

DOCUMENT OF THE INTER-AMERICAN DEVELOPMENT BANK

**BRAZIL**

**HIGHWAY REHABILITATION PROGRAM  
IN THE STATE OF SÃO PAULO (PHASE II)**

**(BR-L1033)**

**LOAN PROPOSAL**

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## CONTENTS

### PROJECT SUMMARY

I.	FRAME OF REFERENCE .....	1
A.	Background .....	1
B.	Financial background .....	1
C.	Socioeconomic conditions in São Paulo .....	2
D.	Institutional framework for the program.....	2
1.	São Paulo State Transportation Department (SET).....	2
2.	The São Paulo State Highway Department (DER/SP).....	3
3.	State transportation infrastructure.....	4
E.	State strategy in the sector .....	8
F.	Bank experience and lessons learned.....	9
G.	Progress with Phase I components (loan 1351/OC-BR).....	10
H.	Country strategy and value added of Bank participation.....	12
II.	THE PROGRAM.....	14
A.	Objectives .....	14
B.	Description.....	14
1.	Studies, engineering designs, and administration costs.....	14
2.	Direct costs - rehabilitation works – 156.4 km .....	15
3.	Associated costs .....	16
C.	Cost and financing.....	16
III.	PROGRAM EXECUTION .....	18
A.	Borrower, guarantor, and executing agency.....	18
B.	Execution and administration.....	18
C.	Monitoring and evaluation .....	19
D.	Revolving fund .....	20
E.	Audits.....	20
F.	Procurement of works, goods, and services .....	20
G.	Maintenance of program-financed works .....	23
H.	Recognition of expenditures, execution period, and disbursement timetable ..	23
I.	Final evaluation.....	24
IV.	VIABILITY AND RISKS .....	25
A.	Institutional viability .....	25
B.	Socioeconomic viability .....	25
C.	Financial viability.....	27
D.	Environmental impact .....	29

E.	Benefits and beneficiaries .....	31
F.	Risks .....	32

## ANNEXES

Annex I          Logical framework

## APPENDIX

Proposed resolution

Electronic Links and References	
Basic Socioeconomic Data	<a href="http://www.iadb.org/res/index.cfm?fuseaction=externallinks.countrydata">http://www.iadb.org/res/index.cfm?fuseaction=externallinks.countrydata</a>
Status of loan in execution and loans approved	<a href="http://ops/Approvals/PDFs/BRen.pdf">http://ops/Approvals/PDFs/BRen.pdf</a>
Tentative lending program	<a href="http://opsgs1/ABSPRJ/tentativelending.ASP?S=BR&amp;L=EN">http://opsgs1/ABSPRJ/tentativelending.ASP?S=BR&amp;L=EN</a>
Program area map	<a href="http://opsws3.reg.iadb.org/idbdocswebservices/getDocument.aspx?DOCNUM=561079">http://opsws3.reg.iadb.org/idbdocswebservices/getDocument.aspx?DOCNUM=561079</a>
Environmental report	<a href="#">IDBDOCS referencia #600878 y RAAEP</a>
Economic feasibility study	<a href="http://opsws3.reg.iadb.org/idbdocswebservices/getDocument.aspx?DOCNUM=597203">http://opsws3.reg.iadb.org/idbdocswebservices/getDocument.aspx?DOCNUM=597203</a>
Financial analysis	<a href="http://opsws3.reg.iadb.org/idbdocswebservices/getDocument.aspx?DOCNUM=597488">http://opsws3.reg.iadb.org/idbdocswebservices/getDocument.aspx?DOCNUM=597488</a>
Procurement plan	<a href="http://idbdocs.iadb.org/WSDocs/getDocument.aspx?DOCNUM=720995">http://idbdocs.iadb.org/WSDocs/getDocument.aspx?DOCNUM=720995</a>

## ABBREVIATIONS

AADT	annual average daily traffic
CESI	Committee on Environment and Social Impact
DER/SP	São Paulo State Highway Department
DERSA	Desenvolvimento Rodoviário S.A.
ECP	environmental control plan
EIA	environmental impact assessment
HDM-4	Highway Design and Maintenance Standards Model
ICB	international competitive bidding
IRI	International Roughness Index
IRR	internal rate of return
LIB	limited international bidding
LIBOR	London interbank offered rate
NCB	national competitive bidding
NPV	net present value
PCU	program coordinating unit
PDDT	São Paulo State Transportation Development Plan
QBS	quality-based selection
QCBS	quality- and cost-based selection
RFAP	Restructuring and Fiscal Adjustment Program
SEA	strategic environmental assessment
SELIC	Sistema Especial de Liquidação e Custódia [Special System for Settlement and Custody]
SET	São Paulo State Transportation Department
ToR	terms of reference
UBA	basic service unit

## PROJECT SUMMARY

### BRAZIL HIGHWAY REHABILITATION PROGRAM IN THE STATE OF SÃO PAULO (PHASE II) (BR-L1033)

Financial Terms and Conditions <sup>1</sup>				
Borrower: State of São Paulo			Amortization period:	20 years
Guarantor: Federative Republic of Brazil			Grace period:	48 months
Executing agency: São Paulo State Highway Department (DER/SP)			Disbursement period:	48 months
			Deadline for commencement of works:	36 months
<b>Source</b>	<b>Amount (US\$)</b>	<b>%</b>	Interest rate:	LIBOR-based option
IDB (Ordinary Capital)	30 million	50	Inspection and supervision fee:	0%
Local	30 million	50	Credit fee:	0.25%
Total	60 million	100	Currency:	U.S. dollars from the Single Currency Facility
Project at a glance				
<b>Project objective:</b> <p>The program's goal is to contribute to the economic and social development of the state of São Paulo by improving freight and passenger transportation on the state highway system. The specific objective is to lower operating costs and make it safer for people and goods to travel on the roads covered by the program by carrying out rehabilitation works on those sections that suffer from poor or fair traffic and safety conditions.</p>				
<b>Special contractual conditions:</b> <p><u>Conditions precedent to physical commencement of works</u></p> <p>The hiring of works supervision services as previously agreed to with the Bank (paragraph 3.2).</p> <p><u>Conditions precedent to implementation of the program</u></p> <p>The signature and entry into effect, as previously agreed to with the Bank, of the agreement on implementation of the program between the borrower through the São Paulo State Transportation Department (SET) and the executing agency (DER/SP) (paragraph 3.1)</p>				
<b>Exceptions to Bank policies:</b> <p>Yes, to Policy GN-2349-4, by not allowing consortia to bid on works (paragraph 3.15).</p>				
Project consistent with country strategy:    Yes [X]                      No [ ] Project qualifies as:                              SEQ [ ]                      PTI [ ]                      Sector [ ]                      Geographic [ ]                      Headcount [ ] Verified by CESI on: 7 October 2005 Environmental and social review: (paragraphs 4.15 to 4.25), environmental report and strategic environmental assessment Procurement: See paragraphs 3.15, 3.16, and 3.17.				

<sup>1</sup> The interest rate, credit fee, and inspection and supervision fee mentioned in this document are established pursuant to document FN-568-3 Rev. and may be changed by the Board of Executive Directors, taking into account the available background information, as well as the respective Finance Department recommendations. In no case will the credit fee exceed 0.75%, or the inspection and supervision fee exceed 1% of the loan amount.\*

\* With regard to the inspection and supervision fee, in no case will the charge exceed, in a given six-month period, the amount that would result from applying 1% to the loan amount divided by the number of six-month periods included in the original disbursement period.

## **I. FRAME OF REFERENCE**

### **A. Background**

- 1.1 Because economic activity in the state of São Paulo is highly dependent on the road transport system, the State has sought to provide the necessary conditions for boosting competitiveness and productive capacity (paragraph 1.2) by expanding the capacity of its road network. This effort has involved restoring the highways under its jurisdiction through pavement improvements and measures to maximize road safety. Since 2001, the Bank has been supporting this process through its São Paulo highway rehabilitation program (hereinafter “Phase I”), which, at an expected total cost of US\$240 million,<sup>1</sup> is financing the rehabilitation of 700 km of highways in the state road network. Technical inspection visits to Phase I works have confirmed that they are of high technical and environmental quality and that resettlements were carried out properly. This program seeks to lend continuity to the rehabilitation process begun in Phase I and contribute to the state’s sustained growth in the medium and long term.

### **B. Financial background**

- 1.2 Law No. 9496 of 1997 established a framework for consolidating the state’s debts, authorizing the federal government to assume those debts and renegotiate more favorable conditions: interest rates below the SELIC rate,<sup>2</sup> 30-year repayment periods, and a ceiling on the level of revenues committed to debt service. The refinancing contract created the Restructuring and Fiscal Adjustment Programs (RFAP), whose targets are analyzed and updated every year based on a federal evaluation of the performance of the state’s financial indicators. With the Fiscal Responsibility Act (Law No. 101 of 2000), the federal government gained firm control of its public finances, setting standards that have had further positive repercussions on the states’ fiscal management, e.g. by limiting payroll expenses to 60% of net revenues. São Paulo has satisfactorily fulfilled its RFAP obligations (paragraph 4.8). With the new repayment terms, São Paulo improved its debt profile and regained its ability to make investments with direct impacts on the economy, thus creating a favorable environment for private-sector activity. São Paulo’s healthier financial situation has also allowed for new investments in the areas of health, education, and transportation—most notably in ports and highways.

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<sup>1</sup> 1351/OC-BR: BR-295 Highway Rehabilitation Program in the State of São Paulo (US\$120 million), 2001, currently in execution and expected to conclude by July 2006.

<sup>2</sup> The Sistema Especial de Liquidação e Custódia [Special System for Settlement and Custody] (SELIC) rate is published by the Monetary Policy Committee. The interest rates charged in the marketplace are guided by the SELIC rate.

## **C. Socioeconomic conditions in São Paulo**

- 1.3 The state of São Paulo covers 248,600 km<sup>2</sup> and has approximately 39.8 million inhabitants, with a population density 7.5 times higher than the national average. Located in southeastern Brazil, it borders the states of Minas Gerais and Rio de Janeiro to the north, the state of Paraná to the south, the state of Mato Grosso do Sul to the west, and the Atlantic Ocean to the east. The metropolitan area of its capital, the city of São Paulo, is home to 43.8% of the state's industries. The state is the largest industrial center in South America, generating one third of exports and about 34% of Brazil's gross domestic product.
- 1.4 In 2004, the fastest-growing sector of São Paulo's economy was the manufacturing/processing industry (18.2%). The state has the country's largest industrial infrastructure base. The foremost sectors include transport equipment, machinery, chemical products, wood pulp, paper, basic metallurgy, electrical equipment and materials, medical/hospital instrumentation equipment, precision and optical instruments, industrial automation instruments, computer equipment, etc. São Paulo is the world's third largest producer of orange juice, accounts for a third of Brazil's fruit output, has the installed capacity to assemble over a million vehicles per year, and is considered the world's fourth largest and the country's third largest coffee producer.

