

## THE PROGRAMME OF CONSTRUCTION AND MAINTENANCE OF PUBLIC ROADS FOR THE PERIOD FROM 2005 THROUGH 2008

The initial basis for the realization of an efficient public road management policy in the Republic of Croatia was created by the adoption of the Transport Development Strategy of Croatia, the Public Road Construction Programme for the 2001 to 2004 period, and the Public Roads Act.

The traffic and technical characteristics of tolled motorways and other tolled facilities, along with the specific features of financial operations, have made necessary the establishment of particular structures for the management of these facilities. Therefore, in addition to continued maintenance of motorway sections and structures and further construction, increased efforts will have to be made in the forthcoming planning period on the improvement of regular maintenance organisation and automated toll collection systems, and in providing better service on the motorways.

### Organisational structure of road management

The Government of the Republic of Croatia has entrusted public road management to the following legal entities:

- Hrvatske ceste d.o.o (HC) - for management

of the public road network, coordination of county and local roads, and design development for motorways in the stages prior to the issue of outline planning permission;

- Hrvatske autoceste d.o.o. (HAC) - for management of the tolled motorways network and other tolled engineering structures;
- Concession Companies - for construction and management of motorways and structures: Autocesta Rijeka - Zagreb d.d. (ARZ), Autocesta Zagreb - Macelj d.o.o. (AZM), BINA ISTRA d.d. (BI),
- County Roads Administration (ŽUC) - for management of county and local roads.

### The construction of motorways

The construction of motorways is of strategic significance for the Republic of Croatia because such roads will tend to foster the overall development of the country and its regions, the

development of priority sectors (tourism, agriculture, and the transport industry), standardised regional development, with special emphasis on the underdeveloped parts of Croatia (mountainous regions, under-populated areas), increased employment and positive effects on demographic development, connecting Croatia with the European transport system and reinforcing Croatia's transit role (connection of Adriatic harbours with the transport gateways of Croatia and Europe), elimination of bottlenecks in road network, improved flow of people and goods, road safety, riding comfort and travel time savings, increased mobility of people, improved transport connections between the Croatian regions (Rijeka-Žuta Lokva, Split-Ploče-Dubrovnik, Zagreb-Sisak, Zagreb-Goričan, Beli Manastir-Osijek-Svilaj), as well as their connection with Europe, and the revitalisation of seaports and river ports.



**Hrvatske autoceste d.o.o.**

In the 2005 to 2008 period, works are planned as follows:

Number	Type of works	Overall planned works	Year			
			2005.	2006.	2007.	2008.
0	1	2	3	4	5	6
1.	CONSTRUCTION PROGRAMME	11.228.820	3.365.586	3.112.591	2.448.531	2.302.112
2.	HEAVY MAINTENANCE PROGRAMME	795.011	445.261	156.000	96.400	97.350
3.	OPERATION AND MAINTENANCE PROGRAMME	1.991.218	487.861	490.697	507.880	504.780
	TOTAL 1 - 3	14.015.049	4.298.708	3.759.288	3.052.811	2.904.242

In the above period, 257 kilometres of highways as part of the HAC programme will be opened for traffic. Of the 257 kilometres, 48 kilometres are under construction with a deadline for opening for traffic in 2005, while the remaining 209 kilometres will be commenced and completed

within the four-year period. As of the end of 2004, Hrvatske autoceste maintains 666 kilometres of highways. By the end of the new programme period, it is planned to have a total of 925 kilometres of motorways under the Regular Maintenance Plan. Pursuant to Article 24 of the

Public Roads Act, Hrvatske autoceste d.o.o. is entitled to perform direct regular maintenance works on tolled motorways and tolled structures. Separate maintenance companies may also be established to carry out these works.

**BINA ISTRA d.d.**

The Concession Agreement provides for motorway construction in two phases. The semi-motorway (single carriageway motorway) constructed in the first phase will be finalised in the second phase. Since the time that the Conces-

sion was granted, 92 kilometres of semi-motorway have been put into operation. By May 2005, it is planned to open to traffic approximately 42 kilometres of semi-motorway on the western branch, that is, the Medaki - Višnjani - Nova Vas

- Buje - Umag sections, while the remaining 13 km on the Vodnjan - Pula section will be opened in April 2006.

Number	Type of works	Total planned works	Year			
			2005.	2006.	2007.	2008.
0	1	2	3	4	5	6
1.	CONSTRUCTION PROGRAMME	528.463	491.827	36.636	0	0
2.	HEAVY MAINTENANCE PROGRAMME	44.113	14.683	9.180	8.220	12.030
3.	OPERATION AND MAINTENANCE PROGRAMME	120.599	28.272	29.870	30.767	31.690
	TOTAL 1 - 3	693.175	534.782	75.686	38.987	43.720

**Autocesta Rijeka - Zagreb d.d.**

The total length of the motorway from Zagreb to Rijeka is 146.5 kilometres, of which 90.93 is two-lane dual carriageway. The remaining 55.57 kilometres have been constructed as a semi-motorway with an additional lane for slow vehicles on steep grades. The Government of the Republic Croatia

has issued a Decree granting approval to the Concessionaire for commencement of works on Phase II of the Rijeka - Zagreb motorway, from the Bosiljevo Interchange to the Stara Sušica Viaduct. In the continuation of the construction, the emphasis will be on construction of the remaining

sections, the "Tuhobić" Tunnel, the longest structure in the second construction phase of the Project. The completion of the tunnel will also mark the completion of the Project, that is, the two-lane dual carriageway from Zagreb to Rijeka.

