

Federal Ministry of Transport & Communications
Federation of Bosnia and Herzegovina
Bosnia and Herzegovina

**BASIC DESIGN STUDY REPORT
ON
THE PROJECT
FOR
PROCUREMENT OF ROAD MAINTENANCE
EQUIPMENT(PHASE-2)
IN
BOSNIA AND HERZEGOVINA**

March 2007

JAPAN INTERNATIONAL COOPERATION AGENCY

KATAHIRA & ENGINEERS INTERNATIONAL

PREFACE

In response to a request from the Government of Bosnia and Herzegovina, the Government of Japan decided to conduct a Basic Design Study on the Project for Procurement of Road Maintenance Equipment (Phase-2) and entrusted the study to the Japan International Cooperation Agency (JICA).

JICA sent to Bosnia and Herzegovina a study team from February 27 to March 28, 2006.

The team held discussions with the officials concerned of the Government of Bosnia and Herzegovina, and conducted a field survey at the study area. After the team returned to Japan, further studies were made. Then, a mission was sent to Bosnia and Herzegovina in order to discuss a draft basic design, and as this result, the present report was finalized.

I hope that this report will contribute to the promotion of the Project and to the enhancement of friendly relations between our two countries.

I wish to express my sincere appreciation to the officials concerned of the Government of Bosnia and Herzegovina for their close cooperation extended to the teams.

March 2007,

KUROKI Masafumi
Vice-President
Japan International Cooperation Agency

Letter of Transmittal

We are pleased to submit to you the Basic Design Study Report on the Project for Procurement of Road Maintenance Equipment (Phase-2) in Bosnia and Herzegovina.

This study was conducted by Katahira & Engineers International, under a contract to JICA, during the period from February 2006 to March 2007. In conducting the study, we have examined the feasibility and rationale of the Project with due consideration to the present situation of Bosnia and Herzegovina and formulated the most appropriate basic design for the Project under Japan's grant aid scheme.

Finally, we hope that this report will contribute to further promotion of the Project.

Very truly yours,

March 2007

MURAKAMI Keiichi
Chief Consultant
Basic Design Study Team on the Project
for Procurement of Road Maintenance
Equipment (Phase-2) in Bosnia and
Herzegovina
Katahira & Engineers International

SUMMARY

1. Outline of the country

Bosnia and Herzegovina (hereinafter referred to as “B&H”) is consisted of two entities, i.e. Federation of Bosnia and Herzegovina (hereinafter referred to as “Federation”) and Republic of Srpska (hereinafter referred to as “Republic”), and the district of Brcko. B&H has 51,209 sq. km in area surrounded with Croatia, Serbia and Montenegro. There is short sea shore facing the Adriatic Sea but no port, and so B&H is substantially landlocked country. The long chain of the Southern Alps – the Dinaric Alps - stretches at the heart of B&H. The land is composed with mountainous terrain with the peaks over 2,000m and hilly terrain with scattered basins. Along the Sava River near the northern border, limited flat terrain is spread. The southern area near the Adriatic Sea shows the Mediterranean climate and the more inland area belongs continental climate with hot summer and cold winter. The difference of the temperature in a year is big. During summer even average is around 20 degrees, maximum temperature goes up around 40 degrees. At middle winter average temperature becomes under zero and sometimes minimum temperature becomes 20~30 degrees under zero.

Estimated population at year 2004 is approximately 3.8 million. The ethnic composition remains similar to census in 1991: Bosniaks (Muslims) 44%, Serbs (Christian Orthodox) 32%, and Croats (Catholics) 17%, others 7%. By the conflict broken out 1992, it was estimated about 2 million persons were displaced either as refugees within or out of the country. After the peace agreement, people moved to each ethnic territories, then Bosniaks and Croats became majority in the Federation while Serbs became the one in the Republic. Not only refugees from overseas but displaced persons in the country, who not able to return their origin, is the subject at present. The peak of returns have already passed but still continued. The subject of the returns is important issue to solve amicability of each ethnic groups.

Regarding the economic condition of B&H, GDP in 2004 is 8.57 billion US\$ and GDP per capita is 2,229 US\$. Industrial composition is 14% by agricultures, 24% by industries and 62% by services. Industrial composition of the Federation shows similar trend with B&H. The activities of a service such as wholesale and retail trade, transport and communications, public administration and defense, etc. contribute much share in GDP. Canton of Herzegovina Neretva, where with major Mostar city is located, has the major industry of refining aluminum and hydroelectric power generation in the Neretva River.

