

BRIDGETOWN ROADS AND SAFETY IMPROVEMENT

(BA-0047)

EXECUTIVE SUMMARY

**BORROWER AND
GUARANTOR:** Barbados

EXECUTING AGENCY: The Ministry of Works, Communications and Transportation (MCW)

AMOUNT AND SOURCE: IDB: US\$18.5 million (OC)
Local counterpart funding: US\$ 8.0 million
Total: US\$26.5 million

**TERMS AND
CONDITIONS:** Amortization period: 20 years
Disbursement period: 4 years
Interest rate: variable
Inspection and supervision: 1%
Credit fee: 0.75%

OBJECTIVES: The general objective of the project is to heighten the efficiency of the various economic activities conducted in the Greater Bridgetown area by reducing the cost of transportation and cutting the time needed to transport goods and passengers in the urban district.

The project's specific objectives are:

- a. To expand traffic capacity and improve general traffic conditions in the inner and outer corridors of Greater Bridgetown and at intersections with main roads.
- b. To reduce the risk of accidents and, in general, raise the safety levels for all urban road users by improving the road infrastructure and implementing more effective traffic control measures.
- c. To optimize the use of resources earmarked for the planning, administration and control of urban traffic and help to enforce the laws and regulations applicable thereto.

DESCRIPTION:

The proposed operation will include the following components:

- a. The construction of works to improve road capacity and traffic conditions in the inner and outer road corridors of Greater Bridgetown. Contracting for the execution of works to rehabilitate and improve the physical status of about seven kilometers of existing urban roads in Greater Bridgetown, including: the widening of pavement; construction and equipping of various intersections; construction of protection and safety works such as curbs, sidewalks, zones for parking and bus stops and service to school zones, plus vertical and horizontal traffic signals; improved drainage; relocation of public services; and works to protect and improve the environment. This component includes complementary activities to expedite the flows of traffic and achieve the best possible use of the proposed road improvements. Those activities will in turn be backstopped and enhanced by the technical assistance which is also to be provided by the project.
- b. The provision of technical assistance and equipment to improve traffic safety, education, and control and management of highway traffic. The contracting of consultants to furnish the following services: (i) improved traffic control and management to raise the level of safety for users of the roads; and (ii) the development of a national program of highway education for pedestrians and motor and nonmotor vehicles. In addition, equipment will be provided for urban traffic control and management.

**ENVIRONMENTAL
CLASSIFICATION:**

The Environmental Management Committee, at its meeting of May 20, 1991, classified this as a Category III operation. The environmental impact evaluation report was approved on November 4, 1991.

BENEFITS:

The additional width of the roads slated for improvement and the complementary action to expedite the flow of traffic on these roads will increase their capacity and eliminate the dangerous competition between motor and nonmotor traffic. At present, large buses cannot use these roads because of their narrowness, irregular alignment and the two-way traffic.

The construction of intersections with stoplights and proper control of traffic at those points will smooth

the flow of traffic on the proposed roads and on the main highway system that links Bridgetown with the rest of the country. The proposed intersections will make it possible to control and improve vehicle crossings, while reducing their present congested state - particularly at peak traffic hours - and cutting the consumption of fuel and other vehicle operating costs, and particularly shortening the substantial delays experienced by the users.

The high risk to which pedestrians are exposed will be eliminated by the construction of curbs and sidewalks, which will also result in heightened safety and handier access to commercial services for school children which compete with vehicles for use of the roads.

Other project benefits, although they are not quantified, are the reduced frequency and duration of detours and traffic interruptions due to faulty paving and drainage; the reduction and prevention of accidents; and a cutback in environmental pollution.

RISKS:

A possible risk entailed by the project is the potential weakening of the Barbadian government's financial capabilities that might result from the measures taken to remedy the deficit situation and the country's macroeconomic problems. That contingency will nevertheless be minimized or eliminated by two factors: (a) the financial projections show that the financial burden entailed by the government's contribution to the project is less than the one it shouldered in the execution of previous investments; accordingly, a possible cutback in the MCW budget would keep the relative weight of the proposed outlay within the historical average; and (b) the Bank is pursuing efforts to obtain cofinancing, which would reduce the burden of the local counterpart funding.

The risk of delays in securing legal possession of the right-of-way has been lessened, since the MCW is actively engaged in acquiring the land necessary for the project.

**EXCEPTIONS TO
BANK POLICY:**

It is recommended that, as an exception to the Bank's policy on bidding, the respective public service companies carry out the relocation of their facilities on force account. The exception in question is justified by the greater efficiency, savings of time and lower cost for work performed by the companies rendering these services in Barbados. The information available indicates that the companies in

question perform such work satisfactorily, within the time frame required and at a lower cost than the amount charged by contractors. Two of the four companies (Barbados Telephone Co. Ltd. for telephones and Barbados Light and Power for electricity) are privately owned, while a third (National Petroleum Corporation, a gas utility) is now in the process of privatization and the fourth (Barbados Water Authority - potable water supply and sewerage service) is a public utility company.

I. FRAME OF REFERENCE

A. Economic situation

- 1.1 Sugar has traditionally been the mainstay of the Barbadian economy, and continues to be its principal crop. After the country became independent in 1966, however, sugar income was outstripped by tourism and the light industries which became the most dynamic sectors of the economy. But in the 1980s – and particularly as of 1986 – the ability of those sectors to compete in the world market was seriously eroded by anti-export macroeconomic policies. Both public and private investment sagged. Only tourism continued to be productive, but the high cost of local components (labor and heavily protected intermediate inputs) plus the deterioration of the facilities offered led to a decline in the returns from that source and a diminished share of the Caribbean tourist trade.
- 1.2 The problem of external payments which has beset Barbados since the end of 1989 reached critical levels in the third quarter of 1991. A downturn in tourist arrivals at that time, combined with heavy demand for imported products and the high external debt service figure, soon depleted the nation's foreign exchange reserves. Faced with that situation, the government sought assistance from the International Monetary Fund (IMF) and – partly anticipating the policy requirements of that organization – put into effect an economic stabilization program. The impact of the stabilization measures and the slump in tourism were the chief factors for the 4.1% drop in real GDP in 1991, in the wake of the 3.2% decline posted in 1990. The decline in production in 1991 was accompanied by a 20% increase in open unemployment, as compared with 16% for the previous year.
- 1.3 A standby agreement was signed with the IMF in February 1992, and will remain in force until May 1993. The program is designed to restore financial stability and promote conditions that will foster sustained growth of the economy, at the same time maintaining nominal exchange parity. The chief instrument to be used to achieve those objectives was reduction of the fiscal deficit to 1% of GDP in fiscal year 1991-92 (April 1 through March 31) and eliminating it altogether in fiscal year 1992-93.
- 1.4 The economic recession in Barbados worsened in the first half of 1992, due to a new and sharp reduction in the number of incoming tourists and the continuation of policies to shrink demand. Central Bank calculations showed a 6.5% drop in GDP in the first six months as compared with the figure posted one year earlier. The marked recession is a response to the austerity policies applied pursuant to the IMF program. The balance of payments showed a surplus in the first six months of 1992, accompanied by a substantial accumulation of international reserves. The improvement took place in the current account and was largely the result

of a 20% downturn in the volume of goods imported, as compared with the same period in 1991.

- 1.5 The improvement in external payments was achieved by dint of monetary and fiscal austerity. IMF fiscal deficit targets were met, as the deficit was brought down almost to zero, in sharp contrast to the negative balance of BDS\$244 million posted in 1990. One of the means used to reduce the deficit was postponement of public investment outlays.
- 1.6 The priorities established by the designers of the Government of Barbados policies included incentives for private sector production as a means of overcoming the deep economic recession. An increase in public spending would help to spark an increase in such activities, and a cutback in lending rates would have the same effect. Unless the present structure of the Barbadian economy is changed, however, the expansion policy might trigger a repetition of the instability prevailing in 1990 and 1991, along with a new crisis in international reserves. The structural adjustment in the medium term, pursuant to current loan negotiations with the World Bank and the IDB (investment sector loan BA-0012), requires Barbados to overcome its present difficulties and prepare the way for new public and private investments.

B. The transportation sector

1. Geographic and economic setting

- 1.7 The island of Barbados is 34 kilometers long from north to south and measures 19 kilometers at its widest point, with a total area of 430 square kilometers. The terrain is largely flat or rolling, with a mountainous section along the eastern coast. Barbados has a population of 258,000 and the present growth rate is estimated at 0.3% a year. The largest city is Bridgetown, where roughly 40% of the population lives. The rural population is concentrated in small towns all over the island, some of which have decreased in size as a result of migration to Bridgetown.

2. Description of the metropolitan area

- 1.8 The city of Bridgetown is the hub of financial, commercial and tourism activity. It offers the largest and best opportunities for education and jobs, and constitutes the center where all of the functions inherent to public service and government administration are performed.
- 1.9 Downtown Bridgetown is a very compact nucleus, consisting of little more than a single square kilometer which contains the traditional public buildings and commercial establishments of the old city. While many of the businesses have moved or have opened branches elsewhere, the greatest concentration of trade and banking transactions and professional services is in this area. The port

of Bridgetown, the industrial districts, schools, theaters and hospitals are located at a short distance from this point.

- 1.10 The area known as Greater Bridgetown has absorbed the population growth and consequent expansion of the city, which has gradually incorporated small peripheral urban settlements, thus making the metropolitan area much larger than the central core.

3. The transportation system

- 1.11 The service provided by the transportation system is vital to the nation's economy. The sector's infrastructure consists of a broad network of highways (1,725 kilometers) under the jurisdiction of the Ministry of Public Works, Communications and Transportation (MCW); an international airport near Bridgetown that is administered by a government department; and an important port, located in the central part of Bridgetown, which is managed and operated by the Barbados Port Authority. The airport and the port are strategically important for foreign trade and for development of the tourism industry. The country lacks transportation facilities or services for rail, river and coastal traffic.

4. The urban road system

- 1.12 The road system was originally developed to meet the needs for domestic transportation at a time when almost all the economic, social and political activities took place in Bridgetown, the country's capital. The natural result was that all of the principal highways originate in that city, thus giving the primary highway system a radial configuration that is conducive to high levels of congestion.
- 1.13 The centralist trend of Bridgetown's road system has remained largely unchanged in recent years. Most of the urban roadways in the city were built before the appearance and widespread use of automobiles. As a result, their physical dimensions are not geared to meet the requirements of modern traffic and the safety criteria which should be the first consideration in regulating the use of city streets.
- 1.14 Transport demands in Bridgetown have produced flows of crosswise movement, creating a gridiron pattern of inadequate and variegated avenues and streets, backed up by the very few collector roads between the primary radial axes. At present, this situation is fraught with high risk levels for pedestrians and both motorized and nonmotorized vehicles.
- 1.15 The chief problems besetting traffic in the central area of Bridgetown are primarily the result of: (a) the high demand for transportation, spurred by the concentration of economic, tourism and social activities; (b) the relatively strong growth of the automotive fleet that has occurred in recent years, most of it

registered in Bridgetown; (c) the poor condition and inadequate capacity of the roadways most frequently used for transit in this area; and (d) the scarcity of resources for traffic control, plus the weak, complicated and ineffective administration of traffic laws and regulations.

- 1.16 Except for the few streets built or restored in the past 10 years, the typical cross section of Bridgetown's main arteries consists of a paved course six to seven meters wide and very narrow - or at times nonexistent - shoulders which have here and there been adapted for pedestrian traffic. Motor and nonmotor vehicles alike travel in both directions within this cramped space, along with a large flow of pedestrians in certain zones. This results in frequent disputes which limit the capacity of these streets even further and are the cause of numerous accidents.
- 1.17 The roadways comprising the traffic corridors - which are described in later paragraphs and which would be remodeled by the proposed project - now bear volumes of traffic ranging from 9,000 to 15,000 vehicles a day. Movement along these corridors is difficult, particularly at peak hours, mainly due to: (a) the flawed configuration of the intersections with other main arteries and the lack of traffic lights or other means of regulating the flow of vehicles; (b) the existence of certain sectors or specific points where the roadway is too narrow to permit two-way traffic or where sharp curves make it difficult for large buses to maneuver; (c) the absence of turnouts or bus bays where public service vehicles can stop to allow passengers to board or disembark without interrupting the normal flow of other vehicles; (d) the paucity of organization at the start and end of the school day for the parking of private vehicles which transport the students; (e) the excessive number of secondary streets with direct access to the corridors; and (f) the scarcity of police officers available to control traffic and parking, especially at peak demand times.

5. Automotive fleet

- 1.18 Between 1980 and 1990, the number of motor vehicles registered in Barbados rose by more than 50% - the equivalent of a 4.3% annual growth rate - and reached a total of 50,207 units in 1991. This means that there is approximately one vehicle for each six persons, a factor that is quite high when compared to other countries in the region. Given the current state of economic recession now prevailing in Barbados, the growth rate of the fleet will probably decline in coming years, as is apparent from the increased number of used vehicles in the market and the decline in the sale of new units.

6. Public transportation services

- 1.19 Three modes of public transportation are available to passengers in the metropolitan area: (a) the buses operated by the Transport

Board, which is the state agency administering such services; (b) minibuses with a maximum of 15 seats, belonging to small businesses or independent owner-operators; and (c) regular taxis and jitney-type taxis (which travel along a fixed route, picking up passengers as they go) that are owned by individuals, cooperatives or private companies.

- 1.20 The service provided by the state enterprise operated by the Transport Board is acceptable but economically inefficient, for its operating costs are very high due to excess personnel and low returns, plus the strong and dynamic competition from minibuses operated by the private sector. To keep its fares at a reasonable level, the company depends on subsidies from the government; but even so, each trip costs the passenger the equivalent of US\$0.75. The subsidies have been reduced substantially in the last few years and the company is now in the process of privatization. The public in general prefers to use the service offered by the minibuses and fixed-itinerary taxis, which cover a more flexible routing, move along more quickly and charge the same fares as the buses. However, the proliferation of these smaller-capacity units - which take up more road space per passenger transported, in constant competition to attract customers - is a source of considerable aggravation in traffic because of their frequent stops and unpredictable maneuvers in the middle of the roadway and the continuous violations of traffic regulations.