Number	Type of works	Total planned works	Year			
			2005.	2006.	2007.	2008.
0	1	2	3	4	5	6
1.	CONSTRUCTION PROGRAMME	382.550	176.000	103.275	103.275	0
2.	HEAVY MAINTENANCE PROGRAMME	137.600	29.700	32.600	35.800	39.500
3.	OPERATION AND MAINTENANCE PROGRAMME	547.350	135.300	136.000	137.050	139.000

**Zagreb - Macelj d.o.o.**

According to the Concession Agreement the Concessionaire is obliged to construct the section from Krapina to Macelj (18.6 kilometres) and the second lane on the motorway from Jankomir to Zaprešić (7.4 kilometres). The con-

struction of 1.4 km from Velika Ves to Krapina is planned for 2005, as well as the continuation of the construction of the second lane on the Jankomir - Zaprešić section, with the completion date in 2006.

The Zagreb - Macelj motorway will be fully completed in 2007, with the construction of the 17.2 km Krapina - Macelj section.

Number	Type of works	Total planned works	Year			
			2005.	2006.	2007.	2008.
0	1	2	3	4	5	6
1.	CONSTRUCTION PROGRAMME	1.798.600	765.000	775.200	258.400	0
2.	HEAVY MAINTENANCE PROGRAMME	30.300	7.500	7.600	7.600	7.600
3.	OPERATION AND MAINTENANCE	144.810	26.250	26.600	47.120	44.840
	TOTAL 1 - 3	1.973.710	798.750	809.400	313.120	52.440

Number	Investment description	Public Road Management Legal Entity				TOTAL 2005.-2008.
		HAC	HC	ŽUC	Concession Companies	
0	1	2	3	4	5	6 (2+3+4+5)
1.	CONSTRUCTION OF PUBLIC ROADS	11.228,82	4.600,00	918,00	2.709,61	19.456,43
1.1.	MAINTENANCE OF PUBLIC ROADS	2.786,23	4.460,00	2.532,00	1.024,77	10.803,00
1.2.	TOTAL 1. - 2.	14.015,05	9.060,00	3.450,00	3.734,38	30.259,49

### Conclusion

Over the last three years, the current public road management system, through legal entities registered as companies, which operate in accordance with the Commercial Companies Act, has proved to be very efficient in view of the results achieved.

In addition to the basic activity of management and maintenance of national roads, Hrvatske ceste d.o.o. will take further control of the coordinative role in the field of planning

and preparation of studies and designs for motorway construction, as well as in co-ordination of county and local road development.

Hrvatske ceste d.o.o. will install and operate a uniform database on public roads in the Republic of Croatia. In this way, data on public roads will be consolidated in one place, and the technical and technological uniformity of the public road network will be ensured, with the possibility of obtaining data from a single source.

The Ministry of the Sea, Tourism, Transport and Development will, at the end of each year, analyse the realisation of the planned programmes of maintenance of county and local roads, as well as the adequacy of the funds for these purposes, and will, on the basis of the results, adjust the amount payable for the vehicle registration fee.

## CONSTRUCTION CONTRACT FOR THE SPLIT - PLOČE SECTION SIGNED

The construction contract for the Split - Ploče section was signed with selected contractors in Split this March. The value of the works is 4,996 billions kuna not including VAT and completion is expected at the end of 2008, when the total length of constructed sections of the Zagreb - Split - Dubrovnik motorway will be 475 kilometres.

On March 21, 2005 Hrvatske autoceste motorway company signed in Split the construction contracts for the Split-Ploče section on the Zagreb-Split-Dubrovnik motorway. The contract with the selected contractors was signed in Split on March 21, 2005. Present at the signing were Prime Minister Ivo Šanader, ministers Božidar Kalmeta and Ivan Šuker, as well as Minister Marina Matulović-Dropulić.

The conclusion of the motorway works from Split to Ploče is anticipated for the end of



2008, and when they are completed, the total length of the constructed part of the Zagreb-Dubrovnik motorway will come to 475 km. In this sector of the motorway, six interchanges

will be built, with seven service area facilities, two maintenance and traffic control centres, eight viaducts, nine tunnels and a bridge over the Cetina.

### THREE CONSTRUCTION CONTRACTS, FOR THREE OF THE SUB-SECTORS, WERE SIGNED:

**1. A construction contract for the construction of the DUGOPOLJE-PLOČE motorway, to wit, for the DUGOPOLJE-BISKO and BISKO-ŠESTANOVAC sections:**

The best tender, in the total amount of 1,587,072,617.72 kuna plus VAT with a completion date of June 30, 2007, was from the qualified and eligible tenderer:

the consortium:  
KONSTRUKTOR INŽENJERING d.d. Split  
- leading partner  
VIADUKT d.d. Zagreb  
HIDROELEKTRA NISKOGRADNJA d.d. Zagreb  
CESTA VARAŽDIN d.d. Varaždin  
ZAGORJE TEHNOBETON d.d. Varaždin  
STRABAG d.o.o. Zagreb  
OSIJEK-KOTEKS d.d. Osijek  
INGRA d.d. Zagreb

