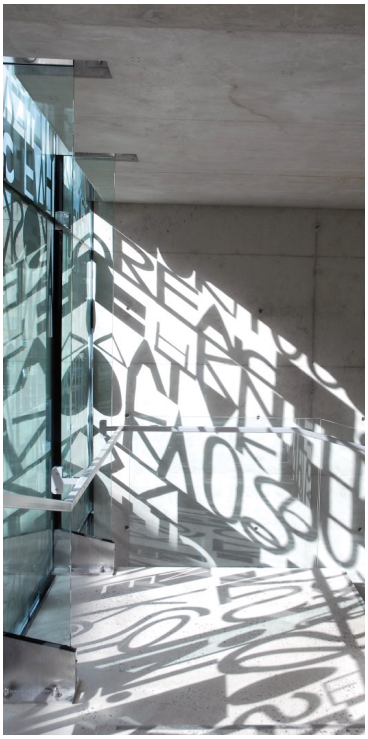
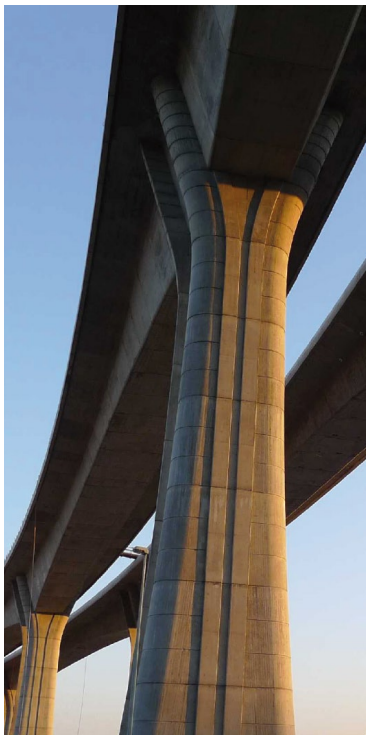
ECSN

European Concrete Societies Network





EUROPEAN CONCRETE AWARD 2012

www.ecsn.net

THE EUROPEAN CONCRETE SOCIETIES NETWORK (ECSN)

Members of the ECSN (f.l.t.r.): Marco Menegotto (I), Jussi Mattila (Fin), Éanna Nolan (Irl), Dick Stoelhorst (Nl), Morten Bjerke (N), Frens Pries (NL), Michael Pauser (A), Richard McCarthy (S), Anja Muschelknautz (D), Vlastimil Sruma (CZ)

The object of the network is to encourage cooperation between the 12 European member countries and thereby promote the development of concrete technology and use of concrete in Europe. The network will not interfere with the work of individual societies and other international organisations. Membership is open to all Concrete Societies of Europe. The Secretariat is currently managed by Austria: **www.bautechnik.pro**

www.ecsn.net

European Concrete Award 2012

2012 again was a strong year for concrete as building material and the concrete award. The ECSN's call for the submission of attractive projects both in buildings and civil engineering resulted in 18 submissions – 9 for the building category and 9 for the civil engineering category. The participants this year came from Austria, the Czech Republic, Finland, Ireland, Italy, the Netherlands, Norway and Sweden.

Their projects were evaluated against a set of criteria by an international ECSN jury consisting of members from Austria, Belgium, Czech Republic, Germany, Finland, Ireland, Italy, Netherlands, Norway, Sweden and the United Kingdom. Among those criteria are: design, construction, visual appearance and harmony of the structure with its surroundings, properties of concrete exploited in the design, innovative use of concrete in composition, structure or form, workmanship and finish.

I'm very much looking forward to the prize ceremony at the Norwegian Concrete Day in Oslo on 25th of October 2012, when the projects, which met these criteria best, will be presented. All the buildings and structures on the following pages are an impressive demonstration of the many possibilities of concrete as a building material.

Enjoy the nominations!

Yours sincerely

Michael Pauser
Chairman of ECSN

IMPRINT
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AWARD CEREMONY
OSLO 25.10.2012

THE AWARD CEREMONY

During the Norwegian Concreteday plenty of award winners from owners, architects- and engineering offices and contractors came to the award ceremony EUROPEAN CONCRETE AWARD 2012 to Oslo:

CATEGORY BUILDING

The Regional Emergency Management Centre is the natural result of design strategy that targeted the best exploitation of synergies between architectural morphology and anti-seismic requirements.

Winner: **Regional Emergency Management Centre, Italy (02)**
F.l.t.r.: Michael Pauser (ECSN), Alberto Parducci (Structural Engineer)

Honorable mention: **TEACHERS' HOUSE, Norway (03)**
F.l.t.r.: Michael Pauser (ECSN), Cathrine Vigander (Element Arkitekter AS), Per Aahlin (Utdanningsforbundet), Stig Rongved (Tronrund Entrep)

Honorable mention: **Housing Coopeoration Flora Square, Finland (01)**
F.l.t.r.: Petteri Karling & Jorma Kekki (City of Helsinki Production Department), Michael Pauser (ECSN)

