



Project name: Technical  
Assistance to the Southern  
Republics of the CIS and  
Georgia - TRACECA: Roads  
Maintenance. Project No  
TNREG 9601

## Completion Report

### Module A: Materials, Plant and Standards

Date of submission  
December, 1999



**Technical Assistance to the Southern Republics of CIS and  
Georgia – TRACECA**

**TRADE AND TRANSPORT SECTORS**

**COMPLETION REPORT**

**FOR**

**MODULE A : MATERIALS, PLANT, STANDARDS**

**OF**

**PROJECT NO. TNREG 9601, ROADS MAINTENANCE**

**December 1999**

**Finnroad Oy  
Helsinki  
Finland**

**in association with**

**Parkman Ltd  
Ellesmere Port  
U.K.**

**Roughton Int.  
Southampton  
U.K.**

**and**

**Phønix  
Veijen  
Denmark**

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MODULE A

**REPORT COVER PAGE**

Project Title	:	TRACECA: Roads Maintenance
Project Number	:	TNREG 9601
Country	:	Armenia, Azerbaijan, Georgia, Kazakhstan, Kyrgyzstan, Mongolia, Tadjikistan, Turkmenistan and Uzbekistan

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MODULE A

**REPORT COVER PAGE**

Project Title	:	TRACECA: Roads Maintenance
Project Number	:	TNREG 9601
Country	:	Armenia, Azerbaijan, Georgia, Kazakhstan, Kyrgyzstan, Mongolia, Tadjikistan, Turkmenistan and Uzbekistan

	Local Operator	EC Consultant
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MODULE A

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MODULE A

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MODULE A

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MODULE A

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MODULE A

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Date of report	: 6 June 1999
Reporting period	: Entire Project
Author of report	: John Saunbury Director - Roughton International

EC M & E Team	(name)	(signature)	(date)
EC Delegation			
TACIS Bureau			
(Task Manager)			

## 1. PROJECT SYNOPSIS

**Project Title : Technical Assistance to the Southern Republics of the CIS and Georgia-TRACECA : Roads Maintenance Project  
Module A : Materials, Plant, Standards**

Project No. : TNREG 9601

Countries : Armenia, Azerbaijan, Georgia, Kazakstan, Kyrgystan, Mongolia, Tajikistan, Turkmenistan, Uzbekistan

### **Project Objectives:**

#### **Wider Objectives:**

Improved construction of bituminous pavements, in order to minimise the sum of vehicle operating costs over the road network and the cost of road construction and maintenance.

#### **Specific Objectives:**

- Partner organisations have accepted the recommendations for bitumen production quality, materials supply and quality control procedures and the recommendations have been implemented
- Steering Committee has approved the new specifications and standards and these new specifications and standards have been implemented.
- Foreign and local funding agencies have in principle decided on the foreign investment packages, for those countries with a proven interest of EU and local entities.

### **Planned Outputs :**

**Phase 1** of the project (6 months) will produce reports covering aspects of the bituminous roads construction/maintenance sector, examining the existing situation and practices and making recommendations for future actions, where required. Outputs will include *country by country* reporting on:

1. future road construction demand and projects viability;
2. review of present plant and equipment and projection of future requirements;
3. review of road materials resources and projection of future requirements;
4. appraisal of alternative pavement materials;
5. materials supply industry sourcing strategy for roadstone and bitumen;
6. bitumen production and quality control requirements;
7. review of present materials and construction standards and specifications, and *drafting of new standards and specifications*
8. materials and construction quality control requirements (including a country specific implementation plan);
9. possible legislative changes
10. *foreign investment packages, financially viable state by state*, covering particular plant /equipment supply and manufacture, and materials production and supply

#### **Phase 2** outputs :

recommendations covering revised standards and specifications and improved arrangements for quality control, in areas acknowledged as deficient, have been diffused.

foreign participation and investment have been promoted in the recipients constructional plant/equipment manufacture and assembly operations and materials production and supply.

### **Project Activities :**

#### **Phase 1 :**

- a review of the requirements, resources, and standards for bituminous pavement construction for a ten year period in the nine states covered by the project including existing data collection ;
- analysis, field visits , discussions with national highway authorities, review and evaluation of data;
- preparation of recommendations, draft standards and specifications and specific reports;
- formation and presentation of recommendations to a regional steering committee;
- identification of opportunities for commercial cooperation.

