

# HIGHWAY CORRIDOR INTEGRATION PROGRAM FOR THE STATE OF BAHIA

(BR-0278)

## EXECUTIVE SUMMARY

**BORROWER:** Government of the State of Bahia

**GUARANTOR:** Federative Republic of Brazil

**EXECUTING AGENCY:** Department of Transportation Infrastructure of the State of Bahia (DERBA)

**AMOUNT AND SOURCE:**

IDB:	US\$146 million (OC)
Local:	US\$ 98 million
Total:	US\$244 million

**FINANCIAL TERMS AND CONDITIONS:**

Amortization period:	20 years
Grace period:	5 1/2 years
Disbursement period:	5 years
Interest rate:	variable
Inspection and supervision:	1%
Credit fee:	0.75%
Currency:	basket of currencies

**OBJECTIVES:** The goal of the program is to contribute to the economic and social development of the state of Bahia. The purpose is to reduce transportation costs on the road system under DERBA's responsibility.

The program includes actions to consolidate the state's network of secondary transportation corridors, rehabilitate roads whose paved surface is in a critical state of deterioration, and improve maintenance. On the institutional front, DERBA will be equipped to manage its network efficiently by strengthening its planning, management, traffic safety and environmental management capacity.

**DESCRIPTION:** This operation is a global multiple-works program with the following main components: (i) paving and improvement of other technical aspects of approximately 600 km of transportation corridors in the DERBA network, connected directly to the primary interstate highway system; (ii) rehabilitation or reconstruction of some 600 km of state highways; (iii) sealing and other improvements on some 270 km of state highways, stabilization of 250 km of unpaved roads, and 300 km of routine maintenance under performance contracts; (iv) paving of 240 km of roads

that provide access to productive areas; (v) procurement of road maintenance equipment, engineering tools, and computer, traffic safety, and weight-control equipment; and (vi) technical assistance for institutional strengthening, including the use of the performance-based training method.

**ROLE OF THE  
PROJECT IN THE  
BANK'S COUNTRY  
AND SECTOR  
STRATEGY:**

The Bank's strategy as set forth in the country paper supports the Government of Brazil's focus on decreasing the causes and consequences of inflation by improving the productive infrastructure to reduce the so-called 'Brazil cost', together with government modernization at the federal, state, and municipal levels, including improvements in managerial and planning capacity. Better environmental management and the reduction of regional inequalities and poverty are also sought. The aforementioned document singles out the transportation and energy sectors in terms of reducing the high costs of productive processes and involving the private sector to cut costs and boost efficiency. The proposed program attaches priority to improving planning and management capacity and reforming public-sector activities. This will be achieved through institutional strengthening of DERBA and expansion of private-sector participation in routine maintenance. The program is thus consistent with the Bank's strategy in Brazil of supporting government modernization and investments in productive infrastructure. In addition, it provides for institutional strengthening activities related to environmental issues and includes measures to repair the environmental damage related to old works and environmental protection for new works.

**ENVIRONMENTAL  
REVIEW AND  
SOCIAL  
CONSIDERATIONS:**

The environmental impact of the works is limited and predictable and can be mitigated. The program will have a positive impact on the management of environmental issues in the state, including the transportation of hazardous materials and measures to repair previous environmental damage and strengthen DERBA's environmental management capacity (paragraphs 3.6 and 5.19 to 5.30). DERBA has conducted public consultations with the affected communities and other interested entities and will continue to do so during preparation of the designs of the new sections to be included in the program. The environmental report was approved by the CESI on October 10, 1998, and sent to the PIC on December 16, 1998.

**BENEFITS:**

The program will help to reduce transportation costs on the state's road system, thereby contributing to the economic and social development of Bahia by

making modern productive activities possible in regions that are currently not connected by paved roads or where connections are indirect or interrupted by unpaved sections. Travel time between the main production and consumption centers of Bahia will be reduced as will the costs of providing road infrastructure, including those associated with environmental damage and the risk of accidents. The program will thus facilitate the supply of agricultural and industrial production to state and national markets, making the products more competitive on international markets and stimulating tourism.

Improvements in highway administration will allow the State to improve service to users despite a reduction in force. The orderly transfer of additional tasks to the private sector will give the latter and the authorities the opportunity to work under a new institutional framework without the disruptions that frequently accompany radical changes.

**RISKS:**

The costs of the rehabilitation projects may increase if there are significant delays in starting the proposed works. Reasons for delays outside DERBA's control could be, for example, protests that interfere with bidding processes or contractors that fail to fulfill their contracts.

**SPECIAL  
CONTRACTUAL  
CONDITIONS:**

Conditions precedent to the first disbursement  
(already fulfilled):

(a) Extension of the life of the program coordinating unit (PCU); (b) staffing of the PCU; and (c) hiring of the firm that will provide support to the PCU (see paragraph 3.2).

Other conditions:

- a. Prior to the call for bids for any works or equipment: (i) when required, have the necessary environmental permits and, when necessary, population resettlement plans (paragraph 3.14); and (ii) interagency agreements where applicable (paragraphs 2.17, 2.18, 3.4, 3.16, 3.17).
- b. Three months after signature of the contract, hire a firm to provide environmental advisory services (paragraph 5.25).
- c. Six months after signature of the contract: (i) commission the studies and plans for transportation of hazardous materials and macro-

zoning of western Bahia; (ii) approve general specifications for road works; (iii) approve DERBA's new bylaws (condition already met); and (iv) appoint qualified staff to head the Environmental Management Office (condition already met) (paragraph 5.26).

- d. Submit the first maintenance plan 12 months after the physical initiation of the works or the procurement of equipment with program resources. The plan is to be presented annually through year 5 following the last disbursement of the program components and until the last disbursement for DERBA's entire road system. In addition, it will contain a chapter on environmental issues and another on progress achieved with the program's institutional activities (paragraphs 3.26 and 5.30).
- e. Twenty-four months after signature of the contract, submit the results of the studies and plans mentioned above (paragraph 5.27).
- f. Adopt procedures similar to those followed in the sample to prepare the other program projects (paragraphs 2.8 and 3.10).
- g. Have works supervision services available prior to the start of the respective works (paragraph 3.11).
- h. Costs of up to US\$3.5 million from the counterpart will be recognized (paragraph 3.25), and up to US\$8 million in payments will be reimbursed from the financing.
- i. Maintain the network adequately, with a suitable level of resources and up-to-date collection of necessary data (paragraphs 2.19, 3.26, and 3.27).
- j. Maintain a data bank to allow the Bank to perform an ex post evaluation if it wishes to do so (paragraph 3.28).
- k. External audit by the Audit Office of the State of Bahia (paragraph 4.11).

**IMPACT ON POVERTY  
AND SOCIAL SECTOR  
CLASSIFICATION:**

Eighty percent of the population of the state of Bahia is classified as low-income (monthly incomes below US\$109 per capita in 1996) and the average per capita income in Bahia is below the country average. The works will be constructed in all the major regions of the state, to correlate with the

population distribution. All the state's inhabitants use the road system directly or indirectly and are beneficiaries of the program. From the geographical standpoint, the program fulfills the requirements of a program targeting the low-income sectors. This operation qualifies as a project focussed on social equity enhancement and poverty reduction, as described in the key objectives of the Bank's activity contained in the Report on the Eighth General Increase in Resources (paragraphs 5.17 and 5.18).

**EXCEPTIONS TO  
BANK POLICY:**

The federal government guarantees repayment of the loan to the Bank (amortization, interest, and fees included), but not the local counterpart or any other obligation undertaken by the executing agency which, by law, it does not have the authority to assume. The financial analysis shows that the borrower has the financial capacity to supply the counterpart financing necessary for the program (paragraphs 4.16 and 5.7 to 5.9).

**PROCUREMENT:**

International competitive bidding (ICB) will be used for contracts valued at more than US\$5 million in the case of works (paragraph 3.21) and US\$350,000 in the case of equipment (paragraph 3.22). International open calls for proposals will be required for consulting services contracts valued at more than US\$200,000 (paragraph 3.23).

## I. FRAME OF REFERENCE

### A. Background

- 1.1 With 13 million inhabitants, Bahia is the fourth largest state in Brazil in terms of population. It is the largest state in northeastern Brazil, with a surface area of 567,000 square kilometers.
- 1.2 The gradual expansion of the road network has supported the growth and diversification of economic activities, including the construction of the Aratu industrial center and the Camaçari petrochemical center in the 1960s and 1970s. As a result, industrial production (petrochemicals, metallurgy, and machine tools) was stimulated and the commercial and services sectors were strengthened. These sectors support an urban population that represents 65% of the state's total population living primarily in medium-sized centers of economic activity distributed among the state's 15 economic regions.
- 1.3 Although 80% of the state's population is still classified as poor under the IDB's criterion, the aforementioned economic transformations have increased annual per capital income by 50% since 1975 (it is up to US\$2,700). Other social indicators have also improved: the enrollment rate for children ages 7 to 14 rose from 38% in 1970 to 80% in 1996 and infant mortality per 1,000 live births dropped from 42 to 15 between 1980 and 1996.
- 1.4 The Government of Bahia's investment program seeks to continue these improvements through: (i) expansion of the infrastructure (transportation, energy, and communications); (ii) modernization of production activities; (iii) development of human resources (training, education, health, housing, sanitation, and environmental protection); (iv) civic awareness and civil defense; (v) technological development; and (vi) modernization of public administration.

### B. The state's transportation system

- 1.5 Roads are concentrated near the coast and converge on the capital, Salvador, a metropolitan region inhabited by 2.2 million people (17% of the state's population) which contains the two main ports and the largest population and industrial centers.

#### 1. Road transportation

- 1.6 In Bahia, the overland transport of most freight and virtually all people is done almost exclusively by road. The system of trunk roads is comprised of 4,000 km of federal highways, under the jurisdiction of the National Highways Department (DNER). There are four federal transportation corridors that cross the state (two

north-south and two east-west), connecting Bahia to the neighboring states. These corridors are supplemented by 7,000 km of secondary and feeder roads under the jurisdiction of the State of Bahia's Department of Transportation Infrastructure (DERBA). DERBA also manages 7,400 km of dirt and gravel roads and another 3,600 km of gravel roads that are sprayed with asphalt (dust control treatment - DCT). This treatment provides better road conditions to users and reduces the loss of surface that occurs on untreated gravel roads. Most of the 108,000 km of connections to towns and rural areas are dirt or gravel roads managed by municipalities. Thus, only 9% of Bahia's road network and 40% of the roads under DERBA's jurisdiction are paved (see Table 1).

