PROJECT CONCEPT DOCUMENT

GUYANA

I. BASIC INFORMATION

Project name:	Bridges Rehabilitation Program – Lot 2		
Project number:	GY-L1008		
Project team:	Ana María Rodriguez-Ortiz (RE3/FI3), Division Chief; Leader: Alejandro Taddia (RE3/FI3); other members: Alejandro Melandri, Vera Lucía Vicentini, José M. Cabral, Susan Tamir, Isabel Cardona (RE3/FI3); Bernadete Buchsbaum (LEGIII/OPR), Christopher Persaud (COF/CGY), Ione Müller (Consultant).		
Date of Project Outline:	June 23, 2005		
Borrower:	The Government of the Cooperative Republic of Guyana (GOG)		
Executing agency:	The Ministry of Public Works & Communications (MPW&)		
Financing plan:	IDB: (FSO)	US$	15 million
	Local:	US$	1.7 million
	Total:	US$	16.7 million
Tentative dates:	Analysis Mission		February 2006
	Loan Committee		March 2006
	Board		April 2006
PTI/SEQ:	No		

II. BACKGROUND

A. Economic Framework

2.1 Guyana is a low-income, thinly-populated country with a predominantly agricultural economy. The total population according to the 1991 census was 723,000. Based on preliminary data from 2002 census, population growth shows marginal increases of 0.3% per year. The vast majority of the population lives in the coastal strip. The rural interior is very sparsely populated. The country is divided into 10 Regional Administrative Region, governed by Regional Democratic Councils (RDCs). Regions 1, 7, 8, and 9 are classified as the interior regions - rural and remote, with small populations. Regions 2, 3, 4, 5, and 6 are the coastal regions, and Region 10 has one moderate sized town and a large rural area. Region 4 includes Georgetown, the capital, and represents the largest concentration of population.

2.2 Despite rich endowments of mineral resources, biodiversity and land, economic development was stymied in the 1970s and 1980s, which reduced GDP per capita to one of the lowest levels in the region. Strong growth in the period 1991-97, was followed by stagnation, with GDP growth averaging just 0.6% per year over the 1998-2004 period.

2.3 Guyana remains among the poorest countries in the Americas. It was ranked 107th in the United Nation Development Program (UNDP's) 2005 Human Development Index Report, the lowest ranking in the English-speaking Caribbean. Terms of trade have declined around 19% over the last seven years. Private investment has declined from 13.4% of GDP in 1998 to just 5.8% in 2004. It is estimated that GDP growth reached only 1.6% in 2004, compared to an expected rate of 2.5%, and it is expected to slip back to less than 1% in 2005-2006. The floods of January 2005 are also expected to have a negative impact on growth during the year. Public consumption and a debt relief-financed expansion of public services have been the main forces driving the economy.

2.4 Debt relief following the Enhanced Heavily-Indebted Poor Countries (E-HIPC) completion point at the end of 2003 helped to bring Guyana's external debt/revenue ratio down from 376% at the end of 2002 to 209% one year later. The latest WB/IMF-led debt sustainability analysis shows the debt/revenue ratio rising again to a peak of 246% in 2006, which is close to the ceiling of 250% established under the E-HIPC initiative. In order to continue to decrease its debt/revenue ratio, Guyana must seek greater levels of concessionality from its creditors and/or less external financing. The current G8 proposal to finance Guyana's debt repayments to the IMF and WB would have a positive impact.

B. Transport Infrastructure

2.5 Guyana has 98 km of railroads entirely dedicated to ore transport, one international airport, and 46 additional airstrips with short runways. The country has a single general cargo seaport in Georgetown, and 4 specialized bulk loading facilities. Guyana relies upon its 6,000 km of navigable water-ways used for carrying bauxite, sugar cane and other bulk commodities. The road network of Guyana totals 3,995 km and serves a national fleet of about 52,000 vehicles. All national paved roads have only two lanes, except for a segment along the East Coast Demerara, which has four lanes, and consist of six main roads.

2.6 Guyana's road network relies heavily upon its bridges and culverts. Much of the Atlantic coastal plain and the littoral areas of the country are below mean sea level making necessary a dense system of drains, canals and sluices to permit habitation and agriculture. Most of these structures run perpendicular to the shoreline and consequently must be crossed by the main roads, substantially increasing construction and maintenance costs of the network.

2.7 Although the road network is one of the sparsest in South America, most of the population has access to paved roads, mostly in fair conditions, due to the

concentration of the population and the main road system in the coastal areas and since over the last 10 years GOG has embarked on a progressive rehabilitation of the roadways and structures along these roads. The road network in the interior is short and in bad condition, consisting mainly of roads readily accesible only during the dry season and limited to 4wd drive vehicles. Overall, the transport system is supported by an inadequate network, providing little internal and international connections, highly congested roads in urban areas with poor quality and costly transport services (ferries and buses). Air service and river transport to the interior is sporadic and limited by inadequate infrastructure.

