

**PUBLIC WORKS DEPARTMENT
GRAND CAYMAN, CAYMAN ISLANDS, B.W.I.**

**EXECUTIVE SUMMARY
MASTER GROUND TRANSPORTATION PLAN**



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in association with
DAVID LASHLEY & PARTNERS
and
ROBERTSON WARD ASSOCIATES

1988

ACKNOWLEDGEMENT

The Master Ground Transportation Plan was prepared under the direction of the MGTP Steering Committee appointed at the direction of the Cayman Islands Government, under the auspices of the Public Works Department. Members of the Committee were drawn from all branches of Government carrying major responsibilities regarding the provision of safe and convenient ground transportation facilities in Grand Cayman.

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- * A prospective program and schedule of road transport projects for 1993-1997.
- * Recommendations for the improvement of operation, planning, and management of the road transport mode.
- * Recommendations for the improvement and coordination of Government transport policies.

NATIONAL GOALS AND OBJECTIVES

To begin this analysis it was first necessary to ensure that the greater national interest was the guiding principle in the conduct of the Master Ground Transportation Plan Study. The provision of transport facilities is intended to serve the national interest by furthering national goals, objectives and policies. Transport is not an end in itself, and it does not have its own political constituency. Rather it should be directly and consciously linked to national economic, demographic and social policy.

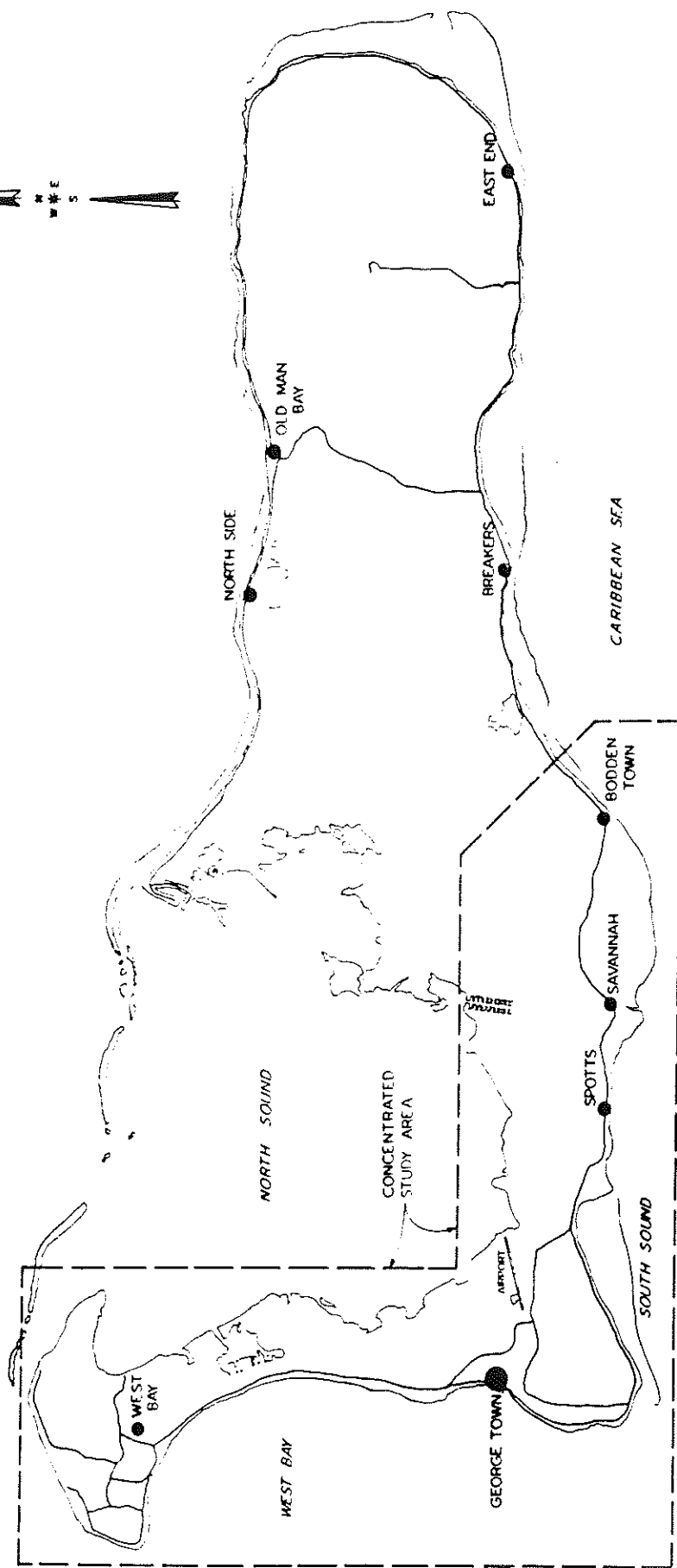
A series of meetings were held with both governmental agencies and private groups to appraise them of the process of conducting a transportation study, and results that could be expected upon completion of the work. In all cases these sessions resulted in much general discussion and personal sharing of thoughts and concerns regarding future growth and development of Grand Cayman.

DEVELOPMENT/INFRASTRUCTURAL RELATIONSHIP

There is a direct relationship between the number of residents and visitors and the infrastructure investments (roads, water supply, sewerage, etc.) needed. Demand for transport is a function of population size, number of tourists, gross national product, trip making characteristics, and other demographic and economic features.

To design a road transport system that is based on needs, a forecast of demographic and economic conditions must be made. Such a forecast accepts an existing and established national policy and goals regarding future development. This was not the case in Grand Cayman

CARIBBEAN SEA



WILBUR SMITH ASSOCIATES

LEGEND

- MAJOR ROADWAY
- URBAN CENTRE
- LIMITS OF STUDY AREA

STUDY AREA
MASTER GROUND
TRANSPORTATION PLAN

MGTP STUDY
GRAND CAYMAN BWI

FIGURE 1



at the onset of the Master Ground Transportation Study. The National Development Plan was in the process of being revised, and concerns about the rate of national growth were being expressed by both Government and the general public.

GROWTH ALTERNATIVES

As the issue of continued growth and development versus constrained growth has not been decided, the Government requested that the MGTP Study investigate transportation impacts relating to three possible growth rates. However, because development permits had already been granted and no major changes in Government policies were imminent, it was appropriate to anticipate a continuation of current growth rates for the next five years.

Therefore, the MGTP Study based its population forecasts on the Planning Department's Linear Growth Projections which forecasted a population of 26,700 persons by the year 1992, an annual increase of 3.6 percent in total population. This growth rate, subsequently defined as Growth Option B, was extended to 1997 at the same annual rate of increase, for a projected population of about 34,000.

For the second five-year period, in order to comply with the Government's request, a low rate was defined as consisting of the natural increase of the indigenous population coupled with a proportional increase of expatriates (Option A), thereby projecting 28,700 persons in 1997. Similarly, a forecast of 36,300 assumed a high rate of development, based on a 10 percent average annual increase in work permits and thereby increasing the number of expatriates and dependents, (Option C).

ADOPTED GOALS AND POLICIES

A review of the Economic Development Plan, 1986/1990, and The Development Plan of 1977, provided the basis for judging likely future policy decisions and their effect on transportation planning. The 1977 goals or strategies had a strong growth and development orientation --encourage tourism, banking, manufacturing, etc.

A gradual shifting of attitude away from growth accentuation to one of controlled population increase is more apparent today. Concern has been expressed for environmental

preservation, and emphasis on "Caymanian" opportunities, standard of living, and quality of life. This gradual shift in goals and policies was recognised in the Study.

TRANSPORT-SPECIFIC POLICY

Discussions with the Government and with those in the private sector also provided guidance on policy and strategy matters. From these meetings the following conclusions were drawn:

Major Land Use Changes - The analysis would consider any envisaged new schools, major hotels or condominiums, hospital relocation, etc, based upon information to be supplied by the Planning Department.

Mass Transportation - Discussions indicated that mass transportation would remain in the private sector throughout the study period.

Road Network Improvements - All options capable of improving traffic flow would be considered as possible solutions, including traffic management, intersection improvements, road widening, and alternative routings.

Parking Demand and Cost - The issues of parking space demand and parking policy were identified as important study elements. Government recognised that future parking regulations could include the institution of parking charges.

Road Right-Of-Way - Under current law, the landowners generally provided the land for new roads without compensation. In order to provide for new and improved roads needed to serve the study area, Government must have the mechanisms whereby it can gain access to the necessary lands in order to serve public needs, even if this means compensating the landowners.

In addition, rapidly changing land use that accompanies development processes may preclude the provision of an adequate public road network. In order for the Government to address this problem, right-of-way must be preserved, even though it may not be required until some future date.

SOCIOECONOMIC ESTIMATES AND FORECASTS

In order to project future transportation needs it is first necessary to identify existing levels of activities that directly or indirectly require transport services and facilities. In this case, primary generators of vehicle trips in the study area included population, employment, tourism and education. Current levels of these activities were identified within each of 88 traffic zones that together encompassed the entire land area of Grand Cayman.

POPULATION

Total 1987 population for Grand Cayman was calculated to be 24,046, including an estimate of 1,633 tourists in short term rented units.

Existing Population - The current population in Grand Cayman is distributed throughout the Island, although a large proportion (70 percent) is domiciled in the western peninsula extending northward from South Sound to West Bay. The George Town area, traffic zones 29 through 74, includes 33 percent of all inhabitants. An estimated 4,200 (18 percent) persons live in the south coast communities of Prospect, Spotts, Savannah, Lower Valley, and Bodden Town. Remaining inhabitants, about 2,900 persons or 12 percent, are centered primarily in the East End and North Side areas of Grand Cayman.

Population Forecasts - An increase in population of about 3,500 persons (15 percent) is expected by 1992, resulting in a total of 27,600 persons. Again, George Town leads the way with over 33 percent of the population. Together with Seven Mile Beach and West Bay, the western end of the Island is expected to include 20,300 persons or 74 percent of all inhabitants. The south side from Prospect to Bodden Town is expected to increase 12 percent to a 1992 total of about 4,700 inhabitants.

The mid-range ("B") forecast to 1997 is expected to reach a total of about 34,000 persons on Grand Cayman. Fastest growth during the second five year period is expected in the Seven Mile Beach area (30 percent), followed by Bodden Town (25 percent) and George Town (21 percent).

A Government Policy designed to slow the rate of growth on Grand Cayman between 1993 and 1997, if implemented, could be expected to result in a total population of 30,200. This "A" rate represents a 9.0 percent increase compared with the 23% achieved under the straight line trend of the "B" rate. On the other hand, a policy to encourage additional development ("C" rate) could be expected to increase population by 37 percent over the 1992 total, giving a total of 37,800 by 1997.

EMPLOYMENT

The foundation of growth in Grand Cayman is gainfull employment, perhaps more so than in other more fully developed nations. The variety of job opportunities is an economic planning objective fundamental to development goals set for the area. The degree of employment is translated into family income and future land use.

Existing Employment - It is apparent that full employment presently exists on Grand Cayman, and that a significant number of jobs remain unfilled. The result is that an increasing effort is being made to recruit additional workers from abroad. About 11,200 jobs are estimated to exist, with the largest proportion (48 percent) related to retail sales. Industrial jobs, together with all other types of employment total almost 5,900 units.

George Town and inner-suburban areas provide over 8,200 jobs, while the Seven Mile Beach area includes an additional 1600 positions. Together they represent 91 percent of all employment on Grand Cayman.

Employment Forecast - Grand Cayman is projected to add 2,500 jobs by 1992, with almost 2,100 of them in George Town and along Seven Mile Beach. Together they represent 89 percent of all employment on the Island. When West Bay is included in the group it can be seen that 96 percent of all jobs are located on the west coast area.

Employment is forecast to reach 18,000 on the Island in 1997, according to the median "B" rate of development. If development slows somewhat and the "A" rate is appropriate, it is likely to result in a total of about 16,000 jobs. This represents an increase of about 2,300 over the 1992 figure. If accelerated growth occurs, the "C" rate of development forecast shows just over 20,000 jobs in the target year.

TOURISM

Development of the tourist industry in recent years has resulted in its becoming a major revenue producer and employer. Two broad categories of tourists were studied. One-day visitors generally include only tour-ship passengers, while air arrivals generally stay for up to a week or longer. It is the latter group with which the MGTP study is most concerned, as they tend to develop much greater demand for transportation facilities over extended time periods. Air passenger arrivals in 1987 are expected to total nearly 175,000, an increase of about 9,000 over the previous year. By 1992 the number of visitors arriving by air is forecast to reach 224,000, a five year increase of 28 percent. Continued development of tourist accommodations on Grand Cayman is expected to result in 274,000 air visitors in 1997.

EDUCATION

Enrollment in primary and secondary schools is estimated to have reached just over 3,800 in the 1987/88 year. By 1992 the number is projected at about 4,900, with almost 3,400 of these students enrolled in Government schools.

The number of students is likely to increase to 5,900 in 1997, according to the "B" rate of development on the Island. A slower "A" rate would reduce the forecast to about 5,300, while the "C" (rapid) development scenario would likely produce about 6,600 students in all primary and secondary schools.

TRAFFIC FORECASTING AND CAPACITY ANALYSIS

Transportation planning, as the phrase implies, requires a technical look into the future. In order to plan for the future transport needs of Grand Cayman it was first necessary to forecast the amount of travel and changes in trip characteristics that were likely to occur. These forecasts reflected development trends identified in the planning analysis, and were the most important factors in developing the capital improvement program.

ESTIMATING FUTURE TRAFFIC

For this study, mathematical models were developed to simulate existing traffic patterns and to forecast future trips on the existing road network. The same process was used later in the study to forecast travel on both new and improved road links. This process has been accepted worldwide as one of the most reliable and comprehensive procedures for use in transportation planning.