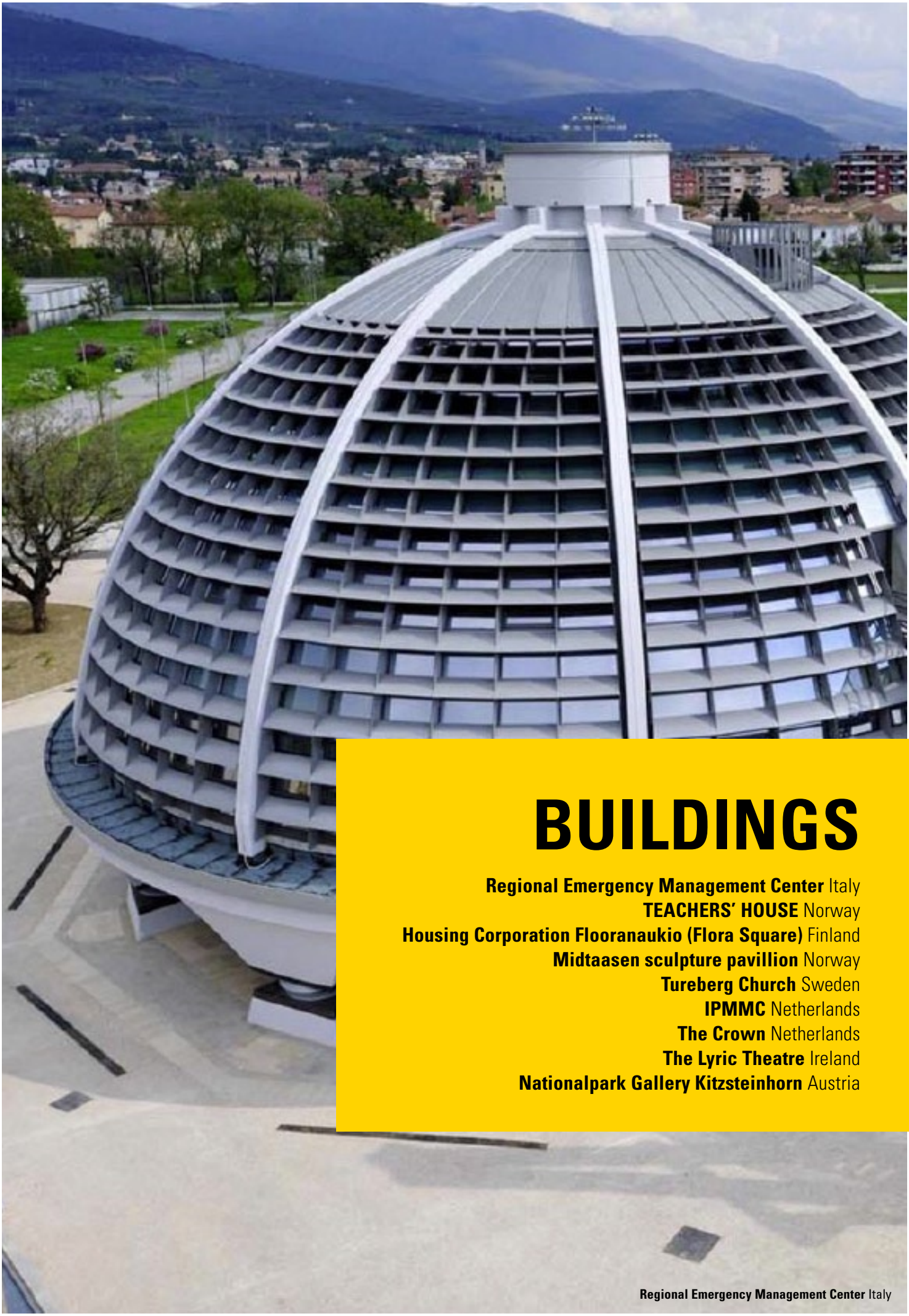
CATEGORY CIVIL ENGINEERING

The Gooise Bridge as the first pre-stressed high performance concrete bridge in the Netherlands demonstrates, that the winning project need not always a huge motorway bridge with high span.

Winner: **Gooise Bridge, Netherlands (04)**
F.l.t.r.: Michael Pauser (ECSN), Ahmad Gholizadeh (City of Utrecht, IBU), Frank van der Vaart (City of Utrecht), Roy Fakiera (Prolusion), Jan Kroon (Romein Beton)

Honorable mention: **Sluis 0124, Netherlands (05)**
F.l.t.r.: Michael Pauser (ECSN), Jeffrey Raadschelders (Ingenieursbureau Amsterdam), Jan Schuurmans (Schuurmans Betonbouw), Erik Bakker (Ingenieursbureau Amsterdam)

Honorable mention: **Bridge over the Oparno Valley, Czech Republic (06)**
F.l.t.r.: Michael Pauser (ECSN), Roman Simacek & Milan Spicka (Metrostav), Milan Kalny (Pontex)



BUILDINGS

Regional Emergency Management Center Italy
TEACHERS' HOUSE Norway
Housing Corporation Flooranaukio (Flora Square) Finland
Midtaasen sculpture pavillion Norway
Tureberg Church Sweden
IPMMC Netherlands
The Crown Netherlands
The Lyric Theatre Ireland
Nationalpark Gallery Kitzsteinhorn Austria

Regional Emergency Management Center Italy

WINNER
BUILDINGS

REGIONAL EMERGENCY MANAGEMENT CENTRE
ITALY

WINNER

INTRODUCTION

The work constitutes the most significant result of a research project carried out during the construction of Umbria's new regional Emergency Management Centre in Foligno (Perugia). The aim was to make a tangible contribution that proved the importance of architectural involvement in current seismic problems. In a holistic planning approach, Base Isolation (BI) techniques (to be applied for construction in areas at high seismic risk to avoid restricting design options) open new perspectives for research into architectural design, capable of activating synergies to enhance anti-seismic quality in buildings.

The architectural morphology and structural system configuration were designed with the objective of ensuring top performance during seismic events thanks to the synergies that can be activated using a BI system.

The example being presented aims to show that nowadays the famous Vitruvian triangle of firmitas, venustas, utilitas must be bettered, extending the first term to motus, deformatio, separatio.

OBJECTIVES OF DESIGN STUDIES

The building's structural definition is unusual but was the natural result of a design strategy that targeted the best exploitation of synergies between architectural morphology and anti-seismic requirements, with reference to the use of BI techniques. Briefly, the aim was to achieve for anti-seismic purposes an optimized combination of

- appropriate architectural morphology with
- the functional requirements of BI when the technique
- is applied to a structural system comprising
- elements of standard and pre-stressed reinforced concrete.

Essentially, properly engineered BI can guarantee conditions of intense dynamic decoupling between a building's horizontal displacements and those of the earthquake, extensively reducing the seismic accelerations transmitted to:

- structures (protection of structures);
- secondary elements (protection of additional architectural features);
- contents (protection of plant and furnishings).

The last two capabilities offer a characteristic that only BI technique is able to provide, as an alternative to the same capabilities that could be obtained with traditional engineering solutions based mainly on the design of high-strength structural elements.

