

6th International Conference on  
**Concrete under Severe Conditions**  
**Environment and Loading**

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## CONSEC'10

June 7-9, 2010  
Mérida, Yucatán, México

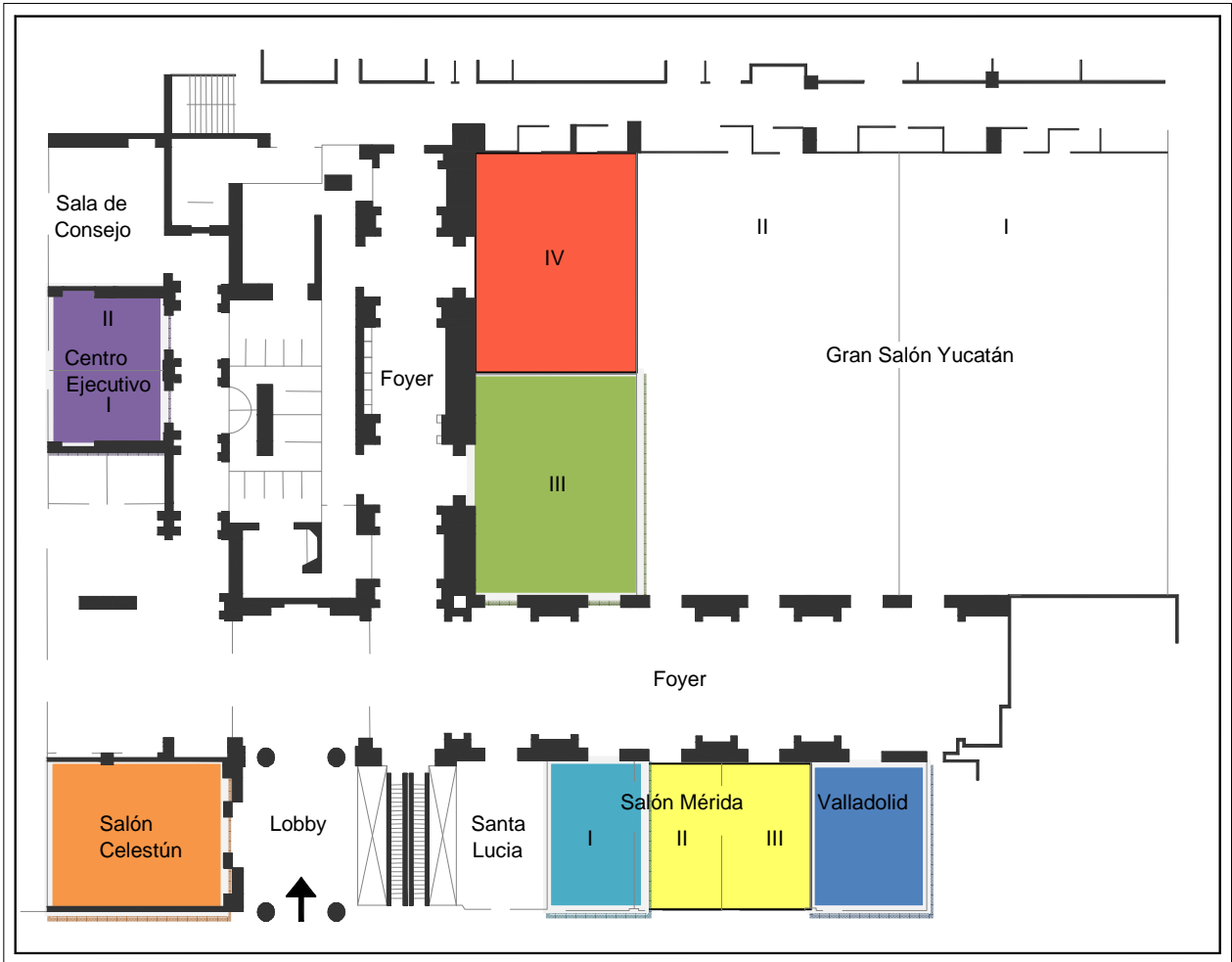
## TECHNICAL PROGRAM

### Host Organizations



## Program at a glance

Sunday June 6	Monday June 7	Tuesday June 8	Wednesday June 9
9:00 – 18:00 Registration Room: Santa Lucía	7:30 – 8:30 10:00 – 17:00 Registration Room: Santa Lucía	9:00 – 18:00 Registration Room: Santa Lucía	9:00 – 13:00 Registration Room: Santa Lucía
18:00 – 20:00 Welcome Cocktail	8:30 – 9:30 Opening Ceremony	9:00 – 11:30 Parallel session	9:00 – 11:30 Parallel session
	9:30 – 10:00 Coffee Break and Opening of the exhibition		
	10:00 – 11:30 Plenary session		
	11:30 – 11:45 Coffee Break	11:30 – 11:45 Coffee Break	11:30 – 11:45 Coffee Break
	11:45 – 13:45 Parallel session	11:45– 13:45 Parallel session	11:45– 13:45 Parallel session
	13:45 – 15:15 Lunch	13:45 – 15:15 Lunch	13:45 – 15:15 Lunch
	15:15 – 16:55 Parallel session	15:15 – 17:15 Honoree´ session	15:15 – 17:15 Honoree´ session
	16:55 – 17:10 Break	17:15 – 17:30 Coffee Break	17:15 – 17:45 Closing session
	17:10 - 17:45 Plenary Session Progreso Pier	17:30 – 18:30 Parallel session	17:45 – 18:00 Break
	17:45 – 20:00 Technical tour to Progreso Pier	18:30 – 20:00 Break	18:00 – 23:00 Social activity (Chichén Itzá and Closure dinner)
20:00 – 23:00 Social activity (Dinner at Progreso port)	20:00 – 23:00 Social activity (Congress gala dinner)		



# **CONSEC'10**

## **Technical program**

**Monday 7, June 2010.**

**Opening Ceremony**  
**Room: Gran Salón Yucatán II**

8:30 - 9:30 hrs.