Traffic In 1992 - The West Bay Road segment between Holiday Inn and Merrens Shopping Complex was expected to carry between 17,000 and 30,000 vehicles in 1992, with volumes increasing rapidly with proximity to George Town. Eastern Avenue is expected to serve just over 14,000 vehicles on the segment adjacent to Kirkconnells Home Center. Other roads with comparatively high traffic forecasts include North Church Street (19,500), Cardinal Avenue Extension (17,400) and Shedden Road east of Elizabethan Square (15,000).

Traffic in 1997 - Three forecasts of traffic for 1997 were prepared in order to measure the impact of development policies that may be implemented by the Cayman Government. These included a straight line "B" forecast of growth, an "A" rate to show the effects of a policy severely restricting island development, and growth rate "C", assumed as a continuation of the parabolic curve describing Cayman's rapid development over the past several years. Only the straight line ("B") forecast is discussed in this section.

Although traffic increased at varying rates at most locations, the relationship of levels of traffic flow between road segments did not change. West Bay Road was predicted to carry 23,200 vehicles at the Holiday Inn, and 36,600 opposite Merrens. North Church Street and Cardinal Avenue again were

expected to experience the highest traffic flow in George Town, with volumes of 21,800 and 22,500 respectively. Eastern Avenue, 19,200 and Crewe Road, 17,800 also are projected to carry relatively high traffic volumes.

CAPACITY NEEDS

The assignments of future traffic assumed that no improvements would be made to the existing road network. It was also assumed that traffic growth would not be restrained by the possible lack of capacity of any road segment to serve the need of future traffic. That procedure established the likely level of future travel demands. When compared with the actual capacity of each road segment to carry traffic, locations where road improvements were needed in order to achieve the required capacity became apparent.

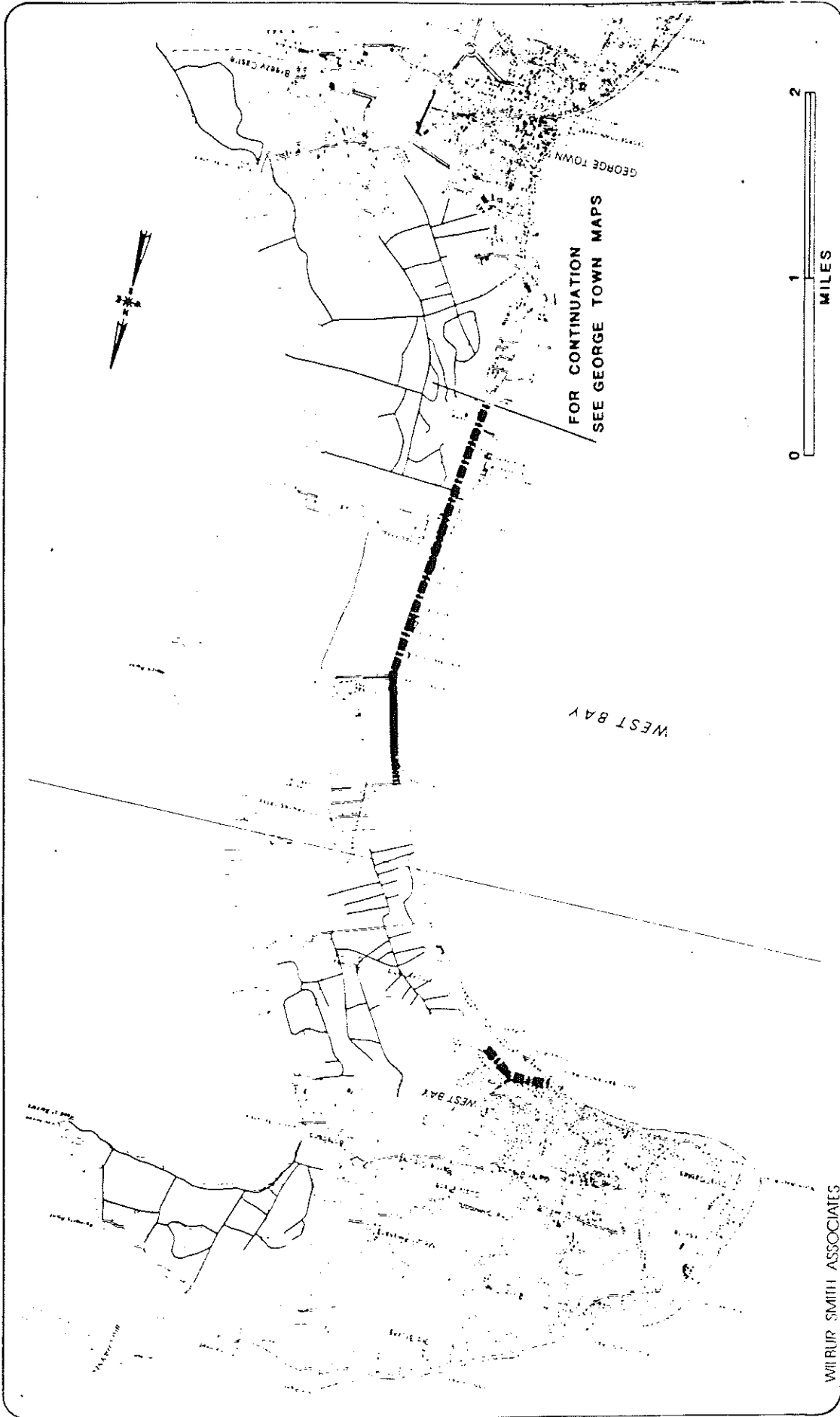
1992 Deficiencies - Much of West Bay Road is currently providing a less than acceptable level-of-service (LOS). By the year 1992, that condition was expected to extend from its southern end at Eastern Avenue to the Holiday Inn, a distance of about 2.4 miles, as shown in Figures 2 and 3. A further deficiency is likely to exist at the northern end of West Bay Road at Church Street in West Bay.

In the George Town area, North Church Street, Harbour Drive, and part of South Church Street are currently over capacity and the condition will deteriorate by 1992. In the same category are segments of Fort Street, Edward Street, Cardinall Avenue, Shedden Road, and Mary Street, as seen in Figure 4. Elgin Avenue and segments of Crewe Road are expected to exceed practical capacity by 1992, as is the northern half of Eastern Avenue.

1997 Deficiencies - A number of roads that had acceptable levels of capacity to serve 1992 traffic needs are expected to become deficient by 1997. Capacity problems evident on more southern segments of West Bay Road by 1992 are expected to extend further northward about 1.5 miles to near Victoria House. On South Church Street the deficiency extends southward from Boilers Road for about one mile, in addition to that part of the road found deficient by 1992.

Segments of Crewe Road and Smith Road, both with existing capacity to serve 1992 traffic forecasts, are expected to become deficient by 1997. Similarly in George Town, segments of Fort Street and Mary Street are not expected to be able to serve forecasted traffic volume with an acceptable LOS.

In addition, several roads are likely to be within 10 percent of practical capacity in 1997. These include segments of South Church Street, Walkers Road, Hospital Road, Airport Road and Bodden Town Road. In George Town, roads nearly at capacity include parts of Shedden Road, Goring Road and the unnamed connection road between Eastern Avenue and North Sound Road.



MGTP STUDY
GRAND CAYMAN BWI

FIGURE 2

1992 ROAD DEFICIENCIES WEST BAY

LEGEND

VOLUME/CAPACITY (V/C) RATIOS
BELOW 0.9
BETWEEN 0.90 AND 0.99
1.00 AND UP



LEGEND

VOLUME/CAPACITY (V/C) RATIOS

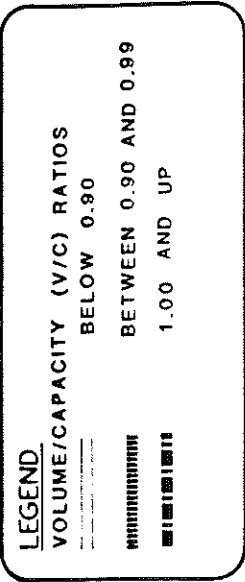
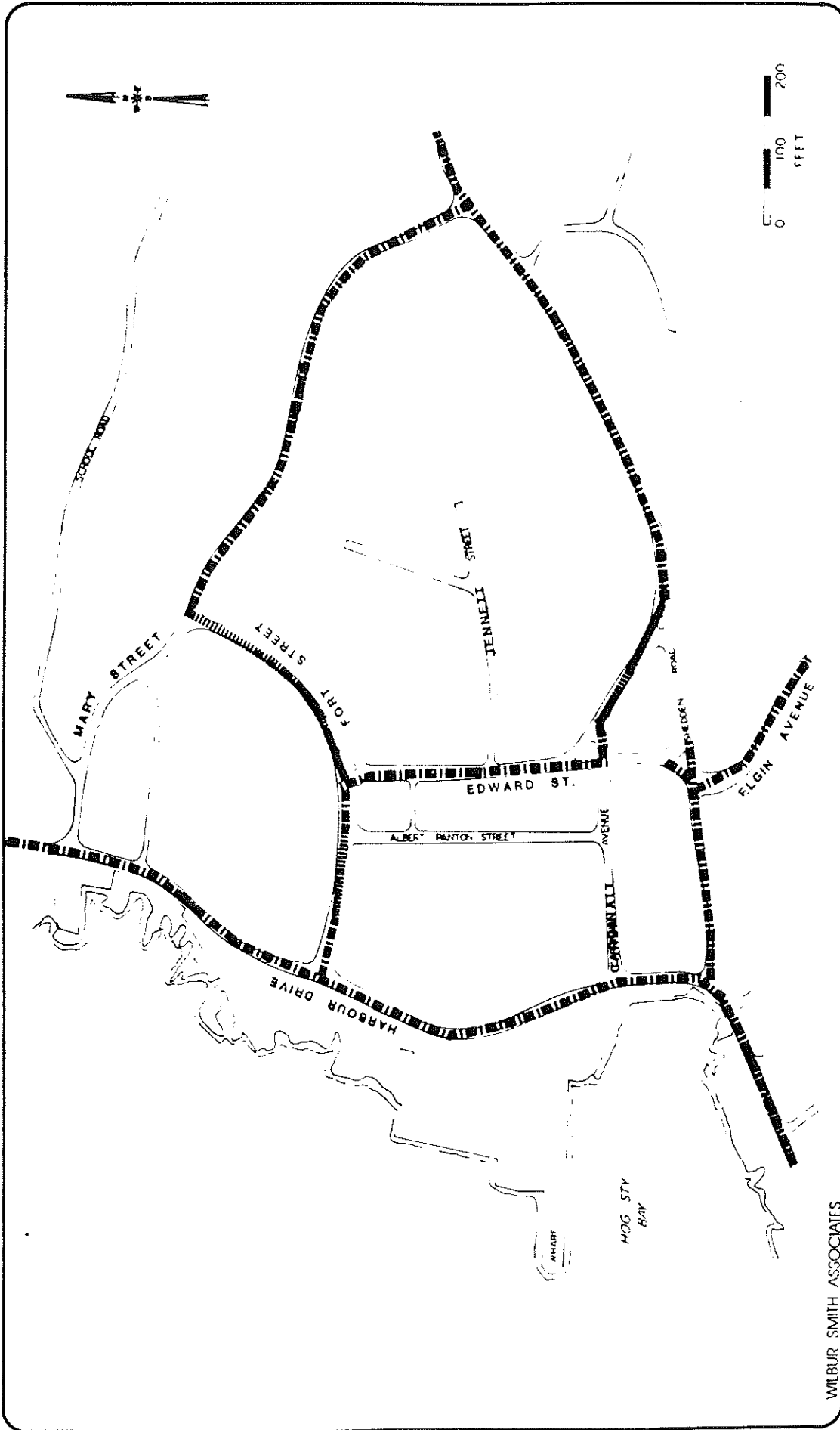
- BELOW 0.9
- BETWEEN 0.90 AND 0.99
- 1.00 AND UP

1992 ROAD DEFICIENCIES SOUTH SOUND

MGTP STUDY
GRAND CAYMAN BWI

FIGURE 3

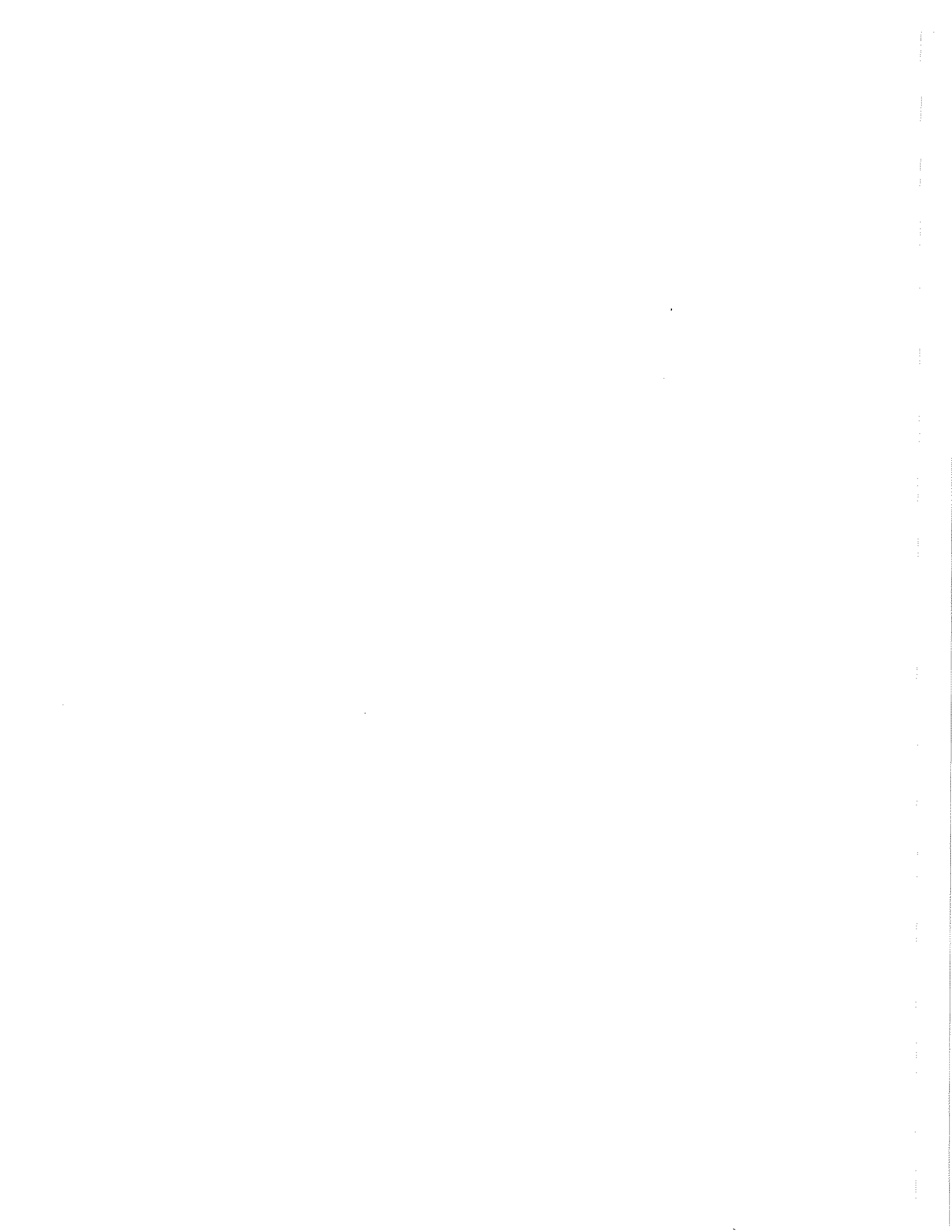




1992 ROAD DEFICIENCIES CENTRAL GEORGE TOWN

MGTP STUDY
GRAND CAYMAN BWI

FIGURE 4



ALTERNATIVES ANALYSIS

Future traffic congestion is expected to occur primarily along the Seven Mile Beach peninsula and in central George Town. These areas together have absorbed a large proportion of recent development that has occurred on the Island, and together the two will likely include more than 90 percent of the new growth expected over the next 10 years.

