

REGISTRATION OF RESEARCH ACTIVITIES
IN THE NORDIC COUNTRIES
1984 - 1987

Denmark
Finland
Iceland
Norway
Sweden

PROPERTIES OF CEMENT-FLYASH-MICROSILICA-MORTAR.

Torben L. Andersen, Chr. F. Justesen.

Aalborg Portland/CtO, P.O. Box 165, 9100 Aalborg, Denmark.

Keywords: fly ash, microsilica, mortar, strength, durability

SENSORS FOR LONG TERM MONITORING OF CONCRETE STRUCTURES.

Hans Arup, Michael Berggren Petersen, Carolyn M. Hansson.

Korrosionscentralen (The Danish Corrosion Centre), Park Alle 345,
2605 Brøndby, Denmark.

Keywords: Reinforcement corrosion, Electrochemical potential,
Electrical resistivity

SERVICE LIFE OF CONCRETE STRUCTURES INFLUENCE OF STRUCTURAL FORM.

Niels Askov, Steen Rostam.

Department of Structural Engineering, Technical University of
Denmark, Building 118, 2800 Lyngby, Denmark.

Keywords: Concrete, Service life, Structural form

CEMENT-BASED STABILIZATES.

Thorkild Bach.

Aalborg Portland, P.O. Box 165, 9100 Aalborg, Denmark.

Keywords: Density, Cement, Fly Ash, Waste Products, Stabilizates

THE BEHAVIOUR OF COMPACT REINFORCED CONCRETE (CRC) IN COMPRES-
SION, TENSION, PURE BENDING AND BENDING WITH SHEAR.

Hans Henrik Bache, Gert Heshe.

Aalborg Portland, P.O. Box 165, 9100 Aalborg & Aalborg Universi-
tetscenter, Institut for Bygningsteknik, Sohngaardsholmsvej 57,
9000 Aalborg, Denmark.

Keywords: Fibre, Concrete, Strength, Deformation, Cracks

LONGTERM DURABILITY OF CONCRETE WITH MINERAL ADMIXTURES.

Dirch H. Bager.

Aalborg Portland, P.O. Box 165, 9100 Aalborg Denmark.

Keywords: Durability, Exposure, Fly Ash, Microsilica, Shrinkage

PERMEABILITY OF CONCRETE.

Dirch H. Bager, Bent W. Kristensen.

Aalborg Portland, P.O. Box 165, 9100 Aalborg, Denmark.

Keywords: Permeability, Method, Curing, Oxygen, Water

NON LINEAR CALCULATIONS OF CONCRETE COLUMNS AND FRAMES

Mogens Bergholdt, Erik Steen Pedersen.

Beton- og Konstruktionsinstituttet, Dr. Neergaards Vej 13, 2970 Hørsholm, Denmark.

Keywords: Finite Element, Material Non-linearity, Geometrical Non-linearity, Stress Analysis, Columns and Frames

CHLORIDE CORROSION ILLUSTRATED BY CORROSION CELL MEASUREMENTS

Kirsten Brandt-Pedersen, Steen Rostam.

Department of Structural Engineering, Technical University of Denmark, Building 118, 2800 Lyngby, Denmark.

Keywords: Reinforcement, Chlorides, Corrosion, Corrosion Cell, Measurements

STUDIES OF HIGH-STRENGTH, LIGHT WEIGHT CEMENT-BASED FIBRE-REINFORCED COMPOSITES.

S. Chatterji.

Teknologisk Institut, Gregersensvej, Postboks 141, 2630 Tåstrup, Denmark.

Keywords: Fibre, Composite, Light-weight, Cement, Strength

STUDIES OF ALKALI-SILICA REACTION.

S. Chatterji, A. Damgaard Jensen, N. Thaulow.

Teknologisk Institut, Gregersensvej, Postboks 141, 2630 Tåstrup, Denmark.

Keywords: Alcalisilicareaction, fine aggregates, porous flint, chlorides, alcalies

STUDIES OF ALKALI-SILICA REACTION WITH ESPECIAL EMPHASIS ON HOW TO AVOID CONCRETE BREAKDOWN.

S. Chatterji, N. Thaulow.

Teknologisk Institut, Afdelingen for Byggeteknik, Gregersensvej, Postboks 141, 2630 Tåstrup, Denmark.

Keywords: Alkali-silica reaction, Moler, Reaction products analysis, Mechanism

GEL FORMATION IN ALKALI-SILICA REACTION. STUDIES OF REACTION MECHANISM.

S. Chatterji, N. Thaulow.

Teknologisk Institut, Afdelingen for Byggeteknik, Gregersensvej, Postboks 141, 2630 Tåstrup, Denmark.