#### **Phase 2**

- activities in the field of implementing the recommendations agreed upon during Phase 1 (bitumen

- quality, materials supply, specifications and standards, and quality control procedures;
- activities to stimulate foreign participation in those areas identified under Phase 1, including
  - i) contact with multi-national enterprises in the EU;
  - ii) participation in trade conferences, presentations to IFI's;
  - iii) press releases to relevant technical and financial newspapers and journals;
  - iv) organisation of trade delegations to host countries;
  - v) participation in international conferences, exhibitions;
  - vi) organisation of project specific Investors Conference.

**Project Starting Date:** 24<sup>th</sup>. July, 1997

**Duration :** 15 months



## **2. SUMMARY OF PROJECT PROGRESS SINCE THE START (TO 31/3/98)**

The contract was signed on 24 July 1997. Due to the temporary unavailability of the substantive Team Leader Mr M Taylor, approval was obtained to field Mr A Murphy as Acting Team Leader for Phase 1. Initial visits to most project countries took place between 20 August and 2 September, with the Project Director covering the Caucasus and the Acting Team Leader covering Central Asia. During these visits the views of the Road Authorities were sought, local subconsultants engaged, and data collection put in place.

The key item that came out of these initial visits was the inadequacy of the proposed inputs for the Bitumen Specialist and Refinery Expert to address bitumen quality problems across the region, and to meet the needs of Turkmenistan in particular. We were requested to increase these inputs in lieu of some of the Team Leader's time. This was agreed with the TRACECA Co-ordinator (Central Asia), and included in the Inception Report.

Further field visits by the Acting Team Leader, Materials Specialist, Bitumen Specialist and Refinery Expert took place to all countries in the period 5 October to 14 December, including initial visits to Tajikistan, though subsequent ones were cancelled. Data analysis, including bitumen sample testing, took place in December and January, and the Draft Phase 1 Report was sent out in Russian to all recipients at the start of February 1998.

The Steering Committee took place in Almaty on 16 and 17 February 1998 during which Phase 1 recommendations and Phase 2 activities were discussed. The principal findings from Phase 1 were that, whilst the SNiPs and GOSTS specification were in many respects adequate, there were a number of deficiencies, namely with bitumen specification, the use of a classification-based system to assess the strengths of subgrade materials and aggregates, and with the asphalt mixes. Quality in construction was further compromised by insufficient testing of compacted densities, and weak contractual arrangements. Materials supply issues concerned bitumen quality, and materials processing plant. Plant fleets were generally aged, with spare parts supply problems, and institutional arrangement that did not encourage the private sector. Specific recommendations included revisions to the bitumen specifications, introduction of CBR and Marshall testing, and consideration of plant pools.

These recommendations were accepted by the meeting, though opinions varied between countries as to the degree of authority to vary standards that Roads Authorities had.

Phase 2 activities highlighted by the Steering Committee were a request for a revised bitumen specification, translation into Russian of the recommended AASHTO specifications and tests, assessment of investment needs in laboratory equipment, and circulation of supplier information on laboratories equipment, mobile crushers, and asphalt plants in particular. No other Phase 2 activity on plant was requested.

The Phase I Final Report was dispatched in March reflecting the Steering Committee discussions, together with minutes of the meeting.

Activities in Phase 1 to identify potential for commercial cooperation included approaches to firms with regard to the Investors Conference, attendance at the PIARC Winter Roads Conference, and attendance at the Steering Committee Meeting by a representative of the International Roads Federation. These are further discussed in Section 3.



### **3. PROJECT PROGRESS IN THE FINAL PROJECT PERIOD**

The substantive Team Leader, Mr Taylor, attended the Steering Committee meeting, and took over the role from Mr Murphy.

#### **3.1 Activities to Implement Recommendations Agreed upon at the Steering Committee (Activities 1 and 2)**

Translation of the specific AASHTO standards agreed at the Steering Committee was commenced at the start of Phase 2, as was work on the revised Bitumen Specification (including information on additives as requested by the Steering Committee).

Visits by the Team Leader and the Refinery Expert to Tajikistan were twice arranged and postponed at this stage due to the ongoing security situation, and finally abandoned.

A major liaison meeting took place at the end of May 1998 between the Team Leader, the TRACECA Coordinator, the Asian Development Bank Project Officer for the ADB Design Standards and Construction Specification Project, and their consultant's project team. During this meeting the question of overlaps between the two projects was discussed as were areas not covered by either project. It was decided that the two projects would produce a coordinated set of outputs. As a consequence, Module A was requested to concentrate more effort into production of a complete typical international contract document in Russian, together with translation of all AASHTO materials standards and tests referred to in either the ADB project's Construction Specification or in the specification within the typical contract document. This major work item continued through to November 1998.

