

Tacis Regional 2000 Traceca Programme

**Rehabilitation of Caucasian
Highways
Azerbaijan, Georgia and Armenia**

September 2003 - QUARTERLY Progress Report
No: (QPR / 1 / 2003 / G)

October 15, 2003



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funded by the
European Union



A technical
Support Project
By Louis
Berger SA

Report Cover Page

Project Title	Rehabilitation of Caucasian Highways Azerbaijan, Georgia and Armenia	
Project Number	EUROPEAID/113179/C/SV/MULTI	
Country	Azerbaijan, Georgia and Armenia	
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Reporting Period	July– September, 2003
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1.0 PROJECT SYNOPSIS

Project Title	Rehabilitation of Caucasian Highways Azerbaijan Georgia and Armenia
Project Number	EUROPEAID/113179/C/SV/MULTI
Country	Azerbaijan, Armenia and Georgia

<p>Wider Project Objectives</p>	<p>The Wider Project Objectives are to support the Republics to catch up with their serious backlogs in road maintenance, and to cope with growing local, and international transport. These include the following:</p> <ul style="list-style-type: none"> • The improvement and provision of a better level of service for the travelling public on route corridors; • To reduce costs in road transportation; • To arrest deterioration of pavements by timely intervention; • To reduce costs for road rehabilitation and maintenance; • To strengthen the national road construction and maintenance capabilities through transfer of technology.
<p>Specific Project Objectives</p>	<p>The Specific Project Objectives are to provide consultancy services for three Beneficiaries. These all being the State Departments of Roads in their respective Countries namely Azerbaijan, Georgia and Armenia.</p> <p>Azerbaijan: Component 1</p> <p>In Azerbaijan there are four subcomponents of the Project:</p> <ol style="list-style-type: none"> 1.1) Review of Designs and Tender Documents; 1.2) Supervision of Construction of the WB (IDA) financed road sections under the Azerbaijan Highway Project; 1.3) Assistance to the joint Project Implementation Unit (PIU) for the World Bank and EBRD roads Projects; 1.4) Technical supervision of the TACIS project: Construction of two bridges/ Gasan Su Chay and Shemkir. <p>Duration estimated 24 months.</p> <p>Georgia: Component 2</p> <p>In Georgia the main objective is the developing of a Pre-Feasibility Study for modernization of the existing Poti –Tbilisi- Red Bridge road under the standard of the international motorway passing by larger inhabited areas.</p> <p>Determining the deadline for road carrying capacity, based on the dynamics of traffic volume growth at sections of the existing road, and modernization periods, technical and economic study and comparison of the modernization alternative with the alternative of construction of international motorway (to a SNiP Category I). Also</p>

	<p>an exchange of technical expertise. Duration estimated 10 months, in conjunction with the project in Armenia.</p> <p>Armenia: Component 3</p> <p>The project in Armenia covers the investigations, designs, preparation of contract drawings, cost estimates and Tender Documents for 3 tunnels on the road from Vanadzor to the Georgian Border. Also an exchange of technical expertise. Duration estimated 10 months, in conjunction with the project in Georgia.</p>
<p>Planned Outputs</p>	<p>Azerbaijan: Component 1</p> <p>1.1) Assistance to the PIU such that they become an experienced unit and fully conversant with the procedures of all the International Funding Institutions (IFI); 1.2) Supervision of six Contracts such that they are all finished in accordance with the International Standards and within the programmed time and in accordance with the budget.</p> <p>Georgia: Component 2</p> <p>The production of a Pre-Feasibility Study for the road improvements to the Poti to Red Bridge Road.</p> <p>Armenia: Component 3</p> <p>The production of a complete set of Tender Documents for the 3 tunnels.</p>

Project Activities

The Project is set up in the form of separate components all of which form the main basis of the proposed project activities. These are enumerated in the table below.

Component	Location	Services
Component 1	Azerbaijan	Design Reviews, Construction Supervision and Assistance to the Project Implementation Unit in Azerbaijan.
Sub-component 1.1		Review of the Design and Contract Documents.
Sub-component 1.2		Construction Supervision on Lots 1 (CW/2002/1) and 1 to 4 (CW/2003/1 to 4) of Ganja to Gazakh Road.
Sub-component 1.3		Technical assistance to the PIU.
Sub-component 1.4		Technical supervision of the TACIS project "Reconstruction of two bridges Gasan Su Chay and Shemkir".
Component 2	Georgia	Pre-Feasibility study of modernisation of Poti-Tbilisi-Red Bridge Road in Georgia.
Component 3	Armenia	Design and Preparation of Tender Documents for three Tunnels on the road from Vanadzor to the Georgian Border in Armenia.
Project Starting Date		Contract signed on 25 th November 2002.
Project Duration		24 months.

2. SUMMARY OF PROJECT PROGRESS FROM THE START

The Team Leader arrived in Baku on 19th January 2003 accompanied by the Project Director. The Project Team Leader has resigned from the project and LBSA Project Coordinator has replaced him from June 10 up to mid August 2003. The new Project Team Leader has been taking over activities since 14th August 2003.

2.1 Component 1: Design Reviews, Construction Supervision and Assistance to the Project Implementation Unit (PIU) IN Azerbaijan

Sub-component 1.1 Reviews of the Design and Contract Documents

Designs and Tender Documents for Lots 1 – 4 of Shemkir – Gazakh Road Sections (4 ICB Contracts) requested from the PIU for reviews have been re-examined.

By the time of the start of consulting services, 2 out of 6 Contracts for Civil Works have already been tendered and contracts awarded. Thus, consultant had no possibility to review Tender Documents before Bids process. Reviews of Contract Documents have been taking place during the execution of the two Contracts (Ganja-Shemkir road section and the two bridges). Status of the sub-component: works are ongoing.

Sub-component 1.2 Construction Supervision of Ganja to Gazakh Road

Civil Works Contract for Ganja-Shemkir Road Section is ongoing but not as anticipated as serious problems with the original design survey data were found.

Redesigned longitudinal profile and cross sections for the first 5 km have been given to the Client (RoadTransService Department) in August 14, 2003 for consideration and approval.

KOCKS Consultant's Managing Director and Transportation Engineer has visited the site in August 26, 2003 and reported on September 8, 2003 confirming the problematic issue with the longitudinal profile. The Mot after consulting with KOCKS has requested LBSA on 23 September to instruct the Contractor to carry out Works based upon revised vertical alignment.

Shemkir to Gazakh road section is on the stage of Tenders preparation. Pre-Bid meeting was held on September 16, 2003. Status of the sub-component: works are ongoing.

Sub-component 1.3 Assistance to the PIU

Consultant (LBSA) has been providing day-to-day assistance to the PIU, including equipping the PIU, providing salaries, providing a training session on implementation of internationally funded projects. Consultants have created library reference system for the PIU.

Sub-component 1.4 Technical supervision of the TACIS project "Reconstruction of two bridges Gasan Su Chay and Shemkir"

Design reviews for two bridges (re-designed by the contractor) are finalized. On 24 July 2003, permission was granted by GOSSTROY for construction to begin on the 2 bridges provided that existing piles on Gasan Su Chay Bridge shall be checked. Status of the sub-component: works are ongoing.

2.2 Component 2: Pre-Feasibility Study of Modernisation of Poti- Tbilisi-Red Bridge Road in Georgia

Works started with arrival of LBSA Highway Engineer to Tbilisi on June 17, 2003. Inception Report was produced in 15th August 2003.

Works now are under progress.

2.3 Component 3: Design and Preparation of Tender Documents for Three Tunnels on the Road From Vanadzor to the Georgian Border in Armenia

Works started in May 2003. Three Technical Reports have been produced: Engineering-Geological Conclusion, Survey of Tunnels and Site Inspection & Rehabilitation Works Proposal. Works are ongoing.

3. SUMMARY OF PROJECT PLANNING FOR THE REMAINDER OF THE PROJECT

Since the practical day-to-day work on the project has started with the Team Leader's arrival in Baku on 19th January 2003, LBSA proposes to define January 15 of 2003 as the project's start date and *January 15, 2005* as a project's completion date (Contract Duration is 24 months).

3.1 Project Panning for Component 1: Design Reviews, Construction Supervision and Assistance to the Project Implementation Unit (PIU) In Azerbaijan

Sub-component 1.1 Reviews of the Design and Contract Documents

Design reviews for two bridges are accomplished (a number of problems were discovered upon excavation on Gasan Su Chay Bridge).

Designs for Ganja to Shemkir road section have been improved due to discrepancies in survey data. Consultants have undertaken topographical surveys jointly with Contractor for the first 5 km out of 21 km. From km 5 to 12+400 and km12+400 to 21, redesigning is planned for *the first and fourth week of October* respectively.

Consultants reviewed the Tender Documents for Shemkir to Gazakh Road Section. The deadline for Bids submission is planned for *October 16, 2003*.

Sub-component 1.2 Construction Supervision of Ganja to Gazakh Road

Civil Works Contract for Ganja-Shemkir Road Section is behind the schedule and completion date most likely will be affected by Design (survey) discrepancies have been found. Despite of delays, Civil Works for lot 1 are expected to be completed in 2004.

Tenders for the road section Shemkir to Gazakh (4 ICB Contracts) are on the stage of Bids submission. Tendering is 2 months behind the original schedule and remaining contracts are expected to be awarded in *January-February 2004*, details are shown in **Table 4.2 Tendering Schedule**. Completion of Civil Works for Shemkir to Gazakh Road is obviously going to be beyond LBSA project completion date for about *9 months*, as described in detail in **section 5** of this Report.

Sub-component 1.3 Assistance to the PIU

Consultants have been providing day-to-day assistance to the PIU, including equipping the PIU, providing salaries, providing a training session on implementation of internationally funded projects. Consultants have created Library Reference System for the PIU.

Consultants (LBSA) will continue assistance as required by the ToR until the Project Completion Date.

Sub-component 1.4 Technical supervision of the TACIS project "Reconstruction of two bridges Gasan Su Chay and Shemkir"

Contractor's Works Programme has been submitted in August 04, 2003 to Construction Supervision Consultant. It shows that the Contractor is already behind its programme. He has been requested to submit revised one. Revised Program is expected to be submitted on October 5, 2003.

3.2 Planning for Component 2: Pre-Feasibility Study of Modernisation of Poti- Tbilisi-Red Bridge Road in Georgia

Works started with arrival of LBSA Highway Engineer to Tbilisi on June 17, 2003. Draft final Report is due in *December 2003* and Final Report in *April 2004*. Inception Report and Progress Report were produced in August and October 2003 (with this Report).

3.3 Panning for Component 3: Design and Preparation of Tender Documents for Three Tunnels on the Road From Vanadzor to the Georgian Border in Armenia

Works started in May 2003. Draft final report is due in *January 2004*. Three Technical Reports have been produced so far.

4. PROJECT PROGRESS IN REPORTING PERIOD

Project Team Leader has resigned from the project and LBSA Project Coordinator has replaced him from June 10 up to mid August 2003. The new Project Team Leader has been taking over activities since 14th August 2003.

The Team Leader has attended meetings in August 18 and 27, 2003 at the Government House with Team Leaders and EU Advisor Mr. B. Smolin and at MoT with the Director of "RoadTransService" Mr. J. Gurbanov, respectively. This facilitated to highlight comments on other projects and to contribute to important suggestions on improvement of management development.

The Team Leader has performed on August 25, 2003 a meeting with KOCKS Consultant's Managing Director and Transportation Engineer. The aim of this meeting was to resolve the problematic issue on survey for the road Ganja-Shemkir. He has performed project management mission to Ganja-Gazakh on 3rd and 4th of September 2003. During the mission project's progress for Ganja-Shemkir and the 2 bridges Contract has been reviewed. Mission has helped to evaluate supervision tasks.

The EBRD mission has visited Baku between 09 -11 September 2003. The Team Leader has attended meeting on September 10, 2003 at EBRD headquarters between Mr. M. Graille (TRACECA coordination Team) and Mr. J. Manning (EBRD). The aim of the meeting was the updating information of the Feasibility study of Gazi-Mammed to Kyurdamir road section (81 km).

The Pre-Bid meeting for Contracts (CW 2003/1 to 4) was held on September 16, 2003 to clarify Bidding Documents and to answer to Bidders questions (Please see Minutes of Meeting in Annex 1).

Meetings with Mr. Graille were held on September 17 and 29, 2003 to discuss progress on component 1 Azerbaijan as well as the most recent matters on Bridges Contract.

The Team Leader has attended in October 8, 2003 in Tbilisi TACIS Monitoring Office a meeting with Mr. Gotsiridze, during TL's mission to Georgia Component. As results, important issues were discussed to improve project reporting and progress. For example, it was agreed to include in planned Outputs the central briefly outputs required under the Project.

4.1 Project Achievements in Comparison with Planned Results

4.1.1 Progress on Component 1: Design Reviews, Construction Supervision and Assistance to the Project Implementation Unit (PIU) in Azerbaijan

The "Azeravtoyol State Concern" has been liquidated. The Ministry of Transport issued letter in August 14, 2003 to Traceca Coordination Team-Baku copied to the Consultants appointing authorised representatives of the Client.

Mr. Arif N. Asgarov, Head of Finance and Credit Department of MoT, is assigned as an authorized person on behalf of the Client and Mr. Javid G.Gurbanov (Director of the "RoadTransService" Department) is in charge with executing of the Project activities. Letter is attached in the Annex 2 of this report.

Progress on Sub-component 1.1 Reviews of the Design and Contract Documents

Design reviews for two bridges (re-designed by the contractor) are finalized. On Gasan Su Chay Bridge, upon excavation a number of problems were discovered with the existing piles installed 15 years ago. Concerns about their competence to support the bridge loads were agitated. Thus, the Contractor has put forward a draft solution to install two new 1.2 m diameter bored piles at each intermediate support to take the bridge loads. Consultants

Expatriate Bridge Expert has performed in the 4th week of September a mission to review the Contractor proposal and agreed to install the 2*2 additional piles. Impacts are detailed in comments on constrains and assumptions of the **Form 2.4 Output Performance Report**.

Designs for Ganja to Shemkir road section have been improved after resolving discrepancies in survey data.

Redesigned longitudinal profile and cross sections for the first 5 km have been given to the Client ("RoadTransService" Department) in August 14, 2003 for consideration and approval.

KOCKS has reported on September 8, 2003 confirming the problematic issue with the longitudinal profile. The MoT after consultation with KOCKS has requested the Consultants on September 23, 2003 to instruct the Contractor to carry out Works based upon the revised vertical alignment.

Consultants reviewed the Tender Documents for Lots 1 to 4 of Shemkir to Gazakh Road Sections and produced "Design Review and Review of Tender Documents" and "Pavement Design Evaluation" Reports in August 2003. Report on "Pavement Design Evaluation" is attached in **Annex 3**. PIU has started to sell Tender Documents from 02 September 2003. The deadline specified in the Bidding Documents for Bid submission is October 16, 2003 (to allow 6 weeks for Bid preparation).

LBSA is contractually not responsible for re-designing of road sections, but for the project's progress LBSA expressed its readiness to help to Client to overcome of arisen situation. LBSA expects that "RoadTransService" would provide its design engineer to take part in design corrections and recommendation mentioned in Consultants Report entitled "Design Review and Review of Tender Documents" for Shemkir to Gazakh Road Section.

Sub-component 1.2 Construction Supervision of Ganja to Gazakh Road

Civil Works Contract for Ganja-Shemkir Road Section are ongoing. However, Design (survey) discrepancies have been found and appropriate measures were being taken as described above. Design discrepancies may eventually affect the civil works completion date. The project data is briefly presented in the **Table 4.1 Civil Works Progress Data**.

Contracts CW 2003 -1 to CW 2003 - 4 Rehabilitation and upgrading of Shemkir – Gazakh Road sections

Specific Procurement Notice (SPN) has been published on dgMarket on August 29, 2003 and advertised in the newspaper of national circulation on 02 September 2003.

The PIU and the WB have prepared Procurement Plan entitled "Procurement Plan as agreed at negotiations" which indicates the date of August 30, 2003 as the deadline of Bid submission. This Procurement Plan would be updated during the next WB mission.

The Consultants with PIU have prepared a Tendering Schedule approved by the WB on September 18, 2003. The tendering schedule dates would be estimated as shown in **Table 4.2 Tendering Schedule**.

Table 4.1 Civil Works Progress Data

Works Contract:(CW 2002-1)	
Works Tender Opened	14 th May 2002
Contract Awarded Article 33.2	30 th December 2002 by IDA
Letter of Acceptance Issued 33.1	24 th March 2003
Contract Agreement Signed Article 33.3	April 9, 2003
Tender Amount	28,749,462,180.50 AZM
Contract Amount Article 15.3	29,903,403,179.00 AZM
Contract Start Date	21 st April 2003
Original Contract Completion Date	21 st July 2004
Extended Completion Date	Nil
Works Programme received	18 th April 2003
Last revision of Works programme	30 th July 2003
Value of Works to date	5,062,383,115.89 AZM
Variations	Nil
Advance Payment Received	5,980,680,936.00 AZM
Repayments made	0%
Delays	Nil
Claims	Request for extension due to redesign
Time elapsed to date	163 days
Time remaining to date	295 days

Table 4.2 Tendering Schedule

Step	Action	Estimated Date Plan	Actual Date
1	PIU sells the Tender Documents to the prospective Bidders.	From September 2, 2003.	September 2, 2003
2	Pre-Bid Meeting.	September 16, 2003	September 16, 2003
3	Deadline for submission of Bids.	October 16, 2003.	
4	PIU carries out Bid opening.	October 16, 2003	
5	PIU submits to the Bank the Minutes of the Bid opening.	October 16, 2003	
6	PIU carries out the evaluation of the Bids and submits to the Bank the Evaluation Report	December 9, 2003	
7	Banks reviews the Evaluation Report and sends comments/no objection to PIU.	December 20, 2003	
8	PIU invites the lowest evaluated Bidder to sign the Contract (Clause 33.1 of Instructions to Bidder)	January 02, 2004	
9	PIU signs the Contract (Clause 33.3 of Instructions to Bidders).	January 30, 2004	
10	The successful Bidder signs the Contract (Clause 33.3 of Instructions to Bidders).	February 20, 2004	
11	PIU sends to the Bank conformed copy of the signed Contract.	March 04, 2004	
12	PIU notifies the other Bidders that their Bids have been unsuccessful (Clause 33.4 of Instructions to Bidders).	When successful Bidder furnishes the PS.	

Sub-component 1.3 Assistance to the PIU

Consultants have been providing day-to-day assistance to the PIU Staff (Highway Engineer, Financial Specialist, Procurement Specialist and Translator) including equipping the PIU and providing salaries.

The PIU has provided Procurement Plan of WB and EU projects requested by Consultants in order to follow up with further assistance. The projects extracted from The Procurement Plan (as agreed at negotiations) with updated status are attached in the Annex 4 of this Report.

Consultants contacted the British Council for English Language Training in Baku to organize English training courses focusing in road terminology for the PIU staff and Local Engineers. PIU Staff except the Translator would that Training to be started on the first month of the next year as they are at this moment full of activity for tendering stage on Shemkir – Gazakh Road. PIU Translator has started end of September English training in the International Learning Centre in Baku.

Sub-component 1.4 Technical supervision of the TACIS project “Reconstruction of two bridges Gasan Su Chay and Shemkir”

The Contractor’s work program has been submitted to construction supervision Consultant. He has been requested to provide an updated program. The Contractor has submitted revised Performance and Advance Payment Bank Guarantees.

The project data is presented in the **Table 4.3 Project Data** below:

Table 4.3 Project Data

Works Contract EUROPEAID/112944/C/W/AZ	
Works Tender Opened	
Contract Awarded	27 th December 2002
Contract Agreement Signed	27 th December 2002
Tender Amount	€1,424,017.80
Contract Amount	€1,424,017.80
Contract Start Date	10 th March 2003
Original Contract Completion Date	4 th November 2003
Works Programme received	August 4, 2003
Planned Works to date	Mobilisation 60%
Works complete to date	18%
Value of Works to date	€256,323.20
Variations revised bridge design at Contractors cost	Nil
Advance Payment Received	€142,401.78
Repayments made	0%
Delays	140 days
Claims	Request for extension of time
Time elapsed to date	204 days
Time remaining	36 days

On 24 July 2003 the Azerbaijan State Construction and Architecture Committee “GOSSTROY” granted permission for construction to begin on the two Bridges. The

Original Period of Performance is 240 Calendar Days, thus the revised Completion Date would be March 20, 2004. As the Contractor started works a few days prior to the 24th of July, Consultant has recommended that March 15, 2004 being the Revised Completion Date.

