1. Basic Information

1.1 CRIS Number: PHARE 2003/005-778.01
1.2 Title: Rehabilitation of National Road NR 59, the sector between km 36+500 – km 63+428 at Voiteg and the border crossing point with Serbia & Montenegro at Moravita
1.3 Sector: Infrastructure (IN)
1.4 Location: Romania, West Development Region, Timis Country
1.5 Beneficiary: National Administration of Roads, Timis County Council

2. Objectives

2.1 Overall Objective
To develop the economy of the border regions by enhancing the trade and the economic co-operation. To motivate the creation and development of corresponding transport links on both sides of the Serbia & Montenegro/Romania Border. To promote good neighborliness and promote co-operation between Romania and Serbia & Montenegro.

2.2 Project purpose
To improve the access to the cross border check point at Moravita by rehabilitating the road on the Romanian side, including some corrections of curves and of longitudinal profile

2.3 Accession Partnership and NPAA priority

NPAA (medium – term priority):
The policies in this area aimed at stopping the decline of the economy, creating the prerequisites for economic recovery and preparing Romania for EU accession. The following objectives are set for promoting a favorable business environment: achieving flexibility of the central administration and of the staff involved in Romania’s official international relations so as to stimulate international trade and to harmonize the domestic and global business environments.

2.4 Contribution to the National Development Plan
The project will contribute to the achievement of the objectives included in the 2nd development direction of NDP during 2003 – 2006 period, as well as to the main priority stipulated in the Regional Development Plan, i. e. “Improvement and Development of Infrastructure”.

2.5 Cross Border Impact
The realisation of the project will have a direct impact on the international traffic through Moravita border crossing point on both sides of the Romanian-Serbian border, being the only existing border crossing point between Romania and Serbia & Montenegro.

The opening of the Moravita border-crossing point to all type of international traffic (including road services and railway services) and the rehabilitation of the NR 59 from km 36+500 – km 63+428 between Voiteg and the border crossing point with Serbia & Montenegro at Moravita will improve and increase cross border traffic between Romania and Serbia.

It will allow an easier access from the western part of Romania to Serbia & Montenegro
It will encourage the economic development of the two bordering regions by increasing the traffic of goods and people;
It will contribute to promote good neighborliness and co-operation between Romania and Serbia & Montenegro.
The local impact will be:
- Creation of direct and indirect jobs during the implementation and operational phase;
- Improved accessibility in the border region;
- Better transportation conditions for goods and people from Moravita locality and surrounding areas to the Serbia & Montenegro border point.
- Reduction of the costs of road users, savings on travel time and improvement of road safety;

3. Description

3.1. Background and justification

The concerned project is part of a more global project aiming at improving road conditions from Belgrade to Timisoara, including necessary investments to upgrade the road from 10t to 11,5t axle load. At present the existing border crossing point on this road is the most important between Romania and Serbia.

On the Serbian side, the directorate for the reconstruction of roads within the Ministry of Transport is responsible for that project. The first intention of the authorities is to rehabilitate the road from Pancevo to the border crossing point with Romania at Vrsac. A technical design has been completed but no fund has been secured so far.

On the Romanian side, taking into account the likely increase of the traffic between Romania and Serbia & Montenegro, it is necessary to provide better conditions for transit traffic.

The actual situation of the road infrastructures requires an important financial effort from the Romanian authorities.

The proposed project is the “rehabilitation of National Road NR 59, from km 36+500 to km 63+428 between Voiteg and the border crossing point with Serbia & at Stamora Moravita”.

The average daily traffic in 2000 was:
- for the sector km 36+150 – km43+500 Voiteg – Deta 3.096 vehicles;
- for the sector km 43+500 – km 60+000 Deta junction with NR 57 1.627 vehicles;
- for the sector km 60+000 – km 63+428 junction with NR57 and cross border with Serbia & Montenegro 589 vehicles

The total budget foreseen for this component is 4.95 M€, out of which 3.71 M€ Phare funds. The amount of 1.24 M€ will be provided by the Ministry of Transport, Constructions and Tourism through the National Administration of Roads.