PLANNING CONSTRAINTS - Several factors along the Seven Mile Beach peninsula control the possible location of new or widened roads. West Bay Road is located on a 50 foot right-of-way throughout its entire length. All frontage property has at least one point of access to the road, and most business lots have two or more entrances. Disruption of West Bay Road traffic flow due to right turning vehicles and to entering traffic is frequent and often involves a full stop during peak-hour traffic.

Possible road alternatives along new alignment parallel to West Bay Road have two major constraints. The Hyatt Hotel/Britannia development extends across the entire peninsula from West Bay Road to North Sound. A second area restricting possible road locations is Governors Harbour/Lime Tree Bay/ Cayman Island Yacht Club, a relatively new residential area consisting of private homes and condominiums. Other constraints for a road location through the corridor relate to geological conditions including depth of unsuitable soil material, and existence of mangrove swamps.

Central George Town improvements must be accomplished within existing right-of-way. Streets are generally ample two-lane width, but several important arteries are too narrow for normal two lane operations. Sidewalks, where existing, are seldom continuous for the full block and often require a step up or down at private entrances.

WEST BAY ROAD IMPROVEMENTS

Alternatives considered include widening the existing road to accommodate a central right-turn lane, widening to four lanes with protected centre right-turn lanes, and a four lane design that includes roundabouts at intervals and prohibits all right-turns. Each potential solution would result in major damage to adjacent property.

Widening of the existing road to four lanes required a 76 foot right-of-way (R/W) and yet would not have sufficient capacity to serve 1992 traffic. A possible variation would eliminate the centre right turn option in favour of left turn only and "U" turns at roundabouts spaced at quarter-mile intervals. This alternative would cost \$4.9 million to construct, and would have capacity for 24,000 VPD, still not sufficient for future traffic demand.

NEW ARTERIAL ROAD

With the limited ability of West Bay Road improvements to serve future traffic, and the negative environmental impacts resulting from such widening, new alternatives were investigated along parallel corridors to the east. One possible alignment extended northward from George Town along the North Sound coastline to a connection with Mount Pleasant Road. Because of the numerous water crossings and likely negative environmental impacts the route was judged unsuitable.

A possible inland alignment between George Town and West Bay would more effectively serve development schemes within the travel corridor. In the vicinity of the Hyatt Regency Hotel and adjacent canal, several alternatives exist. One would carry the road over the canal and golf course to the east of the hotel. An alternative would carry the new route between the hotel and West Bay Road along a right-of-way already designated for a future road.

GEORGE TOWN ALTERNATIVES

The new alignment alternative parallel to West Bay Road also has implications for improvement alternatives in George Town. By linking it to North Sound Way at Webb Road the new route would become an eastern bypass of the inner city, thus relieving traffic on North and South Church Streets and Harbour Drive.

New George Town Access - To connect the Outer Bypass with Central George Town, it was necessary to supplement the existing radial routes of Crewe Road, North Sound Road and School House Road with one or more new links. One alternative would connect the Bypass with the eastern end of Fort Street in downtown George Town, creating an entirely new route as it intersects Eastern Avenue and penetrates the Rock Hole area. Another would connect the Bypass with School House Road and follow that existing road into the town centre. A third alternative

would connect North Sound Road at Webb Road with the central city along a new route just north of and parallel to the existing North Sound Road.

Central Business District - Central George Town presently has a reasonable network of roads. The traffic problem relates more to narrow rights-of-way that accommodate some of these streets, and to illegal parking. To acquire the additional R/W needed to accomplish road widening it would be necessary to reduce sidewalk width, and, in many instances, disrupt the flow of patrons into and out of adjacent business and office establishments. A more acceptable approach would be to convert many of the streets to one-way operations, thus doubling the capacity of each road to handle directional traffic, and to enforce more stringent parking regulations.

SOUTH SOUND CORRIDOR

This corridor is primarily served by Crewe Road and South Sound Road, both of which connect with Red Bay/Bodden Town Road to the east. It is anticipated that 1997 traffic volumes will overload short sections of both Crewe Road and Red Bay Road.

Crewe Road/Red Bay Road Improvement - Alternatives considered included the widening and partial realignments of Crewe Road and Red Bay Road and development of a new route parallel to and north of the existing road. The new alignment alternative would create a second major east west arterial road, thus relieving pressure on Crewe Road south of the airport.

BODDEN TOWN CORRIDOR

The Bodden Town travel corridor is presently traversed by the single road which passes through the centre of Bodden Town. Improvements to this existing road section should be considered whether or not Bodden Town is bypassed. Upgrading may be limited by the property constraints along each side of the road.

East-West Arterial - An extension of the Crewe Road relief route eastward to Pease Bay is possible but hard to justify because of low traffic volumes in the travel corridor. It would provide a fast/efficient route connecting Bodden Town with the airport, sea port and the commercial centre of George Town. A possible bypass of Bodden Town would follow the eastern segments of the proposed East-West Arterial to North Ward, and then along new alignment to a point on the existing Bodden Town Road near Savannah.

ECONOMIC ANALYSIS

It is in order to examine each proposed road improvement to see if it is economically justified within the context of the existing Grand Cayman road network. This analysis, therefore, was designed to determine if monetary benefits will exceed construction costs.

BENEFIT/COST ANALYSIS

Alternative road improvement proposals selected for this analysis were divided into two groups. The first, Phase 1, included construction of a roadway on new alignment (North-South Arterial) from a point opposite the Holiday Inn to a new junction with North Sound Road east of George Town. This project, including necessary connections to the existing road network, was needed in order to serve the forecast of traffic needs in 1992.

Phase 2 improvements, designed to meet 1997 needs, included widening of the first segment of the North-South Arterial to four lanes, and a two lane extension northward to Batabano Road. Other improvements to be evaluated were the extension of the North-South Arterial southward to Walkers Road (South Sound Arterial), and a new road parallel to and south of Crewe Road (East-West Arterial).

Phase 1: North-South Arterial - This high volume facility showed a B/C Ratio of 1: 3.57, an NPV of CI \$22.14 million and an IRR of 38.7 percent for the 15 year period, increasing to a B/C Ratio of 1 = 4.62, an NPV of CI \$31.34 million and an IRR of 39.1 percent at 25 years. This is a highly viable component consisting of a new two-lane road from near the Holiday Inn to North Sound Road.

Phase 2-1: North-South Arterial - 2 Lane - This segment would extend the arterial network from the Holiday Inn to Botabano Road. It showed up poorly in the first analysis, and was reevaluated as a double check. Its final B/C Ratio was 1; 0.58; its NPV was CI \$1.7 million and its IRR was 7.2 percent. In order to be economically feasible, it would have to had a B/C Ratio greater than one; a positive NPV and an IRR higher than the 12 percent discount rate.

Phase 2-2: North-South Arterial - 4 Lane - This Phase 2 widening of the completed Phase 1 segment shows high viability, with a 20-year reading of B/C Ratio - 1: 3.52, NPV: CI \$1.8 million and IRR 34.4 percent.

Phase 2-3 = East-West Arterial - This Phase 2 segment from Smith Road at Crewe Road to Crewe Road at the Lion's Center has a B/C Ratio of 1: 0.66, an NPV of CI-\$391,900 and an IRR of 7.7 percent. While making a slightly better showing than Phase 2-1, it was still not economically feasible.

Phase 2-4 = South Sound Arterial - This Phase 2 link between Smith Road and Walkers Road had a B/C Ratio of 1: 0.29, an NPV of CI-\$1,588,700 and an IRR of 3.2 percent. It made the poorest showing of any of the four Phase 2 segments and was not economically feasible.

TRAFFIC MODEL INPUT

The MGTP Model which is installed on a computer in PWD is capable of forecasting traffic for the Grand Cayman road network. However, in order to do this, it must have certain general data input, and these data must be for specified traffic analysis zones. The range of these data is significant, as follows:

1. Population
2. Dwelling Units
3. Total Employment
4. Retail Employment
5. School Attendance

Most of the data indicated above are already collected by the Cayman Islands Government, in one form or another. However, there are two principal difficulties connected with trying to use these data with the MGTP Traffic Model. First, the base areas from which they are collected have boundaries different than those of the traffic zones. Second, the frequency of collection of the data is less than is required. To remedy this situation of fragmented data availability, the following recommendations are presented.

* **Recommendation:** That PWD arrange with The Immigration Department to obtain necessary data on work and residency permits issued, on a recurring annual basis.

* **Recommendation:** That PWD arrange with the Immigration Department, to obtain necessary tourist arrival data on a recurring annual basis.

- * **Recommendation:** That PWD arrange with the Registrar of Births, Deaths and Marriages to obtain necessary data on a recurring annual basis.

- * **Recommendation:** That the Planning Department continually update the land use maps to show actual construction, and that PWD arrange to get the results on an annual basis.

- * **Recommendation:** That employment by Traffic Zone be compiled directly from subsequent surveys, and that such totals be made available to PWD staff on an annual basis.

- * **Recommendation:** That PWD arrange with the Education Department to obtain necessary school attendance data on a recurring annual basis.

TRANSPORT INVESTMENT CRITERIA

The present procedure used to assemble the annual road construction program involves a series of five general areas of activity. These include formulation, selection, design and approval, preparation of annual work program, and construction inspection. The most recent example of the decision process for Cayman road investments is the actions taken in 1986 which led to the adoption of PWD's Annual Work Programme, Figure 5. Actions on this chart are keyed to Table 1, which summarises the action taken at each point. While there is no assurance that the process shown will be followed in the future, it is both logical and current.

Actions are divided into five areas:

1. Project Formulation
2. Project Selection
3. Project Design and Approval
4. Annual Work Programme Preparation
5. Construction Inspection

Presently there are 35 actions required, 15 of which are the responsibility of PWD. With this many actions involved, there is ample opportunity for delay if participants in the process do not handle their actions expeditiously. Some 19 of the actions involve decisions. The criteria upon which the decisions involved are based are covered in the following discussion.

ROAD PROJECT DECISION PROCESS

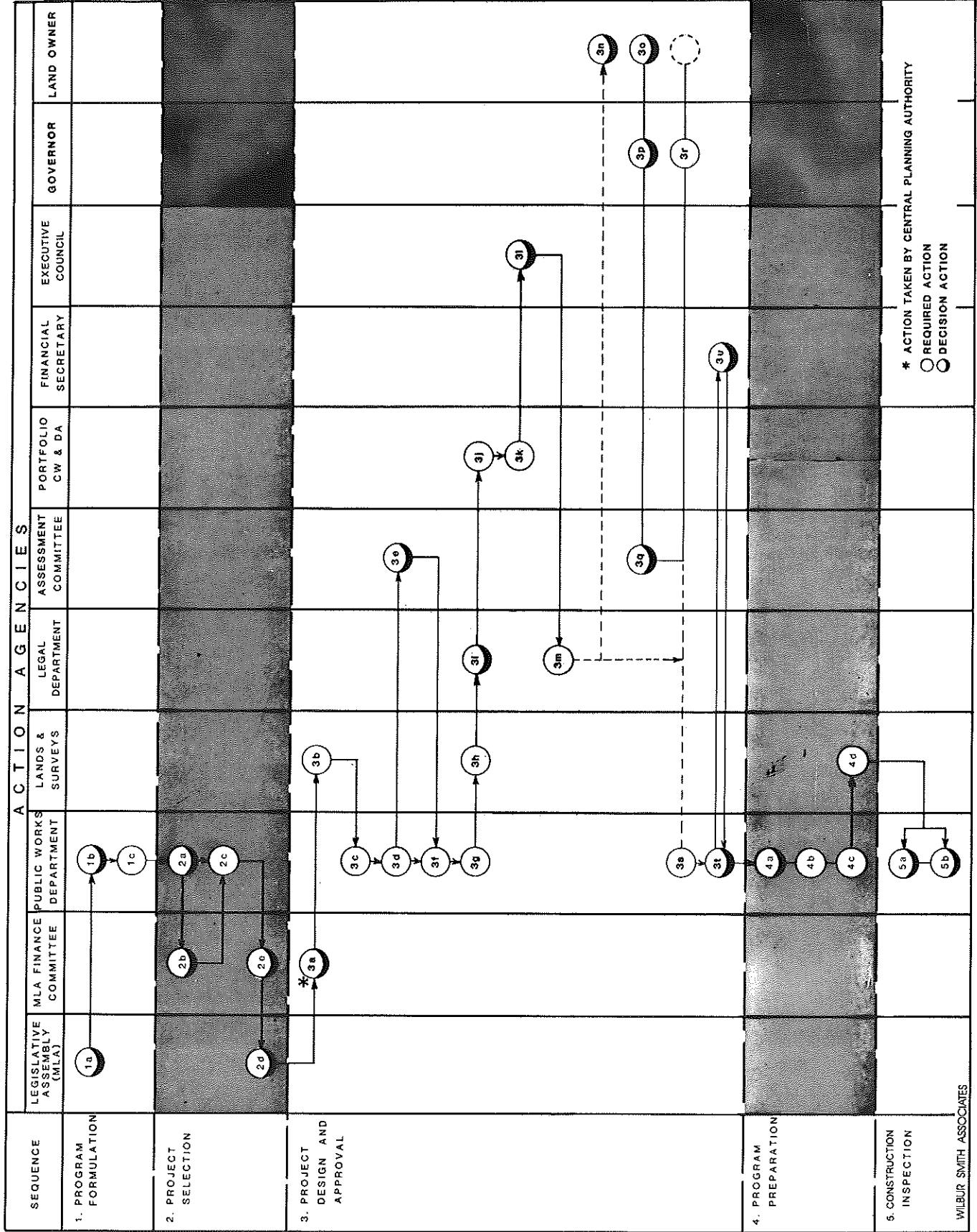


FIGURE 6

WILBUR SMITH ASSOCIATES



TABLE 1
ROAD PROJECT DECISION PROCESS

1. **Project Formulation**
 - * a. Each MLA provides list of road projects from his district to PWD.
 - * b. PWD adds other projects, based on technical considerations.
 - c. PWD prepares technical description of each project.