Visits were made by the Team Leader to all countries except Tajikistan and Mongolia during Phase II to discuss and promote implementation of AASHTO-based standards, and to assess training and equipment needs for materials laboratories. Laboratory Needs Assessment Reports were produced for seven countries (Mongolia having stated at the Steering Committee that they did not require a laboratory assessment, as one had recently been done as part of a technical assistance under another project).

Training needs for materials laboratories to undertake testing and quality control using the recommended specifications and tests were assessed during the Team Leader's visits, and incorporated into the laboratory reports.

Information was collected from suppliers of laboratory equipment, materials extraction and processing plant, construction and maintenance plant and works contractors, covering the areas requested at the Steering Committee during August and September. The material consisted of brochures and leaflets with specifications and list prices from 15 selected European suppliers. These were assembled, together with a report listing the brochures, and including extracts of the relevant sections of the "Euro Pages Directory of Suppliers", and distributed in October 1998.

The other documents were dispatched at the beginning of December 1998. The pack consisted of the following:-

- Bitumen Specification report (English and Russian)
- Typical International Contract Documents (English and Russian)
- Commentary on typical contract Documents (English and Russian)
- AASHTO Specifications and Methods of Sampling and Testing (complete set, 2 volumes in English)
- Russian Translations of AASHTO specifications and Methods of Sampling and Testing (2 Volumes including all the ones used in the Construction Specifications).
- Laboratory Assessment Reports (English and Russian)
- Compact disc with all above documents (except the AASHTO English originals)



The covering letter made cross reference to the ADB project's documents, "Highway Design Standards" and "Highway Construction Specifications". These two documents were separately circulated to all TRACECA recipients by TRACECA Coordinators.

Discussions took place at the end of 1998 with TRACECA Coordinators and Monitors about the desirability of a further round of visits to present and discuss the documents with recipients, despite the fact that all resources had been consumed previous in country visits and document preparation. These presentations were subsequently provided by the contractor, free-of-charge, to increase the impact of the project, Mr Saunbury visiting Central Asia countries between 28 February and 22 April, and the Caucasus in late May. The positive responses to those presentations are discussed in Section 4.

### **3.2 Activities to Stimulate Foreign Participation (Activities 3 to 8)**

Four principal activities took place to promote foreign participation:-

#### **Attendance at International Road Fund Silk Road Conference**

Following the invitation to Steering Committee members by the International Road Fund Representative, assistance was given by the Project Director to the IRF in contacting Steering Committee members and assisting with travel plans. As a result of this follow up, most of the members of the Steering Committee attended the IRF conference, which took place in Ashgabat from 15 to 17 April 1998.

The Team Leader also attended the conference, and the opportunity was taken to discuss standards issues, particularly the bitumen specification, as well as the conference items.

#### **Investors Conference**

The Steps taken in Phase 1 to plan the Investors Conference were continued in Phase 2. The Project Director promoted the conference by circulation of information to the Commercial Sections of the Embassies of EC and TACIS countries in Helsinki for onward transmission to relevant trade organisations, and similarly through embassies in Bishkek and Almaty. In addition, direct approaches were made to about fifty firms from the consultants' offices in Bishkek, Helsinki and Southampton.

Direct invitations were also issued to representatives of the World Bank, EBRD, EU/TACIS and ADB, though of these only ADB were able to attend.

The Conference took place in Almaty on 21<sup>st</sup> May 1998 with attendance by eleven European firms and twenty two regional ones (from Kazakstan, Mongolia, Uzbekistan, Kyrgyz Republic and Belorussia).

The Conference resulted in a number of new business contacts between EU based and local firms. Moreover the Conference resulted in discussions to set up two joint ventures. One of them was a Finnish-Kazak partnership for local manufacturing and assembling of truck-mounted maintenance equipment. The other was a Finnish-Kazak partnership for setting up a mobile asphalt plant including bitumin stabilization and pavement recycling operation. The Conference also led to discussions between a Finnish paint manufacturer and an Uzbekistan organization for manufacturing of paint in Uzbekistan. Finally the Conference led to discussions between ADB and an Austrian company on the use of modified bitumens.

A Joint Venture Agreement on local manufacturing of truck mounted winter maintenance equipment has been signed between the Finnish and Kazak partners and the Joint Venture has started operating.



### **Suppliers Listing**

Following the visit made to the PIARC Winter Roads Conference in Sweden during Phase I some twenty firms exhibiting there were approached for inclusion in the Suppliers Listing. The majority of these provided materials. A further thirty or so firms were also written to, so that a good coverage could be provided in those sectors requested by the Steering Committee.

