ECSN

European Concrete Societies Network

EUROPEAN CONCRETE AWARD 2014

www.ecsn.net

THE EUROPEAN CONCRETE SOCIETIES NETWORK (ECSN)

Members of the ECSN (f. l. t. r.): Richard Mc Cathy (S), Vlastimil Sruma (CZ), Morten Bjerke (N), Frens Pries (NL), Michael Pauser (A), Juha Valjus (Fin), Anja Muschelknautz (D), Lars Meyer (D), Brian O'Rourke (Irl), Jef Apers (B)

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 2014

2014 again is 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 34 submissions – 19 for the building category and 15 for the civil engineering category. The participants this year came from Austria, Belgium, the Czech Republic, Finland, Germany, Ireland, Italy, the Netherlands, Norway and Sweden.

Their projects were evaluated against a set of criterias by an international ECSN jury consisting of members from Austria, the Czech Republic, Finland, Germany, Ireland, Italy, the 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.

For me it was a great honour to hand out the prize at the AUSTRIAN CONSTRUCTION CONGRESS 2014 on the 3rd of april in Vienna, to the representatives of owner, architect- and engineering offices and the contractors of the winner projects, which met these criterias best. All the buildings- and civil engineering projects 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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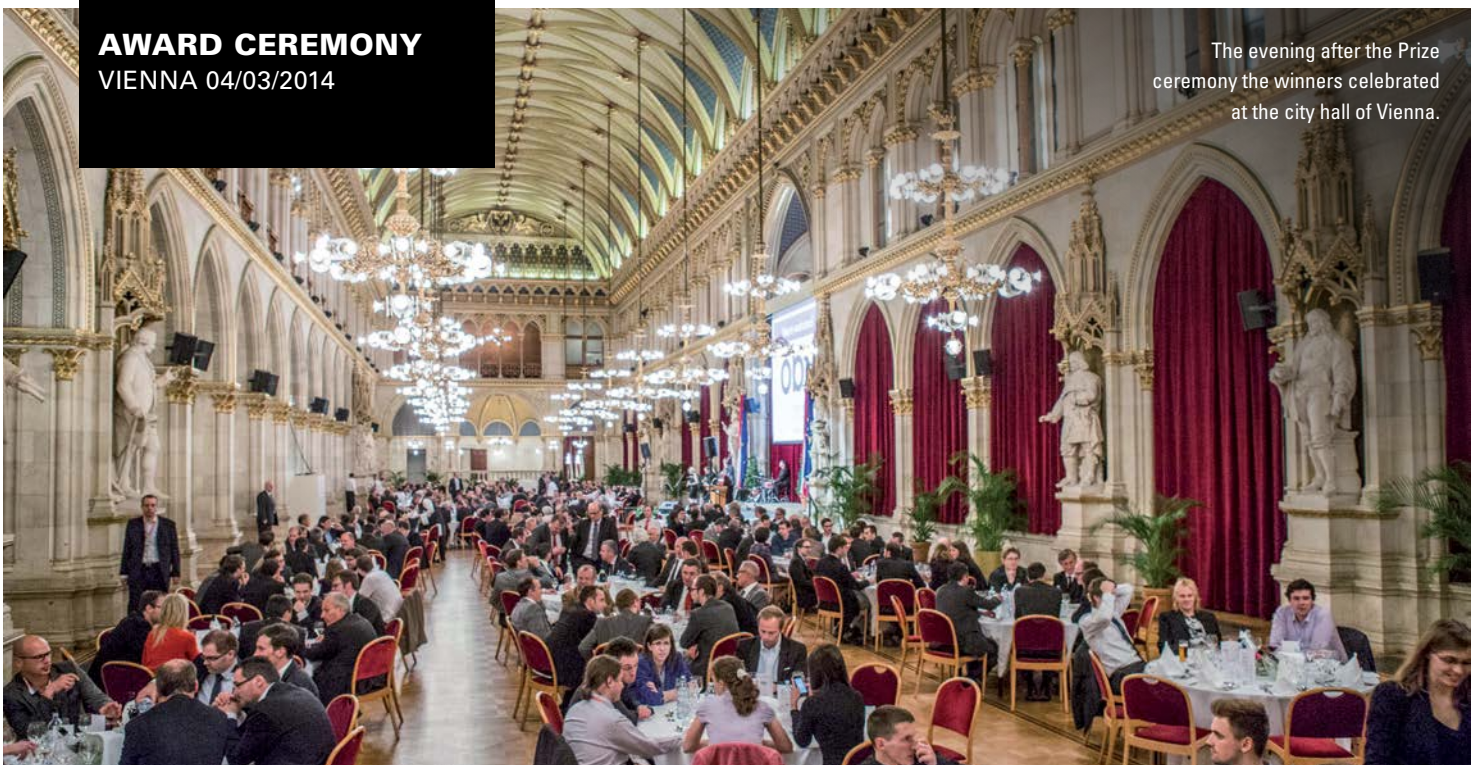
AWARD CEREMONY
VIENNA 04/03/2014



The evening after the Prize ceremony the winners celebrated at the city hall of Vienna.

01

02

03

THE AWARD CEREMONY

During the AUSTRIAN CONSTRUCTION CONGRESS plenty of award winners from owners, architects, structural engineers and contractors came to Vienna for the EUROPEAN CONCRETE AWARD 2014 ceremony:

CATEGORY BUILDING

The Trollstigen Plateau is built of concrete robust enough to withstand heavy weather and floods while simultaneously appearing simple and elegant.

Winner: **Trollstigen Plateau, Norway (01)**
F.l.t.r.: Michael Pauser (ECSN), Sivert Sundsbö and Tor Inge Vestre (Christie & Oppsahl AS), Kjell Sture Björvig (Norwegian Road Administration), Ole H. Krokstrand (Norwegian Concrete Association)

Honorable mention: **Kaisa-Talo University Helsinki Library, Finland (02)**
F.l.t.r.: Matti Julin (SRV Rakennus Oy), Jyrki Jauhiainen and Anssi Kolehmainen (Finmap Consulting Oy), Teppo Salmikivi (University Helsinki)

Honorable mention: **European Central Bank, Germany (03)**
F.l.t.r.: Eugen Bindek (on behalf of The European Central Bank), Christian Lackner (on behalf of B+G Ingenieure Bollinger und Grohmann GmbH), Elzbieta Zagorska and Holger Schmid (Ed. Züblin AG)

BUILDINGS

Trollstigen Plateau Norway
Kaisatalo, University Library Finland
European Central Bank Germany
Festival Opera House Austria
Seinäjoki City Library Finland
Stavanger Concert Hall Norway
Crematorium Hofheide Belgium
Espoon Tähystäjä Finland
Saunalahti School Finland
The ‚self-healing' Pavilion, Netherlands
Geriatric Centre Simmering Austria
The Dancing Towers of Hamburg Germany
House Lagnö Sweden
The Widerström Building Sweden
University Campus – Trefolo – Forlì Italy
Nedinsco Netherlands
Palais Hansen Austria
Raiffeisen Headquarter Austria
Bord Gais Networks Ireland

Trollstigen Plateau Norway

WINNER
BUILDINGS

TROLLSTIGEN PLATEAU
NORWAY

WINNER

INTRODUCTION

Located on Norway's west coast, Trollstigen plateau is perched within a dramatic pass between the deep fjords that characterize the region. This panoramic site can only be visited and constructed during summer, due to severe winter weather. The challenge was to build an attraction that was inspiring and that will endure over time in the very rough and fast changing climate. The project includes an entire visitor environment ranging from a mountain lodge with restaurant and gallery to flood barriers,water cascades, bridges, and paths to outdoor furniture and pavilions and platforms meant for viewing the scenery. All of these elements are moulded into the landscape so that the visitor's experience of place seems even more intimate.