7. Traffic management and control

- 1.21 Management of urban transportation and traffic is the responsibility of the MCW, which is charged with approval of the designs, execution of works and maintenance of the country's entire road infrastructure, including the streets in the urban area of Greater Bridgetown. At the same time, it is responsible for regulating vehicle traffic, reviewing and updating traffic norms and regulations, installing road signs and operating traffic signals. The MCW has qualified professional staff to perform these duties, and needs to be supported by middle management personnel with training in specific jobs to make its performance more effective.
- 1.22 Control of compliance with traffic regulations and ordinances is the responsibility of the Royal Barbados Police Force (RBPF), which has the authority to direct traffic, intervene, investigate and determine responsibilities in accident cases, and levy fines or detain drivers who commit traffic violations. The RBPF is also responsible for administration of the School Traffic Patrol services.
- 1.23 The police complement assigned to perform these duties in the urban area is very small, however, and thus cannot ensure adequate traffic control. In addition, the procedures used to apply penalties for traffic violations are protracted, costly and ineffective. Accordingly, the procedures must be modernized and

the use of the RBPF and MCW human resources optimized by providing them with additional training, equipment and other physical resources so that they can better perform their duties.

8. Highway safety

- 1.24 The roster of road accidents reported over the 1983-1989 period shows that while the yearly total (almost 5,000 in 1989) rose by 22%, those resulting in injuries and personal damage (1,387 in 1989) posted an increase of almost 50%. The real figure in the latter case may be even higher, since in recent years the population tends to avoid making the pertinent report to the authorities when the accidents do not result in personal injury. These figures show the need to adopt a preventive approach to reduce the number of accidents and avoid the high cost thereof to the country in terms of the loss of human life and property, plus the expense of rehabilitating the injured parties, along with the loss of earnings.
- 1.25 A number of factors - some of which were noted earlier - contribute to the dangers implicit in vehicle and pedestrian traffic in Greater Bridgetown. The risks created by the physical conditions of the roads are compounded by: (a) the high speed limit allowed in the urban core (60 kilometers an hour); (b) the lack of pedestrian footpaths or walkways along most of the principal roads; (c) insufficient traffic control signs and devices; and (d) the limited highway education given to users and - in particular - the fact that many of the tourists are not accustomed to driving on the 'wrong' side of the street.
- 1.26 The number of fatal accidents has ranged from 25 to 34 a year, thus constituting an important cause of death, particularly among the young population. Adequate data are not available concerning these accidents, nor do the means exist for conducting exhaustive research on the subject. There is also a low level of general awareness of the factors responsible for such occurrences, and scant resources are available for improving and developing the means of avoiding or reducing the incidence thereof.
- 1.27 Accordingly, there is an urgent need to strengthen traffic control mechanisms, improve the systems for the communication and processing of information, conduct driver education campaigns and set up permanent training programs for police officers and instruction for highway users. To that end, the project slated for financing by the Bank includes a technical assistance component aimed mainly at (a) formulation of an accident prevention plan; (b) preparation of a traffic signs and signals program; (c) selection of a suitable system to control traffic signals; (d) training of staff for analyzing traffic information; and (e) development of a national highway education program, aimed particularly at drivers and the school population.

9. Road maintenance

- 1.28 The age and condition of the relatively lengthy highway system in Barbados call for maintenance to be performed in a sustained and effective manner. This will require additional planning and sufficient resources for the job to be done satisfactorily. At present, roughly one fifth of the MCW budget is allocated to maintenance, and a National Maintenance Plan is now being drawn up with support from the World Bank through a loan equivalent to US\$21.2 million, which was recently signed and will be executed over a period of four years (loan 3493-BAR).
- 1.29 Previous projects financed by the IDB have established a condition requiring maintenance of the works financed to be provided for a period of 10 years. This condition has been satisfactorily met. But in the last three years, the fiscal crisis has led to some neglect of this activity, particularly in regard to the Spring Garden expressway (loan 470/OC-BA), on which the requisite sealing and surface reinforcement work has not yet been performed. Allocation of the necessary resources to comply with these contractual obligations in the 1993 MCW budget has been confirmed by the government, and steps are now being taken to complete the tasks required. Funds from the World Bank loan have been earmarked for this purpose.

C. The government's strategy

- 1.30 The Public Sector Investment Program (PSIP) for the next four years - i.e., fiscal years 1992-93 through 1995-96 - reflects the awareness of the Government of Barbados that public spending in the medium term must emphasize an improvement in the country's ability to compete economically and to maintain fiscal austerity. When compared with recent years, this PSIP shows a marked shift in favor of economic infrastructure (transportation and the environment). Such emphasis attests to the belief of the Barbadian government that investment in economic and environmental infrastructure cannot be postponed without undermining the productivity of the country's industries and services.
- 1.31 To solve traffic problems in the central area of Bridgetown, as noted in previous sections, the Government of Barbados has based its strategy and action on two studies and a document on national development planning. The studies are the 1980-1990 National Highway Plan and the Study for Traffic Management in the city of Bridgetown (conducted between the 1983 and 1986 period). The other document is the National Development Plan for the 1988-1993 period. Most of the projects and recommendations presented in those studies have been carried out, assistance from the IDB having been granted for that purpose. Execution of the present program will complete the works initially proposed in the study of ways to improve traffic conditions in Bridgetown.

- 1.32 Prominent among the works and activities already completed are the following: (a) construction of the Spring Garden expressway; (b) construction of the expressway linking the airport with the west coast; (c) upgrading of certain sections of the inner and outer corridors; (d) a change in the direction of traffic on some of the streets in downtown Bridgetown, plus the establishment of zones where parking is strictly prohibited; (e) remodeling of Trafalgar Square and the surrounding area; and (f) an increase in the number of intersections with traffic lights. The project proposed here will complete the upgrading of the corridors mentioned and will help to improve the orderly management and safety of traffic.
- 1.33 The 1988-1993 National Development Plan assigns high priority to the proposed program works that will be financed in part by the Bank. That priority continues to obtain when this project is compared with other possible projects in the transportation sector. Consequently, the Government of Barbados has taken all the necessary measures to obtain external financing for the proposed project and is now preparing a new development phase of the sector by drawing up a National Transportation Plan that will cover the 1994-2004 period. The plan is receiving financing from the Bank through technical cooperation approved in January of 1992 (ATN/SF-3922-BA), for which the corresponding consulting firm is now being selected.

D. Previous IDB operations

- 1.34 The loans which the Bank has granted to the Barbados transportation sector total US\$37.9 million equivalent, including US\$28.9 million for highways and US\$9 million for the port of Bridgetown. All of the projects thus financed are in Bridgetown, and they have been carried out to the Bank's satisfaction. The completed works are all fully operative at present.
- 1.35 The historical evolution of financial support to the transportation sector follows a cyclical process that is fundamental for its development. It has also been congruent with existing needs in each subsector, effective in achieving the requisite intersectoral complementarity with the rest of the economy and timely in meeting the country's needs and resolving any problems when they have arisen.
- 1.36 In the course of the 1970s, the Bank financed: (a) the study of the Barbados international airport, located in Greater Bridgetown; (b) drafting of the first National Highway Plan for 1980-1990; (c) the works to expand and improve the port of Bridgetown; and (d) construction of urban roads in Bridgetown, such as the expressway to Spring Garden and St. Barnabas Street. In the 1980s, the Bank helped to finance: (a) the study on Bridgetown's Traffic Management; and (b) the study and construction of the expressway from the airport to the west coast.

- 1.37 Finally, in 1992 the Bank assisted Barbados in drawing up the terms of reference and in the financing of a National Transportation Plan based on updated information and featuring broader coverage than the preceding one. The project is now in the process of choosing the consulting firm that will be responsible for compiling that plan. In addition, the Bank granted nonreimbursable technical-cooperation funding from the Project Preparation Facility (PPF) to complete the formulation of the project proposed in this document.

E. The Bank's country strategy

- 1.38 For the period from 1992 to 1995, the Bank's lending program for Barbados amounts to US\$320 million equivalent and calls for the financing of 13 projects. This programming, as well as the technical cooperation which the Bank plans to finance, will be designed to: (a) protect and improve the environment (39%); (b) support institutional and policy reforms affecting the private sector and foster an increase in exports (30%); (c) eliminate the bottlenecks in the transportation sector and upgrade port services (19%); (d) heighten the cost-effectiveness and quality of education and health care services (10%); and (e) finance studies relevant to project development (2%).
- 1.39 The Bank's strategy for Barbados attaches priority to assistance for designing and implementing adjustment measures and investments to restore growth and to enhance the competitiveness and spur the future development of the producing sectors. The strategy recognizes that deterioration of infrastructure and fragile ecosystems - of both land and sea - poses a threat to the foundations of the sectors which are the mainstay of the country's economy.
- 1.40 The project will improve the sector's effectiveness, efficiency and planning, as well as the quality of life and safety conditions in the urban area. It will also help to reduce the consumption of depletable resources. At the same time, the project is indirectly consonant with the strategy of supporting investments in the transportation sector that will backstop development of the producing sectors, inasmuch as improvement of the highway corridors will facilitate activities in the tourism industry by providing better access to and orderly and efficient communication between various tourist attractions in the city. By reducing vehicle traffic, the project will collaborate in the orderly development of Bridgetown and the conduct of future projects in the area, such as the one for expansion of the port facilities. It should also be emphasized that the cutback in the use of gasoline as a result of the project will improve the status of the environment, in particular the air quality, while generating a savings of foreign exchange.

II. THE PROJECT, ITS COST AND FINANCING

A. Project objectives

- 2.1 The general objective of the project is to: heighten the efficiency of the various economic activities conducted in the Greater Bridgetown area by reducing transportation costs and shortening the time required for the conveyance of goods and passengers in the urban district.
- 2.2 The project's specific objectives are:
- a. To expand traffic capacity and improve general traffic conditions in the inner and outer corridors of Greater Bridgetown and at intersections with main roads.
 - b. To reduce the risk of accidents and, in general, increase safety levels for all users of urban thoroughfares by improving the road infrastructure and implementing more effective traffic control measures.
 - c. To optimize the use of resources earmarked for planning, management and control of urban traffic and for support to effective application of the laws and regulations governing this factor.

B. Description

1. Traffic corridors

- 2.3 The term 'corridor' refers to the group of existing roads used to channel north/south traffic in the urban area, without crossing the central district of Bridgetown; or those serving as traffic distributors for vehicles entering or leaving that area, thus permitting a smooth connection between the different primary roads radiating from the center of the city. 1/

a. The inner corridor

- 2.4 The inner corridor has a roughly semicircular configuration, 2/ girdling the central area at an average distance of one kilometer. It starts at the intersection of President Kennedy Drive with Fontabelle, where it connects directly with Spring Garden Highway; and it ends at the intersection of Jemmotts Lane with Bay Street - the point where that street runs into Route 7, which parallels the southern coast of the island. This corridor is made up of

1/ See project area on general location map.

2/ See Bridgetown map for location of the inner corridor.

President Kennedy Drive, Westbury Road, Passage Road, Country Road, part of Roebuck Street, Halls Road, Martindale Road and Jemmotts Lane, a total length of approximately 2.9 kilometers. Since the Barbadian government has already completed the remodeling and improvement of some of these segments, the project will include only the works to improve the complementary sections corresponding to Westbury Road, Passage Road, Country Road and Roebuck Street, which cover a segment 1.51 kilometers long. It also calls for improvement of the intersections with President Kennedy Drive, Baxters Road, Whitepark Road and Roebuck Road.

b. The outer corridor

- 2.5 The outer corridor 3/ starts at a point 4.5 kilometers north of the central area, where Gordon Cummins Highway intersects with Route 1, which is the main roadway parallel to the west coast; and it ends at the intersection of Garrison Road and Route 7, which is roughly 2 kilometers south of the center of Bridgetown. The path of this corridor follows a curved line running about 500 meters from that of the inner corridor along Black Rock Main Road, Lower Bank Hall Crossroad, Bank Hall Crossroad, Bridge Road, Welches Road, Pine Road, Culloden Road, and Dalkeith Road, ending with Garrison Road - a total length of 7.38 kilometers. Since the government has also upgraded some sections of this corridor, the project will deal only with Black Rock Main Road and the sections between (and including) Pine Road and Garrison Road, for a total of 5.48 kilometers. The project also includes improvement of the intersections with Deacons Road, Eagle Hall, Government Hill, Dalkeith Hill and Route 7.

2. The project components

- 2.6 The Bridgetown Roads and Safety Improvement Project consists of the following components: (a) works to improve the road infrastructure and complementary action to handle traffic on the two road corridors within the Greater Bridgetown area; (b) technical assistance to upgrade traffic control and administration and raise the level of safety for users of these roads; (c) development of a national highway education program; and (d) the purchase of equipment to support traffic control and management operations.

a. Civil works

- 2.7 The civil works that will be carried out on the road corridors described above - and specifically on those indicated in paragraphs 2.4 and 2.5 - will consist basically of the items listed below.
- 2.8 Demolition and removal of the rubble from fences, walls, access ramps and wooden or masonry structures located in the areas that

3/ See Bridgetown map for location of the outer corridor.

will be affected by the works to broaden and improve the roads; demolition and elimination of sidewalks, curbs and existing man-holes and drain inlets whose present location does not match the new designs; and removal of trees where essential owing to technical reasons or safety factors, and replacement with new species.

