

PANAMA

**PUEBLA PANAMA PLAN MULTIPHASE ROAD INFRASTRUCTURE
PROGRAM TO ENHANCE COMPETITIVENESS – PHASE II**

(PN-L1047)

MEMORANDUM OF EVALUATION OF PHASE I (PN-L1010)

AND

LOAN PROPOSAL FOR PHASE II (PN-L1047)

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CONTENTS

PROJECT SUMMARY

I.	DESCRIPTION AND RESULTS MONITORING	1
A.	Background, problem to be addressed, and rationale.....	1
B.	Objectives, components, and costs	5
C.	Results framework and key indicators.....	9
II.	FINANCIAL STRUCTURE AND MAIN RISKS	10
A.	Financing instruments	10
B.	Environmental and social risks	10
C.	Fiduciary risk	11
D.	Other special considerations	12
III.	IMPLEMENTATION AND MANAGEMENT PLAN.....	13
A.	Implementation arrangements.....	13
B.	Summary of monitoring and evaluation arrangements	14
C.	Significant post-approval activities.....	14

ANNEXES	
Annex I:	Development Effectiveness Matrix (DEM) Summary
Annex II:	Results Framework / Matrix of Indicators
Annex III:	Summary Procurement Plan

ELECTRONIC LINKS	
REQUIRED	
1.	Procurement plan http://idbdocs.iadb.org/wsdocs/getDocument.aspx?DOCNUM=2199166
2.	Annual work plan http://idbdocs.iadb.org/wsdocs/getDocument.aspx?DOCNUM=2196430
3.	Monitoring and evaluation arrangements http://idbdocs.iadb.org/wsdocs/getDocument.aspx?DOCNUM=2196498
4.	Program ESMR–ESMS http://idbdocs.iadb.org/wsdocs/getDocument.aspx?DOCNUM=2198892
OPTIONAL	
1.	Evaluation – Phase I http://idbdocs.iadb.org/wsdocs/getDocument.aspx?DOCNUM=2194790
2.	Evaluation of nation's road assets, measured according to the ECLAC methodology http://idbdocs.iadb.org/wsdocs/getDocument.aspx?DOCNUM=2194761
3.	Economic appraisal of circuits with integrated maintenance http://idbdocs.iadb.org/wsdocs/getDocument.aspx?DOCNUM=2194784
4.	List of sections of the road network with maintenance contracts http://idbdocs.iadb.org/wsdocs/getDocument.aspx?DOCNUM=2194753
5.	Regulations for environmental impact assessment (Executive Order 122) http://idbdocs.iadb.org/wsdocs/getDocument.aspx?DOCNUM=2198884
6.	Environmental specifications for works http://idbdocs.iadb.org/wsdocs/getDocument.aspx?DOCNUM=2198877
7.	Environmental monitoring report, Santiago-Soná highway http://idbdocs.iadb.org/wsdocs/getDocument.aspx?DOCNUM=2199239
8.	Bidding documents, performance-based maintenance http://idbdocs.iadb.org/wsdocs/getDocument.aspx?DOCNUM=2199251
9.	2008 annual maintenance plan http://idbdocs.iadb.org/wsdocs/getDocument.aspx?DOCNUM=2199246

ABBREVIATIONS

ANAM	Autoridad Nacional del Ambiente [National Environmental Authority]
Bank/IDB	Inter-American Development Bank
ECLAC	Economic Commission for Latin America and the Caribbean
ESMR	environmental and social management report
ESMS	environmental and social management system
HDM	Highway Design and Maintenance Standards Model
IRR	internal rate of return
km	kilometers
LIBOR	London Interbank Offered Rate
MOP	Ministry of Public Works
NPV	net present value
PCO	Project Coordination Office
UME	Unidad de Mantenimiento por Estándares [Performance-based Maintenance Unit]

PROJECT SUMMARY

PANAMA

PUEBLA PANAMA PLAN¹ MULTIPHASE ROAD INFRASTRUCTURE PROGRAM TO ENHANCE COMPETITIVENESS – PHASE II (PN-L1047)

Financial Terms and Conditions			
Borrower: Republic of Panama		Amortization period:	25 years
		Grace period:	5 years
Executing agency: Ministry of Public Works (MOP)		Disbursement period:	5 years
Source	Amount (US\$ thousands)	Interest rate:	LIBOR
IDB (Ordinary Capital)	70,000	Inspection and supervision fee:	*
Local	30,000	Credit fee:	*
Total	100,000	Currency:	U.S. dollars
Project at a Glance			
<p>Objective</p> <p>The general objective is to enhance competitiveness through the sustainable improvement of overland freight and passenger transportation in the priority corridors of Panama's road network. The specific objectives include rehabilitation, implementation of permanent maintenance management mechanisms, and consolidation of the MOP modernization process. To achieve these objectives, the operation has been designed with the following main components: (i) engineering and administration; (ii) direct costs, including: (a) integrated performance-based rehabilitation and maintenance contracts and (b) a pilot project for the rehabilitation of rural roads; and (iii) institution-strengthening.</p> <p>The rural roads pilot project subcomponent seeks to ensure year-round serviceability in order to provide the country's most isolated communities with access to markets, education, and health services.</p> <p>Special execution conditions:</p> <p>(i) As a condition precedent to the first disbursement of funds for the activities under subcomponent 2.3 (rural roads pilot project): (a) the Operations Manual must enter into force, subject to the Bank's no objection; and (b) the social and environmental analysis of the sample rural road projects (paragraph 1.25) must be completed; and (ii) Upon completion of all Phase I works, the MOP will submit a final report to the Bank describing the degree of compliance with the social and environmental measures (paragraph 2.4), which may be included in the project completion report.</p> <p>Exceptions to Bank policies:</p> <p>None.</p>			
<p>Project consistent with country strategy:</p> <p>Project qualifies as:</p>			
		Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	
		SEQ <input type="checkbox"/> PTI <input type="checkbox"/>	Sector <input type="checkbox"/> Geographic <input type="checkbox"/> Headcount <input type="checkbox"/>

* The credit fee and inspection and supervision fee will be established periodically by the Board of Executive Directors as part of its review of the Bank's lending charges, in accordance with the applicable provisions of the Bank's policy on lending rate methodology for Ordinary Capital loans. In no case will the credit fee exceed 0.75% or the inspection and supervision fee exceed, in a given six-month period, the amount that would result from applying 1% to the loan amount divided by the number of six-month periods included in the original disbursement period.