MATERIALITY

The Trollstigen Plateau is a robust facility, dimensioned for durability with minimal maintenance and large static stresses. The major contrast between the seasons has been handled with the choice of materials. The area receives up to 7 m of snow during winter, placing extreme demands on static strength. Structures and details are designed to with stand the extreme stress without compromising on the visual slenderness. Working with resistant materials felt natural. Cast in-Place concrete and cor-ten steel are the main materials used in the project. The concrete emerges as a living and beautiful material through the use of various kinds of finishes, from rough crush hammered surface, exposed aggregate, wooden board formwork to the satin-smooth highly polished surfaces. In this way the site actually serves as a showcase for various types of concrete surface finishes.

SIZE

The Trollstigen Plateau is a very comprehensive architectural project, both in program, complexity and extension. It covers an area of approximately 600,000 m² that from one end to the other takes about twenty minutes of continuous walking. At the same time the complex is dimensioned to receive a lot of people in a short time. Around 600,000 people in 100,000 vehicles visit the site during the summer months. This causes big demands on infrastructure and logistics.

SUSTAINABILITY

The following issues are important for the sustainability of the project:

- **Grey water**
  All grey water is filtered locally at the site through a series of sand reservoirs recycled directly into nature.
- **Black water**
  This is extremely reduced using vacuum sanitary systems.
- **Self-sufficient energy consumption**
  Trollstigen will be self-sufficient with energy with the use of a local mini hydro power plant, which is a part of the project.
- **Low energy consumption**
  The project is provided with low energy consumption installations in all parts.

PROJECT & CONSTRUCTION DETAILS

Owner The Norwegian Public Roads Administration, Oslo
Architect Reiulf Ramstad Arkitekter AS, Oslo
Structural Engineer Dr. techn. Kristoffer Apeland AS, Oslo
Contractor Christie & Opsahl AS, Aalesund

HONORABLE MENTION
BUILDINGS

KAISATALO UNIVERSITY LIBRARY FINLAND

Previously this location was shopping mall and parking facility. Lower floors were renovated, columns were reinforced, and new levels were created. Upper columns and slabs are cast in-situ concrete. Total area is 30,700 m². Slabs are post-tensioned in order to achieve thin structures with longer spans. Beams are integrated into slab areas giving slender appearance. Architectural forms, round shapes, exiting oval forms and staircases, exterior walls with brick wall and openings, slabs which change in shape floor by floor gives signature look to the building. The unique architecture and engineering give excellent surroundings and innovative and inspiring atmosphere for university students and library. Studying is time of searching; library is the place of knowledge and research. The fact that this building is made of concrete almost disappears in its harmonious and intriguing details. This building redefines the use of concrete giving the architecture full power to accomplish everything.
Long open spans give flexibility for the layout making future changes possible. High quality architecture combined with modern engineering and latest techniques on site create unique combination of excellence. This great architecture and high level of execution has been appreciated by the owner, University of Helsinki. New timeless architecture in the very heart of Helsinki.

PROJECT & CONSTRUCTION DETAILS

Owner University of Helsinki, Helsinki
Architect Anttinen Oiva Arkkitehdit Oy, Helsinki
Structural Engineer Finnmap Consulting Oy, Helsinki
Contractor SRV Toimitilat Oy, Espoo

EUROPEAN CENTRAL BANK GERMANY

The building complex of the new ECB premises in Frankfurt is by all means an exceptional project. Next to the preservation of the the historical Grossmarkthalle, the architecture and appearance of the double office tower in the east of the City of Frankfurt, with the geographic distance from the downtown skyscrapers of the banking metropolis, represents a landmark for the independence and strength of the European currency. The complex geometrical structure posed challenges on the execution and load-bearing capacity of concrete as a construction material. Storey by storey pre-deformation lead to a parabolic curvature of the towers in order to compensate for the deflections which occurred during construction.

In the north tower the rectangular plan of level 0 develops into a trapeze shape on level 43, while the south tower begins with a trapeze plan in level 0 and ends with a rectangular plan in level 43. Therefore in the north tower three of the four facade surfaces are skewed planes, in the south tower two of the four surfaces. Reinforced concrete is the major load-bearing material of the structure and connects the steel bracing elements to form a complex composite structure. The concrete in this structure is not visible and was not poured in any curved forms. It is, however, the basis for the structure, the support for other construction materials, the invisible force that holds the building together and the material that enables complex geometric structures.

„It's only concrete – and thank goodness"

PROJECT & CONSTRUCTION DETAILS

Owner European Central Bank, Frankfurt
Architect: Coop Himmelb(l)au, Vienna
Structural Engineer B+G Ingenieure Bollinger und Grohmann GmbH, Frankfurt
Contractor Ed. Züblin AG, Stuttgart

FESTIVAL OPERA HOUSE AUSTRIA

The high-contrast design has its seasonal reason. During the summer season the white „Passionsspielhaus" will catch all attention of the visitors, while the new dark theatre will acquiesce in the surrounding of the forest. Other way around in the winter season when the white building will be invisible in the snowy landscape of Tyrol and the dark complex will be outstanding – in its elevation and impression too. The main construction material for the five-storiedbuilding is reinforced concrete combined with a steel structure in an optimal way. The structure of the roof consists out of a trapezoidal steel section and a top concrete layer. The cantilever parts and parts of the ceiling of the hallwere realised with open-web-girder elements (appr. 400 t) out of steel.

PROJECT & CONSTRUCTION DETAILS

Owner Haselsteiner Familien-Privatstiftung, Spittal a. d. Drau
Architect
Delugan Meissl Associated Architects, Vienna
Structural Engineer FCP Fritsch, Chiari & Partner ZT GmbH, Vienna
Contractor Strabag AG, Vienna

SEINÄJOKI CITY LIBRARY FINLAND

PROJECT & CONSTRUCTION DETAILS

Owner City of Seinäjoki, Seinäjoki
Architect JKMM Architects, Helsinki
Structural Engineer Ramboll Finland Oy (former Magnus Malmberg Oy), Espoo
Contractor Rakennusliike Timo Nyyssölä Oy, Ähtäri

The key point of reference for the new library design was its location in the valuable environment of the civic centre created by Aalto. The aim was to initiate a dialogue between the new and the old part. Dividing the new building into three sculpture-like sections was an important insight that helped to reconcile its large volume with the scale of the civic centre. The building thus relates to its surroundings, and a different statuesque aspect of it is revealed from each direction. On the other hand, the new building discreetly keeps its distance from the outlines and materials of the old civic centre. With liberal generosity, it was placed in the middle of lawns, as though a building in a park. A distinctive copper cladding material was designed for the facades that gives the building a unique lively texture.

STAVANGER CONCERT HALL
NORWAY

The program asked for two halls, more or less similar in volume, but opposite and complementary in content; one hall fine-tuned for natural acoustic, and one hall for congresses and banquettes. The main principle is that colours should be natural, with a clear contrast between walls and floors, as well as between the two complementary building volumes. The glass lobby has light grey granitefloors, exposed concrete elements and grey perforated metal ceilings. The multipurpose hall is clad with almost black steel panels combined with exposed concrete surfaces. The closed box has dark smoked oak flooring, natural maple and white plaster on the walls. The cast in place concrete box is covered on the outside with highly polished red precast concrete panels partially of red granite mixed with red opaque glass. The largest wall panels are 4.2 x 8 m.