4.1.2 Progress on Component 2: Pre-Feasibility Study of Modernisation of Poti-Tbilisi-Red Bridge Road In Georgia

Works started with arrival of LBSA Highway Engineer to Tbilisi on June 17. Inception Report forming the Stage I of overall project was produced on August 15, 2003. The Inception Report has been signed by the State Department of Roads, Georgia with objections concerning the Road Section from Poti to Turkish border. Copy of the Inception Report cover page with SDR's Georgia comments is attached in the Annex 6 to this Report.

Stage II activities were planned from mid August to mid December 2003 and are presented in the Table 4.4 Stage II activities.

Table 4.4 Stage II activities

Stage II Main Technical Design and Economical Principles

- 1) Visual reconnaissance of the selected alternative on maps in order to assess the feasibility of technical documents in future;
- 2) Field survey according with adopted plan;
- 3) Final recommendation of the main design and technical principles;
- 4) Detailed content of the Pre-Feasibility study, investment economic effectiveness;
- 5) Discussion of Pre-Feasibility documents with the State Department of Roads, Georgia;
- 6) Submission of the Progress Report and Draft Final Report in October and December 2003 respectively.

The Progress on Stage II in reporting period is as follows:

- 1) Visual reconnaissance: completed.
- 2) Field survey:
 - 2.1 Analysis of traffic counts results;
 - 2.2 Analysis of the O-D Survey results.
- 3) Final recommendation: completed.
- 4) Detailed content of the Pre-feasibility study, investment economic effectiveness:
 - 4.1 Calculation of the existing road carrying capacity;
 - 4.2 Analysis of road accident Database provided by Georgian Police.
- 5) Submission of the Progress Report (with this Quarterly Report).

4.1.3 Component 3: Design and Preparation of Tender Documents for Three Tunnels on the Road from Vandazor to the Georgian Border in Armenia

Works started in May 2003. Three Technical Reports have been produced: Engineering-Geological Conclusion, Survey of Tunnels and Site Inspection & Rehabilitation Works.

"Site Inspection and Rehabilitation Works Proposal" Report, dated August 2003, is attached in the Annex 5 of this Report.

The Report provides aspects taken for assessment of refurbishment options namely technical, economic, labour and material availability, traffic flow, safety and design life.

Tunnel 1 (between km 25+460 and km 25+566):

It is recommended that rehabilitation work to cover increasing the walkway width to appropriate standards, drainage, reflective signage, ventilation and fire protection improvements.

Tunnel 2 (between km 31+200 and km 31+476):

It is recommended that rehabilitation work to cover improvements to drainage system, lighting. Waterproofing membrane and decorative lining of the Tunnel are also proposed for better safety and easy maintenance.

Tunnel 3 (between km 31+910 and km 32+090):

It is recommended that rehabilitation work to cover drainage, lighting, ventilation and fire protection improvements.

For the three Tunnels, it is generally recommended that appropriate signage on the approaches to the Tunnels to be incorporate and this will comprise:

- Tunnel approach warning;
- Vehicle Speed restrictions;
- Dimensions of Tunnel, length, height and width restrictions;
- Signs to advice drivers to use dipped headlights.

Project progress and resources in reporting period for components 1, 2 and 3 are presented in the Forms 2.2 and 2.3, respectively.

Important Correspondences during reporting period are attached in Annex 8 to this Report.

4.2 Deviation from Original Planning and Reasons

Deviations from original planning are occurring in design reviews, construction supervision of Ganja – Gazakh road rehabilitation, and Construction of two bridges. Reasons for these deviations are explained in the section 4.4.1 of this Report.

Components in Armenia and Georgia have started in May and June respectively. The delay, in comparison with originally planned start (January, as per original schedule stated in LBSA proposal – the first month of the project), has occurred due to better convenience for field investigations and studies in mountainous conditions.

Deviations, reasons for deviations and comments are presented in Form 2.4 Output Performance Report.

4.3 Specific Action Needed from the Local Authorities – Including the Coordinating Unit Concerned – and/or the European Commission

Specific actions from the local authorities, Regional TRACECA Coordinating unit and EU are being provided to overcome of problems arisen during the project implementation. However, the project will need the following actions from Project partners in the nearest time:

Component 1: Azerbaijan

Supervision Consultant hopes that the Client would consider LBSA recommendation established in “Design Review and Review of Tender Documents” and “Pavement Design Evaluation” Reports dated August 2003 regarding the review of Tender Documents for Shemkir to Gazakh Road section.

Component 2: Georgia

Consultants expect that Project partner and EU provide their comments on the recommendations of consultant for performing studies for two alternative options: motorway on a new alignment and upgrading of the existing road up to motorway standards (two alternative options).

Component 3: Armenia

“Site Inspection and Rehabilitation Works Proposal Report” is attached in Annex 5 of this Report, in which Consultant presents the main rehabilitation options by each tunnel. There is a need to review the conclusions of this report and approve the main scope of work proposed for rehabilitation.

FORM 2.2: PROJECT PROGRESS REPORT

Project title: Rehabilitation of Caucasian Highways		Project number: Europeaid/113179/C/SV/MULTI			Country: Azerbaijan, Georgia and Armenia			Page: 1 of 4					
Planning period: July 2003 – September 2003		Prepared on: October 15, 2003			EC Consultant: LBSA								
Project objectives: Component 1: Supervision of six civil works contracts, assistance to PIU, Component 2: Pre-Feasibility Studies, Component 3: Design and Tender Documents for three tunnels													
No	ACTIVITIES IMPLEMENTED	TIME FRAME 2003 Months			INPUTS								
					PERSONNEL EC CONSULTANT		COUNTERPART		EQUIPMENT AND MATERIAL		OTHER		
		7	8	9	Planned	Utilised	Planned	Utilised	Planned	Utilised	Planned	Utilised	
1	Component 1: Azerbaijan												
1.1	Subcomponent 1.1: Review of the design and tender documents				35	14.53	97	97	n/a	n/a	n/a	n/a	
1.1.1	Road Ganja-Gazakh: Lot 1 Ganja-Shemkir 2002-1 Lot 1 Shemkir-Road Station Lot 2 Road Station-Tovuz Lot 3 Tovus-Road Station Lot 4 Road Station-Gazakh												
1.1.2	Reconstruction of Two Bridges												
1.2	Subcomponent 1.2 Construction Supervision Ganja – Gazakh Road												
1.2.1	Lot 1 Ganja-Shemkir												
1.2.1.1	Mobilisation of Consultant												
1.2.1.2	Pre-construction advisory services												
1.2.1.3	Construction supervision												
1.2.1.4	Progress reports		X		X							X	

1.2.1.5	Final Acceptance																
1.2.2	Lot 1 Shemkir-Road Station	Not started yet															
1.2.3	Lot 2 Road Station-Tovuz																
1.2.4	Lot 3 Tovuz-Road Station																
1.2.5	Lot 4 Road Station-Gazakh																
1.3	Subcomponent 1.3: Assistance to the PIU in implementation of the World Bank and EBRD projects						440	187	22	0	Euro 20,000	Euro 18.755	n/a	n/a			
1.3.1	Set-up of organisation and structure of the PIU																
1.3.2	Review suitable management procedures and systems																
1.3.3	Advise and assist the PIU in the management and implementation of the project																
1.3.4	Advise and assist the PIU to develop and operate procedures and expertise in the financial administration of Contracts																
1.3.5	Provide assistance and liaison to the management of RoadTransService and the EBRD and World Bank, as may be necessary																
1.3.6	Provide Administrative support for the PIU, in the form of salaries and payroll cost, office equipment, supplies and running costs, training, and transport						10	4									
1.4	Sub-component 1.4: Technical Supervision of the TACIS Project: "Construction of two bridges: Gasan Su Cay and Shemkir						220	(157)	704	110	n/a	n/a	n/a	n/a			

1.4.1	Mobilisation of the Bridge Design Engineer													
1.4.2	Review of the Design and Tender/Contract Documents													
1.4.3	Technical meeting on the Reviewed Contract Documents													
1.4.4	Provide the EU and RoadTransService with an overall performance schedule													
1.4.5	Technical Supervision of the Contract													
1.4.6	Inspections and Control													
1.4.7	Issue Acceptance Certificates													
1.4.8	Prepare Financial Documents													
1.4.9	Prepare Reports on Project Progress		x		x									
2	Component 2: Georgia Pre-feasibility Study for modernization of Poti-Tbilisi-Red Bridge Road						132	65	1518	253	n/a	n/a	n/a	n/a
2.1	Data Collection and Surveys													
2.2	Develop Technical Specification													
2.3	Perform Environmental Assessment													
2.4	Assessment of Economic costs													
2.5	Perform Economic Analysis													
2.6	Determining Cost Estimates													
2.7	Technical Reporting			x									x	
3	Component 3: Armenia Design and Tender Documents for three tunnels on the road from Vanadzor to						(146)	(65) 14.318	1342	755	n/a	n/a	n/a	n/a

FORM 2.3: RESOURCE UTILISATION REPORT

Project title: Rehabilitation of Caucasian Highways		Project number: Europeaid/113179/C/SV/MULTI		Country: Azerbaijan, Georgia and Armenia		Page: 1 of 1	
Planning period July – September 30, 2003		Prepared on: October 15, 2003		EC Consultant: LBSA			
Project objectives							
RESOURCES/INPUTS	TOTAL PLANNED	PERIOD PLANNED	PERIOD REALISED	TOTAL REALISED¹	AVAILABLE FOR REMAINDER		
PERSONNEL							
International Experts:							
<i>Long Term:</i>							
Team Leader	440	66	67	187	253		
Resident Engineer	440	66	66	157	283		
Highway Engineer	220	66	54	65	155		
<i>Short Term:</i>							
Short term Experts	103	0	0	32.8	70.2		
Sub-Total International	1203	198	187	441.8	761.2		
Local Long and Short Term Experts							
Senior	3310	627	627	863	2447		
Junior	2793	498	498	728	2065		
Sub Total Local	6103	1125	1125	1591	4512		
Sub-total	7306	1323	1312	2032.8	5273.2		
EQUIPMENT AND MATERIAL	Euro 20,000	Euro 20,000	Euro 18,755	Euro 18,755	Euro 1,245		

¹ From the Start.

FORM 2.4: OUTPUT PERFORMANCE REPORT

Project title: Rehabilitation of Caucasian Highways	Project nr: Europeaid/113179/C/SV/MULTI	Country: Azerbaijan, Georgia and Armenia	Page: 1 of 3
Prepared on: October 15, 2003		EC Consultant: LBSA	
Output results	Deviation original plan + or - %	Reason for deviation	Comments on constrains & assumptions
<p>Component 1: Azerbaijan</p> <p>Subcomponent 1.1: Review of the design and tender documents</p> <p>Road Ganja-Gazakh: Lot 1 Ganja-Shemkir 2002-1 Lot 1 Shemkir-Road Station Lot 2 Road Station-Tovuz Lot 3 Tovus-Road Station Lot 4 Road Station-Gazakh</p> <p>Reconstruction of Two Bridges</p> <p>Subcomponent 1.2 Construction Supervision Ganja – Gazakh Road</p> <p>Lot 1 Ganja-Shemkir Mobilisation of Consultant Pre-construction advisory services Construction supervision Progress Reports; 8 Progress Reports produced Final Acceptance Lot 1 Shemkir-Road Station Lot 2 Road Station-Tovuz</p>	<p>~2months behind the proposed Procurement Plan (PP) as agreed at negotiations</p> <p>Ongoing TD reviewed after contract awarded ~2 months behind the PP (reviewed) ~2 months behind the PP (reviewed) ~2 months behind the PP (reviewed) ~2 months behind the PP (reviewed)</p> <p>TD reviewed after contract awarded</p> <p>Completed Completed Ongoing, delays expected</p> <p>n/a Behind the schedule Behind the schedule</p>	<p>-</p> <p>Substitute "Azeravtoyol" Management with "RoadTransService" and delay on SPN advertisement</p> <p>Survey discrepancies</p> <p>n/a Bid submission stage Bid submission stage</p>	<p>-</p> <p>The deadline for bid submission is planned for October 16, 2003 instead of August 30, 2003 (as per PP)</p> <p>Redesigning is going on</p> <p>n/a Works Contracts expected be signed in January-February 2004</p>

<p>Lot 3 Tovus-Road Station Lot 4 Road Station-Gazakh 2 Technical Reports produced</p>	<p>Behind the schedule Behind the schedule</p>	<p>Bid submission stage Bid submission stage</p>	<p>Works Contracts expected be signed in January-February 2004</p>
<p>Subcomponent 1.3: Assistance to the PIU in implementation of the World Bank and EBRD projects</p>	<p>Ongoing</p>		<p>No comments</p>
<p>Set-up of organisation and structure of the PIU</p>	<p>Completed</p>		<p>No comments</p>
<p>Review suitable management procedures and systems</p>	<p>Completed</p>		<p>No comments</p>
<p>Advise and assist the PIU in the management and implementation of the project</p>	<p>Ongoing</p>		<p>No comments</p>
<p>Advise and assist the PIU to develop and operate procedures and expertise in the financial administration of Contracts</p>	<p>Ongoing</p>		<p>No comments</p>
<p>Provide assistance and liaison to the management of RoadTransService and the EBRD and World Bank, as may be necessary</p>	<p>Ongoing</p>		<p>No comments</p>
<p>Provide Administrative support for the PIU, in the form of salaries and payroll cost, office equipment, supplies and running costs, training, and transport</p>	<p>Ongoing</p>		<p>No comments</p>
<p>Sub-component 1.4: Technical Supervision of the TACIS Project: "Construction of two bridges: Gasan Su Cay and Shemkir</p>			
<p>Mobilisation of the Bridge Design Engineer</p>	<p>Complete</p>		<p>No comments</p>
<p>Review of the Design and Tender/Contract Documents</p>	<p>Comments issued</p>		<p>No comments</p>
<p>Technical meeting on the Reviewed Contract Documents</p>	<p>Completed</p>		<p>32506 Euro additional costs 2*2 piles</p>
<p>Provide the EU and RoadTransService</p>	<p>Behind the schedule</p>		<p>Revised completion date to be</p>

<p>with an overall performance schedule Technical Supervision of the Contract Inspections and Control Issue Acceptance Certificates Prepare Financial Documents Prepare Reports on Project Progress; 8 Progress Reports produced in conjunction with Component 1.2 and 2 Technical Reports produced</p>	<p>Behind the schedule Behind the schedule Behind the schedule Behind the schedule Ongoing</p>		<p>approved by the EC Revised completion date to be approved by the EC</p>
<p>Component 2: Pre-feasibility Study for modernization of Poti-Tbilisi-Red Bridge Road in Georgia</p>	<p>Ongoing</p>		<p>April Inception Report signed with objections (please refer to Annex 6)</p>
<p>Data Collection and Surveys Develop Technical Specifications Perform Environmental Assessment Assessment of Economic Costs Perform Economic Analysis Determining Cost Estimates Reporting; 1 Report produced</p>	<p>Completed Ongoing On target On target On target Ongoing Ongoing</p>		<p>No comments No comments No comments No comments No comments No comments No comments</p>
<p>Component 3: Design and Tender Documents for three tunnels on the road from Vanadzor to the Georgian Border in Armenia</p>			
<p>Field Investigations Design works Determination of Excavation works Technical description of Construction and Engineering Process Cost estimates Preparation of the Tender documents Reporting; 3 Technical Reports produced</p>	<p>Completed Ongoing On target On target On target On target On target Ongoing</p>		<p>No comments No comments No comments No comments No comments No comments No comments No comments</p>

Notes:

- 3 Reports (Inception, First Progress and Quarterly Progress) were produced for the 3 Components in addition to the Reports mentioned above;
- Total Reports produced including this one are 19.

5. PROJECT PLANNING FOR THE NEXT REPORTING PERIOD.

Next reporting period is October – December 2003. The Quarterly Report for this period will form part of the Second Progress Report (6 months) July – December 2003. This section of the report is presenting LBSA's plans for the next reporting period.

5.1 Important observations for the project success

Component 1: Design Reviews, Construction Supervision and Assistance to the Project Implementation Unit (PIU) in Azerbaijan

Sub-component 1.1 Reviews of the Design and Contract Documents

Designs and Tender Documents for Shemkir-Gazakh Road section have been reviewed. Two reports been provided to the Client. Consultants will follow the Tendering Timing as provided in Table 4.2 of this Report.

Concerning Construction of two bridges (Gasau Su Chay and Shemkir), designs are evaluated and Consultants will follow the revised cost estimate occurred on Gasau Su Bridge (additional piles).

Sub-component 1.2 Construction Supervision of Ganja to Gazakh Road

Civil Works Contract for Ganja-Shemkir Road Section is behind the schedule and completion date most likely will be affected by Design (survey) discrepancies have been found. Despite of delays, Civil Works for lot 1 are expected to be completed in 2004.

LBSA has revised the original proposal concerning local Staff for components 1.2 and 1.4 (Construction Supervision of Ganja-Gazakh Road and TACIS project) and recommend the following adjustment to the original proposal for the project success as indicated in the Table 5.1.

Table 5.1 Revised Proposals

No	Original Position	Revised Proposed Position	Original Days		Revised Proposed Days		Remarks
			Road	Bridge	Road	Bridge	
1	Assistant RE	Assistant RE	440	340	440	-	340 to (6)
2	Soils Engineer	Material Eng.	440	220	440	-	220 to (10)
3	Pavement Eng.	Structural Eng.	440	-	440	-	
4	Quantity Surveyor	Quantity Surveyor	440	-	440	-	
5	Surveyor	Surveyor	340	100	340	100	
6	Bridge Eng.	ARE Bridge Eng.	100	-	100	340	
7	Safety Eng.	N/A ¹	110	-	-	-	110 to (10)
8	Environmental Eng.	N/A ²	110	-	-	-	110 to (10)
9	Foundation Eng.	Foundation Eng.	-	44	-	44	
10	-	Second Surveyor	-	-	440		Road & Bridge Contracts
Total			2420	704	2640	484	
Grand Total			3124		3124		

As can be seen from the above Table, there is no change to the total Man/days.

¹ The position of Safety Engineer would be covered by the Assistant Resident Engineer;

² The position of Environmental Engineer would be covered by the Assistant Resident Engineer;

Tenders for the road section Shemkir to Gazakh (4 ICB Contracts) are on the stage Bids submission. The Table 4.2 provides schedule of tendering estimated dates approved by the WB and shows Civil Works Contracts to be signed in January-February 2004.

In the case that tendering strictly follows the estimated schedule, Civil Works Completion Date is going to be 9 months beyond LBSA Contract Completion Date, taking into account 18 months for CW contracts duration, estimated in the Engineering Report (part of Tender Documents).

Consultants have assessed the impact of the delay on required staff resources taking into consideration the revised proposal shown in Table 5.1.

Impacts are presented in the Table 5.2 Forecast of impact of delays to required staffing resources (Component 1).

Sub-component 1.3 Assistance to the PIU

Consultant (LBSA) has been providing day-to-day assistance to the PIU, including equipping the PIU, providing salaries, providing a training session on implementation of internationally funded projects. LBSA will continue assistance as required by the ToR until the project completion date.

Consultant intends to help PIU in development of the EU financed project as well, as part of the TOR requirements. Consultants have received from PIU the Procurement Plan (as agreed at negotiations) for PIU Contracts with EU and WB. This Procurement Plan has been updated and commented on in order to assist and help PIU. For example, Consultants have prepared for PIU a revised list of detailed laboratory equipments for the main and mobile laboratories, office Equipment and Tendering Schedule for the descriptions No 4, 5 and 15 of the Actual Status Tables, which are attached in the Annex 4.

Sub-component 1.4 Technical supervision of the TACIS project "Reconstruction of two bridges Gasan Su Chay and Shemkir"

The Contractor's work program has been submitted to construction supervision Consultant. He has been requested to provide an updated program. The Contractor has submitted revised Performance and Advance Payment Bank Guarantees.

The validity of the revised Performance Bank Guarantee is until 15.04.2005, this is the revised completion date (15.03.2004) + 12 months Defects Liability Period + 30 days allowed for Final Statement.

Consultant is expecting revised work program of Contractor.

Planning for component 1 is presented in the Form 1.6 Plan of operations for the next period.

Component 2: Pre-Feasibility Study of Modernisation of Poti- Tbilisi-Red Bridge Road in Georgia

Works started with arrival of LBSA Highway Engineer to Tbilisi on June 17. Draft final Report is due in December 2003.

The project planning for the next reporting period for the component 2 can be extracted for the Table 5.3 Planning for the next period as below:

Table 5.3 Stage II Planning for the next reporting period

Stage II - Main Technical Design and Economical Principles

- 4) Detailed content of the Pre-Feasibility study, investment economic effectiveness;
- 5) Discussion of Pre-Feasibility documents with the State Department of Roads, Georgia;
- 6) Submission of the Draft Final Report in December 2003.

