive provides two eastbound lanes in this area. Full intersections are provided

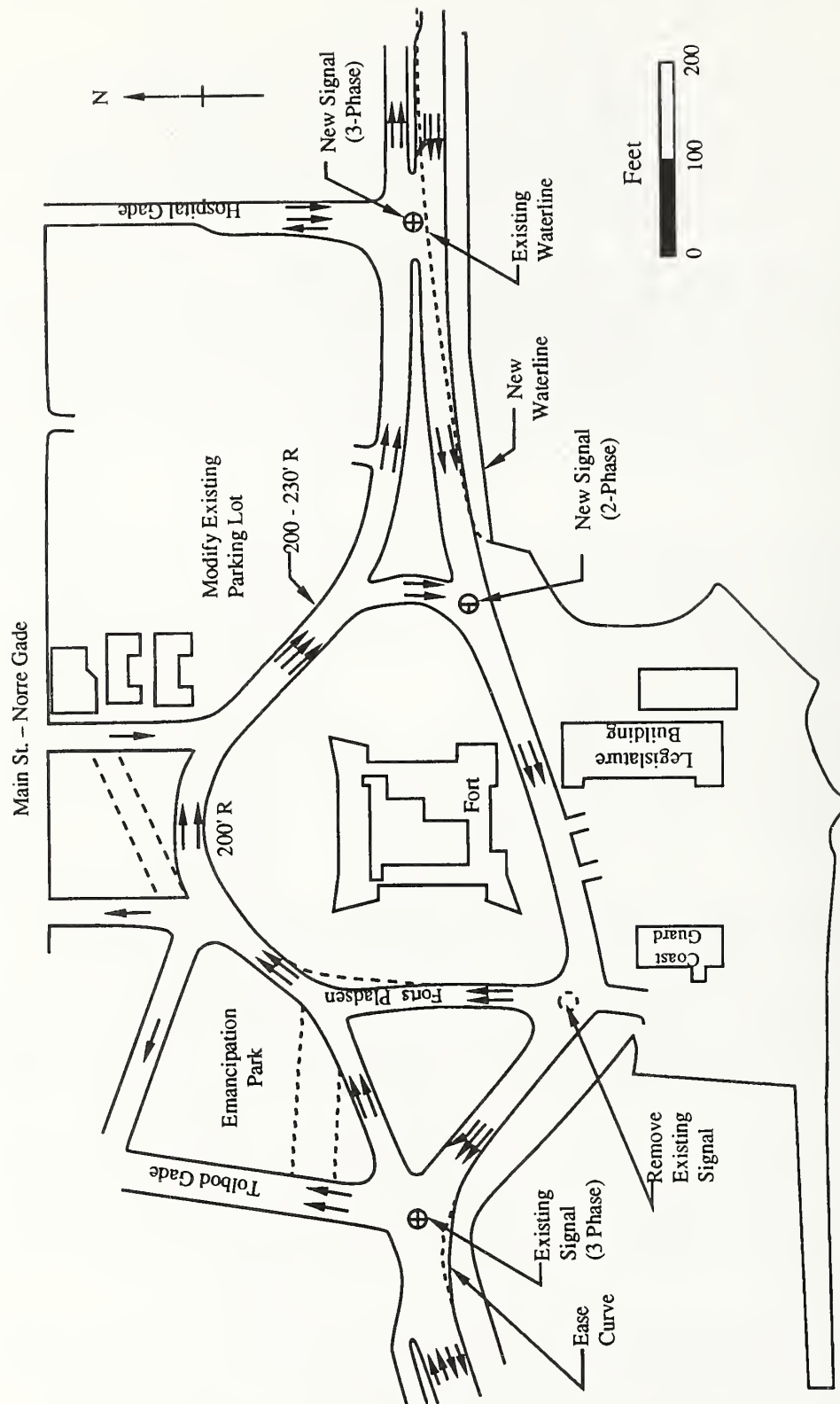


FIGURE 2-54. INLAND ONE-WAY SYSTEM - VETERANS DRIVE

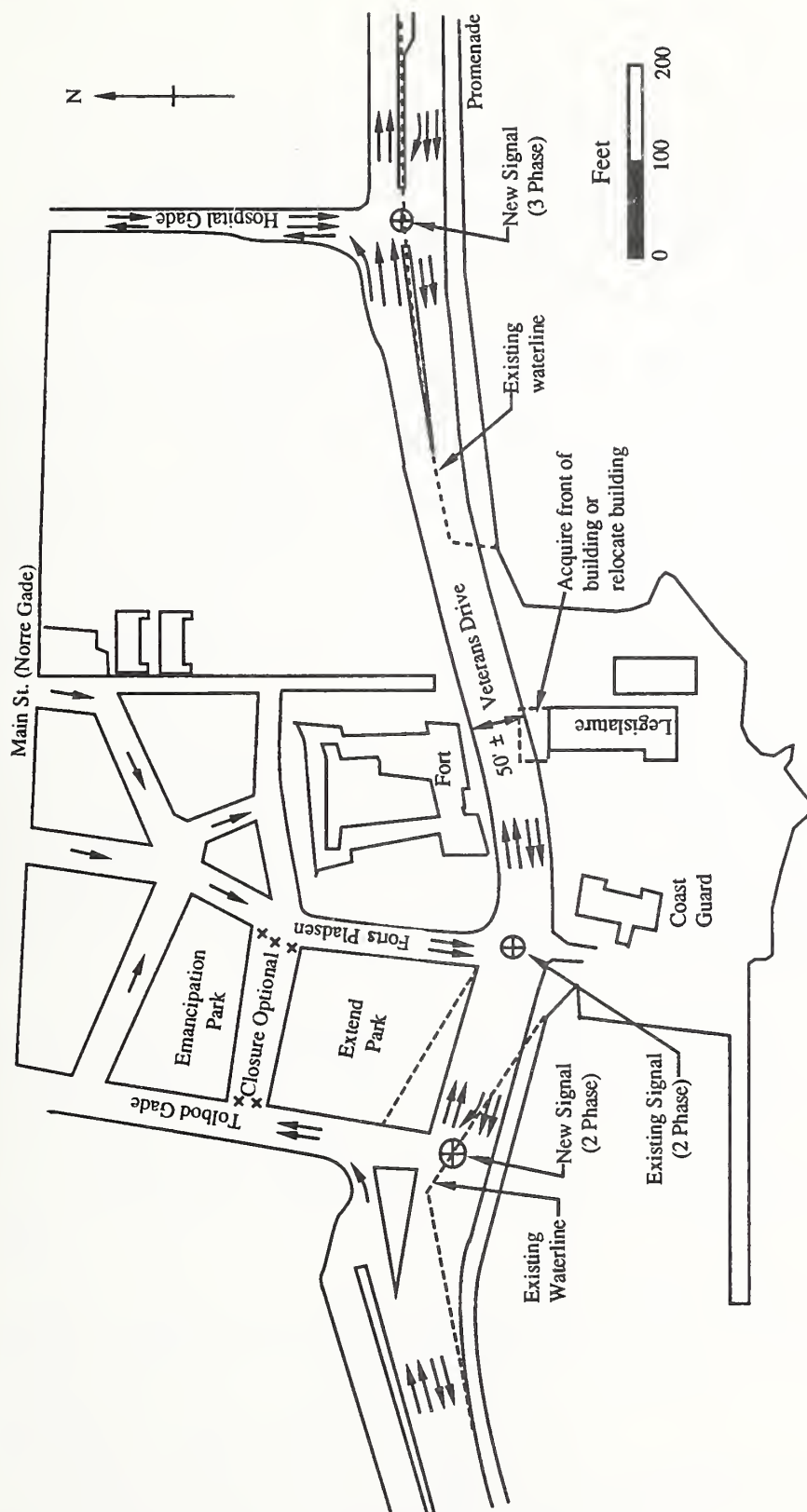


FIGURE 2-55. FOUR-LANE VETERANS DRIVE ON EXISTING ALIGNMENT

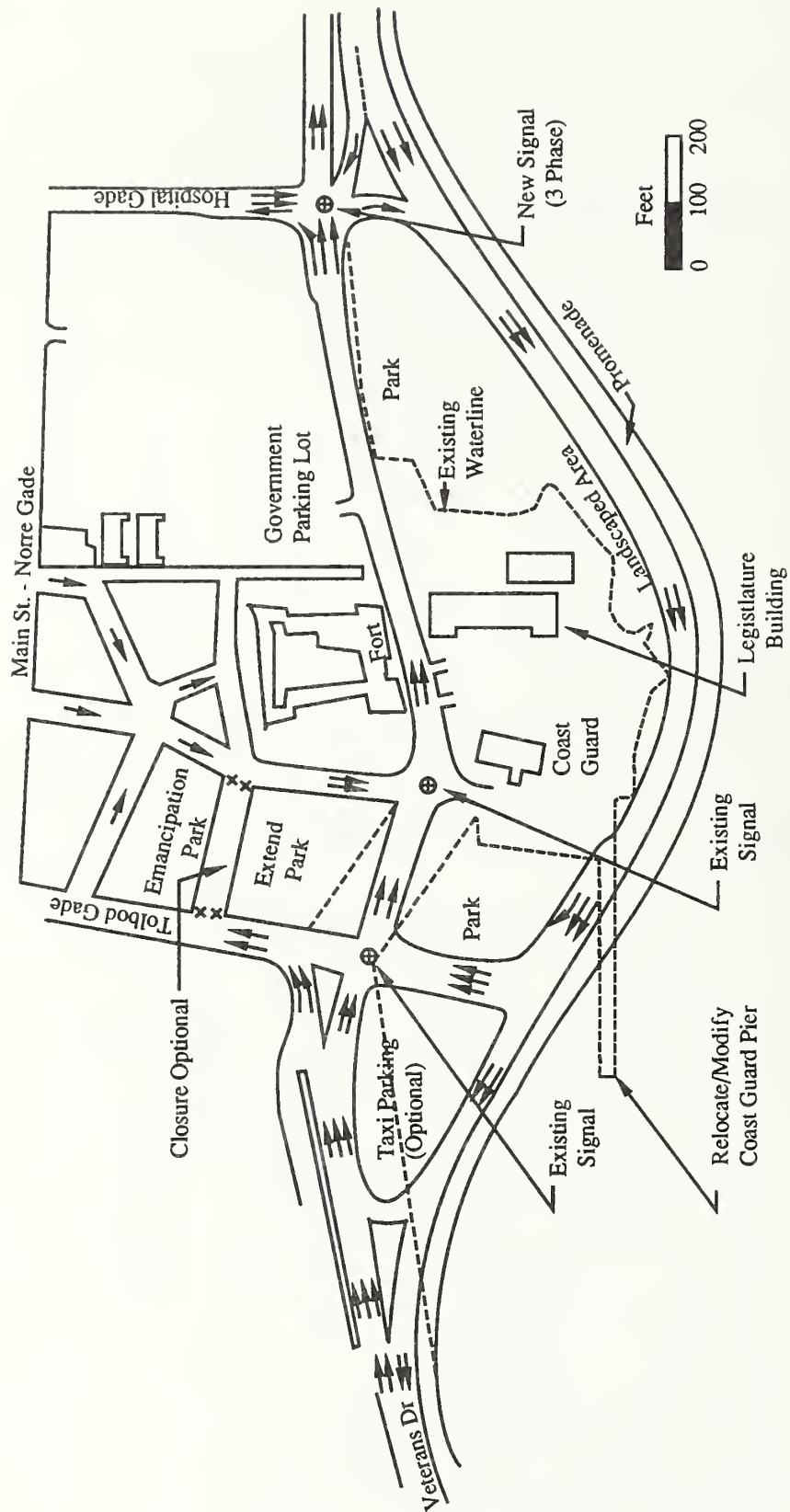


FIGURE 2-56. WATERSIDE ONE-WAY SYSTEM - VETERANS DRIVE

at Hospital and Tolbod Gades. A clockwise one-way circulation pattern is provided around the Legislature Building.

The new one-way westbound road is obtained by filling in the waterfront in this area. A 25-foot pedestrian promenade along the road affords pedestrian access to the waterfront. The access west of the Legislature Building-Coast Guard "peninsula" would be developed as a park, thereby enabling Emancipation Park to be extended to the water. The area east of the "peninsula" could be used for parking or a park.

This concept provides direct access into the shopping area between Tolbod and Hospital Gades, and its design can permit continuous westbound travel. It doubles eastbound capacity on the approach to Tolbod Gade, and allows direct access to and from the Government parking lot. It provides an easier road alignment than the inland scheme (option A); it does not impact either the Government parking lot, the Emancipation Park area, or the Legislature Building; and it makes more land available for park or parking purposes.

However, the concept does impact the waterfront, and is probably more costly than options A and B. It requires relocating the Coast Guard Pier.

- D. Waterside two-way system. A fourth alternative is to develop a two-way road along the waterfront close to the alignment of Option C. This option was initially suggested in the deJongh Associates Main Street Plan. It eliminates Veterans Drive between Tolbod and Hospital Gades, thereby allowing the entire area between the Legislative Building and the Fort to be pedestrianized. It does, however, require reverse curves in two-directions and more land fill. Its cost and waterfront impacts would be the greatest.

Each of the options analyzed will provide the needed increase in traffic capacity and are roughly equivalent in terms of their traffic service. All appear to be affordable, and cost substantially less than the initially proposed four-lane waterfront highway. The choice will be based mainly on land-use, cost, and environmental considerations.

- If it is desired to preserve both the Legislature Building and the waterfront, the FHWA "inland" one-way system (Option A) is preferable.
- If cost is the main consideration, Option B is preferable (assuming that the Legislature Building can be modified or relocated).
- If it is desirable to add parkland and parking space, Option C, the waterside one-way system, is preferable.
- If it is desirable to preserve both the Legislature Building and the parking lot, and to create a pedestrian zone between the Fort and the Legislature Building, Option D is preferable.

The Federal Highway Administration, U.S. Department of Transportation, recommended Option A. Regardless of the alternative chosen, the most important point is to select an option and move ahead with it.

Route 38 (Weymouth Rhymer Highway) at Ft. Mylner [11]. The recommended treatment (shown in Figure 2-57) is based upon road changes previously proposed by the Department of Public Works.

- Widening of Weymouth Rhymer Highway to provide a northbound right turn lane into Route 32.
- Widening of Route 32 to provide separate westbound right and left turn lanes approaching Weymouth Rhymer Highway.
- A channelized southbound left turn lane with a minimum 35 foot radius (requires the purchase of a portion of the vacant property in the eastern quadrant of the intersection). Although the specific design and radius will depend upon the property available, the radius must be at least 20 to 25 feet.
- A simple two-phase actuated traffic signal control with minimum entry periods for Route 32 traffic.

Route 38 at south entrance to Four Winds Plaza [11]. The recommended treatment (shown in Figure 2-58) provides a northbound right turn lane on Route 38. This is achieved by removing an existing island, and by converting the existing left turn lane into a combined left turn and through lane. Route 38 is widened slightly on its west side north of the intersection to improve the northbound alignment. Several changes in the placement of traffic signals are made because of the changed roadway configuration.

Smith Bay Road-Route 384-Four Winds Plaza [11]. (See Figure 2-59.) The recommended treatment, shown in Figure 2-60, is designed to reduce the delays that occur at this junction throughout much of the day. It includes two stages of improvements.

- Immediate Action. The existing signal sequence should be revised to allow various movements on the same approach to move together as much as possible. The proposed "lead-lag" overlapping phase sequence reduces the likelihood of north-south through and right turns blocking each other. It is recommended that westbound through and right turns move on Phase A-1, east-west through traffic on Phase A-2, and eastbound through and right turn traffic on Phase A-3. Phases B-1 and B-2 would operate as they do now.
- Subsequent Development. The long range treatment widens Smith Bay Road to three lanes on its approach to the intersection from the east. The widening makes it possible to separate fully westbound

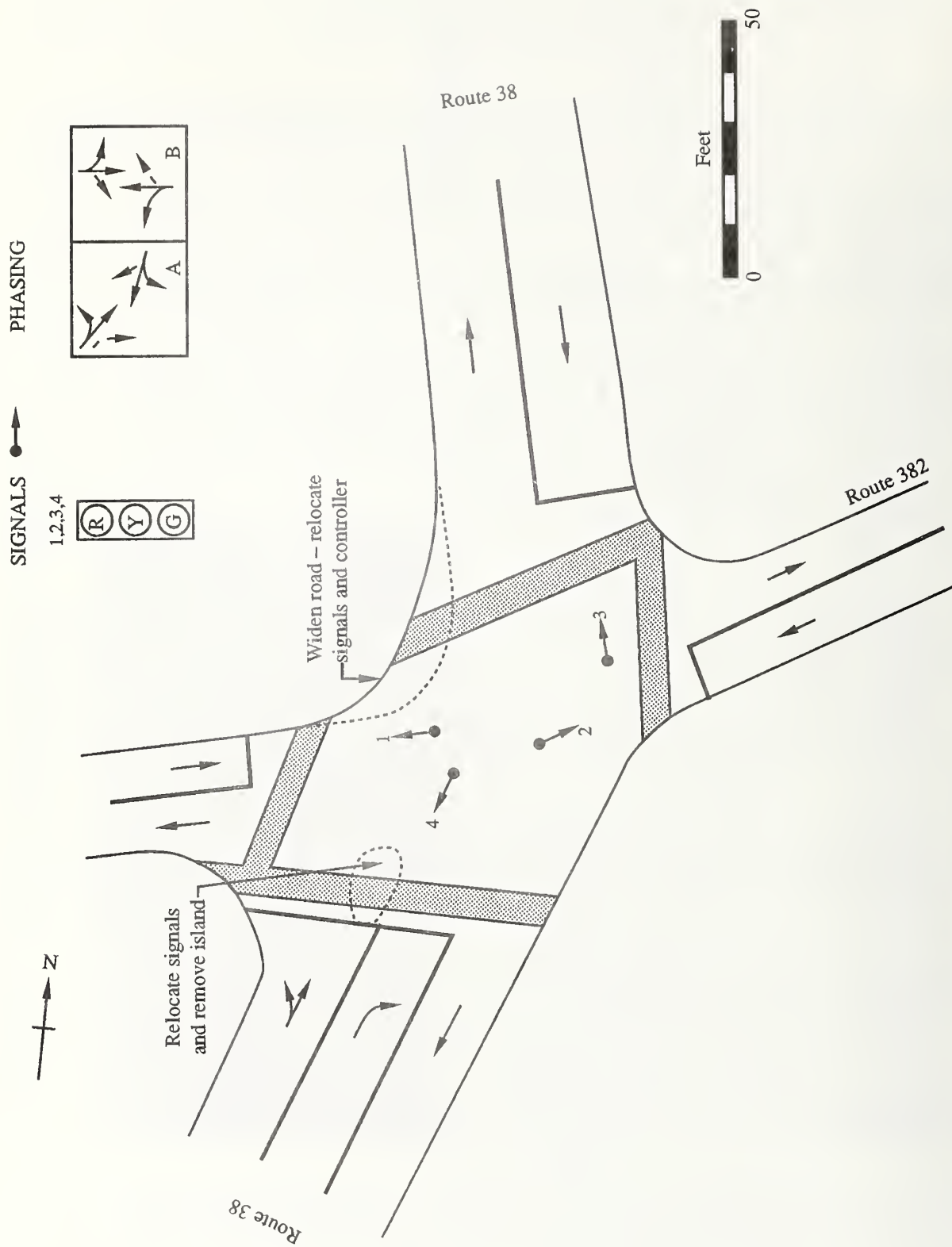


FIGURE 2-58. RECOMMENDED TREATMENT - ROUTE 38 / SOUTH ENTRANCE TO FOUR WINDS PLAZA INTERSECTION

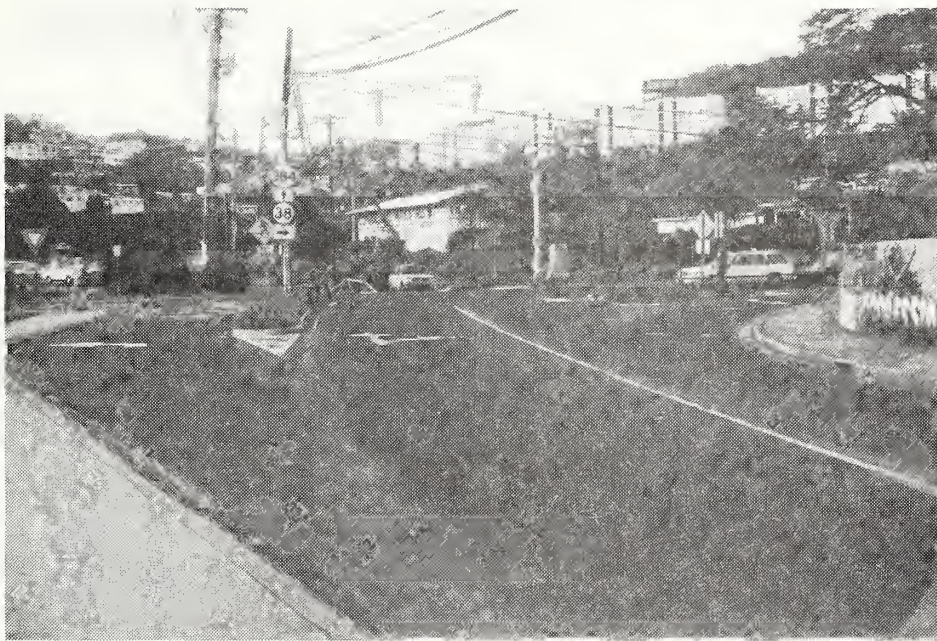


FIGURE 2-59. INTERSECTION PHOTOGRAPHS - SMITH BAY ROAD / ROUTE 384 / MAIN ENTRANCE TO FOUR WINDS PLAZA



right turns from the heavy westbound left turns. It is accomplished on the north side of Smith Bay Road since the existing retaining wall on the south side makes widening there impractical. Some relocation of existing storm drains will be necessary.

Sub-Base access to Veterans Drive [12]. Dual northbound right turn lanes should be provided on the Route 304 junction with Veterans Drive in the sub-base area. These lanes will increase the northbound capacity and reduce congestion during peak periods. Minor curb adjustments and widening will be required.

Right turn lanes on Veterans Drive [13]. East-west right turn lanes should be provided on Veterans Drive in the Frenchtown area. These lanes can be developed by removing the median island and restriping the roadway. Some minor widening also may be needed.

Traffic signal coordination [14]. Effective traffic signal coordination along Veterans Drive, Main Street/Norre Gade and Hospital Gade is desirable to minimize delays. The Veterans Drive coordination should be done in concert with the widening of the roadway between Fort Christian and Lovers Lane. The recommended traffic signal coordination plan is shown in Figure 2-61.

- The pre-timed and actuated signals along Veterans Drive should be coordinated to operate on a 70 to 80 second cycle. Time-based coordination units should be installed at each intersection, and keyed to a new "master" control unit.
- Pre-timed signals along Main Street/Norre Gade should be coordinated on a 60 second cycle by physical interconnection and/or controller modifications.
- Signals on Norre Gade and Hospital Gade should be coordinated on a 50 second cycle by physical interconnections and/or controller modifications.
- Traffic responsive actuated signals should control movements at Sugar Estate Road and Lovers Lane, Long Bay Road at Lovers Lane and Centerline Road, and along Weymouth Rhymer Highway/Route 38 to the Four Winds Plaza. Because of the heavy turning movements at most of these intersections, the traffic responsive feature of the actuated type signal is more important than coordination between adjacent intersections.
- A generalized time-space diagram for Veterans Drive is shown in Figure 2-62. Progression or "green wave" speeds would range from 29.4 mph with an 80-second cycle to 33.6 mph with a 70-second cycle. The green band would approximate 40 percent of the cycle.

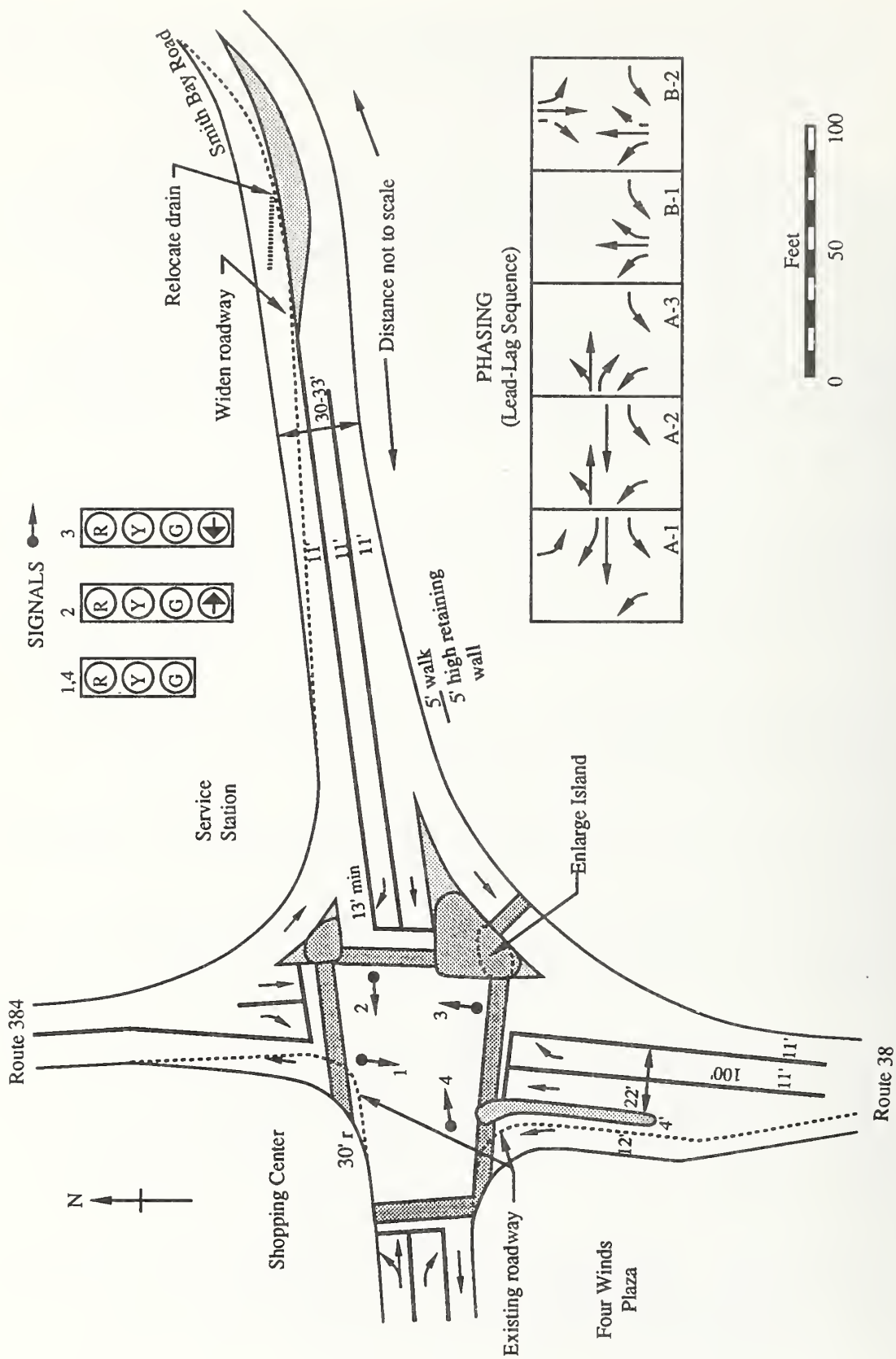


FIGURE 2-61. TRAFFIC SIGNAL COORDINATION AND IMPROVEMENT PLAN

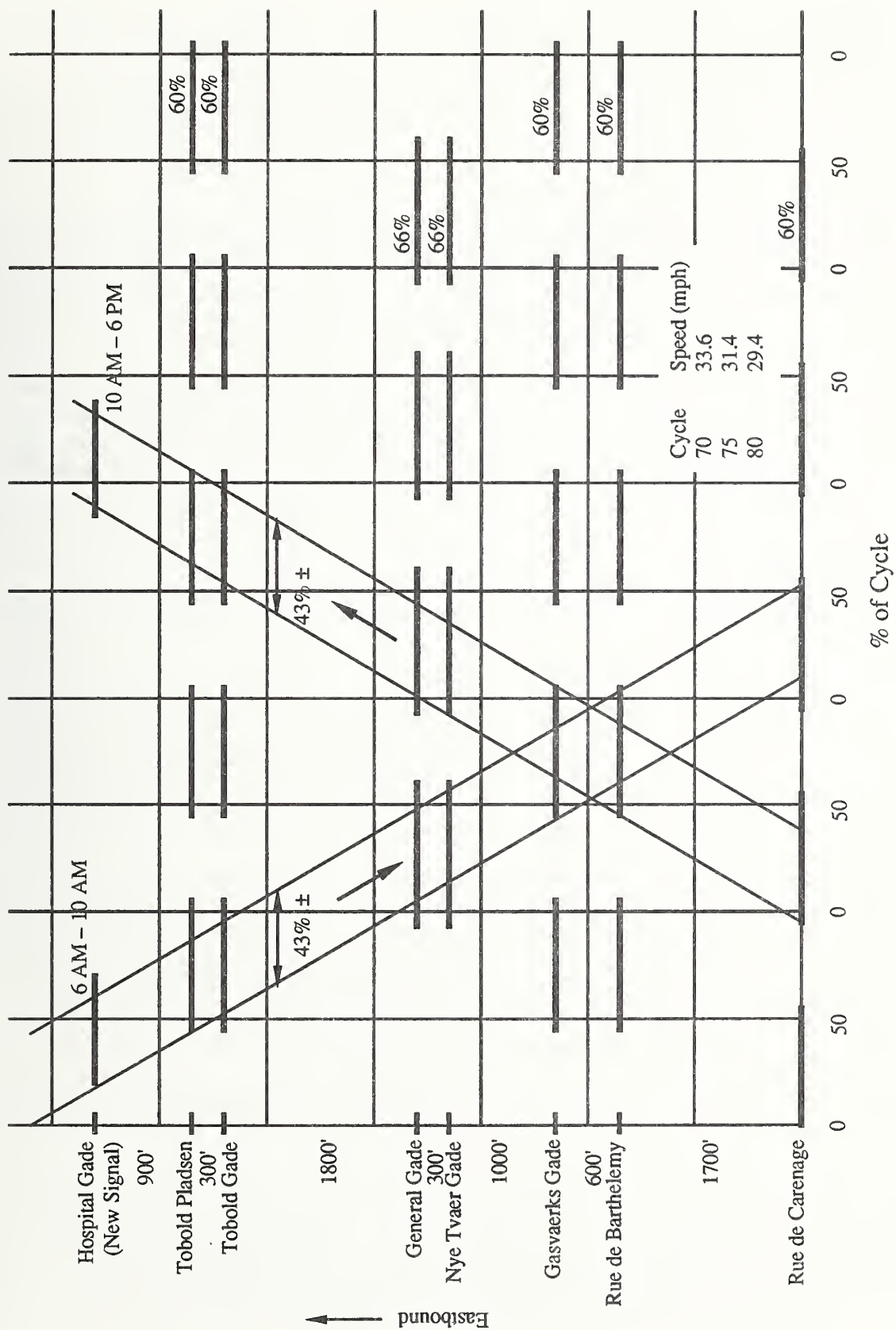


FIGURE 2-62. GENERALIZED TIME-SPACE DIAGRAM - VETERANS DRIVE

New signals are recommended on Veterans Drive at Hospital Gade. Because these signals do not "fit" into the time-space pattern, they should operate on two distinct offsets: one from 10 am to 6 pm which would favor eastbound traffic; and the other, from 6 pm to 10 am, which would favor westbound traffic. With the "waterside one-way loop" scheme, westbound traffic would move at all times, and the offsets should be set for eastbound traffic flow.

Improving Raphune Hill traffic flow. Much of the traffic congestion along Weymouth Rhymer Highway/Route 38 results from the intersection delays at Centerline Road and in the Fort Mylner and Four Winds Plaza areas. These conflicts, and the "shock waves" that they create, will be reduced by the recommended intersection improvements. However, the long, steep grade on Raphune Hill will still pose a problem, especially for trucks.

The need to improve traffic flow across Raphune Hill will remain. Continued growth in the area, and the development of a new Government Center between Charlotte Amalie and Ft. Mylner, will increase traffic pressures along this route. Accordingly, plans have evolved over the years for a new four-lane Raphune Hill Bypass. This Bypass would commence at a widened Lovers Lane and follow a new alignment north of the existing highway. It would join Weymouth Rhymer Highway to the west of Route 39. The Bypass initially was developed as a four-lane road at a cost of about \$30 to \$40 million at 1988 levels. Because of these costs, a two lane Bypass with passing lanes is now being considered -- at a probable cost of about \$20 to \$25 million.

The Bypass would solve the Raphune Hill traffic problem. But it would place increased pressures on Weymouth Rhymer Highway/Route 38 between Route 39 and Four Winds Plaza. To avoid transferring the congestion problem, it would be necessary to widen Weymouth Rhymer Highway/Route 38 to four lanes between its junction with the Bypass and Four Winds Plaza, further adding to the costs.

A more attainable option is to improve the existing Weymouth Rhymer Highway by selectively reducing grades and curves, and by adding passing lanes. This concept appears to be more realistic from a cost standpoint, and it would maintain a better continuity of road capacity. It would require careful study to maintain traffic flow during construction. Further engineering study of this potentially cost-effective option is recommended.

Main Street Pedestrian Mall. A pedestrian-only mall on Main Street was proposed in 1974. The mall would extend from Garden Street to Market Square integrating Emancipation Park, the retail district, and the Square.

At present, Main Street is used by taxis carrying tourists to or from the shops, circulating traffic searching for a parking space, and as an alternative route through town. In view of the limited space for traffic circulation and taxi-waiting areas, it is believed that Main Street should remain open to traffic at present. However, after Veterans Drive is revamped, traffic circulation is improved, and suitable taxi loading and

discharge areas are provided, implementation of the Mall should be re-evaluated.

2.3.3 Implementation

2.3.3(a) Suggested priorities

Ideally, the various improvements should be scheduled to: (1) alleviate the critical waterfront congestion as soon as possible; (2) avoid transferring problems to other locations; and (3) achieve relatively uniform annual expenditures. Achieving these objectives would call for improving the Veterans Drive-Long Bay Road-Frenchman Bay Road route first, followed by improvements to other roads.

This idealized sequence, however, would be difficult to achieve in practice. First, it will take time to get agreement on the Veterans Drive improvement, to develop updated plans, and to initiate construction. Second, there is an important need to follow-through on currently programmed activities. Getting improvements implemented will enhance the credibility of the DFW, and help build consensus for the more costly treatments.

Accordingly, first priority should be given to the immediate action improvements, followed by the scheduled widening of Sugar Estate/Centerline Roads, and related intersection treatments. Next, attention should be turned to widening the waterfront highway system. Finally, improvements to alleviate the Raphune Hill grades and curves should be implemented. Necessary planning for a scaled down waterfront highway system should start at once.

The suggested construction sequence is as follows:

Stage I: (years 0-1) -- The early action intersection improvements along Centerline Road at Weymouth Rhymer Highway and Frenchman Bay Road junctions, and the Long Bay Road-Lovers Lane junctions should be implemented. Total costs would approximate \$250,000. Planning should be started on the Veterans Drive improvement.

Stage II: (years 2-4) -- The second stage calls for the widening of Centerline and Sugar Estate Roads; intersection improvements at the Centerline Road/Long Bay Road, Centerline Road/Weymouth Rhymer Highway/Sugar Estate Road, Sugar Estate Road/Lovers Lane, Route 38/Route 32 (Ft. Mylner area), Route 38/Four Winds Shopping Center junctions, and on Veterans Drive, west of Charlotte Amalie. Construction costs are estimated at \$2,955,000.

These improvements would produce an improved route into Charlotte Amalie from Four Winds Plaza via Weymouth Rhymer Highway and Sugar Estate Road.

Stage III: (years 5-10) -- Roadway improvements along Veterans Drive, Long Bay Road, and Frenchman Bay Road should be implemented in this stage, along with expansion of the Lovers Lane/Veterans Drive intersec-

tion. This will dramatically improve movement along the waterfront. Costs are estimated at about \$19,275,000 to \$24,275,000.

Stage IV: (years 11-12) -- Improvement of the existing Weymouth Rhymer Highway (or alternatively, developing the Raphune Hill Bypass) would be done after the other improvements have been implemented. This improvement has been deferred because: (1) other improvements along Weymouth Rhymer Highway will help alleviate many of the current problems; (2) it is not basic to alleviating congestion in central Charlotte Amalie; and (3) very high costs are involved. From a cost standpoint, improving the existing road appears preferable, provided that traffic can be maintained during construction.

2.3.3(b) Planning implications

The recommended improvement program reflects many of the Virgin Islands Government's objectives and proposals. However, by reducing the scale of the Charlotte Amalie waterfront improvements, it produces a more affordable program.

The current funds received from FHWA for the three islands approximates \$5 million per year. The Virgin Islands Government, through a 13-cent/gallon gas tax and other road fund revenues, generates about \$6 million per year. The recommended 10-year program would average about \$2.3 to \$2.8 million annually. As the benefits accruing from its implementation become visible, the local gas tax could be increased. Such increases also will be desirable to keep pace with inflation.

The suggested sequence of improvements is generally consistent with the DPW's current road program. However, an improved Raphune Hill Bypass is deferred because of costs, complexity, and relative importance; here again the feasibility of less costly improvements should be explored.

Discussions with DPW Roads and Highway Engineering staff in March, 1988, indicated that the Government is considering building the Raphune Hill Bypass before widening and/or relocating Veterans Drive. This poses two major problems relative to its desirability: (1) special funding for the \$20 to \$30 million improvement would be needed; and (2) the project would introduce a new westbound bottleneck at the Lovers Lane-Veterans Drive junction.

The DPW plans to improve Bolongo Bay Road/Bovoni Road between 1990 and 1992. This is a desired project, since it would provide a viable alternate route to Weymouth Rhymer Highway to eastern parts of St. Thomas, and it would enable bus service to be provided along this road.

However, in view of the pressing needs to allocate funds to relieve traffic congestion in Charlotte Amalie, it may be desirable to defer the planned improvements of Mandal and Black Point Roads, also planned for 1990-1992.

2.3.3(c) Implementation cost estimates

Order of magnitude estimates of construction costs for the recommended roadway and traffic improvements (1988 dollars) are given in Table 2-14. These estimates are based upon the DFW's cost estimates for specific projects, and on unit values suggested by this agency. In some cases, it was necessary to adjust certain estimates based upon expected project changes.

The overall program would cost about \$28 to \$38 million, assuming reconstruction of the existing Weymouth Rhymer Highway. These costs would escalate to about \$43 to \$48 million with a two-lane Raphune Hill Bypass.

- The early action improvements would cost about \$250,000; most of these costs would be for traffic signals.
- The recommended improvements (excluding Raphune Hill) would cost about \$23 to \$28 million depending upon the specific option chosen for widening Veterans Drive in the vicinity of Fort Christian.
- A two-lane Raphune Hill Bypass would cost another \$20 million, whereas improving the existing road might be done for between \$5 and \$10 million.

2.3.3(d) Implementation actions

The logical next step is to translate the proposals into reality. This calls for obtaining community consensus, securing needed funding, acquiring needed rights of way, and preparing detailed engineering plans. (The Virgin Islands Government's resources should be focused on implementing the specific traffic improvement projects which would relieve Charlotte Amalie's traffic congestion).

Discussion and dialogue on these proposals is both desirable and necessary. But it is even more important to act quickly and decisively to improve mobility in Charlotte Amalie in the years ahead.

2.4 PARKING IN CHARLOTTE AMALIE

This section contains an updated parking plan and program for downtown Charlotte Amalie. The plan integrates downtown and park-and-ride parking actions into an overall program that complements the traffic and transit improvements.

The parking program and its associated policy addresses these basic questions. What are the present parking problems and needs, and how best can they be resolved? How much additional parking should be provided and where should it be located? What parking rates should be set for on- and off-street parking? How should parking management and enforcement be improved?

TABLE 2-14.
ESTIMATED COSTS OF RECOMMENDED IMPROVEMENTS
(PRELIMINARY) CONSTRUCTION COST

<u>ITEM</u>	<u>DESCRIPTION</u>	<u>ROADWAYS</u>	<u>SIGNALS</u>	<u>TOTAL</u>	<u>SOURCE</u>
Stage I - Early Action					
1-4	Street direction changes		\$75,000	\$75,000	(1)
7	Long Bay Rd/Lovers Lane				(2)
8	Channelize Long Bay Rd		75,000	75,000	(1)
9	Channelize Weymouth Rhymer Hwy at Centerline Rd	5,000	75,000	80,000	(1)
10	Mafolie Rd flasher		20,000	20,000	
Subtotal		5,000	245,000	250,000	
Stage II - Short term					
5	Expand Long Bay Rd/ Centerline Rd jct	150,000	(4)	150,000	(1)
7,9,10	Widen Centerline Rd & Sugar Estate Rd to 3 lanes; expand Lovers Lane jct	2,000,000		2,000,000	(3)
8	Expand Weymouth Rhymer Hwy/Centerline Rd jct	50,000	(4)	150,000	(1)
11	Expand Weymouth Rhymer Highway jcts				
	Ft. Mylner	100,000	75,000	175,000	(1)
	Four Winds-South	20,000	-	20,000	
	Four Winds-Main	150,000	-	150,000	
12	Dual right lane at Sub-base	100,000	-	100,000	(1)
13	Right turn lane on Veterans Drive	50,000	-	50,000	(1)
14	Signal coordination - 16 intersections	-	160,000	160,000	(1)
Subtotal		2,620,000	235,000	2,855,000	
Stage III - Short term					
1,2	4-Lane Veterans Dr:	10,000,000/		10,000,000/	(2)
	Tobold - Lovers Lane	15,000,000		15,000,000	(2)
3	Expand Veterans Dr/ Lovers Lane jct	200,000	75,000	275,000	
4	Widen Long Bay Rd	5,000,000	-	5,000,000	(3)
6	Widen Frenchman Bay Rd to 3&4 lanes	4,000,000	-	4,000,000	(2)
Subtotal		19,200,000/ 24,200,000	75,000	19,275,000/ 24,275,000	

TABLE 2-14. (Continued)

<u>ITEM</u>	<u>DESCRIPTION</u>	<u>ROADWAYS</u>	<u>SIGNALS</u>	<u>TOTAL</u>	<u>SOURCE</u>
Stage IV - Future					
101/102	Raphune Hill Bypass/ Lovers Lane improvement (2+ lane bypass)	20,000,000		20,000,000	(3)
102 Alt	Improve existing Weymouth Rhymer Hwy	5,000,000/ 10,000,000		5,000,000/ 10,000,000	(5)
Subtotal		<u>5,000,000/</u> 20,000,000		<u>5,000,000/</u> 20,000,000	

Estimated Grand Total

(With 2 lane Raphune Hill Bypass)	41,825,000/ 46,825,000	555,000	42,380,000/ 47,380,000
(With Improved Weymouth Rhymer Hwy)	26,825,000/ 36,825,000	555,000	27,380,000/ 37,380,000

Sources and notes:

- (1) H. S. Levinson and TSC based upon \$75,000 traffic signal and \$100,000 channelization costs per intersection. DFW estimates about \$200,000 per intersection for channelization and signalization.
- (2) Estimated based upon \$30,000,000 construction cost for Waterfront Highway (50% of \$60,000,000) estimate for improvement from Windward Passage to Raphune Hill (east).
- (3) DFW or URS estimate.
- (4) Included in Early Action Proposals
- (5) The \$5,000,000/\$10,000,000 is a "target" estimate. Detailed engineering analyses of alternative investment levels is needed.

Findings and recommendations are based upon site observations and a thorough review of previous parking studies. These include:

- (1) The Charlotte Amalie Parking Study prepared by the Virgin Islands Planning Office, July 1974.
- (2) The Gannett Fleming Parking and Traffic Management Program Technical Report, November 1982.
- (3) The Urbitran Associates Report on the Implementation of a Paid Parking Program in Downtown Charlotte Amalie, October 1986.

Data and analysis contained in these documents were reviewed and assessed based on field observations conducted during early 1988.

2.4.1 Existing Conditions

Downtown Charlotte Amalie's parking problems and potentials reflect its development pattern, street system, and current parking practices. Development is dense, space for parking is limited, and traffic is constrained. Collectively, these factors result in both traffic and parking congestion.

2.4.1(a) Parking supply and use

For parking analysis purposes, downtown Charlotte Amalie includes the area bounded by Bjerger Gade on the east, the Windward Passage Hotel on the west, Back Street on the north, and Veterans Drive on the south. The 1986 Urbitran study found 875 legal on-street spaces and 570 off-street spaces (450 at the Fort Christian parking lot, and 120 at the Emile Griffith Park parking lot) in this area. The 1974 study found about 1,750 legal spaces in a slightly larger area, with a peak parking accumulation of about 1,600 (91 percent) from 10:00 am to 2:00 pm.

Most legal curb spaces have neither parking charges nor time restrictions. The Government parking lot at Fort Christian charges \$.50 per hour; consequently, the curb spaces are occupied by early arriving, all-day parkers, and the Fort Christian parking lot is used by short-term parkers at about 70-80 percent of its capacity. Illegal curb parking is common along many streets.

2.4.1(b) Problems

The existing parking problems can be summarized as follows:

- (1) The present parking supply is inadequate to meet the needs of workers, shoppers, and visitors.
- (2) The demand for free, unrestricted curb parking space vastly exceeds the supply. Curb spaces are preferred by all motorists. These spaces are

quickly occupied by workers parking as close to their place of employment as possible, leaving little, if any, curb space for shoppers, visitors, and people with business in town. Consequently, there is a prolonged search for curb parking that results in excessive cruising along Main Street, Back Street, and Veterans Drive. This cruising adds to the already serious downtown traffic congestion.

A situation in which parkers use on-street spaces for long-term parking and the main off-street lot for short-term parking is not desirable, because it forces shoppers to park in peripheral locations. The free on-street parking, therefore, limits the attractiveness and utility of the well-located Fort Christian parking lot.

- (3) Inadequate enforcement results in illegal or double parking that further adds to traffic congestion.
- (4) Parking detracts from the environment in the Emancipation Park area. When this area is improved, parking spaces will be lost, and parking deficiencies will increase.

2.4.1(c) Efforts to alleviate problems

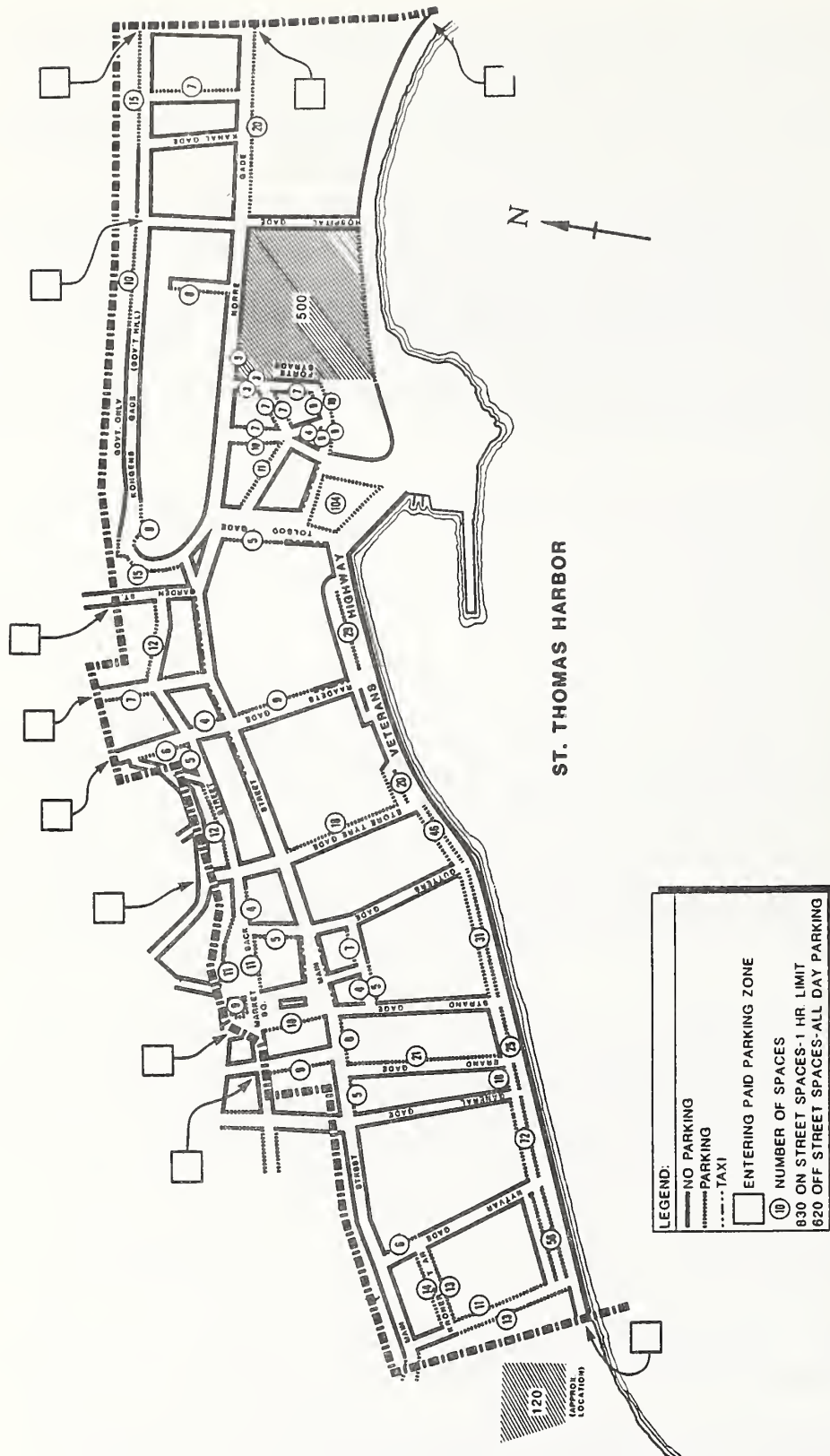
Alleviating these problems calls for cooperative public and private sector actions that: better rationalize the management of existing spaces in terms of time-limit regulations, parking rates, and enforcement; selectively upgrade and expand the downtown parking space supply; and progressively develop peripheral park-and-ride facilities.