**2. A construction contract for the construction of the DUGOPOLJE-PLOČE motorway, to wit, for the ŠESTANOVAC-ZAGVOZD and ZAGVOZD-RAVČA sections:**

The best tender, in the total amount of 1,660,216,388.52 kuna plus VAT, with a completion date of December 30, 2008, was from the qualified and eligible tenderer:

the consortium:  
VIADUKT d.d. Zagreb - leading partner  
KONSTRUKTOR INŽENJERING d.d. Split  
HIDROELEKTRA NISKOGRADNJA d.d. Zagreb  
CESTA VARAŽDIN d.d. Varaždin  
ZAGORJE TEHNOBETON d.d. Varaždin  
STRABAG d.o.o. Zagreb  
OSIJEK-KOTEKS d.d. Osijek  
INGRA d.d. Zagreb

**3. A construction contract for the construction of the DUGOPOLJE-PLOČE motorway, to wit, for the RAVČA-PLOČE and RAVČA-PLOČE 1 sections:**

The best tender in the total amount of 1,749,170,277.19 kuna plus VAT with a completion date of December 30 2008, was from the qualified and eligible tenderer:

the consortium:  
HIDROELEKTRA NISKOGRADNJA d.d. Zagreb  
- leading partner  
VIADUKT d.d. Zagreb - leading partner  
KONSTRUKTOR INŽENJERING d.d. Split  
CESTA VARAŽDIN d.d. Varaždin  
ZAGORJE TEHNOBETON d.d. Varaždin  
STRABAG d.o.o. Zagreb  
OSIJEK-KOTEKS d.d. Osijek  
INGRA d.d. Zagreb

## CROATIAN NATIONAL REPORT FOR 2004

Motorways in the Republic of Croatia are managed by four companies: Hrvatske autoceste d.o.o., which manages all tolled motorways, and three concession companies BINA- ISTR A d.d. Pula (manages the Istrian Epsilon), Autocesta Rijeka- Zagreb d.d. and Autocesta Zagreb - Macelj d.o.o.

### Network

The total length of the motorway and expressway network of Croatia at the end of the year 2004 is 928.8 km, 89.4 km of which are not tolled (Rijeka and Zagreb bypasses). In 2004 several new sections in Croatia were opened to traffic of a total length of 193.5 km.

	Company	2003 total km	2004 total km	2004 tolled	2004 not tolled
1.	Hrvatske autoceste d.o.o. (HAC)	509,2	652,7	570,7	82
2.	Autocesta Rijeka-Zagreb d.d. (ARZ)	132,6	146,5	146,5	-
3.	BINA-ISTR A d.d.	88,6	88,6	88,6	-
4.	Autocesta Zagreb-Macelj d.o.o. (AZM)	-	41	33,6	7,4
<b>TOTAL</b>		<b>730,4</b>	<b>928,8</b>	<b>839,4</b>	<b>89,4</b>

### Sections under construction

In 2005 a total of 50.06 kilometres of new motorways and 41.7 kilometres of semi-motorways will be opened for traffic, as follows:

- Bosiljevo - Split motorway, total 39.16 km [tunnel Mala Kapela (5.76 km), Krka bridge on Skradin - Šibenik section (0.4 km), Pirovac Skradin section (10 km), Skradin - Šibenik section (9 km), Šibenik - Vrpolje section (14 km)]
- Rupa - Rijeka motorway, total 9.5 km [Jurđani-Permani section (4,5 km), Permani-Rupa section (5 km)]

- Istrian Epsilon semi-motorway, total 41.7 km [Umag - Medaki section (41,7 km) including reconstruction of 6 kilometres]
- Zagreb-Macelj motorway, 1.4 km [Velka Ves junction Krapina section (1,4 km)]

In 2005, in addition to the works started in the previous year, construction will start on 131.2 km of new motorway and 12.9 km of semi-motorway as follows:

- Split- Dubrovnik motorway (further 96.7 km under construction) [Dugopolje - Šestanovac

section (37 km), Šestanovac - Ploče section (59.7 km)]

- Beli Manastri - Osijek - Svilaj motorway - VC corridor (23 km) [Đakovo-Sredanci section (23 km)]

- Istrian Epsilon (12.9 km) [Vodnjan-Pula section (12,9 km)]

- Zagreb-Rijeka motorway (construction of existing sections to full profile of 11.5 km) [Vrbovsko-Bosiljevo section (8 km), Kupljak-Vrbovsko section (3.5 km)]

### Investments and financing

Investment in the construction of new motorways in 2004 amounted to a total of 5,538.09 billion kuna (EUR 784.43 million) and investment in existing sections totaled 529.95 mil-

lion kuna (EUR 69.73 million). The construction of highways in 2004 was for the most part financed from loans and revenues from tolls. Hrvatske autoceste d.o.o. is also financing

motorway construction with revenues from the fuel tax (0.60 kuna per liter).