- 2.9 Relocation of public utilities, power and telephone lines and poles, and pipelines for gas, potable water and drainage which must be moved because of the road construction.
- 2.10 Reconfiguration and widening of embankments at the intersections and whenever necessitated by the new alignments; preparation of the new subgrade and laying of new subbase and base courses or rebuilding or reconstitution of the existing ones where needed; laying of the new asphalt wearing course with a standard width of seven meters and the thickness indicated in the project plans; construction of curbs and sidewalks with a minimum width of 1.2 meters, adjusting the works to existing conditions to try to avoid large expropriations; construction or widening of the necessary piping systems and drainage works for due protection of the road and the adjacent properties; and construction of bays or turnouts at bus stops, plus the coverage and other facilities to provide protection from the rain and other amenities for the comfort of those who use the public transport services.
- 2.11 Replacement of fences, walls, frontage and entryways to any privately owned properties that may be affected by the road improvement works.
- 2.12 Installation of vertical and horizontal traffic signs and stoplights and other systems to regulate traffic at intersections, in accordance with the designs drawn up for the project.

b. Complementary action to improve traffic regulation

- 2.13 The efficiency of the works described above and their effect in reducing bottlenecks and smoothing the flow of vehicle traffic will be seriously impaired unless a series of complementary activities can be performed to improve the regulation of traffic and ensure compliance with the rules now in effect. The most important measures for that purpose will be: the restriction of parking along the road corridors; a reduction in the number of side streets with direct access to the corridor; the defining and placement of suitable traffic lights at pedestrian crossings, in particular those close to schools; obligatory use of the bus stops to pick up or discharge passengers on public transport vehicles of all types; and an increase in the number of police officers to enforce compliance with these measures, especially at peak times.
- 2.14 Improvement of the roads and the proposed complementary activities will not produce the anticipated results unless they are accompanied by institutional strengthening and provision of the

necessary equipment to improve the general ordering of traffic and achieve effective compliance with traffic regulations and measures. To that end, the project has included a technical assistance component. 4/

3. Technical assistance for traffic control and management

- 2.15 This component will be used to engage the necessary consulting services to assist the MCW Traffic Division in: (a) developing an accident prevention plan; (b) preparing a program to refurbish and complement traffic signal equipment in the Greater Bridgetown area; (c) conducting a study for selection of the most appropriate system of traffic light control; and (d) training of the personnel responsible for gathering, processing and analyzing traffic information.
- 2.16 In addition, this technical assistance will be used to: (a) review existing traffic regulations and legislation, propose the necessary changes and design a practical and up-to-date system to streamline the process for penalizing violators; (b) promote better coordination between the Traffic Division, the MCW License Department and the Royal Barbados Police Force (RBPF); (c) provide institutional strengthening for the RBPF by developing computerized systems of management, technical and administrative data which permit the analysis of accident statistics, monitoring of penalties for traffic violations and constant updating of the registers of drivers and vehicles; (d) indoctrinate and train the police officers responsible for traffic control; and (e) reorganize the school traffic patrol service.

4. National highway education program

- 2.17 The proposed operation includes the necessary resources to engage the services of a specialized consulting firm that will work with the MCW to develop and carry out a national highway education program aimed at three levels: drivers, school age population and the general public. The program will include the design and production of the necessary elements for the holding of lectures, courses and seminars and for conducting a campaign through the national media. The firm will be responsible for coordinating the dissemination and direction of that campaign with the media during the launching period. The resources earmarked for this program will also be used to purchase materials for recordings and publications, to pay for radio and television announcements at a first stage and to pay instructors.

4/ See Annexes II-1 and II-2 for the guidelines for preparing the terms of reference applicable to the necessary consulting services.

5. Procurement of equipment and materials

- 2.18 This component will be used by the MCW to purchase equipment 5/ to facilitate the gathering and processing of traffic statistics and assist in conducting the studies of urban traffic. The resources available will also be used to purchase materials and equipment to prepare and install traffic signals and to purchase motorcycles and radio communication equipment that will be used to increase the operating capability of the police force to enforce traffic laws and regulations.

C. Project cost and financing

1. Cost

- 2.19 The project's total cost is estimated at the equivalent of US\$26.5 million. The Bank's participation in the financing of the project will be US\$18.5 million equivalent from the ordinary capital resources, a sum that represents about 70% of the total amount. The local contribution to be provided by the Government of Barbados will cover approximately the remaining 30%, equivalent to US\$8 million. The cost summary, with a breakdown of the investment categories and the proposed financing plan, appears in the table that follows.

5/ See the itemized list of proposed equipment in Annex II-3, page 3 of 3.

| Project cost and financing (in US\$000) | | | | |
|--|--------|-------|--------|-------|
| Categories | IDB | Local | Total | % |
| 1. <u>Engineering and admin.</u> | 1,050 | 250 | 1,300 | 4.9 |
| 1.1 Recov. ATC/SF-2241-BA | 410 | 0 | 410 | 1.6 |
| 1.2 Technical supervision | 640 | 0 | 640 | 2.4 |
| 1.3 Project administration | 0 | 250 | 250 | 0.9 |
| 2. <u>Direct costs</u> | 12,232 | 6,592 | 18,824 | 71.0 |
| 2.1 Civil works | 8,443 | 1,491 | 9,934 | 37.5 |
| 2.2 Relocation of utilities | 3,789 | 668 | 4,457 | 16.8 |
| 2.3 Right-of-way purchases | 0 | 4,433 | 4,433 | 16.7 |
| 3. <u>Associated costs</u> | 632 | 108 | 740 | 2.8 |
| 3.1 Technical assistance | 332 | 108 | 440 | 1.7 |
| 3.1.1 Traffic management and control | 132 | 108 | 240 | 0.9 |
| 3.1.2 Nat'l H'way Educ. Program | 200 | 0 | 200 | 0.7 |
| 3.2 Equipment and materials | 300 | 0 | 300 | 1.1 |
| 4. <u>Unallocated</u> | 1,991 | 746 | 2,737 | 10.3 |
| 4.1 Contingencies | 1,280 | 222 | 1,502 | 5.7 |
| 4.2 Cost escalation | 711 | 524 | 1,235 | 4.6 |
| 5. <u>Financing costs</u> | 2,595 | 304 | 2,899 | 11.0 |
| 5.1 Interest | 2,410 | 0 | 2,410 | 9.1 |
| 5.2 Credit fee | 0 | 304 | 304 | 1.2 |
| 5.3 Inspection & supervision | 185 | 0 | 185 | 0.7 |
| Total | 18,500 | 8,000 | 26,500 | 100.0 |
| Percentage | 69.8% | 30.2% | 100% | |

2. Project cost categories 6/

- 2.20 **Engineering and Administration.** The sum allocated, equivalent to US\$1.3 million, will cover the following items: (a) contingent recovery of the US\$410,000 that was used to prepare the project through technical-cooperation operation ATC/SF-2241-BA, which was approved in 1983; (b) contracting of the supervisory firm that will be responsible for the supervision and technical administration of the civil works, up to US\$640,000; and (c) salaries of the additional personnel the MCW will have to engage to strengthen the professional and technical staff of the executing unit throughout the project execution period - the sum of US\$250,000 equivalent.
- 2.21 **Direct costs.** The figure for this category, US\$18,824,000 equivalent, covers the following items: (a) execution of the civil works

6/ See the breakdown of costs in Annex II-3.

to improve the road corridors, a total equivalent to US\$9,934,000, which includes the demolition works and replacement of the property affected thereby, plus the cost of traffic signs and lights on these corridors; (b) the cost of the necessary relocation of public utilities to permit execution of the aforementioned works, a total of US\$4,457,000. The cost figures for the civil works and signs and stoplights were calculated on the basis of the volumes of work to be executed and the unit prices of the different items, which were drawn up by the consulting firm that prepared the final engineering studies and technical documentation for the project. The cost of relocating public utilities was based on quotations provided by the companies which administer and operate those services; and (c) the expense of obtaining the right-of-way, plus compensation payable to the owners of property affected by execution of the project, a total equivalent to US\$4,433,000.

- 2.22 **Associated costs.** This category covers the following items: (a) the contracting of consulting services to draw up and carry out the road safety and traffic sign plan and to strengthen traffic control mechanisms by instructing and training staff from the MCW and the RBPF, for which the amount of US\$240,000 has been assigned; (b) contracting of advisory and specialized services to organize and launch the national highway education campaign, plus the provision of resources to conduct the campaign, up to US\$200,000 equivalent; and (c) the procurement of equipment and materials, such as traffic counters, portable scales, computers, video equipment, materials for traffic signs and lights, tools for manufacturing or repairing traffic signs and lights, motorcycles for the RBPF and equipment for radio communication - up to a total of US\$300,000.
- 2.23 **Unallocated costs.** This category includes: (a) the equivalent of US\$1,502,000 to cover contingencies and unforeseen expenses which may arise during the project execution period, which has been estimated to be 10% of the amount of the civil works and 5% of the technical assistance expenses; and (b) cost escalation resulting from both external and domestic inflation during the project execution period, which was computed on the basis of factors provided by DES and amounts to a total equivalent to US\$1,235,000.
- 2.24 **Financial costs.** A sum equivalent to US\$2,899,000 has been assigned to cover these costs. The figure includes: (a) interest on the loan, computed by using the current rate applicable to operations funded from the ordinary capital, during the disbursement period; (b) the credit fee on undisbursed balances of the loan, for which an annual rate of 0.75% is used; and (c) payment of the Bank's inspection and supervision expenses, amounting to 1% of the total loan figure.

3. The Bank's financing

- 2.25 The amount of the proposed loan is consistent with the financing matrix currently in effect for Group C countries, which include Barbados: it calls for the maximum contribution from the Bank to be up to 70% of the project's total cost. The loan resources will be disbursed in foreign exchange, chargeable to the Bank's ordinary capital resources.
- 2.26 The resources provided by the Bank will cover the larger share (between 65% and 85%) of the outlays in the following categories: construction of civil works, the cost of technical assistance, contingencies and price escalation. They will also cover 100% of the expenses for: recovery of the financing for technical-cooperation operation ATC/SF-2241-BA; engineering services and supervision for the execution of those works; the procurement of materials and equipment; interest on the loan; and the expenses entailed by inspection and supervision of the proposed project.
- 2.27 The terms on which the loan will be granted will be the following:

| | |
|-----------------------------|-------------------------------|
| Interest rate (OC): | variable |
| Amortization period: | 20 years |
| Grace period: | 4 years |
| Disbursement period: | 4 years |
| Credit fee: | 0.75% on undisbursed balances |
| Inspection and supervision: | 1% of the loan amount |

4. Local counterpart funding

- 2.28 The contribution from the Government of Barbados will come from the national budget, and it will defray the expenses not covered by the IDB resources until project execution is completed, including a minority share of the following outlays: execution of civil works and relocation of public utilities; supervision of civil works; consulting and advisory services; contingencies; and cost escalation. It will also cover 100% of the cost of obtaining the right-of-way for construction of the civil works and the credit fee to be paid to the Bank. The government's contribution will be made in accordance with the execution plan and disbursement schedule agreed upon with the Bank. The annual disbursements that are scheduled will be smaller than the outlays made annually by the MCW for investment projects over the past five fiscal years (1986-87 through 1990-91).

III. PROJECT EXECUTION

A. The executing agency

- 3.1 The executing agency for the project will be the Ministry of Public Works, Communications and Transportation (MCW), through its Technical Department and with assistance from the ministry's administrative and accounting divisions. The MCW Technical Department is responsible for carrying out all of the institution's investment projects, and it performs all the duties incumbent upon it through the following divisions: Project Administration; Operations; Machine Shops; and Design Services. These technical divisions are in turn supported by the ministry's administrative and accounting divisions - Finance and Accounting, Personnel, and Central Administration - and the Internal Audit Unit.
- 3.2 The MCW performed satisfactorily as executing agency for the two earlier highway projects financed by the Bank (365/OC-BA in the period from 1979 through 1984 and 470/OC-BA in the period from 1984 through 1990). An executing unit was set up in each of these projects and assigned responsibility for administration of the loans and coordination with the Bank. When construction was completed in the latter of the two projects cited, part of the executing unit's staff was taken on by various divisions of the MCW Technical Department. The capability of that department is adequate for performance of the normal MCW functions, but some of its branches need to be strengthened by hiring consulting services so that the tasks entailed in administering the project to be financed can be properly discharged. The professional services in question will have to be contracted out or duly assigned to the Bank's satisfaction. Consequently, the Technical Department should engage the services of a consulting firm to supervise the works to be built in this project. To that end, it is recommended that the loan contract include a clause requiring that such a firm be selected six months before the loan is signed. 1/

B. Status of project preparation

- 3.3 Work on the final engineering studies, which were contracted out under technical-cooperation operation ATN/SF-3671-BA approved in May 1991 with funds from the Project Preparation Facility, was completed in April 1992, and all of the technical documents for bidding on the civil works are ready. The traffic sign component was also examined and assigned the proper dimensions in that technical cooperation package.

1/ See Recommendations.

- 3.4 The engineering studies were prepared in accordance with standard requirements and sound engineering practice. The design solutions used for the intersections are based on direct traffic counts conducted at the end of 1990, and their dimensions were scaled pursuant to the standards for such volumes and the projections thereof over the next 20 years.
- 3.5 Certain adjustments had to be made in the original designs 8/ owing to the restrictions imposed by the features of the urban street grid and the need to avoid or lessen the adverse environmental effects of construction involving extensive expropriation of land, displacement of the inhabitants of houses along these streets and the removal of valuable trees. The resulting changes made it possible to reduce the total costs of the project without impairing the functional status of the corridors or appreciably lowering their technical efficiency.
- 3.6 The pavement studies designed to evaluate the functional and structural condition of the existing roadway and its ability to tolerate future traffic requirements have been conducted satisfactorily. Selection of the proposed solutions took into account practical considerations - opting, in some cases, for total reconstruction of the paved surface when the works entailed by the relocation of public utilities require removal of large segments of the present surface.
- 3.7 Dimensions of the components of technical assistance and equipment procurement were set in accordance with the goal of covering the most urgent needs in terms of physical resources and staff training in order to help improve traffic management and increase road safety. Considerable importance was also assigned to the needs to improve existing regulations and strengthen procedures to ensure compliance therewith.
- 3.8 A preliminary draft of the terms of reference for contracting all of the proposed consulting services was agreed upon in principle with officials of the MCW Technical Department and a copy is included in the annexes to this report. 9/

C. Coordination with other agencies

- 3.9 Throughout the project execution period, the MCW must maintain close coordination with the RBPF, since the latter is directly responsible for traffic regulation and control and for penalizing those who violate the regulations. The areas for coordination

8/ See Section H: "Environmental Impact."

9/ See the general outline of the terms of reference in Annexes II-1 and II-2. The final terms must be approved by the Bank before the invitation to prequalify is issued for selection of the consulting firms.

include the control and safety of traffic operations during works construction and active participation of the RBPF in execution of the National Highway Education Plan; in the advisory services on traffic signs and road safety; and in the conduct of studies on ways to improve traffic control.