- 1.7 The state average of 20 km of paved roads for every 1,000 km<sup>2</sup> of land surface is low compared with other countries and other Brazilian states (in Spain, the index is 650; in Mexico, 45; in São Paulo, 102; in Sergipe, 78; in Santa Catarina, 76). The most critical aspects of this low density of paved roads are the lack of continuity in the secondary corridor network and the dearth of paved connections to productive areas. The program will significantly improve the network's connections in the most populated areas (see map) and will add nine productive areas to the paved network.

Table 1  
Bahia's road system, by jurisdiction and surface (km)

Network/surface	Paved	DCT*	Dirt or gravel	Total
State	7,148	4,035	7,355	18,538
Federal	4,243	-	692	4,935
Municipal	228	-	99,378	99,606
Total	11,619	4,035	107,425	123,079

\* dust control treatment

- 1.8 Roadways are the only means of transportation serving the majority of the state's regions, including the semiarid areas that are interspersed with diversified agricultural and agroindustrial areas and expanding coffee and fruit-growing areas. Road transportation is the most inexpensive means of connecting these regions with relatively low passenger and freight densities (Salvador is the only city in the state with over 500,000 inhabitants).

## 2. Other means of transportation

- 1.9 Bahia has three railway lines, which are operated by private companies. These lines travel north, northwest, and southwest out of Salvador, totaling 1,905 km. In 1997, only 1.5 million tons were transported by railway (equivalent to the transport capacity

of approximately 1% of the trucks in the state). The railways' share is relatively insignificant because of the industrial and geographical diversification of economic activities, the importance of pipelines in the transportation of petrochemical products, and the lack of large volumes of freight (mining, while important economically, is comprised of calcite, copper, chromium, emeralds, manganese, marble, gold, lead, and talc). The products primarily transported by railway are: fuel, cement, minerals (chromium and manganese), fertilizers, and iron and steel products.

- 1.10 There are seaports in Aratu and Salvador, in the metropolitan area, and one in Ilhéus, located 460 km south of Salvador. Aratu handles some 15 million tons annually (primarily liquid bulk commodities); in Salvador, under two million tons of general cargo are handled each year; and the port of Ilhéus moves small quantities of cocoa and close to 500,000 tons of general cargo per year.
- 1.11 The São Francisco River, the only navigable river in the state, has an intermodal connection with the railroad in Juazeiro. However, since it crosses the semiarid region of western Bahia and does not link significant centers of production and consumption, river transportation is of little significance in the state.
- 1.12 There are three main airports in Bahia. The one in Salvador handles annual traffic of some 50,000 domestic flights and 3,500 international flights, totaling 1.5 million passengers. Ilhéus and Paulo Afonso only handle domestic travel, with a total of some 10,000 flights per year.

C. Highway corridor program, phase I

- 1.13 The first Bank-financed highway corridor program in the state of Bahia was approved in September 1993 (loan 772/OC-BR). The program was implemented between 1994 and 1998 and almost all the works were completed on schedule. Its main objective was to integrate transportation corridors by paving key sections of the road network and rehabilitating some of the existing surfaced roads. All the main targets were exceeded: 1,251 km of roads were paved (67% more than the 750 km planned), 624 km were restored (600 km planned), and 4,035 km of gravel roads were treated with DCT (3,315 km planned).
- 1.14 When phase I was completed, 80% of the paved roads under DERBA's responsibility were in good condition. However, there are still some 900 km of roads with worn pavement that needs to be reinforced or rehabilitated over the short or medium term and other paved roads that are prematurely worn. The worst damage was caused by trucks with excessive weight per axle resulting from the unexpected expansion of soya crops in the southwestern part of the state before the three weigh stations acquired under phase I and others proposed under the federal highway rehabilitation program (BR-0195) were operational. The pavement of the federal primary corridor



(BR-242) was destroyed first, followed by that of the secondary corridors under DERBA's jurisdiction. The second phase provides for the procurement of additional scales to prevent excess per-axle weight in the future.

- 1.15 DERBA was able to implement the institutional components of phase I of the highway corridor program. Despite the enormous difficulties encountered (see paragraphs 1.21 to 1.25), the agency was able to complete the first stage of the administrative modernization process. It eliminated obsolete functions and equipment and reduced permanent staff, primarily through early retirement and on the basis of age. The staff was reduced from 5,121 in 1991 to 1,529 in 1997. While some of these positions are being eliminated, a number of key positions in the agency requiring qualified professionals remain unfilled. DERBA, which had already been commissioning studies and engineering designs from the private sector as well as major restoration and paving works, increased private-sector presence in the area of road works conservation. A highway works quality control system (SiCQ) was created, together with computerized pavement maintenance and management systems, for which purpose computers were acquired and set up. DERBA began to implement freight vehicle weight control measures with three portable scales acquired under the program. The evaluation prepared at the program's conclusion confirmed the initial forecast of the positive impact that the road works would have on economic activities and traffic in their service areas.

D. Current problems and phase II of the highway corridor program

- 1.16 Phase II of the highway corridor program will continue the work of phase I by completing the network of secondary corridors and consolidating and expanding the institutional improvements of DERBA, to remedy the deficiencies described below.
- 1.17 The road network does not adequately address the needs arising from economic activities in the interior and the capital. The limited reach of paved roads in the state results in breaks in the paved road network and a lack of suitable access to the productive regions. The dirt-road sections that intercalate with paved sections damage vehicles and their freight or force users to take much longer routes to remain on paved roads. During rainy periods, traffic is interrupted, which makes modern agricultural activities, such as fruit-growing and dairy production, unviable.
- 1.18 The proposed program will create new road corridors by paving approximately 600 km of dirt-road sections (see map), thereby improving connections between the middle and southern parts of the state and the metropolitan region. It will also provide some 210 km of paved access roads to a number of productive areas, will restore 20 sections of paved roads (total of approximately 550 km), and will stabilize 250 km of gravel or dirt roads.

- 1.19 There are isolated environmental and traffic-safety problems on the state's roads. The environmental problems relate primarily to shortcomings, during execution of the original construction works, in the makeup and reestablishment of vegetation in the affected areas (slopes, borrow pits, etc.). In areas with vulnerable soils, this resulted in extensive erosion and sedimentation. The program will help correct these problems by repairing environmental damage on the roads being restored, in addition to ensuring the environmental recovery of areas where improvements and paving are being carried out.
- 1.20 Similarly, the program will help reduce problems where roads go through populated areas and at dangerous intersections that lead to traffic accidents. These environmental and safety considerations are taken into account for all the roads covered under the program and their correction will be included in the respective paving, rehabilitation, and sealing projects. The program will also support other traffic safety activities in the state by providing equipment and technical assistance.
- 1.21 From the institutional standpoint, DERBA became more efficient and effective in the course of phase I of the program. It grew, having absorbed the functions of other agencies that were eliminated, and confirmed its traditional mission in the road sector. It obtained the resources to maintain and expand its road network and developed a project quality control system. Staff motivation improved, with the program having been considered a challenge in terms of contributing to the state's development and an opportunity to demonstrate the technical and administrative competence of the agency and its staff.
- 1.22 Nevertheless, the loss of two thirds of its staff left the agency with few professionals and a staff profile that is not suited to the changes in the external environment, the functions, and the administration of internal processes. With regard to the external environment, DERBA is establishing more and closer relations with the private sector, other government agencies, highway users, and civil society organizations. The current functions focus on efficiency and effectiveness in relations with clients and oversight of performance. The following paragraphs discuss the backdrop of this trend as well as the implications for the program.
- 1.23 DERBA played a pioneering role in modern road construction and maintenance activities in Brazil in the 1940s and 1950s. Some of its staff left the agency to work in or set up their own road construction companies. These private firms developed technically in the 1960-1980 period thanks to more flexible and responsive administration systems than those of government highway departments.
- 1.24 In the 1980s, both the public and private sectors experienced a crisis. The State lost the resources it had been receiving from

the federal highway fund and drastically cut back its work on project design and road construction and rehabilitation. For almost two decades, DERBA did not replenish its staff, while many professionals left the private companies and few students trained in highway engineering. Low salaries made it difficult to keep staff motivated and some of the agency's highway administration functions were being carried out by another agency – the Consórcio Rodoviário, a public company owned by the State of Bahia with symbolic participation by municipal and private-company shareholders.

- 1.25 The state government has recognized the need to make changes so that DERBA can efficiently and meticulously carry out: (i) the functions it cannot delegate; (ii) certain activities related to conservation and emergency response, which it can still perform more efficiently than third parties; and (iii) hiring and supervision of private-sector services.
- 1.26 To adjust DERBA to the new external environment, the State has approved: (i) a new structure for the agency, eliminating positions that are superfluous and strengthening necessary functions, and creating four highway maintenance and administration centers at the four most important regional road administration offices [Residências de Conservação e Melhoramento (RCMs)]; (ii) a significant increase in salaries of engineers and other professionals, which is considered the first step toward making salaries compatible with market rates; and (iii) the hiring of the professionals needed to implement the new organizational structure. The proposed program will support this new institutional framework through technical assistance to: (i) support the administration in the assignment of staff to the new functions and organization of the new structure; and (ii) performance-based training for professional and administrative staff to carry out their new functions. In addition, equipment will be acquired to strengthen the pavement maintenance and management systems developed under phase I. Information will be available through an on-line network and key professionals will be trained to operate the aforementioned systems and extend per-axle weight control throughout the state.
- 1.27 The State of Bahia has also authorized the reorganization of the traffic police, which would make it possible to increase the number of police officers, which is currently insufficient to cover the state's entire road network. The program will support this initiative through the procurement of: (i) modern breathalyzers and speed measuring devices; and (ii) fixed and portable axle weight control scales for commercial vehicles. The fixed scales play a dual role for the State, helping to preserve pavements and prevent evasion of the excise tax.

E. Private-sector participation

- 1.28 Private companies carry out the highway rehabilitation and construction works and projects and participate in DERBA's hybrid model for application of DCT and routine maintenance. Under this model, DERBA supplies some of the inputs, supervises the services, and contracts out sand transport services and most labor to private companies. This strategy means that DERBA will retain little equipment, and that will be concentrated in the four RCMs designated as centers.
- 1.29 DERBA will therefore continue to gradually transfer routine maintenance activities to the private sector. This process makes it possible for small local firms to be set up and trained and promotes a certain level of competition between the private companies' work teams and DERBA. It also allows DERBA to respond quickly to emergency situations and overcome problems related to the lack of budgetary allocations and delays in the timely hiring of third-party services. This strategy efficiently uses the staff of the highway department and avoids problems such as: (i) possible shortages of funds to hire third parties to perform services; and (ii) the inability to mobilize the private sector quickly in cases of emergency.
- 1.30 The State of Bahia has privatized the operation of ferryboat passenger terminals and services. It has asked the federal government for permission to administer the state's most important federal highway section (the 116-km stretch between Salvador and Feira de Santana) and award it under concession to a private operator. It tried to award a concession to transform the existing two-lane road - the "Linha Verde" - which is about 50 km long and travels northward along the coast from Salvador, into a four-lane divided highway. But this initiative failed when the two companies that submitted bids asked for subsidies greater than what the State considered acceptable. DERBA has analyzed the feasibility of a concession mechanism to increase the capacity of four access roads to the metropolitan region of Salvador and for the implementation of a toll system on them. In the context of the program, DERBA will study the viability of awarding concessions for maintenance services for other roads in its network, pursuant to terms of reference agreed upon with the Bank.