## **D. Institutional framework for the program**

### **1. São Paulo State Transportation Department (SET)**

- 1.5 The SET coordinates and promotes the organization and operation of all modes of transportation under the State's direct and indirect responsibility. It also studies, approves, monitors, and executes technical, economic, financial, and administrative plans for the transportation systems within its purview, sets transportation charges, and manages the parts of the Tietê-Paraná waterway inside state lines. For administration purposes, decentralized agencies have been created to coordinate and execute state works. Working under the SET are the State Delegated Public Transportation Services Regulatory Agency;<sup>3</sup> the independent state aviation, highway, and waterways departments; and the semipublic company Desenvolvimento Rodoviário, S.A.
- 1.6 The SET is responsible for preparing the Transportation Development Plan, which aims to develop an integrated state transportation system, simultaneously meeting the demand for transportation and for logistical networks. In 2000, the SET prepared the 2000-2020 plan, which identified the physical, operational, and

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<sup>3</sup> Created in 2002 to regulate and oversee all authorized, licensed, or franchised modes of public transportation services.



institutional bottlenecks in the state transportation system (paragraphs 1.3, 1.4, and 1.29).

## **2. The São Paulo State Highway Department (DER/SP)**

- 1.7 The DER/SP is an independent agency with technical, administrative, and financial autonomy (paragraph 4.11) with headquarters in the city of São Paulo and jurisdiction over the entire state. It has 14 regional divisions and 57 Maintenance and Works Offices throughout the state and is responsible for the administration and maintenance of 16,811.9 of the 21,533.5 km of highways within the state road network. Its primary responsibilities are planning for the state road system; approving municipal road plans; preparing cost estimates for works and services; designing, building, maintaining, and operating highways; as well as policing, authorizing, awarding concessions for, and overseeing the transportation of persons and goods on state roads.
- 1.8 Consistent with the state government restructuring policy and the Fiscal Responsibility Act, DER/SP's active staff has been downsized. It outsources designs, studies, construction, and maintenance for road works and focuses on planning, coordination, bidding, management, oversight, and contracting of State works. DER/SP's payroll dropped from 19,000 active employees in 1983 to 4,540 in 2005: 246 engineers, 2,837 mid- and upper-level technical and professional staff, and 1,457 lower-level workers (Link 1).
- 1.9 To meet the objectives and strategies of the Public Management Policy, which seeks to implement management by results, the DER/SP's Administration Office has set up a professional training and development section designed to enhance the technical capacity of its staff. Course subjects include legislation, information technology, customer service, and managerial development. Training seminars on road operation and safety for the technical staff of the Maintenance and Works Offices, the basic service units (UBAs),<sup>4</sup> and the operational offices at headquarters are also in the pipeline. During 2004, a total of 1,614 DER/SP employees were able to take part in various technical training courses.
- 1.10 The **semipublic company Desenvolvimento Rodoviário S.A. (DERSA)** was created in 1969 to build highways SP-160 (Imigrantes) and SP-348 (Bandeirantes) and to operate highways SP-150 (Anchieta) and SP-330 (Anhanguera) as well as passenger and freight terminals in São Paulo. In August 1992, pursuant to State Law No. 7835, DERSA and the SET classified state highways based on annual average daily traffic (AADT) and technical characteristics, selecting 4,800 km of highways for more detailed concession studies. In 1995, the State launched the Private-Sector Participation Program for the

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<sup>4</sup> These units are sponsored by the DER/SP to provide road users with 24-hour towing, mechanic, and first-aid services. Of the total of 57 planned units, 27 are already up and running (Link 2).

delivery of public services and the execution of infrastructure works, with a view to improving and expanding the capacity of the state's main highways (paragraph 1.1). The toll roads operated by DERSA and the DER/SP formed the basis of the concession plan, and were subsequently transferred to 12 private firms/consortia. The above program made São Paulo one of the subnational entities with the most kilometers of privately operated roads (4,238) and toll roads (5,049) in the world.

- 1.11 Now that the highway concession program (paragraph 1.10) has concluded, DERSA operates and administers a mere 483.5 km of roads, the concession for which is to be granted in late 2005 (paragraph 1.29). As no more state highways meet the concessions criteria, the potential in the short run for new concessions in São Paulo is basically limited to federal highways. The federal government has already awarded the concession for the Via Dutra highway (São Paulo–Rio de Janeiro) and has begun the bidding process for another three federal highways in the state: BR-381 (São Paulo–Belo Horizonte), BR-116 (São Paulo–Curitiba), and BR-153 (Transbrasiliana). The State requested authorization to award concessions for highways belonging to the federal system, but the federal government has temporarily suspended the process of delegating to States the right to franchise federal highways.
- 1.12 With the roads under DERSA transferred to private hands, part of its staff is now assigned to the DER/SP, strengthening the latter's technical capacity and bolstering its cadre of specialists (paragraph 1.9). DERSA is also managing construction of the Mario Covas Ring Road, the future beltway around the state capital (paragraph 1.29).

### **3. State transportation infrastructure**

- 1.13 São Paulo is home to advanced technology and industrial centers, agroindustrial centers, consumption centers, and two of Brazil's largest ports in terms of freight volume—Santos and São Sebastião. Other states also rely on São Paulo's transportation system, mainly because of the state's importance in national commerce and its geographical location—freight traffic between south, east, and northeast Brazil passes through the state. São Paulo also has two of Brazil's largest airports in terms of passengers and volume of freight transported (paragraph 1.18).
- 1.14 São Paulo has one fifth of the country's entire paved road network, so about 90% of the population lives fewer than 5 km from a paved highway. The São Paulo transportation system comprises ports, railways, airports, and roadways, encompassing public infrastructure operated by the three levels of government as well as by private entities regulated by the public authority granting the concession.

**Table 1**  
**Toll roads by operator**

Type	DER/SP		DERSA		Private		Total	
	km	%	km	%	km	%	km	%
2-lane	109.0	20.7	0	0.0	1,969.8	46.5	2,078.8	41.2
4-lane	418.0	79.3	284.7	100.0	2,268.4	53.5	2,971.1	58.8
<b>Total</b>	<b>527.0</b>	<b>100.0</b>	<b>284.7</b>	<b>100.0</b>	<b>4,238.1</b>	<b>100.0</b>	<b>5,049.8</b>	<b>100.0</b>
%	10.4		5.6		83.9		100.0	

- 1.15 **Railway system.** Rail lines are indirect, deficient, or nonexistent between most cities outside the capital and those in neighboring states, in addition to using two incompatible gauges. Almost all the existing railway lines connect the rest of the state with the state capital.
- 1.16 **Waterway system.** The result of a 2.5 billion reais investment by the São Paulo government, the Tietê-Paraná waterway made freight transport cheaper and more competitive, improving the prospects for intermodal freight transport; spurred economic and social development of the Southeast, Center-West, and South of Brazil; increased the volume of freight transported via inland waterways; enhanced integration among authorities and municipal entities; and enhanced integration with the Mercosur countries.
- 1.17 **Port system.** The port of Santos has the largest container terminal in Latin America, 12 km of docks, specialized terminals for grains, fertilizers, and liquid bulk, and two port-access rail lines with 200 km of branch lines. Its geographical position is central to intermodal (overland-maritime) transportation, which moves approximately 38 million tons of freight per year. The port of São Sebastião is administered by DERSA and is located on the northern coast of São Paulo, about 200 km from the capital. North of the port lies the Almirante Barroso maritime terminal, operated by Petrobrás, which specializes in loading and unloading liquid bulk, petroleum, and petroleum derivatives.
- 1.18 **Airway system.** The air transport system is composed of 36 airports, which move 19 million passengers per year. Its role is essential in intermodal transportation, primarily in the movement of inputs for and finished products from the high-tech industrial sector that is taking root in the state. São Paulo has the two largest airports in Brazil in terms of passengers and volume of freight transported.
- 1.19 **Roadway system.** The state's economic activity is highly dependent on the road transport system. Half of the entire national fleet travels on its roads, which measure approximately 198,000 km in length, 32,977 km of which are paved (Table 2).

**Table 2**  
**State roads by type and jurisdiction (km)**

Jurisdiction	Unpaved		Paved two-lane		Paved four-lane		Total	
	km	%	km	%	km	%	km	%
Federal	0	0.0	441.33	1.5	610.22	14.0	1,051.55	0.5
State	1,256.64	0.8	16,516.61	57.7	3,760.24	86.0	21,533.49	10.9
Municipal	164,158.39	99.2	11,649.31	40.7	0	0.0	175,807.70	88.6
<b>Total</b>	<b>165,415.03</b>	<b>100.0</b>	<b>28,607.35</b>	<b>100.0</b>	<b>4,370.46</b>	<b>100.0</b>	<b>198,392.74</b>	<b>100.0</b>
%	83.4		14.4		2.2		100.0	

- 1.20 *Federal road network*. The radial, north-south, east-west, and diagonal highways that cross the country are the responsibility of the federal government, through its National Transportation Infrastructure Department. Measuring a total of 1,051 km, the highways that make up the federal road network inside the state are the BR-101, BR-116, BR-153 BR-354, BR-381, BR-383, BR-459, and BR-488.
- 1.21 *State road network*. This system consists of 16,812 km under the responsibility of the DER/SP, 4,238 km under concession to private enterprise, and 483.5 km under the jurisdiction of DERSA. About 30% of the national vehicle fleet and 28% of the total truck and freight vehicle fleet travel on State roads, and roads carry almost all passenger traffic from outside the state capital and 93.2% of the tons per kilometer of freight. The system consists of highways and access roads that connect the state's principal cities with production and marketing centers, serving also as feeders for federal highways and connecting the road system with other modes of transportation.
- 1.22 *Municipal road network*. The municipal network is composed of access roads to the state's urban settlements and also meets the transportation needs of rural communities, facilitating the movement of inputs and outputs within production areas. Construction, rehabilitation, and maintenance activities are, with some exceptions, the jurisdiction of the municipal governments, and are carried out under agreements with the DER/SP.
- 1.23 **Road maintenance**. Maintenance services for the road network under the DER/SP's responsibility seek to preserve State property, ensuring the initially forecast useful life of the highways and providing greater safety, passability, and convenience to users. These services are divided into routine maintenance, special maintenance, and emergency work. Maintenance services mainly involve the following activities: (i) evening out the wearing surface (filling cracks and potholes); (ii) controlling vegetation; (iii) tending the right of way; (iv) maintaining embankments; (v) replacing guardrails; (vi) installing and replacing safety barriers; (vii) collecting animals; and (viii) cleaning, rehabilitating, replacing, and building drainage devices (in and outside the subgrade).