- 3.10 The MCW must also coordinate its works program with the public utility companies that administer systems for water supply and drainage (Barbados Water Authority); electricity (Barbados Light and Power Co. Ltd.); gas (National Petroleum Corporation); and telephones (Barbados Telephone Co. Ltd.), to ensure that the task of relocating the services that will be affected by the road construction is completed on schedule. The MCW will also sign such contracts as may be necessary, subject to prior approval from the Bank, to permit the work of relocating the utilities scheduled by the project and management of the resources assigned for that purpose in the loan to be performed on force account. The MCW will begin preparing the documentation for and negotiating those contracts as soon as possible in order to avoid delays in executing the road improvement works.
- 3.11 The MCW has appointed an environmental specialist whose experience and qualifications for this post must be certified by the Environmental Unit of the Ministry of Labour, Consumer Affairs and the Environment, who will carry out the task of inspecting compliance with the environmental protection requirements as cited in the project's environmental impact assessment. It is recommended that a contractual condition of the proposed loan require the borrower, through the MCW, to present to the Bank the list of measures adopted to carry out the recommendations on environmental protection agreed upon with the Bank. 10/ (See the section entitled "Environmental impact" later in this same chapter.)

D. Rights-of-way

- 3.12 Various properties must be acquired to permit execution of the project works. The number of properties affected (about 500) - including those in which only the yard will be cut back, or the front walls or fences relocated - was considerably reduced by the changes made in the design to reduce and cushion the project's direct adverse effects. Only 67 homes will be affected, seven of which will be demolished; relocation costs are included in the total project cost.
- 3.13 Procurement in Barbados must be approved by law. The procurement process calls for a series of preparatory activities by the MCW which include a declaration of public usefulness and publication in the official gazette (both of which requirements have already been met), plus the procedures to define the property limits and

10/ See Recommendations.

negotiate the purchase price with each owner. When these formalities have been concluded, the MCW prepares a report for the Minister of Housing and Lands, who in turn is responsible for drafting the proposed procurement law - based on the MCW report - and submitting it to the Parliament. Once the Parliament issues the pertinent law, it is signed by the Governor General. Upon publication of the law, the property is transferred and the lots are released for the start of construction. The authorities calculate that these proceedings will have been completed by October 1993.

- 3.14 The procurement process had been interrupted because of the government's temporary withdrawal of the project's priority status. When the analysis mission was scheduled, the Permanent Secretary of the MCW reinstituted the process by hiring surveyors to complete the job of establishing the boundaries of the properties slated for purchase. This made it possible to send the report to the Ministry of Housing and Lands, as noted in the preceding paragraph. Prior to issuing the call for bids for the construction, the government must provide the Bank with the requisite evidence of legal possession of the land and property needed for the project. 11/
- 3.15 The legal proceedings required in Barbados for expropriation in the public interest can be either mandatory (or coercive) or voluntary. Both of these procedures were previously used successfully to acquire the rights-of-way for the two earlier urban road projects financed by the IDB.

E. Execution plan

- 3.16 The civil works to improve the road corridors have been divided into four sections, both to prepare the project plans and to draw up the construction budgets and determine the economic feasibility of these investments.
- 3.17 The civil works will be executed by specialized contracting firms, selected by means of international public bidding procedures consistent with the Bank's rules and policies. For purposes of the tender, the sections into which the project has been divided are grouped in the following three bidding packages:

Package No. 1: Section A (Outer corridor)
Package No. 2: Sections B and C (Outer corridor)
Package No. 3: Section D (Inner corridor)

11/ See Recommendations.

3.18 Details of the packages to be bid on are shown below.

| No. | Works | Amount (in US\$000) | Tentative date | Prequalification |
|-----|-------|------------------------|-------------------|------------------|
| 1 | A | 6,146 | June 1994 | Yes |
| 2 | B/C | 6,044 | June 1995 | Yes |
| 3 | D | 6,634 | December 1994 | Yes |

- 3.19 The bidders will present their offers for a single package or up to seven possible combinations that can be made of these packages, depending on the bidders' financial and operating capacities. There will be nothing to prevent all of the contracts from being awarded to a single firm if the lowest bid evaluated is submitted by such a bidder. In any event, execution of the works included in each package must adhere to the schedule established during formulation of the project to avoid excessive interference with and rerouting of the traffic that uses these corridors.
- 3.20 Supervision of these works will be entrusted to a single specialized consulting firm, selected through an international invitation to prequalify, pursuant to IDB procedures. The firm will be engaged for the entire period required by the construction, plus an additional period of 60 days to prepare the final settlements and the project completion reports.
- 3.21 Because of the specialized nature and the business policies of the agencies which administer and operate public utilities, relocation of these utilities will be executed on force account or under subcontracts administered by the companies in question. To that end, an exception to the Bank's bidding policy is requested. 12/ The exception, which involves an amount equivalent to roughly US\$4.5 million, is justified by the greater efficiency, heightened timeliness and lower cost of work performed directly by the companies which provide these public services in Barbados.
- 3.22 Execution of the works to relocate public utilities will precede that of the road construction. As a result, before the call to public bidding or competition is issued, the MCW must submit for the Bank's approval the contracts the ministry has signed with those agencies that establish the unit costs or lump-sum amounts agreed upon. 13/ The MCW must also present a plan of action

12/ See proposed resolution.

13/ See Recommendations.

for the relocation activities that will include the areas to be coordinated with the different companies.

- 3.23 As stated earlier, contracting of consulting firms or individual consultants for such technical assistance or advisory services as may be needed in other components of the project - as well as procurement of the goods and services for which the loan resources are to be used - will be governed by IDB policies and procedures, which will be a part of the eventual loan contract. ^{14/} The MCW must engage the consulting services within twelve months of the date when the loan contract is signed. ^{15/}

F. Execution schedule and disbursement timetable

- 3.24 The project execution schedule covers a total period of four years. According to the proposed timetable, execution of the works included in each of the three packages into which the project has been divided will take 12 months. It will start with the work in Section A, followed by Section D; and the construction will end with Sections B and C. The land acquisition process will be completed in 1993, as will the prequalification of construction contractors and the consulting firms for supervision and technical assistance. The request for proposals will be sent to the consulting firms when the prequalification formalities have been completed, and the call to bid on construction will be issued early in 1994.
- 3.25 The dates when other tasks or activities affecting or directly related to the road construction - such as acquisition of the right-of-way, relocation of public utilities and technical supervision of the works - have been established in accordance with the scheduling described above. The disbursement timetable which was drawn up on the basis of that schedule is summarized below.

| <u>Disbursement Schedule</u> (in the equivalent of US\$ millions) | | | |
|--|------------|-------------------|--------------|
| <u>Year</u> | <u>IDB</u> | <u>Government</u> | <u>Total</u> |
| 1 | 0.6 | 0.9 | 1.5 |
| 2 | 5.9 | 4.3 | 10.2 |
| 3 | 7.8 | 2.2 | 10.0 |
| 4 | 4.2 | 0.6 | 4.8 |
| Total | 18.5 | 8.0 | 26.5 |

^{14/} See proposed resolution and Annex A to the loan contract.

^{15/} See Recommendations.

- 3.26 Disbursement of the counterpart funding that will be contributed by the Government of Barbados will be concentrated in the first years of project execution, since acquisition of the right-of-way - which is financed in its entirety by the government - must precede execution of the proposed road improvement works.

G. Road maintenance

- 3.27 To ensure adequate maintenance of the road corridors included in the project plus that of Bridgetown's principal urban roadways, the government is to present an annual maintenance report to the Bank for a period of ten years from the date of the loan contract, within the first quarter of each fiscal year. The report will contain the following items: general data of an institutional, organizational and administrative nature about the MCW; an updated inventory of the status of the roads which must be maintained; an evaluation of execution of the maintenance plan for the previous fiscal year; and the maintenance plan for the following fiscal year. ^{16/} The plan will indicate both the physical resources required and the budget duly assigned to the urban road system. The budget must include sufficient annual funding to cover maintenance. The technical assistance will help to identify the principal urban roads. The first such annual maintenance report must include the plan for the fiscal year corresponding to the first year of the loan contract.
- 3.28 If the inspections conducted by the Bank or the reports it receives shows that the maintenance has fallen below the levels agreed upon, the borrower will be required to take the necessary steps to correct such shortcomings.

H. Environmental impact

- 3.29 Once in operation, the project will help to improve environmental conditions in the Greater Bridgetown area, since it will - in addition to reducing traffic gridlock and shortening the travel time for a large number of those who use the roads - cut the level of air pollution and eliminate many of the accident risk factors for those users and, in particular, for pedestrians.
- 3.30 The properties adjacent to the corridors will benefit from an efficient drainage system that will prevent a buildup of storm water and, in some cases, from the restoration of public utility systems that are at present in a highly deteriorated state.
- 3.31 At its May 20, 1991 meeting, the Bank's Environmental Management Committee (CMA) classified the project as a Category III operation, inasmuch as its effects on the environment were readily identifiable and the measures to lessen or eliminate direct adverse impact

^{16/} See Recommendations and Annex A to the loan contract.

could be foreseen in the design stage. The CMA approved the environmental summary of the project, which includes recommendations as to the measures that should be adopted to prevent and mitigate negative effects, both in the implementation phase and when the project becomes operative.

- 3.32 At the request of the MCW in July 1991, the Environmental Unit of the Ministry of Labour, Consumer Affairs and the Environment conducted the environmental study for the project. The MCW also consulted the property owners affected by project construction and the principal nongovernmental agencies which address environmental matters in Barbados, such as the Barbados National Trust and the Garrison Committee. Other government agencies and organizations were also consulted, including: the National Conservation Commission, the Town Planning Department, the Barbados Turf Club, the Barbados Museum and the Historical Society.
- 3.33 The chief potentially adverse effects of the project that were identified in the environmental assessment stemmed mainly from: (a) the expropriation and demolition of some buildings; (b) the removal of trees to allow widening of the roadway; (c) the possible impact on monuments or buildings of historical value; (d) the inconvenience that will be suffered by residents and businesses bordering the roads during the construction stage; and (e) elimination of the leftover construction material and rubble from the demolitions and the work to clear the right-of-way. All of the recommendations obtained from the environmental assessment and the consultations with persons living and working in the project area, the nongovernmental organizations and other government agencies were taken carefully into account to cushion and minimize the potential adverse effects of the project.
- 3.34 The measures taken and yet to be implemented to comply with the recommendations of the environmental assessment are the following:
 - a. Various changes were made in the alignment originally proposed in the corridors, which made it possible to reduce by nearly half the number and area of the expropriations and the number of residents affected.
 - b. The removal of valuable trees was avoided by means of certain design changes. As a result, the only trees that will now be cut down are those whose useful life has practically ended and whose location makes them a risk to traffic.
 - c. Damage to buildings of historical value in the Garrison Savannah area was avoided and the recreational and sports-oriented nature of the district was protected by eliminating the proposed widening of that section, placing a larger number of warning signs and reducing the authorized speed limit; no building of historical value will be affected.

- d. To minimize the inconvenience to residents from construction (dust, noise, access and the interruption of public services), it was agreed with the MCW that the construction contracts will include sufficient and adequate technical specifications and conditions to compel the contractors to maximize precautionary measures by means of proper planning of works execution, the use of detours and adequate traffic control, efficient operation of equipment, scrupulous handling of materials and waste matter, and the provision of access to the properties bordering the road during the construction work.
 - e. It was also agreed with the MCW that the disposal of waste materials from the construction - particularly petroleum derivatives (fuel, lubricants and asphalt) - as well as rubble from the property and structures demolished to obtain the right-of-way will be effected with the use of modern practices which minimize spillage and possible leakage of such substances into the drainage systems.
- 3.35 The MCW will have the necessary staff to monitor and control execution of the environmental protection activities described above, and it has already appointed an environmental specialist. The conditions governing environmental protection - which will be included in the respective contracts for the construction of project works - must be sent to the Bank for review and approval as a condition precedent to each call to bid. These recommendations are part of the environmental assessment report on the project that was approved by the Bank's CMA on November 4, 1991. In addition, a chapter of the semiannual progress reports the Bank will require on the project will deal with environmental matters during its execution.

I. Implementation of technical assistance

- 3.36 Agreement has been reached with the executing agency on the deadlines for putting into effect the traffic control measures, the amendments to the regulations, the improved traffic signs and other recommendations that will be presented in each of the various technical assistance activities. Within four months of the date the studies are completed, the borrower will present to the Bank the recommendations that have been approved, accompanied by a plan of action. The borrower will begin to carry out those recommendations as soon as they have been approved by the Bank. 17/

J. Ex post evaluation

- 3.37 At the end of the third year from the date of the final disbursement of the financing, the borrower must provide the Bank with an ex post evaluation report on the project. This will be used to

17/ See Recommendations.

assess its socioeconomic impact and the extent to which the target objectives have been met. ^{18/} The methodology that will be used will be the same one that was applied for the ex ante analysis, based mainly on the savings of time for the users. All data must be explained in detail. Any change in the designs or costs, and any delay in construction or problems relevant to maintenance of the roads, must also be accompanied by a detailed explanation. In addition, the report will describe any adverse impact on normal traffic volume during the construction period; the current situation; and the results obtained in terms of traffic control and management on the project routes.

3.38 In order to compile sufficient information for the ex post evaluation of the project and to verify compliance with the proposed goals, from the start of the project the borrower must gather the annual data needed for that purpose. The basic data will consist of the following:

- a. Twenty-four-hour traffic counts conducted prior to the start and at the end of the works for each of the project sections and for each of the intersections examined in the ex ante evaluation. The counts will be made during two representative periods and must include the classification by type of vehicle and, for the intersections, the movements of the vehicles. These counts must be accompanied by an explanation of the results obtained (daily and annual fluctuations).
- b. Average travel time on the two project corridors, measured prior to the start and at the end of the works during two representative periods (normal period and summer vacation period) and twice a day (at peak hours and off-peak).

K. Inspection and supervision

3.39 The Country Office in Barbados will be responsible for supervising the project. The Bank will establish the inspection procedures necessary to ensure satisfactory progress of the project. The sum of US\$185,000 from the amount of the financing will be credited to the Bank's income accounts to defray the expenses of inspection and supervision.

^{18/} See Recommendations and Project Description (Annex A to the loan contract).