4) Detailed content of the Pre-Feasibility study:

- 4.1) Collection of additional economical Data;
- 4.2) Preparation of HDM-4 model for each for each analysed alternatives section by section;
- 4.3) Calculation of road carrying capacity based on the dynamics of traffic growth;
- 4.4) Environmental assessment.

- 5) Discussion of Pre-Feasibility documents with the State Department of Roads, Georgia.
- 6) Submission of the Draft Final Report in December 2003.

According to Consultants plan, the Pre-Feasibility report will be presented in the following four documents:

Volume	I	Explanatory note and tables of main works
Volume	II	Drawings and photos
Volume	III	Road transport economics
Volume	IV	Conclusions and recommendations

Planning for Component 2 is presented in the **Form 1.6 Plan of operations for the next period.**

Component 3: Design and Preparation of Tender Documents for Three Tunnels on the Road from Vandazor to the Georgian Border in Armenia

Works started with arrival of LBSA Highway Engineer to Tbilisi on June 17, 2003. Draft final Report is due in January 2004.

Planning for Component 3 is presented in the **Form 1.6 Plan of operations for the next period.**

5.2 Proposals for adjustment of overall planning and their consequences.

Start date of Works on Component 2 Georgia and Component 3 Armenia, in June and May respectively, does not effect to the overall project implementation. Being 10 months long, these components will be finalised within the service contract period (24 months).

As it is described in the **section 5.1** of this Report, there is a delay in sub-component **1.2**, which is expected in implementation of construction supervision on Ganja – Gazakh road rehabilitation.

Impact of the delay to required staffing resources is provided in the **Table 5.2** taking into consideration the proposed adjustment to the Staff position shown in the **Table 5.1** of this Report.

The Table 5.4 summarized the required extra staffing extracted from the Table 5.2 of this Report.

Table 5.4 Extra staffing required to the delay in sub-component 1.2

No	Position	Extra Days	Days for Defect Liability Period as per the original proposal	Total Days
a)	Local Staff			
1	Assistant RE	247	22	269
2	Material Eng.	233	-	233
3	Structural Eng.	250	-	250
4	Quantity Surveyor	213	-	213
5	Surveyor (1)	246	-	246
6	ARE & Bridge Eng.	70	-	70
7	Surveyor (2)	21	-	21
	Total	1280	22	1302
	Grand Total Local Senior - Junior³	705	597	
b)	Expatriate			
1	Project Manager / Team Leader	194	22	216
2	Resident Eng.	202	-	202
	Grand Total Expatriate	396	22	418

Reports produced on this project including this Quarterly Report are detailed in the Annex 7 of this Report.

The summary illustrates reports produced on each component (tables 1, 2 and 3) as well as general reports for the 3 Components (table 4).

³ Proportion as per the Original Proposal.

2.4	Assessment Assessment of Economic costs										
2.5	Perform Economic Analysis										
2.6	Determining Cost Estimates										
2.7	Technical Reporting	X					X				
3	Component 3: Design and Tender Documents for three tunnels on the road from Vanadzor to the Georgian Border in Armenia							(64)	260	n/a	n/a
3.1	Field Investigations	Completed									
3.2	Design works										
3.3	Determination of Excavation works										
3.4	Technical description of Construction and Engineering Process										
3.5	Cost estimates										
3.6	Preparation of the Tender documents										
3.7	Reporting										
							TOTAL:	213	1799	n/a	n/a

Annex 1
Minutes of Pre-Bid Meeting
(It contains 10 pages excluding this one)

**AZERBAIJAN REPUBLIC
MINISTRY OF TRANSPORT
ROADTRANSERVICE DEPARTMENT**

AZERBAIJAN HIGHWAY PROJECT

Contracts CW/ /2003/1 - 4

PRE-BID MEETING

Submitted by Project Implementation Unit (PIU)

September19, 2003

Table of Contents

- 1.Introduction
- 2.Minutes of Pre-Bid Meeting
3. Questions and answers
- 4.Appendix 1
- 5.Appendix 2

Note: Bidders are requested to confirm receipt of this Circular letter in return to “RoadTransService”, and to include a copy of this circular in their Bid.

Azerbaijan Highway Project
RoadTransService Department
Rehabilitation and Upgrading of Shemkir-Gazakh Road Section (4 Lots)

Minutes
Pre-Bid Meeting

1. Introduction

The Pre-Bid Meeting was set up in "RoadTransService" headquarters (72/4 Uzeir Hajibekov Street; third floor) on September 16, 2003, at 11:00 Hours (local time).

According to the Ministry of Transport Order No8 dated 15/07/2003, the Pre-Bid and Bid Evaluation Committee has been appointed with the aim of participating and evaluating the submitted Bids for the following Contracts:

CW/2003/1

CW/2003/2

CW/2003/3

CW/2003/4

The following official persons attend the Pre-Bid Session:

- Gojayev Adil Jahan oglu
PIU Director
- Safarov Gazanfar Bahadur oglu
PIU Procurement Specialist
- Guliyev Rafiq Haji oglu
PIU Financial Specialist
- Alakbarov Marahim Amrah oglu
PIU Translator / Interpreter

The representative of PIU Technical Assistant who has participated in the Pre-Bid Meeting:

- Razek Degheim
LBSA Team Leader / Project Manager

-The Representatives of Bidders, which received Bidding Documents, have participated to the Meeting:

- | | |
|--|-------------------|
| 1. Turan Hazinedaroglu ve Oztas İnsaat İsh ort | - Tolga Aksut |
| 2. Alarko Taannit Crubu | - Kenan Kose |
| 3. Meltas Ltd. | - Solattin Tasgin |
| 4. Emek İnsaat Ltd. | - Aydin Gulser |

- | | |
|--|------------------------|
| 5. RTIC Consortium | - Rashad Aliyev |
| 6. EREL Engineering & Construction Inc. | - Hilmi Temiz |
| 7. AZ Wirt | - Nariman Bagirov |
| 8. ODISAN ortagocu ve senayi TIC.A.S Hakan Demir | - Kenan Kose |
| 9. AVRASYA Technology Engineering and Cons. | - Aziz Chakhmakkaya |
| 10. SEP Inshahat Sanayli ve Ticaret Ltd. | - Selahattin Septioglu |
| 11. "Autobahn" GmbH | - Anvar Karimov |

The signed list that confirms the participation of representatives of Bidders mentioned here is annexed to the Minute.

We herein attach the following Appendices:

- | | |
|------------|--|
| Appendix 1 | List of the firms or JVs purchasing the Bidding Documents up to the date of this Meeting (in 2 pages); |
| Appendix 2 | List of the participants of the Pre-Bid Meeting. |

2. Minutes of the Pre-Bid Meeting

The discussion of questions related to the Bidding Documents on "Rehabilitation and upgrading of Shemkir to Gazakh road sections".

Made a speech:

The Session is opened by Mr. Adil Gojayeve, the PIU Director who asked the representatives of Bidders to sign the list of participants indicating their names and the companies, greeted who purchased the Bidding Documents upon the "Rehabilitation and Upgrading of Shemkir-Gazakh Road Section (4 Lots)". He introduced the attended representatives of PIU, Technical Assistance of PIU to the Bidders (the list of participants are annexed to the Minute)

He pointed out that so far only one company of 15 (fifteen) applied to RoadTransService Department with questions in writing concerning the clarification of Bidding Documents. Therefore, he noted to begin clarifying the questions forwarded in writing, after which should be replied the verbal questions elaborately.

After exchange of views it was decided:

- **Bidders should submit any further requests for clarification in writing to "RoadTransService" as per the Conditions of Biding Documents;**

- **The answers to the question submitted would be given in writing, without disclosing the source of the questions, to every firms or JV who has purchased the Bidding Documents.**

At the end of the session, Razek Degheim, LBSA Team Leader / Project Manager advised the participants to follow the requirements of the Bidding Documents. Any material deviation, reservation or disqualification by a Bidder in its Bid may lead to disqualification. All Bidders would be informed about successful Bidder on every single Contract as per the Bidding Documents.

_____ **A.J.Gojayev**

_____ **G.B.Safarov**

_____ **R.H.Guliyev**

_____ **M.A.Alakbarov**

_____ **Razek Degheim**

List of questions and answers

Q1: What is the VAT rate and shall be included in BoQ?

A1: VAT is not applicable to the suggestions of Bidders as per the Guidelines of World Bank and the local Legal System.

Q2: Shall we prepare the same Performance Bank Guarantee documents for all Contracts respectively if we give offer to all contracts?

A2: Each Bidder, for each lot, should be offered separately and each Bid has separate Performance Bank Guarantee.

Q3: Is there any discount during Bid-Opening?

A3: No discount is considered during Bid-Opening. Discounts only to be applied to the Clause 30.0 of "Instructions to Bidders".

Q4: Shall the submitted Bidding Documents comprise the Documents mentioned in Clause 12 of Instruction to Bidders or partial Documents such as Specifications and Drawings would be returned to the Bidders?

A4: The Bidders shall include a complete set of the Bidding Documents which have been bought from the Employer into the Bids Envelope.

Q5: Who will bear the cost of expropriation for borrow pits?

A5: The Clauses 312 and 313 of Section VI, Specifications and the preamble to the Bill of Quantities are clear. The costs for expropriation must consider all costs in connection with extraction or purchase from borrows pits and built-in. The costs shall be deemed to be distributed among the rates and prices entered for the related Items of Work.

Q6: In which languages shall the documents forming the Qualifications Information to be submitted with the Bid?

A6: The documents forming the QI must be submitted in English. If the original of the documents are in other languages, an English translation is needed.

Q7: If the Annual Turnover is for every single contract shall apply?

A7: All criteria – including Qualification Information must be in compliance with the requirements of Bidding Documents.

Q8: If the Location of Land is defined?

A8: It should be noted that the Project Institution are preparing the documents for Land Location for the Project of Shemkir-Gazakh Road Section. So far the relevant negotiations have been taken with the Land Owners belong to subsidiary land sections which are under construction and we hope it should find its solution as soon as the Contract would signed. After the documents produced, any hamper to the Land Owner concerning the ancillary Land Section would be calculated and should be paid by the Government of Azerbaijan.

End of Questions and Answers.

List of participants in the Pre-Bid meeting held on 16.09.2003 at 11:00 (local time) concerning the Bidding Documents for CW2003-1, CW2003-2, CW2003-3, CW2003-4

16.09.2003-cü II tarixdə CW2003-1, CW2003-2, CW2003-3, CW2003-4 lotlar üzrə Tender sənədlərinin müzakirəsi ilə əlaqədar keçirilən Tendergəbağı iclasın iştirakçılarının Siyahısı

No	Company / Şirkət	Name/Adı	Signature/İmza
1	MELTAS LTD.	Seləttin Təspim	
2	TH & ÖZETAS JV	Tolga AKOİT	
3	EMEK İNŞ	Məhmut Dəmir	
4	EMEK İNŞ	Azadın Güler	
5	Rəşad Aliyev	RTIC	
6	RTIC	Xidayət Gasanov	
7	RTIC	Mahir Bağirov	
8	RTIC	Ziyafət Aliyev	
9	"AZKİT" BM	Nəriman Nəziyev	
10	"Autobahn" GmbH	İsmail Kərimov	
11	Odisan	Kenan KÖRƏ	
12	ALARKO	Kenan KÖRƏ	
13	AURASYA	ƏSİZ GƏMƏKƏYƏ	
14	ERE ENJ. & CONSTR. INC.	HİLMİ TƏMİZ	
15	SƏP-İNŞ. Sən. Təcr. Ltd. Ş.	Seləttin Səptəyev	
16	Bəyqan İNŞ. Sən. Təcr.	Məhəlib Əliyev	
17	Tender Komissiyası	Əliyev Rəfiq	
18	LİQ-ünün direktoru	Qocayev Ədil	
19	LİQ-ünün əlyazma nüsxəçisi	Səfirov Əsmir	

20. Raman Co. ESMAIL NURİ
21. Louis Berger (TRACCA) Rəzək Dəglim
22. PİLİ İnterpreter Mərahim Ələkbərov

"Şəmkir – Qazax avtomobil yolunu reabilitasiyası və təkmilləşdirilməsi" Layihəsi üzrə (4 Lot) podrat işlərini yerinə yetirəcək Podratçılar arasında 16 oktyabr 2003 – cü il tarixdə saat 11:00 – da "Yolnaqliyyatservis" Departamentində keçiriləcək Tenderin sənədlərini alan İddiaçıların siyahısı.

Kredit: "Azərbaycan Magistral Avtomobil Yolu Layihəsi, Kredit 3517 AZ"

Layihənin adı: "Şəmkir – Qazax avtomobil yolunu reabilitasiyası və təkmilləşdirilməsi" Layihəsi, Müqavilə nömrələri CW 2003 – 1, CW 2003 – 2, CW 2003 – 3, CW 2003 – 4, 4 Lot.

s/s	İddiaçı firmaların adı	İddiaçı firmanın təmsil etdiyi ölkə	Lotlar üzrə tender sənədlərinin alınma tarixi və saati				Tender sənədlərini alan səlahiyyətli nümayəndənin A.F.A.	Tender sənədlərini alan səlahiyyətli nümayəndənin imzası, tel. faks nömrələri
			I	II	III	IV		
1.	Turan Həzinedaroglu ve Öztas inşaat iş ortaxlığı	Türkiyə	03.09.03 saat 15 ⁰⁰	03.09.03 saat 15 ²⁵	03.09.03 saat 15 ⁰⁵	03.09.03 saat 15 ⁰⁵	Rüstəm Rüstəmov tel. 93-94-99 Fax 93-92-59	
2.	Alarxo TAAHHÜTİ CRUBU	Türkiyə	03.09.03 saat 17 ³⁰	03.09.03 saat 17 ³⁰	03.09.03 saat 17 ³⁰	03.09.03 saat 17 ³⁰	Nesə VCAR tel. 678 2200 Fax 7522910	
3.	Moltas LTD	Türkiyə - Azərbaycan	04.09.03 saat 11 ⁴⁵	04.09.03 saat 11 ⁴⁵	04.09.03 saat 11 ⁴⁵	04.09.03 saat 11 ⁴⁵	C. Təsgin tel/fax 2533736	
4.	Emex İnşaat LTD	Türkiyə	04.09.03 saat 17 ³⁰	04.09.03 saat 17 ³⁰	04.09.03 saat 17 ³⁰	04.09.03 saat 17 ³⁰	Aydın Gulser tel: 0522 254926	
5.	RTIC consortium	Rusiya Türkiyə	05.09.03 15 ³⁰	05.09.03 15 ³⁰	05.09.03 15 ³⁰	05.09.03 15 ³⁰	Vahid Səmədov tel: 33-62-82 Fax 53-62-90	
6.	Konsolidiyed Contractors International Kompani, S.A.L	Livan	08.09.03 saat 14 ⁵⁰	08.09.03 saat 14 ⁵⁰	08.09.03 saat 14 ⁵⁰	08.09.03 saat 14 ⁵⁰	Nosimi Babayev tel. 972116 Fax 972291	
7.	EREL Engineering & Construction Inc.	Panama	09.09.03 saat 15 ⁰⁰	09.09.03 saat 15 ⁰⁰	09.09.03 saat 15 ⁰⁰	09.09.03 saat 15 ⁰⁰	Hilmi Temiz tel: 933490 Fax 988279	
8.	Az Wirt	Azərbaycan Almaniya	10.09.03 saat 15 ⁵⁵	10.09.03 saat 15 ⁵⁵	10.09.03 saat 15 ⁵⁵	10.09.03 saat 15 ⁵⁵	Feyzulla Balamiyev tel: 47-3664 Fax 47-3665	
9.	MZ Autobahn-Bau GmbH	Rumaniya	10.09.03 saat 16 ⁰⁰	10.09.03 saat 16 ⁰⁰	10.09.03 saat 16 ⁰⁰	10.09.03 saat 16 ⁰⁰	Feyzulla Balamiyev tel: 47-36-64 Fax 473660	
10.	ATILIM yapı taahhüdü A.S.	Türkiyə	10.09.03 16 ¹⁰	10.09.03 16 ¹⁰	10.09.03 16 ¹⁰	10.09.03 16 ¹⁰	Haxan Demir tel 435 9649 Fax 435 6125	
11.	ODISAN ortaqoşu inşaat və sənaye ticarət	Türkiyə	—	10.09.03 16 ³⁵	—	—	Erçem Kilibiç tel: 435 9649 Fax 4325015	

No	Adi	Oran	1.0 Saat 15 ²⁹	2.6 Saat 15 ²⁵	A. Saat 15 ²⁵	1. Saat 15 ²⁹	10% Ya	Not
12.	KAMAN Co	ICAN						tel: 98522-11344-0215
13.	KAVRASYA TEKNOLOJİ ENGINEERING and construction SEP İNŞAAT SANAYİ VE Ticaret LTD. STİ	Türkiye	12.09.03 1645	12.09.03 1645	12.09.03 1645	12.09.03 1645	Aziz ÇAKMAKÇI	tel: 47 9226 Fax 401313
14.	SEP İNŞAAT SANAYİ VE Ticaret LTD. STİ	Türkiye	13.09.03 1540	13.09.03 1540	13.09.03 1540	13.09.03 1540	Habib Akyıldız	tel: 0532 312 2469
15.	INŽINIERSKÉ STAVBY a.s.	Slovakia	15.09.03 1015	15.09.03 1015	15.09.03 1015	15.09.03 1015	Pavol Peško	mob. +421(0)909702408

Annex 2
Letter of the MoT
(It contains 3 pages excluding this one)

Received from Mr. Coable
21.08.03



AZƏRBAYCAN RESPUBLİKASININ NƏQLİYYAT NAZİRLİYİ

№ 652/S-NN

"14" 08 2003 il

TRACECA Koordinasiya
Grupunun rəhbəri
Cənab Mark Qreyla

Hörmətli cənab Mark Qreyl!

Məlumat üçün bildiririk ki, Azərbaycan Respublikasında idarəetmə sisteminin təkmilləşdirilməsi məqsədi ilə aparılan məqsədyönlü struktur islahatlarının tərkib hissəsi olaraq Azərbaycan Respublikası Prezidentinin 2003-cü il 10 iyun tarixli 880 nömrəli Fərmanı ilə Azərbaycan Respublikası Nəqliyyat Nazirliyinin Əsasnaməsi təsdiq olunmuş və Nazirlik, yol-nəqliyyat kompleksində vahid dövlət siyasətini formalaşdıran və həyata keçirən mərkəzi icra hakimiyyəti orqanı kimi müəyyən olunmuşdur. Həmin Fərmana əsasən «Azəravtonəqliyyat» Dövlət Konserni və «Azəravtoyol» Dövlət Şirkəti ləğv edilmiş və onların tərkibində olan müəssisə, təşkilat və digər obyektlər Azərbaycan Respublikası Nəqliyyat Nazirliyinin tabeliyinə verilmişdir.

Azərbaycan Respublikası Prezidentinin müvafiq Fərmanına uyğun olaraq, ləğv olunmuş «Azəravtonəqliyyat» Dövlət Konserninin və «Azəravtoyol» Dövlət Şirkətinin ləğvi ilə bağlı həmin sahələrin fəaliyyətini təmin etmək məqsədi ilə Nəqliyyat Nazirliyinin 2003-cü il 23 iyun tarixli 03 nömrəli və 2003-cü il 24 iyun tarixli 04 nömrəli əmrləri ilə müvafiq olaraq «Yolnəqliyyatşəxsi» Departamenti və «Avtonəqliyyatşəxsi» Departamenti təşkil edilmişdir.

Bununla əlaqədar olaraq, Azərbaycan Respublikası ilə Beynəlxalq İnkişaf Assosiasiyası arasında 25 iyul 2001-ci il tarixdə imzalanmış «İnkişaf üçün kredit haqqında Saziş (Azərbaycan Magistral Avtomobil Yolları Layihəsi)» (kredit № 3517 AZ) çərçivəsində görülməli işlər üzrə ləğv olunmuş «Azəravtoyol» Dövlət Şirkətinin müvafiq hüquq və vəzifələri qanunvericiliklə

müəyyən olunmuş qaydada Azərbaycan Respublikası Nəqliyyat Nazirliyinin «Yolnəqliyyatservis» Departamentinə keçmişdir.

Qeyd olunanlara əsasən Nəqliyyat Nazirliyi tərəfindən Layihə çərçivəsində görülməli işlərin sifarişçisi adından Kredit Müqaviləsi Layihələri üzrə səlahiyyətli şəxs Cavid Qənbər oğlu Qurbanovun əvəzinə Nəqliyyat Nazirliyinin Maliyyə və Kredit Departamentinin rəisi Arif Nəriman oğlu Əsgərov təyin edilmiş, Layihə çərçivəsində nəzərdə tutulan müvafiq işlərin icra olunması isə «Yolnəqliyyatservis» Departamentinin rəisi Cavid Qənbər oğlu Qurbanova həvalə edilmişdir.