3.2 Linked activities

There are no consistent linked activities at the moment. A common structure will have to be set-up for border crossing aspects, mainly road and railway services, customs and border police facilities. Following the implementation of this project, the border crossing formalities between Romania and Serbia & Montenegro will be reviewed, harmonised and streamlined in order to reduce the waiting time at the border.

3.3 Results

• Access road to Moravita cross-border checkpoint rehabilitated in compliance with EU standards.

3.4 Activities

Component 1: Project preparation

Preparation of the necessary technical plans and tender documents for the work contracts will be financed through this component. Corresponding expenses (0,300 M€) will be fully covered by the National Administration of Roads.
Component 2 – Road building and construction

It is foreseen that the national road NR 59, from km 36+500 to km 63+428 between Voiteg and the border crossing with Serbia & Montenegro at Moravita will be rehabilitated and widened with the following specifications:
- 9.00m roadway;
- 7.00m carriageway;
- 2 lanes of 3.5 m width each with separation of the two carriageways;
- 2 x 1.00m shoulders of which: 2 x 0.50m emergency stopping lines, 2 x 0.50m earth shoulders
- wearing course 4 cm
- bituminous treatment 7 cm

The financed activities will also comprise the arrangement of the junctions, sign posting, accordingly with Romanian and European standards.

Rehabilitation will be carried out, as much as possible, on the existing route.

Sizing of the new road structures or reinforcing of the existing ones will be done for a vehicle of 11.5t axle load (in compliance with EU standards) with a view to open the road and the Moravita border crossing to international heavy traffic.

The budget foreseen for this component is €4.35M out of which Phare funds will amount to €3.41M.

Component 3 – Supervision of works

A supervision of works for the above mentioned contract will be provided by a specialised company selected in accordance with the "Practical Guide to contract procedures financed from the general Budget of the European Communities in the context of external actions" rules.

The budget foreseen for this component is 0.30 M €, to be covered by Phare funds.

3.5 Lessons learned

The deadline for execution of contracts has been extended to take into account contingencies that are likely to occur during the works period as it has happened for similar projects in the past (weather conditions, etc.)

A working group for streamlining Cross border procedures will be established so that benefits of improved accessibility to the border point will not be counterbalanced by administrative burdens at the border crossing points.

As the EMS Evaluation Report no R/RO/CBC/03037 issued in July 2003 revealed some administrative and financial aspects of co-operation between local beneficiaries and the centre there were taken corrective measures as follows:
- As concerns the lack of expertise at the local level, and the lack of co-ordination and guidance from the centre the CA has closely collaborated with the local beneficiaries, technical designer and authorities, in order to improve the quality of the technical documents, including technical projects, general estimates, implementation time schedule, etc.
- Regarding the delays caused by the preparation of the detailed technical projects only after the programmes are selected, the Contracting Authority, at the time of preparation of the Project Fiches, asked the beneficiaries to get all the necessary documents as a pre-condition of the project approval: feasibility studies, impact assessments studies, and any other related documents.
- The technical project should be better developed by the local beneficiary who is familiar with the local conditions, rules and regulations regarding constructions.
- The CA asked the beneficiaries to provide in due time all the legal building permits.
- Regarding the financial aspects, taking into account the previous experience, in order to ensure a clearly stated co-financing provided through the local county budgets, there were taken the following measures:
  - a letter of commitment was asked, compulsory accompanied by the decision of the relevant institution: county council, local council, ministries etc.
- opening a separate bank account by the beneficiaries for each and every project in part, no matter the co-financing is parallel or joint.
- submission of a monthly Technical Progress Report including the status of co-financing (parallel or joint

4. Institutional framework

The Beneficiary of this project will be the National Administration of Roads. The National Administration of Roads will co-finance this project with the funds necessary to fulfill the activities. The National Administration of Roads commits to cover all operational and administrative costs for the overall implementation of this project and to ensure its timely implementation. It will also cover all maintenance costs after completion of the project ensuring its sustainability.

The Road is public property and belongs to the Ministry of Transport, Construction and Tourism – National Administration of Roads.