2. **Project Selection**
 - * a. PWD identifies projects of possible national concern.
 - * b. MLA Finance Committee selects from these projects.
 - c. The cost of national projects is deducted from funds available for road construction.
 - * d. MLA Finance Committee divides remaining funds up among districts.
 - * e. MLA's select projects for their district, consistent with funding allocated.

3. **Project Design and Approval**
 - a. Central Planning Authority reviews projects.
 - b. Department of Lands and Surveys conducts reconnaissance surveys of approved projects.
 - c. PWD develops preliminary horizontal alignment from surveys.
 - d. PWD forwards to Portfolio of CW and DA for political review and comment.
 - e. PWD obtains alignment approval from Portfolio of CW and DA.
 - f. PWD prepares project budget, based on approved horizontal alignments.
 - g. PWD sends to Department of Lands and Survey for property acquisition, as necessary.
 - h. Department of Lands and Survey prepares boundary plan and Gazette Notice, sends to Legal Department.
 - * i. Legal Department reviews Gazette Notice.
 - j. Portfolio of CW & DA prepares submission for Executive Council consideration.
 - k. Portfolio of CW & DA submits Gazette Notice to executive Council.
 - * l. Executive Council approves/disapproves submission.
 - m. Clerk of Legal Department publishes Notice.
 - * n. Landowner does not object within 15 days; PWD proceeds.
 - * o. Landowner objects to the Governor, within 15 days.
 - * p. Governor refers the objection to the Assessment Committee.
 - * q. The Assessment Committee determines compensation.
 - r. The Governor notifies the landowner.
 - s. PWD completes final road project design.
 - * t. PWD develops final project cost estimate.
 - (1) If below preliminary estimate, PWD can initiate construction.
 - (2) If above preliminary estimate, PWD forwards to Financial Secretary.
 - * u. Financial Secretary reviews and approves, as appropriate.

4. **Annual Works Programme Preparation**
 - * a. PWD decides for each project
 - (1) PWD construction, or
 - (2) Contractor construction.
 - b. PWD prepares annual schedule for project construction.
 - c. PWD prepares construction schedule and programme for next 3 months.
 - d. Lands and Surveys Department sets out construction control points.

5. **Construction Inspection**
 - * a. PWD inspects contractor-built projects.
 - * b. PWD also inspects PWD-built projects.

- * Decision Points

A number of the decisions evidence the trademarks of the democratic process, e.g., legislators competing for scarce resources in the interests of their constituents. Others involve government officials who are trying to stretch these same scarce resources to cover road requirements which increase inexorably, year after year. In both cases, a tool which could quantify the benefit potential of projects would be of significant assistance.

* **Recommendation:** That the process depicted in Table 1/Figure 5 (or a similar process) be considered for adoption by the Cayman Islands Government, for the assembly of the annual roads programme, and that PWD be designated as the government coordinating agency responsible.

* **Recommendation:** That during Step 1c (Preparation of Project Technical Description) of the process:

(a) That PWD attach a cover routing slip, listing the sequence of actions required, with spaces for date handled and initials of handling officer.

(b) That PWD add to each project coverage a designator termed here as a Road Viability Index that would provide a preliminary indication of the benefit/cost relationship of the projects.

* **Recommendation:** That improvements be made in the present system of notifying landowners of proposed land takings to ensure that adequate advance notice is provided.

INVESTMENT PLAN

There are two types of road improvement projects which will be required during the period 1988-1992. First, there are those essential road projects which because of their size, location, criticality, etc, should be started immediately. These projects will also impact upon Phase 1, in that they are necessary to increase the capacity of the existing road network. The cost of these projects is estimated at CI \$5.30 million. Second, are the major road construction projects. This includes the first segment of the North-South Arterial and connector roads, with an estimated cost of CI \$13.48 million, Table 2.

TABLE 2

FOREIGN AND LOCAL COMPONENTS OF FINANCIAL COSTS

1988-1992

PROJECT DESCRIPTION	PROJECT TYPE ⁽¹⁾	<u>ESTIMATED COSTS (C/\$000)</u>			
		<u>Construction</u>			
1. IMMEDIATE ACTION PROJECTS		<u>Foreign</u>	<u>Local</u>	<u>Land</u>	<u>TOTAL</u>
a. Owen Roberts Drive/Dorcy Drive	I	7	3	4	14
b. Eastern Avenue/West Bay Road	I	19	9	42	70
c. Mary Street/Harbour Drive	I	5	3	104	112
d. Eastern Ave/Shedden Rd/Crewe Rd	I	74	36	268	378
e. School Access Road	S	336	164	-	500
f. Walkers Road/Boilers Road	I	90	44	261	395
g. South Church St/Boilers Road	I	38	18	25	81
h. Miscellaneous Roads	S	<u>2517</u>	<u>1233</u>	<u>-</u>	<u>3750</u>
Sub-Total		3086	1510	704	5300
2. PHASE 1 PROJECTS					
a. North-South Arterial	P	3727	1825	1484	7036
b. Roundabouts, N-S Arterial	I	503	247	282	1032
c. Fort Street Extension	P	785	385	1198	2368
d. Palm Heights Access Road	P	220	108	36	364
e. Hyatt Hotel Access Road	P	197	96	32	325
f. Holiday Inn Connector	P	398	195	269	862
g. Royal Palms Connector	P	338	165	682	1185
h. Crewe Road/North Sound Way	I	<u>156</u>	<u>76</u>	<u>80</u>	<u>312</u>
Sub-Total		6324	3097	4063	13484
Total		9410	4607	4767	18784

(1) Legend

I - Intersection.

P - Primary.

S - Secondary Road.

SUMMARY

A road construction program totaling CI \$18.78 million has been proposed for the 1988-1992 timeframe, along with recommended phasing of investments. Of this, CI \$13.48 million is allocated for the principal investment, the Phase 1 projects. Since the proposed Phase 2 program (1992-1997) builds upon Phase 1, it is imperative that at least the bulk of the 1988-1992 program be successfully implemented. Phase 2 calls for a capital investment in transport facilities of about \$3.82 million, including four major arterial roads and nine other projects (Table 3). Only the dual carriageway proposal (item 1b.) showed a positive Benefit/Cost Ratio within the 10-year program.

TABLE 3**FOREIGN AND LOCAL COMPONENTS OF FINANCIAL COSTS**

1993-1997

PROJECT DESCRIPTION	PROJECT TYPE ⁽¹⁾	ESTIMATED COSTS (CI\$000)			
		Construction Foreign	Local	Land	TOTAL
1. PHASE 2 PROJECTS					
a. North-South Arterial to Batabano	P	4323	2128	4287	10738
b. Dual Carriageway Arterial	P	1243	609	-	1852
c. East-West Arterial	P	1860	911	338	3109
d. Outer Bypass to Walkers Road	P	<u>1385</u>	<u>679</u>	<u>4034</u>	<u>6098</u>
Sub-Total		8811	4327	8659	21797
2. OTHER PROJECTS					
a. North-South Local Extension	S	1102	540	2797	4439
b. New North Sound Road	S	602	295	1196	2093
c. Jennett Street Extension	S	115	57	500	672
d. Inner Bypass Extension	P	533	261	1426	2220
e. Airport Drive	S	707	347	1163	2217
f. Jennett Street/Edward Street	I	5	3	108	116
g. Hospital Road/Smith Road	I	42	8	-	50
h. Access Roads	S	294	144	447	885
i. Other Roads at 750/yr.	S	<u>2517</u>	<u>1233</u>	-	<u>3750</u>
Sub-Total		5917	2888	7637	16442
Total		14728	7215	16296	38239

⁽¹⁾ Legend

- I - Intersection.
- P - Primary.
- S - Secondary Road.

ROAD NETWORK RECOMMENDATIONS

For each area wide or local deficiency identified, one or more potential solutions was formulated. These alternatives have been evaluated based upon their geometry, construction cost, vehicle capacity ratio and Benefit/Cost parameters. The result of the analysis was such that all practical solutions considered necessary for the first five-year construction program proved to be cost beneficial. Preliminary design drawings have been prepared for each recommended project in the first 5-year program.

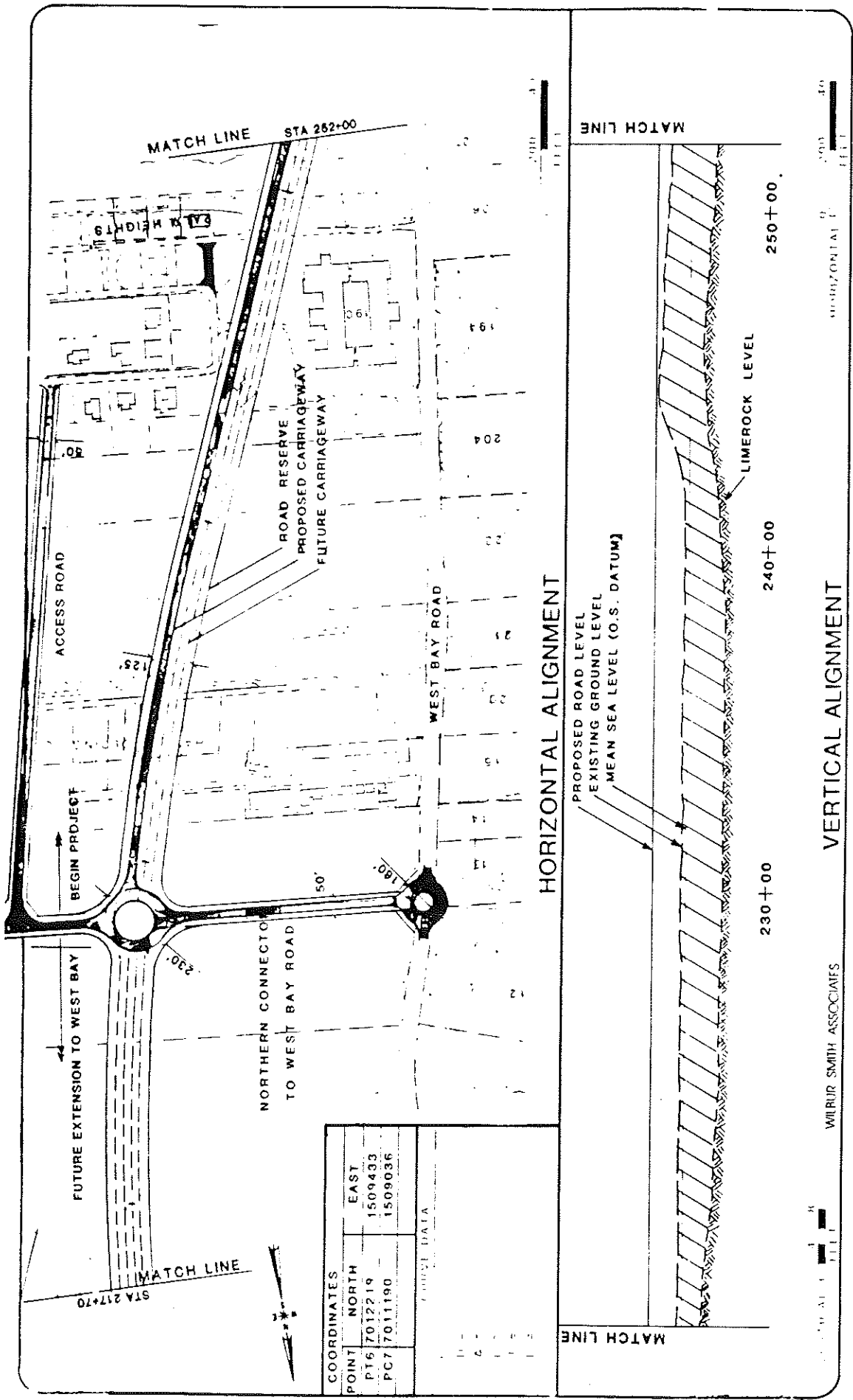
1992 RECOMMENDATIONS

The following recommendations are based upon the need to achieve a level-of-service C to the greatest extent possible. Each improvement is designed to stand on its own as a needed project, but each is also an integral part of the 1997 road network.