(1 EUR = 7,6 kuna)

Company	Investments in 2004. in billions of kuna (EUR mill.)		Plan for 2005. in billions of kuna (EUR mill.)	
	In new sections	In existing sections	In new sections	In existing sections
HAC	4.609,08 (606,45)	266,39 (35,05)	3.092,74 (406,93)	718,11 (94,48)
ARZ	329,05 (43,29)	248,00 (32,63)	89,68 (11,8)	18,905 (2,49)
BINA ISTR A	403,42 (53,08)	15,56 (2,04)	379,24 (49,9)	14,8 (1,96)
AZM	196,54 (25,86)	-	1.084,82 (142,74)	-
<b>TOTAL</b>	<b>5.538,09 (784,43)</b>	<b>529,95 (69,73)</b>	<b>4.646,48 (611,38)</b>	<b>51,81 (98,92)</b>

### Toll revenues (VAT excluded)

In 2004 total revenues from tolls increased by 27.4 percent over the preceding year, which is

the result of increased traffic, the opening of new motorway sections and minor price rises

on some motorways in Croatia.

Company	2003.		2004.		% (04/03)
	kn	EUR	kn	EUR	
1. HAC	539.929.779	71.043.392	774.591.367	101.919.168	43,4
2. ARZ	235.068.660	30.930.086	297.137.243	39.097.005	26,4
3. BINA-ISTR A	76.198.000	10.026.052	85.551.000	11.256.710	12,3
4. AZM	-	-	61.018.007	8.028.685	-
<b>TOTAL</b>	<b>851.196.439</b>	<b>111.999.530</b>	<b>1.218.297.617</b>	<b>160.301.568</b>	<b>27,4</b>

(EUR 1 = 7.6 kuna)

### Traffic

Compared to the previous year the total traffic volume on motorways in 2004 increased by 10.2 %.

Company	2003.		2004.			
	Light vehicles (Cat. 1 and 2)	Heavy vehicles (Cat. 3 and 4)	Light vehicles (Cat. 1 and 2)	% (04/03)	Heavy vehicles (Cat. 3 and 4)	% (04/03)
HAC	21.683.149	3.196.587	24.647.049	13,7	3.533.203	10,53
ARZ	10.294.661	1.565.562	10.198.543	-0,93*	1.515.674	-3,2*
BINA ISTR A	2.098.943	337.154	2.324.893	10,7	357.217	5,9
AZM	-	-	4.198.445		533.259	
<b>TOTAL</b>	<b>34.076.753</b>	<b>5.099.303</b>	<b>41.368.930</b>	<b>12,2</b>	<b>5.939.353</b>	<b>8,2</b>

Note: On the Rijeka-Zagreb motorway, up until the introduction of a completely closed system for toll collection in 2004, traffic was counted at several entrances and exits, and vehicles that today exit at Bosiljevo 2 were counted at Vukova Gorica. When the HAC section was opened last year, this practice was discontinued, hence the reduction in traffic and the rise in revenue.

## Safety

2103 traffic accidents occurred in 2004, which 44 mortalities and 315 injuries. In comparison

with the previous year the number of accidents increased by 20.9%; however, this was con-

comitant with a 27.2% rise in the number of kilometers in the motorway network.

Number of traffic accidents:	2003.				2004.				
	HAC	BINAISTRA	ARZ	RH	HAC	BINAISTRA	ARZ	AZM	RH
Involving fatalities	36	1	8	45	28	3	7	1	39
Involving injuries	235	20	57	312	218	20	73	4	315
Involving material damage	982	102	298	1382	1136	99	489	36	1760
<b>Total number of accidents</b>	<b>1253</b>	<b>123</b>	<b>363</b>	<b>1739</b>	<b>1382</b>	<b>122</b>	<b>563</b>	<b>36*</b>	<b>2103</b>
<b>Total number of fatalities in accidents</b>					<b>32</b>	<b>3</b>	<b>8</b>	<b>1</b>	<b>44</b>

\* data refer to the period from 08.08.2004 to 31.12.2004.

## PHASE 2 OF CONSTRUCTION OF THE RIJEKA - ZAGREB MOTORWAY

On the 9<sup>th</sup> of December 2005 the Government of the Republic of Croatia issued a Decree granting approval to the Concessionaire for commencement of works on Phase 2 of the Rijeka-Zagreb motorway project.

The company was authorised to use the remaining unused funds from loans set aside for the construction on Phase 1 of the Rijeka - Zagreb motorway, in the amount of EUR 53 million, for the financing of construction of part of Phase 2 of the Rijeka - Zagreb motorway at the Bosiljevo - Vrbovsko - Kupjak section, from the Bosiljevo 2 inter-regional Interchange to the Stara Sušica Viaduct.

Pursuant this Decree, the Minister of the Sea, Tourism, Transport and Development in his capacity as the representative of the Grantor and the Rijeka - Zagreb Company were entitled jointly to define contractual relations and the dynamics of construction of the entire Phase 2 of the Rijeka - Zagreb motorway project. In order to fulfil such an obligation, in December 2004, the Company signed with the minister concerned an Annex to the Concession Agreement.

Since the funds for the continuation of works of Phase 2 A of the Rijeka-Zagreb motorway had been provided, the company launched several invitations for bids for execution of the works. Two international public calls for tenders for works related to construction of the second tube of the Veliki Gložac Tunnel and the Čardak Tunnel with accompanying sections were completed and construction contracts were signed in Zagreb on March 23, 2005.

Works on the Veliki Gložac Tunnel, which is 1,126 metres long, and the accompanying section will be carried out by the Business Association Viadukt d.d., Zagreb & Hidroelektra niskogradnja d.d., Zagreb. The value of the works is 95,347,779.52 kuna and the deadline for the execution of the works is 24 months after the handover of the building site to the Constructor. The works will be financed with a loan from Zagrebačka banka d.d. (ZABA).