The regulatory framework for the border crossing is settled through several documents including:
- Agreement between Romanian and Serbia & Montenegro Ministries of Transport regarding Moravita and Vrsac border crossing point.
- Law no. 103 for Romania adhesion to international Convention on cross border goods controls harmonisation, signed in Geneva on October 21\textsuperscript{st} 1982.

Contracting Authority: Ministry for European Integration – CBC Directorate

5. Detailed Budget (in M€)

<table>
<thead>
<tr>
<th>Components</th>
<th>Phare Support (M€)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Investment Support (I)</td>
</tr>
<tr>
<td>1. Project preparation</td>
<td>0</td>
</tr>
<tr>
<td>2. Road building and construction</td>
<td>3.41</td>
</tr>
<tr>
<td>3. Supervision of works</td>
<td>0</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>3.41</strong></td>
</tr>
</tbody>
</table>

6. Implementation Arrangements

6.1 Implementing Agency

The Implementing Agency will be the Ministry of European Integration, through its Cross Border Cooperation Directorate, which will retain overall responsibility for the implementation of the programme, including: approval of tender documents, evaluation criteria, evaluation of offers, signature of contracts, authorisation of invoices. The Payments Directorate within the same ministry will make the payments of invoices.

The CBC Directorate will support the beneficiaries in their activities with regard to the preparation of tender dossiers and related documents.

The beneficiary is the National Administration of Roads.

6.2 Twinning arrangements

NA
6.3 Non-standard aspects

There are no non-standard contracts or tender procedures envisaged within this project. "Practical Guide to contract procedures financed from the general Budget of the European Communities in the context of external actions" will be strictly followed.

6.4 Contracts

In order to achieve the purpose of the project, two contracts are foreseen for activities co-financed by Phare:
Component 2: one works contract for 4.35 M€ (Phare €3.41M) following an open tender procedure (Phare rules).  
Component 3: one service contract following a tender procedure (Phare rules).

7. Implementation schedule

Due to the time needed to implement works project and in particular the defect liability period, a 3-year disbursement period will be necessary.

<table>
<thead>
<tr>
<th>Start of tendering</th>
<th>Start of project activity</th>
<th>Project completion</th>
</tr>
</thead>
<tbody>
<tr>
<td>June 2004</td>
<td>January 2005</td>
<td>March 2007</td>
</tr>
</tbody>
</table>

8. Equal opportunity

Equal opportunity for men and women to participate in all the components of the project will be ensured.

9. Environment

All legal framework related to environmental aspects have to be accomplished and all legal endorsements and approvals have to be obtained before launching the tender for works component including completion of land arrangement aspects.

10. Rates of return

Economic internal rate of return is 20%

11. Investment criteria

11.1. Catalytic effect

Without Phare assistance, the project would have never taken place due to a lack of funds.

11.2. Co-financing:

The project is co-financed by the National Road Administration, which will provide 1.24 M€, representing 25% from the total cost of the project.

11.3. Additionality:

No other financing sources from the private sector or from IFIs were available for financing this project.

11.4. Project readiness and Size:
The Regional Directorate for Roads and Bridges Timisoara made the Feasibility Study for Rehabilitation of National Road NR 59, the sector between km 36+500 – km 63+428 at Voiteg and the border crossing point with Serbia & Montenegro at Moravita”.

The Regional Directorate for Roads and Bridges – Technical Economical Committee has approved the Feasibility Study for the above project

The technical design is foreseen under component 1. The project can start according to the implementation chart.

11.5. Sustainability:

The owner of the road is National Administration of Roads. The project’s main beneficiary will be the National Administration of Roads, which will support from its own sources the maintenance costs for the road.

11.6. Compliance with state aids provisions

The project respects the state aids provisions.

12. Conditionality and sequencing

- The National Administration of Roads will provide the co-financing to the project from the Government of Romania funds allocated through the Ministry of Public Works, Transport and Housing.
- The National Administration of Roads undertakes to finance any additional costs, which may arise in order to ensure timely completion and implementation of this project.
- All legal framework related to environmental aspects have to be accomplished and all legal endorsements and approvals have to be obtained before launching the tender for works component, including completion of land arrangement aspects.
- The joint working group for improving customs and border police procedures (please refer to 3.2 Linked activities) will have to be established and will have approved a working schedule before the contracting of the works component.