**9:30 – 10:00 Coffee Break and Opening of the exhibition**

**Plenary Session**  
**Room: Gran Salón Yucatán II**

10:00 - 11:30 hrs.

Chairman: Odd GJØRV

Durability and safety of concrete structures in the nuclear context

**J.M. Torrenti**, G. Nahas

Diagnosis of alkali-aggregate reaction - polarizing microscopy and SEM-EDS analysis

**T. Katayama**

Accelerated vs. natural corrosion experimental results for remaining life stage forecasting

**A.A. Torres-Acosta**

**11:30 – 11:45 Coffee Break**

**Monday 7 June 2010**  
**Technical Parallel Sessions**  
11:45 to 13:45 hrs.

**Room: Gran Salón Yucatán III**  
**Performance under severe environment**  
**Chairpersons: Vesa Penttala (Finland)**  
**Lojze Bevc (Slovenia)**

Durability

Durability of High Performance Concrete in Cold Climate and Exposure to Deicing Salts.  
B. Czarnecki, R.L. Day

Capillary absorption and concrete durability.  
L. Juárez, P. Cano-Barrita, C. Robles, P. Castro-Borges, A.A. Torres-Acosta

Deterioration processes

Corrosion initiation state of rebars in concrete subjected to chloride penetration.  
G.M. Sadiqul Islam, T. Sugiyama

Deterioration due to combined cyclic actions and reinforcement corrosion of R.C. structures.  
L. Giordano, G. Mancini, F. Tondolo.

Frost scaling of blast-furnace slag mortar with sodium monofluorophosphate.  
K. Sisomphon, O. Copuroglu, A.L.A. Fraaij

Influence of the steel-concrete interface condition on the chloride corrosion rate and pattern.  
A. Castel, R. Zhang, R. François

**Room: Gran Salón Yucatán IV**  
**Maintenance & repair**  
**Chairpersons: Oladis Troconis (Venezuela)**  
**Kenji Reichling (Germany)**

Conditions assessment

Reliability of existing bridges under severe seismic and wind loading.  
A. Mandić, J. Radić, Z. Šavor

Analysis of sorted powder samples for the assessment of deteriorated concrete.  
R. Felicetti

Experimental Study on the long-term durability after repairing by desalination.  
H. Koga, H. Watanabe, Y. Takeuchi

Surface treatments

The effect of using surface penetrate materials (silane type) to control the scaling of wheel-guard concrete on highway bridges.  
H. Endoh, F. Taguchi

Sensing and monitoring

A fundamental study on non-destructive measurement of chloride concentration in concrete by prompt Gamma-ray analysis.  
I. Ujike, S. Okazaki, Y. Yamada, H. Matsue

Application of electrochemical and novel techniques  
Self-corrosion of steel in concrete by electrochemical measurements and X-ray tomography.  
J. Goebbels, M. Beck, B. Isecke, A. Burkert, R. Bäßler

**Monday 7 June 2010**  
**Technical Parallel Sessions**  
11:45 to 13:45 hrs.

**Room: Sal3n M3rida II**  
**Performance and application of specialized materials**

**Chairpersons: Daniel Cusson (Canada)**  
**Carmen Andrade (Spain)**

Aggregates

Effect of type of fine aggregate on the resistance of concrete to sulfuric acid attack.

T. Ayano, T. Fujii

Development of lightweight aggregate concrete with high resistance to water and chloride-ion penetration.

X.M. Liu, K.S. Chia, M.H. Zhang

Improved durability of concrete due to SAP.

H.W. Reinhardt, A. Assmann

A study on NO<sub>x</sub> purification by porous concrete with several kinds of aggregates and void contents.

T. Xiang, T. Nakazawa, F. Imai, K. Onoue

Cement

Slag cements and frost resistance.

V. Årskog, O.E. Gj3rv

Composites

Limiting crack width in RC beams by the use of ultra high toughness cementitious composites.

X.F. Zhang, S.L. Xu

**Room: Sal3n Celest3n**  
**Sustainability**

**Chairpersons: Luis Javier Malvar (USA)**  
**Jos3 Iv3n Escalante (M3xico)**

Life cycle assessment

Life-cycle maintenance strategies for deteriorating RC buildings.

C. K. Chiu, T. Noguchi

Recycled and supplementary materials

Low carbon rice husk ash - A sustainable supplementary cementing material.

K.V. Harish, P.R. Rangaraju

LWA absorption and desorption: the influence on transport properties.

J. Castro, J. Weiss, R. Henkensiefken, T. Nantung, D.P. Bentz

Performance of concretes prepared with blended cements made in Romania.

D. Georgescu, A. Apostu, R. Pascu

Environmental issues

Environmental effects of a new concrete armor block.

W.Nishigori, S. Takimoto, S. Noboru, K. Sakai

Use of novel cements and concretes

Pervious concrete development in Rapid City, South Dakota, USA.

M.R. Hansen, C. Phillips

**Monday 7 June 2010**  
**Technical Parallel Sessions**  
11:45 to 13:45 hrs.

**Room: Valladolid**  
**Performance under severe loading**  
**Chairpersons: Mitsuo Ozawa (Japan)**  
**Jean Mathieu Rambach (France)**

Temperature

Mechanical and physico-chemical characteristics of self-consolidating concrete exposed to elevated temperatures.