The importance of paid parking, both on- and off-street, is fully recognized by both the public and private sectors. The Charlotte Amalie Traffic Committee indicates that paid parking is the single most important treatment for improving conditions in downtown Charlotte Amalie.

Urbitrans parking study. In an effort to address the parking problems, the Department of Public Works sponsored the 1986 Urbitrans parking study. This study recommended: (1) changes in the existing parking arrangement; (2) establishment of a paid parking zone in downtown Charlotte Amalie; (3) use of PARCARDS as a means of paying for parking; and (4) a one-hour time limit for on-street parking. These recommendations were designed to increase the supply of short-term space along curbs and encourage long-term parking at the Fort Christian and Emile Griffith Park parking lots. Urbitrans estimated the program would generate annual revenues of \$1.5 million, with an annual cost of about \$700,000. The overall plan is shown in Figure 2-63.

Parking supply. The specific Urbitrans proposals included the following changes to the existing parking arrangements.

- (1) Convert the three taxi spaces at the bay in front of Sebastians and Barclays Bank (between Tolbod Gade and Raadet's Gade) to passenger vehicle spaces.



Source: URBITRAN ASSOCIATES

FIGURE 2-63. URBITRAN PROPOSED PARKING PLAN - CHARLOTTE AMALIE

- (2) Replace nine passenger vehicle spaces at the south end of Raadet's Gade with approximately six taxi spaces.
- (3) Replace the taxi stand and drop-off area on the west side of Raadet's Gade and Veterans Drive with a commercial loading and unloading zone.
- (4) Remove approximately 18 vehicle spaces on Main Street between Guttets Gade and Raadet's Gade to allow easier vehicle flow on Main Street. The taxi parking spaces on Main Street may be removed by the Department of Public Works to further alleviate traffic congestion. If this occurs, 20 spaces should be removed from the Emancipation Garden parking lot (between Tolbod Gade and the fire station) to allow space for 12 taxis.
- (5) Restripe the Fort Christian parking lot to accommodate 500 vehicles, and install ticket dispensing machines (spitters).
- (6) Redesign and pave the parking lot behind Emile Griffith Park to accommodate 120 long-term parkers. (This lot will be part of the paid parking system utilizing a ticket spitter to distribute tickets and a lot attendant to collect fees).

The proposed revisions provide approximately 50 additional off-street all-day parking spaces and 45 fewer on-street spaces for a total of 1,450 spaces (620 off-street and 830 on-street spaces). Parking in downtown Charlotte Amalie would be allowed only on designated streets and in the two paid parking lots. Parking in other areas would be prohibited, and would constitute a violation. Within the PARCARD zone, on-street parking would be limited to one-hour intervals; off-street parking at the Emile Griffith Park and Fort Christian parking lots would be allowed between the hours of 8:00 am and 6:00 pm on weekdays, for a maximum duration of 10 hours.

Parking rates. The Urbitran plan recommends an on-street parking charge of \$0.50 per hour with vehicles limited to one hour at any location, a charge comparable to the rate at the Fort Christian parking lot. Thus, parking on the street for an entire day would cost between \$4.00-\$5.00 (for 8 to 10 hours) and would require moving the car and purchasing a new PARCARD every hour to avoid a parking violation.¹

Long-term parking would be encouraged at the two off-street lots by offering reduced rates for regular long-term parkers. Rates would be set at \$44.00 per month for an all-day parking pass. Individuals not purchasing monthly tickets would pay \$0.50 per hour. Therefore, all-day parking for monthly ticket holders would cost only \$2.00, as compared with \$4.00-\$5.00 per day for those who park on-street or pay on a daily basis for off-street

¹ If the Department of Public Works determines that on-street parking time limits should be increased to two or three hours, the appropriate number of one hour cards at \$0.50 per car could be used to accommodate this revision. If two hours are allowed, an all day parker would have to move the car and purchase a new card every two hours.

parking. (To encourage monthly users, parkers purchasing a \$44.00 monthly ticket should be assured a parking place at the lot of their choice.)

Signage. The plan recommends a series of signs that would conform to the guidelines in the Manual on Uniform Traffic Control Devices. These signs would inform motorists that they have entered a paid parking area, assist in the proper use of PARCARDS, define appropriate parking restrictions, and identify vendors of PARCARDS.

PARCARDS. The Virgin Island PARCARD, patterned after PARCARDS used in Singapore and Tel Aviv, would be designed as a 3" by 8" ticket as shown in Figure 2-64. It would contain three major items of printed information: month of the year; day of the month; and a series of space-time indicators, showing successive expiration times. The PARCARD also would include a serial number on the bottom of the card, boxes to fill in the user's license plate number, and a one-hour parking designation.

Writing in the license plate number on the front of the card would discourage the stealing of PARCARDS. Only the car bearing the plate number written on the PARCARD would be able to use it legally. In addition, the serial and license plate numbers would be used for enforcement purposes. Upon issuing a parking summons, the enforcement agent would record the time, date, and license plate number, and the serial number of the PARCARD used. This procedure would minimize the possibility of violations being dismissed in court. The serial number would identify the PARCARD involved in the violation and the date of violation, and would have to be produced as proof by a parker claiming he was not guilty. The back of the card would provide necessary instructions for proper use and the user's address. The unused space on the back of the card would be used for advertisements.

Tickets. As part of the PARCARD plan, the existing traffic summons ticket would be revised as shown in Figure 2-65. The key changes are: (1) adding a parking violation box that identifies the time, date, specific parking violations, and PARCARD number; and (2) removing the address of the court.

Contemplated Department of Public Works actions. The Department of Public Works is hoping to implement the first phase of the Urbitrans PARCARD program by late 1988. The PARCARD is preferable to parking meters, since the Historic District in central Charlotte Amalie precludes meters (which were proposed in 1974 and 1982).

The Department of Public Works is proposing a \$25 to \$50 fine for violators; violators would be unable to re-register their cars until tickets were paid. The Department would like to have the first violation for each driver tried in the traffic court, and the second as a writ arrest. The Department supports, in principle, the Denver Boot, but there are no definite plans to implement it.

The Department of Public Works has suggested that fringe parking be developed at the hospital parking lot to the east of Charlotte Amalie center,

Fold Here -----

v.i. parcardTM

9:15	9:30	9:45
10:00	10:15	10:30
10:45	11:00	11:15
11:30	11:45	12:00
12:15	12:30	12:45
1:00	1:15	1:30
1:45	2:00	2:15
2:30	2:45	3:00
3:15	3:30	3:45
4:00	4:15	4:30
4:45	5:00	5:15
5:30	5:45	6:00

1 Hour Parking

Month

JAN	FEB	MAR	APR	MAY	JUN
JUL	AUG	SEP	OCT	NOV	DEC

Date

1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	31				

PLATE NO.

--	--	--	--	--	--

Source: URBITRAN ASSOCIATES

FIGURE 2-64. PARCARD SAMPLE

TERRITORIAL COURT OF THE VIRGIN ISLANDS

Division of:
TRAFFIC ☐ St. Thomas & St. John ☐ St. Croix

CASE NO. _____
No. _____ A THE-UNDERSIGNED SOLEMNLY
STATES THAT

On the day of 19. at M.

Name
(Please Print)

Address

Birth Date Sex

Driver's License No. Did unlawfully (park)
(operate)

Motor Vehicle (Reg. No.) State

Make Yr. Body Type Color

Upon a public highway, namely at (Location)

Did then and there commit the following offense(s):

SPEEDING: ☐ m.p.h. in m.p.h. zone
☐ RECKLESS ☐ NEGLIGENT (DRIVING)

OTHER VIOLATIONS:

PARKING:	AM ☐	Time	PM ☐	Date of Offense
Place of Occurrence				
☐ No Parking ☐ Overtime ☐ No Card				
Parcard #:				

You are notified that the undersigned will file a complaint in this Court
charging you with the offense set forth above

WITNESSES:

..... (Signature and identification of officer
or other complainant)

Sworn to before me this..... day of..... 19.....

NOTICE TO VIOLATOR: Read the back of this Summons
carefully Bring Summons with you.

Court appearance . . . day of 19. at M.

Conditions	Road ☐ Dry	☐ Business	Visibility ☐ Clear
	Surface ☐ Wet	☐ Industrial	☐ Rain
	☐ Light	Area ☐ School	☐ Property Damage
	Traffic ☐ Medium	☐ Residential	☐ Personal Injury
	☐ Heavy	☐ Rural	

SUMMONS

Source: URBITRAN ASSOCIATES

FIGURE 2-65. MODIFIED TRAFFIC SUMMONS

and at the Emile Griffith Park environs to the west. The lots would be linked to the center by shuttle buses and vans; however, the details of this decade-old proposal remain to be resolved.

2.4.2 Parking Alternatives

The parking choices facing the Charlotte Amalie community include: (1) charging for on-street parking in the central area; (2) expanding the downtown parking supply by building a deck or garage on the Fort Christian parking lot site; (3) developing fringe park-and-ride areas on the east and west sides of town; and (4) providing shuttle van or bus services to the park-and-ride lots. Each of these parking improvement options has been analyzed in terms of its costs, community and user acceptance, and effects on traffic and parking conditions.

2.4.2(a) Charging for on-street parking

There is general acceptance by public agencies and many private sector groups of the need to charge for on-street parking to better ration the use of scarce street space in downtown Charlotte Amalie. The parking charges, depending on the fee structure chosen, could make it more costly for workers to park on-street than to park in the Fort Christian parking lot, thus encouraging the use of the lot by all-day parkers and freeing curb space for visitors and shoppers. This, in turn, would result in less cruising. Workers also would have the option of using improved bus services.

A PARCARD zone was suggested to the Department of Public Works in 1987, and, reportedly, is in the process of implementation. The financial impacts of this zone were analyzed, with two modifications to the original assumptions: (1) excluding the spaces in the Emile Griffith Park parking lot from the zone because of their distance from the center of town; and (2) assuming a 75 percent revenue realization factor for on-street parking revenues (versus the 100 percent figure used by Urbitran) to reflect possible revenue losses. The results are summarized in Tables 2-15 through 2-18. The detailed income and cost assumptions are contained in Appendices D and E. Highlights of the parking analyses are indicated below.

- Total annual revenue is estimated at \$1,086,000 (Table 2-15).
- The monthly revenue at the Fort Christian parking lot would approximate \$24,000 as compared to \$18,000 at present.
- Anticipated annual operating costs would approximate \$552,020 (Table 2-16). About \$419,340 would be for the PARCARD program, and \$132,680 for the lot operation.
- Estimated first year start-up or capital costs would approximate \$105,000 (Table 2-17). About \$25,000 would be for the PARCARD program, and \$80,000 for upgrading the Fort Christian parking lot. Subsequent annual capital costs would approximate \$2,000.

TABLE 2-15.
PROJECTED INCOME FROM MODIFIED PARCARD
PROGRAM AND GOVERNMENT PARKING LOT

	PARCARD ON-STREET	PARKING LOT OFF-STREET	TOTAL
Number of spaces	830	500 ¹	1,330
Annual Parking Revenue	\$796,000 ²	\$289,000	\$1,086,000
Per Space	\$960	\$578	\$816

Source: Adapted from Urbitran Associates, Inc. Report, Table 1,
[Reference 24]. See Appendix E.

¹ Excludes 120 spaces at Emile Griffith Park parking lot.

² Adjusted for 75% realization

TABLE 2-16.
PROJECTED ANNUAL OPERATING COSTS OF
PARCARD PROGRAM AND GOVERNMENT PARKING LOT

	PARCARD On-Street 830 <u>Spaces</u>	Parking Lot Off-Street 500 <u>Spaces</u>	Total 1,330 <u>Spaces</u>
1. Personnel			
A. Enforcement	\$ 118,000	\$ 93,000	\$ 211,000
B. Benefits (30%)	\$ 45,000	\$ 35,400	\$ 80,400
Subtotal	\$ 163,000	\$ 128,400	\$ 291,400
2. Administrative			
A. Professional Services (Monitoring, Evaluation, Education, Distribution)	\$ 103,100		\$ 103,100
B. Materials and Supplies			
PARCARDS, Tickets	\$ 148,740 ¹	\$ 2,280 ¹	\$ 151,020 ²
Fuel, Maintenance	\$ 3,000	\$ 1,000	\$ 4,000
Uniforms, etc.	\$ 1,500	\$ 1,000	\$ 2,500
Subtotal	\$ 256,340	\$ 4,280	\$ 175,020
TOTAL	\$ 419,340	\$ 132,680	\$ 552,020

Source: Second year breakdown estimated from Urbitran Associates report analysis, [Reference 23].

¹ See Appendix E.

² See Appendix F.

TABLE 2-17.
ESTIMATED FIRST YEAR START-UP (CAPITAL) COSTS³
PARCARD PROGRAM AND GOVERNMENT PARKING LOT

	<u>PARCARD</u> <u>On-Street</u>	<u>PARKING LOT</u> <u>Off-Street</u>	<u>Total</u>
A. <u>EQUIPMENT</u>			
Tri-Wheel Scooter	\$ 12,000		\$ 12,000
Two-Way Radio	\$ 7,500		\$ 7,500
Ticket Spitter Assembly		\$ 25,000	\$ 25,000
Toll Booth Assembly		\$ 20,000	\$ 20,000
B. <u>IMPROVEMENTS</u>			
Parking Lot Equipment Installation		\$ 25,000	\$ 25,000
General Site Preparation		\$ 5,000	\$ 5,000 ⁴
Signage and Striping	\$ 5,000	\$ 5,000	\$ 5,000 ⁵
Total	<u>\$ 24,500</u>	<u>\$ 80,000</u>	<u>\$104,500</u>

Source: Breakdown estimated from Urbitran Associates report, [Reference 23].

³ See Appendix E.

⁴ \$500 in second year.

⁵ \$1,500 in second year.

- The overall program would produce a net operating income of about \$531,980 (Table 2-18). The PARCARDS would generate about \$377,460, and the Fort Christian parking lot, about \$154,520.

These financial returns from the PARCARD program in conjunction with the improved Fort Christian parking lot would occur only if the program were vigorously enforced. Unless a high level of enforcement were realized, the program actually could result in a deficit.

An alternative to PARCARDS is a vehicle licensing scheme for central Charlotte Amalie, in which only vehicles with special license plates would be allowed to enter the area. Such a scheme would apply within the same general limits as the PARCARD, but it would exclude Veterans Drive, and Veterans Drive access to the Fort Christian parking lot. Its strength is its apparent simplicity to install and enforce; but it has a major weakness: it fails to shift long-term parkers from the curb to off-street.

An alternative similar to the licensing scheme would be to permit only those vehicles with special stickers to park in central Charlotte Amalie in the same general area where the PARCARD would apply. The stickers could be sold on a periodic basis for a high fee. This system would generate parking revenues and would be easy to enforce; however, its weakness, like the licensing scheme, would be that it would not shift the long-term parkers to the fringe areas and would not free the limited parking spaces in downtown Charlotte Amalie for shoppers and visitors. Thus, the two options above should only be considered if it is not possible to implement the PARCARD plan.

2.4.2(b) Expanding central area parking

There is a need to provide more off-street parking in the center of Charlotte Amalie. The additional parking would reduce pressures on curb space, serve business and employment growth, and replace the 100 spaces lost when development occurs in the Emancipation Park environs.

But space for additional parking is limited in the city center. The only available space is the Fort Christian parking lot where a structure might be built, or south of Veterans Drive as part of a landfill for a new waterfront highway.

The Fort Christian parking lot is well located in terms of street access and proximity to employment, especially if a four-lane Veterans Drive is developed east of Forts Pladsen. Consequently, plans have been proposed periodically to build a parking structure on this site, possibly as part of an integrated commercial development.¹ Doubling the capacity of the present

¹ For example, correspondence of Dale Greblich, Brian Murphy, and Jay Greblich, dated July 15, 1983, to Verne Callwood of the DPW, and dated July 21, 1987, to Senator Cain Magrass.

TABLE 2-18.
COST - INCOME SUMMARY
PARCARD PROGRAM AND GOVERNMENT PARKING LOT

ITEM	PARCARD ON-STREET	PARKING LOT OFF-STREET	TOTAL
Gross Revenue	\$796,800	\$289,200	\$1,086,000
Operating Costs (Typical Year)	\$419,340	\$132,680	\$ 552,020
Net Operating Income	\$377,460	\$154,520	\$ 531,980
Start Up Costs First year	\$ 24,500	\$ 80,000	\$ 104,500
Net Revenue First Year	\$352,960	\$ 74,520	\$ 427,480
Maintenance Costs Subsequent Years	\$ 1,000	\$ 1,000	\$ 1,500
Net Revenue Second Year	\$376,460	\$153,520	\$ 530,480

Source: Computed from Tables 2-15, 2-16, 2-17.

facility would increase the downtown parking supply by a third, from about 1,500 to 2,000 parking spaces.

Accordingly, preliminary financial analyses were made for the parking expansion scenarios: (1) adding a 500-space parking deck; and (2) adding a 300-space parking deck. The analyses were based on the following assumptions.

- Development cost of a parking deck at \$12,500 per space. (The V.I. Department of Public Works and V.I. Planning Offices have used \$14,400 as the development cost of a garage space; U.S. experience suggests \$10,000 to \$12,000 per space). This cost would apply to spaces on both levels of the deck (i.e., the ground level spaces and the spaces on the raised deck).
- Revenue bond financing with bond issue costs of about 25 percent of development costs (current U.S. experience).
- 30-year debt service period at 8 percent interest.
- The additional spaces would generate an annual net revenue of about \$320 per space. This is based upon the anticipated productivity of the existing spaces with the PARCARD program in effect.

The results of this analysis are shown in Tables 2-19 and 2-20. Neither garage development option would be financially feasible at the existing parking rate charges, even when revenues from PARCARDS are available. The 1,000 space lot and deck would have an shortfall of \$1,064,000. When offset by PARCARD revenues, the shortfall of \$636,000 still would be a significant amount. The 800 space lot and deck would produce an annual shortfall of \$567,600; this would be reduced to \$140,000 when offset by PARCARD revenues. Both garages are more costly to develop than the Government can afford at present.

Therefore, the Virgin Islands Government should not develop these facilities unless private sector or general community support is obtained. One possibility for shared public and private development would be to establish a benefit assessment district in the central area. An annual assessment of \$150,000 to \$250,000 would offset deficits for a smaller facility, and provide a small reserve. Because revenue bonds require a 1.3 to 1.5 coverage ratio, the Government would have to pledge support of the bonds. Alternatively, a parking deck or garage could be built entirely by the private sector as part of a multi-use development.

If additional surface parking space were incorporated in the Veterans Drive expansion, the need for a garage would be obviated.

2.4.2(c) Park-and-ride

Park-and-ride proposals have been discussed for over a decade. The goal has been to intercept motorists on the eastern and western perimeters of

TABLE 2-19.
FINANCIAL ANALYSIS - ESTIMATED CAPITAL COST
FOR TWO-LEVEL GARAGE WITH 1,000 SPACES
(PARKING DECK OVER GOVERNMENT PARKING LOT)

<u>COST</u>	<u>Per SPACE</u>	<u>1,000 SPACES</u>
1. Development Cost	\$ 12,500	\$ 12,500,000
2. Bond Issue Costs (.25 of 1.)	\$ 3,125	\$ 3,125,000
3. Total Bond Issue	\$ 15,625	\$ 15,625,000
4. Approximate Annual Debt Service (30 Years @ 8%) (Capital Recovery Factor = .088827)	\$ 1,388	\$ 1,387,922
5. Annual Net Revenue		
Existing Lot Spaces		\$ 162,000
Additional 500 Spaces		\$ 162,000
		\$ <u>324,000</u>
6. Debt Service Coverage Ratio		0.23
7. Estimated Annual Shortfall		\$ 1,063,922
8. Shortfall with PARCARD revenues accounted for		\$ 635,922

TABLE 2-20.
FINANCIAL ANALYSIS FOR A 600-SPACE, TWO-LEVEL GARAGE AND 200 SURFACE SPACES

<u>COST</u>	<u>PER SPACE</u>	<u>600 SPACES</u>
1. Development Cost	\$12,500	\$7,500,000
2. Bond Issue Costs (.25 of 1.)	\$ 3,125	\$1,875,000
3. Total Bond Issue	\$15,625	\$9,375,000
4. Annual Debt Service (30 Years @ 8%)	\$ 1,388	\$ 826,753
5. Annual Net Revenue		
Existing Lot Spaces		\$ 162,000
Additional 300 Spaces		\$ 97,200
		\$ 259,200
6. Debt Service Coverage Ratio		0.31
7. Estimated Annual Shortfall		\$ 567,553
8. Shortfall with PARCARD revenue accounted for		\$ 139,553

central Charlotte Amalie and transport them via bus or van to the center. Recent Department of Public Works proposals call for a 240 space lot in the Emile Griffith Park environs and another 200 spaces in the hospital parking area. Van service would be provided between these areas and the town center.

Park-and-ride works best in large metropolitan areas with intensive downtown office development, high downtown parking costs, and fast transit service to the city center. These prerequisites do not exist in Charlotte Amalie. The central area employment density is low, parking is free or inexpensive, and transit service must pass over congested city streets. Moreover, the scale of the proposed park-and-ride lots is too small to support additional transit service.

However, there are benefits to be achieved by expanding and upgrading peripheral parking facilities, and encouraging commuters to ride existing transit service or walk to their destinations.

2.4.3 Recommended Parking Program

The following specific actions should be taken to improve parking in central Charlotte Amalie. They are described in their general order of implementation.

- A two-hour maximum time limit for on-street parking in central Charlotte Amalie should be implemented immediately. Parking duration at some locations could be limited to one hour or less. The imposition of time limits should be accompanied by intensified enforcement, and improved ticket adjudication procedures.
- The PARCARD plan proposed by Urbitran should be fully implemented by 1990. However, it should exclude the Emile Griffith Park parking lot. The program should produce an annual surplus of about \$600,000. This surplus should be used to upgrade existing facilities, to offset the transit operating deficit, and to provide a reserve for possible future parking facility expansion. Parking time limits should be enforced to ensure parking turnover. Back-to-back parking segments by the same car should be prohibited.
- The Emile Griffith Park parking lot should be resurfaced and expanded to about 240 spaces by 1990. It should permit free parking to encourage usage, and to enable parkers to balance proximity versus cost. Estimated costs of upgrading and expanding the lot would be about \$420,000 (based upon \$1,750 per space improvement costs).
- About 200 spaces in the hospital parking lot nearest to Sugar Estate Road should be designated for commuter parking by 1990. These spaces should be clearly striped and located near Sugar Estate Road so that they are close to the bus stop.
- Parking in the environs of Emancipation Park should not be converted

to commercial development until after the Emile Griffith Park parking lot is expanded.

- The Government should not develop a parking deck or garage on the Fort Christian parking lot at this time. However, cooperative development of structured parking with the private sector could be considered after the traffic capacity of Veterans Drive is increased and if the Veterans Drive improvement does not incorporate additional parking. Any parking structure on this site should be integrated with commercial development on the Fort Christian and Veterans Drive sides at minimum, should be subject to stringent design controls, and should not require Government subsidy.
- A new parking organization should be established to implement the parking development and management program (discussed in Chapter 5).

3. ST. CROIX

3.1 INTRODUCTION

3.1.1 Land Use

St. Croix is the largest of the three main U.S. Virgin Islands, with an area of 84 square miles. The northwestern and eastern parts of the island are mountainous, with relatively little development (Figure 3-1). The central part of the island is fairly flat and provides a favorable terrain for agricultural purposes. Figure 3-2 shows the locations of the major residential developments on St. Croix. Superimposed are 1985 population estimates calculated by expanding the 1980 U.S. Census data for the sub-districts of the island. Most people live in Christiansted, Frederiksted, and the central suburban area between the two towns. The Alexander Hamilton Airport and the Hess Oil Refinery are located on the southern side of St. Croix, just south of the Ville La Reine and Sunny Isle commercial areas. Most of the transportation facilities, travel, and traffic problems occur in the two towns, and in the area between them. The East End is sparsely populated and is the location of several of the island's largest tourist resorts.

3.1.2 Socio-Economic Characteristics

In 1985, there were about 57,000 people living on the island of St. Croix. Compared to St. Thomas, the age distribution is slightly lower, with a median age of 21.0. It has a large household size, 3.51 people per household, and a low employee to population ratio, 32.7 employees for every 100 people. These ratios are a consequence of the low median age on the island. St. Croix suffers a high poverty rate, with 36.5 percent of the population below the poverty level, compared to 30.5 percent on St. Thomas. Reflecting the 59 percent growth in population since 1970, almost 42 percent of the housing units have been built since 1970.

Although the public sector employs almost 32 percent of the St. Croix workforce, agriculture, manufacturing, and construction also account for over 30 percent of the workforce, compared to 36 percent and 12 percent, respectively, for St. Thomas. St. Croix is not as dependent on tourism as St. Thomas, with about 29 percent of the workforce employed in the tourist industry.



FIGURE 3-1. TOPOGRAPHY OF ST. CROIX

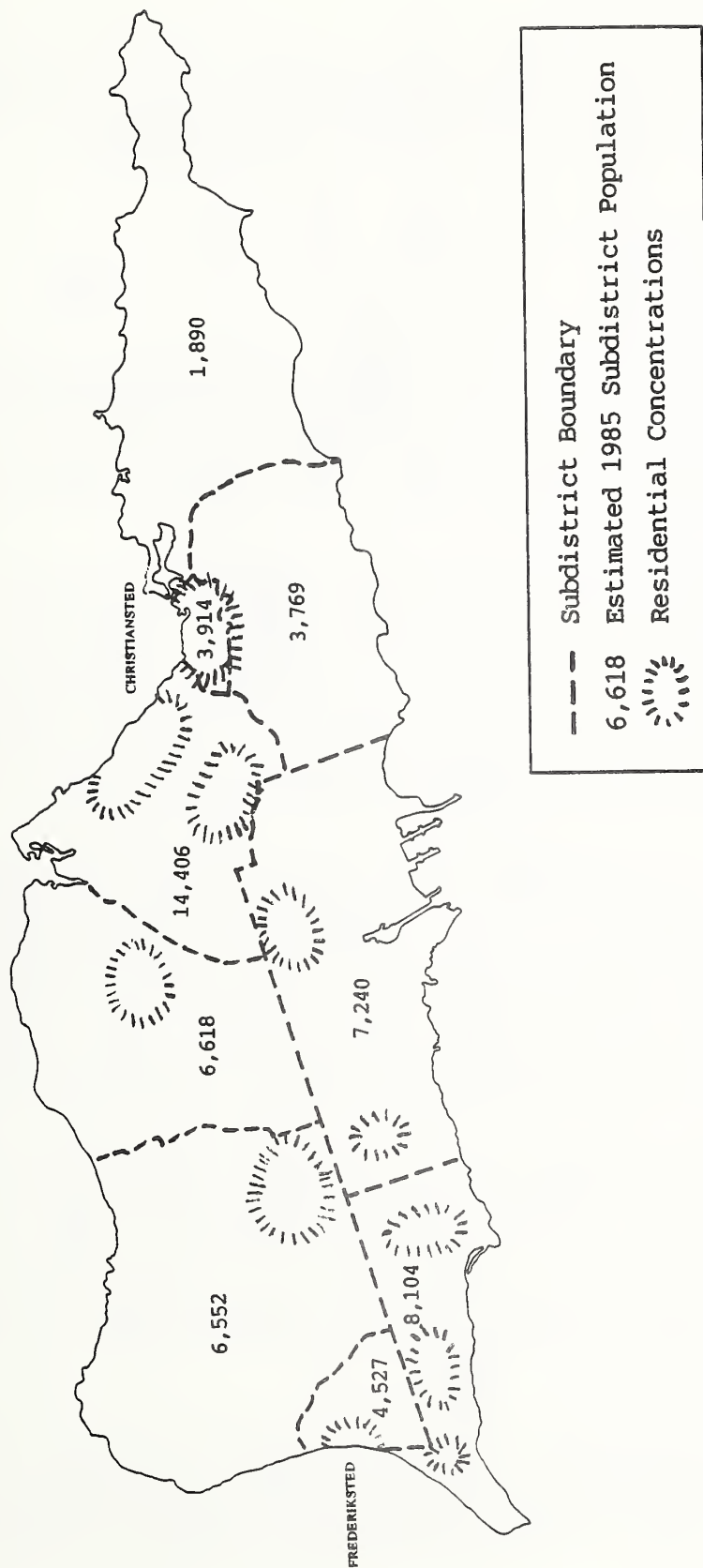


FIGURE 3-2. POPULATION DISTRIBUTION - ST. CROIX

3.2 PUBLIC TRANSPORTATION

Since 1984 there has been no public transportation system on the island of St. Croix. Instead, private taxivan operators provide an informal "bus" service along the principal route between Christiansted and Frederiksted. This service appears to satisfy the bulk of transit demand.

3.2.1 Existing Conditions

3.2.1(a) Transit system

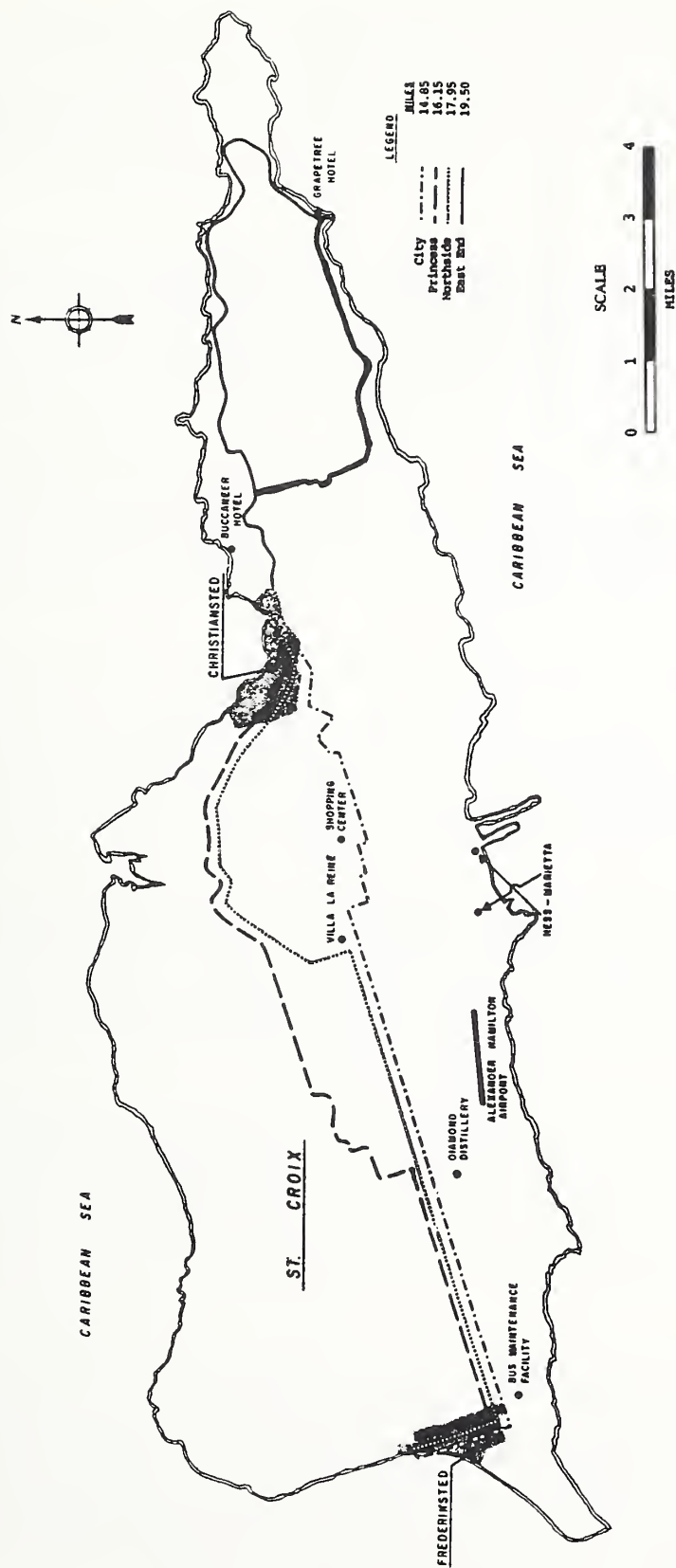
History. From 1958 to 1984, Abramson Enterprises, Inc. provided the bus service on St. Croix. In 1958, the Virgin Islands Legislature granted Abramson's Taxi Service an exclusive franchise to operate bus service on the island except within the city limits of Christiansted. By 1973, Abramson was carrying 2,000 daily passengers on four routes, Monday through Saturday. There was no Sunday service.

In 1974, coincidental with a bus fare increase, the taxivans began to compete heavily with the buses along the City Route on Centerline Road. With 20-minute headways and a capacity of only 60 passengers per hour, buses lost business to taxivans cruising the route with 2-minute headways and offering 500 seats per hour. By 1981, Abramson had eliminated the Northside Route. In 1982, it discontinued all service for about four months, resuming only the City and Princess Routes initially. Abramson Enterprises, Inc. showed a net profit only because the profit from the contract school bus portion of the business was greater than the loss from the transit operation.

Finally, in 1984, Abramson Enterprises discontinued bus service permanently, citing several reasons. The biggest factor was economic. They claimed that the Department of Public Works was habitually late in paying the subsidy, and frequently did not pay the amount specified in the service contract. Abramson felt that the DPW was not committed to public transit, and complained that the Government did nothing about "unfair" competition from the taxivans, which were charging the same fares as the buses, operating in front of and just behind buses, and picking up passengers at bus stops.

The taxivans' competition with the buses was motivated by the lack of sufficient business from hotels and cruise ships to support the large number of taxis on the island. Before buses ceased operations, taxivan drivers were charging a 50-cent fare on the City Route, the same as the bus fare. Afterwards, taxivan drivers tripled the fare to \$1.50 for trips from Christiansted to Frederiksted, and doubled the fare to \$1.00 for anything in between. The increased revenue potential brought a number of additional taxivans into the market.

Coverage. Figure 3-3 delineates the former bus routes: (1) the City Route from Christiansted to Frederiksted along Centerline Road; (2) the Princess Route from Christiansted along Northside, Midland, and Centerline Roads to Frederiksted; (3) the Northside Route from Christiansted along



Source: 1976 Mass Transit Study. Wilbur Smith and Associates

FIGURE 3-3. FORMER BUS ROUTES - ST. CROIX

Northside and Centerline Roads to Frederiksted; and (4) the East End Route from Christiansted to the East End and back. In 1976, when the buses were running on all of the routes, it was estimated that the service area covered about 40 percent of the population on the island. Just before the buses stopped running in 1984, only the City, Princess and East End Routes were being served.

Service frequency. In 1984, the Princess Route was run only once a day (during the morning rush hour), and the East End Route was run only twice a day (during the morning and afternoon rush hours). The greatest demand was on the City Route, along which the main shopping centers on the island are located. Buses operated with 20 minute headways from 6:30 am to 5:30 pm daily. No Sunday service was offered on any of the routes.

Fares. In 1984, the fares were the same on all routes -- 50 cents. There were no special fares offered to transferring passengers, elderly and handicapped persons, students, or children. Passengers deposited their fares directly into fare boxes.

Ridership. Transit ridership had been eroded by taxivans competing for business on Centerline Road. The 2,000 bus passengers per day in 1973 had decreased to 1,000 passengers per day in 1984. Load factors for Centerline Road service were low, but buses running on the Princess and East End Routes experienced load factors of over 100 percent.

Quality of service. The bus service on St. Croix was more reliable than that on St. Thomas because the buses were not subjected to the same traffic congestion, rough terrain, or poor road conditions. Preventive maintenance practiced by Abramson resulted in fewer bus breakdowns and better schedule adherence. The buses were in fair to good condition because of the relatively flat terrain on the island and better roads.

However, the quality of bus service could not compare to that of the taxivans on Centerline Road. The taxivans ran with more frequent headways, and the fare was same for most trips. The taxivans had more comfortable, cushioned seats, and some had air-conditioning. The taxivans also operated on Sundays.

3.2.1(b) Taxis

As on St. Thomas, the taxis on St. Croix are regulated by the Taxi Commission. A taxi operator's license can be obtained by any qualified driver, but to operate as a taxi requires possession of a medallion. At present, there are approximately 470 medallions on St. Croix. These can be sold (current market value of about \$6,000) or leased to taxi operators by their owners. Taxis on the island include cars, station wagons, vans, and safari buses, but about 95% of them are said to be vans.

Most taxi drivers belong to taxi associations to which members pay initiation fees and monthly dues. These organizations provide benefits for members such as group medical insurance, and they set up service agreements with cruise lines and tour groups. One taxi association, the St. Croix Taxicab Association, has an exclusive franchise to provide service from the airport to all points on the island. Any taxi can carry passengers to the airport.

Taxis may operate continually or alternately, at their option, in one of two ways: as public vehicles, picking up and discharging passengers along a route; or as a vehicle for hire, exclusively transporting a contracting person or group from one point to another, without stops for other soliciting persons that may be encountered en route. (See Appendix C for legislation regarding taxis.)

Exclusive ride. Most taxis operate as cars for hire, providing point-to-point transportation to their passengers. They respond to telephone calls, as well as to people hailing them from the roadside. They also pick up passengers at designated taxistands in the towns and at bus stops if they are hailed.

Coverage — Taxis can operate as cars for hire on all parts of St. Croix.

Fares — The Virgin Islands Legislature has set maximum point-to-point fares for the island. No minimum fares have been set. Tourists are generally charged the maximum fares, but the drivers usually charge local residents fares which are far below the maximums set by the Legislature.

A table of the legislated fares can be found in Appendix D. They range from \$1.25 per person for a ride from Christiansted to Pueblo Shopping Center, to \$13.50 for a ride from Frederiksted to Davis Bay. The legislated fare schedule also describes several standard tours of the island, specifying the tour stops, duration of tour, minimum charge, and charge per person.

Taxivan system. The taxi associations and drivers have set up an informal transit service on the City Route between Christiansted and Frederiksted, taking advantage of their charter to operate as public vehicles. It is informal, because participation is voluntary and the associations have no authority for enforcing the practices agreed on at association meetings. Generally, about 95 vans consistently operate as taxivans, 70 on any particular day.

It is up to the individual driver to determine the hours and days of the week he works, the route he takes, and the stops he makes. If, for example, a cruise ship is in Frederiksted, a driver can abandon the City Route to carry ship passengers on tours of the island. Fortunately, the high local demand for transportation usually guarantees that some taxivans remain on the route to offer service at a minimal level even when cruise ships are in port.

The taxivan City Route begins at the waterfront in each of the towns (Figure 3-4). It exits Christiansted along Company Street. At the intersection of Routes 70 and 75, it either goes north to the Pueblo Shopping Center or south onto Contentment Road, meeting at Centerline Road. It deviates from Centerline Road to serve Sunny Isle Shopping Center and Grove Place, a residential area. It ends on King Street at Fort Frederik Park in Frederiksted. The taxivans stop anywhere along the route when hailed. Many passengers board at the former bus stops.

Service frequency — In the absence of any published data, estimates of the operating characteristics of the taxivan system were calculated based on field data collected on March 28-30, 1988. Information on the frequency of service, load factors, and length of trip were gathered both from on-board taxivan observations and from observing the taxivan system from roadside vantage points. Results are shown in Table 3-1.

TABLE 3-1. OPERATING STATISTICS FOR TAXIVAN SYSTEM, 7 AM - 7 PM		
	PEAK HOURS	OFF-PEAK HOURS
HEADWAYS	1.1-1.8 min.	1.5-2.7 min.
1-WAY TRIP LENGTH	43-53 min.	36-46 min.
1-WAY LOAD FACTORS	14-16 people	10-12 people

In practice, it is claimed that taxivans are available from around 5 am until midnight. During the morning and afternoon rush hours, taxivans run along the City Route every 1.5 minutes on average, but sometimes as often as every 1.1 minutes. During off-peak hours, taxivans pass by less frequently, at an average rate of one every 2.1 minutes. A one-way trip between Christiansted and Frederiksted takes about 45 minutes on average, a little longer during the rush hours, and a little less during off-peak hours.

Fares — The fare structure along the City Route is as follows: \$1.50 for trips between Christiansted and Frederiksted; \$1.00 for trips anywhere in between; and \$0.75 for elderly, handicapped, students, and children. After 7 pm, 50 cents is added to each of the fares.

Ridership — Typically, a taxivan will pick up and discharge 14 to 16 passengers while traveling in one direction along the City Route during rush hours, and 10 to 12 passengers during off-peak hours. Approximately 30 percent of the riders during the morning and afternoon peak periods are high school students. Fewer than 2 percent of the riders travel all the way from one end of the City Route to the other.

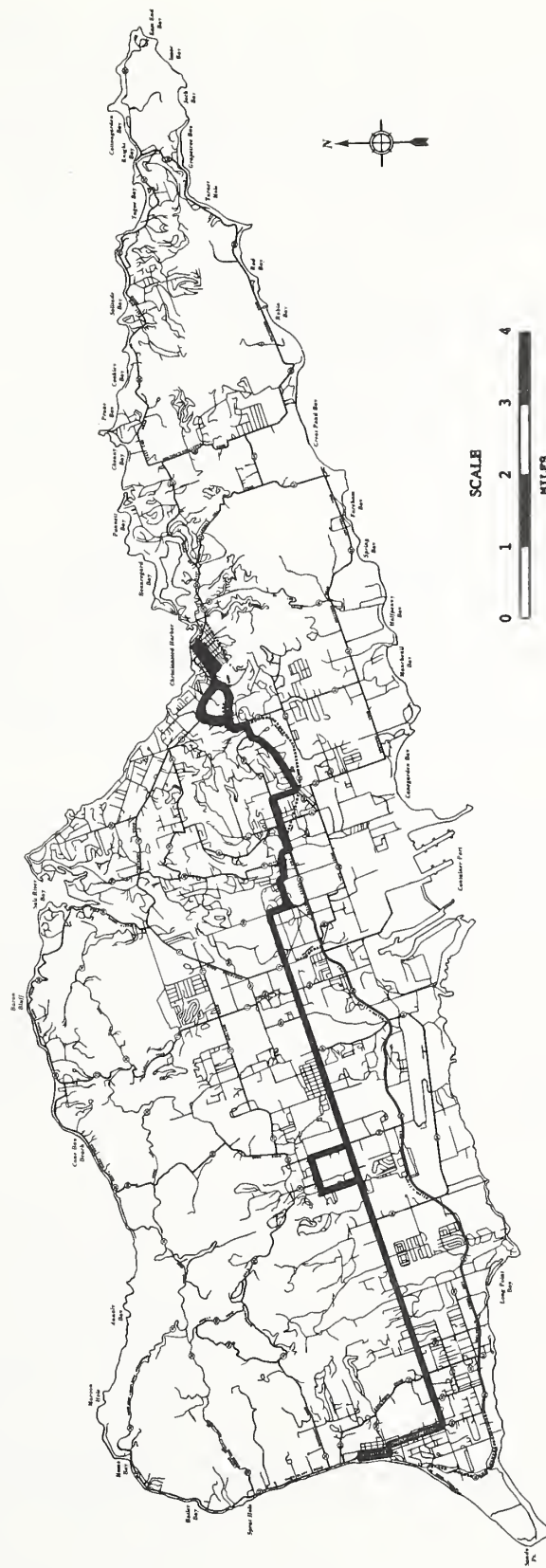


FIGURE 3-4. EXISTING TAXIVAN ROUTE - CENTERLINE ROAD

Based on the sample observations, some rough estimates of system-wide performance were calculated (Table 3-2). Taxivans were estimated to make about 430 round trips on the City Route each day from 7 am to 7 pm, carrying around 6,000 passengers in each direction, and collecting about \$11,500 in fares. If 70 taxivans were operating, each driver would make about \$165 in gross revenues, averaging over \$20 per hour for an 8-hour day.

TABLE 3-2.
12-HOUR SYSTEM ESTIMATES, 7 AM - 7 PM

430 Taxivan Round Trips
6,000 Passengers in Each Direction
\$11,500 in Gross Fares

Quality of service: comfort — In some aspects, the taxivan system is able to provide a higher quality service to its users than a traditional public transit system. The vans are comfortable, with seating capacities of up to 14 passengers, some are air-conditioned, and most have stereo systems. Users are pleased with the frequency of service along Centerline Road. The system is profitable, unlike most public transit systems. It is an example of the free enterprise system working with a minimum of governmental intervention.

Quality of service: safety — There are, however, some less than ideal aspects of the system in the area of safety. The vans, purchased mainly from the United States, are left-hand drive vehicles with the passenger entry doors on the right side. Since vehicles travel on the left-hand side of the road in the Virgin Islands, this forces customers to enter and exit from the traffic side of the van. This practice is quite dangerous, since other drivers rarely stop while a van is loading or unloading, but pass the van on the right at high speeds, especially on the rural portions of the route. Also, elderly passengers experience difficulty in boarding; as a running board is not standard on all vans, the first step into the vehicle is quite high, and the headroom is relatively low.

Quality of service: coverage — Although the City Route provides service to the commercial and educational centers of the island, its coverage of most of the residential areas is weak. It bypasses several low-income housing developments where many transit-dependent people live, while it serves only the housing projects on Soboetker Road and King Street in Christiansted, and the residents of Grove Place. Many of the other residential areas are located nearly a mile from Centerline Road, requiring passengers from these areas to walk a long distance to reach the taxivan service. The taxivan drivers decline to cover these areas because they do not think the detours required from Centerline Road would be cost-effective, and some drivers fear for their own and their vehicle's safety in some of the housing project areas.

3.2.1(c) Transit demand

The current demand for transit service is difficult to gauge accurately because of the lapse in operations for the last four years. Even when buses were operating, information on ridership as a whole was scarce, and by bus route, non-existent. However, vehicle-miles by route were available for 1976 and 1983 (Table 3-3). Using these as a proxy for demand (under the assumption that the two are roughly correlated), some limited inferences about relative demand on the three routes can be made.

TABLE 3-3.
DAILY VEHICLE-MILES AND ROUND TRIPS BY BUS ROUTE

Route	1976		1983	
	Miles (%)	Trips	Miles (%)	Trips
CITY	713 (87)	24	704 (63)	18
PRINCESS	88 (11)	3	360 (32)	9
EAST END	20 (2)	1	47 (5)	2
TOTAL	821	28	1111	29

Service on the Princess Route, which covered several major residential areas including Mon Bijou and Grove Place, grew considerably from 1976 to 1983. It is assumed that there was increasing demand to support the increased service. In contrast, service on the City Route remained about constant, since the taxivans were competing for and capturing any increased demand on that route. The taxivan operators evidently did not feel then, as now, that there was sufficient ridership on the Princess Route to warrant its coverage.

Service to the sparsely populated East End provided transportation mainly to employees commuting to and from the hotels, and did not significantly increase over the time period. Again, the taxivans avoided this route. It can be concluded from examining these data that, although the City Route generated the bulk of the transit market, the Princess Route contributed an increasing, but limited, portion of the transit ridership.

It has been suggested that several of the residential areas, such as Paradise and Mon Bijou, would generate sufficient ridership to warrant service, either in the form of a shuttle to a trunk line or a diversion of a service route. A 1984 study conducted jointly by the V.I. Housing Authority and the DFW estimated that combined bus and taxivan ridership to and from Paradise would be approximately 740 one-way trips per weekday. Subsequent to the study, bus service was discontinued, fares were increased, and many people undoubtedly found alternative means of transportation. Consequently, it is uncertain how this estimate would relate to a current estimate of demand. Similarly, without further study it is difficult to predict the

potential ridership for any proposed service to other areas. What is certain is that residents of these areas that do use taxivans would benefit from more convenient access to them.

3.2.2 Transit Alternatives

The crucial transit decision on St. Croix is whether or not to reinstate bus service. Alternatives for management, operations, regulation, equipment, maintenance standards, fares, and coverage follow from the outcome of this decision. The following discussion treats separately the alternatives to be considered given a decision for reinstating bus service and given a decision against it.

3.2.2(a) Resumption of bus service

Advantages and disadvantages. Support exists for the resumption of bus service on St. Croix for a number of reasons. Many people feel that: residents living on former bus routes no longer covered by the taxivans deserve access to public transportation; taxivan fares are too high, and bus service would be more affordable to the people who need public transportation the most; resumption of bus service is the only way to assure reliable service, since the Government does not regulate the operation of the taxivans; taxivan drivers, not obligated to provide service on the City Route, abandon it at will when cruise ships are in Frederiksted; senior citizens have great difficulty boarding taxivans because of the high step, and would much prefer buses; and finally, buses with left-side doors would provide an extra degree of safety over the taxivans, whose doors open on the right, or traffic side.

Two groups of people have strong sentiment against bus resumption: taxivan operators, and taxivan riders. The operators feel their livelihoods would be threatened, and the riders, who have become accustomed to the frequent service of the taxivans, would not like to return to the less frequent, less comfortable buses.

Reinstating bus service would be an expensive proposition for the V.I. Government. Equipment, maintenance facilities, and salaries are costly items. If bus service were resumed, the Government would have to take steps to eliminate competition from taxis. This would require new legislation to restrict taxivan competition with bus operations on Centerline Road. It also would require increased patrolling by the police to enforce any regulations enacted. This would represent another cost to the V.I. Government of resuming bus service. Taxivan service, on the other hand, already provides transit service at no cost to the Government. Many people, including some elected officials, feel that the taxivans should be allowed to continue to operate the Centerline Road service.

Resumption of bus service on St. Croix might mean that the buses previously used in transit service and currently parked on Abramson's property would remain on St. Croix rather than be moved to St. Thomas (see

below). After being refurbished, it is expected that these buses would be operable for a few more years, during which time new buses could be designed and built. While they would provide St. Croix with a short-term solution for its transit system, St. Thomas then would have to look elsewhere for buses to meet its critical short-term needs. The other alternative is to move the buses to St. Thomas and purchase new buses for St. Croix.