PROJECT & CONSTRUCTION DETAILS

Owner Regione Umbria, Foligno (Perugia)
Architect Alberto Parducci, Guido Tommesani
Structural Engineer Alberto Parducci, Alfredo Marimpietri, Marco Mezzi, Roberto Radicchia
Contractor Giovannini Costruzioni SpA
Prefab supplier or other supplier details CO.M.I.T. Aldo Novelli, CLER – Coop. Lavoratori Elettrici Scarl assignor

HONORABLE MENTION
BUILDINGS

TEACHERS' HOUSE NORWAY

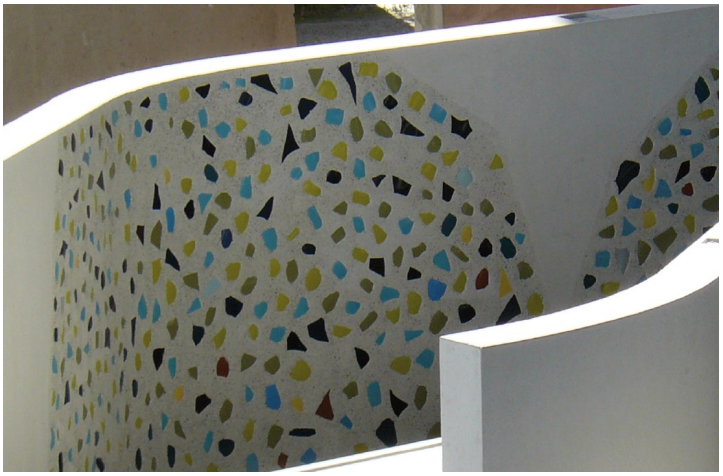
TEACHERS' HOUSE in Oslo is a conference center built on a tight and narrow building site, squeezed between two existing older buildings. As you are to enter the building, you are met by a large glass façade decorated with words and numbers relating to the activities in the building. Behind the glass wall you enter a very spacious hall where a very light grey concrete is the dominating material, in the walls and floor. The craftsmanship is excellent and is combined with other materials in a very fine manner, both with glass, wood and textiles. Though the use of concrete is predominant, the room still gives you a pleasant feeling as bright daylight shines into the room from both sides. This makes the hall an excellent meeting place for conference participants. From the hall we move to the upper floors in a very precisely executed concrete stairway where also the handrail is made of concrete. On a sunny day, the printed letters in the glass façade cast decorative shadows on the bright concrete surfaces. The stairs lead to a large conference room and further up, a canteen, also with concrete walls, floors and ceilings.The floor plan is simple, while the building itself is very complex. It is equipped with a very advanced heating system, collecting heat from 10 heat wells 150 m below ground. The heating system also takes into account the use of thermal mass from the heavy concrete structures. Combined with the utilization of the heat wells this results in an extremely low degree of energy consumption. Calculations show that the extra investments in energy installations are paid for after 5 years.

PROJECT & CONSTRUCTION DETAILS

Owner Utdanningsforbundet, Oslo
Architect Element Arkitekter AS
Structural Engineer Dr. Techn. Kristoffer Apeland AS
Contractor Tronrud Entreprenør AS
Prefab supplier or other supplier details
Unicon Ready mix concrete

HOUSING CORPORATION FLORA SQUARE FINLAND

The buildings of Housing Corporation Asunto Oy Helsingin Flooranaukio ja Kiinteistö Oy Lontoonkuja form an integral city block with a common courtyard that opens up towards the Toukola shore park. The redbrick cladding and the openings of the building's street facades imitate the rationalism of the old industrial buildings of the Arabia area. This is contrasted by the light colour of the courtyard side facade, which flows in free form bringing light and variety to the deep city block.



Mosaic concrete unites Finnish architecture in a modern way with European building art. A two-storey row house type structure stands on top of the building, as indicated in the town plan. The white concrete surfaces of the undulating elements of the internal courtyard are enlivened by a floral motif fabricated in connection with the production of the precast facade and balcony elements.
The mosaic motif of the facade was inspired by a butter dish that Arabia manufactured in the 1930s. It is now repeated in three times the height of the building on the walls that face the internal courtyard.The adhesion of the porcelain pieces was tried and tested comprehensively. The patterns were designed and glued on the bottom of the base by hand. Exposed aggregate surface finish technique was used to create the foliage pattern. The base surface of the element is white concrete with greyish white limestone and grey granite used as aggregate.

PROJECT & CONSTRUCTION DETAILS

Owner City of Helsinki Housing Production Department
Architect Heikkinen-Komonen Architects
Structural Engineer Finnmap Consulting
Contractor Lujatalo
Prefab supplier or other supplier details Parma

MIDTAASEN SCULPTURE PAVILLION NORWAY

The pavillion is situated in a large public wooden park outside the city of Sandefjord and contains a selection of sculptures by Knut Steen, one of the most recognized sculptors in Norway. The structure is intended as a protection against rain and snow, as the fine marble sculptures will suffer in the harsh Norwegian climate. The City wanted the pavillion to be integrated in the landscape, marinating as much as possible of the nearby vegetation. Other requirements were for the pavillion to reinforce the qualities in the artwork, and give sufficient light to the sculptures. Architectural qualities were also important for the project.

PROJECT & CONSTRUCTION DETAILS

Owner City of Sandefjord
Architect Lund Hagem arkitekter AS
Structural Engineer Siv.ing. P. O. Danielsen AS
Contractor TKS-bygg AS
Prefab supplier or other supplier details
Unicon Ready mix concrete

TUREBERG CHURCH SWEDEN

The newly built Tureberg church in Sweden honors life and nature through an impressive assortment of green building strategies. Paying respect to the lives of future generations, the architecture and interior design includes a green sedum roof, district heating as well as an altar and organ facade made from scrap wood. The sustainably built Tureberg Church in Sollentuna (outside Stockholm), Sweden, stresses the importance of living a green lifestyle. The vicar Anders Roos explains: "The world's resources aren't infinite and we must be economic with the gifts God has donated."

PROJECT & CONSTRUCTION DETAILS

Owner The Church of Sweden, Sollentuna Congregation
Architect Helena Tallius Myhrman, Tallius Myhrman Arkitekter AB
Structural Engineer Rolf Johansson, Johansson Byggnadskonstruktioner AB
Contractor Peab Sweden AB
Prefab supplier or other supplier details Swerock AB, Rosersberg

IPMMC
NETHERLANDS

The buildings of Nieuwerijn II are prominently situated as villas in a series of blocks along the Orteliuslaan. The "villas" show their own identity as freestanding volumes. The new premises of IPMMC is situated in this series of blocks on the corner of the Orteliuslaan and the Bleaulaan. The building has the same architectural appearance on all sides and differentiates itself because of its uncomplicated structure and expressive materialisation. The building has four similar floors of 32 m by 42 m, parking included. The cars can be seen from the outside, standing on the groundfloor inside.