Construction works of the Čardak Tunnel, which is 601 metres long, and the accompanying section of 2.3 kilometres will be carried out by Konstruktor inženjering d.d., Split. The value of the works is 88,898,717.29 kuna and the deadline for the completion of works is 14 months after the handover of the building site to the Constructor. The works will be financed by a loan from a German development bank, Kreditanstalt für Wiederaufbau (KfW).



An international public tender invitation is underway for works of Phase 2 A, i.e. providing dual carriage way on the Vrbovsko - Bosiljevo 2 section (which includes a 4,559 metre-long section and the Osojnik Viaduct, 435 metres long), as well as works on the Zečeve Drage Viaduct (916 metres) and the Severinske Drage Viaduct (726 metres). The works will be financed from a loan of the European Investment Bank (EIB) and the European Bank for Reconstruction and Development (EBRD).

In the meantime, an Audit of the Feasibility Study on construction of the Rijeka - Zagreb motorway, bringing it up to full motorway profile, was drawn up. The conclusion of the review was that the continuation of the construction is fully technically and economically justified: "It is believed that the final phase of construction of the Stara Sušica - Kikovica semi-motorway by bringing it up to the level of full profile is justified and the project should be taken into consideration for possible financing" (BCEOM Study, January 2005).

The results of the Study and the Company's performance were presented to the representatives of the European Investment Bank, who assessed the Project in mid-March. This assessment procedure resulted in the conclusion that Phase 2 B of construction of the motorway is acceptable for EIB financing and will be remitted to the bank's official procedure for approval. The EIB would finance 50 percent of costs of the project and the remaining necessary funds for the financing of Phase 2 B, as well as the best way of using them, will be discussed by the company and agreed upon with financial institutions and representatives of the owners in the coming period.



## THE FOURTH IRF SOUTH EASTERN EUROPE ROAD CONFERENCE

From March 6-9, 2005, the 4<sup>th</sup> IRF Conference was held in Cavtat, hosted by the Government of the Republic of Croatia and organised by the IRF with the support of the Croatian Via-Vita Road Association.

As in previous conferences, essential issues related to road transport and road infrastructure were discussed.

As well as matters of maintenance, safety, financing and developmental benefits, the emphasis at this conference was placed on the issue of PPP - Public-Private Partnership, during which time the experience of Croatia was raised. A special session was also held at which a conclusion concerning support to the continuation of activities aimed at getting the Adria-

tic-Ionian Corridor into the Pan-European Corridors Network was adopted. This involves the foundation of a joint expert team for a conceptual approach, studies and projects along the route from Trieste to Kalamath. It was concluded that the Ministry of the Sea, Tourism, Transport and Development should organise a constituent session of the Adriatic-Ionian Transport Corridor Coordination Committee in Zagreb in May, when the Joint Committee of Experts for the AITC and the A-I Motorway of

seven countries of the A-I Initiative would be verified.

The AITC, and within this the A-I Motorway, from Trieste in the northern Adriatic to Kalamath in the south of the Peloponnese, has a length of some 1500 km, 545 km of which go through Croatia, constituting 36% of the total length.

By summer 2005, Croatia will have 285 km of highway constructed and open to traffic, and has started construction works on a further 96 km.

## NEW KILOMETRES ON THE ZAGREB - BOSILJEVO - SPLIT MOTORWAY

By the end of this June the company Hrvatske autoceste will open the 5.8 kilometre-long Mala Kapela Tunnel on the Zagreb - Bosiljevo - Split motorway for traffic, as well as the 33 kilometre-long Pirovac-Vrpolje section.

### Mala Kapela Tunnel

At the Mala Kapela Tunnel works on the reconstruction of the central drainage system of the right tunnel tube are underway, as are preparations for the start of laying concrete in the portal zones of the left tunnel tube and the equipping of the tunnel. In the first phase of exploitation, from June 2005, only the right tunnel tube will be open, with traffic in both directions, as in the Sveti Rok Tunnel. The left tunnel tube will, in this phase of exploitation, be used as a utility tunnel, for safety operations or the evacuation of passengers in emergency situations. By the time the intensity of traffic has increased, the left tunnel tube will be completed, which will enable separate traffic in both directions.

### Pirovac - Vrpolje

On all three sections, Pirovac-Skradin, Skradin-Šibenik and Šibenik-Vrpolje, asphaltting works are underway and works on the motorway structures are progressing in accordance with the dynamic plan. The largest structure on this section is the bridge across the Krka River, located on the Skradin - Šibenik section. The laying of the final layer of asphalt has already started on the bridge, as well as on the



entire section. Fencing is also under way on this section. On the Rupa - Rijeka highway, the section between Jurdani and Rupa, which is 9.3 kilometres long, is under construction, as is the connection between the motorway and the border crossing, 1.5 kilometres long. On the Jurdani - Permani section, drainage works have been carried out and asphalt works and equipping of the motorway have begun. On the Permani - Rupa section, the construction of the drainage system is underway, and on certain locations of this section asphaltting works have started. Also underway are works on connecting the highway to the border crossing.

## ELECTRONIC SYSTEM OF PAYMENT

Rijeka - Zagreb highway d.d. company in 2004 fully implemented a new electronic system of payment which will be opened for commercial use when the Hrvatske autoceste d.o.o. company creates the technical preconditions for its application on the Zagreb - Split highway.