PROJECT & CONSTRUCTION DETAILS

Owner Nytt konserthus i Stavanger IKS, Stavanger
Architect Ratio arkitekter AS, Oslo
Structural Engineer Hjellnes Consult AS, Oslo
Contractor Kruse-Smith AS, Kristiansand

CREMATORIUM HOFHEIDE
NETHERLANDS

The natural infiltration area extends with its branches into a marshland and a robust volume, a „monumental sarcophagus" erects from this landscape and becomes a unity with its surroundings. The background noise of everyday life disappears, a no man's land around the crematorium is preserved. In harmony with the local ironstone earth layers, the volume is fully constructed of pigmented concrete with natural sand and gravel. The basement seems to have risen spontaneously from the ground as a protective shell to its visitors. The raw exposed concrete is poured in one „full height" action. Around the total perimeter of this concrete „sarcophagus", a vertical screen of corten steel sheets creates intimacy and works as an intermediate layer between visitor and landscape.

PROJECT & CONSTRUCTION DETAILS

Owner IGS Hofheide, Holsbeek
Architect Joint Venture RCR Aranda Pigem Vilalta Arquitectes & Coussée & Goris architecten, Gent
Structural Engineer Studieburo Mouton bvba, Gent
Contractor STRABAG Belgium nv, Antwerpen

ESPOON TÄHYSTÄJÄ
FINLAND

The 13-storey apartment block in Espoon is called Tähystäjä – Finnish for Lookout – and its facades are all covered in graphic concrete making the building the most extensive application of graphic concrete so far in Finnish housing construction. The graphic patterns have been created by graphic designer Aimo Katajamäki, who considers the visual implementation of the large-scale patterns as a particularly difficult work phase from his own viewpoint. A uniform pattern running round the building had to be created with a limited number of print films. The creation of the running wave pattern, for example, required that the print films were turned in different positions. The appearance changes with seasons, humidity, sunlight and observation distance resembling the ripple of water.

PROJECT & CONSTRUCTION DETAILS

Owner YIT Rakennus Oy, Helsinki
Architect Arkkitehtitoimisto Petri Rouhiainen Oy, Helsinki
Structural Engineer Wise Group Finland Oy, Kotka
Contractor YIT Rakennus Oy, Heslsinki
Prefab Supplier: Parma Oy, Nummela

SAUNALAHTI SCHOOL
FINLAND

Saunalahti school is a multi-purpose building for education and culture. The scale of the building varies according to the functions and the age of the children both in the facades and inside the building. From the central square and the neighbouring apartment buildings the copperroof forms the fifth facade of the building. The vast light central heart space of the building is emphasized by the characteristic free-form ceiling that echoes the form of the roof. Massive walls of cast on site concrete support the laminated timber beams that are left visible on the eaves outside the large glass wall of the space. Authentic materials used both on the facades and in the interiors are durable and give the building a warm and relaxed atmosphere – rough red brick, warm wood, concrete and copper on the facades and oak, concrete and light coloured rough surfaced brick in the interiors.

PROJECT & CONSTRUCTION DETAILS

Owner City Of Espoo Premises Department, Espoo
Architect Verstas Architects, Espoo
Structural Engineer Ramboll Finland Oy (former Magnus Malmberg Oy), Espoo
Contractor YIT rakennus Oy, Helsinki

THE ‚SELF-HEALING' PAVILION
NETHERLANDS

The pavilion which accommodates the First Aid and Response & Rescue Unit is located on the lakeside at the „Galderse Meren" a recreation and leisure area, near the city of Breda. Besides functional content, this is characterised by sustainability and „vandal-proof" targets. The facade and gable are, by means of 60 mm concrete, built in a shell or monocoque construction. The frontfacade attempts to be „vandal-proof" with its wire meshing and steel-plated slidingdoor. The concrete contains a bacteria, harmless to both human and animal life, which allows for limestone to develop. This allows for eventual cracks to be repaired without any additional, external assistance. In this way, the need for maintenance is eliminated.

PROJECT & CONSTRUCTION DETAILS

Owner City Community Breda, Breda
Architect Frank Marcus, Boven-Leeuwen
Structural Engineer Archimedes bv, R. van Gestel, Eindhoven
Contractor Bouwbedrijf Balemans, Breda

GERIATRIC CENTRE SIMMERING
AUSTRIA

This state-of-the-art geriatric centre, which accommodates 348 patients, was built in the centre of Vienna's Simmering district. The complex consists of various nursing wards on its upper floors and a day care centre for 50 to 60 seniors on its ground floor. Its modern technical requirements but also the barrier-free realization of the entire building posed an interesting challenge. All obstructed materials have been approved by the guidelines of „ökokauf vienna", wherein no pvc materials are allowed. One of the building's most striking characteristics is its façade which consists of a curtain-wall facing with clay cladding and ETICS meanders. Another very particular highlight was the chapel beside the old preserved trees. The double wall construction made of ferroconcrete was a special challenge to build.

PROJECT & CONSTRUCTION DETAILS

Owner SENUIN Beteiligungsverwaltungs GmbH, Vienna
Architect Josef Weichenberger Architects + Partner, Vienna
Structural Engineer FCP-Fritsch Chiari&Partner GmbH, Vienna
Contractor PORR Bau GmbH, Vienna

THE DANCING TOWERS OF HAMBURG GERMANY

The Dancing Towers are located at a prime site at Reeperbahn No. 1 in Hamburg's famous St. Pauli district. For the „Tanzende Türme" a smart and innovative solution for the execution of concrete columns using high-strength threaded steel could be found. The solution considers the interests of static, execution, economic efficiency as well as architecture. By using high-strength threated steel it was possible to reach an increased bearing capacity and are duction of the cross section at the same time. The inclined columns fulfil the high architectural demands and transfer the design concept of the slanted towers and the facadestructure into the building and remind the user that he is standing inside a „dancing" tower. The angled columns stand for consequent design and enable a bridge between architecture and engineering.

PROJECT & CONSTRUCTION DETAILS

Owner Projekt Elbpark GmbH & Co. KG, c/o STABAG REAL Estate GmbH, Hamburg
Architect BRT Architekten Bothe Richter Teherani, Hamburg
Structural Engineer Züblin Direktion Zentrale Technik, Hamburg
Contractor Ed. Züblin AG – Direktion Nord, Hamburg

HOUSE LAGNÖ SWEDEN

PROJECT & CONSTRUCTION DETAILS

Owner Private Västra Lagnö, Stockholm
Architect Tham & Videgård Arkitekter, Stockholm
Structural Engineer Sweco Structures AB, Stockholm
Contractor BTNG projekt AB, Stockholm

The desire for a maintenance-free house in the sourounding of Stockholm inspired to search for a way to design the house as an integral part of nature, where the material's weight and color scale connects to the archipelago granite bedrock, rather than a light wooden cottage. It is a first outdoor space protected from rain by a pitched canopy of glass. The exterior character of the house is derived from a number of transverse gable roofs, which connect to each other, and like boathouses in a line form a pleated long facade. This provides a sequence of varied room heights for the interior and creates places in the otherwise completely open living room that stretches through the entire length of the main building. The sliding doors are lit by openable skylights and form smaller pitched ceiling spaces within the main roof volume. Plywood formwork cut was used to fit the facades. The interior is painted white with woodworks in ash.

THE WIDERSTRÖM BUILDING
SWEDEN

The Widerström Building is an entirely prefabricated building. The architecture is not trying to conceal theraw elements but rather to process the tactility of the surface. The exteriorfaçade elements have red bricks cast into the concrete like a stitching pattern from alusekofta (Norwegian wool cardigan). The interior features raw clean concrete elements with adjacent details in cool tones providing a calm and generous meeting space for the students and researchers. Other elements that help to tie up the design and give the building a personal identity includes the artwork by Kristina Matousch, a creation made up of casted toilet rolls incorporated in the concrete walls.