STUDIES OF LIGHT WEIGHT, HIGH STRENGTH CEMENT BASED COMPOSITES

S. Chatterji.

Teknologisk Institut, Afdelingen for Byggeteknik, Gregersensvej, Postboks 141, 2630 Tåstrup, Denmark.

Keywords: Cement, Light weight, High strength, Composite, Durability.

STUDIES OF ALKALI-SILICA REACTION WITH ESPECIAL EMPHASIS ON THE ACCELERATING ACTION OF ALKALI SALTS.

S. Chatterji, N. Thaulow.

Teknologisk Institut, Afdelingen for Byggeteknik, Gregersensvej, Postboks 141, 2630 Tåstrup, Denmark.

Keywords: Alkali-silica reaction, Alkali salts, Acceleration, Mechanism, Silica solution.

IMPREGNATION OF DENSIT.

" "
Zoltan Fordos.

Aalborg Portland, P.O. Box 165, 9100 Aalborg, Denmark.

Keywords: Densit, Impregnation, Polymer, High strength.

STUDIES ON CHEMICAL RESISTANCE OF CEMENT-BASED MATERIALS WITH HIGH SILICA CONTENT.

" "
Zoltan Fördös.

Aalborg Portland, P.O. Box 165, 9100 Aalborg, Denmark.

Keywords: Durability, Chemical resistance, Cement-based, Materials, Silica.

POSSIBLE INFLUENCE OF SMALL ADDITIONS OF FLY ASH ON ALKALI-SILICA REACTIONS.

" "
Zoltan Fördös.

Aalborg Portland, P.O. Box 165, 9100, Aalborg. Denmark.

Keywords: Durability, Alkali-silica reaction, Fly Ash, Expansion.

JOINTS AND DETAILS IN A PREFABRICATED COLUMN-SLAB SYSTEM DESIGN BY TESTING.

Jens Ole Frederiksen, S. Øivind Olesen, Knud Bay.

Concrete and Structural Research Institute, Dr. Neergaards Vej 13, Postboks 82, 2970 Hørsholm, Denmark.

Keywords: Column, Slab, Shear, Precast housing, Joints

THE TEMPERATURE DEPENDENCE OF THE ALKALI-SILICA REACTION.

Mette Geiker, Torben Knudsen.

Cowiconsult, Teknikerbyen 45, 2830 Virum og Inst. of Mineral Industry, The Technical University of Denmark, 2800 Lyngby, Denmark.

Keywords: Chemical Shrinkage, Alkali-Silica Reaction, Activation Energy, Temperature, Testing

EXAMINATION AND EVALUATION OF ALKALI-SILICA REACTIVITY AND FROST RESISTANCE OF STONES.

Bent Grellk, Arne Damgaard Jensen.

Teknologisk Institut, Afdelingen for Byggeteknik, Gregersensvej, Postboks 141, 2630 Tåstrup, Denmark.

Keywords: Aggregate, Alkali-Silica Reactivity, Frost, Testing, Flint

CALCULATION OF STRESSES IN HARDENING CONCRETE STRUCTURES.

Erik Grodtkjær.

Beton- og Konstruktionsinstituttet, Dr. Neergaards Vej 13, 2970 Hørsholm.

Keywords: Visco-elasticity, creep, young concrete, concrete hardening, stress analysis

THE THRESHOLD VALUE OF CHLORIDE CONCENTRATION IN CONCRETE FOR THE INITIATION OF REINFORCEMENT CORROSION.

Carolyn M. Hansson, Birgit Sørensen.

Korrosionscentralen (The Danish Corrosion Centre), Park Alle 345, 2605 Brøndby, Denmark.

Keywords: Durability, reinforcement corrosion, chlorides

INVESTIGATION OF THE EFFECT OF PAINT COATINGS ON PREVENTION OF ACID RAIN AND CHLORIDE ATTACK ON CONCRETE.

Carolyn M. Hansson, Birgit Sørensen.

Korrosionscentralen (The Danish Corrosion Centre), Park Alle 345, 2605 Brøndby, Denmark.

Keywords: Durability, paint, acid rain, chlorides

THE FACTORS INFLUENCING CHLORIDE BINDING IN CONCRETE.

Carolyn M. Hansson.

Korrosionscentralen (The Danish Corrosion Centre), Park Alle 345, 2605 Brøndby, Denmark.

Keywords: Chloride binding, poresolution, C_3A content, durability

DEVELOPMENT OF NON-ADIABATIC CALORIMETER FOR HEAT OF HYDRATION OF CONCRETE.

Jacob Hougaard Hansen.

BKI, Dr. Neergaards Vej 13, 2970 Hørsholm. Denmark.