West Bay Road Corridor - Analysis of the advantages and disadvantages of each possible alternative has resulted in a recommendation that the North-South Expressway is the most suitable alternative. The new expressway should be constructed as a two lane road between the Holiday Inn Connector Road and a new intersection with North Sound Road, with at-grade connections to West Bay Road at two intermediate points. The ultimate design should be for four lanes with a median, including full control of access and grade-separated intersections, except at the two terminal points where roundabouts are appropriate (Figures 6, 7, 8, 9 and 18).

Two lane connector roads should be constructed from new roundabouts on West Bay Road at two locations. One would be at a point just south of the Holiday Inn, and would extend east of the expressway to a junction with a new service road. The service road would run south with the expressway to intersect local roads in the area north of the canal. A second two lane connector road should begin at a new roundabout on West Bay Road just north of the Royal Palms Hotel. It would extend east and intersect the Expressway at a roundabout. Further east it intersects a service road running north to the Hyatt Hotel property.

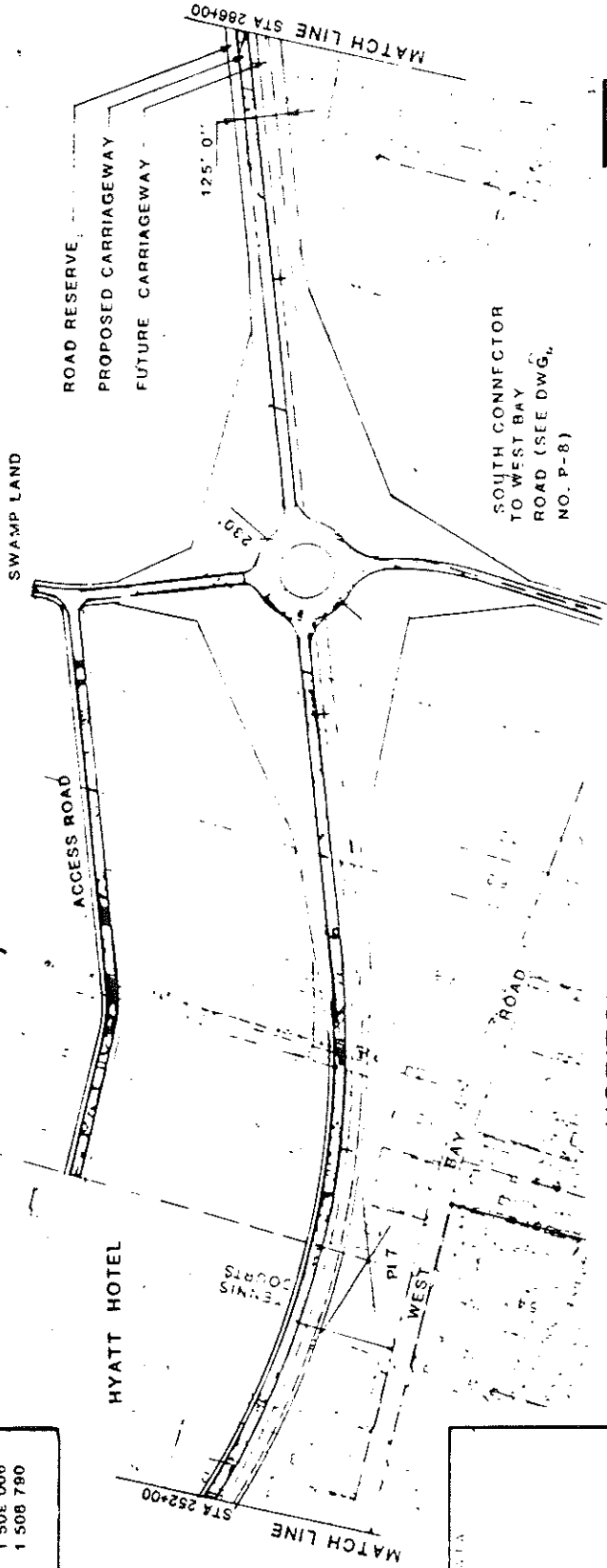
Existing West Bay Road - Because of the rapid development expected to continue along this road, it is recommended that the right-of-way be increased to 64 feet of width in order





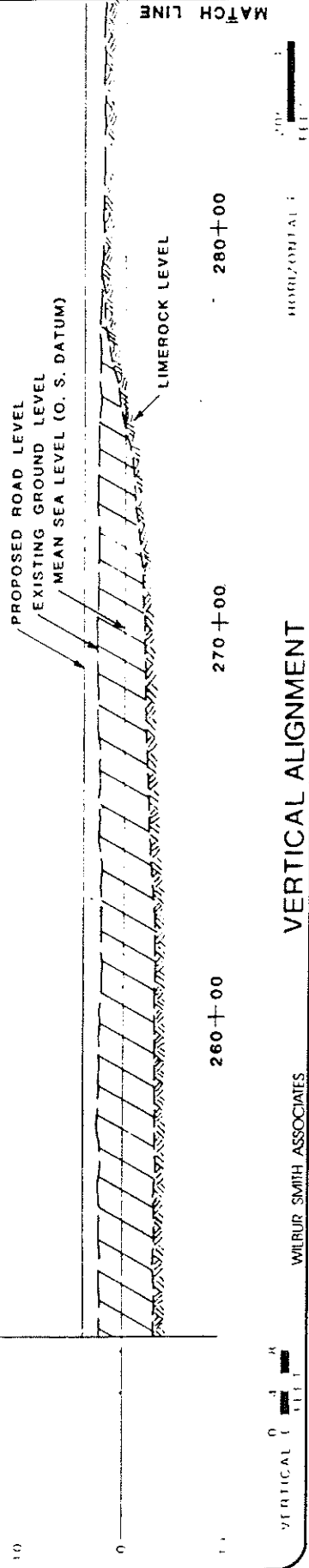
COORDINATES

PT 7 7 009 899 1 50E 006
 PT 7 7 010 550 1 50B 780



HORIZONTAL ALIGNMENT

STATION	CHORD BEARING
1+0	1909'
2+0	3'00"
4+0	38°31'
1+2	1317'
1+3	686'
1+4	119'



**MGT P STUDY
 GRAND CAYMAN BWI**

**PROPOSED NORTH SOUTH
 ARTERIAL
 STA 252+00 TO STA 286+00**

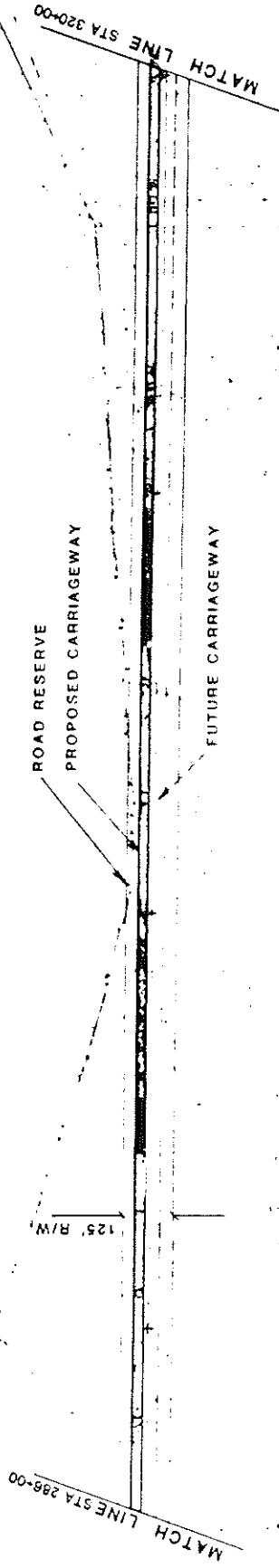
LEGEND
 1. ALL LEVELS SHOWN ARE APPROXIMATE
 CONSTRUCTION PRE 1992
 PEAT
 LIMEROCK
 Wilbur Smith and Associates

FIGURE 7



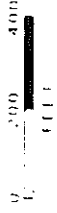
COORDINATES
 400 100 000 000
 100 000 000 000

SWAMP LAND



CURVE DATA

HORIZONTAL ALIGNMENT



PROPOSED ROAD LEVEL
 EXISTING GROUND LEVEL
 MEAN SEA LEVEL (O.S. DATUM)



VERTICAL ALIGNMENT

WILBUR SMITH ASSOCIATES



M G T P STUDY
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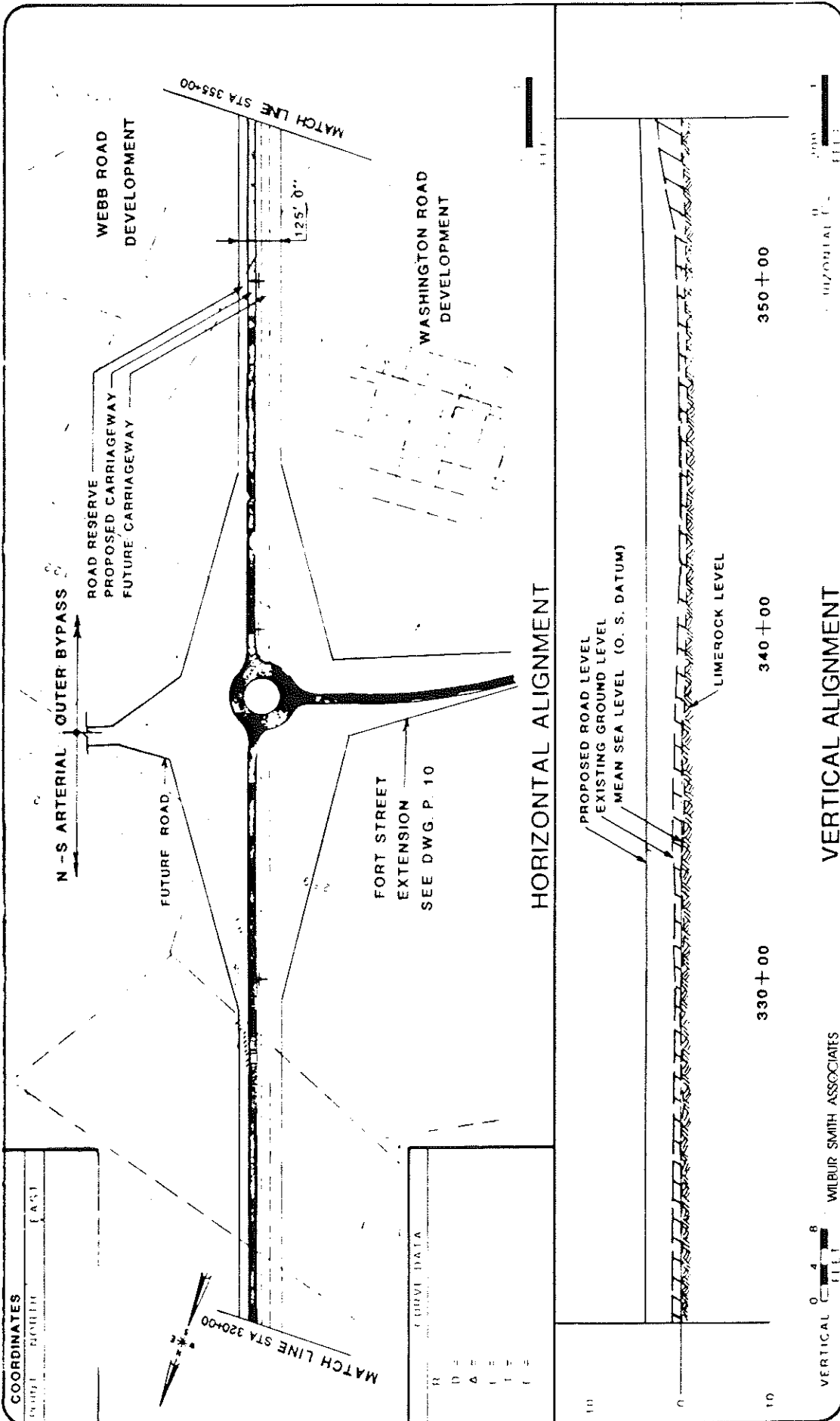
FIGURE 8

PROPOSED NORTH SOUTH
 ARTERIAL
 STA 286+00 TO STA 320+00

LEGEND
 ALL LEVELS SHOWN ARE APPROXIMATE
 CONSTRUCTION PRE 1992

PEAT
 LIMESTONE





LEGEND
 1. ALL LEVELS SHOWN ARE APPROXIMATE
 CONSTRUCTION PRE 1992
 PEAT
 LIMEROCK

PROPOSED NORTH SOUTH ARTERIAL
 STA 320+00 TO STA 355+00

M G T P STUDY
GRAND CAYMAN BWI

FIGURE 9



COORDINATES	
PCR	7 001 272
PTR	0 916
PC9	0 178
PT9	0 070
PC10	6998 827
PT10	8 305
EOP	8 540

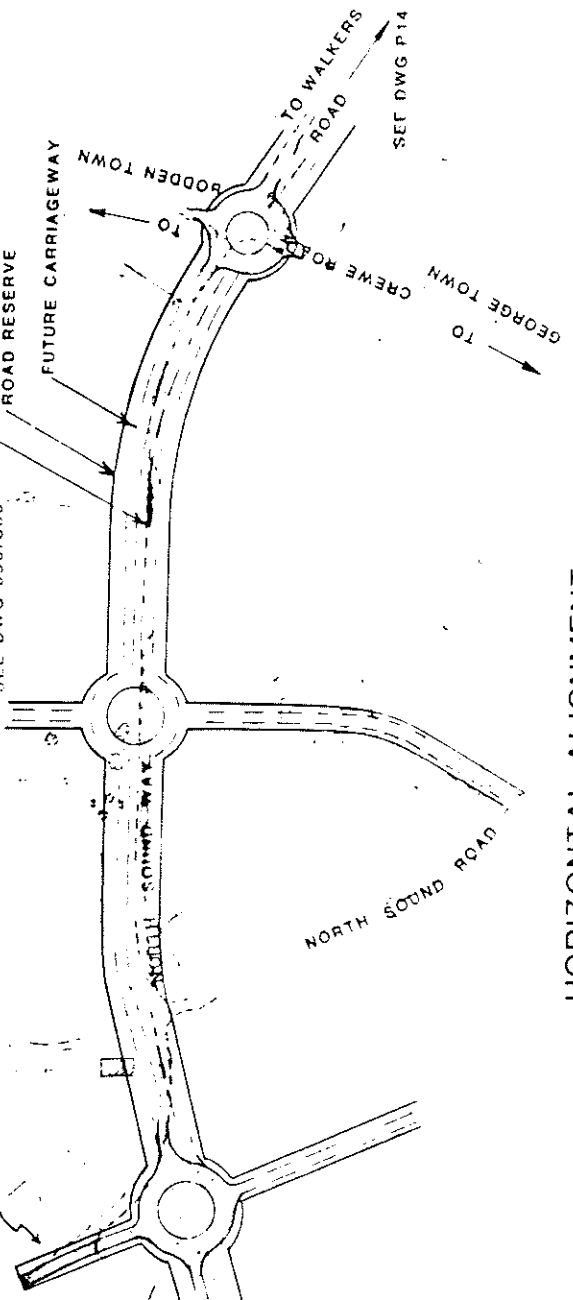
COORDINATES		
POINT	NORTH	EAST
PI 8	7 001 096	1 511 941
PI 9	0 100	2 167
PI 10	6 998 845	2 132