2.8 With funding from the IDB, major rehabilitation work was undertaken on the east west corridor stretching from Timehri to Mahaica as part of the Main Roads Rehabilitation Program (LO-890/SF). The World Bank financed the rehabilitation of the main road in the Essequibo area (US$ 17.0 million).

2.9 Expenditures of the Ministry of Public Works and Communications (MPW&C) for routine maintenance of national paved roads have averaged US$ 620,000 per year. Routine annual needs for maintenance at minimum standards are estimated at US$ 0.7 million. The Routine Maintenance Management System (RMMS) determined the minimum expenditure for a road sample of 85 kilometers, at US$ 1,500 (2003 prices). Almost all maintenance has been concentrated on the paved road system, resulting in most of these roads being in fair condition, while the unpaved roads are generally in poor condition.

2.10 Based on a combination of standards obtained from the RMMS, safety, and routine maintenance works on 330 km of main roads have been tendered and awarded to private firms. The first routine maintenance contract was awarded in December 2003, works started in January 2004, and it will be completed by December 2006. Subsequent contracts were awarded during 2004. GOG and the Bank finance the annual average contractual cost for routine maintenance and traffic safety implementation respectively. In addition, to better support road performance and optimize routine maintenance expenditures, the Mahaica Rosignol Road Rehabilitation Project (LO-1094/SF), finances a Weigh Control Program and the establishment of six permanent weigh stations.

2.11 A 2003 road safety study concluded that Guyana has 2,872 accidents per year, including 170 fatalities per year, while the motor vehicle registration is one vehicle every fifteen persons. The total number of fatalities per number of accidents, is approximately 0.059, almost 15 times greater than the index corresponding to developed economies.

C. Transport Sector Institutional Framework

2.12 Government responsibilities in the transportation sector are spread among various agencies, with the MPW&C taking on the main role. The MPW&C is basically responsible for transport policy and the provision and maintenance of almost all major transport infrastructure. The Ministries of Agriculture and Local

Government assume the responsibility for providing and maintaining some local infrastructure while the Ministry of Home Affairs assumes some regulatory functions regarding safety and security of transport services.

2.13 The MPW&C's capacity to perform the function of executing agency has been affected over the years by the difficulty to retain its core technical and professional staff due to declining real wages over time. Therefore, as part of the design of LO-1094/SF and Bridges Rehabilitation Program (LO-999/SF), and with the objective of consolidating the administration of the road sector and formulating an Institutional Improvement Plan, an Institutional and Organizational Capacity Assessment was undertaken.

2.14 This Plan consisted of the following elements; i) strengthening national transport planning and policy formulation; and ii) institutional reform to improve the capacity of the MPW&C to plan, design and supervise construction, rehabilitation and maintenance of roads and bridges. The later recommendation resulted in the creation in 2002 of the Work Services Group (WSG) that assumed responsibilities for the main roads and bridges, and main executive responsibilities for the road sector. This unit has evolved from being a PEU for IDB projects to become the unit that is responsible for all road works being undertaken by the MPW&C. This unit is responsible for the planning and management of road investments and maintenance activities. The WSG has also provided engineering advice to the RDCs, the Airport Authority and the Central Tender Board (CTB).

2.15 The Bank is assessing the capacity of the local construction and consulting industries. In the case of local supervision services appears to be a lack of sufficiently qualified personnel. Also, the supply of construction materials is frequently controlled by a small number of suppliers. All of these factors continue to affect the quality, cost and timeliness of project outputs. The study is carried out with a view to identify key activities to support strengthening of the sector and eventually finding new and innovative approaches to deal with these constraints.

D. The country's Sector Strategy

2.16 The country's strategy in the transport sector aims at reducing transportation costs, improve market access and overall competitiveness, and increase coverage of main roads, bridges and other infrastructure by management contracts. The Program, through the replacement and rehabilitation of critical bridges and culverts along the main roads will contribute to improve permanent accessibility, driving conditions and road safety along some of the main roads in the country, as well as to the development of a more comprehensive maintenance management system for the road sector by implementing both pavement and bridges management systems.

E. Bank Strategy

2.17 The Bank's strategy in Guyana, expressed in the Country Paper (GN-2228), seeks

to achieve medium-term poverty reduction through activities that will: (i) lead to sustainable economic growth; (ii) improve governance and public sector efficiency; and (iii) strengthen social programs. The proposed program will support the improvement and maintenance of critical transport infrastructure in one of the most important economic regions of Guyana, thus contributing to a more attractive environment for private sector investments as a means to support economic and social development for the country.

