

INTER-AMERICAN DEVELOPMENT BANK



BRAZIL

***ANHANGÜERA-BANDEIRANTES
HIGHWAY SYSTEM
BR - 0306***

ENVIRONMENTAL AND SOCIAL IMPACT REPORT

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ACRONYMS AND INITIALS

AutoBAN	Concessionaire of the Anhangüera - Bandeirantes Highway System (Empresa Concessionária do Sistema Anhangüera - Bandeirantes S/A)
CETESB	Technology and Environmental Sanitation Company (Companhia de Tecnologia e Saneamento Ambiental)
CONSEMA	State Environmental Council (<i>Conselho Estadual de Meio Ambiente</i>)
CPRN	Natural Resources Protection Office (<i>Coordenadoria de Proteção aos Recursos Naturais</i>)
DAIA	Environmental Impact Analysis Department (<i>Departamento de Avaliação de Impactos Ambientais</i>)
DEPRN	Natural Resources Protection Department (<i>Departamento de Proteção aos Recursos Naturais</i>)
DER	Highway Department (<i>Departamento de Estradas de Rodagem</i>)
DERSA	Desenvolvimento Rodoviário S.A.
DNER	National Highway Department (<i>Departamento Nacional de Estradas de Rodagem</i>)
EIA	Environmental Impact Assessment (<i>Estudo de Impacto Ambiental</i>)
EMP	Environmental Management Plan (<i>Plano de Gerenciamento Ambiental</i>)
IFC	International Finance Corporation
RAP	Environmental Preliminary Report (<i>Relatório Ambiental Preliminar</i>)
RIMA	Relatorio de Impacto ao Meio Ambiente
SMA	Environmental State Secretariat (<i>Secretaria de Estado do Meio Ambiente</i>)
SPMA	São Paulo Metropolitan Area (<i>Região Metropolitana de São Paulo</i>)

1.0 INTRODUCTION

- 1.1 The São Paulo highway network is quite important to the country's transportation system since a major part of the country's traffic has its origin and destination in the State of São Paulo. Most of the highways in the State of São Paulo were built in the 1960s and 1970s, but due to a lack of resources, these highways have been inadequately maintained. Accordingly, this highway system urgently needs major rehabilitation and reconstruction work.
- 1.2 In 1996, the State of São Paulo launched a toll road concession program (*Programa de Concessões de Rodovias Pedagiadas do Estado de São Paulo*) aimed at privatizing the highway system. Objectives of the program are: (i) to improve highway safety; (ii) to reduce transportation costs in the state economy; (iii) to rationalize the use of infrastructure; (iv) to upgrade efficiency in the transportation sector; and (v) to upgrade the road capacity to correspond with economic demand.
- 1.3 The bidding for the Anhangüera-Bandeirantes System was awarded on February 11, 1998 by the granting authority, the State Highway Department (DER) to the Jaraguá Consortium, which formed the special purpose company Concessionaria do Sistema Anhangüera-Bandeirantes (AutoBAn) dedicated exclusively to act as the concessionaire. AutoBAn signed the concession contract on May 1st, 1998, on which date the 20 year concession period was commenced.
- 1.4 The Anhangüera-Bandeirantes System currently comprises 238 km of highways, connecting the cities of São Paulo, Campinas, Jundiaí and Limeira. Located in the region of greatest urban and industrial growth of the State of São Paulo, this system constitutes one of the most important vectors for development of the State.

2.0 PROJECT DESCRIPTION

2.1 The Project

- 2.1. The project consists of a concession for the operation, expansion and modernization of the Anhangüera-Bandeirantes System. The system consists of 238 km of highways and their respective right of ways, buildings, facilities and equipment contained therein. The main investment contemplated is a 77 km extension of the Bandeirantes highway between the cities of Campinas and Limeira. The composition of the system is presented in Table 1 (see Annex I for site map).

2.2 The Sponsors

- 2.2 The sponsors of the project are: Camargo Corrêa S.A.; Construtora Andrade Gutierrez S.A.; Odebrecht S.A.; with 23.2% of the shares each; SVE Participações with 20% and Serveng-Civilsan with 10.4%. All are Brazilian construction companies with experience in an important number of toll road concessions in Brazil.

2.3 The Investment Program

- 2.3 The majority of the investments will be conducted during the first five years of the concession, from year 1998 to year 2002, and the project cost is estimated at US\$ 515 million. The investment program of the project includes the following: (i) construction of approximately 76.7 km of new highway extending Bandeirantes highway in parallel to the existing Campinas – Limeira stretch on Anhangüera highway with established intermediate and final completion deadlines (32 and 44 months beginning on May 1, 1999); (ii) construction of three additional toll plazas; (iii) upgrades, extensions, repaving, and other maintenance responsibilities on the existing roads; (iv) emergency services and (v) establishment of an adequate operational center. The initial construction activities (e.g., final design documents, etc.) began in October 1998 and will be carried out under a turn key, fixed price, date certain EPC contract by the consortium members. Annex II presents a more detailed itemization of Project activities and their time schedule.
- 2.4 There are additional investments from year 2003 until the end of the concession period, which are estimated to cost approximately US\$ 390 million. Since these investments should be financed out of internal cash generation of the project, they have been excluded from project costs.
- 2.5 The construction works require the expropriation of approximately 10.5 million m² of land, mostly along the new highway segment. The land to be expropriated along the new section is mainly under agricultural use and represents approximately 0.5 % of the total agricultural land in the affected municipalities. According to the information available to date, there are no residential areas or marginal settlements along the new highway segment.

2.4 Operation and Maintenance

- 2.6 The Concession for the Anhangüera-Bandeirantes System comprises the execution, management and survey of services, and operational activities. These are classified as follows: services delegated to the concessionaire; support services to the non-delegated services, services that remain the responsibility of a public authority; and complementary services. The delegated services were grouped in operational functions, maintenance functions and expansion functions.
- 2.7 The services which refer to the operational functions comprise: (i) toll plaza operation including toll collection, control of vehicles and financial control and accounting of collected sums; (ii) operation of the fixed and movable, static and dynamic weigh stations; (iii) support services for the users including first-aid medical services, mechanical services, emergency communication system, signaling and information services; (iv) inspection of the lanes, the right of ways and remaining areas; (v) implementing operational schemes for extraordinary conditions and emergency situation services; (vii) monitoring of traffic conditions and operation of integrated surveillance and traffic control systems.
- 2.9 The services related to the maintenance include: (i) regular maintenance including restoration of pavement, drainage system, tunnels, overpasses and bridges, signaling and

highway safety devices, vegetation, control and automation systems, telecommunication facilities, operational and support stations, electric and lighting systems; (ii) special maintenance of all the elements composing the system in order to preserve the original undertaking; (iii) emergency maintenance in order to immediately substitute, rebuild or recuperate any stretch of highway and damaged facilities or equipment.

2.5 Toll

- 2.10 The project will have eight toll plazas in total. Currently, there are six operating toll plazas distributed alongside the concession highways, five of which have been operated by the State since 1977 in the case of the Anhangüera highway and since 1978 in the Bandeirantes stretch. The sixth toll plaza, located at Nova Odessa on the Anhangüera highway between Campinas and Limeira, is the first of three toll plazas to be constructed by AutoBAN and was inaugurated in December 1998. The additional two toll plazas to be constructed as part of the project are anticipated to begin operations on Anhangüera on July 1st 2001 (Sumaré Bandeirantes Km 118), and on July 1st 2002 (Limeira Km 159), respectively.
- 2.11 Tariffs are charged on northbound traffic only, based on the type of vehicle and the number of axles and are adjusted annually according to IGPM. Currently, the basic rate per axle is R\$4.4 and tolls are established at the different stations based on the objective to assure an even per-kilometer charge. Total toll revenue generated during the eight months of concession operations in 1998 was approximately US\$ 122 million.

2.6 Alternative Analysis

- 2.12 The Environmental Impact Assessment (EIA) approved in the process of environmental licensing for the extension of the Bandeirantes Highway initially analyzed 4 route alternatives, named after their geographical location on Bandeirantes, as: (i) East; (ii) West; (iii) Extreme West and (iv) Expansion of Anhangüera Highway.
- 2.13 A regional approach was adopted for the analysis of the alternatives considering legitimate local and municipal interests. Among the criteria used for the analysis were the following: (i) transfer of traffic from the Anhangüera Highway; (ii) minimal alteration of access ways within the same region; (iii) improvement in traffic safety conditions within the region; (iv) significant interference with areas of vegetation coverage; (v) interference in water courses and water basins considered strategic for public water supply; (vi) spatial distribution of induced urbanization and potential conflicts in environmentally vulnerable areas; and (vii) interference in the processes of urban growth or sectioning of densely occupied areas with high traffic levels.
- 2.14 The first analysis indicated alternative West as the one with the least environmental impacts, although it sectioned two axles of urban growth: (i) Campinas/Monte Mor and (ii) Americana/Santa Bárbara. As a consequence of this situation a new alternative was studied in order to minimize the impacts on both areas. The additional study undertaken indicated the construction of a variant of the West alternative of a 12 km extension, named the “Contour of Santa Bárbara d’Oeste”, as most favorable, mitigating thus the impacts over this urban area.
- 2.15 Ultimately, the environmental assessment indicated the occurrence of local interference with urban areas only in the municipalities of Hortolândia, which were properly

minimized during the period of the elaboration of the engineering design. The present route for the extension of the Bandeirantes Highway was discussed during the public hearings held by CONSEMA (see section 7.1).

3.0 INSTITUTIONAL AND LEGAL FRAMEWORK

3.1 Institutional

3.1.1 Highway System Concession

- 3.1 The entities directly related to the concession to AutoBAn are the State Commission of Concessions and the State's Highway Department (DER).
- 3.2 The Commission for Monitoring of Concessions and Permits for Public Services of the Transport Service was created by the Decree No. 43011/98 in order to manage the contracts of the road concessions, to prepare regulations and procedures to control and supervise the concessions. Additionally it is charged with developing studies to create a regulatory and supervisory agency for the concessions. This Commission's responsibilities are: (i) constitution of technical groups to supervise contracts; (ii) establishment of monitoring procedures; (iii) establishment of performance indicators and monitoring of their evolution; (iv) monitoring of service levels; (v) systematization of basic information; (vi) inspection of irregularities; (vii) evaluation of the economical situation of the concession companies; (viii) preparation of an inventory of the construction works, equipment and facilities; (ix) monitor the transfer of the assets to State ownership. This Commission has a temporary character until the regulatory supervision agency of the concessions has been established. Once created, this agency will act on behalf of the granting authority (DER), equipped with all powers to actively manage and supervise the concession.