ANNEXES TO PROJECT FICHE

1. Logical framework matrix
2. Detailed implementation chart
3. Contracting and disbursement schedule by quarter
4. Reference to the required feasibility and pre-feasibility studies for investment projects
### ANNEX 1 – LOGFRAME PLANNING MATRIX

**Rehabilitation of National Road NR 59**

<table>
<thead>
<tr>
<th>Overall objective</th>
<th>Indicators of achievement</th>
<th>Sources of information</th>
</tr>
</thead>
</table>
| • To develop the economy of the border regions by enhancing the trade and the economic cooperation.  
• To motivate the creation and development of corresponding transport links on both sides of the Serbia & Montenegro/Romania Border.  
• To promote good neighborliness and promote co-operation between Romania and Serbia & Montenegro. | • 3% decrease of unemployed from Moravita area;  
• Improved accessibility in the border region | • Official journals  
• Trade and Transport Statistics |

<table>
<thead>
<tr>
<th>Contracting period expires:</th>
<th>Disbursement period expires:</th>
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</thead>
<tbody>
<tr>
<td>30 November 2005</td>
<td>30 November 2007</td>
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</table>

<table>
<thead>
<tr>
<th>Total budget:</th>
<th>PHARE contribution:</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>4.95 M€</strong></td>
<td><strong>3.71 M€</strong></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Project purpose</th>
<th>Indicators of achievements</th>
<th>Sources of information</th>
<th>Assumptions</th>
</tr>
</thead>
</table>
| To improve the access to the cross border check point at Moravita by rehabilitating the road on the Romanian side, including some corrections of curves and of longitudinal profile | • Increase traffic between the two countries at the border crossing:  
NR 59, from km 36+500 to km 63+428 between Voiteg and the border cross with Serbia & Montenegro at Moravita  
Daily traffic in 2000 was:  
- for the sector km 36+150 – km43+500 Voiteg – Deta, 3.096;  
- for the sector km 43+500 – km 60+000 Deta junction with NR 57, 1.627;  
- for the sector km 60+000 – km 63+428 junction with NR57 and cross border with Serbia & Montenegro, 589 | • Trade, social and cultural statistics  
• Official Journal  
• Published accounts | • long term promotion of the project and its sustainability;  
• a strong commitment of the Romanian authorities and good collaboration between the Romanian and Serbia & Montenegro institutions Serbian & Montenegro |

<table>
<thead>
<tr>
<th>Results</th>
<th>Indicators of Achievements</th>
<th>Sources of information</th>
<th>Assumptions</th>
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</table>
1. Access road to Moravita cross-border checkpoint rehabilitated in compliance with EU standards.

- Rehabilitation of the road in a total length of 27 km

- Site visit
- Supervision
- Evaluation Report

- Tender documentation properly prepared by the Romanian authorities
- Timely implementation of the time schedule

<table>
<thead>
<tr>
<th>Activities</th>
<th>Means</th>
<th>Assumptions</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.1, Project preparation consisting in:</td>
<td>- Corresponding expenses 0.300M€ covered by National Administration of Roads.</td>
<td>• Good quality of works;</td>
</tr>
<tr>
<td>- technical plans and Tender documents for the work contracts</td>
<td>- Rehabilitation will be carried out as much as possible, on the existing route</td>
<td>• Experience of consultants</td>
</tr>
<tr>
<td>1.2 Road building and construction</td>
<td>- The budget foreseen is 4.35 M€, out of which Phare funds will amount to 3.41M EUR</td>
<td></td>
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<tr>
<td>1.3 Supervision</td>
<td>- Supervision of works contract provided by a specialised company</td>
<td></td>
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<tr>
<td></td>
<td>- The budget foreseen for this component is 0.30 M€, to be covered by Phare funds.</td>
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<tr>
<td></td>
<td>- Works Contract – Contract with a specialised construction company</td>
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</tbody>
</table>
Annex 2 – Detailed implementation chart