F. Expected benefits from the proposed program

- 1.31 The expansion and improvement of the paved network is a precondition for the growth of many agroindustrial activities such as horticulture, fruit-growing, and the dairy industry, as well as other activities and services that are part of a modern economy. The program will expand the area in which these basic conditions are met and will reduce the travel time between Bahia's main production and consumption centers. It will reduce transportation costs for people and goods in the state, including those associated

with environmental damage and the risk of accidents. It will thus facilitate the access of agricultural and industrial production to state and national markets, make the products more competitive in international markets, and stimulate tourism, which is an important source of jobs in the state.

- 1.32 Improvements in highway administration will allow the State to provide better service with fewer employees, even with the gradual expansion of the road network. The orderly transfer of additional functions to the private sector will give it and the authorities the opportunity to work under a more efficient institutional system, without the disruptions that usually accompany radical changes.

G. Strategy and rationale for IDB participation

- 1.33 The Bank's strategy as set forth in the country paper supports the Government of Brazil's focus on decreasing the causes and consequences of inflation by improving the productive infrastructure to reduce the so-called 'Brazil cost'. It also emphasizes government modernization at the federal, state, and municipal levels, including improvements in administrative and planning capacity. Other goals are to improve environmental management and reduce regional inequalities and poverty. The aforementioned document focuses on the transportation and energy sectors to curtail the high costs of productive processes and on private-sector involvement to reduce costs and increasing efficiency.
- 1.34 The proposed program will improve the transportation sector's productive infrastructure in a state with low income levels, thereby reducing regional inequalities and promoting economic activities. It will also attach priority to improving planning and management capacity and reform of public-sector activities. This will be achieved through institutional strengthening of DERBA and expansion of private-sector participation in routine maintenance. It is thus consistent with the Bank's strategy in Brazil to support modernization of the State and investments in productive infrastructure. In addition, it provides for institutional strengthening activities related to environmental issues and includes measures to repair environmental damage related to old works and environmental protection activities for new works.
- 1.35 A network of paved roads needs to be established to assist in the development of agricultural, industrial, and service (especially tourism) activities that will generate jobs and additional revenue in the state. The program's road improvements contribute to this purpose, by reducing vehicle operating costs between the state's main production areas and between the state and the rest of the country. With regard to the social sectors and the environment, the highway projects call for actions to reduce traffic accidents

(which are the main cause of death among young people and prime age adults) and to mitigate critical environmental situations.

- 1.36 On July 8, 1997, the External Financing Committee of the Ministry of Planning and Budget gave government priority to the proposed program.

H. Experience of the Bank and other financial institutions

- 1.37 The projects financed in part by the Bank 1/ cover a significant proportion of the state's economic and social infrastructure. They have contributed directly and indirectly to increasing per capita income and improving the main social indicators over the last two decades.

- 1.38 The World Bank has financed several projects in Bahia and is executing operations in urban infrastructure (US\$100 million) and the fight against rural poverty (US\$105 million). Most of its previous operations were loans to the federal government with onlending to the States. It made three loans to the highway sector between 1978 and 1989, cofinanced by Banco Nacional de Desenvolvimento Econômico e Social [National Economic and Social Development Bank] (BNDES) and the federal government, with onlending to the DNER. The total of the loans was only US\$30 million, with the World Bank's participation totaling US\$12 million. Some 1,442 km of dirt roads were built, equivalent to 1.3% of such roads in Bahia. The executing agency, Consorcio Rodoviário, was declared defunct by the State of Bahia in 1991, leaving legal matters pending that also affect DERBA, inasmuch as consortium staff had ties to DERBA.

I. Lessons learned

- 1.39 The most important lessons learned from the Bank's experience in the Brazilian highway sector are described below, and whether the experience was in Bahia and/or other projects is indicated in parentheses, together with the paragraph number dealing with the topic in the current operation.

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1/ The Bank has been involved in 13 operations with the State of Bahia (including technical cooperation operations), totaling US\$863 million, such as: expansion of the telecommunications system (1969); electric power transmission and distribution (1963, 1980, and 1985); water supply (1961 and 1983) and sanitation (1995) in the Salvador metropolitan region; comprehensive rural development of the Irecê region (1982); port of Aratu (1970); and phase I of the highway corridor program (1993). Only one operation - rural development - was not completed successfully and was partially cancelled.

- 1.40 The quality of works execution requires careful preparation of engineering designs and projects. It is essential to have quality control on a representative sampling and for highway department project engineers to be trained. Engineering projects need to be prepared that incorporate technical, environmental, and traffic safety components. Bidding documents and contracts should have the same focus. In its projects, the Bank has made a key contribution by helping the executing agencies learn to incorporate such innovative components (Bahia and others, paragraphs 1.15, 2.8, and 2.17 to 2.22).
- 1.41 Highway department structures and functions are undergoing significant changes. The privatization and downsizing stage is only the first and easiest phase of a process that will last over a decade. Private-sector efficiency depends on public-sector efficiency. The current challenge is to train highway departments to be efficient in the planning and financing of their activities, the administration of contracts with private companies, and their relations with the external environment. A strategy is recommended that involves gradual training in these functions for the department (Bahia and others, paragraphs 1.15, 1.21 to 1.26, and 1.32). Many traditional highway department training programs are too expensive and ineffective in terms of preparing staff for their new functions and tasks. The Bank is working with its clients using alternative methods such as performance-based training (Bahia and others, paragraphs 1.26 and 2.17).
- 1.42 The Highway Design and Maintenance Model (HDM) is useful for the planning and evaluation of alternatives only if updated and reliable basic information is available. Contrary to what the name implies, the HDM is not used for designing pavements or administering maintenance, which require other information systems and specific actions (the next version of the model will have a more appropriate name - "a planning tool"). In addition, the HDM must be used by experienced highway engineers, who can program the most appropriate options. Thus, the basic data collection systems need to be strengthened, together with routine and periodic maintenance administration, training of department engineers, and weight control (Bahia and others, paragraphs 1.14, 2.16 to 2.19, 2.21, and 2.23).
- 1.43 When the State is seeking financing for different agencies in the same sector (others), sometimes there are not enough counterpart resources available on a timely basis or interest is lacking to carry out the institutional strengthening activities (others). There may also be delays in the transfer of funds from the State's "single cash account" to the executing agency (others, paragraph 3.2).

## II. THE PROGRAM

### A. Objectives

- 2.1 The goal of the program is to contribute to the economic and social development of the state of Bahia. The purpose is to reduce the total cost of highway transportation on the road system under DERBA's responsibility.
- 2.2 To that end, the program includes actions to: (i) increase the size of the paved network and the connections between the main and secondary transportation corridors, including access to productive areas; (ii) rehabilitate paved sections that are at an advanced stage of deterioration; (iii) expand the scope and improve the execution of routine and periodic maintenance; (iv) acquire equipment for better control of highway operation and maintenance; and (v) support the reorganization and modernization of DERBA, including the implementation of highway administration systems and traffic safety and environmental activities.

### B. Targets

- 2.3 By the time the program ends in 2002, the economic cost of operating vehicles, in constant values calculated with the HDM-Q model and data on traffic makeup and base prices as of December 1997, will have dropped to the values indicated in Table II-1 for gravel or dirt roads that will be paved. The costs for other categories and other quantitative targets are shown in the project's logical framework (Annex II-1). By December 2002, some 2,880 km of roads will have been improved, by paving, rehabilitation, stabilization activities, or periodic and routine maintenance financed directly by the program. Through the highway administration systems and increased effectiveness of maintenance work, the level of service of the entire network will have increased and the proportion of roads in bad condition will have been cut to less than 5% of the total.

### C. Formulation of the proposed program

#### 1. Type of operation and investment categories

- 2.4 The main investment categories of this global multiple-works program are: civil works and highway maintenance; equipment procurement; and consulting services for training and institutional strengthening, execution of studies and projects, and works supervision.



Table II-1  
Average operating costs in 1997 U.S. dollars per vehicle/km  
on roads to be paved

Vehicle	June 1998	December 2002
Automobile	0.32	0.21
Bus	0.75	0.57
Truck	0.85	0.47

## 2. Project selection criteria

- 2.5 DERBA used the following methodology for the paving component: (i) delimitation of key economic areas, in terms of their potential for generating investments and jobs; (ii) analysis of the reduction in travel distance to be achieved through the new paving; and (iii) economic analysis of the alternatives identified.
- 2.6 Similarly, a field assessment was carried out to determine the condition of existing pavements; those segments showing signs of more advanced deterioration were selected and their rehabilitation costs estimated. The HDM-III model was used to establish the priority of the sections to be rehabilitated.
- 2.7 For the maintenance component, paved sections in the early stages of deterioration were identified that required periodic maintenance and other improvements such as shoulder repair, drainage system works, and environmental protection and traffic safety measures.

## 3. Representative sample

- 2.8 The representative sample analyzed covers all the investment subcategories of the road works component. The amount of the projects included in the sample is equivalent to 39% of the total value of the program works (paragraph 5.11). All the technical, economic, and environmental documentation is ready for these projects as are the respective bidding documents. Execution can therefore begin in the first year of the program. During preparation of the sample, DERBA improved the project technical standards and included traffic safety and environmental considerations pursuant to Bank requirements. This also made it possible to disseminate the use of these concepts among the consulting firms that provide services to DERBA. The integrated project preparation and evaluation procedure by DERBA and the Bank will be followed in preparing the rest of the program studies and projects.