PROJECT & CONSTRUCTION DETAILS

Owner Akademiska Hus AB, Stockholm
Architect Kod Arkitekter AB, Stockholm
Structural Engineer Sören Lundgren Byggkonsult AB, Stockholm
Contractor NCC Construction Sverige AB, Stockholm

UNIVERSITY CAMPUS, TREFOLO – FORLÌ
ITALY

Trefolo and Tunnel are two different blocks of University Campus in Forlì. Tunnel is an undergroundstructure for technological systems. It is totally made in reinforced concrete with ordinary technologies. Trefolo is the set of paths connecting the lecture halls. It consists of three twisting tubes with plan variations and modifications during the profile development elevation. It rests on concrete walls and steel columns. Biggest distance between two consecutive supports exceeds 30 m. The columns have different heights and different tilt angles. Trefolo has a total length of about 100 m and three tubes have a cross section of 7.00 x 3.50 m.

PROJECT & CONSTRUCTION DETAILS

Owner Municipality of Forlì, Forlì
Architect Arch. Lamberto Rossi, Milan
Structural Engineer PROGES ENGINEERING Sas, Rome
Contractor A.T.I. Conscoop S.c.a.r.l. – Ciro Menotti – CEAR, Ravenna

NEDINSCO
NETHERLANDS

The Nedinsco Factory in Venlo is a former industrial complex in Bauhaus style, built in the period 1920 – 1930. Revitalizing began with the restoration and re-establishment of the concrete frame, which is the basis of this building. The function change of industrial complex into a building to live and work in is beautifully crafted within the original structure of the building, where the airframe has been reduced almost entirely in its originalform. Most recent techniques of concrete repairs are combined with the redevelopment and renovation of the project. The Nedinsco Factory now has a characteristic look for the modern and functional architecture.

PROJECT & CONSTRUCTION DETAILS

Owner Woningcorporatie Woonwenz,Venlo
Architect Diederendirrix, Eindhoven
Contractor Vogel BV, Zwijndrecht

PALAIS HANSEN
AUSTRIA

Designed by the famous architect, Theophil Hansen, and constructed as his private investment, Palais Hansen,located at the Schottenring is the largest private building along Vienna's Ringstraße development. The refurbishment of the Palais was conducted in different stages of demolition and a new structure consisting of a reinforced concrete skeleton was in corporated into the old building, floor by floor, beginning with the soilCrete foundation elements covered by reinforced concrete grids of the basement levels, and finishing with the apartment storeys built into the former attic,in many individual interrelated building phases. The restoration work of the façade was modeled on the look of the former Ringstraße era. Chemical analysis of the facade revealed that up to fives coats of paint had been applied to the façade and windows since Hansen's time.

PROJECT & CONSTRUCTION DETAILS

Owner Wien Holding GmbH,Strauss&Partner, Vienna
Architect Boris Podrecca & Dieter Hayde consortium, Vienna
Contractor PORR Bau GmbH, Vienna

RAIFFEISEN HEADQUARTER AUSTRIA

The shape of the building is matching to the curve of the Danube canal and the „Obere Donaustraße"– a new landmark in the inner city of Vienna. The focus for the project was set on the „Raiffeisen-climateprotection-initiative" by using/ installing Photovoltaic, cooling with Danube-channel water, geothermal heat use (with concrete core activation), power-heat coupling by use of biogas as well as a climate façade. From a structural-physical point of view the building corresponds to the standard of passive houses.The double skin facade makes natural ventilation possible. One of the structural and construction high light were the design and construction of the front lined V-shaped double column especially in consideration of the construction of the upper floors.

PROJECT & CONSTRUCTION DETAILS

Owner Raiffeisen Bank, Vienna
Architect Atelier Hayde Architekten ZT GmbH, Vienna
Structural Engineer Vasco + Partner Ingenieure ZT GmbH, Vienna
Contractor STRABAG AG, Vienna

BORD GAIS NETWORKS IRELAND

The Design Team defined sustainability targets early on in the design process, formulating an integrated sustainable design approach. This approach combines microclimate, biodiversity and landscape, water management and use of renewable energy technologies, within a compact building featuring a low energy design concept to establish a service facility with a high quality and permeable work environment. The flat slab concrete construction along with a 9 m grid spacing of the concrete columns allow for a high degree of flexibility in both layout and usage, minimizing the costs for future adaptations.The Displacement Ventilation system relies on natural air movement between the assisted fresh air supply at floor level and a controlled extraction via a central chimney at the apex of the folding exposed concrete roof.

PROJECT & CONSTRUCTION DETAILS

Owner Bord Gáis Networks, Dublin
Architect Denis Byrne, Denis Byrne Architects, Dublin
Structural Engineer Stuart Brumpton, Buro Happold, London
Contractor Gareth Lloyd, Dublin

AWARD CEREMONY
VIENNA 04/03/2014

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THE AWARD CEREMONY

Part two of the award ceremony was dedicated to civil engineering. Austria won this category of the EUROPEAN CONCRETE AWARD for the first time in 2014.

CATEGORY CIVIL ENGINEERING

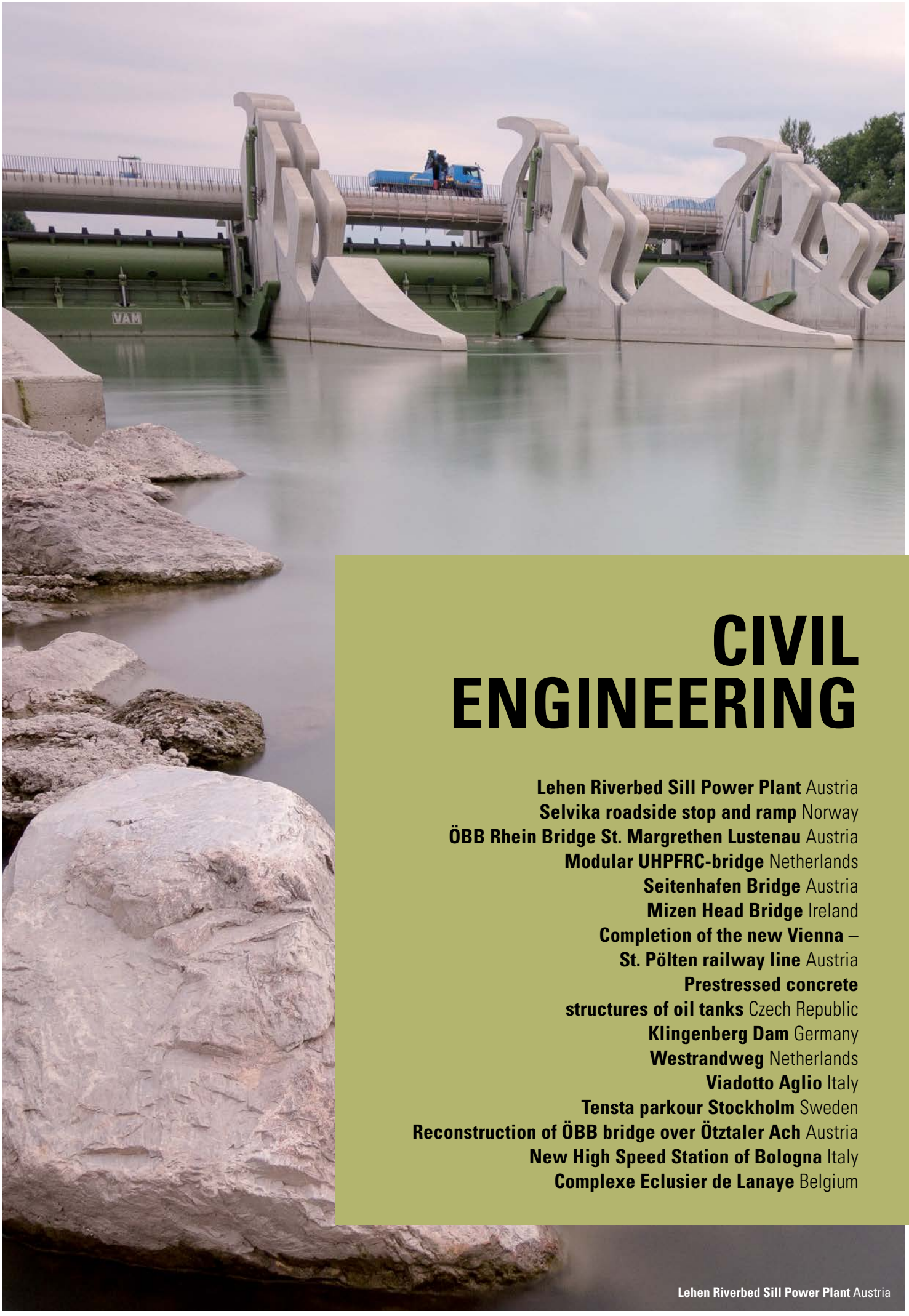
The Lehen Riverbed Sill Power Plant proves hydropower as a design principle.