### Rehabilitation of National Road NR 59

<table>
<thead>
<tr>
<th>Components</th>
<th>2003</th>
<th>2004</th>
<th>2005</th>
<th>2006</th>
<th>2007</th>
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<td>2. Construction Works</td>
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<td>3. Supervision of works</td>
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**Legend:**
- **D** = Design/Tender preparation
- **C** = Contracting
- **I** = Implementation/works
- **R** = Review/Defect Liability Period
Annex 3 – Contracting and disbursement schedule by quarter

Rehabilitation of National Road NR 59

<table>
<thead>
<tr>
<th>Components</th>
<th>Cumulative contracting schedule by quarter in M€ (planned)</th>
<th>Total Phare Allocation</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2003</td>
<td>2004</td>
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<tr>
<td></td>
<td>Q3</td>
<td>Q4</td>
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<tr>
<td>2. Road construction</td>
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<tr>
<td>3. Supervision of works</td>
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</table>

<table>
<thead>
<tr>
<th>Components</th>
<th>Cumulative disbursement schedule by quarter in M€ (planned)</th>
<th>Total Phare Allocation</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2003</td>
<td>2004</td>
</tr>
<tr>
<td></td>
<td>Q3</td>
<td>Q4</td>
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<tr>
<td>2. Road building and constructions</td>
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<td>3. Supervision of works</td>
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<tr>
<td>Total disbursement:</td>
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</tbody>
</table>
Annex 4: reference to feasibility study

D.R.D.P. Timisoara
Design department

Reinforcement DN 59
km 36+500-63+428

SUMMARY OF FEASIBILITY STUDY

CHAPTER 1. GENERAL DATA

1.1. Objective denomination: “Reinforcement of DN km 59 36+500-63+428”
1.2. Main credit coordinator: The Ministry of Transport – N.A.R. Bucharest
1.3. Investor: The Regional Department of Roads and Bridges in Timisoara
1.4. Designer: D.R.D.P. Timisoara – design department
1.5. Designing stage: Feasibility study;
1.6. Location: National Road DN 59 (E70) Timisoara – Moravita between the localities Voiteg and Moravita, as far as the Yugoslavian border

1.7. The necessity and the opportunity of the investment

The national road 59 is part of the European roads category and that is (E70) and it ensures the connection between Timisoara and Moravita and it goes further through the customs Moravita to Yugoslavia.

The bitumen surfacing on this road section was made between 1977 – 1981 – 1992 and it has been maintained with surface dressings, bituminous surfacing, and in 1997 the entire analyzed section was cold recycled IN SITU using the WIRTGEN technology, followed by surface dressings.

In 1997 the rehabilitation works on the section km 6+400 – 36+500 were finished. They had substantially improved the road surface, increased the bearing capacity and the road safety through the road marking and traffic signing, parking arrangement, parapet assembly, etc.

In order to bring the rest of the road section (km 36+500 – 63+428) to the rehabilitated section parameters it is required that the section be strengthened by increasing the bearing capacity and road safety works.

These work are also to be done due to technical characteristics that are no longer in accordance with the technical in force norms as follows:
- the road exploitation period is overdue so that the maintenance works are very expensive;
- the technical state is inadequate: swelling, corrugations, crazing, cracks, etc.
- the roadway has an inadequate evenness;
- on some isolated sections water drainage is deficient.

The analyzed road section is 7.00 m wide, with or without reinforced strips.

The analyzed alignment is divided in three characteristic sections considering the traffic, as follows:
- section A, between km 36+150 – 43+500 (Voiteg-Deta);
- section B, between km 43+500 – 60+000 (Deta - crossroads with DN 57);
- section C, Between km 60+000 – 63+428 (crossroads with DN 57 and Yugoslavian border).
The actual annual daily average traffic (in 2003), established according to the traffic census taken in 2000, is situated between 3,096, 1,627 respectively 589 physical vehicles (except for bicycles, motorcycles and trailers), the anticipated traffic for 2018 is between 5,703; 2,991 respectively 1,085 physical vehicles. The increased traffic values are those on section A, between Voiteg and Deta. These traffic values justify the reinforcement of the national road, the actual technical state of the road requires that these works be done between 2003 – 2004.

Although the traffic is lighter further on the section (Deta – Moravita), it is anticipated that it will become heavier due to economic relations extension with Yugoslavia; modernization of customs in the perspective of European Union integration.