PROJECT & CONSTRUCTION DETAILS

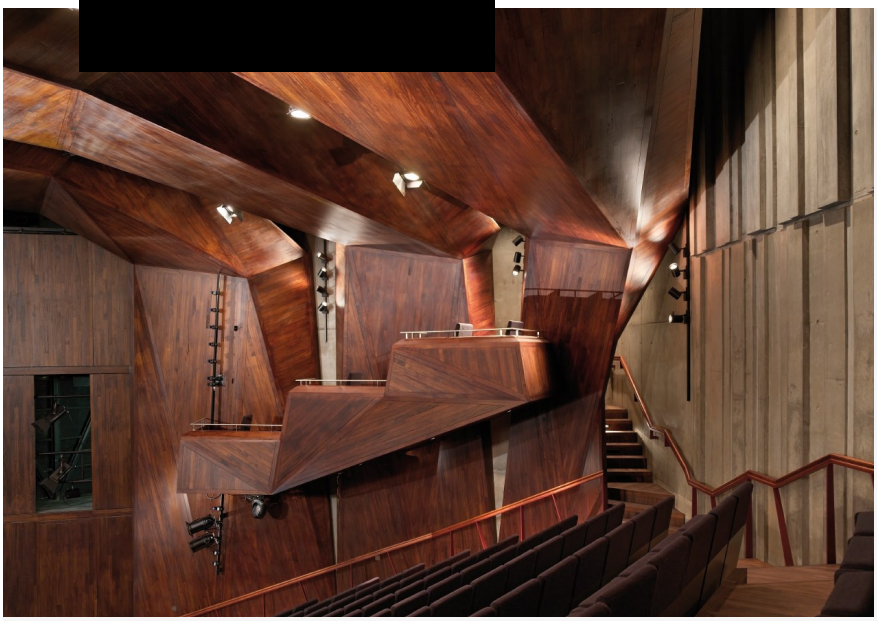
Owner IPMMC Vastgoed
Architect Claus en Kaan Architects
Structural Engineer Pieters Bouwtechniek
Contractor BAM Utiliteitsbouw
Prefab supplier or other supplier details
ILEX Installatiemanagement

THE CROWN
NETHERLANDS

Starting point for the design was the urban master planning, made by the municipality of The Hague. The building heights should connect to the surrounding buildings. An important reference for the design was the high rise typology of the late 18th and early 19th century Chicago.
Window types, façade linings and the use of headstone formed an important source of inspiration. The office and residential building have been placed next to one another. The office building forms a continuous volume with the surrounding buildings and is designed around a covered atrium, which allows daylight entering this long volume.

PROJECT & CONSTRUCTION DETAILS

Owner Wijnhaven C.V. (MAB/Kristal)
Architect Rapp + Rapp
Structural Engineer Corsmit Consulting Engineers a company of Royal Haskoning
Contractor Building consortium Wijnhaven (Ballast Nedam + BAM)
Prefab supplier or other supplier details
Loveld NL prefab elements



THE LYRIC THEATRE IRELAND

The irregular outline of the boundaries of the site and the constraints of the sloping ground have given rise to a site-specific design solution. Our architectural design concept responds to these conditions by housing the 3 principal functional elements of the building (auditorium, studio, rehearsal) within its own distinctive brickbox, with the public circulation spaces and staircases wrapping around the fixed forms of the theatre, studio and rehearsal room. Externally, the sculptural concrete "theatre roofs" of the auditorium, studio and rehearsal room create a new distinctive Belfast skyline. A continuous perimeter concrete edge coping with concrete screed rooffinish creates a solid cap to the brick volumes. In the construction of the hard landscaping design, concrete was the primary material forming new pathways, stairs and continuous in situ bench seats.

PROJECT & CONSTRUCTION DETAILS

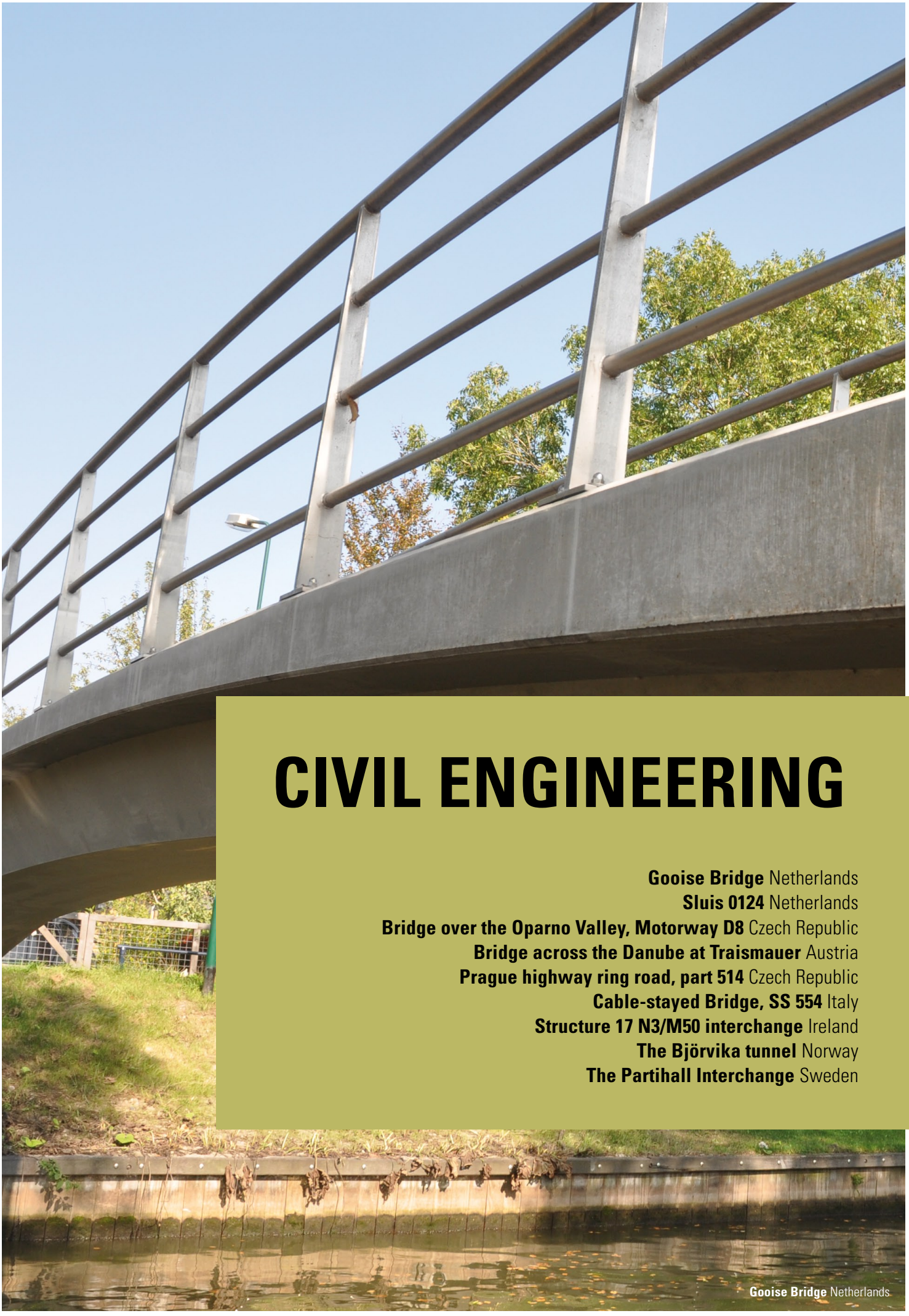
Owner The Lyric Theatre
Architect O'Donnell + Tuomey
Structural Engineer Horgan Lynch
Contractor Gilbert Ash
Prefab supplier or other supplier details
Mastercraft Construction; Dungiven, Co. Derry