Winner: **Lehen Riverbed sill power plant (01)**
F.l.t.r.: Michael Pauser (ECSN), Andreas Jancar (PORR Bau GmbH), Erich Wagner (Architekt), Wolfgang Göbl (Hinteregger BauGesmbH), Peter Mall (Teerag Asdag AG), Martin Pfisterer (Salzburg AG)

Honorable mention: **Selvika roadside stop and ramp (02)**
F.l.t.r.: Roger Hammari and Torleif Johansen (T.Johansen Drift AS), Kjell Sture Björvig (Norwegian Road Administration), Ole H. Krokstrand (Norwegian Concrete Association)

Honorable mention:
Austrian Railways Rheinbridge St.Margrethen-Lustenau (03)
F.l.t.r.: Albert Ausserlechner (Bernard Ingenieure ZT GmbH), Wolfgang Dittrich (Strabag AG), Michael Biegelmayer (Ostertag Architects), Thomas Gelbmann and Walter Fischer and Johannes Kari (ÖBB-Infrastruktur AG), Daniel Cranach and Markus Ostertag (Ostertag Architects)


Fastest legs in town: Michael Seida entertained the CONSTRUCTION CONGRESS dinner guests at Vienna city hall with his step-dancing and singing.



CIVIL ENGINEERING

Lehen Riverbed Sill Power Plant Austria
Selvika roadside stop and ramp Norway
ÖBB Rhein Bridge St. Margrethen Lustenau Austria
Modular UHPFRC-bridge Netherlands
Seitenhafen Bridge Austria
Mizen Head Bridge Ireland
Completion of the new Vienna – St. Pölten railway line Austria
Prestressed concrete structures of oil tanks Czech Republic
Klingenberg Dam Germany
Westrandweg Netherlands
Viadotto Aglio Italy
Tensta parkour Stockholm Sweden
Reconstruction of ÖBB bridge over Ötztaler Ach Austria
New High Speed Station of Bologna Italy
Complexe Eclusier de Lanaye Belgium

Lehen Riverbed Sill Power Plant Austria

WINNER
CIVIL ENGINEERING

LEHEN RIVERBED SILL POWER PLANT
AUSTRIA

WINNER

THE NEW SALZBURG AG POWER PLANT WAS BUILT IN THE IMMEDIATE VICINITY OF THE HISTORICAL CITY CENTRE OF SALZBURG, WHICH WAS DECLARED A UNESCO WORLD HERITAGE IN 1997.

Due to this exposed location particular attention was paid not only to expedient access, but also to an appropriate concept of open space. Therefore this hydroelectric power plant differs from other, mainly purpose-built structures.
As the main design element for the hydroelectric power plant, the architects chose the energy and power dynamics of water. The key design elements were arranged in the direction of the flow. Both basic tendencies of power generation – the potential of „stillheadrace" and the kinetics of „flowing tailrace" were epitomized in the balance of the powers. The headrace and tailrace integration and design of the fish ladder, power plant run off as well as abutment and embankment piers enhance the impression of a sculpture in the riverbed.
Immediately above the built power plant there is a so-called low weir that was built by the city of Salzburg in the 1960ies in order to stabilize the river bed. In accordance with statutory regulations, this low weir would have had to be rehabilitated and made passable at considerable cost. With the construction of the power plant, the existing low weir is dammed in and the ecological patency of the River Salzach for fish – as required by the EU by 2015 – is restored with the installation of a fishladder as well as a newly created bypass channel.

ECOLOGICAL CHALLENGE

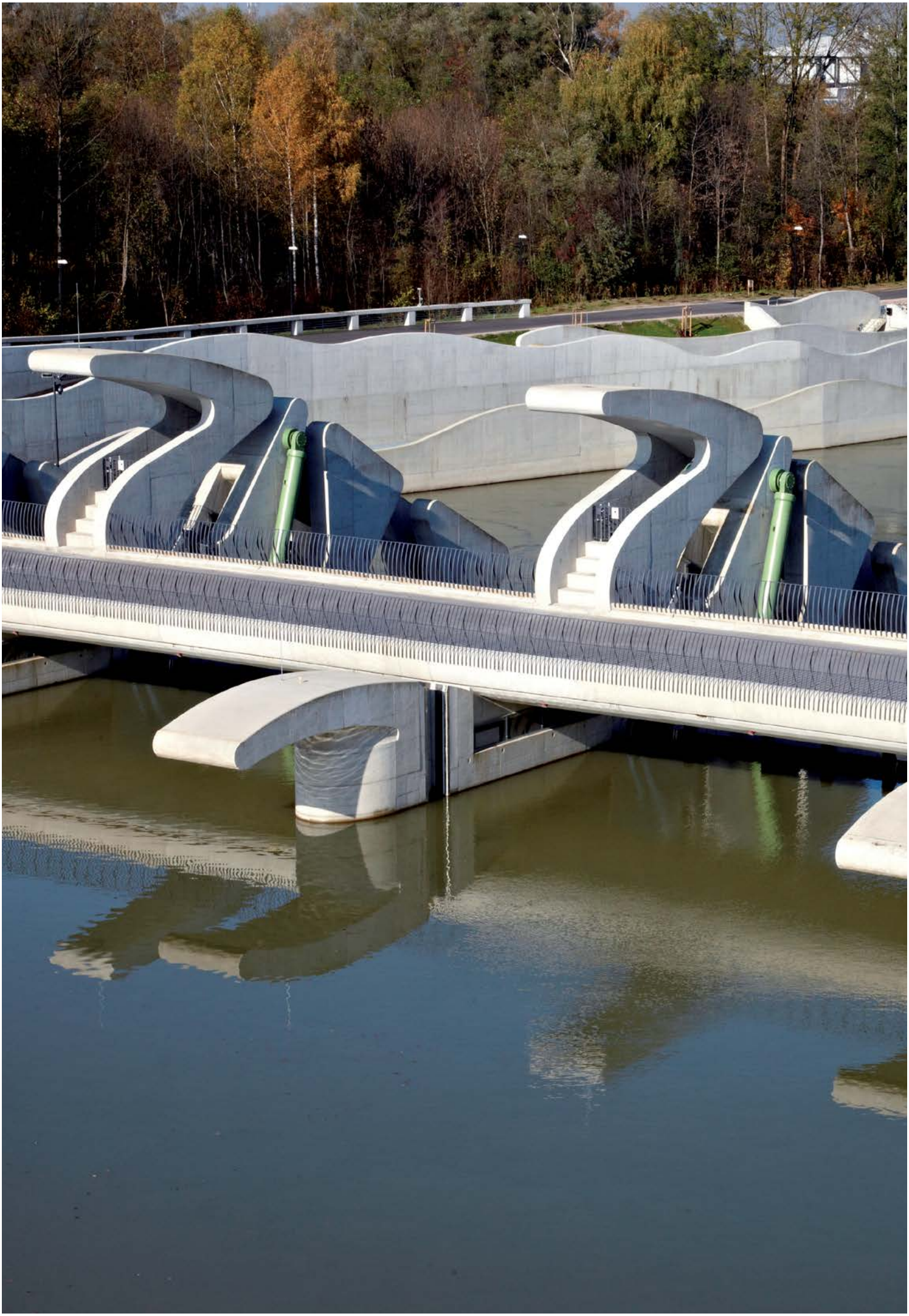
In the course of construction of the power plant, an all-year endowment and renaturalisation of the Glan channel, an originally strictly regulated flood discharge channel, was integrated in the project. In combination with the still existing wetland forests as well as the newly created open space in the area of the Glanspitz, this has created a new local recreational area in which the ecological requirements were also taken into account with biotope zones and reforestation areas. At the same time it was possible to improve the flood protection and the groundwater management.