3.1.2 Environment

- 3.3 The National Environment Policy created the National Environment System (SISNAMA), constituted by agencies and entities of the Federal, State and Municipal Governments. SISNAMA is responsible for the protection and improvement of the quality of the environment. The Federal Constitution granted authority to the states and local governments to legislate on environmental matters under their responsibility. The federal agency establishes general requirements of broad applicability, while the state and local agencies establish specific standards of enforcement. The establishment of regulations, criteria and standards concerning the control and maintenance of the environmental quality is responsibility, at the federal level, of the National Environment Council (CONAMA) the consulting and deliberative agency of SISNAMA.
- 3.4 The Environmental State Secretariat (SMA) is the public entity responsible for the enforcement of the state environmental policy and ensuring compliance with legal environmental protection and control provisions. Legal provisions include, among others, the licensing of activities deemed to have an environmental impact and therefore require submission of environmental studies (e.g., a Preliminary Environmental Report (RAP)),

pursuant to SMA Resolution No. 42/94, or Environmental Impact Assessment (EIA). Within SMA, the Environmental Impact Analysis Department (DAIA) is responsible for the technical analysis of RAPs and EIAs, and must submit its Technical Appraisal (Parecer Técnico) to CONSEMA (State Environment Council) for approval. DAIA is also responsible for analyzing other complementary environmental studies regarding the construction and operation licenses.

- 3.5 CONSEMA, an agency related to SMA and defined by the State Constitution, is responsible for the formulation of the state environment policy and issuing of norms and procedures, which regulate environmental protection and control instruments within the State of São Paulo. CONSEMA has 38 members, 50% of which are representatives of state government agencies and the remaining of non-government organizations, including nine members of environmental organizations. CONSEMA is responsible for the analysis of DAIA's Technical Appraisal and for the final decision on the approval of EIAs, and may incorporate additional recommendations or requirements to be fulfilled in the project's licensing phases. In addition, CONSEMA is also responsible for organizing a public hearing regarding EIA projects under the licensing process.

3.2 Legal Framework

3.2.1 Highway System Concession

- 3.6 The Federal Constitution establishes that it is the responsibility of the public authority, directly or under concession or permission, to offer public services. Federal Laws No. 8987/95 and 9074/95 regulate the concession of public services. These define concessions preceded of the execution of public construction works as: "any construction, total or partial, or conservation, remodeling, expansion or upgrading of any public interest works, delegated by the conceding authority, through a bid, to the juridical person or consortium of companies that demonstrate adequate capacity, assuming its own responsibility and risk, so that the investment of the concessionaire be remunerated and amortized, by means of the exploration of the service or of the work within a determined term."
- 3.7 The concession of public services in the State of São Paulo is regulated by Laws No. 6544/89, 7835/92, and 9361/96. Decree No. 40000/95 instituted the State Public Services and Execution of Infrastructure Works Private Sector Participation Program, and Law No. 9361/96 instituted the State Privatization Program.
- 3.8 Decree No. 40028/95 authorized the auction for the concession of public services exploration of the Highway System constituted by the highway network, which connects São Paulo to Campinas and Limeira. Decree No. 40077/95 approved the Concession Regulation of the Public Services of Exploration of the Anhangüera-Bandeirantes System.
- 3.9 State Law-Decree No. 13626/43 defines standards and specifications for the routes of state roads. This legislation, dating since 1943, defines the width of right of way of state roads to be a minimum of 50m, and of 80m when close to urbanized areas. For the more recent highways built in the state, specific laws or decrees define the width of the right of way.

- 3.10 Besides these legal documents concerning the concession of the road system, rules and regulations defined by DER for the expansion and maintenance of the state highways must be met. The DER is elaborating, through specialized technical consultants, environmental specifications manuals adapted to the local conditions. The first version of these manuals will be submitted for discussion to SMA to be subsequently approved.
- 3.11 DNER manuals do not directly apply to these roads, since the system comprehends only state highways, although they have been used as reference for the DER.

3.2.2 Environment

- 3.12 The National Environment Policy is regulated by Federal Law No. 6938/81 (altered by Laws No. 7804/89 and 8028/90) and by the 1988 Federal Constitution which determines that: “all have a right to an ecologically balanced environment, for the common use of the people and to ensure a healthy quality of life, imposing thus to the public authority and the community the obligation to defend and preserve it for the present and future generations.”
- 3.13 CONAMA Resolution No. 001/86 defines environmental impact and provides a list of environmental-changing activities that depend on the preparation of an Environmental Impact Assessment (EIA) to be submitted to the state agency concerned for environmental licensing purposes, including “roads with more than two lanes”. Said provision was confirmed by CONAMA Resolution No. 237/97, which expands the list of Activities or Projects Subject to Environmental Licensing, with emphasis on “Civil Works - roads, railways (...)”.
- 3.14 The State Constitution published in 1989 dedicates its Chapter IV to the Environment, and State Law No. 9509/97 regulates the State Environmental Policy establishing its objectives, formulation and application mechanisms, and constituting the State Environmental Quality Management, Protection, and Control System (SEAQUA).
- 3.15 The licensing process established by the National Environment Policy (regulated by Federal Decree No. 99274/90) comprises three phases, as follows: (i) Preliminary License (LP), required during the planning stage accompanied, if applicable, by an Environmental Impact Assessment; (ii) Installation License (LI), required prior to construction and requiring the submittal of the respective engineering design, and environmental management plan (EMP); and (iii) Operation License (LO) - required after the completion of the works and commencement of road operation.
- 3.16 CONAMA Resolution 237/97 empowers the concerned environmental agency to set the validity terms for licenses, specified in the documents, taking into consideration the following aspects: (i) LP validity term shall not exceed five years; (ii) LI validity term shall not exceed six years; (iii) LO validity term shall be no less than four years and no more than ten years. LP and LI validity terms may be extended provided that they do not exceed the maximum terms provided for herein above.
- 3.17 In the State of São Paulo environmental permits have been regulated since 1994 by SMA Resolution No. 42/94. This Resolution establishes an additional stage to the environmental licensing process introducing the Preliminary Environmental Report

(RAP) which must be submitted to SMA in order to obtain a decision about the need for an Environmental Impact Assessment (EIA/RIMA). As a result of the analysis of the RAP, SMA may issue a Preliminary License (LP) or request an EIA/RIMA.

- 3.18 SMA Resolution No. 81/98 establishes procedures for licensing conservation and upgrading services in state highways, as well as procedures for dealing with emergencies due to accidents with hazardous cargoes. This resolution defines that no environmental licenses are required for conservation and other services (e.g., removal of secondary vegetation, slope stabilization, paving, construction of additional lanes, toll plazas) within the right of way of existing highways. Licenses will be requested if these services demand the removal of native vegetation or deviation of water courses.
- 3.19 The DEPRN edict No. 17/98 defines the technical documentation to be provided to instruct authorization requests forwarded to DEPRN, and the DEPRN edict No. 44/95 defines the specific procedures for obtaining authorization for the clearing of isolated native trees.

3.2.3 *Indirect Legislation*

- 3.20 Apart from the legislation mentioned above, the project should also observe the following federal legal regulations: CONAMA Resolution No. 002/96 establishing a requirement for the allocation of 0.5% of the value of the investment to repair the environmental harm caused by the destruction of forests and other ecosystems; Law No. 4771/65 – Forest Code which regulates the protection and preservation of significant vegetation; Law No. 5197/67 which regulates the protection of fauna; Law No. 6766/79, which regulates land use for urban purposes and defines as *non aedificandi* the 15m area along both sides of the right of way of the highways; and Law No. 86176/81 which regulates the creation of Ecological and Environmental Protection Areas.
- 3.21 Federal Law No. 7347/85 (altered by Laws No. 7804/89 and 8028/90) regulates the public civil action of responsibility for damage done to the environment, the consumer, and the estates and rights of artistic, esthetic, historic, and tourism assets. Federal Law No. 9605/98 disposes about the administrative and penal sanctions proceeding from harmful actions to the environment.
- 3.22 Federal Decree No. 96/88 approves the regulation of the transportation of hazardous products on roadways, complemented by the Ministerial Edict No. 291/88. Law No. 7802/89 and Federal Decree No. 98816/90 should also be observed as these regulate the transportation of agro-toxic and dangerous products. Also to be observed is CONAMA Resolution No. 1-A/86 which requires the transporter of dangerous products to communicate this to the state environmental agencies with a minimum notice of 72 hours.
- 3.23 The State Law No. 997/76 (regulated by Decree No. 8468/76) created the Environmental Pollution Prevention and Control System for projects considered to be polluting such as concrete and asphalt preparation sites temporarily constructed for the civil works, pavement and construction of other works.
- 3.24 Within the State, the following legal devices relating to the vegetation and landscape of the right of way should also be observed: Law No. 3735/83 which regulates the planting

of fruit trees along the state highways; and Law No. 5255/86, which regulates the conditions for removal of vegetation in areas contiguous to state highways.

- 3.25 Municipal legislation regarding the control of land use and areas of environmental interest will have to be observed, especially with regard to the municipalities which will be affected by the construction of the extension of the Bandeirantes highway. Within the municipality of Sumaré, municipal Law No. 2427/92 (altered by Law No. 2489/92) shall be considered as it regulates the types of land use and occupancy allowed in the Water Resource Protection Zone and in the Special Ecological Preservation Zone of the Horto Reservoir. In the municipality of Nova Odessa, Law No. 966/86 regulating the land use in the Environmental Protection Area of the Recanto Reservoir, shall also be considered.

3.3 Project Compliance Status

- 3.26 As stated in the environmental legislation, for the expansion work of the Bandeirantes Highway a full environmental licensing process (LP, LI and LO) is required, including the submittal of an EIA/RIMA. For the construction of the marginal lanes on the Anhangüera Highway the licenses can be issued upon presentation of a RAP. As for the other interventions (additional lanes, toll plazas, conservation and maintenance, work camps and send-off areas), if restricted to the right of way, no licenses are requested. Work camps, send-off areas and quarries must have an Authorization issued by DEPRN, and concrete and asphalt preparation sites must be licensed by CETESB as well as DEPRN. Accordingly, it is necessary to analyze each highway's compliance status separately.

3.3.1 Existing System

- 3.27 The marginal lanes of the Anhangüera Highway require all environmental licenses (LP, LI and LO). Except for the marginal lanes from km 86 through 111, none of the others have any licenses. Nevertheless, given that the Installation License was issued in 1994 and that the time scheduled for the commencement of the construction works was the 7th year of the concession, this license will have to be renewed. In all cases the procedure will consist of the presentation of a Preliminary Environmental Report (RAP) at least 10 months in advance of the commencement of the works in order to obtain the Preliminary License (LP). The first section of marginal lanes between km 12.85 and km 18, is programmed for the 3rd year of the concession pursuant to the standing legislation.
- 3.28 Intersections of the Anhangüera and Bandeirantes highways with the Metropolitan Beltway (RODOANEL) and the Campinas Beltway under the responsibility of AutoBAN depend on the issuance of an Installation License (LI). The licensing of the works is already being processed for the former, the LI of the junctions is observing the same procedures, with AutoBAN forwarding the executive project demonstrating the incorporation of the mitigation measures. In the case of the intersections with the Campinas Beltway there already is a LI which was conceded in 1991. This LI will have to be revalidated, due to the commencement of the works being programmed for the 7th year of the concession.
- 3.29 In September 1998 AutoBAN sent a letter to DAIA with the description of the Expansion and Upgrading Program to be carried out during the first four years of the concession and asked for licensing instructions for each intervention. DAIA's reply, dated January 22, 1999, confirmed that the preparation of a RAP may only be required for marginal roads

along Anhangüera highway between km 12.85 and km 18, depending on detailed project engineering data to be submitted when available.