¹ Known today as the Mesoamerica Project.

I. DESCRIPTION AND RESULTS MONITORING

A. Background, problem to be addressed, and rationale

- 1.1 **Road infrastructure.** Panama's total road system consists of 16,717 kilometers (km) of roads, 13,615 km of which constitute the interurban network and the remaining 3,102 km the urban network. Of the interurban road network, approximately 5,022 km, or 37%, are paved. The data show that approximately 80% of the interurban network was in fair or poor condition in 2004, while in 2008 this percentage dropped to 74%. The state of disrepair of the Panamanian road infrastructure is chiefly the result of many years of limited funding for maintenance and concentrated management of services performed on force account by the Ministry of Public Works (MOP). The rural network, measuring 4,420 km (included in the 16,717 km total), allows the population to access urban centers, but nearly 80% of this network is in poor condition due to lack of preservation.
- 1.2 **Institutional framework.** The MOP is responsible for the planning, construction, environmental control, and maintenance of the urban and interurban roadways. In this capacity, the MOP works through three national divisions for contracts administration, inspection, and maintenance, which cover the entire country, including urban areas, and are organized into five regions (the western, central, Azuero, metropolitan, and eastern regions). Road construction and rehabilitation tasks are performed by private contractors and supervised by consulting firms. Most road maintenance is done on force account. In recent years, however, the MOP has begun a program to manage road projects through integrated works contracts (integrating design, construction, and maintenance into the same contract), which is being satisfactorily executed. Nevertheless, the MOP has stated an interest in reviewing its structure with a view to modernizing it.
- 1.3 **Bank participation.** The proposed operation is consistent with the Bank's current country strategy with Panama (document GN-2385-1), which seeks to support the rehabilitation and maintenance of major road networks in order to consolidate a basic network that improves physical integration, provides greater accessibility and serviceability, preserves the country's current road assets, and optimizes management. These aims gave rise to the Puebla Panama Plan Multiphase Road Infrastructure Program to Enhance Competitiveness, designed to be executed in three phases, an initial six-year phase and two subsequent five-year phases, with Bank financing of US\$70 million, US\$60 million and US\$40 million, respectively, overlapping so that the overall program encompasses 12 years of investments. Phase I of the program is currently in an advanced state of execution (paragraph 1.6), and this operation will finance Phase II, for which the government has requested an increase from the originally planned amount to US\$70 million, in order to include a rural roads pilot project component.
- 1.4 This operation is also aligned with the Bank's new country strategy with Panama for 2010-2014, currently in the approval process, which seeks to improve the quality of road infrastructure and maintenance management. The activities envisaged

in this operation will help achieve the outcomes included in the country strategy matrix (paragraph 1.30).

- 1.5 The program has positioned the Bank as a strategic partner in the road subsector, supporting its development agenda, actively participating in the financing of road infrastructure improvement, rehabilitation, and maintenance, and modernization of the MOP. The program has also enabled the Bank to promptly address the needs that have arisen in this subsector in Panama. In order to facilitate monitoring of the Bank's operations in the transportation sector, the Panamanian government has asked to consolidate Phases I and II.
- 1.6 **Evaluation of Phase I of the program (loan 1785/OC-PN) and verification of the milestones or targets for continuing to Phase II.** Following are the results of the evaluation of Phase I.²
- 1.7 **At least 75% of the loan funds for Phase I have been committed, with 50% disbursed.** As of 20 September 2010, 95% of the loan proceeds had been committed, with 55.2% disbursed, as shown in Table I-1, which presents the current status of the financing for Phase I.

Table I-1 – Current Status of Financing - Phase I (in thousands of US\$)									
Category	Current (reflects category adjustments)			Committed 15 September 2010			Disbursed³ 20 September 2010		
	IDB	Local	Total	IDB	Local	Total	IDB	Local	Total
1. Engineering and administration	4,816		4,816	1,271	35	1,306	24	1	25
2. Direct costs	65,184	35,000	100,184	65,027	34,719	99,746	35,030	6,921	41,951
2.1 Rehabilitation and maintenance	63,304	35,000	98,304	63,304	34,599	97,903	34,568	6,801	41,369
2.2 Institution-strengthening	1,880		1,880	638	120	1,843	462	120	582
Advance of funds							3,127		
Total	70,000	35,000	105,000	66,298	34,754	101,052	34,099	6,922	40,531
Financial execution status				95%	99%	96%	55.2%	23%	40.5%

- 1.8 Table I-2 shows the progress on contracting for the physical targets, which have been exceeded for the rehabilitation component. The maintenance target was lowered, however, as the contracted projects ended up costing more than planned. This was because the amount of work had increased as a result of the time elapsed between the initial evaluation (August 2006) and the contracting (June 2008), and because construction costs had risen, driven up mainly by higher fuel prices.

² Phase I evaluation report. See optional electronic link 1.

³ Includes disbursement requests 42 and 43, currently being processed.

