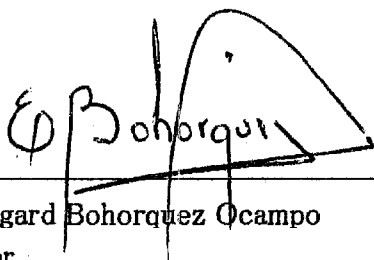


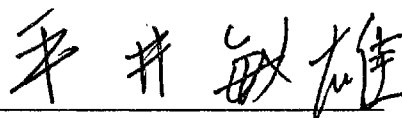
2. Scope of Work

**SCOPE OF WORK
FOR
THE STUDY
ON
VULNERABILITY REDUCTION FOR MAJOR ROADS
IN
THE REPUBLIC OF NICARAGUA
AGREED UPON BETWEEN
MINISTRY OF TRANSPORT AND INFRASTRUCTURE
AND
JAPAN INTERNATIONAL COOPERATION AGENCY**

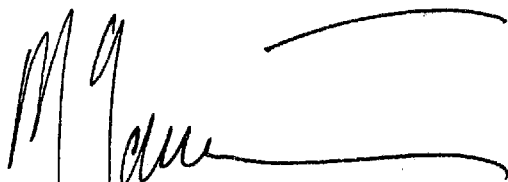
MANAGUA, 12 SEPTEMBER 2001



Mr. Edgard Bohorquez Ocampo
Minister,
Ministry of
Transport and Infrastructure



Mr. Toshio Hirai
Leader, Preparatory Study Team,
Japan International
Cooperation Agency (JICA)



Dr. Mauricio Gómez
Secretary,
Cooperation and Economic Relationships Office
Ministry of Foreign Affairs

I. INTRODUCTION

In response to the request of the Government of the Republic of Nicaragua (hereinafter referred to as "GRN"), the Government of Japan (hereinafter referred to as "GOJ") has decided to conduct the Study on Vulnerability Reduction for Major Roads in the Republic of Nicaragua (hereinafter referred to as "the Study"), within the general framework of technical cooperation between Japan and the Republic of Nicaragua, which is set forth in the Agreement on Technical Cooperation between GOJ and GRN signed on May 30, 2001.

Accordingly, the Japan International Cooperation Agency (hereinafter referred to as "JICA"), the official agency responsible for the implementation of the technical cooperation programs of GOJ, will undertake the Study in close cooperation with the authorities concerned of the Republic of Nicaragua.

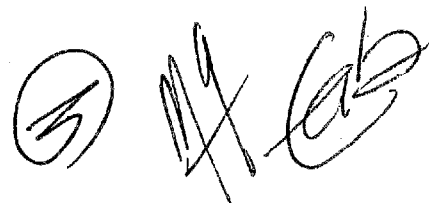
On the part of GRN, General Division of Planning, Ministry of Transport and Infrastructure (hereinafter referred to as "GDP"), shall act as a counterpart agency to the Japanese Study team and also as a coordinating body in relations with other governmental and non-governmental organizations concerned for the smooth implementation of the Study.

The present document sets forth the Scope of Work with regard to the Study.

II. OBJECTIVES OF THE STUDY

Objectives of the Study are ;

- (1) to formulate a reduction plan of road vulnerability for the major roads in the Republic of Nicaragua ;
- (2) to prepare detailed countermeasures for the high priority roads ;
- (3) to prepare a manual for road vulnerability reduction ; and
- (4) to pursue technology transfer to the counterpart personnel in the course of the Study.



Objective disasters in the Study shall be those related to roads such as slope failure, rock fall, land slide, debris flow and washing out for bridge foundation and approach road.

III. STUDY AREA

The Study area shall cover the following Project Roads within major roads in the Republic of Nicaragua.

1. El Espino –San Benito (NIC.1 ; Route Number)
2. Yalaguina –Las Manos (NIC.15)
3. Sebaco –Jinotega (NIC.3)
4. Chinandega –Guasaule (NIC.24)
5. Telica –San Isidro (NIC.26)

IV. SCOPE OF THE STUDY

In order to achieve the objectives mentioned above, the Study shall cover the following items.

1. Diagnosis and identification of critical spots

Based on following studies, critical spots with high potential in road disaster shall be selected.