Hörmətlə,

Nazir



Z. Məmmədov

Surəti: Louis Berger LTD Məsləhətçi Firmasının «Qafqaz Magistral Avtomobil Yollarının Bərpası» Layihəsinin Qrup rəhbəri vəzifəsini icra edən cənab K. Zuruxova

Surəti: Podratçı «Turan Xəzinədar oğlu və Öztaş İş Ortaqlığı» Birgə Müəssisəsinə

Surəti: Texniki Kömək Layihəsi üzrə Finrood firmasına

Dear Mr. Marco Graille,

We would like to inform you that the goal-oriented structured activities being carried out in order to improve executive system of the Azerbaijan Republic, resulted in the decree № 880 of the President of Azerbaijan, dated from 10 June 2003. According to the decree, Statute of the Ministry of Transport of Azerbaijan Republic was approved and the Ministry was determined as an executive body forming the unified state policy in the field of transport. Due to the Decree, the State Concern "Azeravtonaghiyyat" and State Company "Azeravtoyol" had been abolished, and the enterprises, organizations and other units of the company had been subordinated to the Ministry of Transportation.

According to the decree № 03 dated from June 23, 2003, decree № 04 dated from June 24, 2003, "Roadtransservice", and "Autotransservice" departments were established with the purpose of the working activity of the former companies.

"Azeravtoyol" State Concern abolished in connection with the activities to be implemented in the framework of "Azerbaijan Highways Project (Credit № 3517)" signed between the Government of Azerbaijan and World Bank International Development Association in July 25, 2001, was subordinated to the "Roadtransservice" Department of the Ministry of Transport.

Mr. Arif N. Asgarov, Head of Finance and Credit Department of MoT, is assigned as an authorized person (on behalf of Client) for the Projects of Credit Contract. Mr. Javid G. Gurbanov, Director of the "Roadtransservice" Department, is in charge with executing of the activities being implemented within the framework of the Project.

Sincerely,
Z. Mamedov

Annex 3
Pavement Design Evaluation Report
Shemkir to Gazakh Road Section

**REHABILITATION OF CAUCASIAN
HIGHWAYS**

Azerbaijan / Georgia / Armenia

Shemkir to Gazakh Road - Azerbaijan

Pavement Design Evaluation



Design Review Report

August 2003

Client:
 Project: REHABILITATION OF CAUCASIAN HIGHWAYS Job No: J23147
 Title: PAVEMENT DESIGN REVIEW REPORT

	Prepared by	Reviewed by	Approved by
ORIGINAL	NAME Dr M.E. HEELIS	NAME TIM CHEESEMAN	NAME
DATE	SIGNATURE	SIGNATURE	SIGNATURE

REVISION	NAME	NAME	NAME
DATE	SIGNATURE	SIGNATURE	SIGNATURE

REVISION	NAME	NAME	NAME
DATE	SIGNATURE	SIGNATURE	SIGNATURE

REVISION	NAME	NAME	NAME
DATE	SIGNATURE	SIGNATURE	SIGNATURE

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- (b) By release of the report to the Third Party, that Third Party does not acquire any rights, contractual or otherwise, whatsoever against JacobsGIBB Ltd, and JacobsGIBB Ltd accordingly assume no duties, liabilities or obligations to that Third Party, and
- (c) JacobsGIBB Ltd accepts no responsibility for any loss or damage incurred by the Client or for any conflict of JacobsGIBB Ltd's interests arising out of the Client's release of this report to the Third Party.

Executive summary

The M1 Highway forms part of the TRACECA corridor from Baku, Azerbaijan to Poti, Georgia by the Black Sea. The road connects the three capitals of the Trans-Caucasian Republics: Baku; Azerbaijan Tbilisi; Georgia and Yerevan; Armenia.

The World Bank has agreed to finance the rehabilitation and upgrading of the existing single carriageway Ganja to Gazakh road sections (Azerbaijan Highway Project). The section under review in this report is a 73km section CW-2003 Shemkir to Gazakh.

This is the design review report by a pavement design expert. The purpose of this review is to develop an overview of the design, summarise the current situation and anticipate follow up actions

The pavement rehabilitation was designed by KOCKS CONSULT GMBH as described in an Engineering Report (October 2002). KOCKS prepared contract drawings (July 2001), which included preliminary drawings for the pavement.

The visiting Jacobs pavement design engineer performed a Visual overview of the site to establish that the proposed design was commensurate with the projected levels of traffic.

A number of inconsistencies were observed in the KOCKS report, some of a major nature. The conclusions from the report and the design rely heavily on a FWD survey conducted in June 2001. The FWD analysis appears to be inconsistent with two design temperatures and reports bituminous stiffnesses for aged material in excess of those practically achievable for new material. Analysis of the grading from a wearing course has been compared to that of a base course. Traffic figures have been used which may not be applicable to the scheme under consideration.

The current level of traffic (two-way 2,000 to 3,000 vehicles per day) indicates that the section will not require upgrading to a dual carriageway during the current pavement design life (15 to 20 years).

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The M1 Highway forms part of the TRACECA corridor from Baku, Azerbaijan to Poti by the Black Sea. The road connects the three capitals of the Trans-Caucasian Republics: Baku, Tbilisi and Yerevan.

This report refers to the pavement design expert visit to Ganja, Azerbaijan in August 2003. The visit lasted from the 5th August 2003 to the 9th August 2003. The objective of the visit was the review of the pavement designs for the Rehabilitation and Upgrading of the Shemkir to Gazakh road section. These pavement designs are required as part of an overall project involving a World Bank credit for the rehabilitation of the Ganja to Gasakh highway. The scheme is fully within the International Development Agency funded Works Contract for the rehabilitation of the Ganja to Shamkir road section of motorway M1.

The review was undertaken by pavement design expert Dr Michael Heelis, employed by Jacobs working in association with Louis Berger S.A..

The purpose of this design review has not been to undertake a detailed check on the Designer's work. The review has therefore aimed at developing an overview of the proposed pavement designs. In this process, it is inevitable that some quite detailed points will be observed in the course of looking at the functionality of the designs and these points have been noted as well as those of greater significance. Responsibility for the Design remains with the Designer who is quality assured to ISO 9001.

The first stage involved a review of all the documents in association with a site visit by the Pavement Engineer from 6th to 8th August 2003. This included a review of the preliminary design and the associated background information as detailed in the Engineering Report prepared by KOCKS in October 2002. A review of the drawings which form part of the Bidding Documents prepared by KOCKS Contract CW-2002 has also been performed, where this affects the design of the pavement structure. This process identified where designs were not consistent with the current visual condition of the road. The dominant issue in the review has been the appropriateness of the design.

The Review has been conducted with the following objectives:

- *To review the existing road conditions to identify the distress that has occurred to the existing pavement, which are not traffic volume or service life related, and to the drainage.*
- *To review and comment on the type and extent of sampling and testing .*
- *To review the Pavement Designs considering all pertinent factors and data including :*
 - *Geotechnical Results*
 - *Construction material results*
 - *Material availability, haulage and costs*
 - *Axle load survey*
 - *Traffic Volume and composition*
 - *Future maintenance requirements and cost.*

3.1 General Descriptions

The Shemkir to Gazakh road forms part of the main road corridor extending from Alyat near the Caspian Sea to the Georgian Border. The section begins at the major roundabout Shemkir/Deliler/Gazakh/Baku (km 390.0 Site Chainage 0). The alignment of the road is consistent with existing standards traversing a flat rolling terrain with long straights and occasional bends. It is predominantly in a rural setting with no housing on either side of apart from where it passes through Tovuz, which is effectively bisected.

From Tovuz the road continues over gently undulating terrain normally on 1-2m height embankment but with sections in cut of up to 5-10m depth. The town of Agstafa is bypassed to the west after which the route turns sharply westward to run parallel to the Agstev river. The main centre of Gazakh is bypassed with the road routed along the southern and western limits of the town in an urban setting. The road section ends at km 463.8 (Chainage 73.8).

3.2 Existing Road Condition

The KOCKS Engineering Report is deemed to accurately reflect the existing pavement condition. The visual inspection conducted as part of this review suggests that the current pavement structure is approximately 5-10 years old. This has not been confirmed from documentary evidence. There is widespread deterioration across the whole width of the pavement however the severity of the deterioration would be classed as moderate according to TRL (United Kingdom Transport Research Laboratory) Overseas Road Note (ORN) 18.

Surface Roughness

The surface roughness provides a comfortable ride up to speeds of 100-120 kph although sections on the approach to Tovuz are such that a lower speed (80kmph) is required for a comfortable ride. The roughness of this section is considerably less than other roads in Azerbaijan in particular the road from Baku to Ganja.

Rutting Deterioration

No significant wheelpath or structural rutting was observed during the inspection in August 2003 although the section Site Chainage 48.6 to 49.7 has been recently patched and it is understood the principal mode of failure had been rutting in the wheel paths.

Visual Condition

Road condition data, in particular visual condition data, is presented in summary format only, and does not allow correlation of rehabilitation recommendations with the visual condition of the road. For example, areas with little current deterioration should correlate to sections with a 40mm overlay recommendation and sections indicating deterioration should require reconstruction or thicker overlays.

There are moderate lengths of edge deterioration and road shoulders are typically un-sealed. No heavy vehicles were observed over-running the pavement shoulders. Therefore it is assumed likely that the shoulders were unsealed when constructed.

This is not a practice that is typically recommended and the shoulders should be sealed.

Pavement Drainage

There appears to be sufficient cross fall on the pavement surface to prevent surface ponding of rainwater, and there is no reported problem with surface drainage from the actual pavement.

Where the route passes through rural areas the pavement surface is typically on embankment 1-2 m above the surrounding areas. Drainage from the road is directly onto adjacent fields where drains were either not initially constructed or have been filled in over-time. The proposed arrangements in the KOCKS Bidding Documents, which comprise sidedrains that shall be constructed when the height of the embankment is less than 1.0m should alleviate these problems if they are maintained. The longitudinal slope of the proposed design is a matter of concern as it is below the recommended standard (or 0.3 to 0.5%) in order to ensure water is efficiently removed from the road. The drainage of water from the side drains should be actively promoted in the final design, in order to prevent underlying pavement layers from being in saturated conditions for long periods and accelerating pavement deterioration.

Where the road passes through an urban environment provisions for road drainage are either non-existent or have deteriorated to such an extent as not to be effective. Residential accesses have been created across drainage systems which can lead to flooding during periods of wet weather. Provisions for urban drainage should be recommended.

Earthwork Failures

The earthworks are generally in good condition with few occurrences of localised settlement or slope instability. However there appears to be some localised failures on the approaches to the overbridge to the railway at Chainage km 60.400. This section is to be re-aligned and a new bridge is to be constructed. The new earthworks will be constructed alongside the existing earthworks which will then be required to support the new construction. The existing earthworks may provide insufficient support. The suitability of the existing embankment for the current design, in terms of required compaction, stability etc, should be checked prior to construction.

4.1 General Descriptions

The type and extent of the geotechnical and pavement structure surveys conducted as part of the KOCKS Engineering Report (October 2002) are outlined below.

Trial Pits

A total of 15 Trial pits to a target depth of 0.8m were excavated. The stratigraphy of each trial pit was noted and bulk samples were recovered (Appendix A.4 Table 1 of the KOCKS Engineering Report). The bulk samples were a nominal 50kg in weight however this appears to be excessive from a single trial pit and may indicate that the samples were combined to provide sufficient mass for subsequent laboratory tests. The reported grading curves do not conform to the TRL ORN 31 standard, the primary reason being excessive large size aggregate in excess of 50mm. This may have reduced the possible level of compaction of this layer during construction.

Trial pits were performed both in the carriageway and at the carriageway edge adjacent to the shoulder. The cross-section reported in the KOCKS Report indicated that at the carriageway edge there was 80 to 110mm less bituminous material than in the carriageway. This is probably one of the principal causes of the edge deterioration observed along the road section.

Dynamic Cone Penetrometer Testing

Dynamic Cone Penetrometer (DCP) testing according to the standard specified in TRL ORN 18 was performed at a nominal 1km spacing along the entire road section. The results from the tests allowed the thickness of the relevant layers to be identified along with the nominal California Bearing Ratio (CBR) strength (of the granular sub layers). The raw data from these test are not available in the KOCKS Engineering Report and therefore the testing methodology cannot be confirmed. However the results appear to be consistent with the existing road structure and identify two underlying pavement layers. The upper layer typically has a CBR in excess of 100% and the second is of inferior strength CBR 15% overlying a subgrade with CBR 4-5% (KOCKS Appendix A.4 Table 2). The upper layer can be classified as a good quality granular sub-base in line with applicable standards. A typical capping layer would have a CBR in excess of 30%. This requirement is normally specified in order to ensure that overlying layers can be compacted efficiently. The overall performance of these underlying layers appears to be good as there are few signs of structural rutting or localised settlement.

Percussion Borings

On the alignment of the proposed second carriageway, 13 no. smaller percussion borings have been carried out. The resulting soil profiles indicate that there is clay subgrade but no other information from this survey is presented in the KOCKS Report.

In order that a suitable pavement design for the dualling route can be established the strength of the subgrade must be confirmed prior to the start of construction.

Coring Survey

A further 18 no. 60mm diameter cores were taken through the pavement surface at a spacing of approximately 5km along the route. The stratigraphy of the pavement was identified and presented in KOCKS Appendix 4 Table 3.

Falling Weight Deflectometer Testing

A Falling Weight Deflectometer survey (FWD) was conducted, testing the pavement structure at staggered 100m intervals. The subsequent analysis of the pavement was used to identify the proposed rehabilitation regime and will be discussed in Section 4.2

Conclusions

The extent of the investigation of the current pavement structure appears to be sufficient to identify the current construction and the strength of the relative layers and identify rehabilitation requirements.

There is insufficient information to assess the suitability of the ground and drainage for the provision of a dual carriageway along this route. The adequacy of the geotechnical survey for bridge construction is outside the scope of this report.

4.2 Falling Weight Deflectometer Survey

A Falling Weight Deflectometer (FWD) Survey of the entire length of the section was conducted and the results reported in the KOCKS Report.

The deflections measured by the FWD or examples of the analysis have not been reported and therefore the results from the survey cannot be validated.

4.2.1 Back Analysed Stiffness

The methodology for the back-analysis of the FWD results has used the Method of Equivalent Thicknesses as recommended by International Experts such as Ullditz (1999). However, the preferred method of back-calculation recommended by the UK Transport Research Laboratory is to use Burmisters equations (UK Design Manual for Roads and Bridges (DRMB) Volume 7 HD 29/94).

Typically, results from the sensor at a distance from the centre of the loading plate can provide information at approximately the same depth downwards in the structure. The typical height of the embankment is 1-2 m and therefore the information reported to be about the subgrade at a depth of approximately 1.27 m may reflect the condition of compacted imported material at the base of the embankment.

The sensor closest to the loading plate is at a distance of 210mm. Typically this would mean that the minimum thickness of the surface layer for analysis should be of the same order i.e. 200-300mm. Layers with a thickness of 30 to 60mm have been analysed in the Engineering Report produced by KOCKS. The results for these layers are unlikely to be consistent with the in-situ pavement stiffnesses.

The back-analysed stiffness is normally adjusted to a design temperature typical of the site conditions. The design temperature for the Section Shekmir to Tivuz road section (length 40.2km) is quoted as 25°C. The design temperature for the Tovuz to Agstafa road section (length 67.1 km) is quoted as 35°C. No indication as to the reason for the change in design temperature has been given.

A typical sample of new bituminous material will have a maximum stiffness of 7000MPa (DRMB) at 20°C. The stiffness of bitumen reduces with higher temperatures and at the proposed design temperature of 25°C or 35°C (according to the KOCKS report) a maximum stiffness of 4000MPa would be expected. The reported stiffnesses in the KOCKS Engineering Report for new asphalt layer:

- New Asphalt layer < 100mm Stiffness 2000MPa
- New Asphalt layer > 100mm Stiffness 3000MPa

The poor visual condition of the bituminous material would indicate that a lower stiffness would be expected for the existing bituminous material. However, the back-analysed stiffnesses for the existing bituminous material in the report are regularly in excess of 10,000MPa indicating that they are better than new material. This would appear to indicate that the FWD Analysis is inconsistent.

In order to check the accuracy of the analysis technique, it is common practice to provide data comparing the measured deflection data and the deflections calculated using the stiffness output from the analysis. No such data is provided and therefore the analysis cannot be validated.

The recorded FWD survey length is 107.1km and is in excess of the scheme length of 73.8km.

Results reported for the FWD analysis have been observed to be inconsistent with International practice. It has not been possible to perform a check of the analysis as the consultant used by KOCKS has not supplied examples of the following data which would be required to review the FWD analysis (see UK Design Manual for Roads and Bridges (DRMB) Volume 7 Section 29/94):

- Measured deflection data (Maximum and Differential data is normally reported)
- Pavement Temperature at the time of testing (only the design temperature has been supplied)
- Correction method for the Pavement Temperature
- Design Temperature (Why have two design temperatures been adopted?)
- Design (Deterioration) Curves for each layer
- Data on the error between the calculated and measured deflection bowls.

The final designs in terms of overlay rely totally on the results of the FWD survey. Further conclusions about the appropriateness of the recommended rehabilitation regime, for instance the recommendation of an overlay compared to an inlay, cannot be assessed from the current analysis.

4.3 Laboratory testing

4.3.1 Existing Bituminous Material

The bituminous content and grading of the aggregate in the existing bituminous material from the trialpit survey was undertaken. The recorded bitumen content was typically approximately 4% for the wearing course and 3% for the underlying bituminous layers. A typical design bituminous content of a bituminous macadam would be in the range of 4.5-5.5%. Some reduction from the design content would be expected due to the fact that the bitumen is being recovered from aged samples. The seasonal temperature range would also have some bearing on the choice of wearing course bitumen content.

In Appendix A4 Table G-7 to G-10 the KOCKS report compares the grading of the in-situ material with that taken from TRL ORN 31. The grading of the upper wearing course layer is compared to a Hot Rolled Asphalt Base Course layer (Ref. BC3) and the second asphalt layer is compared to a Road Base mix (RB3).

The wearing course grading of the in-situ material has excess material in the particle sizes 0.01 to 1mm. Additionally there is too much material with aggregate size in excess of 20mm. There is material of 30mm particle size in a nominal 40mm layer. This larger aggregate will cause particular problems when compacting the layer during the construction process leading to an excess of voids. The visual deterioration of the surface layer is typical of such a problem.

In addition, the large aggregate has become polished with use and this will decrease the skid resistance of the surface when wet. This is also typical of using un-crushed aggregate for bituminous layers. It may also prevent aggregate interlock with overlying layers when these are placed in the current scheme and care must be taken in the preparation of the surface prior to the overlaying process.

4.4 Existing Granular Material

The sub-base material from the trialpits was also taken to the laboratory for grading analysis. Similar to the bituminous material the grading was compared to that in TRL ORN 31 in the KOCKS Engineering Report. Aggregate with particle sizes in excess of 50mm was found and this may affect the compaction of layers on site. The thickness of the sub-base layer varied considerably but was typically 200mm. Despite the excess of coarse material the CBR strengths typically reported are in excess of 100%. This figure should be treated with caution as the Dynamic Cone Penetrometer (DCP) probe may have hit large aggregates and will give un-typical readings.

4.5 Subgrade

It is believed that the strength of the subgrade was assessed by several different methods. Where the DCP test penetrated through the sub-base layers the underlying CBR was reported to be typically 4-5%. The stiffness of the subgrade from the FWD tests has been converted to a strength using equations from TRL ORN 18. The conversion by such a method is typical where the strength and stiffness of a material are confused. It is not always the case that a stiff material is also very strong as such effects as aggregate interlock and moisture content may affect the relationship between strength and stiffness of soils.

The pavement design of the section km 398 to 402 (Page 31 of the KOCKS Report) Chainage km 8.000 to 12.000 is apparently based on DCP tests which did not fully penetrate the imported granular material. On page 24 the CBR of 12% is attributed to a section at km 402 to 412 which would correspond to a site Chainage 12.000 to 22.000. The natural subgrade under the proposed new alignment for the dual-carriageway is classified with a typical CBR of 2% at the same location.

Without supporting information and confusion of the extent of the stiffer underlying material, it will be extremely risky to construct any section without a 300mm capping layer. A conservative design would take the in-situ CBR of the subgrade to be 2%. The adoption of this approach would lead to the prevention of premature deterioration and possible pavement failure.