Table I-2. Physical Targets for Phase I Financing			
Category	Physical target in km	Adjusted and contracted target in km	Percentage completion
Kilometers of roads rehabilitated	315	393	124%
Kilometers of roads maintained	1,135	393	38%

- 1.9 As of 20 September 2010, all adjusted Phase I works have been contracted and are currently at various stages of execution. Three projects have been completed and are now in the maintenance stage: La Chorrera–San Carlos (53.8 km), Santiago–Soná (46 km), and Sabana Grande–Macaracas (33.5 km). Three sections are in execution, with the following levels of physical progress: Aguabuena Bridge–Chilibre–Chagres Bridge (11.4 km): 76%; Penonomé–Aguadulce (43.9 km): 97%; and San Carlos–Penonomé (204.5 km): 53%. Lastly, on 21 April 2010 work began on the final project to be financed with Phase I resources: the Panama maintenance circuit (100.2 km), currently 9% completed.
- 1.10 **Condition of the road network.** The second milestone for continuing to the second phase was that at least 25% of the road network had to be in a good or superior state of conservation. According to the following table, 26% of the network is in good condition, so the milestone has been met.

Table I-4. Condition of the National Road Network - 2008								
Condition	Concrete (km)	Asphalt/concrete (km)	Asphalt (km)	Surface dress. (km)	Coated (km)	Dirt (km)	Total	%
Good	230	281	1,098	1,422	482	59	3,573	26
Fair	167	108	251	1,344	2,669	1,258	5,797	43
Poor		12	0	256	1,197	2,780	4,245	31
Total	397	401	1,349	3,023	4,348	4,098	13,615	100

- 1.11 **Road maintenance** The third milestone consists of having established a sustainable mechanism for execution and maintenance and having applied that mechanism to at least 20% of the interurban road network. Here it is worth noting that the MOP's budget allocations for road network maintenance have been higher than planned, as shown in Table I-5. These allocations allow for periodic and routine maintenance on about 800 km/year and 3,500 km/year of the interurban road network, respectively (31.6%), and routine maintenance on 1,200 km/year of the

Table I-5. Investment in Maintenance		
Year	Planned ⁴	Executed
	Amount in US\$	Amount in US\$
2004		16,866,783
2005	15,840,000	19,155,294
2006	17,430,000	21,681,810
2007	18,550,000	26,556,389
2008	21,010,000	30,204,207
2009	21,780,000	33,301,309

⁴ Target for investment in maintenance envisaged in the Phase I project report.

urban network. In addition, contract maintenance work is being done on about 1,600 km/year of paved interurban highways, or 12% of the interurban road network, which, added to the above, equals 43.3%, exceeding the required 20%. Accordingly, this milestone has been met.

- 1.12 **Service-level maintenance contracts.** The fourth milestone was to have an evaluation of the results of the maintenance contracts signed in Phase I. The evaluations performed show that activities are being executed on schedule and as stipulated in the respective contracts. Where deficiencies are found, the contractors are given a reasonable period of time to correct them, and if they fail to do so, a fine is imposed. A review was done of a sample of projects, analyzing the bidding documents, contracts, types of maintenance and maintenance costs, and the technical quality of the work. As a result, the bidding documents and the standard performance-based rehabilitation and maintenance contracts were fine-tuned, and costs adjusted. A qualified inventory of the condition of the paved interurban road network (including highway conditions) is available and is updated yearly. The MOP's Unidad de Mantenimiento por Estándares [Performance-based Maintenance Unit] (UME) has thus far been effectively supervising the performance-based maintenance contracts. The MOP has shown a high level of commitment to providing sustainable technical and financial coverage of maintenance activities. An analysis of the MOP found it warranted to temporarily supplement the supervision activities performed by the UME with the services of the consulting firms in charge of supervising road rehabilitation. This milestone is therefore considered to be met.
- 1.13 **Environmental aspects.** The fifth milestone involves having properly incorporated the specifications and Environmental Management Plans for the projects into the works execution and supervision contracts. An evaluation was performed of the projects completed with Phase I financing, confirming that environmental and social liabilities are virtually nonexistent. The degree of fulfillment of the environmental and social requirements is considered adequate.
- 1.14 **Institution-strengthening.** Progress on the implementation of the institution-strengthening subcomponent was established as the sixth milestone. Progress is evaluated by two indicators: (i) an updated road network inventory; and (ii) an evaluation of the nation's road assets, measured according to the methodology of the Economic Commission for Latin America and the Caribbean (ECLAC). The road network inventory was completed in 2008, and the road assets evaluation was done following the ECLAC methodology and is included in optional electronic link 2. This milestone has therefore been met.
- 1.15 **Completion of milestones for continuing to Phase II.** The table below summarizes the status of the milestones.

Topic	Milestone
Level of execution	At least 75% of the loan funds for Phase I must have been committed, with 50% disbursed. Met (paragraph 1.6)
Condition of the road network	At least 25% of the road network must be in a good or superior state of conservation. Met (paragraph 1.10)
Road maintenance	A sustainable mechanism for execution and maintenance of the road network must have been established, and this mechanism must have been applied to at least 20% of the interurban road network. Met (paragraph 1.12)
Topic	Milestone
Service-level maintenance contracts	The MOP must submit: (i) an evaluation of the results of the maintenance contracts signed in Phase I; (ii) a review of the standard performance-based rehabilitation and maintenance contract based on the evaluation performed; (iii) the classification of types of routine and regular maintenance, together with a description of the activities involved and costs; (iv) an evaluation of the technical quality of the maintenance projects carried out under service-level maintenance contracts, based on the experience gained in Phase I and a comparison with the same costs obtained by force account; (v) an inventory of the paved road network; and (vi) an independent analysis of maintenance contract supervision by MOP personnel and an analysis of whether such supervision should be contracted. Met (paragraph 1.12)
Environmental aspects	The Environmental Management Plans must have been satisfactorily executed for all rehabilitation projects. Met (paragraph 1.13)
Institution-strengthening	The planned strengthening program must show progress, and the MOP must have submitted: (i) an updated road network inventory; and (ii) an evaluation of the nation's road assets. Met (paragraph 1.14)

1.16 **Conclusions and recommendation.** As indicated in the preceding sections, the milestones for continuing to Phase II have been met. The program objective will be met even though the physical targets were reduced due to additional costs. The recommendation is therefore to process the second phase, so that the program can continue to promote the sustainability of the road system through rehabilitation, implementation of the maintenance management mechanisms developed in Phase I, and the consolidation of an ongoing strategy for investment in conservation.