The Rijeka - Zagreb Highway d.d. company in 2004 fully implemented a new electronic system of toll payment, which, in addition to the standard way of payment with cash, includes the following possibilities: SMART CARDS, CREDIT CARDS AND ELECTRONIC TOLL COLLECTION.

The SMART CARD is a subscription card which provides users with a simpler and quicker way of paying tolls. It is anonymous and is not restricted by the category of vehicle or the time period of use. It enables subscription in various amounts, according to users' wishes and needs. The amount on the card can be extended an unrestricted amount of times and the user sets the amount of subscription on the card.

When paying tolls with the SMART CARD, users are given a ten percent discount. Moreover, when paying with the card, the time of the transaction is reduced significantly in relation to the time it takes to pay with cash. A positive consequence of the use of the SMART CARD is also significantly reduced time at tollbooths, which tends to be very long at busy times. During 2004, the company signed agreements



with card companies and business banks, which makes it possible to use credit cards (Amex, Visa, Diners Club Card, Mastercard and others), as well as debit cards of all banks that are active in the Republic of Croatia. All toll stations on the

Rijeka - Zagreb highway are equipped with POS devices for payment with cards. Authorisation is not necessary with payment by credit card and the transaction lasts about three seconds. The electronic toll payment system makes it possible for users to pay tolls and pass through the toll station with minimum stops (STOP AND GO). At each tollbooth, automatic lines for the electronic payment of tolls have been set up. To use this means of payment, a user must install a special device in the vehicle and have a certain amount of funds in the relevant bank account. When the highway is entered, the electronic system checks the validity of the device and raises the toll barrier. The system is not yet in commercial use, but it will be when the Hrvatske autoceste d.o.o. company creates the technical preconditions for its application on the Zagreb - Split highway.

## BIOU GRANTED ISO 9001:2000 CERTIFICATE

After an audit carried out by Det Norske Veritas in November 2001, the BINA ISTRAN MANAGEMENT AND MAINTENANCE (BIOU) was granted an ISO 9001:2000 certificate for activities in the area of security/maintenance/toll payment on sections of the Istrian Y and road facilities.

In May 2002, March 2003 and November 2003, after periodical audits of the application of management and maintenance procedures, Det Norske Veritas confirmed that the organisation and completion of tasks by BIOU were in line with the requirements of the ISO 9001:2000 standard.

As envisaged by ISO 9001:2000, another audit with the aim of reissuing the certificate was carried out in December 2004. The auditors did not find any elements to throw doubt on the confirmation of the certificate to the BIOU. In line with this, Det Norske Veritas on Wednesday, December 14, 2004, for the second time confirmed that BIOU met the criteria of the ISO 9001:2000 standard.

The excellent results were due to the fine work of all BIOU teams, which, due to improved work organisation, not only received



this certificate, but also maintained quality long-term, taking the best that the standard had to offer. In essence, what is at issue is the constant revision of everyday tasks so as to prevent the establishment of a routine, which can very easily happen, especially when working every day on the same subjects that are constantly repeated, always within the same perimeter.

The management of roads and road facilities means to anticipate through everyday work each element that can be a hindrance to users. The work of employees does not consist only of individual feats, rather of the aggregate of the abilities and human quality which, finally, are able to provide high quality service to the clients of the operating company, to the grantor, the concessionaire and the users of roads and facilities.

## CERTIFICATE ISO 9001:2000 AWARDED TO RIJEKA - ZAGREB HIGHWAY D.D.

The Rijeka - Zagreb Highway d.d. company has won the ISO 9001: 2000 certificate which confirms that the company applies a quality system in the preparation and execution of investment works in the concession area, maintaining highways, toll payments and support processes.

Quality management system in Rijeka - Zagreb highway d.d. The Rijeka - Zagreb Highway d.d. company was established for the purpose, after the completion of a safe, reliable and fast artery between Croatia's capital and its largest harbour, of managing the highway in line with the highest standards and applying principles of good stewardship. The project of introducing a new quality management system, according to demands of the ISO 9001:2000 standard, started with a management decision. An education programme for the Board and the management first line was held, as well as for teams that took part in the drawing up and implementation of the system, with regard to requirements of the standard and the ways of building business processes and the drawing up of documents for the management system. Five managers underwent professional education in quality, as did twenty internal auditors, according to the harmonised scheme of the European Quality Organisation. A new Quality Manual and a Process Book were drafted and adopted. The Manual pro-



vides new foundations and principles from which all documents for the system were yielded. The Process Book describes the main processes of realisation identified. Existing quality documents were incorporated into the system and new ones were drafted (processes, forms, control lists and instructions). Cro Cert, a member of IQNet, the International Quality Network, was selected for certification. A certification audit established that the management system met the requirements of the standard, and that it was appropriately documented. This meant that the company had won its ISO 9001:2000 certificate, certifying that Autocesta Rijeka-Zagreb d.d. applies a quality system in the preparation and execution of capital investment works on the area of the concession, in maintenance of the motorway, in the toll collection and support processes. Cro Cert director Dr Seka Kugler and president of the Croatian Chamber of Economy Nadan Vidošević officially handed the certificate to the board of management chairman, Zoran Klarić, on December 22, 2004.