4.6 New Material

In order that that proposed rehabilitation gives good performance and achieves the proposed design life, it is necessary that the quality control of new material is effective. Material outside the proposed grading curves will result in a sub-standard pavement which will not achieve the proposed design life. Primarily this will be due to insufficient compaction of the surface layer which will lead to fretting (aggregate loss) from the bituminous surface, and subsequent moisture contamination of the primary pavement structure layers. The provision for a 40mm overlay will be problematic on site if a suitable supply of graded material is not obtained.

The trials pits where 100mm less bituminous material is found at the road edge indicate the problem and highlight the requirement for proper construction quality control.

Note that where a nominal overlay thickness is proposed, i.e 80mm, this is the minimum thickness of bituminous material to be placed. In order to maintain the crossfall across the road width it may be necessary to place additional material in the centreline of the road.

5.1 Geotechnical Results

According to the KOCKS Engineering Report (October 2002) geotechnical and pavement structure surveys were conducted and the following are the type and extent of the surveys.

5.2 Construction material results

The existing construction materials appear to be comparable with modern working practices although excessive coarse material is present in the bituminous and granular layers. The suitability of the current construction materials has been discussed in Section 4. Due to the quality of the likely supplies of construction aggregate, it is recommended that the minimum overlay requirement be increased from 40 to 50-60mm. Where an overlay thickness is specified, it is the minimum that is to be applied across the width of the carriageway and not that applied at the carriageway centreline

The preparation of new materials should be carefully supervised and controlled in order to ensure that only quality products with optimum load bearing characteristics are used.

5.3 Materials Availability, Haulage and Costs

The availability of suitable material cannot be checked during the time constraints of this report. However, the KOCKS report identifies at least four possible locations for aggregate and according to the available laboratory tests results (repeated in Appendix 2.4 Tables 10 and 11) these are suitable for use in road construction. The condition of the current road indicates that material of sufficient quality and suitability has been available in the past. The distance from site is typically less than 1.5km.

It is considered unlikely that between the composition of the KOCKS report (October 2002) and this review the information from the identified resources will have changed significantly. It is unlikely that there will be a significant changes to local materials in terms of availability or cost.

The KOCKS Report indicates that bitumen can be produced locally in the state capital Baku (400km) although it may have excessive paraffin content. The contractor should attempt to source a bitumen of better quality. Marshall stability tests should be conducted in order to confirm that the proposed construction material is of the best quality possible taking into account the source of aggregate and bitumen.

5.4 Axle load Survey

The results from the axle load survey (1998 to 1999) are reported in Page 5 Table 2.2 of the KOCKS Report. The reported typical axle weight is in the range of 4 to 5 tonnes for all vehicles apart from large buses which have an axle weight of 8.09 tonnes. The legal maximum in Azerbaijan for a road axle is reported to be 9 tonnes. Typically the legal maximum internationally is 8 tonnes. Note that a typical 2 axle truck in Azerbaijan would have an approximate gross weight of 5-6 tonnes and is able to carry a 6 tonnes payload. The figures supplied imply that the average

payload on the section is less than 1 tonne which is inconsistent with observations made on site during the August visit.

The accuracy of the axle weight survey could be tested by conducting a road side survey of the cargo weights of trucks according to their documentation in conjunction with the local police check point.

5.5 Traffic Volume and Composition (including Directional Analysis)

The traffic volumes and therefore the overall design traffic figures are split into two sections. The first is from Shemkir to Tovuz and the second from Tovuz to Gazakh. The average traffic volume for Tovuz to Gazakh is taken from the count station at KP 438 between Tovuz and Gazakh and is 2,400 vpd in 2001. It has been impossible to establish whether the reported levels of traffic are single or bi-directional figures.

The traffic volume for Shemkir to Tovuz is taken as an average from 2 count stations at KP 280 between Yelakh and Goran and KP320 between Goran and Ganja. The section under consideration is approximately 80 km beyond the second count station and is past the major conurbation of the regional headquarters of Ganja. The origin destination surveys conducted as part of the survey indicate that approximately 12% of traffic surveyed was on a journey that stopped in Ganja from the area around the state capital, Baku. This agrees with the visual assessment of traffic on the scheme under consideration compared to the route between Baku and Ganja. The use of the traffic counts from KP280 and JP320 are therefore likely to over estimate the levels of traffic between Shamkir and Tovuz.

It is recommended that the volumes of design traffic are confirmed by a random manual count along the section. In addition the mix of vehicle types can be confirmed at the same time. Subsequent to the visit by the Pavement Engineer, a 12 hour survey of the traffic flows was conducted Jacobs request as detailed in Appendix A. The single direction design traffic for the section was calculated to be approximately 9.0 million standard axles using the revised equivalency figures for axle weights.

The provision for creating two more lanes on this section of road to rise to dual carriageway standard has been discussed. Typically traffic levels would have to increase to approximately 20,000 to 25,000 vehicles per day before the upgrade to a dual carriageway would be deemed to be appropriate. The current level of traffic at 2,000-3,000 vpd indicates that there is currently no requirement for the provision of a dual carriageway along this section.

Although the volumes of traffic in both directions are approximately the same it has not been possible to compare the weights of vehicles in each direction. In addition, once dualling of the section has been completed the levels of heavy traffic in Lane 2 of the then dual carriageway will be considerably less than in Lane 1 (typically 60% of HGV's will travel in Lane 1). The design outlined in the KOCKS report does not take into account the different levels of traffic in each lane post-dualling and therefore the level of rehabilitation that is currently required. This may be because the proposed date for the dualling has not been confirmed and it is more conservative to design the existing rehabilitation assuming long term utilisation of the road as a single carriageway.

The level of traffic growth has been assessed using the Azerbaijan National Gross Domestic Product (GDP) as an indication of the likely growth in commercial traffic.

The report was published in October 2002 when the effects of the World-wide downturn in trade could not be properly assessed. The assumptions behind the traffic model should be revisited bearing in mind the latest economic outlook of the World economy and that of Azerbaijan.

5.6 Future Maintenance Requirements and Costs

The future maintenance requirements are difficult to assess in light of the concerns about the proposed design traffic and the economic model used to predict future traffic growth.

The relatively good visual condition of the current pavement would indicate that if quality materials and modern construction methods are used during rehabilitation work the underlying pavement will perform well structurally. The surface will need to have regular maintenance in order to ensure that moisture does not enter the unbound layers which will accelerate the deterioration of the pavement structure. A surface seal will be required in 5-7 years time with possibly a replacement of the wearing course in 10-14 years time if the structure of the pavement remains in good condition.

To prevent premature failure of the pavement it is essential that the drainage, both surface and sub-soil, is maintained in optimum working condition. Side drains and carriageway shoulder should be cleared of vegetation on an annual basis. Blocked drainage culverts and lateral drains where the longitudinal profile is flat should be maintained in good working order. The controlling organisation's attitude to regular low-cost on-going maintenance compared to high-cost major rehabilitation will dictate the level of serviceability of any road section on a long-term basis.

5.7 Horizontal Alignment

The horizontal alignment has followed the existing carriageway. Limited lengths are to be re-aligned to bring the route in line with applicable standards for a single carriageway. The impact in the future of the proposal to upgrade the section to a dual carriageway and the corresponding impact on the alignment has not been considered. Dual carriageways typically have horizontal curves with much larger radii than single carriageways. The horizontal radii for single carriageways are often determined to dissuade drivers from overtaking manoeuvres around bends, whereas this requirement is no longer valid for dual carriageways. The different horizontal design parameters have not been considered in the KOCKS report.

The following are additional observations on the two documents KOCKS Engineering Report and Bidding Documents which are outside the main scope of this report but have come to the attention of the Pavement Engineer during his review.

6.1 Longitudinal Profile

There are long sections with a flat longitudinal profile e.g. Chainage 15.400 to 15.900 and 43.300 to 43.700 gradient 0.358%, 45.2 to 45.500 gradient 0.055%. A minimum of 0.5% is often used internationally in order to ensure free draining in the longitudinal direction of not only the road surface (which also would normally have a cross fall of 1.5%) but also the drains at the side of the road. Although culverts are provided at either end of such sections there are no provisions for draining water away from the road structure.

Sections where the longitudinal profile has a gradient of less than 0.5% are unlikely to have drain which empties rapidly and provision for the lateral movement of water away from the pavement structure should be provided in order that the future maintenance cost is reduced. Long-term vegetation growth on the road shoulder in such areas may also prevent effective drainage and should be cut-back on a regular basis during maintenance operations. A section on the current alignment at Site Chainage 48.6 to 49.7km has failed in the past and been recently patched and the underlying problem is probably insufficient longitudinal profile and associated drainage problems.

Improvements in the vertical alignment will require the current level of the pavement surface to be raised or lowered. Where the level is to be raised by less than 200 mm it may be possible to achieve this by the addition of bituminous material. Where the level is greater than 200mm, additional granular material will be required to maintain an economic design. This should not be placed directly on top of the existing bituminous layer. Water will not be able to freely drain through the bituminous layer leading to saturation of the granular layer and poor load supporting performance and accelerating pavement deterioration. Similarly the design of the shoulders should allow for free drainage of both granular and sub-base layers.

Where the vertical alignment requires that the level of the road is reduced, it will be necessary to ensure the placement of both a new granular sub-base layer and bituminous surfacing material (minimum thickness 200mm sub-base and 200mm bituminous material). The vertical design could be improved by minimising the length of sections where the level of the road is reduced as this would also reduce the amount of new material that would have to be placed.

The long term proposal to upgrade to a dual carriageway and the associated increase in carriageway surface will exacerbate the problem of poor drainage.

6.2 Details of Changes in Construction

The proposed long sections in the bidding documents appear to be inconsistent. In one case at Chainage 18.650 the long-section details a constant downward slope of 1.484% with a change from 80 to 120mm overlay mid way down the slope. Any

such change will require a localised change in slope in order to feather out the transition and will lead to an uneven vehicle ride which may cause localised failures due to axle bounce of heavy vehicles. Transitions in levels of overlay requirement could be more easily accommodated at changes in gradient of the longitudinal profile

6.3 Report Layout

The sections contained within the report and the data from different surveys has not been collated in a logical manner. The geotechnical surveys have been extensive. However the results from the FWD survey have been used without comparison to either other surveys or the visual condition of the road.

7 Comparison with International Design Standard

In order to compare the rehabilitation proposals including the construction of the re-aligned and/or reconstructed sections of the scheme, the UK TRL Overseas Road Note 31 was used to prepare a design by Jacobs see Appendix A of this Report.

The design assumptions are presented in Appendix A of this Report were as follows for the entire length of the scheme.

- Design 16.5 msa over a design period of 20 years
- Subgrade strength Ch. km 0.000 to 40.200 CBR 2% Ch.40.200 CBR 5-7%
- Semi-structural Surface and bituminous roadbase

For Chainage km 0.000 to 40.200, the required construction will be 225mm of bituminous material over 225mm of granular sub-base over 350mm of capping. The extent of the section with a stiffer subgrade of CBR 12% should be re-established on site in order to utilise a pavement design with a reduced granular material thickness (approximately 200mm of sub-base).

From Chainage Km 40.200 the required construction would be 225 mm of bituminous material over 275 mm of granular sub-base.

In each case the bituminous material should consist of a 50mm wearing course and 150mm base.

The existing thickness of bituminous material is approximately 100mm at the road edge and 170mm in the carriageway according to the trial pits in the KOCKS Report. In order to strengthen the entire cross-section and prevent premature failure of the road edge, as observed currently, it would be necessary to place a minimum of 125mm across the width of the road. Areas of severe deterioration, such as pot-holes, edge cracking or crocodile cracking should be broken out and replaced prior to the overlay process.

A reduced overlay thickness may be appropriate where the current construction is thicker than 100mm across the entire road. Prior to the placement of a reduced bituminous overlay the current condition of the pavement should be assessed in order to confirm that the underlying layers of the current pavement are performing satisfactorily, ie. There is good drainage and little surface deterioration.

Sufficient repairs to any existing deterioration should be conducted prior to overlay operations. Where there is observed edge deterioration to the bituminous surface it is essential that a full thickness of new bituminous material is placed. Drainage paths in the pavement structure should be maintained in order to ensure adequate structural performance.

The visiting Jacobs Pavement Design Expert, Dr Michael Heelis, conducted a site visit to the Rehabilitation and Upgrading of the Shemkir to Gazakh Road section in August 2003. A visual inspection of the site was performed and the Engineering Report and Bidding documents prepared by KOCKS CONSULT GMBH were reviewed.

A number of inconsistencies were observed in the report some of a major nature. The conclusions from the report and the design for the rehabilitation works rely heavily on a FWD survey conducted in June 2001. The FWD analysis appears to be inconsistent with two design temperatures and reported bituminous stiffnesses for aged material in excess of those achievable. Analysis of the grading from a wearing course has been compared to that of a base course. Traffic figures and axle loads have been used which may not be applicable to the scheme under consideration.

The structural data cannot be re-analysed in the time frame before the start of construction and therefore it is recommended that a design based on existing International Design standards and the existing geotechnical survey are implemented.

Despite the above observation, the design in the KOCKS Engineering Report is comparable to International Design Standards, providing:-

- The extent of the section with a design subgrade CBR of 12% is re-established.
- The level of design traffic is established.

In addition, the following observations are made on the recommendations contained in the KOCKS Report:-

- Where reconstruction of the existing alignment has been recommended and there is little visual deterioration the existing overlay recommendation may be over-conservative depending on the design traffic.
- Where an overlay of less than 100mm has been recommended, it should be confirmed that the drainage conditions of the pavement foundations are sufficient and the pavement is currently in a good visual condition.
- A lack of drainage ditches and poorly maintained culverts, as well as a longitudinal profile with insufficient gradient (<0.5%), have attributed to the poor drainage condition and deterioration of the existing road pavement and should be rectified.
- Marshall Stability testing of the proposed bituminous mixture should be conducted to ensure an optimum design.
- Quality control on site should be carefully supervised.

The current level of traffic (two-way 2,000 to 3,000 vehicles per day) indicates that the section will not require upgrading to a dual carriageway during the current pavement design life (15 to 20 years).

Appendix A - Independent Pavement Assessment

A road –side traffic count was conducted on the instigation of the Pavement Engineer and reported to the Jacobs Project Manager in the United Kingdom on the 11th August 2003.

An additional cause of concern regarding the analysis of the axle weights is contained Table 2.2 where the equivalency factors appear to be calculated using average truck weights. According to TRL ORN 31 the calculation as performed in the report of determining the equivalency factor from the average axle load is incorrect and leads to large errors. This erroneous methodology has been adopted in the KOCKS report to calculate the design traffic.

The equivalency factors for each type of vehicle can be calculated on the legal maximum in Azerbaijan which is a 9 tonne axle. Typically where axle weights are poorly policed the observed axle weights are in excess of legal requirements especially when goods are being moved internationally. Each single axle of 9 tonnes is equivalent to approximately 1.5 standard axles. In this case the equivalency factors for Bus, 2 axle, 3 axle, 4 axle and 5 axle trucks would be 3.0, 3.0, 4.5, 6.0 and 7.5 respectively.

The total 2-way traffic flows over a period 8am to 8pm (between 7th-10th August 2003) was evaluated at a point at Chainage km421.0 (Site Chainage km30.2). The composition of the traffic with approximately 80-85% of light traffic is consistent with the traffic surveys reported in the KOCKS Report.

Vehicle Type	2-way Traffic Flow	Percentage of total
Cars	1930	70.9
Pick-ups	291	10.7
Buses	45	1.7
Motorcycles/Tractors	62	2.3
Trucks 2 Axle	201	7.4
Trucks 3 axle	134	4.9
Trucks 4 axle	34	1.2
Trucks 5 axle and over	26	1.0
TOTAL	2723	100

Note: Buses total is low, because buses mostly travel at night.

The following assumptions were then used to provide a value for the design traffic over a 20 year period.

- A multiplier of 1.3 (3.0 for buses) was used to provide a 24 average traffic count
- The equivalency factors based on the maximum legal axle limit was used
- A design Period of 18 years was used (as per KOCKS Report)
- A Summer Season factor of 0.94 was used to take into account annual variation of traffic. (Source KOCKS Report)
- The equivalency factors for Cars, Pick-ups and Motorcycles/Tractor was assumed to be negligible compared to other vehicle types.
- The survey site was at Chainage km30.2 which was between Shemkir and Tovuz. The level of traffic between Tovuz and the end of the site at Gazakh should also be confirmed. A significant reduction in the number of

vehicles with heavy axles was not observed between the two sections although the KOCKS Report indicates a reduction from 3000 to 2000 vehicle per day.

Vehicle Type	2-way Traffic Flow	24 hour traffic	Equivalency Factor	Standard Axles
Buses	45	135	3	405
Trucks 2 Axle	201	261	3	783
Trucks 3 axle	134	174	4.5	783
Trucks 4 axle	34	44	6	264
Trucks 5 axle and over	26	33	7.5	247
TOTAL				2482

Standard axles/day

A 20 year design traffic would be based on the reported level of traffic multiplied by the seasonal factor (0.94) for 365 days a year over 20 years in each direction. The design traffic would therefore be calculated as 8.5 million standard axles.

The calculation does not take into account a growth factor as the 8 fold increase in traffic in 20 years reported in the KOCKS report would appear to be over optimistic. An increase in traffic to 24,000 vehicle per day would require the route to be upgraded to a dual carriageway dependent on the level of service required and additional pavement design would be required once this traffic level has been exceeded. An increase in the traffic of approximately 6% per year would lead to a 3-4 fold increase in the traffic over 20 years and a corresponding design traffic of **15.6 million standard axles**

At a level of 15.6 msa, the section would be rated a T 7 according to TRL Road Note 31. According to the TRL design guide, the bituminous thickness required will be a minimum of 225mm (surface course and road base).

The subgrade CBR strength of 2% has been established for the section Chainage km 0 to 40.2. The required thickness of granular material would typically be 225mm of sub-base over a 350mm capping layer. Where the CBR of the subgrade is increased to 12%, the required thickness could be decreased to 200mm of sub-base. The extent of this stronger subgrade has not been established in the KOCKS report.

For Chainage km 40.2 onwards the CBR of the subgrade is 4-5% and the required thickness of sub-base would be 225mm with a 200mm capping layer.