NEW NORTH SOUND ROAD
FOR DETAILS SEE DWG 590/330

AIRPORT DRIVE
SEE DWG 690/330

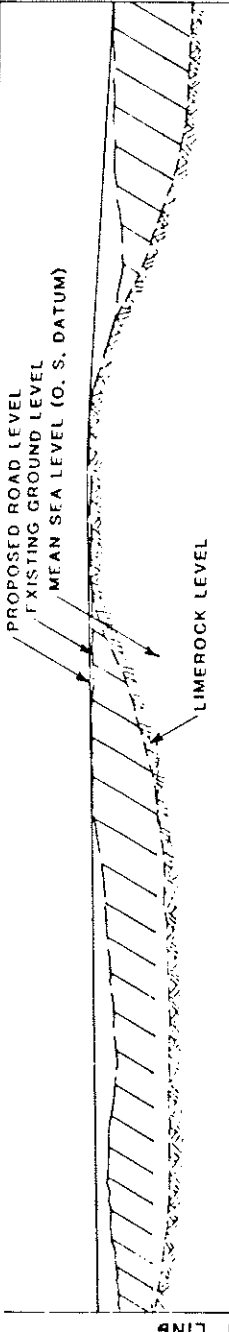
EXISTING ALIGNMENT
PRE 1992
ROAD RESERVE

FUTURE CARRIAGEWAY



57.30	6.97	95.5	PI 8	PI 9	PI 10
1' 00"	9' 00"	6' 00"			
3' 40"	14' 22"	33' 27"			
367	160	5.58			
184	80	287			
3	5	42			

HORIZONTAL ALIGNMENT



360+00 370+00 380+00 383+33 END

VERTICAL ALIGNMENT

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David Leahley & Partners Inc.

M G T P STUDY
GRAND CAYMAN BWI

PROPOSED NORTH SOUTH
ARTERIAL
STA 355+00 TO STA 383+33

LEGEND
1. ALL LEVELS SHOWN ARE APPROXIMATE
CONSTRUCTION PRE 1992
PEAT
LIMEROCK

FIGURE 10

to accommodate the future widening. This also recommended that existing road segments opposite shopping plazas and other major traffic generators be widened to accommodate protected right-turn storage lanes.

George Town Area - There are a limited number of possibilities for improving the traffic flow into George Town. The solution which proved most beneficial was that of linking the North-South Expressway to Fort Street. This Fort Street connector would commence at a roundabout on the North-South Arterial before crossing the presently undeveloped land to the north and west of the Washington Road Development (Figures 11 and 12). A roundabout would be constructed at Eastern Avenue and the new connector road would continue across the "Rock Hole" area before linking to Fort Street.

An improvement was also recommended for the intersection of Crewe Road with North Sound Way. With increasing traffic expected on the latter road as it becomes a link in the Outer Bypass, it is necessary to build a small roundabout to equally serve all traffic approaches.

Immediate Action Improvements - The proposed 1992 road network will depend to a considerable extent on the ability of existing intersections to carry future traffic loads. A number of these junctions have been identified as needing modification in order to improve capacity. Included are:

- * Owen Roberts Drive/Dorcy Drive
- * Eastern Avenue/West Bay Road
- * Mary Street/Harbour Drive
- * Eastern Avenue/Shedden Road
- * School Access Road
- * Walkers Road/Boilers Road:
- * South Church Street/Boilers Road:

Central Business District - A modified one-way traffic system is recommended for the Central Business District. This proposal does not necessitate the construction of capital intensive improvement schemes. Only minor modifications are necessary to achieve the system shown in Figure 13.

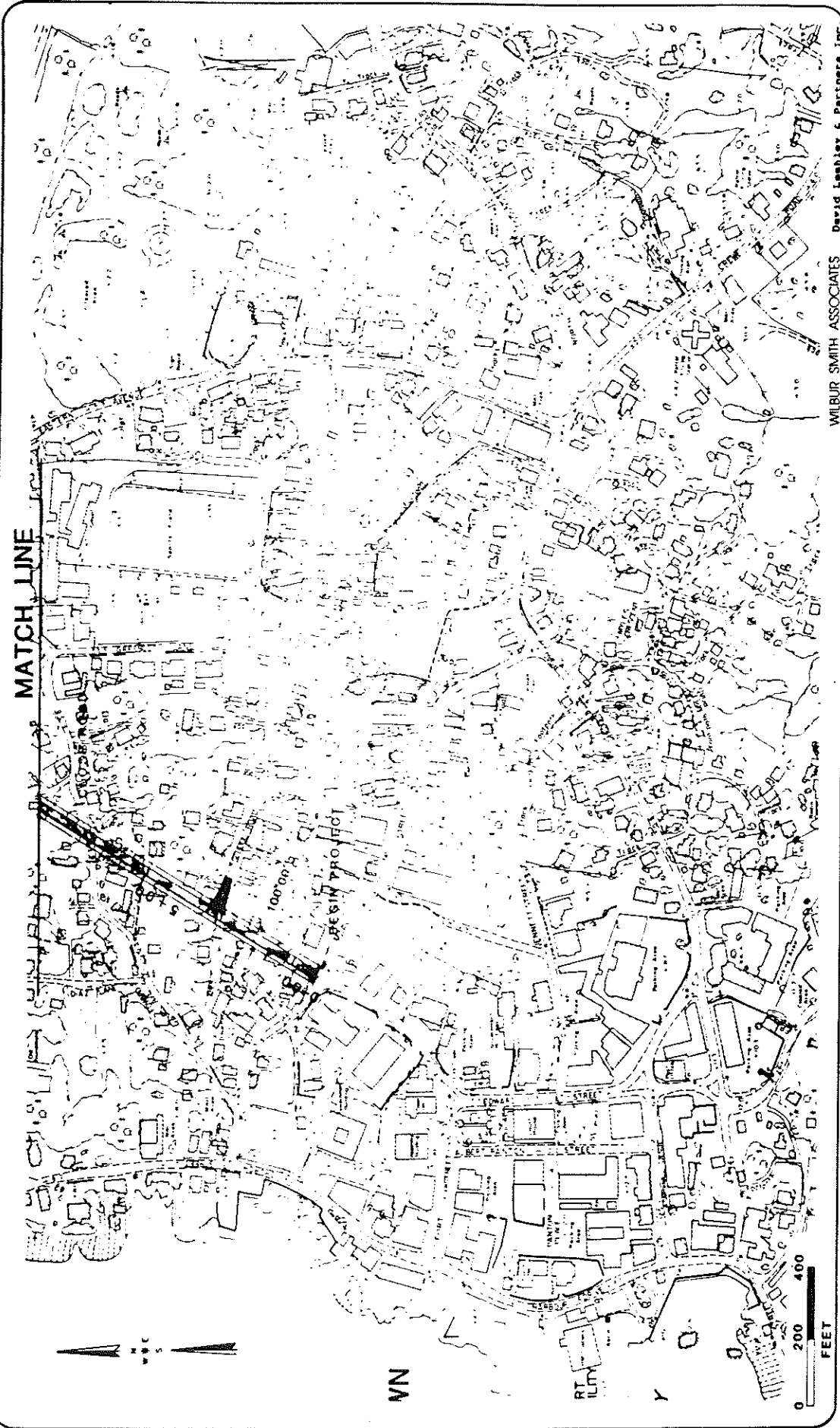
Enforcement of Subdivision Standards - At present the procedure for approval of private development projects requires application to the Central Planning Authority. That body in turn consults with technical branches of Government regarding appropriate design and specifications. Where such development includes provision of roads and streets, including storm drainage, it is recommended that the approval process include a stipulation that developers submit detail design drawings and specifications for review prior to approval for construction to begin. Plans to be reviewed should include geometric and structural design, storm drainage, site grading, traffic control, and material specifications.

Financial Cost, 1988-1992 Recommendations - Cost estimates have been prepared for individual elements of the recommended works prior to 1992 and are shown on Table 4. The land acquisition costs shown have been computed using the unit rates established in an earlier MGTP report on Existing Conditions. In all cases, the cost of engineering design is included in the first year of construction.

1997 RECOMMENDATIONS



These recommendations follow on in a logical progression from those given for 1992. Their implementation should be considered part of a 10 year development programme. Road construction beyond 1997 has been addressed by the delineation of recommended road reserves which define the anticipated traffic needs for the year 2000 and beyond. Included are:

- *North South Arterial, widening to four lanes
- *New North Sound Road into CBD
- *Jennett Street Extension to Mary Street/Shedden Road
- *Eastern Avenue extension to Smith Road
- *Airport Drive connection to Eastern Avenue
- *Jennett Street/Edward Street intersection improvement
- *Hospital Road/Smith Road signal
- *Local Access Roads where existing access is removed
- *Annual improvements to existing roads