Keywords: Heat development, heat flux, testing, calorimeter

STRUCTURAL ANALYSIS OF CONCRETE.

Arne Damgaard Jensen, Preben Christensen.

Teknologisk Institut, Afdelingen for Byggeteknik, Gregersensvej,
Postboks 141, 2630 Tåstrup, Denmark.

Keywords: Concrete, Micro-Structure, Cracks, Testing, Thin
sections

THE ALKALI-SILICA REACTIVITY OF FINE AGGREGATES. TYPES OF FLINT,
REACTIVITY AND A PETROGRAPHIC TEST METHOD.

Arne Damgaard Jensen, Bent Grelk.

Teknologisk Institut, Afdelingen for Byggeteknik, Gregersensvej,
Postboks 141, 2630 Tåstrup, Denmark.

Keywords: Aggregates, Concrete, Alkali-Silica Reactions, Tes-
ting, Petrography

THERMOGRAVIMETRY - A METHOD TO TEST THE ALKALI REACTIVITY OF SAND

Boye Bork Jepsen.

Aalborg Portland, P.O. Box 165, 9100 Aalborg.

Keywords: Heating, Weight loss, Opal, OH-groups, Pore system

DETERMINATION OF FREE WATER CONTENT IN FRESH CONCRETE.

Ulla Kjær, Jacob Hougaard Hansen.

BKI, Dr. Neergaards Vej 13, 2970 Hørsholm, Denmark.

Keywords: Water, Testing, Fresh Concrete, Microwaves, Analysis

DURABILITY OF POLYPROPYLENE FIBRES.

Herbert Krenchel, Anders Staf Hansen.

ABK, Danmarks Tekniske Højskole, Bygning 118, 2800 Lyngby, Den-
mark.

Keywords: Accelerated weathering tests, Arrhenius plot, Anti
oxydants, Activation energy

SURFACE REINFORCEMENT OF CONCRETE STRUCTURES WITH FIBRES.

Herbert Krenchel, Finn Benthin.

ABK, Danmarks Tekniske Højskole, Bygning 118, 2800 Lyngby, Denmark.

Keywords: Fibre-concrete, surface reinforcement, FRC-coating, lamination technique, 2-dimensional fibre orientation

DURABILITY OF HIGH QUALITY CONCRETE.

Bent W. Kristensen.

Aalborg Portland, P.O. Box 165, 9100 Aalborg, Denmark.

Keywords: Strength, Microstructure, Microsilica, Fly Ash, Corrosion

NUMERICAL CALCULATION FOR ULTIMATE LOAD FOR RIGID PLASTIC MATERIALS.

Jens Chr. Kærn.

ABK, Danmarks Tekniske Højskole, Bygning 118, 2800 Lyngby, Denmark.

Keywords: Finite element program, ultimate load, concrete structures, optimal design

HIGH STRENGTH AGGREGATE RICH CONCRETE FOR PAVEMENTS.

Niels Jørgen Larsen, Hans Henrik Bache, Dirch H. Bager.

Aalborg Portland, P.O. Box 165, 9100 Aalborg, Denmark.

Keywords: Strength Compaction, Fly-Ash, Microsilica, Mixing

TIME DEPENDENCE OF ALKALI SILICA REACTIONS.

Anders Nielsen.

Laboratoriet for Bygningsmaterialer, Danmarks Tekniske Højskole, Bygning 118, 2800 Lyngby, Denmark.

REALKALIZATION OF CONCRETE NEUTRALIZED BY CARBONATION.

Ervin Poulsen, Viggo Jensen, Jens M. Frederiksen.

AEC Consulting Engineers Ltd., 23 Holte Midtpunkt, 2840 Holte, Denmark.

Keywords: Realkalization, neutralization, carbonation, coating, petrography

NEUTRALIZATION OF COATED AND UNCOATED CONCRETE CAUSED BY ACID ATMOSPHERE.

Ervin Poulsen, Viggo Jensen.

AEC Consulting Engineers Ltd., 23 Holte Midtpunkt, 2840 Holte, Denmark.

Keywords: Deterioration, neutralization, carbonation, coating, petrography

ON THE RELIASE AND MIGRATION OF ALKALIS IN CONCRETE.

Ervin Poulsen, Viggo Jensen.

AEC Consulting Engineers Ltd., 23 Holte Midtpunkt, 2840 Holte, Denmark.

Keywords: Available alkalies, alkali aggregate reaction, aggregates, moisture migration, petrography

COMPUTER INTEGRATED TEST AND MONITORING SYSTEMS FOR CONSTRUCTION.

Carsten Reimers, Ulla Kjær, Jørgen Schou, Jacob Hougaard Hansen.