In addition, the firms approached for brochures for inclusion in the Suppliers Listing had the market potential explained to them. Contact details of recipients were provided, and three firms expressed the intention to make country visits as a consequence.

### **Investment Packages**

The laboratory assessment reports for each country include the justification for investment in laboratory training, facilities upgrading and equipment purchases. The potential for obtaining equipment for testing to the recommended standards has been discussed at the presentations, focusing on an acquisition via international loans/grants, or through road construction contracts.

The consultant has since had informal but encouraging discussions with a UN Division of Sustainable Development Officer about a potential laboratory equipment and training project in the Caucasus.

Project Title: TRACECA ROAD MAINTENANCE PROGRAMME-MODULE A		Project No: TNREG 9601		Countries: Armenia, Azerbaijan, Georgia, Kazakstan,	
Prepared on: 20th December 1999				Kyrgystan, Mongolia, Tajikistan, Turkmenistan, Uzbekistan	
Output Results	Deviation from Original Plan %	Reason for Deviation		Comment on constraints and assumptions	
Interim Report summarising data Collection and road conditions throughout Project region	0 %				
Reports on Laboratory equipment and needs for 7 countries	New Output	Project design reviewed and modified at Steering Committee stage		Two countries did not request laboratory assessments	
Report on Bitumen Problems and improved specification and tests	New Output	Ditto			
Translated Standards and Specifications to collaborate with ADB Standards Project	New Output	Ditto		Collaboration with ADB project requested by the Steering Committee and by TRACECA Coordination (Central Asia) in order to produce a coordinated package of outputs between the two projects resulted in substantial redirection of activities in the second and third periods.	
Translated Standard Contract Documents with Commentary	New Output	Ditto			
Seminars in 8 Countries to present Standards and Contract Documents	New Output	Ditto			

#### 4. OVERALL REPORT ON TOTAL PROJECT

##### 4.1 Project Achievements in Comparison with Planned Results

###### a) Phase I

The wide-ranging terms of reference, coupled with the geographic spread over nine countries, proved from the start to be rather ambitious. Despite this, Phase I was successful in meeting its original objectives both in terms of outputs and activities as indicated in the Project Synopsis (Section 1). Specifically:-

- a review was undertaken of road construction and maintenance programmes in each country, and an assessment made of realistic likely spending over the next 10 years
- plant and equipment fleets were reviewed, and future needs projects with recommendations made about areas of shortage and about fleet management
- materials sources were reviewed in the light of the 10 year programmes, and alternative materials appraised
- the materials supply industry was required with regard to aggregates and bitumen, with recommendations made regarding refineries, bitumen shortage and distribution and the need for greater flexibility in aggregate production to achieve shorter haul distance by using mobile processing plant
- particular attention was given to bitumen production and quality control, with recommendations for refinery upgrading and for a number of changes to the bitumen specification
- legislative constraints to changes in specifications were examined on a region-wide basis

The above items were all reported to the Steering Committee in Almaty in February 1999, and discussed over two days. All important items were agreed by all delegates, though there were divergent views as to what extent the recommended AASHTO specifications should be adopted as they were, or whether they should be reworked as local standards. The rapid changes over recent years had also caused uncertainty over decision taking processes.

However, in order to achieve this level of success Phase I consumed additional resources, particularly in terms of the additional inputs of the Bitumen Specialist and Refinery Expert, and in additional travel costs.

Work on identification of opportunities for commercial cooperation during Phase I included attendance at the PIARC Winter Road Conference, work by the Project Director to attract firms to the Investors Conference, and attendance by a representative of the IRF at the Steering Committee.

###### b) Phase 2

Recommendations covering revised standards and specifications were finalised in the form of the Bitumen Specification, the Construction Specification in the typical contract, and the AASHTO translations and diffused through the Team Leader's visits, through distribution of the reports and through follow-up presentations.

The section of the "Commentary" on the typical documents relating to the Introduction to the Specification deals with the policy choices for recipients relating to specifications, and this was highlighted in the presentations.

With regard to improved arrangements for quality control, the principle outputs were the quality control mechanisms within the typical contract document, and the laboratory proposals. These were diffused in the same way as the revised standards. Presentations of the documents emphasised the role and powers of the Engineers under the Conditions of Contract, Clauses 36 to 39 relating to Materials, Plant and Workmanship, and the advice in the "Commentary" in this regard.