**Table 3**  
**Condition of wearing surface on state roads**

	<b>Current</b>	<b>After program</b>
Good (IRI<3)	50%	55%
Fair (IRI 3 to 5)	30%	30%
Poor (IRI>5)	20%	15%

- 1.24 Over the last decade, the DER/SP has nearly doubled the coverage of the Highways Preservation Plan—from 8,500 km in 1997 to 15,900 km in 2004. Currently, all of the paved state roads under responsibility of the DER/SP (16,812 km), which vary widely in terms of topography, region, AADT, and pavement age, are covered under 140 maintenance contracts. The average annual cost of highway maintenance is on the order of US\$5,000/km, thanks to efficient management and the maximization of available resources. Rehabilitation and maintenance trends in terms of kilometers and past and projected costs are presented in Table 4.

**Table 4**  
**Investment in Road Rehabilitation and Maintenance**  
**(US\$000s – Dec. 2004)**

	<b>2000</b>	<b>2001</b>	<b>2002</b>	<b>2003</b>	<b>2004</b>	<b>2005</b>	<b>2006</b>	<b>2007</b>	<b>2008</b>	<b>2009</b>
Kilometers	667	1,336	835	532	657	800	1,200	1,000	1,000	1,000
US\$/km	215.23	70.75	121.30	344.19	289.90	328.36	339.16	339.16	339.16	339.16
Rehabilitation	143,480	94,511	101,232	183,110	190,407	262,689	406,994	339,162	339,162	339,162
Kilometers	8,500	14,664	15,597	15,900	16,000	16,012	15,812	15,812	15,812	15,812
US\$/km	7.93	4.66	3.78	4.20	5.23	5.23	5.29	5.29	5.29	5.29
Maintenance	67,364	68,347	58,961	66,750	83,699	83,699	83,699	83,699	83,699	83,699
<b>Total</b>	<b>210,844</b>	<b>162,858</b>	<b>160,193</b>	<b>249,860</b>	<b>274,106</b>	<b>346,387</b>	<b>490,693</b>	<b>422,861</b>	<b>422,861</b>	<b>422,861</b>

- 1.25 The DER/SP has conducted studies with a view to reducing the number of contracts to a total of 57, with services contracted by Maintenance and Works Office and not by highway. The idea is for maintenance services to follow the same model as the operational services that have already been hired (operation of UBAs). The average length of roadway per Maintenance and Works Office is approximately 295 km (Link 2).
- 1.26 **Road safety policy.** Although the vehicle fleet in São Paulo has grown at an average annual rate of 4% over the last 10 years, and there has been a 3% annual increase in the number of traffic accidents with victims during the last four, the number of fatal accidents has declined from 2.28 to 1.76 per 10,000 registered vehicles. The DER/SP, DERSA, the State Highway Police, and the concessionaires have a total of 227 radar devices for controlling speeding on State highways. Speeding fines generate about US\$76 million per year for the DER/SP. This program seeks to support the strategy to enhance road infrastructure safety

conditions through projects to improve the pavement, drainage, signage, and critical points on the road network.

- 1.27 The State's road safety policy seeks to reduce the number and the seriousness of accidents and to build its capacity for road management and oversight. The activities currently carried out by the DER/SP include: (i) electronic speed surveillance, highway monitoring, and weight and load control; (ii) implementation of the UBAs (Link 3); (iii) prompt accident reporting; (iv) surveying of critical points on the state road network; (v) regular upgrading of equipment for the state highway police; (vi) photographic recording of trucks that bypass weigh stations; and (vii) driver education activities. The DER/SP has started a program for replacement and maintenance of signage (horizontal and vertical) in the 14 regional divisions. The 14 signage contracts are for about US\$30 million per year each, which includes the cost of radar speed control.
- 1.28 **Weight and load control.** In São Paulo, weight is monitored with dynamic, mobile, and fixed equipment at checkpoints located in high freight-traffic corridors. Fixed weigh stations operate continuously—24 hours a day, every day—while the mobile ones operate in alternating eight-hour shifts. The load control program was designed to be executed in two phases. The first was implemented in 2001, with 79 mobile weigh stations using 28 dynamic scales. The second phase, to begin in the second half of 2005, will install 12 fixed weigh stations along the state borders. In 2004, 17.1 million freight vehicles were checked, and 57,000 were fined for excess weight. The DER/SP assigns an agent to the sections granted by concession to the private sector, and collects the full amount of ticket revenues. Contractual conditions require the concessionaire to operate and maintain the weigh stations. São Paulo performs weight control in accordance with National Traffic Council Resolution No. 104/99—by total net load as opposed to load per axle.

**Table 5**  
**Stations and equipment available**  
**for weight and load control**

Network (Jurisdiction)	Stations		Equipment	
	Mobile	Fixed	Mobile	Fixed
DER/SP	79	3	28	3
DERSA	2	2	3	2
Concessionaires	54	16	26	22
<b>Total</b>	<b>135</b>	<b>21</b>	<b>57</b>	<b>27</b>

## **E. State strategy in the sector**

- 1.29 The São Paulo State government's strategy seeks to further expand and improve the state's logistical infrastructure by coordinating actions aimed at lowering transportation costs and enhancing accessibility and safety, thereby boosting the

competitiveness and complementarity of the state economy in the Southeast of Brazil (paragraphs 1.1 and 1.6). The SET prepares and coordinates execution of the Transportation Development Plan (PDDT), which, since 2000, has offered a set of strategies for achieving a more efficient transportation system in São Paulo. It will cost an estimated US\$12 billion through 2020, distributed amongst the federal and state governments and the private sector, to implement the infrastructure proposed in the PDDT. Major PDDT initiatives have already been completed, including the Tietê–Paraná waterway (paragraph 1.16), expansion of the airport infrastructure, and construction of the south, north, and east sections of the Mario Covas Ring Road, among others. Priority actions include implementing the Campinas–Vale do Paraíba–North Coast Transportation Corridor by awarding to private enterprise a concession for the roads operated by DERSA, and for a new lot consisting of the Tamoios highway (SP-099) and the Caraguatatuba and São Sebastião bypass. Operation of the Port of São Sebastião will also be transferred to private hands (paragraph 1.13).

- 1.30 The projects and activities identified in the PDDT call for boosting the capacity of and expanding the state road network, and include the highway restoration, pavement upgrading, and road safety program (paragraph 1.1). The Bank's participation will lend continuity to Phase I and will aid in making State transportation services more efficient by helping to remove the bottlenecks and the critical points from the current system, bolstering the network's capacity to meet current challenges as well as the future demand for transportation (paragraphs 1.3, 1.4, and 1.13). Improvements to the interconnections between public and private road networks will enhance accessibility, primarily benefiting freight and passenger transportation.

## **F. Bank experience and lessons learned**

- 1.31 The Bank has experience working directly with several operations in São Paulo. In the transportation sector, the Bank financed construction of the first section of Metro Line 5 and upgrading of the South Line of the suburban overground train system through loan 844/OC-BR.<sup>5</sup> Through its Private Sector Department, the Bank granted a total of US\$380 million in loans (1156A/OC-BR and 1156B/OC-BR,<sup>6</sup> 1190A/OC-BR and 1190B/OC-BR,<sup>7</sup> and 1232A/OC-BR and 1232B/OC-BR<sup>8</sup>) to three private São Paulo highway concessionaires.

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<sup>5</sup> 844/OC-BR: BR-0163 São Paulo South Line Suburban Train Project (US\$420 million), 1994.

<sup>6</sup> 1156A/OC-BR and 1156B/OC-BR: BR-0296 Castello-Raposo Highway (US\$75 million and US\$55 million), 1998.

<sup>7</sup> 1190A/OC-BR and 1190B/OC-BR: BR0306 Anhanguera-Bandeirantes Toll Road (US\$50 million and US\$45.9 million), 1999.

<sup>8</sup> 1232A/OC-BR and 1232B/OC-BR: BR0312 Ecovias Dos Imigrantes Toll Road (US\$75 million and US\$80 million), 1999.

- 1.32 The Bank has had experience with the DER/SP, as the executing agency for Phase I of this program (paragraphs 1.1 and 1.34 through 1.36) and as the coexecuting agency for the program to modernize and widen the Fernão Dias Federal Highway (loans 767/OC-BR and 975/OC-BR<sup>9</sup>) together with the Minas Gerais Highway Department, under an agreement with the National Highway Department (now the National Transportation Infrastructure Department). Although there have been delays during Phase II, these delays are not the fault of the DER/SP, as they have mainly been the result of a lack of timely counterpart funding, which is the direct responsibility of the federal government. The Bank has also had extensive recent experience with road transport programs in Brazil, financing multiple-works road programs similar to this program in several states, including Santa Catarina and Bahia.<sup>10</sup> All these operations yield lessons that can be applied to this program.
- 1.33 The most notable lessons learned from the operations financed in São Paulo, from the experiences captured in the project completion and performance monitoring reports for the respective projects, and particularly from the experience gained in Phase I of this program include, for the preparation phase: (i) studies and engineering designs, including environmental protection and mitigation measures, need to be high-quality and sufficiently detailed, and changing or adjusting them during project execution or making any contractual amendments should be avoided, especially where paving and rehabilitation works are concerned (paragraphs 2.8, 3.4, and 3.10); (ii) public consultations should be held at the start of the process; (iii) delays and cost overruns can be minimized through greater control and precision during execution planning; (iv) criteria should be established for selecting the complementary sections to the representative sample that meet program objectives and conditions; and (v) the complexity and number of phases involved in the bidding process must be sufficient to comply with local legislation as well as Bank rules. The lesson for the execution phase is to maintain ongoing technical, financial, and operational monitoring so as to avoid any substantial delays.