1.17 **Lessons learned.** The execution of Phase I indicated a need to continue incorporating the following special considerations into the design of Phase II: (i) roads are more efficiently rehabilitated and maintained by private firms; and (ii) with the use of design-build contracts for rehabilitation and maintenance of straightforward works like those under the program, contracting processes are more streamlined, projects are completed within the established time frames, and works start promptly, minimizing deterioration between the start of competitive bidding and the start of the works and thereby resulting in more predictable costs.

B. Objectives, components, and costs

1.18 **Objectives.** Phase II has the same goal and purpose as the program overall; i.e. to enhance competitiveness through the sustainable improvement of overland freight and passenger transportation in the priority corridors of Panama's road network. The specific objectives include rehabilitation, implementation of permanent

maintenance management mechanisms, and consolidation of the MOP modernization process.

- 1.19 Given the country's need to take the benefits of its economic progress to the neediest population, a pilot component for rehabilitation and maintenance of rural roads has been included in order to develop the basis for a sustainable rural road management model that could be reproduced on a larger scale. This component seeks to ensure year-round serviceability in order to provide the country's most isolated communities with access to markets, education, and health services.
- 1.20 The project has been designed with the same investment categories as Phase I, with the inclusion of the rural roads pilot project, so that execution of the operations can be combined, as requested by the Panamanian government (paragraph 1.5).

Component 1. Engineering and administration (US\$10 million)

- 1.21 **Administration.** This is the group of services and activities that will be the responsibility of the MOP: (i) engineering designs and studies, includes consulting services to perform the economic, technical, and environmental feasibility studies and basic engineering designs for the program works, and financing of technical studies and designs for works financed with the MOP's own resources; (ii) technical and environmental works supervision by consulting firms specializing in technical and environmental supervision of road projects, thus ensuring compliance in terms of work schedules, work quality, and technical specifications; and (iii) financial auditing and evaluation, including resources for commissioning independent financial audits and external evaluations.

Component 2. Direct costs: (US\$86 million)

- 1.22 **Integrated performance-based rehabilitation and maintenance contracts,**⁵ for approximately 850 km of priority sections of the national road network, including subsequent maintenance with well-defined activities managed by the contractor based on status or performance indicators. The rehabilitation work is straightforward from an engineering standpoint, and is intended to provide the network with a standard that ensures acceptable serviceability conditions and adequate road safety (e.g. signs and pavement markings, guardrails, safety barriers). The rehabilitated sections are then maintained by the contractor immediately after the work is concluded. The sections to be rehabilitated and maintained have been grouped into geographically concentrated circuits large enough to be attractive to the private sector; these sections are part of the road network inventory. The circuits that have been identified are listed below. The first three were to have been executed in Phase I, but could not be included due to lack of resources.

⁵ Service paid directly on the basis of "service quality level," i.e. the condition of the road, which must be maintained during the entire contract as specified with measurable road condition indicators.

Circuit	Provinces	Rehabilitation and periodic maintenance Length in km	Maintenance activities Length in km over three years
1	Azuero (Herrera-Santos)	138	414
2	Veraguas	118	354
3	Chiriquí	209	747
4	Colon	135	405
5	Other	250	750
	Total	850	2,550

- 1.23 Each integrated performance-based circuit rehabilitation and maintenance contract will include two different responsibilities: (i) initial rehabilitation of certain sections of highway according to the design conditions defined by the MOP and the contractor's final designs, with quality controls that follow the usual contracting practices, paid based on unit prices and number of projects executed and measured monthly, with terms ranging from 18 to 24 months; and (ii) maintenance of all roads included in the circuit throughout the life of the contract, with actions determined and managed by the contractor and road condition indicators monitored by the MOP. Maintenance activities include such additional reinforcement as the contractor deems necessary for meeting required service levels. Payments for this portion of the contract are made periodically in fixed amounts for each type of road surface. If the agreed service levels are not met, incremental fines of predetermined amounts are levied.
- 1.24 **Institution-strengthening.** This component is aimed at strengthening the MOP as the sector's apex agency, continuing the support initiated in Phase I. Support will consist of consulting contracts, procurement of specialized equipment, and instruction and training, in connection with the following: (i) review of the MOP's organizational structure, to determine how to adjust it to better respond to current demands and prepare an institutional proposal; (ii) implementation of the proposed MOP structure; (iii) execution and monitoring of road system planning; (iv) strengthening of the engineering department, specifically with regard to works inspection, by training its personnel and outfitting its materials laboratories; and (v) strengthening of the studies and designs department with technical personnel and upgraded systems and software.
- 1.25 **Pilot project for the rehabilitation of rural roads.** The rural roads to be included in the pilot project will be determined by the MOP with the Bank's no objection once the respective technical, environmental, and economic studies have been completed. These studies are being commissioned and will be financed by a technical-cooperation operation (ATN/OC-11670-PN). The projects to be included in this component will be selected on the basis of objective criteria that give priority to the greatest impact on serviceability and development of production in their service areas and in accordance with the Bank's policies (paragraph 1.30).