H. Fares, S. Remond, A. Noumowe, A. Cousture

Remediation of high temperature effects on self-consolidating concrete.

N. Ghafoori, H. Diawara

Energetic consideration on strength decrease of concrete immersed in liquid.

K. Onoue, H. Matsushita

On the influence of high temperature on the dynamic behaviour of HPRCC.

E. Cadoni, A. Caverzan, M. di Prisco

Earthquake

Seismic performance of rc columns with low-environmental impact friction-welding mechanical anchor bars.

T. Matsuka, K. Sakai, M. Suzuki, N. Takahashi

Connection solutions for precast concrete columns subjected to earthquake loading.

V. Popa, D. Cotofana, R. Pascu

**13:45 – 15:15 Lunch**

**Monday 7 June 2010**  
**Technical Parallel Sessions**  
15:15 to 16:55 hrs.

**Room: Gran Salón Yucatán III**  
**Performance under severe environment**

**Chairpersons: Maria Cruz Alonso (Spain)**  
**Kazunori Fujikake (Japan)**

Deterioration processes

Chloride ingress in pre-tensioned prestressed concrete beams and the effect of corrosion on their structural behavior.

B. Cousin, B. Martín-Pérez

Improving the frost resistance of short-fiber-mixed shotcrete by hollow microspheres.

F. Taguchi, M. Takahashi, N. Kishi, Y. Kurihashi, H. Mikami

Strains and stresses in concrete due to saline and non-saline freeze-thaw loads.

V. Penttala

Experimental investigations concerning combined delayed ettringite formation and alkali-aggregate reaction.

R.P. Martin, J.C. Renaud, F. Toutlemonde

Field performance of structures and materials

Monitoring of "Zarzuela Racecourse" structure by means of non-destructive techniques for durability assessment.

A. Castillo, C. Andrade, I. Martínez, N. Rebolledo, L. Fernández Troyano, G. Ayuso, J. Cuervo, J. Junquera, C. Santana

**Room: Salón Mérida II**  
**Performance and application of specialized materials**

**Chairpersons: Min-Hong Zhang (Singapore)**  
**Toshiki Ayano (Japan)**

Concretes

Impact safety of structural UHPC elements – combined numerical and experimental approach.

M. Noeldgen, E. Fehling, W. Riedel, K. Thoma

Comparative performances on the resistances of HPC and RPC to penetration of water and Cl<sup>-</sup>.

K.V. Harish, D.S. Sabitha, J.K. Dattatreya, M. Neelamegam

Development of low-shrinkage high-performance concrete with improved durability.

D. Cusson, J. Margeson

Effect of autogenous shrinkage of UHSC on bending behavior of RC column.

I. Maruyama, M. Teshigawara

Ultrasonic monitoring of shrinkage development of HPC under isothermal conditions.

S. Staquet, C. Boulay, N. Robeyst, N. De Belie

**Room: Gran Salón Yucatán IV**  
**Maintenance & repair**

**Chairpersons: Roberto Felicetti (Italy)**  
**Jure Radic (Croatia)**

Conditions assessment

Diagnosis and Rehabilitation of a Mexican Pier.

A. del Valle-Moreno, A. Torres-Acosta, M. Martínez, D. Vázquez, R. Hernández, M. Fabela, W. Molina-Martínez, E. Alonso Guzmán.

Corrosion mitigation

Inhibiting behavior of nitrites in corrosion of reinforcing steel in micropore solutions

P. Garcés, E. Zornoza, P. Saura, C. Andrade

Surface treatments

Effect of concrete surface hydrophobation against chloride penetration.

G. Liu, O.E. Gjorv, V. Årskog,

Effect of w/c on the behavior of hydrophobic concrete coatings in a tropical environment.

O. Troconis-Rincón, J. Bravo, M. Sánchez, D. Contreras, M. Aboulhosn, C. Morales, V. Millano, Y. Hernández

Sensing and monitoring

Wireless measurement of electrochemical potentials of steel reinforcement in concrete structures.

K. Reichling, M. Raupach

**Room: Salón Celestún**  
**Sustainability**

**Chairpersons: Koji Sakai (Japan)**  
**Prasad Rangaraju (USA)**

Recycled and supplementary materials

Properties of HPC containing supplementary cementing materials.

E. Vejmelková, P. Konvalinka, R. Černý, M. Ondráček, M. Sedlmajer

Required usage of supplementary cementitious materials in concrete.

L.J. Malvar

Silicoaluminat cementitious materials, chemical durability and strength.

O. Burciaga-Díaz, R. Arellano-Aguilar, J.I. Escalante-García

An option for the use of fly ash on roller compacted concrete dams in Mexico.

A. Garduno, M. Montero

Control of thermal cracking in mass concrete with blast-furnace slag cement.