Annex 4
List of PIU Projects with EU and WB
(It contains 3 pages excluding this one)

**Actual Status of WB and EU TACIS Projects
(End of September 2003)**

Information extracted from Procurement Plan (as agreed at negotiations)

No	Description	Procurement Method	Contract signing date as planned d/m/y	Contract completion date as planned d/m/y	Actual Status
1	Rehabilitation of Ganja-Shemkir road	ICB	09/04/2003	04/07/2004	Works ongoing
2	Vehicles for the PIU	NS	10/06/2003	10/07/2003	VAT problem; to be resolved with WB next mission
3	Vehicle for the Azyol	IS +NS	10/06/2003	10/07/2003	3 vehicles Contract (IS) signed mid September with the ANK Turkey Contractor; One vehicle (NS) to be resolved with WB next mission (VAT)
4	Laboratory Equipment for Azyol	ICB	10/12/2003	15/02/2004	List submitted to the WB and commented on. Revised list submitted by Consultant to PIU on September 16, 2003 for WB approval
5	Office Equipment for Azyol	NS	10/09/2003	10/10/2003	Draft Invitation to Quote discussed with PIU
6	Office Equipment for the PIU	NS	10/09/2003	10/10/2003	Completed
7	Supervision Consultant	EU TACIS	27/11/2002	27/11/2005	On going with LBSA Consultants
8	Consultant Technical Assistance	QCBS	11/03/2003	11/03/2005	On going with Finnroad
9	Consultant for Restructuring of Azyol	CQ	28/02/2004	30/06/2005	Planned for 2004
10	Consultant for Road Safety Program	CQ	28/02/2004	30/06/2005	Planned for 2004

11	Individual Procurement Consultant	EU TACIS	05/11/2001	30/06/2002	Completed
12	Audit Firm for the Project	LCS	15/03/2002	30/06/2005	On going
13	Financial Management System	EU TACIS	01/05/2001	15/12/2001	Completed
14	Consultant for Demo Project	CQ	31/03/2003	09/04/2003	Completed
15	Rehabilitation of the Road Section Shemkir to Gazakh (4 Lots)	ICB	30/11/2003	30/05/2005	Tendering Schedule approved by the WB. Deadline of Bids submission is planned for October 16, 2003
16	Demo Project for Rural Roads Maintenance Works Poladi-Badali	MW	10/03/2003	11/08/2003	10% Works are outstanding
17	Demo Project for Rural Roads Maintenance Works Chkuryud-Gizmeydan	MW	10/03/2003	11/08/2003	10% Works are outstanding
18	Training and Study Tours	CQ	-	TBD during the Project	To be determined
19	Consultant for Trade Facilitation and Border Crossing	CQ	30/12/2004	30/06/2005	Planned for 2004
20	Audit of Azeravtoyol	LCS	10/01/2005	30/06/2005	Planned for 2005
21	Office Equipment for Azyol	NS	10/09/2004	10/10/2004	Planned for 2004
22	Demo Project for Rural Roads Maintenance Works	MW	28/09/2003	28/11/2003	Procurement under preparation by Project Institution. WB consent on road section to be finalized during WB mission
23	Demo Project for Rural Roads Maintenance Works	MW	28/09/2003	28/11/2003	Procurement under preparation by Project Institution. WB consent on road section to be finalized during

					WB mission
24	Demo Project for Rural Roads Maintenance Works	MW	28/09/2003	28/11/2003	Procurement under preparation by Project Institution. WB consent on road section to be finalized during WB mission
25	Cons. for Poverty Study	CQ	28/02/2004	30/06/2005	Planned for 2004
26	Incremental Operational Cost (Not included in 2,10 and 11)	NBF	-	-	-

ICB International competitive Bidding

CQ Consultant Qualification

QCBS Quality Cost Based Selection

LCS Local Consultant Selection

MW Minor Works

NS National Shopping

IS International Shopping

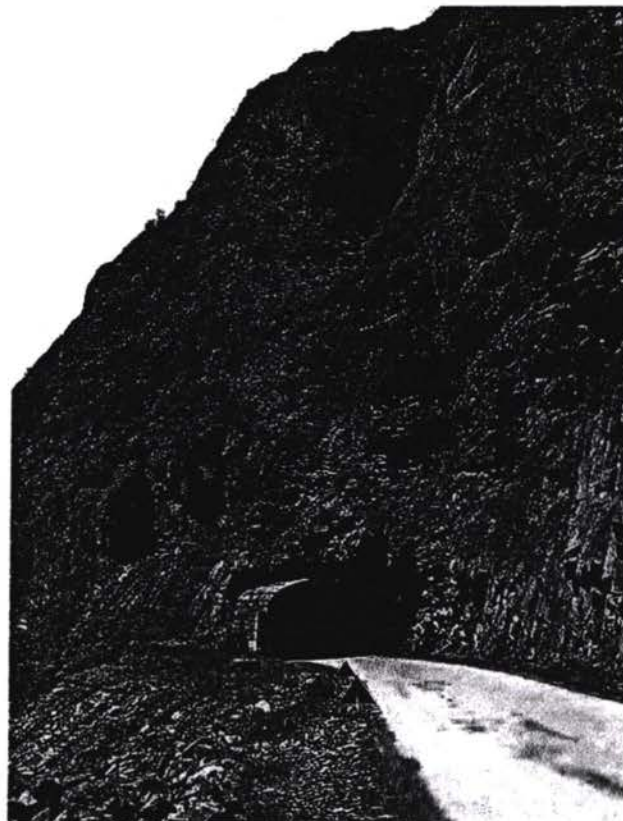
NBF Not Bank Fund

Annex 5
Site Inspection and Rehabilitation Works Proposal Report

**REHABILITATION OF CAUCASIAN
HIGHWAYS**

**Azerbaijan / Georgia / Armenia
Project Component IV - Armenia**

**Tunnels on M6 Highway
Vanadzor – Georgian Border Road**



**Site Inspection Report &
Rehabilitation Works Proposal**

August 2003

Document control sheet **Form IP180/B**

Client:
 Project: Rehabilitation of Caucasian Highways Job No: J23147
 Title: Site Inspection Report and Rehabilitation Works Proposal

	Prepared by	Reviewed by	Approved by
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REVISION	NAME	NAME	NAME
DATE	SIGNATURE	SIGNATURE	SIGNATURE

REVISION	NAME	NAME	NAME
DATE	SIGNATURE	SIGNATURE	SIGNATURE

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Appendix A : Geological Report

Appendix B : Traffic and Pedestrian Flow Information

Appendix C : Design Codes and Standards

Executive Summary

Louis Berger S.A. working in association with Jacobs Ltd have been appointed as Consultants for the project by EuropeAid/113179/C/SV/Multi-6 for the Rehabilitation of Caucasian Highways in the countries of Armenia, Azerbaijan and Georgia.

This report summarises the findings of the Jacobs tunnel expert's visit to Armenia in May 2003 to carry out field investigations and prepare rehabilitation proposals for three existing tunnels on the M6 highway from Vanadzor to the Georgian Border.

1 Introduction

1.1 Project Scope

The inspection and rehabilitation of the road link between Yerevan and T'Blisi is an integral part of the overall scheme to upgrade the highway infrastructure of the Caucasian countries of Armenia, Georgia and Azerbaijan.

The main highway link from Yerevan, Armenia to T'Bilisi, Georgia is the M6. On this road situated between the town of Vanadzor and the Georgian border are three existing and operational road tunnels constructed between 1965 and 1973. The M6 carries the majority of all road traffic between Armenia and Georgia and is currently the major road link out of Armenia. There is one alternative existing route across the Georgian border via the A328.

1.2 Scope of Report

This report summarises the findings of the Jacobs tunnel expert's visit to Armenia in May 2003 to carry out field investigations and prepare rehabilitation proposals for three tunnels on the M6 highway.

The Jacobs tunnel expert visited Armenia over the period Friday 16 May to Monday 26 May 2003. During this visit, meetings were held with representatives from the local consulting engineering firm DorProject, who will be responsible for the engineering design of the tunnel rehabilitation measures to be finally adopted. Messrs DorProject also participated in the site visit to the three tunnels on 20 May 2003, and provided essential logistical support for the inspection works. Subsequent to the site visit in May, Dorproject also provided certain geological information at the tunnel locations, and associated engineering details.

This report describes the activities carried out during the site inspection, summarises the present condition of each of the three tunnels, and examines a range of possible rehabilitation options, together with recommendations for short term, and long term action.

2 Site Inspection

2.1 Introduction

The three tunnels were inspected on 20th May 2003 with logistical support provided by the local consultant DorProject. All three tunnels are situated on the main M6 highway link from Yerevan, Armenia to T’bilisi, Georgia between the town of Vanadzor and the Georgian border, see the map below. The road in this location is a two lane single carriageway and is aligned approximately north to south.

2.1.1 Form of Inspection

The inspection of each tunnel consisted of a detailed walk-through visual examination. None of the tunnels has artificial light supplied, so light for the inspection had to be provided by hand held torches. No means of access was available to allow a close inspection of the crown, and no integrity tests were carried out on the concrete lining.

Traffic levels in the tunnels on the day of the inspection were low, and were understood to be generally representative of the day-to-day traffic conditions. In view of this situation, no air monitoring tests were carried out. The tunnels do not have any fixed chainage points which would allow an accurate location of any particular observation. Where necessary, significant features were recorded giving approximate positions only. It is understood from discussions with DorProject that there are no as-built record drawings or original design documentation available for the three tunnels.

Weather conditions at the time of the inspection were dry with occasional cloud cover.



2.2 Tunnel Number 1

2.2.1 Location

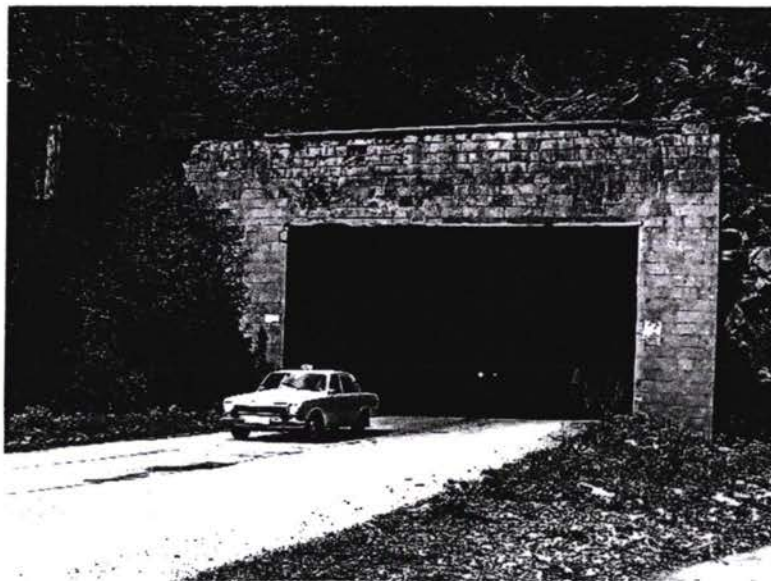
Tunnel number 1 is the first tunnel north of Vanadzor located between km 25+460 m and km 25+566 m.

2.2.2 Dimensions

The tunnel is 106 m long, with a minimum height of 5.5 m and a minimum width of 7.75 m.

2.2.3 Tunnel Construction

The tunnel was constructed in 1962 and comprises an excavated bore through Basalt rock with a cast in-situ concrete lining. The concrete lining is formed in panels of approximate size 1.5 m by 4.0 m. The thickness of the lining could not be determined at the time of the inspection. The south portal consists of a rectangular reinforced concrete structure consisting of walls and a beamed roof. To one side of the portal there is a stepped wing wall. The concrete lining in the main tunnel length forms a conventional arch. The road enters the tunnel from the south on a level gradient on a left hand horizontal curve. This continues into the tunnel bore, such that the exit at the north portal cannot be seen when entering from the south.



Tunnel 1. View on South Portal

2.2.4 Condition of Lining

The southern portal shows signs of deterioration in the roof beams. The concrete has spalled and the steel reinforcement is exposed and has corroded. However, there appears to be no immediate instability of this portal structure.

For the main tunnel section, the surface of the concrete lining is in poor condition, but this is mainly due to poor quality at the time of construction rather than deterioration over time. Inadequate concrete vibration has left areas of exposed (honeycombed) aggregate. The joints between adjacent panels are of poor quality with slight evidence of concrete spalling. There is however, no sign of deformation of the lining, suggesting that the units are not suffering any structural instability at this time.

2.2.5 Carriageway surfacing

The carriageway surface comprises asphalt, and is in good condition. The wearing course is understood to have been relaid approximately 2 to 3 years ago and shows no sign of deterioration.

2.2.6 Leakage, Waterproofing and Drainage

Leakage of water through the concrete lining is categorised as minor. There was no observation of running water. However, there was evidence of moisture on the surface of the lining at several locations and very low frequency dripping at approximately 10 locations. There were also clear indications of surface staining whereby leakage had occurred in the past and leaching through the concrete has taken place. Surface staining has occurred at approximately 40% of the construction joints.

Other than the concrete lining, there appears to be no other waterproofing measures within the tunnel bore.

There is no wall drainage and no surface drainage gullies or sub-surface drainage in the tunnel invert. Surface water assisted by the longitudinal gradient, runs along the carriageway, and is shed to the verges at either end of the tunnel.

2.2.7 Ventilation and Air Quality

The tunnel is not equipped with any ventilation facilities. Air quality did not appear to be a problem at the time of the inspection, a situation to be expected with the short distance between portals. As a result, air quality testing was not considered necessary.

2.2.8 Visibility and Lighting

The tunnel is not equipped with either internal or approach lighting. There are no approach signs to warn drivers of the tunnel or the need to use headlights whilst passing through. At the time of the inspection, it was noted that many vehicles passed through without using headlights.



Tunnel 1. Surface Staining of the Concrete Lining.

2.2.9 Other Features

As mentioned in Section 2.2.3, this tunnel location has an unsurfaced track round the foot of the hill through which the tunnel passes, which could be used as a temporary diversion for traffic whilst maintenance and refurbishment works are carried out within the tunnel. The track is approximately 4m wide, and runs parallel to the east of the tunnel adjacent to the river. However it may only be suitable for light vehicles, and would require improvements of the running surface to allow it to be used safely for public traffic.

There are severe horizontal curves on the approach road at both ends of the tunnel that prevents vehicles from entering at high speed. There are no utility services routed through the tunnel.

The tunnel includes provisions for pedestrians with a kerbed and raised footpath, 1.2 m wide alongside the northbound wall. The presence of this footpath is partly obscured to drivers by roadside debris. Due to this problem and the lack of lighting, there is a potential safety hazard to pedestrians.



Tunnel 1. View of side road from South Portal

2.3 Tunnel Number 2

2.3.1 Location

Tunnel 2 is situated on the route M6 to the north of Tunnel 1 and is located between km 31+200 and km 31+476.

2.3.2 Dimensions

The tunnel is 276 m long. The height and width of the tunnel varies along its length and has a minimum width of 7.4 m and a height of 4.6 m. The cross section of the tunnel tends towards near vertical walls with a sharp transition curve into a flat crown.

2.3.3 Tunnel Construction

The tunnel was constructed in 1962 and contains two types of lining. The north and south portals are cast in-situ concrete for a length of approximately 12 m. The thickness of this entry portal lining is unknown. Thereafter, the tunnel is unlined and the excavated rock surface is exposed. The rock type throughout the tunnel consists of strong Basalt.

2.3.4 Condition of Lining

The concrete within the portals is of poor quality and spalling has occurred along construction joints. Stress cracks of up to 5mm width appear at random intervals and locations. Displacement of the concrete between individual panels between

5mm and 10 mm is likely due to have been caused during construction. There does not appear to be any immediate structural weakness in the portal structures.

The condition of the exposed rock appears structurally sound, being of strong Basalt. The rock has been subject to pre-excitation movement with the rock jointing being aligned at an inclination of 10 degrees sub-vertical. The distance between the joints varies from 300 mm to 1000 mm. The vertical profile of the rock is very irregular varying from 100 mm to 500 mm between joints. There appears to be no post-excitation movement of the exposed rock and there is no evidence of any previous rock collapse.

2.3.5 Carriageway Surfacing

The surface of the asphalt wearing course is badly eroded and there exist numerous large potholes, which are in part due to the constant presence of water in the tunnel.

2.3.6 Leakage, Waterproofing and Drainage

Ground water is leaking from the tunnel crown, along the joints of the exposed rock. There was no flowing water observed, but at many locations water is dripping at a constant rate.

There are no waterproofing measures in the tunnel. There are no surface drainage gullies or sub-surface drainage in the invert of the tunnel. There is evidence that surface water enters at grade on the asphalt surface through the south portal, continues along the length of the tunnel and exits at the north portal.



Tunnel 2. View of South Portal

2.3.7 Ventilation and Air Quality

There are two holes in the northbound tunnel wall approximately mid way through the bore, which were probably formed during the tunnel excavation. These holes indicate that the tunnel is very close to the surface of the hillside at this location, and

that the rock mass along this wall of the tunnel is potential unstable. The holes extend from the tunnel invert to approximately 2m in height, with the lower part having been blocked off with masonry leaving an arch shape opening of approximately 5m by 3m. There is a further smaller hole at approximately 2m in height, possibly formed through collapse of unstable rock during construction. These holes do provide local ventilation to the tunnel although air passage through the openings at the time of the inspection was not evident.

The manner in which these openings have formed is not apparent, and further geological inspections and assessments would have to be carried out if these, or additional openings are to be developed for additional ventilation.

2.3.8 Visibility and Lighting

The tunnel is not equipped with either internal or approach lighting. Some natural light is given through the openings in the northbound wall described in Section 2.3.7.

2.3.9 Other Features

The topography in the area of the tunnel provides no scope for an external temporary diversion to be constructed during any refurbishment works. It was noted that there was pedestrian use of the tunnel. A raised walkway 0.60m wide, 0.2 m above carriageway level runs along the northbound wall.

2.4 Tunnel Number 3

2.4.1 Location

Tunnel 3 is the third tunnel in the series on the M6 and is located between km 31+910 and km 32+090

2.4.2 Dimensions

The tunnel is 180 m long, with a minimum height of 6.5 m and a minimum width of 7.9 m.

2.4.3 Tunnel Construction

The tunnel was constructed in 1971, and comprises an excavated bore through basalt rock with a cast in-situ concrete lining. The thickness of the lining could not be established at the time of the inspection.

2.4.4 Condition of Lining

The quality of the concrete surface is poor. There is prominent lipping (up to 100 mm) between adjacent concrete pours at springing level from the side walls to the

crowns. There is spalling along most of the construction joints and some stress cracking between these joints.

2.4.5 Carriageway Surfacing

The carriageway surface comprises asphalt and is in fair condition.

2.4.6 Leakage, Waterproofing and Drainage

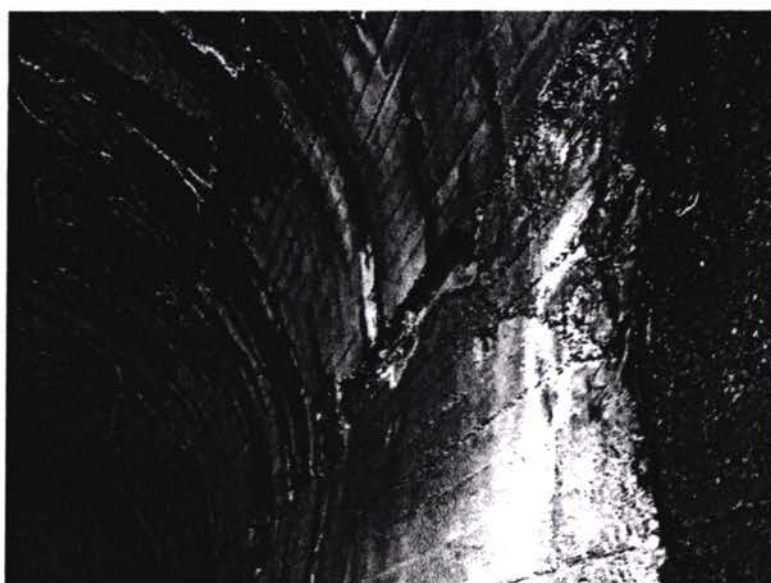
Other than the concrete lining, there appears to be no other waterproofing measures within the tunnel bore. There is no wall drainage and no surface drainage gullies or sub-surface drainage in the tunnel invert.

There was no observed dripping of water at the north end of the tunnel, however, most construction joints showed evidence of seepage. Leaching through the joints is widespread.

Some dripping was observed toward the south end of the tunnel with frequent patches of moisture on the concrete surface.

2.4.7 Ventilation and Air Quality

The tunnel is not equipped with any ventilation facilities. Air quality did not appear to be a problem at the time of the inspection, a situation to be expected with the short distance between portals. There was a distinct draw of air through the tunnel from north to south at the time of the inspection. As a result, air quality testing was not considered necessary.



