

International Conference and EurekaBuild Event  
DUBROVNIK 2008



Conference Programme  
23-25 May 2008

# NETWORKS



for sustainable environment and  
high quality of life

# NETWORKS – DUBROVNIK 2008

## Organisers



Croatian Construction Technology Platform  
Croatian Academy of Sciences and Arts  
SECON HDGK

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Goran Puž  
Vlatka Rajčić  
Jerko Rošin  
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Damir Tkalčić  
Darija Živni

# Message from the organizer

## Dear Colleagues

It is my great pleasure to welcome you in Croatia on international conference and EurekaBuild event "Networks for sustainable environment and high quality of life".

Networks represent the largest part of our built environment including transport infrastructures - roads, railways & waterways, and infrastructures of services - gas, water, energy, telecommunications & postal services. European Construction Technology Platform identified integrated system of networks as the fundamental backbone through which European social cohesion and economic growth is being promoted and developed. Networks are the basis of the European competitiveness against strong competitors and low cost economies.

2008 is a good year to organise conference on Networks in Croatia, as the construction is booming with hundreds of kilometers of motorways completed each year, as well as plans for extending railway and waterway network and major ports. All these provide stimulating environment for the conference and EurekaBuild brokerage event.

State-of-the-art in network construction and management will be presented during the conference, and we invite you all to EurekaBuild brokerage event which is organized to promote and facilitate further research and set up project proposals and consortia under the Eureka framework.

Five main lines of activity for future research are identified at the moment:

- Management of assets, incl. life cycle management
- Impact on the environment
- Safety and security
- Mobility
- Inter-modality and inter-operability

I wish you all a warm welcome to Mediterranean setting of historic city of Dubrovnik to join our efforts in progressing towards set goals.

Jure Radic  
*Croatian Construction Technology Chairman*

# NETWORKS

for sustainable environment and high quality of life

International Conference and EurekaBuild Event



Dubrovnik | Croatia | 23-25 May 2008

## PROGRAMME OVERVIEW

### 22 May 2008 THURSDAY

|               |              |
|---------------|--------------|
| 16:00 – 20:00 | Registration |
|---------------|--------------|

### 23 May 2008 FRIDAY

|               |                   |
|---------------|-------------------|
| 08:00 – 11:00 | Registration      |
| 11:00 – 13:00 | Opening session   |
| 13:00 – 14:30 | Welcome drink     |
| 14:30 – 16:30 | Technical session |
| 16:30 – 17:00 | Coffee break      |
| 17:00 – 19:00 | Technical session |
| 20:00         | Gala dinner       |

### 24 May 2008 SATURDAY

|               |                             |
|---------------|-----------------------------|
| 09:00 – 10:45 | Technical session           |
| 10:45 – 11:15 | Coffee break                |
| 11:15 – 13:00 | Technical session           |
| 13:00 – 14:30 | Lunch break                 |
| 14:30 – 16:00 | EurekaBuild Brokerage Event |
| 16:00 – 18:00 | Technical session           |

