

## NEW PROVIDENCE TRANSPORT PROGRAM

(BH-0029)

### EXECUTIVE SUMMARY

<b>Borrower:</b>	The Government of the Commonwealth of the Bahamas		
<b>Guarantor:</b>	The Government of the Commonwealth of the Bahamas		
<b>Executing agency:</b>	Ministry of Public Works		
<b>Amount and source:</b>	IDB: (OC)	US\$	46,200,000
	Local:	US\$	19,800,000
	Total:	US\$	66,000,000
<b>Financial terms and conditions:</b>	Amortization Period:	20	years
	Grace Period:	4	years
	Disbursement Period:	4	years
	Interest Rate:	Variable	
	Supervision and Inspection:	1.00	%
	Credit Fee:	0.75	%
	Currency:	US dollars	
<b>Objectives:</b>	The main objective of this Program is to reduce transport costs for road users by providing a more rational and efficient transport system for New Providence Island. This objective will be met by improving the existing road network, modernizing and strengthening the institutional framework responsible for the provision of transportation services, improving road safety, improving public transportation and alleviating the negative environmental impacts associated with the existing traffic congestion levels.		
<b>Description:</b>	The program will consist of three major components: <i>a) Roadway development and traffic management (US\$ 50 million)</i>  This component will include the physical works and traffic management measures needed to provide the island with a well-defined road hierarchy. This road hierarchy would allow traffic to		

be channeled onto appropriate roads away from local community roads, improving traffic flows and reducing congestion.

The physical works include 23 km of road improvements, consisting mainly of the widening of existing roads, and 15 km of new road construction. These works will include the completion of three new corridors –two north-south in the middle sector of the island and one east-west in the western sector- and the improvement of various existing corridors including the widening from two lane undivided to four lane divided of the main east-west link on the island

Several traffic management measures that will improve traffic flows and make better use of existing capacity will accompany the physical works to be carried out on all corridors. These measures include improvements in road and intersection geometry, improvements in traffic control measures, better road signage and pavement markings and traffic signal timing improvements. Improvements to corridors will also include specific measures to improve road safety.

*b) Engineering Studies (US\$ 5.5 million)*

This component will finance program preparation studies, including preliminary engineering designs, economic feasibility studies and environmental studies. Funding will also be provided for technical and environmental supervision and auditing and to implement measures to mitigate environmental and social impacts.

*c) Institutional Development and Strengthening (US\$ 1.5 million)*

Assistance will be provided in four major areas: i) transportation planning, including support for the creation of a Transport Planning Unit and the study of economic alternatives to reduce automobile use; ii) traffic management, including the strengthening of the MOT's technical capability to implement traffic management procedures; iii) road maintenance, including implementation of improved road pavement management procedures in terms of planning, programming, reporting and monitoring of maintenance works; iv) public transportation, including support for the strengthening of the MOT's capacity to plan and regulate public transport services and the implementation of pilot public transport project; and v) road safety, including improvements in road accident data collection and analysis and the development of new road safety manuals.

**Bank's country  
and sector  
strategy:**

An important goal of the Bank's current lending strategy is to support the government in increasing the competitiveness of the Bahamian economy in both the tourism and productive sectors. The Bank also aims to support the country in dealing with the problems created by the recent growth of tourism supporting improved public services, improving environmental management and by incorporating more of the population in its benefits.

Consistent with that strategy, the proposed Program is designed to improve the public road system and ease the flow of goods and services by solving existing traffic problems that create high costs for road users. More efficient traffic flows will reduce the harm caused to the environment by congestion and improve the attractiveness of Nassau as a tourist destination.

**Environmental/  
Social review:**

The Environmental and Social Impact Assessment (ESIA), conducted by an international consulting firm for the program, has provided general and indicative, positive and negative environmental and social impacts, and the basis to develop an Environmental and Social Management Plan to monitor impacts during and after construction and to ensure mitigation measures are implemented. When final designs are complete for each corridor, additional assessments will be undertaken and a specific Site Environmental and Social Management Plan will be prepared for each corridor. These plans will be audited and their implementation supervised by an independent agency. To compensate for the habitat loss and environmental damage from construction a program for the protection, rehabilitation and management of Big Pond and its environs will be developed (§4.27 *et seq.*).

**Benefits:**

The program will benefit the community as a whole. The road improvement and traffic management component will relieve severe traffic congestion on New Providence significantly reducing travel times and improve mobility for passengers and goods. Due to the high level of car ownership on the island, 1.34 vehicles per household, these improvements should benefit a majority of the population. The design standards for these improvements will be based on existing US standards and incorporate a wide range of safety measures. These measures will include the provision of sidewalks and pedestrian crossings, improved signings and road markings, and bus stops and lay-bys. These measures will benefit not only vehicle users but also pedestrians, most of whom are women, children and the elderly. The Program will also benefit the users of public transportation by strengthening the GoBH's capacity to plan and regulate these services.

**Risks:**

**Design/build procurement system.** While the design/build procurement system permits quicker execution and reduces contractor claims due to redesign, it may also increase risk since these are strong incentives for the contractor to submit designs that reduce its construction costs. Critical to the system's success is proper project definition and adequate supervision during project execution.

To an extent, the hiring of an engineering services firm with ample experience in design/build contracts to assist in project preparation and supervision will mitigate these risks, but close monitoring from the Bank and proper coordination among the supervising firm, the contractor, the MOW must be assured to ensure the success of the project.

**Institutional Capability.** Design/build contracts require greater supervision than fully designed works. Despite the experience of some MOW staff in this modality and its successful application in The Bahamas in the past, given the size of the Program and the additional burden of simultaneously executing the Infrastructure Rehabilitation Project (BH-0031), there is some risk that the MOW will have difficulties in the supervision and administration of the design/build contract.

The hiring a supervisory firm to oversee the technical, environmental and financial execution of the Project and to monitor compliance with environmental mitigation measures will help mitigate this risk, but proper coordination among the supervising firm, the contractor, the MOW and the Bank must be assured to ensure the success of the project.

**Long term sustainability of urban transport system.** This project provides a medium-term solution to urban transport problems in New Providence. If automobile ownership rates keep rising at present levels, in the long-term a more comprehensive and sustainable solution will have to be sought for the urban transport problem. This long-term solution will have to include policy and economic measures that will imply significant travel behavior changes. The implied risk is that the country might not be prepared to implement the required measures. To mitigate this long-term risk the Program will provide funding to study these options through the institutional development component and provide Bahamian society with an opportunity to consider, and debate, different options for a long-term solution.

**Special  
contractual  
clauses:**

**Prior to first disbursement:**

The Borrower will establish a Transport Planning Unit within the Executive Agency (¶2.21).

The Borrower will submit to the Bank, for its proper review and approval, a program for the protection, rehabilitation and management of Big Pond and its surroundings. (¶4.40).

**Prior to the first disbursement of resources to finance the construction of Corridors 7 and 8**

The Borrower will submit to the Bank, for proper review and approval, the design and implementation schedule of the Big Pond protection, rehabilitation and management plan.

**During Project execution:**

Within the first twelve months following the date of signing of the Loan Contract, the Borrower through the Executing Agency will hire consultants to execute a study to analyze economic alternatives to promote a sustainable long term solution to the urban transport problem in New Providence and to develop a strategy plan for the Office of the Roads Comptroller (ORC) (¶2.22).

Prior to approval by the Bank of final designs on the first corridor to be constructed, BEST will provide evidence to the Bank that a firm has been hired and that staff is in place to provide assistance in environmental auditing and supervisory activities (¶4.38).

Prior to approval by the Bank of final designs on Corridors 3, 5, 7 or 8, whichever of these corridors construction begins first, evidence that a Hazardous Materials Spill Contingency Plan has been prepared will be submitted to the Bank. Evidence will be submitted to the Bank that implementation of the proposed actions for the Contingency Plan are in place before construction is completed on the first of the above designated corridors (¶4.39).

Condition on Loan approval, and observance of the Bank procurement procedures, expenditures of up to US\$3.6 million incurred to contract the engineering consultancy services necessary for Program preparation will be recognized as part of local counterpart funding (¶3.26).

A revolving fund, of up to 15% of the financing (US\$6.9 million), will be established with resources from the Financing to pay for projected expenses. The high percentage of the revolving fund is due to the relatively short schedule for the execution of the design/build contract (¶3.33)

**Poverty-targeting  
and social sector  
classification:**

This operation does not qualify as a social equity enhancing project, as described in the indicative targets mandated by the Bank's Eighth Replenishment (Document AB-1704).

**Exceptions to  
Bank policy:**

See Procurement section.

**Procurement:**

In procuring goods and services financed by the Bank, the Executing Agency will follow the basic Bank procurement policies and procedures. The MOW will use international competitive bidding for all goods and services valued at more than US\$250,000, for civil works valued at more than US\$1.5 million, and for consulting services in excess of US\$200,000.

Direct hiring of ICF Consulting, that has comparative technical advantages, to carry out environmental auditing is recommended as an exception to selection by open competition. This firm will carry out any procurement or other required activities observing the procedures of the Bank. The direct hiring procedure is in accordance with Chapter GS-403 of the Procurement Manual (§3.29 and 3.30).