- (1) Collection and analysis of past disaster records
- (2) Review and analysis of the existing data and information
- (3) Field inspection
- (4) Classification of road disaster
- (5) Assessment of road disaster potential
- (6) Identification of critical spots with high potential

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2. Formulation of a reduction plan of road vulnerability for critical spots

(1) Field survey of the identified critical spots

- a. Topographical survey
- b. Geological survey
- c. Soil investigation

(2) Determination of Countermeasures and Preliminary Design

- a. Study of various types of countermeasures for each type of road disaster in due consideration of natural conditions
- b. Determination of countermeasures for each identified spot
- c. Preliminary design of countermeasures selected for each spot
- d. Cost estimate

(3) Implementation plan

3. Preparation of Manual for Road Vulnerability Reduction and Recommendation Report on Management and Operation System

(1) Manual for road vulnerability reduction shall contain followings.

- Classification of road disaster
- Assessment of road disaster potential
- Field survey for design
- Prevention and restoration measures (urgent measures, permanent measures)
- Selection of prevention and restoration measures
- Design of selected measures
- Monitoring, inspection and communication system
- Materials and equipment required for restoration

(2) Recommendation report on management and operation system for road vulnerability reduction

V. STUDY SCHEDULE

The Study will be carried out in accordance with the tentative schedule as attached in the appendix.

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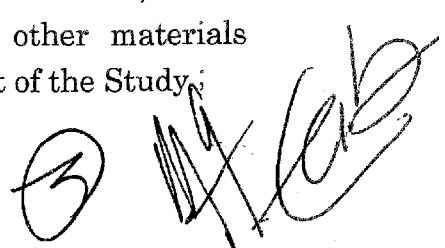
VI. REPORTS

JICA shall prepare and submit the following reports to GRN.

1. Inception Report : Twenty (20) copies in English and in Spanish at the commencement of the Study in Nicaragua.
2. Progress Report : Twenty (20) copies in English and in Spanish within three (3) months after the commencement of the Study.
3. Interim Report : Twenty (20) copies in English and in Spanish within five (5) months after the commencement of the Study.
4. Draft Final Report : Twenty (20) copies in English and in Spanish within ten (10) months after the commencement of the Study.
GRN shall provide JICA with its comments within one (1) month after the submission of the Draft Final Report.
5. Final Report : Twenty (20) copies in English and in Spanish within one (1) month after the receipt of the written comments on the Draft Final Report.

VII. UNDERTAKINGS OF GRN

1. To facilitate the smooth conduct of the Study, GRN shall take the following necessary measures ;
 - (1) to secure the safety of the members of the Japanese study team ;
 - (2) to permit the members of the Japanese study team to enter, leave and sojourn in the Republic of Nicaragua for the duration of their assignment therein, and exempt them from foreign registration requirements and consular fees ;
 - (3) to exempt the members of the Japanese study team from taxes, duties and other charges on equipment, machinery and other materials brought into the Republic of Nicaragua for the conduct of the Study ;



- (4) to exempt the members of the Japanese study team from income tax and charges of any kind imposed on or in connection with any emoluments or allowances paid to the members of the Japanese study team for their services in connection with the implementation of the Study ;
 - (5) to provide necessary facilities to the Japanese study team for the remittance as well as utilization of the funds introduced into the Republic of Nicaragua from Japan in connection with the implementation of the Study ;
 - (6) to secure permission for entry into private properties or restricted areas for the conduct of the Study ;
 - (7) to secure permission for the Japanese study team to take all data and documents (including maps and photographs) related to the Study out of the Republic of Nicaragua to Japan ; and
 - (8) to provide medical services as needed. Its expenses will be chargeable on the members of the Japanese study team.
2. GRN shall bear claims, if any arises against the members of the Japanese study team resulting from, occurring in the course of, or otherwise connected with the discharge of their duties in the implementation of the Study, except when such claims arise from gross negligence or willful misconduct on the part of the members of the Japanese study team.
3. GDP shall, at its own expense, provide the Japanese study team with the following, in cooperation with other organizations concerned ;
- (1) available data and information related to the Study ;
 - (2) counterpart personnel ;
 - (3) suitable office space with necessary equipment in Managua ; and
 - (4) credentials or identification cards.