#### **G. Progress with Phase I components (loan 1351/OC-BR)**

- 1.34 By the end of Phase I, 703 km of the network will have been restored under 20 rehabilitation contracts. As of the third quarter of 2005, physical progress on the works was 98%, and financial progress was 94%. The number of kilometers to be covered in Phase I (1,000) was reduced primarily because of: (i) the devaluation of the *real* vis-à-vis the dollar in 2002, when the exchange rate rose from 2.68 *reais* per dollar (the exchange rate assumed in the budget for the 20 packages at the time the loan contract was signed) to 3.92, which raised the price of paving materials and led to contract adjustments with cost increases averaging 40%; (ii) the devaluation

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<sup>9</sup> 767/OC-BR and 975/OC-BR: BR-0162 and BR-0216 Program to Modernize and Widen the Fernão Dias Federal Highway, Phases I and II (US\$265.9 and US\$265 million, respectively), 1993 and 1996.

<sup>10</sup> 1390/OC-BR: BR-0355 Santa Catarina State Highway Program Phase IV (US\$150 million), 2002; 1191/OC-BR: BR-0278 Bahia State Highway Program Phase II (US\$132 million), 1999.



of the dollar in 2004 and through the third quarter of 2005, which drastically reduced purchasing power for Phase I and severely compromised the targets set after the 2002 adjustment; and (iii) the amount of time required for program preparation, which made it necessary to redesign the structural pavement components to factor in the new conditions in terms of highway deterioration.

- 1.35 All Phase I components have been put out to tender, awarded, and are in execution. The equipment for the fire department and the highway police has been procured, and the auditing firm was hired for fiscal year 2005. The firm for 2006 will be hired at the end of this year. Also in progress are the road signage, environmental compensation, bus terminal renovations and construction, works supervision, and institution-strengthening components (paragraph 1.36). Some US\$221 million had been invested in the program by 31 May 2005, of which US\$108 million corresponded to Bank financing and US\$113 million to local counterpart funds ([Link 4](#)).
- 1.36 **Institution-strengthening component.** An institutional capacity assessment was conducted to verify the need to continue this component in the current program. The project team found that Phase I had covered all the specific subcomponents for strengthening institutional and environmental policies and regulations, addressing the areas of planning, analysis, and personnel training, and hence does not find it necessary to carry out special institution-strengthening activities for the executing agency as part of this program.
- 1.37 The project team confirmed that specialized firms were hired to develop and implement systems to boost the DER/SP's efficiency and effectiveness in the five areas relating to the subcomponents below. About 50% of the resources earmarked for the institution-strengthening component have already been disbursed, and a physical target of 75% will have been met by the second quarter of 2006 (see Table 6 and [Link 4](#)). The DER/SP environmental sector subcomponent will be extended through the end of 2006, allowing for continued monitoring of the positive impacts of program works and of the implementation of the Environmental Highway Information System. Each of the subcomponents is described below.
- a. *Traffic Statistics System (TSS).* The first phase was contracted out on 2 December 2004 and the second and third phases on 13 June 2005. Once fully implemented, the system will make it possible to measure hourly vehicle flows on the principal highways and to calculate average daily traffic.
  - b. *Road surface management system (RSMS).* The priority of this subcomponent, contracted out on 1 December 2004, is to modernize management of the state road network. It includes a road database containing information on pavement conditions, traffic volume and composition, maintenance and preservation problems, services in operation or contracted, and the status of contract performance and investments either scheduled or already undertaken.

- c. *Engineering projects (EP)*. Begun on 1 December 2004, it calls for strengthening the capacity of the DER/SP in the following areas, among others: (i) standards development and review; (ii) development of standard designs; (iii) procurement of hardware and software; and (iv) in-service training on applying the above standards and using the equipment and software.
- d. *Management of the transport of hazardous materials (THM)*. In execution since 1 December 2004, its activities include: (i) preparing an emergency response plan for DER/SP-operated highways; (ii) preparing and implementing an information system that allows for interfacing with other agencies involved with the transport of hazardous materials in São Paulo; (iii) publishing legislation and standards on this issue; (iv) training the managers of entities engaged in transporting hazardous materials; and (v) purchasing emergency vehicles and equipment.
- e. *Support for the DER/SP's environmental sector (DES)*. The following activities began on 1 July 2004: (i) implementation of an environmental management policy and system; (ii) technical support and in-service training; (iii) collection of environmental risk data for São Paulo's paved road network; (iv) monitoring of the positive impacts of program works; (v) implementation of the environmental highway information system; and (vi) procurement of computer and other equipment.

**Table 6**  
**Timetable of Institution-Strengthening Activities**  
**in Phase I (BR-0295)**

Activity	Financial progress (Aug/05)	Physical progress (targets)				
		Aug/05	Dec/05	Mar/06	May/06	Dec/06
TSS	18%	70%	100%			
RSMS	18%	40%	74%	100%		
EP	18%	24%	72%	93%	100%	
THM	29%	33%	58%	84%	100%	
DES	41%	59%	81%	86%	92%	100%

## **H. Country strategy and value added of Bank participation**

- 1.38 The proposed program is consistent with the Bank's strategy with Brazil as set out in Country Paper GN-2327. The strategy outlines the following four areas of action: (i) productivity and infrastructure, with priority given to the use of public-private partnerships in new investments; (ii) poverty, equity, and human capital formation, with a focus on programs for income distribution as short-term measures for poverty alleviation, and on education and health as sustainable means of improving equity; (iii) living conditions and efficiency in cities, integrating measures to fight urban poverty with improvements in habitability, efficiency, and environmental

quality of cities; and (iv) institution-strengthening and modernization of the State, with emphasis on subnational governments.

- 1.39 In tune with this strategy, the program has been designed to lend continuity to Phase I and to continue to support São Paulo in its effort to achieve a more efficient state transportation system with a more modern physical infrastructure and a better wearing surface, thus facilitating the population's access to social services. The program will foster better transportation of goods and products to and from consumption, production, and export centers. Greater mobility of passengers and freight will make the state more competitive by ensuring good connections between the productive regions of the North, Northeast, and South of the country.
- 1.40 The Bank's participation in this program is important in that it can provide the borrower with timely resources to enable it to continue its investment and governance program and to confirm the validity of the standards, procedures, and good practices acquired in executing Phase I through effective support in sectors in which investments have accomplished the desired objectives. Along with this program, the Bank is preparing other operations with the state—a program to develop ecotourism in the Mata Atlántica region (BR-L1013) and a clusters competitiveness program (BR-L1016). The project teams have shared information, in particular the state financial report that served as the basis for the program's financial projections.

## II. THE PROGRAM

### A. Objectives

- 2.1 The program's goal is to contribute to the economic and social development of the state of São Paulo by improving freight and passenger transportation on the state highway system. The specific objective is to lower operating costs and make it safer for people and goods to travel on the roads covered by the program by carrying out rehabilitation works on those sections that suffer from poor or fair traffic and safety conditions. The program will rehabilitate 0.9% of the state highway network, which together with the sections added in Phase I, will make for substantial improvements to the surface conditions of approximately 5% of the network as a whole (see Table 3).

### B. Description

- 2.2 The program will be executed as a multiple-works program, financing the restoration of approximately 156 km of highways and improvement of road safety through the treatment of critical accident points. The program has a total cost, including finance charges and administration costs, of US\$60 million, of which 50% (US\$30 million) will come from the Bank loan and the remainder (US\$30 million) from state counterpart funds. The direct program costs will total US\$56.84 million. The program envisages the following components:

**1. Studies, engineering designs, and administration costs (US\$2,850,000/ IDB loan: US\$2,142,000)**

- 2.3 This component will finance economic, technical, and environmental feasibility studies for program works. It will also finance the program administration costs, the primary expense being that of hiring the management firm. The proposed activities are divided into two subcomponents:
- 2.4 **Subcomponent 1: Studies and engineering designs (US\$0.25 million).** This subcomponent will finance the review and update of engineering designs of program works that had been prepared during Phase I. It will also finance economic, technical, and environmental feasibility studies in the event that new works can be added to the program.<sup>11</sup>
- 2.5 **Subcomponent 2: Administration costs (US\$2.6 million).** Administration costs are those associated with the array of services and activities to be provided by the Program Coordinating Unit (UCP), which is responsible for carrying out the operation. It also includes the cost of hiring a consulting firm specialized in road

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<sup>11</sup> If the dollar rises against the *real*.

programs management with external financing, and the cost of hiring the independent firms that will conduct the accounting/financial and environmental program audits (paragraphs 3.5, 3.13, and 3.14). The management firm is expected to be hired during the second half of 2007 (paragraphs 3.5 and 4.3).

**2. Direct costs - rehabilitation works – 156.4 km (US\$56,840,000/IDB loan: US\$27,858,000)**

- 2.6 **Subcomponent 1: Highway rehabilitation (US\$53,355,000)** will finance the rehabilitation of approximately 156 km and works to improve their technical characteristics. The existing pavement on these stretches is in poor or fair condition—very close to the end of its useful life. In addition to pavement work, the subcomponent calls for the addition of shoulders, the enhancement of surface and underground drainage systems, major structures (widening or modification of subgrades) and masonry structures, road safety elements (works at crossings and access points, third lanes added on steep grades, works to protect foot and bicycle traffic, signage, etc.), mitigation of the impact of new works, and environmental recovery where critical impacts have occurred. All the program works are included in the representative sample.
- 2.7 No significant changes to the road configuration have been proposed in developing the rehabilitation projects. The interventions are aimed at eliminating critical points with a high risk of accidents for users and to restore the wearing surface to its optimal condition. Table 7 shows the rehabilitation works to be financed under the program.

**Table 7**  
**Rehabilitation works**

Regional Division	State Road	Section	Ext. (km)	Estimated cost (US\$ millions)	
				US\$/km	Total
DR06	SP-125	Alto da Serra – Ubatuba	16.8	0.471	7.918
DR13 / DR01	SP-133	Via Anhangüera – Cosmópolis	14.6	0.371	5.414
DR04	SP-255	Araraquara – Boa Esperança do Sul	39.1	0.318	12.448
DR11	SP-425	José Bonifácio –Tietê River	41.8	0.224	9.344
DR07/ DR12	SP-294	Iacri – Osvaldo Cruz	21.1	0.414	8.738
DR12	SP-294	Osvaldo Cruz – Adamantina	23.0	0.413	9.493
<b>Total rehabilitation works</b>			<b>156.4</b>	<b>0.341</b>	<b>53.355</b>

- 2.8 **Eligibility criteria for works** The six sections evaluated during program preparation, which make up 100% of the universe of sections under the program, meet the following criteria: (a) are part of the state road network; (b) have an AADT of over 2,000 vehicles; (c) have an economic internal rate of return equal to or above 12%; (d) have completed engineering, economic viability, and environmental studies; and (e) have a completed executive engineering design. As this is a multiple-works operation, any new works to be substituted or included in

the program must meet the above eligibility criteria. Each section must have an environmental permit or authorization, and the required studies and designs will be commissioned from specialized consulting firms and will be performed according to the same methodologies and standards used during program preparation.