## **I. FRAME OF REFERENCE**

### **A. Project Framework**

- 1.1 New Providence Island is the main island of the Bahamas. The island is some 20 miles long and 7 miles wide, has approximately 200,000 residents, an employment base of 90,000 jobs and is visited by nearly 3 million tourists annually. Most residents use private cars or buses for transport, while the tourists arriving on cruise ships docking in Nassau harbor, or by air at the international airport, use taxis and boats or simply walk around the downtown area of the capital, Nassau.
- 1.2 Eastern New Providence is highly urbanized, with new housing projects close to absorbing the few remaining rural areas. High traffic volumes produce severe congestion that causes high costs to road users and the urban environment. During the 7:30 to 9:30 a.m. peak, traffic moves at average speeds estimated at less than one quarter of normal speed. In the central part of the island, the road network consists mainly of narrow two-lane urban roads. The capacity of this network is far from adequate for existing traffic, let alone for the additional traffic volumes that can be expected in the next few years with existing traffic growth rates. Deficiencies in road network capacity in the less-densely-populated western part of the island are not yet as serious.
- 1.3 Nassau suffers inordinate congestion from two sources: residents using automobiles and the cruise ship passengers travelling to and from the docks in Nassau Harbor. As a relatively high per capita income country, travel patterns in the Bahamas resemble those in the U.S.: private automobiles as the main mode of transportation for a large part of the population and public transportation is underused. Automobile ownership rates are rising dramatically, with 85% of the workforce already commuting by car to work. Congestion is increased by the daily arrival of four to six vessels at Nassau Harbor that discharge thousands of tourists who leave the docks to visit historical sites, shops on Bay Street, beaches or casinos. The fleet of taxis and small buses carrying this traffic compete for road space with private vehicles, public buses and trucks.
- 1.4 Due to these high levels of congestion, there is a need to improve traffic flows on the New Providence Island road network. The most effective method of achieving these improvements in the medium term is through a combination of traffic management measures and well-targeted improvements in physical infrastructure to increase road capacity. The Program, partially financed by this proposed loan, will achieve this objective by including components for effective traffic management measures and the upgrading of the road network through the improvement of existing roads, modifications to existing intersections and some new construction.
- 1.5 As is the case in most modern urban areas, if automobile ownership rates keep rising at present levels, in the long-term a more comprehensive and sustainable

solution will have to be sought for the urban transport problem. This long-term solution will have to include policy and economic measures that will imply significant travel behavior changes. These measures, which will probably have to consist of economic incentives and restrictions on automobile use, are highly unpopular and are still considered unnecessary by Bahamian society. While these measures are beyond the scope of the present Program, the Program will support present efforts by the Government to study these options through the institutional development component. This Program will also serve to ease the congestion problem in the mid-term, with considerable savings to road users in vehicle operation costs and congestion delays, and provide Bahamian society with an opportunity to consider, and debate, different options for a long-term solution.

**B. The Urban Transport Sector of New Providence Island**

- 1.6 The surface transportation system of New Providence Island consists of 1000 miles of roadways the majority of which are paved. Of this total, 200 miles of roadway provide the basic arterial roadway function carrying the majority of traffic. Pavements of the main road network are generally in adequate condition, with sufficient funds for maintenance being annually allocated in the national budget.
- 1.7 Currently there appears to be a limited form of road hierarchy. There are some roads that are of a better standard, but these are not well connected and are not properly signalized. Most major roadways, especially in the intensely developed eastern and central parts of New Providence Island, are narrow without adequate intersections, with uncontrolled access, poor right of way definition, and inadequate traffic control. Most roadways beyond the major tourist areas lack sidewalks or any type of pedestrian facilities making walking, even short distances, difficult and dangerous.
- 1.8 Public transit consists of taxis and small public transportation buses called jitneys. The taxi fleet, while diverse and fairly large, mainly serves tourists and tends to concentrate around the hotel areas and downtown Nassau. On street taxi availability is greatly reduced outside of peak demand periods.
- 1.9 The approximately 600 public buses in service are privately owned and operate under individual licenses on 23 routes. Operators are given franchises to run services on particular routes. The route structure offers comprehensive coverage of the island, however service concentrates on the arterial routes to the downtown area of Nassau.
- 1.10 The system is financially self-supporting with all revenues coming from user fees. Fare structure is regulated by Government and is currently based on a flat fare of US 75¢ for adults and US 50 ¢ for school children. The bus fleet is fairly modern and in good condition with air conditioned service provided on major routes.



- 1.11 Ineffective regulation results in excessive competition on popular routes and much of the rest of the Island with poor and infrequent service. Bus services are concentrated on high demand routes and during peak travel times; little or no service is provided in outlying areas or during the late evening and early morning hours. Most license holders own only one or two buses and lease them to drivers for a fixed daily fee; drivers are then allowed to keep all collected fares. This results in aggressive competition among drivers for passengers and little or no coordination among them to keep schedule adherence. Many drivers frequently depart from their established routes in search of more passengers.
- 1.12 All fuel is imported refined to New Providence Island. Gasoline prices are freely determined with pump prices presently at US\$2.83 per gallon. 45% of this amount is due to taxes and levies, this percentage has remained unchanged since 1994. Although gasoline prices are fairly high, due to high level of congestion, the small size of the island and the relatively short trip distances, fuel costs represent only 5% of road user costs when travel time is considered. For this reason, it is logical to consider that gasoline prices are not a major factor in determining travel demand patterns.

**C. The Country's Sector Strategy**

- 1.13 The Government of The Bahamas' (GoBH) strategy for the urban transport sector is based mainly on the Transport Development Plan (TDP) for New Providence Island prepared by the consulting firm of M.M. Dillon Ltd. in 1995. This comprehensive study covered all areas of urban transport on the island, presented a series of policy recommendations for the sector and provided a detailed plan of action to effectively implement this policy, including specific actions to be taken in institutional restructuring. The TDP analyzed the existing transport system and infrastructure network and identified a series of high priority investments in road development and traffic management to improve the overall efficiency of the system. Parts of the TDP were updated in 1999 by an international consulting firm as part of preparation activities for this Program.
- 1.14 The TDP was undertaken in two phases. The first phase consisted of a general review of the existing transportation system on the island, the identification of key issues and a description of alternatives for solving existing and future problems. This phase also included data collection on traffic flows and the updating of traffic forecast models, incorporating current data on traffic levels and growth patterns in travel demand.
- 1.15 The second phase of the study included further research and analysis, and the development of policies and specific action plans for five different areas: a) Institutional Development; b) Public Transit; c) Student Transportation; d) Traffic Management and e) Roadway Development.
- 1.16 Since the completion of the TDP in 1995, the GoBH has been implementing many of the actions presented in the plan, although at a slower pace than had been

originally recommended. Most of the delays in implementation have been due to either a lack of available funds, as is the case in most of the roadway improvements, or to the GoBH considering that the actions recommended were not supported with sufficient demand to make them effective, as is the case with the student transportation plan.

- 1.17 In the area of institutional organization, the GoBH has implemented many of the recommendations presented in the TDP. The Ministry of Public Works (MOW) and Ministry of Transport (MOT) have undertaken efforts to improve their staffing. New positions have been created in the areas of traffic engineering and road maintenance. The GoBH is also making a sustained effort in appointing Bahamian residents in Ministry senior posts, although due to the lack of qualified graduate engineers in the country, expatriates on fixed term contracts have filled some key posts.
- 1.18 The GoBH is also acting on the recommendations to modernize the legal framework covering the transport sector. The GoBH is currently updating the supporting Highway Code and preparing new regulations to update the testing and licensing of motor vehicle drivers. The Office of the Roads Comptroller (ORC) is revising the categories and standards of public service vehicles and improving the procedures to deal with traffic violations; as a result of these activities some traffic offenses are now being dealt with as fixed penalties.
- 1.19 In public transportation the GoBH is also implementing some of the actions recommended in the TDP. The ORC reviewed and rationalized the public transportation route structure. New public transport licenses were issued based on the new route structure of 23 routes suggested in the TDP. The ORC has started negotiations with bus operators in order to promote their grouping in larger more cost efficient cooperatives or associations to improve the provision of service. These negotiations have unfortunately, up to now, been unsuccessful. The MOT is also developing a depot for public buses in downtown Nassau to reduce the current practice of buses parking on roads or of stopping and blocking traffic lanes while waiting for passengers. The depot will also provide a convenient and protected transfer point for bus passengers.
- 1.20 In the area of student transport, the GoBH recognizes that the “school-run” of parents taking their children to school by car is one of the main contributors to traffic congestion during the morning and afternoon rush hours and is actively taking measures to reduce its impact. In spite of this, the GoBH has decided that the Student Transportation component of the TDP, which included island-wide service being provided by 200 buses according to a computerized school-bus transportation model, greatly exceeds the current demand for these services. The Ministry of Education has implemented a reduced school transportation scheme, under which it offers school-bus services in selected schools with a large proportion of students residing a considerable distance from the school location. These services are tendered yearly and are currently costing the GoBH US\$1.25 per student. Demand for these services has been very low: only 900 students are

transported daily. In addition, in an effort to promote the use of public transportation, the GoBH has established a discounted fare of US 50 ¢ for those students wishing to utilize the public transportation system. The Ministry of Education is also looking into the possibility of staggering the starting and ending time of classes in public schools to spread out the “school run” over a longer period of time and reduce its impact on congestion levels.

- 1.21 Regarding traffic management, the TDP identified traffic improvement plans for several locations on New Providence Island. For these locations the traffic management plans identified operational improvements, geometric enhancements in road and intersection design, traffic signal optimization plans, pavement markings and traffic signage improvements. The GoBH has already implemented plans in several of these locations, including the downtown Nassau area. The proposed Program will implement some of the remaining traffic management plans identified in the TDP not yet implemented.
- 1.22 The area in which less progress has been made in the implementation of the TDP has been the execution of proposed road developments. These roadway developments, which included some new road construction and existing road rehabilitation and improvement, were to provide the island with an integrated road network and a clearly defined road hierarchy. The improved network was to be obtained mainly by expanding some two-lane roads to four lanes and by some minimum widening of existing roads. These improvements were also to increase the provision of pedestrian facilities and provide infrastructure for the public transportation system. Few of the proposed road improvements were implemented, although some improvements were made in the Nassau downtown area.

#### **D. The Bank’s Sector Strategy**

- 1.23 An important goal of the Bank's current lending strategy is to support the government in increasing the competitiveness of the Bahamian economy in both the tourism and productive sectors. The Bank also aims to support the country in dealing with the problems created by the recent growth of tourism supporting improved public services, improving environmental management and by incorporating more of the population in its benefits.
- 1.24 Consistent with that strategy, the proposed Program is designed to improve the public road system and ease the flow of goods and services by solving existing traffic problems that create high costs for road users. More efficient traffic flows will reduce the harm caused to the environment by congestion and improve the attractiveness of Nassau as a tourist destination.

#### **E. Bank Experience in the Sector**

- 1.25 Bank experience in the transport sector in Bahamas is limited to preparation activities for this Program, which started in 1994. The Bank approved a Profile II

for this project in May 1994. As part of Program preparation, the Bank financed two technical cooperations, (ATN/CP-4077-BH and ATN/SF-4620-BH), for the preparation of Phases I and II of the "*Transport Development Plan for New Providence Island.*" These technical cooperations were completed in 1995.

- 1.26 Subsequently, due mainly to fiscal concerns, the Government decided to significantly reduce the scope of the investments proposed and to finance them through budgetary resources. This eliminated the need for Bank financing and IDB project preparation activities underway were suspended. In 1998 the Government expressed a renewed interest in the Program. Due to the time elapsed since previous efforts, the Bank decided that Program preparation start over.
- 1.27 The Bank is currently assisting the Government with the Infrastructure Rehabilitation Project (BH-0031). This US\$ 43 million project will restore physical elements of surface transport system damaged by Hurricane Floyd in September of 1999. This project will rehabilitate certain roads, bridges, seawalls and docks located in the Family Islands and is to include repairs in one seawall located in New Providence. This Project was approved by the Bank Board of Directors in September 2000.