S. Miyazawa, K. Koibuchi, A. Hiroshima, T. Ohtomo, T. Usui

**Monday 7 June 2010**  
**Technical Parallel Sessions**  
15:15 to 16:55 hrs.

**Room: Valladolid**  
**Performance under severe loading**  
**Chairpersons: Viorel Popa (Romania)**  
**Luis Fernández (México)**

Impact

Fiber Bragg grating arrays for impact damage monitoring in concrete.  
V. Sotoudeh, B. Moslehi, R.J. Black, L. Oblea, G. Chen, P.W. Randles

Experimental validation of an anisotropic delay damage model for impact on reinforced concrete structures.  
M. Chambart, F. Gatuingt, R. Desmorat, D. Guilbaud

Loading

Dynamic model of a clamped elastic rectangular plate for spread-sheet application.  
J.M. Rambach

Temperature

On shotcrete mechanical behavior past severe heating.  
P. Bamonte, P.G. Gambarova, M. Marazzi, A. Rinaldi

Monitoring the explosive spalling process of HSC by means of acoustic emission method.  
M.Ozawa, H. Morimoto, S. Uchida, T. Kamada

**16:55 – 17:10 Break**

**Plenary Session**  
**Progreso Pier**  
**Room: Gran Salón Yucatán II**

17:10 - 17:45 hrs.

Chairpersons: P. Castro-Borges, A. Torres-Acosta, C. Rocha

**Technical tour to Progreso Pier**

**17:45 – 20:00**

**Dinner at Progreso port**

**20:00 – 23:00**

**Tuesday 8 June 2010**  
**Technical Parallel Sessions**  
9:00 to 11:30 hrs.

**Room: Gran Salón Yucatán III**  
**Performance under severe environment**  
**Chairpersons: Paulo Helene (Brazil)**  
**Bernardo Martínez (México)**

Deterioration processes

Influence of type of deicing chemical and cement on salt scaling of concrete.

T. Oyamada, S. Hanehara, T. Fujiwara, T. Takahashi

Deteriorate forms and defective events on concrete surface damaged by de-icing chemical attacks.

Y. Takashina

The effect of the corrosive environments over high strength concrete.

C. Magureanu, C. Negrutiu, B. Heghes

Influence of concrete cracking on the corrosion of steel reinforcement.

V. Jiménez-Quero, P. Montes-García, T.W. Bremner

Influence of local steel corrosion on shear failure mechanism of RC linear members.

K. Watanabe, J. Niwa, M. Tsunoda

Spalling under fire of ultra-high performance fiber concrete: effect of polymer fibers.

L. Missemmer, E. Ouedraogo, Y. Malécot, D. Rogat, C. Clergue

Comparison of voltage versus current effects in corrosion accelerated tests in reinforced concrete structures

A. G. Graeff, A. S. Torres, L. C. P. Silva Filho

**Room: Gran Salón Yucatán IV**  
**Maintenance & repair**  
**Chairpersons: Anders Selander (Sweden)**  
**Miguel Azenha (Portugal)**

Conditions assessment

Moisture transport within building materials.

J. Skramlik, M. Novotny

RH measurements for assessing moisture conditions in concrete structures.

F. Pruckner, O.E. Gjørv

Elimination of biological covering on concrete: tests *in situ* of different techniques.

M. Bouichou, E. Marie-Victoire, A. Francois, F. Boust, G. Orial

Preventing chloride ingress in concrete with water repellent treatments.

A. Johansson-Selander, J. Trägårdh, J. Silfwerbrand, M. Janz

The effect of chloride depletion on the corrosion state of steel in alkaline environment.

T. Eichler, B. Isecke, G. Wilsch, A. Faulhaber, K. Weidauer

Application of electrochemical and novel techniques  
Suppression of ASR due to electrochemical supply of lithium from DFRCC anode system.

T. Ueda, T. Kameda, T. Maeda, A. Nanasawa

Sensing and monitoring

Development of a remote monitoring strategy for building foundations affected by AAR.

G. Nery, P. Helene, D. Cusson, J.C. Margeson

**Tuesday 8 June 2010**  
**Technical Parallel Sessions**  
9:00 to 11:30 hrs.

**Room: Salón Mérida II**  
**Performance and application of**  
**specialized materials**

**Chairpersons: Jean Michel Torrenti (France)**  
**Marion Russell Hansen (USA)**

Supplementary materials

Durability of RC structures using GGBS under the complex deterioration condition.

J. Matsumoto, K. Takewaka, T. Yamaguchi, M. Umeki

Combined use of Class F fly ash and lithium salt for the reduction of alkali-silica reactivity.

N. Ghafoori, M.S. Islam

Utilisation of slag from steel industry as an aggregate in concrete.

I. Netinger, D. Bjegović, M. Jelčić

Effect of silica fume and GGBS on shrinkage in the high performance concrete.

F. Ghassemzadeh, M. Shekarchi, S. Sajedi, M. Khanzadeh, S. Sadati

Comparing chloride diffusion in nine months concrete specimens containing zeolite and silica fume pozzolans.

F. Pargar, M. Shekarchizadeh, M. Valipour

Sustainable binder for severe environment: magnesium-based cementitious material.

F. Qiao, Z. Ding, Z. Li

**Room: Salón Celestún**  
**Special NDT Session**

**Chairpersons: Nemy Banthia (Canada)**  
**Koichi Kobayashi (Japan)**

Electrochemical behavior of steel bar in concrete under tidal environment.

Y. Akira, M. Iwanami, T. Yamaji, Y. Shimazaki, M. Ishinaka

The use of electrical resistivity as a NDT for the specification of concrete durability.

C. Andrade, Renata d'Andrea

Several factors affecting the anodic polarization curve of steel bars embedded in mortar.

H. Hamada, Y. Sagawa, T. Ikeda, R. Morikawa

Durability monitoring on RC structures using "Shirasu concrete" in marine environment.

T. Yamaguchi, K. Takewaka, S. Mori

Detection of reinforcement corrosion with a new non-destructive test method using induction heating.

K. Kobayashi, N. Banthia

Surface resistivity profiles on marine substructures to assess concrete permeability.