NEW CHALLENGE IN DESIGN

Due to the confined space, the power plant had to be built in two construction phases with simultaneous re-routing of the River Salzach. Extremely complex special civil engineering works were necessary in order to create the conditions for excavation of the weir sections and the power house. Thereby special attention had to be paid to the specific „Seeton" geology in Salzburg.
With the realisation of this unique construction project it has been possible not only to achieve the primary purpose of power generation, but also to improve the overall situation in terms of both ecology and design.

PROJECT & CONSTRUCTION DETAILS

Owner Salzburg AG, Salzburg
Architect ARGE Max Rieder Erich Wagner, Vienna & Salzburg
Contractor PORR Bau GmbH, Hinteregger BauGesmbH, Teerag Asdag AG, Vienna & Salzburg



HONORABLE MENTION
CIVIL ENGINEERING

SELVIKA ROADSIDE STOP AND RAMP NORWAY

The Selvika roadside stop is part of the National Tourist Route located in the extreme north of Norway, in a landscape almost lunar in its barren and inhospitable beauty.
The roadside stop invites the visitor to a slow walkin the beautiful, open and rough landscape. The meandering walkway from the road towards the beach provides the framework to experience the nature and location from different viewpoints.The walk ends at a focal point andgathering place with fireplace, outdoor kitchen and benches.

The design is intended to enhance the experience of moving from the road to the beach and water at this particular place. The primary functional focus was access for disabled persons. As opposed to proposing a solution consisting of both stairs and a ramp, the ramp is made as ajoint walkway of a holistic project character. The sculptural structure is based on a study of the organic forms of seashells.
The location is characterized by a harsh climate where the sea hammers against the land for large parts of the year. Concrete is chosen as primary construction material for its plasticity in design, as well as its solidity andability to weather well over time. The entire project is a continuous structure of in-situ concrete with vertical timber formwork. Supplementary materials include prefabricated elements of wood, steel and glass.
Before the construction work started, the constructioncrew was given a special course focusing on the execution of in-situ concrete, including:

- the composition and desired mix of concrete
- reinforcement and consequences of mistakes
- approach to formwork
- casting and finishing of concrete
- cold weather concreting
- casting in-situ joints
- casting of trial panels

PROJECT & CONSTRUCTION DETAILS

Owner The Norwegian Public Roads Administration, Oslo
Architect Reiulf Ramstad Arkitekter, Oslo
Structural Engineer Dr. techn. Kristoffer Apeland AS, Oslo
Contractor T. Johansen Drift AS, Alta

HONORABLE MENTION
CIVIL ENGINEERING

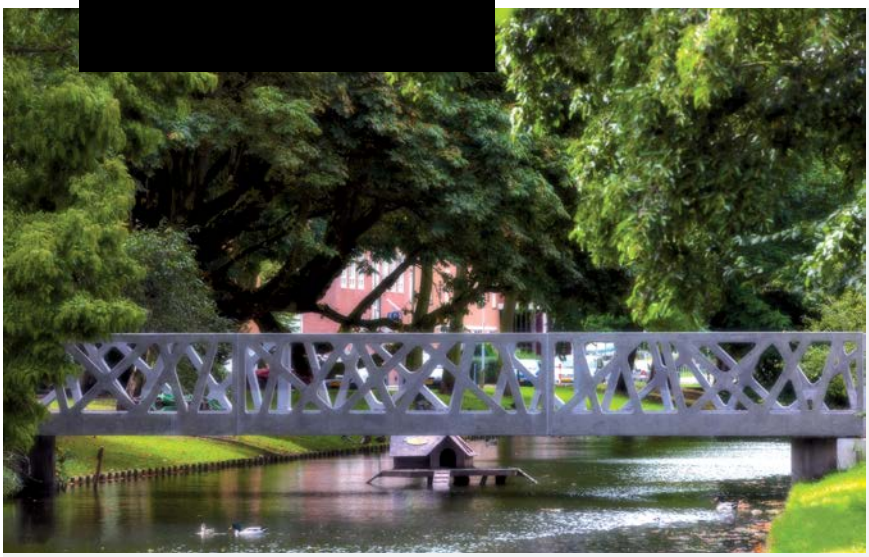
ÖBB RHEIN BRIDGE ST. MARGRETHEN – LUSTENAU AUSTRIA

The extension of the transnational railway network (Zürich-Bregenz-Munich) between St. Margrethen (Switzerland) and Lauterach (Austria) had to be planned with a new embankment two meters higher than before due to an improved flood pretention. The new bridge-construction has a total length of 290 m including six foreshore bridges. The central and longest bridge has amain span of 104 m and a width of 8 m.

The extraordinary design of the bridge comprises aneconomical structural design, flood protection, protection of residents for noise and vibration as well as an outstanding architecture. The two concrete arches of the central bridge are inclined into the middle, all foreshore bridges are trough-shaped and the piers are designed in a streamlined way. The concreteslab of the track itself is carried by a steal-beam-structure which is connected to the concrete arches at the end and is suspended from the concretearches over the whole span - altogether an interesting combined construction inconcrete and steel following another way. The heavy foundation works, overall 8.500 m of sheetpiles and 3.700 m drilled piles, especially of the central piers with 20 m longbored piles, were the first important construction phase. The entire arches were casted in concrete in one single step (300 m³ C40/50(90)/XC2/XF3/SB/F59/PB/W55/RRS) which lasted 12 hours. The structure stayed 56 days encased for the hardening. Then road surfacing and the swelling of the slings took place. During the realisation of that railroad project a great deal of attention was paid to environmental issues too, as for example the program of construction included the living environment of bats, the spawning season of grayling and also air pollution was prevented with exhaust-particle-filter for all engines. After finishing the bridge construction all areas were replanted and recultivated extensively.

PROJECT & CONSTRUCTION DETAILS

Owner ÖBB-Infrastruktur AG, Vienna
Architect Ostertag Architekten, Vienna
Structural Engineer Bernard Ingenieure ZT GmbH, Innsbruck
Contractor STRABAG AG, Vienna



MODULAR UHPFRC-BRIDGE NETHERLANDS

In order to respond to the demand formaintenance-free sustainable bridges with low lifecycle costs, a concept was made for modular bridges in Ultra-High Performance Fibre Reinforced concrete.The first bridge was recently built, tested and placed in collaboration with the Municipality of Rotterdam. In the search for a material with the greatest possible durability, ultra-highperformance concrete (UHPFRC) has showed a good direction. The modularstandardization allows building the bridge with various length, width and design of the handrails with two small moulds for a railing and a plateelement.The handrail elements, each with a length of 4.3 m, were positioned and prestressed to each other. Bridges up to 30 m length and up to 5m width can be built economically with only two standard-moulds.