## THE CURRENT STATE OF WORKS ON THE ZAGREB-MACELJ MOTORWAY

The Zagreb-Macelj Motorway consists of three parts: Section A from Jankomir to Zaprešić, Section B from Zagreb to Krapina and Section C from Krapina to Macelj. Austrian and Slovenian companies are working alongside Croatian companies on the construction, while the Civil Engineering Institute of Croatia is carrying out supervision.

Strabag from Austria and NGR from Slovenia are taking part in the construction, along with a number of renowned Croatian construction firms: Viadukt, Konstruktor, Cesta-Varaždin, Jedinstvo-Krapina, Geotehnika, Crosco, Tehnobeton. Supervision of the construction is being carried out by the Civil Engineering Institute in accordance with the designs produced by IPZ and IGH. The construction is being monitored by independent engineers from Austria's VCE and technical advisors from UK's Atkins. The financing is provided by bank loans and is proceeding without a hitch in accordance with the project's financial plan. The bankruptcy of the chief partner of the German party to the concession contract, Walter-Bau, did not have any effect on the project, since its part was taken over by Strabag in accordance with the joint venture contract.

### Section A: Jankomir-Zaprešić

The second, western carriageway of the highway, 6.4 km long, has been under construction since July 2004, and will be completed and opened for traffic in June 2006. Works on the whole of the section are underway, works on the foundation piling of all structures are completed, as are the piers for a bridge across the Sava and an overpass across the railway line in Zaprešić. The assembly of the pre-stressed girders of the bridge has started, as well as the assembly of the steel parts of the bridge. Works are progressing with only a minimum deceleration of the traffic along the existing part, and are going on in accordance with the dynamic plan.

### Section B: Zaprešić-Krapina

Only the betterment of the standards shall be carried out on this full motorway section that has already been constructed and in service: an SOS system is to

be introduced, dynamic traffic signals and a meteoration. The toll system will be fully closed by the end of 2005, when toll stations will have been constructed in Gubaševo, Začretje and Krapina interchange, which, with the already constructed Zaprešić toll plaza will constitute a closed toll collection system from Zaprešić to Krapina. All the necessary works started at the end of March 2005 and will be completed by December 2005.

### Section C: Krapina-Macelj

This is the most demanding section in terms of execution of construction works. The 26-km-long section will have six tunnels and nine viaducts, the Đurmanec and Trakošćan interchanges and the Maintenance and Traffic Control Centre. Works started in July 2004 and are to be completed by April 2007. Works on the improvement of soil bearing capacity for all the facilities have been completed, and three of the tunnels have been broken through. The construction works of the Maintenance Centre are almost completed. In short, all of the works, in spite of the long and hard winter, are well ahead of dynamic plan.



## OPENING OF THE WESTERN PART OF THE ISTRIAN Y FOR TRAFFIC

In May 2005 the concession company Bina-Istra d.d. will open for traffic the section from the Umag Interchange to the Medaki Interchange; this is a section of 41.7 km, and it will mean that of a total of 143.2 km of the Istrian Y, 130.6 km will be in service.

In 2005 the state company Hrvatske ceste reconstructed and built about 2.0 km of the existing national roads network from Umag Interchange to the border crossings of Plovanija and Kaštel.

### The technical features of the section are as follows:

- Design speed 100 km/hr
- Cross section of the semi-motorway: 2 x 3.5 m plus 2 x 0.5 m, or total of 8 m.
- On slopes of over 7% a third, slow lane has been constructed, and at every 2 km on both sides there is a lay-by of a length of 200 m with an emergency telephone system.

In some places the route passes through water-protected areas. Due to the very demanding requirements for waterproof sewage system along the entire route, these sections are equipped with closed drainage systems, which conduct rainwater via water-resistant collectors to a treatment plants, i.e. to separators and lagoons at the Višnjani interchange and in the Mirna River valley before final outfall in the existing streams or to the surrounding land. Along the entire route there were built 3 separators and 5 lagoons (at Lovreč, Košćan, Višnjani, Mirna valley and Medaki)

### This section has:

- 6 interchanges - Umag, Buje, Nova Vas, Višnjani, Baderna and Medaki -
- 12 overpasses
- 12 underpasses
- 1 bridge - Košćan
- a viaduct over the course of the Mirna River.

### The following works have been carried out during the construction of the Umag - Medaki section:

- 2.4 million cubic metres of excavated material

- 1.6 million cubic metres of material have been used for fill-in
- 200,000 cubic metres of 0/63 mm crush stone has been incorporated into the base course.

The Mirna Viaduct, with a total length of 1,3854.86 m consists of two abutments on rock foundation and 21 concrete piers founded on steel piles driven into marshy soil. Each pier foundation is piled on sixteen steel piles whose maximum individual length is 61.5 m, and the total length of all piles is 14.2 km. The anti-corrosive cathodic protection is provided for all piles.

The reinforced concrete piles have a maximum height of 40 m. They were cast in sliding shuttering method, and the span of the viaduct was done on both sides behind the bank, injected from both sides of the bridge and joined in the centre of the span. The width of this bridge is 10.10 m, and a total of 11,300 cubic metres of concrete, 1,832 t of reinforcing and 2,720 tons of steel for the span construction was built into it.

As the viaduct passes through a water-protected area, the water draining from the viaduct is passed through separators into a drainage channel of an irrigation area below the viaduct.