VIII. UNDERTAKINGS OF GOJ

For the implementation of the Study, JICA shall take the following measures ;

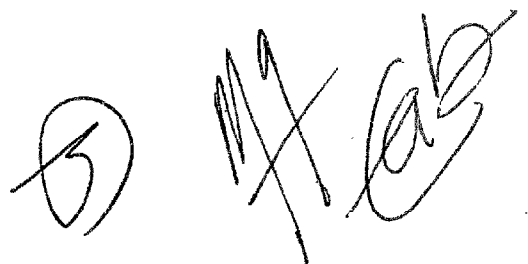
1. to dispatch, at its own expense, the Japanese study team to the Republic of Nicaragua ; and
2. to pursue technology transfer to the Nicaragua counterpart personnel in the course of the Study.

IX. CONSULTATION

JICA and GDP shall consult with each other in respect of any matter that may arise from or in connection with the Study.

X. OTHERS

In case any doubt arises in interpretation of the Scope of Work which is prepared in English and Spanish, the English text shall prevail.



Tentative Schedule

Month	1	2	3	4	5	6	7	8	9	10	11	12
Year	2002											
Month of the year	1	2	3	4	5	6	7	8	9	10	11	12
Work in Nicaragua												
Work in Japan												
Report	△ IC/R		△ PR/R		△ IT/R					△ DF/R		△ F/R

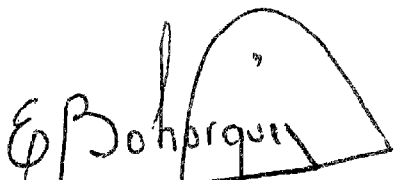
IC/R : Inception Report
 PR/R : Progress Report
 IT/R : Interim Report
 DF/R : Draft Final Report
 F/R : Final Report

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**MINUTES OF MEETING
ON
SCOPE OF WORK
FOR
THE STUDY
ON
VULNERABILITY REDUCTION FOR MAJOR ROADS
IN
THE REPUBLIC OF NICARAGUA**

**AGREED UPON BETWEEN
MINISTRY OF TRANSPORT AND INFRASTRUCTURE
GENERAL DIVISION OF PLANNING
AND
JAPAN INTERNATIONAL COOPERATION AGENCY**

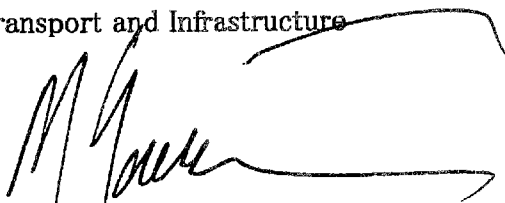
MANAGUA, 12 SEPTEMBER 2001



Mr. Edgard Bohorquez Ocampo
Minister,
Ministry of
Transport and Infrastructure



Mr. Toshio Hirai
Leader, Preparatory Study Team,
Japan International
Cooperation Agency (JICA)



Dr. Mauricio Gómez
Secretary,
Cooperation and Economic Relationships Office
Ministry of Foreign Affairs

In response to the request of the Government of the Republic of Nicaragua (hereinafter referred to as "GRN"), the Government of Japan (hereinafter referred to as "GOJ") has decided to conduct the Study on Vulnerability Reduction for Major Roads in the Republic of Nicaragua (hereinafter referred to as "the Study") through the Japan International Cooperation Agency (hereinafter referred to as "JICA").

The Japanese Preparatory Study Team (hereinafter referred to as "the Team") organized by JICA and headed by Mr. Toshio Hirai visited the Republic of Nicaragua from September 2 to 13, 2001 to discuss the Scope of Work for the Study with relevant authorities of GRN.

The Team had a series of discussions with General Division of Planning, Ministry of Transport and Infrastructure (hereinafter referred to as "GDP"), which is a counterpart agency of GRN and carried out field survey along the roads in the potential disaster areas.

The meetings were held between GDP and authorities concerned of GRN and the Team. The list of participants is shown in Appendix1. As a result of discussions, both sides came to agreement on the Scope of Work for the Study, and signed it on September 12, 2001. In addition to the Scope of Work, both sides confirmed the following.

1. Title of the Study

Both sides agreed to use "Vulnerability Reduction for Major Roads in the Republic of Nicaragua" as the title of the Study.