- 3.30 Thus, other interventions (toll plazas, general surveillance stations, users' assistance services, movable weigh stations, bus stops, overpasses, additional lanes) will only require licensing if in the following situations: (i) when extending outside the limits of the right of way; (ii) when demanding the relocation of population; (iii) when demanding removal of natural coverage in medium or advanced stages of regeneration (inside or outside areas of permanent preservation) or in the initial stages of regeneration (when in areas of permanent preservation).

3.3.2 *Bandeirantes Expansion*

- 3.31 In 1991, an Environmental Impact Assessment (EIA) was presented for the expansion of the Bandeirantes Highway. The EIA was complemented in 1994 with the proposal of an alternative route in the section corresponding to the variant of Santa Bárbara d'Oeste which obtained a favorable appraisal from the state environmental authority in 1996 (Technical Appraisal CPRN/DAIA 004/96). On March 15, 1996 LP No. 027 was issued, valid for one year from that date. On September 29, 1998 the LP was renewed with a validity of six months.
- 3.32 The Technical Appraisal by CPRN/DAIA established the following conditions for the obtainment of the Installation License: (i) detailed design of a reforestation plan for the riparian vegetation of the affected watersheds; (ii) specification of the functional aspects of the project, including upgrade of land use as well as provision of transversal requests - overpasses, returns, underpasses, etc.; (iii) obtainment of specific authorization for the operation of work camps, asphalt plants, soil excavation and send-off areas; (iv) dimensioning of expropriation program with regard to the conditions of the property, the economic activities affected and the loss of agricultural production; (v) design of a plan for the management of water quality of the basins directly affected, including schedules; (vi) general schedule of construction works and development of environmental programs; (vii) general definition of responsibilities over the implementation of the environmental education, social communication and management programs.
- 3.33 On November 10, 1998 AutoBAN submitted to DAIA a request for the Installation License (LI) including a detailed description of the status of implementation of all the requirements formulated by the latter and of all the mitigation and/or compensatory measures proposed in the EIA/RIMA. The works were subdivided in sections in three levels of priorities expecting to obtain the LI for the first level of priority corresponding to approximately 25 km. DAIA granted the LI to AutoBAN for the expansion works on January 21, 1999.

3.3.2 *Environmental Management Plan*

- 3.34 As requested by the Bank, AutoBAN has elaborated an Environmental Management Plan (EMP) (*Plano de Gestão Ambiental Integrada do Sistema*) that identifies the main environmental issues to be managed during the period of the Anhangüera-Bandeirantes System concession, and defines environmental programs to prevent and control environmental and social impacts. An additional EMP has been prepared specifically for the expansion of the Bandeirantes highway extension, where the majority of the

environmental impacts are expected. The EMP defines a set of technical specifications and instructions for environmental management during both the construction and operation phases of the highway. See section 6 for details on the EMP.

- 3.35 The Bank required that the EMP be broadly exposed to the public within the municipalities served by the System, in order to meet IDB's public disclosure and consultation requirements (see section 7 for details).

3.3.3 Resettlement Action Plan

- 3.36 As requested by the Bank, AutoBAN prepared a specific final Resettlement Action Plan to define the specific plans and procedures related to the acquisition of land for the Bandeirantes highway extension (see section 6 for details on plan). This land acquisition activities consist of basically purchase of the necessary land and subsequent governmental designation of land expropriation; and there is basically no classical "resettlement" activities of land-less populations. The final Resettlement Plan complies with the Bank Policy on Involuntary Resettlement.

4.0 ENVIRONMENTAL AND SOCIAL CONDITIONS

4.1 Introduction

- 4.1 The region in which the Anhangüera-Bandeirantes System is located is densely populated including highly industrialized areas, intensive agricultural activities and significant urbanization. This region constitutes the principal vector of development of the State of São Paulo represented mainly by Campinas, Jundiaí and Limeira, demanding as such an adequate roadway and transportation system (see Annex I for site location map).
- 4.2 The characterization of the social and environmental conditions of the area of influence was based on the Environmental Impact Assessment for the Extension of the Bandeirantes Highway (1991) and the Survey of the Environmental Liabilities (1998) of the existing system, including erosion, sedimentation, unstable landfills, degraded structures, occupation by vendors and low-income families (*favelas*), dumps and contamination of water courses. In addition, some additional information was collected during the development of the various programs in the Project Environmental Management Plan.
- 4.3 The social and environmental conditions of the area of influence of the Anhangüera-Bandeirantes Highway System are here presented under two sections: (i) the first referring to the existing highway sections; (ii) the second, to the expansion of the Bandeirantes Highway.

4.2 Existing System

4.2.1 Environmental

- 4.4 The predominant climate in the area of influence of the Anhangüera-Bandeirantes Highways is classified as cWa (hot and humid climate) with dry winter, dominant winds from the SE of average annual speeds below 3m/second. The pluviometric distribution defines the months of December, January and February as the wet season, with January being the month of highest incidence of rainfalls, almost daily.
- 4.5 The initial stretch of the Anhangüera-Bandeirantes Highways, from São Paulo to Campinas is located in the Atlantic Plateau, on the zone of the São Roque mountain ridge characterized by markedly uneven topography, superior to 1000 m, forming deep valleys and a high drainage area. This is an extensive mountainous area. In the other sections the terrain becomes less irregular with soft slopes, smooth topography, favorable to settlement due to the low occurrence and intensity of erosive processes.
- 4.6 The Anhangüera-Bandeirantes Highways in their initial stretch are situated (until approximately km 39), within the basin of the Juqueri river of the High Tietê Basin. In this section the Juqueri river presents serious water quality problems due to the intense urbanization and concentration of industrial activities. For the rest of the stretch the highways pass through the basins of the Piracicaba, Capivari and Jundiaí rivers. These are some of the most important hydrographic units within the State of São Paulo, and some serve as sources of public water supply for local municipalities.
- 4.7 The vegetation coverage of the region was severely affected by the expansion of the coffee plantations, which left very little of the semi-deciduous Forest intact. Serra do Japi in the State of São Paulo, constitutes one of the last areas of continuous forest remaining in the area of influence of the highways, providing a glimpse of the once exuberant fauna and flora of the southeastern region of Brazil. Serra do Japi runs southwest of the highways.
- 4.8 The fauna of this region has been considerably disturbed. The general register of species shows little diversity in the present fauna, which is a direct result of intensive agricultural activity and urban expansion.

4.2.2 *Socioeconomic*

- 4.9 The Anhangüera-Bandeirantes Highway System is almost completely located within the Administrative Region of Campinas and has an important role in the urban-industrial development of this area. This region encompasses approximately 25% of the population of the interior of the State (4.5 million inhabitants), which is mostly concentrated in urban centers (90%). This region has the second largest industrial park in the State behind the one in the SPMA. This region's industry is based on the production of intermediate products and capital goods, driven by the petrochemical pole of Paulínia.
- 4.10 The Anhangüera-Bandeirantes Highways constitute the principal axis of the regional urban network leading to an almost continuous urban area, from the SPMA to Americana, wherein Sumaré, Hortolândia, Nova Odessa, Americana and Limeira, as well as Santa Bárbara d'Oeste and Piracicaba are included. The main urban centers are Campinas and Jundiaí, the former is the center formed by the municipalities of Valinhos, Vinhedo, Paulínea, Sumaré, Hortolândia, Nova Odessa, Americana, Santa Bárbara d'Oeste, Monte Mor, and Indaiatuba. Jundiaí is the center of the urban agglomeration formed by the municipalities of Várzea Paulista and Campo Limpo Paulista.

- 4.11 Although agriculture is only a minor part of the economy of the region, sugar cane, orange, tomato and other fruits do contribute to the economy of the region. The regional agroindustry developed in linkage with technological progress in the production of sugar, alcohol and concentrate orange juice, in the municipalities of Campinas, Limeira and Piracicaba; and the production of other fruit, dairy products and livestock (poultry and swine) in the municipalities of Jundiaí, Atibaia, Vinhedo and Bragança Paulista.
- 4.12 The social infrastructure varies considerably presenting health indicators superior to the median for the State, but with low educational services. As for the basic urban sanitation, transportation and telephone services, the larger cities present high quality standards, as in Americana and Limeira.
- 4.13 Up to km 17 of the Anhangüera there is significant development including a medium-to-high income residential urbanization, industrial facilities and commercial activities. This type of development can be observed to varying degrees in different sections of the highway among the cities of Jundiaí, Campinas, Americana and Limeira and other cities along the highway where commerce and industry are the predominant activities. From km 17 until the city of Jundiaí, the land use along the route presents rural characteristics with low land occupancy and empty areas where some isolated uses can be seen and leisure-oriented estates and country-houses or small industries are located. The stretch between Jundiaí and Campinas presents intermittent occupation with the occurrence of industrial areas and residential zones of different standards. From km 86, the future junction with the Campinas Beltway, until km 120 (Limeira) the standard of occupancy is more consolidated, with a diversified use and variable density, and from then on consisting of scarcely occupied land.
- 4.14 The main problems related to these commercial activities are: (i) close proximity to the roadway or location in curves with low visibility conditions (significantly increasing the chance of accidents); (ii) lack of acceleration and deceleration lanes and inadequate stop areas generating risks for vehicles; (iii) accumulation of garbage and clogging of the drainage system of the highway.
- 4.15 The area surrounding the Bandeirantes Highway in its initial section presents residential settlements of medium and low standard on the north side of the highway, and of medium to high income standards on the south side. Rural occupation can be observed up to km 55, with low density, isolated small properties, such as summer country-houses and some small industries. In the final section there are various dense industrial and residential centers in the proximity of the intersections with SP-300 in Jundiaí, SP-075 (Santos Dumont Highway) and in the vicinity of km 97.
- 4.16 In the area of influence of the existing stretch of the Anhangüera-Bandeirantes Highways there are the following State Environment Protection Areas (APA): (i) APA of Cajamar established by Law No. 4,095/84; (ii) APA of Cabreúva, established by Law No. 4,023/84; (iii) APA of Jundiaí established by Law No. 4,095/84; (iv) APA of the Piracicaba River Basin and Juqueri-Mirim River, created by the Decree No.26,882/87. There are also Natural Preserves protected as historical heritage by the CONDEPHAAT [not a defined term] authority as are the Jaraguá State Park and the Serra do Japi.

4.3 Bandeirantes Expansion

- 4.17 The extension of the Bandeirantes Highway will follow the same path as that of the existing roads distancing itself no more than 25 km from the axis of the Anhangüera Highway. The regional social and environmental conditions as observed are much the same between the two roads, and thus presented below is a summary of only aspects that are different for the Bandeirantes expansion area.