- 2.9 **Subcomponent 2: Technical and environmental supervision of rehabilitation works (US\$3,485,000).** Consulting firms specializing in technical supervision of road works will supervise the works. A team of environmental specialists from the program management firm will conduct environmental supervision of the works. The firms hired will guarantee their adherence to project work schedules and the respective technical and environmental standards and specifications. The supervisory consulting firms will be engaged in five packages.

### **3. Associated costs (US\$310,000)**

- 2.10 **Expropriations (US\$50,000).** In preparing the final engineering designs, it was found that no land needed to be appropriated. The program nevertheless provides for resources to cover such costs in the event that an expropriation is necessary to free up small sections of roadway.
- 2.11 **Environmental compensation (US\$260,000).** This covers the measures needed to compensate for inevitable environmental impacts, such as removal of vegetative cover or damages suffered by any affected groups.

### **C. Cost and financing**

- 2.12 The estimated program costs and financing structure are presented in Table 8.<sup>12</sup>

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<sup>12</sup> Interest: As in Phase I of the program, interest will be paid by the borrower, outside the program, through the São Paulo State Finance Department, and therefore does not figure in the table of program costs.

**Table 8**  
**Program costs (US\$ millions)**

	<b>Category</b>	<b>Total</b>	<b>IDB</b>	<b>%</b>	<b>Local</b>	<b>%</b>	<b>% Total</b>
1	Engineering and administration	2.850	2.190	76.8	0.660	23.2	4.8
1.1	Studies and designs	0.250	0.000	0.0	0.250	100.0	0.4
1.2	Program administration	2.600	2.190	84.2	0.410	15.8	4.3
1.2.1	DER/SP coordinating unit	0.180	0.0	0.0	0.180	100.0	0.3
1.2.2	Management firm	2.300	2.070	90.0	0.230	10.0	3.8
1.2.3	Accounting audit	0.080	0.080	100.0	0.0	0.0	0.1
1.2.4	Environmental audit	0.040	0.040	100.0	0.0	0.0	0.1
2	Direct costs	56.840	27.810	48.9	29.030	51.1	94.7
2.1	Rehabilitation works (156 km)	53.355	24.673	46.2	28.682	53.8	88.9
2.2	Works supervision	3.485	3.137	90.0	0.348	10.0	5.8
3	Associated costs	0.310	-	0.0	0.310	100.0	0.5
3.1	Expropriations	0.050	-	0.0	0.050	100.0	0.1
3.2	Environmental compensation	0.260	-	0.0	0.260	100.0	0.4
	<b>Total</b>	<b>60,000</b>	<b>30,000</b>	<b>50,0</b>	<b>30,000</b>	<b>50,0</b>	<b>100.0</b>

### **III. PROGRAM EXECUTION**

#### **A. Borrower, guarantor, and executing agency**

- 3.1 The borrower for this operation is the State of São Paulo, and the guarantor for debt service obligations is the Federative Republic of Brazil. The executing agency will be the São Paulo State Highway Department (DER/SP), under an agreement with the São Paulo State Transportation Department. This agreement must be presented to the Bank within six months after the effective date of the loan contract (condition precedent to implementation). For the purposes of coordinating program execution, the Program Coordinating Unit (PCU) from Phase I (paragraph 3.5) will continue to function, and will still be directly connected to the Superintendent of the DER/SP. Through the General Coordinator, the PCU will also supervise any activity having to do with management and auditing of the operation.

#### **B. Execution and administration**

- 3.2 All the program works will be executed by private consulting firms. Works will be supervised and studies and technical-support (management) and environmental-supervision services for the program conducted either by consulting firms or independent consultants hired by the DER/SP following Bank procedures. The hiring of works supervision services will be a condition precedent to the effective commencement of each of the road works.
- 3.3 The DER/SP will assume responsibility for administering program contracts and for overseeing the rehabilitation services to be delivered by the above firms. Along with the PCU, several sections of the DER/SP will be involved in program execution, as will the regional divisions (paragraph 1.7) of this agency that have jurisdiction over the sections to be rehabilitated (Link 5).
- 3.4 An economic assessment was made of all the sections to be included in the program (paragraph 4.5). The final designs for these works are complete and the works are ready to be put out for tender. If any new sections are included during program execution, they must meet the conditions described in paragraph 2.8.
- 3.5 The existing PCU consists of two specialists—a coordinator and an assistant. It will receive support from the same consulting firm specialized in road program management—that is still managing Phase I of the program (in its final stage of execution) until its contract runs out at the end of 2007. The management firm performs its functions under the direction of the PCU and under the direct supervision of the DER/SP Superintendent. Its main duties include: (i) scheduling and monitoring during the physical/financial performance of contracts, including the supervision of bidding involving proceeds of the Bank loan; (ii) creation, implementation, and operation of a monitoring plan for program evaluation based



- on evaluation indicators and verification of performance; (iii) support in preparing terms of reference (ToR) for the contracting of construction and works supervision services, engineering studies, and external program audits; (iv) support for project and works supervision and oversight services and for the procurement of goods and services; (v) environmental works supervision and environmental program monitoring; (vi) preparation of economic viability studies, in case additional road works are to be financed under the program; and (vii) preparation of periodic, specific reports on the program's physical and financial progress.
- 3.6 The DER/SP's Environmental Office will oversee implementation of the environmental management plan, including the measures provided for in the environmental control plans. The Accounting and Finance Office and the Administration Office will be involved in budgetary control and procurement activities, respectively. A Special Bidding Commission and a Special Expropriations Commission with professional staff from DER/SP and SET will be used if necessary to handle activities relating to program bidding and expropriations processes.
- 3.7 The loan resources must be deposited in the special separate account opened exclusively for administration of the local counterpart contribution and the program financing, which have now been opened by the executing agency. The PCU will be required to maintain specific detailed accounting and financial records for the program by source of financing and must also keep in its files the original documentation supporting payments it has made.

### **C. Monitoring and evaluation**

- 3.8 The program will be monitored through semiannual progress reports, to be submitted to the Bank within 30 days after the end of each six-month period, that describe the physical progress of the works as well as project outcomes. These reports will include the following information: (i) progress made with regard to the performance indicators and disbursement schedules agreed upon for the program; (ii) updated execution and disbursement schedules for the remainder of the program; (iii) a work plan, including the updated procurement plan and the detailed action plan for the next two six-month periods; and (iv) a report on the progress in carrying out environmental programs.
- 3.9 These reports will include semiannual updates of program outcome indicators. Outcomes will be evaluated using a series of objective technical indicators, set out in the logical framework, that will be measured before and after the program and will allow for the project performance monitoring report to be updated.
- 3.10 For the investment components, the principal evaluation tool was the Highway Design and Maintenance Standards Model, or HDM-4. The principal economic indicators (internal rate of return, net present value) for each intervention were

determined using this model. The baseline for this evaluation, which includes traffic measurements and estimated vehicle operating costs, has already been determined for all the program works (Link 6).

- 3.11 Trends in management indicators relating to the decline in traffic accidents will also be evaluated, yielding information on road safety performance and passability of the state road infrastructure. The calculations for this indicator factored in AADT, the yearly number of accidents, and the length of the section. The baseline has already been determined and the values included in the program's logical framework (Annex I).

#### **D. Revolving fund**

- 3.12 In order to provide resources in advance for carrying out Bank-financed activities, a revolving fund limited to 5% of the loan amount will be created. The executing agency will be responsible for submitting semiannual revolving fund status reports to the Bank within 30 calendar days of the close of each six-month period.

#### **E. Audits**

- 3.13 The external program audit will be an accounting-financial audit and is to be conducted by an independent firm acceptable to the Bank, based on the previously approved ToR (documents AF-400 and AF-500). Standard Bank procedures for the selection of external audit services (document AF-200) will be used in the process of selecting and hiring the firm. Audit-related costs will be considered program costs and will be financed with proceeds of the Bank loan. Independent semiannual environmental audits will also be conducted, the reports for which will be submitted concurrently to the Bank, the DER/SP, and the State Environment Department.
- 3.14 The auditing firm will issue an annual report for each fiscal year. The report must include the annual financial statements of the program and must be submitted within 120 days after the end of the fiscal year. Also, it should cover, among other items: (i) the executing agency's internal control system; and (ii) procurement procedures, disbursements, and their application. The final audit report will be submitted within 120 days after the last disbursement, in accordance with the ToR approved by the Bank.

#### **F. Procurement of works, goods, and services**

- 3.15 The works are being put out for tender in six packages, and, because the projects were ready, the Bank authorized bidding to begin before loan approval. The General Procurement Notice was published on 18 May 2005 in the United Nations publication *Development Business*. The public call for bids was published before 31 July 2005, in keeping with applicable Bank procedures for the transition phase before adoption of the new procurement policy (Transition Guidelines CC-5966-1 of 4 May 2005). International competitive bidding will be used, and the DER/SP

will set up a Special Bidding Commission for the purpose of choosing the best bid, in accordance with the procedures set out in the Bank's procurement policies and procedures (paragraphs 3.15 and 3.16). Owing to market conditions and the specific nature of the bidding process, the executing agency requested, and the Bank justifiably approved (Link 7), the following bidding provisions:

- a. *Works and goods:* (i) **The participation of consortia will not be permitted**, given that works of limited technical complexity<sup>13</sup> or involving technology that has been more than mastered by the companies with a presence in specific sectors do not necessitate the formation of consortia.<sup>14</sup> The program works are multidisciplinary and of limited complexity. There are hundreds of medium-sized enterprises in Brazil that have built up their capacity in the marketplace over the decades to do such work "on their own". Ruling out the formation of consortia is justified because responsibilities are spread out among firms in a consortium. Hiring just one company per work enables management to identify and ascribe the appropriate responsibility to that single company with regard to executive activities (even for social and environmental implications) and to the quality of services rendered. The program works essentially involve relatively low-budget highway rehabilitation and are not commercially attractive to non-Brazilian companies. The creation of consortia would even further limit international bidding, encouraging the participation of small local contractors who are generally accustomed to small-scale routine maintenance works; the companies that would come together to form a consortium would be competing (and not complementary) companies whose only purpose would be to "spread out" the contracts (facilitate collusion among companies to limit competition and drive up the cost of the works). The serious danger also exists that the works would be executed by consortia of small, competing businesses that are not qualified to execute them. The use of technical and financial capacity indices is not the appropriate way to restrict the participation of small, unqualified businesses; the indices required in the bidding documents cannot be raised, as they already reflect the upper and lower limits allowed by the Bank and by the State Auditing Office, which are not sufficient to preclude the participation of the vast majority of small firms with low operating capacity, and hence do not ensure the technical quality of the works or the meeting of execution deadlines. In the last 10 years of procurement by the DER/SP, all the bidding documents (including those for Phase I works) have always restricted the participation of consortia, and all were ruled to be proper by the Auditing Office in this regard. In sum, hiring

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<sup>13</sup> The execution of works and services that combine different technologies and complex construction methods, or that necessitate the purchase of specific equipment, is generally optimized when companies form consortia. The program works are multidisciplinary and of limited complexity.