NATIONALPARK GALLERY KITZSTEINHORN AUSTRIA

PROJECT & CONSTRUCTION DETAILS

Owner Gletscherbahnen Kaprun AG
Architect Bmstr. Ing. Karl Aigner
Structural Engineer BauCON ZT GmbH
Contractor ALPINE Bau GmbH

The newly built Nationalpark Gallery is the highlight of "Gipfelwelt 3000" at the summit of the Kitzsteinhorn. When you leave the "Gipfelbahn" cable car, you enter the heart of the mountain. An old, 450 m long tunnel has been reprofiled and extended. At the end of the tunnel, you're standing in the midst of the glorious mountain peak scenery of the Hohe Tauern Nationalpark, with a breathtaking view of the Grossglockner and the Grossvenediger – this is where the Nationalpark Gallery has been built. Altitude: 3029 m.



CIVIL ENGINEERING

Gooise Bridge Netherlands
Sluis 0124 Netherlands
Bridge over the Oparno Valley, Motorway D8 Czech Republic
Bridge across the Danube at Traismauer Austria
Prague highway ring road, part 514 Czech Republic
Cable-stayed Bridge, SS 554 Italy
Structure 17 N3/M50 interchange Ireland
The Björvika tunnel Norway
The Partihall Interchange Sweden

Gooise Bridge Netherlands

WINNER
CIVIL ENGINEERING

GOOISE BRIDGE
NETHERLANDS

WINNER

GOOISE BRIDGE, THE FIRST PRE-STRESSED HIGH PERFORMANCE CONCRETE BRIDGE IN THE NETHERLANDS

The Gooise bridge (length 20 m, width 1,60 m) is situated in Vleuten-De Meern and connects the Rijksstraatweg with the Zandweg across the Leidsche Rijn, at the intersection with Strijkviertel. It replaces an old bridge dating back to the fifties. The department for Urban Management from the municipality of Utrecht, responsible for the management of public space, asked IBU City engineers to design a new bridge. They were asked to give special attention to maintenance and sustainability. After deliberation it was decided to implement the bridge with High Performance Concrete (HPC). Subsequently, the municipality invited tenders for the project.

HIGH PERFORMANCE CONCRETE

The application of HPC offers advantages for maintenance. Because of the high density the material has a low porosity, whereby less chloride ions can penetrate. In the long run this means less maintenance costs and almost no inconvenience because of maintenance.

LCC (LIFE CYCLE COSTS)

The applied HPC has a much higher tensile strength and compression strength than concrete with strength class C53/65. It also has a more dense texture, whereby the bridge is better protected from weather influences. Because of the high tensile strength the cross-cut has a better resistance against fatigue. Combined with the stainless steel railings the whole bridge is very easy to maintain, and it will last for a hundred years without any major maintenance. The acquisition costs are about equal to those for a traditional bridge with supporting points. Because the lower maintenance costs are extended over the longer life expectancy, the new bridge is cheaper.

PROJECT & CONSTRUCTION DETAILS

Owner Gemeente Utrecht, Stadswerken, afd. Stedelijk Beheer (Municipality Utrecht)
Architect Gemeene Utrecht, Stadswerken, afd. IBU Stadsingenieurs (Municipality Utrecht)
Structural Engineer Gemeente Utrecht, Stadswerken, afd. IBU Stadsingenieurs (Municipality Utrecht)
Contractor Romein Beton BV