Concrete and Structural Research Institute, Box 82, Dr. Neergaards Vej 13, 2970 Hørsholm, Denmark.

Keywords: Curing, Testing, Planning, Maturity, Simulation

PROTECTION OF CRACKED CONCRETE FACADE ELEMENTS SHOWING BEGINNING DETERIORATION.

Steen Rostam, Mette Geiker.

Cowiconsult, 45 Teknikerbyen 2830 Virum, Denmark.

Keywords: Concrete, cracks, surface protection, surface treatment, testing

SIMULTANEOUS HEAT AND MOISTURE TRANSFER IN CONCRETE.

Jørgen Schou, Jacob Hougaard Hansen, Carsten Reimers.

BKI, Dr. Neergaards Vej 13, 2970 Hørsholm, Denmark.

Keywords: Heat, Transport, Moisture, Testing, Simulation

CONSTITUTIVE MODELLING OF MICROCRACKING IN CONCRETE AND FRC-MATERIALS.

Henrik Stang.

ABK, Danmarks Tekniske Højskole, Bygning 118, 2800 Lyngby, Danmark.

Keywords: Microcracking, Micromechanics, Damage mechanics, Cementitious materials, Fibre reinforced materials

LOAD-CARRYING CAPACITY OF BRIDGES SUBJECTED TO ALKALI-SILICA REACTIONS.

Vejdirektoratet, Broafdelingen, Lyngbyvej 17, 2100 Ø., Denmark.

Keywords: Alkali-silica reactions, accelerated deterioration, evaluation of damage, load carrying capacity, shear strength

STABILITY OF REINFORCED CONCRETE DISKS AND SLABS.

Lars Yde, M.P. Nielsen.

ABK, Danmarks Tekniske Højskole, Bygning 118, 2800 Lyngby, Danmark.

Keywords: Stability, Disks and Slabs, Plasticity, Reinforced Concrete.

CONCRETE FOR VARIAX HOLLOW-CORE SLABS.

Klaus Juvas.

Partek Corporation, 21600 Pargas, Finland

Keywords: Hollow-core slab, earth stiff concrete, compaction, proportioning, testing.

PUMICE CONCRETE, NEW APPLICATIONS.

Haraldur, Asgeirsson, Karsten Iversen.

The Icelandic Building Research Institute, Keldnaholt, 112 Reykjavik, Iceland.

Keywords: Lightweight concrete, Pumice, Components, water repellancy, timber replacement

THE INFLUENCE OF THE CEMENT CONTENT ON THE DURABILITY OF
CONCRETE.

Markku Leivo, Heikki Kukko, Tarja Häkkinen.

VTT, Concrete and Silicate Laboratory, Kemistintie 3,
SF-02150 Espoo, Finland.

Keywords: Concrete, Cements, Durability, Building Construction,
Construction Materials.

COMPUTER AIDED PRODUCTION ON BUILDING SITE.

Jukka Mertanen, Juha Ratvio, Karl-Johan Serén, Markku Kihlman,
Hannu Tyrväinen, Matti Alasalmi, Sakari Pulakka.

VTT, Concrete and Silicate Laboratory, Kemistintie 3,
SF-02150 Espoo, Finland.

Keywords: Building Sites, ADP, Building Construction, CAD,
CAM, Microcomputers, Computer Aided Manufacturing,
Building Materials, Manufacturing, Production Management.

GIANT DILATIO.

Reijo Ylä-Mattila.

VTT, Concrete and Silicate Laboratory, Kemistintie 3,
SF-02150 Espoo, Finland.

Keywords: Dilatometry, Plaster, Bricks, Freezing, Mortars, Large
Workpieces, Mortars (Materials), Test Specimens,
Deformation Properties.

BLENDED CEMENTS IN MORTAR ANALYSIS.

Reijo Ylä-Mattila, Kari Silvennoinen, Hannu Pyy.

VTT, Concrete and Silicate Laboratory, Kemistintie 3,
SF-02150 Espoo, Finland.

Keywords: Mortars, Cements, Plaster, Mortars (Materials), Fly Ash,
Analysis, Limestone, Blast Furnace Slags.

BASIC PROPERTIES OF BY-PRODUCT CONCRETE.

Heikki Kukko, Jarmo Ruohomäki, Erkki Vesikari, Tero Hakkarainen,
Hannu Pyy.

VTT, Concrete and Silicate Laboratory, Kemistintie 3,
SF-02150 Espoo, Finland.

Keywords: Concrete, Blast Furnace Slags, Byproducts, Aggregates,
Properties.

SERVICE LIFE OF CONCRETE STRUCTURES.

Erkki Vesikari.