As noted in Section 3.2, foreign investment and participation in the region's construction plant and materials supply industries was promoted through the Investors Conference, with a number of potential joint ventures being discussed as a result. The market potential of the region was also brought to the attention of a larger number of firms in the construction plant, materials processing plant and laboratory equipment fields in particular, and information on a selection of these firms was made available to the recipients through the Suppliers Listing.

c) Presentation of Phase 2 Documents

A brief summary of the attendance and principal views expressed at each of the presentations is given below, in the order that the presentations were made.

**Kyrgyz Republic (26 February 1999)**

Presentation to staff of MoTC, MRD Headquarters (3), PIUs (6), Design Institute (2), SPA(1), and PLUADs (4). The morning session covered the relationship between the various documents, and a discussion of the Typical Contract Document and Commentary, particularly relating to powers of the Engineer, and quality control. The afternoon session on specifications, and testing was cancelled at the participants' request as documents had not been circulated internally in advance. A Chief Specialist of MRD was nominated to co-ordinate further internal workshops, and this will be followed up by the consultant during a country visit in late June 99. MoTC stated that they now have a policy of moving to AASHTO - based specifications.

**Kazakstan (4 March 1999)**

Presentation to staff of Engineeringautodor (5), MoTC board of Investment (2), Design Institute (1), Road Research Institute (3), Kazjol (2) and the TRACECA Co-ordinator. Discussions highlighted quality control aspects of contracts, policy issue relating to specifications, bitumen specifications and the use of CBR and Marshall tests. The recipient is working to produce Kazak specifications for locally funded work while adopting international standards for loan prospects. The Module A documents were considered useful for both purposes.

**Turkmenistan (14 April 1999)**

Presentation to staff of Turkmenautoellari HQ (3), Design Institute (5), Buzmein Road Materials Co (5), Ashgabat Maintenance Department (5), Road Construction Departments Nos 2 and 14 (8). Contracts role of the Engineer and quality control were discussed in the morning, with specifications, testing, bitumen and laboratories after lunch. The set of documents were well received, particularly the Bitumen Specification, with the recipient stating they intended to adopt it. Separate meetings were also held with the State Standards Institute and Ministry of Oil and Gas promoting the Bitumen Specification.

**Tajikistan (19 April 1999)**

Presence in Dushanbe on another matter was utilised to make a presentation to seven members of the Design Institute (the recipient in this case). Although all areas were covered, the main concentration was on specifications, testing and bitumen. The recipient stated that the output was very useful.

**Uzbekistan (22 April 1999)**

Presentation to staff of Uzavtoyul HQ (2), PIU (2), Design Institute (6), Intertechnology Centre (2), Tashavtoyul (2), and Asphalt and Cement Concrete Centre (5). The presentation was over two sessions and covered all the documents. Uzbekistan is already moving to AASHTO based testing where practical, and the documents were considered useful to that aim.



### **Azerbaijan (18 May 1999)**

Presentation to staff of Azeravtoyul HQ (1), Azeravtoyul SRC (9), Road Construction Department of University of Azerbaijan (6), and TRACECA Monitors (2). All the documents were covered and discussed, with the Bitumen Specification and recommendation of AASHTO-based specifications being well received. There was a wish to have a programme of comparative testing between GOSTS and AASHTO to see how tests such as CBR and Marshall could be incorporated. In the absence of the Director of Azeravtoyul, a pre briefing was given to the Chief of Technical and foreign Relations Department who was also unavailable on the 18<sup>th</sup>.

### **Georgia 21 May 1999**

In the absence of the Vice Chairman, Sakavtoysa, he deputed the Design Institute to organise the presentation and it was attended by five of its staff and the local TRACECA Monitor. All documents were presented and lively debate took place on the role of the Engineer, quality control, bitumen specifications and CBR and Marshall tests. A wish was expressed for testing to compare AASHTO to GOST tests.

### **Armenia (25 May 1999)**

Presentation to staff of Armenia Roads Directorate (4), Design Institute (9), Institute of Architects and Construction (2), Maintenance Co (1), TACIS (2). Discussion took place of all documents, which were well received and described as very useful for the stated policy of developing Armenian standards.

### **Mongolia**

No presentation in Mongolia was possible.

## **4.2 Deviations from Original Planning**

As indicated in 4.1a) there was little deviation from the original plan in Phase 1 other than the provision of additional Bitumen and Refinery inputs as requested. Visits to Tajikistan were also curtailed as TACIS policy resulting from the security situation.