## **II. THE PROGRAM**

### **A. Objectives**

- 2.1 The main objective of this Program is to reduce transport costs for road users by providing a more rational and efficient transport system for New Providence Island. This objective will be met by improving the existing road network, modernizing and strengthening the institutional framework responsible for the provision of transportation services, improving road safety, and alleviating the negative environmental impacts associated with the existing traffic congestion levels.
- 2.2 The activities included in the Program form part of the *Transport Development Plan for New Providence Island*, executed in 1995 and partially updated in 1999.

### **B. Program Description**

- 2.3 The Program will consist of three major components:
  - 1. Roadway Development and Traffic Management (US\$ 50 million)
- 2.4 This component will include the physical works and traffic management measures needed to provide the island with a well-defined road hierarchy. This road hierarchy would allow traffic to be channeled onto appropriate roads away from local community roads, improving traffic flows and reducing congestion. All the corridors are in an existing urban environment and traffic management will be critical to the success of the project.
- 2.5 Currently, there appears to be a limited form of road hierarchy in existence but no proper arterial network. There are some roads that are of a better standard, and that serve a strategic purpose, but these are not well connected or properly signalized for existing traffic demand. The residents of the island however, do have a good knowledge regarding which roads to use and which to avoid. The problem with this is that some of the roads used are not appropriate for their present traffic levels, while others (such as Independence Drive) are under utilized due to the inadequate number of North / South arterials.
  - a) Roadway Development
- 2.6 The proposed road works will establish the road hierarchy by improving critical main roads therefore creating corridors to channel the traffic flows on the island away from residential local roads. The physical works include 23 km of road improvements, consisting mainly of the widening of existing main roads, and 15 km of new road construction. These works will provide the island with three new corridors -two north-south in the middle sector of the island and one east-west in the western sector- and the improvement of various existing corridors including the widening from two lane undivided to four lane divided of the main east-west

link on the island. Tables II-1 and II-2 present a brief summary of the proposed works.

- 2.7 All designs for new and rehabilitated roadways will be based on Florida Department of Transportation (FDOT) standards. Capacity and geometric designs will be based on the peak hour flows for the year 2007 determined by the updated traffic models. Pavement designs will be based on a design life of 20 years.

<i>Table II-1</i> <i>Schedule of Road Corridors</i>			
<b>Road Corridor</b>	<b>Description</b>	<b>Proposed Improvements</b>	<b>Length (km)</b>
<b>1</b>	Pinewood to Seabreeze between East Street and Sea Breeze	2 lane new, & rehabilitation	3.2
<b>2</b>	Sir Milo Butler Extension between Fire Trail Road and Carmichael Road	2 lane new	1.4
<b>3</b>	Sir Milo Butler Improvements between Harrold Rd. and Fire Tr. Rd	4 lane existing Street lights, curbing and landscaping	1.9
<b>4</b>	Bethel Avenue - Phase A between Harrold Road and JFK Drive	4 lane new	1.6
<b>5</b>	Bethel Avenue- Phase B between JFK Drive and West Bay Street	2 lane new	2.1
<b>6</b>	Gladstone Road Realignment between bottom of south end of ridge and JFK Drive	2 lane new	0.8
<b>7</b>	Gladstone Road Extension between JFK Dr and West Bay St	2 lane new	1.9
<b>8</b>	Moss – Cordeaux Link between Thompson Blvd. and Baillou Rd	2 lane new	1.0
<b>9</b>	Oakes Field Distributor North of new Govt. Subdivision between Bethel Avenue- Phase A and Yellow Elder Way	2 lane new	1.3
<b>Sub-total for new road corridors</b>			<b>15.2</b>

<b>Table 11-2</b> <b>Schedule of Road Corridors (continued)</b>			
<b>Road Corridor</b>	<b>Description</b>	<b>Proposed Improvements</b>	<b>Length (km)</b>
<b>10</b>	Baillou Hill Road between Robinson Road and Carmichael Road	Widening of existing 2 lane to 4 lane Widening on east side of existing road	1.6
<b>11</b>	Baillou Hill/Market One Way Couplet between Robinson Road and Duke Street	Traffic Management, minor improvements Existing two way traffic to be one way north and south respectively.	6.4
<b>12</b>	East Street Between Robinson Road and Soldier Road	widening of existing 2 lane to 4 lane widening on west side of existing road	1.1
<b>13</b>	Robinson Road - Prince Charles Drive between Baillou Hill Road and Fox Hill Road	widening of existing 2 lane to 4 lane at selected locations widening on both sides of existing road within the road reservation	6.1
<b>14</b>	Harrold Road between Bethel Avenue and Baillou Hill Road	widening of existing 2 lane to 4 lane widening on north side of existing road	2.5
<b>15</b>	Marathon Road between Robinson Road and Wulff Road	widening of existing 2 lane to 2 lane and central turning lane widening on both sides of existing road to accommodate additional lane	1.1
<b>16</b>	Wulff Road between Marathon Road and Village Road	widening of existing 2 lane widening on both sides of existing road	0.8
<b>17</b>	Abundant Life Road – Windsor Place between Independence Highway and Soldier Road	widening only at junctions of Abundant and Soldier Roads and Windsor Place and Soldier Roads	1.3
<b>18</b>	West Bay – Saunders Beach	Realignment of West Bay St to accommodate beach parking on south side and tie-in of Bethel B	0.3
<b>19</b>	West Bay – Blake Road Just east of Blake Road to Sea Beach Estates	Realignment of West Bay St on south side to accommodate beach parking	2.1
<b>Sub-total existing corridor improvements</b>			<b>23.3</b>
<b>Grand total</b>			<b>38.2</b>

#### b) Traffic Management

- 2.8 Several traffic management measures that will improve traffic flows and make better use of existing capacity accompany the physical works to be carried out on all corridors. Most of these measures have been identified in the 1995 TDP and updated in 1999 according to present traffic flows and the proposed roadway developments.

- 2.9 In addition to improving traffic flows on the roadway corridors, these measures will be used to enforce/control access onto these corridors with a series of road closures and turning constraints thereby reducing traffic on local residential sideroads.
- 2.10 These measures include improvements in road and intersection geometry, improvements in traffic control measures, additional road signals, improved traffic signal timing and coordination, and better road signage and pavement markings. All of these measures, including the installation of traffic signaling, lighting and signage, will be conducted simultaneously with the roadway physical improvements under one contract.
- 2.11 Improvements to corridors will also include specific measures to improve road safety. Almost all corridors will include new pedestrian facilities. The Executing Agency will conduct Road safety audits on all designs for improved and new corridors before final approval. Among the elements to be included to increase road safety, the incorporation of wider footpaths at public places including schools will help alleviate accidents to pedestrians and children. Most of the corridor improvements will provide sidewalks to urban roads that presently do not have them. The provision of bus stops and lay-bys will also increase pedestrian safety and will help to alleviate congestion by improving facilities for buses.

## 2. Engineering Studies and Project Supervision (US\$ 5.5 million)

- 2.12 This component will finance the engineering, economic and environmental studies necessary to prepare and supervise the road development and traffic management works in the Program. This component will also finance environmental auditing and supervision and mitigation measures to compensate for habitat loss and environmental damage from roadway construction.
- 2.13 To reduce project preparation and construction time, the MOW plans to use a design/build procurement system for the works of the road development/traffic management component. Under this system, preliminary engineering and road alignment studies are given to prospective companies who present financial and technical proposals for final design and construction of works. These studies have already been carried out as part of Program preparation activities. Among them, fairly detailed preliminary engineering designs have permitted cost estimates within 10% of final values.

### *Estimated Costs of Engineering Studies and Project Supervision Component (in US\$ '000)*

	Cost
<b>A. Engineering Services</b>	<b>4,000</b>
<b>B. Environmental Supervision and Mitigation</b>	<b>1,500</b>
Environmental auditing and supervision	600
Development and implementation of Hazmat Spill Plan	150
Development and implementation of Big Pond Proposal	750
<b>TOTAL</b>	<b>5,500</b>



- 2.14 The studies executed include: precise alignment determinations clearly specifying the right of way and land acquisition needs, utility relocation studies, geotechnical and hydrological studies, the preparation of bidding documents, assistance in the evaluation of design/build proposals, execution of environmental and social impact studies, and a review of the existing institutional structure for Program execution. Funding will also be provided for project supervision activities, including independent environmental auditing, to be carried out for the Program.
- 2.15 The MOW has decided to execute most of these studies under one packaged contract for engineering services; the Bank has reviewed and approved the terms of reference and contract for these services. The Execution and Procurement sections of this document (See ¶3.9 and ¶3.26) include details on the contracting of the consulting firm for these services. This firm hired to conduct these studies will also perform project supervision including quality control and quality assurance, and assist the MOW in the general management of the design/build contract (See ¶3.10). The total amount of this contract is estimated to be US\$ 4 million.
- 2.16 This component will also provide funding in the amount of US\$ 1.5 million for environmental supervision and auditing, the preparation and implementation of a hazardous Materials Spill Contingency Plan for the corridors, and assistance in the preparation of a program for the protection, rehabilitation and management of the Big Pond area to compensate for habitat loss and environmental damage from roadway construction (See ¶4.27 through ¶4.41).

### 3. Institutional Development and Strengthening (US\$ 1,5 million)

- 2.17 This component will strengthen and modernize the GoBH's institutional capacity to develop and implement the comprehensive surface transport policy established in the *Transport Development Plan for New Providence*. In addition, the elements of this component will clearly focus on specific actions, such as assuring efficient maintenance of the roadways in the project and improving the regulation of existing public transport services, necessary to assure the long term sustainability of the main objectives of this Program.
- 2.18 The action plan for institutional strengthening developed in the TDP will serve as the main guide for this component. As described in the Country's Sector Strategy section of this document (See ¶1.13), many of the actions presented in the TDP either have already been implemented or are presently being put in place. The activities included in this component will provide support for these ongoing activities and will focus on the remaining elements of the TDP action plan that have not yet been implemented.
- 2.19 The assistance provided to the MOW and MOT in this component will be mainly through technical cooperations in the form of consulting services for specific tasks or through the use of Program funds for staff training. In each case that a consultant or firm is to be hired, the Government must first agree with the Bank

the corresponding terms of reference and cost estimate, and follow the Bank's procurement procedures. Similarly, in the case of training for MOW and MOT staff, a training program will be agreed upon with the Bank. Table II-3 provides a summary of the services to be provided and an estimate of their costs.