4.3.1 Environmental

4.18 In the section corresponding to the extension of the Bandeirantes Highway the rocky substratum consists primarily of rocks of the Itararé subgroup, of the Tatuí, Irati and Serra Geral formations, besides cutting through alluviums at the floor of valleys. The EIA points out favorable soil conditions for intervention, including low erosion potential and good support capacity. The relief is characterized by a predominance of broad hills, smooth topography, favorable to occupation due to the low occurrence and intensity of erosion processes.

4.19 The route of the highway traverses the Piracicaba River basin. Besides this river the route also crosses various other water courses, some of which are considerably polluted by domestic sewage, and others are used as water supply sources for Nova Odessa and Sumaré.

4.20 In the area of influence of the extension of the Bandeirantes Highway, the remaining vegetation consists of broken patches of riparian forest along some of the water courses. Despite their scarcity, these remnants play an important role as refuge for some elements of the Ombrophylous flora, birds and some species of Chiroptera. The new highway will only affect two areas of vegetation, both are within the right of way and the impact is expected to be minor.

4.3.2 Socioeconomic

4.21 The route of the extension of the Bandeirantes Highway will cross the municipalities of Campinas, Nova Odessa, Hortolândia, Sumaré, Santa Bárbara d'Oeste and Limeira, all of which integrate the Administrative Region of Campinas. The route of the new highway will bypass the urban growth within Campinas, Americana and Santa Bárbara d'Oeste, reducing urban interference as presently observed along the Anhangüera Highway.

4.22 The extension of the Bandeirantes Highway is located near the following special areas: (i) Water Resources Protection Zone of Sumaré; (ii) Special Ecological Preserve of Represa do Horto, in the municipality of Sumaré; (iii) the Pinheirinho stream which supplies the Represa do Marcelo; and (iv) the Environmental Protection Area of the Represa do Recanto in Nova Odessa.

4.23 Various municipalities with the project area have developed specific land use master plans, for example, Campinas, Monte Mor, Sumaré, Nova Odessa, Americana, and Limeira.

5.0 ENVIRONMENTAL AND SOCIAL IMPACTS

- 5.1 The analysis of social and environmental impacts indicates that in general, these are of minor importance and magnitude, and are mostly restricted to the expansion of the Bandeirantes Highway. The project related impacts have been analyzed and are presented in two areas: (i) impacts related to the existing roads, corresponding to works related to improvements and expansion within the already road system, and (ii) impacts related to the expansion of the Bandeirantes Highway, or the all impacts related to completely new roadways.

5.1 Existing System

- 5.2 Main impacts on the existing system relate to the construction of the Anhangüera Highway marginal lanes. Of the planned sections, only the marginal lanes between Km 86 and Km 111 have been analyzed in terms of impacts given the requirements for the Installation License application. Other sections will be analyzed, as required, during the installation license application.
- 5.3 The environmental liabilities assessment reported the existence of irregular settlements (*favelas*) along the Bandeirantes Highway between km 16 and 38, totaling 268 dwellings. Except for a reduced number of units existing under a high-risk situation (approximately 8), no resettlement procedure is proposed by AutoBAN since there shall be no direct interference on these areas from the present operations or from the planned improvements. As per the concession agreement, the relocation of favelas invading the right of way prior to subscription date is not a contractual obligation. AutoBAN's contractual liability is limited to inspecting the right of way occupancy, and controlling invasions, so as to prevent existing invasions to expand or new ones to develop. However, should resettlement of the favelas be required by authorities in the future, AutoBAN will promptly communicate the fact to the lenders and prepare and submit a specific Resettlement Action Plan in full compliance with the Bank's resettlement policy.
- 5.4 The environmental liabilities survey listed 36 vendors¹ of horticultural and poultry farm products located in the right of way in the area surrounding km 70 and in the final stretch between km 114 and 128 of the Anhangüera Highway. The vendors have been there for about 10 years on average, and some for 35 years, since the time of the original construction of the highway, when they commercialized products for the workers. Most of them claim to have a license from DER to operate. The origin of the commercialized products is from CEASA (Storage and Commerce Agriculture Center) of Campinas and small farms and harvesters of the region. Their average monthly billings vary from R\$1,000 to R\$4,000, with extremes of R\$200.00 to R\$ 20,000. The environmental liabilities survey also identified the existence of 9 fruit vendors between km 72 and 85 of the highway. According to the socioeconomic survey 8 of these declared to be functioning there for 18 years and only one for 10 years. All of them declared to possess an operation license from DERSA. The origin of the commercialized products is from the Campinas CEASA and from small horticulturists in the region. The average monthly billing is reportedly around R\$2,000, although two vendors reported sums up to R\$20,000. The facilities are usually precarious: made of wood and canvas covering - with

¹ The total number of vendors identified along the highway system is 45 (see para. 4.18).

no sanitary infrastructure or electricity. A specific mitigation program has been developed for these vendors (see section 6 for details).

5.1.1 Construction Phase

- 5.5 The implementation of improvement and expansion works will generate the following impacts: (i) noise and dust generation; (ii) interference on natural drainage, especially upon implementation of a new bridge over the Piracicaba river; (iii) slope instability and intensification of erosion processes and consequent siltation of water bodies; (iv) disturbance of traffic conditions and crossings on existing ways; (v) interference on infrastructure systems (i.e. water, sewerage, telephone, electricity); (vi) increased accident risk, and (vii) removal of vendors from the right of way.
- 5.6 On the section between Km 86 and Km 111, marginal lanes will cross several watercourses, many of which have poor water quality. Currently, the Anhangüera Highway already crosses these watercourses, and transversal ducts have been constructed under the road. In most cases the capacity of these ducts is insufficient and therefore, the systems will have to be re-adapted upon implementation of the marginal lanes.
- 5.7 Preliminary estimates show that few expropriations will be necessary along the marginal lanes. This is because to the extent possible expropriation will be limited to those living on the road right of way, excluding the construction of new accesses where the need to expropriate additional areas will be evaluated. Since the area to be expropriated is located on *non aedificandi* area pursuant to the law, no interference on buildings or improvements has been anticipated.
- 5.8 The implementation of additional lanes on the Bandeirantes Highway during year 7 of the concession will not directly affect the irregular settlements along the right of way as indicated in Section 4.0.
- 5.9 In terms of impacts from use of borrow pits and landfills for excess soil, the occupancy patterns of areas adjacent to the section forces the spreading of surplus disposal sites and sources of borrow materials. In some cases, such areas shall be located within urbanized private plots of land, where landowners are willing to give or receive landfill material, in exchange for the formation of a plateau compatible with the gradient of surrounding road works. Given the characteristics of the road works and the required flexibility in the location and use of pits and landfills, the project will obtain licenses for areas exceeding the actual needs, to safeguard against possible delays.

5.1.2 Operation Phase

- 5.10 The need to separate regional from urban traffic flows is the main justification for the implementation of the marginal lanes. The shared use of the roads for regional and urban flows generates traffic safety problems and induces the multiplication of irregular accesses, constructed without the required acceleration and deceleration lanes. Marginal lanes must intercept these accesses by channeling local flows and allowing confluence with the road only through adequate acceleration and deceleration lanes, thus minimizing conflicts and risks of accidents.
- 5.11 During the operation phase of the marginal lanes, the following impacts are expected: (i) improvement in traffic flow; (ii) reduction in accident rates; (iii) consolidation of road

uses and benefit to urban activities from improved traffic and safety conditions; (iv) reduction in air pollution levels; and (v) increased noise levels in some urbanized areas closer to the roadway and new lanes.

5.2 Bandeirantes Expansion

- 5.12 The analysis of impacts related to the expansion of the Bandeirantes Highway has been based on the analysis made in the Environmental Impact Assessment submitted to the State Environmental Authority (SMA) to obtain the LP, studies carried out to obtain the Installation License, and a detailed engineering study.

5.2.1 Construction Phase

The principal impacts expected during the construction phase are indicated below.

- 5.13 Inducement of erosion processes and slope instability. The consequent siltation of valleys will not be significant given that the terrain on the area of intervention is undulating and cuts and fills have small dimensions. The erosion processes will be localized, reversible, and mitigated using appropriate soil management practices, especially in the valleys. The use of adequate soil management techniques will also prevent siltation of water bodies.
- 5.14 Impacts on water resources. These include: (i) risk of pollution of water supply sources, especially in Sumaré and Nova Odessa; (ii) increased water turbidity, and (iii) siltation of Marcelo and Recanto dams in Nova Odessa.
- 5.15 Increased emissions of particulate material. Earth-moving activities in cuts, fills, and storage areas for excess materials, and the operation of asphalt plants, will lead to the generation of emissions that could affect the population in dry and windy conditions. State of the art technology will be used to control these emissions. The operation of earthmoving machinery and tractors shall increase noise levels, which will affect urbanized and residential areas in the vicinity of the works.
- 5.16 Alteration of fragments of remaining vegetation. Increased human intervention on forest edges (especially through fires) will affect the flora and local fauna. Furthermore, there will be some reductions in forest area in intermediate or advanced secondary succession phases. This latter impact should be of lesser magnitude given the scarcity of these forest formations.
- 5.17 Interference on road infrastructure. There will be a permanent interruption of some secondary road corridors, as well as temporary interruption of local ways. The need for temporary traffic diversions, will result in temporary alterations in local traffic conditions.
- 5.18 Expropriations. A total of 232 properties shall be expropriated due to the Bandeirantes highway extension project, consisting of 128 properties and 131 project affected people (PAP) in Lots 1, 2 and 3, and 104 properties and 91 PAP in Lots 4 and 5 (see Tables 3 and 4 for details). Large properties (e.g., greater than 10,000 m²) represent the majority of properties, with a minor amount of urban plots (e.g., less than 1,000 m²). A total of 73 buildings will be expropriated, including 21 non-residential buildings (small commercial, rural buildings, etc.). The remaining 52 buildings are residential, including 37 principal

residences, 7 unoccupied or closed, and 8 week-end homes. Of the 52 residential units, 22 are owner-occupied or empty, 9 are rented and 21 are assigned to resident employees.

- 5.19 Loss of cultivated areas. A loss of 500 ha of agricultural land is expected. This amount represents approximately 0.5% of the cultivated area in the directly affected municipalities.
- 5.20 Job generation. The hiring of direct labor in the region will be significant, given its availability. The EIA estimates that 8 to 12 thousand jobs (both direct and indirect) will be generated during the peak of works phase.