IV. THE EXECUTING AGENCY

A. Institutional analysis of the MCW

1. Objectives, functions and organizational structure of the executing agency

- 4.1 The Ministry of Public Works, Communications and Transportation (MCW) is responsible for developing the highway system as well as for some of the public buildings in Barbados. The ministry also handles questions relevant to public transport, port administration, potable water supply distribution and sanitation, plus traffic signs, lighting of streets and public buildings and the maintenance thereof. ^{19/} All of these activities are independent of the basic objective indicated, and the MCW has broad powers in regard to the setting of policies and control of the use of resources for the purposes cited.
- 4.2 The organization adopted by the MCW, which is acceptable for its purposes, embodies many of the reforms introduced as a result of the recommendations made by the consulting firm that executed technical-cooperation operation ATN/SF-2053-BA, with certain subsequent amendments and adjustments. The recommendations, which were implemented in 1985 and 1986, included a new structure for the ministry and particularly for the divisions responsible for planning and construction. It is important to note that the entire maintenance sector was improved from the standpoints of new procedures, the procurement system and other factors. The Minister is assisted by the Permanent Secretary, who is responsible for all of the administrative and accounting units; and by the Chief Technical Officer, who heads the units charged with planning, construction and maintenance of the highway system, bridges, drainage and government buildings.

2. Staff

- 4.3 The MCW manning chart in 1991 included approximately 2,600 persons. To rationalize their duties, the staff was reduced by about 1,150 persons over a period of roughly a year and a half. This had no adverse impact on the activities performed, since the employees cut consisted mainly of low productivity personnel. In addition, and as had been agreed, all of the construction work is being contracted out to the private sector except for highway maintenance, thus sharply reducing the overall need for staff.

^{19/} The organs over which the MCW has administrative and supervisory powers are: the Transport Board, the Licensing Authority, the Water Authority, Port Authority and the Government Engineering Department.

Lastly, it should be noted that, by and large, the MCW personnel perform their assigned tasks acceptably, with their various years of experience compensating for the lack of academic background.

3. Financial, accounting and budgetary administration

- 4.4 Responsibility for these duties is borne by the Finance Division, which is made up of the disbursement, payroll, and computer services sections plus the Integrated Financial Accounting System (IFAS). The IFAS was set up to comply with a requirement of World Bank loan 2432 in 1984 and it is basically responsible for recording the transactions included in that credit operation with the use of a double-entry accounting system, as well as for processing the respective disbursement requests.
- 4.5 The system is marked by certain shortcomings in the accounting procedures and the chart of accounts configuration which are now being corrected. This will enable the IFAS to be used for recording the transactions corresponding to the operation proposed in this document. The necessary officers to perform these duties have already been engaged.

4. Internal control

- 4.6 The control system established by law provides the senior management of the MCW with satisfactory evaluation both of operations from the accounting, financial and operational standpoints and of the quality and adequacy of compliance with policies and attainment of the duly established goals. The head of the Internal Audit Unit will be required to provide the new professional recruits with adequate orientation and supervision and - insofar as possible - to see that they take courses that will be given, preferably, by an international firm of auditors with an office in Barbados.

5. External audit

- 4.7 The MCW's accounts are audited by the Auditor General of Barbados and the staff of that department, by means of scheduled and unannounced visits, the main purpose of which is to verify that the expenditures made and the income received have been properly recorded in the books and settled in accordance with the regulations currently in effect (the 1971 Financial Rules and the 1989 Accounts Manual).
- 4.8 To complement these reviews, the financial statements for projects of the IDB and other international organizations are audited by independent auditing firms. For the operation discussed in this document, it is recommended 20/ that the loan contract include a clause requiring that the project financial statements,

20/ See Recommendations.

throughout the execution period, be presented each year to the Bank with the opinion of an independent public accounting firm acceptable to the Bank. The first financial statements will be the ones corresponding to the year when project execution starts.

6. Procurement and contracting systems

- 4.9 The frame of reference for the procurement of goods and services by the MCW is set forth in the Barbados Financial Rules. When the resources of a loan from an international organization are used, a Special Tenders Committee is set up. In addition to the officials noted above, its members consist of up to five more persons appointed by the Director of Finance and Planning with the approval of the Minister of Finance and Economic Affairs. For procurement and contracting related to execution of the proposed project, the bidding procedure agreed upon with the Bank will be used and will be included as part of the loan contract.

B. Historical financial analysis of the MCW

1. Budgetary resources

- 4.10 Under current legislation, MCW operations are financed out of the Consolidated Fund (General Budget).

2. Budget execution

- 4.11 The analysis 21/ of the budget executed by the MCW by object of expenditure indicates that payroll (central administration and maintenance) accounted for 57% of the operating costs for the period from 1987-88 through 1991-92, and that maintenance was responsible for 45% of same.
- 4.12 The item of capital expenditures in the last six fiscal years absorbed 42% of the revenue received by the MCW. It should be noted that more than a third of these outlays were used for construction and rehabilitation of the highway system.

a. Operating and investment budget

- 4.13 MCW budgetary execution accounted for an average 11% of the national government budget during the period from fiscal years 1987-88 through 1990-91. In absolute terms, it is observed that the MCW executed a budget of more than US\$42 million in the most recent period.

21/ To prepare this analysis, the data on the budget and the execution thereof were obtained from the Estimates and the reports issued by the Comptroller General of Barbados. Those data were later adjusted to constant December 1992 currency - i.e., the price level used for the table of the project's basic costs.

- 4.14 MCW capital expenditures for the construction of roads and related costs declined in absolute real terms during the historical period analyzed due to the fiscal austerity efforts. Investment in highways for fiscal year 1991-92 amounted to only 42% of the figure for 1987-88. At the same time, in relative terms and as compared with total investment, the trend noted signals an incipient qualitative change in national priorities, which appear to be shifting to the coverage of needs in other areas.
- 4.15 The distribution of the MCW budget between its operating and investment expenses for the period from 1987-88 through 1991-92 indicates that while the ministry's operating budget has started to decline gradually in recent fiscal years, outlays in the investment budget have been relatively steady, fluctuating around the level of approximately US\$27 million per year. The exception to that performance - i.e., the capital expenditure for fiscal year 1988-89 (US\$37.9 million) - stemmed from the investment of US\$10.5 million equivalent for partial renewal of the Transport Board's bus fleet, which provides public transportation in Barbados, and for construction of its office premises and machine shops.
- 4.16 The capital investments, and specifically those related to the highway subsector, include the outlays relative to the execution of the project for the expressway from the airport to the west coast (ABC Highway), which was partially financed by the resources of loan 470/OC-BA.

b. Road maintenance administration and budget

- 4.17 Responsibility for the programming and execution of maintenance of the Barbados highway system is assigned to the MCW Operations Division, a five-section structure comprising: Materials Management, Road Maintenance Administration; Road and Drain Maintenance; Building Maintenance; and, finally, Research and Laboratory. To perform the road maintenance, the Division has a payroll of about 1,000, or roughly 60% of the total MCW staff complement. The system now being used enables senior management in the districts to program maintenance jobs; present such programming for the consideration of the Operations Chief; and prepare and send periodic reports from the field on the progress of this work.
- 4.18 A technical assistance program financed by the World Bank was used to develop a road maintenance administration system that will eliminate the weaknesses of the present system for carrying out maintenance programs. The proposed system, which is appropriate for its purposes, will be implemented in its entirety during the present fiscal year. Since it will then be possible to predetermine the needs and types of resources as part of the budget preparation cycle, early participation can be assigned to the various MCW sectors which must provide logistic support for execution of the maintenance plan - basically Personnel, Equipment Administration and Materials Management.

- 4.19 Budgetary execution of the road maintenance item has accounted for no less than one fifth of the total expenditures. In fiscal year 1989-90, these outlays amounted to US\$18.8 million equivalent, or 30.1% of the MCW budget; and in fiscal year 1991-92 the equivalent of US\$13.6 million, or 32.5%.
- 4.20 Despite the favorable trend in the monetary values actually spent on maintenance of the highway system, it must be noted that the sums have not been totally adequate and efficient for satisfactory maintenance of the entire system. When the necessary items are compared with the amounts received from the Treasury for road maintenance expenses, an estimated shortfall of roughly 25% is apparent, even without taking into account road rehabilitation needs. Execution of the World Bank program, which is devoted exclusively to maintenance, has solved this problem.

c. Financing of the MCW budget

- 4.21 Most of the financing for the MCW operating and investment expenses for fiscal years 1987-88 through 1991-92 was provided by the Consolidated Fund (Treasury), which covered the greater portion of the ministry's financial transactions (85%) as compared with the funds of external origin (15%). This included resources from the Transport Tax Fund, which existed up to the year 1988 - a cumulative amount equivalent to approximately US\$17 million, the proceeds of which are now transferred directly to the Treasury. A prominent item in the external funds consisted of the Bank's disbursements for partial financing of the Airport-West Coast Highway, which was completed in fiscal year 1990-91.

3. Fiscal receipts from road use

- 4.22 The Government of Barbados levies taxes on the users of highway transportation in order to recover the cost of maintaining and improving the respective infrastructure. Revenue is provided by taxes on vehicle imports; the consumption of fuel, oil, tires and spare parts; a surcharge on the price of imported vehicles; a special transport tax; and a fee for vehicle registration. The following table shows the evolution of the total amounts collected in taxes from users of the highway transportation system.

| Road user charges (in thousands of current BDS\$) | | | | | |
|--|---------------|---------------|---------------|---------------|---------------|
| Item | 1986 | 1987 | 1988 | 1989 | 1990 |
| <u>Cons. taxes & revenue stamps</u> | <u>52,370</u> | <u>51,041</u> | <u>55,443</u> | <u>77,282</u> | <u>76,987</u> |
| Gasoline | 29,480 | 29,500 | 30,865 | 38,774 | 44,213 |
| Diesel oil | 7,591 | 7,934 | 7,936 | 9,389 | 10,103 |
| Fuel oil | 6,503 | 7,826 | 7,639 | 9,270 | 9,775 |
| Vehicles <u>1/</u> | 7,085 | 3,892 | 6,156 | 16,383 | 10,031 |
| Spare parts <u>2/</u> | 1,346 | 1,578 | 2,190 | 2,195 | 2,095 |
| Tires <u>3/</u> | 365 | 311 | 657 | 771 | 770 |
| <u>Import taxes</u> | <u>9,846</u> | <u>23,991</u> | <u>27,123</u> | <u>22,227</u> | <u>17,380</u> |
| Vehicles <u>4/</u> | 5,032 | 18,451 | 21,295 | 18,052 | 13,177 |
| Spare parts <u>5/</u> | 3,075 | 3,545 | 3,664 | 2,688 | 2,589 |
| Tires <u>6/</u> | 1,739 | 1,995 | 2,164 | 1,487 | 1,614 |
| <u>Trans. taxes <u>7/</u></u> | <u>13,439</u> | <u>17,633</u> | <u>23,737</u> | <u>27,248</u> | <u>28,216</u> |
| <u>Regist. fees</u> | <u>12,371</u> | <u>13,251</u> | <u>13,707</u> | <u>15,835</u> | <u>16,213</u> |
| Total | 88,026 | 105,916 | 120,010 | 142,592 | 138,796 |
| <u>1/</u> 70% of the CIF price plus import tax if more than BD\$30,000 and 50% if less. Revenue stamp tax is 20% of the CIF price. <u>2/</u> 18% of the CIF price plus import tax. Revenue stamp tax is 20% of the CIF price. <u>3/</u> 50% of the CIF price plus import tax. Revenue stamp tax is 20% of the CIF price. <u>4/</u> 45% of the CIF price. <u>5/</u> 30% of the CIF price. <u>6/</u> 45% of the CIF price. <u>7/</u> 1.75% of salaries and wages in general. | | | | | |

- 4.23 Over the 1986-1990 period, the revenue thus collected rose by more than 12% a year in current terms, and that trend is not expected to change appreciably in the medium term. The total annual receipts from these levies and taxes during the period sufficed to cover the costs of maintaining, improving and rehabilitating the highway system.

V. FEASIBILITY AND RISKS

A. Technical feasibility

- 5.1 The analysis of the project shows it to be technically feasible. The proposed designs, execution plan, administration and supervision mechanisms and the conditions agreed upon for execution, operation and maintenance of the project ensure its viability.
- 5.2 The designs of the road improvement works that were produced by a consulting firm were drawn up on the basis of recent traffic counts, detailed topographical surveys and an evaluation of the functional and structural status of the existing paved surfaces. The technical solutions were chosen by applying traditional highway engineering criteria and taking into account the necessary economic considerations to achieve optimal design and minimum cost.
- 5.3 Most of the works will be executed by contracting firms selected by means of international public bidding pursuant to the Bank's procedures. It is nevertheless proposed that an exception to the IDB policies be granted, to allow the relocation of public utilities to be executed directly by the companies which administer and operate those services. As to the project works in general, previous experience shows that there will be no difficulty in hiring suitable firms through international competition. Earlier examples of the installation and relocation of public utilities by the companies themselves attest to their ability to perform such work satisfactorily.
- 5.4 Technical supervision of the works will be assigned to a consulting firm selected through an international call for proposals, to be conducted in accordance with IDB procedures. Previous experience also confirms that there are specialized and reliable consulting firms in the country and in the Caribbean region which can perform the supervisory duties efficiently.
- 5.5 The technical studies have covered all of the details concerning the needs for expropriation of land and property, defining the areas involved and identifying the necessary factors to be taken into account in the valuation thereof.
- 5.6 The MCW units that will take part in the administration and inspection of the project have the necessary trained professional staff to perform these duties. The project includes technical assistance activities to improve the operating capabilities of these workers, providing them with advisory services in specific areas plus support teams and the training required for technical personnel.

- 5.7 One of the contractual commitments contemplated in the prospective loan contract will establish the obligation of the MCW to carry out complementary activities and put into effect a maintenance plan to ensure that the project's objectives are accomplished and that the works will be adequately maintained.

B. Institutional feasibility

- 5.8 The MCW has been responsible for other projects supported by the Bank, such as the Spring Garden-Saint Barnabas and Airport-West Coast expressways. In addition, it has executed projects financed by other international organizations, such as the World Bank and the Caribbean Development Bank. This has enabled the ministry to acquire valuable administrative and technical experience in the execution and administration of operations partially financed by such institutions.