Equipment. The ten buses formerly used in transit service have been parked on the Abramson lot since 1984. The study recently performed by Lea & Elliott, indicates that nine of the buses could be refurbished at reasonable expense and would be serviceable for several years. However, it is being recommended that seven buses with the smaller chassis be transported to St. Thomas to satisfy their critical need for replacement equipment for their aging bus fleet until new buses can be purchased.

If this happens, only two buses would remain on St. Croix for transit service, and additional buses would have to be obtained to provide service at the 1984 level. The only feasible source in the short term would be used buses purchased from other U.S. transit systems, and the same funding and bus modification constraints would be encountered as on St. Thomas. It is possible that modifying the used buses would take almost as long as purchasing new ones. If service were reinstated at a reduced level and limited to using the two remaining buses, the equipment would be sufficient for serving only the East End Route.

In the long term, regardless of the level of service resumed, new buses would have to be purchased to replace both the current and used buses. For this to occur, a number of steps would have to be taken. Specifications would need to be developed for St. Croix buses. Currently, Lea & Elliott are preparing specifications for buses suitable for St. Thomas. Given the differences in terrain between the two islands, it must be determined whether these specifications would be appropriate for St. Croix' needs. If not, new specifications would have to be developed. A grant request would have to be submitted and approved by UMTA. The bus purchase would have to be advertised for bids, a manufacturer chosen, and the buses manufactured. This process would take at least two years.

Maintenance facilities. Prior to the cessation of bus service in 1984, the maintenance facilities and the land on which they were located were owned by the bus operator, Abramson Enterprises, Inc., and shared with the school buses, which also were operated by Abramson. Costs associated with the facilities were apportioned between transit and school buses based on a factor developed by Abramson, reflecting the relative usage by the two types of service.

The 1982 Gannett Fleming report outlined a number of deficiencies with the existing Abramson maintenance facilities and recommended a new facility on a site nearer to Christiansted. Many of the deficiencies noted still exist. Consequently, it would appear that the previous recommendation is still valid.

Another reason for a new maintenance facility is that it is not certain that Abramson would be the operator if bus operations were to resume. Abramson has claimed not to be interested in resuming service unless competing taxivan service were eliminated and major improvements were made in the responsiveness of the DPW to transit needs. Furthermore, if transit service were to be advertised for bids, it is not assured that Abramson would be selected as the operator. Therefore, it does not make sense for UMTA or the V.I. Government to fund new maintenance facilities on Abramson property. In fact, funding a new facility on any operator-held property would restrict the Government's flexibility in dismissing an operator for unsatisfactory performance. Rather, it would seem reasonable for a new facility to be built on land belonging to the V.I. Government and leased to the transit operator. Gannett Fleming recommended a site close to Christiansted, but the availability of that particular property at this time is not known.

A new maintenance facility would be costly, and would take at least three years to design, fund, and build. In the interim, an existing facility would have to be used. The only one known at this time on the island is that belonging to Abramson. If bus service were to resume, an arrangement would have to be made for the use of this facility until a new one could be completed. If such an arrangement could not be consummated, the reinstitution of bus service would have to be postponed until a new facility was built.

Coverage and service frequency. These aspects of a transit system must be considered in conjunction with each other. With a fleet size of seven buses, the three-route system operated by Abramson in 1984 could be served with the same frequency as before. However, without any changes to the way taxivans are permitted to operate along Centerline Road, ridership, especially on the Centerline Road route, would be minimal. It would consist principally of the elderly, who would find buses easier to board, and the poor, who had no other options. If the bus fleet size were increased, enabling the headways along Centerline Road to be reduced, then bus ridership would likely experience some expansion. However, purchasing and operating more buses is a very expensive proposition to undertake with no assurances that the bulk of the riders would choose them over the taxivans.

If taxivans were regulated to limit their ability to compete with the buses, a greater bus ridership would be guaranteed. For instance, if taxivans were prohibited from charging less than one dollar, and the bus fare were sixty cents, more people would patronize the buses. If taxivans were prevented from picking up people at bus stops and from cruising Centerline Road, then all City Route riders would be forced to use the buses for public transportation.

The subject of regulating the taxivans is very controversial, and there exists strong public sentiment both for and against it. Politically, the taxi organizations comprise a strong constituency with powerful influence on elected officials. Their emergence as a source of transportation for the general public on St. Croix has enabled them to carve a niche for themselves in the island economy which cannot easily be eliminated or substantially

altered. However, unless regulations are imposed and strictly enforced, taxivans would compete with the buses and erode bus ridership.

Another option would be to offer bus service only on the routes that the taxivans have no interest in covering. This would eliminate the possibility of direct competition between buses and taxivans while still providing some service to residents of areas that are currently excluded from public transportation. Service on these routes could be partially covered with the two longer chassis transit buses being left on St. Croix, once refurbished. For example, the two buses could be dedicated to running on Northside Road from Christiansted to Centerline Road and back again, perhaps with some form of transfer arrangement with the taxivan operators for bus riders whose final destination is another location on Centerline Road. However, this would leave no back-up for the buses in case of mechanical trouble or other emergency situation.

Various arguments have been made over the years that service should be expanded to include some of the high-density residential areas that are just beyond the normal coverage area of potential bus routes. These areas include Paradise, Williams Delight, Clifton Hill, and the area south of Centerline Road near Frederiksted. Two residential areas were served in the former system: Grove Place by the City Route; and Mon Bijou by the Princess Route.

A study performed by the V.I. DPW and the V.I. Housing Authority in 1984 examined both the possibility of diverting the City Route to go through Paradise and the possibility of dedicated service to the area. At that time, it was estimated there would be enough ridership to eliminate the need for a subsidy from the Housing Authority. The most cost-effective of the two possibilities would have been to divert some of the City Route buses to Paradise; however, this would have affected the schedule, adding at least ten minutes to the trip between Christiansted and Frederiksted. This undoubtedly would result in the loss of some passengers to the faster taxivans. If, in addition, the buses were to be diverted to some of the other housing developments, the schedule and patronage would have been even more adversely affected.

City Route buses are not the only means of providing residential areas with service. A shuttle service could be established between the areas and Centerline Road, where the passengers could transfer to the City Route buses. The shuttle could be in the form of a taxivan contracted to provide this service, or a government-owned vehicle driven by a paid employee. The shuttle could probably serve several housing developments in proximity of each other.

Fares. As previously mentioned, the fare structure for bus service was 50 cents for trips between Christiansted and Frederiksted and between Christiansted and the East End. For any service between the East End and west of Christiansted, the fare was one dollar. There were no special fares for students or for the elderly. This type of flat rate fare structure discouraged short trips.

Now that four years have passed since the above fares were used, an increase would seem warranted. It would not appear desirable to raise them to the level of the taxivan fares, which many people feel are too high for the low-income passengers who comprise the bulk of the transit-dependent population. On St. Croix, where the populace has been accustomed to one dollar taxivan fares, a limited bus fare increase would still represent a savings to users over the taxivans. Provisions also should be made for students and for elderly and handicapped persons to ride at reduced fares.

Transit management and operations. The transit management and operations alternatives for St. Thomas also apply to St. Croix. The options include: (1) transit management by the V.I. Government and operation by a private contractor; (2) both management and operation by the V.I. Government; and (3) both management and operation by a private contractor, either as a package or separately. For a thorough discussion of the merits and disadvantages of these options, refer to Chapter 2.

3.2.2(b) Taxivan-based transit system

Advantages and disadvantages. An alternative to the more traditional bus-based transit system on St. Croix is utilization of the taxivan-based transportation system that is operating on the island today. In such a system, taxivans would substitute for buses. The taxivans would be privately owned, operated, and maintained, relieving the Government of these responsibilities. The Government would perform the function of oversight, of regulating and monitoring taxivan service and safety, and of paying for any operating subsidies that would be required on non-profitable routes.

One advantage of this arrangement would be its low cost to the V.I. Government. Many of the governmental expenses of a traditional transit system, such as vehicle ownership and maintenance, would be covered by the taxivan owners. The Government would avoid the considerable expense of purchasing transit vehicles and building maintenance facilities. Even if UMTA covered a large percentage of these expenses, the local share still would represent a major expenditure for the V.I. Government.

Other advantages to the taxivan-based transit system would be its superior performance characteristics to those of the bus system. As noted previously, the average service frequency of the taxivans along Centerline Road is 1.5 minutes during the morning rush hour and one taxivan every 2.5 minutes during off-peak hours. Most riders find the vans more comfortable than the buses. In addition, the taxivan-based system would encourage private enterprise and keep government intervention to a minimum, in line with the Federal Government's private sector initiative.

The main drawback to the taxivans is in the area of safety. The taxivans must pick up and discharge passengers from the right or traffic side of the vehicle. This results in passengers having to incur undue risks to their safety to ride the taxivans. Mothers with small children, as well as elderly people, are particularly at risk. Cars are not required to stop for

boarding and alighting passengers, and rarely do. Even when taxivans use the bus stop pull-offs, there is often not enough room for passengers to avoid walking into the roadway to board and exit the taxivans. The cost of modifying the taxivans to open on the left side would be prohibitive to most owners. Another problem with taxivans is the difficulty they pose to elderly people in boarding because of the high step. The low headroom inside the vehicle also is a problem.

Centerline Road service. The discussion below deals with alternatives for service along Centerline Road in the areas of management and operations, service frequency, and fares.

Management and operations — The current taxivan system along Centerline Road operates with no formal management structure. The drivers, through their associations, have voluntarily agreed to charge fares that are significantly lower than the maximum fares allowed by law, but they have developed no other guidelines for levels and hours of service. The reason the system works so well with no other governmental or voluntary controls is that the demand for service is high enough to offer many drivers the opportunity to make a reasonable income.

One option for a taxivan-based transit service along Centerline Road would be to allow the current system to continue as it is today -- an informal system that works on the simple demand and supply principle with no governmental involvement whatsoever. This option would cost the Government nothing, and as long as conditions did not change, would probably continue to provide acceptable service. The disadvantage of this option is that in the absence of any controls, the operators could change the service at any time. For example, drivers could desert Centerline Road when cruise ships are in Frederiksted and reduce the level of service significantly. (St. Croix is trying to increase the level of cruise ship activity.) Also, given a captive market, the operators could legally raise the fares without seriously endangering the profitability of their business, but creating hardships for many of their low-income riders.

An alternative approach is to formalize the system with a contract which would be negotiated between the V.I. Government and the taxivan drivers to provide specific transit services on Centerline Road. The incentive for the taxivan operators to agree to formalize the system would be a commitment by the V.I. Government not to reinstitute bus service and accompanying controls over taxivan operations on Centerline Road. If the Government were to make a commitment not to reinstate bus service, it would need assurances from the taxivan community that an adequate transit service would be provided to the residents of the island. The Government would want guarantees that taxivans would cover specific routes with specified frequencies, fares, and hours of service.

Currently, there is no single organization that represents all taxivan drivers. Most drivers belong to a taxi association, but they do not all belong to the same one. Before a contract could be established, the taxivan operators would have to organize into some legal entity -- either a taxi or

route association exclusively for taxivan operators or a corporation -- with the authority to represent the taxivan operators in contract negotiations. In addition, the organization could perform the administrative and supervisory functions associated with managing and operating the service. It would have to be able to assure acceptable levels of performance by its members and take disciplinary actions when necessary.

The advantage to a system of this type would be that service at acceptable frequency, hours, and fares would be assured to the residents of St. Croix. Government involvement would be limited, and the system would remain basically a free enterprise. However, it would not be entirely cost-free to the Government. There would be some legal and administrative expenses involved to set up the system initially, and some costs associated with monitoring its performance. In addition, the Government likely would have to cover some of the expenses of the taxivan organization.

Another possibility is for the Government itself to assume the responsibilities of the taxivan organization described above. The taxivan drivers wishing to participate in the Centerline Road transit service would sign individual contracts with the Government, agreeing to abide by the established regulations. The advantage to this option would be that the Government would have more control over system performance. It also would cost more because extra personnel would have to be hired to carry out the administrative and supervisory functions.

Service frequency — If the system were allowed to continue operating as it currently does, then the service frequency and hours of operation would be determined by forces of the marketplace. As demand intensified or decreased, drivers would be attracted to or discouraged from participating in the service, and service frequency and service hours would be self-adjusting to the demand.

If the government were to sign a contract with a newly established taxivan organization to provide transit service, the hours of operation and service frequency would have to be specified in the contract. These specifications could be in the form of maximum headways at various times of the day. The taxivan organization would have to ensure that these specifications were met. It may be that the system would operate to specification with very few new controls imposed on the drivers. If not, the taxivan organization might have to translate the specifications into shifts that the drivers would sign up for, so that the appropriate number of vans were operating throughout the day. Initial headways specified in the contract would be based on current performance of the system. The contract would have to allow for maximum headway modifications if initial specifications proved unworkable.

Fares — The current structure could be continued, but it contains some inherent inequities. For instance, it costs the same to ride from downtown Christiansted to the Pueblo shopping center, a distance of less than 1.5 miles, as it does to go 10 miles further. The fares, in general, are higher than those charged by most transit systems in the U.S. and than those charged on St. Thomas. Some transit-dependent riders undoubtedly find them a financial burden.

The fares could be lowered to make them comparable to transit services in other localities and more affordable to the lower income residents of St. Croix. Lower fares, however, would be unacceptable to the taxivan drivers, who feel that the current structure is appropriate for covering their costs and enabling them to make a reasonable profit. Subsidizing the drivers would be difficult and expensive to implement, as discussed below. If the Government desired to make the service more affordable to lower income residents, one possibility would be to subsidize the riders directly through a Department of Health and Human Services program or a user-side subsidy program.

Other areas. The discussion below deals with alternatives for service to other areas of St. Croix besides those served by the Centerline Road taxivans.

Routes — A number of areas on the island would be prospects for subsidized taxivan service. Unfortunately, there is insufficient information to indicate the volume of demand these areas would generate. Any service would best be initiated on a trial basis until its feasibility could be determined. Candidates include: the residential areas of Princess and Mon Bijou along Northside Road; the residential housing project at Paradise; the residential areas of Williams Delight, Clifton Hill, Hope, Whim, Hannahs Rest, and Smithfield; the Martin Marietta and Hess Refinery industrial areas; and the airport.

Given its viability as a bus route when buses were running, Northside Road would have to be considered as a possible route for subsidized service. One alternative for this route would be to run along the former Northside Route from Christiansted via Northside Road to the Ville La Reine Shopping Center, thence following Centerline Road to Frederiksted. However, this routing would conflict with the non-subsidized Centerline Road Service and might cause problems among the drivers. Another alternative would be to operate the route only from Christiansted to Ville La Reine via Northside Road. This would eliminate any conflict between the two routes. Another possibility would be to extend the route from Ville La Reine to Sunny Isle to make it unnecessary for passengers wishing to go to Sunny Isle to pay two fares or to transfer. The three possibilities for this route are shown in Figure 3-5.

Another route worthy of consideration would be the former East End Route, an 18-mile loop beginning and ending in Christiansted and following East End, Southside, and Lowry Hill Roads (see Figure 3-5). This route was patronized mostly by hotel employees and domestics working in that part of the island.

Service to some of the residential areas along Centerline Road could be accomplished by diverting some of the Centerline Road taxivans into those areas. This would increase taxivan travel time between Christiansted and Frederiksted. It also would complicate the administration of the subsidy in that the participating taxivans would be operating both on subsidized and on non-subsidized routes.



FIGURE 3-5. POTENTIAL NORTHSIDE ALTERNATIVES AND EAST END ROUTE

Another way to offer service to some of the residential areas would be by subsidized shuttles carrying riders only between the residential areas and Centerline Road. There would be many possible routings for these shuttles. Three examples are described below and pictured in Figure 3-6.

- Airport Shuttle -- beginning at the junction of Centerline Road and Rt. 64, proceeding on Rt. 64 to the airport, over to the Hess Oil Refinery, through the Clifton Hill area to Rt. 663, and returning to Centerline Road; round trip distance: 8 miles.
- Paradise Shuttle -- from the Paradise residential area out to Centerline Road, along Centerline Road, and into Williams Delight; one-way distance: 3.6 miles.
- Hope Shuttle -- from Centerline Road down Rt. 703 into the Hope and Carlton residential areas, following Routes 701, 63, 632, and 701 out to Centerline Road, into the Stony Ground and Smithfield areas, into Frederiksted, and returning to Rt. 703 via Centerline Road; round trip distance: 7.6 miles.

Management and operations — Taxivan drivers do not perform the same type of service on other former bus routes as they do on Centerline Road, because they feel the demand is too light and too disperse to make it worthwhile. The drivers do not serve high-density residential areas for similar reasons. In a taxivan-based transit system, providing residents and businesses along these routes with service probably would require the Government to contract with the taxivan operators to perform this service on a subsidized basis, unless providing subsidies to potential low-income riders would generate sufficient revenues to entice operators to offer adequate service without a Government contract.

If a subsidy contract proves necessary, the Government could contract either with an organization representing the taxivan drivers or with the drivers themselves on an individual basis. Contracting with a taxivan organization would relieve the Government of the responsibility for managing, operating, and administering the system. The Government's role would be limited to one of oversight. However, contracting directly with the drivers would enable the Government to exert more control over their performance.

The management of a subsidized taxivan system would be composed of many activities. Payment of a subsidy would require record-keeping on the part of the organization and/or the drivers depending on the mechanism chosen for determining the subsidy payment. Administrative duties would consist of scheduling the drivers, supervising them, and monitoring their performance. Government oversight would require constant monitoring of market circumstances that might affect the service, such as increased or decreased demand and changes in major destinations, as well as taxivan adherence to contract terms.

Service frequency — Service frequency and hours of operation ideally should be determined by demand. In the absence of information on demand,



FIGURE 3-6. SHUTTLE ALTERNATIVES

initial schedules and hours of operation would be determined by past activity and other available information.

One option would be to provide subsidized service on all other routes to coincide with the hours of operation on Centerline Road. This certainly would satisfy demand and facilitate transfers between routes. However, considering the expense of subsidized service, it would be more cost-effective to limit it as much as possible to the hours of the most urgent need on each route.

Similarly, if service were offered at the same frequency as on Centerline Road, many taxivans would be running empty. Rather, frequency should be tailored to the demand on each route, based initially on the best available information, and subsequently adjusted as more experience with operating the service is gained.

Subsidy mechanism — A subsidy would be necessary to induce drivers to serve routes which they feel are not profitable enough to run without assistance. There are three possibilities for implementing a subsidy: (1) the drivers could be paid an hourly amount which would cover their equipment and operating costs and salaries, and fares would be turned over to the Government; (2) the drivers could be paid a lesser amount that, when combined with the fares they collected on their routes, would be equivalent to the first option; or (3) subsidies could be paid to the users of the service rather than the taxivan operators.

Under the first option, an appropriate hourly rate would be easier to determine since it would not depend on the amount of fares collected. Revenues are a function of ridership, and at present there are insufficient data to estimate ridership by route. However, after service is established and ridership stabilizes, expected fare revenues could be predicted reasonably accurately. Appropriate subsidies then could be calculated to supplement the fares kept by the drivers under the second option.

The main drawback to the first option is that it would be difficult to verify that drivers were surrendering all the fare money they collected to the Government. Fare boxes could be installed, but these would be expensive, difficult to locate conveniently in the vans, and would require special procedures for emptying them and handling the cash. A method of circumventing this problem would be to implement a transit pass/ticket system in which passengers would have to purchase tickets or passes ahead of time at designated points of sale. This would eliminate the need for drivers to handle money, and also make it possible to develop accurate demand statistics. Although such a system would present no difficulty to regular users of the service, infrequent users who could not anticipate their transit needs might not have access to a ticket sales office nearby and open when they needed it.

The third option, user-side subsidies, would require the establishment of a governmental office to review applications for transportation fare assistance, register the legitimate applicants, sell or distribute the subsidy medium (usually coupons referred to as scrip), and redeem the scrip

for its dollar value when turned in by the taxi drivers or the taxi organization. This option would require passengers to purchase the scrip in advance of their trip. This approach has the advantage of eliminating direct subsidies to the taxi drivers, as well as providing financial transportation assistance to people who need it. However, the user-side subsidy strategy does not guarantee taxivan drivers any revenue. As such, it poses a risk that initial ridership will not be sufficient to induce drivers to continue the service in anticipation that ridership will ultimately increase to profitable levels. Consequently, service could be terminated abruptly without a fair test of the demand for the service.

Fares and transfers — The fare issue is complicated because many riders would use subsidized routes as feeders to the City Route, necessitating a transfer between subsidized and non-subsidized systems. One alternative for dealing with transferring passengers would be to charge all passengers full fare, forcing transferring passengers to pay the full fare on each taxivan. Another alternative would be to charge all passengers the same fare on the first taxivan, but issue transferring passengers a slip to give them free or discounted passage on the second taxivan.

Charging transferring passengers full fares would generate more revenues, but would impose a financial burden on transit-dependent residents. The short-distance shuttles, designed to give people living just outside the transit service area access to the system, would not be used if the fares were too high. However, a transfer fare system would be difficult to implement and control. Any transfer mechanism has the potential for abuse. A transfer fare system also would require the cooperation of taxivan operators along Centerline Road, and possibly their acceptance of reduced fares from passengers transferring from a subsidized route. Their current willingness to charge students and elderly people reduced fares, however, may predispose them to go along with this scheme. The subsidized system might, in fact, generate new business along Centerline Road which they would not otherwise have.

Regardless of the transfer system adopted, fares for subsidized routes should bear some relation to the length of the route. Shuttle fares, for example, should be less than the fares for the Northside Route, which in turn should be less than the Christiansted to Frederiksted fare.

If a user-side subsidy mechanism is eventually adopted, it should encompass all routes, including Centerline Road.

3.2.3 Recommendations

3.2.3(a) Transit service concept

Reinstating bus service on St. Croix would be a very expensive proposition for the Virgin Islands, almost as expensive as if buses had never been operated there. Not only would new maintenance facilities have to be built and new equipment purchased, but very possibly a new contractor would have to be found or the DPW itself would have to develop the necessary skills to

operate the system. New legislation would have to be enacted to prevent the taxivans from competing unfairly with the buses. Without a considerable increase in the size of the police force, the taxivan restrictions could not be consistently enforced.

Therefore, it is recommended that the Virgin Islands Government develop a public transit system for the island of St. Croix based on the taxivan system operating there at present. It is recommended that Centerline Road service be left as is, as long as adequate service and reasonable fare levels are maintained. However, the Government should closely monitor this service. If service deteriorates or fares escalate unreasonably, the Government should attempt to negotiate better arrangements with the taxivan operators. If cooperation is not obtained, the Government should attempt to contract directly with taxivan operators and impose legislative restrictions on other taxivan operators who might try to compete for the same patronage market. If both of these efforts fail, Government regulation of the taxivan service should be pursued. If the Legislature fails to enact such regulations, a reinstitution of bus transit service would be recommended.

For other routes, the Government should contract for service with the taxivan operators through a taxivan organization which would be responsible for representing the taxivan drivers in contract negotiations and for administering the terms of the contract. The contract will have to offer terms that make taxivan operators feel it is to their advantage to participate in the system.

These recommendations for implementing a transit system on St. Croix will be the least costly to the V.I. Government, and, thus, most amenable to the Legislature. They will keep governmental involvement to a minimum, make use of an existing transportation resource -- the taxivans -- and continue to offer Centerline Road taxivan patrons the high frequency of service to which they have become accustomed, while offering previously excluded residents public transportation at a reasonable charge.

3.2.3(b) Management and operations

Taxivan organization. The taxivan operators should form an organization with membership consisting exclusively of taxivan drivers participating in subsidized transit type service. This organization could take the form of a taxi route association or corporation. Its two main roles would be to represent the drivers in contract negotiations with the Virgin Islands Government, and to perform the administrative functions associated with the operation of the transit service. These functions would follow from the nature of the contract agreement signed with the Government, but most likely would include enrolling members, issuing transit identification placards, ensuring adequate service frequency and hours of service, scheduling and tracking working hours of drivers on the subsidized routes, and distributing payments to the drivers.

The organization would incur costs in performing its administrative duties, and in hiring attorneys to handle legal matters. Some of the costs

could be offset by membership dues, as are required by most taxi associations. The balance would have to be negotiated in the contract with the Government.

Government role. Once operational standards are established, the Government's role in the transit system would be primarily that of monitoring the system's performance. One government employee would be needed full time on St. Croix to observe the taxivan system in action on an ongoing basis. He would be responsible for confirming that the taxivans were starting and quitting on time, that the correct number of vans were operating, and that the correct headways were being offered. Discrepancies from specifications in the contract would have to be documented and brought to the attention of the taxivan organization. He also would be responsible for estimating passenger volumes by route, and for determining the need to adjust route- and time-specific subsidy rates.

The importance of the Government's role cannot be overemphasized in assuring the success of the taxivan-based transit system. It is only through constant monitoring by the Government and the threat of withholding the subsidy that any control can be exerted over the performance of the taxivan system. A strong Government monitoring role will make the taxivan system work with a minimum of regulation and bureaucracy.

If user-side subsidy is eventually adopted, a new Governmental organization would be needed to establish and operate the user-side subsidy program.

Nature of contract. The contract between the Virgin Islands Government and the taxivan organization should specify the duties of both parties, and the consequences of failing to perform them. It should specify the fares to be charged on each route and the desired service characteristics. Service on subsidized routes should be initiated on a trial basis for a period of six months. If during that time it is determined there are not enough passengers to justify continuing service on a particular route, the route should be discontinued.

The contract should be granted initially for a period of six months. If this mechanism proves to be an effective means of providing public transportation to the island, then the contract should be renewed, possibly in longer increments, or replaced by a user-side subsidy arrangement.

3.2.3(c) Coverage

It is recommended that service be allowed to continue as is on the City Route along Centerline Road and that new service be initiated on two subsidized routes: the Northside Route; and the Paradise Route. The recommended routings are shown in Figure 3-7. If the service on the subsidized routes proves successful during the six-month trial period, and as both the V.I. Government and the taxivan organization acquire experience with managing



FIGURE 3-7. RECOMMENDED TAXIVAN ROUTES - ST. CROIX

and operating the system, additional routes may be considered for implementation.

3.2.3(d) Service frequency

The following service frequencies and hours are recommended to begin with on the transit routes.

- Centerline Road-City Route -- Since this route will not be subsidized, it will operate on the demand and supply principle. No controls need be implemented as long as service is being offered on the route between the hours of 6 am and 11 pm with headways of: no more than 3 minutes during rush hours; 5 minutes during off-peak times up to 7 pm; and about 10 minutes from 7 pm to 11 pm. If service levels drop, then the Government should pursue other means to assure that service is maintained.
- Northside Road Route -- Service should be offered from 6 am to 7 pm, Monday through Saturday. Headways should be a maximum of 20 minutes in each direction. This could be accomplished by two taxivans running in opposite directions along the route throughout the day. Two six-and-one-half-hour shifts would cover the service hours.
- Paradise Shuttle -- This service should be offered from 6:30 am to 6:30 pm, Monday through Saturday, with 20-minute headways throughout the day. This could be accomplished with one taxivan on each six-hour shift.

3.2.3(e) Safety issues

It is recognized that taxivans with doors opening on the right side present a safety hazard to boarding and alighting passengers. Both the cost of modifying existing vans and the cost of purchasing specially designed new vans would be prohibitively high to taxivan owners. It is unlikely that the Virgin Islands will change its practice of driving on the left side of the road in the near future. Thus, to minimize passenger exposure to hazards with existing equipment, it is recommended that the Government provide taxivan turnoffs at high usage stops and that taxivans operating in transit service make an effort to pick up and discharge passengers where there are places to pull off the road (such as parking lots and bus stops where turnoffs have been established). On one-way streets, taxivans should be required to pick up and discharge passengers on the right side of the road, directly adjacent to the sidewalks.

Recent legislation requires that taxis have safety inspections twice a year instead of once a year. This establishes taxi inspections at the same frequency as bus inspections. As soon as inspectors can be hired, probably within the year, the regulation will take effect. No additional safety requirements are recommended.

3.2.3(f) Fares

It is recommended that the fare structure for the City Route continue as is: \$1.50 for travel between Christiansted and Frederiksted; \$1.00 for any distance in between; \$0.75 for elderly and handicapped passengers, students, and children; and nighttime fares should be \$.50 higher than daytime fares.

The recommended fares for the Northside Route are \$1.00 for regular passengers and \$0.75 for elderly and handicapped passengers, students, and children.

The recommended fare structure for the Paradise Shuttle is \$0.25 for all passengers.

During the trial period, it is recommended that transferring passengers not be given any special treatment. The low shuttle fare reflects this policy. The proposed Northside Route to the Sunny Isle Shopping Center will lessen the need for many riders to transfer to a second taxivan.

3.2.3(g) Subsidy mechanism

The recommended subsidy mechanism is to pay the drivers on the subsidized routes a rate that, in combination with the fares collected, will amount to a reasonable profit. This option will require a minimum of administrative activity, since the drivers will simply keep whatever they collect in fares and will not have to report the amount or turn it in to a collection agent. The advantage of this approach is that it would encourage good performance on the part of driver-owners. Good performance should equate to higher profits. However, this approach will require the Government to reassess the guaranteed subsidies periodically based on observations of taxivan passenger loads and estimates of fares collected during the period. In order to preserve driver incentives, the subsidies should not be reduced in direct proportion to the increased fare revenues.

If the service proves successful during its six-month test period, other options may be possible. The most desirable occurrence would be for the service to be so popular that subsidies could be dropped. The next most desirable option would be a user-side subsidy program. If neither prove feasible, the initial subsidy mechanism could be continued.

3.2.4 Implementation Plan

3.2.4(a) Cost estimates

The major cost associated with the recommendations is the transit subsidy. For the Northside Route, this is estimated to be approximately \$82,000 annually, or \$41,000 for the six-month trial period (based upon an assumed average hourly subsidy of \$10 per hour). For the Paradise Shuttle, the cost is estimated to be approximately \$68,000 annually, or \$34,000 for

the six-month trial period (based upon an assumed average hourly subsidy of \$18 per hour). These total \$150,000 annually, or \$75,000 for six months.

Other expenses associated with the recommendations would be the salary of a full-time Government employee on St. Croix to monitor the performance of the taxivan-based transit system, administrative and legal costs to draw up and negotiate the contract with the taxivan organization, any expenses of the taxivan organization covered by the contract, public relations costs to advertise the implementation of the new service, and expenses incurred in creating turnoffs at high density transit stops.

3.2.4(b) Implementation schedule

The following implementation schedule allows one year to establish the structure for operating the subsidized routes. Because the recommended transit system is a new concept requiring the resolution of issues not considered before, seemingly simple tasks may take longer than anticipated.

Stage I: first year

1. Obtain legislative approval and funding for the recommended transit program.
2. Form organization of taxivan operators.
3. Negotiate contract between the Government and taxivan organization to provide transit service on the two subsidized routes recommended.
4. Hire a full-time Government employee to monitor the transit operation on St. Croix.
5. Conduct a public relations campaign to publicize the new routes, fares, and schedules.

Stage II: second year

6. Implement the new system on the two subsidized routes.
7. After six months, evaluate the performance of the system and determine whether to continue; make any necessary adjustments.

Stage III: third year

8. If patronage on the subsidized routes is high and the system is working well, consider establishing service on additional routes according to expected demand.

3.3 HIGHWAY SYSTEM

3.3.1 Existing Conditions

This section describes and analyzes existing roadways, traffic patterns, and operating conditions, and provides the context for the recommendations that follow.

3.3.1(a) Street system

The St. Croix street system reflects both its terrain and development patterns. There is a basic grid of north-south and east-west roads in the central suburban belt, irregular road patterns in the hilly areas, and historic street grids in Christiansted and Frederiksted.

The principal roadways and routes on St. Croix are as follows:

- Centerline Road (Route 70) is the main east-west route between the two towns. It is a straight two-lane road from Frederiksted to a point midway between the Ville La Reine and Sunny Isle Shopping Centers; then it meanders through the escarpments until it reaches Christiansted.
- The Melvin H. Evans Highway (Route 66) parallels Centerline Road between the Sunny Isle Shopping Center and Frederiksted, about 1 mile south of Centerline Road. It is a four-lane divided highway with turning lanes, signalized intersections, and controlled access from adjacent areas; it serves the airport, the Hess oil refinery, and nearby residential developments.
- Northside Road (Route 75) links Christiansted with the suburban areas along the water to the northwest. It provides two through lanes plus right turning lanes at key intersections.
- Routes 70 and 75 meet on the western edge of Christiansted. All traffic entering the town from the west is required to pass through this single gateway.

Streets in the historic center of Christiansted are narrow, have virtually no corner turning radii, and usually are lined with parked cars. Traffic concentrates on King, Company, and Hospital Streets, since the other streets generally have steep grades and circuitous routings. King and Company Streets and sections of other streets have been converted to one-way flow. The one-way street pattern, which was developed to reduce conflicts and expedite traffic movement, is shown in Figure 3-8 together with the major land uses in the waterfront area.

3.3.1(b) Traffic signal controls

Traffic signals control movements at 15 intersections on St. Croix. Figure 3-9 shows the locations of these signalized intersections, and Table 3-4 gives further details about their operations. Among the signalized intersections are key intersections along Northside Road, Centerline Road, and the Melvin H. Evans Highway. One junction in the Mon Bijou area is signalized.

The signal installations are recent -- most have been installed within the past five years. The traffic signals along the Melvin H. Evans Highway

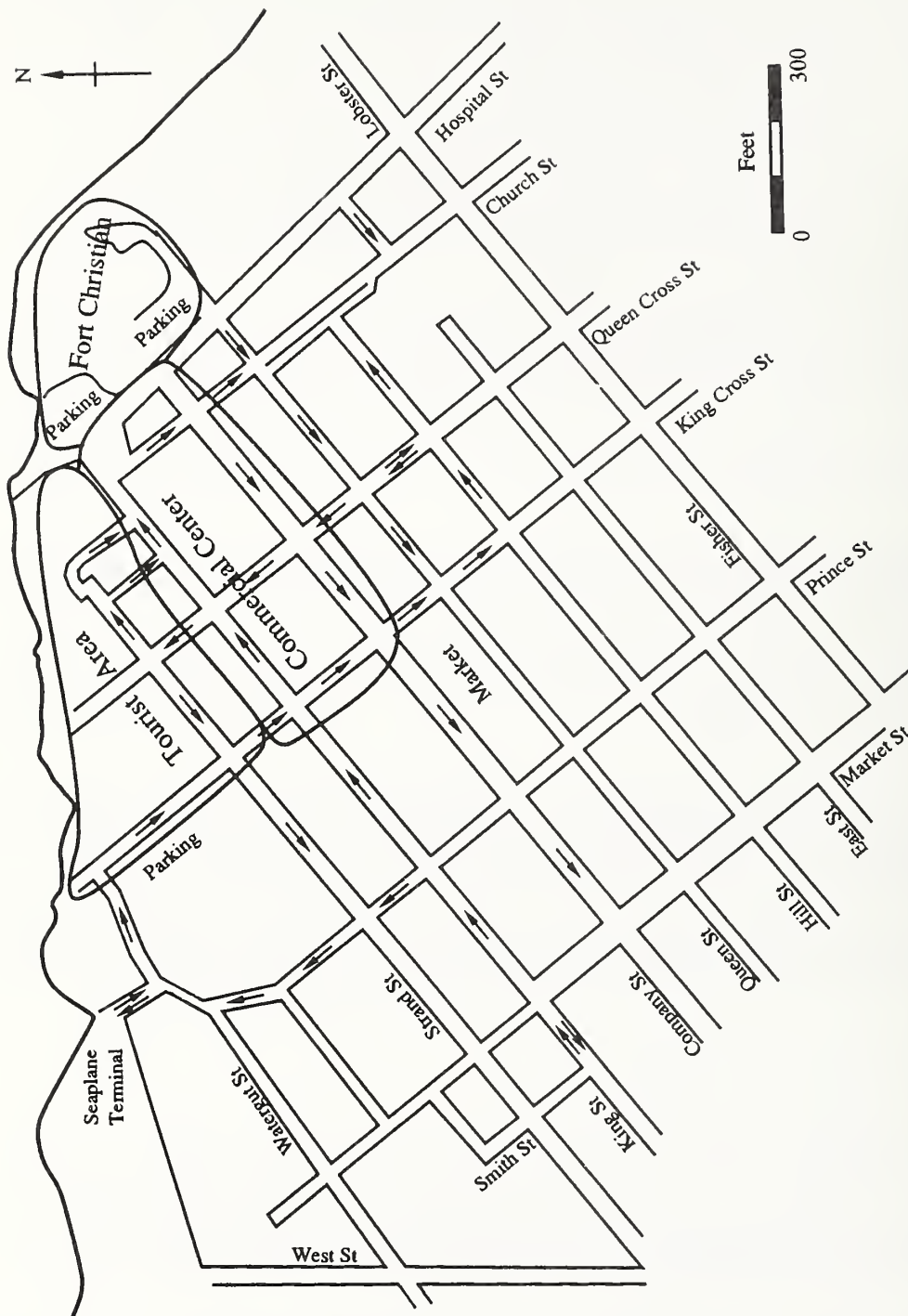
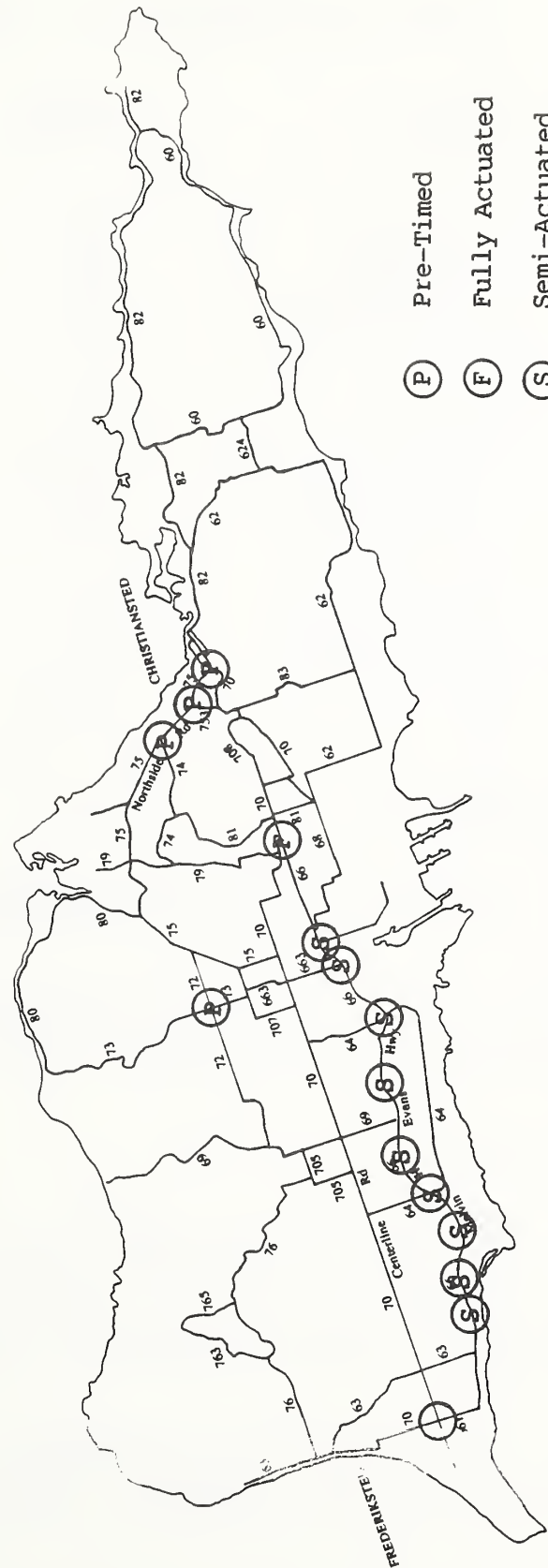


FIGURE 3-8. STREET DIRECTIONS AND MAJOR LAND USES IN CHRISTIANSTED



Note: Melvin H. Evans Highway signals are coordinated.

FIGURE 3-9. TRAFFIC SIGNALS - ST. CROIX

TABLE 3-4.
TRAFFIC SIGNAL CONTROLS ON ST. CROIX

SIGNAL	TYPE CONTROL	CYCLE (sec.)	DATE INSTALLED
1	Pre-timed	60	NA
2	Pre-timed	NA	1986
3	Pre-timed	50	NA
4	Fully-actuated	110**	1986
5	Semi-actuated*	80	1982
6	Pre-timed	55	1987
7	Semi-actuated*	80	1981
8	Semi-actuated*	80	1986
9	Semi-actuated*	80	1984
10	Semi-actuated*	80	1986
11	Semi-actuated*	80	Post 1986
12	Semi-actuated*	80	Post 1986
13	Semi-actuated*	80	Post 1986
14	Semi-actuated	80	Post 1986
15	NA	NA	NA

* Background Cycle

** Maximum

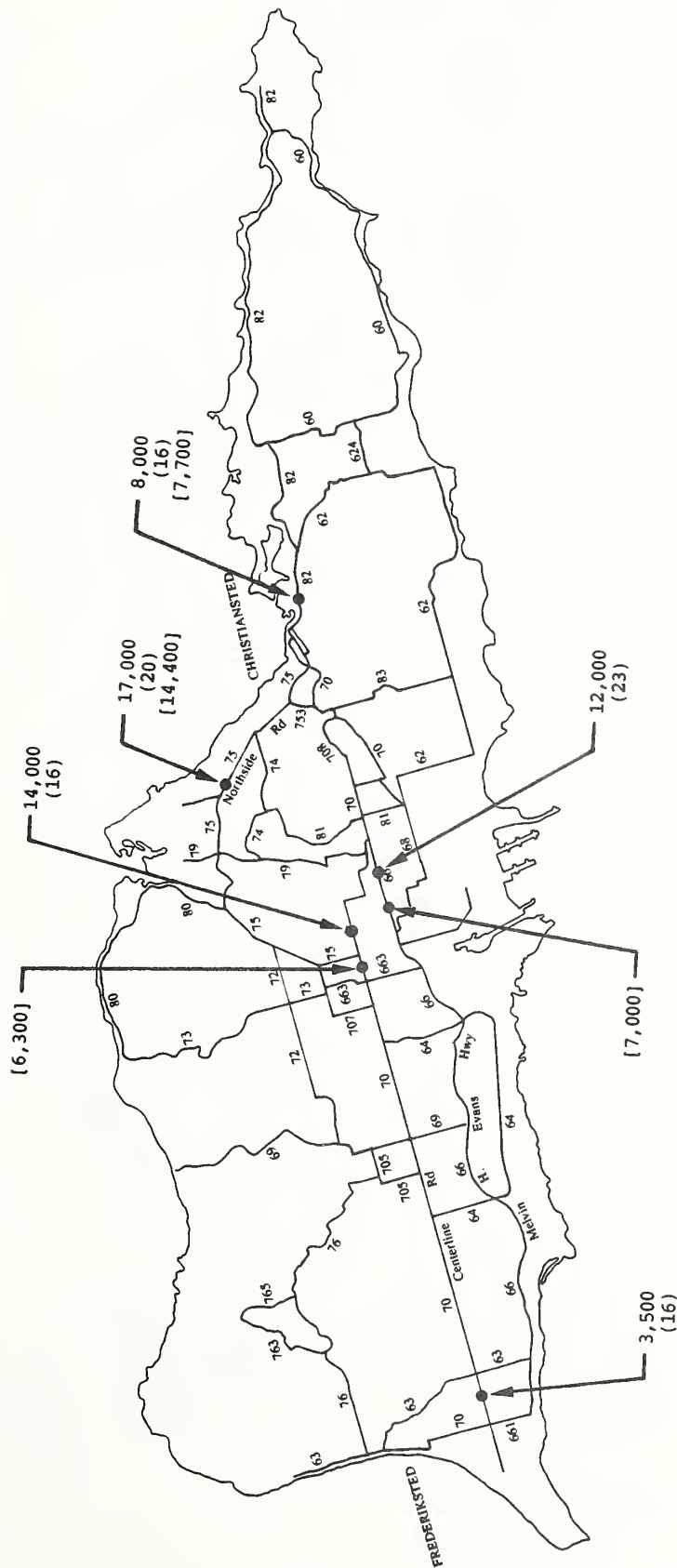
Source: Virgin Islands Department of Public Works

are semi-actuated and coordinated to provide progressive 55 mph speeds. The signals along Northside and Centerline Roads are pre-timed. The signal at the Sunny Isle intersection is fully actuated.

3.3.1(c) Traffic volumes

The daily, and morning and afternoon peak hour traffic volumes on the major roadways in St. Croix are shown in Figures 3-10, 3-11, and 3-12, respectively. The 1988 volumes were obtained from special counts conducted from January to March, 1988. The 1972 average daily traffic figures reported in the Highway Needs Study are shown for comparative purposes.

Daily volumes. The heaviest traffic volumes on St. Croix are found on Centerline Road east of the Sunny Isle Shopping Center, and on Northside Road east of the junction with Route 74. Twelve-hour volumes on these two



1,111 1988 24-Hr Weekday Volume
 (16) Percent Trucks
 [2,222] 1972 Average Annual Daily Traffic

FIGURE 3-10. 1988 DAILY TRAFFIC VOLUMES - ST. CROIX

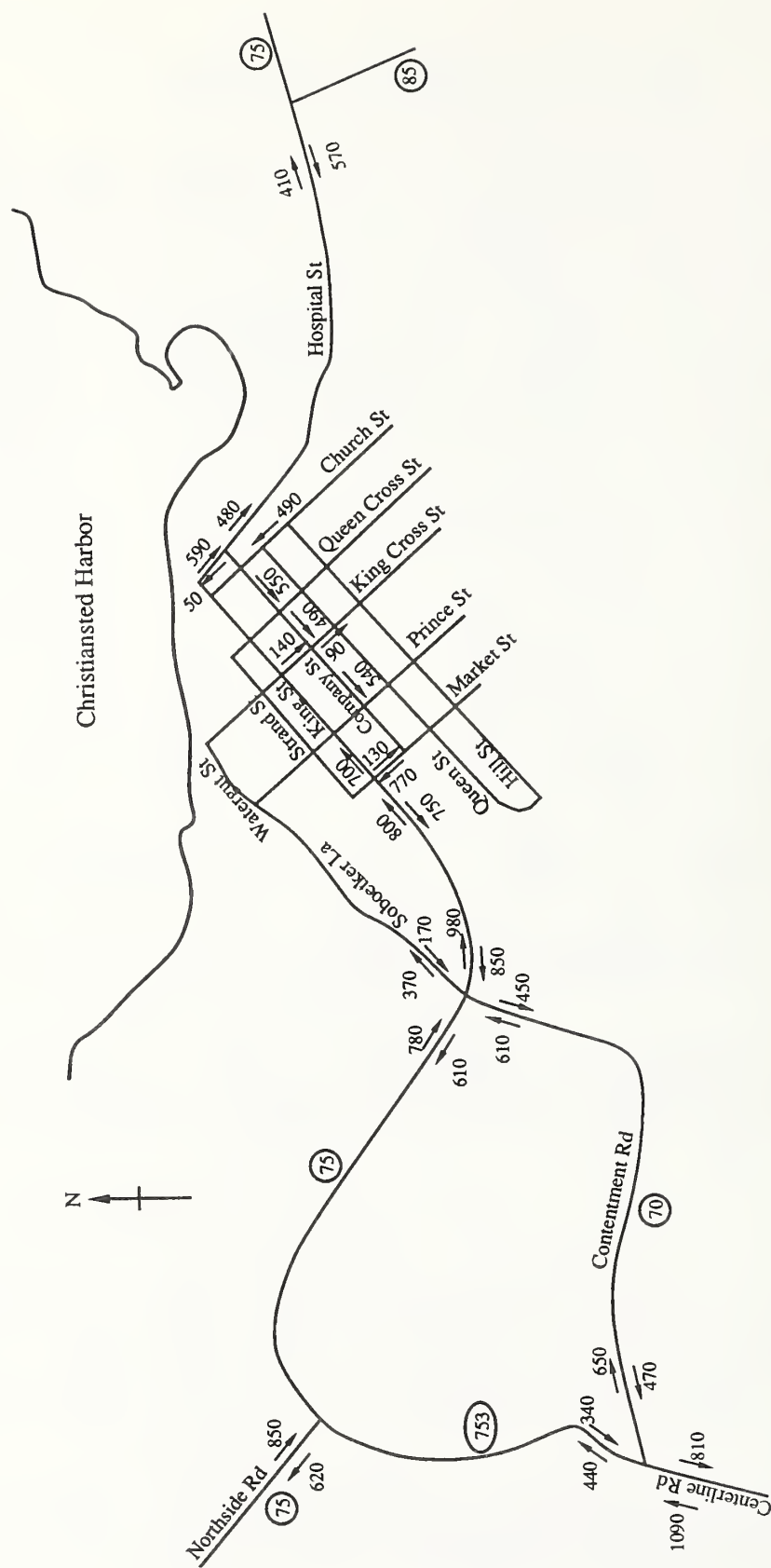


FIGURE 3-11. AM PEAK HOUR TRAFFIC VOLUMES - CENTRAL CHRISTIANSTED

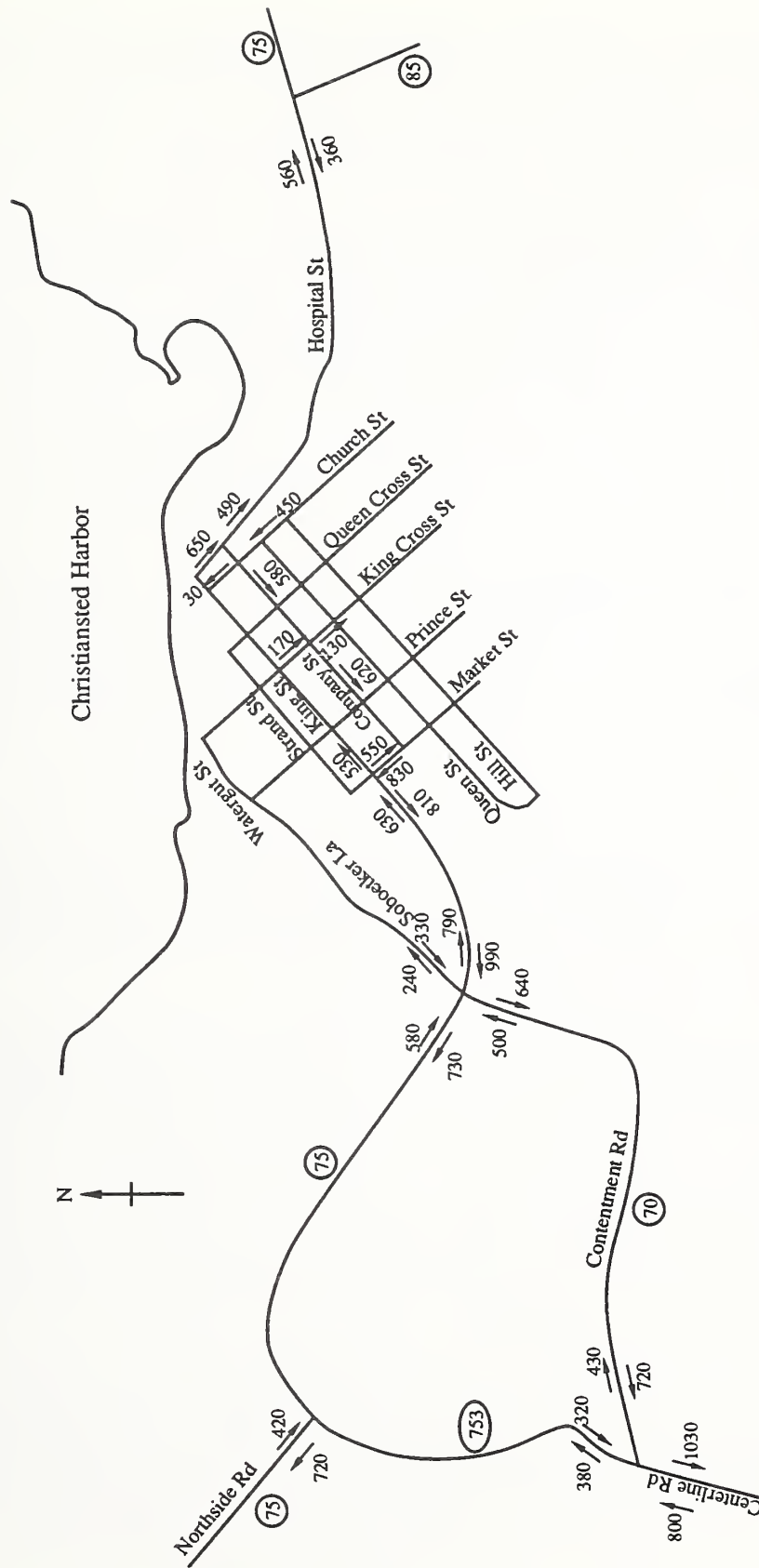


FIGURE 3-12. PM PEAK HOUR TRAFFIC VOLUMES - CENTRAL CHRISTIANSTED

sections of roadway are estimated to exceed 20,000 vehicles. The following 12-hour volumes were recorded at other locations.