2. Duration of the Study

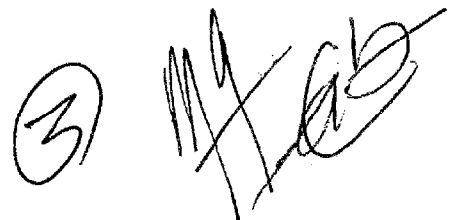
Both sides agreed that duration of the Study would be about twelve (12) months.

3. Study area

Both sides agreed that the Study area shall cover five (5) major roads in the northern and western part of the Republic of Nicaragua as shown in Appendix 2.

However, GDP requested to include the following two (2) roads in the Study area, if possible.

(1) Matagalpa - La Dalia (NIC.5 ; Route Number)

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(2) San Benito - El Rama (NIC.7)

The Team promised to convey the request to JICA Headquarters for consideration.

4. Steering Committee

The Team requested GDP to establish Steering Committee for the smooth implementation of the Study, and GDP agreed.

Steering Committee shall consist of the following relevant organizations under the chairmanship of GDP.

- (1) General Director, General Division of Planning
- (2) General Director, General Division of Road
- (3) General Director, General Division of Technical and Environment
- (4) General Director, Natural Disaster Division, Nicaraguan Institute of Territorial Studies
- (5) General Director, Cooperation and Economic Relationships Office, Ministry of Foreign Affairs

5. Security of the Safety

The Team strongly requested GDP to secure the safety of the Japanese Study Team.

GDP promised to arrange required measures for the Japanese Study Team in cooperation with relevant organizations.

6. Vehicles and drivers

GDP explained budgetary and administrative difficulties to prepare vehicles and drivers. GDP requested that the vehicles required for the field survey should be arranged by JICA.

The Team promised to convey the request to JICA Headquarters for consideration.

7. Office space and equipment

GDP agreed to provide the furnished office space in Managua with necessary equipment such as furniture (desk, chairs, etc.) and telephone lines.

However, GDP expressed that due to budgetary and administrative constraints, it would be difficult to provide appropriate number of computers and photocopy machine for the Study.

The Team promised to convey the request to JICA Headquarters for consideration.

8. Counterpart Personnel

The Team requested GDP to allocate adequate number of counterpart personnel throughout the Study.

GDP agreed to allocate necessary number of counterpart personnel.

9. Seminar and Workshops on Technology Transfer

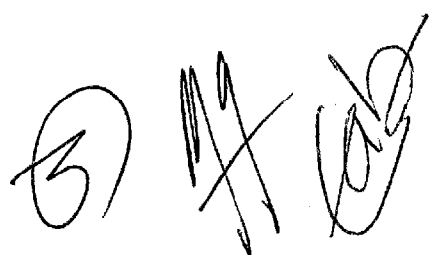
Both sides agreed to hold technical seminars and/or workshops whenever the reports are submitted.

10. Reports

The Team requested GDP to make the reports available to the public in order to achieve maximum use of the Study result, and GDP agreed.

11. Language

The Scope of Work and the Minutes of Meeting are prepared in both English and Spanish. In case any doubt arises in interpretation, the English text shall prevail.



LIST OF PARTICIPANT

(Nicaraguan Side)

Name	Post	Organization
Mr. Ernesto Barrantes. E	General Director	General Division of Planning Ministry of Transport and Infrastructure (MTI)
Ms. Anabelt Ortega	Director of Preinvestment	ditto
Ms. Thelma Zambrano	Engineer Supervisor	ditto
Ms. Jacqueline Rojas Collado	Engineer Supervisor	ditto
Mr. Joaquín Guevara	Chief of Technical Study Office	ditto
Mr. Jorge Urbina	Engineer Supervisor	ditto
Mr. Octavio Joaquín Rocha	Economist of Transport	ditto
Mr. Fabio Guerrero Osorio	Environment Specialist	General Direction of Technical and Environmental Control, MTI
Mr. Alejandro Maltez Montiel	Advisor for Grant Aid Cooperation of Japan	Cooperation and Economic Relationships office, Ministry of Foreign Affairs

(Japanese Side)

Mr. Toshio Hirai	Leader, Preparatory Study Team	Preparatory Study Team, JICA
Mr. Tetsuo Hirose	Road Disaster Prevention Administration	ditto
Mr. Yoshifumi Nagata	Road Maintenance	ditto
Mr. Akiyoshi Togiya	Road and Bridge Design	ditto
Mr. Satoshi Nakamura	Natural Condition/ Environment	ditto
Mr. Takanori Zemmmoto	Study Planning	ditto
Ms. Hiroko Ishii	Interpreter	ditto