D. Description of the program components

1. Engineering and administration (US\$16.5 million)

a. Advisory services for program management (US\$1.65 million)

- 2.9 The program coordinating unit (PCU) will have a structure similar to that adopted by DERBA for execution of the first Bank-financed highway corridor program and will be advised and supported by a consulting firm. This support is particularly important inasmuch as the agency's restructuring will involve a redistribution of duties and responsibilities that could initially hinder smooth administrative management of the program. A portion of the resources allocated to the consulting firm will be used to train DERBA staff and thus ensure a technology transfer that, in the future, will enable the agency to manage similar programs without external support.

b. Studies and projects (US\$2.4 million)

- 2.10 In addition to the representative sample of about 500 km of projects, this subcomponent will finance studies for approximately: (i) 420 km of improvement and paving; (ii) 340 km of rehabilitation; (iii) 210 km of periodic maintenance and minor improvements; (iv) 300 km of maintenance under contract; (v) 240 km of access road paving; and (vi) 250 km of unpaved road stabilization.

c. Works supervision (US\$12.51 million)

- 2.11 The paving and rehabilitation works will require supervision to be contracted on a permanent basis, the cost of which is estimated at approximately 7% of the total amount of the works. A mixed format, with DERBA staff being advised by hired consultants, will be used for supervision of the contract-based maintenance works and the pilot projects involving stabilization of unpaved roads.

2. Road works (US\$181.93 million)

a. Improvement works and paving (US\$87.8 million)

- 2.12 The improvement works and paving involve 12 sections totaling some 600 km. Eight of these sections currently have dust control treatment, which deteriorates rapidly and needs to be applied annually. The four remaining sections are gravel roads. The improvement projects call for expansions or minor changes in the current levels of existing embankments, complementation of drainage works and special masonry structures, construction of base and subbase, asphalt surfacing, and shoulders. Where appropriate, the projects will also include: (i) installation of safety devices for the protection of pedestrians and nonmotorized traffic, where the roads cross populated areas; and (ii) works to repair existing

environmental damage and measures to mitigate the environmental impact of the new works.

b. Road rehabilitation works (US\$67.7 million)

- 2.13 Pavement rehabilitation and/or reconstruction will be performed on approximately 12 sections totaling about 600 km. The existing pavement on these sections is in average or poor condition and its useful life is nearing expiration. The following are included: repair and/or complementation of surface and underground drainage systems, masonry works, highway safety devices, and, where appropriate, the recovery of environmental damage and mitigation of the impact of new works.

c. Road maintenance (US\$7.52 million)

- 2.14 This subcomponent primarily covers periodic maintenance works (application of sealant, asphalt slurry seal, or a thin bituminous layer), in addition to other services, when necessary, such as patching or correction of environmental problems, traffic safety or drainage, over approximately 270 km of asphalt roads, to preserve the roads and/or make them functional again. Also included is the routine maintenance of some 300 km of main and/or secondary roads that are in the DERBA network, to be carried out by private companies hired for a period of four years. Experimental works will be carried out to stabilize the surface of approximately 250 km of unpaved roads, through applications of DCT or other methods recommended by the study that is part of the program.

d. Improvement of access to productive areas (US\$18.91 million)

- 2.15 The access roads to some 10 important productive areas will be paved, totaling 210 km, to ensure year-round usability and facilitate the transportation of production. In view of the relatively low traffic flows, the works proposed will generally involve low-cost solutions. Designs will be considered that involve one-lane roads that widen every 500 meters so that cars can pass each other as needed.

3. Institutional strengthening (US\$8.96 million)

- 2.16 As a consequence of the structural changes DERBA is facing, the development of professional and technical staff will require a new profile which places greater emphasis on managerial training and the capacity to oversee contracts, as well as knowledge of modern and efficient highway administration methods. Twenty-four months after the signing of the loan contract, DERBA is to submit a progress report on the institutional strengthening activities described below:

a. Support for the reorganization of DERBA and staff training  
(US\$790,000)

- 2.17 DERBA has requested technical assistance for the institutional restructuring process. Such assistance will focus on: (i) defining the new structure in detail, including a description of positions and responsibilities; (ii) preparing organizational and functional manuals that will set performance standards; (iii) establishing systems to promote the flow of information and evaluation of results; and (iv) training staff in all their new functions through a performance-based training program to be carried out at the workplace, under the guidance of consultants and/or through agreements with universities or other entities.

b. Expansion and restructuring of the new professionals program (US\$650,000)

- 2.18 The process that led to a decrease in the number of engineers with highway experience at DERBA and at private companies that provide services to the department was described in paragraphs 1.15 and 1.22 to 1.26. DERBA has a program under which university students and young professionals are hired on a temporary basis. It plans to reactivate this program to revitalize and institutionalize the training of young professionals in an organized and efficient way. Candidates with the greatest potential and highest qualifications will be selected and mechanisms will be set up and financing ensured to cover the essential technical positions within DERBA's new structure. These resources may also be used for training activities by having staff attend regular courses at technical institutes or universities or by hiring experts to supplement specific training activities (paragraph 2.17).

c. Highway administration systems (US\$1.78 million)

- 2.19 During execution of the first highway corridor program in Bahia, the following computerized models were designed and set up: basic information system (SIB), maintenance administration system (SAM), and pavement management system (SGP). These systems are essential technical tools for planning and prioritizing investments to ensure proper maintenance of the road network, given certain traffic characteristics and the availability of resources. The sustainability of these systems and the effectiveness of their application depends on continuity, timeliness, and consistency of the information. To obtain this vital information, Bank resources will be used under this subcomponent to hire a specialized consulting firm which, during the first year of the program, will provide advisory services and assist DERBA staff in updating the basic data and highway inventories, adjust the models, fine-tune the data collection and processing procedures, and train staff in the use and maintenance of the models. Subsequently, the consultants will conduct periodic evaluations to ensure that DERBA staff is using the models properly, and will report to the Bank on

the progress achieved (paragraph 3.26). Local counterpart resources will cover the cost of gathering information, data processing, and systems implementation statewide throughout the program period.

d. Studies on maintenance policy options (US\$90,000)

- 2.20 Consulting services will be contracted to assist DERBA with the analysis of maintenance financing policies and with the preparation of documents to issue calls for bids and contract out these activities, under the modality deemed appropriate for each type of service. In particular, the advisability of quickly introducing performance contracts for routine maintenance will be studied. Consulting services will also involve monitoring and, subsequently, evaluation of systems performance and efficiency.

e. Weight control (US\$1.9 million)

- 2.21 Private firms will be hired to install and operate weight control equipment to be acquired under the program and to complete coverage of the entire network under DERBA's responsibility.

f. Environmental recovery, protection, and studies  
(US\$3.75 million)

- 2.22 This subcomponent consists of mitigation of the environmental impact of the program and activities recommended in the Bank-approved environmental report, which include: environmental education; ecological macrozoning of western Bahia; institutional strengthening of DERBA's environmental area; response capacity for accidents involving hazardous materials; consultations with communities; and environmental impact studies on DERBA highways that are not part of the current program. The Environmental Resource Center of the State of Bahia is expected to participate in these activities.

g. Equipment procurement (US\$6.19 million)

- 2.23 The following equipment will be procured: (i) highway maintenance equipment to complete the basic fleet required to attend to emergencies and maintenance work for which the awarding of contracts is not viable; (ii) engineering, pavement assessment, and computer equipment to improve monitoring, administration, and quality control of projects and highway maintenance; and (iii) weighing equipment (fixed and mobile scales, with their respective support facilities), communications systems, radars, breathalyzers, and vehicles to improve traffic control and safety.

4. Traffic safety

- 2.24 The actions include road engineering design improvements to reduce accidents (paragraphs 2.8 and 5.26), training (paragraph 2.17), and

procurement of radars and breathalyzers (paragraph 2.23), the costs of which are budgeted under the paragraphs indicated.

5. Financial costs (US\$30.36 million)

- 2.25 This heading includes interest, credit fees, and inspection and supervision fees applicable to the prospective Bank loan during program execution.

6. Total cost of the program and financing

- 2.26 The total cost of the proposed program is estimated at US\$244 million, of which the Bank will finance up to US\$146 million (60%) with ordinary capital funds, while the State of Bahia will provide the remaining 40% (US\$98 million).
- 2.27 The Bank loan will be granted on the following terms and conditions: (i) amortization period: 20 years; (ii) execution period: 4.5 years; (iii) disbursement period: 5 years; (iv) interest rate: variable, on amounts disbursed; (v) credit fee: 0.75% p.a. on undisbursed balances; (vi) Bank inspection and supervision: 1% of the loan amount; and (vii) currency: basket of currencies.
- 2.28 Table II-2 presents the various investment categories and the distribution of the contributions from the Bank and the State of Bahia.

**TABLE II-2**  
Estimated costs of the program <sup>1/</sup>  
(US\$000)

COMPONENTS	Cost	Participation	
	Total	IDB	Local
<b>1. ENGINEERING AND ADMINISTRATION</b>	<b>16,560</b>	<b>8,970</b>	<b>7,590</b>
1.1 Support for PCU	1,650		1,650
1.2 Studies and projects	2,400		2,400
1.3 Works supervision	12,510	8,970	3,540
<b>2. ROAD WORKS</b>	<b>181,930</b>	<b>125,630</b>	<b>56,300</b>
2.1 Paving and improvements	87,800	63,000	24,800
2.2 Rehabilitation (600 km)	67,700	47,300	20,400
2.3 Maintenance (820 km)	7,520	1,770	5,750
2.4 Access to productive areas (240 km)	18,910	13,560	5,350
<b>3. INSTITUTIONAL STRENGTHENING</b>	<b>8,960</b>	<b>4,890</b>	<b>4,070</b>
3.1 Support for the reorganization of DERBA and training	790	500	290
3.2 New professional staff and training	650	500	150
3.3 Application of SIB, SAM and SGP	1,780	600	1,180
3.4 Studies on maintenance options	90	90	0
3.5 Weight control	1,900	1,200	700
3.6 Environmental programs	3,750	2,000	1,750
<b>4. EQUIPMENT PROCUREMENT</b>	<b>6,190</b>	<b>5,050</b>	<b>1,140</b>
4.1 Engineering and traffic and weight control equipment	2,690	2,250	440
4.2 Road maintenance equipment	3,500	2,800	700
<b>SUBTOTAL</b>	<b>213,640</b>	<b>144,540</b>	<b>69,100</b>
<b>5. FINANCE CHARGES</b>	<b>30,360</b>	<b>1,460</b>	<b>28,900</b>
5.1 Interest	26,200	0	26,200
5.2 Credit fee	2,700	0	2,700
5.3 Bank's inspection and supervision	1,460	1,460	0
<b>TOTAL</b>	<b>244,000</b>	<b>146,000</b>	<b>98,000</b>

<sup>1/</sup> At the request of the executing agency and with the Bank's nonobjection, some flexibility may be exercised in the allocation of funds within and between large categories in this table. This will make it possible to address — without having to change the contract — both variations between estimated and final costs as well as other pertinent factors that may cause changes in the makeup of the expenditure categories.