<sup>14</sup> Depending on the nature of the works, hiring consortia can, in most cases, be detrimental to achieving the desired quality of works and consulting services rendered.

consortia in the particular case of procurement of program works is not advisable, so an exception is necessary. (ii) **Each bidder may be awarded up to a maximum of two packages**, enhancing the competitiveness of the bidding process and avoiding the risk of awarding all the works to a single company, which would discourage the participation of smaller, capable firms and would put the contracting agency at a disadvantage if there were to be a problem with that company. Because the works are scattered geographically, there are no economies of scale. This rule would prevent more than 30% of the program works from being in the hands of a single company, thereby reducing the risk of conflicts with contractors. It would also lessen the financial risks and the risk of the program being crippled by the contracting agency's diminished bargaining power.

- b. *Consulting services:* (i) **The participation of consortia made up of a maximum of three companies will be permitted.** Consulting activities generally involve complementary activities. Works supervision, for instance, has three fundamental components: technical experience with road works, environmental issues, and management of supervision activities. These activities may be carried out by a consortium of three complementary firms, facilitating coordination and avoiding the diffusion of responsibilities. (ii) **Each bidder may be awarded up to a maximum of two packages** (paragraph 3.15a).
  - c. *Works and consulting services:* **The minimum validity period for bids will be 180 days**, given that shorter periods are not only not seen in practice, but also free the bidder from having to honor the bid over time, raising the risk of cost overruns, as the bidder will only renew the validity of the bid if the price covers any cost increases. As the international competitive bidding (ICB) process (analysis, evaluation, approval, publication, and contracting) requires the Bank's no objection, good practice indicates that a 180-day validity period for bids should be adopted. Note that prices are always readjusted as of the date bids are submitted, regardless of their validity period. If the bids were no longer valid when the bidding process came to a close, the competing firms would be able to decide whether or not to renew their bids; at this stage of the process, since all the bidders would know which companies were in the running, they could conspire not to renew the validity of lower-cost bids, thereby driving up the price of the services.
- 3.16 Goods, services, and works financed with program resources will be procured and consulting services selected and hired in accordance with Bank policy (GN-2349-4 and GN-2350-4, both of January 2005). The executing agency will be in charge of the bidding process for works, works supervision, and engineering designs, in addition to selecting and contracting program consulting services. Works will be carried out by private construction firms, and studies and technical assistance

services will be provided by specialized consulting firms. The Bank will review program procurement ex ante.

- 3.17 Where procurement is financed in whole or in part by the Bank, ICB will be used to procure individual works or packages whose estimated cost is equal to or greater than US\$10 million and goods and related services whose estimated cost is equal to or greater than US\$500,000. Works whose estimated cost is equal to or greater than US\$500,000 and less than US\$10 million will be procured using national competitive bidding (NCB); shopping may be used for works costing less than US\$500,000. Goods and related services whose estimated cost is equal to or greater than US\$100,000 and less than US\$500,000 will be procured using NCB; shopping may be used for amounts below US\$100,000. Consulting services whose estimated cost is equal to or greater than US\$200,000 will be advertised internationally, and the short lists of consultants for jobs whose estimated cost is below US\$500,000 may be composed entirely of national consultants.

#### **G. Maintenance of program-financed works**

- 3.18 After analyzing the DER/SP's annual financial statements (paragraph 4.11) and investment plans, the project team feels that the São Paulo government's current road maintenance policy is sound. Given the importance and impact of maintenance, the borrower, through the executing agency, undertakes to properly preserve and maintain all program-financed works in accordance with internationally accepted technical standards. The executing agency will also, within the first quarter of each calendar year and for five years after the last disbursement, submit an annual report to the Bank on the results of the maintenance works carried out during the past year and a plan for the following fiscal year, outlining the scope of the works, number of contracts, and amount budgeted for execution. The annual report will also include an update on the conditions of the state road network, statistics on traffic accidents on the network, and updated AADT figures for the roads under each regional division ([Link 8](#).)

#### **H. Recognition of expenditures, execution period, and disbursement timetable**

- 3.19 The borrower has requested recognition of the following expenditures: (i) up to the equivalent of US\$10 million, ***charged against the loan***, for works and supervision expenses; and (ii) up to the equivalent of US\$20 million, ***charged against the local counterpart funds***, for studies and designs, administration costs, supervision, and works. To be recognized, these expenses must have been incurred before approval of the loan and after 9 February 2005. Such amounts are required because the works have already been initiated (commencement in March 2006).
- 3.20 Given the progress made with the engineering designs for all the program projects, and bearing in mind the experience with other projects in São Paulo and in Brazil, a program execution period of 48 months has been set, as shown in the disbursement

timetable in Table 9. The deadline for the effective commencement of program rehabilitation works will be 36 months.

**Table 9**  
**Timetable of Program Disbursements (US\$ millions)**

<b>Components</b>	<b>Total</b>	<b>Year 1</b>	<b>Year 2</b>	<b>Year 3</b>	<b>Year 4</b>
Engineering and administration	2.85	1.13	0.86	0.57	0.29
Direct costs	56.84	22.74	17.05	11.37	5.68
Associated costs	0.31	0.13	0.09	0.06	0.03
<b>Total</b>	<b>60.00</b>	<b>24.00</b>	<b>18.00</b>	<b>12.00</b>	<b>6.00</b>
Percentage (%)	100	40	30	20	10

## **I. Final evaluation**

- 3.21 The DER/SP will keep the necessary data on road surface management systems, traffic statistics, and program environmental management performance indicators and parameters set out in the logical framework (Annex I) until completion of the program. This information will be needed for the final program evaluation and the project completion report (PCR). The final program evaluation will be carried out by the executing agency and the Bank six months after the last disbursement during the program completion seminar and will describe the close of activities, evaluating the specific outcomes achieved and the extent to which the specific objectives set for the project have been accomplished.

## **IV. VIABILITY AND RISKS**

### **A. Institutional viability**

- 4.1 As stated previously (paragraphs 1.1 and 1.32), the DER/SP has been satisfactorily coexecuting Phase II of the program to widen the Fernão Dias Highway and executing Phase I of this program, and is acknowledged to have ample management capacity to execute a program of the nature of the proposed operation.
- 4.2 The road management systems that are currently being implemented with Bank support (Phase I) will provide the DER/SP with the necessary information on the physical condition of the network, traffic volumes, and control of the transport of hazardous freight in the state and will enable it to effectively see to activities to upgrade, rehabilitate, and maintain the network (paragraphs 1.36 and 1.37). No need was identified to conduct special institution-strengthening programs and actions for the executing agency other than those currently under way. The physical and financial progress of each component is presented in the respective timetable (Table 6 and Link 4).
- 4.3 To ensure coordination among the actors involved in executing the program as well as adequate control of their activities, the DER/SP will maintain the execution structure from Phase I, keeping the same program coordinating unit. Similarly, because there is a remaining balance on its contract, the management firm hired for Phase I will continue to render services through at least the second half of 2006, when a new firm will be hired, allowing for a transition between the two firms and the transfer of information on execution.
- 4.4 The outcomes achieved during Phase I confirm that the DER/SP has a sound environmental management policy and skilled personnel, and that continuing to implement the component supporting its environmental sector will provide the DER/SP with the personnel it needs for environmental protection and conservation activities, not only for this program, but also into the institution's future. Moreover, the DER/SP has gained experience in environmental management, applying it to the bidding, contracting, construction, supervision, and auditing of works in a manner consistent with Bank policies and requirements.

### **B. Socioeconomic viability**

- 4.5 An economic analysis was done for all the sections comprising the representative sample of 156.4 km of the universe of 534.5 km of eligible sections. As the program is a multiple-works operation, the initial sample represents 100% of the sections included in the program. The analysis used the HDM-4 model, considering for each project the benefits from savings in vehicle operating costs, savings in travel times, savings in maintenance, and economic benefits deriving from the

decline in accidents. Owing to the uncertainty that always surrounds quantifying the benefits associated with road safety, profitability indicators were calculated with and without the benefits of a decline in accidents, resulting in variations in the internal rate of return of less than 1%.

- 4.6 Traffic growth rates were calculated per section and vehicle category, and are based on the socioeconomic studies conducted by the unit responsible for the Transportation Development Plan under the São Paulo State Transportation Department (paragraph 1.6). Projections took into account the effect on travel demand in the state, among light vehicles in particular, of the mass concessions awarded for the state's main highways. This policy, implemented between 1998 and 2001, entailed the introduction of toll charges and a substantial increase in existing fees.
- 4.7 The internal rate of return (IRR) and net present value (NPV) were calculated for each section and for the program as a whole, and sensitivity to cost and benefit variations was analyzed (Table 10). Figures were obtained for the following three scenarios: (i) a 20% increase in project costs (construction and maintenance); (ii) a 20% decline in benefits (savings in terms of vehicle operating costs and users' time) and (iii) a simultaneous 10% cost increase and 10% decrease in benefits. Among the six highways analyzed, the highest IRR is 169.4% and the lowest 18.9%. The overall IRR for the program is 46.5%. The sensitivity analysis yielded values above 12% in all cases, demonstrating that the risk of the highways to be improved not being economically viable, even under adverse conditions, is low (Link 9).