By reinforcement works the costs that are paid every year for maintenance and repairs will be reduced, the average traffic speed will grow, thus reducing fuel consumption, transport cost and time.

1.8. Functional and technological description

1.8.1. The national road has two traffic strips, the roadway is 7.00 m wide and the roadbed measures 9.0….10.0 m;

Through reinforcement it is foreseen the making of a 7.00 m wide roadway, having 0.50 m wide strips. The shoulders will each be 1.00 m wide, so that the roadbed will be 9.0 m wide.

The suggested works have been divided into more objects as follows:
- object no. 1. Reinforcement NR 59 km 36+500 – 40+800;
- object no. 2. Reinforcement NR 59 km 40+800 – 46+480;
- object no. 3. Reinforcement NR 59 km 46+480 – 62+750;
- object no. 4. Customs check point Moravita;
- object no. 5. Crossroads arrangement DN 59 km 36+371 with DN 58B km 67+214 in Voiteg;
- object no. 6. Weighbridge arrangement in Moravita customs check point on the way out to Yugoslavia;
- object no. 7. Passage arrangement at railway level (performance solutions).

The total length of the analyzed section is of 26.250 km (a length corresponding to objects no. 1; 2 and 3) and the area amounts to 13,500m² which includes the Moravita customs check point (object no. 4)

1.8.2. The reinforcement works mainly consisted of the following:
- digging and removal of the inadequate traffic system from the areas where swellings and ruts occurred due to the lack of bearing capacity and remaking of the foundation in damaged areas;
- enlargement of foundation in order to make the reinforced strips of 0.50m wide;
- removal of inadequate asphalt pavement through milling;
- reinforcement of the existent traffic system by making more bitumen layers;
- IN SITU recycling of the existent bitumen layers on a approximately 7.00 cm and spread of the milled material over the entire width of the roadway, including over the reinforced strips, which now have an adequate traffic structure;
- repair of the rain water headers (ditches and existent drainage channels);
- replacement of inadequate culverts from a technical point of view and their enlargement;
- arrangement of crossroads with the national road 59 B at km 43+510 in Deta and NR 57 km 60+000 to Oravita, in Moravita;
- arrangement of crossroads with rural roads;
- arrangement of service roads on a length of 50 m and access to households;
- arrangement of refuges for public transport stations;
- making of road markings;
- detachment and replacement of parapets;
- supplementing the traffic signs;

As a result of the uneven passage over Timisoara – Resita railway, it is necessary to rearrange the crossroads with DN 58 B Resita – Voiteg, a main national road with a continuously increasing traffic both during summer (development of trade, a productive agricultural area, etc.) and in winter, considering that DN 58 B ensures the connection between Timisoara and the Semenic Mountain (resort area). It is worth mentioning that the present crossroads has some inconveniences (lack of visibility at the way out of DN 58 B, lack of left turning strip on DN 59 – E 70). All these deficiencies have been removed, and the documentation is approved by N.A.R. – S.C.A. Bucharest no. 92/3.797/1998 and M.H.A. – G.I.P. Bucharest no. 155.393/13.05.1998.

The realization of this crossroads depends on the completion of works in the superior passage. Also, within this work, a supplementary strip has been considered, on which the weighbridge will be located, on the way out of the country at the customs check point in Moravita. This work affects electrical wiring that need to be moved; of which the beneficiaries have been informed.

Another object is the arrangement of passages at the railway level at km 41+030 and km 46+200 with performance elements, considering that even if in the future there will be an avoidance alternative for the town Deta (avoiding these two passages), still the locals are either going to Timisoara, or to Resita they would be forced to pass through these two passages that are badly kept and have increased swellings.

Every designed work is made right-of-way the existent road, therefore there is no need for expropriation, bringing out of the agricultural circuit, fence demolishing or moving. On the sections where the foundation is to be enlarged (in order to make the reinforced strips), the roadbed modification will also be made on the existent right-of-way, without affecting the nearby grounds, possibly cutting off the plantation, which is anyway withered.

CHAPTER 2. TECHNICAL DATA OF INVESTMENT

2.1. The area and juridical nature of the ground that is to be occupied by the objective.

The occupied area measures approximately 250,000 m², of which 197,250 m² is roadway area.