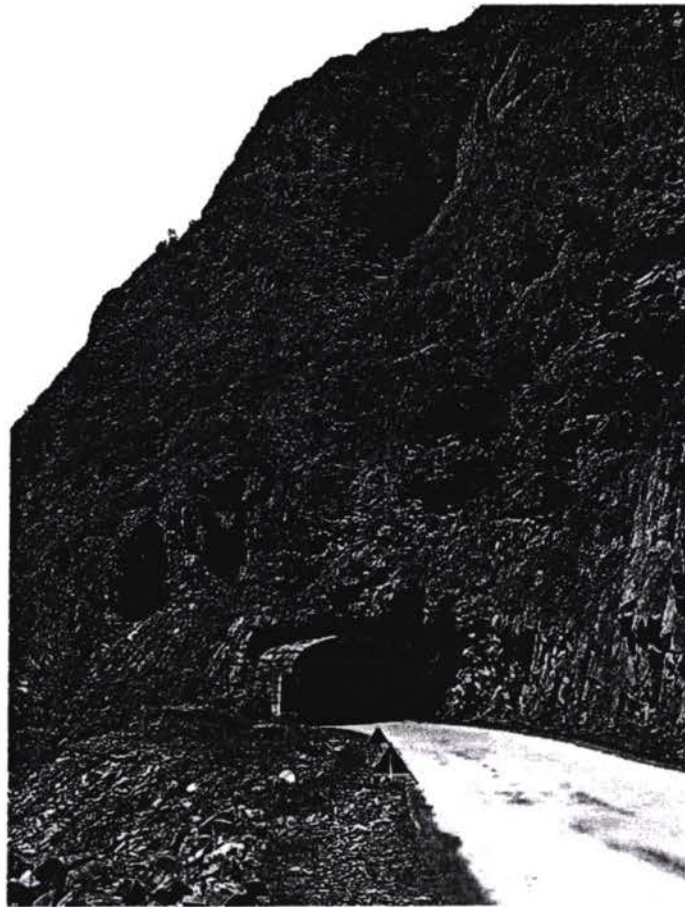
Tunnel 3. Concrete lining

2.4.8 Visibility and Lighting

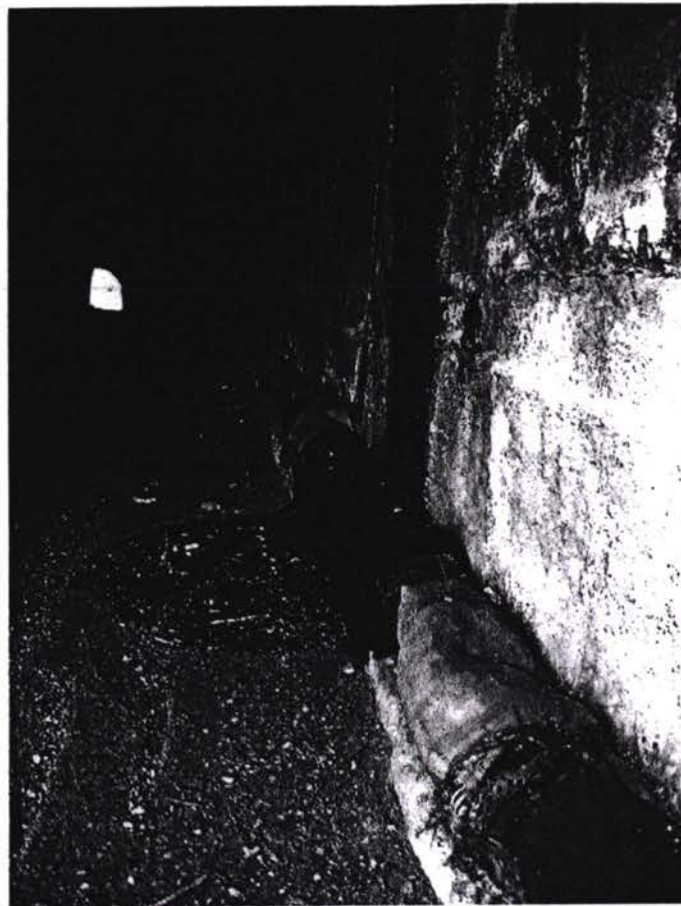
The tunnel is not equipped with either internal or approach lighting, although there are redundant light fittings in place along the northbound wall. At a distance of 20 m in from the portals, visibility is poor. The approach roads to both portals have a gentle horizontal curve

2.4.9 Other Features

The topography in the area of the tunnel provides no scope for an external temporary diversion to be constructed during any refurbishment works. It was noted that there was pedestrian use of the tunnel. A raised walkway 0.80m wide, 0.2 m above carriageway level runs along the northbound wall.



Tunnel 3. View on North Portal and overlying terrain.



Tunnel 3. View of surface staining of side wall and water supply pipe

3.1 General

The assessment of refurbishment options has taken into consideration the following aspects;

1. technical,
2. economic,
3. external service availability (i.e. electrical supply),
4. labour and material availability,
5. technical skill of local labour,
6. practicality of construction with regard to maintenance of traffic flow during construction period
7. post construction maintenance.

The refurbishment option can also be assessed in terms of a short, medium and long term design life.

Recommendations will also be influenced by use of 'Design Standards'. However, it may not be physically or commercially feasible to comply with the appropriate standards.

A major consideration when assessing selection of a proposal is to what extent the flow of traffic through the tunnels can be restricted. The level of restriction to the traffic flow needs to be agreed and classified as one of the following;

1. two lane flow maintained, partial restrictions within the tunnels,
2. flow restricted to one lane and at times both lanes closed to traffic movements during construction,
3. total closure to all traffic movements for the duration of the construction period.

When organising any temporary diversion, the health and safety of operatives, pedestrians and vehicle drivers needs to be considered.

If a permanent road closure is required, there are two possible alternative routes from Armenia to the Georgian border. The existing A328 to the west of the M6 and a new road currently under construction to the east of the M6.

3.2 Tunnel Number 1

3.2.1 General Comments

Tunnel 1 is generally in a good state of repair. There appears to be no major structural or leakage problems with the existing lining.

3.2.2 Structural Repair to the Lining

(i) Refurbishment Options

- 1) Do nothing.
- 2) Cleaning of concrete lining and walkway
- 3) Increase the walkway width
- 4) Minor repairs to concrete in portal structures.

(ii) Refurbishment Proposal

It is proposed that no structural repair work should be carried out on this tunnel. However, increasing the walkway width to appropriate standards should be implemented.

3.2.3 Leakage, Waterproofing and Drainage

(i) Refurbishment Options

- 1) Do nothing
- 2) Joint sealing of the concrete lining
- 3) Cementitious back-grouting of interface between concrete lining and rock.
- 4) Chemical injection of the concrete lining
- 5) Longitudinal invert drainage (side wall)

(ii) Refurbishment Proposal

It is proposed that no waterproofing works should be done. The extent of the leakage through the lining does not warrant work over the total area of the tunnel lining. Patch-work repairs could be carried, however, due to the highly jointed nature of the lining, new leakage paths would soon be created. Thus making patch-work repairs would be ineffective.

3.2.4 Ventilation and Air Quality

(i) Refurbishment Options

- 1) Do nothing

(ii) Refurbishment Proposal

It is proposed that there is no requirement for a ventilation system in this tunnel.

3.2.5 Visibility and Lighting

(i) Refurbishment Options

- 1) Do nothing
- 2) Reflective signage through tunnel
- 3) Lighting to be installed

(ii) Refurbishment Proposal

It is proposed that reflective signage throughout tunnel should be installed in accordance with appropriate standards. If the supply and maintenance of electricity to the tunnel can be guaranteed, then lighting should be fitted throughout the tunnel.

3.2.6 Other items of interest

Nothing to report.

3.3 Tunnel Number 2

3.3.1 General Comments

The tunnel appears to be structurally sound with no obvious signs of collapse or movement of the exposed rock.

3.3.2 Structural Repair to the Lining

(i) Refurbishment Options

- 1) Do nothing
- 2) Shotcrete lining to be applied
- 3) Cast in-situ concrete lining to be installed

(ii) Refurbishment Proposal

For the unlined section of the tunnel, it is proposed that no additional structural support is required. However, the concrete structures forming the tunnel portal require surface treatment to replace and repair spalling concrete. Particular attention should be made to repair work around exposed and corroded steel reinforcement.

3.3.3 Leakage, Waterproofing and Drainage

(i) Refurbishment Options

- 1) System of hard sheeting to be erected to prevent leakage onto carriageway. Sheeting to be galvanised steel or plastic coated steel to be corrosion resistant. Sheeting to be erected on steel frames / hoops formed to the correct tunnel profile.
- 2) Drainage gully to be installed at wall bottom along length of tunnel.
- 3) Waterproof membrane to be installed within shotcrete lining
- 4) Waterproof membrane to be installed within cast in-situ concrete lining.

(ii) Refurbishment Proposal

The leakage of water through the rock needs to be prevented from damaging the carriageway surface of the road. However, applying option 1) above to the entire length of the tunnel would further reduce the clearance of the tunnel profile. A localised solution could be adopted at locations where the leakage effect on the asphalt is most prevalent. The lining should span the arch of the tunnel crown and the collected water should be brought down to collector drains along the invert of the sidewall.

3.3.4 Ventilation and Air Quality**(i) Refurbishment Options**

- 1) Do nothing
- 2) Install ventilation units, output according to standards. Maximum of four units envisaged. Size and location of units to be considered with respect to the tunnel dimensions.

(ii) Refurbishment Proposal

To assess the requirement for artificial ventilation atmospheric monitoring should be carried out. However, due to the clearance problems within the tunnel profile, the location of ventilation units would further reduce the available clearance. In addition, the supply of electricity and maintenance of the system is likely to be a prohibiting issue. It is recommended, because of the problems associated with installation and maintenance, that a ventilation system should not be installed.

3.3.5 Visibility and Lighting**(i) Refurbishment Proposal**

It is recommended that reflective signage and lighting, if possible, shall be installed throughout the tunnel in accordance with applicable standards.

3.3.6 Other items of interest

- 1) Any subsequent lining works would reduce the inner profile dimensions and therefore the invert should be deepened to maintain the height clearance of the tunnel. Any consideration for widening the existing rock profile would require a detailed assessment of the exposed rock. Without temporary and permanent support works, this would be inadvisable.
- 2) Installation of cable trays for electricity supply and existing telephone cables.
- 3) A conduit for the existing potable water supply should be provided.

3.4 Tunnel Number 3

3.4.1 General Comments

Tunnel 3 is generally in a good state of repair. Any future works will need to concentrate on the upgrading of the drainage system and the installation of lighting.

3.4.2 Structural Repair to the Lining

(i) Refurbishment Proposal

Locations where there are holes in the concrete lining require infilling.

3.4.3 Leakage, Waterproofing and Drainage

(i) Refurbishment Options

- 1) Do nothing
- 1) Joint sealing of the concrete lining
- 2) Cementitious back-grouting of interface between concrete lining and rock.
- 3) Chemical injection of the concrete lining
- 4) Longitudinal invert drainage (side wall)

(ii) Refurbishment Proposal

It is proposed that invert sidewall drainage be installed and that the water conduit currently running at surface level should be buried in a shallow trench.

3.4.4 Ventilation and Air Quality

(i) Refurbishment Options

- 1) Do nothing
- 2) Install ventilation units, output according to standards. (Maximum of two units envisaged).

(ii) Refurbishment Proposal

It is proposed that no ventilation systems are required in this tunnel.

3.4.5 Visibility and Lighting

(i) Refurbishment Options

- 1) Do nothing
- 2) Reflective signage through tunnel
- 3) Lighting to be installed

(ii) Refurbishment Proposal

It is recommended that reflective signage and lighting shall be installed throughout the tunnel in accordance with standards.

3.4.6 Other items of interest

- 1) Installation of cable trays for electricity supply and existing telephone cables.
- 2) Provision of conduit for existing potable water supply

3.5 General recommendations for all tunnels

It is recommended that appropriate signage on the approaches to the tunnels should be put in place and comprise:

- Tunnel approach warning
- Vehicle Speed restrictions
- Dimensions of tunnel, length, height and width restrictions
- Signs to advise drivers to use dipped headlights.

Appendix A - Geological Report.

This Geological Report has been produced by Dorproject

**Road M-6 VANADZOR – ALAVERDI –
GEORGIAN BORDER**

KM 25 + 460 – KM 32 + 090

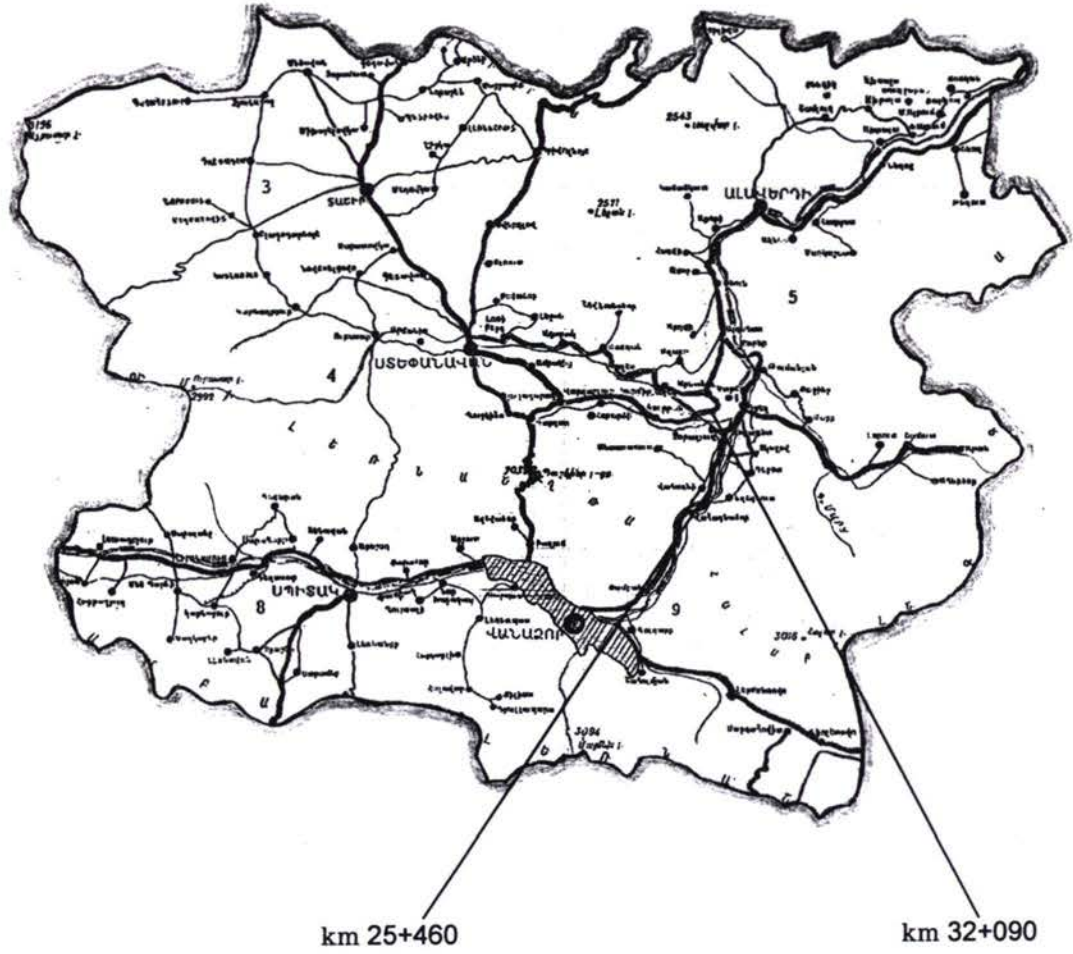
DESIGN ON THREE TUNNELS

ENGINEERING – GEOLOGICAL CONCLUSION



YEREVAN 2003

Km 25+460 – km 32+090



Introduction

According to the assignment on geological survey by the contract with "Louis Berger", the following works have been carried out:

- 1. Study of the route 9.0 km long and 200 m wide.*
- 2. Drilling holes 26.62 l.m..*
- 3. Selection of 3 samples*
- 4. Compilation of characteristic diameters*
- 5. Survey of locations of open pits of road construction materials and their suitability in field conditions.*

Field and office works were done by P. Makinyan, the Head of geological party.

Drilling operations are implemented by S. Sirakanyan, a drilling foreman

Chapter I Physical and geographical conditions**§1. Climate**

The section of the studied road refers to the first climatic zone with absolute altitude marks up to 1200 m, which is characterized by warm summer and cold windless winter.

Average annual air temperature is $8,3^{\circ}$ C (station Tumanian). The average temperature in the coldest month is $-2,2^{\circ}$ C, and that of the warmest month is $+18,1^{\circ}$ C.

The air temperature passes through 0° degree in February and December. Absolute maximum air temperature in summer is $+35^{\circ}$ C, and the minimum one in winter is -23° C.

Prevailing wind directions: southern (S) in winter (months XII–II), and southern (S) in summer (months VII–X).

Average annual wind speed 1.7 m/sec. (st. Odzun).

Annual precipitation is 593 mm, more than 40% of which occurs during summer (June–August).

Stable snow blanket is formed in the beginning of December, reaches the height of 10 cm and starts to melt in March.

Maximum water reserve in snow is 130 mm (st. Odzun).

Number of days with snow blanket – 68 days per year (st. Vanadzor).

Maximum depth of frost penetration – 42 cm (st. Odzun).

Estimated height of snow blanket with 5% probability (1:20) is 32 cm. Occurrence of snowstorms is 5–6 days, and that of glaze–clear ice is 0.5 days a year.

Climatic conditions are presented according to CNRA II.7.01.96 "Construction climatology" and climatic reference–books, issue N16, as well as Climatic Atlas of the Armenian SSR 1975.

§ 2. Relief and geomorphology

The section of the studied road passes along the eastern foot of the Bazum mountain ridge, beginning from railway station Shahali and ending at settlement Dzoraget. Administratively, it belongs to Lori region.

The relief of the section is very complex, cut with a lot of ravines and brooks with slope grades of more than 15° .

The route passes along the Pambak river which has formed a deep canyon of medium and upper quaternary age (Q3–Q4) in that particular section, and its tributaries have formed V-shaped and U-shaped valleys.

The relief has volcanic genetic type. Absolute altitude marks vary between 900–1200 m.



§3. Soil and Flora

Flora of the section is that of woodland and represented by oak–hornbeam forests and cultivated varieties of vegetation. One can encounter shrubs, as well.

Soils are those of mountainous woodland represented by brown soils of arid forests and bushes. Erosion (physical weathering) of soils is developed poorly.



§ 4. Hydrology

The section of the road has a poor hydrographic network. The Pambak river flows on the right side along the route. Only one of its tributaries (near the junction in station Tumanian) intersects with the studied section. The reinforced concrete bridge on that section is in good condition.

At the end of the route, the Pambak and Dzoraget rivers join and form the Debed river.

The route intersects with ravines in several places effluent water of which has temporary nature. Surface water flow from the Pambak river is provided by reinforced concrete culverts.

The section belongs to basins with moderate mudflow activity.

Mudflows recur once in 3–10 years.

The construction site is located in the fourth road–climatic zone. By moistening conditions, the section of the surveyed road is referred to the II type of terrain.



Chapter 2 Geological Conditions

§1. Conditions of ground bedding and description of layers.

From engineering and geological point of view, there are rocks of sedimentary-volcanic complex of lower Eocene and Palaeocene eras (Pq1) of tertiary system.

We have discovered the following types of soils and rocks, as well as strength and composition of the pavement directly on the section by using boreholes:

Layer N1. Asphalt concrete.

Layer N2. Macadam.

Layer N3. Gravel – sand mixture.

Layer N4. Concrete.

Layer N5. Crushed stone and gruss ground with a mix of blocks and loamy filler up to 40-45% in volume.

Treatment category of soil - 10á-IV.

Layer N6. Strongly weathered, cracked and changed basic basalt.

Treatment category of soil – 20a – VII.

Layer N7. Slightly weathered solid and a little cracked columnar basic basalt.

Treatment category of soil - 20á-VIII.

Soils and rocks of all layers have good physical-mechanical parameters and can serve as a reliable basement for the designed road.



§2. Hydrogeological conditions

Underground water less than 5 m deep is not discovered along the route.

The road passes through 3 tunnels in sections at km 25+460÷25+570, km 31+200÷31+465, km 31+910÷32+090.

The relief on tunnels is cut by a number of ravines. Surface water penetrates into the tunnels through slightly cracked basalt rocks and creates unfavorable conditions for exploitation of tunnels. The water is not aggressive with respect to concrete.

Engineering-geological passport of the route and tunnel sections is enclosed separately.

Contemporary physical-geological processes (landslides, screes, landslips, etc.) are not revealed on the existing road except the section at km 21+100–km 21+150, where a part of the road has collapsed.



§3 Seismicity of the region and seismic characteristics of soils.

According to seismicity map of the territory of Armenia, the region of the studied road belongs to the second zone with seismicity factor of VIII-IX, $\dot{A}_{\max}=0.3g$, $V=24$ cm/sec.

By their seismic characteristics, grounds of the designed road refer to:

1. 10á-IV – II category crushed stone with loam
2. 20á-VII I category weak basalt
3. 20á-VIII I category strong basalt



Chapter III. Conclusions and recommendations

1. Standard depth of seasonal frost penetration for soils is taken as 42 cm. (st. Odzun).
2. Depth of foundation of artificial structures is designed 0.25 m lower than the estimated depth of frost penetration.
3. No underground water is discovered at a depth of less than 5.0 m during the survey (May 2003).
4. Seismicity of the region is estimated to be VIII-IX points.
5. It is necessary to take engineering-technical measure to ensure normal exploitation of tunnels in sections at km 25+460÷25+570, km 31+200÷31+465, km 31+910÷32+090.
6. Due to very steep slope, a part of the road has collapsed in the section at km 21+100–km 21+150. It is necessary to provide for appropriate measures for normal exploitation of that part of the road (construction of a retaining wall, bypass, widening, etc.).
7. New pavement is recommended on the whole route.
8. Grounds under the base of the road are in solid, reliable and stable condition.

Chapter IV. Road construction materials

- a) Gravel-sand material for embankment and basement is to be brought from flood-lands of the Pambak river near the village of Vahagnadzor. Treatment category of soil - 6â-III. Average distance 12 (twelve) km.
- b) Provide for dumping of unused soil 3 (three) km far (average distance). State construction order 76.85.