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APPENDIX 2

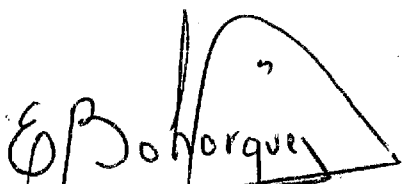


ALCANCE DE TRABAJO
PARA
EL ESTUDIO
DE
REDUCCIÓN DE VULNERABILIDAD EN
LAS CARRETERAS PRINCIPALES

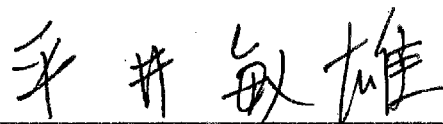
EN
LA REPÚBLICA DE NICARAGUA

ACORDADO ENTRE
MINISTERIO DE TRANSPORTE E INFRAESTRUCTURA
Y
AGENCIA DE COOPERACIÓN INTERNACIONAL DEL JAPÓN

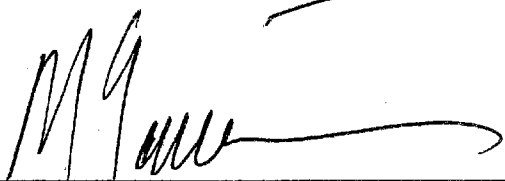
MANAGUA, 12 DE SEPTIEMBRE, 2001



Ing. Edgard Bohorquez Ocampo
Ministro
Ministerio de Transporte e Infraestructura



Sr. Toshio Hirai
Jefe de la Misión Preparatoria
Agencia de Cooperación Internacional
del Japón (JICA)



Dr. Mauricio Gómez
Secretario
Secretaría de Relaciones Económicas y Cooperación
Ministerio de Relaciones Exteriores

I. INTRODUCCIÓN

En respuesta a la solicitud del Gobierno de la República de Nicaragua (de aquí en adelante, se denominará "GRN"), el Gobierno del Japón (de aquí en adelante, se denominará "GOJ") ha decidido realizar el Estudio de Reducción de Vulnerabilidad en las Carreteras Principales en la República de Nicaragua (de aquí en adelante, se denominará "el Estudio") dentro del marco general de cooperación técnica entre el Japón y la República de Nicaragua, establecido por el Acuerdo de Cooperación Técnica firmado entre el GOJ y el GRN en el día 30 de mayo, 2001.

La Agencia de Cooperación Internacional del Japón (de aquí en adelante, se denominará "JICA"), agencia oficial responsable de la ejecución de programas de cooperación técnica del GOJ, realizará el Estudio con la estrecha cooperación de las autoridades correspondientes de la República de Nicaragua.

Por la parte del GRN, División General de Planificación del Ministerio de Transporte e Infraestructura (de aquí en adelante, se denominará "DGP") actuará como agencia de contraparte del Equipo de Estudio japonés y también como ente coordinador en relación con otras organizaciones gubernamentales y no gubernamentales relacionados para facilitar la ejecución del Estudio.

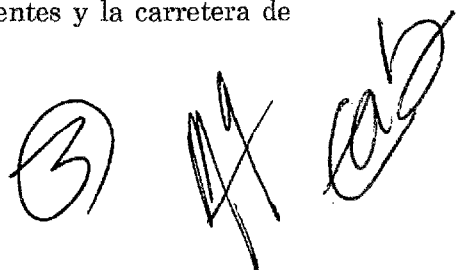
El presente documento establece el Alcance del Trabajo en relación con el Estudio.

II. OBJETIVOS DEL ESTUDIO

Los objetivos del Estudio son:

1. Formular un plan para reducir la vulnerabilidad de las carreteras principales en la República de Nicaragua;
2. Preparar medidas detalladas para las carreteras con alta prioridad;
3. Preparar un manual para reducir la vulnerabilidad de las carreteras; y
4. Efectuar la transferencia de tecnología al personal de contraparte durante el Estudio.

Los desastres, objeto del Estudio serán todos los fenómenos relacionados a las carreteras como derrumbe de taludes, desprendimiento de rocas, deslizamiento de tierra, alud de fango y socavación para la fundación de puentes y la carretera de aproximación al puente.