The occupied area is entirely right-of-way, therefore there is no need for expropriation, bringing out of the agricultural or forest circuit, fence demolishing or moving, demolishing of buildings or other types of construction.

2.2. Geophysical characteristics of the location ground.

The ground in the location area has the following bedding:
- vegetable soil and fine alluvium 0.00…0.30 m
- dusty sandy clay 0.30…2.00 m

The ground has the general stability ensured and a normal genesis reinforcement, along the mentioned route.

From a seismic point of view, according to the standard norm P100/92, the location is characterized by the global seismic coefficient $k_s = 0.12$, corresponding to the seismic area E, having a corner period $T_c = 0.7$ sec.

2.3. The main characteristics of the route:

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Technical class of road</td>
<td>III</td>
</tr>
<tr>
<td>Design speed</td>
<td>60...80 km/h</td>
</tr>
<tr>
<td>Width of roadbed</td>
<td>9.00 m</td>
</tr>
<tr>
<td>Width of roadway</td>
<td>7.00 m</td>
</tr>
<tr>
<td>Reinforced strips</td>
<td>2 x 0.50 m</td>
</tr>
</tbody>
</table>
2.4. The constructive structure

On the entire studied length maintenance works were made using bituminous surfacing and previous strengthening (in the last few years these contained bituminous sand), where the bituminous layers were from 12 to 15 cm thick.

The road reinforcement solution is:
- 4.0 cm wearing course made of hydrocarbon concrete type B.A. 16;
- 4.0 cm binder course made of hydrocarbon concrete type B.A.D. 25;
- 6.0 cm base course made of bituminous mixture B.A.D.P.S. 31;
- 7.0 cm IN SITU recycling of the existent bituminous layers.

To execute the form for the strips the framing roadway curb must be removed and the traffic system must be brought out on the width 0.25 m. The adopted traffic system is made of:
- 4.0 cm wearing course made of hydrocarbon concrete type B.A. 16;
- 4.0 cm binder course made of hydrocarbon concrete type B.A.D. 25;
- 6.0 cm base course made of bituminous mixture B.A.D.P.S. 31;
- 20.0 cm ballast foundation stabilized with cement;
- 30.0 cm ballast foundation made in two layers;
- 7.0 cm sand isolating underlayer.

Traffic systems were dimensioned for the future 15 years traffic; also, they were verified from the endurance point of view according to the provisions in “The department technical instructions for dimensioning the yielding and semi-rigid traffic systems” ind. N.A.R. 550/1999. This checking considers the total number of 115 kN standard axles on the entire period of asphalt pavement exploitation.

Also, the rehabilitation project for DN 59 km 6+400 – 36+500 was consulted where the average thickness of the pavement is 10…12 cm.

According to the provisions of national standard 1709/90 and national standard 1709/2-90, the traffic systems were also verified considering their behavior in frosting and defrosting actions.

The shoulders within the object no. 2 (crossing Deva), will be waterproofed on a width of 0.50…3.50 m, some of them becoming a shoulder for emergency use for vehicles that go to the town hall, the town court of law, local stores, etc.

The culverts that have an inadequate technical state will be disabled and replaced with slab culverts of 2.0 m wide. The culverts will be made of precast concrete products.

CHAPTER 3. INSTALLATIONS ADHERENT TO CONSTRUCTION

The designed works will be made in accordance with the limit of the existent right-of-way, without affecting the existing underground and on-the-ground networks, in a current route.

These networks are located out of the right-of-way, and the air lines that cross the national roads are high enough, so they don’t need further raising.

Arranging the crossroads with the DN 59 B to Carpinis, with DN 57 to Oravita, and the supplementary strip for the weighbridge in customs check point in Moravita requires that the air and underground electric and phone networks be settled, as they are located on the edge of the roadway.
CHAPTER 4. THE GENERAL INVESTMENT ESTIMATE

The total value of the investment objective, according to the general enclosed estimate, is 279,499,927 thousand lei, meaning 7,831,000 euro, of which C+M = 274,825,425 thousand lei, meaning 7,695,000 euro, prices established in march 2003.