- 1.26 The resources from the technical-cooperation operation will be used to develop an Operations Manual for the rural roads pilot project that will include, at minimum: (i) the eligibility and selection criteria for the roads to be financed by the pilot project; (ii) the requirements and procedures for social and environmental analysis of the projects, in accordance with the Bank's policies; and (iii) the social and environmental management procedures to be applied throughout the project cycle for each rural road (design, rehabilitation, maintenance, and operation). As special conditions precedent to the disbursement of funds for the activities under subcomponent 2.3 (rural roads pilot project): (i) the Operations Manual must enter into force, subject to the Bank's no objection; and (ii) the social and environmental analysis of the sample rural road projects must be completed.
- 1.27 The sections of rural road for which rehabilitation and maintenance will be financed with this operation as a pilot project will be selected on the basis of specific criteria set out in the Operations Manual, along the following general guidelines: (i) preselection of routes or sections of routes associated with productive areas that have limited serviceability; (ii) study of the service area of the preselected roads, identifying the type and volume of current production and the type and volume of potential production as limited by the condition of the area's roads; (iii) determination of the investment costs for rehabilitating and preserving the preselected roads, to provide year-round serviceability; (iv) analysis of alternative mechanisms for implementing road preservation activities (including the creation of microenterprises with the local population, contracting with private firms, etc.); (v) social and environmental analysis to identify the direct, indirect, and cumulative effects of the works, pursuant to applicable law and the Bank's policies, determining the costs of the necessary mitigation measures and/or actions to be included in the works or management plan budget; (vi) determination of the economic and social benefits of the improvements on the roads in question; and (vii) establishment of an order of priority for the preselected roads based on the economic/social return on the respective works.
- 1.28 **Costs.** This phase will be financed with an investment loan totaling US\$100 million, of which the Bank will finance US\$70 million and the local counterpart will provide US\$30 million. The table below shows the distribution of costs by sources of financing for this operation, together with Phase I:

Cost and Financing Table							
Investment category	Phase I (1785/OC-PN)			PN-L1047 - Phase II			Total
	IDB	Gov. of Panama	Total	IDB	Gov. of Panama	Total	IDB
1 Engineering and administration	4,816		4,816	9,300	700	10,000	14,116
1.1 Engineering and studies	300		300	2,500		2,500	2,800
1.2 Works supervision and audits	4,016		4,016	6,400		6,400	10,416
Works supervision	3,816		3,816	6,100		6,100	9,916
Financial audits	150		150	200		200	350
Evaluations	50		50	100		100	150
1.3 Administration	500		500	400	700	1,100	900
2. Direct costs	65,184	35,000	100,184	56,700	29,300	86,000	121,884
2.1 Integrated rehabilitation and maintenance contracts	63,304	34,900	98,204	38,700	29,300	68,000	102,004
2.1.1. Rehabilitation and periodic maintenance	16,083	7,646	23,729	38,700	8,600	47,300	54,783
2.1.2 Routine maintenance	4,818	7,242	12,060		20,700	20,700	4,818
2.1.3 Rehabilitation and maintenance of specific sections	39,816	18,930	58,746				39,816
2.1.4 Environmental impact mitigation	2,587	1,082	3,669				2,587
2.2 Institution-strengthening	1,880	100	1,980	3,000		3,000	4,880
2.3 Rural roads pilot project				15,000		15,000	15,000
3. Finance charges							
3.1 Inspection and supervision fund							
4. Contingencies				4,000		4,000	4,000
TOTAL	70,000	35,000	105,000	70,000	30,000	100,000	140,000

C. Results framework and key indicators

- 1.29 The operation's main outcomes involve providing sustainable transit conditions for people and goods. Specifically, the operation is expected to help improve road management, as reflected in objective, easy-to-measure indicators related to the program's main economic benefits, such as shorter travel times for users and lower vehicle operating costs. The main expected outcomes and their indicators are: (i) improvement in the serviceability of the main road network, measured by the decrease in operating costs; and (ii) reduction in travel times.
- 1.30 The main output indicators are: (i) increase in the percentage of the main road network that is in good condition; (ii) increase in the percentage of the main paved network that is under a performance-based routine maintenance system; and (iii) implementation of a rehabilitation and maintenance mechanism for rural roads.
- 1.31 The proposed indicators and means of verification make optimum use of the information available at the MOP and the information that will be directly or indirectly obtained during execution of the loan. Some of the indicators have a baseline, while one will be developed for the others at the start of the specific consulting services. The baseline thus created will be the benchmark for evaluating

the operation. The results of the measurements will be compared with the expected values presented in the results framework.

II. FINANCIAL STRUCTURE AND MAIN RISKS

A. Financing instruments

- 2.1 The operation involves a multiple-works investment loan and has a total cost of US\$100 million, to be financed according to the breakdown given in paragraph 1.28. The resources for the Bank loan will be drawn from the Ordinary Capital. The planned execution period for this operation is five years.

B. Environmental and social risks

- 2.2 Executive Order 122 of August 2009 created the One-Stop Service Office of the National Environmental Authority (ANAM) at the central and regional levels, consisting of the various sector environmental authorities, to handle and process applications for permits and licenses, classify the category of environmental studies to be conducted, and ensure proper and effective application of the environmental impact assessment process in their respective sectors. ANAM is also required to conduct field inspections.
- 2.3 Article 16 of that executive order contains a list of projects, works, or activities for which an environmental impact assessment is required. Highway rehabilitation is not on the list and an environmental assessment is not required.
- 2.4 Execution of Phase I of the program successfully complied with the Bank's social and environmental requirements and safeguards. The bidding documents for the road projects financed in Phase I included the mandatory social and environmental specifications and environmental management plans to be implemented by the contractors and works supervisors. During execution of the works, the supervision firms prepared monthly reports and the MOP conducted inspection visits to monitor and supervise completion of the social and environmental measures. In addition, during the preparation of this operation, the projects concluded in Phase I were subjected to an independent evaluation, which found a negligible number of environmental liabilities, related primarily to minor erosion problems at road drainage outlets. Measures to remedy these liabilities are included in the Phase I project maintenance activities that will be financed as part of Phase II. As a special execution condition for Phase II, upon completion of all the Phase I works, the MOP will send the Bank a completion report detailing the degree of compliance with the social and environmental measures for those projects.
- 2.5 With regard to Phase II, the rehabilitation projects pose no major construction challenges, do not entail widening and/or changes to road layout, and are located within the right-of-way in stable areas. All project works will be carried out on existing highways and in areas already developed and targeted, in order to regain and improve transportation capacity, the loss of which has had a significant impact on competitiveness.