### III. PROGRAM IMPLEMENTATION

#### A. Executing agency

- 3.1 The executing agency for the program will be the Department of Transportation Infrastructure of the State of Bahia (DERBA), which is an agency attached to the state's Infrastructure Ministry.
- 3.2 For the monitoring and administration of all the activities involved in the proposed program, an organizational structure will be used that is similar to the one employed in the first highway corridor program, which produced satisfactory results. Accordingly, DERBA will retain the program coordinating unit (PCU), which will report to the department's general directorate. The PCU will carry out its activities in coordination with DERBA's organization structure and will be advised and supported by a specialized consulting firm. Extending the life of the PCU to keep it operating throughout the program execution period, confirming its staff members and selecting the consulting firm are contractual conditions that have already been satisfied.
- 3.3 All program works will be executed by private construction firms. The supervision of these works, together with the execution of the studies and provision of technical assistance services, will be performed by specialized consulting firms or independent consultants, as appropriate, to be contracted by DERBA in accordance with procedures agreed upon with the Bank. Administration of these contracts and inspection of the services will be DERBA's responsibility. The agency's capacity and experience, with the support referred to in paragraph 3.2, are considered sufficient for it to perform this function.
- 3.4 In principle, DERBA is expected to conclude agreements with the following entities: public utility companies (paragraph 5.3); the State Ministry of Finance (paragraph 3.17); the State Environmental Resource Center (paragraph 2.22); for traffic safety and weight control matters, the military police and the traffic department (DETRAN) (paragraph 3.16).

#### B. Status of preparation of the program

- 3.5 The technical, economic, and environmental feasibility studies and the designs for 12 projects, covering approximately 500 km of roads, have been evaluated and found satisfactory by the Bank. This amount is sufficient to form the groups of projects for which contracts would be awarded in the first year. Studies and designs for an additional 800 km have already been commissioned and will be ready in the first quarter of 2000, so an adequate flow of projects to be tendered is assured for year two of the program.



- 3.6 Because of the characteristics of the works, an environmental impact assessment is not required. However, DERBA has prepared environmental management plans for the program's paving and rehabilitation works. It also performed an environmental analysis that contains the procedures that will be used to prepare projects not included in the sample. All the documents were made available to the public on May 8, 1998, in compliance with the Bank's public information policy. The environmental report was approved by the Committee on Environment and Social Impact at its October 10, 1998, meeting and sent to the Public Information Center on December 16, 1998. Chapter 7 of that report describes the environmental mitigation and control measures in detail.
- 3.7 The institutional strengthening and equipment procurement components have been defined, together with the program's special studies. Most of the respective terms of reference have been agreed upon with the Bank, and drafts of the agreements that DERBA would sign with other agencies to execute one or more of these components, and/or transfer equipment for traffic safety, control of hazardous loads, etc., have been submitted. The agreements are to be submitted to the Bank for its nonobjection.
- 3.8 The Bank has indicated its nonobjection for: (i) publication of the General Procurement Notice for the program and the specific notice that would be published for letting contracts for five sections that are to be rehabilitated, totaling 144 km; and (ii) the model bidding documents that would be used in the international competitive bidding for the works involved in the proposed operation.

C. Execution of the program components

1. Advisory services for the PCU

- 3.9 To advise the PCU in the administration and technical, environmental and financial control of the program, a specialized consulting firm would be hired sufficiently in advance so that it can be in place before the disbursements for the other program components are started (see paragraph 3.2).

2. Studies and projects

- 3.10 This component comprises the preparation of studies for the improvement, rehabilitation, and maintenance of approximately 1,760 km of highways, including the representative sample and others already commissioned by DERBA and currently under way (see paragraphs 2.8, 2.10, and 3.5). Each of these studies is to be contracted for as a package, so that all the technical, economic, environmental, and road safety aspects can be handled in a coordinated fashion under the responsibility of a single firm or consortium. The review and approval process for these studies will be the same as that followed for the sample evaluated by the Bank.

### 3. Works supervision

- 3.11 The consulting firms that will supervise the highway improvement and rehabilitation works will have to be contracted sufficiently in advance for them to be able to start providing services before the commencement of the works they will be supervising. The periodic maintenance works (270 km), unpaved road stabilization (250 km), and routine maintenance by contract (300 km) may be supervised by technical personnel from DERBA's regional road administration offices (RCMs) or, alternatively, by consulting firms.

### 4. Civil works

- 3.12 All the works included in the program will be contracted out to private construction firms; tenders will be grouped by geographic location so as to achieve economies of scale, and combined into lots that will make them attractive for international competition. In programming the tender processes, priority will be given to rehabilitation and asphalt sealing, in order to prevent deterioration of the roads concerned.
- 3.13 Before giving the order to start work on any of the sections that run through built-up areas, DERBA will submit evidence to the Bank that the utility companies whose systems and installations might interfere with such work possess the resources and action plans to carry out the necessary relocations without disruption of their normal services. To this end, DERBA will conclude the pertinent agreements with these companies in good time and will submit the respective traffic control plans to the Bank.
- 3.14 In all instances identified to date, the proposed works will be located within DERBA's right-of-way and no low-income families will be affected. However, in all works where the right-of-way will have to be widened onto private lands or property, DERBA will be required to submit evidence that it has reached agreements with the owners regarding the payment or compensation that the owners will receive for the property affected, before the Bank will authorize the respective call for bids. If resettlement should become necessary, DERBA will submit the plans for compensation and resettlement of the low-income population affected, prepared in accordance with the Bank's policy, before the respective call for bids is authorized.

### 5. Institutional strengthening activities

- 3.15 The majority of the training courses and systems implementation work included under this heading will be contracted out to consulting firms or individual consultants with extensive experience in the specialized areas concerned, in accordance with the training plan agreed upon with the Bank. Some of the activities may be carried out under agreements with public or nongovernmental agencies that have specialized capacity and

infrastructure. In each case, DERBA and the Bank will agree on the content of the programs, the scope and terms of reference for the services to be contracted, as well as the procedures for selecting consultants or other agencies (see paragraphs 3.3 and 3.4).

6. Equipment procurement

- 3.16 The equipment to be procured with program funds will be installed at DERBA's offices and will be used by DERBA personnel, except for traffic safety (paragraph 2.23) and vehicle weighing equipment (paragraphs 2.19, 2.24, and 3.16). The former will be transferred to the Military Police under ad hoc agreements. Agreements are required with the Traffic Department (DETRAN). The operation of the scales will be contracted out to private firms under DERBA supervision.

7. Upgrading of inspection posts

- 3.17 The fixed weigh stations (paragraphs 2.21 and 2.23) will be operated at the State Ministry of Finance's inspection facilities. The necessary construction works or services will be contracted out by DERBA to private-sector firms. DERBA will submit the respective agreement with the State Ministry of Finance to the Bank prior to the start of such works.

D. Execution schedule

- 3.18 The program will be implemented over a period of four and a half years from the effective date of the prospective loan contract, with a five-year disbursement period. Physical commencement of all works is to take place before the end of three and a half years of program execution.

E. Bidding on works, procurement of goods, and contracting of services

- 3.19 Before inviting bids on any of the works included in the program, where applicable, the executing agency will submit evidence to the Bank that it has obtained the approvals and environmental permits required by national and state legislation.
- 3.20 The works planned are not of a complex nature and do not require any special technology, so prequalification will not be necessary. However, the way in which the bid packages will be grouped would require bidders to meet specific levels of installed capacity and financial soundness; accordingly, it is recommended that the two-envelope system be used for bidding.
- 3.21 The outcome of recent calls for bids shows that there is little interest on the part of foreign construction companies in participating in bids for road works in Brazil if the amount involved is below US\$5 million. For this reason, it is proposed that a ceiling of US\$5 million be established for individual works

or packages above which international competitive bidding will be required. Where the total involved is less than that figure, the procedures specified by Brazilian legislation will be followed.

- 3.22 All goods and services financed fully or partially with Bank funds for amounts equal to or exceeding US\$350,000 will be procured by international competitive bidding (ICB). For amounts below that figure, the procedures set forth in local legislation will be followed.
- 3.23 Contracts for consulting services funded under the prospective loan for amounts equal to or exceeding US\$200,000 will be effected by means of an international open call for proposals (ICP). For contracts involving smaller amounts, open calls for proposals will be conducted, notices for which may be limited to the local press. In all cases, the bidding documents will be submitted to the Bank for nonobjection.
- 3.24 The Bank's procedures for the contracting of works, procurement of goods and services, and the contracting of consultants will form part of the prospective loan contract. The ICB and ICP notices will be published in the United Nations' *Development Business* (see schedule of bidding and contracts in Annex III-2).

F. Recognition of expenditures and reimbursements

- 3.25 The borrower has requested recognition of expenditures from the counterpart incurred in the preparation of this operation which, up to the prospective date of approval of the loan, would amount to US\$3.5 million equivalent. These expenditures relate to the contracting of consulting services for the preparation of projects and other tasks. The borrower has also requested reimbursement from the financing of up to US\$8 million. These expenditures involve restoration works performed through authorized advance tendering.

G. Maintenance of works, facilities, and equipment financed with loan proceeds

- 3.26 Within 12 months of startup of the works or procurement of equipment and facilities financed with resources from the loan, DERBA will submit the respective maintenance plan to the Bank, indicating the resources that will be assigned for this purpose, the frequency of maintenance work on the road network under DERBA's responsibility, based on the maintenance administration system (SAM) and the parameters for evaluating its effectiveness. During program execution, the borrower will submit a report to the Bank during the first quarter of each year for the entire DERBA network and through the fifth year following the last disbursement for the program components. This report will contain: (a) the maintenance activities carried out during the previous year on the entire DERBA network; (b) the resources used (paragraph 3.27); (c) a detailed

assessment of the condition of program works, facilities, and equipment and of other state roads; (d) the proposed maintenance plan for the following year, using the SAM; and (e) a chapter on the progress of all institutional activities under the program.

H. Maintenance of the road network under DERBA's responsibility

- 3.27 The executing agency undertakes to properly maintain its road network in accordance with generally accepted technical standards and will assign to routine maintenance activities resources compatible with the needs set forth by the SAM. The executing agency will be required to keep the database for the basic information system (SIB), the SAM, and the pavement management system (SGP) up to date. The resources for this purpose are provided for in the local counterpart.

I. Ex post evaluation

- 3.28 In accordance with Bank policy, the borrower was consulted and declined to perform an evaluation of the program. Nevertheless, the borrower will conduct vehicle counts classified by type and will have data available on pavement conditions as provided in the SGP and SAM for the paved road network, to enable the Bank to conduct an ex post evaluation, if it wishes to do so.

J. Revolving fund

- 3.29 The revolving fund for this operation has been established at 5% of the resources of the financing.

#### IV. THE BORROWER AND THE EXECUTING AGENCY

##### A. Institutional analysis

##### 1. Borrower, guarantor, and executing agency

- 4.1 The borrower will be the State of Bahia, which will also be responsible for the local counterpart funding; the guarantor will be the Federative Republic of Brazil; and the executing agency will be DERBA.