**Table 10**  
**Economic analysis of program road works**

State road	Section	AADT <sup>1</sup>	Length (km)	NPV <sup>2</sup> US\$000s	IRR %	Sensitivity Scenarios		
						IRR 1 <sup>3</sup>	IRR 2 <sup>4</sup>	IRR 3 <sup>5</sup>
SP-125	Ubatuba - Alto da Serra	2,010	16.8	4,710	18.9	15.6%	14.8%	15.3%
SP-133	Via Anhanguera - Cosmópolis	5,448	14.6	60,961	169.4	143.6%	138.4%	141.3%
SP-255	Araraquara - Boa Esperança do	4,549	39.1	31,979	35.5	31.5%	30.7%	31.1%
SP-294	Iacri - Osvaldo Cruz	4,991	21.1	17,152	55.7	48.1%	46.5%	47.4%
SP-294	Osvaldo Cruz - Adamantina	5,909	23.0	30,585	26.4	22.6%	21.8%	22.3%
SP-425	José Bonifácio - Tietê River	2,696	41.8	12,197	32.0	27.7%	26.7%	27.2%
<b>Program Total</b>			<b>156.4</b>	<b>157,583</b>	<b>46.5</b>	<b>40.2%</b>	<b>38.9%</b>	<b>39.6%</b>

<sup>1</sup> AADT: average annual daily traffic

<sup>2</sup> NPV: US\$ millions

<sup>3</sup> IRR: sensitivity analysis with 20% higher costs

<sup>4</sup> IRR: sensitivity analysis with 20% lower benefits

<sup>5</sup> IRR: sensitivity analysis with 10% higher costs and 10% lower benefits



### **C. Financial viability**

- 4.8 The External Financing Committee, through Recommendation No. 770 of 31 December 2004, authorized preparation of Phase II of the Highway Rehabilitation Program in the state of São Paulo for a maximum of US\$60 million, with up to US\$30 million in Bank financing and US\$30 million in counterpart funds.
- 4.9 In 2004, current revenues totaled US\$25.725 billion, representing a 6.6% increase over 2003, and current expenditures were US\$23.819 billion, 5% above the figure recorded the previous year. The current surplus of US\$1.905 billion is equivalent to 7% of current revenues—one percentage point higher than the prior year, yet below the 8% recorded from 2000 to 2002. Capital income in 2004 was only 2% of current revenues, the same percentage seen the other years in the period. Capital expenditures in 2004, at US\$2.277 billion, represented a 28% increase over the previous year and the same level as in 2000. The budget surplus for the year was the lowest of the period, standing at US\$19 million. End-of-year liquidity totaled US\$3.152 billion, a 12% increase over the previous year.
- 4.10 Short-term accounts receivable totaled US\$1.588 billion and long-term accounts receivable US\$28.665 billion, of which US\$25.278 billion were taxes receivable, which can be expected to be partially collected. Short-term financial liabilities totaled US\$5.263 billion, of which US\$1.642 billion were accounts payable, amounting to 6.9% of current expenditure in 2004—a level compatible with the state's operations. Long-term debt totaled US\$48.742 billion at the close of the 2004 fiscal year, a 1% increase over the previous year. Internal operations, at US\$42.969 billion, represent 88% of long-term liabilities and are 1.7 times the year's current revenues. External operations totaled US\$1.116 billion on the same date. With the signing of the internal-debt renegotiation agreement with the federal government, the state's debt profile looks quite favorable. The repayment profile for debt in foreign currency is also reasonable.
- 4.11 The local counterpart contribution, to come from São Paulo's own resources, is US\$30 million, which amounts to US\$7.5 million a year, or 0.05% of the state's 2004 revenues. São Paulo's financial projections for the next 10 years show current revenues covering current expenditures and still generating enough savings to repay debt and help finance the proposed program and part of the rest of its current and projected investment program. Although budget results will be negative in the 2005-2006 period, existing liquid assets at the end of 2004 will suffice to cover resource needs. Budget surpluses will be generated consistently starting in 2007.
- 4.12 The state is effective in the financial management of its resources. The positive findings of the 2003 evaluation from the second renewed term of the Restructuring

and Fiscal Adjustment Program (RFAP)<sup>15</sup> were released in December 2004; the official 2004 evaluation should be released in the third quarter of 2005. Based on projections (Table 11) and the financial analysis and documentation submitted to the project team, São Paulo has been satisfactorily meeting the RFAP targets, managing to put its financial house in order, and therefore has the financial liquidity to assume the commitments deriving from contracting a loan with the Bank and to contribute the required counterpart funds.

**Table 11**  
**Cash flow – State of São Paulo (millions of constant Dec. 2004 US\$)**

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010-2014
1. Current revenues	27,609.6	27,655.7	27,054.2	24,130.2	25,724.9	26,869.3	27,793.1	28,749.2	29,880.5	31,204.4	179,941.6
2. Current expenditures	25,502.2	25,493.2	24,952.5	22,665.7	23,819.4	24,902.1	25,747.1	26,211.4	26,748.1	27,389.9	151,153.1
3. Current savings	2,107.4	2,162.5	2,101.8	1,464.5	1,905.4	1,967.2	2,046.1	2,537.8	3,132.4	3,814.4	28,788.5
4. Capital income	686.5	277.3	597.8	483.6	390.7	384.8	446.7	249.4	155.1	136.2	663.9
5. Capital expenditures	2,770.5	2,415.8	2,381.2	1,775.3	2,277.0	2,705.8	3,346.9	2,744.8	2,920.9	3,137.0	19,256.6
6. Fiscal year surplus/deficit	23.5	24.0	318.4	172.9	19.1	(353.8)	(854.2)	42.4	366.7	813.7	10,195.5
7. Beginning-of-year liquidity	2,264.0	2,958.6	2,669.9	2,444.0	2,826.1	3,152.3	2,899.8	2,104.7	2,179.6	2,583.9	3,442.5
8. End-of-year liquidity	2,958.6	2,669.9	2,444.0	2,826.1	3,152.3	2,899.8	2,104.7	2,179.6	2,583.9	3,442.5	13,940.8

4.13 The DER/SP's revenues basically come from royalties (provided for in the concession contracts) paid by concessionaires and from traffic fines levied on state highways, representing US\$103 million and US\$76 million in 2004, or 57% of its current revenues. The DER/SP's budget performance for 2000 to 2004 shows agency revenues averaging US\$280 million, covering about 79% of its current expenditures in the period, including highway maintenance and preservation, which averaged US\$69 million per year. State Treasury funds were used to cover the remainder of current expenditures and all investments, which averaged US\$174 million per year. Toll revenues declined over the period from US\$29.6 million in 2000 to US\$6.5 million in 2004 because of the privatization of state highways ([Link 10](#); [Link 11](#)).

4.14 Projections indicate that the DER/SP's revenues will average US\$299 million in the 2005-2012 period, enabling it to cover 77% of its current expenditures, so it will need State Treasury funds to meet part of those expenses as well as investments. Payroll costs, which accounted for 46% of current revenues in 2004, are expected to drop to 38% by 2012. Highway maintenance/preservation and operation costs, included in current expenditures, are estimated to average US\$84 million and

<sup>15</sup> The RFAP sets out action strategies, objectives, and six basic targets for general monitoring of improvements to the debt: (i) the ratio of total state financial debt to real net income, which should, by 2030, decline to a level no higher than the ILR; (ii) a primary surplus sufficient to cover scheduled debt service; (iii) personnel expenditures of no more than 60% of net current income; (iv) tax collection such that there is real growth in state tax receipts; (v) state reform, asset adjustments, and sale of assets and real estate owned by São Paulo; and (vi) investment spending over net real income at percentages compatible with the state's revenue capacity.

US\$35 million, respectively (having averaged US\$69 million and US\$23 million, respectively, in the 2000-2004 period). Capital expenditures are estimated to hit US\$407 million, more that twice the 2000-2004 level (US\$174 million). To tackle a more ambitious works program and current expenditures 8% above those observed in the last five years, the State Treasury will have to contribute an average of US\$456 million per year (US\$185 million being the average for 2000-2004). As a portion of the state's overall works program, road investments will rise from 17% in the 2000-2004 period to 33% in 2005-2012.

**Table 12**  
**Projected cash flow – DER/SP (millions of constant Dec. 2004 US\$)**

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
1. Current revenues	238.6	292.2	203.4	201.6	221.0	212.7	226.1	228.7	231.5	234.3	237.2	240.2	243.2
2. Current expenditures	249.9	333.4	276.2	224.3	316.0	289.9	293.1	294.9	296.7	298.6	303.8	305.9	307.9
2.1 Personnel	89.1	88.5	80.1	77.5	102.2	76.1	79.1	80.7	82.3	83.9	89.0	90.8	92.6
2.2 Road maintenance	67.4	68.3	59.0	56.7	83.7	83.7	83.7	83.7	83.7	83.7	83.7	83.7	83.7
2.3 Road operation	17.8	22.3	18.8	22.2	35.4	35.4	35.4	35.4	35.4	35.4	35.4	35.4	35.4
2.4 Other current expenditures	75.7	154.2	118.3	57.8	94.8	94.8	95.0	95.2	95.4	95.6	95.8	96.1	96.3
3. Current savings	(11.6)	(41.2)	(72.8)	(22.7)	(94.9)	(77.2)	(67.0)	(66.2)	(65.2)	(64.3)	(66.7)	(65.7)	(64.7)
4. Capital income	19.1	21.5	13.0	73.8	61.5	23.5	27.5	21.0	18.0	15.0	12.0	12.0	12.0
5. Capital expenditure	214.6	146.6	124.7	189.2	194.3	268.0	488.4	407.0	410.4	413.9	417.7	421.6	425.7
6. State Treasury revenues	207.1	166.4	184.4	138.1	227.7	321.7	527.9	452.2	457.7	463.3	472.4	475.3	478.4

## **D. Environmental impact**

- 4.15 Considering that the works are restricted to the right of way of the highways, the planned interventions come under the provisions of Environmental Department Resolution No. 81 of 1 December 1998, which governs the environmental licensing of interventions aimed at highway preservation and improvements and on the response to emergencies arising from the transport of hazardous products on highways. The competent environmental authorities analyzed the environmental report on each section to be rehabilitated under the program and exempted those sections from the environmental licensing requirement.
- 4.16 The potential positive environmental impacts of the program will occur in its operation phase, with particular socioeconomic benefits: (i) improved access to jobs and services; (ii) fewer road accidents; (iii) better traffic conditions for pedestrians and cyclists where highways pass through towns; (iv) better environmental quality owing to the correction of environmental liabilities along the highways; and (v) job creation during the works. From an environmental standpoint, implementation of the program will result in improvements to existing conditions in the rehabilitated sections served by the project.