- Northside Road (Route 75) west of Route 74 -- 17,000 vehicles.
- Centerline Road (Route 70) east of Route 75 -- 14,000 vehicles.
- Melvin H. Evans Highway (Route 66) west of Sunny Isle intersection -- 12,000 vehicles.
- Route 75 east of Christiansted -- 8,000 vehicles.
- Centerline Road (Route 70) west of Route 63 -- 3,500 vehicles.

Trucks comprised about 15 to 20 percent of the total 12-hour flow on these roads.

Morning peak hour volumes. The morning peak hour traffic volumes in the Christiansted area are highest between 7:30 and 8:30 am. Traffic is oriented toward central Christiansted from all directions. Peak directional volumes approach 1,100 vehicles per hour eastbound on Centerline Road (west of Route 83), 1,000 vehicles per hour eastbound on Western Suburb Road (east of the junction between Routes 70 and 75), and 850 vehicles per hour eastbound on Northside Road (west of Route 753). These are heavy volumes for a single traffic lane to carry.

The volumes outbound from Christiansted are also heavy. They approximate 850 vehicles per hour on Western Suburb Road (east of its junction between Routes 70 and 75), 800 vehicles per hour on Centerline Road (west of Route 83), and 600 vehicles per hour on Northside Road (west of Route 753). These flows also exceed desirable capacities.

Afternoon peak hour volumes. The afternoon peak hour volumes in the Christiansted area are highest from 5 to 6 pm. Although traffic is heaviest outbound from the town center, inbound flows are also quite heavy.

The peak westbound directional volumes approximate 1,000 vehicles per hour on Centerline Road (west of Route 83), and on Western Suburb Road (east of the junction between Routes 70 and 75). Westbound volumes on Northside Road approximate 700 vehicles per hour. Eastbound volumes on East End Road (at Route 85) approach 600 vehicles per hour. These volumes exceed the desirable capacity of a single lane.

Eastbound volumes approximate 800 vehicles per hour on Centerline Road (west of Route 83) and on Western Suburb Road (east of the junction between Routes 70 and 75). Eastbound volumes approach 600 vehicles per hour on Northside Road. Westbound volumes on East End Road range from 350 to 450 vehicles per hour.

3.3.1(d) Traffic problems and congestion

Traffic congestion occurs during busy traffic periods in the Sunny Isle Shopping Center area, on the western approaches to Christiansted, and within Christiansted center. No traffic congestion was observed in Frederiksted and its environs.

Much of the existing congestion results from: the convergence of all traffic from the west onto Centerline Road near the Sunny Isle Shopping Center; the convergence of Centerline Road traffic with flows from the north at the junction of Routes 70 and 75; and the concentration of traffic on King and Company Streets in Christiansted.

Specific problem areas include the following.

- Right turns block through traffic along Centerline Road, especially between the Ville La Reine and Sunny Isle Shopping Centers.
- Heavy traffic flows converge on Centerline Road at the Sunny Isle intersection. The complex signal phasing results in cycles up to 110 seconds, with delays to traffic in the single northbound lane common during the afternoon peak hour. Eastbound, the Melvin H. Evans Highway and Centerline Road traffic join and proceed in a single lane.
- Recurrent congestion occurs on Centerline Road at its junction with Route 81. This is the maximum-load-point section of Centerline Road, and the delays resulting from police control in a school area cause a spillback of traffic in both directions during peak traffic periods. Operations are further complicated by the existing offset alignment of Route 81 for north-south traffic.
- All Centerline Road and Northside Road traffic going to and from central Christiansted crosses at a single gateway point, the intersection of Contentment, Soboetker, Northside, and Western Suburb Roads (the intersection of Routes 70 and 75). Turning lanes are provided on all approaches except Soboetker Road, which backs up during the evening peak hour.
- Traffic moves slowly on King and Company Streets in Christiansted. There are conflicts with traffic crossing at intersecting streets and with parked cars. Taxi parking activity on King Street near Hospital Street often blocks King Street. Other vehicles parking and un-parking also block moving traffic. Speeds are further constrained by the narrow corner turning radii and the lack of adequate sight distances at intersections (parking is allowed to within 10 feet of intersections).
- There is considerable cruising and circulating by vehicles in search of curb-side parking space in central Christiansted. These vehicles add to the traffic flow and congestion.

- Illegal curb-side parking, such as the parking adjacent to the District Court on King and Company Streets, has a negative impact on traffic flow. Enforcement of no-parking regulations appears ineffective.

Special travel time studies were conducted to quantify the extent of traffic congestion in central Christiansted between the junction of Routes 70 and 75 and Hospital Street. The results are shown in Tables 3-5 and 3-6 and are highlighted below.

- Eastbound travel times via Western Suburb Road and King Street averaged about 4 minutes during the morning and evening peak hours. However, when a cruise ship was docked in Frederiksted, they exceeded 15 minutes.
- Westbound travel times via Company Street and Western Suburb Road approximated 3 minutes during the morning peak hour and 4 minutes during the evening peak hour.
- Travel times via Watergut Street were slightly longer, except outbound in the morning peak hour.
- Approximately two minutes are lost per trip each way as a result of normal traffic friction and congestion. However, when a cruise ship is docked in Frederiksted, taxi activity at the waterfront and on Hospital Street increases dramatically. This backs up traffic on King Street through town, sometimes up to the gateway junction west of town. Under these conditions, twelve minutes of time is lost per trip on average.

3.3.1(e) Implications

Traffic congestion in Christiansted and central St. Croix has not reached crisis proportions. But there are several problems that should be corrected to improve operating conditions. Traffic management and engineering changes will be needed in the short run to improve flow through the Centerline Road corridor and downtown Christiansted. Over the longer term, construction of the Christiansted Bypass will be needed to increase east-west capacity, to separate through and downtown Christiansted traffic, and to better balance the distribution of traffic entering Christiansted from the eastern and western approaches.

3.3.2 Traffic Improvement Plan

This section sets forth a strategic traffic improvement plan for central St. Croix. The plan is based on an analysis of existing conditions, a review of ongoing proposals and programs, and discussions with the public and private sectors.

TABLE 3-5.
TRAVEL TIMES AND SPEEDS BETWEEN THE JUNCTION OF
ROUTES 70 AND 75 AND HOSPITAL STREET
(MARCH 1988)

ROUTE AND DIRECTION	TRAVEL TIMES (minutes:seconds)		SPEED (mph)
	RANGE	AVERAGE	
EASTBOUND			
Via Western Suburb-King			
AM Peak	2:35-5:02	3:40	11.5
PM Peak		4:30	9.3 *
Mid-morning (cruise ship in)		15:45	2.7 *
Via Watergut-King Cross- Western Suburb			
AM Peak		4:39	10.3
PM Peak		4:10	11.5
WESTBOUND			
Via Company-Western Suburb			
AM Peak	2:41-3:19	2:59	11.0
PM Peak	3:15-4:40	3:49	11.0
Via Company-Market-Soboetker			
AM Peak	4:08-5:10	3:37	13.3
PM Peak		6:30	7.4*

* 1 test run

Source: Test runs, March, 1988

TABLE 3-6.
ESTIMATED TIME LOST FROM CONGESTION¹
JUNCTION OF ROUTES 70 AND 75 TO HOSPITAL STREET
 (0.7 miles)

EASTBOUND	TIME LOST (minutes:seconds)
Via Western Suburb-King	
AM Peak	1:10
PM Peak	2:00
Mid-morning (cruise ship in)	12:15
Via Watergut-Kings Cross- Western Suburb	
AM Peak	2:09
PM Peak	1:40
 WESTBOUND	
Via Company-Western Suburb	
AM Peak	0:29
PM Peak	1:19
Via Company-Market-Soboetker	
AM Peak	1:07
PM Peak	4:00

Source: Table 3-5

¹ "Non-congested" flow assumed as 2:30 minutes via King and Company Streets at 17 and 19 mph, respectively.

3.3.2(a) The overall plan

The recommended traffic improvement plan is shown in Figure 3-13 and Table 3-7. This plan incorporates proposals of the Department of Public Works as well as some additional improvements. It is designed to improve traffic flow and reduce congestion in the Centerline Road corridor, on the approaches to Christiansted, and within the town. It includes improvements to the high-hazard locations identified by the Department of Public Works.

The plan recommends the following.

- Provision of right turn lanes at key junctions along Centerline Road from Frederiksted to the Ville La Reine Shopping Center.
- Provision of two-way right turn lanes on Centerline Road in the Ville La Reine and Sunny Isle Shopping Center area.
- Expansion of three strategic intersections: Centerline Road at Sunny Isle Shopping Center; Centerline Road and Route 81; and Route 70, Route 75, and Soboetker Road.
- Construction of the Christiansted Bypass.
- Changes in curb-use regulations along King and Company Streets in the center of Christiansted.
- Development of a one-way street system in central Frederiksted in anticipation of future need.

3.3.2(b) Centerline Road corridor: Ville La Reine Shopping Center to Christiansted

Several improvements are essential along Centerline Road in the Ville La Reine and Sunny Isle Shopping Center area, and on its approach to Christiansted, in order to increase capacity and reduce traffic friction. The numbers in parentheses below correspond to the numbers in Figure 3-13.

Two-way right turn lane (1). The plan calls for providing a two-way right turn lane on Centerline Road between the Ville La Reine and Sunny Isle Shopping Centers. The lane would be provided by restriping the roadway for three lanes whenever it is 30-32 feet or more in width. The center lane would be used only by traffic turning right in each direction. (See Figure 3-14). Overhead signs are desirable to reinforce the pavement markings. Two-way center turning lanes, such as these, have proven successful throughout the United States in reducing delays and accidents. Similar benefits are anticipated in St. Croix.

Sunny Isle intersection expansion (2). The intersection at the Sunny Isle Shopping Center has been effectively channelized and signalized by the

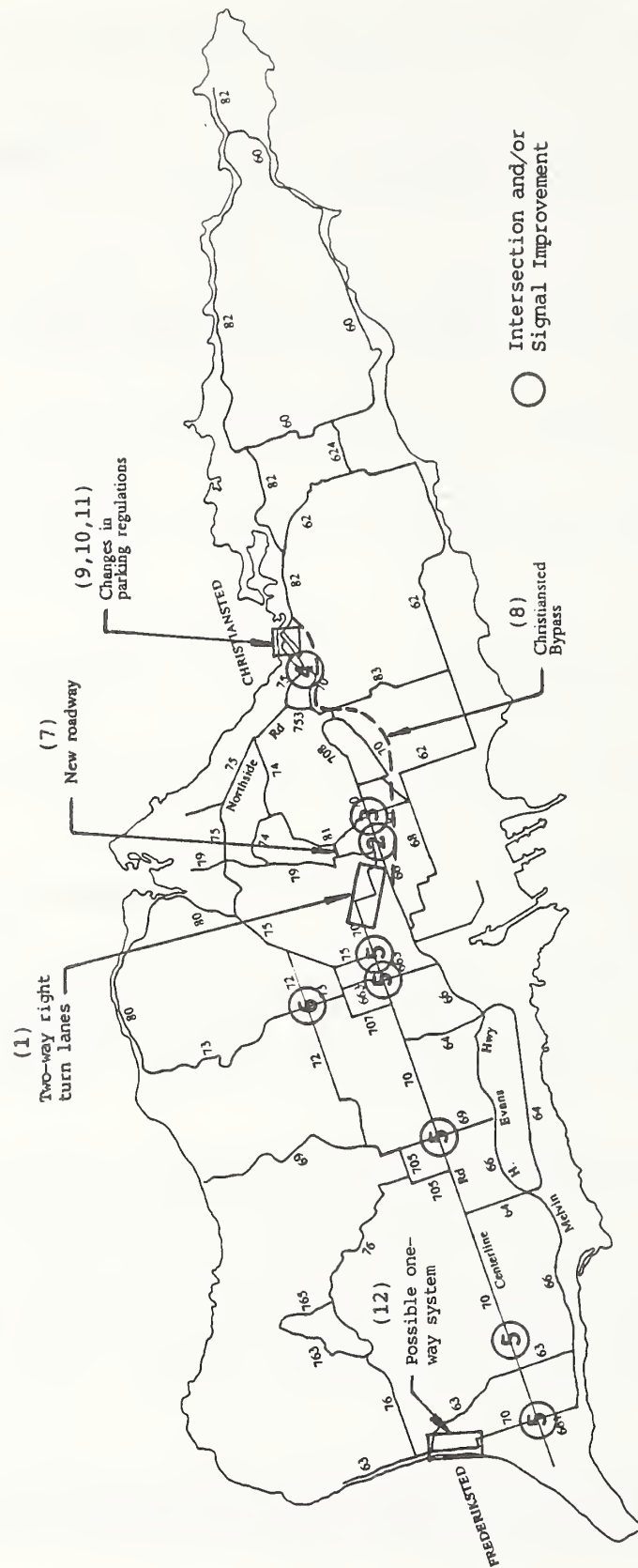


FIGURE 3-13. TRAFFIC IMPROVEMENT PLAN - ST. CROIX

TABLE 3-7.
ST. CROIX TRAFFIC IMPROVEMENT PLAN

- A. Centerline Road Corridor - Villa La Reine Shopping Center to Christiansted
1. Provide two-way right turn lane where width permits from the junction at Route 663 to the junction at Route 81.
 2. Provide additional northbound lane at the Sunny Isle intersection.
 3. Realign Route 81 at Centerline Road. Expand and signalize the intersection.¹
 4. Provide additional southbound right turn lane on Soeboetker Road at the intersection of Routes 70 and 75.²
- B. Centerline Road Corridor - Frederiksted to Ville La Reine Shopping Center
5. Widen Centerline Road to provide right turn lanes at the junctions at Routes 661, 703, 69, 663, and 75.³
- C. Other Outlying Improvements
6. Extend Route 69 to the Melvin H. Evans Highway and signalize the junction.
 7. Expand the junction of Routes 72 and 73 at Mon Bijou and upgrade the traffic signals.
 8. Connect Routes 79 and 81 near the hospital.⁴
- D. Christiansted Bypass
9. Develop Christiansted Bypass west of the Sunny Isles intersection to east of Christiansted.⁵

¹ Under design by the Department of Public Works.

² Programmed for FY 1988.

³ Mainly programmed for FY 1988.

⁴ Programmed for 1991.

⁵ Christiansted to Orange Grove programmed for 1990. Western part of bypass programmed for 1994.

TABLE 3-7. (Continued)

E. Christiansted Central Business District

10. Transpose parking restrictions and taxivan stops on King and Company Streets to the opposite side of the street.
11. Restrict curb-side parking on King and Company Streets to two hours.
12. Create taxi loading zone on the south side of King Street from Church to Hospital Streets.

F. Frederiksted

13. Develop north-south one-way street system.

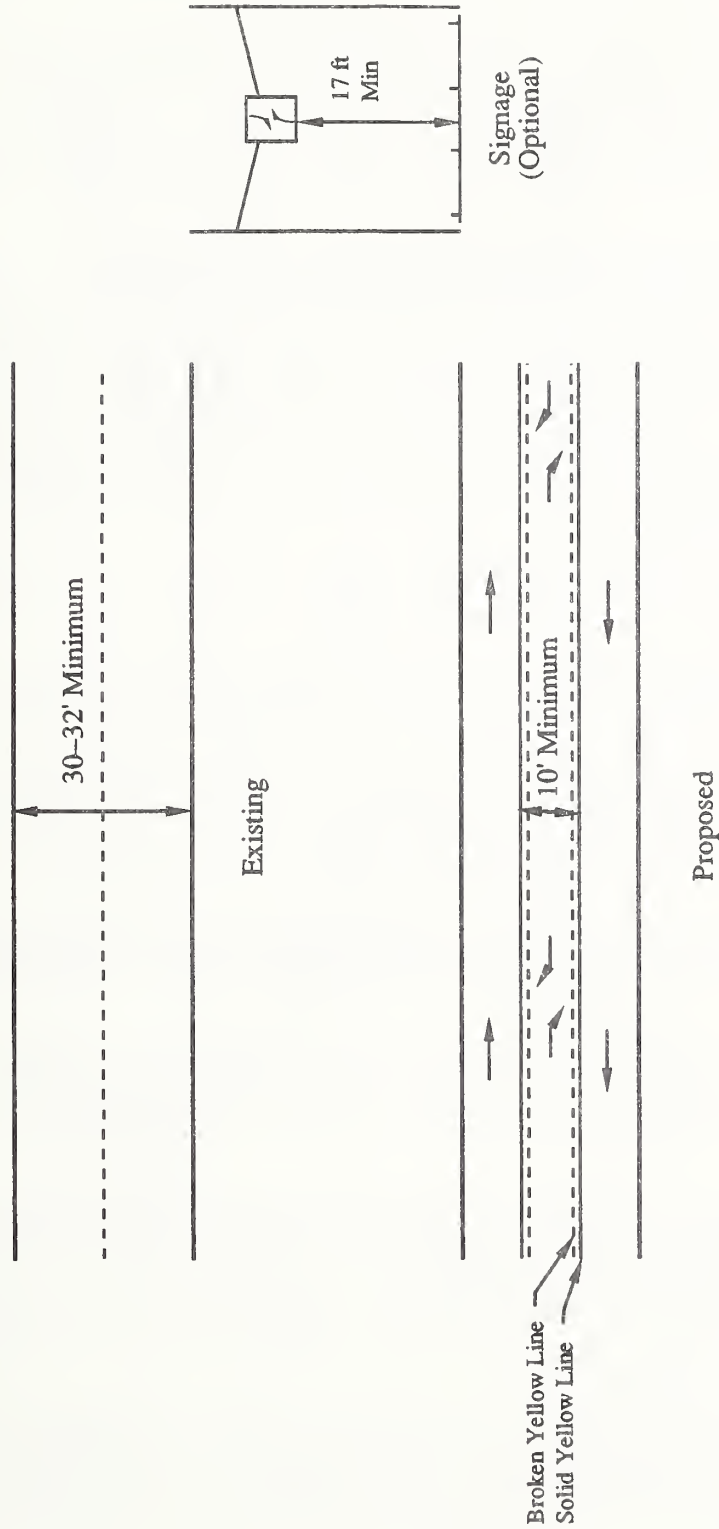


FIGURE 3-14. RECOMMENDED TWO-WAY RIGHT TURN LANES ON CENTERLINE ROAD

Department of Public Works. There are turning lanes on three of the four approaches. However, the northbound approach operates in a single lane, and backs up during the homebound commute of Hess Oil Company employees.

Accordingly, the plan recommends widening the northbound approach to provide one additional lane. (See Figure 3-15). The added lane will make it possible to separate northbound, through, and turning traffic, and to improve the traffic signal sequence. It can be provided without taking any buildings. The existing fully-actuated signal controller would be retained.

Centerline Road and Route 81 intersection improvement (3). The recommended treatment for this intersection, shown in Figure 3-16, reflects the Department of Public Works' proposals to increase capacity and reduce delays. At present, the offset alignment of Route 81 as it crosses Centerline Road, and police control of traffic (due to a large school crossing pedestrian traffic), result in excessive delays to heavy east-west Centerline Road flow. Traffic backs up in each direction during peak commuter and traffic hours, sometimes extending as far back as the Sunny Isle intersection in the western direction.

The recommended treatment corrects these conditions, and features the following modifications.

- Route 81 would be realigned to cross Centerline Road at right angles. The existing Route 81 roadway to the south of Centerline Road would be retained for westbound left turns only.
- Centerline Road should be widened to 36 feet. The widening makes it possible to provide protected right-turn lanes, thereby removing turning traffic from through traffic.
- Two-phase semi-actuated traffic signals would control movements. Route 81 would be "on call," receiving the green signal only upon demand.
- Signals should be interconnected with those at the Sunny Isle intersection, so that the Route 81 traffic moves at the same time as the north-south traffic at the Sunny Isle intersection.

Routes 75-Route 70-Soboetker Lane-Western Suburb Road intersection (4). The am and pm peak hour traffic volumes for this gateway into Christiansted are shown in Figure 3-17. The recommended treatment (Figure 3-18) is designed to accommodate the heavy traffic volumes that pass through this intersection -- over 2,400 vehicles during each peak hour.

The intersection presently is signalized with a two-phase pre-timed control. The Department of Public Works has provided turning lanes on three of the four approaches. The single southbound lane on the Soboetker Road approach backs up during the afternoon peak hour.

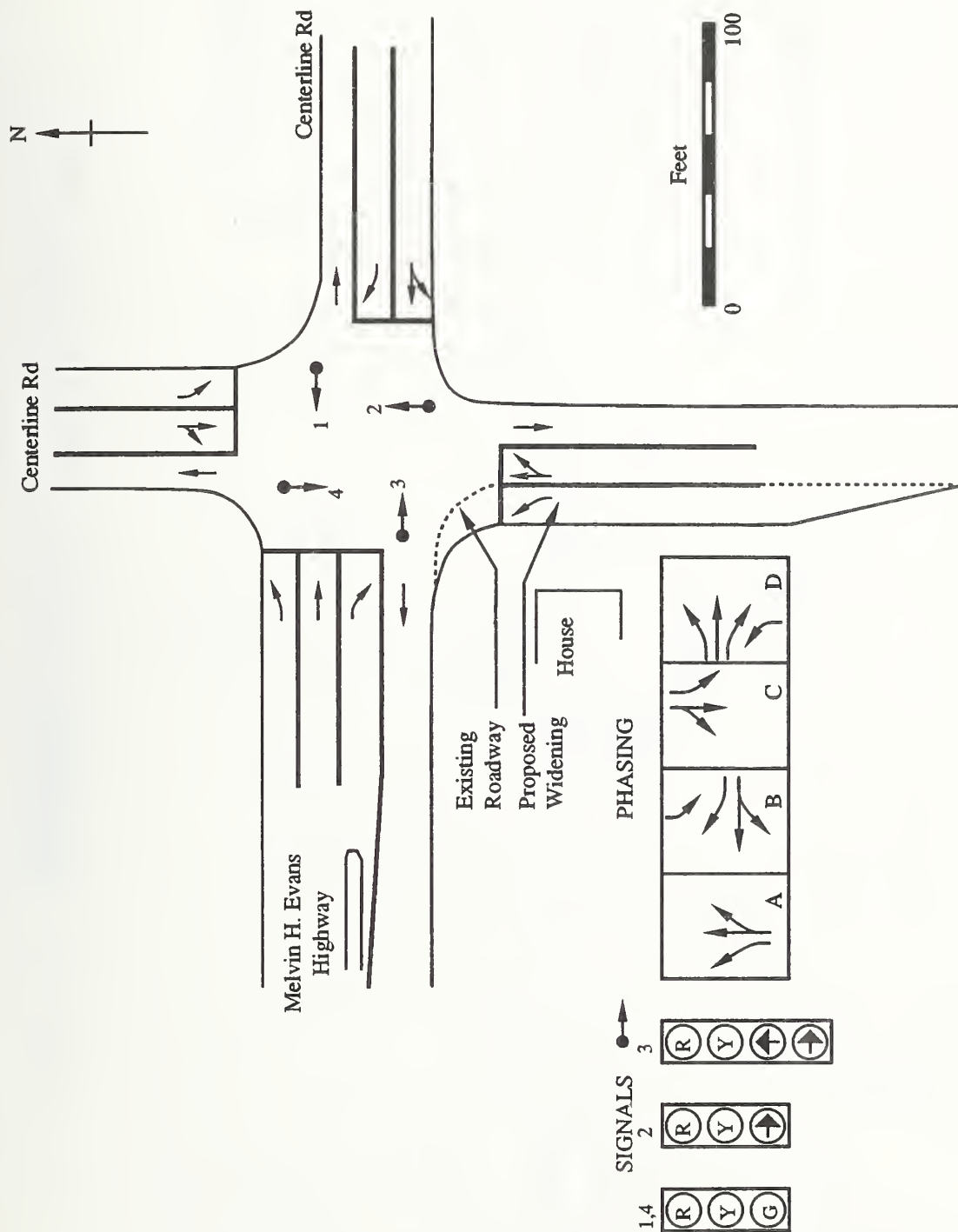


FIGURE 3-15. RECOMMENDED EARLY ACTION TREATMENT - MELVIN H. EVANS HIGHWAY / CENTERLINE ROAD INTERSECTION

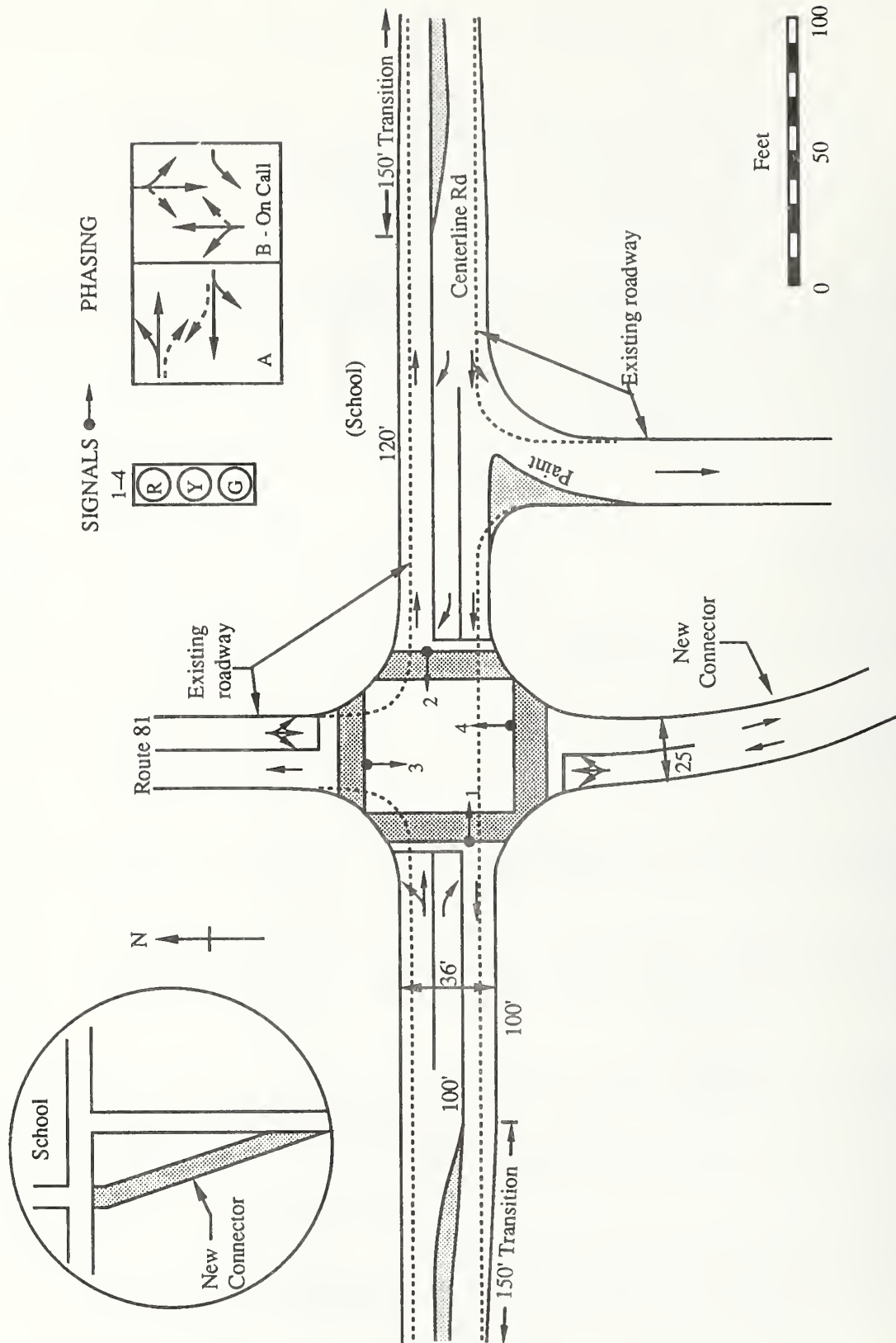


FIGURE 3-16. RECOMMENDED TREATMENT - CENTERLINE ROAD / ROUTE 81 INTERSECTION

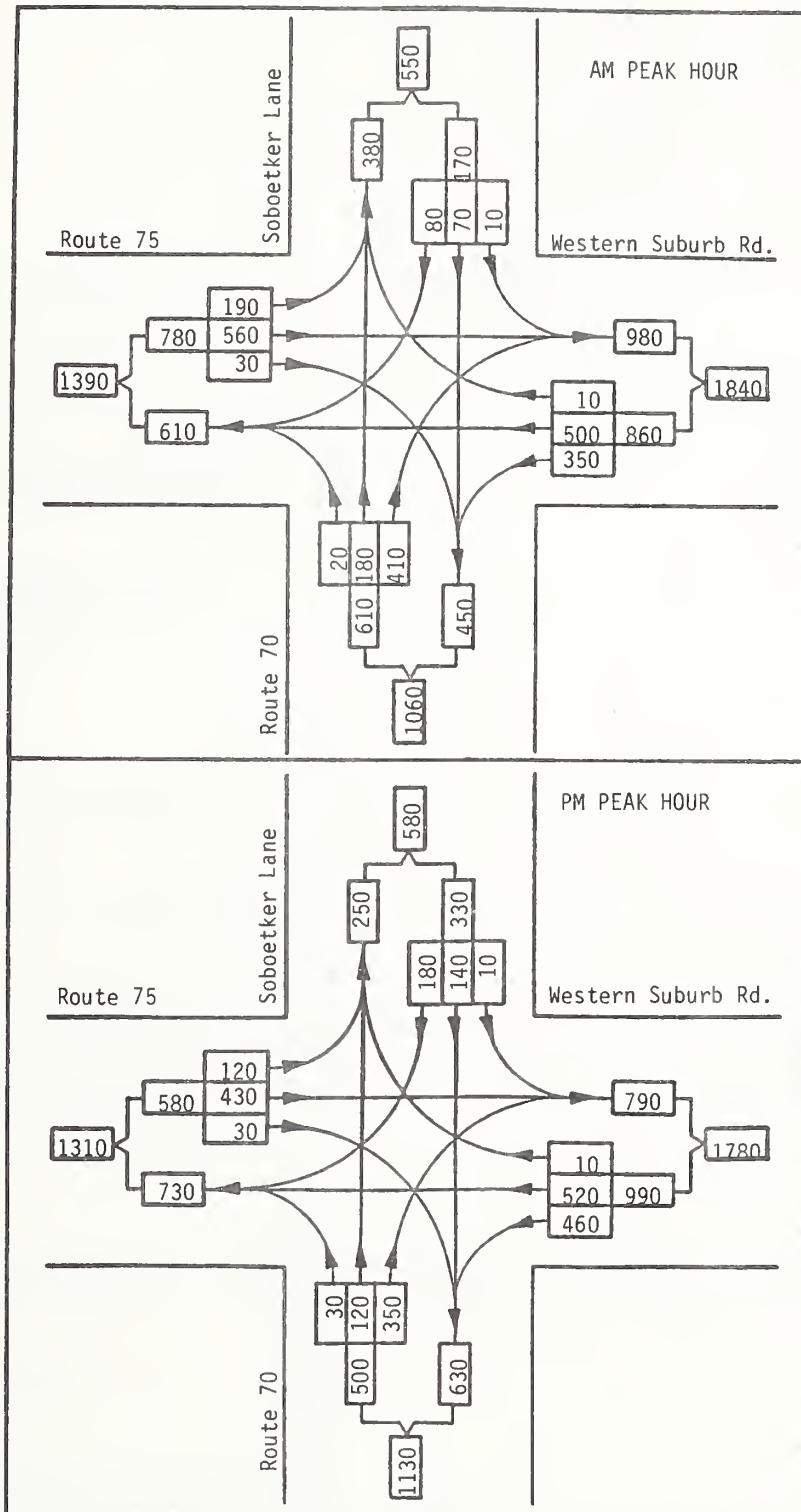


FIGURE 3-17. PEAK HOUR TRAFFIC VOLUMES - ROUTE 75 / ROUTE 70 / SOBOETKER LANE / WESTERN SUBURB ROAD INTERSECTION

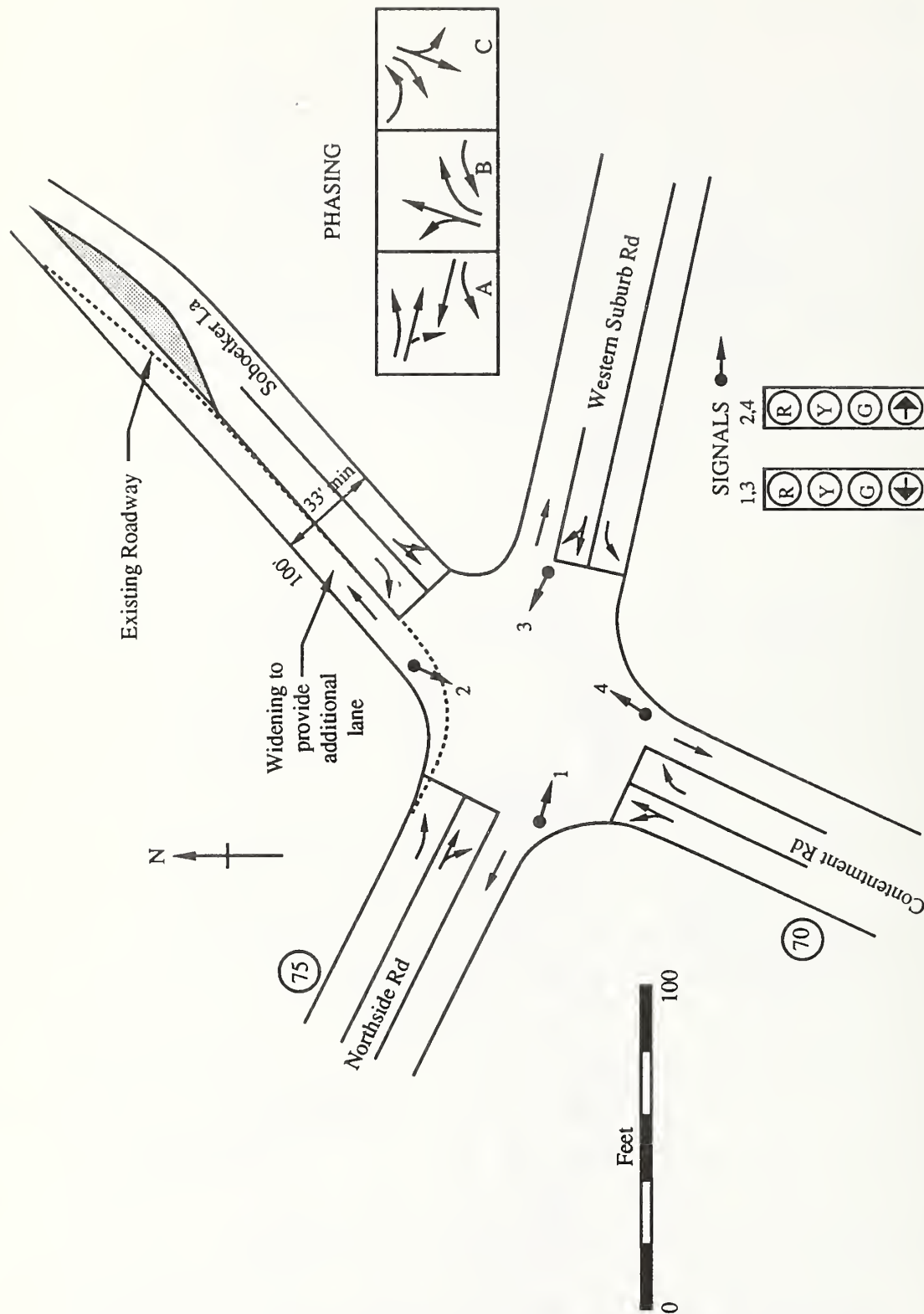


FIGURE 3-18. RECOMMENDED TREATMENT - ROUTE 75 / ROUTE 70 / SOBOETKER LANE / WESTERN SUBURB ROAD INTERSECTION

The recommended plan calls for widening the west side of Soboetker Road to provide an additional lane for southbound right turns. A three-phase traffic signal would separate conflicting Soboetker Road and Route 75 movements. The added capacity on Soboetker Road would make the Watergut Street-Soboetker Road route a more attractive alternative to and from the center of Christiansted. It would complement an expanded seaplane parking lot and Watergut Street access to and from the existing Government parking lot.

3.3.2(c) Centerline Road corridor: Ville La Reine Shopping Center to Frederiksted (5)

The plan calls for protected right turn lanes at key intersections. These lanes would minimize conflicts between through and turning traffic at the high-accident locations identified by the Department of Public Works.

The right turn lanes would be provided at the following locations:

- Route 661;
- Route 703;
- Route 69;
- Route 663; and
- Route 75.

3.3.2(d) Other improvements in outlying areas

Several traffic and road improvements in outlying areas complement the Centerline Road corridor treatments. These improvements were identified by the Department of Public Works and the study team.

Route 72 and Route 73 intersection expansion (6). The widening of the approaches to the intersection of Routes 72 and 73 near Mon Bijou is desirable to provide protected right turn lanes at this high-hazard location. Fully-actuated traffic signal controls should be installed to minimize traffic delays.

Route 79 and Route 81 connector road (7). A direct east-west connector between Routes 79 and 81 is desirable to improve access to the hospital from Route 81. This connection also would reduce traffic pressures at the junction of Routes 70 and 81. (This proposal has been suggested by the Department of Public Works).

3.3.2(e) Christiansted Bypass (8)

The Christiansted Bypass proposed by the Department of Public Works, is an integral part of the plan. The bypass, shown in Figure 3-19, would connect the Melvin H. Evans Highway to the west of Christiansted with

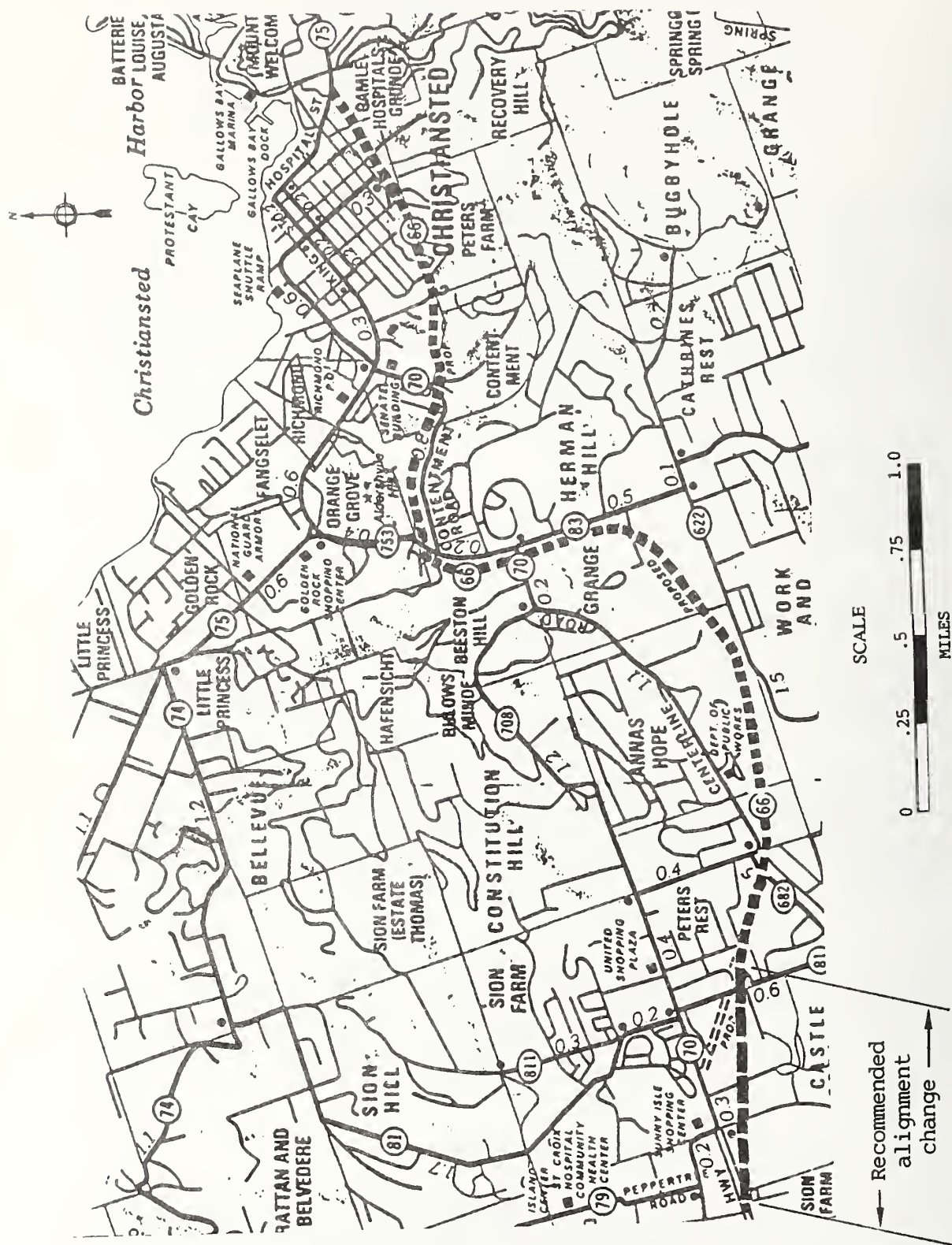


FIGURE 3-19. PROPOSED CHRISTIANSTED BYPASS

Hospital Street on the east side of town. In between, it would generally parallel Centerline and Contentment Roads (sometimes following a common sector), and then proceed south of Christiansted to meet Hospital Street. A spur would follow Route 753 to connect with Northside Road at Orange Grove.

The bypass initially would be developed from Hospital Street to Contentment Road as a two-lane highway. Subsequently, four lanes would be developed from Contentment Road to the Melvin H. Evans Highway. At the Sunny Isle Shopping Center, it is essential to locate the bypass on a new alignment south of Route 70 to avoid placing excessive traffic pressures on the Sunny Isle intersection.

The bypass has several important traffic and development benefits: it more than doubles the road capacity along the Centerline Road corridor; it provides an alternative to the Hospital-King-Company Streets route; it provides direct access to Christiansted from the south; it enables traffic going to or from the eastern parts of St. Croix to bypass Christiansted; and it improves the attractiveness of eastern Christiansted for development. It also has received the support of the Christiansted community. Consequently, its development should be encouraged.

3.3.2(f) Christiansted Central Business District traffic management improvements (9,10,11)

The recommended traffic management plan for the Christiansted Central Business District is shown in Figure 3-20. Highlights are listed below.

- The existing one-way street system operates satisfactorily and should be retained.
- The parking restrictions on King and Company Streets (and the 50-foot taxivan stops) should be transposed to the right sides of the streets (9). Thus, the north side of King Street and the south side of Company Street would become "No Stopping" areas. The change will enable the taxivans to load and unload passengers along the curb side, rather than into the street as is presently the case. (See Figure 3-21.)
- Parking on King and Company Streets east of Prince Street should be limited to two hours (10). This regulation and its effective enforcement will make curb-side parking spaces more readily available for shopper and visitor parking. Field observations indicated that about half of the parkers along these curbs remain for 6 hours or more (Table 3-8). The expansion of parking at the Government parking lot and the seaplane terminal would make more space available for workers and other long-term parkers. (See Section 3.4).
- Taxi loading areas along King Street between Queen Cross and Hospital Streets should be eliminated to free traffic flow through this bottleneck area (10). New taxi zones are provided along the south

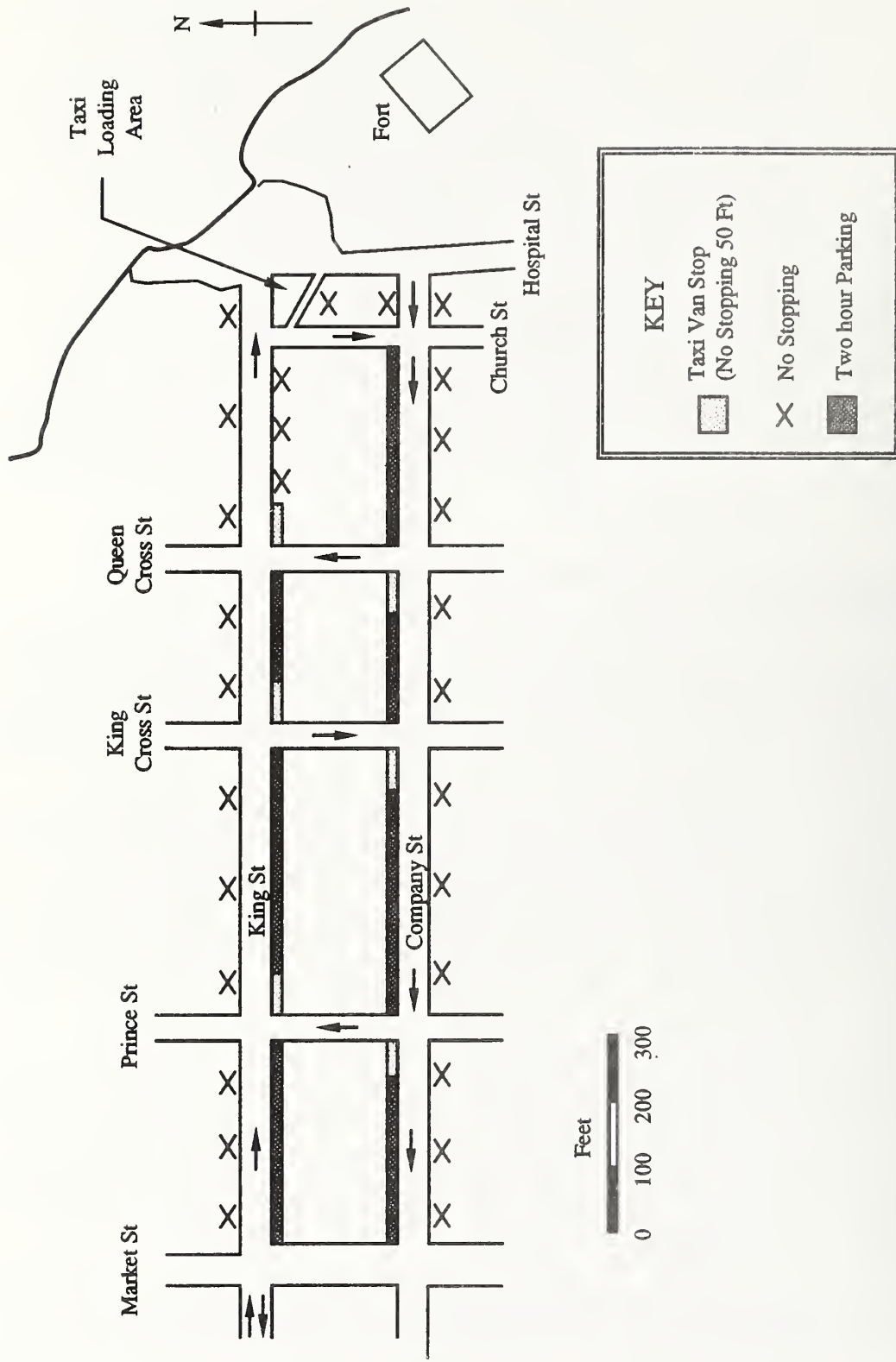


FIGURE 3-20. TRAFFIC MANAGEMENT PLAN - KING AND COMPANY STREETS IN CHRISTIANSTED



FIGURE 3-21. TAXIVAN UNLOADING ON TRAFFIC SIDE

TABLE 3-8.
PARKERS STAYING 6 HOURS OR MORE ON KING AND COMPANY STREETS
 (Typical March, 1988 day)

	NO. PARKERS 8:45 AM	NO. REMAINING 2:45 PM	%
Kings Cross - Queen Cross	17	9	53
Queen Cross - Hospital	8	4	50
Company			
Hospital - Church	4 ¹	0	0
Church - Queen Cross	16	7	44
Queen Cross - Kings Cross	7	5	71
Kings Cross - Prince	13	6	46
TOTAL	65	31	48 ²

Source: Field survey, March 30, 1988.