##### a. Nature and functions of the executing agency

- 4.2 DERBA is a decentralized agency attached to the State Ministry of Infrastructure. It was established pursuant to State Law 816 of July 12, 1946, as amended, including the recently approved State Law 7,314 of May 19, 1998, reorganizing its institutional structure and expanding and defining its functions.
- 4.3 DERBA's basic functions in the highway subsector, according to the aforementioned legislation, are: (i) the planning, construction, maintenance, and operation of Bahia's road network; (ii) the periodic review of the State highway plan; and (iii) as a supplementary task, construction and administration of port, airport, and bus terminals.

##### b. Institutional structure

- 4.4 DERBA's current structure is made up of the following levels:

- Decision-making bodies and senior management: Board of Directors and General Directorate;
- Advisory bodies serving the General Directorate: Office of the Director General, Technical Advisory Office, Bids Coordination Office, Legal Affairs Office, and Internal Audit Office;
- Technical units: Offices of Operations, Planning and Regional Centers and road administration offices; and
- Administrative unit: Administration and Finance Division.

##### c. Human resources

- 4.5 Matters related to DERBA staff are governed by State Decree 29,920 of October 4, 1993, and are handled by its Section of Human Resources, which reports to the Administration and Finance Division.
- 4.6 DERBA reduced its active personnel from 5,121 employees on December 31, 1991, to 1,529 on December 31, 1997. The State of Bahia's policy to downsize the public sector and contract private-sector services has made it necessary for the department to

reorganize so as to adjust to changes in the external environment with a smaller, but better trained staff (see paragraphs 1.15 and 1.21 to 1.27).

d. Staff training

- 4.7 Staff training at DERBA is the responsibility of its Staff Development Unit, which reports to the Administration and Finance Division. The outcome of the training plan in phase I of the highway corridor program was satisfactory but insufficient in terms of the current staff and DERBA's new profile. Accordingly, this program includes a performance-based training component under the institutional strengthening subprogram (paragraph 2.17), in addition to other training activities (paragraph 2.18).
- 4.8 Under this program, DERBA will strengthen its Staff Development Unit through: (i) computerization of its activities; (ii) staff training; and (iii) preparation of an annual training plan for DERBA, including financing for the plan in DERBA's annual budget proposal.

e. Financial administration and preparation and control of budget performance

- 4.9 DERBA's financial resources are administered by the Administration and Finance Division, which also handles control of budget performance. Financial management falls under the Accounting and Financial Information System (SICOF), administered by the State Ministry of Finance by means of the "single account" arrangement, whereby each state agency functions as a "depository" and makes its respective payments through accounts controlled by the Ministry of Finance. All these activities have an adequate level of execution and control.
- 4.10 DERBA's budget is prepared by the various divisions and units of the agency, whose proposals are forwarded to the Programming and Budget Office for consolidation and transmittal to the Department of Planning, Science, and Technology of Bahia (SEPLANTEC), after the budget is approved by DERBA's General Directorate and by the Infrastructure Ministry. Final approval is provided by the Legislative Assembly of the State of Bahia.

f. Internal and external control of DERBA

- 4.11 The Government of Bahia has set up an internal and external control system for transactions for which DERBA is responsible. Audit activities at the state level involve the following: (i) internal audit, done by DERBA's Audit Unit, which reports to DERBA's General Directorate; (ii) external audit, which is performed by the Bahia State Ministry of Finance and lastly by the State Audit Office, which reports to the State Legislative Assembly. Each of these

units acts in its respective field and their work is considered satisfactory.

- 4.12 During preparation of this operation, DERBA strengthened its Internal Audit Unit, a condition under the contract for loan 772/OC-BR for phase I of the highway corridor program. Four additional auditors were hired on a permanent basis for the unit; computerization of its activities has begun and will be completed under the program proposed herein; and an independent firm of auditors was hired for one year to train its staff and establish effective internal control methodologies to help improve the scope and quality of its work. It is recommended that the program's financial statements be audited by the State Audit Office during execution.

g. The State's budget performance

- 4.13 Table IV-1 shows the State of Bahia's budget performance of revenues and expenditures for the 1993 to 1997 period. <sup>2/</sup> The State of Bahia obtained average total revenues of US\$3.474 billion per year, with average annual growth of 24.8%. Part of the explanation for this is that the State's tax collections achieved an annual average growth rate of 19.9%. In 1997, there was a drop in collections due to the impact of Federal Law 87/96 to promote exports, which grants tax exemptions for exports of capital goods.
- 4.14 Total expenditures posted similar growth, but at a lower rate: 16.8%. The State had a current-account surplus every year from 1993 to 1997, which shows that the State authorities managed their finances carefully. The small average deficit of 7.2% with respect to total revenues in 1993 to 1996 was due to normal accounting movements arising from commitments contracted at the end of each year which were settled in January of the following years, a practice that was changed starting in 1997.
- 4.15 The overall surplus for 1997 was created by the sale of the State of Bahia's electric company to the private sector for US\$1.7 billion. The State is planning to invest a portion of those funds and, with the rest, to make a first contribution to a fund to pay pensions to State employees. This fund, added to the contributions that State employees will have to make under approved labor reforms, will in the future release the State from having to lay out the full amount.
- 4.16 The State renegotiated its debt with the Caixa Econômica Federal in 1994 and with Banco do Brasil in 1998, and is honoring the commitments it undertook. It is complying with all the parameters established by the federal government for financial administration

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<sup>2/</sup> For the Brazilian currency-U.S. dollar conversion, average annual exchange rates published by the Central Bank of Brazil were used.



by the states. For example, Federal Law 82 of 1995 establishes a maximum of 60% of net current income for payroll expenses. In Bahia, state payroll expenditures in 1997 accounted for only 35%. If staff at autonomous agencies are included, the figure for that year comes to 54%. The recent currency devaluation has not affected the state's credit status significantly, because only 6.9% of its debt is in foreign currency. A devaluation of 40%, for example, would increase its debt by only 2.8%.

**TABLE IV-1**  
**Net Budget Performance 1993-1997**  
(US\$ millions)

CATEGORY	1993	1994	1995	1996	1997
<b>REVENUE</b>					
<b>Total current revenue</b>	<b>2,261.0</b>	<b>2,379.0</b>	<b>2,993.2</b>	<b>3,294.8</b>	<b>3,552.6</b>
Taxes	922.4	1,384.0	1,723.2	1,900.3	1,800.3
Current transfers	761.9	847.3	1,140.4	1,235.1	1,410.0
Other	576.7	147.7	129.6	159.4	342.3
<b>Total capital revenues</b>	<b>38.9</b>	<b>75.8</b>	<b>451.5</b>	<b>490.2</b>	<b>1,831.8</b>
Capital transfers	9.3	8.4	13.5	7.5	15.2
Loan operations	29.1	67.4	437.7	468.9	243.2
Other	0.5	-	0.3	13.8	1,573.4
<b>TOTAL REVENUE</b>	<b>2,299.9</b>	<b>2,454.8</b>	<b>3,444.7</b>	<b>3,785.0</b>	<b>5,384.4</b>
<b>EXPENDITURES</b>					
<b>Current expenditures</b>	<b>1,610.2</b>	<b>1,968.7</b>	<b>2,577.7</b>	<b>2,950.1</b>	<b>3,211.3</b>
Salaries and benefits	734.9	818.1	1,064.5	1,177.7	1,252.9
Current transfers	634.9	827.6	1,222.2	1,327.9	1,459.9
Other	240.4	323.0	291.0	444.5	408.5
<b>Capital expenditures</b>	<b>770.7</b>	<b>774.2</b>	<b>1,176.6</b>	<b>1,014.9</b>	<b>1,131.5</b>
Investments	234.5	163.8	214.7	164.6	266.6
Capital transfers	305.6	382.1	354.5	360.9	518.5
Debt amortization	180.7	172.7	515.0	370.6	247.4
Other	49.9	55.6	92.4	118.8	99.0
<b>TOTAL EXPENDITURES</b>	<b>2,380.9</b>	<b>2,742.9</b>	<b>3,754.3</b>	<b>3,965.0</b>	<b>4,342.8</b>
<b>CURRENT BALANCE</b>	<b>650.8</b>	<b>410.3</b>	<b>415.5</b>	<b>344.7</b>	<b>341.3</b>
<b>TOTAL BALANCE</b>	<b>(81.0)</b>	<b>(288.1)</b>	<b>(309.6)</b>	<b>(180.0)</b>	<b>1,041.6</b>

Source: State of Bahia net budget performance prepared by SEFAZ. Net budget is equal to total budget less transfers to municipalities.

#### h. DERBA's budget execution

4.17 Table IV-2 shows DERBA's revenues and expenditures for the 1993 to 1997 period. The revenues are derived almost entirely from the transfers it receives from the Treasury of the State of Bahia. Table IV-2 shows that the annual revenues received by DERBA

remained at US\$119 million, with the exception of increases in 1994 and 1997, when DERBA received more resources from loan 772/OC-BR to finance phase I of the highway corridor program (totaling US\$126 million in 1997). The expenditure side displayed similar behavior, although the most significant impact came from capital investments to improve highways with resources from the aforementioned loan.

- 4.18 As mentioned before, between 1993 and 1995, deficits were recorded at the end of each year that were settled in January of the following year. This practice was changed by the authorities in 1996 and 1997. DERBA's personnel expenditures rose to a maximum of 53% of current revenues in 1995 and dropped to a minimum of 41% in 1997.

**TABLE IV-2**  
**DERBA's revenues and expenditures for 1993-1997 (US\$ millions)**

<b>CATEGORY</b>	<b>1993</b>	<b>1994</b>	<b>1995</b>	<b>1996</b>	<b>1997</b>
<b>Current revenues</b>	<b>49.4</b>	<b>52.0</b>	<b>48.9</b>	<b>61.1</b>	<b>74.5</b>
Current transfers	48.5	49.1	46.7	58.7	72.2
Other	0.9	2.9	2.2	2.4	2.3
<b>Capital revenues</b>	<b>70.0</b>	<b>99.5</b>	<b>70.2</b>	<b>58.4</b>	<b>194.2</b>
Capital transfers	70.0	99.5	70.2	55.3	188.2
Agreement with federal agencies	-	-	-	3.1	6.0
<b>TOTAL REVENUES</b>	<b>119.4</b>	<b>151.5</b>	<b>119.1</b>	<b>119.5</b>	<b>268.7</b>
<b>Current expenditures</b>	<b>54.6</b>	<b>57.8</b>	<b>53.9</b>	<b>62.8</b>	<b>71.0</b>
Salaries and benefits	21.9	22.6	26.1	28.3	30.2
Other	32.7	35.2	27.8	34.5	40.8
<b>Capital expenditures</b>	<b>81.5</b>	<b>135.4</b>	<b>74.3</b>	<b>56.4</b>	<b>174.9</b>
Investments	81.5	135.4	74.3	56.4	174.9
<b>TOTAL EXPENDITURES</b>	<b>136.1</b>	<b>193.2</b>	<b>128.2</b>	<b>119.2</b>	<b>245.9</b>
<b>TOTAL BALANCE</b>	<b>-16.7</b>	<b>-41.7</b>	<b>-9.1</b>	<b>0.3</b>	<b>22.8</b>

Source: Balance sheet — DERBA budget performance.

i. Net income generated by the transportation sector

- 4.19 Table IV-3 shows net income generated by the State of Bahia's transportation sector in 1994-1997. Over 90% of the average annual total collected (US\$331 million) came from the highway subsector. The transportation sector generated almost twice the average of US\$171 million in expenditures on the highway subsector over the same period (Table IV-2).