- 2.20 Technical cooperation assistance will be provided to the MOW and MOT in five major areas:

a) Surface Transportation Policy and Transportation Planning

- 2.21 This sub-component will support the setting up and training of a transport policy and planning unit within the MOT. This unit will have the basic responsibilities of making recommendations for updating transport policy and carrying out basic transport planning activities. Its functions will include preparing long-range transport plans and updating the current TDP, identifying required transport developments, carrying out feasibility/functional planning studies, and preparing annual investment programs related to transportation projects. This Unit will be created prior to first disbursement.

- 2.22 Among the basic responsibilities of this unit will be the development of a long-term strategy to deal with the problem of increasing automobile ownership. Strategy alternatives, such as the use of economic incentives, will be studied to reduce automobile use in New Providence. Within 12 months of contract signing a consulting firm will be hired to execute a study to analyze this problem and present the MOT with a strategy plan and different policy options to deal with these issues. Draft terms of reference are in file.

b) Traffic Management

- 2.23 This sub-component will strengthen the MOT's technical capability to evaluate, design and implement traffic management procedures. Funds will be provided to update existing traffic management plans for the downtown Nassau area and for the development of an island-wide traffic management plan to incorporate changes in traffic flows brought about by the corridor improvements and to regulate truck routing on the island. Assistance will also be provided for staff training and the purchase of necessary equipment.

c) Road Maintenance

- 2.24 This sub-component will support efforts to improve the planning, programming, reporting and monitoring of maintenance works by implementing improved road pavement management procedures. Roads and their bridge maintenance activities are under the responsibility of the MOW. Current maintenance is relatively good, with most roads being in good to fair condition and sufficient funds being allocated annually for road maintenance in the national budget. The MOW administers routine maintenance activities using both force account and local contractors. The MOW is seeking institutional modernization to optimize

maintenance expenditures and therefore reduce costly rehabilitation and reconstruction costs.

- 2.25 The project will introduce a state of the art computerized Routine Maintenance Management System (RMMS) program. The MOW will operate the RMMS in terms of adequate road network planning, project specific programming, reporting and monitoring tools to administer routine maintenance systematically.
- 2.26 The RMMS will be designed to overcome two key obstacles to effective maintenance of roads and bridges: establishment of desirable, affordable and minimum levels of funding; and preparing reliable annual plans and monthly programs of maintenance works. Most maintenance works will be contracted out. Funding is provided within the project to develop, establish and implement the RMMS. Draft terms of reference are in file.

d) Public Transportation

- 2.27 Regulation of public transportation is currently under the responsibility of the Office of the Road Comptroller (ORC) of the MOT. This sub-component will support efforts identified in the TDP, and currently being undertaken by the ORC, in improving the provision of public transportation services in New Providence. This sub-component will place emphasis on improving the ORC's capacity to regulate existing services to permit full implementation of the Public Transit Operating Plan presented in the TDP and to ensure bus operators fully comply with the requirements of their operating licenses.
- 2.28 The Program will provide funding for the development of a strategy plan for strengthening the ORC. This strategy plan will be based on a review of existing laws and regulations defining the operations of the public transportation system in The Bahamas as well as on the organizational and legal structure of the private operators providing service. Special consideration will be given to regulatory schemes and institutional structures in other parts of the Caribbean and Latin America, including Barbados, Brazil, Argentina, and Chile that may be applicable in The Bahamas. Draft terms of reference are in file.
- 2.29 The strategy plan will propose an adequate structure for the ORC so that it is able to both develop and enforce regulations for the public transportation system. This will include suggested staffing levels, responsibilities, staff skills, necessary training and data needs. The plan will also carefully revise the existing system for awarding public bus operating licenses and recommend a new system based on the desired corporate structure for bus service providers. The plan will also identify needs for further technical cooperation that may be necessary to implement this plan. This plan will be commenced by consultants during the first year of Program execution.
- 2.30 The Program will also provide funding for the implementation of a demonstration Pilot Public Bus Service on one of the improved corridors. The pilot scheme would be developed by the ORC and would consist of improved public service on

one of the road corridors of the Roadway Development component of the Program. The ORC will strictly regulate the compliance of schedules, routes and the quality of the vehicles providing the service. The scheme would include small investments to provide adequate bus stop markings and signalization. The pilot scheme will be accompanied by a public relations campaign to increase public awareness of the improved service.

- 2.31 The Pilot Public Bus Service scheme will be developed as part of the ORC strengthening plan described previously. Based on the recommendations of this plan, the provision of bus services for this Pilot Bus scheme will be either tendered or negotiated with bus service providers. The system adopted to tender or negotiate this scheme will serve as a model for re-organizing other bus routes later on.
- 2.32 The pilot scheme would serve three main purposes. In first place, it would provide an opportunity to test the regulatory capabilities of the new structure for the ORC developed in the ORC strategy plan. Secondly, it would permit clear identification of the costs and benefits to operators providing service according to the requirements of their operating licenses. Thirdly, it would provide an opportunity to showcase to the travelling public the functioning of a reliable, safe and efficient public transportation service presenting an attractive alternative to automobile use.

#### e) Traffic Safety

- 2.33 This sub-component will strengthen the institutional capacity of the MOT to deal with road safety issues. Funding will be provided to improve road safety data collection and analysis and to study, and implement, preventive and remedial road safety measures in The Bahamas. Funding will also be provided to develop new road safety and driver education manuals.

<b>Table II-3</b> <b><i>Institutional Strengthening Plan</i></b>				
Area	Actions	Description	Timeframe	Cost (US\$)
<b>Transportation Planning</b>	Creation and staffing of Transportation Planning Unit	<ul style="list-style-type: none"> <li>Hiring of 1 international consultant and 2 local consultants to staff unit</li> </ul>	2,5 years	300.000
	Strengthening of Unit	<ul style="list-style-type: none"> <li>Staff training</li> <li>Equipment for unit</li> </ul>		30.000 50.000
	Execution of studies	Updating TDP	6 months	100.000
		Economic alternatives to reduce automobile use	3 months	50.000

<b>Traffic Management</b>	Studies	<ul style="list-style-type: none"> <li>Downtown Nassau traffic study</li> <li>New Providence traffic study</li> </ul>	6 months 6 months	100.000
	Institutional Strengthening	<ul style="list-style-type: none"> <li>Staff training</li> </ul>		30.000
<b>Road Maintenance</b>	Improvement of road maintenance programming and administration	<ul style="list-style-type: none"> <li>Implementation of RMMS</li> </ul>	4 months	300.000
<b>Public Transportation</b>	Strengthening of ORC	<ul style="list-style-type: none"> <li>ORC analysis and development of strategy plan</li> </ul>	6 months	300.000
	Development and implementation of pilot project	<ul style="list-style-type: none"> <li>Development plan</li> <li>Equipment and signage</li> <li>Public awareness campaign</li> </ul>	6 months	140.000
<b>Traffic Safety</b>	Institutional Strengthening	<ul style="list-style-type: none"> <li>Road safety data collection and analysis</li> <li>Development of road safety and driver education manuals</li> </ul>	2,5 years	100.000
<b>Total</b>				<b>1.500.000</b>

### C. Cost and Financing

2.34 The total cost of the project is estimated at US\$ 66.0 million. Of this total, approximately US\$ 50.0 will be used for physical works and traffic management measures, US\$ 5.5 million will be used for studies and US\$ 1,5 million will be used for institutional development. This amount also includes a contingency reserve of US\$ 8 million which is consistent with the preliminary nature of the designs required for a design and built contract. The Bank loan will finance US\$ 46.2 million, 70% of the total amount.

<i>Estimated Costs and Financing (in US\$ mio)</i>			
	<b>Total</b>	<b>IDB</b>	<b>Local</b>
<b>A. Direct Costs</b>	<b>57.0</b>	<b>39.9</b>	<b>17.1</b>
1. Roadway Development & Traffic Management	50.0	36.4	13.6
2. Studies and Supervision	5.5	2.0	3.5
3. Institutional Develop.	1.5	1.5	0.0
<b>B. Financial Costs (FIV+CC)</b>	<b>1.1</b>	<b>0.5</b>	<b>0.6</b>
<b>C. Contingencies</b>	<b>7.9</b>	<b>5.8</b>	<b>2.1</b>
<b>TOTAL</b>	<b>66.0</b>	<b>46.2</b>	<b>19.8</b>

### **III. PROGRAM EXECUTION**

#### **A. The Borrower and Executing Agency**

- 3.1 The Government of the Bahamas would be the Borrower; the Ministry of Works would be the Executing Agency.

#### **B. Program Execution and Administration**

##### **1. Institutional Framework**

- 3.2 The Ministry of Public Works (MOW) is responsible for the construction, maintenance and operation of all transport infrastructure and public buildings in The Bahamas. The Ministry of Transport (MOT) is responsible for establishing and implementing transport policy and regulating the provision of transport services.
- 3.3 The Executing Agency for this Project is the MOW, with several components to be executed by units within the MOT. The Minister of Public Works will name a full-time Program Coordinator with exclusive assignment and responsibility for Program implementation. The Program Coordinator will report directly to the Permanent Secretary of the MOW. The Coordinator will have the responsibility, independence and the authority to coordinate and ensure the proper execution of all Program activities being carried out in different units of the MOW and the MOT. This institutional arrangement will be set up prior to Program implementation and presented to the Bank for its non-objection.
- 3.4 The activities to be performed by the Program Coordinator will include: (a) ensuring that all Program activities are executed in a timely manner; (b) informing the Permanent Secretaries of the MOW and MOT and line unit authorities of the execution of activities and Program progress; (c) obtaining the necessary clearances and approvals from the line unit authorities responsible for the execution of specific activities; (d) coordinating the supervision of activities being carried out by different units; (e) identifying potential problems and conflicts and presenting them to the Permanent Secretary for resolution; and (f) acting as liaison between the MOW, the MOT, the Bank and the Ministry of Finance. The Program coordinator will also be directly responsible for the creation and setting up of the Transportation Planning Unit in the MOT.
- 3.5 The administrative responsibilities of the Program Coordinator will include: (a) maintaining adequate financial, accounting and internal control systems; (b) organizing an accounting system that allows to keep track of the Program's resources, providing the necessary documents to verify transactions and to facilitate the timely preparation of financial statements and reports; (c) preparing and submitting disbursement requests to the Bank and the corresponding justification of expenses; (d) maintaining an adequate disbursements support documentation filing system; (e) preparing and submitting to the Bank the annual

financial statements regarding project's expenses, and the semi-annual Revolving Fund Status Reports. The Administrative Sub-secretariat of the MOW will provide accounting and administrative support for these activities.