- 5.9 In addition, the MCW organizational structure, which responds acceptably in achieving its objectives and carrying out its duties, has been modified pursuant to the recommendations of the consulting firm which executed the technical cooperation financed by the Bank in 1981. In the interim, the MCW has implemented other organizational adjustments required by the World Bank, which include the introduction of improvements in its maintenance system. Based on this background information and the fact that the proposed project calls for the contracting of consulting firms to advise the MCW during project execution, it is believed that no problems of an institutional, administrative or technical nature will arise that might adversely affect the progress of the work.

C. Financial viability

1. MCW financial projections

- 5.10 To measure the financial impact of the proposed project and others to be carried out within the period scheduled for its execution, a budgetary projection has been drawn up for the MCW which covers a period of five fiscal years (1992-93 through 1996-97).
- 5.11 If the anticipated performance of the different MCW budgetary items holds true, the current and capital expenditures will represent 60% and 40%, respectively, of total outlays. In the first category, growth of the central administration expenses will decline somewhat, due to the budgetary constraints facing the national authorities in their efforts to reduce the fiscal deficit. In view of that factor and coinciding with the plan to rationalize activities in the MCW, the number of staff was sharply reduced - by approximately 1,150 employees - as of fiscal year 1991-92.
- 5.12 It should also be noted that maintenance expenses have been computed pursuant to predetermined price and volume standards for each activity that is part of the new maintenance management

system. The design and implementation of that system were the result of technical cooperation from the World Bank, now in the final stage of start-up. The estimated maintenance costs of US\$10 million for fiscal year 1992-93 have been increased by approximately US\$3 million for fiscal year 1993-94 plus additional items for each of the ensuing fiscal years. It is therefore believed that the MCW will be in a position to provide a satisfactory level of maintenance for the entire highway system in Barbados. To ensure that level of service, it is recommended that the prospective loan contract include a maintenance clause. 22/

- 5.13 The wage bill for maintenance underwent additional cuts in the last two fiscal years due to the reduction in force because of the increasing privatization of road maintenance work. The enhanced role assigned to the private sector is reflected in the item entitled "Other Maintenance Expenses," especially in fiscal years 1995-96 and 1996-97 when the contracting of specialized firms is expected to reach nearly 50%.
- 5.14 Anticipated capital expenditures include the proposed project in accordance with the estimated schedule, plus a project for road rehabilitation and maintenance, mainly of rural roads, at a cost of US\$46.8 million, for which financing equivalent to \$21.2 million will come from the World Bank and US\$9.6 million from the Caribbean Development Bank. Plans also call for execution of the Tenantry Roads project, financed by the Investment and Export Funds of the Government of Venezuela. Finally, the list includes a number of other projects and various studies, some of which are slated for external support from the Caribbean Development Bank and the European Economic Community.

2. Feasibility of the local contribution

- 5.15 For the future execution of operating and investment programs by the MCW, the needs for national resources from the Consolidated Fund (Treasury) during the projected period were determined. The figures for each fiscal year are lower than those financed during the fiscal years in the historical period examined, i.e., 1986-87 through 1991-92. Viewed from that angle, it may be inferred that the country will not be obliged to make greater efforts than those expended in the past in order to finance the future activities and projects of the MCW.
- 5.16 Nevertheless, the difficulties facing the Treasury at the current economic juncture plus those stemming from implementation of a stand-by agreement with the IMF call for an analysis in greater depth of the government's ability to finance programs for which the MCW will be responsible. The implications of this situation for projects funded by international organizations are that the

22/ See Recommendations.

pressures on the Consolidated Fund might affect the steady and timely availability of counterpart funding. The Government of Barbados, which delayed approval of this project for two years owing to that situation, has notified the Bank that it will include in its forthcoming budgets the requisite items to cover the local counterpart. The amounts necessary to start the project have already been included in the 1993-94 budget.

D. Economic feasibility

1. Economic analysis

- 5.17 Widening of the roadway and improvement of the conditions for vehicle traffic on the road corridors will substantially reduce traffic bottlenecks in peak hours, thus lowering vehicle operating costs and, in particular, travel time for users. In addition, although these benefits have not been quantified, the project will reduce the frequency and duration of traffic interruptions caused by breaks in the pavement, flooding and accidents. At the same time it will provide greater safety for all users, especially pedestrians and nonmotorized vehicles which now have to compete with motor vehicles due to the narrowness – and, in many cases, the absence – of sidewalks.
- 5.18 The project will also increase the level of service at intersections, thus sharply reducing delays for the vehicles traveling both in the project corridors and in the streets crossed by those routes, at the same time generating considerable savings of time for all users of the urban road system. Moreover, it will diminish the additional fuel consumption caused by idling motors of vehicles caught in traffic jams, with the added boon of substantially lower pollution levels from toxic gas emissions.
- 5.19 An additional benefit is that improved traffic conditions on the inner and outer corridors will alleviate congestion in the central area of Bridgetown through more efficient distribution of vehicular movement in the road grid. This benefit has not been quantified due to the difficulty and high cost entailed by such calculations, so that the present socioeconomic evaluation of the project may be considered to be very conservative.
- 5.20 For purposes of the socioeconomic evaluation, each important component was evaluated separately. This made it possible to optimize the overall dimensions of the project and verify the socioeconomic viability of its major components. The tools used for this purpose were the VOC (Vehicle Operating Cost) subroutine of the World Bank's Highway Design and Maintenance Standards Model (HDM-3) and the methodology of the Highway Capacity Manual of the United States Transportation Research Board. To gauge the benefits of time savings, consideration was given only to the time spent by users driving to work, pursuant to the standard method employed by the Bank.

- 5.21 The cost-benefit analysis posted a 56% economic internal rate of return (EIRR) for the inner corridor and 42% for the outer corridor, as shown in the table that follows. These high rates are explained by the fact that the present capacity of the intersections and sections of the project corridors is far too low to handle traffic demand; and that relatively small investments could produce a sharp increase in service levels on these corridors. The optimal timing analysis confirms that situation. It is therefore concluded that the projects should be carried out as soon as possible.

| <u>Net present value and EIRR</u> (in thousands of BDS\$) | | |
|--|-----------------------|-----------------------|
| | <u>Inner corridor</u> | <u>Outer corridor</u> |
| <u>Costs</u> | | |
| Investment | 11,360 | 21,140 |
| <u>Benefits</u> | | |
| Time savings | 47,487 | 54,308 |
| Vehicle operating costs | 1,923 | 6,597 |
| Speed changes, motor idling | 2,325 | 2,481 |
| Maintenance | 461 | 2,113 |
| <u>Total</u> | <u>40,836</u> | <u>44,359</u> |
| <u>Average EIRR</u> | 56% | 42% |

- 5.22 The sensitivity analysis shows that there is very little risk of an economic internal rate of return that is too low. The most sensitive parameter – an 80% drop in the benefits from the savings of passengers' travel time – would still produce an EIRR of 14% for the inner corridor and one of 12% for the outer corridor. An increase of 20% in the investment costs would produce EIRRs of 47% and 34%, respectively, for the inner and outer corridors. Under the scenario that demand for transportation fails to rise, the EIRR would be 47% for the inner corridor and 35% for the outer corridor.

2. Distributive impact

- 5.23 The effects that the project will have on low-income beneficiaries were estimated by computing the ratio between the present value of the net economic benefits to low-income groups and the present value of net economic benefits to the private sector. As may be seen in the following table, the share of the present value of the

project's net economic benefits that would go to low-income groups is 13%. 23/

| <u>Present value of net economic benefits</u> <u>by beneficiary group</u> (in thousands of BDS\$) | | | | |
|---|---------------------------|----------|---------------|-----------------------|
| Costs/Benefits | Low-income private sector | Other | Public sector | Net economic benefits |
| Costs Investment | +353 | 0 | -32,853 | -32,500 |
| Benefits Maintenance | -28 | 0 | +2,602 | +2,574 |
| Vehicle operating costs | 0 | +17,367 | -4,041 | +13,325 |
| Savings of passenger travel time | +15,316 | +86,479 | 0 | +101,795 |
| Total | +15,641 | +103,846 | -34,293 | +85,194 |

5.24 The relatively low distributive effect that the project would have on the low-income population is mainly due to the fact that it will generate important savings of travel time for passengers, but the economic value of that time is less for the low-income population. In addition, it is not anticipated that the benefits of reduced bus operating costs will be transferred to passengers – most of whom are poor – through fare adjustments. It should nevertheless be pointed out that the poorer population will benefit from the added safety that the project will provide for cyclists and pedestrians. Also, the savings in travel time will help to make life more comfortable for the users who travel to and from work, 30% of whom are in the low-income bracket.

E. Risks

5.25 The project includes components that are designed primarily to ensure its successful execution and to avoid or reduce the risk of failing to obtain all of the benefits from time savings. The plans call for a group of facilities and activities to improve traffic management and control in the streets which are targeted for improvements (such as the establishment of parking zones for buses, signs restricting or prohibiting parking, changes of traffic

23/ Distributive effect ratio: $\frac{15,641}{15,641 + 103,846} = 0.13.$

direction in the streets providing access to the corridors, etc.) in addition to the civil works. These facilities and activities are complemented by the technical assistance component and the added traffic equipment which will contribute to the same purpose.

- 5.26 Another possible risk to the project is the potential reduction in the financial capacity of the Government of Barbados that may result from the measures taken to overcome the fiscal deficit situation as well as the macroeconomic problems besetting the country. That risk, however, will be minimized or eliminated by two factors: (a) the financial projections show that the financial burden of the government's contribution to the project is lighter than the one borne by the MCW in the execution of previous investments; accordingly, a possible reduction in the MCW budget would keep the relative onus of the proposed investment within the historical average range; and (b) the Bank is pursuing efforts to obtain cofinancing, which would reduce the burden of the local counterpart funding.
- 5.27 The risk of delays in securing legal possession of the right-of-way has been considerably lessened, inasmuch as the government informed the Bank at the time of negotiations for the operation that the process of acquiring the land has been speeded up through the contracting of additional surveying staff. The Bank requires that there be legal possession of the land by the time the call for bids is issued, and not prior to the prequalification process. 24/

OUTLINE OF TERMS OF REFERENCE

Technical Assistance for Traffic Management and Control

I. BACKGROUND AND OBJECTIVES

- 1.1 The Government of Barbados has launched a series of activities designed to improve transport conditions in the Greater Bridgetown area. They include upgrading of the road infrastructure and adoption of a set of traffic management and control measures that will expedite the movement of vehicles traversing the principal streets within the urban perimeter and will help to raise safety levels for users.
- 1.2 Given the high accident rate posted at present, these activities should be complemented by a strong effort to reduce the risks facing both the drivers of vehicles and pedestrians using the urban street system; and to lower the number of traffic accidents.
- 1.3 To achieve the desired results, it is evident that adequate laws are needed and that traffic rules and regulations must be strictly enforced. The studies already conducted and the coordination work with the agencies responsible for traffic control have revealed the shortcomings that exist in the current regulations; the ineffectiveness of the system to penalize violators of the rules; and the scarcity of human and material resources for ensuring effective control of vehicular traffic.
- 1.4 In response to that situation, this operation includes the financing of technical assistance the chief objectives of which are the following:
 - a. formulation and implementation of an accident prevention plan;
 - b. preparation of a program to refurbish and complement road and traffic signs in Greater Bridgetown;
 - c. selection of the most appropriate system to control the operation and maintenance of traffic lights;
 - d. training in the processing and evaluation of traffic statistics;
 - e. implementation of the necessary changes in present laws to streamline the system of penalties for violations of traffic rules and regulations, and to make that system more effective;
 - f. improvement of the system of statistics covering traffic accidents and violations as a basis for keeping an up-to-date

and individual register of vehicles and drivers that will permit ongoing evaluation of their performance; and

- g. an increase in the operating capability of the Royal Barbados Police Force so that it can handle traffic control effectively throughout the Greater Bridgetown area.

II. GENERAL CONDITIONS

- 2.1 The technical assistance will be provided by a specialized consulting firm of proven international experience, which will be contracted by the MCW in accordance with the procedures set forth in IDB rules and regulations.
- 2.2 The MCW will assign the necessary counterpart staff to assist in execution of the consultants' activities; receive the technology it is hoped to transfer by means of this technical assistance; and produce, at the detailed level, the plans, quantity estimates and budgets that must be furnished as a result of the consultants' recommendations.
- 2.3 Part of the financing provided by the Bank will be used to purchase the requisite supplies and materials for the consultants to carry out their duties.
- 2.4 Both the MCW and the other institutions benefiting from the technical assistance must provide all assistance necessary for the consultants to carry out their activities, giving them access to documentary sources and files related to their specific tasks; furnishing the office space and equipment needed; and assigning support staff and the means of local transportation.
- 2.5 These agencies must also appoint the counterpart personnel who will receive the transferred technology and training it is hoped to obtain through this technical assistance and who will, at the same time, be responsible for carrying out the recommendations of, and setting up the systems developed by, the consultants.
- 2.6 The consultants will be responsible for the technical quality and timely delivery of the documents they produce; for the development of data-processing systems; for the preparation and delivery of the training programs that will be designed in accordance with the needs identified; and for the compiling of training manuals.

III. SCOPE OF THE SERVICES

A. Accident prevention plan

- 3.1 The consultants will analyze the existing data and will tour the main arteries in the Greater Bridgetown area, identifying the places where a large number of accidents has occurred in recent

years or where the physical condition of the streets, the high volume of pedestrian traffic or driving habits present a potential risk of accidents.

- 3.2 The results of that evaluation will be used to identify the most probable causes of accidents and the most appropriate measures for avoiding them or reducing the risk thereof will be recommended. Those measures will include, as a minimum, the following action: (a) the establishment of new speed limits in the urban area, in accordance with the characteristics of each district traversed; (b) changes in the direction of traffic on certain streets; (c) restrictions on turns at certain intersections; (d) determination of the need for warning signs and signals at all trouble spots, conflict, pedestrian crossings, school zones, etc.; and (e) the compiling of an inventory of sites where small-scale physical works are needed, such as sidewalks and pedestrian islands; improved visibility; elimination of slippery pavement; reconfiguration of gutters or dangerous ditches, relocation of posts, and the like.