F. Bank Experience in the Sector

2.18 The Bank's involvement in the road sub-sector is long-standing. In coordination with the WB and the Caribbean Development Bank (CDB), most of the national network of primary roads either have been or are being rehabilitated. In addition, recent projects in the sector have improved maintenance mechanisms with the introduction of a RMMS that covers most of the primary road network.

2.19 Current Bank operations have made provision for the future financing of some maintenance under the system. LO-890/SF was completed in 2002, and implementation of LO-999/SF, with the creation of the WSG in 2002, reached 67% disbursement by September 2005[1] (47% by March 2004, and 35% by September 2003).

2.20 LO-999/SF envisaged the rehabilitation of 284 structures along the road segment from Timehri to Rosignol. As part of the preparation of this operation, structures were prioritized into two lots based on an evaluation of their physical condition. Designs and cost estimates were done for a sample (Lot 1, 57 structures). The estimated construction cost for the sample was US$ 7.7 million, while the estimated construction cost for all the structures (Lots 1 and 2) was US$ 14.7 million. In 2001, the MPW&C modified designs and produced new cost estimates for Lot 1 that amounted up to US$ 13.8 million. Of the two prequalified firms, the bid ranked first had a tender price of US$ 22.7 million, only for Lot 1. The reasons provided during the PPAG to review the award of contract, for the difference between the MPW&C's estimate and the tender sum were the higher than previously envisaged contractor's mobilization cost, and that the Executing Agency's estimate omitted significant quantities.

2.21 During a Value Engineering Exercise the construction methods and designs were reviewed, and resulted in the cancellation of the demolition of two large bridges, and the scope of the contract was expanded to include the construction and/or rehabilitation of thirty additional structures from the top priorities of Lot 2 without increasing the contract sum. The final scope of the project included the rehabilitation of 81 structures. This contract was completed during April 2005.

2.22 After Lot 1 was awarded, an exercise of assessment and prioritization of the remaining structures from Timehri to Rosignol was conducted, resulting in the

[1] US$ 10.5 million correspond to the construction of the access roads to the Berbice River Bridge. GOG is expecting to receive proposals to construct such bridge by the end of 2005.

structures to be included in this program.

2.23 The Bank approved LO-1094/SF in November 2001, and works started in May 2003 on various sections of the Mahaica - Rosignol roadway. By September 2005, 79% of the loan has been disbursed (29% by March 2004 and 21% by September 2003). The weigh control component of the program is deferred awaiting completion of ongoing rehabilitation and construction works and results of ongoing feasibility studies to identify final locations of scales. This program also monitors the development and implementation of the RMMS financed by LO-999/SF. The Project supports cost reliability in terms of using performance based lump-sum investment and maintenance contracts for contractors and supervisors, which restrict cost overruns and minimize delays. The environmental strategy, supervision and follow up procedures developed and implemented in this operation had proven to be effective and efficient in prevent and mitigate environmental impacts.

2.24 As part of the institutional assessment of WSG carried out during the preparation of the New Amsterdam - Moleson Creek Road Rehabilitation Program (LO-1554/SF), an action plan was developed to improve WSG's institutional capacity. Funding to implement those actions was included in that operation.

2.25 In the area of air transport, the Air Transport Reform Program (1042/SF-GY, 1999) has helped the sector to attain compliance with international standards within a financially sustainable framework.

G. Other Donors Experience

2.26 Three other donors have been active in the road transportation sector. The WB has financed an infrastructure rehabilitation project that focused mainly on the rehabilitation of the Essequibo Coast Road (ECR) and preventive maintenance of sea defenses. The EU, through the National Indicative Program, financed an Economic Infrastructure Rehabilitation Project that included rehabilitation of sea defenses and the Demerara Harbor Bridge. The EU also financed, through a Regional Program, the establishment of a ferry service between Suriname and Guyana. Additionally, the EU is financing, under the 9th European Development Fund, a comprehensive national transportation plan that will provide a coherent and consistent policy and strategy framework for the development of the transport sector. A key output of the study would be an indicative investment program consistent with the Government's anticipated financial capacity that will meet the demands for transport and support the social and economic development of the country. The CDB has fully disbursed its US$20M for the rehabilitation of the Linden-Soesdyke highway and selected streets in the town of Linden. The CDB is also financing the upgrade of the heavily congested existing southern approach to the city of Georgetown from the Demerara Harbor Bridge, to a four-lane facility, and is financing the rehabilitation of the most heavily trafficked section of the West Demerara Highway from the Demerara Harbor Bridge to Vreed-en-Hoop.