- 2.6 Inspection visits were conducted on a sample of roads selected for rehabilitation under this operation. A social and environmental study was done on these roads, consisting of identifying potential impacts and the corresponding prevention, mitigation, compensation, and environmental control measures; identifying and classifying environmental liabilities; and actions to monitor execution of the works. The results of the aforementioned visits and study confirm that the projects' potential environmental and social impacts will be direct, temporary, localized, and minor, and can be mitigated by contractor compliance with the MOP's environmental specifications, which specifically describe how construction activities and associated areas (quarries, disposal of surplus material, borrow pit areas, etc.) are to be managed. The budget for mitigating the identified impacts and for the environmental management and control plans is included in the individual works budgets for each project.
- 2.7 Due to their very nature, road rehabilitation and the implementation of sustainable maintenance mechanisms such as those included in the program will have positive social and environmental impacts as a result of improved drainage conditions, erosion control, service conditions, and road safety, and the measures to remedy environmental liabilities. This operation has therefore been classified as category "B" pursuant to the Bank's Environment and Safeguards Compliance Policy (operational policy OP-703). The operation was reviewed by the ESR (meeting 32-09), which confirmed the classification as presented in the project profile.

C. Fiduciary risk

- 2.8 No institutional or fiduciary problems are anticipated given the executing agency's experience with similar programs. The MOP has broad, recognized management capacity to execute an operation of these characteristics, as seen from the execution of Phase I of the program and previous programs financed by the Bank, the Andean Development Corporation, and the World Bank. The MOP is a solid institution that has already been evaluated by the Bank and has undergone previous strengthening programs implemented by all the lending agencies with a presence in the country. Moreover, it will be assisted by the works supervision firms. It has also demonstrated good budget execution and a suitable capacity to conduct competitive bidding and contracting processes, financial management of resources, and the corresponding controls.
- 2.9 **Execution risks.** Technically, the projects do not entail a high degree of difficulty and there are construction companies on the national, regional, and international market capable of handling the type of projects that will be financed. With regard to technical and operational sustainability, the MOP is giving priority to maintenance of the road network for which it is responsible—in 2009, it serviced approximately 50% of the interurban network (approximately 5,100 km with routine maintenance and the rest with periodic maintenance). In environmental terms, the works do not entail significant indirect impacts, and the direct impacts related to implementation will be properly addressed in the works and supervision contracts.

D. Other special considerations

- 2.10 **Eligibility criteria for works.** Since this is a multiple-works operation, works must meet the following program eligibility criteria in order to be included: The selected sections must (i) be part of the primary or secondary networks in the nation's road inventory; (ii) be included in the MOP's Investment Plan; (iii) have an economic internal rate of return (IRR) of 12% or more; (iv) have preliminary engineering plans at the pre-design level with specified expected outcomes and sufficient detail for design-build contracts to be tendered; and (v) meet the operation's social and environmental requirements.
- 2.11 **Economic appraisal.** Of the rehabilitation and maintenance projects to be financed by the program, four particular sections were subjected to an economic appraisal using the HDM-4 model and the projected figures for vehicle flow, in order to estimate savings in terms of transportation costs and travel times. In the 2010-2014 period, US\$5,739,000 and US\$1,083,000 are needed to finance rehabilitation and maintenance expenses, respectively. The appraisal was done for a 15-year period, yielding an overall net present value (NPV) of US\$3,760,000 (discounted at 12%) and an overall IRR of 28%. The results of the appraisal of each of the sections are summarized in the table below:

Circuit	Name of subsection	NPV (US\$ millions)	IRR (%)	NPV/Investment
Azuero	Chitré–El Agallito	0.40	50.0	0.44
	Monagrillo–Boca de Parita	0.16	20.3	0.16
Veraguas	Pan American Highway–Cañazas	0.41	20.0	0.11
Chiriqui	Pan American Highway–David–Concepción	2.79	30.2	0.35

- 2.12 The periodic maintenance activities (e.g. sealing) to be financed with program resources are an integral part of road preservation, along with patching, drain-clearing, cleaning the right of way, and fixing edge damage. The economic benefits of overall preservation cannot be divided up and ascribed to each of the individual subactivities. Periodic maintenance will be performed following best practices.
- 2.13 **Evaluation of Phase II and eligibility of Phase III of the program.** Phase III may be submitted for consideration by the Bank's Board of Executive Directors when the purposes of Phase II have been substantially met, including satisfactory execution of the rehabilitation and maintenance works and the activities under the institution-strengthening component. Specifically, substantial achievement of the following targets will be verified: (i) for the operation overall, that at least 75% of the loan proceeds for Phase II have been committed and 50% disbursed; (ii) for the integrated performance-based rehabilitation and maintenance contracts component, that approximately 250 km of highways in the nation's road network have been rehabilitated and are being maintained; and (iii) for the institution-strengthening

component, that an updated interurban road inventory is submitted annually beginning the first year of the second operation.