## VISIT OF ASECAP SECRETARY GENERAL

A year after the association's establishment, the visit of the secretary-general had been agreed upon to examine the possibilities for co-operation and exchange between the HUKA association and ASECAP.

On February 23 and 24, the secretary-general of the European association of tolled motorways (ASECAP), Kallistratos Dionelis, visited the HUKA association where he was received by HUKA president Aleksa Ladavac. A year after the association's establishment, the visit of the secretary-general had been agreed upon to examine the possibilities for co-operation and exchange between the HUKA association and ASECAP. As part of the visit, the secretary-general visited the hotel and congress capacities of the "HISTRIA" Hotel in Pula, which will host the annual ASECAP congress in 2006. After a brief meeting at the association's office, a working lunch was held where the secretary-general had the opportunity to speak with Croatia's assistant minister of the sea, tourism, transport and development, Mate Jurišić and, representatives of companies that are members of HUKA. On this occasion, Jurišić stressed that Croatia had already fulfilled its obligations and completed on its territory the construction of all pan-European traffic routes, adding

that the start of construction of the 5C corridor was planned for 2005. The secretary-general offered the support of the ASECAP office in Brussels, emphasising the importance of Croatia's active participation in the planning of highway policy during negotiations with the European Union as well as its suggestions or observations about traffic projects important to the Republic of Croatia. The secretary-general accepted the initiative by HUKA's president Ladavac that a round-table conference be held in Zagreb in June 2005, at which members of HUKA and interested parties would become acquainted with ASECAP projects: the interoperability of the electronic system of toll payments, safety in tunnels and intelligent transport systems. The secretary-general also briefly visited the Učka tunnel and became acquainted with the management of the tunnel and emergency protocols. Dionelis expressed satisfaction with the visit and stressed that he was impressed by the technology and the expertise of tunnel management.



## PROTECTIVE ARCHAEOLOGICAL RESEARCH ON THE ADRIATIC HIGHWAY IN SPLIT - DALMATIA COUNTY

A total of ten localities ranging from prehistoric and medieval times have been excavated on the Adriatic highway route from Radošić to Dugopolje. The "thirty kilometres of archaeology" illuminates the life of the Dalmatian hinterland. This is a unique opportunity to survey 5,500 years of continued life in the Dalmatian hinterland, from the early Stone Age to the late medieval age, in a period of 4,800 B.C. to approximately AD 1700.

Protective archaeological research on the Adriatic highway route in Split - Dalmatia County started in 1998, when a study was drawn up on the impact of the highway on the cultural heritage. From 2001 through 2003, three excavations were carried out in four sectors and a total of ten localities from the prehistoric to the medieval age were excavated over 30 kilometres from Radošić to Dugopolje. All localities were on the route itself or in the close vicinity. At the locality of dolines at Vučevica, the remains of primitive huts, numerous remains of ceramic pottery and flint stone tools were found, which bear witness to prehistoric people from the Neolithic to the Bronze Age settling the sinkholes. Very interesting findings are connected to tumuli, mostly from the Bronze Age. The tumuli depict the Indo-Europeanization of the central Dalmatian area. From the new Indo-European peoples, who replaced the old indigenous population, developed the Illyrian peoples such as the Delmats from whom Dalmatia got its name. The Romans conquered the Delmats and, for the sake of better connections in the short period of time from the 14 to 20 AD, they built around 700 kilometres of new roads. The chief constructors were Roman soldiers. A part of one of the Dolabel roads was researched at the Podi locality in Dugopolje.



The remains of a villa rustica were found at the Latica site, where farm buildings and the remains of a water cistern with a mosaic floor, as well as numerous types of tools were found. The site bears witness to the vigorous economic life of the settlement. We generally know very little about rural life in the age of later antiquity, and this find has a far greater than local significance.

One of the most important finds on the entire route of the highway in Split - Dalmatia County is that of an ancient Croatian cemetery from the ninth or tenth century, which was dug into a prehistoric tumulus. This is the only example of the ancient Croatian population using a prehistoric tumulus, in which they were buried after they had ransacked it

completely and restored its original, prehistoric appearance. The cooperation between the Hrvatske autoceste company and the Ministry of Culture's Conservation Department in Split has gone on properly and successfully since the beginning of the works in Split - Dalmatia County. Protective archaeological excavations will continue further towards Dubrovnik.

## KEY FIGURES FOR 2004

CROATIA	2004
Total motorway network length, km	928,80
1 x 2 lanes	144,17
2 x 2 lanes	781,63
2 x 3 lanes	3,00
2 x 4 lanes	0
Non tolled network length, km	89,40
No. of km under construction - 2004	139,76
Forecasts of opening motorway sections - 2005	91,76
Annual toll revenue in 2004	EUR 160.3 mill
Permanent staff	2.479
Average daily traffic LV	20.923
Average daily traffic HV	2.906
Average daily traffic LV + HV	23.829
Total number of accidents	2.103
Number of accidents with mortalities and injured	315
Number of mortalities	45
Km travelled (10 <sup>6</sup> km)	1.181.786.000
Number of toll plazas	54
Number of lanes	295
Number of automatic lanes	44
Number of subscribers (smart cards)	1.312
Number of rest areas (with station services)	50
Number of rest areas	76
Number of restaurants	13
Number of hotels	8



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