H. Lessons Learned

2.27 Projects from all donors have faced major implementation delays and cost overruns that have resulted from the difficulty to meet conditions prior to loan disbursement, and to conclude contract actions in a reasonable time. An important lesson learned is that a major source of delays and cost overruns was the fragmentation of contracts, as small contracts do not attract well-qualified bidders.

2.28 The execution of World Bank funded Essequibo Road Project and LO-890/SF encountered problems with claims and delays, resulting in increases in final costs and execution periods that occurred because of increased scope of works, price fluctuations being contractually allowed, and major redesign of activities.

2.29 Based on those experiences, three initiatives were introduced: the creation of WSG (¶2.14), the development of the RMMS and the implementation of lump sum contracts. The creation of WSG has produced good results in the execution (¶2.19 and ¶2.23) and cost control areas. WSG successfully concluded designs and bidding documents for routine maintenance, and contracted out 330 Km of roads with performance based fixed cost contracts (¶2.9 to ¶2.10). In terms of financial sustainability of maintenance works, the GOG has committed itself to provide the expenditures required to achieve the minimum level of routine maintenance works determined by the RMMS, whose inventory has grown to cover 500 km.

2.30 With the introduction of lump-sum contracts, it was intended that bidders would be required to conduct a thorough design review of all the plans and specifications before the submittal of their proposals. During final negotiation with the selected contractor, justified design errors are corrected and the selected contractor certifies that there are no errors or omissions in the contract documents and accepts all design conditions, adjusted quantities, specifications and drawings ahead of execution, and not be allowed claims for design errors or extra time. The inclusion of a design review stage in the projects did not eliminate all design errors. The system as used is workable although there will still be design changes and amendments resulting in some quantity variations for which contingency sums should be allowed. Additionally, some allowances had to be made for design changes during Value Engineering procedures and additional costs (¶2.19).

2.31 Ongoing IDB projects (LO-999/SF, LO-1094/SF, and LO-1554/SF) support sustainability of these initiatives (¶2.29, and ¶2.30) in terms of financing institutional strengthening of WSG, actual maintenance works through a 3-year contract with the private sector, and bundling activities into sufficiently large, partially or fully performance-based lump-sum contracts. The implementation plan of the Road Safety component (LO-999/SF) resulted in eight maintenance contracts that have been awarded, which combined road safety works and the RMMS. In addition, five contracts were awarded for the construction of sidewalks and two contracts were awarded for street lighting.

2.32 Initial implementation of the civil works (LO-999/SF) resulted in inadequate traffic control and diversions, although significant improvements were put into effect in the last half of the contract execution.

III. THE PROGRAM

A. Objectives and Description

3.1 The main objective of the program is to secure permanent accessibility along the main road network, specifically along the Timehri to Rosignol corridor. The program will contribute to the improvement of road network and driving conditions along the 130-km stretch of roadways -initiated under LO-890/SF and LO-999/SF (¶2.8, ¶2.19 and ¶2.23)- by replacing and rehabilitating existing critical bridges and culverts along the main roads (¶2.6) to accommodate wider carriageway and structures, and improving road safety conditions. Additionally the program will contribute to the development of a more comprehensive maintenance management system for the road sector by implementing both pavement and bridges management systems.

B. Program Structure

3.2 The proposed program will consist of the following main components: 1) an investment component for culverts and bridges works, 2) maintenance of the RMMS on the national road network (¶2.9, ¶2.10 and ¶2.29), including the design and implementation of a Pavement Management System (PMS) and a Bridge Management System (BMS) to complement the RMMS, and 3), a traffic safety audit and implementation of immediate and short term action plan (¶2.19).

1. Structure Rehabilitation (US$ 8.20 million)

3.3 This component would fund the rehabilitation of forty (40) structures, comprising thirty seven (37) culvert structures and three (3) bridge structures located along the 130 km stretch of roadway (¶2.22).

3.4 The roadways subject of this operation, are located in the coastal belt and traverse almost a continuous ribbon development of houses and businesses on both sides, with short intermittent breaks. These roadways pass through Regions 5 and links Region 4 (to the West) with Region 6 (to the East). Specifically, these structures are located along the Timehri to Georgetown (TG) roadway, Georgetown to Mahaica (GM) roadway, and Mahaica to Rosignol (MR) roadway. The structures rehabilitated under LO-999/SF are located along the same road segments subject of this operation. The total population of the three Regions is nearly half a million, more than half of the total population of Guyana. These roads serve both as inter-urban highway and as local access roads and provide access to residences, businesses and industries all along their length.