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LEGEND

-  NEW ROAD CONSTRUCTION
-  NEW RIGHT OF WAY

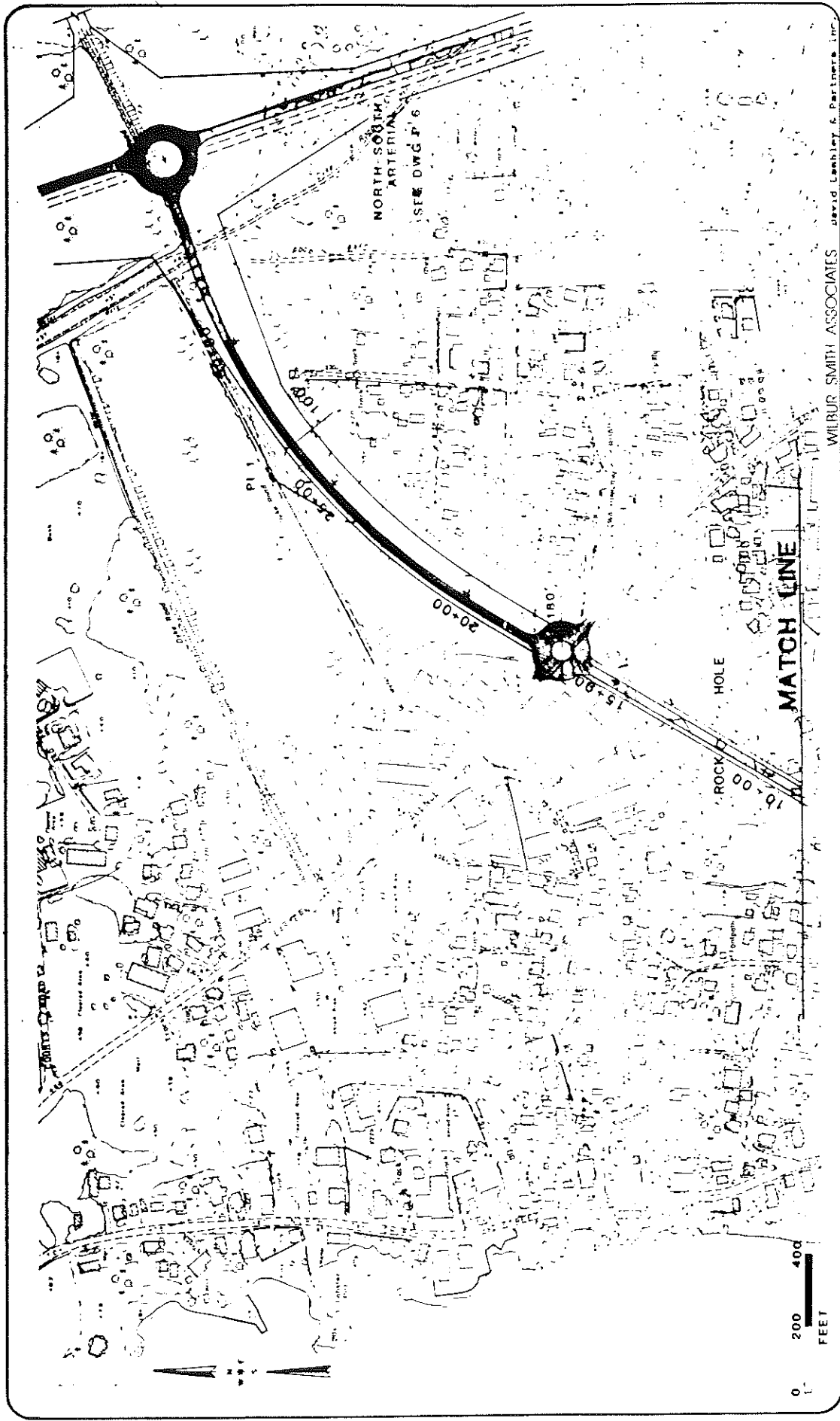
FORT STREET EXTENSION

SHEET 1 OF 2

MGTP STUDY
GRAND CAYMAN BWI



FIGURE 11





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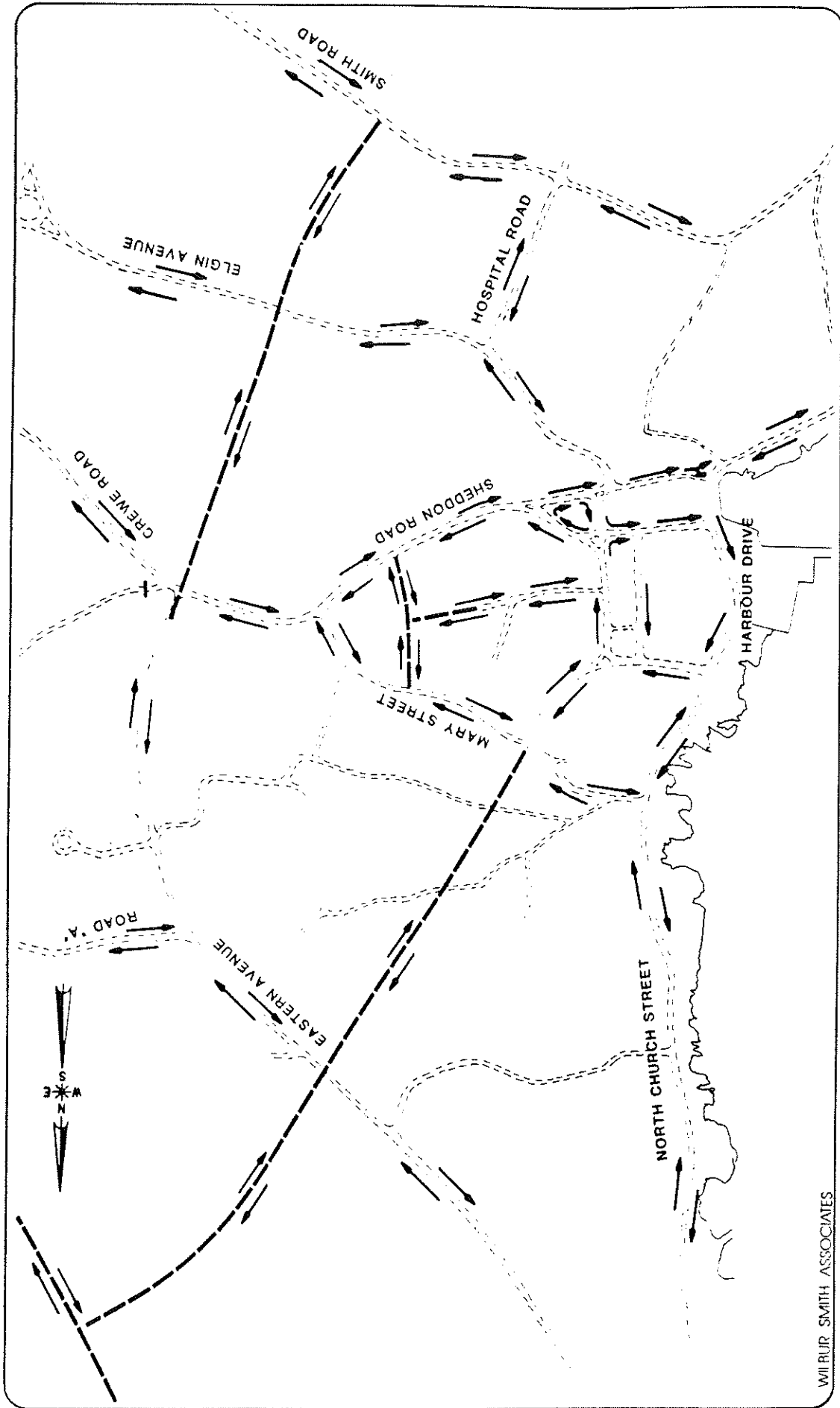
LEGEND

-  CONSTRUCTION PRE 1992
-  NEW RIGHT OF WAY

FORT STREET EXTENSION
SHEET 2 OF 2

MGTP STUDY
GRAND CAYMAN BWI

FIGURE 12



WILBUR SMITH ASSOCIATES

MGTP STUDY
GRAND CAYMAN BWI

FIGURE

13

LEGEND

— FLOW ON PRINCIPAL EXISTING ROADS

— FLOW ON PROPOSED ROADS

CENTRAL AREA

TRAFFIC CIRCULATION PLAN

TABLE 4

**FINANCIAL COST OF ROAD IMPROVEMENTS
1988-1992**

<u>PROJECT DESCRIPTION</u>	<u>PROJECT TYPE</u> ⁽¹⁾	<u>ESTIMATED COSTS</u> ⁽²⁾			<u>ANNUAL EXPENDITURES</u>					
		<u>Land</u>	<u>Construction</u>	<u>TOTAL</u>	<u>1988</u>	<u>1989</u>	<u>1990</u>	<u>1991</u>	<u>1992</u>	
------(C/\$000)-----										
1. <u>Immediate Action Projects</u>										
a. Owen Roberts--Dorcy Dr	I	4	10	14	* 14	-	-	-	-	-
b. Eastern Ave--West Bay Rd	I	42	28	70	* 70	-	-	-	-	-
c. Mary Street--Harbour Dr	I	104	8	112	* 112	-	-	-	-	-
d. Eastern Ave--Shedden Rd- -Crewe Rd	I	268	110	378	* 378	-	-	-	-	-
e. School Access Rd	S	-	500	500	* 500	-	-	-	-	-
f. Walkers Rd--Boilers Rd	I	261	134	395	- * 395	-	-	-	-	-
g. So Church St.--Boilers Rd	I	25	56	81	- * 81	-	-	-	-	-
h. Miscellaneous Roads	S	-	<u>3,750</u>	<u>3,750</u>	<u>* 750</u>	<u>* 750</u>	<u>* 750</u>	<u>* 750</u>	<u>* 750</u>	<u>* 750</u>
SUBTOTAL		704	4,596	5,300	1,824	1,226	750	750	750	
2. <u>Phase 1 Projects</u>										
a. North-South Arterial	P	1,484	5,552	7,036	- * 264	1,495	3,518	1,759		
b. Roundabouts - N-S Arterial	I	282	750	1,032	- * 36	222	516	258		
c. Fort Street Extension	P	1,198	1,170	2,368	- * 56	536	1,184	592		
d. Palm Heights Access Road	P	36	328	364	- * 16	348	-	-		
e. Hyatt Hotel Access Road	P	32	293	325	- * 14	311	-	-		
f. Holiday Inn Connector	P	269	593	862	-	- * 28	834	-		
g. Royal Palms Connector	P	682	503	1,185	-	- * 24	636	525		
h. Crewe Rd - North-Sound Wy	I	<u>80</u>	<u>232</u>	<u>312</u>	-	-	-	<u>* 11</u>	<u>301</u>	
SUBTOTAL		4,063	9,421	13,484	-	386	2,964	6,699	3,435	
TOTAL		4,767	14,017	18,784	1,824	1,612	3,714	7,449	4,185	

Source: MGTP Study

(1) Legend: I - Intersection,

P - Primary Road, and

S - Secondary Road.

(2) Includes design and construction cost. Design year indicated by asterisk.

Financial Cost, 1993-1997 Recommendations - The total cost for nine projects is estimated to be \$13.86 million, including \$4.84 to acquire right-of-way.

RECOMMENDED FUTURE ROAD NETWORK

All of the projects previously recommended for the 10-year improvement program were qualified through the benefit/cost analysis as being a valuable addition to the road network. It is quite likely that in the near future other projects will also be needed in order to serve future development on Grand Cayman. Those projects considered for Phase Two construction but with currently low need relative to cost are set out in Table 5.

TABLE 5
FINANCIAL COSTS OF ROAD IMPROVEMENTS, FUTURE

<u>PROJECT DESCRIPTION</u>	<u>TYPE PROJECT</u> ⁽¹⁾	<u>ESTIMATED COSTS (CI \$000)</u>		
		<u>Land</u>	<u>Construction</u> ⁽²⁾	<u>Total</u>
a. N-S Arterial to Botabano	P	4,287	6,451	10,738
b. E-W Arterial to Crewe Road	P	338	2,771	3,109
c. South Sound Arterial	P	4,034	2,064	6,098
d. N-S Botabano Road to Spanish Bay	L	2,797	1,642	4,439

Source: MGTP Study

(1) Legend: P = Primary Roads,
L = Local Roads.

(2) Includes Design Costs.

RIGHT-OF-WAY RECOMMENDATIONS

Present Right-of-Way (R/W) widths of public roads in Grand Cayman vary between 30 and 50 feet, depending upon the age of the road and its geographical location. It is recommended that all existing public roads have at least a minimum width of 40 feet in order to accommodate two 12 foot lanes, a two foot kerb setback on each side, and six foot wide sidewalks on each side.

Additional width is required on certain major arterial roads in order to accommodate paved shoulders, a median, and roadside drainage. Such important traffic routes should always include sufficient R/W to accommodate anticipated 20-year traffic demand. Four lane design in a suburban or rural setting should include 125 feet of R/W. This width could be reduced to 80 feet in an intensely developed urban setting, but would require special roadway design considerations and speed restrictions. Two-lane arterial roads in all areas would require a 50 foot wide R/W.

PARKING RECOMMENDATIONS

The recommended parking programs for Central George Town recognised an expected shortfall of 316 spaces by 1992. Although the MGTP Study lacks sufficient information and resources to recommend specific solutions, general recommendations have been developed. Logical areas for new or improved parking facilities are indicated on Figure 14.

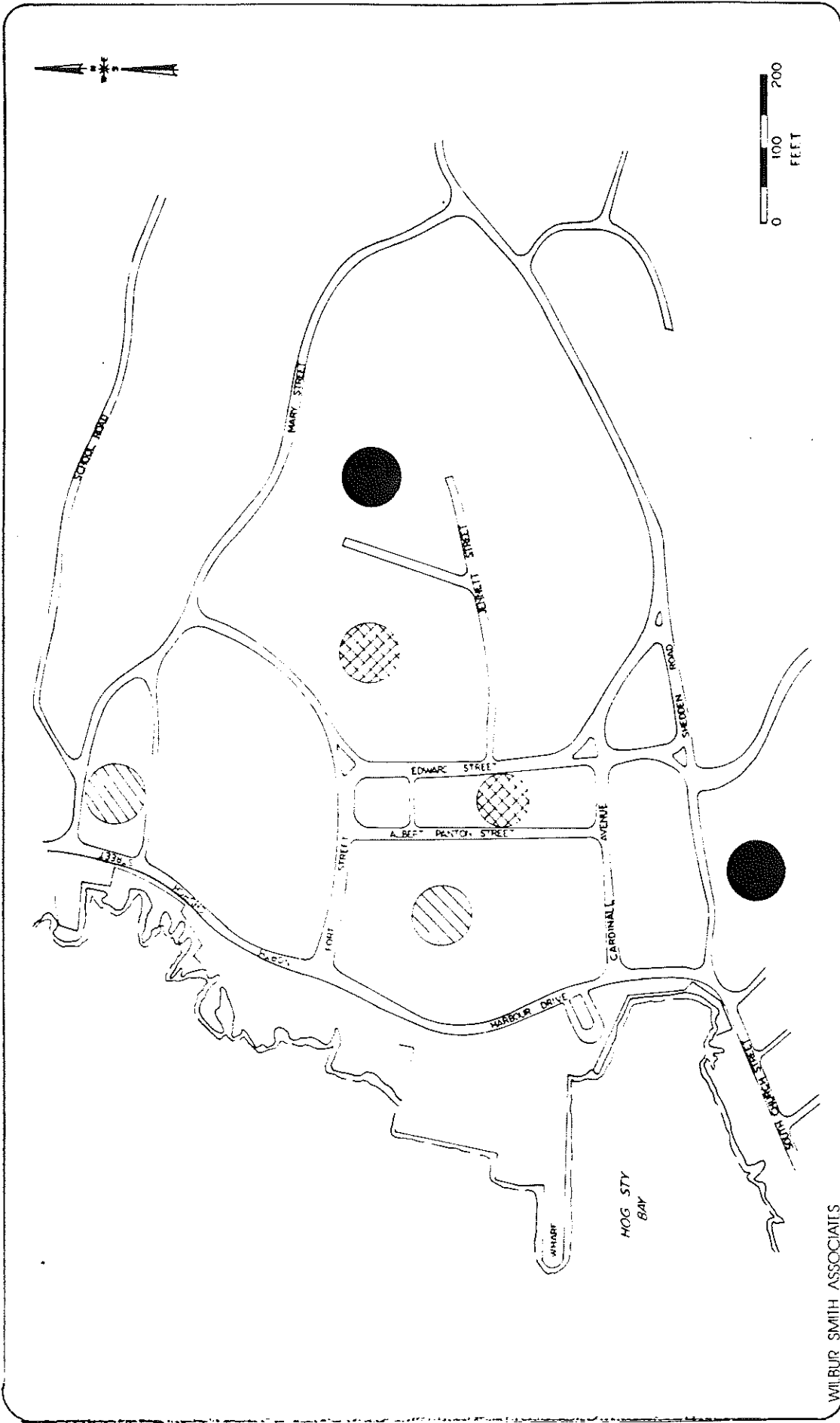
It is recommended that legal kerb parking space available in 1987 should be retained for as long as possible in future years. Use of these spaces should be regulated in a manner that encourages a high rate of turnover rather than use for long term parking.

Allowable Parking Duration - A maximum allowable parking duration should be in effect at kerb spaces located in the prime commercial area. It is recommended that kerb parking be so regulated on all principal streets in the Central Area. The recommended time limit of 90-minutes is adequate for the majority of shopping and business visits.