VTT, Concrete and Silicate Laboratory, Kemistintie 3,
SF-02150 Espoo, Finland.

Keywords: Concrete Structures, Bridges, Service Life.

FIELD TESTS OF QUALITY CONTROL SYSTEM OF CONCRETE STRUCTURES
BASED ON NONDESTRUCTIVE TESTING.

Kalervo Orantie.

VTT, Concrete and Silicate Laboratory, Kemistintie 3,
SF-02150 Espoo, Finland.

Keywords: Concretes, Quality Control, Field Tests, Durability,
Nondestructive Tests.

USE OF BUILDING MASS AS A PART OF THE HEATING AND VENTILATION
SYSTEMS.

Heikki Siro, Kalevi Kantojärvi.

VTT, Concrete and Silicate Laboratory, Kemistintie 3,
SF-02150 Espoo, Finland.

Keywords: Concrete, Heating, Air Condition, Field Tests.

DEVELOPMENT OF ROTATIONAL MODEL FOR THE DETERMINATION OF THE
CAPACITY OF REINFORCED AND PRESTRESSED CONCRETE STRUCTURES.

Pekka Nykyri.

VTT, Concrete and Silicate Laboratory, Kemistintie 3,
SF-02150 Espoo, Finland.

Keywords: Concrete, Reinforced Concrete, Prestressed Concrete,
Concrete Structures, Beams, Slabs, Shear Properties,
Modelling.

DEVELOPMENT OF THE USE OF FINNISH NATURAL STONES IN CONSTRUCTION.

Pekka Mesimäki, Juha Ratvio, Jouko Ritola, Hannu Pyy.
VTT, Concrete and Silicate Laboratory, Kemistintie 3,
SF-02150 Espoo, Finland.

Keywords: Natural Stones, Building Stones, Facades.

FROST RESISTANCE IN BRICKS.

Kari Silvennoinen.

VTT, Concrete and Silicate Laboratory, Kemistintie 3,
SF-02150 Espoo, Finland.

Keywords: Bricks, Test Methods, Frost Resistance.

THE MICROSTRUCTURE OF MINERAL BUILDING MATERIALS.

Hannu Pyy, Erkki Vesikari, Lasse Mörönen.

VTT, Concrete and Silicate Laboratory, Kemistintie 3,
SF-02150 Espoo, Finland.

Keywords: Concretes, Mortars (Materials), Microscopy, Micro-
structure, Durability.

OPTIMIZATION METHODS FOR COMPUTER-AIDED STRUCTURAL DESIGN OF CONCRETE HALLS.

Matti Pajari.

VTT, Concrete and Silicate Laboratory, Kemistintie 3,
SF-02150 Espoo, Finland.

Keywords: Optimization, CAD, Structural Design, Costs, Concrete,
Modelling, Building.

THE DEVELOPMENT OF INDUSTRIALIZED PRECAST CONSTRUCTION IN WINTER.

Martti Tuovinen, Anneli Kaitamaa, Markku Leivo, Tapani Hakkarainen,
Lasse Mörönen.

VTT, Concrete and Silicate Laboratory, Kemistintie 3,
SF-02150 Espoo, Finland.

Keywords: Concrete Element, Concrete Industry, Joints, Construction,
Winter, Production.

CONCRETE ELEMENT-CAD.

Juha Ratvio, Marjo Saari.

VTT, Concrete and Silicate Laboratory, Kemistintie 3,
SF-02150 Espoo, Finland.

Keywords: CAD, Computer-Aided Design, Building Construction,
Concrete Industry.

CORROSION PROBLEMS IN THE CONSTRUCTION INDUSTRY.

Liisa Salparanta, Erkki Vesikari, Tero Hakkarainen, Asko Sarja,
Heikki Kukko, Heikki Noro.

VTT, Concrete and Silicate Laboratory, Kemistintie 3,
SF-02150 Espoo, Finland.

Keywords: Concrete Structures, Reinforcing Steels, Corrosion,
Service Life, Epoxy Resins, Zinc Coatings.

DETERMINATION OF FROST ACTIONS ON BRICK STRUCTURES AND
DEVELOPMENT OF THE FREEZE-THAW-TEST ON MORTARS.

Reijo Ylä-Mattila

VTT, Concrete and Silicate Laboratory, Kemistintie 3,
SF-02150 Espoo, Finland.

Keywords: Frost Resistance, Freezing, Mortars, Hardening, Masonry.

SPECIAL CONCRETE TECHNOLOGY FOR ARCTIC OFFSHORE-STRUCTURES.

Seppo Huovinen, Markku Leivo, Lasse Mörönen, Anna Kokkila,
Matti Lanu, Erkki Vesikari.