More significant deviations took place in Phase 2. As requested by the Steering Committee, liaison took place with the parallel Asian Development Bank project on Highway Design Standards and Construction Specifications. A meeting took place between the TRACECA Co-ordinator, the Asian Development Bank Project Officer and the two Team Leaders to discuss how the two projects could produce a co-ordinated set of outputs and minimise duplications and gaps. The agreement reached was that Module A should produce a typical international contract document in Russian and English, including a construction specification, and would also translate all the AASHTO materials specifications and testing methods referred to in both this construction specification and the one being produced by the ADB project. This overcame one of the problems in giving substance to the Steering Committee recommendations, in that materials specifications and test standards need to relate to construction specifications, which themselves should relate to a design methodology which fell outside the remit of Module A. However, it expanded the number of AASHTOs to be translated from 24 resulting from the Steering Committee recommendations to 156, and required continuous technical oversight by the Team Leader, and proved to be a greater redirection of effort than had been anticipated.

As a consequence Phase 2 travel by the Team Leader was restricted to one visit per country to promote the adoption of revised standards, and to assess the capabilities of materials laboratories in each country to carry out the testing involved. Recommendations on facilities, equipment needs, staffing and training needs were produced.

The shortfall of recipient liaison was however largely made good by the subsequent visits to present final documents.

Activities to promote foreign participation took place largely as planned, and had as good an outcome as the project context permitted.

## 5. LESSONS LEARNT AND RECOMMENDATION

It was acknowledged by TRACECA Co-ordinators and Monitors early in the project that terms of reference were over-ambitious in relationship to the resources. This was compounded by an early request to deploy additional Bitumen Specialist and Refinery Experts inputs by diverting resources. The situation in this regard was not helped by the complex TRACECA structure, which lead the contractor to believe that variations within the overall total were permitted, until informed otherwise over a year after the start, having already agreed to readjust the balance of inputs at client request.

It is recommended that in multi-country projects like this a more realistic inception period be allowed, so that meaningful replanning can take place at that stage. Clearer and more flexible decision taking processes would also increase project effectiveness. The co-ordination between this and the ADB project in Phase 2 was essentially sound, though the impact on Module A proved greater than was anticipated, and adversely effected the contractor. It did however solve one of two technical problems with the project design, namely the consideration of contraction standards within a maintenance project without reference to design methods. The other technical problem was the lack of laboratory comparisons between AASHTO and GOST tests, which has been raised by a number of recipients.

Promotion of foreign investment and regional activities was to some extent hampered by the lack of own funds by local participants and local companies, and consideration should be given to covering all such travel costs from projects funds in the future.



**TRACECA ROAD MAINTENANCE PROJECT  
MODULE A PRESENTATION  
MATERIALS, PLANT AND STANDARDS  
BISHKEK – 26 FEBRUARY 1999**

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3.	Majevskaya E. I.	- Leading Specialist of MRD, MoTC
4.	Momayev K A	- Director of SPA (Scient, Produc Amolgamation)
5.	Izibayer A. A.	- Chief Engineer of the Design Institute
6.	Sadritdinov L B	- Leading Engineer of Geology, Design Institute
7.	Esentulov A. M.	- Head of Production – Technical Dpt of PLUAD 1
8.	Tojkulov B T	- Head of PLUAD 1
9.	Isayev E.	- Deputy Head of Investment Project, Implementation Unit
10.	Iskailov A. I.	- Leading Engineer of PLUAD – 1
11.	Chimchikov K	- Head of PIU, ADB
12.	Jumalieva J	- Chief Specialist, PIU
13.	Tanayev A. N.	- Head of PIU, OECF
14.	Khakimov A. Z.	- Chief Specialist of PIU
15.	Shekeyev O.	- Chief Engineer of Bisacec OSA Division
16.	Tkachev A.P.	- Chief Engineer of PIU



**TRACECA ROAD MAINTENANCE PROJECT  
MODULE A PRESENTATION  
MATERIALS, PLANT AND STANDARDS  
TBILISI, GEORGIA 21<sup>ST</sup> MAY1999**

	<b>NAME</b>	<b>POSITION/ORGANISATION</b>
1	Chigogidze Guram	- Chief Engineer of the Sakgza Institute
2	Peneladze R	- Head of the Department of Artificial Constructions
3	Datunashvil T	- Head of the Road Materials Department
4	Popeliani V	- Head of Road Transport Problems Department
5	Natsvlisrili	- Head of the Bitumen Laboratory
6	Gogelia T	- Local TRACECA Monitor

**TRACECA ROAD MAINTENANCE PROJECT  
MODULE A PRESENTATION  
MATERIALS, PLANT AND STANDARDS  
AZERAVTOYOL - BAKU 18<sup>TH</sup> MAY1999**