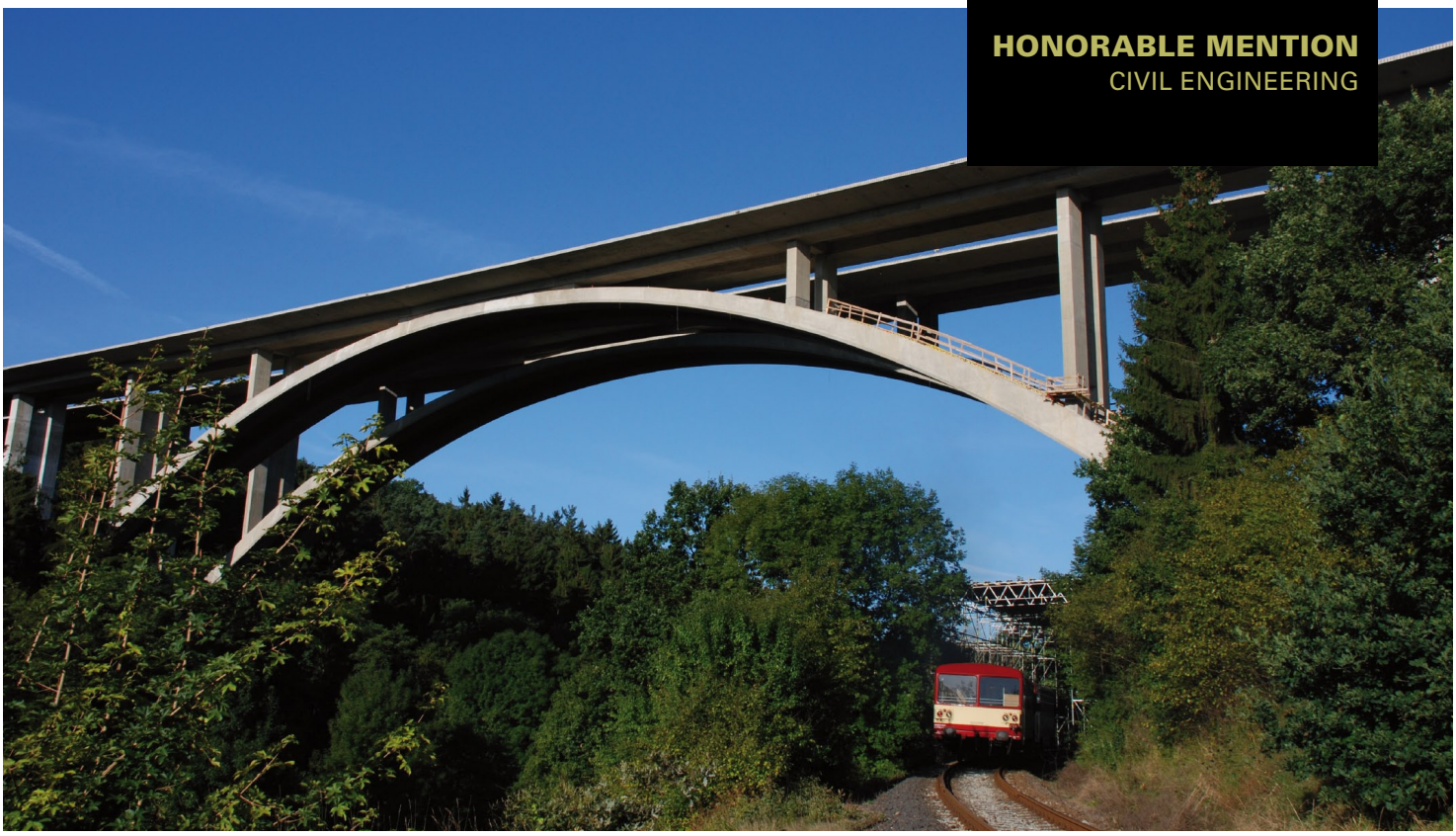
HONORABLE MENTION
CIVIL ENGINEERING

SLUIS 0124
NETHERLANDS

Sluis 0124 is the first lock in the world with gates made of high-performance concrete. Amsterdam's first is a breakthrough in the use of concrete in movable water-retaining structures worldwide. The doors are cheaper to build and to maintain, and also provide benefits in sustainability. IJburg, Amsterdam's latest big residential development area, is being built on artificial islands. All islands have their own system of dykes and canals. The biggest island, the "Harbor-Island", hosts a marina and has three locks for small boats on the northern, southern, and eastern tips of the island. Sluis 0124 is the last to be completed and situated on the southern end. The three locks are all based on the same general principle: sliding gates shift under the quay. All of the installations: the electrical, mechanical and hydraulic systems, and culverts have been installed in the concrete basements. The lock-chamber of Sluis 0124 has a length of approximately 19 m and is 6 m wide. The level of the inside and outside water courses is almost equal under normal conditions, but due to wind tides the level of the outside water course could fluctuate between -2 and +2 metres. Both the education and business sectors have been involved in the development of the lock gates. Two graduates from the Hogeschool Amsterdam created the design together with experts at IBA and a number of external consultants. The doors are 10 cm thick, 6.55 m long and have a surrounding slanted edge of 35 x 40 cm. The east gate weighs approximately 14.5 t and is 4.5 m high; the west gate weighs approximately 14 t and is 4.15 m high. Haitsma Beton developed a special HSC mixture (C90/105) for Sluis 0124. By making use of ultra-fine aggregates it becomes extremely compact, strong and maintenance-free.

PROJECT & CONSTRUCTION DETAILS

Owner Projectbureau IJburg
Architect Meyer en Van Schoten Architecten
Structural Engineer Ingenieursbureau Amsterdam
Contractor Schuurmans Betonbouw
Prefab supplier or other supplier details Haitsma Beton, prefab elements



HONORABLE MENTION
CIVIL ENGINEERING

BRIDGE OVER THE OPARNO VALLEY, MOTORWAY D8
CZECH REPUBLIC

The Oparno arch bridge is situated on the D8 motorway from Prague to Dresden in a scenic hilly landscape in the preserved natural area called "Ceské Stredohorí". Due to its location, special requirements and limitations had to be met during construction of the bridge. Each of two parallel, almost identical, bridges supports two lanes of the motorway. The length of the bridge is about 275 m and the span of arches is 135 m. The bridge has the second longest span of the concrete arch in the Czech Republic. A beautiful countryside along the bridge was one of the reasons why an arch bridge was chosen for erection. The aim was to build a structure which is elegant, fits well into the landscape, is durable with low maintenance costs and complies with the requirements on sustainability.

BRIDGE DESIGN

The concept of the bridge was prepared already in 1998, when planning of the motorway started. Due to the delay caused by land acquisition and negotiations associated with a construction permit, the construction could not begin earlier than in 2008. During the ten years, the technology of concrete developed and it was possible to optimize an original design. In cooperation with the consultant and the contractor, higher strength classes of concrete were used for the arch as well as for the deck and piers. It resulted in substantial savings of volumes of concrete and made the structure lighter and even more durable. The proposed and then realized changes led to savings in cement consumption and thus contributed to the savings of energy and reduction of emissions of carbon dioxide.