VTT, Concrete and Silicate Laboratory, Kemistintie 3,
SF-02150 Espoo, Finland.

Keywords: Arctic Technology, Concrete Construction, Concrete
Structures, Offshore, Mix Design, Salts, Ice.

DEVELOPMENT OF STRUCTURES AND FIXING TECHNIQUES OF NATURAL
STONE-CLAD FACADE ELEMENTS.

Pekka Mesimäki.

VTT, Concrete and Silicate Laboratory, Kemistintie 3,
SF-02150 Espoo, Finland.

Keywords: Natural Stone, Cladding, Facades, Anchoring, Concrete,
Construction Industry, Prefabrication, Element System,
Fixings, Trusses.

PROPERTIES OF CONCRETE AND CONCRETE STRUCTURES AT LOW TEMPERATURES.

Markku Leivo, Tauno Hyvönen, J. Scheuermann.

VTT, Concrete and Silicate Laboratory, Kemistintie 3,
SF-02150 Espoo, Finland.

Keywords: Concrete, Frost Resistance, Concrete Structures, Low
Temperature Tests, Pore Structure, Arctic Regions,
Impact Strength, Reinforcing Steels.

PRODUCT DEVELOPMENT AND BUILDING COMPONENT SYSTEM 2000 FOR
RESIDENTIAL AND OFFICE BUILDINGS. PRELIMINARY STUDY.

Pekka Korhonen.

VTT, Concrete and Silicate Laboratory, Kemistintie 3,
SF-02150 Espoo, Finland.

Keywords: Residential Buildings, Office Buildings, Planning, Compo-
nents, Products Planning, Product Development.

S-CATEGORY AIR-RAID SHELTERS.

Anneli Kaitamaa, Heli Koukkari, Pekka Laine, Kari Matikainen,
Marjo Skogberg.

VTT, Concrete and Silicate Laboratory, Kemistintie 3,
SF-02150 Espoo, Finland.

Keywords: Shelters, Radiation Protection, Air Raid Shelters,
Constructions, Equipment, Costs.

CONCRETE FACADE ELEMENT COATING.

Heikki Kukko, Kalervo Orantie.

VTT, Concrete and Silicate Laboratory, Kemistintie 3,
SF-02150 Espoo, Finland.

Keywords: Concrete, Facade Materials, Painting.

LONG-TERM PROPERTIES OF ALKALI ACTIVATED SLAG CONCRETE.

Tarja Häkkinen, Pertti Koskinen, Hannu Pyy, Erkki Vesikari,
Ulla-Maija Jumppanen.

VTT, Concrete and Silicate Laboratory, Kemistintie 3,
SF-02150 Espoo, Finland.

Keywords: Slag Concrete, Chemical Analysis, Durability, Physical
Properties, Concrete.

PROPERTIES AND USE OF HIGH-STRENGTH CONCRETE.

Lasse Mörönen, Anna Kokkila, Karl-Johan Serén, Matti Alasalmi,
Eero Posti.

VTT, Concrete and Silicate Laboratory, Kemistintie 3,
SF-0215D Espoo, Finland.

Keywords: High Strength Concrete, Properties, Compressive Strength,
Tensile Strength, Toughness, Composition (Property),
Manufacturing.

ADVANCED CERAMICS.

Pertti Koskinen, Olof Malmström, Kari Romu, Pertti Nenonen.

VTT, Concrete and Silicate Laboratory, Kemistintie 3,
SF-02150 Espoo, Finland.

Keywords: Ceramics, Pressing, Microstructure, Sintering, Properties,
Injection Molding, Development, Methods, Powder Metallurgy,
Preparation.

AUTOCAD.

Jukka Kuisma, Jukka Mertanen, Karl-Johan Serén, Matti Alasalmi,
Antti Paatela.

VTT, Concrete and Silicate Laboratory, Kemistintie 3,
SF-02150 Espoo, Finland.

Keywords: ADP, Application, Computer Programs, Autocad, CAD,
Computer Aided Design, Software.

EXPERIMENTAL METHODS IN THE RESEARCH OF CONCRETE STRUCTURES.

Heili Koukkari, Jukka Jokela, Reima Rae, Pertti Pitkänen.

VTT, Concrete and Silicate Laboratory, Kemistintie 3,
SF-02150 Espoo, Finland.

Keywords: Concrete Structures, Loads, Damage Control, Static Tests,
Dynamic Tests, Methods, Building Construction,
Experiments, Loading.

DYNAMIC TESTS ON CONCRETE STRUCTURES.

Heli Koukkari.

VTT, Concrete and Silicate Laboratory, Kemistintie 3,
SF-02150 Espoo, Finland.