3.5 The scope of the program in each road segment is as follows:

Segment	Culverts				Bridges
	Reinforced concrete box	HDPE pipe	Deck refurbishment	Backfill	
Timehri – Georgetown	15	2	1	3	1
Georgetown – Mahaica	10	3	-	1	1
Mahaica – Rosignol	2	-	-	-	1

3.6 Designs and construction methodology of these structures will reflect best practices to minimize any adverse impact on the road users during the construction period (¶2.19). Standard precast culverts will be used in lieu of in-situ culverts. The recently approved operation, LO-1554/SF, already incorporates four different standard designs for culverts, as well as precast construction methodology (¶5.5a).

2. **Continue Implementation of the RMMS (US$ 2.30 million)**

3.7 This component would allow for uninterrupted road maintenance of routine activities under three-year performance based lump sum contracts. Currently 70% of the main road network, approximately 330 kilometers, is under maintenance contracts that were developed using the RMMS (¶2.9, ¶2.10, ¶2.18, ¶2.19 and ¶2.23). The remaining 30% of the network is presently under rehabilitation or in the process of being rehabilitated and consequently will not be included in this component.

3.8 This component will provide the funds required to assess the current situation of the maintenance strategy, including sustainability over time of maintenance activities, its implementation program, and develop improvements that could be applied for the program's future continuation. This study will also develop strategies to extend the physical scope of the ongoing implementation of the RMMS to cover the main paved network

3.9 GOG will benefit by implementing a Pavement Management System (PMS) and a Bridge Management System (BMS), to supplement the capabilities of the existing RMMS. Furthermore, it will be advantageous if the three systems are compatible, thus eliminating the need for new road condition surveys and keeping one comprehensive database. The basic functions of the PMS are to improve the efficiency of decision making process, allow user specific network analysis scope, provide feedback on the consequences of funding and treatment decisions, facilitate the coordination of activities with the agency and ensure consistency of decisions made at different management levels. The BMS is a tool responsible for managing inspections, analysis and maintenance of the components that make up the structures (bridges and culverts). This component will finance the development and implementation of both the PMS and BMS, as well as the corresponding training required to allow for a proper use of these management tools.

3. Traffic Safety Audit and Implementation of Action Plan (US$ 3.30 million)

3.10 The road safety study financed under LO-999/SF (¶2.11) identified road corridors, and proposed several measures (improvement of structures, signage, sidewalks; implementation of a Highway Safety Unit; education of pedestrians and drivers; standardization of signage; and policy update and development), some of which have already been included either in subsequent road segments rehabilitation works or in the routine maintenance contracts under the RMMS (¶2.9, ¶2.10 and ¶2.19). Nevertheless, traffic safety remains an important issue to be addressed. Therefore, this component will finance a road safety audit to be carried out on a road segment to determine the current level of implementation of the study's proposed measures, evaluate the future needs and develop an action plan. Based on the audit and action plan, the component will also finance the implementation of the short term proposed actions.

C. Program Costs

3.11 Project costs, in thousands of dollars, are summarized in the table below:

	Bank	GOG	Total
Civil works and supervisory consultancy	**8,200**	**0**	**8,200**
Bridges Rehabilitation – Lot 2	7,200	0	7,200
Project Management	1,000	0	1,000
Routine Maintenance (RMMS)	**800**	**1,500**	**2,300**
Routine Maintenance evaluations	200	0	200
Maintenance activities	300	1,500	1,800
PMS and BMS	300	0	300
Road Safety	**3,300**	**0**	**3,300**
Road Safety Audit	300	0	300
Implementation of Action Plan	3,000	0	3,000
Evaluations	**350**	**0**	**350**
External Audits	**350**	**0**	**350**
Financial Expenditures	**500**	**200**	**700**
Interests	350	0	350
Commitment Fee	0	200	200
Inspection and Supervision	250	0	250
Contingencies	**1,500**	**0**	**1,500**
TOTAL	**15,000**	**1,700**	**16,700**
Percent	**90%**	**10%**	**100%**

3.12 The annual average routine maintenance contractual cost is fully financed by GOG and included as counterpart of this operation. Considering that the Bank has approved the Country Financial Parameters, the inclusion of this component in the operation does not require a waiver request to OP-707.

IV. PROGRAM EXECUTION

A. The Borrower and Executing Agency

4.1 The borrower is the Government of the Cooperative Republic of Guyana (GOG), and the executing agency is the MPW&C. Project implementation will be the direct responsibility of the WSG.