- 3.6 The Roadway Development and Traffic Management component and the Routine Maintenance Management System sub-component of the Program will be executed by the staff of the Department of Public Works (DPW) of the MOW. The DPW, headed by a Director, is organized into three divisions - Civil/Structures, Buildings, and Administration - each headed by a Deputy Director. The Civil Design Section (CDS) of the DPW, which has a staff of 23 professional engineers, will provide technical support during Program execution.
- 3.7 The Public transportation sub-component of the Program will be executed by the Office of the Roads Comptroller (ORC) of the MOT.
- 3.8 To reduce project preparation and construction time, the MOW plans to use a design/build procurement system for the works of the Roadway Development and Traffic Management component. Under this system, the execution of final designs and the construction of works are bundled into one contract instead of being divided in two separately bid contracts as in done in the traditional design-bid-build system.
- 3.9 In May 1999, the MOW hired an international engineering services firm, to provide support in the preparation and execution of the Program
- 3.10 Due to the size and scope of the Program, the MOW will also require assistance in the supervision, administration and management of the design/build contract. The MOW has decided to bundle together in one package project preparation and project administration and supervision activities.
- 3.11 This decision was based on the familiarity with the project that the firm has acquired during project preparation. The knowledge acquired during project preparation activities presents important advantages to having the same engineering firm perform project preparation and supervision activities. This firm will be better equipped to assure that the project is executed according to the MOW requirements. For example, as part of the design/build process, the contractor will have to present final designs for approval before starting construction. Having prepared the preliminary designs and having established the final design criteria and requirements, the firm assisting in project preparation will be better qualified to evaluate if the final designs meet these criteria. The same situation applies to the evaluation of the Environmental Management Plans (EMPs), the Traffic Management Plans and to construction supervision.
- 3.12 By lumping together project preparation activities and project supervision in one contract, and increasing the total contract amount, the MOW has made the engineering services contract more attractive to experienced international firms. In addition, the larger contract permits some economies of scale for the services

provided by reducing data collection, office installation and personnel mobilization costs.

- 3.13 The MOW has contracted Mott MacDonald of Great Britain, to provide these services during project execution. . Mott-MacDonald is an engineering consulting firm offering a wide array of services and has significant experience in the administration and supervision of design/build contracts. Mott MacDonald has assisted the MOW in the preparation of the preliminary designs and engineering studies necessary to clearly define the works to be included in the design/build contract. This firm has also updated existing traffic demand models and carried out economic feasibility studies. It is also carrying out all environmental studies needed for project preparation.
- 3.14 Jointly with the MOW, Mott MacDonald has prepared the bidding documents for the design-build contract and has assisted the MOW in the execution of the international bidding procedure. The firm will also assist the MOW in the evaluation of proposals to select the design/build contractor, and in project administration and supervision.

## 2. Execution

### a) Design/build Execution

- 3.15 The MOW plans to use a design/build procurement system for the works of the Roadway Development and Traffic Management component. The system allows the executing agency to significantly reduce the time necessary to execute the project by eliminating the separate procurement of final designs and thereby reducing administrative processes. Since the design and construction are performed through one procurement process, the contractor has more flexibility in the scheduling of activities. Construction can begin on specific items immediately once designs are completed while work continues on other items with longer design times. Additionally, because design and construction the responsibility of a single firm, claims for design errors or construction delays due to redesign are not allowed and the potential for claims and cost over-runs is greatly reduced.
- 3.16 The design/build contract modality also supports effective cooperation between the contractor and the contracting agency, specifically in the administration of the quality control and the institutional quality assurance procedures, therefore minimizing delays and cost over-runs.
- 3.17 The MOW has also decided that all physical works of the project be tendered in one package of approximately US\$ 50 million to ensure that the amount of the contract is large enough to attract experienced international bidders. The grouping of all works in one package also allows the MOW to reduce the amount of administrative work necessary to process the project and allows the contractor greater flexibility in the coordination of activities to assure that traffic disruptions during construction are kept at a minimum.



- 3.18 To effectively use the design/build system, the contracting agency must first clearly define the scope of work to be executed. This includes establishing specific design criteria and end result parameters for the expected product. These criteria and parameters are specified in the bidding documents so that prospective contractors can present technical and financial proposals for the execution of final designs and the construction of works according the contracting agency's requirements.
- 3.19 For this project the MOW, jointly with its engineering services consultants, has prepared fairly detailed preliminary engineering studies for all the proposed works. These studies include roadway corridor alignments, definitions of the right of way and land acquisition needs, utility relocation studies and geotechnical and hydrological studies. These studies also include preliminary designs so as to permit cost estimates within 10% of expected contract values. The MOW has also specified the criteria and standards to be used in the execution of the final designs, mainly that the roads be designed according to the Florida Department of Transportation (FDOT) standards to ensure adequate quality.
- 3.20 During project execution, the design/build contractor will progressively produce final designs for the construction of new roadways and rehabilitation of existing corridors. As these final designs are developed, they will be submitted to the MOW for their review and approval and then to the Bank for its non-objection. . For each specific corridor, the Bank's non-objection to the final designs will be required before construction can begin.

b) Land Acquisition

- 3.21 Preliminary designs have kept land acquisition at a minimum. According to these designs, up to five homes and two abandoned buildings need to be acquired, and two or three commercial buildings will be partially impacted and may need to be acquired. Given the limited number of affected buildings and households, a formal Resettlement Plan will not be necessary. All resettlements will be carried out following Bank's on Involuntary Resettlements (OP-710) Once the Office of the Prime Minister has approved the alignment of the roads and other detailed plans for improvements of all the corridors, and should the designs completed by the contractor lead to the need for additional land, land will be acquired by the Government in accordance with the *Acquisitions of Land Act*. This act regulates the process of land acquisition for public purposes and it allows the Government to take possession of the land within a short period after the declaration of intending acquisition notice has been published in the Gazette and posted in a conspicuous part of the land. Persons with interest in the land may state their interest and their claims to compensation but may not prevent the Government from appropriating the selected land for the public purpose mentioned in the notice before payment of the purchase price of compensation.

**c) Road Safety**

- 3.22 To assure all road safety concerns are addressed both at the design stage and construction stage, all corridor rehabilitation works and new corridors works will be subject to Road Safety Audits (RSA) by specialized audit teams approved by the MOW. The RSA will be carried out in accordance with the UK Highways Agency Road Safety Audits Standard. These RSA will be carried out in two stages. The first stage will consist of a review of the draft final designs and pre-construction documents and will provide recommendations for design improvements. The second stage will take place prior to works completion and opening of each corridor and will assure all recommendations have been implemented. No corridor opening will be permitted prior to completion of both stages of the RSA.

**d) Financial Statements and Auditing**

- 3.23 During the project execution, the Executing Agency will prepare and submit annual financial statements regarding the use of the Program's funds. These financial statements will be submitted within one hundred and twenty (120) days after the closing date of each fiscal year. An audit firm acceptable to the Bank will be responsible for the audit of the financial statements submitted to the Bank.

**C. Procurement of Goods and Services**

- 3.24 In procuring goods and services financed by the Bank, the Executing Agency will follow the basic Bank procurement policies and procedures. The Executing Agency will use international competitive bidding for all goods and services valued at more than US\$250,000, for civil works valued at more than US\$1.5 million, and for consulting services in excess of US\$200,000.
- 3.25 To avoid delays in project implementation the MOW has initiated the procurement of Program works and services prior to Loan approval. In all cases these processes have carefully followed all Bank procurement procedures.
- 3.26 In May 1999 the GoBH hired an international engineering services firm (See ¶3.9) to assist the MOW in the preparation, execution and supervision of the Program. The GoBH has requested and the Project Team agreed that, conditional on Loan approval, these expenditures of US\$ 3.6 million be recognized as part of local counterpart funding.
- 3.27 The GoBH has also decided to begin the process of tendering the design/build contract for the Roadway Development and Traffic Management component of the Program. This process was carried out in close consultation with the Country Office of the Bahamas to ensure all Bank procurement procedures were followed.
- 3.28 Four prequalified firms presented proposals with bid prices ranging from a low of approximately US\$ 49 million to a high of US\$ 69 million. The MOW and its

engineering services consultants are now evaluating these proposals. Selection of the design/build firm will be based on the least cost among proposals being substantially responsive to the bidding documents.

- 3.29 The Government expressed its interest in directly hiring ICF Consultants to conduct the environmental auditing and supervision of the Program (See ¶2.16). The estimated cost of this contract is US\$600,000. This firm is currently engaged in the institutional strengthening of the Bahamas Environment, Science and Technology Commission ("BEST") (MIF ATN/MT-5979-BH "Enabling Private Sector Investment") and has been hired according to Bank procurement procedures.

- 3.30 This firm is assisting BEST in developing their institutional capacity to carry out environmental audits for infrastructure projects such as the one needed for this Program. In addition the firm has assisted BEST in the review of the Environmental and Social Impact Assessment ("ESIA") of this Program, and is therefore familiar with its scope and required activities and all relevant environmental issues. The firm possesses ample knowledge of the environmental and legal regulatory framework of the Bahamas relevant to this Program, knowledge not commonly found in other firms. In addition, ICF has developed an excellent working relationship with the BEST commission and its performance has been very good. The IDB project team supports this request.

**D. Execution and Disbursement Schedule**

- 3.31 The design/build contract for the Roadway Development and Traffic Management component of the Program will be contracted shortly after loan signature and completed

<i>Estimated Disbursement Schedule (in US\$ millions)</i>					
	<b>Total</b>	<b>Yr. 1</b>	<b>Yr. 2</b>	<b>Yr. 3</b>	<b>Yr. 4</b>
<b>Direct Costs</b>	<b>57.00</b>	<b>32.00</b>	<b>20.00</b>	<b>2.50</b>	<b>2.50</b>
<i>IDB</i>	39.90	22.40	14.00	1.75	1.75
<i>Local</i>	17.10	9.60	6.00	0.75	0.75
<b>Financial Costs</b>	<b>1.07</b>	<b>0.46</b>	<b>0.28</b>	<b>0.17</b>	<b>0.16</b>
<i>IDB</i>	0.47	0.12	0.11	0.12	0.12
<i>Local</i>	0.6	0.34	0.17	0.05	0.04
<b>Unallocated</b>	<b>7.93</b>	<b>4.45</b>	<b>2.78</b>	<b>0.35</b>	<b>0.35</b>
<i>IDB</i>	5.83	3.27	2.04	0.26	0.26
<i>Local</i>	2.10	1.18	0.74	0.09	0.09
<b>Total</b>	<b>66.0</b>	<b>34.9</b>	<b>23.1</b>	<b>3.0</b>	<b>3.0</b>
<i>IDB</i>	46.2	25.8	16.2	2.1	2.1
<i>Local</i>	19.8	11.1	6.9	0.9	0.9

within three years. It is expected that the majority of the activities included in the institutional strengthening component of the Program will also be completed in the same time period. Disbursements for the engineering studies component of the Program began in 1999 and will end with completion of the Roadway Development and Traffic Management component. The GoBH has requested that, conditional on Loan approval, these expenditures be recognized as part of local counterpart funding.