III. IMPLEMENTATION AND MANAGEMENT PLAN

A. Implementation arrangements

- 3.1 This operation will be implemented under the same execution conditions as agreed for loan 1785/OC-PN. The borrower will be the Republic of Panama and the executing agency will be the MOP, through the Project Coordination Office (PCO) that was created and trained with resources from previous Bank-financed operations. The financial/administrative unit created within the PCO will provide program assistance. This unit has qualified personnel trained in the financial policies and procedures established by the Bank for investment loans.
- 3.2 The MOP will be in charge of program execution; establishing the technical and environmental standards for road rehabilitation and maintenance; updating and preparing technical manuals; monitoring the projects and their compliance with rehabilitation and maintenance standards; and preparing the bidding documents for the contracting of consulting services and works and the procurement of goods. The MOP's duties will be to: (i) prepare the work plan and its modifications, when necessary; (ii) coordinate preparation of the annual budget; (iii) verify and monitor works budgets; (iv) propose, prepare, review, and approve studies and bidding documents; (v) monitor, supervise, and technically oversee the execution of program studies and works; (vi) prepare and support the processing of payments for the operation's various components; (vii) support preparation of disbursement requests; and (viii) be responsible for monitoring, tracking, and evaluating the operation's implementation and the results achieved.
- 3.3 The PCO will: (i) implement and maintain systems for contract management, accounting-financial management, and the internal control system for managing program resources in accordance with the Bank's requirements; (ii) submit disbursement requests and vouchers for eligible expenses; (iii) prepare and submit reports on fund advances, financial reports, and other required reports; and (iv) maintain a proper filing system for the documentation supporting the operation's eligible expenses.
- 3.4 All works will be executed by private contractors. Technical and environmental supervision, as well as maintenance, of the rehabilitation works during the first year and execution of the studies and technical support services for the operation will be entrusted to consulting firms contracted by the MOP. During the first year of execution of the maintenance works, the supervisor will train UME staff to take over these tasks. The MOP will assume responsibility for the management of program contracts and for oversight of the supervision services to be provided by these firms.

- 3.5 **Disbursements.** The resources for the operation will disbursed through advances reflecting actual cash needs. The frequency of these advances will be determined on the basis of the operation's financial programming. The executing agency will therefore need to periodically update its financial plan, estimating the loan resources needed for program execution, based on the budget, work plan, and assumed commitments. The executing agency must justify at least 80% of each advance before receiving the next advance.
- 3.6 **External audits.** Throughout the execution period, the MOP will each year submit the project financial statements to the Bank. The external audit will be conducted by an independent auditing firm acceptable to the Bank in accordance with the latter's requirements, as specified in the terms of reference for external audits of projects financed by the IDB. For selecting and contracting the firm, the procedures set forth in the bidding documents for external audits will be used. The costs of the audit will be part of the project and will be financed out of the Bank loan.
- 3.7 **Procurement.** Procurement and contracting for the operation will be carried out in accordance with the policies for the procurement of goods and works financed by the IDB (document GN-2349-7) and the policies for the selection and contracting of consultants financed by the IDB (document GN-2350-7) of July 2006, as reflected in the procurement plan (Annex II).
- B. Summary of monitoring and evaluation arrangements**
- 3.8 Monitoring measures include audits, evaluations, administration missions, semiannual progress reports, the annual work plan, and the annual external audits. These activities are described in required electronic link 4 "Monitoring and evaluation arrangements."
- C. Significant post-approval activities**
- 3.9 **Rural roads pilot project.** The technical, social/environmental, and economic studies are being financed with technical-cooperation funds (ATN/OC-11670-PN). The respective contracting processes will begin in November 2010.

Banco Interamericano de Desarrollo (BID)

ANEXO CONFIDENCIAL

CONFIDENTIAL ANNEX

INE-TSP@iadb.org

RESULTS FRAMEWORK / MATRIX OF INDICATORS

Project objective	The general objective is to enhance competitiveness through the sustainable improvement of overland freight and passenger transportation in the priority corridors of Panama's road network. The specific objectives include rehabilitation, implementation of permanent maintenance management mechanisms, and consolidation of the MOP modernization process. The purpose is to increase and maintain the service level for a part of Panama's national road network by: (i) improving road serviceability; (ii) lowering operating costs; and (iii) shortening travel times.		
Outcome indicator	Baseline	Target	
Reduction in operating costs and travel time			
Average reduction in vehicle operating costs in the sections of the national road network targeted by the program.	Year 0=0%	Year 5=3%	Vehicle operating costs will be calculated annually by the MOP using the HDM model. Cost evaluations will be performed taking into account the current values for inputs and outputs at the time of the evaluation.
Average reduction in travel time on the roads rehabilitated by the program, with the level remaining constant three years after the work was done.	Year 0=0%	Year 5=10%	At the end of the operation, average travel time will be less than at the start, as measured for typical sections with an average length of 30 km, one way.

	Base	Year 1	Year 2	Year 3	Year 4	Year 5	Target
Civil works component							
<u>Outputs</u>							
Highway rehabilitation	km	100	250	250	250		850
Extent of the national road network managed under performance-based maintenance contracts.	km		150	400	640	570	1,760
<u>Final outcomes</u>							
The serviceability conditions of road infrastructure (measured using the International Roughness Index (IRI)) in the network targeted by the program improve.	5.5	4.6	4.0	3.3	3.2	3.1	