Description of holes

km + m	No. of holes	Depth cm	A/c	Crushed stone	Gravel – sand	Concrete	Soil	Rock (types)	Soil category	Notes
25+410	1	100	15	10	–	–	75	–	10e – IV	
25+460	2	65	20	15	–	–	–	30	206 – VIII	100% D&B
25+510	3	52	18	10	–	–	–	24	–//–	–//–
25+570	4	56	22	19	–	–	–	15	–//–	–//–
25+620	5	54	23	20	–	–	–	11	–//–	–//–
26+000	6	140	20	15	15					
27+000	7	115	18	17	20					
28+000	8	90	15	21	40					
29+000	9	80	17	18	15					
30+000	10	90	13	17	15					
30+500	11	115	12	13	17					
31+100	12	120	10	15	15	–	80	–	10e – IV	
31+150	13	110	13	17	20	–	60	–	–//–	
31+200	14	108	13	13	58	–	–	24	206 – VIII	100% D&B
31+250	15	90	13	14	43	–	–	20	–//–	–//–
31+300	16	76	12	14	27	–	–	23	–//–	–//–
31+350	17	105	20	12	54	–	–	19	–//–	–//–
31+400	18	87	20	15	32	–	–	20	–//–	–//–
31+465	19	100	30	17	33	–	–	20	–//–	–//–
31+515	20	120	15	17	50	–	38	–	10e – IV	
31+600	21	110	30	20	20		40	–	–//–	
31+700	22	105	20	15	10	–	60	–	–//–	
31+800	23	100	13	15	12	–	60	–	–//–	
31+850	24	95	18	40	–	–	–	37	206 – VIII	100% D&B
31+910	25	65	16	14	–	15	–	20	–//–	–//–
31+960	26	80	17	20	–	18	–	25	–//–	–//–
32+010	27	50	16	14	–	–	–	20	–//–	–//–
32+060	28	44	17	10	–	–	–	17	–//–	–//–
32+140	29	50	18	12	–	–	–	20	–//–	–//–
32+500	30	90	20	13	17	–	40	–	10e – IV	
		2662								

Appendix B - Traffic and Pedestrian Flow Information

A study was carried by Dorproject to obtain Traffic Flow Information.

(i).1 Traffic Flow

Traffic volume (vpd.) of various vehicles at the outlet portal (towards the increase of kilometerage) of the third tunnel is presented in the following table:

Passenger cars with carrying capacity <1.5 tons	Trucks with carrying capacity b/w 1.5 – 3.0 tons	Buses	Two – axle trucks with carrying capacity <3.0 tons	Six – wheel trucks	Eight – or ten – wheel trucks with trailer	Total
1671	110	84	31	33	18	1889

(i).2 Pedestrian Flow

Pedestrian flow rates were measured at < 50 persons per day.

Appendix C - Design Codes and Standards

The following are the main normative documents acting in the Republic of Armenia:

1. "Railway and Highway Tunnels" CNRA IV – 11.05.04 – 97.
2. "Railway and Highway Tunnels" MCH 3.03 – 07 – 97.
3. "Highway Tunnels" Clearance to obstructions and equipment and machinery
GOST 24451 – 80.
4. "Highways" CNRA IV – 11.05.02 – 99.

Annex 6
Cover Page of the April Inception Report Commented by SRD, Georgia
(It contains 1 page excluding this one)

Annex 7
Summary of Reports Produced
(It contains 2 pages excluding this one)

Rehabilitation of Caucasian Highways

Azerbaijan, Georgia and Armenia

EUROPEAID/113179/C/SV/MULTI

Reports Produced

1) Azerbaijan: Component 1

No	Title	Date of Issue	Prepared by	Expert Expatriate/Local
1	Design Review Report- 2 Bridges Contract	May 2003	E.Kritikou	Short-Term Exp. Bridge Engineer
2	Quarterly Progress Report	June 2003	S. Dotchev	Long-Term Exp. RE
3	Review of Tender Documents-Shemkir to Gazakh Road	August 2003	S. Dotchev	Long-Term Exp.RE
4	Pavement Design Evaluation-Shemkir to Gazakh	August 2003	M.E.Heelis	Short-Term Exp. Pavement Engineer
5	Supplementary Design Review-2 Bridges Contract	September 2003	J.Rigby	Short-Term Exp. Bridge Engineer
6	Monthly Reports- 2 Bridges and Ganja to Shemkir Contracts	March to September 2003 – 7 Reports	S. Dotchev	Long-Term Exp. RE

2) Georgia: Component 2

No	Title	Date of Issue	Prepared by	Expert
1	Inception Report	August, 2003	R. Degheim	Long-Term Exp. PM

3) Armenia: Component 3

No	Title	Date of Issue	Prepared by	Expert
1	Technical Report on Survey of Tunnels ¹	July 2003	V.Matnishyan	Short- Term Local Tunnel Engineer
2	Site Inspection and Rehabilitation Works Proposal ²	August 2003	I.Turnbull	Short-Term Exp. Tunnel Engineer
3	Engineering-Geological Conclusion ³	August 2003	P.Makinyan	Short-Term local Geotechnical Eng.

¹ Report enclosed in Annex 4 to the 6 months Progress Report dated July 27;

² Report enclosed in Annex 5 to the Quarterly Report dated October 15, 2003;

³ Report enclosed in Annex A to the Site Inspection and Rehabilitation Works Proposal.

4) General for Components 1, 2 and 3

No	Title	Date of Issue	Prepared by	Expert
1	Inception Report	April 2003	G.Tremlett	Long-Term Exp. PM
2	First Progress Report	July 2003	K.Zukhurov	Long-Term Exp. acting PM
3	Quarterly progress Report	October 2003	R. Degheim	Long-Term Exp. PM

Annex 8
Important Correspondences
(It contains 10 pages excluding this one)



Louis Berger S.A.
Mercure III 55 Bis qual de Grenelle
75015 Paris



Rehabilitation of Caucasian Highways
Azerbaijan Georgia and Armenia

EUROPEAID/113179/C/SV/MULTI

TRACECA

This Project is funded by the European Union

Team Leader
Baku
Reference PS277/P46/03/230/RD/fb
Tel + 994 12 98 84 31
Fax + 994 12 93 24 76
8th September, 2003
Subject: **Contract Agreement No 30468**
- Extension of the Performance
Guarantee
For the Attention of Mr. E. Ismiyev

To: JSC Azerkorpu
179, Azadliq ave
Baku 370130

Dear Sir,

We refer to your letter referenced No 686 dated June 11, 2003 requesting to extend the period of performance without any financial compensation or claims.

We have addressed to JSC Azerkorpu our letter referenced No PS277/30468/SD/CC1-058 dated September 08, 2003 replying to your letter No 826 of September 3, 2003 and requesting you to extend the Performance Guarantee.

Please note that this extension of the period of performance (extension of time) with no additional claims or cost implication for redesigning the bridges and any delay occurred prior to the date of this letter could be accepted subject to extend the Performance Guarantee.

Please be informed that this Performance Guarantee must be valid for the period pursuant to Article 13 of the General and Special Conditions of the Contract and Sub-Articles related to especially 13.8 of the GCoC.

Yours Sincerely

Razek Degheim
LBSA Team Leader/ Project Manager

08.09.2003 r.

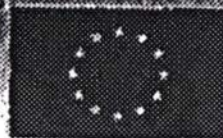
15:20

cc Task Manager-Mr. E. Dalamangas
TRACECA-Mr. Marc Graille
Louis Berger SA-Mr. F. Signor
Project Manager's Representative-Mr. S. Dotchev



Rehabilitation of Caucasian Highways
Azerbaijan Georgia and Armenia

EUROPEAID/113179/C/SV/MULTI



TRACECA

This Project is funded by the European Union

Our Reference PS277/SID/CC1/004

19/09/2003

European Commission
Europeaid Co-operation
Office L41 04/6
B-1049
Brussels

Contract Details:

Title: Rehabilitation of Caucasian Highways
Azerbaijan, Georgia and Armenia

Number: EUROPEAID/113179/SV/MULTI
Contract N° 27531

Subject: Extension period of performance

Attention Mr E. Dalamangas

Dear Mr. E. Dalamangas,

With reference to above matter we would like to inform you that we have received request from the Contractor (letter 826 dated September 3, 2003) for extension period of performance (March 30, 2004) in accordance with article 33 d. section 2 of the Contract document. Further for convenience we would like record some of the important date as follows:

* Contractor's redesign

- i) The Contractor on site since March 10, 2003
- ii) April 8, 2003 the Contractor submit first redesign version in accordance with Article 11, section 2 of the Contract documents
- iii) April 16, 2003, AIDCO/A4, L-41 4/67 - Proposal has been rejected by the Client
- iv) May 19, 2003, AIDCO/A4, L-41 4/67 - Consequently conditional Client's approval on the Consultant's advise - of the way the redesign to be done (to respect the Azeri standards and technological culture of the country)
- v) June 19, 2003, letter 01/573 - The Contractor submits his second proposal for local authority approval as Client's requested.

BERGER S.A.

- vi) July 24, 2003, letter 4457/3331 - The Contractor's proposal has been approved. However the approval has been conditional. Please note that the condition has been set against the Gasan Su Chay Bridge existing piles for the intermediate supports, to be checked up and tested before incorporating into the structure (as required by the original KOCKS design)
- vii) July 30, 2003 the Contractor reopen the works
- viii) August 11, 2003 - The Client has been furnished with revised Bill of Quantities.

• Advance payment

- i) March 7, 2003 - Advance payment has been requested
- ii) June 21, 2003 - Advance payment has been received

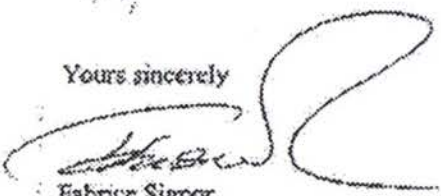
• Correspondence

- i) June 11, 2003, letter of intention to request extension of time
- ii) September 3, 2003 - letter requesting extension of time (Completion date March 30, 2004)

Further we would like to record that this is an 8 months Contract. Since the Contractor take possession of site during the first two weeks they have started and complete the Demolishing works at the aborted existing structures along the existing Bridges at the two sites. This is a part of the Works and being completed in time. Therefore in our opinion the Contractor should be granted extension of time in accordance with the article 33 d of the Contract documents till the March 15, 2004.

Would you please confirm as soon as possible the extended date acceptable for you?

Yours sincerely



Fabrice Signor
Deputy General Manager



№ 209/02 YNS

"23" 09 2003 cü il

Mr.S. Dotchev
Project Manager's Representative
Louis Berger SA Consulting
Company

Dear Mr.Dotchev,

As you know that, during the transmitting the vertical alignment to the ground surface the inconveniencies occurred in the design and ground elevation heights stipulated in the original design upon the "Rehabilitation and Upgrading of Ganja -Shemki Road Section". By a letter № 17/02 dated 14 July 2003, the RoadTransService Department has applied for KOCKS CONSULT GMBH to request them in scrutinising the issue. Having carefully examined the mentioned issues KOCKS has given its recommendations concerning the Topographical Survey data by a letter dated 08 September 2003. After the negotiations among Consultant, Client and KOCKS CONSULT GMBH, the final results are identical, please be advised to give appropriate instructions to Contractor so as to carry on the construction works basing upon the letter. From station 8+100 to the end of the road the differences between both the existing and the design elevation heights are similar and it should be correlated to the local polygon system.

Further we would like to record that we can't refuse to the extension of time (for 2 months) of Contract without any ancillary payments due to the lost of time in the course of problem.

Addendum: KOCKS CONSULT GMBH Letter dated 08 September 2003 - 7 pages

Yours Faithfully,
J.G.Gurbanov

24.09.03

Louis Berger SA Consulting Engineers				
Construction of the Ganja Su Cay and Shemki Cay Bridges				
Date Received:				
File no.	Analysis	Reply	Discuss	Reply
KE	✓	✓		
ENG 1	✓	✓		
ENG 2	✓	✓		
MAT ENG	✓	✓		
QS	✓	✓		
Field	✓	✓		
Reply/Response Ref.				
Date of response				



Louis Berger S.A.
Mercure III 55 Bis qual de Grenelle
75015 Paris



Rehabilitation of Caucasian Highways
Azerbaijan Georgia and Armenia

EUROPEAID/113179/C/SV/MULTI

TRACECA

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Team Leader
Baku
Reference PS277/P52/03/230/RD/fb
Tel +994 12 98 84 31
Fax +994 12 93 24 76
29th September, 2003

To: JSC Azerkorpu
179, Azadliq ave
Baku 370130

Subject: Reconstruction of Shemkir and Gasan Su Chay Bridges-Drawings,
BoQ-Contract EUROPEAID/112944/C/W/AZ

For the Attention of Mr. E. Ismiyev

Dear Sir,

Reference is made to your letter No 847 dated September 26, 2003 and to the meeting held with LBSA Bridge International Expert Mr. J. Rigby. We would make the following comments:

-Drawings Gasan Su Chay Bridge:

- 1) Sheet No 5, please correct the pile reinforcement from 16Ø 16 to 16 Ø 20 mm to match the table in sheet 15;
- 2) Sheet No 13, same remark as point 1;
- 3) Sheet No 6 shows only the old foundation, please re-draw this sheet by showing the new foundations;
- 4) In sheet No 18, it is not clear the connection of the reinforcement bar (kerbs) with the pre-cast beam. Please clarify this in details.

On the other hand and for Gasan Su Chay Bridge, we kindly ask you to submit particular details, not a complete revised BoQ, relating to the additional amount of 31822 Euros requested in your letter No 835 of September 11, 2003 for incorporating 2 new 1.2 m diameter bored concrete piles at each intermediate support. The particular details shall explain the cost of the detailed works for new additional piles and the saving on works relating to the abandoned existing piles.

Please note that our estimate for the additional Works related to this issue is 31498 Euros. We cannot at this stage forward your request to the EC for approval unless you provide a complete comprehensive particular details.

Regarding your request to change the grade of concrete foundations on Shemkir Bridge from B25 to B15, this will be treated when we receive the Bridge Expert Report. In order to gain time, we kindly ask you to submit a breakdown detail showing how the new price is obtained.

29.09.03

Yours Sincerely

A handwritten signature in black ink, appearing to read 'Razek Degheim', with a horizontal line extending to the right from the end of the signature.

Razek Degheim
LBSA Team Leader/ Project Manager

cc: Mr. E. Dalamangas – Brussels
Mr. Marc Graille – TRACECA Coordination Team
Mr. F. Signor - LBSA Paris
Mr. S. Dotchev – PM's Representative/ Resident Engineer

Received 06.10.03

TURAN HAZINEDAROĞLU İnş.ve Tic.A.Ş. - ÖZTAŞ İnş.İnş.MİZ.Tic.A.Ş.
Joint Venture / İş Ortaklığı

LOUIS BERGER S.A.

Mr. S. I. DOTCHEV
Project Manager's RepresentativeNo:36
29 September 2003**Subject: Compensation of the time lost**
Project: Rehabilitation and Upgrading of Ganja - Shemkir/Deliler RoadRef: 1) Your letter dated 25th September 2003 with Reference No. PS277/CW2002-1/SD/CCC-059
2) Conditions of the Contract Item No.44

Dear Sir,

With your referenced letter we have been instruction to commence the earthworks between Km 0+000 and Km 5+000. However, although, commencement date has been fixed as 21st April 2003 with your letter dated 22nd April 2003 Ref. PS277/CW2002-1/SD/CC1-012, we could not commence earthworks until your referenced letter. In order to put forward the matter clearly we should look backwards what we have experienced until this time:

On 22nd April 2003 with your letter Ref. PS277/CW2002-1/SD/CC1-012 you have fixed the commencement date as 21st April 2003.

On 23rd April 2003 with our letter No.0012, the first survey report has been submitted to you stating mistakes in benchmarks determined during the possession of site process.

We have started our mobilization works especially the construction of the houses and offices for the Consultant and Contractor Staff.

On 22nd May 2003 with your letter Ref. PS277/CW2002-1/SD/CC1-033 you have mentioned that the consultant's staff Highway Engineer, Bridge Engineer and Surveyor have arrived on site.

After the studies of the Consultant and the Contractor surveyors jointly; a report, putting the forward the problem, has been prepared and submitted to the Consultant on 7th June 2003 with a letter No.0021. In this report, what we have determined initially during possession on site process, has been confirmed with the Consultant and it is understood that the existing design is not applicable.

At the end of May we have started preparing and sieving riverbed material in Shemkir River and in the beginning of August we have started transportation of this material to the site.

TURAN HAZINEDAROĞLU İnş.və Tic.A.Ş. - ÜZTAŞ İnş.İnş.Miz.Tic.A.Ş.
Joint Venture / İş Ortaklığı

We have got permission for the diversion of the traffic from State Main Road Police Department on 10th of June 2003. We have prepared and placed necessary signalization and submit this matter to your approval on 2nd of July 2003 with a letter No.0024.

After due consultations with the Consultant and the Employer it is decided that the Contractor and the Consultant surveyors will renew the survey works and the new design will be prepared by the Consultant with the help of the Contractor's personnel and the Software. In this respect survey works have been started and the existing topography to be the base for the new design has been submitted on 30th July 2003 to the Consultant. New design of the first five kilometer has been prepared by the Consultant and submitted for the approval of the Employer. For the following part of the design, the Employer's comments were waited.

On 24th September 2003, in the Monthly Progress Meeting, the Employer stated that they have approved first five kilometer of the new design.

On 25th September we have received your referenced letter instructing the commencement of earthworks.

According to the work schedule and the Cash Flow Diagram we have submitted on 18th April 2003 with a letter No.004, we were planning to complete 75% of the project within the year 2003 and to start earthworks in the beginning of the June. However due to the abovementioned events we are instructed to start earthworks on 25th September. The time lost is 117 days in numbers. However you should also take into consideration that this time is lost between June and October, which is the most valuable period for road construction in this region. If you also consider that the winter is approaching, it will be clear that the main idea of our work schedule is collapsed and only one summer season is remained to complete the project. For that reason, the time lost should not be considered only in numbers but also the season should be taken into consideration.

Consequently according to the Conditions of the Contract Item numbers 44.1c, 44.1g and 44.2 we kindly ask to be entitled for 4 months time extension to compensate the time lost.

Awaiting your evaluations.

Sincerely Yours,

pp. Z. Tolga AKSÜT
Contract Manager



Louis Berger S.A. Consulting Engineers				
Construction of the Gusan Su Cay and Shenkir Cay Bridges				
Date Received: 30.09.03				
File In:	Action	Info	Discuss	Reply
RE	✓			✓
ENG 1	✓	✓		
ENG 2				



Louis Berger S.A.
 Mercure III 55 Bis quai de Grenelle
 75015 Paris

Handwritten signature and date: 30.09.03



*Fixed by 10.10.03 to site office to deliver to the Contractor
Please deliver to Mr. SIGNOR *R. Signor* 10.10.03*



Louis Berger S.A.
Mercure III 55 Bis quai de Granelle
75016 Paris



Rehabilitation of Caucasian Highways
Azerbaijan Georgia and Armenia

EUROPEAID/113179/C/SV/MULTI



This Project is funded by the European Union

Team Leader
Baku
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Fax +994 12 93 24 76

To: Turan Hazinedaroglu
ve Oztash Inshaat JV
1/13, Injesenet str.
370010 Azerbaijan
Baku
Tel +994 10 98 94 49
Fax +994 12 93 92 53

10th October, 2003

Subject: Request for Extension of Time

Dear Sir,

We refer to your letter reference No: 36 dated September 29, 2003 received in October 06, 2003 in Main Office claiming 4 months Extension of Time due to the discrepancies on longitudinal profile for the above-mentioned project. We would make the following comments:

- 1) Our records show the following:
 - 1.1. Contractor Organization (28 July 2003, Minutes of Meeting): In Item 1.5, it was stated that you have not taken real actions between June 19, 2003 to July 8, 2003 due to your organization problems. Besides it was noted in the same meeting that first 5 km would be available for the construction by August 7, 2003 (please refer to Minutes of Meeting held on July 28, 2003).
 - 1.2. Equipments: your equipments (lists attached to July 28, August 25, and September 24, 2003 Minutes of Meetings) were not yet available and planned to be on site in September and or October 2003.
 - 1.3 Laboratory Equipment: You stated in July 28, 2003 Meeting that you have ordered part of Laboratory Equipment from Turkey and other part would be available after completion of Alyat to Gazi-Mohammed Road.
- 2) In addition, the Extension of Time claims need to be equated to critical path and in order to establish your entitlement to an Extension of Time; you need to submit more detailed documents, explanations, additional volume of works (if any) etc.

In conclusion, the Project Manager does not at this stage, reject your claim for delay. However, in order to determine your entitlement to an Extension of Time, please submit more detailed documents linked to critical path as mentioned above.

We wait for your submission.

Yours Faithfully
Razek Degheim



LBSA Team Leader/ Project Manager

Cc: TRACECA-Mr. Marc Graille
PIU-Mr.A.Gojayev
Louis Berger SA-Mr. F.Signor
LBSA Project Manager's Representative- Mr. S.Dotchev



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