2. Background of the Project

The road traffic is the main system of the transportation in the country. Collapsed and disconnected road network was the emergency subject to be solved. Under this situation, “The project for procurement of construction machinery” was implemented by the Japan’s Grant Aid with 1.6 billion yen in 1998, which procured road maintenance equipment for the recovery of Sarajevo ~ Tuzla road, Krajina highland road and Sarajevo canton roads. The previous project concentrated on Serbs and Bosniaks territories only. CESTE d.d. Mostar (hereinafter referred to as “CESTE”) is undertaken the road maintenance in Croats territory. The equipment owned by CESTE is insufficient and the execution of their work faces some difficulties. The Government of B&H made a request for the project which planned the procurement of construction machinery in 5 cantons of Croats territory.

During the conflict, the road sector was controlled by the military and strategic important places were recovered or constructed, but road maintenance was not carried. After the conflict, the projects assisted by several donors were executed for the recovery and reconstruction works on the collapsed roads and bridges. But road maintenance works for the existing roads were insufficient because of the lack of the budget of road sector. At present the renewal work of the existing pavement (reconstruction or overlay) is still not executed enough. As the result of this situation, generally pavement of the road in the country is aging, and deterioration of the surface is being faster. It means the importance of the daily maintenance becomes higher.

Project roads of 1,617 km in length is 15 routes of main roads and 30 routes of regional roads which are maintained by the CESTE. Those roads are 40% of main roads and 30% of regional road on the federal road network, and it has an important role for the national road network. Regarding the equipment owned by CESTE, the operation rate is low level due to aging of machines and the total number is considerably insufficient. CESTE can not carry out all necessary work only by owned equipment. To correspond this problems, some machines are shared by 5 cantons or insufficient number of equipment is covered by private machines. However, payment to the private machines becomes heavy burden which shared about 1/4 of expenditure of CESTE. And it sometimes makes the delay of the work due to the time lag between the request and mobilization. In the result, there are obstructions to pass at some sections for a while or always due to the road damages. In addition, it is difficult to effectively execute the installation of safe facilities at appropriate timing such as milling for anti-slip, guardrail, road marking, road sign and so on. To execute proper maintenance works, it is required to organize the system to carry out the necessary work on the appropriate timing by strengthening the equipment of CESTE.

3. The Result of the Study and Contents of the Project

In response to the request, the Government of Japan decided to conduct the Basic Design Study on the Project for Procurement of Road Maintenance Equipment (Phase 2) and CESTE is the implementation agency. Japan International Cooperation Agency (hereinafter referred to as “JICA”) sent the Basic Design Team to B&H between February 27 to March 7, 2006. The Team made discussions with concerned officials and conducted a field survey of the Project area. After return to Japan, the Team carried out the Basic Design for the most suitable Project based on the result of the field survey, and prepared its contents in the draft final report. JICA dispatched the Team for the explanation of draft report between February 11, 2007 to February 18, 2007 and held discussions with concerned officials regarding the its contents.

Overall objective and Project objective are summarized as shown below:

- Overall Objective:

To recover and develop the regional society and economy along the project road, and to accelerate the inter-entity exchange of humans and goods, the returns of displaced persons and amicability of each ethnic groups

-Project Objective:

To properly maintain concerned roads of 1,617 km in length

To achieve the above objectives, this project is to strengthen the execution system of the maintenance work using CESTE’s owned equipment by the procurement of insufficient equipment at present. It is expected to be possible the effective quality maintenance work at appropriate timing. In this project, Japan’s Grant Aid shall procure the road maintenance equipment of CESTE.

CESTE has executed routine maintenance work such as daily patrol & repair and its work items covers wide rang. During winter season, most of the work items for summer season are going to suspend and their major work items are sifted and concentrated to the snow removal and icing prevention. Their works are carried out in accordance with the contract with Federal, cantonal and municipal government and the annual work volume is similar in every year. Therefore, this basic design is carried out based on the past experience of work items and volume done by CESTE.

The basic specification of the equipment was referred to the popular and presently owned equipment which is familiar in CESTE or B&H, with the consideration on the management and maintenance. The procured number of equipment was decided from insufficient number based on the comparison of necessary number and owned number with the consideration of

the formation of each work item.

Number of Equipment to be Procured

No.	Equipment	No. of Unit	No.		No. of Unit
1	Motor Grader	3	11	Vibration Roller	5
2	Dump Truck (with Snow Plough)	14	12	Wheel Loader	5
3	Asphalt Finisher	1	13	Truck with Crane	2
4	Asphalt Milling Machine	2	14	Line Marker	1
5	Asphalt Sprayer	12	15	Pile Driver (Self-Propelled)	2
6	Truck	8	16	Crack Filler	5
7	Concrete Cutter	5	17	Mobile Workshop Truck	1
8	Multi Purpose Vehicle	2			
9	Wheel Backhoe (with Hydraulic Breaker)	4			
10	Backhoe Loader	1			

Above listed equipment includes machinery which not manufactured in Japan or having quite different basic specification compared with basic specification of Japanese products. In particular the emission from engine will be adopted the equivalent standard with Euro 3 of EU. In addition, The cost of Japanese products will much higher than European products because of the transportation cast. Therefore, this project considers procurement from the third countries.