B. Execution and Disbursement Period

4.2 Within the MPW&C, WSG is responsible for project planning, development, implementation, monitoring and evaluating and maintenance of all donor funded Roads and Bridges Projects as well as those funded from local resources (¶2.14). The unit is adequately staffed, except for non-critical positions that are vacant. In spite of the existing vacancies, the current deployment of responsibilities is adequate and assignments are being executed. During the last years, WSG was able to meet disbursement targets (¶2.19, and ¶2.23). A plan to improve the institutional capacity of WSG was developed under LO-1554/SF and the necessary funds were included in the program; the operation has not yet met all the prior conditions for first disbursement.

4.3 WSG will be responsible for the implementation of the Project, monitor the activities of the supervision firm, and maintain adequate accounting and financial controls and appropriate support documentation filing systems. WSG will also prepare and submit to the Bank the disbursement requests and the corresponding justification of expenses, financial reports, and the annual audited financial statements. WSG will act on behalf of the borrower in such matters as contractor claims and related contract adjustments to preserve the design level of service.

4.4 Considering the scope of works that have to be done, and that the routine maintenance contracts will start in January 2007 and last for three years, the expected disbursement period of the Program is 66 months.

V. IMPACT ON DEVELOPMENT

A. Benefits and Beneficiaries

5.1 The Project will have a positive impact upon the urban and semi-urban population of Guyana. As a result of the Project, the physical, operational and safety conditions of the road segments will be improved, including ongoing maintenance procedures, resulting in the following positive contributions to socio-environmental quality: i) *traveling public*: reduced travel time and economic costs resulting from a reduction in delays; increased safety in private and public vehicles and truck transport due to the implementation of the immediate and short-term road safety action plan; reductions in the per-kilometer costs of vehicle operation and in emissions and local air pollution as traffic will move more smoothly; ii)

pedestrians: increased safety in built-up areas and in proximity to schools, hospitals and markets as a consequence of widening the bridges and their approaches, and paving the shoulders; iii) *traveling public and residents*: reduction in the number and severity of vehicle-to-vehicle and vehicle-to-pedestrian accidents; decrease in stress and noise level; and iv) *agricultural producers and residents*: improved storm water management thanks to improvements of drainage systems, reducing impacts of local and sub-regional flooding and erosion and sedimentation processes.

B. The Environmental and Social Strategy

5.2 **Potential Environmental and Social Impacts**. The *Maintenance of the RMMS* component will have positive impacts, since it will strengthen the institutional capacity of the MPW&C. The *Traffic Safety Audit and Implementation of Action Plan* will also have positive impacts, since it will assess the effectiveness of implemented recommendations, develop an updated action plan and finance the short and medium term recommendations arising from the action plan.

5.3 *Structure Rehabilitation* is the only Project component likely to generate negative impacts. Given the relative simplicity and small magnitude of the proposed works, as well as the fact they will follow the existing structure alignments and will take place within the existing right of way of a corridor that traverses consolidated urban and semi-urban areas, no significant negative direct or indirect impacts are anticipated. The anticipated negative impacts are related to the execution of construction activities and can be characterized as easily identifiable, minor to moderate in magnitude, temporary in duration, spatially restricted, reversible and easily preventable or controllable with widely available, technically simple and cost-effective environmental management specifications and techniques being developed as part of the update of the Environmental Management Plan (EMP) prepared for the LO-999/SF. The key likely impacts are: (i) generation of dust, noise and gases by the operation of construction equipment, asphalt plants and vehicles; (ii) traffic congestion, creation of hazardous driving conditions and temporary obstruction of access to community services and residential and commercial areas during the execution of construction activities; (iii) soil erosion and landscape degradation with possible sedimentation of nearby water bodies, resulting from earth movement; (iv) soil and water contamination and landscape degradation due to wastes and effluents coming from work areas, equipment yards and asphalt plants; and (v) possible intervention of the yards of two commercial structures.

5.4 **Socio-Environmental Management Measures**. The actions and measures being undertaken to ensure the environmental and social sustainability of the Project are grouped in the following two categories. These categories are based upon the methodology developed and implemented in LO-1094/SF (¶2.23), which proved to be effective and efficient in preventing and mitigating environmental impacts.