PROJECT & CONSTRUCTION DETAILS

Owner City of Rotterdam, Rotterdam
Architect Chris Bosse, Rotterdam
Structural Engineer FDN Engineering, Amsterdam
Contractor FDN Construction, Amsterdam

SEITENHAFEN BRIDGE AUSTRIA

Due to the new construction of „B14 – Freudenauer Hafenstraße, a new construction of Danube crossing became necessary. The total length of the bridge is 130 m, the width 15 m. The three-span structure is divided into single spans of 32 m, 65 m and 32 m and was completed for two traffic lanes. The piers were designed with foot intersections out of cast steel – each bundles two coalescing strut pairs – on both sides of the Danube's bank slops. The load bearing structure was planned as a prestressed reinforced concrete construction. The bridge cross-section dissipates from a slab section in the peripheral areas to a sculpturally shaped slab-and-beam section with eight partitions in the middle of the span. The bridge was designed without bearings and dilatations and build on-site from both sides as an integral structure with flexible abutments sloping to the dam body – a remarkable construction.

PROJECT & CONSTRUCTION DETAILS

Owner Council Department 29 Bridge Engineering, Vienna
Architect AGU & Zeininger Architekten, Vienna
Structural Engineer PCD ZT GmbH, Vienna
Contractor STRABAG AG, Vienna

MIZEN HEAD BRIDGE
IRELAND

Mizen Head is the most south-westerly location in Ireland. When the original bridge was constructed in 1909 it was the longest span reinforced concrete bridge in Europe. It was the first reinforced concrete bridge built in Ireland. The bridge is a through-arch structure comprising twin arch ribs which support a pedestrian bridge deck. In 2007, it was decided to carefully remove the existing structure, which was displaying defects caused by exposure to the marine environment, and to build a replica structure in reinforced concrete. The key challenge facing the Designer and the Contractor was to design and build a scheme that would allow safe demolition of the existing bridge, and safe construction of a new bridge, with minimal disruption to the local environment.

PROJECT & CONSTRUCTION DETAILS

Owner Cork County Council, Cork
Structural Engineer Kieran Ruane, RPS Consulting Engineers Ltd., Cork
Contractor Irishenco Ltd., Kill

COMPLETION OF THE NEW VIENNA – ST. PÖLTEN RAILWAY LINE
AUSTRIA

The new high-performance line is a crucial component of the expansion to a four-track Western line between Vienna and Wels and is part of the trans-European network. With a length of 13.356 km the tunnel beats all previous railway records in Austria, its western section consists of two separate tubes and opens on to a forecourt that creates an arena-like termination. To embed the tunnel a step had to be created in the terrain. All the elements were harmonized in terms of colour, the concrete was coloured throughout using iron oxide pigment. The shade is reminiscent of burned brick. By making the two tubes of different lengths the negative impact of pressure waves and tunnel bang caused by trains entering and leaving the tunnel could be avoided.

PROJECT & CONSTRUCTION DETAILS

Owner ÖBB-Infrastruktur AG, Vienna
Architect DI Eduard Kargel, Linz
Structural Engineer Dipl.-Ing. Dr. techn. Bernd Strobl,Vienna
Contractor PORR Bau GmbH, Vienna

PRESTRESSED CONCRETE STRUCTURES OF OIL TANKS CZECH REPUBLIC

The concept of prestressed concrete tanks with laminate sealing system represents a new system for storage of oil in the Czech Republic. It is expected that its life time will be significantly longer than that of the steel tanks. The prestressed concrete structure is rather thin-walled and economical. Prestressing resulted in the compression in majority of concrete parts and almost complete elimination of cracking. Therefore it significantly contributes to durability. The most of the earth excavated before erection of the tanks was used for their cover, which also contributed to the ambient environment and to aesthetical impression of the tanks. The quality of the structure is good enough to guarantee the service life without a significant repair for 100 years.

PROJECT & CONSTRUCTION DETAILS

Owner CEPRO jsc, Praha
Architect Strasky, Husty and Partners, Ltd., Brno
Structural Engineer Metrostav jsc.,Praha -
Contractor Metrostav jsc., Praha

KLINGENBERG DAM GERMANY

PROJECT & CONSTRUCTION DETAILS

Owner Landestalsperrenverwaltung des Freistaates Sachsen, Dresden
Architect HPI Hydroprojekt Ingenieurgesellschaft + Spiekermann GmbH, Dresden
Structural Engineer HPI Hydroprojekt Ingenieurgesellschaft + Spiekermann GmbH, Dresden
Contractor Ed. Züblin AG, Dresden

Klingenberg dam was built in the period 1908 – 1914 according to plans of the Royal Saxon Waterworks Directorate in order to manage flood risk of the „wild" Weisseritz river. Klingenberg dam has a crest length of 310 m, a total waterside surface area of 8,000 m² and rises 34 m over the valley floor. One of the great challenges for the concrete works was producing all visible surfaces and surfaces in contact with water as fair-faced concrete. In order to increase the concrete density at its surface, drainage membranes were placed on all formwork surfaces and thus free of cavities. A high level of craftsmanship was necessary to prepare the formwork, which had almost always curved, conical or rounded off concrete surfaces. The standard radius of the dam was 250 m.

WESTRANDWEG
NETHERLANDS

To alleviate traffic congestion and to improve access to the port of Amsterdam,the Dutch government decided to build an eleven km long highway, west of Amsterdam. For a quick and economical construction of the viaduct, a new and innovative girder system-was developed. To create one span segment with a width of 30 m, only ten beams were used, each being 2.79 m wide and on average 42 m long. The new system made it possible to produce, supply, assemble and construct one span per week. An aesthetically smooth line of the viaduct was achieved by a number of spans made of horizontally curved beams. The transportation of the beams at night from the factory site to the construction site deserves special attention.

PROJECT & CONSTRUCTION DETAILS

Owner Rijkswaterstaat Noord Holland, Haarlem
Architect Zwarts en Jansma, Amsterdam
Structural Engineer Volker Infra Design, Woerden
Contractor Van Hattum en Blankevoort, Woerden

VIADOTTO AGLIO
ITALY

Among the works being carried out on the deviation of the Italian motorway Autostrada del Sole, Aglio viaduct is the most spectacular one, with an interesting comparison before the former and the current condition. Having a 600 m long deck and a maximum height of 87 m, the viaduct is being built according to the classic cantilever method, anchoring the main structure to piles and making use of self compacting concrete. The new four lines carriageway under construction shall be opened as a one-way to South (Florence). With minimizing construction and maintenance costs, getting the best static and seismic performance and reducing the environmental impact of the facility on the valley it crosses, the goals were reached with this design.

PROJECT & CONSTRUCTION DETAILS

Owner Autostade per l'Italia S.P.A., Rome
Architect Guido Furlanetto, Chieti
Structural Engineer Guido Furlanetto, Chieti
Contractor Toto Costruzioni Generali S.P.A., Chieti

RECONSTRUCTION OF ÖBB BRIDGE OVER ÖTZTALER ACH AUSTRIA

Due to the 4th generation of the Ötztal Ach bridge, a section of slow-speed railway traffic that has existed for a long time between Innsbruck and Bludenz was eliminated. The new bridge is a permanentand low-maintenance composite structure which meets the increasing requirements of railway transport. In this case, steel box-type structure constructed in1968 was replaced by a semi-integral composite box-type bridge with an underlying steel trough and a non-prestressed carriageway slab with precastconcrete units as permanent formwork. The spans of the load-bearing structure, measured in the plan curvature, are 42.0 – 60.60 – 42.0 = 144.60 m, whereby the buttressing piers were designed with a hexagonal cross-section at the upperface of the pile head slab and a rectangular cross-section at the bottom of the load-bearing structure for architectural reasons.