PROJECT & CONSTRUCTION DETAILS

Owner Road and Motorway Directorate of the Czech Republic
Architect Ing. Milan Kalny
Structural Engineer Pontex Ltd.
Contractor Metrostav a.s. Division 5

BRIDGE ACROSS THE DANUBE AT TRAISMAUER
AUSTRIA

The new Danube Bridge at Traismauer connects the Krems Highway S33 to the Stockerau Highway S5. This connection is of great importance for the national and local development. The project is also part of the highway ring road Vienna and connects the North Motorway A5, coming from the Czech Republic, to the Western Highway A1. The main part of the new 7 km long highway is the "Lot Main Bridges", which was awarded in November 2007 to ALPINE Bau GmbH. It consists of the 320 m long Southern Approach Bridge, the 360 m long Danube Bridge and the 450 m long Northern Approach Bridge. For each direction an own superstructure was built. The bridge over the Danube with spans of 100, 156 and 100 m is designed as a pre-stressed concrete box girder and was erected by the free cantilever method. By applying two pairs of form travellers, the superstructure of both directions could be built almost in parallel.

PROJECT & CONSTRUCTION DETAILS

Owner ASFINAG Baumanagement GmbH
Architect FCP Fritsch, Chiari & Partner Ziviltechniker GmbH, DI Josef Mayer ZT GmbH, KMP ZT-GmbH
Structural Engineer DI Josef Mayer ZT GmbH, KMP ZT-GmbH
Contractor ALPINE Bau GmbH
Prefab supplier or other supplier detail Brandner Wasserbau GmbH; Bauservice-Fuhs GmbH; Cemex Austria AG, Wopfinger Transportbeton GmbH

PRAGUE HIGHWAY RING ROAD, PART 514
CZECH REPUBLIC

The bridge structures no. 204/1 205 lead the motorway ring over the valley of Berounka River and adjacent inundation area with a few roads, including the I/4 highway to Strakonice, railway sidings and a railway line. The bridge over Vltava River, a part of structure no. 513, is connected thereto on a common expansion pier. The bridge over Berounka Valley features monolithic load bearing structure of prestressed concrete with boxed cross section. Separate structures are built for either direction of traffic. The overall length of the bridge (2,054.5 m) between the axes of bearing on terminal abutments is divided into five separate expansion units – construction structures no. 205 and 204/1.1 through 204/1.4 – that differ from one another in their layout, span size and employed construction technology.

PROJECT & CONSTRUCTION DETAILS

Owner Road and Motorway Directorate of the Czech Republic
Architect Novák & partner ltd.
Structural Engineer Novák & partner ltd., Valbek ltd., Pontex ltd.
Contractor Bögl & Krýsl k.s.
Prefab supplier or other supplier details Valbek ltd.

CABLE-STAYED BRIDGE, SS 554 ITALY

Entirely realized in prestressed concrete, the bridge joins the metropolitan area of Cagliari with the University hub and the University General Hospital. The tilted form of the single inverted Y-shaped tower with splayed legs creates an arch which makes a dramatic entrance for drivers. The 59-m-high tower is topped by a perforated stainless steel "beak" whose sole purpose is to streamline the structure aesthetically. The deck is fully prestressed with longitudinal and transverse cables as well as the horizontal component of force in the cable stays.

PROJECT & CONSTRUCTION DETAILS

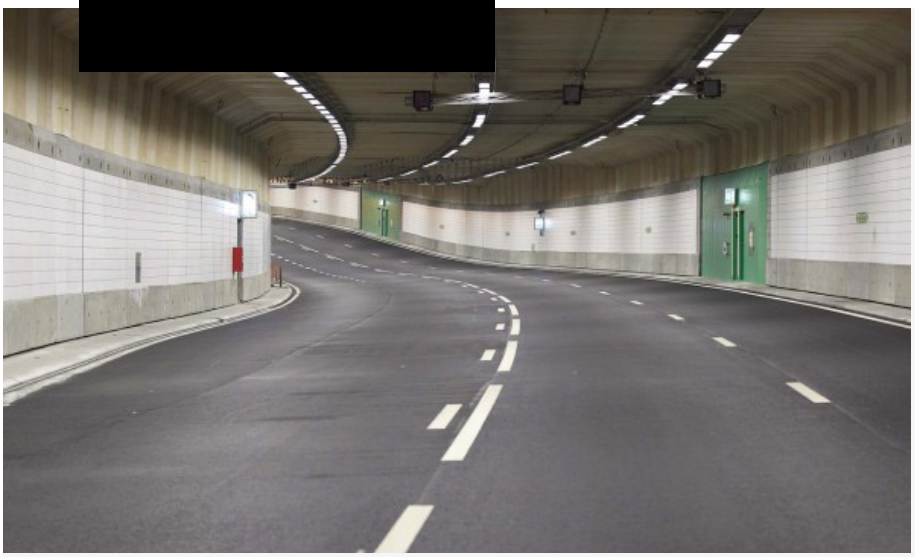
Owner Provincial administration of Cagliari
Architect Pietro Paolo Mossone
Structural Engineer Pietro Paolo Mossone, Piero Tomnino
Contractor Raffaello Pellegrini S.R.L.

STRUCTURE 17 N3/M50 INTERCHANGE IRELAND

The M50 Motorway is Dublin's ring route and is a crucial part of the transport infrastructure for Dublin and the surrounding counties,carrying more than 100,000 vehicles each day.The scheme included widening of approximately 23 km of motorway from dual two to dual three/four lanes and upgrading seven existing junctions, including conversion of the M1, N2 and N3 junctions to free-flow interchanges. The design of the M50 Upgrade PPP scheme involved a massive management exercise on the part of the scheme design consultants, ATKINS, Ireland. Undertaking these works on a live motorway represented an enormous challenge, and to complete the design while construction was ongoing required a highly co-ordinated and well-managed design effort.