¹ All illegally parked.

² 51% of illegal parkers are excluded.

side of King Street between Church and Hospital Streets, and within the National Park Service parking lot on the waterfront (11).

- The turning radius on Watergut Street where it joins King Cross Street should be increased to facilitate traffic flow.

These changes will improve the effectiveness of the existing curb parking supply, improve taxivan passenger safety, and facilitate vehicular flow on King Street.

3.3.2(g) Frederiksted one-way system (12)

At present, traffic volumes are light in the center of Frederiksted, and there is no peak hour congestion. However, the Virgin Islands Government plans to encourage tourism in Frederiksted as a complement to expanded cruise ship activity. As the number of shops, visitors, and workers increases, there will be a corresponding increase in traffic flow. It then may become necessary to reduce travel friction and increase traffic capacity.

The one-way street system shown in Figure 3-22 achieves these objectives. It develops Strand and Queen Streets as one-way northbound streets, and King and Prince Streets as one-way southbound streets between Fisher and Custom House Streets. This system should be considered for possible future implementation when required by traffic conditions.

3.3.3 Implementation Program

This section sets forth an implementation program for the recommended roadway and traffic improvements. It contains order of magnitude cost estimates, presents priorities, and identifies implications to ongoing activities.

3.3.3(a) Cost estimates

Order-of-magnitude estimates of construction and traffic control costs of the recommended improvements are given in Table 3-9. These estimates are in 1988 dollars and are based on the Department of Public Works' cost assumptions for the Christiansted Bypass and the connector between Routes 81 and 79, and on unit values suggested by Department of Public Works personnel. However, in some cases adjustments were made based upon the likely extent of construction.

The total program cost is estimated at \$12.9 million. About \$10.5 million of this total would be needed to build the Christiansted Bypass, and another \$1.0 million for the connector between Routes 79 and 81. The remaining \$1.4 million would be spread among eleven traffic engineering and management projects.

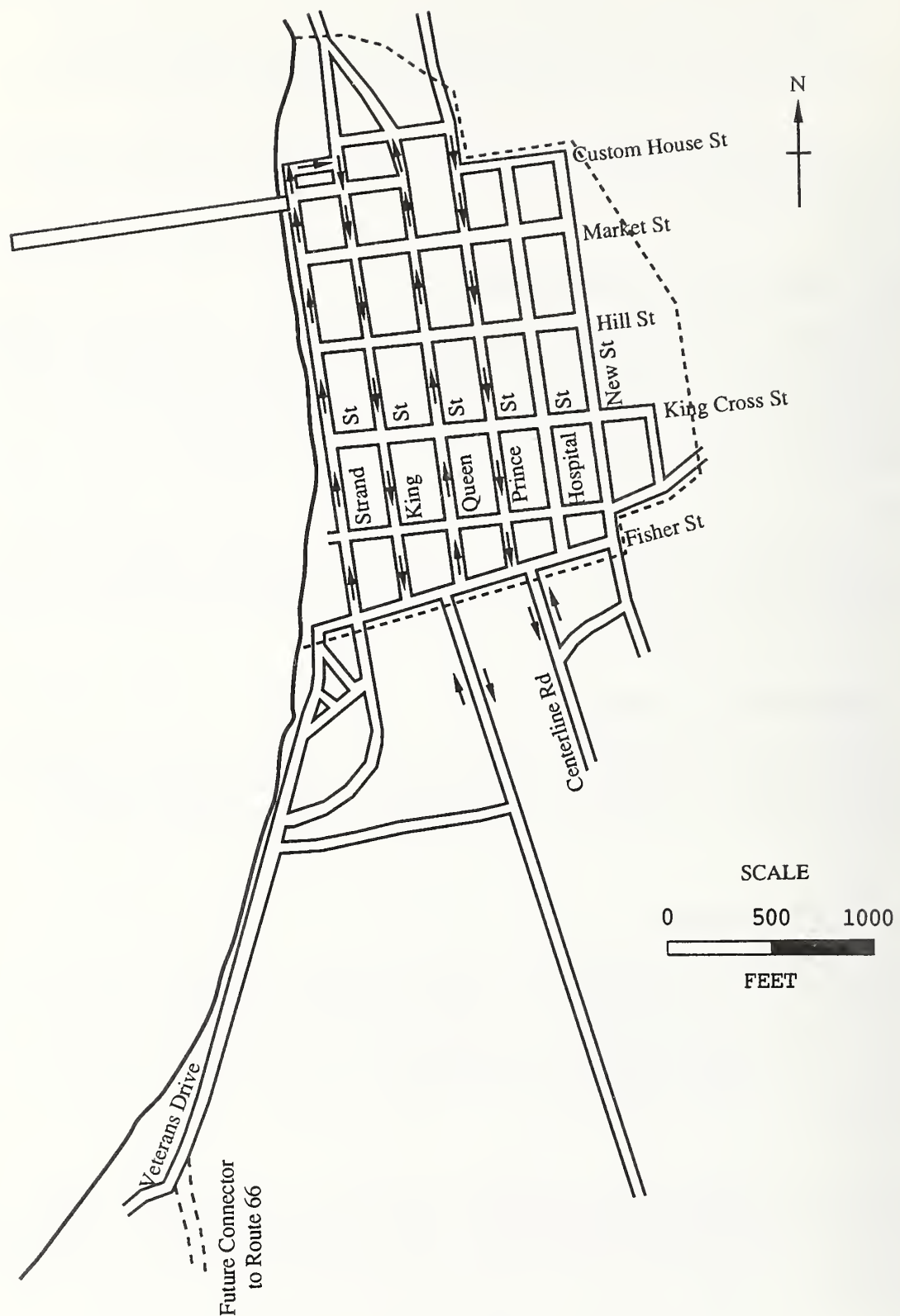


FIGURE 3-22. POSSIBLE FUTURE ONE-WAY SYSTEM IN FREDERIKSTED

TABLE 3-9.
ESTIMATED COST OF IMPROVEMENTS

ITEM	DESCRIPTION	CONSTRUCTION	SIGNALS	TOTAL	SOURCE
1	Two-way right turn lane on Centerline Rd.- Ville La Reine to Sunny Isle	-	-	-	(3)
2	Additional northbound lane at Sunny Isle junction	70,000	-	70,000	(1)
3	Centerline Rd. at Rt.81 improvement	300,000	75,000	375,000	(1)
4	Routes 70 & 75 junction improvement	100,000	50,000	150,000	(1)
5	Improvement of 6 intersections along Centerline Rd.	600,000	75,000	675,000	(1)
6	Route 69 extension	200,000	75,000	275,000	(1)
7	Routes 72 & 73 junction improvement	100,000	50,000	150,000	(1)
8	Connector of Routes 79 & 81	1,000,000	-	1,000,000	(2)
9	Christiansted Bypass	10,500,000		10,500,000	(2)
10-12	Traffic management downtown Christiansted	-	-	-	(3)
13	Frederiksted one-way system	-	-	-	(3)
TOTAL		12,870,000	325,000	13,195,000	

Sources and Notes:

1. H. S. Levinson and TSC based upon \$75,000 traffic signal costs and \$100,000 typical channelization costs per intersection. Adjusted upward or downward in specific cases.

2. Department of Public Works estimate.

3. Negligible costs.

4. Right-of-way costs not included.

3.3.3(b) Recommended construction sequence

The desired sequence of program development is shown in Table 3-10. This sequence gives first priority to very low-cost transportation system management actions, second priority to intersection and signalization improvements, and third and fourth priorities to new road construction. It also attempts to distribute program costs over a twelve-year period.

Stage I - (Years 0 - 1). The two-way right-turn lanes on Centerline Road and the curb-side parking changes in downtown Christiansted should be implemented. Costs are minimal.

Stage II - (Years 2 - 4). Land should be acquired for the Christiansted Bypass and the connector between Routes 79 and 81. Improvements at the intersection of Routes 70 and 753 and at the intersection of Routes 72 and 73 should be implemented. Estimated costs are \$1,420,000.

Stage III - (Years 5 - 8). The Christiansted Bypass should be built from Mt. Welcome east of Christiansted to Orange Grove. The connector between Routes 79 and 81 should also be built in this stage. Estimated costs are \$5,500,000.

Stage IV - (Years 9 - 12). The Christiansted Bypass should be completed from Route 753 west to the Melvin H. Evans Highway. During this period, it also may be necessary to implement the Frederiksted one-way system.

3.3.3(c) Implications

The recommended improvement program reflects the ongoing activities and priorities of the Department of Public Works. It focuses on the urban elements of the program with an emphasis on those strategic actions that add capacity and alleviate congestion. Obviously, many other road improvements will be needed throughout St. Croix -- extensions of roads to developing resort areas, resurfacing and realigning existing highways, lighting and guard rail improvements.

The extension of Route 75 south from Centerline Road to the Melvin H. Evans Highway has not been included in the program. This link, which would provide a further bypass of the Sunny Isle Shopping Center area, would become meaningful only after the Christiansted Bypass is extended west to meet the Melvin H. Evans Highway.

The recommended program for St. Croix would cost about \$1.2 million per year over a 12-year period. This compares with \$5.0 million received annually by the Virgin Islands Government from the Federal Highway Administration.

TABLE 3-10.
SUGGESTED PRIORITIES

Improvement Number (from Table 3-9)	Description
--	-------------

Years 0 - 1 — Negligible Cost

1	Two-way right turn lanes on Centerline Road
9-11	Traffic management improvements in downtown Christiansted

Years 2 - 4 — \$1,420,000 (1)

	Acquire rights of way for Christiansted Bypass and connector between Rts. 79 & 81
2	Additional northbound lane at Sunny Isle intersection
3	Centerline Road & Route 81 intersection improvement
4	Improvement of junction of Routes 70 & 75
5	Improvements at 6 Centerline Road intersections
6	Improvements at junction of Routes 72 & 73

Years 5 - 8 — \$5,500,000 (1)

7	Connector between Routes 79 & 81
8	Christiansted Bypass (Mt. Welcome to Orange Grove)

Years 9 - 12 — \$6,000,000 (1)

8	Complete Christiansted Bypass
12	Frederiksted one-way system (if necessary)

(1) Excludes acquisition of right of way costs.

3.4 PARKING IN CENTRAL CHRISTIANSTED

This section analyzes existing parking conditions in downtown Christiansted, and sets forth a suggested parking program.

3.4.1 Background

The parking problem in the center of Christiansted has become a major concern of workers, shoppers, visitors, government, private business, and the general community. The lack of attractive and conveniently located off-street parking results in extensive competition for curb space, and frequent illegal parking activity. The consequences are excessive traffic cruising in search of curb-side parking spaces, frequent traffic conflicts, and, in a broader sense, reduced attractiveness of the central area as a place for shopping and business.

These problems, of course, are not unique to Christiansted. They are found in central business districts of every size. However, unlike Christiansted, most communities have adopted parking plans, and have worked toward expanding and rationing their downtown parking supply.

Many ideas have been set forth over the last 15 years on how best to improve parking in downtown Christiansted. These have ranged from expanding "postage stamp" parking lots within the commercial core to developing a multi-level parking garage on the Government parking site. Within this same period, the National Park Service proposed to eliminate its two parking lots as part of a plan to upgrade the Fort Christiansvaern Historic Site; it is understood that this proposal was withdrawn over the last year.

Despite the many proposals, relatively few actions have been taken on improving parking conditions. The Government parking lot has been expanded, and small lots have developed on vacant lots. However, an overall parking program and policy remains to be developed.

Improving the present parking situation is no easy task. It is compounded by the many narrow streets, the historic character of the town center, the high land costs, and the divided jurisdiction between the National Park Service and the Virgin Islands Government.

In developing a parking program many basic questions should be answered. What are the existing parking patterns and problems and how are they likely to change? Where should additional parking be developed and how should it be designed? Who should pay for it? What policies should be established regarding the use of curb-side parking space? How can, and should, parking be coordinated with urban development? And how should it fit into the fabric of downtown Christiansted?

To address these questions, the study team held meetings with representatives of the public and private sectors. Groups queried included the Department of Public Works, National Park Service, and Chamber of Commerce. The 1974 and 1982 parking studies were reviewed in depth. Field observations

were made of peak parking accumulations. These meetings and investigations provided an objective basis for developing a parking program.

3.4.2 Existing Parking Conditions

The 1988 field observations served to update the 1974 and 1982 parking studies. The salient findings and comparisons are discussed below.

3.4.2(a) Parking supply

It is estimated that there are approximately 1,300 parking spaces in downtown Christiansted. (The downtown area extends from the harbor to Market Street and from Fisher Street to Watergut Street). There were about 1,100 spaces in the same area in 1982. About half of the spaces are located along curbs, and half are off-street.

The curb-side spaces have no time limits, except for Church Street between King and Company Streets, where a one-hour time limit applies. Curb-side parking on King and Company Streets and other streets in the commercial core is limited to one side of the street.

The off-street parking spaces are concentrated along the waterfront and in the block bounded by Watergut, Strand, King Cross, and Prince Streets. This area contains about 70% of the off-street supply. The remaining spaces are dispersed throughout the central area in small facilities, usually accommodating fewer than 50 cars. Some of these lots are temporary, and many are inefficient and contribute to traffic congestion.

The three major facilities are:

- the National Park Service lot on the waterfront (85 spaces);
- the National Park Service lot on Hospital Street (51 spaces); and
- the Government parking lot (150 spaces).

3.4.2(b) Parking rates

Parking is free along the curb and in the National Park Service parking lots. The Government parking lot charges \$.50 per hour, \$4.00 per day, and \$40 per month.

3.4.2(c) Peak parking accumulation

The peak parking accumulation occurs between 11 am and noon. It was estimated at 1,140, as compared to a supply of 1,200. Thus, most of the facilities within the parking study area are full. The comparative data for

1982 and 1988 are shown in Table 3-11 below.¹ (About 80 of the 570 curb-side vehicles (14%) in 1982 were parked illegally).

TABLE 3-11. PEAK PARKING ACCUMULATION IN CENTRAL CHRISTIANSTED			
YEAR	CURB-SIDE	OFF-STREET	TOTAL
1982	570	380	950
1988	560	580	1,140

Block by block peak parking accumulations are shown in Figure 3-23. These accumulation patterns largely reflect the availability of spaces. They clearly indicate that the elimination of waterfront parking, as initially suggested by the National Park Service, would seriously overload the existing parking system.

3.4.2(d) Existing problems

The present parking situation is characterized by: a shortage of space in the commercial area; all-day parkers pre-empting curb-side space; parking and environmental conflicts along the waterfront; high land costs; and limited sites for expanding the existing off-street parking supply. Alleviating these problems calls for better use of existing parking space, selective expansion of parking in perimeter areas, and careful coordination of parking and development along the Christiansted waterfront.

3.4.3 Policy Guidelines

The following policy principles should underlie a parking development program for downtown Christiansted.

- Curb-side parking space is a valuable resource. It should be rationed by time-limit restrictions in the short run, and eventually by pricing.
- Effective enforcement of curb-side parking limitations is essential.
- Further development of parking lots fronting King and Company Streets should be discouraged, since they contribute to street congestion, and break up the continuity of pedestrian circulation.

¹ The peak parking accumulation in 1979 was estimated at 1,100 vehicles for a slightly smaller study area. See: Rollings and Neilson, Downtown Christiansted Parking Study, 1974.

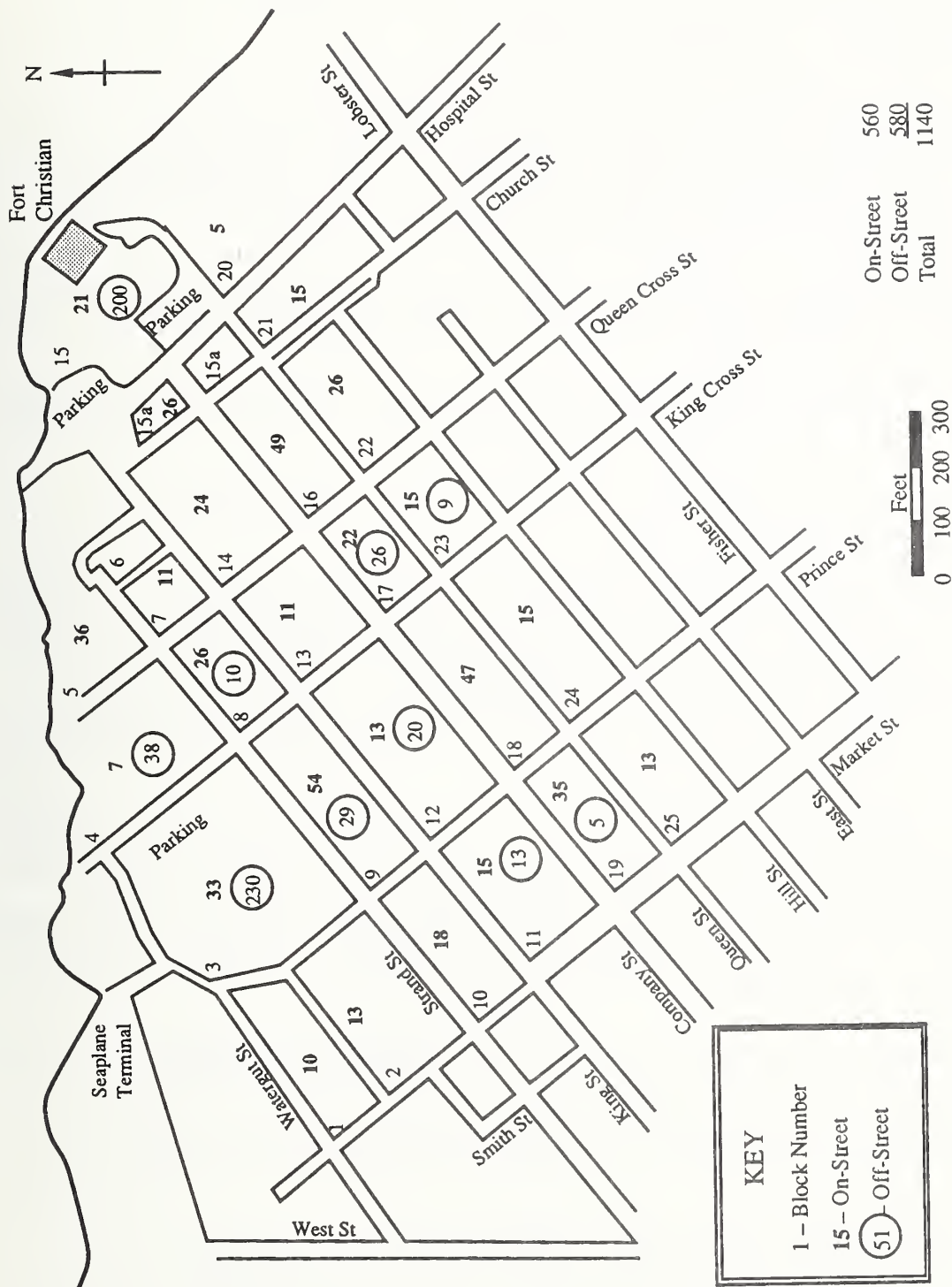


FIGURE 3-23. ESTIMATED PEAK PARKING ACCUMULATION - CHRISTIANSTED

- Large, consolidated surface parking lots, such as the Government parking lot, are preferable to small, scattered, "postage stamp" sites. Many of the 26 potential parking sites identified in the 1982 Gannett Fleming Transit Development Program Update - Parking and Traffic Management Plan are too small for meaningful parking development. (See Table 3-12).
- Surface parking is preferable to structural parking in terms of costs and compatibility with the scale of central Christiansted. Parking facility developments should place a minimum financial drain on the Virgin Islands Government. Therefore, parking garage development either should be deferred, or done by the private sector, possibly as part of a joint or multi-use commercial project.
- The National Park Service parking lots on the waterfront and on Hospital Street should be retained until suitable replacement parking is provided.
- Off-street parking should be an integral part of future developments along the Christiansted waterfront.

3.4.4 Parking Development Program

The recommended parking development plan, shown in Figure 3-24, reflects the preceding policy guidelines. It calls for better management of curb-side parking, and the staged provision of off-street parking space. Table 3-13 sets forth the suggested staging of these proposals. Stage I improvements should be completed within the next few years (i.e., 1988-1992); Stage II improvements should be completed as part of waterfront development plans.

3.4.4(a) Stage I improvements

1. A two-hour parking time limit should be placed into effect on King and Company Streets east of Prince Street. As suggested in the traffic improvement plan, the curb-side parking should be relocated on the south side of King Street and the north side of Company Street to allow curbside taxivan passenger boarding and alighting.
2. There should be no stopping or parking along King Street between Queen Cross and Church Streets. The taxi zone should be relocated (a) adjacent to the Post Office on the south side of King Street between Church and Hospital Streets, and (b) in the parking lot at the wharves. These changes are essential to minimize the likelihood of waiting or maneuvering taxis blocking King Street traffic.
3. Additional ingress and egress to the Government parking lot should be provided from Watergut Street. This will better enable the lot to intercept traffic coming from and going to the west without requiring vehicles to pass through the junction of Strand and King Cross Streets. A gate-controlled entrance on Watergut Street should be open at all

TABLE 3-12.
ANALYSIS OF 26 POTENTIAL PARKING SITES IN DOWNTOWN CHRISTIANSTED
 (IDENTIFIED IN 1982 STUDY)

Site Description	Approximate No. of Spaces	Status	Remarks
1 Vacant lot next to the Community Agency on Prince St.	10	in-use	needs paving
2 Drainage area at inter- section of Market St., North St. and Waterfront Dr.	25	in-use	existing streets
3 Vacant land between North and Strand Sts. and between Market and Smith Sts.	55	available	remote, sloping site on hill
4 Vacant lot between King and Company Sts. behind the theatre	20	in-use	
5 Parking lot opposite St. John's Episcopal Church on King St.	20	in-use	remote
6 Parking lot next to Ittenmann Ice Company	10		too small
7 Small vacant lot north of Company Street between Prince and King Cross Sts.	15	in-use	
8 Delapidated building south of Company St. between Prince and King Cross Sts.	10		too small
9 Vacant lot north of Company St. between Queen Cross and Church Sts.	10		too small
10 Vacant lot south of Queen St. adjacent to the fort on the waterfront	155		develop as part of water- front renewal
11 Vacant lot east of Hospital St. north of Oster Gade	50		develop as part of water- front renewal

TABLE 3-12. (Continued)

Site Description	Approximate No. of Spaces	Status	Remarks
12 Vacant property adjacent to offices of Dept. of Property and Procurement and Dept. of Social Welfare	90		develop as part of water- front renewal
13 Vacant lot south of Queen St. between Church and Queen Cross Sts.	15		inaccessible, too small
14 Vacant lot north of Queen St. between Church and Queen Cross Sts.	13		inaccessible, too small
15 Vacant lot and adjacent abandoned residence southeast of the intersection of Queen and Queen Cross Sts.	20		marginal, would serve market
16 Vacant lot northwest of the intersection of Hill and King Cross Sts.	15		marginal, would serve market
17 Several old buildings southeast of the intersection of Queen and Prince Sts.	25		available, but questionable
18 Vacant lot south of King St. east of Market St.	20	in-use	
19 Private parking area behind the old Town Wheel Restaurant	20	in-use	
20 Old warehouse east of the Holger Danske Hotel	40	in-use	
21 Vacant lot south of Strand St. between King Cross and Prince Sts.	40	in-use	
22 Vacant lot south of Strand St. east of an alley	20		too small
23 Vacant lot north of the intersection of Strand and Prince Sts.	15	in-use	

TABLE 3-12 (Continued)

Site Description	Approximate No. of Spaces	Status	Remarks
24 Undeveloped land west of the existing paid parking lot	40		develop as part of expanded Government lot
25 Existing unpaved lot south of the existing paid parking lot	55	in-use	
26 Existing unpaved lot south of Waterfront Dr. opposite the entrance to the seaplane base	75	in-use	

Source: Field observations, March, 1988.

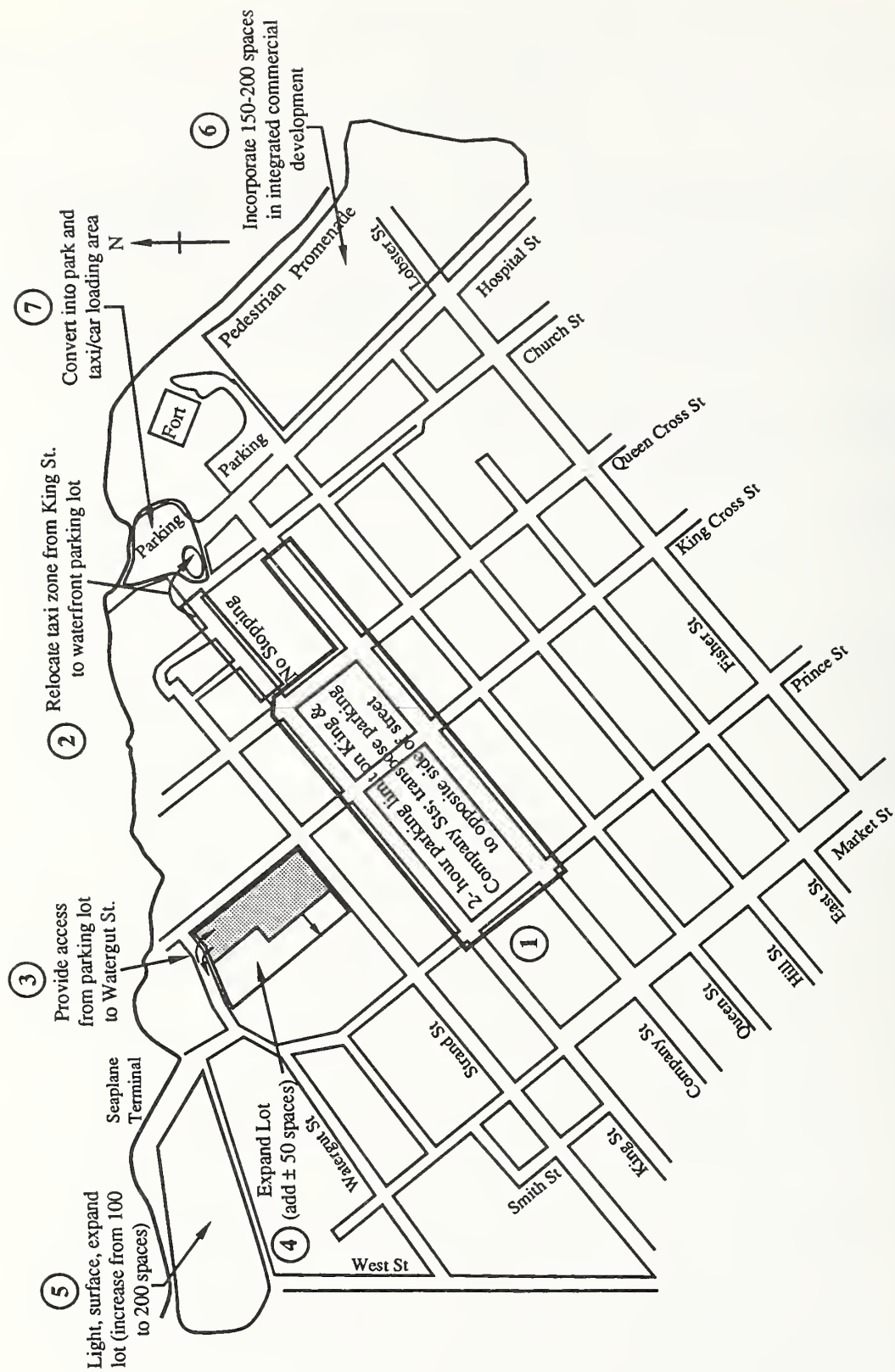


FIGURE 3-24. PARKING DEVELOPMENT PLAN - DOWNTOWN CHRISTIANSTED

TABLE 3-13.
PARKING DEVELOPMENT PROGRAM FOR DOWNTOWN CHRISTIANSTED

Stage 1

- 1 Limit parking to two hours on King and Company Streets. Transpose parking from one side of these streets to the other.
- 2 Relocate taxi-zone to area south of King Street and east of Church Street, and in waterfront parking area. Prohibit all stopping on King Street east of Queen Cross Street.
- 3 Provide entrance and exit from Government parking lot onto Watergut Street.
- 4 Expand Government parking lot. Add 30 to 50 parking spaces.)
- 5 Surface, illuminate and expand seaplane base parking lot. Increase capacity from about 100 to 200 spaces.

Stage II

- 6 Incorporate 150 to 200 spaces into an integrated waterfront development plan. 100 spaces would replace waterfront parking area.
- 7 Convert waterfront parking lot to park and taxivan loading zones. Remove parking only after replacement parking is provided.
- 8 Retain and improve National Park Service Hospital Street lot.
- 9 Defer construction of 150 to 200 space deck with ground floor commercial development along King Cross, until after additional surface parking is provided at the seaplane base and in the existing Government parking lot.

Parking and Management Improvements

- 10 Improve enforcement.
- 11 Consider parcards, but only after they have proven successful in Charlotte Amalie.
- 12 Increase monthly rates in Government parking lot from \$40 to \$75, but only after additional parking is available in seaplane parking lot.

times; the Watergut exit should be open during the afternoon peak period, 3 - 6 pm.

4. The Government parking lot should be expanded. An additional 50 or more spaces can be provided by acquiring the vacant property just to the west of the existing lot. Ideally, the scattered parking lots in the block bounded by Prince, Watergut, King Cross, and Strand Streets should be consolidated into the Government parking lot.
5. The seaplane terminal parking lot should be expanded and improved. The lot should be expanded from about 100 to 200 spaces; it should be paved and illuminated.

(The DPW is considering a shuttle bus service from the Government parking lot to the business and tourist areas of Christiansted. It would seem that the need for a shuttle bus service would be questionable due to the relatively short distance from the lot to the waterfront and the small number of parking spaces involved. However, an experimental shuttle service could be tried to assess the demand for such a system.)

3.4.4(b) Stage II improvements

6. Off-street parking space should be incorporated into an integrated development plan for the Christiansted waterfront. There is need for an overall plan that preserves space along the waterfront for pedestrians, realizes the commercial development potential of the area, and provides needed parking capacity.
7. About 50-100 parking spaces should be provided for the currently proposed waterfront developments, utilizing as appropriate available Government-owned land. An additional 100 spaces should be provided as a replacement for the National Park Service parking lot on the waterfront. This would enable the lot to be converted to a taxi and car loading area, and a waterfront park. The existing National Park Service parking lot on Hospital Street should be retained and improved.

Construction of a 150-200 space parking deck over the existing Government parking lot should be deferred until after additional surface parking is provided in the existing Government parking lot and at the seaplane terminal. At that time, its need and financial feasibility should be analyzed. This site is well-located and of suitable size for a parking garage or deck tied to commercial development along King Cross Street. However, issues of scale (impacts on the Holger Danske Hotel), costs, and financial feasibility would have to be resolved before such a facility could be built.

3.4.4(c) Parking management improvements

8. Effective enforcement of on-street parking regulations in central Christiansted is essential. It is a prerequisite for a successful parking program.

9. The use of PARCARDS for on-street parking in Christiansted should be considered, but only if they prove successful in Charlotte Amalie from the standpoints of enforcement, revenue, and cost.
10. The monthly parking rates in the Government parking lot should be increased to \$75, but only after additional parking is provided at the seaplane terminal. A fee of \$30 per month could be set for parking at the seaplane terminal.

4. ST. JOHN

4.1 INTRODUCTION

St. John is the smallest of the three Virgin Islands in area, population, and land available for development. Consequently, its transportation needs and problems are less pressing than those of St. Thomas and St. Croix. It covers 20 square miles, of which about two thirds is occupied by the Virgin Islands National Park. Its terrain is quite rugged, with very little flat land available for development. Figure 4-1 shows the terrain of the island.

The island's 1986 population of 2,940 people accounted for less than 3% of the 110,000 people living on the three principal Virgin Islands. (This figure is up 50% since 1970). The vast majority of people live in the vicinity of Cruz Bay on the western end of St. John. A small enclave exists in the community of Coral Bay on the eastern side of the island, surrounded by the National Park. Figure 4-2 shows the locations of the major residential concentrations on the island, together with the 1985 subdistrict population estimates.

Cruz Bay, on the west side of the island, is where most people live, work, and shop. It is where the National Park Service dock and the St. Thomas-St. John ferry docks are located, and where most tourist accommodations and services are located. The town, which dates back several centuries, has its own character, and is viewed as an historic district. The streets are narrow, often less than 20 feet wide in the town's center, and often lack sidewalks. Most of the streets in the center of town have been converted to one-way traffic flow.

4.2 PUBLIC TRANSPORTATION

4.2.1 Existing Conditions

There is no public transit system on the island of St. John. People who do not have their own means obtain transportation through ridesharing and via safari vehicles and taxis for hire. There has not been an urgent need for public transportation, because most of the island's small population lives in proximity to the main community, Cruz Bay.

There are approximately 50 taxis on the island, mostly in the form of safari vehicles (Figure 4-3) and vans. They operate under the same medallion



Note: Darker shaded area is the Virgin Islands National Park

FIGURE 4-1. TOPOGRAPHY OF ST. JOHN

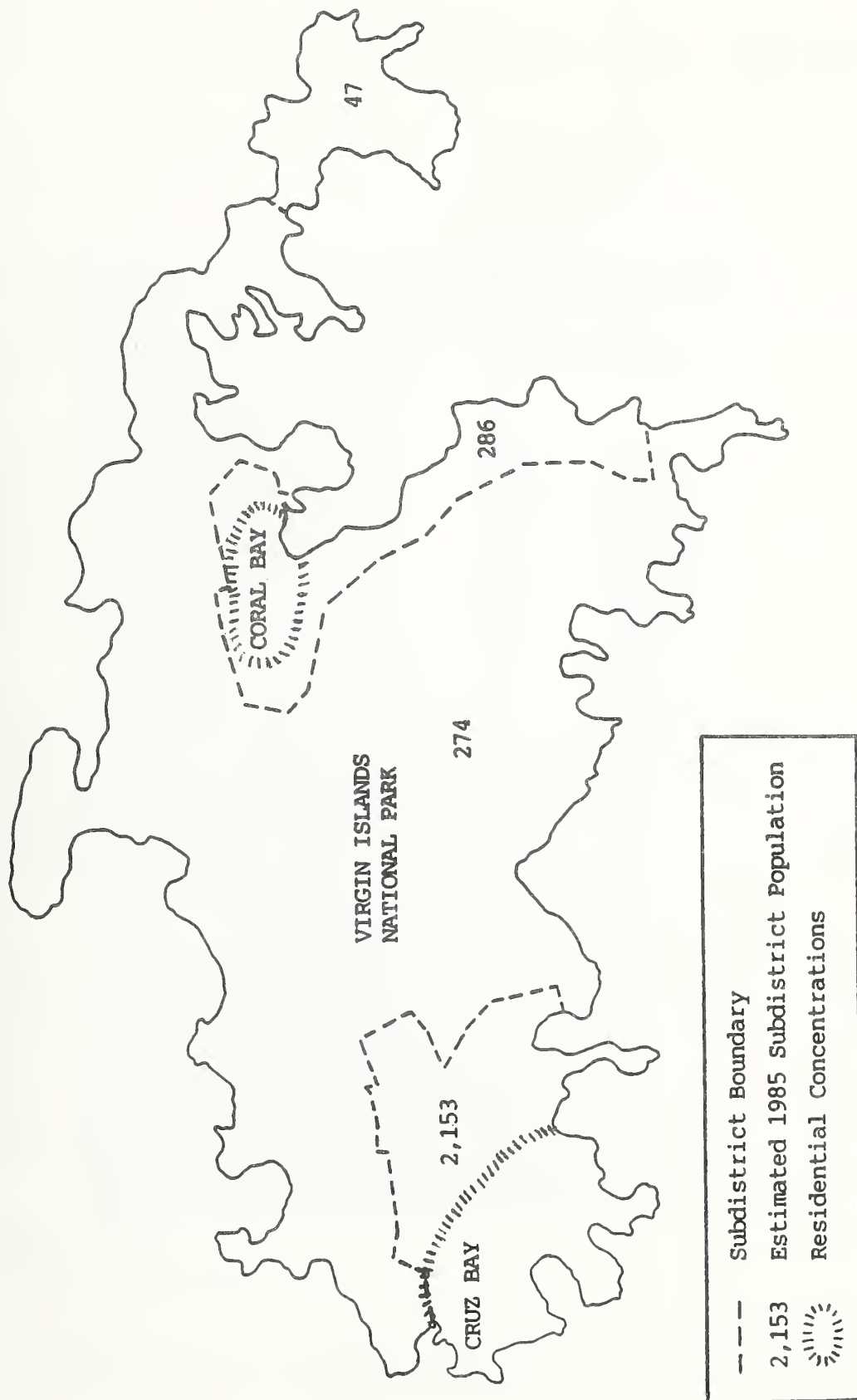


FIGURE 4-2. POPULATION DISTRIBUTION - ST. JOHN

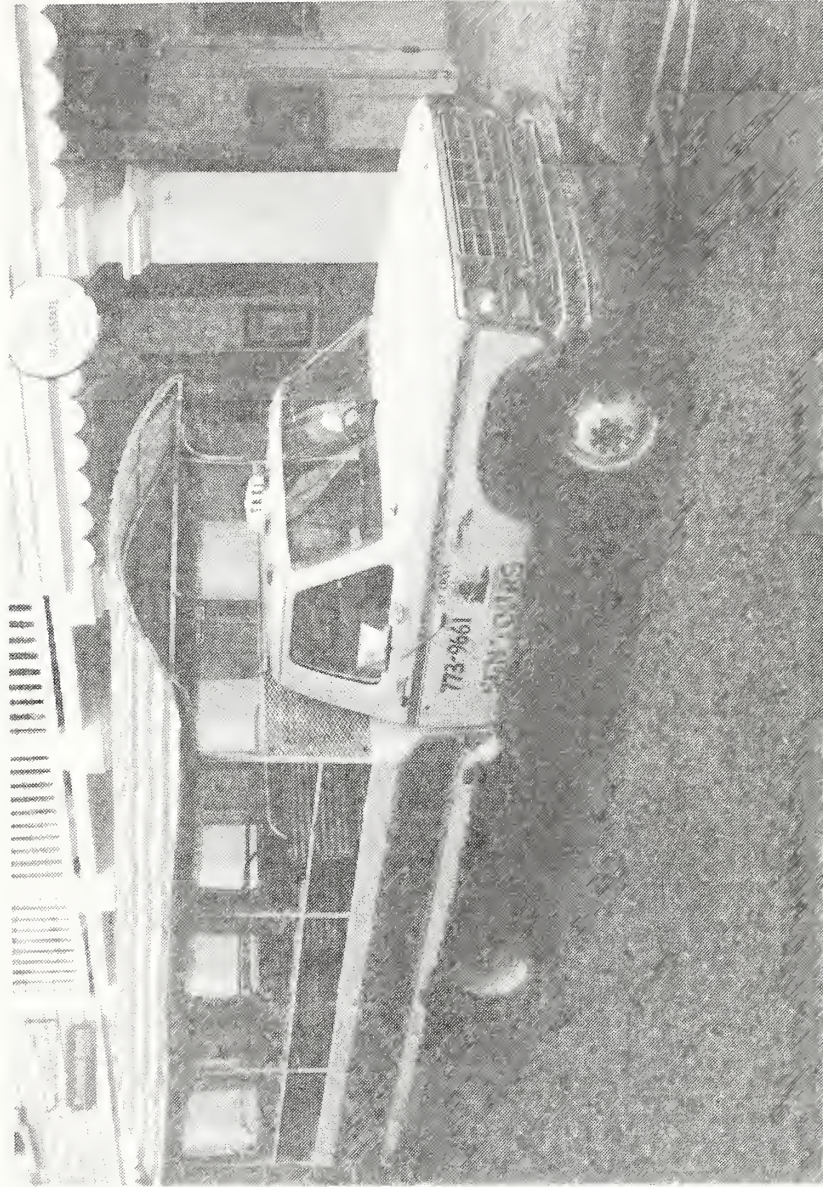


FIGURE 4-3. SAFARI VEHICLE

system as the other two islands. Unlike the operations on the other islands, however, taxis on St. John may not charge any more or less than the published rates set by the Legislature. Appendix B contains the fare schedule for St. John.

The limited number of elderly and handicapped persons (about 30 elderly persons and 5 handicapped students) are served by several cars sponsored by the Departments of Health and Human Services, and Education.

Ferries have a greater role in public transportation on St. John, because St. John is more dependent on off-island services than are the other islands. St. John has no high school; high school students must commute to St. Thomas every day. Many residents work off-island and must commute daily or weekly to their places of employment.

4.2.2 Transit Demand

Some Government officials have suggested that enough demand exists to warrant public transportation service between the towns of Coral Bay and Cruz Bay during the morning and evening rush hours, and perhaps at midday. However, there were no data available on potential demand for this service. The limited observations by the study team indicated that there did not appear to be sufficient demand to warrant transit service at this time.

4.2.3 Transit Alternatives

Although transit is not now an urgent need on the island, it is conceivable that the demand for service may emerge in the future. If this should occur, it would be desirable to develop a transit service that was in keeping with the character of the island and that made use of existing resources. The rough terrain, poor road conditions, and light demand on St. John would point to the use of vans as potential transit service vehicles.

Transit service could be implemented initially on a trial basis at rush hours and at midday between Cruz Bay and Coral Bay, with options to expand service hours if warranted by demand or to discontinue the service if ridership were low. The Government could contract with van operators to perform this service on a subsidized basis, which should be cost-effective for the Government since it would eliminate the expense of purchasing and maintaining vehicles. Unless conditions on St. John changed drastically, a small-scale system would satisfy transit needs on the island for the foreseeable future.

4.3 HIGHWAY SYSTEM

4.3.1 Existing Conditions

The development and road pattern is shown in Figure 4-4. The island's center is hilly throughout, limiting development to the coastal areas. Most

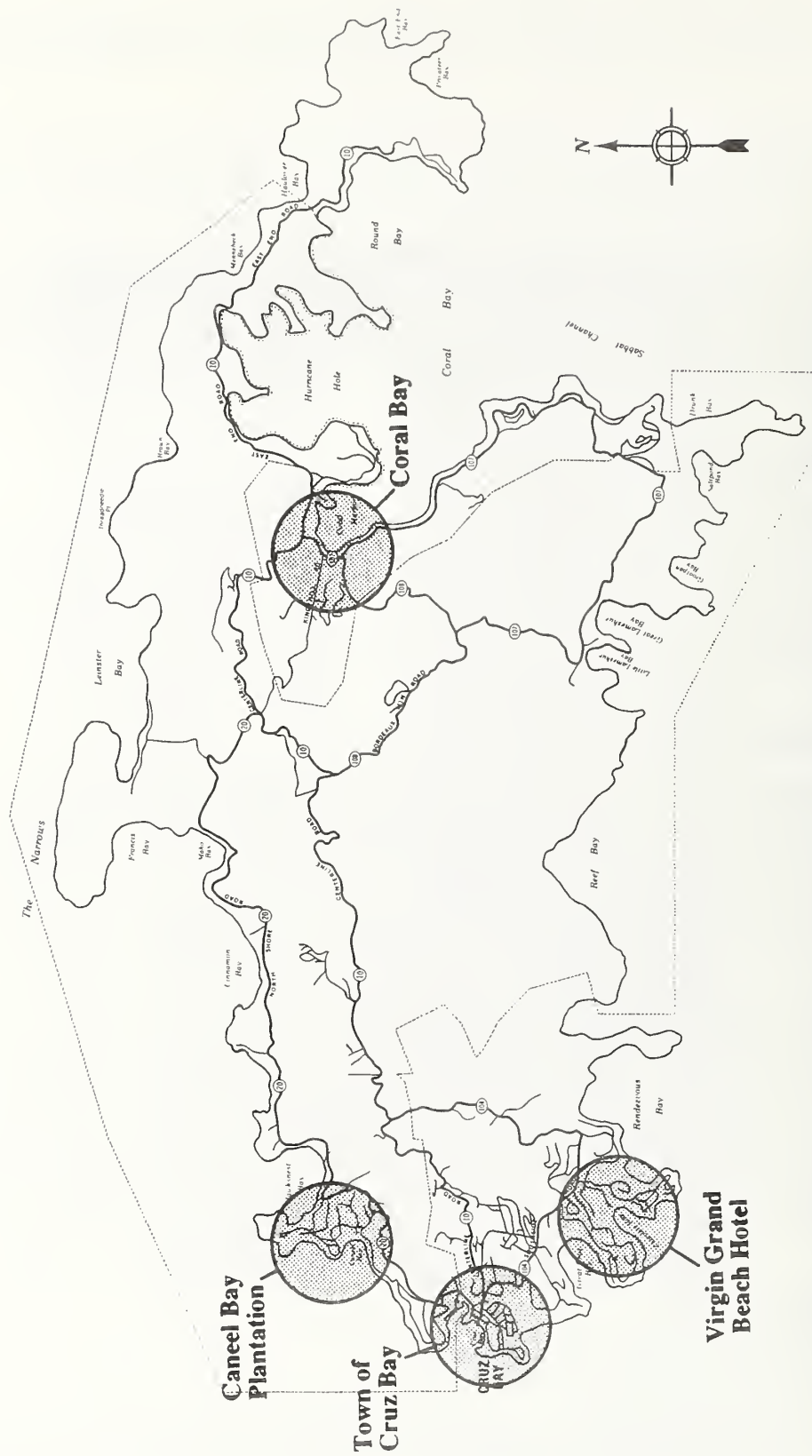


FIGURE 4-4. TRAFFIC GENERATORS ON ST. JOHN

activity occurs in the 3-mile westernmost part of the coast, extending from the Caneel Bay Plantation on the north, through the town of Cruz Bay to the Virgin Grand Beach Hotel on the south. Most car, taxi, and safari-vehicle travel takes place among these points.

4.3.1(a) Major roadways

The major island roadways converge on Cruz Bay and Coral Bay. Centerline Road (Route 10), the main east-west road, connects Cruz Bay and Coral Bay. North Shore Road (Route 20) connects Cruz Bay with Caneel Bay, Cinnamon Bay, and Maho Bay. Southside Road (Route 104) links Cruz Bay with Great Cruz Bay, Chocolate Hole, and Rendezvous Bay. Routes 107 and 108 link Coral Bay with the southeast part of the island. The major roads are surfaced, two-lane facilities. In several locations, such as sections of Centerline Road, the pavements are in poor condition and need resurfacing. All of the highways on St. John are lightly traveled, with average daily traffic under 2,500 vehicles per day.

4.3.1(b) Traffic in Cruz Bay

The existing street pattern and peak-hour traffic flows (March 1988) are shown in Figure 4-5. King Street operates one-way northbound from Bay Street to Henry Samuel Street. Centerline Road operates one way westbound from King Street to Strand Street. Strand Street operates one way southbound from Centerline Road to Bay Street. Bay Street operates one-way eastbound between Strand and King Streets. The other street segments in the town are two-way.

The peak-hour traffic volumes generally average less than 250 vehicles per hour in the heaviest direction. Thus, the roads and streets are operating at less than 50 per cent of their capacity.

- During the morning peak hour, about 450 vehicles enter the center of Cruz Bay. Approximately 220 come from Southside Road, 90 from North Shore Road, and 140 from Centerline Road.
- During the evening peak hour, about 460 vehicles leave the area. Approximately 230 depart via North Shore Road, 110 via Centerline Road, and 120 via Southside Road.
- About 180 vehicles pass through the ferry dock area in the morning peak hour and 220 vehicles in the evening.

4.3.1(c) Pedestrian movements

Tourists and residents congregate in Cruz Bay Park. They add a dimension to street life that should be preserved. Pedestrians intermingle with traffic on Centerline Road between King and Strand Streets, especially when ferries arrive and depart. This results from the absence of a continuous sidewalk. However, it presently poses no real problem.