F.J. Presuel-Moreno, A. Suarez, I. Lasa, M. Paredes

**Tuesday 8 June 2010**  
**Technical Parallel Sessions**  
9:00 to 11:30 hrs.

**Room: Valladolid**  
**Performance under severe loading**  
**Chairpersons: Robert Melchers (Australia)**  
**Marijan Skazlić (Croatia)**

Loading

Effect of the composition on concrete behaviour under high triaxial loading.  
X.H. Vu, Y. Malecot, L. Daudeville

Mechanical behaviour of very light concrete under severe triaxial loading.  
X.H. Vu, Y. Malecot, L. Daudeville, L. Zingg

Steel-concrete bond-slip influence on behavior of rc structures.  
L. Davenne, A. Boulkertous, A. Ibrahimbegovic

Impact

Flexural response of RC beams subjected to impact loadings.  
K. Fujikake, S. Soeun , B. Li

Fatigue

Behavior of anchor rods under creep and fatigue tests.  
F. Delhomme, G. Debicki

Cyclic behavior of RC hollow bridge piers with corroded rebars.  
D. Cardone, G. Perrone, S. Sofia

An experimental study regarding static and dynamic behaviors of RC pier models.  
T. Okamoto, I. Hirasawa, Y. Ito

**11:30 – 11:45 Coffee Break**

**Tuesday 8 June 2010**  
**Technical Parallel Sessions**  
11:45 to 13:45 hrs.

**Room: Gran Salón Yucatán III**  
**Performance under severe environment**  
**Chairpersons: Pedro Montes (México)**  
**Luiz carlos silva Filho (Brazil)**

Deterioration processes

A brief description of alkali-aggregate reaction occurrence and prevention in Brazil.

L. Sanchez, S. Kuperman, P. Helene

The natural pozzolana 'Rhenish trass' and its effect on ASR in concrete.

U. Müller, P. Bürgisser, F. Weise, B. Meng

Chemical changes and carbonation profiles of carbonated cement pastes at 80°C for different relative humidities.

E. Drouet, S. Poyet, P. Le Bescop, J.M. Torrenti

Influences of carbonation on heavy metal diffusivity in cement hydrates.

K. Kawai, T. Sato, Y. Miyamoto

Carbonation of mortar with mineral admixtures and relation with physical properties.

J.L. Gallias, K. Dizayee, A. Bessa

Risk of stress corrosion cracking of prestressing steels in contact with galvanized components.

J. Mietz, A. Burkert, J. Lehmann, G. Eich

**Room: Gran Salón Yucatán IV**  
**Maintenance & repair**  
**Chairpersons: Jan Skramlic (Czech Republic)**  
**Odd Gjorv (Norway)**

Conditions assessment

Repassivation of steel rebars after and electrochemical chlorides removal treatment by simultaneous application of calcium nitrite.

M. Sanchez, M.C. Alonso

Surface treatments

Water repellent treatments - The importance of reaching a sufficient penetration depth.

A. Johansson-Selander, J. Trägårdh, J. Silfwerbrand, M. Janz

Application of electrochemical and novel techniques

Application of bacteria in repairing the concrete cracks - a review.

R. Narayanasamy, N. Villegas Flores, F. Betancourt Silva, J. Betancourt Hernandez, N. Balagurusamy

**Concrete construction and miscellaneous**

Mexico City's deep drainage. Durable concrete design, production and supply.

R. Uribe, B. Martinez

Evaluation efficiency of a vessel-shaped concrete mixer using a visual technique.

M. Yoshida, C. Hashimoto, T. Watanabe, H. Mizuguchi

New method for continuous monitoring of concrete E-modulus since casting.

M. Azenha, F. Magalhães, R. Faria, A. Cunha

**Tuesday 8 June 2010**  
**Technical Parallel Sessions**  
11:45 to 13:45 hrs.

**Room: Salón Mérida II**  
**Performance and application of specialized materials**

**Chairpersons: Zongjin Li (China)**  
**Mohammad Shekarchizadeh (Iran)**

Concretes

Sulfuric acid resistance of belite-based cement concrete mixed with GGBFS.

S. Yoshida, F. Taguchi, T. Nawa, H. Watanabe

Self-compacting concrete for in loco molding walls system for low cost housing.

R. Alencar, P. Helene

Fundamental study on self-repairing concrete using a selective heating device.

T. Nishiwaki, H. Mihashi, Y. Okuhara

Self-Healing Concrete.

R. Vandine, C. West, M.R. Hansen

Validation of an accelerated carbonation model for limestone aggregate concrete.

R. Solís-Carcaño, E.I. Moreno

Performance of self compacting concrete with different quantities of FA and limestone.

M. Skazlić

**Room: Salón Celestún**  
**Special NDT session**

**Chairpersons: Koichi Kobayashi (Japan)**  
**Nemy Banthia (Canada)**

Nondestructive evaluation of horizontal cracks in RC slabs by impact elastic-wave methods.

T. Kamada, S. Uchida, K. Nakayama, H. Mae, T. Tamakoshi

Stress evaluation in concrete members using ultrasonic propagation velocity.

Y. Oshima, A. Okamura, H. Kawano

Evaluation of chloride ion content in concrete structures using near-infrared spectroscopic technique.

T. Yamamoto, M. Kohri, T. Ueda

Improving performance prediction of corroding concrete bridges with field monitoring.

D. Cusson, Z. Lounis, L. Daigle

Nondestructive quality evaluation of surface concrete with various curing conditions.

I. Kurashige, M. Hironaga

Monitoring of macrocell corrosion rate in existing structures.