**TABLE IV-3**  
**Net revenues generated by the transportation sector during the 1994-1997 period**  
**(US\$ millions)**

Type of tax	1994	1995	1996	1997
Fuel and oil	137.3	158.6	182.1	195.5
Fares and freight	33.6	44.7	52.2	54.5
Tires and air conditioning	11.6	14.0	10.0	14.9
Vehicle sales	49.6	52.9	49.2	52.7
Spare parts	28.1	31.9	28.9	25.8
Vehicle property tax (IPVA)	15.8	23.2	27.9	29.6
<b>TOTAL COLLECTED</b>	<b>276.0</b>	<b>325.3</b>	<b>350.3</b>	<b>373.0</b>

Source: Extracted from the balance sheet for State of Bahia budget performance prepared by SEPAZ. The net revenues are equal to total revenues less transfers to municipalities.

## V. PROGRAM VIABILITY

### A. Technical feasibility

- 5.1 The studies for the projects forming the program sample were performed using evaluation, calculation, and sizing criteria and methodologies compatible with modern practices and internationally accepted engineering standards. Reliable, recent basic data concerning traffic and the characteristics and conditions of existing roads were used in determining the main design parameters for the proposed works.
- 5.2 The unit prices used for determining the costs of the sample projects were obtained from DERBA's system, which is updated periodically in accordance with variations in labor rates and the prices of materials and equipment. The average costs for this type of work fall within a range compatible with the results of similar contracts recently concluded by DERBA.
- 5.3 The proposed works do not involve complicated construction work. Nevertheless, agreements with utility companies may be required to provide for the relocation of their facilities and to set up traffic detours. In addition, safety and environmental control measures will be needed to prevent accidents and excessive nuisances for drivers and the people living in the vicinity.
- 5.4 The program includes training activities in technical areas and systems implementation, and calls for engineering equipment to be procured in the early months of the program so that it can be put to use in the execution of the program.

### B. Institutional feasibility

- 5.5 The program will be executed by DERBA, which has experience with this type of work, including the successful completion of phase I of the highway corridor program which was financed in part by the Bank (loan 772/OC-BR).
- 5.6 To ensure successful coordination and control of the activities to be carried out during implementation of this program, DERBA will extend the life of the program coordinating unit (PCU), which performed satisfactorily in phase I of the highway corridor program. The PCU will also receive support from a specialized consulting firm with experience in highway program administration. On the basis of the foregoing, the institutional arrangements set up for this operation are considered to adequately meet the program's requirements.

C. Financial feasibility

- 5.7 The local counterpart funding to be provided out of the State of Bahia's own resources amounts to US\$98 million. This figure represents less than 1% of the State's projected current net revenues for the program execution period. The proposed operation is the most important transportation project that the State of Bahia intends to execute in the next four years, so it has assigned it the highest priority.
- 5.8 The State of Bahia's total net revenues for the next four years will be sufficient to cover its current and operating expenditures, service its debt, contribute to the financing of the proposed program, and generate a surplus for funding the rest of the investment program (both under execution and planned).
- 5.9 The analysis of the State's finances and those of DERBA presented in chapter IV and the information provided in the preceding paragraph show that the State of Bahia has the financial capacity to meet its obligations. It is therefore expected to provide financial resources on a timely basis to meet program commitments.

D. Economic feasibility

- 5.10 As mentioned in paragraphs 1.2, 1.3, 1.6, and 1.7 above, paved roads in good condition are a prerequisite for the development of certain modern economic activities, including agroindustrial ventures involving higher value added. However, the acceptable economic return of each individual project needs to be verified. A conventional and conservative analysis was used for this task, which considers as benefits only direct benefits to the users of the roads that will be improved under the project.

1. Size of sample

- 5.11 A sample has been evaluated representing US\$84 million - 39% of the total direct costs of US\$214 million for program works. The sample has been broken down into three categories of works: (i) improvements and paving (US\$38 million, accounting for 43% of this category); (ii) rehabilitation (US\$59 million, or 87% of the category); and (iii) maintenance and improvements (US\$2 million, 27% of the category). The sample did not include access roads to productive areas inasmuch as simple works are involved that altogether represent 10% of the program works.
- 5.12 For the components involving smaller expenditures, a rough analysis of cost-effectiveness was conducted to ensure that the agency would obtain the desired outputs at the lowest cost. The performance-based training program, for example, should produce better results than conventional programs at 25% of the cost, by focusing training at the workplace and using more individual consultants and DERBA

experts, who will act as "multipliers" when they pass on their knowledge to their colleagues.

## 2. Costs and benefits considered

- 5.13 The total economic costs of each project in the sample were calculated, including the cost of the environmental and road safety improvements which form an integral part of each engineering project.
- 5.14 The benefits include: (i) lower vehicle operating costs and fewer accidents; and (ii) shorter travel times for car drivers and passengers and bus passengers (taking 30% of their hourly remuneration for trips for work, business and services and 0% for other purposes).
- 5.15 Traffic growth rates were calculated per section and per vehicle category (automobiles, buses, and trucks). To this end, the elasticities of these three modes of transportation were taken into account with respect to the most relevant socioeconomic variables (projected growth of the population, tax on the movement of goods and services). The average traffic growth rate is approximately 3% per year.

## 3. Results of the economic analysis

- 5.16 The Highway Design and Maintenance Model, Version Q (HDM-Q), was used for the economic analysis, which includes the congestion-lessening effects of improvements where applicable. Table V-1 summarizes the economic analysis of the sample by investment category. All the economic internal rates of return (EIRR) are over 12% and all the net present values (NPVs) are positive. All the works in the sample are therefore acceptable from the economic standpoint. In addition, the sensitivity analysis shows the rate of return remaining satisfactory, with a 10% increase in costs and a 10% drop in the benefits of each project, together with other simulated circumstances (not shown in the table), such as a traffic growth rate of zero. The first-year benefits of the paving and other improvements are over 12%, which indicates the advisability of starting these works as soon as possible.

**Table V-1**  
**Findings of the economic and sensitivity analysis**

<b>Section</b>	<b>Length (km)</b>	<b>EIRR (%)</b>	<b>NPV (US\$ millions 12% pa)</b>	<b>EIRR (%) + 10% costs -10% benefits</b>
<b>Paving and improvements</b>				
BA130, Itapetinga-Macarani	44	17.3	1.819	14.3
BA250, Maracás-BR116	45	50.6	10.500	41.8
BA891, Jequié-Gandu	89	18.1	7.859	14.5
<b>Rehabilitation</b>				
BA52, BR116, km 37	37	58.6	10.578	50.2
BA52, km 37-Ipirá	49	26.2	8.708	22.4
BA290, Teixeira F.-M. Neto	56	16.4	3.390	13.5
BA263, F. Alves-Itapetinga	58	17.4	2.847	14.6
BR324, Jacobina-C. Grosso	59	20.5	3.421	17.0
<b>Maintenance</b>				
BA220, C. Dantas-Paripiranga	62	20.6	980	17.5

#### 4. Impact on poverty

- 5.17 The program will benefit practically all residents of the state of Bahia, either directly as passengers on buses and in cars, or indirectly through the impact on the goods they consume or produce for the market. The works will be constructed in all the major regions of the state, to correlate with population distribution. Eighty percent of the state's population is classified as low-income, earning less than US\$109 per capita per month in 1996. The average per capita income in Bahia is below the national average. All the state's inhabitants use the road system directly or indirectly and are beneficiaries of the program. The program therefore meets the characteristics of a poverty-targeted program from the geographical standpoint. This operation qualifies as a project focussed on social equity enhancement and poverty reduction, as described in the key objectives of the Bank's activity contained in the Report on the Eighth General Increase in Resources.
- 5.18 Since the elasticity of transportation expenditures with respect to income tends to be close to one, the benefits are distributed in proportion to personal and family income. In terms of indirect and secondary impact, road projects support labor-intensive economic activities, particularly in the agroindustrial sector (paragraphs 1.31 and 5.10), which are crucial for job creation and for generating benefits for low-income people. Although it is difficult to quantify these benefits accurately, ex post evaluations of IDB highway programs in Brazil have shown that the works promote and contribute to the development of agriculture, industry, services and tourism.

E. Social and environmental feasibility

- 5.19 This program will have a positive impact in the management of environmental issues in the state. The proposed environmental programs call for managing hazardous materials transportation (and dealing with accidents involving such freight), reviewing the design and execution standards for road works, and remedying environmental damage. They represent a significant advance in the State's consideration of environmental dimensions in projects and in implementation, works supervision, and highway operation. The environmental requirements contained in the bidding documents include all the measures recommended in the environmental impact studies, and the payment schedule requires contractors to execute them promptly and properly.
- 5.20 Provision is also made for institutional mechanisms for adequate implementation of the various environmental programs proposed and for adequate environmental management of the program. The social and environmental measures have been duly detailed and budgeted, the funds for their execution have been included in the program budget, and the execution schedule for them is compatible with the works schedule. Terms of reference have been drafted for the complementary studies and projects recommended, and they have been reviewed and approved by the Bank.
- 5.21 The actions to strengthen DERBA's environmental management capacity and review its engineering design standards, together with the specifications for the execution of the works, will make it possible to address environmental issues on an ongoing basis during the various phases of the road works in Bahia.
- 5.22 The paving, rehabilitation, and sealing works that were not included in the program sample could conceivably present other types of environmental problems, especially where fragile and/or protected ecosystems are concerned. The program accordingly provides for environmental evaluation and control procedures to ensure compliance with the Bank's policies.
- 5.23 The program as a whole is considered socially and environmentally advantageous and of significant importance to Bahia.