5.2.2 *Operation Phase*

- 5.21 The following are the potential impacts expected during the operation phase: (i) alterations in traffic volume on regional road network, creating a need to improve secondary ways linking the several urban nuclei in the area of influence; (ii) real estate appreciation in areas around road accesses, and depreciation in residential areas adjacent to the right of way; (iii) acceleration in the urban sprawl process in areas close to the road accesses; (iv) alterations in land use in view of the new accessibility provided by the roadway (part of the Special Ecological Preservation Zone of the Horto Reservoir and the Water Resources Protection Zone in Sumaré as well as some urban areas along the road may be affected).
- 5.22 The principal impact expected is the loss of residential and agricultural potential and increase in industrial land-use, due to the urban structure sectioning to take place on the periphery of Hortolândia, Campinas, and Santa Bárbara d'Oeste. This is considered a significant, irreversible impact requiring mitigation through the provision of connections and the relocation of public equipment and infrastructure when necessary.
- 5.23 The potential indirect impacts that have been identified as part of the project EIA include: changes in surrounding land values, especially near inter-change areas; increased urbanization in the municipalities of Americana, Hortolandia, Sumaré, Santa Bárbara do Oeste, and Monte-Mar; increased traffic and associated impacts in the municipalities of Campinas, Hortolandia, and Santa Barbara do Oeste; and increase in traffic on regional roads (e.g., interconnection roads).

5.3 **Positive impacts and other benefits**

- 5.24 Improvement of traffic flow and safety conditions. Improvements are expected in many of the existing highways in preparation for their interconnection with the new beltway (Rodoanel), as well as to meet increased demands generated by the whole Campinas Administrative Region. These improvements will minimize overload situations, accidents, and travel time in the whole highway system, bringing direct benefits to the population living close to the road accesses. Furthermore, a reduction in the use of regional routes is expected due to traffic transferring from Anhangüera Highway to the new road, resulting in reduced freight and regional transportation charges, and reduced air pollution due to improved traffic flow.

- 5.25 Incentive for industrialization. Industrialization of the region is expected due to the reduced travel time from SPMA to the municipality of Campinas and other important consumer centers. Other incentives include the creation of new areas offering adequate rental facilities and infrastructure propitious to the implementation of industrial projects.
- 5.26 Job generation. Generation of jobs is expected at the regional level during construction and operation phases. The jobs will come from direct employment in road construction and then in operation activities, and indirectly from the economic growth promoted by the improved movement conditions and reduced transportation costs.

6.0 ENVIRONMENTAL AND SOCIAL MANAGEMENT

- 6.1 As requested by the Bank, AutoBAn has elaborated an Environmental Management Plan (EMP) (*Plano de Gestão Ambiental Integrada do Sistema*) that identifies the main environmental issues to be managed during the period of the Anhangüera-Bandeirantes System concession, and defines environmental programs to prevent and control environmental and social impacts. An additional EMP has been prepared specifically for the expansion of the Bandeirantes highway extension, where the majority of the environmental impacts are expected. The EMP defines a set of technical specifications and instructions for environmental management during both the construction and operation phases of the highway.
- 6.2 The general objectives of the EMP are: (i) to establish the framework for the implementation of an integrated environmental management program for the concession; (ii) to define AutoBAn responsibilities by generating an environmental management structure, and (iii) to define the specific actions and associated costs, schedule, and responsibilities for action within the environmental program.
- 6.3 A summary of the overall EMP mitigation and monitoring programs is presented in Section 6.1. Costs, schedule and responsibilities for the implementation of EMP are presented in Section 6.2. The Environmental Management System and the Contingency and Risk Management Plan to be implemented by AutoBAn are presented in Sections 6.3 and 6.4, respectively.

6.1 Mitigation and Monitoring Measures

- 6.4 The EMP consists of the nine programs summarized below.

6.1.1 Program 1 – Characterization and Rehabilitation of Environmental Liabilities

- 6.5 This program aims to identify, evaluate, and define rehabilitation and/or management goals for existing and potential environmental liabilities along the roads under concession to AutoBAn, pursuant to agreement provisions executed with the State Government. The program encompasses the whole Anhangüera-Bandeirantes System, including environmental degradation problems identified on the strip where the extension of Bandeirantes Highway will be implemented. The methodology used to prepare this

- program should be compatible with the steps and norms defined on the DNER manuals. Basically, they include: (i) identification and general characterization of liabilities; (ii) definition of rehabilitation activities, and (iii) definition of management and monitoring activities.
- 6.6 During the first phase of works, AutoBAn has already identified and characterized all the environmental liabilities acquired with the concession of the system. In general, these were classified as follows: (i) erosion processes; (ii) siltation of natural drainage channels; (iii) irregular occupancy of right of way; (iv) landscape alteration; (v) irregular waste disposal, and (vi) alteration of pavement conditions by extraneous factors (i.e. waste disposal facility of the São Paulo municipality on km 25.5 of Bandeirantes Highway).
 - 6.7 Table 5 summarizes environmental liabilities rehabilitation and management activities for each type of occurrence reported.
 - 6.8 The program defines major management and monitoring activities to be implemented by AutoBAn on all critical sites identified in the assessment, including after the performance of environmental rehabilitation actions. Monitoring shall include without limitation: (i) stability of side cuts and side fills; (ii) surveillance and control of actions outside the right of way that may jeopardize the drainage system; (iii) follow up of revegetation actions, and (iv) evaluation of effectiveness of drainage systems.

6.1.2 Program 2 - Environmental Licensing

- 6.9 This program intends to prepare AutoBAn, both technically and institutionally to comply with the applicable Brazilian environmental regulations, especially related to the environmental permitting/licensing requirements. Additional objectives of the program are: (i) to establish environmental management planning procedures for the implementation of expansions and improvements; (ii) to ensure that environmental licensing procedures are initiated well in advance, with reasonable anticipation to the performance of services and works requiring licensing, and (iii) as often as possible, to streamline licensing procedures by grouping interventions with similar features in terms of proximity or initiation date.
- 6.10 This program intends to offer support to the schedule of implementation of expansions and improvements anticipated in the concession agreement. The main work to be licensed within the next two years is the construction of the extension to the Bandeirantes Highway. Respective licensing proceedings have been in progress at SMA (for further details, see Section 3.3). The licenses and authorizations shall be obtained from the following environmental agencies during the concession period: (i) DAIA - for interventions requiring that RAP and/or EIA/RIMA be submitted; (ii) DEPRN - for interventions demanding that vegetation be cut and/or alterations made in protected natural areas as well as areas to be used as borrow pits and landfills for excess soil, and (iii) CETESB - for industrial activities supporting the implementation of works, such as asphalt and cement plants.

6.1.3 Program 3 – Environmental Protection and Control

- 6.11 This program will be implemented throughout the life of the concession. The program provides for the adoption of environmental control procedures by the construction companies as listed below. These procedures will be a requirement for the construction companies, as drafted on the construction agreements.
- 6.12 Camp sites, industrial facilities, and temporary infrastructure. Technical guidelines have been prepared for: (i) *location*; (ii) *implementation*; (iii) *operation*; and (iv) *closure* and/or *rehabilitation* of these activities.
- 6.13 Guidelines for location of these activities include measures: (i) to prevent possible clearcutting of areas with significant plant cover; (ii) to avoid interference on environmental preservation areas; (iii) to minimize distances between camp sites, industrial facilities, temporary infrastructure and the work sites, and (iv) to maintain a minimum of one hundred (100) meters between noise-generating sources and urban areas.
- 6.14 Guidelines for installation of these activities include measures: (i) to limit soil impermeabilization; (ii) to perform sanitation and surface drainage systems and fuel spillage containment devices; (iii) to provide for leisure-oriented areas for workers (no less than 4 m²/ worker); (iv) to adopt CETESB-approved pollution control systems, and (v) to implement noise attenuation systems.
- 6.15 Operation guidelines to be implemented include: (i) control and maintenance of sanitary systems; (ii) supply of drinking water in all work areas and camp sites, and water quality control; (iii) classification of wastes generated and proper disposal thereof in authorized areas; (iv) maintenance and constant monitoring of pollution control devices, and (v) use of worker safety devices.
- 6.16 Guidelines for the closure of these activities establish the following requirements: (i) general rehabilitation of the area (removal of all construction materials); (ii) grading; (iii) soil restoration for subsequent planting, and (iv) final inspection and sealing of sanitation systems.
- 6.17 Landfills for excess soil and borrow pits. Guidelines for the *location* of such areas include the requirements: (i) to prioritize the use of areas near the road alignment/work thus minimizing the transport of materials; (ii) to preferably use already degraded areas; (iii) to not use areas with significant plant cover and flood plains. Regarding *implementation* of such areas guidelines include: (i) installation of surface drainage systems; (ii) maintenance of a minimum distance of 15 meters from watercourses; (iii) development of stability studies for landfills over 15 meters in height, and (iv) definition of minimum dimensions for drainage devices, slopes, side fills, and side cut and fill intermediate drains. Guidelines for *operation* include: (i) constant drainage system maintenance; (ii) re-vegetation as often as possible; (iii) moistening of soil surface; (iv) performance of borrow and landfill works in horizontal layers followed by soil compaction. Measures related to the *closure* of said areas include: (i) final cleaning of areas; (ii) restoration of soil horizon, and (iii) planting of native arboreal sized species (no less than 2,000 seedlings per hectare).

- 6.18 Permanent operating controls. The program provides the following additional control measures: (i) *noise control* by enforcement of provisions made on CONAMA Resolution No. 01/90; (ii) *air emission control*, with emphasis on dust control during the dry season; (iii) *works signaling*, drawing up of a signaling plan for the works, including delimitation of restricted movement areas, establishment of internal and external routes for the movement of heavy vehicles, equipment, and machinery; (iv) *safety program* involving accident prevention measures and safety standards, performance of Environmental Risk Prevention and Occupational Health Control programs, and the creation of an Internal Accident Prevention Commission (CIPA) in every construction company; (v) *protection of fauna and flora*, through training of workers and construction companies on the areas to be preserved and team leaders on environmental restrictions associated with the works, as well as the delimitation of areas authorized for cutting of vegetation; (vi) *procedures for removal of vegetation*, through drafting of guidelines for clearcutting activities authorized by the environmental agency, such as demarcation of areas, rescue of seedlings, fire ban, etc.; (vii) *siltation and erosion control* including monitoring of erosion and siltation of watercourses, and placement of devices to slow the speed of runoff water, appropriate maintenance of drainage systems, and (viii) *water quality monitoring*, establishment of special monitoring procedures for watercourses integrating public supply basins through specific technical instruction, monitoring of turbidity (near work areas) and pH parameters (during pavement phase and construction of special road structures), establishment of communication programs with public supply authorities in case of accidents.
- 6.19 Special executive procedures. The following procedures have been defined: (i) instrument-aided control of critical siltation sites; (ii) protection measures in areas where explosives are detonated; (iii) excavation and rescue procedures in areas which might have archaeological artifacts, and (iv) planning and coordination of interference on traffic involving detours of local ways and roads.
- 6.20 Closure of works procedures. At the end of the works, AutoBAn will confirm that the construction companies have fully complied with the following: (i) completion of revegetation program; (ii) final rehabilitation of areas subject to erosion processes; (iii) total organic soil rehabilitation and planting of arboreal species in all the designated areas; (iv) general cleaning of the right of way; (v) completion of landscaping projects; (vi) removal of works signaling; (vii) reconstruction of damaged roadway sections, and (viii) cleaning and clearing of the drainage system.
- 6.21 Liabilities. Pursuant to the program, construction companies are liable for: (i) the performance of control measures listed in the program; (ii) the accountability for possible environmental accidents or damages, and (iii) obligation to repair or indemnify possible damage pursuant to environmental laws enforced in the country. AutoBAn shall create a technical management team during the works in charge of: (i) general coordination of control procedures; (ii) works documentation and monitoring; (iii) recording of relevant environmental issues, and (iv) instructing of companies in specific cases.
- 6.22 Communication program. The program requires construction companies to inform AutoBAn in writing, within 24 hours, about any event deemed to be of environmental significance. For illustration purposes, the program stresses the following instances: (i) identification of soils likely to be contaminated; (ii) identification of archaeological sites or artifacts; (iii) accidents involving fuel spills; (iv) road accidents between construction

support areas and the works; (v) damages to fauna and flora; (vi) fire; (vii) damage to third party properties, and (viii) significant erosion processes and/or landslides.