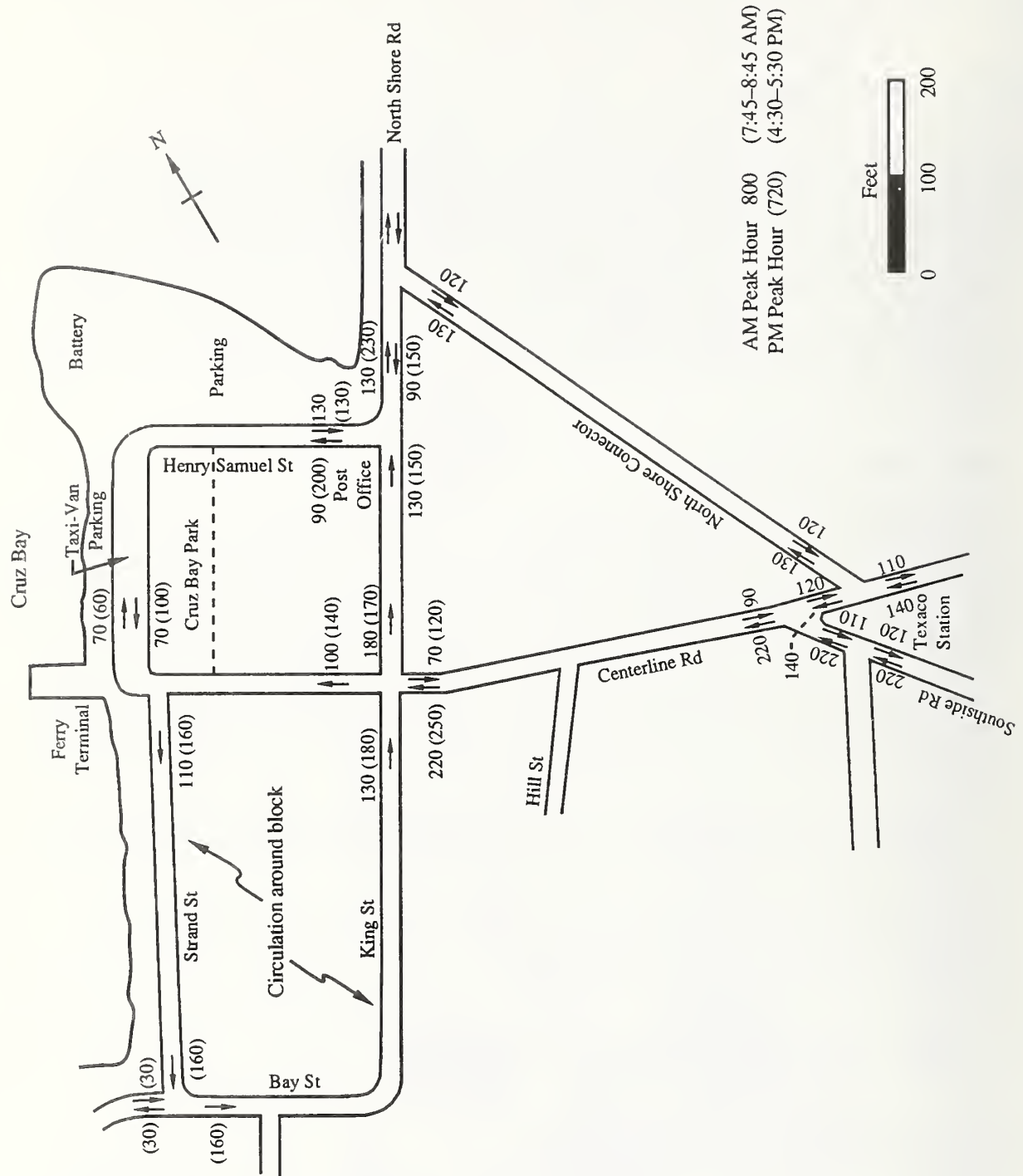


FIGURE 4-5. STREET DIRECTIONS AND TRAFFIC VOLUMES - CENTRAL CRUZ BAY

4.3.1(d) Traffic flow implications

Cruz Bay traffic problems are not of serious proportions at present. The traffic volumes are light, and well below the capacity of the streets in the center of town. Even during busy times of the week, such as Friday evenings, capacity generally is more than adequate.

There is, of course, increased activity during peak hours, especially at the dock area when ferries arrive and depart. Traffic flow is the heaviest on days when cruise ships drop off passengers at St. John on their way to St. Thomas. (These passengers take the ferry to St. Thomas to rejoin their ship). The flow of traffic through the town is impaired during this period, when safari vehicles and taxivans line up in the street to take the heavy influx of tourists on tours of the island. This type of flow impairment is normally of short duration, however. To avoid overcrowding St. John, the number of visitors from cruise ships is limited to 750 people per day. Staggering the days and hours of cruise ship arrivals would help alleviate these problems.

Traffic flow also is affected by other factors: (1) a street system that does not provide the necessary connectivity; (2) narrow streets with circulation patterns that favor access to ferries rather than minimizing conflicts; (3) illegal parking activity on streets; and (4) a tendency for drivers to stop and socialize on streets.

Traffic flow impairment in Cruz Bay has not reached the level that would warrant changes in traffic circulation or physical roadway configuration at this time. The demands for improved transportation facilities and services will increase as development increases, however. Moderate and low-income homes are being built to the east of Cruz Bay. Plans have been developed (although they currently are being held up) for a new marina and cargo facility in the Large Pond area of Cruz Bay. In each case, needed changes in the street system should become an integral part of the proposals. The building of new cargo docks, and the provision of new access to them, actually could reduce traffic friction in Cruz Bay. Nevertheless, it is conceivable that in the future, traffic could increase to the point where changes would become necessary.

4.3.2 Planned Road Improvements

There are three major road improvements planned by the Department of Public Works for St. John. These are shown in Figure 4-6.

- The Department of Public Works plans to spend \$2.5 million to rehabilitate 4.4 miles of Centerline Road from Cruz Bay to Bordeaux Mountain Road. Although not essential from a traffic volume standpoint, this project would eliminate the many potholes on Centerline Road and prevent further pavement deterioration.

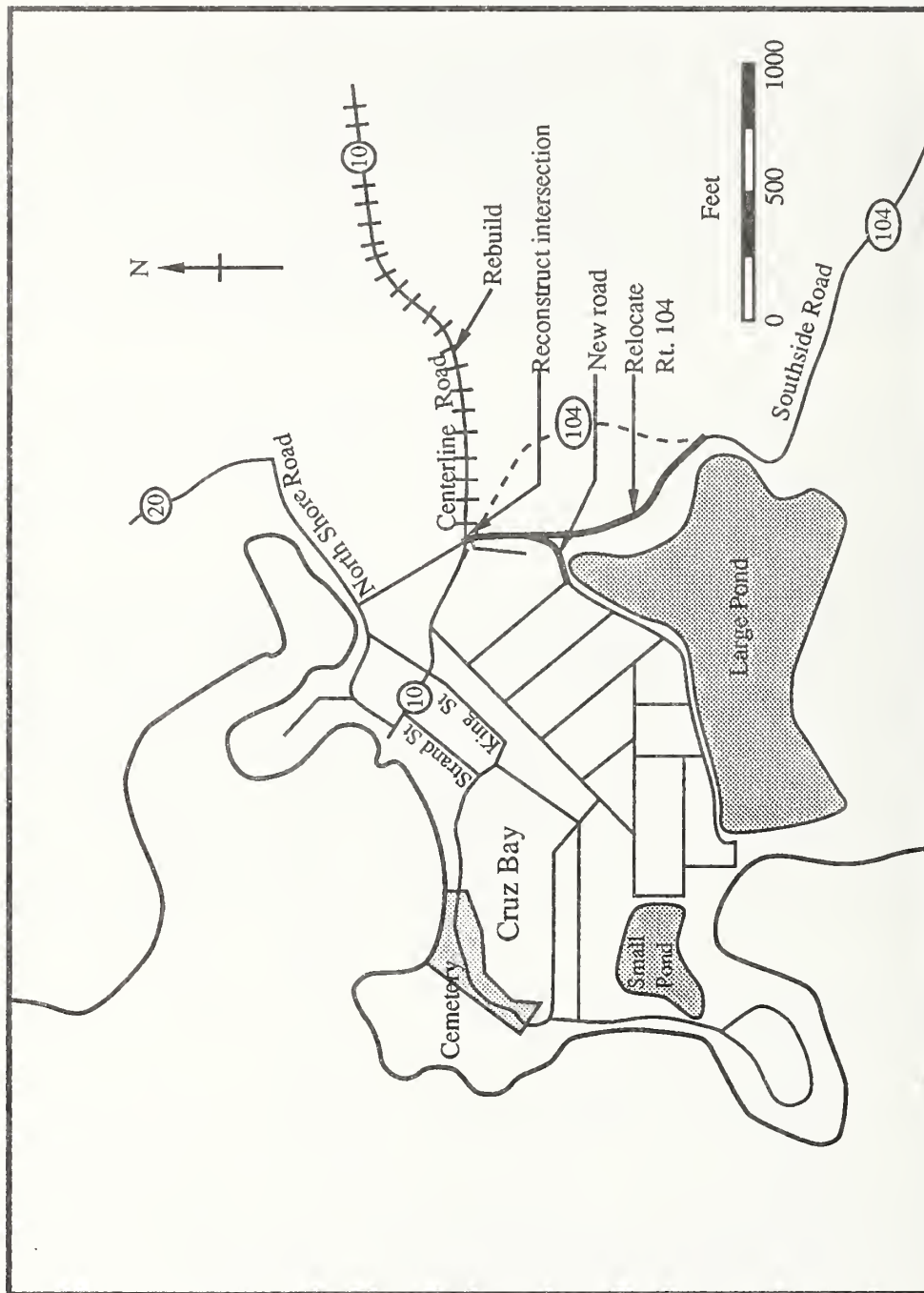


FIGURE 4-6. PLANNED ROAD IMPROVEMENTS - CRUZ BAY AREA

- The Department of Public Works also plans to relocate and rehabilitate Southside Road in FY 1990-1992. The Department of Public Works estimates \$400,000 in property acquisition costs in 1990, and \$1.5 million in construction costs in 1992. As part of this project, a link would be created from the North Shore Connector¹ to a relocated South Side Road along the east side of Large Pond. The existing road would be abandoned. It also would connect with the existing road system along the North Side of Large Pond. Both of these changes are desirable to improve circulation in Cruz Bay. They also would serve a proposed Government Center a short distance to the east of the town. From a traffic standpoint, these projects should be given priority over the Centerline Road rehabilitation.
- An improvement to the intersection of Centerline Road and Southside Road would be part of the Department of Public Work's plan to realign Southside Road. This improvement is especially desirable to provide more orderly traffic flow, reduce delays, better link the northern and southern sides of St. John, and eliminate illegal maneuvers. (During the morning peak hour, some 20 vehicles were observed taking a short cut through the Texaco service station property, rather than following the correct path, which is awkward and difficult to negotiate).

A schematic plan of the recommended treatment is shown in Figure 4-7. This treatment creates a direct crossing of Centerline Road in which Southside Road connects with the North Shore Connector. The road leading south from Southside Road is redirected to enter Southside Road at a 90 degree angle to the south of the new Centerline - Southside junction.

Three lanes are provided along Centerline Road -- two for through traffic and one for right turns. Three turn lanes are provided on the relocated Southside Road -- one for northbound left turns, and two for through traffic.

In order to implement the plan, it is necessary to acquire the Texaco Station. However, the benefits will far exceed the costs and impacts. There will be more capacity and less chance for queuing. Access to and from NorthA Shore Road will be more convenient. And it will remove some traffic from the center of Cruz Bay.

4.3.3 Possible Future Traffic Improvements

Traffic conditions could be improved by better traffic management and selective physical changes. However, the difficulties inherent in widening Cruz Bay's narrow streets, and the need to preserve the historic character of the town center, limit the opportunities to expand street and parking

¹ A name chosen for this street for use in this report. The study team was unable to learn the true name of this street.

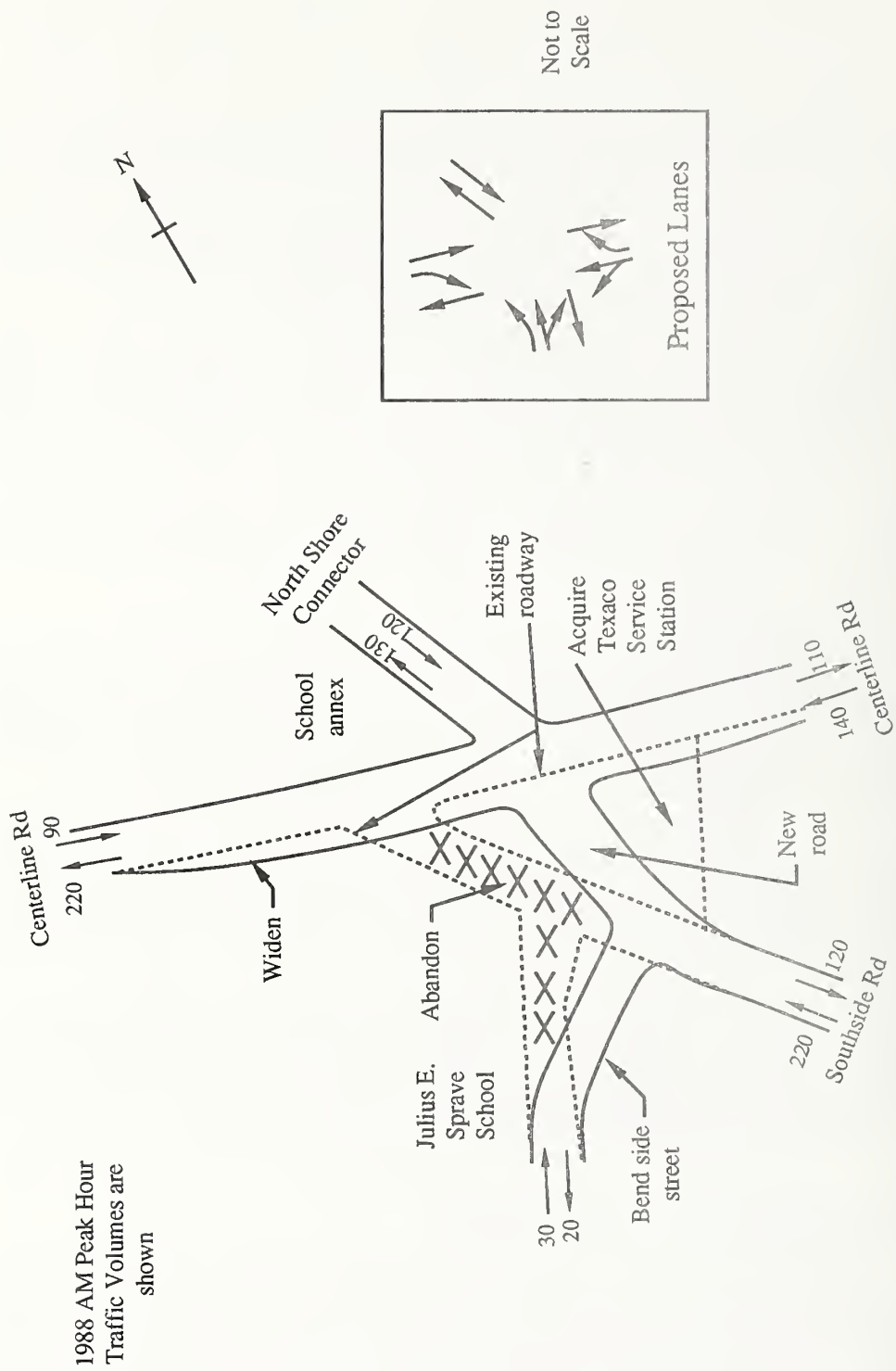


FIGURE 4-7. RECOMMENDED TREATMENT - CENTERLINE ROAD / SOUTHSIDE ROAD / NORTH SHORE ROAD CONNECTOR INTERSECTION

capacity. The long term approach, therefore, should be to "manage demand." Traffic circulation changes would be the easiest alternative to implement.

Traffic movement conflicts are a major cause of congestion. The existing one-way system (Figure 4-8) produces six intersection conflicts: three at the junction of King Street and Centerline Road; and one each at the junctions of King and Henry Samuel Streets, Strand Street and Centerline Road, and Strand and Bay Streets.

There are two viable options for reducing these conflicts: (1) the 1982 option recommended by Gannett Fleming (Figure 4-9) which maintains two-way traffic on Strand and Henry Samuel Streets and results in only two intersection conflicts; and (2) making Strand and Henry Samuel Streets one-way eastbound and southbound eliminates all but one conflict point (Figure 4-10). However, this second option increases travel distances to the ferry dock and the parking areas. Both options reverse the directions of Strand and King Streets and Centerline Road.

A third option converts Centerline Road between King and Strand Streets to a pedestrian-only way (Figure 4-11). This option eliminates all vehicular conflicts, and improves pedestrian flow. It is identified for possible future implementation.

If traffic management improvements become necessary, it is recommended that the Gannett Fleming one-way proposal be implemented. The other options represent further developments of this concept, and should be considered as needs warrant. The traffic management approach should be taken in conjunction with a program to manage demand; i.e., to limit the number of visitors, hotel rooms, and/or motor vehicles on St. John.

4.3.4 Other Improvements

Centerline Road sidewalk — A sidewalk should be built along the northern side of Centerline Road between King and Strand Streets. This sidewalk will provide access for people walking to and from the park and ferry dock. Field observations indicated that there is space available for its construction.

Parking time limit — On- and off-street parking space is limited in Cruz Bay. Accordingly, it may be desirable to limit available curb side parking space to one hour, and off-street space to four hours if conditions warrant.

Public transport — The taxis and safari vehicles provide a valuable public transportation service for residents and visitors. These operations should be encouraged, to reduce the demand for the limited parking and road space in Cruz Bay.

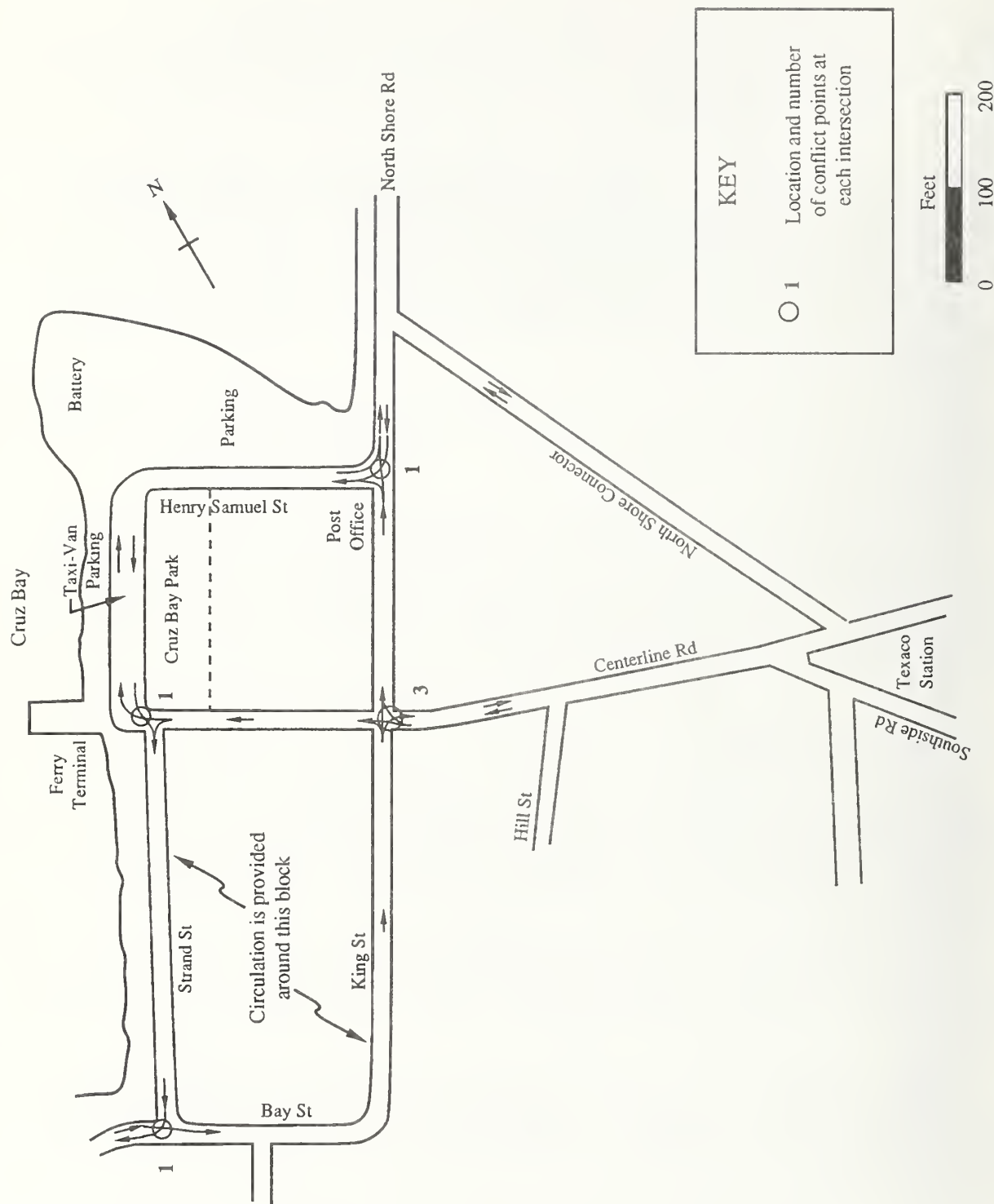


FIGURE 4-8. EXISTING ONE-WAY SYSTEM - CENTRAL CRUZ BAY

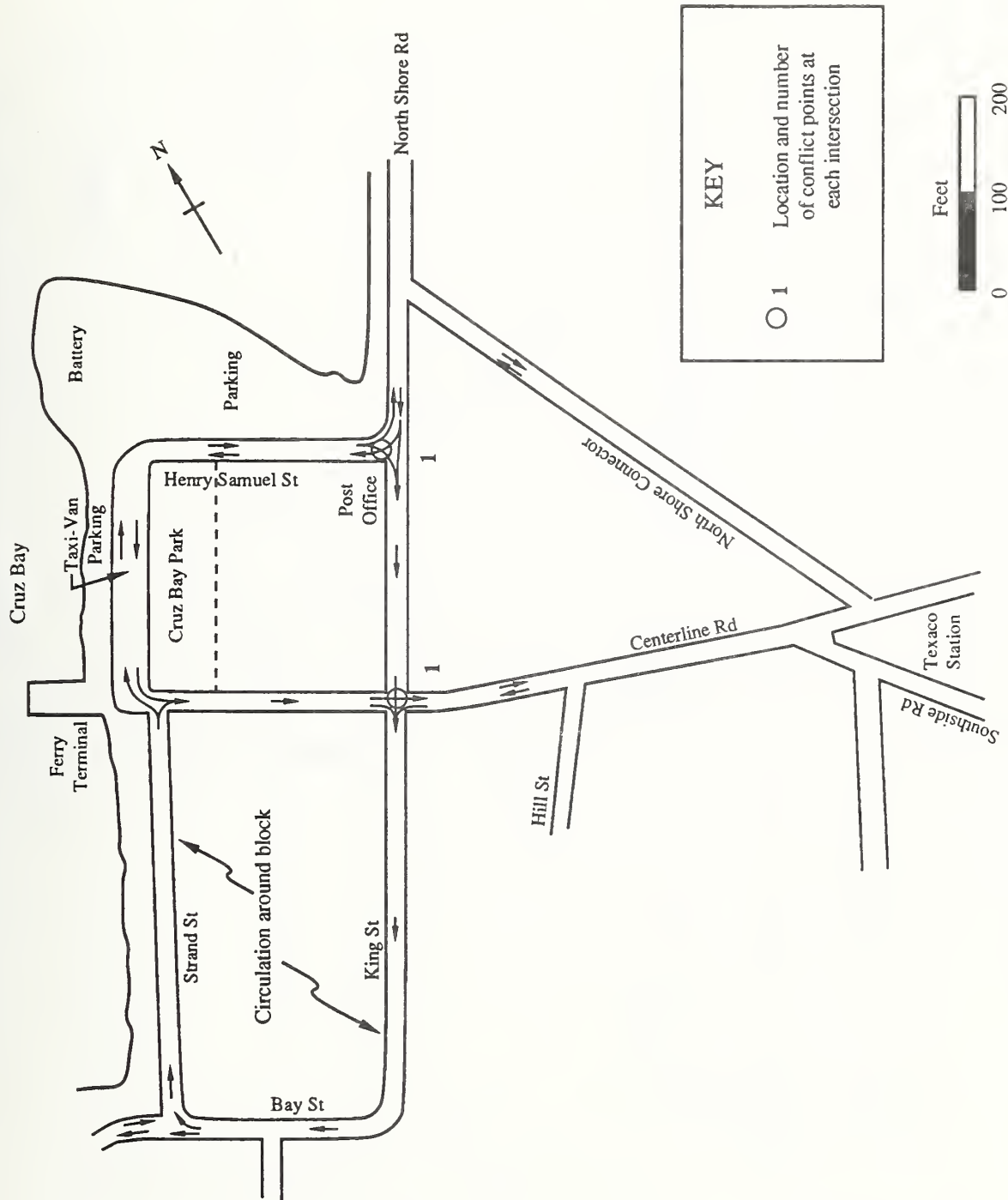


FIGURE 4-9. 1982 ONE-WAY PROPOSAL - CENTRAL CRUZ BAY

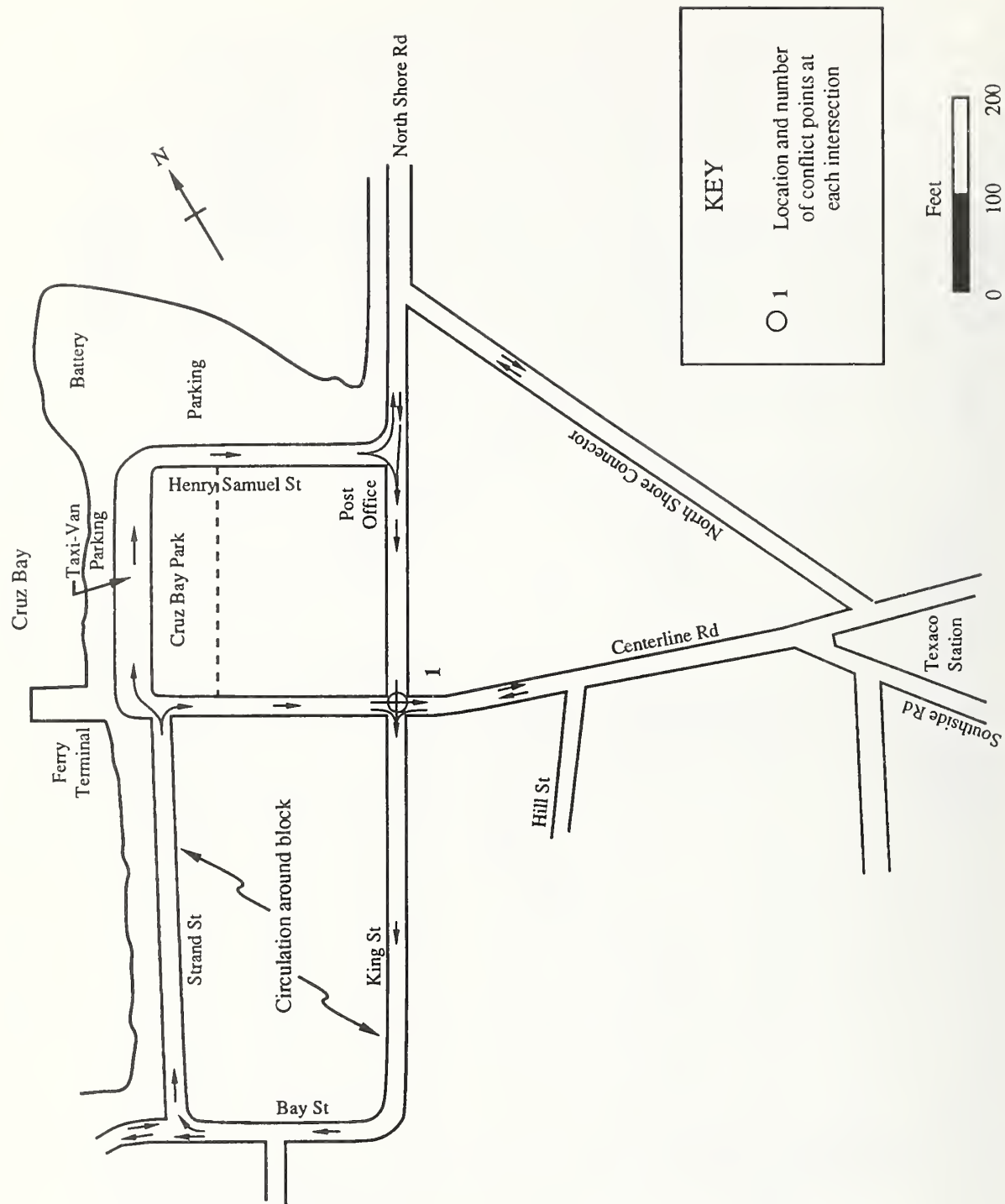


FIGURE 4-10. POSSIBLE FUTURE STRAND AND KING STREETS ONE-WAY SYSTEM-CENTRAL CRUZ BAY

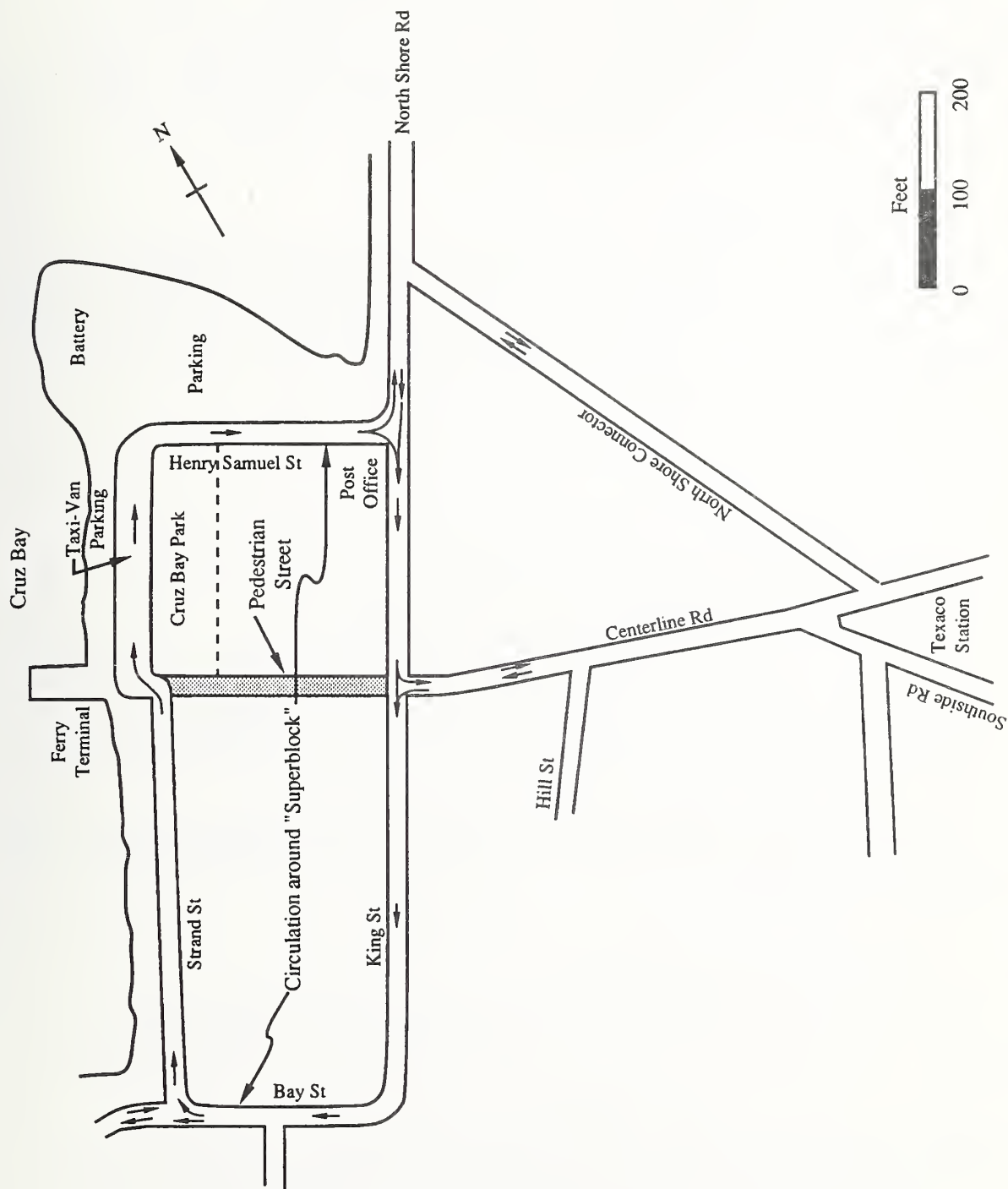


FIGURE 4-11. POSSIBLE FUTURE PEDESTRIAN STREET - CENTRAL CRUZ BAY

4.4 FERRY SERVICE

4.4.1 Existing Conditions

Two ferry companies operate into and out of St. John -- Transportation Services of St. John, Inc. and Varlack Ventures -- offering service to St. Thomas and Tortola, British Virgin Islands. The companies share a ten-year franchise for Red Hook service, which was up for renewal in 1987. They alternate their routes and schedules periodically, so that each performs the same kinds and amounts of service over the course of a year.

4.4.1(a) Routes and schedule

Ferry service is offered to both Red Hook and Charlotte Amalie on St. Thomas and to the West End on Tortola. The ferry schedule is shown in Figure 4-12. Service is offered once an hour to Red Hook from 8:00 am to 11:00 pm daily and five times a day to Charlotte Amalie. Two runs a day are offered to Tortola.

4.4.1(b) Fares

The fare structure to Red Hook in 1987 was:

- Adult -- \$2.00
- Commuter, Senior Citizen -- \$1.25
- Group Rate -- \$1.50 per person
- Children -- \$1.00
- Students -- free (ferry operators subsidized by Dept. of Education)

In their application for renewing the franchise, the ferry operators requested a fare increase. It is not known if the Legislature granted the increase at this time.

An adult fare to Charlotte Amalie costs \$5.00. This fare is higher for two reasons: the trip is longer; and the route is not regulated by a Governmental franchise.

4.4.1(c) Equipment and maintenance

Between the two companies there are eleven ferries in operating condition. A well-maintained ferry vessel will provide about 25 years of service.

Maintenance facilities for ferries are very limited. The ferry companies use the main docks in Cruz Bay for routine maintenance, but must take the ferries to either Puerto Rico, St. Croix, or Tortola for major repairs and haulouts. Consequently, one operator keeps \$60,000 to \$80,000 in spare parts on St. John, and rents two full-time slips on Tortola for emergency repairs.

ST. THOMAS / ST. JOHN FERRY SCHEDULE

Red Hook Dock to Cruz Bay Dock

Every hour on the hour: 8:00 am to 11:00 pm daily
6:30 am and 7:30 am Monday thru Friday

Cruz Bay Dock to Red Hook Dock

Every hour on the hour: 7:00 am to 10:00 pm daily

Between Downtown Charlotte Amalie and Cruz Bay

Leaving Charlotte Amalie: 9:00 am, 11:00 am, 3:00 pm, 5:30 pm, and 7:00 pm
Leaving Cruz Bay: 7:15 am, 9:15 am, 1:15 pm, 3:45 pm and 5:15 pm

Every day including Sundays and Holidays.

This is approximately a 45 minute ride.

TORTOLA / ST. THOMAS / ST. JOHN FERRY SCHEDULE

St. Thomas / St. John to West End, Tortola

Leaving Red Hook Dock: 8:00 am and 3:00 pm Monday thru Saturday
Leaving Cruz Bay Dock: 8:30 am and 3:30 pm Monday thru Saturday
5:00 pm Friday and Sunday only

West End, Tortola to St. Thomas / St. John

Leaving West End Dock: 9:15 am and 4:15 pm Monday thru Saturday,
5:30 pm Friday and Sunday (to Cruz Bay only)

Source: 1988 Here's How, St. Thomas & St. John

FIGURE 4-12. FERRY SCHEDULE

4.4.1(d) Ridership

Ridership was estimated based on revenue data obtained from Transportation Services of St. John, representing about half of the total ferry revenues (since the two operators share the franchise equally). In 1986, approximately 709,000 passengers rode the Cruz Bay - Red Hook ferry route, averaging about 1,950 passengers a day. By 1987, these figures had increased to 900,000 and 2,500, respectively, an increase of over 25 percent. Commuters and daily passengers represented the bulk of the riders -- about 82 percent. The remainder of the riders were students, nighttime travelers, and passengers using vouchers.

Data on ridership on the Red Hook-Charlotte Amalie ferry route were also available for 1987. About 110,000 passengers traveled this route, averaging about 320 passengers per day. It appears that this ferry route did not operate on 22 days scattered throughout the year.

4.4.1(e) Quality of service

The ferry service seems to be adequately serving the needs of the islanders. The ferries adhere to their schedules well and are dependable except when impaired by inclement weather conditions. The operators are able to make a profit from their business, and are responsive to demand.

4.4.2 Recommendations

No changes are recommended in ferry service at this time. It would be desirable, as recommended in Chapter 2, that transit service to Red Hook from Charlotte Amalie be coordinated with ferry service to the extent possible.

5. GOVERNMENT OVERSIGHT

5.1 EXISTING CONDITIONS

Executive Order No. 244-1981, signed by Governor Juan Luis on December 31, 1980, established the Virgin Islands Office of Transportation within the Department of Public Works (DPW) with full power and authority to:

- conduct transportation planning for projects to be implemented by the Department of Public Works;
- prepare a program for transit development;
- implement the Wilbur Smith "Virgin Islands Mass Transit Study;"
- recommend contracts with qualified private firms for operation of transportation services in the Virgin Islands;
- prepare applications, in conjunction with the Office of Federal Programs Coordinator, for Federal transit assistance; and
- recommend and formulate policies, legislation, and programs for improving and supporting transportation systems in the Virgin Islands in order to insure mass transit service development.

Under the Executive Order, the DPW's Office of Transportation (OT) was required to prepare a budget -- to be included with the Departmental budget -- for staffing the Office, for construction of needed transportation facilities and other improvements, and for the staff training needed to carry out the approved programs. The OT budget used to be an appropriation from the Department of Public Works' Road Fund. This has recently been changed, and it is now a separate appropriation line item.

The concept of the OT did not appear to be enthusiastically supported by the DPW. A Director of the Office was named, but was given few resources to carry out the mission of the Office. The Office had no work plans which would identify project priorities and staffing requirements. A lack of funds was the stated reason for the inability to hire the staff needed to prepare such plans. It was not until 1982 that a Transit Planner was added to the staff. A Technical Services Officer (Inspector of Facilities and Equipment) was hired in 1983. From 1984 to early 1987, the Office was without an acting head, as the Director was assigned to develop and implement a parking program for the Territory.

Transit oversight by the DPW appears deficient. The transit operator has made significant service modification decisions which the DPW has discovered only after they were implemented. Transit ridership and revenue have been inadequately monitored. Prior to the data collected as part of this study, no information was available concerning transit ridership. The last audit of Mannassah occurred in 1983. The last audit of Abramson Enterprises occurred in 1980, four years prior to service cessation. One of the reasons cited by Abramson for transit termination was the late subsidy payments by the Government.

A 1987 audit of the OT by the Office of Inspector General, U.S. Department of Interior, concluded that "Public Works had not (1) provided adequate management or work plan priorities for its Transportation Office, (2) issued official policies or procedures, (3) enforced or complied with contracts it had with public bus carriers, or (4) complied with applicable Federal grant terms and conditions." Even the transit operator has criticized the lack of oversight and participation by the DPW in major transit policy and management decisions.

The OT claims that proposals for organization and staffing, in general accordance with recommendations of the 1982 Transit Development Plan Update, were rejected by previous DPW Commissioners. As a result, the OT staff of 2 professionals and 1 para-professional have not been able to adequately oversee the planning studies, capital programs, operating assistance contracts, transit services, and two parking lots.

In 1987, the new administration began an effort to rectify the problems in the OT. The Director of the Office reassumed that responsibility, and has been named a Deputy Commissioner of the DPW. A transit planner in the OT has been given the responsibility of developing official transit policies and procedures. An Initial Public Transportation Policy statement and a Fiscal Year 1988 Work Plan was drafted but had not been acted upon as of mid-1988. The DPW is also working to correct other deficiencies noted in the Federal Audit Report. Two additional staff recently have been added to assist with transit program elements.

The mass transit program is supposed to be the most important activity within the OT. Unfortunately, over the years a relatively small amount of staff resources have been devoted to managing this program. It is critical that oversight of the transit system be improved. The failing of the DPW in this regard has contributed to the deterioration in public transportation on St. Thomas and the cessation of transit service on St. Croix. Without an increased commitment to public transit from the Virgin Islands Government, transit service could cease on St. Thomas as well.

5.2 ALTERNATIVES

Options for governmental oversight of the transit operation include:

- continuation of DPW oversight;

- governmental management and operation of the transit system; and
- integration of the transit oversight function with other non-highway related transportation functions under a separate governmental body.

If DPW oversight were to continue, the deficiencies noted in the audit report of the Department of the Interior's Inspector General must be corrected, and a much more active involvement in transit operations must be achieved. However, without increases in the OT's staffing and funding levels, this turnaround does not appear likely.

(Note: The DPW, after reviewing a draft of this report, commented that they could address the problems concerning prior monitoring of the transit system operation, and that the "...present administration is working to expand the role of the Office of Transportation.")

The governmental management and operation option would put transit under direct government control, the ultimate oversight position. The advantages and disadvantages of this option have been discussed under the transit management and operation section.

The option of removing the transit oversight function from the DPW and combining it with other non-highway transportation functions such as parking and taxi regulation is a major departure from the current situation. This option has appeal particularly for considering comprehensive proposals for possible solutions to the traffic and parking problems in Charlotte Amalie. Previous work has recommended fringe parking lots and shuttle service from these lots to the downtown area. Taxis have been suggested as providers of the shuttle services. On St. Croix, taxi-vans operate as a form of transit between the towns of Christiansted and Frederiksted. (This informal system was another reason cited by Abramson for terminating transit service). Taxis also are potential providers if some form of transit service is reinstituted. Fringe parking and taxi shuttle service previously has been proposed as a solution for the parking problem in Christiansted.

With the solutions to the transit, parking, and traffic congestion problems so closely intertwined, close cooperation between the bodies regulating these activities is essential. Placing these activities under the same organizational body would facilitate this coordination. In the DPW, the transit oversight function is only a minor piece of the total operation. As such, it has tended to receive less attention than other, larger programs. Commitment, funding, and staffing have been problems from the beginning. In its current position, it is largely obscured from public and legislative scrutiny. Removing it from the DPW and establishing it as a major function in a new governmental body would make it much more visible. If this governmental body is under the control of the Legislature, the Legislature would have to deal with it directly, rather than as a small piece of a large organization. The chances of obtaining needed funding as well as the staff necessary to perform its function should be improved under this option. In addition, revenues from the parking activity could be used to reduce the amount of transit subsidies required.

Several types of instrumentalities could serve as the umbrella organization for a combined mass transportation, parking, and taxi regulatory body. A department, bureau, independent board, agency, authority, or commission are potential candidates for such an organization. An organization with the power to raise its own revenues would definitely have an advantage compared to one which does not. If transit is to become a more useful segment of the transportation system, funding sufficient to provide a reasonable level of service is a requirement.

5.3 RECOMMENDATIONS

It is recommended that a new governmental instrumentality be created to oversee and regulate mass transportation services, parking, and taxis. All three elements are integral pieces of proposed means of reducing traffic congestion in the urban centers. Since coordination of these activities is critical for the recommended transportation system to function smoothly, a unified governmental structure would appear to be the most appropriate means of accomplishing this.

The selection of the appropriate governmental instrumentality to perform the oversight and regulation function is an issue for the political process to resolve. There are existing legislative restrictions on the number of Departments or Authorities allowed. However, this can be changed by legislative action. It would be preferable if the chosen instrumentality had the ability to raise its own revenues, subject to legislative approval, either through taxing or bonding authority.

It is recommended that this new transportation instrumentality be headed by an Executive Director (or Commissioner), with separate Directors for mass transportation, parking, taxi functions, and administration. It would also appear desirable to include oversight and regulation of ferry services under mass transportation. Each of the four divisions should be staffed with the needed management, planning, marketing, financial, and public relations capability to execute its responsibilities in an exemplary manner. Staffing must not be short-changed lest the DFW transit experience be repeated.

Particularly in light of recent problems, it is not recommended that the DFW transit and parking staff members be moved en masse to similar positions in this new organization. Rather, it is suggested that applications be encouraged from all qualified individuals (including but not limited to current DFW staff), and that the experience and capabilities of all applicants should be examined carefully for evidence that they could competently carry out the required duties and responsibilities. It is especially critical that top level positions be filled by individuals with proven management abilities.

The following qualifications for the Executive Director and Division Director positions are suggested:

Executive Director

Applicants should have a Bachelor's Degree in public administration, political science, engineering or transportation and 10 years of experience in transportation planning, transit operations, or public administration; at least 4 years of required experience must have been in high level management positions. A Graduate Degree in a qualifying field may be substituted on a year for year basis for lower level experience.

Director of Mass Transportation

Applicants should have a Bachelor's Degree in public administration, political science, engineering or transportation and 5 years of experience in transportation planning, transit operations, or public administration; at least 2 years of required experience must have been in high level management positions. Two years of transit operating experience is desirable. A Graduate Degree in a qualifying field may be substituted for up to one year of lower level experience.

Director of Parking

Applicants should have a Bachelor's Degree in public administration, political science, engineering or transportation and 5 years of experience in transportation planning, parking operations, parking administration or public administration; at least 2 years of required experience must have been in high level management positions. Two years of parking operations or parking administration experience is desirable. A Graduate Degree in a qualifying field may be substituted for up to one year of lower level experience.

Director of Taxi Services

Applicants should have a Bachelor's Degree in public administration, business administration, political science, or transportation and 5 years of experience in transportation planning, taxi operations, taxi service administration or public administration; at least 2 years of required experience must have been in high level management positions. A Graduate Degree in a qualifying field may be substituted for up to one year of lower level experience.

Director of Administration

Applicants should have a Bachelor's Degree in public administration or business administration, and 5 years of experience in business or public administration; at least 2 years of required experience must have been in high level management positions. A Graduate Degree in a qualifying field may be substituted for up to one year of lower level experience.

6. FUNDING

This chapter is concerned principally with transit funding. Although this report also deals with roadway and traffic engineering improvements necessary for congestion relief in the islands' urban centers, and although rough cost estimates for these improvements are provided, the additional funding needs for the DPW as a whole are not addressed. However, the discussions of alternatives for additional revenue generation in many instances are relevant to highway as well as transit systems and services.

6.1 EXISTING CONDITIONS

The Department of Public Works receives Federal funds under four UMTA Grant Programs: Section 3 (Discretionary Capital Assistance); Section 8 (Planning and Technical Assistance); Section 16(b)(2) (Capital Assistance to Private Non-Profit Organizations for Elderly and Handicapped Transportation); and Section 18 (Capital and Operating Assistance in Rural Areas).

The Department presently has active grants under each of these programs. A Section 3 grant was used to purchase buses, service vehicles, and maintenance equipment. Section 9 grants have been used for the Transit Development Plan Update, a handicapped and elderly transportation plan, a parking study, and a transit marketing study. From FY 1985 until recently, UMTA withheld action on Section 18 and Section 16(b)(2) grant applications due to non-compliance with DOT and UMTA reporting requirements on active grants. Section 18 funds, which increased to \$125,000 in FY 1988 from the previous range of \$75,000 - \$85,000, are used by the Virgin Islands to supplement local funds available for transit operating subsidies.

Since 1983, the Legislature has appropriated funds to support the private transit operators. However, this funding has not been at a level sufficient to cover operating deficits, much less to improve transit services. Table 6-1 shows the financial situation for Fiscal Years 1983 to 1987. From October 1982 through September 1987, transit operating losses totaled \$2,581,475. Since the DPW Office of Transportation's subsidies to Mannassah Bus Lines during this period totaled \$1,573,800, Mannassah is owed \$1,007,675 by the V.I. Government under the contract agreement. The full subsidy amount will not be paid until an official audit has been performed for years beginning in 1984. The deficiency in subsidy payments is claimed to be a major factor in the poor quality of transit services on St. Thomas. However, Mannassah owes an amount in the same range to the V.I. Government in unpaid taxes, unemployment insurance, rent, and license fees. This would

seem to negate the argument that the lack of subsidy payment has been responsible in large part for poor transit service.

TABLE 6-1.
TRANSIT FINANCIAL STATUS, ST. THOMAS

	1983	1984	1985	1986	1987
Operating Expense	1,372,441	1,306,355	1,507,651	1,581,849	1,546,266
Revenue	999,003	1,016,345	1,013,687	916,547	787,485
Operating Loss	373,438	289,990	493,964	665,302	758,781
Subsidy	180,000	221,464	222,336	400,000	550,000
Deficit	193,438	68,526	271,628	265,302	208,781

The total proposed DFW Road Fund budget for the District of St. Thomas and St. John was \$4,890,929 for FY 1988. The Office of Transportation was to be allocated \$1,125,731, or 23 percent of the total. Of this amount, \$800,000 was allocated for mass transit assistance. The remainder was split between personnel (\$250,903), fringe benefits (\$24,685), and operating expenses (\$41,199). If the \$800,000 is actually appropriated, there could be sufficient funds available to cover payment of the full subsidy for the first time since subsidy payments were initiated in 1983.

6.2 ALTERNATIVES

If transit system oversight remains within the DFW, prospects for sufficient funding for new buses, maintenance facilities, and service expansion would appear dim. Substantial amounts of local money will have to be made available in order to improve transit service to even a minimal level of performance. Since funds for the entire V.I. Government are very tight, it would appear that new funding sources are needed.

There are potential sources for additional funds. Added highway user fees could be imposed. A recent survey by the Advisory Commission on Intergovernmental Relations (ACIR) found that user charges were the second most favored way of raising state government revenues. An increase in gasoline and diesel fuel taxes would be the easiest to implement, as the administrative mechanism to collect them are already in place. A \$0.05 increase per gallon would raise approximately \$2.5 million. Automobile excise taxes, either on a one-time or annual basis, established according to the value of the automobile, could be imposed. User charges would be expected to be opposed by automobile owners and operators, and some may complain about the use of highway user charges for transit. It is likely that there would be strong competition between highway and transit interests for funds derived through such a tax. Funds for highway improvements are in short supply as well. Recent Road Fund budgets have been insufficient to fund badly needed roadway improvements.

Another possible source of revenue would be the imposition of taxes on such items as retail sales, meals, alcohol, and cigarettes. Alcohol and cigarette taxes were found by the ACIR survey to be the most favored way of raising state revenue. Sales and meals taxes are common in the U.S., but are not levied in the Virgin Islands. In fact, Virgin Islands' residents are among the least taxed of Americans, with no meals, sales, or local income taxes, and low property taxes. A one percent retail sales tax would raise over \$6.5 million. Nevertheless, any taxes of this nature would bear heavily upon a population with a relatively low per capita income.

The local impact could be lessened by exempting items of necessity, such as food and clothing. It also would be possible to institute the taxes only within Charlotte Amalie, thereby allowing residents to avoid them by shopping and eating outside of town. This might have an adverse effect on some store and restaurant owners in that some business would shift from Charlotte Amalie to other parts of the island. Store owners and restaurateurs also would be expected to oppose the imposition of sales, meals, or alcohol and cigarette taxes, since they would be viewed as a potential deterrent to tourism. Expenditures by tourists constitute a large portion of the Virgin Islands economy.