1. Environmental recommendations

- 5.24 The loan contract will include the following clauses:
- 5.25 Within three months after signature of the loan contract, DERBA will submit evidence that it has hired the consulting firm that will provide environmental advisory services.
- 5.26 Within six months after signature of the loan contract, DERBA will submit evidence to the Bank that: (i) the consulting firm that will be preparing the procedures for handling highway accidents



involving hazardous materials has been hired, pursuant to the terms of reference agreed upon with the Bank; (ii) the consulting firm that will be preparing the agroecological macrozoning of western Bahia has been hired, pursuant to the terms of reference approved by the Bank; (iii) the general specifications for road works in the state of Bahia have been approved, including the environmental protection, occupational safety, and traffic safety measures agreed upon with the Bank; (iv) DERBA's new regulations have entered into force (already met); and (v) a qualified professional has been appointed to head the Environmental Management Office (already met).

- 5.27 Twenty-four months after the signing of the contract, DERBA will submit the studies described in the preceding paragraph to the Bank for its nonobjection.
- 5.28 Plans for compensation and resettlement of the affected population, if necessary, are to be submitted (paragraph 3.14).
- 5.29 DERBA will conduct public consultations with the affected communities and other interested entities during the design of the projects for new road sections to be included in the program.
- 5.30 The periodic reports that DERBA will submit to the Bank during program execution will include a specific chapter on the results of the environmental supervision and monitoring of the program as well as the progress achieved in the training and institutional strengthening activities on environmental management.

F. Risks

- 5.31 There may be cost increases for the rehabilitation budgets if there are significant delays in performing the work. Matters beyond DERBA's control that may result in delays include protests regarding bids on projects and/or the respective works or contractors who breach their contracts. Such risks are considered acceptable.

**LOGICAL FRAMEWORK**  
**State of Bahia Highway Corridor Program**  
**(BR-0278)**

OBJECTIVE	INDICATORS	MEANS OF VERIFICATION	ASSUMPTIONS												
the economic and social of the State of Bahia.															
transportation costs on the DERBA highways.	<div>1. Average vehicle operating costs on highways to be asphalted as part of the program reduced (in US\$ of 12/1997, per vehicle-km):</div> <table><tr><td></td><td><u>12/1997</u></td><td><u>12/2002</u></td></tr><tr><td>Auto:</td><td>0.32</td><td>0.21</td></tr><tr><td>Bus:</td><td>0.75</td><td>0.57</td></tr><tr><td>Truck:</td><td>0.85</td><td>0.47</td></tr></table> <div>2. Vehicle operating costs on roads rehabilitated or maintained under the program in 12/2002 equal to or below those recorded in 12/97, which were, on average: US\$0.22 for cars, US\$0.60 for buses, and US\$0.60 for trucks.</div>		<u>12/1997</u>	<u>12/2002</u>	Auto:	0.32	0.21	Bus:	0.75	0.57	Truck:	0.85	0.47	<div>1. Results of HDM-Q applied in 12/2002, with the same prices and types of vehicles, compared with results at 6/98. SGP/DERBA.</div> <div>2. Results of HDM-Q applied in 12/2002, with the same prices and types of vehicles and compared with results based on 12/98 parameters (date on which basic data used in HDM-Q will be updated). SGP/DERBA.</div>	<div>(Purpose to goal)</div> <div>1. Macroeconomic and transportation market conditions remain satisfactory.</div> <div>2. Maintenance of the rest of the network remains adequate.</div>
	<u>12/1997</u>	<u>12/2002</u>													
Auto:	0.32	0.21													
Bus:	0.75	0.57													
Truck:	0.85	0.47													

**LOGICAL FRAMEWORK**  
**State of Bahia Highway Corridor Program**  
**(BR-0278)**

OBJECTIVE	INDICATORS	MEANS OF VERIFICATION	ASSUMPTIONS
<p><b>TS</b></p> <p>aved, restored, sealed, and in</p> <p>nt and facilities acquired/built, and in operation.</p>	<p>C1. At 12/2002, the following will have been opened to traffic:</p> <p>(i) 600 km of paved and improved roads; (ii) 550 km of restored roads; (iii) 270 km of roads with sealing and other improvements, 250 km of unpaved roads stabilized with DCT, and 300 km of roads maintained under performance contracts; and (iv) 210 km of paved connections to production areas. According to works schedule in annex.</p> <p>C2. a) At 12/1999, the equipment listed in the annex will have been received, with specifications and guarantees conferred, training completed, and equipment in operation, at DERBA's regional road administration offices and the highway patrol unit, as per list in annex.</p> <p>C2.b At 12/2000, the posts indicated in the annex will have been built and outfitted, and will be in operation.</p>	<p>C1. Certification of works by DERBA and opening of sections to traffic.</p> <p>C2. a) Technical report from DERBA's intake committee.</p> <p>C2. b) Idem.</p>	<p>(Component to purpose)</p> <p>C1, C2, C3 The department receives support and counterpart resources available on a timely basis.</p> <p>C1. Macroeconomic and transportation market conditions remain satisfactory.</p>

**LOGICAL FRAMEWORK**  
**State of Bahia Highway Corridor Program**  
**(BR-0278)**

OBJECTIVE	INDICATORS	MEANS OF VERIFICATION	ASSUMPTIONS
Organized and prepared to manage and system efficiently.	<p>C3. a) By 12/99, the quality control system will have reached 25% of projects under preparation; at 12/2000, 50% of the projects; at 12/01, 75% of the projects; at 12/02, 100% of the projects.</p> <p>C3. b) By 12/02, the supervision model for 300 km of the routine maintenance works will have been changed, with a focus solely on results monitoring, with equal or better quality and a reduction in the cost of supervision from 8% of the cost of the works in 1998 to 4% of that amount.</p> <p>C3. c) By 12/99, the new system will be in place and the units will be in operation with the technical staff proposed.</p> <p>C3. d) By 12/2000, staff trained in the following areas: traffic safety; environment; projects; road maintenance; pavement management; contract management; internal control. Schedule and number of people trained consistent with training plan agreed upon with the Bank.</p> <p>C3. e) By 12/2000, the measures to be agreed upon during the respective technical cooperation activities will have been implemented, and staff trained and assigned to the appropriate functions.</p> <p>C3. f) The SIB, SGP, and SAM will be operating at all RCMs by 12/2000.</p> <p>C3. g) Environmental monitoring in place by 6/99.</p> <p>C3. h) Traffic safety measures in place by 12/99.</p>	<p>PCU reports</p> <p>C3. Idem</p>	<p>(Component to purpose)</p> <ol style="list-style-type: none"> <li>Counterpart resources for the works and for routine maintenance all highways in the state are available.</li> <li>Macroeconomic and transportation market conditions remain satisfactory.</li> </ol>

**LOGICAL FRAMEWORK**  
**State of Bahia Highway Corridor Program**  
**(BR-0278)**

OBJECTIVE	INDICATORS	MEANS OF VERIFICATION	ASSUMPTIONS
<p>not included in the sample and reference for works supervision on prepared.</p> <p>documents for works and on services have been</p> <p>bids published, bids analyzed, companies selected.</p> <p>and supervision services contracts</p> <p>ve projects prepared in case projects are not viable.</p> <p>on contracts updated if there are e delays in implementation of d works.</p> <p>ns of reference for the studies, g services, and training prepared.</p> <p>pective bidding documents and published, bids analyzed, ected, and contracts awarded.</p>	<p>See detailed program budget and schedule.</p>	<p>Accounting records of PCU in DERBA.</p>	<p><b>(Activities to components)</b></p> <p>The technical, economic, and environmental feasibility of the projects conforms with criteria and delays are avoided.</p> <p>The counterpart is available on a time basis to ensure that restoration work carried out according to the work schedule and engineering designs remain up to date.</p> <p>There are no frivolous challenges or changes in pertinent legislation causing excessive delays.</p>

**BIDDING SCHEDULE**

Description	Type of entity	Type of bidding	Source of funds	Date of notice	Start date	Total
<b>1. CONSULTING SERVICES</b>						
Program administration	Firms	LCP	LOCAL	II/1999	IIII/1999	4,500
Studies and projects	Firms	LCP	LOCAL	IV/1999	I/2000	2,800
Works supervision	Firms	ICP	IDB/LOC	III/1999	IV/1999	11,400
Reorganization of DERBA	Firms	ICP	IDB	IV/1999	II/2000	2,100
Training in environmental management	Individual	LCP	IDB	IV/1999	I/2000	100
Training in traffic safety	Individual	LCP	IDB/LOC	I/2000	II/2000	200
Training in engineering areas	Individual	LCP	IDB/LOC	I/2000	II/2000	300
Maintenance administration system	Firms	ICP	IDB/LOC	IV/1999	II/2000	500
Experimental sections program	Individual	ICP	IDB/LOC	II/2000	IIII/2000	200
Environmental monitoring	Firms	ICP	IDB/LOC	IV/1999	I/2000	1,200
<b>2. CIVIL WORKS</b>						
Improvement of main roads	Contractors	ICB	IDB/LOC	II/1999	IV/1999	45,000
Road rehabilitation	Contractors	ICB	IDB/LOC	IV/1999	II/2000	35,500
Road maintenance	Contractors	ICB	IDB/LOC	II/1999	IV/1999	25,500
Access road improvement	Contractors	ICB	IDB/LOC	II/1999	IV/1999	50,000
<b>3. PROCUREMENT OF EQUIPMENT</b>						
Pavement evaluation equipment	Supplier	ICB	IDB/LOC	IV/1999	II/2000	100
Traffic safety equipment	Supplier	LCB	LOCAL	IV/1999	II/2000	1,000
Computer equipment	Supplier	ICB	IDB/LOC	IV/1999	I/2000	500
Weight control equipment	Supplier	ICB	IDB/LOC	II/2000	III/2000	1,200
Road maintenance equipment	Supplier	LCB	LOCAL	I/2000	III/2000	3,500

LCP — local call for proposals  
 ICP — international call for proposals  
 ICB — international competitive bidding  
 LCB — local competitive bidding

PROPOSED RESOLUTION

BRAZIL. LOAN\_\_\_/OC-BR TO THE STATE OF BAHIA  
HIGHWAY CORRIDOR INTEGRATION 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 State of Bahia, of Brazil, as Borrower, and with the Federative Republic of Brazil, as Guarantor, for the purpose of granting the former a financing to cooperate in the execution of a Highway Corridor Integration Program. Such financing shall be for the amount of up to US\$146,000,000 or its equivalent in other currencies, except that of Brazil, which are part of the Ordinary Capital resources of the Bank, and will be subject to the "Special Contractual Conditions" and the "Terms and Financial Conditions" of the Executive Summary of the Loan Proposal.