6.1.4 Program 4 – Environmental Documentation and Monitoring

- 6.23 This program has the objective of establishing the environmental documentation, monitoring, and management procedures for works related to the expansion of the road system, with emphasis placed on the extension of the Bandeirantes Highway. The program provides for the following main tasks: (i) drafting of an Environmental Management Manual defining technical procedures related to the preparation of environmental recommendations and requirements as listed on Program 3; (ii) follow-up on the General Schedule of Works; (iii) monitoring of services performed by construction companies to ensure full compliance with environmental measures defined in the above-mentioned program; (iv) creation of a Records System to document all the main phases of works and pertinent environmental issues; (v) drawing up of bi-annual Environmental Management Reports; (vi) development of an Annual Environmental Performance Report, and (vii) support to AutoBAn in the interaction with environmental authorities and follow-up of environmental licensing proceedings, as set forth in Program 2.

6.1.5 Program 5 – Expropriation and Relocation Support

- 6.24 This program is designed for expropriations made during the improvement works on the Anhangüera-Bandeirantes System, especially in the construction of the extension of the Bandeirantes Highway. Pursuant to Brazilian law, expropriations can be partial or total, depending on the amount of property taken and the conditions of the affected properties. Pursuant to the concession agreement, AutoBAn is responsible for the expropriation activities as provided for by the law, paying fair compensation to owners affected by the works. With regard to the construction of the extension of the Bandeirantes Highway, expropriation actions shall start upon enactment, by the State Government, of the Public Interest Decree for the new roadway right of way. AutoBAn shall indemnify all the owners, and land shall be ceded to the State Government. The total cost estimated for the expropriation is around R\$ 13 million..
- 6.25 The goals of this program are: (i) to evaluate the road design in an attempt to minimize interference with urban areas, especially residences; (ii) to prepare the expropriation procedures to be followed, and (iii) to establish support measures for the population and vendors found on the area where works shall be implemented. A resettlement action plan has been prepared and is detailed below. No need has been anticipated to resettle the irregular or illegal population and/or economic activities as a direct result of the improvement works on the System.
- 6.26 At the request of both IDB and IFC, AutoBAn has prepared a separate “stand-alone” final Resettlement Action Plan which details the various actions described below, and in compliance with the Bank’s policies on resettlement.
- 6.27 Compensation and assistance. In accordance with the general principles of the IDB, the compensation and assistance procedures described in this section are designed to allow the population to be relocated, to share the benefits of the project through compensation mechanisms and support measures for their dislodgment and social re-integration. Affected economic establishments will also be compensated and supported according to this guideline. A “no harm” philosophy will prevail throughout all activities included in

the Resettlement Action Plan, and the following general principles will be observed in all cases:

- All PAP, regardless of the absence of legal rights over property, will be compensated on the basis of the estimated replacement cost of their current dwelling or commercial establishment;
- All PAP will receive proper logistic and social assistance during the transition period;
- Reinsertion into the new urban context will be monitored and assisted in order to assure that current standards of living are at least assured.

6.28 In accordance with above mentioned principles, compensation and assistance measures included in the Resettlement Action Plan for the PAP to be affected by the Bandeirantes extension, deal with all involuntary relocation and economic displacement impacts, including loss of property and loss of employment. In general terms, the procedures described herein can be grouped into three main categories as follows:

- Compensation required by expropriation legislation;
- Compensation required by labor legislation;
- Complementary compensation and assistance procedures proposed by AutoBAn.

6.29 Tables 6 and 7 present the proposed compensation and assistance procedures and entitlements included in the Resettlement Action Plan.

6.30 There is no need for a collective resettlement, since affected properties are individual rather than community. Informal consultation indicated that most people wish to secure their own new sites, though AutoBAn will assist with a database of available properties. Should any PAP request assistance to find a new property or dwelling, AutoBAn will provide this assistance through the Community Interaction Unit. It should be noted, however, that availability of options has been confirmed during the appraisal process. That is, there are significant quantities of empty residences for sale, as well as urban plots, commercial establishments, farms and agricultural land in general. That availability is much larger than demand to be generated by PAP and hence it is not expected that a sudden peak in real estate market demand will result in market value appreciation. Table 7 in the following page indicates typical compensation and assistance entitlements for some of the more significant PAP categories.

6.31 The schedule for all compensation and relocation assistance measures proposed is influenced by the construction schedule. Conditions prior to the construction start-up on properties where involuntary relocation shall take place are listed below:

- In the residential sectors to be expropriated, works may commence only after the actual move of dwellers, likely to take place within thirty (30) days from the writ of entry for all the households in the work area affected. Said period shall allow current owners and/or tenants to move their belongings and to remove doors, windows, frames, grills, or other building components.
- PAP who delay their move for more than three (3) months after writ of entry will not be entitled to moving assistance unless the delay is due to the project. This restriction should not affect any PAP negatively and is mostly aimed at owners of second residences (week-end homes) who do not necessarily have any urgency in finding a new place.

- In case of commercial and service establishments, demolition may commence immediately after the writ of entry and evacuation of facilities.
- Demolition of industrial facilities may also commence immediately after the writ of entry and evacuation, although it shall be preceded by an AutoBAn audit (“due diligence”) intended to identify remaining environmental liabilities. Should any liability be reported (for example, soil contamination), the State Environmental Authority (SMA) and CETESB shall be immediately informed and inquired about the definition of corrective actions applicable.
- With regard to agricultural activities, production-support facilities (warehouses, sheds and the like) which are essential for farm operation must obtain replacement facilities within the remaining parts of the agricultural property before they are demolished.

6.1.6 Program 6 - Management of Irregular Uses in the Right of Way

- 6.32 This program has the objective of providing satisfactory solutions for two kinds of irregular occupancy found in the right of way of the highways of the System, namely: (i) low income occupations; and (ii) commercial activities - vendors. These are occupations that occurred before the signing of the contract of the concession by AutoBAn and have thus been included in the environmental liability survey as discussed in Program 1. AutoBAn has maintained constant vigilance to avoid increments in these irregular dwellings or new commercial activities since the date when it took over the responsibility for the concession.
- 6.33 The objectives of this Program are to establish procedures that AutoBAn will adopt to manage activities around these occupations. The procedures take the following issues into consideration: (i) the low income residential occupations will not be affected by the expansion and upgrading works of the System and therefore, as stated by AutoBAn, will not demand resettlement; and (ii) to minimize current conflicts between these uses and the highways in order to improve safety conditions. The procedures defined for each situation are described below.
- 6.34 Low income residential occupations. A number of 268 low income dwellings were identified along five main locations, all situated in the initial section of the Bandeirantes Highway. Except for a reduced number of units existing under a high-risk situation (approximately 8), no resettlement procedure is proposed by AutoBAn since there shall be no direct interference on these areas from the present operations or from the planned improvements. The program defines the following procedures: (i) re-positioning within the same area of seven dwellings that are currently situated in high risk locations; (ii) construction of guardrails and/or fences where necessary for improved safety (for instance, where units are below level of the highway); (iii) contracts with water supply, sewer treatment and garbage collection companies for improvement of local sanitation conditions; (iv) environmental education activities for the community in order to ensure the effectiveness of the programmed interventions; (v) control and surveillance of the areas to prevent further invasion and to control irregular waste disposal.

- 6.35 The program foresees a series of procedures to be adopted in case some authority or intervening entity in the process of the concession determines the need for a removal and resettlement program of this population. These measures were defined pursuant to the rules and procedures established by Bank policy on resettlement. If resettlement of the favelas be required by authorities in the future, AutoBAN will promptly communicate the fact to the lenders and prepare and submit a specific Resettlement Action Plan, acceptable to the lenders, in full compliance with the Bank's resettlement policy
- 6.36 Occupancy by commercial activities. A number of 45 fruit vendors were identified, 36 of which are on Anhangüera Highway and 9 on Bandeirantes. The program includes a variety of measures for the relocation of all vendors that will ensure safety, some of these are: (i) reasonable distance from the roadway to ensure the safety conditions of both vendors and customers; (ii) adequate parking areas; (iii) adequate sanitary conditions; and (iv) safety and information signaling on the highway. As for localization the program plans: (i) relocation to areas close to the areas designated to be Users' Assistance Stations (SAU), to General Surveillance Stations (PGF), and resting areas; (ii) where the above is not possible the relocation to less risky sections of the highway, distancing the vendors' booths away from the boundaries of the right of way.
- 6.37 In addition, systematic surveillance by AutoBAN will be done in order to: (i) prevent the installation of new commercial activities; and (ii) to supervise the vendors as to the established commerce procedures, i.e., fruit selling, waste disposal, etc.

6.1.7 Program 7 – Public Disclosure and Community Relations

- 6.38 This program aims to disseminate the information on the diverse works and activities to be executed by AutoBAN and their possible effects on the population and economic activities. The program establishes through a Public Disclosure and Community Relations Plan (PDI) general communication and public relation guidelines involving the following aspects: (i) public interest; (ii) environmental educational actions; (iii) disclosure media; (iv) population inquiry mechanisms; (v) program contents; and (vi) distribution of responsibilities.
- 6.39 Target Audience. Three different population groups were identified as affected by this program. The dissemination activities will vary according to the specific characteristics of each group. The affected groups are: (i) communities located in the proximity of each intervention site; (ii) communities situated in a strip within 500 m of the axis of the highways and/or in a radius of 1,000 m from the work sites; and (iii) population in the municipalities under the direct influence of the Anhangüera-Bandeirantes Highway Systems.
- 6.40 Environmental Education Actions. The environmental education actions will mostly be aimed at the population directly affected by the construction works and activities, particularly by the expansion of the Bandeirantes Highway. The program will involve: (i) information on the environmental impacts and mitigation measures; (ii) instruction about the importance of maintaining the natural coverage in the proximity of the right of way; and (iii) guidelines on the procedures in case of accidents, spills of hazardous cargoes and other hazardous situations.
- 6.41 Disclosure Media and Inquiry Mechanisms. The program establishes the following means for disseminating information depending on the target population. For those *directly*

affected, visits to the job sites, meetings with representative associations of the communities, meetings at industrial and agricultural enterprises and distribution of information brochures. For those *indirectly affected*; signs and posters, disclosure at representative associations, distribution of informative material at schools, churches, clubs and associations and communication with social entities in the municipalities. For *regional population*, distribution of dissemination materials at toll plazas and gas stations, publication of articles in newspapers and local magazines, broadcasting in local radio stations and erection of billboards in the municipalities. The main inquiry mechanisms for the population will be: a toll free telephone number, programmed meetings for questions and suggestions, users' assistance services, collection of suggestions and doubts through stations in the municipalities affected by the civil works of the System, mainly the extension of the Bandeirantes Highway.