B. Traffic sign program

- 3.3 All places where traffic control signs (the direction of traffic, turns permitted or forbidden, speed limits, parking prohibited, authorized stopping places for public service vehicles, etc.) are needed will be identified and the requisite signage will be designed.
- 3.4 The places where signs are needed for guidance or information will be identified and the signs containing such data will be designed.
- 3.5 A plan showing the location of all traffic signs (warning, control, guidance and information) will be drawn up; the number and type of signs required in each case will be tallied; and the instructions, directions for assembly, stencils and specifications of the necessary materials for manufacturing the signs will be provided.
- 3.6 Research will be conducted to analyze and determine the most appropriate types of materials to be used for marking the pavement, such as reflector paint, thermoplastic sheets, button reflectors, etc.
- 3.7 The requirements for materials and spare parts will be quantified and lists will be made of the quantities and the corresponding budgets for the procurement thereof.
- 3.8 A program will be drawn up for the manufacture, placement and refurbishing of signs and striping or marking of the pavement, plus instructions and general guidelines for the maintenance thereof.

C. Selection of the traffic light control system

- 3.9 The consultants will verify and, if necessary, add to the inventory of traffic signals in the Greater Bridgetown area, checking the operating status thereof and the type of operating system and examining the advisability of establishing a system for synchronization and central control.
- 3.10 Depending on the results of that study, which must be based on technical and economic criteria, they will select and recommend the system(s) which should be adopted for operation and control of the traffic light system and the timing for the installation of such systems.

D. Training of Traffic Division staff

- 3.11 The system of on-the-job training will be used to train the personnel of the Traffic Division. The consultants will use this method to work in permanent collaboration with the counterpart staff throughout all phases of the programs and in performing all of the tasks included therein.

E. Review of traffic laws

- 3.12 The consultants will review the traffic laws, rules and regulations; examine the factors which make the control and accident investigation procedures and the application of penalties ineffective and inefficient at present; and propose the changes needed to streamline administrative and judicial processes.

F. Coordination between the MCW and the police

- 3.13 The consultants will also propose mechanisms for the exchange of information and technical and administrative cooperation which should exist between the MCW Traffic Division and the police to keep up-to-date records of drivers and vehicles for the investigation of accidents and for timely adoption of accident prevention measures. To that end, they will develop the procedures to be followed; prepare models of documents, reports and files; and advise both agencies on the selection of communications media and complementation of computerized systems.

G. Training of police force personnel

- 3.14 A training program will be set up for RBPF personnel, designed to ensure: (a) an awareness of changes that would take place in the present rules and regulations; (b) the adoption of effective methods for patrolling, directing and controlling traffic; (c) quick and effective action to provide assistance in case of accidents and to obtain the information necessary to report the

pertinent facts; and (d) the achievement of ongoing cooperation with the MCW.

H. Reorganization of school traffic patrols

- 3.15 The consultants will develop the basis on which school traffic patrols will be set up; indicate the scope of this service; establish the necessary resources; and identify the sources of financing to ensure permanent operation of the service.
- 3.16 They will also define the roles to be performed by the RBPF, the MCW and the Ministry of Education, along with the areas in which those agencies should play an active part, providing personnel to give informative talks, instruct the new school guards and supervise the programs.
- 3.17 At the start of each stage or phase of the work, the consultants will give orientation briefings, explaining the basic elements, the methodologies to be used and the goals it is hoped to attain.
- 3.18 In every case, the consultants will prepare a detailed work plan and establish a schedule assigning specific tasks to each member of the counterpart staff, giving clear instructions and specifying the degree of precision and the formats in which the results obtained must be presented.

IV. PERSONNEL COMPLEMENT REQUIRED AND EXECUTION PERIOD

- 4.1 It is anticipated that coverage of the first four areas of this technical assistance will require the services of a specialist in traffic engineering with no fewer than 10 years of experience, for a period of about a month and a half; and those of a transportation economist or urban transport planner with no fewer than 10 years of experience, for a period of approximately one month.
- 4.2 The remaining areas are expected to require contracting of the services of a traffic specialist, a police advisor, a legal advisor and a systems analyst, all of whom must have recognized experience in their respective fields and no fewer than 10 years of work in their professions.
- 4.3 The estimated time for the assignments of these specialists is a total of 210 person-days.
- 4.4 The MCW counterpart staff will consist of at least two highway engineers, a transportation economist, two traffic technicians and the necessary support personnel. These individuals will be assigned on a full-time basis and for a period of no less than four months, or the time needed to produce all of the plans and documents.

OUTLINE OF TERMS OF REFERENCE
NATIONAL HIGHWAY EDUCATION PROGRAM

I. BACKGROUND AND OBJECTIVES

- 1.1 The Government of Barbados has instituted a series of activities designed to improve transportation conditions in the Greater Bridgetown area. They include: improvement of the highway infrastructure and adoption of a set of measures for traffic management and control that will expedite the movement of vehicles through the principal streets within the urban perimeter, and will help to raise the level of safety for users.
- 1.2 Traffic jams, the large number of accidents and the limited efficiency of public transportation are largely due to the scant knowledge of the regulations or failure to obey them and to careless driving habits or ignorance of the dangers involved in driving through streets and avenues where nonmotorized and automotive vehicles and pedestrians mingle and compete with each other.
- 1.3 To ease these problems, loan, financed by the Inter-American Development Bank, calls for formulation and start-up of a nationwide highway education program, the main objectives of which are:
 - a. to publicize the rules for traffic and highway safety and promote strict compliance therewith;
 - b. to make the population aware of the risks implicit in poor driving habits; and
 - c. to emphasize the precautionary measures which must be observed to avoid traffic accidents.

II. GENERAL CONDITIONS

- 2.1 Pursuant to the procedures established by the Bank, the MCW will engage the services of an advertising agency which will draw up the plan of action and will be responsible for conducting a highway education campaign, the scope of which is described below.
- 2.2 The MCW will appoint a General Coordinator for the program and will enter into the necessary arrangements or agreements to secure the participation and support of other public agencies, such as the Ministry of Education, the Royal Barbados Police Force, universities, state-owned communications media and others, to ensure the success of the campaign.

- 2.3 The advertising agency will be responsible to the program management for the design and programming of all phases of the campaign and for the production of all of the necessary audiovisual material, recordings, pamphlets and publications.

III. SCOPE OF THE PROGRAM

1. Action plan

- 3.1 The action plan that will be submitted for approval of the MCW must contain a detailed description of the different phases to be included in the campaign; the publicity media that will be used; the materials that will be employed in arrangements with each of the media; and the number or frequency of such publicity, the human resources needed and the corresponding budget.
- 3.2 The highway education campaign must be carried out on a nationwide basis and will be aimed at three levels: drivers, the school-age population and the general public. The media which will provide the greatest impact will be selected and the ways for publicizing the campaign will be determined with those targets in mind.
- 3.3 The action plan will establish the areas in which public organizations or parastatals will participate and those that will require the contracting of private sector services.

2. Design of the campaign

- 3.4 In principle, it is believed that in order to reach all of the population strata, use should be made of every possible mass communications medium, such as television, radio and newspapers, for which the type, frequency and length of the spots or publications will be established, along with the time at which they will be aired or the space in which they will be printed and the array of elements that will be employed in such publicity.
- 3.5 At the school-age level, it is considered that greater effectiveness will be achieved by holding short courses at which audiovisual material will be shown and pamphlets distributed. This introduction will be complemented by active participation of the older students who help to perform the functions of the school traffic patrols.
- 3.6 The campaign aimed at drivers would involve distribution of copies of the rules and regulations; television and radio spot announcements or posters containing specific advice for drivers; and courses which all drivers of public service vehicles will be required to attend.

- 3.7 The foregoing indications notwithstanding, in each case adequate analysis should be conducted to determine which advertising media can be used most effectively.

3. Production of material for the campaign

- 3.8 The advertising agency will produce or supervise the production of all radio or television announcements, publications, teaching materials and other items that will be used to carry out the highway education campaign. In each instance, the agency contracted for that purpose will be responsible for the quality and timely delivery of the elements to be produced.
- 3.9 Consideration should be given to the preparation of video and audio recordings, slides, posters, billboards, leaflets, ads to be published in newspapers and magazines, and the like.
- 3.10 All of the items cited above will be the property of the Government of Barbados, which will have the exclusive reproduction and distribution rights.

4. Dissemination of information

- 3.11 Depending on the results of a publicity impact analysis which it will conduct, the agency will propose to the MCW a system for the contracting of space in the publicity media selected as the most appropriate and, after obtaining the corresponding authorization, will proceed to contract for such space and to distribute the necessary materials.
- 3.12 Once the publicity has been released, the agency will conduct frequent monitoring to verify compliance with the contracts and will carry out opinion polls to evaluate the effect of the campaign. Depending on the findings of that evaluation, it will make any necessary adjustments, changing the time, length and frequency of the broadcasts or any other factor it may deem important in order to achieve better results.
- 3.13 Drivers' education at the school level will be approached as a permanent function. To that end, cooperation will be sought from the Ministry of Education to set up a team of instructors who will rotate in giving short courses at all education centers in the country, using the audiovisual materials, posters and leaflets prepared for this program.

IV. EXECUTION PERIOD

- 4.1 It is estimated that the advertising agency's services will cover a period of six months. The first month will be used to draw up the action plan; the next two for preparing the materials, organizing the campaign and contracting the media; and the remaining three

months for the launching and monitoring of the campaign and implementation of the necessary adjustments.

- 4.2 By the end of that period, it is considered that the MCW or another branch of the government will be able to assume responsibility for continuing the highway education program, with the cooperation of and input from other public organizations and private enterprise.

V. CONTRACTING MECHANISM

- 5.1 The advertising agency will be hired on the basis of its background and experience, and compensation for its services may be based on its professional fees plus expenses of administering the monies made available by the MCW, or the payment of a lump sum. The choice of these options will be determined by the action approved.

| ESTIMATED COSTS OF THE TECHNICAL SUPERVISION AND ASSISTANCE COMPONENT (in US\$) | | | | |
|--|-------------|------------|----------|---------|
| | Months each | US\$/month | Subtotal | Total |
| 1. Engineering and administration | | | | |
| 1.2 Technical supervision | | | | |
| a. Staff | | | | |
| Project director | 0.5 | 3,400 | 1,700 | |
| Highway engineer | 1.0 | 3,000 | 3,000 | |
| Technicians (2) | 1.0 | 2,000 | 4,000 | |
| Secretary | 1.0 | 1,000 | 1,000 | |
| Draftsman/office assistant | 0.5 | 1,400 | 700 | |
| Subtotal | | | | 10,400 |
| b. Overhead | | | | |
| 50% of staff salaries | 0.5 | 10,400 | 5,200 | |
| Subtotal | | | | 5,200 |
| c. Vehicles and equipment | | | | |
| Vehicles (2) | 0.5 | 1,000 | 1,000 | |
| Engineering equipment | 1.0 | 650 | 650 | |
| Subtotal | | | | 1,650 |
| d. Operating expenses | | | | |
| Maintenance of premises | 1.0 | 600 | 600 | |
| Office supplies | 1.0 | 300 | 300 | |
| Materials | 1.0 | 400 | 400 | |
| Communications | 1.0 | 200 | 200 | |
| Subtotal | | | | 1,500 |
| Total cost of supervision (US\$18,750 x 34 months) | | | | 18,750 |
| 1.3 Project administration | | | | |
| Additional staff to be assigned to the MCW to strengthen the Project Monitoring Unit | | | | |
| Specialist in the planning and execution of highway works | 1.0 | 2,600 | 2,600 | |
| Accounting specialist | 1.0 | 2,600 | 2,600 | |
| Monthly cost | | | | 5,200 |
| Total cost of administration (US\$2,200 x 48 months) | | | | 249,600 |

| ESTIMATED COSTS OF THE TECHNICAL SUPERVISION AND ASSISTANCE COMPONENT (in US\$) | | | | |
|--|---------------------|------------|----------|---------|
| | Months each | US\$/month | Subtotal | Total |
| 3.1 TECHNICAL ASSISTANCE | | | | |
| 3.1.1 Advisory services on road signs and safety | | | | |
| Hiring of specialists to advise and direct the studies | | | | |
| a. Fees | | | | |
| Traffic engineering specialist | 55 days @ 275 | | 15,125 | |
| Transport economist | 30 days @ 275 | | 8,250 | |
| Traffic specialist | 40 days @ 275 | | 11,000 | |
| Police advisor | 30 days @ 220 | | 6,600 | |
| Legal advisor (local) | 15 days @ 180 | | 2,700 | |
| Systems analyst | 40 days @ 220 | | 8,800 | |
| Subtotal | | | | 52,475 |
| b. Travel and per diems | | | | |
| Fares and transportation expenses | 5 x 1,500 | | 7,500 | |
| Per diems | 195 days @ 200 | | 15,000 | |
| Subtotal | | | | 61,500 |
| c. Payments to traffic guards | 6 x 36 months @ 500 | | 108,000 | 108,000 |
| d. Supplies and materials | global | | 18,025 | 18,025 |
| Total 3.1.1 | | | | 240,000 |
| 3.1.2 National highway education program | | | | |
| Advertising agency services | | | 15,000 | |
| Production of audiovisuals and manuals | | | 50,000 | |
| Material for audiovisuals and publications | | | 25,000 | |
| Contracting of space in the media | | | 80,000 | |
| Remuneration of coordinators and instructors | | | 30,000 | |
| Total 3.1.2 | | | | 200,000 |
| Total technical assistance | | | | 440,000 |

| ESTIMATED COSTS OF THE TECHNICAL SUPERVISION AND ASSISTANCE COMPONENT (in US\$) | | | | |
|---|-------------|------------|----------|----------------|
| | Months each | US\$/month | Subtotal | Total |
| 3.2 PROCUREMENT OF EQUIPMENT | | | | |
| a. Equipment for traffic studies and statistics | | | | |
| Traffic counters, portable scales, computers and software, video equipment | | | 60,000 | |
| b. Equipment and materials for traffic signs | | | | |
| Equipment for machine shop; materials for sign manufacture; painting and stencils for traffic marking | | | 160,000 | |
| c. Equipment to support traffic control | | | | |
| Upgrading of vehicles, radiocommunications equipment | | | 80,000 | |
| Total 3.2 | | | | 300,000 |

PROPOSED RESOLUTION 1/

BARBADOS. LOAN /OC-BA TO BARBADOS
(Bridgetown Roads and Safety Improvement Project)

The Board of Executive Directors

RESOLVES:

That the President of the Bank, or such representative as he shall designate, is authorized, in the name and on behalf of the Bank, to enter into such contract or contracts as may be necessary with Barbados, for the purpose of granting it a loan to cooperate in the execution of a Project for improving the roads capacity, transit conditions and safety of Greater Bridgetown, hereinafter called the "Project". This financing shall be subject substantially to the following conditions:

1. Amount and Currencies: Up to US\$18,500,000, or the equivalent in other currencies (except that of Barbados) which are part of the ordinary capital resources of the Bank, to pay for goods and services acquired through international competition in the member countries of the Bank and for such other purposes as may be specified in the loan contract. Payments of amortization and interest shall be made in the currency or currencies specified by the Bank, in a quantity equivalent to the corresponding amount owed, calculated in units of account in terms of dollars of the United States of America, in accordance with provisions to be included in the loan contract.
2. Source of Funds: The ordinary capital resources of the Bank.
3. Guarantee: The general responsibility of the Borrower.
4. Credit Fee: 0.75 percent per annum on the undisbursed portion of the financing, which shall commence to accrue 60 days after the date of the loan contract and payable in dollars of the United States of America on the same dates as the interest.
5. Amortization: The Borrower shall amortize the loan in a period of 20 years from the date of the loan contract, by means of

1/ The provisions contained in this Appendix I and in Appendices II and III will be final only when the Board of Executive Directors has approved the proposed loan.

semiannual, consecutive and, insofar as possible, equal installments. The first installment shall be paid on the first interest payment date, six months after the date scheduled for the last disbursement of the financing.