The society and economy of B&H is strongly related with European countries due to its geographical situation. Then construction equipment made in Europe is common and there are many agents of the European brand in the country. The existence of the agent is an important factor on the procurement of spare parts and provision of mechanical service to appear the continuous effect of the cooperation. CESTE has procured spare parts of the owned equipment for the maintenance from those agents at present. In this project, Japanese brands also shall be secured in B&H or neighbors so there is no problem on the availability of the spare parts. CESTE has allocated budget for the spare parts. And it is possible to procure the parts by themselves. Therefore this project shall procure only machineries excluding their spare parts.

4. Operation Plan and Cost Estimation of the Project

If it is approved to execute the project by the Japan's Grant Aid, it is scheduled 4.5 month for detailed design and 9.0 month for the procurement. Total project cost was estimated on 774 million Japanese Yen, 774 million Japanese Yen by Japanese side and 0.32 million Japanese Yen by B&H side, provisionally. It would be further examined by the Government of Japan for the approval of the Grant.

5. Project Evaluation and Recommendation

The direct beneficiary by the execution of the project is the residents of concerned 5 cantons approximately 690 thousands persons. The indirect beneficiary is people of B&H approximately 3.8 million. The effects expected to appear by the project are as follows:

(1) Direct Effects

- To be possible securely executing the maintenance work which not able to covered so far because of the lack of machine (ex. Increasing working party : 1 party for Overlay with milling machine, 1 party for surface milling for anti-slip, 4 parties for repair of potholes, etc.)
- To secure the stable road traffic with the prevention of deterioration and the preservation of serviceability of concerned roads
- To improve the safety of the road by the execution of proper maintenance

(2) Indirect Effect

- To secure the smooth national distribution network of B&H by the preservation of serviceability of main roads and regional roads
- To extend the service life of the road by the prevention of deterioration with the quickly work of repairing the damages like potholes

Regarding the direct effect, it is estimated that annual equipment cost including operation and maintenance is saved approximately 2.60 million KM which is corresponded to about 50% of equipment cost in 2005 amount 5.32 million KM by the implementation of the project. It is expected that annual work volume of maintenance work executed by CESTE is increased due to the saving of the budget and improving the work ability.

This project is expected much effect mentioned above and is to contribute the improvement of basic human needs of the residents. It is confirmed the appropriateness of the execution of the Japan's Grant Aid to the project. B&H side has enough ability on the staffing and finance for the management and maintenance of the project without any problem. In addition, it is considered that the project effects is larger if the budget of the road maintenance is allocated sufficiently on both Federal and Cantonal government.

CONTENTS

Preface	
Letter of Transmittal	
Summary	
Contents	
Location Map / Image Photo of the Equipment	
List of Figure & Tables	
Abbreviations	

	Page
CHAPTER 1 BACKGROUND OF THE PROJECT	1 - 1
1.1 Background of the Request and its Summary	1 - 1
1.2 Environmental and Social Considerations	1 - 3
CHAPTER 2 CONTENTS OF THE PROJECT	2 - 1
2.1 Basic Concept of the Project	2 - 1
2.2 Basic Design of the Requested Japanese Assistance	2 - 3
2.2.1 Design Policy	2 - 3
2.2.2 Basic Plan (Equipment Plan)	2 - 6
2.2.3 Basic Design	2 - 17
2.2.4 Implementation Plan	2 - 25
2.2.4.1 Implementation Policy	2 - 25
2.2.4.2 Implementation Conditions	2 - 26
2.2.4.3 Scope of Works	2 - 27
2.2.4.4 Consultant Supervision	2 - 27
2.2.4.5 Procurement Plan	2 - 28
2.2.4.6 Quality Control Plan	2 - 29
2.2.4.7 Operational Guidance Plan	2 - 30
2.2.4.8 Implementation Schedule	2 - 31
2.3 Obligations of Recipient Country	2 - 32
2.4 Project Operation Plan	2 - 33
2.5 Project Cost Estimation	2 - 35
2.5.1 Initial Cost Estimation	2 - 35
2.5.2 Operation and Maintenance Cost	2 - 35
2.6 Other Relevant Issues	2 - 38

CHAPTER 3	PROJECT EVALUATION AND RECOMMENDATION.....	3 - 1
3.1	Project Effect.....	3 - 1
3.2	Recommendation	3 - 2
3.2.1	Recommendation to the Recipient Country	3 - 2
3.2.2	Technical Assistance & Cooperation with Other Donors.....	3 - 3

[Appendices]

1. Member List of the Study Team
2. Study Schedule
3. List of Parties Concerned in the Recipient Country
4. Minutes of Discussions



Project Area