Property taxes generate over \$20 million per year. A 10 percent increase would bring in more than \$2 million. A relatively generous residential exemption could soften the impact on low income residents. Any amelioration measures on this or any other tax imposed would reduce the revenues generated, however, unless the percentage tax to be levied is increased.

Another potential revenue source is the sale of Government backed revenue bonds to secure funds for capital expenditures. This approach is attractive in that it minimizes the amount of local money that has to be put up for the initiation of a project, but debt service will increase subsequent required outlays. Highway projects, new bus purchases, and the construction of a new maintenance facility all could be funded through this mechanism.

The most appealing revenue generation mechanism would be one which would generate substantial revenues while minimizing the impact on V.I. residents, especially those with low incomes. This could be accomplished by deriving revenues from tourists. The type and extent of revenues extracted from visitors must be weighed carefully, lest the taxes imposed reduce visitor expenditures. The Virgin Islands are in an advantageous position to impose such taxes, however, due to prices which are very competitive with those of other islands and the favorable treatment accorded U.S. citizens bringing purchases back into the U.S.

6.3 RECOMMENDATIONS

Added revenues for transit are necessary if transit is to become a viable mode of transportation in the Virgin Islands. Without an infusion of new facilities and equipment, transit probably will soon cease to exist on St. Thomas, as has happened already on St. Croix. It is perilously close to that stage now. Stop-gap measures, such as the Mahogany Run vehicles, are

not the ultimate solution. The definitive test of the Virgin Islands Government's commitment to transit will be whether or not sufficient funds will be provided to run a decent transit system on a continuing basis.

An increase in funding for highways also is needed to help reduce traffic congestion and to keep the highway infrastructure from further deterioration. Large amounts of local money will be needed if new roadways are to be constructed along the waterfront or around Raphune Hill.

No attempt is made here to recommend the type of revenue generation mechanisms that ought to be implemented. This decision should be made through the political process. Such a decision should be made only after careful consideration of the impacts on individuals and on the economy as a whole. An analysis of this nature was beyond the scope of this study.

7. LEGISLATION

In order to implement the recommendations contained in this report, two major legislative actions are required: (1) creation of a governmental instrumentality to oversee and regulate mass transportation, parking, and taxi services; and (2) funding legislation.

7.1 NEW TRANSPORTATION ORGANIZATION

The new governmental transportation instrumentality created should be given broad powers to plan, implement, coordinate, and regulate non-highway transportation functions, and to receive and dispense Federal funds. Any revenues generated by one division could be used to offset expenses of the other divisions. If this organization had taxing or bonding authority, separate funding legislation might not be necessary.

The transportation organization should have three technical divisions or units, plus an administrative division.

- (1) A mass transportation division -- This division should oversee transit and ferry services. Its responsibilities should include: establishing routes and schedules; overseeing and coordinating transit and ferry services; estimating funding requirements; authorizing the payment of subsidies to contract providers; and recommending changes in fare structure to the legislature.
- (2) A parking division -- This division should oversee both on-street and off-street parking, paid as well as free. It should have the responsibility for recommending the location and construction of additional lots and parking structures. It should have the ability to impose time limits on parking, and set the fine structures for parking violations. Giving this division the responsibility for enforcement of parking regulations would permit the police department to better use their limited personnel. Park-and-ride service should be a joint effort with the mass transportation division and the taxi division.
- (3) A taxi division -- This division would have the same basic authority as the existing taxi commission. However, in order to implement the recommendations for use of taxis to provide limited transit-type service, this division should have the authority to negotiate service agreements with taxi associations or operators.

This activity would be conducted in close cooperation with the mass transportation division.

- (4) An administrative unit -- This unit would be responsible for personnel, clerical, financial, and contractual functions.

7.2 FUNDING

Unless the new transportation organization has its own taxing or bonding authority, or produces sufficient revenue to fund its own functions and adequate transportation services, new funding legislation will be required. It is doubtful that sufficient revenues could be generated internally to cover operational expenses and needed capital expenditures. Revenues could come from a number of sources, as discussed in Chapter 6. Funding mechanisms should be chosen in close cooperation with the legislature and the administration. Funding should be adequate to cover highway needs as well.

APPENDIX A. METHODOLOGY FOR CORDON COUNT ESTIMATION

A cordon count around the center of Charlotte Amalie was performed to obtain information on the number of vehicles and people traveling to and from the center each day. This information is valuable for any major traffic study because it shows the baseline, relative demands, and importance of the various modes of transportation.

A.1 SAMPLE DESIGN

The cordon count was conducted on a sample basis. The count took place over a period of two days: February 2 and 3, 1988. These days were chosen because they represented typical high-season, mid-week days when demands for transportation services would be at a maximum. On February 2, nine cruise ships were in the harbor, and on February 3, seven ships were in port, contributing thousands of visitors to the city.

Eight major arteries into and out of Charlotte Amalie were identified, as shown on the map in Figure 2-29 of the main report. A person was stationed at each location for a total of 12 hours over the two-day period, covering the hours from 6 am to 6 pm. Several minor streets were not covered, but observations of those locations confirmed that they were little-used roads due to their width, grade or continuity, and that they contributed little to the daily traffic to and from the city.

Sampling was conducted at each location by counting the traffic in 15-minute intervals, alternating the direction of counting every 15 minutes throughout the period of the cordon count. Thus, approximately 30 minutes of traffic counts were obtained per hour in each direction. Both the type of vehicle and the number of occupants per vehicle were recorded.

A.2 EXPANDING THE SAMPLE DATA

Data obtained from the cordon count were not always evenly spaced at 15-minute intervals, nor did they always cover the full 15 minutes, for a number of reasons: rest breaks, late arrival at the count location, rain interruptions, time expended changing vantage points, etc. Consequently, a graphical method was used for expanding the sample points to cover the full counting period. Data points were plotted according to the actual times they represented, and 15-minute counts were read off the graphs by mode. Peak

period, peak hour, and 12-hour counts were then calculated for each location, as shown in Tables A-1 through A-4.

The 12-hour estimates were then expanded to 24-hour estimates using factors derived from data collected in 1981 by URS Consultants, Inc. using automatic traffic counters. URS locations corresponded with the cordon count locations (except for the waterfront), so that appropriate daytime/nighttime factors could be obtained for each location. These were applied to the 12-hour cordon count results to produce 24-hour estimates.

An exception to the above method was made for the transit bus counts. Since a companion data collection effort was conducted to obtain bus ridership counts for all buses and all runs throughout an entire day, these data were thought to be more reliable than the sample data. Because transit buses comprise such a small portion of overall traffic and tend to bunch up, a 15-minute sampling interval may miss bus groups and underrepresent buses in the sample. A comparison of the census with the cordon count results did, in fact, confirm this occurrence.

TABLE A-1.
NUMBER OF VEHICLES ENTERING CHARLOTTE AMALIE
BY MODE OF TRAVEL AND CORDON COUNT LOCATION

	<u>TOTAL</u>	<u>CAR</u>	<u>TAXI</u>	<u>TRUCK</u>	<u>BUS</u>	<u>OTHER</u>
VETERANS DRIVE- WINDWARD PASSAGE						
Peak AM Period	2238	1687	218	276	20	37
Peak AM Hour	1051	848	83	104	10	6
Peak PM Period	2179	1566	284	301	14	14
Peak PM Hour	841	610	101	116	10	4
KRONPRINDSENS						
Peak AM Period	982	804	74	98	0	6
Peak AM Hour	426	360	22	39	0	5
Peak PM Period	831	665	76	90	0	0
Peak PM Hour	346	281	30	35	0	0
SOLBERG						
Peak AM Period	370	289	9	70	0	2
Peak AM Hour	228	169	7	50	0	2
Peak PM Period	166	114	19	32	0	1
Peak PM Hour	61	41	8	11	0	1
MAFOLIE						
Peak AM Period	1526	1040	87	384	0	15
Peak AM Hour	766	540	43	179	0	4
Peak PM Period	1046	671	126	241	0	8
Peak PM Hour	402	262	56	84	0	0
DE BELTJEN ROAD						
Peak AM Period	675	501	78	70	22	4
Peak AM Hour	302	244	14	34	8	2
Peak PM Period	961	710	140	76	20	15
Peak PM Hour	557	408	92	33	11	13
VETERANS DRIVE- FEDERAL BUILDING						
Peak AM Period	2027	1461	214	322	7	23
Peak AM Hour	885	682	67	124	2	10
Peak PM Period	1761	1171	273	287	6	24
Peak PM Hour	711	505	94	94	5	13
SUGAR ESTATE ROAD						
Peak AM Period	965	812	36	112	0	5
Peak AM Hour	408	354	8	42	0	4
Peak PM Period	926	743	73	104	0	6
Peak PM Hour	410	341	29	38	0	2

TABLE A-2.
NUMBER OF PEOPLE ENTERING CHARLOTTE AMALIE
BY MODE OF TRAVEL AND CORDON COUNT LOCATION

	<u>TOTAL</u>	<u>CAR</u>	<u>TAXI</u>	<u>TRUCK</u>	<u>BUS</u>	<u>OTHER</u>	<u>WALK</u>
VETERANS DRIVE- WINDWARD PASSAGE							
Peak AM Period	4353	2762	499	416	387	30	259
Peak AM Hour	2046	1487	117	164	209	13	56
Peak PM Period	4000	2339	898	433	164	40	126
Peak PM Hour	1603	918	357	165	86	20	57
KRONPRINDSENS							
Peak AM Period	2081	1521	167	178	0	3	212
Peak AM Hour	1015	777	60	75	0	2	101
Peak PM Period	1592	1106	161	123	0	6	196
Peak PM Hour	644	431	64	53	0	3	93
SOLBERG							
Peak AM Period	674	504	29	111	0	2	28
Peak AM Hour	451	320	26	84	0	1	20
Peak PM Period	293	194	45	45	0	0	9
Peak PM Hour	133	94	14	23	0	0	2
MAFOLIE							
Peak AM Period	3022	2054	255	614	0	82	17
Peak AM Hour	1613	1155	114	331	0	8	5
Peak PM Period	2310	1032	813	411	0	8	46
Peak PM Hour	871	398	330	128	0	0	15
DE BELTJEN ROAD							
Peak AM Period	1315	635	320	99	230	6	25
Peak AM Hour	557	341	23	52	128	2	11
Peak PM Period	1788	950	466	104	224	15	29
Peak PM Hour	1010	589	294	47	60	13	7
VETERANS DRIVE- FEDERAL BUILDING							
Peak AM Period	4047	2495	731	532	174	55	60
Peak AM Hour	1748	1225	168	253	68	28	6
Peak PM Period	3673	1949	937	574	86	45	82
Peak PM Hour	1446	819	301	202	75	22	27
SUGAR ESTATE ROAD							
Peak AM Period	1770	1362	108	193	0	7	100
Peak AM Hour	791	626	22	82	0	7	54
Peak PM Period	1924	1227	204	170	0	12	311
Peak PM Hour	712	526	82	63	0	3	38

TABLE A-3.
NUMBER OF VEHICLES LEAVING CHARLOTTE AMALIE
BY MODE OF TRAVEL AND CORDON COUNT LOCATION

	<u>TOTAL</u>	<u>CAR</u>	<u>TAXI</u>	<u>TRUCK</u>	<u>BUS</u>	<u>OTHER</u>
VETERANS DRIVE- WINDWARD PASSAGE						
Peak AM Period	2523	1964	234	272	19	34
Peak AM Hour	1179	975	81	104	6	13
Peak PM Period	2588	1943	271	339	17	18
Peak PM Hour	1089	862	111	99	6	11
KRONPRINDSENS						
Peak AM Period	956	743	85	112	0	16
Peak AM Hour	464	357	36	56	0	15
Peak PM Period	968	755	98	111	0	4
Peak PM Hour	416	353	22	40	0	1
SOLBERG						
Peak AM Period	125	77	14	34	0	0
Peak AM Hour	57	34	4	19	0	0
Peak PM Period	338	255	23	55	0	5
Peak PM Hour	184	144	11	27	0	2
MAFOLIE						
Peak AM Period	633	436	56	139	0	2
Peak AM Hour	313	225	21	65	0	2
Peak PM Period	1639	1129	186	316	0	8
Peak PM Hour	837	616	62	159	0	0
DE BELTJEN ROAD						
Peak AM Period	625	493	61	67	0	4
Peak AM Hour	287	241	15	29	0	2
Peak PM Period	603	405	118	75	0	5
Peak PM Hour	215	151	41	20	0	3
VETERANS DRIVE- FEDERAL BUILDING						
Peak AM Period	1655	1097	200	334	0	24
Peak AM Hour	670	455	73	131	0	11
Peak PM Period	1726	1140	335	229	0	22
Peak PM Hour	683	497	105	72	0	9
SUGAR ESTATE ROAD						
Peak AM Period	1038	816	41	148	21	12
Peak AM Hour	423	344	14	47	11	7
Peak PM Period	1309	1064	89	122	17	17
Peak PM Hour	563	465	38	42	9	9

TABLE A-4.
NUMBER OF PEOPLE LEAVING CHARLOTTE AMALIE
BY MODE OF TRAVEL AND CORDON COUNT LOCATION

	<u>TOTAL</u>	<u>CAR</u>	<u>TAXI</u>	<u>TRUCK</u>	<u>BUS</u>	<u>OTHER</u>	<u>WALK</u>
VETERANS DRIVE- WINDWARD PASSAGE							
Peak AM Period	4316	2966	445	392	298	38	177
Peak AM Hour	2055	1522	167	156	115	8	87
Peak PM Period	5311	3209	918	553	316	45	270
Peak PM Hour	2272	1464	466	157	63	13	109
KRONPRINDSENS							
Peak AM Period	1773	1108	157	189	0	65	254
Peak AM Hour	931	559	59	87	0	61	165
Peak PM Period	2443	1427	401	195	0	7	413
Peak PM Hour	1012	693	61	65	0	4	189
SOLBERG							
Peak AM Period	192	100	25	65	0	1	1
Peak AM Hour	93	45	8	40	0	0	0
Peak PM Period	617	434	77	93	0	6	7
Peak PM Hour	351	251	45	51	0	2	2
MAFOLIE							
Peak AM Period	1052	605	190	251	0	1	5
Peak AM Hour	475	307	42	125	0	0	1
Peak PM Period	3398	2001	764	557	0	46	30
Peak PM Hour	1394	895	261	238	0	0	0
DE BELTJEN ROAD							
Peak AM Period	962	614	206	95	0	12	35
Peak AM Hour	406	316	32	41	0	0	17
Peak PM Period	952	545	271	94	0	12	30
Peak PM Hour	337	206	97	23	0	0	11
VETERANS DRIVE- FEDERAL BUILDING							
Peak AM Period	2687	1635	434	543	0	60	15
Peak AM Hour	1116	693	165	230	0	28	0
Peak PM Period	4137	2049	1458	406	0	23	201
Peak PM Hour	1533	921	428	124	0	10	50
SUGAR ESTATE ROAD							
Peak AM Period	2538	1397	82	243	443	48	325
Peak AM Hour	1248	688	37	77	253	23	170
Peak PM Period	3084	1872	225	230	517	57	183
Peak PM Hour	1356	818	83	85	237	46	87

APPENDIX B. ONE-WAY CIRCULATION CONCEPTS FOR CHARLOTTE AMALIE

Various one-way routing plans have been proposed by the League of Women Voters and other groups as an alternate to a new four-lane highway across the Charlotte Amalie Harbor. These plans have the intuitive appeal of low cost, minimum disruption, and preservation of the Charlotte Amalie waterfront.

This appendix analyzes some of the traffic impacts of: (1) the initially proposed plan, and (2) a modification of it. These plans are shown in Figures B-1 and B-2 respectively.

Initial Plan. The initial one-way loop plan (Figure B-1) developed a one-way eastbound link from Veterans Drive to Norre Gade across the Emancipation Gardens area. Norre Gade and De Beltjen Road would become one-way eastbound to Lovers Lane, and Veterans Drive would become one-way westbound. A clockwise traffic loop was developed using Lovers Lane, Sugar Estate Road, Centerline Road, and Long Bay Road. In addition, Dronningens Gade and Sugar Estate Road were developed as a one-way eastbound route.

This concept eliminates interaction conflicts at the intersections along Sugar Estate Road and Long Bay Road by creating a "steady flow system". The one-way routing in the central area facilitates right turns at Hospital Gade.

The plan, however, has several disadvantages:

1. The eastern one-way "loop" would result in circuitous travel to reach the Charlotte Amalie High School, Post Office, and Hospital. It would cause a diversion of traffic onto First Avenue and into the adjoining neighborhoods.
2. All access from the east and north would have to enter the center of town via Veterans Drive. This results in indirect access to westbound Main Street.
3. De Beltjen Road has steep grades and narrow travel lanes (9 feet in some places). It is not equivalent to Veterans Drive and not well suited for trucks.
4. To facilitate eastbound access from Norre Gade to De Beltjen Road, the turning radius in the southwest corner of this intersection would have to be expanded.



FIGURE B-1. INITIAL ONE-WAY PLAN



FIGURE B-2. MODIFIED ONE-WAY SYSTEM

5. The heavy eastbound Veterans Drive traffic would be required to flow through the Emancipation Gardens - Fort Christian area.
6. The Norre Gade approach to Hospital Gade would be overloaded, even with all parking removed. Its two lanes would have to carry over 1,300 vehicles per hour during busy periods of the day.
7. Finally, the plan does not increase the number of moving lanes between Fort Christian and Lovers Lane. It shifts traffic flows, rather than increasing capacity.

Accordingly, it is not recommended as an alternative to expanding Veterans Drive.

Modified One-way System. A modified one-way routing system is shown in Figure B-2. This system builds upon the early action street circulation proposals. It differs from the loop scheme in that: (1) it does not call for a one-way "loop," and (2) it calls for one-way northbound operation on De Beltjen Road from Norre Gade to Dronningens Gade.

This concept eliminates the problems of a "loop". It also maintains the direct access into the center of town via Sugar Estate Road. It substantially simplifies the Veterans Drive - Lovers Lane intersection. In all other respects, it is similar to the initial concept. Thus, it also fails to provide the needed additional east west traffic capacity. Accordingly, the modified one-way system also is not recommended as an alternative to the expansion of Veterans Drive.

APPENDIX C. TRANSPORTATION LEGISLATION



THE VIRGIN ISLANDS OF THE UNITED STATES

OFFICE OF THE GOVERNOR

CHARLOTTE AMALIE, ST. THOMAS 00001

PUBLIC WORKS DEPT.
31 JAN 15 AM 8:50

EXECUTIVE ORDER NO. 244 - 1981

TO ESTABLISH THE VIRGIN ISLANDS OFFICE OF TRANSPORTATION
WITHIN THE DEPARTMENT OF PUBLIC WORKS

WHEREAS the Virgin Islands Legislature, through Act No. 3903 (1976) and Act No. 4478 (1980), has recognized the need for development of a Virgin Islands transit program, and has appropriated funds for such purpose; and

WHEREAS the Department of Public Works was identified as the agency authorized to pursue the development of a transit program; and

WHEREAS Public Transportation in the Virgin Islands suffers from a lack of direction and regulation, seriously limiting beneficial services which would otherwise be available to the Community; and

WHEREAS responsibility for the oversight and regulation of transportation in the Virgin Islands is presently delegated among five government agencies (Department of Public Works, Public Services Commission, The Taxicab Commission, Department of Public Safety, and Office of Highway Safety) with no proper coordination; and

WHEREAS lack of delivery of effective public transportation services is contributing to numerous parking problems, highway congestion, vehicular and pedestrian accidents, and an increase in motor vehicle population beyond island land mass limitations; and

WHEREAS, improper equipment, improper routing and scheduling of bus transportation, improper care and maintenance of equipment, lack of bus stops and signs, and a lack of published information all contribute to a fast deteriorating public transportation system; and

WHEREAS the existing public transportation systems on St. Thomas and St. Croix will eventually fail without Government assistance, much to the public detriment; NOW THEREFORE,

By virtue of the authority vested in me by Section 11 of the Revised Organic Act of the Virgin Islands, it is hereby ordered as follows:

Section 1. There is established within the Department of Public Works the Virgin Islands Office of Transportation (hereinafter the "Office" or "VIOT"). The office shall be headed by a Director and be staffed as deemed appropriate by the Commissioner. The Office is established for the following purposes, for which it shall have full power and authority:

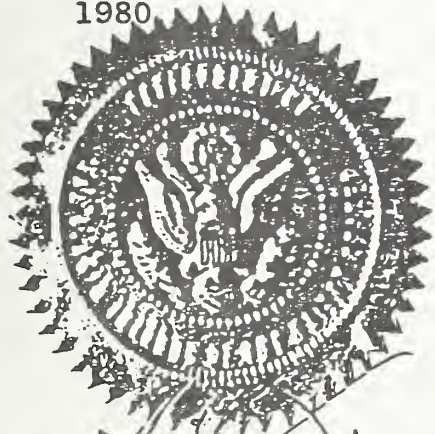
- (a) to conduct transportation planning for implementation by the Department of Public Works;
- (b) to conduct a continuing analysis of Virgin Islands transit systems and to prepare a program for transit development;
- (c) to implement the Wilbur Smith "Virgin Islands Mass Transit Study" for maintaining and improving public transportation services in the Virgin Islands, and to update the study as needed;
- (d) to recommend contracts with qualified private firms where appropriate to operate transportation services in the Virgin Islands;
- (e) to prepare applications, in conjunction with the Office of the Federal Programs Coordinator, for submission to the Urban Mass Transportation Administration and/or Federal Highway Administration for available assistance to improve transportation services; and
- (f) to recommend and formulate policies, legislation and programs for improving and supporting (financially and otherwise) transportation systems in the Virgin Islands in order to insure mass transit service development, and to insure coordination with the Virgin Islands Planning Office, Highway Planning and Research

Office, Virgin Islands Taxicab Commission and the Department of Public Safety in all activities.

Section 2. The VIOT shall annually prepare a budget to be included with the departmental budget to provide funds for VIOT personnel, office, equipment and supplies, for construction of needed transportation facilities and other improvements (such as parking areas, bus stops, bus terminals, equipment garages and maintenance areas), training, and for such other purposes as may be necessary to carry out the programs approved. The VIOT budget shall be requested as an appropriation from the Road Fund (33 V.I.C § 3002) each year. The budget shall clearly state the objectives to be attained and the expected measureable results, and shall be accompanied by a report of the results of operations in the previous fiscal year.

Section 3. The Commissioner of Public Works is hereby directed to expeditiously implement this Executive Order and, in furtherance thereof, is authorized to expend funds appropriated in Act No. 4478 for the purposes stated in Acts No. 3903 and 4478.

IN WITNESS WHEREOF I have hereunto set my hand and caused the Seal of the Government of the Virgin Islands of the United States to be affixed at Charlotte Amalie, St. Thomas, Virgin Islands, this 31st day of December, A.D. 1980



Henry A. Millin
HENRY A. MILLIN
Lieutenant Governor

Juan Luis
JUAN LUIS
Governor

Chapter 37. Automobiles for Hire

SECTION ANALYSIS

- 401. Registration and licenses; operators' badges; identification cards
- 401a. Issuance of badge and identification card without compliance with requirements; number of operators; renewal
- 402. Operation of automobiles for hire
- 402a. Classification of taxi service
- 403. Number of passengers
- 404. Tariff of automobiles for hire
- 405. Maximum rates for service of motor vehicles operated for hire in Virgin Islands
- 406-408. [Repealed.]

HISTORY

Franchises for bus services in St. Croix. Grant of exclusive franchises for bus services in St. Croix, see Act June 11, 1958, No. 304, Sess. L. 1958, p. 33, set out as a note under section 10 of Title 30.

§ 401. Registration and licenses; operators' badges; identification cards

(a) No person may operate an automobile for hire until he has applied for and been issued an operator's badge and an identification card by the Commissioner of Public Safety, and provided, however, his application has been approved by the Virgin Islands Taxicab Commission. The Commissioner may not issue an operator's badge or an identification card to any person who has not complied with the pertinent provisions of chapters ~~33 and~~ 35 of this title or, in the case of every applicant who has not been issued such a badge and card prior to April 17, 1967, who does not comply with or satisfy each of the following requirements and qualifications:

(1) An applicant must be either a citizen of the United States or an immigrant alien admitted to the United States for permanent residence under the pertinent provisions of the Immigration and Nationality Act, as amended (8 U.S.C. §§ 1101 et seq.), except that any person applying for the renewal of a valid badge and card for a new license year who does not meet the requirements of this subdivision shall be issued a badge and card if application for status as an immigrant alien has been properly filed and is pending. In the event that such application lapses or is denied, the current badge and card shall immediately become invalid and void.

(2) An applicant, if applying for his first badge and card, shall not be younger than 21 years of age and not older than 65 years of age.

(3) An applicant must have established a continuous and unbroken residence in the Virgin Islands of the United States at least one year prior to application.

(4) An applicant must have been a licensed operator for at least three years prior to application, except that in the case of a veteran he must have been a licensed operator for at least one year; Provided, however, That the Commissioner may refuse to issue a badge and card to an applicant in any case where he determines that the applicant did not have a good driving record in every jurisdiction in which he was licensed during such three-year period. The Commissioner shall base his determination upon the driving record of the applicant in the Virgin Islands and upon certified statements from the police officials in each other jurisdiction in which the applicant was licensed, which statements shall be obtained by written request by the Commissioner and shall specify every offense involving the operation or use of motor vehicles, except parking offenses. In making his determination of the driving ability and reliability of the applicant under this subdivision, the Commissioner shall consider the public safety and welfare of the Virgin Islands, and he shall not be limited by the provisions of section 547 of this title. In any case where the Commissioner refuses to issue a badge or a card because of his determination that the applicant did not have a good driving record during the three-year period, the applicant may request a hearing and a reconsideration by the Commissioner or he may appeal to the Municipal Court. Pending the receipt of any information necessary to a determination under this subdivision, the Commissioner may issue a badge and identification card on a revocable and temporary basis to any applicant who submits a signed affidavit swearing or affirming that he has had a good driving record, as defined herein, during the period in question.

(5) An applicant, if applying for his first badge and card, must receive a passing score in any written exam or driving test prescribed by the Commissioner.

(b) Operators' badges shall be of the type provided by the Commissioner and shall be purchased from him by the applicant. They shall be effective for a license year expiring on the fifteenth day of February following the date of issuance. As far as practicable, the

same numbered badges shall be issued operators in succeeding years.

(c) The badge shall show the number of the operator's license and shall be conspicuously worn by the operator at all times while operating or in charge of the automobile. Operators' badges shall not be transferred.

(d) In addition to the operators' badge, every person operating an automobile for hire shall, at all times while operating or in charge of such automobile, carry posted on the right hand (passenger side) sun visor the identification card required by subsection (a) of this section. The identification card shall bear a recent photograph of the operator, his name printed in clear characters, and the number of the operator's license. The operator shall furnish the photograph in such size as shall be required by the Commissioner of Public Safety, and the card shall be of the size and type as prescribed by the Commissioner. The identification card shall be legible and shall be visible to the passengers at all times, unless the passenger requests or permits the operator to alter the position of the sun visor.

(e) After June 1, 1967, each operator's badge and identification card shall designate the island for which it is issued and shall be effective only for the island designated and may not be transferred to another person.

(f) Any person who operates an automobile for hire without a valid operators' badge and identification card shall be fined in an amount not exceeding \$50 for each offense.

(g) Any numerical limitations imposed in accordance with the provisions of this section shall not apply in the case of any person who shall establish to the satisfaction of the Commissioner that he is an honorably discharged veteran of the Armed Forces of the United States.

(1) he is a veteran of the Armed Forces of the United States, and

(2) he held a valid and effective license as an operator of an automobile for hire in the Virgin Islands at any time within the period of the twelve (12) months immediately prior to his entry into the Armed Forces.

A person who obtains and holds a valid operators' badge and a valid identification card under this subsection may also obtain a registration license and license plates for a motor vehicle, which otherwise qualifies, as an automobile for hire, notwithstanding any outstanding numerical limitation thereon to the contrary; Provided,

That this provision does not apply to a person who at any time on or after the effective date of this Act, is an owner of validly registered and licensed automobile for hire.—Amended June 3, 1960, No. 575, § 1, Sess. L. 1960, p. 76; June 7, 1960, No. 583, § 3, Sess. L. 1960, p. 83; Dec. 1, 1965, No. 1545, Sess. L. 1965, Pt. I, p. 544; April 17, 1967, No. 1908, § 2, Sess. L. 1967, p. 93-95; June 1, 1967, No. 1990, § 4, Sess. L. 1967, p. 328; Oct. 11, 1967, No. 2066, § 2, Sess. L. 1967, p. 474; Dec. 20, 1967, No. 2088, § 1, Sess. L. 1967, p. 539; March 6, 1968, No. 2110, § 2, Sess. L. 1968, Pt. I, p. 20; July 18, 1968, No. 2309, § 2, Sess. L. 1968, Pt. II, p. 270; March 16, 1970, No. 2666, Sess. L. 1970, p. 49; June 9, 1971, No. 3069, § 2, Sess. L. 1971, p. 292; July 29, 1971, No. 3081, §§ 1, 2, Sess. L. 1971, p. 308, 309.

HISTORY

Codification. Act March 6, 1968, No. 2110, § 2, provided: "Section 401 of Title 20, Virgin Islands Code as amended by the addition thereto of the following new subsection: (b)". As said section contained subsections (a)-(g), such subsection was added as subsection (h). The 1968 amendment to such subsection by N.C. 2309 was executed upon such subsection (h).

Amendments—1971. Subsection (a): Act No. 3069 added proviso in first sentence.

Subsection (a)(4): Act No. 3081 added exception relating to veterans in first sentence.

Subsection (g): Act No. 3081 amended first paragraph generally.

—1970. Subsection (f): Repealed.

Subsection (g): Designated existing subsection as subsection (f).

Subsection (h): Designated existing subsection as subsection (g).

—1968. Subsection (b) as added by Act March 6, 1968, No. 2110 was redesignated as "(e)" by Act July 18, 1968, No. 2309, § 2, and the proviso added at the end of that subsection. See Revision note below.

—1967. Subsection (a)(1): Act Dec. 20, 1967, No. 2088, § 1, added proviso beginning with the word "except".

Subsection (a): Act April 17, 1967, No. 1908, § 2, added provisions setting forth requirements with respect to applicants who had not been issued badges or cards prior to April 17, 1967.

Subsection (a)(4): Act Oct. 11, 1967, No. 2066, § 2, added new sentence at end relating to the Commissioner's issuance of a temporary badge and identification card to an applicant signing sworn affidavit that he has had a good driving record.

Subsection (d): Act No. 1908 substituted provisions for posting the identification card required by subsection (a) on the right hand (passenger side) sun visor for provisions which required that it be posted "in a conspicuous place" and which specified that the back of the front seat or on the instrument panel should be deemed a conspicuous place; and inserted sentence requiring legibility and visibility at all times, unless passenger requests or permits alteration of the position of the sun visor.

Subsections (e)-(g): Added by Act June 1, 1967, No. 1990, § 4.

—1965. Subsection (a): Added proviso at end.

—1960. Subsection (a): Act No. 575 inserted reference to identification card. Subsection (b): Act No. 583 provided that licenses shall be effective for a license year expiring on the fifteenth day of February following date of issuance, rather than, as previously provided, "valid only during the calendar year marked thereon".

Subsection (d): Added by Act No. 575.

Effective date of 1968 amendment. Act March 6, 1968, No. 2110, § 3, provided in part: "The provisions of sections 1 and 2 of this Act shall become effective simultaneously upon the approval of this Act by the Governor".

Effective date of 1967 amendments. Amendment of this section by Act April 17, 1967, No. 1908, as effective April 17, 1967, see section 6 of such Act, set out in note under section 334 of this title.

Section 5 of Act Oct. 11, 1967, No. 2066, Sess. L. 1967, p. 476, provided: "The provisions of sections 1, 2 and 3 of this Act [amending this section and section 402 of this title] shall become effective on the date of approval by the Governor [October 11, 1967]. The provisions of section 4 of this Act [amending section 405 (Schedule II) of this title] shall become effective on Nov. 1, 1967."

Effective date of 1960 amendment. Section 2 of Act June 3, 1960, cited above, provided that such Act, amending subsection (a), and adding subsection (d), "shall become effective January 1, 1961".

Revision note. Based on Ord. Col. C. St. T. and St. J. app. Feb. 14, 1930, § 13. St. Croix had no provisions on this subject. Changes were made in phraseology.

Automobiles for hire by tour or travel agency. Act Oct. 11, 1967, No. 2066, § 1, provided that: "Regardless of whether a person complies with or satisfies the requirements and qualifications set forth in subdivisions (1) and (3) of subsection (a), section 401, Title 20, Virgin Islands Code, the Commissioner shall issue a special and distinguishing badge and a special and distinguishing identification card to each person who, following the effective date of this section [October 11, 1967] and prior to January 1, 1968, applies under this section 401 for a badge and card as an operator, on the Island of St. Croix, of an automobile for hire owned by a tour or travel agency licensed under the provisions of Chapter 9, Title 27 of this code and to be operated exclusively for the purposes of conducting tours, and who meets the other requirements of the law; Provided, however, That the Commissioner may not renew the badge or identification card issued under this section for any person, as required by subsection (b) of said section 401, unless such person, prior to January 15, 1968, either is a citizen of the United States, an immigrant alien admitted to the United States for permanent residence, or has applied for admission as an immigrant alien to the United States for permanent residence pursuant to the pertinent provisions of the United States Immigration and Nationality Act, as amended (8 U.S.C. §§ 1101 et seq.). No badge or card issued or renewed pursuant to this section shall authorize or entitle the holder to operate any type of automobile for hire other than one owned by a tour or travel agency operated exclusively for the purposes of conducting tours unless such person meets the requirements set forth in subdivisions (1) and (3) of subsection (a) of said section 401. The badge and card issued or renewed pursuant to this section to any person whose application for admission as an immigrant alien to the United States for permanent residency is either denied or not favorably acted upon by January 1, 1969, shall be null and void."

Photographs of operators. Text of public notice relating to photographs of operators of motor vehicles for hire, issued under authority of this section, see Title 20, V.I. Rules and Reg., § 401-1.

ANNOTATIONS

1. **Franchise agreements.** Exclusive franchise given taxicab company by government of Virgin Islands which operated to prevent other operator of taxi service from picking up passengers at airport under a package tour contract with foreign corporation was void as so applied as being in violation of the commerce clause of the federal constitution. *Southerland v. St. Croix Taxicab Assoc.*, C.A.3d 1963, 4 V.I. 397, 315 F.2d 364.

2. **Veterans.** The numerical limitations imposed by this section do not apply to persons who are veterans of the Armed Forces of United States, irrespective of when this military service occurred or when the veterans were released from military service and who in addition were legally authorized to operate an automobile for hire at any time during the 12 months prior to their entry into the Armed Forces. 6 V.I.Op.A.G. 19.

§ 401a. Issuance of badge and identification card without compliance with requirements; number of operators; renewal

The Commissioner of Public Safety shall issue a badge and identification card to each person who applies under section 401, Title 20, Virgin Islands Code, for his first badge and card as an operator of an automobile for hire licensed and registered as such in the name of a person who, prior to the effective date of this Act, has five (5) or more motor vehicles registered and licensed as automobiles for hire in his name, regardless of whether the applicant complies with or satisfies the requirements and qualifications set forth in subdivisions (1) and (3) of subsection (a) of said section 401; Provided, however, That the number of operators, for any person, at any particular time, who have not met any or all of said requirements and qualifications may not exceed ten (10) or the number of automobiles for hire registered as such in the person's name at that time, whichever is the less; And provided, further, That the Commissioner may not renew the badge or identification card issued under this section to any person who is not either a United States citizen or an immigrant alien, as defined, unless prior to the final date for renewal such person has applied for admission as an immigrant alien to the United States. The badge and card issued under this section to any person not meeting any or all of the requirements and qualifications of said subdivisions (1) and (3) shall be special and distinguished from other badges and cards for operators of automobiles for hire, and no such special badge or card may authorize or entitle the holder to operate any type of automobile for hire other than one registered in the name of either the person under whose quota the holder was issued the badge and card or the successor of such person. ~~Nothing contained in this section shall be deemed to affect any numerical limitation imposed under or any priority established for the provi-~~

sions of subsections (e), (f), and (g) of said section 401.—Dec. 20, 1967, No. 2088, § 2, Sess. L. 1967, p. 539, 540.

§ 402. Operation of automobiles for hire

(a) Operators of automobiles for hire shall be decently attired and shall be polite to passengers.

(b) Automobiles operated for hire shall be maintained in a clean condition.

(c) Articles mislaid by passengers in automobiles for hire shall be given to the passengers or turned in to the office of the Commissioner of Public Safety by the operators as soon as possible.

(d) In a conspicuous place on the front windshield of every automobile for hire shall be posted a sign four (4) inches high and eight (8) inches wide, bearing the word "Taxi"; Provided, That in lieu of such sign, an automobile for hire may carry a dome light or similar lighted sign bearing the word "Taxi", which dome light shall be lighted when the automobile is on duty, but not occupied. Beginning July 1, 1971, every automobile for hire shall carry lights or a lighted sign installed in a position authorized by the Commissioner of Public Safety pursuant to rules and regulations, which shall be lighted when the automobile is on duty, but not occupied. Every automobile for hire shall additionally have on its front windshield a sign three (3) inches high and six (6) inches wide with the words "On Duty" and "Off Duty" on opposite sides. The side which applies shall be displayed by the operator towards the front of the automobile at all times. Provided, however, that the provisions of this subsection shall not apply to any automobile for hire owned by a tour or travel agency licensed under the provisions of chapter 9, Title 27 of this code and operated exclusively for the purpose of conducting tours.

(e) While on duty, no operator of an automobile for hire may smoke in such automobile, sit in seats provided for passengers, or permit others who are not passengers to do so. While off duty, no operator of an automobile for hire may park such automobile in any space reserved for automobiles for hire. When an automobile for hire is parked in such a space, the operator may not wash or repair the automobile, except in case of emergency.

(f) Upon tender of cash fare, operators or automobiles for hire while on duty on the public streets shall accept all public hire jobs which are proffered to them and shall not discriminate against any prospective passenger. No operator may charge a rate to any passenger in excess of the maximum rates established under the provi-

sions of section 405 of this title. An operator may refuse to accept as a passenger any person in an intoxicated state.

(g) Any person who violates any provision of this section or any rule or regulation of the Taxicab Commission shall be subject to an administrative fine and/or penalty imposed by said Commission. A fine and/or penalty so imposed shall not exceed \$1,000 or the revocation of the operator's badge and automobile for hire plates. No such fine or penalty shall be imposed without previous notice and an opportunity for a fair hearing.—Amended April 17, 1967, No. 1908, § 3, Sess. L. 1967, p. 95, 96; Oct. 11, 1967, No. 2066, § 3, Sess. L. 1967, p. 475; Jan. 16, 1970, No. 2609, Sess. L. 1969, p. 425, June 17, 1970, No. 2754, Sess. L. 1970, p. 182; Dec. 30, 1970, No. 2900, Sess. L. 1970, p. 387; June 9, 1971, No. 3069, § 3, Sess. L. 1971, p. 292; Dec. 27, 1974, No. 3640, § 7, Sess. L. 1974, p. 266.

HISTORY

Amendments—1974. Subsection (g): In the second sentence increased fine and provided for revocation of operator's badge and automobile for hire plates.

—1971. Subsection (g): Amended generally.

—1970. Subsection (d): Act No. 2609 substituted in second sentence "June 20, 1970" for "January 1, 1970".

Act No. 2754 rephrased first two sentences and added requirements for issuance or renewal of registration license.

Act No. 2900 amended second sentence generally.

—1967. Subsection (d): Act Oct. 11, 1967, No. 2066, § 8, added proviso.

Act April 17, 1967, No. 1908, § 3, Sess. L. 1967, p. 95, 96. Substituted "on the front windshield of every automobile for hire" for "in the front of every automobile for hire"; increased size of "Taxi" sign from 2" x 5" to 4" x 8"; and added provisions relating to dome lights and to display of "On Duty" and "Off Duty" signs.

Subsection (e): Added provisions prohibiting parking, while off duty, in spaces reserved for automobiles for hire, and prohibiting an operator from washing or repairing the automobile when parked in such a space, except in case of emergency.

Subsection (f): Inserted sentence prohibiting the charging of rates in excess of maximum rates established under section 405 of this title.

Subsection (g): Substantially increased penalties. Prior to such amendment, subsection (g) merely provided that "Whoever violates this section shall be fined not more than \$5".

Effective date of 1967 amendments. Amendment of this section by Act April 17, 1967, No. 1908, as effective April 17, 1967, see section 6 of such Act, set out in note under section 334 of this title.

Amendment of this section by Act Oct. 11, 1967, No. 2066, as effective October 11, 1967, see section 5 of such Act, set out in note under section 401 of this title.

Revision note. Based on Ords. Col. C. St. T. and St. J. app. Feb. 14, 1980, § 14; Mun. C. St. T. and St. J. app. July 3, 1943 (Bill no. 31).

St. Croix had no provision on this subject. Changes were made in phraseology.

§ 402a. Classification of taxi service

The operator of a taxi may continually or alternately use, at his option, his taxi in one of two ways as follows:

(1) As a public car, picking up and discharging passengers along a main route limited only by the vehicles passengers capacity; or

(2) As a car for hire, transporting a contracting person or group from one point to another without stops for other soliciting persons that may be encountered in route.—Added June 9, 1971, No. 3069, § 10, Sess. L. 1971, p. 297.

§ 403. Number of passengers

(a) In automobiles operated for hire no person shall be carried without the consent of the person engaging the automobile.

(b) No motor bus, truck, or commercial carrying passenger vehicle shall carry any passenger in excess of its capacity. The carrying capacity of all such vehicles shall be determined by the Commissioner of Public Safety and shall be conspicuously marked within and without the vehicle.

If the owner of any vehicle is dissatisfied as to the number permitted to be carried as determined by the Commissioner under this subsection, he may appeal to the municipal court.

HISTORY

Revision note. Based on Ord. Col. C. St. T. and St. J. app. Feb. 14, 1930, § 16; Ord. Mun. C. St. C. app. Nov. 24, 1939 (Bill no. 29), § 38.

Subsection (a) of this section is from the St. Thomas and St. John Ordinance and subsection (b) is from the St. Croix Ordinance.

In subsection (b), reference to the police court was changed to the municipal court. See note under section 2 of Title 4.

Changes were made in phraseology.

(b) On or before October 1, 1978, and in each subsequent year, the Commissioner shall provide the Taxicab Commission with such license plates as it may require to be issued for automobiles for hire. Each plate shall be marked according to existing law and shall designate the island for which it is issued and shall be valid only on the island designated.

(c) On and after October 1, 1978, the Taxicab Commission shall issue to the owner of a valid taxicab medallion who presents proof that an automobile for hire owned by him has been inspected and registered with the Commissioner of Public Safety, a set of license plates for each such automobile; provided, however, that only one set of plates may be issued for each separate medallion. The Taxicab Commission shall forthwith notify the Commissioner of Public Safety the number on the plates issued each automobile and shall record such number in the register of medallions required by subchapter II of chapter 37 of this title. Only persons owning taxicab medallions on and after October 1, 1978, may obtain license plates for automobiles for hire.

(d) Any owner of a validly registered and licensed automobile for hire who chooses to no longer use such vehicle as an automobile for hire shall immediately notify the Taxicab Commission of his intention and return to the Taxicab Commission the license plates from such automobile. The Taxicab Commission shall reserve such plates for that owner's replacement vehicle provided that owner is still the owner of the taxicab medallion for which the plates were originally issued. The Taxicab Commission shall notify the Commissioner of any such disuse of plates and any subsequent reissue.

(e) Any person who operates a motor vehicle as an automobile for hire without the appropriate registration license and license plates shall be fined in an amount not exceeding \$50 for each offense.—Added May 26, 1978, No. 4129, § 2(a), Sess. L. 1978, p. 75; amended Aug. 10, 1978, No. 4185, § 2(a), Sess. L. 1978, p. 205.

Former section 339. Former section 339 was repealed and replaced by Act No. 4129 § 2(a).

1978—Act No. 4185 substituted the date "October 1, 1978" for "August 1, 1978" wherever it appeared.

Effective date of 1978 amendment. Act Aug. 10, 1978 became effective on the date of its enactment.

Issuance of replacement plates. Act May 26, 1978, No. 4129, § 2(b), Sess. L. 1978, p. 76, as amended by Act Aug. 10, 1978, No. 4185, § 2(b), Sess. L. 1978, p. 205, provided: "Notwithstanding the provisions of this section, the Commissioner of Public Safety shall continue, during the period between the date of

§ 339. Registration licenses and license plates for automobiles for hire

(a) On and after October 1, 1978, the Commissioner of Public Safety shall require that each automobile for hire presented to him for inspection and registration be accompanied by a separate taxicab medallion registered to the automobile owner and obtained under subchapter II, chapter 37 of this title. Notwithstanding any other provision of law, on and after October 1, 1978, the Commissioner of Public Safety shall inspect and register automobiles for hire and collect the fees therefor, except that the Commissioner shall not issue license plates for automobiles for hire. In cooperation with the Taxicab Commission, the Commissioner shall devise, by rules and regulations, a means for affixing on the registration form at the time of issuance of the license plates, the number of the license plates issued by the Taxicab Commission to an owner of an automobile for hire.

sections 913 and 933, as amended, shall have the force of law. It shall be the duty of the Commission to arrange for the publication and widest possible distribution of these taxi rules and regulations when filed."

1978—This subchapter designation was added by Act May 26, 1978, No. 4129, § 3(a), Sess. L. 1978, p. 76. Former subchapter I which was added by Act Nov. 2, 1977, No. 4056, § 1, was repealed by Act May 26, 1978, No. 4129, § 6, Sess. L. 1978, p. 81.

§ 401. Registration and licenses; operators' badges; identification cards

(a) No person may operate an automobile for hire until he has applied for and been issued an operator's badge and an identification card by the Commissioner of Public Safety, and provided, however, his application has been approved by the Virgin Islands Taxicab Commission. The Commission may not issue an operator's badge or an identification card to any person who has not complied with the pertinent provisions of chapter 35 of this title or, in the case of every applicant who has not been issued such a badge and card prior to April 17, 1967, who does not comply with or satisfy each of the following requirements and qualifications:

(g) [Repealed.]

—Amended May 26, 1978, No. 4129, § 3(b), (c), Sess. L. 1978, p. 76.

1978—Subsection (a): In the second sentence deleted the letter "s" from the word "chapters"; and deleted "33 and" preceding "35 of this title".

Subsection (g): Repealed.
Change of name. General amendment of all laws to change references relating to former Municipal Court of the Virgin Islands, see section 5 of Act Sept. 9, 1976, No. 3876, set out in note under section 2 of Title 4.

§ 401a. Issuance of badge and identification card without compliance with requirements; number of operators; renewal

The Commissioner of Public Safety shall issue a badge and identification card to each person who applies under section 401, Title 20, Virgin Islands Code, for his first badge and card as an operator of an automobile for hire licensed and registered as such in the name of a person who, prior to the effective date of this Act, has five (5) or more motor vehicles registered and licensed as automobiles for hire in his name, regardless of whether the applicant complies with or satisfies the requirements and qualifications set forth in subdivisions (1) and (3) of subsection (a) of said section 401; Provided, however, That the number of operators, for any person, at any particular time, who have not met any or all of said requirements and qualifications may not exceed ten (10) or the number of automobiles

for hire registered as such in the person's name at that time, which ever is the less; And provided, further, That the Commissioner may not renew the badge or identification card issued under this section to any person who is not either a United States citizen or an immigrant alien, as defined, unless prior to the final date for renewal such person has applied for admission as an immigrant alien to the United States. The badge and card issued under this section to any person not meeting any or all of the requirements and qualifications of said subdivisions (1) and (3) shall be special and distinguished from other badges and cards for operators of automobiles for hire, and no such special badge or card may authorize or entitle the holder to operate any type of automobile for hire other than one registered in the name of either the person under whose quota the holder was issued the badge and card or the successor of such person.—Amended May 26, 1978, No. 4129, § 3(d), Sess. L. 1978, p. 76.

1978—Deleted the last sentence which read, "Nothing contained in this section shall be deemed to affect any numerical limitation imposed under or any priority established for the provisions of subsections (e), (f), and (g) of said section 401".

§ 401b. Issuance of citations: Procedure before Taxicab Commission

Taxicab inspectors are authorized to issue citations, returnable before the Taxicab Commission for violations of chapter 37, Title 20, Virgin Islands Code, or of any regulations of the Taxicab Commission:

(1) Whenever any person is apprehended for any violation of this chapter committed in connection with the operation of a taxi, the apprehending peace officer may serve upon him a citation, which citation and notice shall be in the form approved by the Taxicab Commission and shall be known as a "taxi ticket." A "taxi ticket" shall include spaces for the name and address of the person cited, the offense charged and the time and place of its commission. Such spaces shall be filled with the appropriate information by the apprehending officer. The ticket shall also indicate the fine to be paid and a time limit for payment. If the fine is not paid within the stated time, a summons to appear before the Taxi Commission shall be issued and, if the violation was committed in connection with the operation of a taxi, a lien may be placed against the same until the fine is paid. Upon the cited person's refusing to furnish his name and address he may be taken into custody by the apprehending officer; Provided that a peace officer shall not serve or

issue a "taxi ticket" for any offense or violation except when the same is committed in his presence. For the purposes of this chapter the "Uniform Traffic Ticket" in the form prescribed by the District Court may be used by the members of the police force or taxi inspectors as "taxi tickets."

(2) Any person willfully failing to pay a fine or appear before the Taxicab Commission as provided for in subparagraph (1) of this section shall be guilty of a misdemeanor triable in the Territorial Court regardless of the disposition of the "taxi ticket" for which he was originally cited; Provided that a hearing officer for taxi offenses, designated by the Taxicab Commission, shall have the additional function to accept appearance, waiver of trial, plea of guilty and payment of administrative fines for violations of this subsection, hereinafter referred to as "taxi tickets," subject to the following provisions:

(A) A member of the Taxicab Commission or the Executive Director thereof, may be designated as a hearing officer in contested cases.