III. ÁREA DEL ESTUDIO

El Estudio cubrirá como Carretera del Proyecto los siguientes tramos de carreteras en la República de Nicaragua.

1. El Espino – San Benito (NIC. 1; Número de Ruta)
2. Yalaguina – Las Manos (NIC. 15)
3. Sebaco – Jinotega (NIC. 3)
4. Chinandega – Guasaule (NIC. 24)
5. Telica – San Isidro (NIC. 26)

IV. ALCANCE DEL ESTUDIO

Con el fin de lograr los objetivos arriba mencionados, el Estudio cubrirá los siguientes puntos:

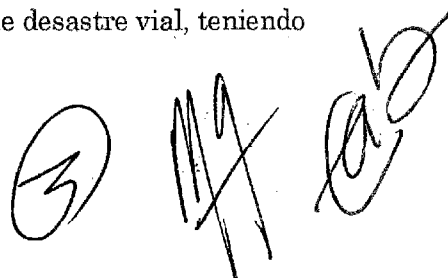
1. Diagnósis e identificación de los puntos críticos

A través de los siguientes estudios, se seleccionarán los puntos críticos con alto potencial de desastre vial.

- (1) Recolección y análisis de los registros de desastres anteriores
- (2) Revisión y análisis de datos e informaciones existentes
- (3) Inspección de campo
- (4) Clasificación de los desastres viales
- (5) Evaluación del potencial del desastre vial
- (6) Identificación de los puntos críticos con alto potencial

2. Formulación del plan de reducción de vulnerabilidad vial para los puntos críticos

- (1) Estudio de campo de los puntos identificados como críticos
 - a. Estudio topográfico
 - b. Estudio geológico
 - c. Investigación del suelo
- (2) Determinación de Medidas y Diseño Preliminar
 - a. Estudio de varios tipos de medidas para cada tipo de desastre vial, teniendo en cuenta las condiciones naturales.



- b. Determinación de las medidas para cada punto identificado
- c. Diseño preliminar de las medidas para cada punto
- d. Estimación de costo

(3) Plan de implementación

3. Preparación del Manual para la Reducción de Vulnerabilidad en las Carreteras y el Informe de Recomendación para el Mantenimiento y el Sistema de Operación

(1) El Manual para la reducción de vulnerabilidad vial abarcará los siguientes puntos.

- Clasificación de los desastres viales
- Evaluación del potencial de los desastres viales
- Estudio de campo para el diseño
- Medidas de prevención y restauración (medidas urgentes, medidas permanentes)
- Selección de medidas de prevención y restauración
- Diseño de los medidas escogidas
- Sistema de monitoreo, inspección y de comunicación
- Materiales y equipos necesarios para la restauración

(2) Informe de recomendación sobre la administración y el sistema de operación para reducir la vulnerabilidad de carreteras

V. CRONOGRAMA DEL ESTUDIO

El Estudio se llevará a cabo de acuerdo con el cronograma tentativo como se indica en el Apéndice.

VI. INFORMES

JICA preparará y proporcionará los siguientes informes al GRN.

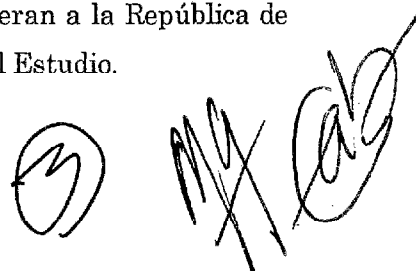
1. Informe Inicial: Veinte (20) copias en inglés y en español en el momento inicial del Estudio en Nicaragua.
2. Informe de Avance: Veinte (20) copias en inglés y en español dentro de tres (3) meses

después del inicio del Estudio.

3. Informe Intermedio: Veinte (20) copias en inglés y en español dentro de cinco (5) meses después del inicio del Estudio.
4. Borrador de Informe Final: Veinte (20) copias en inglés y en español dentro de diez (10) meses después del inicio del Estudio.
El GRN presentará a JICA los comentarios dentro de un (1) mes después de la entrega del Borrador del Informe Final.
5. Informe Final: Veinte (20) copias en inglés y en español dentro de un (1) mes después del recibo de los comentarios escritos sobre Borrador del Informe Final.