# DAY 1: Friday 23 May

**08:00-11:00**

Hotel lobby

**REGISTRATION**

**11:00-13:00**

Bobara Hall

**OPENING SESSION**

Jure Radić

***Croatian motorway network***

G. Hovhannessian & E. Laurent

***Risk based health monitoring & inspection manual – Case study of Rion Antirion Viaduct***

J. Radić, Z. Šavor, G. Hrelja, N. Mujkanović, A. Vlašić & M. Franetović

***Design of Pelješac bridge***

**13:00-14:30**

**WELCOME DRINK**

# DAY 1: Friday 23 May

|                    |   |
|--------------------|---|
| <b>14:30-16:30</b> | <b>TECHNICAL SESSION 1</b>  |
| <b>Bobara Hall</b> | <p>A. Chaperon<br/><i>Infrastructure network rehabilitation: a real matter where new technologies offer high technical and cost-effective solutions</i></p> <p>D. Tkalčić, A. Balažić, A. Idrizbegović, K. Mavar &amp; A. Balagija<br/><i>Structures management system in practice: condition assessment of junction "Lucko"</i></p> <p>A. Kne &amp; J. Šelih<br/><i>Decision making in network management: a case study of highway crossovers maintenance</i></p> <p>J. Radić, J. Bleiziffer &amp; D. Meštrović<br/><i>Bridge monitoring system</i></p> <p>D. Tkalčić, D. Banić &amp; Z. Perić<br/><i>Inspection procedure of highway bridges</i></p> <p>D. Tkalčić, D. Banić &amp; Ž. Banić<br/><i>Bridge behaviour during full scale testing</i></p> <p>S. Šakrić Palić &amp; I. Banjad Pečur<br/><i>The influence of constructive system on the overall structural durability</i></p> <p>D. Tkalčić, D. Banić &amp; D. Novak<br/><i>New approach in durability design of viaducts on highways</i></p> <p>J. Beslač, D. Tkalčić &amp; K. Štemberga<br/><i>Maintenance of Krk bridge as a contribution to high quality of life in Kvarner bay</i></p> <p>H. Wieland<br/><i>Timber-concrete composite high quality and low cost retrofit</i></p> |
| <b>16:30-17:00</b> | <b>COFFEE BREAK</b>   |

# DAY 1: Friday 23 May

|                    |   |
|--------------------|---|
| <b>17:00-19:00</b> | <b>TECHNICAL SESSION 2</b>  |
| <b>Bobara Hall</b> | <p>M. Chromá, P. Rovnaník &amp; B. Teplý<br/><i>Durability limit states for concrete structures – assessment tools</i></p> <p>D. Bjegović, D. Mikulić, I. Gabrijel &amp; B. Milovanović<br/><i>Assessment of concrete in structure</i></p> <p>S. Škarić Palić, I. Stipanović Oslaković, K. Mavar &amp; A. Balagija<br/><i>Condition assessment and LCCA of 11 overpasses on Zagreb bypass</i></p> <p>B. Kister, B. Zimmerli &amp; W. Fellmann<br/><i>On the complexity concerning a systematic rating of the as-is state of old retaining walls made of natural stonework</i></p> <p>S. Škarić Palić, K. Mavar &amp; M. Ille<br/><i>Repair of overpass “Novska” according to EN 1504</i></p> <p>A. Balagija &amp; I. Banjad Pečur<br/><i>Repair techniques of concrete pavements</i></p> <p>D. Tkalčić, D. Banić &amp; Ž. Banić<br/><i>Service life extension of railway station in Vinkovci</i></p> <p>M. Ille, K. Mavar &amp; S. Škarić Palić<br/><i>Repair of overpass “Bestovje” on Zagreb bypass</i></p> <p>M. M. Alshebani<br/><i>Residual strain characteristics of brick masonry under cyclic loading</i></p> <p>D. Meštrović, V. Kazić &amp; I. Hranilović<br/><i>Fibre reinforced polymer products in civil engineering</i></p> |
| <b>20:00</b>       | <b>GALA DINNER</b>  |

## DAY 2: Saturday 24 May

|                    |  |
|--------------------|--|
| <b>09:00-10:45</b> | <b>TECHNICAL SESSION 3</b>   |
| <b>Bobara Hall</b> | <p>J. Radić &amp; J. Bleiziffer<br/><i>Transport infrastructure network in and around Zagreb</i></p> <p>J. Radić, A. Kindij &amp; A. Mandić<br/><i>Finding a solution for two new bridges in Zagreb</i></p> <p>J. I. González, R. Jiménez &amp; F. Capilla<br/><i>Development of a constructive process to build great span bridges using prefabricated segments</i></p> <p>H. U. Baumann<br/><i>How experimental evidence and analysis is leading to rapid advances in design and construction in seismic regions</i></p> <p>J. Radić, Z. Šavor, A. Mandić &amp; A. Kindij<br/><i>Implementation of structural eurocodes in Croatian practice</i></p> <p>Y. Kubota<br/><i>Structural relativity for creative bridge design</i></p> <p>J. Radić, Z. Šavor &amp; G. Hrelja<br/><i>Preliminary design of Mainland-Čiovo bridge in Trogir</i></p> <p>M. M. Strid<br/><i>An uncomfortable challenge – planning for depletion</i></p> |
| <b>10:45-11:15</b> | <b>COFFEE BREAK</b>  |