(B) The Taxicab Commission shall by order, which may from time to time be amended, supplemented or repealed, designate the taxi offenses within the authority of the hearing officer; Provided that such offenses shall in no event include offenses cognizable in the District Court or violations resulting in property damage or personal injury.

(C) The Taxicab Commission, by published order to be prominently posted in the place where the fines are to be paid, shall specify by suitable schedules the amount of the fines to be imposed for first, second and subsequent offenses, designating each offense specifically in the schedules; Provided that such fines shall be within the limits declared by this chapter in section 402(g).

(D) Any person charged with a taxi offense within the authority of the hearing officer may appear in person before the hearing officer and upon signing a plea of guilty and waiver of trial, and pay the fine established for the offense charged. He shall, prior to such a plea, waiver, and payment, be informed of his right to an administrative hearing, that his signature to a plea of guilty will have the same force and effect as a court judgment, and that the record of his conviction will be sent to the Commissioner of Public Safety. A decision of the hearing officer, including his findings of facts and conclusions of law shall become final five (5) days after it is filed with the Taxicab Commission.

(3) All administrative fines collected shall be deposited into the Taxicab Commission Fund previously created by Act No. 1129. No person who has been found guilty or who has signed a plea of guilty to three previous "taxi" offenses in the current calendar year shall be permitted to appear before the hearing officer unless the Commission shall, by general order applying to certain specified offenses, permit such appearance, conditioned upon the payment of a substantially increased fine, which increase shall be specified in such general order.

(4) The provisions of this chapter with regard to the apprehension or arrest of persons violating the same shall govern all peace officers in making arrests without a warrant for offenses committed in their presence, but the procedure prescribed herein shall not otherwise be exclusive of any method prescribed by law for the arrest and prosecution of a person for a misdemeanor.—Added Oct. 20, 1981, No. 4646, § 4, Sess. L. 1981, p. 256.

References in text: The provisions of 1978 Act No. 4129, referred to in paragraph (3), relating to the Taxicab Commission Fund are set out in a note under section 269 of Title 3.

§ 402. Operation of automobiles for hire

(a) Operators of automobiles for hire shall be decently attired and shall be polite to passengers.

* * *

(h) Operators of automobiles for hire shall keep in a conspicuous place within the motor vehicle for hire, and available to passengers, the list of maximum rates applicable to motor vehicles for hire, which list is published by the Virgin Islands Taxicab Commission.—Amended Oct. 11, 1979, No. 4369, § 6, Sess. L. 1979, p. 219.

1979—Subsection (h): Added.

§ 403. Number of passengers

Change of name. General amendment of all laws to change references relating to former Municipal Court of the Virgin Islands, see section 5 of Act Sept. 9, 1976, No. 3876, set out in note under section 2 of Title 4.

Subchapter II. Automobile-For-Hire Medallion

Medallion system investigation authorized. Act Oct. 20, 1981, No. 4646 § 10, Sess. L. 1981, p. 259, provided: "Within ten days after the date of enactment of this act [Oct. 20, 1981] the V.I. Taxicab Commission shall initiate an investigation into the inequities created by the implementation of the medallion system including, but not limited to, the issuance of conflicting instructions to operators, inefficiencies in implementing the law, and administrative delays caused by inadequate staff of the Commission. To the maximum extent practicable, and in accordance with law, the Commission shall take such steps as may be necessary to correct administratively these inequities and rectify any rights violated of persons affected by the medallion system. The Commission shall, within 60 days after initiating its investigation, report to the Governor and the Legislature in detail and in writing the inequities identified and the steps taken to rectify rights violated."

Repeal of former sections 406-414a. Former subchapter II which related to Automobile-For-Hire Medallions, comprised of sections 406-414a, was derived from Act Nov. 2, 1977, No. 4056, § 2, and was repealed by Act May 26, 1978, No. 4129, § 6, Sess. L. 1978, p. 81.

§ 407. Medallion—Required for automobiles-for-hire, description, issuance, fees

(a) After October 30, 1978, no person, company, corporation, or partnership may register an automobile for hire or purchase license plates therefor or own an automobile for hire enterprise within the Virgin Islands who has not first obtained an automobile-for-hire medallion as provided by this subchapter. Medallions shall only be valid on the island for which they were originally issued.

(b) Automobile-for-hire medallions (hereinafter referred to as "medallions") shall be sold by the Virgin Islands Taxicab Commission in the manner provided by this subchapter. The Commission shall cause to be minted such medallions as may be required to carry out the purposes of this subchapter. Medallions shall consist of a metal plaque of such design as may be determined by the Commission. Each medallion shall bear on its face a permanent registration number different from that of any other medallion, and shall be marked for the island for which it is to be issued.

(c) The Commission shall sell to any person, company, corporation, or partnership who owned on May 12, 1978, a valid set of Virgin Islands license plates issued for an automobile for hire, one medallion for each such set of plates owned. The Commission shall charge twenty-five dollars for each medallion sold. In the calendar year beginning January 1, 1979, and in each calendar year thereafter the Commission may sell no more than ten new medallions each year. New medallions sold on and after January 1, 1979, shall be sold to the highest bidder from among approved buyers as pro-

vided by section 410 of this title; provided, however, that of the number of new medallions auctioned each year, no less than five shall be sold at auction exclusively to approved buyers who are veterans and of the five, two shall be for St. Thomas, two shall be for St. Croix, and one shall be for St. John. The revenues from the sale of any medallion under this section shall be deposited in the Taxicab Commission Fund of the Virgin Islands Treasury.— Added May 26, 1978, No. 4129, § 4, Sess. L. 1978, p. 76; amended Aug. 10, 1978, No. 4185, § 2(c), Sess. L. 1978, p. 205.

1978—Subsection (a): Act No. 4185 substituted "October 30, 1978" for "August 31, 1978".

Effective date of 1978 amendment. Act Aug. 10, 1978 became effective on the date of its enactment.

Certificates of entitlement. Act Aug. 10, 1978, No. 4185, § 5, Sess. L. 1978, p. 205, provided: "For the purpose of implementing the medallion system as created by Act No. 4129 (Bill No. 7924) [which added this subchapter], the Virgin Islands Taxicab Commission may issue, pending receipt of minted, metal plaques, certificates of entitlement which shall be valid for the same purposes as a medallion is valid and shall be issued under the same conditions as a medallion would be issued. Upon receipt of minted, metal plaques, the Commission shall cease to issue certificates of entitlement. By rules and regulations properly promulgated, the Commission shall provide for exchanging certificates for metal plaques in a timely fashion, and such other procedures necessary to the issuance of the certificates as the Commission deems appropriate. The crimes and penalties applicable to medallions under section 413, Title 20, Virgin Islands Code, shall be applicable to certificates of entitlement."

"THP", "CHP" or "JHP" license plates. Act May 26, 1978, No. 4129, § 5, Sess. L. 1978, p. 80, as amended by Act Aug. 10, 1978, No. 4185, § 2(d), Sess. L. 1978, p. 205, provided:

"(a) Notwithstanding the provisions of section 4 of this act [this section] to the contrary, any person, company, corporation, or partnership who, on May 12, 1978, owned a set of Virgin Islands license plates marked 'THP', 'CHP', or 'JHP', which plates were registered to a surrey, safari, or other tour bus-type vehicle, shall be eligible to purchase from the Taxicab Commission one medallion for each set of plates owned. The medallions so purchased shall entitle the owner to all the rights and privileges of any other medallion owner under subchapter II of chapter 37 of Title 20, Virgin Islands Code [this subchapter].

"(b) After the date of enactment of this act [May 26, 1978], the Commissioner of Public Safety shall cease to issue 'THP', 'CHP' or 'JHP' license plates for surrey, safari, or other tour bus-type vehicles. After August 31, 1978, such vehicles shall only be operated with plates issued by the Taxicab Commission to owners of medallions of automobiles for hire, pursuant to the provisions of this act [this subchapter]."

§ 408. Registry of Medallions, resale, two medallion limit, approved buyers

(a) The Commission shall keep and maintain an accurate Registry of Medallions which shall include each medallion registration number, the island for which it was issued, its owner, the attachment and cancellation of any lien or encumbrances against any

medallion, the number of the set of license plates issued each medallion each year, any change in ownership of the medallion and such other information as the Commission deems necessary. The Registry of Medallions shall be public information pursuant to Title 3, chapter 33, Virgin Islands Code.

(b) The owner of any medallion may sell the medallion to any approved buyer. The set of license plates for an automobile for hire issued to the seller of the medallion for that medallion may be transferred to the buyer after the inspection and registration of his vehicle required by law, or destroyed and a new set of plates issued to the buyer as determined by the Commission. No sale of any medallion shall be valid until the Commission has been notified of the sale, the buyer has been approved by the Commission, and the transaction is noted in the Registry of Medallions.

(c) No person, company, corporation, or partnership may own more than two medallions at any one time, provided, however, that those persons, companies, corporations, or partnerships, who owned on May 12, 1978, more than two valid sets of Virgin Islands license plates for an automobile-for-hire may own no greater number of medallions than the number of such sets of plates owned on that date, and provided further that any person, company, corporation, or partnership owning more than two medallions may not purchase any other medallion while he is the owner of more than two medallions.

(d) Any person, company, corporation, or partnership desiring to purchase a medallion under this subchapter from either the Commission or another medallion owner may do so if approved by the Commission. The Commission shall, by regulation, establish criteria to insure that owners of medallions will in good faith, cause to be operated on the streets and highways of the Virgin Islands an automobile for hire in a manner acceptable to the public interest. Any potential buyer which the Commission finds meets these criteria is an approved buyer under the meaning of this subchapter. —Added May 26, 1978, No. 4129, § 4, Sess. L. 1978, p. 77.

§ 409. Medallions—Liens and encumbrances against, limits of same

(a) Any medallion valid under this subchapter may be encumbered with a lien or other such evidence of debenture. No such encumbrance shall attach to any medallion until the encumbrance is reported to the Commission and recorded in the Registry of Me-

dallions. No encumbrance duly attached to a medallion shall impair the right of the owner of the medallion to cause to be operated an automobile for hire on the island for which the medallion was issued, except when and if the medallion must be forfeited. No encumbrance which requires forfeiture of the medallion to the secured party upon default of the owner of the medallion shall be valid as to the forfeiture unless the secured party is determined by the Commission to be an approved buyer. When the owner of an encumbered medallion subject to forfeiture to an unapproved buyer is in default on the encumbrance, the medallion shall be sold at auction by the Commission to the highest bidder among approved buyers and the proceeds of the sale shall be paid to the unapproved buyer. The auction shall be conducted in the manner prescribed by section 410 of this title.

(b) A medallion may be encumbered by more than one lien or evidence of debt but the total of all encumbrances outstanding against any one medallion may not exceed twenty thousand dollars. Each creditor takes his encumbrance subject to prior existing encumbrances. The Commission shall take such steps as may be necessary to assure that the sale of any medallion is subject to the settlement of any encumbrances duly attached.—Added May 26, 1978, No. 4129, § 4, Sess. L. 1978, p. 78.

§ 410. Sale of medallions by auction

Whenever the Commission is required to sell a medallion by auction, and in selling all medallions newly issued on or after January 1, 1979, the Commission shall cause to be advertised on the island for which a medallion is issued, timely notice of the sale by auction. The notice shall contain information that only approved buyers may purchase medallions and the procedure by which a person may become an approved buyer. Medallions sold at auction shall be sold to the highest bidder. If the highest bidder is not an approved buyer of record at the time of the auction, the sale shall be honored if the Commission finds that the highest bidder subsequently qualifies as an approved buyer. No person who has been denied status as an approved buyer may bid at an auction conducted under this section until such time as he is determined to be an approved buyer.—Added May 26, 1978, No. 4129, § 4, Sess. L. 1978, p. 79.

§ 411. Death of medallion owner

Upon the death of the owner of any medallion, the Commission

shall, at the option of the heirs, sell the medallion at auction to an approved buyer and pay the proceeds to the estate of the deceased, or transfer the registration of the medallion to an heir or group of heirs if the heir or group of heirs qualifies as an approved buyer, or reregister the medallion to any person, company, corporation, or partnership designated by the heirs which person, corporation, company, or partnership is an approved buyer.—Added May 26, 1978, No. 4129, § 4, Sess. L. 1978, p. 79.

§ 412. Medallion—Lost, destroyed, stolen, or mutilated

Any owner of a medallion which is lost, destroyed, stolen, or involuntarily mutilated shall report such incident to the Commission promptly after discovery of such happening. Such report shall be made by sworn declaration under penalty of perjury and the owner shall state the circumstances in which the medallion was lost, destroyed, stolen, or involuntarily mutilated as the case may be. All information known to the owner, such as the names of witnesses, which would be helpful in recovering the medallion if lost or stolen shall be stated in the declaration. The Commission shall enter such incident in the Registry of Medallions and not allow any further transactions on the medallion for twenty days thereafter or until the medallion is recovered whichever is less. If, in the time allotted, the medallion is not recovered, the Commission may issue a duplicate thereof. If the medallion is involuntarily mutilated the Commission shall issue a duplicate promptly after presentation of the mutilated medallion. In each case in which a duplicate is issued, that fact shall be noted in the register of medallions and the owner shall be charged twenty-five dollars.—Added May 26, 1978, No. 4129, § 4, Sess. L. 1978, p. 80.

§ 413. Crimes and penalties

(a) No person shall willfully mutilate, carve, engrave, destroy, or otherwise deface in such a manner as to render undistinguishable the number and island of issue on any medallion minted under this subchapter.

(b) No person shall forge, imitate, reproduce or otherwise falsely copy so as to obtain a likeness generally indistinguishable from the original any medallion minted under this subchapter.

(c) No person shall cause to be operated within the Virgin Islands an automobile for hire who is not the owner of a medallion validly obtained under this subchapter.

(d) Any person who violates any of the provisions of this section shall be punished for each offense by a fine of not more than five hundred dollars or by imprisonment for a term not to exceed six months or both.—Added May 26, 1978, No. 4129, § 4, Sess. L. 1978 p. 80

APPENDIX D. TAXI FARES

ISLAND OF ST. THOMAS

MAXIMUM RATES

MOTOR VEHICLES FOR HIRE

	TOWN		AIRPORT	
	One Person	More than one person (per person)	One Person	More than one person (per person)
Agnes Fancy, Turnbull and New Islander	3.50	2.00	4.50	2.50
Agnes Fancy — Intersection at Singleton Home ..	3.00	2.50	4.00	2.50
Airport Terminal	3.50	3.00	—	—
Bali Hai Hotel	7.00	4.00	8.00	5.00
Blackpoint Hill (Top)	6.50	3.50	5.00	3.25
Bluebeard's Beach Club	9.00	5.00	10.00	6.00
Bolongo	6.00	3.50	7.00	4.00
Bolongo Estate Peak	6.50	4.00	7.50	4.50
Bonne Esperance	6.00	3.50	5.00	3.25
Bordeaux Housing Development	7.50	4.00	6.00	4.00
Botany Bay	10.00	6.00	8.50	5.00
Bournefield (Low Cost Housing)	3.00	2.00	2.00	2.00
Bovoni	5.50	3.00	7.00	4.00
Brewer's Bay and V.I. College	3.50	3.00	2.50	2.00
Brookman Level	5.00	3.50	6.50	4.00
Brookman Hill (Top)	5.50	3.50	7.00	4.00
Brown Estate	4.25	3.00	5.50	3.50
Canaan	4.50	3.00	6.25	4.00
Caret Bay Estate	6.00	3.50	5.00	3.50
Caribbean Beach Hotel	3.50	3.00	1.50	1.50
Cassi Hill (Top)	5.00	3.00	6.00	3.50
Coki Beach	6.50	4.00	7.50	4.50
Contant (Great House-Mill)	4.00	3.00	3.50	2.50
Contant Development (via Hideaway Road)	4.50	3.00	3.00	2.50
Contant (To Bridge at Soto Town)	2.50	2.50	2.50	2.50
Contant (Beyond Bridge to Soto Town)	3.00	3.00	3.00	3.00
Contant (Lindbeth Jewelry)	2.50	2.50	2.00	2.00
Crown Colony	6.50	3.50	5.50	3.50
Crown Mountain Peak	6.50	3.50	6.00	3.50
Crown Jenni	5.50	3.50	5.00	3.00
Cowpet Bay	9.00	5.00	10.00	6.00
Dorothea Beach Club	8.50	5.00	9.00	5.00
Dorothea Estate	6.00	4.00	6.00	4.00
Drake's Seat	4.00	2.50	6.00	3.50
Elizabeth Estate	4.00	2.50	6.00	3.50
Emerald Hill (Top)	5.50	3.50	6.50	4.00
Flagg Hill (Top)	5.50	3.50	6.75	4.00
Fort Mylner Shopping Center	4.00	2.50	5.25	3.50
Fortuna Mill	7.00	3.50	5.50	3.00
Fortuna Point	10.00	6.00	8.00	5.00
Frydenhoj	5.50	4.00	7.00	4.50
Frenchman's Bay	5.50	3.00	6.50	4.50

	TOWN		AIRPORT	
	One Person	More than one person (per person)	One Person	More than one person (per person)
Frenchman's Reef	5.00	3.00	6.50	3.50
Gold Hill	6.00	4.00	6.50	4.50
Harmony Estate	6.00	4.00	7.50	4.50
Havensight (Cross Road)	3.50	2.50	4.50	3.00
Hawk Mountain	6.75	4.00	7.50	4.50
Hope Estate (Newton House Intersection)	5.50	3.50	4.50	3.00
Hull Bay Beach (Beyond Larry's Bar)	6.50	3.50	8.00	4.50
Hull Bay Residence (Above Larry's Bar)	5.50	3.00	6.50	3.50
Hull Bay — Tropeco Point	8.00	4.50	9.00	5.50
Krum Bay (Power Plant)	3.00	3.00	1.75	1.75
Krum Bay (Sub Base)	2.50	2.00	2.00	1.50
Lagoon Fishing Center	6.50	4.00	7.50	4.50
Limetree Hotel	5.50	3.00	6.50	4.00
Lindberg Bay Beach Club	3.00	3.00	1.50	1.50
Long Point	3.50	4.00	7.50	4.50
Louisenhoj Castle	4.00	2.50	6.00	3.50
Lovenlund	5.50	3.00	6.50	4.00
Madison (James) School	3.50	2.50	5.00	3.50
Mafolie	4.00	2.50	6.00	3.50
Mafolie Church	4.00	2.50	6.00	3.50
Mafolie Hotel	3.50	2.50	5.50	3.50
Magens Bay	6.00	3.50	7.00	4.00
Magens Bay Peak	7.00	4.00	8.00	4.50
Magens Point Hotel	5.50	3.00	6.50	4.00
Mahogany Run Golf Course	6.50	4.00	7.50	4.50
Mandahl Bay	7.50	4.00	8.50	4.75
Morningstar Beach Club	5.00	3.00	6.00	3.50
Mountain Top Hotel and Apartments	6.50	4.00	7.50	4.50
Nadir Hill	5.00	3.00	6.00	4.50
Nisky	2.00	2.00	2.00	2.00
Paul's Cross Road	4.50	3.00	5.00	3.00
Pelican Beach	7.00	4.00	8.00	4.50
Pavillions	7.00	4.00	8.00	4.50
Pineapple Hotel	6.50	4.00	7.50	4.50
Raphune Hill (Top)	3.50	2.50	4.50	3.00
Red Hook	7.50	4.00	8.50	4.50
Rosendahl	5.50	3.00	6.50	4.00
St. Peter Mountain	6.50	4.00	7.50	4.50
Sapphire Beach Club	7.00	4.00	8.00	4.50
Scott's Beach	7.00	4.00	8.00	4.50
Secret Harbor Area	7.00	4.00	8.00	4.50
Shibui Hotel and Plantation Apartments	5.00	3.00	5.00	3.00
Smith Bay	5.50	3.00	6.75	4.00
Solberg Lookout	5.00	3.00	6.00	3.50
Sorgenfri Estates	6.00	3.50	5.00	3.00
Tabor Estate	6.00	3.50	7.00	4.50
Thatch Farm and Kirwan Terrace	3.00	3.00	2.00	2.00
Thomas Estate (New Quarters)	2.00	2.00	4.00	2.50
Tutu (Old Development)	4.50	2.50	5.50	3.50
Tutu (New Development)	4.50	2.50	5.50	3.50
Virgin Isle Hotel	3.00	3.00	3.00	3.00
West Indian Company Dock	2.00	2.00	3.50	3.50
Wintberg	5.00	3.00	6.50	4.00

MISCELLANEOUS POINT-TO-POINT RUNS

FROM	TO	ONE PASSENGER	MORE THAN ONE PERSON (PER PERSON)
Morningstar Beach	Red Hook	7.00	4.00
Virgin Isle Hotel	Bluebeard's Castle	3.00	3.00
Magen's Bay	Red Hook	7.00	4.00
Shibui	Magen's Bay	8.00	4.50
Berg's Homes	High Road	2.00	2.00
Red Hook	Bali Hai	6.00	3.50
Red Hook	Bovoni	4.00	2.50
Red Hook	Bolongo	5.00	3.50
Red Hook	Bordeaux	12.00	6.50
Red Hook	Crown Mountain	10.00	5.50
Red Hook	Donoe	5.00	3.00
Red Hook	Dorothea	8.00	4.50
Red Hook	Hull Bay	9.00	5.00
Red Hook	Island View	8.50	4.50
Red Hook	Limetree Hotel	6.00	3.50
Red Hook	Mafolie	7.50	4.50
Red Hook	Mandahl Estate	6.50	3.50
Red Hook	Mountain Top Hotel and Apartments	8.50	4.50
Red Hook	Shibui	9.00	5.00
Red Hook	Tutu	4.00	3.00
Red Hook	Wintberg	6.00	3.50
Tutu	Bali Hai	5.00	3.00
Tutu	Bolongo	4.50	3.00
Tutu	Bovoni	3.50	2.50
Tutu	Bordeaux	10.00	5.50
Tutu	Caret Bay	7.50	4.50
Tutu	Cowpet Bay	6.00	3.50
Tutu	Crown Mountain	8.00	4.50
Tutu	Frenchman's Reef	6.00	3.50
Tutu	Coki Beach	3.00	3.00
Tutu	Limetree Hotel	6.50	4.00
Tutu	Mafolie	5.00	3.00
Tutu	Magen's Bay	5.00	3.00
Tutu	Mountain Top Hotel and Apartments	6.00	3.50
Tutu	Shibui	7.50	4.50
Bali Hotel	Bolongo	6.00	3.50
Bali Hai	Bovoni	5.50	3.50
Bali Hai	Cowpet Bay	7.00	4.00
Bali Hai	Crown Mountain	9.00	5.00
Bali Hai	Limetree Hotel	7.00	4.00
Bali Hai	Mountain Top Hotel and Apartments	7.00	4.00
Bali Hai Hotel	Virgin Isle Hotel	8.00	4.50
Bolongo	Coki Beach	6.00	3.50
Bolongo	Donoe	5.00	3.00
Bolongo	Island View	7.00	4.00
Bolongo	Shibui	7.50	4.50
Donoe	Limetree Hotel	6.00	3.50
Frenchman's Reef	Bali Hai Hotel	7.50	4.50
Frenchman's Reef	Donoe	5.50	3.00
Frenchman's Reef	Limetree Hotel	3.50	3.50

FROM	TO	ONE PASSENGER	MORE THAN ONE PERSON (PER PERSON)
Island View	Limetree Hotel	6.50	4.00
Island View	Pineapple	7.50	4.50
Island View	Shibui	3.00	3.00
Magen's Bay	Frenchman's Reef	8.00	4.50
Magen's Bay	Limetree	8.00	5.00
Magen's Bay	Mountain Top Hotel and Apartments	5.50	3.50
Mahogany Run	Bolongo	6.00	3.50
Mahogany Run	Cowpet Bay	7.00	4.00
Mahogany Run	Frenchman's Reef	7.50	4.50
Mahogany Run	Limetree	7.00	4.00
Mahogany Run	Mountain Top Hotel and Apartments	6.00	3.50
Mahogany Run	Red Hook	6.00	4.00
Mahogany Run	Shibui	8.00	4.50
Mahogany Run	Virgin Isles Hotel	7.50	4.50
Shibui	Frenchman's Reef	7.00	4.00
Shibui	Mountain Top Hotel and Apartments	5.50	3.50

ADDITIONAL CHARGES AND SPECIAL PROVISIONS :

- A. This Taxi Tariff must be posted in all public vehicles.
- B. Town limits, for the purposes of this Schedule, shall end on the North at Berg's Homes or the West of Burma Road, and includes High Road Catch Basin, Frenchman Hill to the Boschulte House.
- C. The charge to country points not mentioned in this Schedule shall be arrived at by using the nearest tarified place crossed and the next tarified place ahead. The fare shall be based on the point or place nearest to the passenger's destination.
- D. Round trip fares: Double the one-way fare. plus waiting charges.
- E. Waiting time: \$0.15 per minute after the first 10 minutes.
- F. Radio Call: One-third plus the basic fare.
- G. Between the hours of midnight to 6:00 a.m. all out-of-town fares will be \$1.50 additional to the regular fare and intown \$1.00 additional.
- H. Within city limits: \$1.75 per person.
- I. Double one-way fares on any scheduled run for person requesting care for themselves only. Customer must be informed before departure.
- J. Trunks, boxes and suitcases: . \$0.50 each.
- K. Grips and liquor boxes in excess of one each per passenger: \$0.50 each.
- L. Rates for sightseeing tours :
 - (1) One or two passengers: \$20.00.
 - (2) Three or more passengers: \$10.00 per passenger.
 - (3) Limited time for tours: Two Hours.
- M. All Taxis must have ON DUTY - OFF DUTY signs posted. When on duty they must pick up all passengers.

MAXIMUM RATES

MOTOR VEHICLES FOR HIRE — PER PERSON

TO FROM CHRISTIANSTED

Annaly	10.25
Anna's Hope	1.50
Bethlehem, Upper or Lower, Exp. Station, King's Hill, LaReine	3.25
Buccaneer Hotel	2.25
Bulowsminde	2.25
Butzberg	2.25
Cane Bay	10.25
Castle Cockley and Sion Farm	3.25
Castle Nugent	4.00
Catherine's Rest	2.50
Cockley Bay	4.00
Constitution Hill	2.25
Cotton Groves	4.75
Cotton Valley	4.75
Cramer's Park	5.50
East Point (U. S. Most Easterly Possession)	8.00
Emerald Bay Estates	4.25
Fareham	4.00
Frederiksted	10.00
Glynn	2.70
Grange	1.50
Grapetree Bay	5.50
Grassy Point	5.25
Great Pond	4.00
Green Cay	3.25
Grove Place	8.75
Hess Oil-Martin Marietta	4.00
Humbug	2.50
Jockey Market Blue Lagoon	1.50
La Grande Princess	1.50
Longford	3.25
Lowry Hill	3.25
Mon Bijou	3.25
Morning Star	2.25
Mount Washington	4.75
Pearl	3.50
Peter's Rest School	2.25
Peter's Rest Station	2.25
Petronella	4.00
Pueblo Shopping Center	1.25
Rust-up-Twist	9.00
Sally's Fancy	4.00

TO FROM FREDERIKSTED

Point Within Town Limits

(Country Club to Hannah's Rest Corner)	1.25
Annaly	10.50
Butler Bay	3.25
Carlton	1.50
Davis Bay	13.50
Diamond and St. Georges	2.25
Grove Place and Mount Pleasant	2.25
Hess Oil-Martin Marietta	4.00
Inside Lanes of New Town	1.25
Jolly Hill	2.75
La Grange	1.50
Little La Grange	2.00
Manning's Bay	3.25
Mon Bijou	3.25
Mt. Washington (F'sted)	7.25
Sion Farm	4.00
Sprat Hall	2.25
Sunny Isle	8.50
Sunset Beach	1.25
Whim and Good Hope	1.50

TO FROM AIRPORT

Annaly	10.50
Belvedere	8.75
Buccaneer	4.75
Bulowsminde	4.00
Canaan	7.25
Cane Bay Plantation	10.50

Cane Garden	8.75
Castle Nugent	10.50
Christiansted	4.00
Cockley Bay	5.50
Constitution Hill	4.00
Cotton Grove	5.50
Cotton Valley	5.50
Cramer's Park	7.25
Davis Beach	12.00
Fareham	10.50
Fountain Valley	8.75
Frederiksted	3.25
Grapetree Bay	7.25
Great Pond	5.50
Green Cay	5.25
Hams Bay-Clover Crest	5.50
Hams Bay Coast Guard	5.50
Hess Oil	8.00
Humbug	8.75
King Frederiksted	3.50
La Grange	4.00
Longford	8.75
Martin Marietta	3.25
Mount Washington East End	5.50
Oxford	10.50
Petronella	5.50
Queen Quarter	3.25
Queen Quarter Beach Club	4.00
River	7.25
Sally's Fancy	5.50
Sandy Point	4.00
Salt River	8.75
Shoys Estate	5.25
Sion Valley	8.75
Skyway Inn-Race Track	1.25
Smugglers	7.25
Solitude	5.50
South Gate	5.25
Sprat Hall	4.00
St. Croix-by-the-Sea	4.00
Sugar Mill Estate	8.75
Sunny Isle	3.25
Tamarind Reef	5.25
The Beach Hotel of St. Croix	7.25
Tide Village	4.75
Work and Rest	4.00

(OVER)

TOUR 1: Christiansted and Frederiksted via Annaly and Bethlehem. Starting from Christiansted to Airport, travel on paved Centerline Road to Frederiksted, allowing 30 minutes for shopping. Travel north to Mahogany Road, turn right and proceed via Orange Grove to Annaly, bearing left at first paved intersection. Returning from Annaly, proceed via Lower Love, Castle Burke, to Bethlehem Sugar Factory. Travel south to Centerline Road, turn left to Christiansted via Rachel Levine (Alexander Hamilton's Mother) Monument Site, straight to Airport.

Rate over 4 persons	\$ 7.00
Minimum Charge	20.00
Time	Two (2) hours

TOUR 2: Christiansted and Frederiksted via Annaly and Bethlehem, Canaan or Parasol Hill: Starting from Christiansted or Airport travel on paved Centerline Road to Frederiksted, allowing 30 minutes for shopping. Travel north to Mahogany Road, turn right and proceed via Orange Grove to Annaly, bearing left at first paved intersection. Returning from Annaly, bear left at first intersection and proceed via Lower Love, Castle Burke to Bethlehem Sugar Factory. Proceed on dirt road due east to first road turning, make left turn and travel due north over Canaan Hill, passing Mon Bijou, Little Fountain, Betsy's Jewel on to La Valley. Turn right, follow coast line, Rust-up-Twist, Baron Bluff to Salt River and join asphalt road at Morning Star. Turn left to Christiansted or Airport (Alternate route from Annaly over Parasol Hill), same as Tour 3.

Rate over 4 persons	\$ 7.50
Minimum Charge	22.00
Time	Three (3) hours

TOUR 3: Starting at Christiansted, via Centerline Road, after passing Bethlehem Sugar Factory on Centerline Road, turn right on first paved road at Bus Shelter. Follow paved road past Grove Place, turn left at Church and Shrine and bear right at first paved intersection to Annaly. Returning from Annaly on same road to Grove Place, turn left at dirt intersection. Turn left at first turn and continue through Estate River. Climb upward over Parasol Hill down to the sea. Turn right and pass North Star, Cane Bay through La Valley. Follow the Coast, passing Rust-up-Twist, Baron Bluff over to Salt River. Join asphalt road at Morning Star and turn left to Christiansted.

Rate over 4 persons	\$ 7.50
Minimum Charge	22.00
Time	Three (3) hours

TOUR 4: Starting at Christiansted via Centerline Road and Rachel Levine (Alexander Hamilton's Mother) Monument Site, stop at Agricultural Station. Proceed via Centerline Road, turning right at first small grocery on paved road. Turn next on dirt road a short distance to Strawberry to photograph Mill Tower with steps. Continue on Centerline Road, turning right at second paved road, and stop at Bethlehem Sugar Factory. From there turn right to Fredensberg and turn left at next intersection, photographing Mon Bijou at Canaan Hill for panorama pictures. Come down mountain to the sea, turning

right at La Valley and following Coast. Past Rust-up-Twist, Baron Bluff over to Salt River and join asphalt road at Morning Star, turning left on to Christiansted.

Rate over 4 persons	\$ 8.50
Minimum Charge	22.00
Time	Three (3) hours

TOUR 5: Starting at Christiansted going east on paved road, bear right on gravel road via South Gate, Green Cay, to Cramer's Park and thence to the east of the Island (U.S. Most Easterly Possession). After leaving East End, turn left at first road and cut across Island and bear right following the South Shore Road, passing Grassy Point and bearing left at first intersection. Continue to a "T" intersection. Turn right and proceed over Lowry Hill to paved road. Turn left to Christiansted.

Rate over 4 persons	\$ 7.00
Minimum Charge	20.00
Time	Two (2) hours

ADDITIONAL CHARGES AND SPECIAL PROVISIONS:

A. This Taxi Tariff must be posted in all public vehicles.

B. For Person on all point to point runs, except as otherwise specified \$1.25.

C. Children under 6 years of age when accompanied by an adult half rate.

D. Suitcases, grips and liquor boxes in excess of one for each passenger \$0.30.

E. Trunks and boxes \$0.40.

F. Waiting charges \$0.10 per minute.

G. A charge of \$10.00 per hour for any tour which goes over the time limit.

H. All tours one to four persons on Minimum rate.

I. The charge to country points not mentioned in this Tariff shall be arrived at by using the nearest tariffed place crossed and the next tariffed place ahead. The fare shall be based on the point or place nearest to the passenger's destination.

J. Charges are for one passenger unless specified as "trip" which means the charge for transporting one to four passengers from one point to another.

K. Party with less than 4 persons and with pet, pay for four seats (fares) to their destination. Customer must be informed before departure.

L. (a) Two paid seats guaranteed minimum on any scheduled run for person requesting car for themselves only. Customer must be informed before departure.
(b) No additional passenger(s) shall be picked up En Route unless fully agreed to by the original passenger(s).

(c) When a group of passengers are carried, the single rate plus the extra charge should be totaled and divided equally among them.

M. All taxis must have ON DUTY - OFF DUTY signs posted. When on duty, they must pick up all passengers except in areas where a contract or franchise has been awarded to a group or a specific person.

SCHEDULE 2

BILL NO. 14-0223

ISLAND OF ST. JOHN

MAXIMUM RATES

MOTOR VEHICLES FOR HIRE

FROM CRUZ BAY

TO	One Person	Two People	Three and over
Annaberg	8.00	10.00	4.00 each
Bethany	2.00	4.00	2.00 each
Cruz Bay	2.00	4.00	2.00 each
Bordeaux Mountain	8.00	10.00	4.00 each
Caneel Bay	1.50	3.00	1.50 each
Catherineburg	3.00	5.00	2.00 each
Chocolate Hole	3.00	5.00	2.00 each
Indianman Bay	5.00	7.00	2.50 each
Coral Bay	8.00	10.00	4.00 each
Dennis Bay	4.00	6.00	2.00 each
Francis Bay	7.50	9.00	3.50 each
Frank Bay	1.00	2.00	1.00 each
Great Path (Maho Bay)	6.00	8.00	3.00 each
Gallows Point	1.00	2.00	1.00 each
Gift Hill	3.00	5.00	2.50 each
Great Cruz Bay	2.50	4.00	1.75 each
Grunwald	2.50	4.00	1.75 each
John's Head	3.50	5.50	2.50 each
Lamishur	11.00	14.00	5.50 each
Little Maho	8.00	10.00	3.50 each
Little Hawk's Nest	2.50	4.00	1.75 each
Pine Piece	1.00	2.00	1.00 each
Power Boyd's Plantation	2.00	2.00	2.00 each
Reef Bay Trail	6.00	8.00	3.00 each
Rosenberg	4.00	6.00	2.50 each
Sacandip	1.75	3.50	1.75 each

Susannaberg	2.50	4.00	1.75 each
Trunk Bay	4.00	6.00	2.00 each

FROM CANEEL BAY

TO	One Person	Two People	Three and over
Coral Bay	7.50	9.00	3.50 each
Trunk Bay	6.00	5.00	2.00 each

FROM CORAL BAY

TO	One Person	Two People	Three and over
Bloomingdale	2.00	4.00	2.00 each
Calabash Boom	2.00	4.00	2.00 each
East End	6.00	9.00	3.50 each
John's Folly School	3.00	5.00	2.00 each
Trunk Bay (via Centerline Road)	9.00	12.00	4.00 each
Trunk Bay (via Northside Road)	7.00	10.00	3.50 each

ADDITIONAL CHARGES AND SPECIAL PROVISIONS:

- This Taxi Tariff must be posted in all public vehicles.
- The charge to country points not mentioned in this Section shall be arrived at by using the nearest tariff'd place crossed and the next tariffed place ahead. The fare shall be based on the point or place nearest to the passenger's destination.
- Round trip fares: Double the one-way fare, plus waiting charges.
- Waiting time: \$0.15 per minute.
- Radio Call: One-third plus the basic fare.
- Between the hours of midnight to 6:00 a.m., an additional 40% of the fare will be charged.
- Minimum fare in Cruz Bay: \$1.75 per person.
- Double one-way fares on any scheduled run for person requesting car for themselves only. Customer must be informed before departure.
- Trunks, boxes and suitcases: \$0.50 each.
- Grips and liquor boxes in excess of one each per passenger \$0.50 each.
- Rates for sightseeing tours:
 - One or two passengers: \$18.00.
 - Three or more passengers: \$7.00 per passenger.
 - Limited time for tours: Two hours.
- All Taxis must have ON DUTY - OFF DUTY signs posted. When on duty they must pick up all passengers.
- Children under six (6) years of age when accompanied by an adult: half rate.
- No licensed public vehicle may charge above or below published rates.

APPENDIX E. URBITRAN REVENUE ANALYSIS FOR PARCARD PROGRAM¹ AND
GOVERNMENT PARKING LOT

E.1 ON-STREET ECONOMIC ANALYSIS

A. Assumptions

1. Number of spaces = 830
2. Number of paid parking days per year = 240
3. Number of paid hours per day = 10
4. Percentage of time parking spaces are occupied = 80%
5. Average parking duration = 45 minutes (.75 hours)
6. Price for parking = \$0.50 per hour
7. Realization = 0.75

B. Annual Income Calculations

1. Number of revenue hours per year
= $A1 \times A2 \times A3 \times A4 =$ 1,593,600
2. Annual parking revenue
= $(B1 \times A6 \times A7) / A5 =$ \$796,800

(This income calculation excludes additional income potential from the sale of advertising space on the PARCARD).

C. Annual Cost Calculations

1. Number of PARCARDS needed
= $B1 / A5 =$ 2,124,800
2. Unit cost of PARCARD = \$.07
3. Annual cost of PARCARDS
= $2,124,800 \times .07 =$ \$148,736

¹ Adjusted for .75 realization.

E.2 OFF-STREET ECONOMIC ANALYSIS

A. Assumptions

1. Number of spaces = 500
2. Number of paid parking days per year = 240
3. Number of paid hours per day = 10
4. Percentage of time that short-term parking spaces are occupied = 50%
5. Percentage of short-term parkers = 70%
6. Average price for short-term parking = \$.50 per hour
7. Price for long term parking = \$44.00 per month
8. Average short-term parking duration = 2.00 hours

B. Annual Income Calculations

1. Long-term

a. Number of revenue months per year
= $A1 \times (1 - A5) \times 12 \text{ months} =$ 1,800

b. Annual parking revenue
= $1,800 \times A7 =$ \$79,200

2. Short-term

a. Number of revenue hours per year
= $A1 \times A5 \times A2 \times A4 \times A3 =$ 420,000

b. Annual parking revenue
= $420,000 \times \$0.50 =$ \$210,000

3. Total annual off-street revenue
= $B1b + B2b =$ \$289,200

C. Annual Cost Calculations

1. Number of tickets needed
= $B2a / A8 =$ 210,000

2. Cost per ticket = \$0.01

3. Annual cost of tickets
= $210,000 \times 0.01 =$ \$2,100

4. 1,800 monthly passes @ \$.10 = \$180

5. Total annual cost = \$2,280

APPENDIX F. PROJECTED COSTS OF PARCARD PROGRAM AND GOVERNMENT PARKING LOT

	<u>PARCARD</u>		<u>PARKING LOT</u>	
	<u>1st Year</u>	<u>2nd Year</u>	<u>1st Year</u>	<u>2nd Year</u>
PERSONNEL COSTS				
<u>Enforcement</u>				
Parking Superintendent	7,000	7,000	15,000	15,000
Parking Supervisors	11,000	11,000	30,000	30,000
Parking Lot Attendants			40,000	40,000
Parking Enforcement Agents	100,000	100,00		
Maintenance Worker			8,000	8,000
<u>Fringe Benefits</u>	45,000	45,000	35,400	35,400
SUBTOTAL	\$163,000	\$163,000	\$128,400	\$128,400
ADMINISTRATIVE COSTS				
<u>Professional Services</u>				
Monitoring & Evaluation	5,000	5,000		
Personnel Training	5,000			
Public Education	5,000	2,500		
Distribution and collection (12% of PARCARD revenue)	95,600	95,600		
<u>Materials and Supplies</u>				
Uniforms, Clipboards, etc.	2,000	1,500	2,000	1,000
Tickets			2,280	2,280
PARCARDS	148,740	148,700		
Fuel/Maintenance	3,000	3,000	1,000	1,000
SUBTOTAL	\$264,340	\$256,340	\$5,280	\$4,280
TOTAL PERSONNEL AND ADMINISTRATIVE	\$427,340	\$419,340	\$133,680	\$132,680
CAPITAL				
<u>Equipment</u>				
Tri-wheel Scooter	12,000			
Two-way Radio	7,500			
Ticket Spitter Assembly			25,000	
Toll Booth Assembly			20,000	
<u>Improvements</u>				
Parking Lot Equipment Installation			25,000	
General Site Preparation			5,000	500
Signage and Striping	5,000	1,000	5,000	500
TOTAL CAPITAL	\$24,500	\$1,000	\$80,000	\$1,000

Source: Urbitran Associates, Inc.

APPENDIX G. SITE VISITS AND MEETINGS

The study team conducted three site visits in the course of performing the study. They occurred on the following dates: November 2-9, 1987; February 1-5, 1988; and March 22-25, 28-29, 1988. The Deputy Commissioner of the Department of Public Works and Director of the Office of Public Transportation, Verne Callwood, and the Senior Transportation Planner of the Office of Public Transportation, Randolph Richardson, assisted the study team in setting up numerous meetings with the Governor, elected officials, appointed officials, and other members of the Virgin Islands community. The organizations and people with whom the team met are listed below in chronological order of the meetings.

Department of Public Works: James Savage, Commissioner.

Governor of the Virgin Islands: Governor Alexander A. Farrelly.

St. Thomas Chamber of Commerce: Tom Bennett, Executive Director.

Mannassah Bus Lines: Raymond Francis, President; Horace Callwood, Treasurer and General Manager.

Department of Planning and Natural Resources: Allen Smith, Commissioner; Brian Turnbull, Assistant Commissioner for Planning.

President of the Virgin Islands Legislature: Senator Iver Stridiron; Clarence Cuthbertson, Assistant.

Virgin Islands Taxi Commission: Douglas Williams, Executive Director.

St. Thomas Taxi Association Presidents: Gaston Brown, Reliable Taxi Association; Euzebe Birmingham, Sunrise Taxi Association; Joseph Griffin, Virgin Islands Taxi Association.

St. Thomas Traffic Committee: Helen Gjessing, League of Women Voters; Tyrone Martin, Road and Highways Engineer; Sargeant Roberto E. Simmonds, V.I. Police Department Traffic Bureau.

Paul Hoffman, Lawyer and Organizer of Traffic Committees.

Department of Economic Development and Agriculture: Eric Dawson, Commissioner.

Senate Finance Committee: Senator Lorraine Berry, Chairperson.

Abramson Enterprises: Ann Abramson, President.

Public Works Committee of the V.I. Legislature: Senator Douglas Canton, Chairperson.

St. Croix Taxi Associations: Linus Johnson and Joseph Moses, Taxi Drivers; Maurice Williams, Paul Bannis, and John Weekes, Association Presidents; Dudley Johns, Department of Public Works.

St. Croix Traffic Committee: Jan Hanley, President of Chamber of Commerce on St. Croix; Bill Taylor, Architect; Lt. Melbourne Clarke, Commander Traffic Investigation Bureau on St. Croix; Julio Emenaion, Superintendent of Streets and Roads.

Elderly and Handicapped Representatives: Beverly Smith, Dial-A-Ride; Mark Vinzen, V.I. Coalition of Citizens with Disabilities; Joseph Moses, Representative of a local church.

Administrator for St. John and Ferry Operators: Bill Lomax, Administrator; Ira Fleming, Deputy Commissioner for Public Works; Albert Newtonville, Assistant to Senator O'Connor; Clifton Boynes, Ferry Operator.

Chief Engineer, Department of Public Works: David Swan.

National Park Service: Suzanne Lewis, Acting Superintendent.

Director, Division of Roads and Highway Engineering, Department of Public Works: Aloy Nielson.

URS Consultants, Inc.: Fred Eisenzimmer.

Executive Director of Chamber of Commerce on St. Croix: Frank Comito.

APPENDIX H. REFERENCES

1. Adams and Associates. "Redesign of High Hazard Highway Intersections, St. Thomas, Virgin Islands." Prepared for the Virgin Islands Department of Public Works and the Federal Highway Administration, 1977.
2. "Agreement to Operate and Operating Assistance Agreement, Department of Public Works with Abramson Enterprises, Inc., Re: Government Franchise for bus service on the Island of St. Croix." Department of Public Works. 1987.
3. "Agreement to Operate and Operating Assistance Agreement, Department of Public Works with Mannassah Bus Lines, Inc., Re: Government Franchise for bus service on the Island of St. Thomas." 1987.
4. Andreas Esberg & Company. "Financial Statements for Mannassah Bus Lines, Inc." 1981, 1982, 1983.
5. ATE Management & Service Co., Inc. U.S. Virgin Islands Specialized Transportation Final Report. Prepared for the Office of Public Transportation, 1983.
6. Dalton, Dalton, Newport in association with E. H. McDowell & Associates. Proposed Transportation Improvements: Windward Passage Hotel to Raphune Hill, St. Thomas, U.S. Virgin Islands, Final Environmental Impact Statement. Federal Aid Project TER 0001(008). Prepared for the Government of the Virgin Islands Department of Public Works, 1983.
7. Draft Virgin Islands Comprehensive Policy Plan. Government of the Virgin Islands. 1987.
8. "Draft Mass Transportation in the Virgin Islands, A Comprehensive Review." Virgin Islands Department of Public Works, Office of Public Transportation. 1987.
9. Gannett Fleming Engineers and Planners in association with Island Resources Foundation. Transit Development Plan Up-Date, Final Report and Technical Reports. Prepared for the Virgin Islands of the United States Department of Public Works, 1982.
10. Governor's Executive Budgets. 1981 - 1987.
11. Governor's Road Fund Budgets. 1981 - 1987.

12. Lea, Elliott, McGean & Company. Post Delivery Inspection of the Flxette Buses, Final Report. Prepared for the Virgin Islands Department of Public Works, 1986.
13. Menasco-McGuinn Associates. Virgin Islands Highway Functional Classification and Needs Study, Summary Report. Prepared for the Government of the Virgin Islands Department of Public Works, 1973.
14. "Paradise Travel Survey." V.I. Housing Authority and V.I. Department of Public Works. 1984.
15. Prosser & Prosser, P.C. "Abramson Enterprises, Inc. Mass Transit Division Statement of Operations for the Fiscal Years Ended September 30, 1983 and 1982 and the Nine-Month Period Ended September 30, 1981." 1986.
16. "Public Bus Transportation, Government of the Virgin Islands, Audit Report." U.S. Department of the Interior, Office of Inspector General. 1987.
17. Recommendations to Reduce Traffic Congestion for Charlotte Amalie, U.S. Virgin Islands. Federal Highway Administration. Prepared for the Committee on Environment and Public Works of the Senate and the Committee on Public Works and Transportation of the House of Representatives, 1987.
18. Robert deJongh Associates. Main Street Mall. Prepared for the Government of the U.S. Virgin Islands, Virgin Islands Planning Office, 1974.
19. Rollings and Nielson. Christiansted Parking Study. Prepared for the Virgin Islands Planning Office, 1974.
20. The League of Women Voters of the Virgin Islands. "One-Way Traffic Flow Plan." 1987.
21. The Charlotte Amalie Parking Study. Virgin Islands Planning Office, 1974.
22. The League of Women Voters of the Virgin Islands. "Response to the Department of Public Works Regarding the Draft Environmental Impact Statement 'Proposed Transportation Improvements: Windward Passage Hotel to Raphune Hill' by Dalton, Dalton and Newport." 1983.
23. The Master Plan for Government Office Centers. Virgin Islands Planning Office in consultation with Wallace Roberts & Todd and Robert deJongh and Associates. Prepared for the Government of the U.S. Virgin Islands, Office of the Governor, 1983.
24. Urbitran Associates, Inc. Report on the Implementation of a Paid Parking Program in Downtown Charlotte Amalie, St. Thomas, U.S. Virgin Islands. Prepared for the U.S. Virgin Islands Department of Public Works, 1986.

25. U.S. Virgin Islands Economic Review. Department of Commerce, Office of Policy, Planning and Research. 1986.
26. URS Consultants, Inc. "U.S. Virgin Islands St. Thomas Traffic Counts." 1981.
27. "Vendor Activity Center Plan." Department of Planning and Natural Resources. 1987.
28. Wilbur Smith and Associates in association with Design Collaborative. Virgin Islands Mass Transit Study, Recommended Short-Range Transit Development Program, Final Report. Prepared for the Urban Mass Transportation Administration, 1976.
29. Wilbur Smith and Associates, and Q and Company. U.S. Virgin Islands Transit Marketing Study, VITRAN, Virgin Islands Public Transit. Prepared for the Department of Public Works, Division of Public Transportation, 1986.

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