- 6.42 Program Contents. Dissemination of information and interaction with the community will include: (i) publication of the EMP of the System in all the affected municipalities; (ii) description of the environmental programs developed for the expansion of the Bandeirantes Highway; (iii) general description and schedule of works; (iv) description of benefits to the local economy associated with the upgrading and expansion of the System; (v) drafting of a workers code of conduct; and (vi) implementing changes on the local and regional roadway system.

- 6.43 Responsibilities. AutoBAN will be responsible for the execution of the dissemination program whereas the construction companies will assume responsibility for the implementation of the defined actions particularly those relating to the workers employed for the construction of the extension of Bandeirantes highway. AutoBAN will constitute dissemination committees to act in the various stages of the construction and to which each construction company shall appoint an individual responsible for monitoring the program.

6.1.8 Program 8 - Reforestation of Public Water Supply Areas (Watersheds)

- 6.44 This program was established as a mitigation measure for the construction of the extension of the Bandeirantes Highway due to a requirement defined by SMA on the approval of the EIA. This requirement complies with Resolution 02/96 of CONAMA, and requires AutoBAN to invest a sum equivalent to 0.5% of the total project investment in reforestation of watersheds, used as public water supply, situated in the area of influence of the new highway.

- 6.45 For the execution of this program AutoBAN will sign a Cooperation Agreement with the State Coordination Unit of the PED Program - (Decentralized Execution Projects) component of the PNMA (National Environment Program). This unit is subordinate to the Environmental Planning Coordination Authority (CPLA) of SMA. The cooperation agreement establishes the framework for the application of the compensatory funds and for the criteria to be adopted for the selection of projects, as follows.

- 6.46 Benefited Watersheds. The program establishes the technical criteria for the selection of the basins considered as priority, and indicates as a goal to reforest approximately 175 ha corresponding to a 35 km by 50 m strip of land. The selected basins are situated within the following municipalities to be crossed by the Bandeirantes highway: (i) Sumaré, basins of the Taquara Branca (2 water catchments) and the Pinheirinho streams; (ii) Nova

Odessa, basin of the Recanto stream; and (iii) Santa Bárbara d'Oeste, basin of Ribeirão dos Toledos.

- 6.47 Work Plan and Organizational Structure. In order to implement the Agreement, in conjunction with SMA, the program defines a series of procedures to be adopted by both parties. These procedures are: (i) institutional and legal activities (i.e. constitution of a coordination unit and structuring of a management team); (ii) technical activities (i.e. selection of areas for reforestation, executive designs and actual plantation); and (iii) administrative financial activities (i.e. account control, cost auditing, and services contracting procedures). The organizational structure will involve the integrated surveillance of SMA/AutoBAN in technical, administrative and financial aspects. It is important to note that SMA will be responsible for the management of the Committee and the Inter-Municipal Consortium of the Hydrographic Basins of the Piracicaba, Jundiá and Capivari rivers to ensure that they enforce the performance of actions set forth.
- 6.48 Reference Costs and Adjustment Procedures. The program has been estimated at R\$1,500,000 corresponding to 0.5% of the cost for the execution of the extension of the Bandeirantes Highway. The actions will be completed in 5 years pursuant to the physical-financial schedule proposed by AutoBAN. The Agreement foresees the transference of 6% of the total value to CPLA/SMA as an administration fee. The remaining 94% will be allocated for: (i) studies and reforestation projects and (ii) execution of services. Different reviews of the costs of the program will be done at: (i) the conclusion of the complete design project of the extension; (ii) 6 months after the signature of the agreement and (iii) 90 days from the conclusion of the works, based on the sums actually spent.

6.1.9 Program 9 - Risk Management and Contingency Plan

- 6.49 This program is described in Section 6.4.

6.2 Cost, Schedule and Responsibilities

- 6.50 The total cost for the implementation of the EMP programs is approximately R\$ 7,112,000. Table 8 presents a total cost breakdown by program and Annex III presents a cost breakdown by program and year.
- 6.51 AutoBAN is responsible for the implementation of all the programs included in the Environmental Management Plan. Environmental mitigation and monitoring measures will be supervised and controlled by three bodies: (i) the Environmental Unit of AutoBAN, (ii) the State Commission on Roads Concession, which will accompany and supervise the construction and operation stages, and (iii) SMA, which will provide the requirements and recommendations to obtain the Installation and Operation Licenses.

6.3 Environmental Management System

- 6.52 AutoBAN has been putting into operation an Environmental Management Structure to be formed by specialized teams acting in several functional areas. These teams will oversee

the following activities: (i) general coordination of EMP and further activities related to the environment; (ii) planning and development of projects; (iii) licensing activities; (iv) control and monitoring of the expansions and upgrading; (v) control and monitoring of the system's operation; and (vi) disclosure and community relations. The environmental teams will report to the Engineering (general coordination) and Operational Directors.

6.4 Management of Risk and Contingency Plan

- 6.53 AutoBAN has developed a Risk Management Plan (preliminary version) aimed at minimizing the occurrence of accidents with vehicles transporting hazardous products. The plan involves: (i) the identification of situations which contribute to the occurrence of such traffic accidents and (ii) the establishment of controls, rules and procedures to reduce the probability of occurrence of these events. The preliminary version of the Plan has the following sections: (i) *Diagnosis of the Present Situation* characterizing the operational and surveillance actions realized by AutoBAN to prevent the occurrence of accidents; (ii) *Knowledge of the Problem* identifying the relevant information to be generated and the periodicity; (iii) *Factors and Risk Situations* identifying the factors which contribute to the occurrence of accidents; and (iv) *Proposed Alterations* presenting preliminary actions to be developed and the operational and surveillance measures developed for the commencement of the works on the Bandeirantes Highway.
- 6.54 The Contingency Plan (preliminary version) aims to develop a variety of guidelines, information, and logistical, technical and administrative procedures to respond to emergency situations involving hazardous products, in order to minimize possible environmental effects over the population. The preliminary structure of the Plan consists of: (i) *Present Procedures*, involving the organizational structure of AutoBAN, activation of the plan and authorities; (ii) *Proposed Alterations* involving actions like the creation of a data base of the transportation of hazardous cargoes and creation of a work team for monitoring the transportation of these cargoes along the System; and (iii) *Emergency Control Procedures*, involving the definition of procedures to be implemented by AutoBAN in accordance with the possible kinds of accidents and occurrence sites.

7.0 PUBLIC CONSULTATION

7.1 Existing system

- 7.1 In compliance with the Bank's policies, the Public Disclosure and Community Relations Program (see Program 7 described in Section 6.1.7 for details) specifies that AutoBAN will provide information related to the EMP to all the municipalities of the Anhangüera-Bandeirantes System. This disclosure has the objective of informing the community about the project and potential impacts and involving them in the development of the mitigation measures and EMP.
- 7.2 As for the future interventions foreseen for the existing program the disclosure of information procedures shall be undertaken as necessary, pursuant to the legislation for the environmental licensing process of the State of São Paulo.

7.2 *Bandeirantes Expansion*

- 7.3 During the elaboration of the EIA a negotiation process between the environmental authority and the community resulted in a new route layout of the section corresponding to the urban area of Santa Bárbara d'Oeste. This section will be diverted so as not to separate that area from the Americana urban area.
- 7.4 Two Public Hearings about the expansion design of the Bandeirantes Highway were held according to the established regulations of CONAMA and of the State Environment Secretariat on July 25 and 26, 1995, in Campinas and in Santa Bárbara d'Oeste, respectively.
- 7.5 The main issue discussed in these hearings was the alternatives for the route layout proposed by the Municipal Authority of Campinas. This layout proposed that the beginning of the new section be near the International Airport of Campinas (i.e. before the selected section) and also the incorporation of part of the existing highway to the Beltway of the city. This alternative, however, was considered inadequate by DER and SMA for it did not fulfill the objective of transferring the Anhangüera traffic to the new section and also because it would cause an overload of the proposed highway system.
- 7.6 As the works begin, a program of public information will be implemented. This program aims at keeping the population up-to-date with the progress of the works, interference with urban areas and accesses, mitigation measures being adopted and further information concerning the project as foreseen in the Public Disclosure and Community Relations Program.

8.0 RECOMMENDATIONS

- 8.1 The IDB will require, as part of the Loan Agreement, that AutoBAN (Borrower) comply with the following: (i) all applicable environmental, health and safety Brazilian regulatory requirements; (ii) all requirements associated with any environmental, health and safety related permits, authorizations, or licenses that apply to the Project or the Company; (iii) all environmental, health and safety aspects of the Concession Contract and any subsequent modifications; (iv) all mitigation and control measures and monitoring programs in the overall Project Environmental Management Plan (EMP) (*Plano de Gestão Ambiental Integrada do Sistema*) and the EMP specific to the expansion of the Bandeirantes highway; (v) all mitigation measures and monitoring programs in the Resettlement Action Plan for the Bandeirantes expansion; (vi) implementation of all actions and requirements in any project related environmental, health and safety document, including without limitation, project health and safety plans and procedures, risk management plan, contingency plan; and (vii) the applicable environmental and social IDB policies and guidelines, including specifically the policy on involuntary resettlement.
- 8.2 Prior to project financial closure, the Borrower must fulfill the following conditions:

1. Submit the finalized version of the overall Project Environmental Management Plan (EMP) or an amendment to the existing EMP, in form and content acceptable to IDB, which addresses the following: (a) measures to assist local municipalities deal with indirect impacts (such as increased growth, etc) along the Bandeirantes Highway extension; (b) need for noise monitoring during the operational phase along the entire road system, especially in populated areas.
 2. Submit a status on implementation of the EMP including without limitation the Public Disclosure and Community Relations program.
 3. Submit information, in form and content acceptable to IDB, regarding the status of expropriation and relocation activities associated with the Bandeirantes Expansion portion of the Project.
 4. Submit evidence that DER, the concession commission and SMA have been clearly informed related to the *favelas* located in select locations of the highway right-of-way.
- 8.3 Prior to the first disbursement, the Borrower must fulfill the following conditions:
1. Submit evidence that the Environmental Management Unit of the project has been created as anticipated in the EMP.
 2. Submit a preliminary estimate of potential expropriation and relocation that may be required by activities in years 3 to 7 of the Project Expansion and Upgrading Program.
 3. Submit the specific permitting requirements related to the Project Expansion and Upgrading Program, excluding the Bandeirantes extension, to be carried out during the first four years of the concession, based upon the response from the DAIA to AutoBAN request for licensing instructions.
 4. Submit, subject to Bank approval, specific technical measures to ensure technical, social and safety protection associated with the existing irregular settlements (*favelas*) along the Bandeirantes Highway.
 5. Submit, subject to Bank approval, the project Risk Management Plan and the Contingency Plan, including without limitation procedures related to fires within the road right-of-way.
- 8.4 Prior all disbursements of funds, the Borrower must fulfill the following conditions:
1. Certification of compliance with all environmental and social loan requirements.
 2. Description of any non-compliance with any environmental and social loan requirement and an action plan to correct such non-compliance.
 3. Description of any additional or new environmental or social liabilities, including without limitation environmental claims, or material complaints, or unforeseen environmental, health or safety impact or risk.
- 8.5 As a condition for the Technical Completion of the Bandeirantes Highway extension, the Borrower shall submit a Final Report on the Construction Component of Environmental and Social Mitigation and Monitoring Measures, including the following:
1. Certification by the Company that the project has successfully implemented and complied with all environmental and social requirements;
 2. Certification by an independent consultant that all Resettlement Action Plan activities were implemented;