S. Miyazato

**Room: Valladolid**  
**Performance under severe environment**

**Chairpersons: Pietro Gambarova (Italy)**  
**Luc Davenne (France)**

Service life prediction

Modelling of reinforcement corrosion- simulation and time dependence.

J. Harnisch, J. Warkus, M. Raupach

Inclusion of GCC in analytical solutions of service life models for concrete.

J.M. Mendoza-Rangel, P. Castro-Borges

The time to commencement of reinforcement corrosion in marine environments.

R.E. Melchers

A probabilistic approach for modelling calcium leaching in concrete structures.

T. de Larrard, F. Benboudjema, J.B. Colliat, J.M. Torrenti, F. Deleruyelle

Performance-based approach for durability of concrete containing flash metakaolin as cement replacement.

R. San Nicolas, M. Cyr, G. Escadeillas

Deterioration processes

Influence of the curing time in the interfacial transition zone of concrete and galvanized rebars.

O. Quiroz-Zavala, I. Sarmiento-Alvarado, L. Maldonado

**13:45 – 15:15 Lunch**

**Tuesday 8 June 2010**  
**Honoree Session**  
**Room: Gran Salón Yucatán II**  
15:15 - 17:15 hrs.

Brief introduction of the honoree (P. Helene)

**P. Castro - Borges**

The impact of tropical urban environment on the durability of reinforced concrete in Iberoamerican countries

**O. M. Trocónis de Rincón**, M. Sánchez, V. Millano, R. Fernández, E. Anzola de Partidas, I. Martínez, N. Rebolledo, M. Barboza, J. C. Montenegro, R. Vera, A. M. Carvaja, R. Mejía de Gutiérrez, J. Maldonado, C. Guerrero, E. Saborio-Leiva, C. Villalobos-Gonzalez, J. T. Pérez-Quiroz, A. Torres-Acosta, P. Castro-Borges, E. I. Moreno, T. Pérez-López, F. Almeraya-Calderón, W. Martínez-Molina, M. Martínez-Madrid, M. Salta, A. P. de Melo, G. Rodríguez, M. Pedrón, M. Derrégibus

Electrical resistance tomography approach for localizing reinforcing bars in concrete

K. Karhunen, A. Seppänen, A. Lehtikainen, **P. J. M. Monteiro**, J. P. Kaipio

Sustainable cements and concrete for the climate change era – A review

**K. Mehta**

Experimental simulation of surface cracking in concrete structures affected by AAR

G. Nery, **P. Helene**, D. Cusson, J.C. Margeson

Closing Remarks

**17:15 – 17:30 Coffee Break**

**Tuesday 8 June 2010**  
**Technical Parallel Sessions**  
17:30 to 18:30 hrs.

**Room: Gran Salón Yucatán III**  
**Performance under severe environment**  
**Chairpersons: François Toutlemonde (France)**  
**Alejandro Durán (México)**

Deterioration processes

Effect of corrosion on the tensile properties of steel bars in cracked HPC containing CNI.  
H.Z. Lopez-Calvo, T.W. Bremner, M.D.A. Thomas, P. Montes-García

Corrosion resistance of lightweight concrete made of ternary mixtures.  
E.P. Reyes-Diaz, J.G. Osuna-Alarcon, F. Almeraya-Calderon, G. Gaona-Tiburcio

Reinforced concrete beams deterioration in tropical marine environment: DURACON-Campeche.  
T. Pérez, M.R. Sosa, L.R. Dzib, J. Reyes, R. Camacho, O. Troconis-Rincón, A. Torres-Acosta

**Room: Salón Mérida II**  
**Performance and application of specialized materials**  
**Chairpersons: Kazuo Yamada (Japan)**  
**Kenji Kawai (Japan)**

Reinforcements

High strength stainless steel 14301 for prestressed concrete structures protection.  
M.C. Alonso, M. Sanchez, E. Mazario, F.J. Recio, H. Mahmoud, R. Hingorani

Corrosion resistant steel reinforcement – laboratory and field testing.  
M. Serdar, D. Bjegovic, I. Stipanovic-Oslakovic

Stainless steel performance in chloride contaminated concrete.  
A. Ramirez-Rentería, G. Serrano Gutiérrez, A. Torres-Acosta

**Room: Valladolid**  
**Performance under severe environment**  
**Chairpersons: Ion Radu Pascu (Romania)**  
**Nader Ghafoori (USA)**

Service life prediction

Relationship between electric resistivity and diffusion coefficient of chloride ion in mortar.  
H. Minagawa, M. Hisada, A. Ehara

Durability

Durability of light-weight self compacting concrete with expanded clay aggregate.  
M. Hubertova, R. Hela

Freeze-thaw durability of portland cement and silica fume concretes.  
A. Badr

**Room: Gran Salón Yucatán IV**  
**Sustainability**

**Chairpersons: Paulo Monteiro (USA)**  
**Robert Černý (Czech Republic)**

Recycled and supplementary materials

Performance of cement paste partially replaced by micronized sand.  
Y. Wang, G. Ye, K. van Breugel

Reduction of CO<sub>2</sub> emissions by using sugar cane bagasse ash as partial cement replacement.  
E.M.R. Fairbairn, T.P. Paula, R.D. Toledo Filho, G.C. Cordeiro, B.B. Americano, M.M. Silvano

Mechanical strength of hydraulic cement with addition of 2 & 4 % of sugar cane bagasse.  
R. Romero, M.A. Baltazar, D. Nieves, E. Maldonado, G. Fox, H. Hernández, U.R. Bañuelos, R. Hernández