6. Interest: The Borrower shall pay interest semiannually on the daily outstanding balances of the loan. The first payment shall be made six months after the date of the loan contract. The Bank shall determine the rates of interest to be applied during the life of the loan, in accordance with the lending rate policy of the Bank. At the request of the Borrower, resources of the financing may be used to pay the interest during the term for disbursement thereof.
7. Disbursement: The term for disbursement of the financing shall expire four years after the effective date of the loan contract.
8. Special Conditions:
 - (a) The execution of the Project and the utilization of the resources of the loan shall be carried out in their entirety by the Borrower, through the Ministry of Public Works, Communications and Transportation, hereinafter referred to as the "Executing Agency" or "MCW".
 - (b) The resources of the loan shall be used to participate in the execution of a Project the total cost of which is estimated at the equivalent of US\$26,500,000. Consequently, the loan contract shall contain such provisions to ensure that such additional resources as may be necessary, in addition to the loan, for the complete execution of the Project shall be duly provided, in an amount estimated at the equivalent of US\$8,000,000, in accordance with a schedule of investments satisfactory to the Bank.
 - (c) In the acquisition of machinery, equipment and other materials for the Project, and in the awarding of construction contracts, the system of public bidding shall be followed in each case in which the value of such acquisitions exceeds the equivalent of US\$250,000 or the value of such contracts for the execution of works exceeds the equivalent of US\$1,000,000. The bidding shall be subject to the procedures to be appended as an annex to the loan contract.
 - (d) Notwithstanding paragraph (c) above, relocation works for water supply and sewerage, electric power, gas and telephone services may be carried out under force account, for up to the equivalent of US\$ 4,500,000, provided that these works have been previously approved by the Bank.

- (e) The Bank shall establish such inspection procedures as it deems necessary to assure the satisfactory development of the Project and the Borrower shall extend all cooperation which is required for the most effective accomplishment of this purpose. From the amount of the Financing the sum of US\$185,000 shall be allocated for credit to the general income accounts of the Bank to meet expenses of general inspection and supervision.

RECOMMENDATIONS

- A. It is recommended that the following conditions, to be fulfilled to the satisfaction of the Bank, be included in the loan contract in addition to the conditions set forth in the proposed resolution:
1. Prior to issuing each call for invitation to bid for the acquisition of goods or works, or if there is no need for public bidding, prior to the acquisition of goods or the initiation of works, the Borrower shall submit to the Bank: (a) the general plans, specifications, budgets, and other documents needed for the acquisition or construction and, where applicable, the specific requirements and other documents needed for the call for bidding; and (b) in the case of works, evidence that it has the legal possession, easements or other pertinent rights to the lands required for their construction.
 2. Prior to the first call for invitation to bid for works included in the Project, or before any work is undertaken through force account, whichever comes first, the Borrower undertakes to submit the following to the Bank:
 - (a) the plan of action with its implementation schedule, for:
 - (i) relocating water supply and sewerage, electric power, gas and telephone service facilities that will be affected by the works of the Project;
 - (ii) coordinating the relocation works with the highway works of the Project; and
 - (iii) resettling the population affected by the Project;
 - (b) the measures it has adopted for the implementation of the plan of action, referred to in paragraph (a) above, including a copy of the agreements that it shall have entered into with each of the entities charged with carrying out the relocation of the public services referred to in sub-paragraph (a)(i) above. Each contract shall include the cost of the respective relocation. The measures shall also include those relating to the supervision of the relocation works; and
 - (c) the measures undertaken to implement the recommendations on environmental protection agreed upon between the Borrower and the Bank and included

in the Environmental Impact Evaluation report prepared by the Executing Agency.

3. The Borrower agrees to contract, within 6 months from the date of the Loan contract, and following procedures set forth in such contract, the services of a consulting firm to assist the Executing Agency in the supervision of the Project.
4. The Borrower agrees to submit to the Bank, beginning one year from the date of the contract and thereafter annually until the third year after the last disbursement of the Financing, the annual comparative data referred to in paragraph 7.1 of Appendix III.
5. The Borrower agrees to present to the Bank an ex-post evaluation report at the end of the third year from the date of the last disbursement of the Financing, for the purpose of establishing the socio-economic results of the Project. The methodology to be used should be the same as the one applied in the ex-ante cost-benefit analysis, and must follow the guidelines set forth in paragraph 7.1 of Appendix III. The report shall be based primarily on savings in time accruing to the users of the works included in the Project.
6. Within one year from the effective date of the loan contract and following the procedures established in such contract and terms of reference agreed upon previously with the Bank, the Borrower agrees to contract the consultants to: (a) improve traffic control and management in Bridgetown; and (b) prepare the Traffic Education Programme.
7. The Borrower agrees to present to the Bank, within a period of 4 months from the completion of each of the studies referred to in paragraph 6 above, the recommendations that it shall have approved of such studies, together with a schedule for their implementation. The Borrower further agrees to begin implementation of such recommendations once the Bank has approved both the recommendations and the schedule.
8. The Borrower agrees that: (a) the works and equipment included in the Project as well as the main thoroughfares of the urban system of Bridgetown, shall receive proper maintenance, following generally accepted technical standards; and (b) for 10 years following the effective date of the loan contract and within the first quarter of each calendar year, the Bank shall be provided with an annual maintenance report, as set forth in Section VI of Appendix III. If it is determined from inspections made by the Bank or from reports it receives, that maintenance is falling below the levels agreed upon, the Borrower shall undertake the necessary measures to correct these shortcomings.

9. The financial statements of the Project, during its execution shall be submitted to the Bank audited by a firm of independent public accountants acceptable to the Bank.
-
- B. The loan contract shall contain an annex substantially similar in content to Appendix III, The Project, of this proposal.

THE PROJECT

(Annex A of the Loan Contract)

I. Objective

- 1.1 The general objective of the Project is to improve the efficiency of the different economic activities that take place in the area of Bridgetown, through the reduction of transport costs and of the time involved in transporting goods and persons in the urban area.
- 1.2 Specific objectives of the Project are to:
 - a. Improve the capacity and general conditions of traffic in the inner and outer corridors of Greater Bridgetown and, in the intersections with the main roads;
 - b. reduce accident risks, and in general, to increase safety levels for all urban road users through the improvement of highway infrastructure and the implementation of more effective traffic control measures; and
 - c. optimize the use of resources for traffic planning, management and control and support the effective application of laws and regulations relating to these topics.

II. Description of the Project

- 2.1 The Project includes the following components: (a) highway improvement and supplementary works for traffic control in the two highway corridors in Greater Bridgetown; (b) technical assistance to improve the traffic control and management in Bridgetown and for increasing highway safety; (c) development of a national programme for traffic education; and (iv) procurement of equipment to support traffic management.

III. Cost of the Project and Financing Plan

- 3.1 The estimated cost of the Project is of the equivalent of US\$26.5 million, in accordance with the following breakdown by investment categories and sources of financing:

COST AND FINANCING OF THE PROJECT
(In US\$000)

| CATEGORIES | IDB | GOB | TOTAL | % |
|---|--------------|-------------|-------------|------|
| 1. <u>Engineering & Administra.</u> | 1,050 | 250 | 1,300 | 4.9 |
| 1.1 Recovery ATC/SF-2241-BA | 410 | 0 | 410 | 1.6 |
| 1.2 Technical Supervision | 640 | 0 | 640 | 2.4 |
| 1.3 Project Management | 0 | 250 | 250 | 0.9 |
| 2. <u>Direct Costs</u> | 12,232 | 6,592 | 18,824 | 71.0 |
| 2.1 Civil Works | 8,443 | 1,491 | 9,934 | 37.5 |
| 2.2 Relocation of Utilities | 3,789 | 668 | 4,457 | 16.8 |
| 2.3 Rights-of-way | 0 | 4,433 | 4,433 | 16.7 |
| 3. <u>Concurrent Costs</u> | 632 | 108 | 740 | 2.8 |
| 3.1 Technical Assistance | 332 | 108 | 440 | 1.7 |
| 3.1.1 Manag. & Traffic Control | 132 | 108 | 240 | 0.9 |
| 3.1.2 Nat. Prog. Traffic Educ. | 200 | 0 | 200 | 0.8 |
| 3.2 Equipment | 300 | 0 | 300 | 1.1 |
| 4. <u>Unallocated</u> | 1,991 | 746 | 2,737 | 10.3 |
| 4.1 Contingencies | 1,280 | 222 | 1,502 | 5.7 |
| 4.2 Cost escalation | 711 | 524 | 1,235 | 4.6 |
| 5. <u>Financing Costs</u> | 2,595 | 304 | 2,899 | 11.0 |
| 5.1 Interest | 2,410 | 0 | 2,410 | 9.1 |
| 5.2 Credit Fee | 0 | 304 | 304 | 1.2 |
| 5.3 Inspection & Supervision | 185 | 0 | 185 | 0.7 |
| <u>Total</u> | 18,500 | 8,000 | 26,500 | 100 |
| <u>%</u> | <u>69.8%</u> | <u>30.2</u> | <u>100%</u> | |

IV. Procurement

- 4.1 When goods and services to be procured or contracted are to be financed in whole or in part with foreign exchange from the Financing, including those related to any form of transportation and insurance, the procedures and specific requirements for the bidding or other forms of procurement or contracting shall be such as to permit the unrestricted participation of goods and services from member countries of the Bank. Consequently, no conditions that would impede or restrict the offer of goods or the participation of contractors originating in such countries may be imposed through such procedures or specific requirements.

V. Consulting Services

- 5.1 In the selection and hiring of consulting services to be financed in whole or in part from resources of the Financing: (a) the procedures agreed upon with the Bank shall apply, and (b) no conditions or stipulations may be established that would restrict or preclude the participation of consultants from the member countries of the Bank.

VI. Maintenance

- 6.1 The purpose of maintenance is to preserve the main thoroughfares of the urban system of Bridgetown at a level compatible with the service they must provide. The entity shall keep records of its maintenance activities so as to differentiate maintenance directed at the urban system from that intended for the rural system.

- 6.2 The annual maintenance report referred to in recommendation 8 of Appendix II shall include:

(a) general information on:

- (i) organization structure and responsibilities of the entity in charge of maintenance;
- (ii) classification, number and distribution of personnel, as well as the type, number, distribution and conditions for operation of the equipment for maintenance for the urban area of Bridgetown.
- (iii) current maintenance contracts, their term, coverage, and degree of execution.

- (b) an up-to-date inventory of the system to be maintained, to cover at least the thoroughfares mentioned in paragraph 6.1, and detailing the conditions of the various sections comprising such thoroughfares;

- (c) an evaluation of the execution of the maintenance plan for the preceding year, to include:

- (i) comparison of the present conditions of the various sections of the roads with those indicated in the inventory for the preceding year;
- (ii) statistics on activities undertaken, volume of work carried out, and physical and monetary resources expended in work under force account as well as under contract;
- (iii) level of accomplishment of the plan, its effectiveness and adjustments it may require;

- (d) the highway maintenance plan for the following fiscal year, justifying the established priorities, the activities that will be undertaken and the pertinent schedule for implementation. The plan shall also indicate physical resources required as well as the budget that shall be duly assigned to the urban highway system. This budget shall include sufficient annual resources for maintenance.
- 6.3 The first annual maintenance report shall include the plan for the fiscal year corresponding to the first year of the loan.

VII. Ex-Post Evaluation

- 7.1 In order to have adequate information to carry out the ex-post evaluation of the Project and measure the degree to which its objectives have been fulfilled, the Borrower must gather the necessary data for that purpose. All data shall be adequately explained. Any amendment of designs, costs or construction delays or any issue that may arise relating to the maintenance of the main thoroughfares, shall also be adequately explained. The basic data shall be the following:
- a. For each of the sections of the Project and for each of the intersections analyzed in the ex-ante evaluation, 24-hour traffic counts will be carried out before commencement of works and at their completion. These traffic counts shall be carried out for two representative periods and shall include a break-down by type of vehicle and for intersections, vehicular activity. The traffic counts shall be accompanied by an explanatory note on the results obtained (daily and annual fluctuations).
 - b. The average travel time for each of the Project corridors shall be determined by measurements before the works have been initiated and upon their completion for two representative periods (normal period and summer vacation period) and twice a day (during peak and off peak times).
 - c. A periodic evaluation shall be made on the negative effects on traffic resulting from the relocation of services and highway improvement works, during the period of Project execution.