- 4.17 The main potential negative impacts of the works, which would occur largely in their execution phase, are less significant than those caused by existing environmental liabilities, both to the physical environment, resulting from erosion, instability of embankments, and solid deposits in drainage systems, and to the socioeconomic environment, in terms of safety hazards for users and people living in the vicinity. These include: (i) disturbance of green areas; (ii) degradation of source areas for materials used for the works; (iii) accidents during construction; (iv) slow-moving and congested traffic around the works; (v) noise and air pollution produced by equipment; and (vi) noises and vibrations associated with the works themselves. These impacts, though considered minor, will be mitigated by appropriate environmental and safety control measures, as detailed in the environmental control plan (Link 12) and the strategic environmental assessment (SEA) (Link 13 and Link 14).
- 4.18 **Socioenvironmental impact management plan.** The SEA details the programs to prevent, mitigate, and compensate for the environmental impacts resulting from program execution. A summary of each of the environmental programs described in the Environmental and Social Management Report follows.
- 4.19 *Environmental education* (US\$23,918 included in the costs of the works and US\$16,777 included in the costs of the management firm) will help raise socioenvironmental awareness among the employees of the companies hired to execute and oversee the works. The program will be implemented by the contractor and guided and supervised by the management firm.
- 4.20 *Public relations* (US\$59,562 included in the cost of the management firm) will focus on the beneficiary communities, neighboring populations, and road users. The program will be implemented during the works phase by the management firm, with support from the DER/SP's Environmental Office, Communications Office, and Services Ombudsman. A direct channel of communication with the public will be opened by DER/SP to receive, process, and respond to criticisms, complaints, and suggestions regarding the measures adopted under the program.
- 4.21 *Environmental compensation* (US\$260,000). No significant negative impacts on conservation units are anticipated, given that the roads selected are preexisting and the main disturbances associated with them already happened. The state and federal agencies responsible for the units located in the program area were consulted, and they will make any demands on receiving applications for specific authorizations for each project. The works will require limited removal of vegetation, even in Permanent Preservation Areas, and particularly in the section of the SP-125 that passes through the Sierra del Mar State Park, of which only two curves will be improved.
- 4.22 *Plan to control the impact of construction activities.* An environmental control plan (ECP) was prepared for each of the program works, identifying the aspects or

activities that require special attention from an environmental standpoint, including revegetation, water resources, and fauna, and designing the most appropriate solutions. The ECPs will form part of the bidding documents provided to builders and technical works supervisors. The bidding documents and the respective contracts will contain clauses establishing contractors' environmental responsibility, the obligation to follow the environmental specifications set out in the ECPs, and the penalties that will be imposed for uncorrected violations. Road safety is dealt with sufficiently in the engineering designs.

- 4.23 *Environmental program monitoring.* The monitoring and environmental assessment program will track the key indicators set out in the logical framework, using a georeferenced database and monitoring and evaluation subsystems. This will be part of the job of the management firm, which will set and define the parameters and other indicators for monitoring indirect impacts.
- 4.24 With the exception of shoulders, third lanes, and the correction of critical points, there will be no major changes to the configuration of roads. No harm to low-income or indigenous populations was identified; if any low-income and/or vulnerable groups were to be affected and require resettlement or special social and/or legal support, the DER/SP would prepare and execute a specific program, in accordance with Policy OP-710 of the Bank, paid for with counterpart funds. The most significant impacts associated with the execution of road works will be mitigated/prevented through the detailed ECPs, environmental education, and public relations. In general, at the request of the municipal authorities, priority will be given to hiring local workers for construction jobs.
- 4.25 The DER/SP authorities have already held public consultations with civil society agents, and the results were analyzed and incorporated into the projects where applicable. All the environmental studies were prepared in accordance with current Brazilian environmental legislation and the Bank's requirements for similar projects. In keeping with the Bank's public information policy, the socioenvironmental studies were posted on the Internet, at DER/SP headquarters, at its regional divisions, and in mayoral offices.

#### **E. Benefits and beneficiaries**

- 4.26 The principal benefits expected from the proposed program are: (i) reduced vehicle operating costs and travel times thanks to improvements to the wearing surface; (ii) better access to the state's municipios, with the respective benefits for the transportation of people and agricultural and industrial products; and (iii) a reduction in the number of traffic accidents.
- 4.27 Those who use the state roads, particularly the rehabilitated sections, will be the main beneficiaries, benefiting from lower vehicle operating costs, shorter travel times, and fewer accidents, thanks to improved road safety. The program will

benefit all state residents, particularly those who live outside the capital. Greater accessibility will help foster economic activity in the program's area of influence.

**F. Risks**

- 4.28 The program poses no special risks. Institutionally, the DER/SP is a competent executing agency ([Link 15](#)), as its vast experience with contracting works out to the private sector has shown. Not only is it the executing agency for Phase I, but its management capacity is being developed through the institution-strengthening component of that operation (paragraphs 1.36, 1.37, 4.2, and 4.3). It also has a suitable organizational structure, and it will receive support from a management firm (paragraphs 2.5 and 3.5) for the execution of this program. Technically, the works and other interventions are not overly difficult, and there are many construction and supervision firms in the national and international marketplace that are capable of executing this type of project. As for technical and operational sustainability, the DER/SP has accorded priority to maintaining its road network, allocating the necessary budget resources (paragraphs 1.24, 1.25, and 4.8). The State's financial condition is sound, posting surpluses in recent fiscal years (Table 11). Environmentally, the works involve no significant indirect impacts, and the direct impacts are related to implementation of the works and will be duly addressed in the works and supervision contracts (paragraph 4.22).

**BRAZIL: HIGHWAY REHABILITATION PROGRAM IN THE STATE OF SÃO PAULO (BR-L1033)**  
**LOGICAL FRAMEWORK**

Narrative Summary	Indicators	Means of Verification	Assumptions																												
Goal																															
To contribute to the economic and social development of the state of São Paulo by improving freight and passenger transportation on the state highway system.	A positive difference between the variations in the fiscal value added for the group of municípios directly benefiting from the program and the other municípios in the state after the works are completed (2010 to 2014).  Baseline 2001 to 2005	State socioeconomic statistics prepared by the State Finance Department	The state of São Paulo’s economy continues to grow in a context of regional macroeconomic stability.																												
Purpose																															
To provide for sustainable traffic conditions for persons and goods, with lower operating costs and greater safety on the highways included in the program.	By the end of the program execution period (4 years):  1.1 Decline in economic vehicle operating costs (measured in US\$ and constant values per vehicle-km using the HDM-4) vis-à-vis 2005: <table><tr><td></td><td></td><td>2005</td><td>2009</td></tr><tr><td colspan="2">Automobiles</td><td>0.10</td><td>0.09</td></tr><tr><td colspan="2">Buses</td><td>0.65</td><td>0.55</td></tr><tr><td rowspan="3">Trucks</td><td>Medium</td><td>0.42</td><td>0.37</td></tr><tr><td>Heavy</td><td>0.68</td><td>0.60</td></tr><tr><td>Tractor-trailer</td><td>1.05</td><td>0.93</td></tr></table> 1.2 By program’s end, the overall accident rate will have declined by 4% on the sections included in the program.  Annual Targets (baseline in boldface) <table><tr><td></td><td>2004</td><td>2009</td></tr><tr><td>Accident rate</td><td>0.247</td><td>0.237</td></tr></table>			2005	2009	Automobiles		0.10	0.09	Buses		0.65	0.55	Trucks	Medium	0.42	0.37	Heavy	0.68	0.60	Tractor-trailer	1.05	0.93		2004	2009	Accident rate	0.247	0.237	1.1 Results of economic analyses based on HDM-4 methods, for each type of vehicle and for the program highways, to be conducted by the DER/SP’s Engineering Office  1.2 Accident statistics and the overall accident rates calculated by the DER/SP’s Coordinator of Operations	1.1 The highways that make up the state road network continue to be maintained following the guidelines and parameters set by the DER/SP.  1.2 The new management systems developed during Phase I continue to meet the needs of the DER/SP.
		2005	2009																												
Automobiles		0.10	0.09																												
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	2004	2009																													
Accident rate	0.247	0.237																													

Narrative Summary	Indicators	Means of Verification	Assumptions
Components			
<p>1. Highways restored and rehabilitated to have a minimum useful life of 10 years.</p>	<p><i>By the end of the program execution period (4 years):</i></p> <p>1.1 All the sections under the program, totaling 156.4 km in length, will be completed and operational.</p> <p>1.2 At least 75% of the 146 environmental liabilities catalogued under the program should be recovered or remedied.</p> <p>1.3 90% of the 40,595 trees called for in the Environmental Recovery Terms of Commitment should be successfully planted.</p>	<p>1.1 Certification of works by the DER/SP, issuance of the final terms of acceptance, and opening of roads to traffic</p> <p>1.2 Environmental Supervision Report, based on photographic documentation, technical evaluations in the monitoring files, and final terms of acceptance from the environmental authorities</p> <p>1.3 Certificates of execution of DER/SP services</p> <p>1.4 Program monitoring and progress reports prepared by the program coordinating unit</p>	<p>1.1 Resources are available for proper road maintenance.</p> <p>1.2 A load control system (mobile and fixed scales) is in operation, in accordance with the DER/SP plan.</p> <p>1.3 Counterpart resources are provided for in the budget legislation passed the previous fiscal year.</p> <p><i>The DER/SP remains interested in using the systems developed in Phase I:</i></p> <p>1.4 The road surface management system, as one of the tools for planning the road rehabilitation and preservation budget</p> <p>1.5 The Environmental Management System, for monitoring works and state highways projects</p> <p>1.6 The technical standards for preparing engineering designs for state highways</p> <p>1.7 The system for management of the transport of hazardous materials, for responding to accidents involving hazardous freight on state roads</p>
<b>Activities</b>			
See budget.			



DOCUMENT OF THE INTER-AMERICAN DEVELOPMENT BANK

PROPOSED RESOLUTION

Brasil. \_\_\_\_\_ /OC-BR to the State of São Paulo  
Highway Rehabilitation Program in the  
State of Sao Paulo (Phase II)

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 São Paulo, as Borrower, and the Federative Republic of Brazil, as Guarantor, for the purpose of granting the former a financing aimed at cooperating in the execution of a Highway Rehabilitation Program in the State of Sao Paulo (Phase II). Such financing will be in the amount of up to US\$30,000,000, from the resources of the Single Currency Facility of the Bank's Ordinary Capital, and will be subject to the Financial Terms and Conditions and the Special Contractual Conditions of the Project Summary of the Loan Proposal.