**Room: Salón Celestún**  
**Codes & design**  
**Chairpersons: Yamei Zhang (China)**  
**Jorge Varela (México)**

Structural design and performance

A methodology to enhance quality assurance for new concrete construction.  
D.F. Burke

Performance based plastic design (PBPD) of RC special moment frame structures.  
W.C. Liao, S.C. Goel, S.H. Chao

Specifying 100-year design life infrastructure projects – the pitfalls.  
R. Sri Ravindrarajah, B.A. Sabaa

**18:30 – 20:00 Break**

**Congress gala dinner**  
**20:00 – 23:00**

**Wednesday 9 June 2010**  
**Technical Parallel Sessions**  
9:00 to 11:30 hrs.

**Room: Gran Salón Yucatán III**  
**Performance under severe environment**  
**Chairpersons: Byung Hwan Oh (Korea)**  
**Thierry Chaussadent (France)**

Deterioration processes

Study of CEM I and low pH cement pastes leaching in multi-ionic underground water.

A. Dauzères, P. Le Bescop, P. Sardini, C. Cau Dit Coumes

Diffusion and adsorption properties of lead in cement hydrates.

K. Kawai, H. Kikuchi, T. Sato

Influence of specimen type with RILEM CDF and ASTM C 672 on scaling under same temperature.

M. Takahashi, S. Miyazato

Heat deterioration on fracture properties of concrete.

Y. Kitsutaka, K. Matsuzawa

Thermal behaviour of concrete with layer of fireproofing materials exposed to fire.

K.S. Nguyen, C. Lanos, Y. Melinge

Heat and moisture movement and explosive spalling in concrete under fire environment.

T. Noguchi, M. Kanematsu, J.W. Ko, D.W. Ryu

Fire resistance of high performance RC column with nylon and polypropylene fiber.

C.G. Han, M.C. Han, R.P. Ferron, D. Han

**Room: Gran Salón Yucatán IV**  
**Sustainability**

**Chairpersons: R. Douglas Hooton (Canada)**  
**John Provis (Australia)**

Recycled and supplementary materials

Corrosion inhibitors for concrete from cactus extracts.

A. Torres-Acosta

The use of crushed porcelain electrical isolators as fine aggregate in mortars.

A.E.P.G.A. Jacintho, M.A. Campos, V.A. Paulon, G. Camarini, R.C.C. Lintz, L.A.G. Barbosa

Effect of slag on chloride transport and storage properties of HPC.

Z. Pavlík, M. Pavlíková, L. Fiala, H. Benešová, J. Mihulka, R. Černý

Monitoring the setting of concrete containing high cement substitution by supplementary cementitious materials.

M.I.A. Khokhar, S. Staquet, E. Rozière, A. Loukili

Development of a prefoam-type air-entraining admixture for fly ash concrete.

M. Kitatsuji, H. Aoyama, K. Saito, T. Endo

Hydration process of RHA and SF in cement paste by means of isothermal calorimetry.

N. Van Tuan, G. Ye, K. van Breugel, Z. Guo, B.D. Dai

Effects of recycled coarse aggregate replacement levels on the mechanical properties of recycled aggregate concrete (RAC).

H.D. Yun

**Wednesday 9 June 2010**  
**Technical Parallel Sessions**  
9:00 to 11:30 hrs.

**Room: Salón Mérida II**  
**Performance and application of**  
**specialized materials**

**Chairpersons: Andrew Boyd (Canada)**  
**Waltter López González (México)**

Mortars

Textile reinforced mortar for shear strengthening of RC beams.  
T.H. Almusallam, Y.A. Al-Salloum, S.H. Alsayed, H.M. Elsanadedy

Fibers

Mechanical behavior of steel fiber reinforced refractory concretes.  
R.D. Toledo-Filho, V.G.O. Almeida, E.M.R. Fairbairn, L.F.L. Rosa

Effect of steel fiber on explosive spalling and permeability of high performance concrete after exposure to high temperature.  
G.F. Peng, X.J. Duan, X.C. Yang, T.Y. Hao

Wood fibres as reinforcement in a low environmental-impact cementitious material.  
M.G. Sierra-Beltran, E.Schlangen

Composites

Thermal properties of aramid-fiber reinforced cement composite.  
E.Veimejková, P. Konvalinka, R.Černý

Reinforcements

Effect of the chromite precipitates on the corrosion performance of SSR.  
A. Bautista, F. Velasco, S. Guzmán, G. Blanco

Evaluation of galvanized steel under the action of chloride ions and/or carbonation.  
D. Linares, M. Sánchez

**Room: Salón Celestún**  
**Codes & design**

**Chairpersons: Rolf Manser (México)**  
**Elisabeth Marie Victoire (France)**

Performance-based design

Determination of design wind speeds based on the simulation of historical tropical cyclones.  
L.E. Fernández-Baqueiro, A.J. Fernández-Ojeda, J.L. Varela-Rivera

Structural design and performance

The new Romanian code for seismic evaluation of existing buildings.  
T. Postelnicu, E. Lozincă, R. Pascu

Short and long-term behaviors of longitudinally restrained reinforced concrete slabs.  
T. Yamamoto

An energy spectrum method for seismic evaluation of structures.  
S.C. Goel, W.C. Liao, M.R. Bayat, S. Leelataviwat

Experimental and numerical analysis of prestressed HPC girders for bridges.  
P. Buiňáková, M. Moravčík

**Wednesday 9 June 2010**  
**Technical Parallel Sessions**  
9:00 to 11:30 hrs.

**Room: Valladolid**  
**Performance under severe environment**  
**Chairpersons: Atef Badr (United Kingdom)**  
**Ezio Cadoni (Switzerland)**