Institution-strengthening component	Base	Year 1	Year 2	Year 3	Year 4	Year 5	Target	Comments
Outputs The Inspection Department improves its maintenance contract oversight system.	N/A	Timely submission of reports	Timely submission of reports	Timely submission of reports	Timely submission of reports	Timely submission of reports	Operation of the Inspection Division is rated as adequate.	Management of the Inspection Division will be rated on the basis of the semiannual and annual reports planned for program monitoring.
The Studies Unit has tools and personnel for improving its management.	N/A	Timely submission of reports	Timely submission of reports	Timely submission of reports	Timely submission of reports	Timely submission of reports	Operation of the Studies Unit is rated as adequate.	The Studies Unit has a trained technical team and tools that allow it to perform its duties.
The Planning Department has a conceptual framework for the short-and medium-term plan.	N/A	Timely submission of reports	Timely submission of reports	Timely submission of reports	Timely submission of reports	Timely submission of reports	Development of a conceptual framework for the short-and medium-term plan.	The program supervision and monitoring reports and the monthly reports submitted by the supervision firms will be taken into account
Final outcomes								
The management of road preservation for the highways benefitted by the program improves.		Good: 0% Fair: 50% Poor: 50%	20% 40% 40%	40% 30% 30%	60% 20% 20%	65% 22% 15%	75% 25% 0%	State of preservation of the road network targeted by the program

SUMMARY PROCUREMENT PLAN

I. GENERAL INFORMATION

Country	Republic of Panama
Project name:	PPP Multiphase Road Infrastructure Program to Enhance Competitiveness - Phase II
Project number:	PN-L1047
Borrower:	Republic of Panama
Executing agency:	Ministry of Public Works (MOP)

II. BRIEF DESCRIPTION OF THE PROJECT'S OBJECTIVES AND COMPONENTS

The general objective is to enhance competitiveness through the sustainable improvement of overland freight and passenger transportation in the priority corridors of Panama's road network. The specific objectives include rehabilitation, implementation of permanent maintenance management mechanisms, and consolidation of the MOP modernization process.

- i. The operation has been designed with the following main components:
 - (i) engineering and administration;
 - (ii) direct costs, including (a) integrated performance-based rehabilitation and maintenance contracts and (b) a pilot project for the rehabilitation of rural roads; and
 - (iii) institution-strengthening.
- **Date of project approval by the Board of Executive Directors:** November 2010
- **Date of signature of loan contract:** February 2011
- **Estimated date of last disbursement:** February 2016

Total number of contracts included in the program

Component	Works			Goods			Nonconsulting services			Consulting firms			Individual consultants	Total
	ICB	NCB	S	ICB	NCB	S	ICB	S	SSS	QCBS	QBS	SSS	NICQ	
Component 1										5	1		2	8
Component 2	4													4
Component 3										2			4	6
Component 4 - Audits														
Totals	4									7	1		6	18

The following tables list the bidding processes required for project execution.

COMPONENT 1: ENGINEERING AND ADMINISTRATION, AUDITS, AND EVALUATION

COMPONENT 1: ENGINEERING AND ADMINISTRATION, AUDITS, AND EVALUATION											
Ref No.	Category and description of procurement contract	Estimated cost (US\$)	Procurement method (**)	Review	Source of financing		Prequal. Yes/No	Estimated Dates		Status	Comments
					IDB	Local / Other		Start	End		
CONSULTING SERVICES											
1	Engineering studies	750,000	QCBS	Ex ante	100%		N/A	Dec-11	Aug-14	Pending	
2	Financial audits	200,000	QBS	Ex ante	100%		N/A	Feb-11	April-15	Pending	
3	Midterm evaluation	25,000	NICQ	Ex ante	100%		N/A	Jul-13	Jan-13	Pending	
4	Final evaluation	25,000	NICQ	Ex ante	100%		N/A	Jul-16	Dec-14	Pending	
5	Supervision, rehabilitation, and maintenance - Azuero Circuit	625,000	QCBS	Ex ante	100%		N/A	Jul-16	Dec-14	Pending	
6	Supervision, rehabilitation, and maintenance - Veraguas Circuit	575,000	QCBS	Ex ante	100%		N/A	May-11	Mar-16	Pending	
7	Supervision, rehabilitation, and maintenance - Chiriquí Circuit	850,000	QCBS	Ex ante	100%		N/A	May-11	Mar-16	Pending	
8	Supervision, rehabilitation, and maintenance - Colón Circuit	475,000	QCBS	Ex ante	100%		N/A				

COMPONENT 2: DIRECT COSTS

COMPONENT 2: DIRECT COSTS											
Ref No.	Category and description of procurement contract	Estimated cost (US\$)	Procurement method (**)	Review	Source of financing		Prequal. Yes/No	Estimated dates		Status	Comments
					IDB	Local / Other		Start	End		
WORKS											
1	Rehabilitation and maintenance works - Azuero Circuit	10,400,000	ICB	Ex ante	65%	35^%	No	Mar-11	Mar-16	Pending	
2	Rehabilitation and maintenance works - Veraguas Circuit	9,600,000	NCB	Ex ante	65%	35^%	No	Mar-11	Mar-16	Pending	
3	Rehabilitation and maintenance works - Chiriqui Circuit	14,200,000	ICB	Ex ante	65%	35^%	No	Nov-11	Mar-16	Pending	
4	Rehabilitation and maintenance works - Colón Circuit	7,920,000	ICB	Ex ante	65%	35^%		Nov-11	Mar-16	Pending	

Component 3: Institution-strengthening

Ref No.	Category and description of procurement contract	Estimated cost (US\$)	Procurement method (**)	Review	Source of financing		Prequal.	Estimated dates		Status	Comments
					IDB	Local / Other		Yes/No	Start		
CONSULTING SERVICES											
1	Short- and medium-term strategic plan	500,000	QCBS	Ex ante	100%		N/A	Jan-12	Dec-12	Pending	
2	Review of MOP structure	200,000	QCBS	Ex ante	100%		N/A	Jun-11	Jun-12	Pending	
3	Various studies	100,000	NICQ	Ex ante				Oct-11	Oct 12	Pending	4 consultants

Goods and works: ICB: International competitive bidding; NCB: National competitive bidding; S: Shopping

Consulting Firms: QCBS: Quality- and cost-based selection; QBS: Quality-based selection; SSS: Single-source selection

Individual consultants: NICQ: National individual consultant selection based on qualifications