- 3.32 The Executing Agency will open separate accounts in a commercial Bank to deposit the proceeds from the Bank's financing and from the local counterpart funds. The Executing Agency will prepare and submit to the Bank, within a period of sixty (60) days after the closing of each calendar semester, a report showing the use of the yearly loan's funds.

- 3.33 A revolving fund, of up to 15% of the financing (US\$6.9 million), will be established with resources from the Bank's loan to pay for projected expenses. The size of this fund, which triples the usual 5% for Bank operations, is due to the relatively short schedule for the execution of the design/build contract. During the execution of this contract monthly disbursements will average US\$ 2 million; the revolving fund will be sufficient to cover three months of Program execution

**E. Monitoring and Evaluation**

- 3.34 The task of monitoring the project will fall on the Country Office supported by the Project Team.
- 3.35 Bank Management anticipates semi-annual reviews of the progress of the Project on the basis of the reports to be produced by the Supervisory Firm and the Executing Agency.
- 3.36 The Project Team has discussed with the Bahamian authorities the need for an ex-post evaluation of the Program. The Bahamian authorities have indicated that they do not consider necessary to include the *ex post* evaluation within the Program.

## **IV. VIABILITY AND RISKS**

### **A. Project Viability**

- 4.1 The Project Team has reviewed all available information regarding the Project and concludes that there are no known technical, environmental, financial or socio-economic obstacles to proper implementation. To the fullest extent possible the Project Team has attempted to anticipate issues and ensure that they have been considered in designing the Project so as to maximize benefits and reduce unexpected costs.

#### **1. Technical and Environmental Viability**

- 4.2 The technical viability of the Project has been established on the basis of the Project Team's careful review of Project works preliminary designs developed by the consulting firm of Mott-McDonald and through site visits in the Bahamas. The physical works included in the Project consist mainly of relatively simple roadway improvements and rehabilitation and some new roadway construction on well-known terrain and should present no insurmountable technical obstacles.
- 4.3 Once the design/build contract is signed, there is little technical risk that the works will not be completed on time; the execution schedule proposed by the MOW is reasonable given the nature of the works. In addition the design/build contract will include significant penalties for Project execution delays providing an important economic incentive for the contractor to complete the works in a timely manner.
- 4.4 Since the works will be executed in urban areas, the main difficulties will concern traffic management during construction. To minimize traffic disruptions, and assure that roadway network capacity is not significantly affected during project execution, a Traffic Management Masterplan (TMP) during Construction will be developed by the design/build contractor in parallel with the construction program. This Masterplan will carefully detail all temporary traffic management measures proposed during project execution. To this effect, the MOW has established a series of criteria and constraints to be followed in the preparation of the Masterplan. This Masterplan will be reviewed and approved by the MOW before construction starts.
- 4.5 To ensure the environmental and social viability of the Program, an ESIA was carried out to identify the potential environmental and social impacts associated with the project and to enable the selection of appropriate measures for their mitigation. The GoBH will approve this ESIA before the design/build contract is negotiated to ensure its recommendations are incorporated in the contract. The design/build contract will require the contractor to develop a General Environmental Management Plan (EMP) for the Project and to produce specific site EMPs along each of the road corridors. The ESIA contains a set of guidelines

for the contractor to assist in the EMP preparation. The design/build contract will also include requirements for periodic reviews by the MOW and the Bank to insure the EMPs continuing relevance as the project evolves.

## 2. Institutional Viability

- 4.6 For the size and population of The Bahamas the current institutional structure of the MOW seems appropriate for its current principal functions of maintaining basic transport infrastructure. The MOW has also demonstrated the capacity to successfully carry out capital investment projects of significant magnitude when needed.
- 4.7 The areas in which the transport sector institutional structure presents greatest deficiencies is in medium to long-term transport planning and in the regulation of existing transport services. The Institutional Strengthening component of the Program will attack both these problems by increasing the MOT's capacities in carrying out its functions in both these areas by financing the creation of a Transport Planning Unit, the strengthening of the main regulatory unit, the ORC, and the execution of specific studies in these areas.
- 4.8 The MOW has previously been successful in the execution of transport projects using the design/build procurement system. In 1996 the MOW contracted the design and construction of the new Paradise Island Bridge using this method. This bridge was completed within the estimated budget and timeframe. In addition, in view of this Program, the MOW has strengthened its staff by hiring international consultants with design/build experience to hold key posts within the Ministry and assist in the preparation, administration and supervision of the project.
- 4.9 The proposed Program will require a significant effort by the MOW in contract administration and work supervision. Given that investment projects of the magnitude of the proposed Program do not occur frequently in the Bahamas, the MOW does not have the permanent institutional structure to carry out these responsibilities effectively. In past cases, when important investment projects have been needed, the MOW has dealt with the additional demands on its resources by contracting of specialized firms and consultants to provide additional support.
- 4.10 In light of these circumstances, the MOW has decided to hire an engineering services firm to provide assistance in all phases of Program preparation, execution and supervision. The hiring of this firm is described in the previous section of this document dealing with Program Execution (See ¶3.9).
- 4.11 Critical to the success of the Program will be proper coordination among the engineering services firm, the contractor and the different units within the MOW and the MOT. For this reason the Program Coordinator will supervise and coordinate all Program activities and will directly report to the Permanent Secretary of the MOW.

- 4.12 The past record of the MOW in road maintenance assures the future maintenance of the roads included in the Program. The MOW has demonstrated it has the technical, financial and institutional resources necessary to perform adequate maintenance of the road network under its responsibility. Transport infrastructure in the Bahamas is relatively well maintained, with most of the roads being in fairly good condition. Annual allocations for road maintenance in the national Budget have averaged around US\$ 4 million for the past five years, which is sufficient given the size of the road network. The 2000-2001 Budget includes this amount for road maintenance.

### 3. Socioeconomic Viability

#### a) Beneficiaries

- 4.13 The Program will benefit the community as a whole. The Road Development and Traffic Management component will relieve severe traffic congestion on some of the main arteries of New Providence Island significantly reducing travel times and will improve the movement of passengers and goods. Due to the high level of car ownership on the island, 1.34 vehicles per household, these improvements should benefit a majority of the population. By improving the regulation of services, the Institutional Strengthening component will improve the provision of bus services on the island benefiting public transport users.
- 4.14 Almost all the road corridors to be improved or constructed are in commercial or low to medium income residential areas of the island, away from the high-income coastal areas, and will primarily serve these populations. The only exceptions being Corridors 18 and 19, which are located on the coast on one of the most highly traveled roads of the island. These corridors are justified mainly by safety considerations, both are in locations with accident rates among the highest on the island, and by providing much needed access for the general population to the beaches.
- 4.15 The road corridor improvements will also benefit pedestrians. The design standards for these improvements will be based on existing US standards and incorporate a wide range of safety measures. These measures will include the provision of sidewalks on many roads which now lack them. Improvements will also include the provision of pedestrian crossings, improved signings and road markings, and bus stops and lay-bys. These measures will benefit not only vehicle users but also pedestrian users, most of whom will be women, children and the elderly.

#### b) Economic Viability

- 4.16 The economic appraisal prepared of the final design of the 19 road corridors was based on established cost-benefit analysis techniques according to current best practice. A consumer surplus technique was used whereby the benefits to road users of the improvements in terms of reduced vehicle operating and travel time

cost are compared with the construction and maintenance costs to establish an economic rate of return.

- 4.17 A CONTRAM traffic model has been developed for New Providence Island that represents traffic flows during a.m. and p.m. peak periods. The model network includes details of all links and major junctions in the Study Area in 1999. In order for the CONTRAM traffic model of New Providence to be built, a number of traffic counts were required at various locations across the island. These counts enabled the daily traffic patterns (movements) to be built up, and thus the impact of future road building to be evaluated.
- 4.18 The model network includes details of all links and major junctions in the study area in 1999, including any traffic measurements that have been carried out since 1995 by either the MOW or its consultants. The use of CONTRAM now means that detailed junction simulation can be carried out as part of the traffic assignment, which should lead to a better quantification of journey times with and without the improvements.
- 4.19 Realignments on corridors 18 and 19 (see Table II.2) provide public access to beaches. They have not been individually tested in the traffic models because those benefits are not easily quantifiable. Both corridors provide access for the general public to beach areas and improve the alignment of one of the most heavily used roads in areas with high accident rates. Public access to beaches in these corridors has been a long sought request from the general population since recent hotel and private developments have severely restricted beach access in these areas. Corridor 18 provides improved access and parking at Saunders Beach. Corridor 19 is a re-alignment of West Bay Street and junction alterations at Blake Road in order to promote safety at Blake Road/West Bay Street junction and improve the environment along the coast and improve public access to beaches between Delaport Village and Caves Point.
- 4.20 The traffic model simulated morning and evening peak traffic conditions from 0700-1000 and 1500 to 1800, a total of six hours per day. These were grossed up to annual totals using an annualisation factor of 260 working days in a year. The appraisal adopted a conservative approach by only quantifying peak hour benefits (in line with the TDP prepared by MM Dillon 1993 to 1995). As some congestion is likely to occur off peak traffic benefits may be under-stated. Construction is due to start in early 2001 with completion by the end of 2002: a 22-24 month construction period. The traffic model was therefore run for the year of opening 2002, then the junction design year 2007 and the final year of analysis 2019. Annual costs between these years were interpolated to form a twenty-year cost stream. Annual construction and maintenance costs were also entered into the appraisal model.
- 4.21 The appraisal used an incremental cost-benefit analysis technique whereby the annual costs in the base line network with no corridor improvement (the 'Do Minimum' scenario) are subtracted from the annual costs with the corridor



improvement (the 'Do Something' scenario) to produce an annual net benefit stream. A standard discounted cash-flow technique was used to compare all costs in present values. The results are shown in table 2.2 below.