	<b>NAME</b>	<b>POSITION/ORGANISATION</b>
1	Garaisayer N M	- Director of SRC, Azeravtoyol
2	Bachazchinov L G	- Chief Engineer, SRC
3	Valehov H G	- Senior Engineer, SRC
4	Asgerov S P	- Senior Engineer, SRC
5	Murullayev M A	- Head of Department, SRC
6	Yusifov J M	- Head of Department, SRC
7	Kazimov T L	- Head of Department, SRC
8	Mutallimov S	- Head of Department, SRC
9	Tahmazov G	- Head of Department, SRC
10	Mehtiyev G	- Head of Department, SRC
11	Safarov S G	- Chief Specialist of Azeravtoyol
12	Priyev Y M	- Head of Road Construction Department of Civil Engineering – University of Azerbaijan
13	And 5 participants from University	
14	Maters H	- TRACECA Monitor
15	Huseynov A	- TRACECA Monitor

**TRACECA ROAD MAINTENANCE PROJECT  
MODULE A PRESENTATION  
MATERIALS, PLANT AND STANDARDS  
TASHKENT 22<sup>ND</sup> APRIL 1999**

	<b>NAME</b>	<b>POSITION/ORGANISATION</b>
1	Tulyaganov M	- Deputy Chairman, Tashavtoyul
2	Dustpulatov B	- Deputy Head, Tashavtoyul
3	Kukhurov K	- Deputy Head, Intertechnology Centre
4	Mirzaev T	- Laboratory Head, Intertechnology Centre
5	Ochilov a	- Deputy Chief Engineer, Uzroaddesing Institute
6	Kazakov K	- Deputy Chief Engineer, Uzroaddesing Institute
7	Zubenko S	- Project Chief Engineer, Uzroaddesing Institute
8	Sokolov V	- Deputy Head, Uzroaddesing Institute
9	Kamalov Kh	- Deputy Head, Uzroaddesing Institute
10	Shatin G	- Deputy Head, Uzroaddesing Institute
11	Azimova Z	- Deputy Head, Uzavtoyul
12	Akhmedov O	- Chief Expert, PIU
13	Abidova Kh	- Chief Expert, PIU
14	Makhmudov	- Centre Head, Asphalt/Concrete and Cement/Concrete Centre
15	Toshkuziev B	- Group Head, Asphalt/Concrete and Cement/Concrete Centre
16	Yunusova A	- Group Head, Asphalt/Concrete and Cement/Concrete Centre
17	Norova Z	- Group Head, Asphalt/Concrete and Cement/Concrete Centre
18	Toshkuziev E	- Chief Expert, Asphalt/Concrete and Cement/Concrete Centre
19	Farafonov V	- 1 <sup>st</sup> Category Engineer, Asphalt/Concrete and Cement/Concrete Centre
20	Aksamov v N	- Chief Road Inspector, Uzavtoyul

**TRACECA ROAD MAINTENANCE PROJECT  
MODULE A PRESENTATION  
MATERIALS, PLANT AND STANDARDS  
DUSAHNBE 19<sup>TH</sup> APRIL 1999**

	<b>NAME</b>	<b>POSITION/ORGANISATION</b>
1	Shakirov F Sh	- Head of Technical Department, Tajikistan Transport
2	Kolbrodov K A	- Engineer of Production, Technical Department DPUAD
3	Fakhromekov Kh G	- Head of Quality Control Department, TDST
4	Mirzoev G S	- Head of Production, Technical Department, TDST
5	Khudaydodov J D	- Deputy Head of Quality Control Department, TDST
6	Lymzina Yu N	- Engineer of Laboratory of MSU-6 (Bridge Construction Unit)
7	Mirzoev J D	- Director of Tajikistan Transport

**TRACECA ROAD MAINTENANCE PROJECT  
MODULE A PRESENTATION  
MATERIALS, PLANT AND STANDARDS  
ENGINEERINGAUTODOR  
ALMATY 4<sup>TH</sup> MARCH 1999**

	<b>NAME</b>	<b>POSITION/ORGANISATION</b>
1	Goncharov Boris	- Director, Engineeringautodor
2	Zabarko Askold	- Deputy Director, Engineeringautodor
3	Grabshtein Eduard	- Head of Project Preparation – Division of Board of Investment
4	Negievich Galina	- Senior Engineer, Project Preparation Department
5	Goloskokov Vasili	- Head of Division
6	Kozlova Nadezhda	- Senior Engineer
7	Prozentov Victoz	- Head of Division
8	Kaganovicj Yevgeniya	- Deputy of Director Kazdornic
9	Elkin	- Head of Division, Secondment Kazdoznic
10	Bostanjiev Konstantin	- Head of Division, Zazzhol
11	Asmatullaev Boris	- Director of Road Research Centre
12	Tursumuratov Murat	- Head of Division Kazzhol
13	Komov Yuri	- President of Kazdorproject
14	Sims Michael	- TRACECA Co-ordinator