PROJECT & CONSTRUCTION DETAILS

Owner National Roads Authority
Architect Atkins
Structural Engineer Atkins
Contractor M50 Design & Construction (PJ Hegarty, Sacyr, FCC)
Prefab supplier or other supplier details
Keegan Quarries, Major Supplier
Cemex Ireland, Major Supplier



THE BJÖRVIKA TUNNEL NORWAY

The tunnel connects two existing tunnels under the center of Oslo. It is 1100 m long and contains an immersed concrete tunnel in the sea, and regular cast-in-place concrete tunnels including ramps on both land sides.
The three parts of the tunnel represented large construction challenges particularly due to bad soil conditions and complicated sheet piling. The immersed tunnel, the first of its kind in Norway, consists of six large concrete elements, 112 m long and between 28 and 43 m wide. They were floated several hundred kilometers along the rough Norwegian coast before they were placed and connected together on the bottom of Oslo harbor.

PROJECT & CONSTRUCTION DETAILS

Owner Statens vegvesen
Structural Engineer Dr. ing. A. Aas-Jakobsen as
Contractor AF Bjørvikatunnellen, NCC AS, and AF Gruppen Norge AS
Prefab supplier or other supplier details
Unicon as and Norbetong, Ready mix concrete

THE PARTIHALL INTERCHANGE SWEDEN

The Partihallsförbindelsen (Partihal Interchange) forms a part of the planned Marieholmstunneln (Marieholm Tunnel) and the Marieholmsbron (Marieholm Bridge) at the Marieholmsförbindelsen (Marieholm Interchange) in Gothenburg. The Partihall Interchange was built as a 1150 metre long bridge between the E20 and the E45. A new traffic roundabout was also built in order to connect the E20 with the local traffic network. The E20 was widened in order to make room for on-ramps and off-ramps to the road bridge. Due to the long spans and difficult geotechnical conditions, the eastern section of the Partihall Bridge was built as a composite bridge with a steel box girder while the western part was entirely constructed as a concrete bridge.

PROJECT & CONSTRUCTION DETAILS

Owner Trafikverket
Architect WSP
Structural Engineer WSP/ELU
Contractor Skanska
Prefab supplier or other supplier details Ruukki, Steel girder

Bridge over the Oparno Valley, Motorway D8 Czech Republic

MEMBERS
OF ECSN

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The object of the network is to encourage cooperation between the members and thereby promote the development of concrete technology and use of concrete in Europe. The network will not interfere with the work of individual societies and other international organisations. Membership is open to all Concrete Societies of Europe. The Secretariat is currently managed by Austria: **www.bautechnik.pro**

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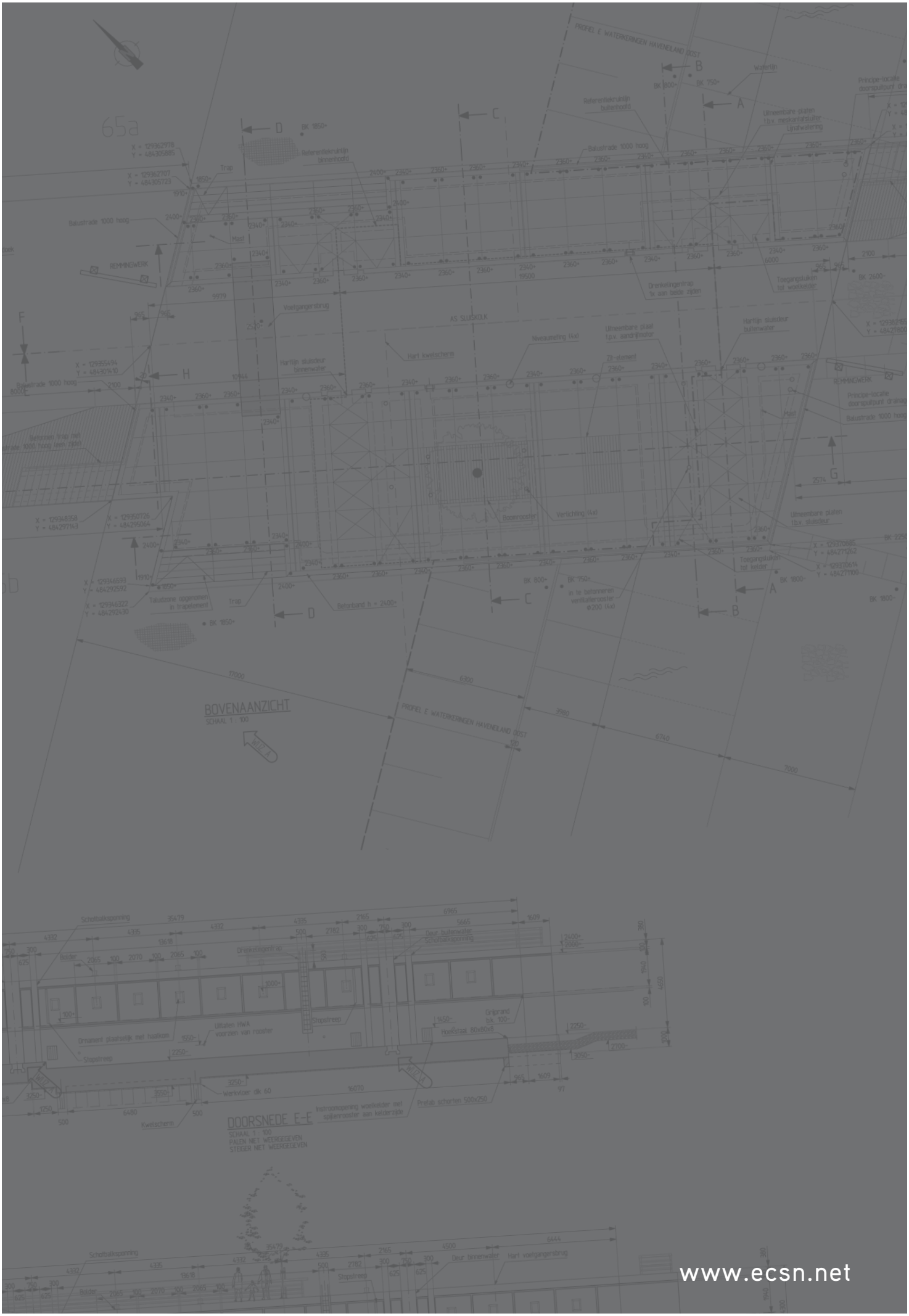
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