5.5 ***Impact Prevention and Mitigation***. To avoid and mitigate the anticipated

negative impacts, the following measures and activities are being developed:

a. Incorporation of lessons learned from Lot 1: civil works design and construction technologies and socio-environmental management. The design of the Project as well as its socio-environmental management measures take into account the experience and lessons learned in the execution of LO-999/SF, completed in April 2005. Based on this experience, Lot 2 culverts will be pre-cast reinforced concrete boxes and HDPE pipes. All culverts will be installed in one stage, with existing drainage diverted either to another nearby canal, or through temporary pipe culverts or temporary bridges spanning over canals. As a result, the construction period and associated traffic restrictions are expected to be three to four weeks, and construction will be sequenced to allow traffic over the pre-cast barrel while the in situ concrete headwalls are being constructed. For each site, specific drainage and traffic management plans (traffic controls and diversions), based on guidelines and criteria provided in the updated EMP for the Project, must be proposed by the Contractor for approval prior to the commencement of works.

b. *Update of Approved Environmental Management Plan* (*EMP*). In 1999, the national environmental authority, the Environmental Protection Agency (EPA), issued an Environmental Permit (EP) which covered the rehabilitation and replacement of the 284 bridges and culverts evaluated during the preparation of LO-999/SF, among which were included the structures that are part of Lot 2. The support for the issuance of the EP was an Environmental Study, which, although concentrated on the 70 structures in worst condition included in Lot 1, evaluated the impacts of the Project as a whole and designed an EMP for it. As part of the preparation of the operation, the EMP is being updated. It is anticipated that the EMP, which follows accepted international technical quality standards and Bank guidelines, will be completed in September 2005. The EMP includes preventive and mitigating measures, monitoring, supervision, contingency and training programs, as well as General and Particular Environmental Specifications. The EMP will be part of bidding documents for construction works and engineering supervisory services, as well as of construction and supervisory contracts.

5.6 ***Supervision and Follow Up***. The supervision and enforcement of the application of the EMP will involve the participation of the WSG's Environmental Engineer, the Supervisory Engineer's Environmental Inspector and the EPA. Bidding documents for construction works and supervisory services will specify that the Contractor must have an Environmental Manager and that the Supervisory Firm must have an Environmental Inspector among their technical staff. The main responsibility for the correct execution of the mitigating, monitoring, contingency and training programs contained in the EMP rests with the Environmental Manager. The Environmental Inspector will verify compliance with EMP requirements on construction sites, ensure the correction of non-conforming procedures, violations of EMP specifications and unanticipated impacts. The

Environmental Engineer will also conduct inspections at least on a monthly basis. The key role of WSG's Environmental Engineer will be to ensure that inspections are carried out thoroughly and on a timely basis by the Environmental Inspector, that appropriate reporting has been undertaken and that the EMP is being implemented as intended. The EPA is also required by law to conduct timely site inspections in order to verify compliance with the stipulations specified in the Environmental Permit, the EMP and national environmental regulations.

VI. SPECIAL FEATURES

A. Economic Feasibility

6.1 During the preparation of LO-999/SF, an economic feasibility was conducted taking into account benefits derived from reduced vehicle operating costs (VOC) and time savings of vehicle operators and passengers. Lower accidents rates were not included since they did not easily lend themselves to measurement. The economic feasibility considered costs and benefits of each structure as well as the overall program. The nature of the structures included in Lot 2 are similar to the ones included in Lot 1, therefore the positive economic figures already obtained for Lot 1 are expected to remain based on the following facts.

6.2 The benefits derived from the reduction in VOC were computed from inputs gathered in Guyana, consisting of average VOC, traffic counts along the road, and traffic projections. After Lot 1 studies ended, during several studies conducted for other projects along the same -or similar- stretch of road (Mahaica-Rosignol: 2001, Georgetown-Timehri: 2002, and New Amsterdam-Moleson Creek: 2003), it was found out that traffic growth, and congestion levels followed similar patterns to those projected in the economic evaluation of Lot 1. This base case scenario results in similar figures for the reduction in VOC, that is to say, similar benefits for the project. Lot 2 incorporates more economical standardized and precast elements that were not included in the construction of Lot 1 structures, which will contribute to cost reduction.

6.3 Costs and benefits were computed for each structure included in Lot 1 and the results indicated that the overall net present value (NPV) was US$ 93.5 million. A number of assumptions were explored in the sensitivity analysis. For the base case scenario, 53 out of 69 of the structures demonstrated robust results. In the worse case scenario 26 of the structures were robust, and the NPV remained positive at US$ 51.3 million. Economic feasibility for Lot 1 was positive and robust. The flow of benefits and costs for Lot 2 is expected to follow accordingly, and consequently the Benefit/Cost ratio will be positive and robust as in Lot 1. As part of the activities being carried out, and update to verify these results is being undertaken.

B. Risks

6.4 The risk of procurement delays was associated with the institutional weaknesses

of the CTB. To contribute to reduce this risk, new procurement bills approved in May 2002 and June 2003 represent an improvement and a new National Tender Board with public and private representation has been created to replace the existing CTB, although its provisions have not yet been implemented. In addition, GOG informed that World Bank is financing ongoing consultancies committed to provide additional assistance in the implementation of the law through the development of relevant regulations and procedures including standard bidding documents and a database. Also, with support from IDB and other financial institutions, research and analyses were undertaken, and study reports elaborated in support of preparing a country procurement assessment report, that was completed in November 2004.