	<b>NAME</b>	<b>POSITION/ORGANISATION</b>
3	Bulanenkov D	- Head of Production Department
4	Akyev Kh	- Chief Foreman
5	Charyev A	- Chief Foreman

**ROAD CONSTRUCTION DEPARTMENT NR 14**

1	Volodina M Yu	- Head of Production Department
2	Knlagin AA	- Leading Engineer
3	Abaev A	- Engineer
4	Solodko V I	- Engineer



**TRACECA ROAD MAINTENANCE PROJECT  
MODULE A PRESENTATION  
MATERIALS, PLANT AND STANDARDS  
TURKMENAVTOELLARY EMPLOYEES  
ASHGABAT 14<sup>TH</sup> APRIL 1999**

**NAME** **POSITION/ORGANISATION**

HEAD QUARTERS PERSONNEL

- |   |                |   |                    |
|---|----------------|---|--------------------|
| 1 | Volodin, VF    | - | Chief Engineer     |
| 2 | Annaev K       | - | Head of Department |
| 3 | Ahikhmuradov A | - | Head of Department |

DESIGN INSTITUTE "TURKMENDORPROJECT"

- |   |                 |   |                    |
|---|-----------------|---|--------------------|
| 1 | Brozda, OG      | - | Director           |
| 2 | Chezlova A N    | - | Chief Engineer     |
| 3 | Mirgorodsky L N | - | Main Specialist    |
| 4 | Kulieva E       | - | Head of Laboratory |
| 5 | Karadurdyev     | - | Engineer           |

BEZMEIN COMPLETE SET OF ENTERPRISES OF ROAD ONCSTRUCTION MATERIALS

- |   |               |   |                               |
|---|---------------|---|-------------------------------|
| 1 | Solomatin AM  | - | Chief Engineer                |
| 2 | Kuznetsov V   | - | Head of Production Department |
| 3 | Annaberdyev R | - | Director of Asphalt Plant     |
| 4 | Semenova L A  | - | Head of Laboratory            |
| 5 | Smiriagina I  | - | Engineer of Laboratory        |

ASHGABAT LINE MAINTENANCE DEPARTMENT

- |   |                 |   |                               |
|---|-----------------|---|-------------------------------|
| 1 | Kurbannazarov V | - | Head of Production Department |
| 2 | Kuznetsov V V   | - | Leading Engineer              |
| 3 | Juravlev A      | - | Leading Engineer              |
| 4 | Prosina L D     | - | Leading Engineer              |
| 5 | Tekaev Kh       | - | Leading Engineer              |
| 6 | Jmatova L I     | - | Leading Engineer              |

ROAD CONSTRUCTION DEPARTMENT NR 2

- |   |              |   |                |
|---|--------------|---|----------------|
| 1 | Riabtsev V   | - | Chief Engineer |
| 2 | Bulanenkov D | - | Chief Engineer |

**TRACECA ROAD MAINTENANCE PROJECT  
MODULE A PRESENTATION  
MATERIALS, PLANT AND STANDARDS  
YEREVAN - 25 MAY 1999**

	<b>NAME</b>	<b>POSITION/ORGANISATION</b>
1	Papik Karchikien	- Advisor of Director General - Armenia Highway
2	Rudolf Olabekian	- Representative of the exploitation firm
3	Avetisian Benik	- Dorproject Institute
4	Oganova Rada	- Dorproject Institute
5	Baganian Mkrtych	- Dorproject Institute
6	Makobyta Stephan	- Head of Technical Department - Dorproject Institute
7	Robert Azoyan	- Transport Construction Facility, Yerevan Institute of Architecture and Construction
8	Karapetian Djonibeu	- Dorproject Institute
9	Ayrapetova Alice	- Yerevan Institute of Architecture
10	Jurnian Glenna	- Representative from Armovtodor
11	Hovsepyan Davit	- Dorproject Institute
12	Martirosian Rudiv	- Dorproject Institute
13	Airapetian G	- Dorproject Institute
14	Jskkrian R	- Dorproject Institute
15	Elaryan Nikolai	- Deputy Director General, Armenia Roads Department
16	Petrosian Jacob	- Head of Planning Division, Armenia Roads Department
17	Tibbs Paul	- TACIS CU
18	Harutunian Gayane	- TACIS Monitoring Team