## DAY 2: Saturday 24 May

|                    |   |
|--------------------|---|
| <b>11:15-13:00</b> | <b>TECHNICAL SESSION 4</b>  |
| <b>Bobara Hall</b> | <p>J. Žák<br/><i>D4704 impact on the environment</i></p> <p>M. Aebi<br/><i>Gridshell geometries from nature green by design</i></p> <p>A. Kovačič<br/><i>The management evaluation of sustainable development</i></p> <p>I. Halavanja, R. Roskovic &amp; T. Jelavic<br/><i>Recycling of aggregates from construction waste for use in concrete</i></p> <p>I. Kesegić, I. Netinger &amp; D. Bjegović<br/><i>Crushed clay brick and tiles as an aggregate in mortar and concrete</i></p> <p>P. Rovnaník, P. Bayer &amp; P. Rovnaníková<br/><i>Alkali activated aluminosilicate composites as fire resistant materials</i></p> <p>J. Dolejs, I. Tunega, V. Hatlman<br/><i>Tests of high performance steel and concrete members</i></p> <p>E. Seferović, M. Jelčić &amp; D. Bjegović<br/><i>Improved fire properties of concrete made with polypropylene fibres</i></p> |
| <b>13:00-14:30</b> | <b>LUNCH BREAK</b>  |

## DAY 2: Saturday 24 May

14:30-16:00

**EUREKABUILD BROKERAGE EVENT**

Bobara Hall

16:00-18:00

**TECHNICAL SESSION 5**

Bobara Hall

D. Bjegovic, D. Mikulic & N. Stirmer

***Construction and demolition waste management system***

D. Bjegović, M. Serdar & D. Mikulić

***Development of concrete as a contribution to sustainability***

P. Sesar, Š. Pastorčić & Ž. Banić

***Implementation of collected data in design of new bridges***

S. C. Ting, M. R. Jones & G. Scholes

***The role of aggregate in reinforced concrete exposed to chloride environment***

P. Sesar, Š. Pastorčić & Ž. Banić

***Pedestrian passes over major urban roads***

D. Serdjuks & K. Rocēns

***Hybrid composite element for tensioned structures***

D. Janjic, J. Stampler, A. Domaingo & H. Bokan

***Application of pre-cast segmental method to increase construction efficiency***

B. Kuvačić & S. Jurić

***Bridge maintenance strategy and plan***

D. Janjic, J. Stampler, A. Domaingo, H. Bokan & R. A. Love

***Life-cycle surveillance and management of bridges – bridge information modeling***

## TOURS (optional)

**23 May**  
**Friday**  
**09:00-16:00**

### **DUBROVNIK HISTORICAL CITY CENTRE TOUR**

Price: 90€ (payment on-site) - 10 persons minimum

After breakfast enjoy a walking tour of the old walled city of Dubrovnik guided in English by local expert guides. The tour starts from the hotel and includes all cities' major landmarks. The participants have the opportunity to walk the streets of historic Dubrovnik, to feel the cities' vibrant life, to see its palaces and monuments, to visit some of its museums (Rector's Palace, the Cathedral and its Treasury, the Dominican and the Franciscan Monasteries with their museums and collections). The Franciscan Monastery was built in the transitional Romanesque-Gothic style and its lofty interior (reputed once to have had ceiling paintings by Titian) was completely reconstructed after the Great Earthquake of 1667. The Old Pharmacy, located inside the Franciscan monastery, was opened in 1317. It is the third oldest pharmacy in Europe, but the only one still working. The inventories, ceramics, bowls, laboratory equipment and old medical books of the old Pharmacy are kept in the Franciscan Monastery Museum, among other highly valued and priceless objects of Dubrovnik's historic and cultural past.