*Table IV-1 Results of Economic Appraisal*

Package	Description	Corridor	Capital Cost (\$m)	EIRR %	NPV \$m	FYRR %
1	Harrold Rd	14	3.59	70	37.6	81
2	Abundant Life/Windsor Rd	17	1.57	44	6.4	21
3	Sir Milo Butler/Bethel Ave/Saunders Bay	2+3+4+5+9	14.31	36	43.2	30
4	Gladstone Rd	6+7	3.94	45	20.2	33
5	Marathon Rd	15+16	3.29	65	24	77
6	Baillou Rd –Market St Couplet	8+10+11	10.84	54	78	53
7	Prince Charles Dr	13	7.54	101	97	132
8	East St	12	2.31	103	49	128
9	Pinewood-Sea Breeze Connection	1	4.34	207	150	362
Saunders Beach & Blake Rd (not appraised)		18+19	3.57	Not appraised		
<b>Total Project</b>		All	55.3*	42	251	34

Source: Mott MacDonald

Notes: Capital cost is the financial cost, EIRR = Economic Internal Rate of Return, NPV = Net Present Value @ 12% discount rate, FYRR = First Year Rate of Return \* Includes cost for corridors 18 and 19 and design & supervision.

- 4.22 Table IV.1 shows that all corridor packages are economically viable, the total project generating an EIRR of 42 per cent. As would be expected, with the exception of Package 9, the widening and traffic management improvements generate the highest returns as they reduce congestion for the lowest capital cost. Hence the widening of Harrold Rd, Prince Charles Drive and East Street generate returns of between 70 and 103 per cent. The lowest return is for Corridor 17, Abundant Life/Windsor Road, where junction improvements bring only modest traffic benefits.
- 4.23 Sensitivity tests were conducted to measure the impact of changes on major project parameters on project EIRR. The results of these tests are set out in Table IV-2. Low traffic growth represents a cut off in traffic growth in 2007 and low travel time costs a 50 per cent reduction on the central estimate. These tests show that even with a 20 per cent increase in construction costs and low traffic growth all the corridors are still economically viable.
- 4.24 Similar tests were conducted to measure the impact of increases on gasoline prices on EIRR. The results of these tests show no measurable change in project EIRR with gasoline price increases of 100%. These results were as expected, since fuel costs represent only 5% of total road user costs due to the current high levels of road congestion.

*Table IV-2 Results of Sensitivity Tests*

Package	Description	Corridor	EIRR			
			Cost +20%	Traffic Low	TTC Low	Cost +20% Traffic Low
1	Harrold Rd	14	61	65	43	55
2	Abundant Life/Windsor Rd	17	39	33	28	27
3	Sir Milo Butler/Bethel Ave/Saunders Bay	2+3+4+5+9	32	24	23	18
4	Gladstone Rd	6+7	40	34	29	27
5	Marathon Rd	15+16	56	60	39	50
6	Baillou Rd –Market St Couplet	8+10+11	48	46	35	38
7	Prince Charles Dr	13	88	99	60	85
8	East St	12	91	101	66	87
9	Pinewood-Sea Breeze Connection	1	182	200	130	182
<b>Total Project</b>		<b>All*</b>	<b>37</b>	<b>30</b>	<b>27</b>	<b>24</b>

Source: Mott MacDonald

Notes: Capital cost is the financial cost, EIRR = Economic Internal Rate of Return, TTC = Travel Time Cost,

\* Includes cost for corridors 18 and 19 and design & supervision.

#### 4. Financial Viability

4.25 Funding for the local counterpart of this Project will come directly from the public budget. The 2000/2001 fiscal year budget approved by Parliament in July of 2000 includes an allocation of US\$ 18 million to the MOW for the New Providence Transport Program. This amount is more than necessary to cover the expected needs of local counterpart funds for the first year of execution.

4.26 The Project is considered sustainable within the macroeconomic and fiscal medium term framework of the Government and counterpart-financing risks to the project are negligible. In the past several years the Government has run fiscal savings of 3½ to 4% of GDP, and is likely to maintain this over the medium term on the basis of prudent debt management, wage restraint and notable improvements in revenue. The fiscal position is more than adequate to supply counterpart funds to capital projects, and to meet the service payments while keeping the fiscal targets on track.

#### B. Environmental and Social Impacts

##### 1. General Impacts

4.27 The design-build nature of this program limits the exact quantification of all environmental and social impacts because final designs are not yet developed. The Environmental and Social Impact Assessment (ESIA), conducted by an international consulting firm for the program, has provided general and indicative, positive and negative environmental and social impacts, and the basis to develop an Environmental and Social Management Plan. When final designs are complete

for each corridor, additional assessments will be undertaken and a specific Site Environmental and Social Management Plan will be prepared for each corridor. The following sections provide the highlights of the potential environmental and social impacts identified and mitigation measures.

## 2. Potential Positive Impacts

- 4.28 Improvements to the road system are designed to relieve congestion. The increased efficient burning of fuel will reduce pollution from vehicular emissions. In areas where traffic has been re-routed the locations where pollution levels are highest will change, while addition of new lanes to improve the flow rate of traffic should reduce localized air pollution hotspots. Nevertheless, it is appreciated that if the road scheme should encourage further traffic onto the roads or increase the appeal of road travel in the long term, air pollution from car exhausts will increase. The project will also improve the public transportation system, hopefully counteracting excessive car use.
- 4.29 Positive benefits will result from closure of side roads, the provision of pedestrian crossings and improved safety to the road user through safety measures including improved signage and road markings. The carefully designed road hierarchy will free housing developments from short-cutting by motorists. In the case of the new road corridors, there is a real opportunity to address safety considerations. Incorporation of sidewalks in public places, including schools, will help alleviate accidents to pedestrians and children. Provision of bus stops and lay-bys will help to alleviate congestion and improve safety and improve the attractiveness of public transportation.

## 3. Potential Negative Impacts

- 4.30 Five areas have been identified as being at risk of contamination from surface water runoff and road accident spillage (Harrold Pond- corridor 3; Perpall's Water Works-corridor 5; Lake Cunningham and wetlands west of the Golf Course - corridor 7; and Big Pond – corridor 8). No runoff water can be discharged directly into these ecosystems. These areas will have specific drainage systems to ensure that contamination risk is minimized. Surface water runoff along corridor 5 where it crosses the Perpall's Water Works, which supplies drinking water to a section of New Providence, will be diverted from these wetlands. A lined drainage system, over one quarter of the length of the corridor, will be provided to discharge the runoff via drainage wells. Furthermore, a hazardous materials spill contingency plan will be in place in the event of accidental spill of any potential contaminants.
- 4.31 Work in some corridors will result in the removal of the existing surface soil and upper levels of the underlying subsoil to provide suitable material for road foundations and drainage channels. Construction of new roads in corridors 5, 6 and 7 there will partial remove oolitic ridges for road cutting to achieve the required road gradients through areas of higher ground. A permit will be obtained

prior to excavations under the Conservation and Protection of the Physical Landscape of The Bahamas Act. If not controlled, sediment may be washed from the exposed cut and into nearby wetlands and water bodies resulting in loss of aquatic flora and fauna. This adverse effect should be mitigated through erosion control protection associated with construction, hydro-seeding of the exposed face to help stabilize the cut surface and reduce sediment creation from erosion, and rapid revegetation of the exposed flat areas.

- 4.32 In general the ecological impacts associated with the road improvements are not substantial, but cumulatively are considered to be of significance. These include: removal of some protected tree; loss and fragmentation of broadleaf coppice along corridors 5 and 7; loss of 1.2 acres of seasonal wetland/mangrove habitat just east of Lake Cunningham as a result of corridor 7; and 1.5 acres of the pond will be infilled at the northern edge of Big Pond as a result of corridor 8. Final designs will include mitigation measures, as retention of as much valuable tree habitat as possible by reduction of the construction corridor width and realignment of the road corridors to avoid as many trees as possible; roadside planting with native trees and shrubs; and transplanting of protected trees. As a result of consultations with BEST and local conservationists, the Program will undertake a program to compensate for the cumulative loss off wetlands, woodlands, and pond filling. Mangrove management protected green space development, and restoration and cleanup of the Big Pond area at Corridor 8 will be undertaken.
- 4.33 Visual intrusion to properties has been identified as a concern on most of the road corridors. In many cases this will be mitigated with roadside planting. However, corridors 10, 13, 15, and 16 fall within existing urban areas. There is limited space remaining within the road corridor for screen planting. Where space permits, mitigation planting will be incorporated. Some properties will be so close to widened roads that it will be difficult to screen them and visual impacts will remain. Wherever possible, existing street trees will be retained and plantings will be enhanced.
- 4.34 Disruption in traffic flow and access by residents to their properties will occur during construction. Residents and business will also be subject to noise, dust and mud from equipment and exposed soil. The Contractor will present a traffic management plan during construction and environmental management measures to minimize these temporary impacts.

#### 4. Environmental and Social Management Programs

- 4.35 To ensure that environmental and social impacts are identified, their seriousness/significance are evaluated, and negative impacts are avoided and minimized, the Government of The Bahamas has prepared an Environmental and Social Impact Assessment (ESIA). The ESIA has emphasized its analysis on key environmental and social issues such as land acquisition; drainage and hydrology; natural

habitats and archaeological resources; traffic disruption; road intrusion; urban dynamics and road safety.

- 4.36 The ESIA presents a preliminary Environmental and Social Management Plan for construction to be detailed and implemented under the Design and Build contract. A Program will be developed to monitor the impacts during and after construction, to ensure the mitigation measures are implemented. This plan will specifically address the issue of traffic related noise, especially in noise sensitive areas such as schools or hospitals. The design/build contract will also specify that individual EMPs be developed for each corridor to be constructed or rehabilitated to ensure appropriate environmental and social mitigation measures are implemented during construction and operation.
- 4.37 Monitoring the environmental and social impacts of the road improvement program will occur on three levels. First, an Environmental Specialist will be hired by the contractor to prepare and implement the Site EMPs and monitor the construction activities and their impacts. At the second level, the Employer's Representative, the supervisory engineering firm, will have an environmental specialist on staff to review the construction work and determine, for the government, if the management plans are being adhered to and no new impacts occur. Finally, BEST will provide independent supervision over environmental and social aspect of the road improvement program by reviewing and approving designs and Site EMPs, periodically reviewing construction and approving the final environmental and social actions for each completed corridor.
- 4.38 For assistance in auditing and supervisory activities BEST will hire an international consulting firm. Prior to approval by the Bank of final designs on the first corridor to be constructed, BEST will provide evidence to the Bank that this firm has been hired and that staff is in place to provide the supervisory services.
- 4.39 To mitigate the risk of environmental damage from hazardous materials spills a Hazardous Materials Spill Contingency Plan will be prepared by BEST. Evidence that the Plan has been prepared will be submitted to the Bank prior to its approval of final design on Corridors 3, 5, 7 or 8, whichever of these corridors construction begins first. Evidence will be submitted to the Bank that implementation of the proposed actions for the Contingency Plan are in place before construction is completed on the first of the above designated corridors.
- 4.40 A program for protection, rehabilitation and management of Big Pond and its environs will be developed to compensate for habitat loss and environmental damage from construction. Prior to first disbursement, the management plan for the Big Pond area will be submitted by BEST to the Bank for review and non-objection. The design and implementation schedule for the plan will be submitted to the Bank for review prior to construction beginning on Corridor 7 and 8.