Durability

The Influence of Intergrinding of Cement and Fly Ash on Concrete Durability.  
B. Czarnecki, W. Johnston, W. Dobslaw

Surface layer study of concrete containing metakaolin.  
K. Kolář, P. Reiterman, T. Klečka, M. Dudíková, P. Huňka

Field performance of structures and materials

Durability of silica fume concrete in Aursundet bridge  
V. Årskog, O. Sengul, O. E. Gjorv

The French National Project CEOS.FR : Assessment of cracking risk for special concrete structures under THCM stresses.  
A. Sellier, C. La Borderie, J.M Torrenti, J. Mazars

Experimental modeling of high thermal gradients in steam injection wells.  
R.F. Correia, E.M.R. Fairbairn, R.D. Toledo-Filho, C.R. Miranda

Evaluation of the risk of cracking in thin concrete walls due to hydration heat.  
C. Zanotti, A. Meda, G. Plizzari, S. Cangiano

Effect of corrosion on time-dependent reliability of steel sheet-pile seawalls in marine environment conditions.  
H. Yañez-Godoy, J. Boéro, G. Thillard, F. Schoefs

**11:30 – 11:45 Coffee break**

**Wednesday 9 June 2010**  
**Technical Parallel Sessions**  
11:45 to 13:45 hrs.

**Room: Gran Salón Yucatán III**  
**Performance under severe environment**  
**Chairpersons: Luiz Fernando Lomba (Brazil)**  
**Toshihiko Yamamoto (Japan)**

Field performance of structures and materials  
Concrete behaviour in four different atmospheres in Michoacan, Mexico.

W. Martínez Molina, E.M. Alonso Guzmán, F. A. Velasco Avalos, C. Lara Gómez, H.L. Chávez García, A.A. Torres Acosta, X. Chávez Cárdenas

Deterioration processes

Remaining shear strength in reinforced concrete beams deteriorated by corrosion.

B. Guevara, C. Juarez, G. Fajardo, P. Castro Borges

Failure analysis of reinforced concrete due to pitting corrosion of reinforcing bar.

B.S. Jang, B.H. Oh, S.Y. Jang

Quantification of water penetration into concrete through cracks to rebars by neutron radiography.

M. Kanematsu, N. Tuchiya, T. Noguchi, I. Maruyama

Behaviour of a crack submitted to a fluid penetration.

C. Rouby, A. Feraille-Fresnet, A. Ehrlacher

Use of entrained air concrete exposed to chlorides in non-freeze thaw environments: effects on plastic concrete properties.

J. Thesen, R. El-Hacha

**Room: Gran Salón Yucatán IV**  
**Sustainability**

**Chairpersons: Karel Kolář (Czech Republic)**  
**Stephanie Staquet (Belgium)**

Recycled and supplementary materials  
Effect of silica fume on carbonation of reinforced concrete structures in Persian Gulf region.

S. Sadati, F. Ghassemzadeh, M. Shekarchi

What controls the durability of geopolymer binders and concretes?.

J.L. Provis, J.S.J. van Deventer

**Performance under severe environment**

Deterioration processes

Properties of fibre reinforced concrete after various degrees of heatloading.

L. Bodnárová, R. Hela, J. Válek

Meso-scale analysis of mortar deteriorated by acid.

Y. Oiwa, Y. Sato, T. Miura

Study of concrete alteration in sewer systems by biogenic sulfuric acid.

T. Chaussadent, F. Boinski, J. Herisson, E. Van Hullebusch

Simplified resistance evaluation of cementitious materials to sulfuric acid.

K. Kawai, H. Morita, Y. Matsui

**Room: Salón Mérida II**  
**Performance under severe environment**  
**Chairpersons: Gai Fei Peng (China)**  
**Christophe Lanos (France)**

Field performance of structures and materials

Durability of fly ash concrete in a concrete harbor structure.

V. Årskog, O.E. Gjorv

Validation and improvement of procedures for performance testing of anti-graffiti agents on concrete surfaces.

K. Malaga, U. Mueller

Field experience of UHPFRC durability in an air cooling tower.

F. Toutlemonde, V. Bouteiller, A. Deman, G. Platret, A. Pavoine, B. Duchesne, L. Lauvin, M. Carcasses, M. Lion

New possibilities of cooling towers diagnostics and repairs for increasing a service life.

J. Bydzovsky, A. Dufka, Z. Snirch

Structural behavior of monitored harbors during several tide and temperature loading cycles.

H. Yáñez-Godoy, F. Lanata, F. Schoefs

**13:45 – 15:15 Lunch**

**Wednesday 9 June 2010**  
**Honoree Session**  
**Room: Gran Salón Yucatán II**  
15:15 - 17:15 hrs.

Brief introduction of the honoree (R. D. Hooton)

**N. Banthia**

Sodium sulfate weathering in the residential concrete foundation

**N. Yoshida**, Y. Matsunami, M. Nagayama, E. Sakai

A required condition of thaumasite formation in marine environments

T. Nozaki, S. Ogawa, H. Hirao, K. Kono, **K. Yamada**

Qualification of repair materials by mechanical and durability properties

C. C. Ferraro, **A. J. Boyd**, C. A. Ishee

Concrete durability and sustainability as influenced by resistance to fluid ingress and selection of cementitious materials

**R. D. Hooton**

Closing Remarks

**Closing session**  
**17:15 – 17:45**

**17:45 – 18:00 Break**

**Visit to Chichén Itzá and Closure dinner**  
**18:00 – 23:00**