3. Any material deviation from the original construction plan, including a brief technical description and major reasons for such changes, as well as any adjustment to the relevant environmental and social measures that have been taken;
 4. Description of any existing or anticipated environmental or social liability, risk or non-compliance; and
 5. Copies of any major environmental or social report or document prepared in order to satisfy regulatory requirements, except those already submitted with the reports during construction period.
- 8.6 During the life of the loan agreement, the Borrower must prepare and submit an Annual Environmental and Social Compliance Report, which will be due 60 days after the close of each Fiscal Year. The report must include, at a minimum, the following:
1. Certification that the Borrower is complying with all environmental and social loan requirements;
 2. Description of any material non-compliance with any environmental and social loan requirement that occurred and a description of any measures taken to correct the non-compliance.
 3. Description of any changes in the company's operations which may have a material environmental or social effect, the reasons for such changes and any actions taken to mitigate the impact of such change.
 4. Description of any material environmental or social problem (such as accident, unplanned event, etc.) and a description of the actions taken to resolve the problem and the measures taken to prevent the event from occurring in the future.
 5. Description of any contact by a third party (including governmental agency, public, non-governmental organization, company employee, etc.) regarding environmental, social or health and safety issue.
 6. Description of planned environmental and social related activities to be performed during the next year, including estimated cost, schedule, and responsibility, including specifically any environmental impact assessment or Brazilian environmental permitting requirement.
 7. Summary of results of all environmental and social monitoring programs performed during the prior year.
 8. Copy of any environmental and social document or report written to comply with any governmental regulatory requirements.
- 8.7 During the life of the loan agreement, the Borrower must comply with the following requirements:
1. Consult with the Bank before implementing any action not covered by the Project EMP, which will have a material environmental or social impact.
 2. Provide written notification, within 30 days after the Company becomes aware, of any material non-compliance with environmental and social loan requirements, environmental health or safety material affect, environmental claim, or material complaint related to environment health or safety related to the Project, including a description of the situation (extent, magnitude, impact, etc.), the cause, proposed corrective or remedial actions, actions taken, and proposed schedule for future actions.
 3. Ensure compliance by construction contractors with all environmental and social requirements.
 4. Implement on-going information disclosure and public consultation related activities.

5. Do not implement any activities which will directly or indirectly result in the resettlement of individuals or business until the Borrower has submitted to the IDB, and the IDB has approved, a specific plan (procedures) to deal with this situation which fully complies with the Bank's policy on involuntary resettlement.

Table 1 - Main Characteristics of the Anhangüera-Bandeirantes System

Highways	Extension	Characteristics
SP-330 Anhangüera Highway São Paulo – Campinas – Limeira (km 11.5 to km 158.5)	147 km	Built in 1952 Two-lane highway in each direction and additional lanes in sections with high activity. Right of way of 100m in width.
SP-348 Bandeirantes Highway São Paulo – Campinas (km 13.4 to km 102.4)	89km	Built in 1978 Three-lane highway in each direction, classed Special, allowing few accesses. Right of way of 120m in width.
SP-300 Don Gabriel Paulino Bueno Couto Highway (km 62.0 to 64.6)	2.6 km	Stretch built in 1978 Two-lane highway in each direction. Right of way of 50m in width.
Expansion of SP-348 Bandeirantes Highway Campinas – Limeira	77 km	Project to be constructed Three-lane highway in each direction until SP-304 (Campinas-Americana) and two lanes up to km 158.5 of SP-330 (Americana-Cordeirópolis), classed as expressway with total control of access. Right of way of 130m in width.

Table 2 - Distribution of the Irregular Settlements along Bandeirantes Highway

locality		no. of units	observations
km 16,425 to 16,709	North lane	74	integrate greater areas of irregular settlements
km 17,193 to 17,312	South lane	99	integrate greater areas of irregular settlements
km 21,270 to 21,533	North lane	61	integrate greater areas of irregular settlements; settlements on slopes and below level of highway, in risk situation
km 26,300	North lane	15	
Km 38,000	North lane	19	settlements on slopes and below level of highway, in risk situation

Table 3 – Summary of Project Affected People - Lots 1, 2 and 3

Type of Property (size in meters)	No. of properties	No. of residents affected	No. of employees affected	Total no. of PAP
> 1.000.000	12	0	0	0
100.000 to 1.000.000	40	23	31	53
10.000 to 100.000	28	27	4	27
1.000 to 10.000	16	14	1	14
< 1.000	02	05	1	05
Unknown area	30	0	32	32
TOTAL	128	69	68	131

NOTE: Resident employees or housekeepers (second homes) are considered both in the column of affected residents and in the column of affected employees. However, they are not counted twice in the sum of the column.

Table 4 – Summary of Project Affected People - Lots 4 and 5

Type of Property (size in meters)	No. of properties	No. of residents affected	No. of employees affected	Total no. of PAP
> 1.000.000	04	0	0	0
100.000 to 1.000.000	17	08	9	14
10.000 to 100.000	12	10	2	10
1.000 to 10.000	01	0	0	0
< 1.000	0	0	0	0
Unknown area	70	36	34	67
TOTAL	104	54	45	91

NOTE: Resident employees or housekeepers (second homes) are considered both in the column of affected residents and in the column of affected employees. However, they are not counted twice in the sum of the column.

Table 5 - Measures to be taken in rehabilitation of liabilities

TYPE OF LIABILITY	MEASURES	
	Structural	Non-structural
1. stability of slopes	a. implementation of drainage systems b. rehabilitation of cuts c. implementation of containment structures	a. re-vegetation b. maintenance and rehabilitation of existing drainage systems
2. siltation/erosion control	Construction of structures such as abutment walls	Implementation of plant cover
3. waste disposal		a. identification of type of waste b. restoration of soil organic horizon c. implementation of plant cover
4. landscaping alteration		Environment rehabilitation projects (landscaping)
5. illegal invasions on right of way (vendors and low income population)		Management defined in Irregular Use Program

Table 6 - List of Compensation and Assistance Procedures

Procedures / Measures	Required by Expropriation Legislation	Required by Labor Legislation	Proposed additionally by AutoBAn
Compensation for land at current market value (replacement cost)	X		
Compensation for all improvements at replacement cost value	X		
Compensation for loss of agricultural production (annual and perennial crops) at market value and/or replacement cost, including loss of future revenue as applicable	X		
Compensation for loss of natural woodlands	X		
Complementary job to work transportation cost assistance		X	
Job related residential relocation allowance		X	
Employment dismissal compensation		X	
Severance fund		X	
Six month unemployment assistance		X	
Job search support			X
Complementary unemployment assistance allowance			X
Special employment program			X
Economic displacement relocation planning assistance			X
Directed economic displacement			X
Complementary economic displacement compensation allowance			X
Residential relocation planning assistance			X
Real estate market value data bank distribution			X
Logistic support to move			X
Support for the recovery of construction components			X
Allowance for temporary housing			X

Table 7 – Compensation and Assistance Entitlements

Owners of Land and Improvements	<ul style="list-style-type: none">• Financial compensation according to Law N° 3.365/41• Availability of real estate market value data bank
Owners of Second Homes	<ul style="list-style-type: none">• Financial compensation according to Law N° 3.365/41• Availability of real estate market value data bank• Logistic support to move (provided that within three months from writ of entry)• Support for the recovery of construction materials
Owners of Permanent Residences	<ul style="list-style-type: none">• Financial compensation according to Law N° 3.365/41• Availability of real estate market value data bank• Logistic support to move (provided that within three months from writ of entry)• Support for the recovery of construction materials• Maximization of period of time available from compensation payment to dislodgment
Tenants	<ul style="list-style-type: none">• Availability of real estate market value data bank• Logistic support to move (provided that within three months from writ of entry)
Resident employees (housekeepers)	<ul style="list-style-type: none">• Residential relocation planning assistance• Availability of real estate market value data bank• Logistic support to move• Allowance for temporary housing (if necessary)• Employment dismissal compensation by current employer as required by law• 6 month unemployment allowance (Social Security)• Job search support (if necessary)• Complementary unemployment assistance or direct employment by AutoBAn on limited basis (if necessary)
Commercial establishment owners	<ul style="list-style-type: none">• Financial compensation according to Law N° 3.365/41• Availability of real estate market value data bank• Logistic support to move (provided that within three months from writ of entry)• Support for the recovery of construction materials• Economic displacement relocation planning assistance• Complementary economic displacement compensation (if pertinent)
Commercial establishment employees	<ul style="list-style-type: none">• Employment dismissal compensation by current employer as required by law• 6 month unemployment allowance (Social Security)• Relocation allowance and/or additional transportation allowance by current employer (if applicable)• Job search support (if necessary)• Complementary unemployment assistance or direct employment by AutoBAn on limited basis (if necessary)
Rural ancillary facility owners	<ul style="list-style-type: none">• Financial compensation according to Law N° 3.365/41• Support to relocation planning• Directed economic displacement – reconstruction prior to demolition

Table 8 - Cost of EMP Programs

Programs	Term	Cost (R\$)
1. Characterization and Rehabilitation of Environmental Liabilities	8 years	*(1)
2. Environmental Licensing	15 years	450,000.00
3. Environmental Protection and Control	20 years	1,685,000.00
4. Environmental Documentation and Monitoring	20 years	1,527,000.00
5. Expropriation and Relocation Support	2 years	*(2) 100,000.00
6. Management of Irregular Uses in the Right of Way	5 years	550,000.00
7. Public Disclosure and Community Relations	20 years	1,300,000.00
8. Reforestation of Public Supply Areas	5 years	1,500,000.00
9. Management of Risk and Contingency Plan	20 years	*(3)
TOTAL COST	-	7,112,000.00

*(1) R\$ 10,515,000.00 associated to the value of civil works

*(2) R\$ 13 million for expropriation not included

*(3) included in AutoBAn operational costs

Annex I

Location Map

Annex II

Project Details and Schedule

Annex III

Environmental Management Plan Costs