VII. COMPROMISOS DEL GRN

1. Para facilitar la ejecución del Estudio, el GRN tomará las siguientes medidas necesarias:
 - (1) Garantizar la seguridad de los miembros del Equipo de Estudio japonés.
 - (2) Permitir a los miembros del Equipo de Estudio japonés, entrar, salir y permanecer en la República de Nicaragua durante el tiempo asignado a este trabajo y eximirlos de los registros de extranjería y del pago de los derechos consulares.
 - (3) Eximir a los miembros del Equipo de Estudio japonés del pago de impuestos, derechos aduaneros y cualquier otra imposición sobre equipos, maquinarias y otros materiales traídos a la República de Nicaragua para la ejecución del Estudio.
 - (4) Eximir a los miembros del Equipo de Estudio japonés del pago de impuestos sobre la renta y otras contribuciones de cualquier naturaleza en relación con sus sueldos, y remuneraciones pagados por sus servicios en relación con la ejecución del Estudio.
 - (5) Proporcionar las facilidades necesarias a los miembros del Equipo de Estudio japonés para remitir y utilizar los fondos que se transfieran a la República de Nicaragua desde el Japón en relación con la ejecución del Estudio.

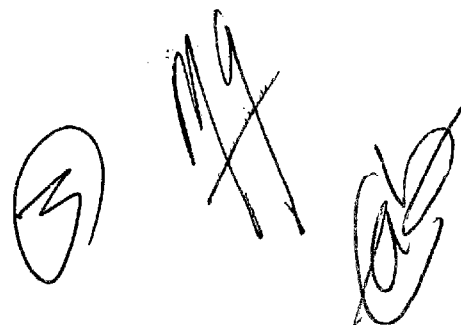


- (6) Garantizar los permisos para ingresar a propiedades privadas y áreas restringidas para la ejecución del Estudio.
 - (7) Garantizar a los miembros del Equipo de Estudio japonés permisos de llevar de la República de Nicaragua al Japón, todos los datos y documentos, incluyendo mapas y fotografías relacionados con el Estudio.
 - (8) Proporcionar servicios médicos en caso de ser necesario. Estos gastos corren a cargo del miembro del Equipo de Estudio japonés.
2. El GRN se hará cargo de cualquier reclamo que se eleve contra los miembros del Equipo de Estudio japonés durante y después de su desempeño en relación con la ejecución del Estudio, salvo cuando dichos reclamos se originaran por grave negligencia o mala conducta intencional por parte de los miembros del Equipo.
3. La DGP proporcionará a los miembros del Equipo de Estudio japonés las siguientes facilidades, a su propio costo y en coordinación con otras organizaciones:
- (1) Datos e informaciones disponibles en relación con el Estudio;
 - (2) Personal de contraparte;
 - (3) Espacio adecuado de oficina con los equipos necesarios en la Ciudad de Managua; y
 - (4) Credenciales o tarjetas de identificación.

VIII. COMPROMISOS DEL GOJ

Para la implementación del Estudio, JICA tomará las siguientes medidas:

- (1) Enviar, a su propio costo, los miembros del Equipo de Estudio japonés a la República de Nicaragua.
- (2) Efectuar la transferencia de tecnología al personal nicaragüense de contraparte durante el Estudio.



IX. CONSULTA

JICA y la DGP se consultarán mutuamente con respecto a cualquier asunto que pudiera surgir en relación con el Estudio.

X. OTROS

En caso de encontrar alguna duda de la traducción en el Alcance de Trabajo, que se prepara en inglés y español, prevalecerá la versión en inglés.

Three handwritten signatures or initials are located at the bottom right of the page. The first is a stylized 'B' inside a circle. The second is a signature with a large 'X' over it. The third is a signature that appears to be 'la' followed by a flourish.

Cronograma Tentativo

Mes	1	2	3	4	5	6	7	8	9	10	11	12
Año	2002											
Mes	1	2	3	4	5	6	7	8	9	10	11	12
Estudio in situ												
Trabajo en Japón												
Informe	△ I /In		△ I/A		△ I/It					△ B/IF		△ I/F

I/In : Informe Inicial
 I/A : Informe de Avance
 I/It : Informe Intermedio
 B/IF : Borrador de Informe Final
 I/F : Informe Final

Handwritten signatures and initials, including a large circular mark and several stylized signatures.