- 4.41 These activities will be financed through the Engineering Studies and Project Supervision component; details of the estimated costs are presented in Section II-B of this document (See ¶2.12 through ¶2.16).

**C. Risks**

- 4.42 **Design/build procurement system.** While the design/build procurement system permits quicker execution and reduces contractor claims due to redesign, it may also increase certain risks by increasing contractor responsibility. This methodology provides the contracting agency with less control over the design process and more difficulty in imposing varied requirements. Critical to the system's success is proper project definition and adequate supervision during project execution.
- 4.43 Project definition must clearly state what is end product is expected and what responsibilities are to be borne by the contractor. Since final designs are to be produced by the contractor, there is a strong incentive for the contractor to submit designs that reduce his construction costs. The Government's only assurance of obtaining quality designs, and therefore quality roads at the contract cost, is to set precise criteria for design acceptability and to verify compliance with these criteria as designs are submitted. A similar process must govern the submission and approval of environmental and traffic management plans.
- 4.44 The determination of corridor alignments and the execution preliminary designs for all works reduces this risk. The adoption of FDOT design standards, which clearly define design methodology and set minimum design requirements, assures adequate final designs.
- 4.45 The MOW has decided to use the International Federation of Consulting Engineers (FIDIC) model for the design/build contracts. This model is generally recommended for the use in design/build contracts with international tendering. This assures that the responsibilities of the contractor and contracting agency are clearly defined and follow widely accepted international practices.
- 4.46 To an extent, the hiring of an engineering services firm with ample experience in design/build contracts to assist in project preparation and supervision and the recent expansion of MOW staff mitigates these risks, but close monitoring from the Bank and close review of final designs, EMPs and TMPs are necessary.
- 4.47 **Institutional Capability.** Design/build contracts require greater supervision than fully designed works. Despite the experience of some MOW staff in this modality and its successful application in The Bahamas in the past, given the size of the Program and the additional burden of simultaneously executing the Infrastructure Rehabilitation Project (BH-0031), there is some risk that the MOW will have difficulties in the supervision and administration of the design/build contract.

- 4.48 The hiring a supervisory firm to oversee the technical, environmental and financial execution of the Project and to monitor compliance with environmental mitigation measures will help mitigate this risk, but proper coordination among the supervising firm, the contractor, the MOW and the Bank must be assured to ensure the success of the project.
- 4.49 **Long term sustainability of urban transport system.** If the rate of automobile ownership continues to rise at present levels, a comprehensive and sustainable solution to the congestion problem in New Providence Island must include improvements in the public transport system and economic measures to internalize automobile use externalities in automobile operation costs. There is a risk that the government might not be prepared to implement the required measures. To mitigate this long-term risk the proposed Program will support the creation of a Transport Planning Unit, and the funding of studies to analyze economic incentives and options to a long-term solution of urban transport problems.

**T H E B A H A M A S**  
**New Providence Transport Program, BH-0029**  
**Logical Framework**

	OBJECTIVES	INDICATORS	MEANS OF VERIFICATION	ASSUMPTIONS
	Create and maintain an efficient and viable surface transportation system on New Providence Island in The Bahamas	Vehicles using transport network able to travel at reasonable speeds and safety levels.  Pedestrians able to use roads safely	Annual statistics on road travel, congestion levels, public transportation use and traffic accidents, as published by the Department of Statistics	
OSE	Reduction in generalized surface transportation costs for users in New Providence	Road congestion reduced to acceptable levels, level of service of at least D during peak hours.  Public transportation functioning according to schedules and level of service specified in licensing agreements.  Reduction of traffic accidents	Inspection reports by MOW, reviewed by Country Office staff.  Inspection reports by ORC, reviewed by the Country Office Staff  Safety statistics from MOT	Automobile ownership rates remain at policy actions automobile use i  Provision of public services remains viable  Government assumes resources to periodic maintenance
UTS	1. Improvement of the existing road network of New Providence using adequate engineering and environmental standards ( FDOT specifications and quality control and quality assurance procedures)	1.1 Rehabilitation and improvement of 23.3 miles of existing urban roads and construction of new 15.2 miles of roads is completed by January/ 03 with rutting of less than 0.5 inch and IRI less than 2 m/km.  1.2 Hazmat spill contingency plan, site EMPs and land compensation plans are approved prior to the construction starts	1.1 Reports of the supervisory engineers verified by the Executing Agency and the Bank Country Office  1.2 Reports from independent environmental audits from BEST.	1.1 No external factors interfere with the procedures of development of the modernization of  1.2 The design-bid-build and the MOW project TORs,



OBJECTIVES	INDICATORS	MEANS OF VERIFICATION	ASSUMPTIONS
2. Development of MoW&T's capacity to execute transport planning functions	<p>of selected corridors.</p> <p>1.3 Road safety audits are completed and approved prior to the approval of the final engineering and environmental designs.</p> <p>2.1 Transport Planning Unit functioning by July 2001.</p> <p>2.2 Study analyzing economic incentives to reduce automobile use completed by February 2002.</p> <p>2.3 TDP updated by December 2002.</p>	<p>1.3 Reports from engineering services consulting firm and MOW</p> <p>2. MOW monitoring reports on organizational changes, reports from consultants.</p> <p>3. Reports from MOW and consultants</p> <p>4. Reports from MOW maintenance staff</p> <p>5. Reports from ORC</p>	and quality control and quality control assurance procedures
3. Strengthening of MoW&T's capacity carry out traffic management.	3. Traffic management studies executed by February 2004.		
4. Improve routine maintenance programming	4. RMMS installed and running by December 2002.		
5. Improvement in regulation of public transportation services	<p>5.1 ORC strategic plan completed and approved by February 2002.</p> <p>5.2 New system for licensing bus services operators designed as part of ORC strategic plan by February 2002.</p>		
6. Implementation of pilot public	6.1 Pilot bus project designed as part of	6. Reports from ORC	

	OBJECTIVES	INDICATORS	MEANS OF VERIFICATION	ASSUMPTIONS
	transport route on improved corridor	ORC study by February 2002.  6.2 New pilot services licenses awarded according to new franchise system by d April 2003		6.2 Bus serv accept new agreements
ITIES	1.Design, build and rehabilitate selected road corridors  2.1 Execute project supervision and administration  2.2 Environmental supervision support for Best contracted  2.3 Hazmat spill contingency plan executed  2.4 Land compensation program developed and implemented  3.1 Create Transport Planning Unit  3.2 Execute Transport Planning and traffic management studies  3.3 Train transport planning and traffic management staff  3.4 Develop and install RMMS	1. US\$50.0 million  2.1 US\$4.0 million  2.2 US\$600 thousand  2.3 US\$150 thousand  2.4 US\$750 thousand  3.1 US\$300 thousand  3.2 US\$350 thousand  3.3 US\$60 thousand  3.4 US\$300 thousand	Executive Agency reports and periodic reviews by Bank Project Team	Counterpart fun and timely  Land acquisition environmental pe more that 5 mon  No unexpected and environment be identified approval of final  Qualified staff planning unit ava  Engineering cor express intere proposed stud Bahamas

OBJECTIVES		INDICATORS	MEANS OF VERIFICATION	ASSUMPTIONS
	3.5 Execute ORC strengthening study	US\$300 thousand		
	3.6 Implement pilot bus service project	US\$140 thousand		

**THE BAHAMAS**  
**NEW PROVIDENCE TRANSPORT PROGRAM**  
**PROCUREMENT PLAN**

<i>Description</i>	<i>Total in US\$ million</i>	<i>% Financing</i>		<i>Method of Procurement</i>	<i>Pre- qualification</i>	<i>Publicity</i>
		<i>IDB</i>	<i>Local</i>			
				<i>ICB/Other</i>	<i>Yes/no</i>	<i>Half /Year</i>
<b>Civil Works</b>						
Design/build contract	\$50	73	17	ICB	Yes	1 <sup>st</sup> /2000
<b>Consultant Services (firms)</b>						
Project Preparation and Supervision	\$4	13	87	ICB	Yes	1 <sup>st</sup> /1999
Environmental auditing and supervision	\$0.6	100	0	ICB	Yes	1 <sup>st</sup> /2001
Development of Hazmat Spill Plan	\$0.15	100	0	Other	No	1 <sup>st</sup> /2001
Economic alternatives to Automobile use	\$0.05	100	0	Other	No	1 <sup>st</sup> /2001
Strategy Plan for ORC	\$0.3	100	0	ICB	Yes	1 <sup>st</sup> /2001
RMMS	\$0.3	100	0	ICB	Yes	1 <sup>st</sup> /2001
Updating TDP	\$0.1	100	0	Other	No	1 <sup>st</sup> /2002
Traffic Study for New Providence	\$0.2	100	0	ICB	Yes	1 <sup>st</sup> /2003

Threshold amounts:	goods and services:	US\$	250,000
	civil works:	US\$	1,500,000
	consultancy:	US\$	200,000

PROPOSED RESOLUTION

BAHAMAS. LOAN \_\_\_\_/OC-BH TO THE COMMONWEALTH OF THE BAHAMAS  
New Providence Transport Program

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 the Commonwealth of The Bahamas, as Borrower, for the purpose of granting it a financing to cooperate in the execution of the New Providence Transport Program. Such financing will be for the amount of up to forty six million two hundred thousand dollars of the United States of America (US\$46,200,000) from the Single Currency Facility of the Ordinary Capital Resources of the Bank, and will be subject to the "Special Contractual Conditions" and the "Financial Terms and Conditions" of the Executive Summary of the Loan Proposal.