PROJECT & CONSTRUCTION DETAILS

Owner ÖBB-Infrastruktur AG, Vienna
Architect Ostertag Architekten, Vienna
Structural Engineer SBV ZT GmbH, Salzburg
Contractor Teerag Asdag AG, Vienna

TENSTA PARKOUR STOCKHOLM SWEDEN

Parkour is not a sport. It's an exercise free of competition and other forms of contest. The aim is to overcome all sorts of obstacles, physical and mental. Tensta Parkour is placed in the suburb of Tensta in the northern part of Stockholm. Placed on a rubber ground surface, the parkour consists of smooth concrete walls of varying height and size. They are accompanied by an array of steel performance frames. Three large benches of cast in-situ concrete, surfaced with rubber, provide space for rest and parkour.The walls are made of raw concrete which is a preferred surface of the parkour practitioners. The functional qualities are reflected in its overall design.

PROJECT & CONSTRUCTION DETAILS

Owner The City of Stockholm, Stockholm
Architect Anders Falk, Stockholm
Structural Engineer Anders Wallmark, Stockholm
Contractor PEAB, Stockholm

NEW HIGH SPEED STATION OF BOLOGNA ITALY

The new HS station Bologna's was designed as a subterranean work, adjacent to the historical station below the tracks most distant from the old passengers building, maintaining the advantage of being centrally located,close to the historic centre, and ensuring an easy interchange between HStrains and regional ones. The dimensions in plant are approximately 640 m long and a 56 m width. The HS rail level, which includes four tracks dedicated exclusively to HS trains, is placed at 23.3 m below the level of the ground. The focal point of the HS station is a large open space that overlooks the platforms trough a central patio and a large double-height void, lit from above, and punctuated by columns of important dimensions; the so called „Cathedral".

PROJECT & CONSTRUCTION DETAILS

Owner R.F.I. S.p.A. (F.S.I. Group), Bologna
Architect ITALFERR S.p.A. (F.S.I. Group), Rome
Structural Engineer ITALFERR S.p.A. (F.S.I. Group), Rome
Contractor ASTALDI S.p.A., Rome

COMPLEXE ECLUSIER DE LANAYE BELGIUM

The project consists in the construction of a lock of 225 x 25 m, ancillary works, a pumping station and a hydro-electric plant on the Albert Canal in Lanaye. This new lock will allow the circulation of convoys of 9,000 t (class Va) on the Albert Canal instead of the current 2,000 t.This lock represents the most important construction in civil works realized in the last decade in Wallonia. This project has provided significant challenges regarding the choice and use of appropriate materials, the reduction of carbon emissions and the need to meet stringent project requirements. Never the less, a stable and homogenous concrete with a low carbon footprint has been achieved, which has been awarded the BENOR (Belgian quality) certificate.

PROJECT & CONSTRUCTION DETAILS

Owner Service Public de Wallonie, Liège
Architect Bureau Greisch, Liège
Structural Engineer Bureau Greisch, Liège
Contractor Besix, Bruxelles

MEMBERS
OF ECSN

THE EUROPEAN CONCRETE SOCIETIES NETWORK (ECSN)

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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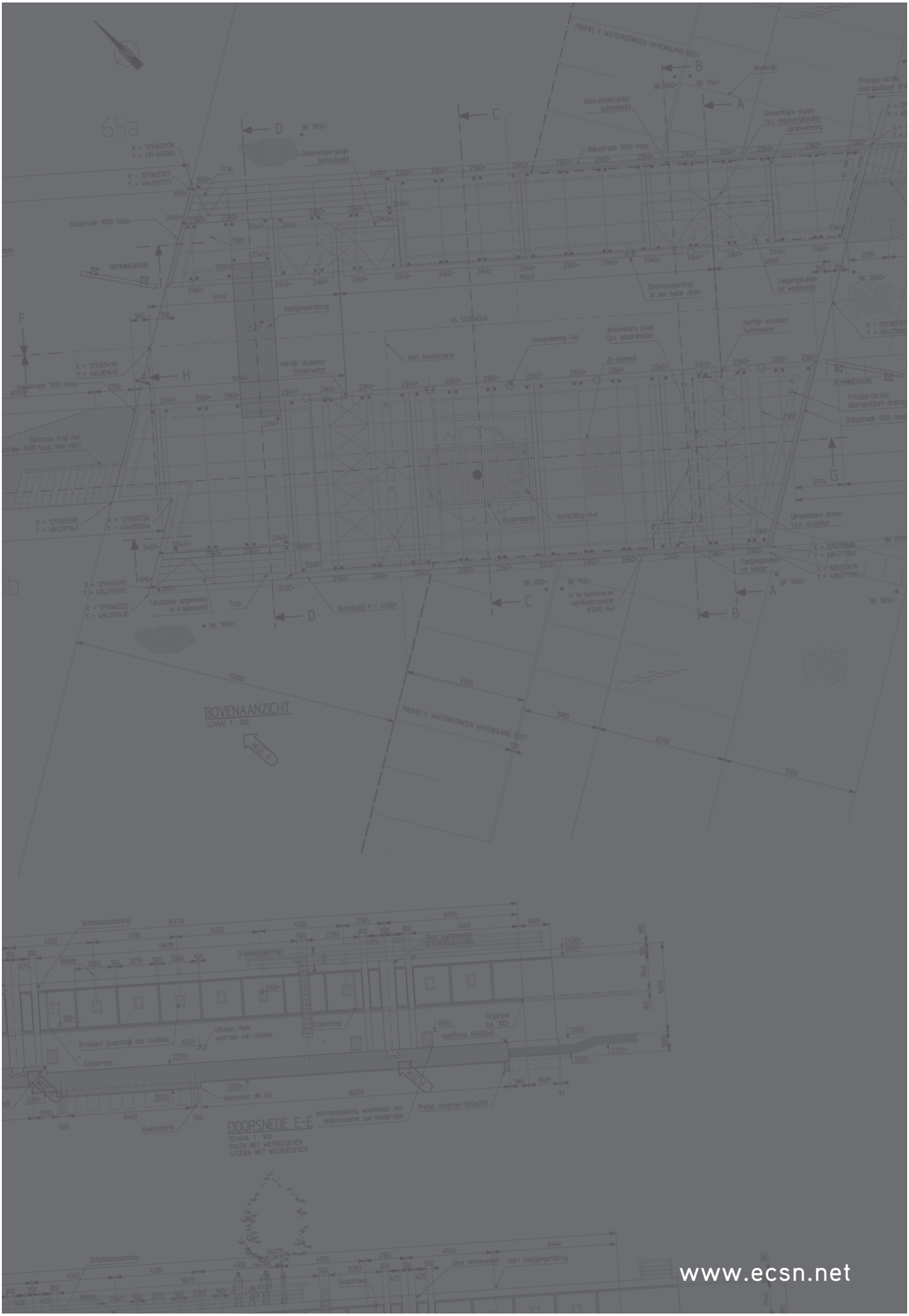
BOVENAANZICHT
SCHAAL 1 : 100
DOORSNEDE E-E
SCHAAL 1 : 100
PALEN NIET WEERGEGEVEN
STEIGER NIET WEERGEGEVEN