Proposed Parking Rates - A minimum charge of \$0.25 is recommended for the first half hour, and \$0.25 for each additional hour up to a daily minimum fee of \$2.00. A minimum charge for monthly parking of \$22.00 is appropriate.

Kerb Parking Control - To achieve short-term kerb parking control, alternative regulation systems were studied. Recognising the particular needs of the George Town central area, it is recommended that the disc system be adopted for regulation of kerb parking. Such a system involves relatively little investment, and is easy to use by motorists.

Enforcement - It is strongly recommended that a traffic warden system be implemented in George Town. Parking fees, collected through the sale of discs (renewable every three months), and fines for violations, should generate sufficient revenue to cover the expense of administering the salaries of the traffic wardens.



PARKING PROGRAMME CENTRAL GEORGE TOWN

MGTP STUDY
GRAND CAYMAN BWI

FIGURE 14

ORGANISATION, POLICIES AND LEGISLATION

Much of the Master Ground Transportation Plan (MGTP) Study is concerned with road network planning, i.e. development of a physical plan to guide the road improvement programme over the next ten years. Complementing and supporting the physical plan are various institutional matters encompassing Government's organisation for transport, its policies regarding roads and their use, and the legislation granting authority for various actions to be undertaken and prescribing conditions associated with a variety of subjects. Summarised in Table 6 are recommendations which are intended to improve these institutional matters so that the objectives for the ground transport sector are achieved.

TRAFFIC MANAGEMENT AND CONTROL

A major recommendation to achieve better use of the road system and to improved traffic operations concerns the transfer of traffic engineering functions from the Royal Cayman Islands Police (RCIP) to PWD. Several recommendations are designed to improve parking regulations, including amendment of existing legislation to permit parking tickets to be left with offending vehicles. Further, it is recommended that Government undertake a major overhaul or redrafting of the Traffic Law and its supporting Regulations and Road Code.

MOTOR VEHICLES AND DRIVERS

It is also recommended that restrictions be placed on the maximum size and weight of vehicles for purposes of road safety and pavement life preservation.

ROAD MAINTENANCE AND UTILITIES

More cost effective planning and control of pavements and road maintenance could be achieved if appropriate management systems are instituted.

PERFORMANCE MONITORING

Expansion of current performance monitoring activities is recommended, particularly regarding a structured analysis of road accident data in relation to the physical features of the road system and traffic control measures.

TABLE 6

SUMMARY OF RECOMMENDATIONS REGARDING ORGANISATION, POLICIES AND LEGISLATION

TRAFFIC MANAGEMENT AND CONTROL

1. Adopt uniform internationally recognised standards for traffic control devices.
2. Replace all non-conforming devices.
3. Executive Council, MLA's and other government departments submit all proposals for changes in speed limits and traffic signs to PWD for technical review.
4. Transfer all traffic engineering functions to PWD.
5. Require PWD to coordinate all changes in traffic controls with RCIP.
6. Establish a small unit in PWD to undertake traffic engineering functions.
7. Consider the merits of establishing a special Traffic Warden unit to enforce parking regulations.
8. Undertake an effective and vigorous parking enforcement programme.
9. Amend legislation to permit leaving a parking ticket with offending vehicles.
10. Consider expanded use of the wheel lock device as a deterrent to illegal parking.
11. Amend the Traffic Law to permit use of metered parking.
12. Empower PWD to require removal of road encroachments and sight obstructions.
13. Assess charges to recover road damage costs in addition to fines for traffic accidents and offenses.
14. Apply such revenues to the PWD budget for replacing and repairing traffic signs, etc.
15. Impose time and route restrictions on slow moving vehicles.
16. Amend/redraft the Traffic Law, Traffic Regulations and Road Code to purge them of encumbering details.

MOTOR VEHICLES AND DRIVERS

17. Transfer vehicle safety inspection responsibilities from RCIP to the Central Funding Scheme.

TABLE 6 (Cont'd)

18. Amend Section 53 of the Traffic Law regarding overhanging loads on vehicles.
19. Conduct a thorough study of the trucking industry regarding vehicle sizes and weights.
20. Consider use of Interim Guidelines regarding vehicle size and weight restrictions as developed by the MGTP Study.
21. Institute a special permit system regarding overweight and oversize vehicles.
22. Purge vehicle registration records of registered but unlicensed vehicles, following suitable notice to the vehicle owner.
23. Adopt a demerit point system regarding driving offences, supported by a computerised record system.

ROAD MAINTENANCE AND UTILITIES

24. Investigate the advantages of a structured pavement management system as a means to control pavement maintenance and rehabilitation costs.
25. Investigate the advantages of a structured maintenance management system as a means to control and schedule road maintenance activities.
26. Exercise the authority granted by Section 10 (2)(c) of the Development and Planning Law to control utility company activities which affect roads.
27. Enact legislation to protect Government from any responsibilities to maintain mosquito control trails as public roads.

PERFORMANCE MONITORING

28. Continue and possibly expand the traffic count and analysis programme.
29. Institute a vehicle weight data collection and analysis programme in connection with a weigh-in-motion scheme for enforcement of new vehicle weight restrictions.
30. Institute within PWD a structured periodic analysis of accidents and determine the need for remedial measures.

ROAD PLANNING AND DESIGN

31. Institute within PWD a continuing transport planning function built upon MGTP Study processes and the transport model.
32. Assign a staff member from the Planning Department to participate with PWD in the continuing transport planning process.
33. Base future transport planning upon a policy guideline/planning goal of Level of Service "C".
34. Adopt a formal set of design standards for roads.

TABLE 6 (Cont'd)

34. Adopt a formal set of design standards for roads.
35. Amend Section 3 of the Roads Law to adopt the MGTP Study system of functional classification of roads.

ROAD RIGHTS-OF-WAY AND ACCESS CONTROL

36. Continue the present practice of requiring developers to provide rights-of-way for new land access roads.
37. Require that the ownership of such rights-of-way be transferred to the Crown as a condition for Government acceptance of maintenance obligations.
38. Enact legislation requiring the transfer to the Crown of rights-of-way on existing private roads as a condition for continued maintenance by Government.
39. Adopt right-of-way standards and access control features proposed by the MGTP Study under the authority of Section 3 of the Roads Law.
40. Utilise the authority provided by Sections 3 and 5 of the Roads Law to schedule arterial roads which require rights-of-way in excess of 50 feet and those which involve controlled access features.
41. Adopt the principle of compensation for right-of-way acquisition in connection with major widenings of existing roads and construction of new arterial roads.
42. Continue to consider benefits conveyed to properties as well as the value of the property and damages caused in making compensation settlements.
43. Protect road reserves recommended in the MGTP from adverse development.
44. Amend Section 6 of the Development and Planning Law to eliminate the five year limitation on reserves for future roads and allow property owners to require advance acquisition of their properties if the road facility is planned for construction more than 10 years in the future.
45. Undertake acquisition of right-of-way when a land owner applies for such action on the basis of legitimate hardship circumstances.
46. Allow acquisition of entire parcels when severance damage claims are excessive or unreasonable or when hardship circumstances occur.
47. Ensure that sufficient sources are available to the Lands and Surveys Department as necessary to perform the survey activities associated with right-of-way acquisition.
48. Ensure that sufficient sources are available to the Lands and Surveys Department to perform the valuation appraisal and other right-of-way acquisition duties.
49. Adopt road regulations which, in the future, will preclude discrepancies between legal descriptions of road rights-of-way and the actual location of roads as built.

TABLE 6 (Cont'd)

50. Empower the Lands and Surveys Department to rectify differences which currently exist between legal descriptions of road rights-of-way and the reserves demarcated on the ground.

DEVELOPER ROADS

51. Give official status to 1983 PWD Subdivision Road Standards, after they have been reviewed to assure consistency with the MGTP standards.
52. Amend current regulations so as to require developers to submit more specific plans regarding proposed roads.
53. Adopt a mandatory protocol for PWD review and approval of plans for developer roads.
54. Modify current procedures to include PWD inspection of developer roads during the construction phase.
55. Ensure that sufficient resources are available to PWD to undertake these additional duties.
56. Require developers to post a bond to cover the cost of possible premature maintenance and rehabilitation of developer roads.
57. Amend the Development and Planning Law to preclude the avoidance of certain development requirements by incremental development of a property in stages of six lots or less.
58. Amend the Development and Planning Law to require conformance to parking provision standards if redevelopment of a property will increase parking demands.
59. Undertake a joint PWD/Planning Department review of parking requirements for new developments as contained in Section 7 (1) of the Development and Planning Regulations.

TRANSPORT FINANCIAL PLANNING

60. Assign road budget formulation responsibilities to a newly created Traffic Transport Unit in PWD.
61. Develop and maintain a multi-year programme of road capital works in addition to the annual budget.
62. Require that all projects desired by MLA'S shall be presented to PWD for technical evaluation.
63. Adopt a simple project prioritisation process for assigning projects to groups reflecting their urgency, worthiness, type of project and road system classification.

TABLE 6 (Cont'd)

64. Maintain the MGTP public participation process in connection with the multi-year roads capital works programme.
65. Give serious consideration to the institution of a development impact fee scheme in connection with roads, sewers, water systems, schools, etc.

GOVERNMENT TRANSPORT ORGANISATION

66. Establish a special Traffic and Transport Unit within PWD with duties as set forth in the MGTP Study.
67. Establish a Major Projects Unit within PWD to undertake the expanded road construction programme required by the MGTP.
68. Ensure adequate PWD staff resources to implement the MGTP.
69. Expand PWD headquarters and other facilities, with supporting equipment and furnishings, to support implementation of the MGTP.
70. Continue to seek Caymanian students of a superior calibre and encourage their pursuit of engineering educations with the long term objective of having them fill important positions in PWD.
71. Vigorously pursue staff recruitment abroad to fill vacant engineering positions in PWD.
72. Rotate senior professional PWD staff between assignments to broaden their expertise and qualify them for top management positions.
73. Employ engineering design consultants to supplement PWD resources.
74. Employ road construction contractors to supplement PWD resources.
75. Establish a right-of-way unit within the Lands and Survey Department.
76. Designate PWD as the lead agency regarding roads and traffic.
77. Extend the MGTP Steering Committee concept to the MGTP implementation phase.

OTHER LEGISLATION MATTERS

78. Modify existing legislation to permit denial of development approval where there are inadequate provisions for access to the public road system across other properties.
79. Require that new property development include adequate road connections with any other existing developments which may have only easement access to the public road system across the land proposed to be developed.

TABLE 6 (Cont'd)

80. Notwithstanding the above recommendations, continue to permit construction of single-family dwelling units on properties which have easement access across adjacent properties to the public road system.
81. Reassess Government's policy regarding tort liability if experience in the future shows signs of materially increased exposure to tort litigation.

ROAD PLANNING AND DESIGN

Continuance of the transport planning process developed in the MGTP Study is recommended, along with other planning and design recommendations.

ROAD RIGHTS-OF-WAY AND ACCESS CONTROL

Recommendations regarding Government's policies in relation to right-of-way acquisition and reservation of lands for future roads undoubtedly are the most important and the most urgent of all the institutional recommendations. Government must institute measures whereby major arterial roads can be widened and new roads constructed in order to implement the MGTP.

Major policy recommendations regarding road rights-of-way are summarised in Table 7. Amendments and additions to existing legislation are required. Additionally, steps must be taken so that sufficient resources are available to the Lands and Surveys Department to acquire the rights-of-way required by the MGTP.

DEVELOPER ROADS

A number of important recommendations will help Government to achieve better planning, design, construction and future maintenance of roads built by developers. Several recommendations are intended to achieve better coordination between the Planning Department and PWD.

TRANSPORT FINANCIAL PLANNING

It is essential that a multi-year programme of road projects be maintained on a continuing basis as a key element is implementing the MGTP. Further, a structured process for evaluating and prioritising road projects is essential if the public is to be assured that Government is achieving the most cost-effective use of public funds.

GOVERNMENT TRANSPORT ORGANISATION

PWD should be assigned lead agency responsibilities regarding road matters. A small Traffic and Transport Unit should be established within PWD to undertake traffic engineering, transport planning, budget formulation and similar duties. Also, a Major Projects Unit should

TABLE 7

SUMMARY OF PRINCIPAL RIGHT-OF-WAY POLICY RECOMMENDATIONS

<u>TYPE OF FACILITY/ACTION</u>	<u>RECOMMENDED POLICY</u>
1. Land Access Roads	1A. Continue current policy of no compensation except in unusual cases 1B. Require transfer of right-of-way ownership to the Crown as a condition for Government maintenance of such roads
2. Widening of Existing Roads	2A. Use authority of Section 3 of the Roads Law to schedule the width of such roads. 2B. Use the authority of Section 5 of the Roads Law to declare Government's intent to acquire additional width as necessary. 2C. Henceforth, CPA should base setback requirements on the gazetted width. 2D. Amend Section 5 of the Roads Law so that when land is acquired for the road widening, the principle of compensation is applied (i.e. if the land value/damage exceeds road benefits).
3. Road Reserves for New Arterial Roads	3A. Declare the site of such roads under Section 6 of the Development and Planning Law. 3B. Amend Section 6 to eliminate the five year limit on road reserves. Permit property owners to petition Government for immediate acquisition if the road is planned for more than 10 years in the future. Otherwise, Government should not deny development approval for properties within the road reserve. 3C. Allow hardship cases to petition Government for advance acquisition. 3D. Amend Section 5 of the Roads Law so that when land is acquired for new arterials, the principle of compensation is applied (i.e. if the land value/damage exceeds road benefits). 3E. Under the authority of Section 5 as amended, complete the acquisition of rights-of-way on a timely basis consistent with the schedule for construction of each facility.

be created to undertake MGTP projects, including both in-house projects and projects contracted to the private sector.

It is most important that the MGTP Steering Committee concept be continued during the implementation phase as a means of coordinating the activities of the several affected Government departments.

OTHER LEGISLATION MATTERS

Improved legislation is required to change present practices of approving developments which do not have adequate access to the public road system.