Keywords: Concrete Structures, Dynamic Loads, Loads (Forces),
Fatigue Strength, Vibration Analysis, Building Construc-
tion, Impact Tests, Dynamic Tests, Loading.

FIXING AND JOINTS OF THIN-WALLED PRECAST CONCRETE STRUCTURES.

Heli Koukkari.

VTT, Concrete and Silicate Laboratory, Kemistintie 3,
SF-02150 Espoo, Finland.

Keywords: Thin-walled Structures, Precast Concrete Structures,
Fixings, Joints, Ferrocement, Fiber Reinforced Concrete,
Sandwich, Fibers, Concrete Structures, Facades.

POLYMERS USED IN JOINTS OF A BUILDING.

Leena Sarvaranta.

VTT, Concrete and Silicate Laboratory, Kemistintie 3,
SF-02150 Espoo, Finland.

Keywords: Construction, Joints, Walls, Polymers, Reviews,
Building Construction, Joint Sealants.

VIBRATIONS IN CONCRETE STRUCTURES.

Matti Lanu.

VTT, Concrete and Silicate Laboratory, Kemistintie 3,
SF-02150 Espoo, Finland.

Keywords: Concrete Structures, Vibrations, Vibration Analysis,
Construction Materials, Computer Programs, Software,
Concrete Construction, Building Constructions.

SPECIAL CEMENTS.

Tapani Aarnivuo.

VTT, Concrete and Silicate Laboratory, Kemistintie 3,
SF-02150 Espoo, Finland.

Keywords: Cements, Reviews, Construction Materials, Building
Materials.

POROSITY OF BRICKS.

Kari Silvennoinen.

VTT, Concrete and Silicate Laboratory, Kemistintie 3,
SF-02150 Espoo, Finland.

Keywords: Bricks, Porous Building Materials, Methods, Measurements, Pore Structure, Porosity, Frost, Freezing.

AN EXPERT SYSTEM FOR THE REPAIRS OF CONCRETE STRUCTURES.

Karl-Johan Serén, Kalle Tanskanen, Juha Ratvio.

VTT, Concrete and Silicate Laboratory, Kemistintie 3,
SF-02150 Espoo, Finland.

Keywords: Concrete Structures, Reparations, ADP, Expert Systems, Repairing, Artificial Intelligence, Renovating, Building Construction.

NONLINEAR COMPUTER CODE OF CONCRETE SANDWICH STRUCTURES.

Heikki Noro.

VTT, Concrete and Silicate Laboratory, Kemistintie 3,
SF-02150 Espoo, Finland.

Keywords: Sandwich Structures, Dimensioning, Building Construction, Physical Properties, Analysis, Shear Strain, Calculation, ADP, Computer Programs, Nonlinear Programming.

PRELIMINARY MODEL FOR COMPUTER-AIDED DESIGN OF BUILDINGS,
RATAS PROJECT, PHASE 1.

Asko Sarja, Pekka Leppänen.

VTT, Concrete and Silicate Laboratory, Kemistintie 3,
SF-02150 Espoo, Finland.

Keywords: Design Process, CAD, Design Models, Maintenance Models, Production Models, Control, Building, Computer Aided Design, Construction.

ACCELERATION METHODS FOR DRYING OF CONCRETE.

Kalervo Orantie, Hemming Paroll, Heikki Kukko.

VTT, Concrete and Silicate Laboratory, Kemistintie 3,
SF-02150 Espoo, Finland.

Keywords: Concrete, Additives, Drying, Methods, Concrete Structures, Admixtures.

PRODUCTION TECHNOLOGICAL EXPERT SYSTEM EMBEDDED IN A CAD/CAM
SYSTEM OF THE PRECAST CONCRETE INDUSTRY.

Matti Alasalmi, Juha Ratvio, Karl-Johan Serén.

VTT, Concrete and Silicate Laboratory, Kemistintie 3,
SF-02150 Espoo, Finland.

Keywords: Expert Systems, Precast Concrete, Production Control,
CAD, CAM, Production Planning, Computer Aided Design,
Artificial Intelligence, Prefabrication, Manufacturing.

REUSE OF PRECAST CONCRETE UNITS.

Pekka Korhonen.

VTT, Concrete and Silicate Laboratory, Kemistintie 3,
SF-02150 Espoo, Finland.

Keywords: Concrete, Concrete Structures, Prefabrication, Precast
Concrete Structures, Environmental Effects, Joints,
Raw Materials, Energy Consumption.

APPLICATION OF FINNISH SYSTEM BUILDING TECHNIQUES TO CHINESE
CONDITIONS.

Pekka Korhonen.

VTT, Concrete and Silicate Laboratory, Kemistintie 3,
SF-02150 Espoo, Finland.