The Franciscan monastery's library possesses 30,000 volumes, 22 incunabula, 1,500 valuable handwritten documents. The well-labeled exhibits include a 15th century silver-gilt cross and silver thurible, an 18th century crucifix from Jerusalem in mother-of-pearl on olive wood, an martyrology (1541) by Bemardin Gucetić (Gozze) and illuminated Psalters. Among the pictures is one of Ruđer

Bošković painted in London in 1760, and a painting showing the town before the earthquake. There will be much more to see in this aristocratic city bound with many tales and legends. The City Walls of Dubrovnik are among the finest and most complete in Europe. They protected the freedom of Dubrovnik Republic for centuries. They surround the entire Old City with their 1940 meters of length and up to 25 meters of height. The whole City Wall complex was built from the 8th until the 16th century, consisting of an inner and outer section. There are five bastions, 3 circular and 12 square and rectangular towers, two corner towers, and one huge fortress. The outer section of City Walls consists of a lower wall, having 10 semicircular bastions built by the famous Italian architect Michelozzo. The town is defended by two more separate fortresses, Revelin on the eastern side and Lovrijenac on the southwest side. The moat ran around the outside section of the City Walls.

Today, these unique ramparts are the major landmarks of Dubrovnik. The tour requires a lot of walking including steps and offers a splendid view on the cities' roofs, the sea and the islands. After the tour participants shall visit a gallery and a gift shop with an excellent opportunity to buy a valuable and discounted piece of art or just a small souvenir. Refreshment is offered in the gallery (choice of soft drinks or brandies and appetizers). The best thing to do after the tour is to enjoy the city on your own - to explore by yourself, to enjoy drinks at one of the numerous side cafes, to hunt for souvenirs or to do some shopping.



## TOURS (optional)

**24 May**  
**Saturday**  
**10:00-15:30**

### **SPIRIT OF ADRIATIC CRUISE – FISH PICNIC**

Price: 70€ (payment on-site)

Min 40 persons

This cruise offers you the sun, sea and relaxing change of pace from the moment you embark. Sail past the Elaphite Islands before you disembark at a secluded bay where traditional welcome of dried figs and local brandy will be offered.

Enjoy lunch of grilled fish, local cheeses and wine, while being entertained by Dalmatian music. Light sportswear and swimwear recommended.



While the sun is not at sleep, the Elaphite Islands guard its keep, and the sun lavishes them with its golden glare, perfecting their beauty in a twilighting sunset, a perennial performance for couples in awe enhancing the Dubrovnik dream forever more.

**The Elaphite** or as their name suggests Deer Islands consist of large number of reefs and rocks and eight islands and five islets, namely: Daksa, Koločep (Kalamota), St. Andrija, Lopud, Ruda, Šipan, Mišnjak, Jakljan, Kosmeč, Goleč, Crkvine, Tajan and Olipa. They are located just west of Dubrovnik and give a special touch to that part of panorama, especially at sunset, when they seem the most beautiful. The view best enjoyed from Dubrovnik hills Srđ and Petka, and some parts of the Lapad peninsula. Only three islands in the whole Elphite archipelago are inhabited; Koločep (Kalamota), Lopud and Šipan. The others are just a playplace oasis for the gull rarely disturbed by the lonesome visitor in search of tranquil isolation.

Koločep, Lopud and Šipan are the islands chosen by the many families of The Dubrovnik Republic aristocracy for their summer manors. Some of these manors stand there today unfaded in full beauty reflecting a rich history of the islands and their owners. Each of these islands is like a special pearl, each similar to the other but still somehow different.

**Koločep** (Kalamota) - is the smallest of the three settled Elaphite islands, closest to Dubrovnik, this island is like a near by dream.

**Lopud** - The island in the middle as it has been called since time out of mind is located between Kalamota and Šipan. This is the most visited island in the Elaphite archipelago, mainly for its amazing Šunj beach.

**Šipan** - The Golden Island is the largest of the settled Elaphite islands, the sight of many Dubrovnik Republic aristocratic manors. Šipan has things to show and is all, except shy.

***Tour booking is made on site, please consult our staff at registration desk.***

# REGISTRATION

| REGISTRATION FEES |                     | Until March 15 | After March 15 |
|-------------------|---------------------|----------------|----------------|
|                   | Author Participant  | 300 €          | 500 €          |
|                   | Accompanying Person | 150 €          | 250 €          |

**To register please fill out the Symposium Registration Form and send it by fax or by e-mail to the Symposium Secretariat:**

- fax: +385 1 4828 052
- e-mail: [secon@grad.hr](mailto:secon@grad.hr)