6.5 Another risk is the weakness of the MPW&C capacity to monitor contractors (¶2.27 to¶2.31). The Project Team recommends continuing with WSG as the executing unit of the MPW&C for the program. The activities included under the institutional strengthening component in LO-1554/SF -and also identified as prior conditions to first disbursement-, were defined after an assessment of WSG's institutional capacities, and identification of its shortcomings. As part of the activities being carried out, and update of the 2004 institutional assessment is being undertaken, and its recommendations will be included in the project report.

6.6 Finally the MPW&C has some weaknesses to avoid delays and claims, which may result in major cost overruns (¶2.27 to¶2.31). The Project Team recommends continuing with the implementation of performance based lump-sum procedures accepted by the MPW&C and implemented in LO-999/SF (¶2.19), LO-1042/SF, LO-1094/SF (¶2.23), and LO-1554/SF (¶2.24). Lump-sum contracts will be used for the rehabilitation works and for engineering supervision.

VII. READINESS

7.1 A Mission visited Guyana during August 2005 to continue the identification of the project, review initial designs, and define the components of the operation. During that Mission, components previously identified, such as road safety, routine maintenance of the national road network, RMMS, PMS and BMS, were detailed. Designs and environmental documents and permits are expected to be completed and available during the third quarter of 2005.

7.2 The project team will continue with the ongoing assessment of WSG's institutional capacity, and the update of the economic evaluation. The results of these activities will be incorporated in the project report.

GUYANA: Bridges Rehabilitation Program – Lot 2

	OBJECTIVES	**INDICATORS**	**MEANS OF VERIFICATION**	**ASSUMPTIONS**
GOAL	• Contribute to secure permanent accessibility along the main road network.			
PURPOSE	• Improvement of physical infrastructure, through rehabilitation of structures and routine maintenance. • Improve Road Safety conditions.	• 0% closures on the road due to failures in the rehabilitated structures. • More than 70% of the main road network under routine maintenance program during the execution of the program. • Fatality reduction of XX% along the selected corridors, 2 years after implementation of safety action plan.	• Works progress reports produced by supervision and MPW&C. • MPW&C highway safety records. • MPW&C records of performed maintenance.	• Macroeconomic framework remains stable. • Pro investment business climate. • Continuing investment in road maintenance and highway safety. • Adequate enforcement of traffic laws by Police Force.
OUTPUTS	• Structures rehabilitated on time and budget. • Continue Implementation of the RMMS. • Road safety audit and action plan implemented. • Expand the road maintenance management system, through the implementation of a PMS and BMS.	• Construction completed by first half of 2009, within 10% of contract cost. • Uninterrupted maintenance on road segments under the RMMS (as of 2005), for three years. • Safety audit completed by second half of 2007. Action plan implemented	• Inspection by IDB Country Office. • Supervisory consultant report. • WSG and MPW&C semestral reports. • Auditors report.	• Adequate counterpart funds provided. • Adequate budgetary allocations and provisions in accordance with mandate of WSG. • Continuing with adequate budget provision for road maintenance in accordance with RMMS specifications.

GUYANA: Bridges Rehabilitation Program – Lot 2

	OBJECTIVES	**INDICATORS**	**MEANS OF VERIFICATION**	**ASSUMPTIONS**
		by first half of 2009. • PMS and BMS designed and implemented by first half of 2008.		
ACTIVITIES	• Rehabilitation of structures. • Supervisory Engineers. • Implementation of the RMMS. • Road safety audit • Implementation of the road safety action plan. • Design and implementation of PMS and BMS.	SEE BUDGET TABLE	• Inspection by IDB Country Office. • Supervisory consultant report. • WSG and MPW&C semestral reports. • Auditors report.	• Competitive bidding attracts qualified contractors. • Technical assistance to carry out studies is contracted rapidly. • WSG keeps adequate resources. • Counterpart funds provided in a timely manner. • Macro economic situation in country remains stable to permit adequate budgetary provisions for counterpart funds.

Annex 2

Estimated costs to complete the project preparation GY-L1008

Concept	**2005**	**2006**	**Total**
Number of missions	1	1	2
FI3 & Legal person-week-missions	3	4	7
FI3 person-week-office	6	9	15
Legal person-week-office	0	2	2
COF/CGY	2	3	5
TOTAL ADMINISTRATION PERSON-WEEK	12	19	31

Consultants (US$): Administrative funds	10,000	10,000	20,000
Consultants (US$): Administrative funds	15,000	15,000	30,000