**The participant registration fee includes:**

- Proceedings as a printed volume as well as on CD-ROM
- Conference bag
- Admission to all Technical Sessions
- Refreshments
- Welcome Drink on Friday 23 May 2008
- Gala-Dinner on Friday 23 May 2008

**Accompanying Persons**

- Welcome Drink on Friday 23 May 2008
- Gala-Dinner on Friday 23 May 2008
- Accompanying person bag

| REGISTRATION DESK<br>Working hours | The registration desk will be located at the Conference Venue of the Hotel Croatia. We advise you to collect your registration documents as soon as possible after your arrival at the hotel. Our staff at the registration desk will be pleased to assist you with all your enquiries. The registration desk will be open according to the following schedule: |             |
|------------------------------------|---|-------------|
|                                    | Thursday, May 22  | 16:00-20:00 |
|                                    | Friday, May 23  | 08:00-18:00 |
|                                    | Saturday, May 24  | 08:00-14:00 |

# VENUE & ACCOMMODATION

## VENUE

The conference will be held in the Congress Hall of the Hotel "Croatia" in Cavtat.

## ACCOMODATION



### Croatia Hotel \*\*\*\*\*

We recommend the accommodation at the Croatia Hotel where the conference venue is located, and special discount rates will be available for conference participants. Croatia Hotel is a luxurious five star hotel on 11 floors with total of 480 rooms and 7 suites. Every room has a balcony with furniture, full size bath with hairdryer, satellite TV, radio, air conditioning, bathrobe, safe deposit box, mini-bar and direct-dial telephone. No-smoking rooms are available. 300 of the rooms are twin rooms with extra bed and a seaview, 180 are twin rooms with bayview and parkview.

***To benefit from the special hotel rates, reservation must be made by on-line booking at [www.hoteli-croatia.hr](http://www.hoteli-croatia.hr), by the access code NET2008.***

20210 Cavtat, Croatia

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e-mail: [info@hoteli-croatia.hr](mailto:info@hoteli-croatia.hr)

website: [www.hoteli-croatia.hr](http://www.hoteli-croatia.hr)

## ACCESS



Croatia Hotel is located only 6 km from [Dubrovnik International Airport](#). There are numerous direct flights (also charters) from most European capitals. There are also regular Croatia Airlines flights from Zagreb twice a day. Information is available at the [Airport Dubrovnik searchable schedule](#) and [Airport Dubrovnik 3 day arrival schedule](#), as well as [Croatia Airlines flight schedule](#). Airport transfer is provided by buses and taxis. Taxi fare from the airport to Croatia Hotel would cost approximately 15€.

# INFO

## Passport and Visa

All visitors need a valid passport for entry into Croatia. In case visa is required, please contact local Croatian Embassy or Consulate or check at [www.mfa.hr](http://www.mfa.hr). Your airline or travel agent can advise you regarding the procedure for visa applications.

## Letter of Invitation

The Conference Secretariat in Zagreb will be pleased to send an official letter of invitation upon request. It is understood that such an invitation is intended to help potential attendees raise travel funds or obtain visa. It is not a commitment on the part of the Organizing Committee to provide any financial support. Please contact [secon@grad.hr](mailto:secon@grad.hr)

## Climate

The climate along Dubrovnik Region is a typical Mediterranean one, with mild, rainy winters and hot, dry summers.

Air temperature:

Average annual 16,4 C (61,5 F)

Average of coldest period (January) 9 C (48,2 F)

Average of warmest period (August) 24,9 C (76,8 F)

Sea temperature

Average May - September 23,8 C (64,2 - 74,8 F)

Air and sea temperature in Dubrovnik region during September is warm enough for swimming.

Weather forecasts

7-day weather forecast for Dubrovnik is available from Meteorological and Hydrological Service website.

## Time Difference

For international passengers, please allow at least a day in which to adjust to the time difference. At the time of the Conference, Croatian time is a Central European Time (GMT+1).

## Currency

Croatian currency is Kuna (Kn). Facilities to exchange foreign currency are available at the airport, in the hotel and throughout the city. For a first approximation, exchange rates are (May 2008): 100 € = 725 Kn, 100 Kn = 13,8 €

## Electricity

The electrical supply is 220 volts and 50 Hz. Connection for appliances is 2-pin plug.

# *Dubrovnik*



# *Cavtat*