Keywords: China, Building Construction, Export, Precast Construction,
Modules, Industrial Engineering, Modular Structures,
Standardization.

THE USE OF MICROCOMPUTER SOFTWARE IN BUILDING SITE PRODUCTION
PLANNING AND CONTROL.

Jukka Mertanen, Juha Ratvio, Karl-Johan Serén.

VTT, Concrete and Silicate Laboratory, Kemistintie 3,
SF-02150 Espoo, Finland.

Keywords: Building Sites, Production Control, Microcomputer
Programs, Software, Production Planning.

FERROCEMENT.

Anneli Kaitamaa.

VTT, Concrete and Silicate Laboratory, Kemistintie 3,
SF-02150 Espoo, Finland.

Keywords: Concrete, Ferrocement, Reinforced Concrete, Mechanical
Properties, Physical Properties, Manufacturing, Casting.

EXPERT SYSTEMS FOR THE CONCRETE INDUSTRY.

Karl-Johan Serén.

VTT, Concrete and Silicate Laboratory, Kemistintie 3,
SF-02150 Espoo, Finland.

Keywords: Concrete Industry, Expert Systems, Production, Quality
Control, Maintenance, Artificial Intelligence,
Manufacturing.

MIXING WATER CONTROL OF CONCRETE.

Matti Alasalmi.

VTT, Concrete and Silicate Laboratory, Kemistintie 3,
SF-02150 Espoo, Finland.

Keywords: Concrete, Mixes, Water, Control, Aggregates, Measuring
Methods, Moisture Content, Determination, Mixing.

CUTTING TECHNIQUES FOR CONCRETE.

Karl-Johan Serén, Pekka Korhonen.

VTT, Concrete and Silicate Laboratory, Kemistintie 3,
SF-02150 Espoo, Finland.

Keywords: Concrete, Concrete Structures, Methods, Cutting,
Product Development.

FOAM CONCRETE.

Lasse Mörönen, Hemming Paroll.

VTT, Concrete and Silicate Laboratory, Kemistintie 3,
SF-02150 Espoo, Finland.

Keywords: Concrete, Foam, Admixtures, Cements, Additives, Mortars,
Foam Concrete, Mixing.

THE RESEARCH AND TEST METHODS OF MASONRY STRUCTURES AND MATERIALS.

Pekka Sipari, Reijo Ylä-Mattila, Kari Silvennoinen, Pertti Koskinen, Hannu Pyy.

VTT, Concrete and Silicate Laboratory, Kemistintie 3, SF-02150 Espoo, Finland.

Keywords: Masonry, Research and Development, Building Construction, Finland, Structures, Test Methods, Bricks, Applications.

TEMPERATURES, MOISTURE CONTENTS AND MOVEMENTS OF INSULATED CAVITY BRICKWALLS IN NATURAL CONDITIONS.

Pekka Sipari.

VTT, Concrete and Silicate Laboratory, Kemistintie 3, SF-02150 Espoo, Finland.

Keywords: Performance Evaluation, Measurements, Motion, Thermal Insulation, Bricks, Temperature, Moisture Content, Brick Structures, Walls, Cold Weather Construction.

DEVELOPMENT OF QUALITY CONTROL METHODS FOR PROCESSING OF NATURAL BUILDING STONES.

Pekka Mesimäki, Hannu Löppönen.

VTT, Concrete and Silicate Laboratory, Kemistintie 3, SF-D2150 Espoo, Finland.

Keywords: Natural Stone, Methods, Measurements, Development, Quality Control, Ultrasonic Testing, Processing.

TESTING OF IMPORTANT PROPERTIES OF FINNISH BUILDING STONES WITH RESPECT TO THE EXPORT DEMANDS, A PRELIMINARY RESEARCH AND PLANNING OF FURTHER ACTIVITIES.

Pekka Mesimäki, Hannu Löppönen.

VTT, Concrete and Silicate Laboratory, Kemistintie 3, SF-02150 Espoo, Finland.

Keywords: Test Methods, Building Materials, Finland, Building Construction, Export, Natural Stone, Properties, Testing.

THE RESEARCH OF ULTRASONIC METHODS FOR STUDYING NATURAL STONE.

Hannu Löppönen, Pekka Mesimäki, Olof Malmström.

VTT, Concrete and Silicate Laboratory, Kemistintie 3,
SF-02150 Espoo, Finland.

Keywords: Natural Stones, Quality Control, Inspection, Ultrasonic
Testing, Properties.

PARTIALLY PRESTRESSED CONCRETE STRUCTURES.

Seppo Matala, Ulla-Maija Koskenranta-Mykkälä.

VTT, Concrete and Silicate Laboratory, Kemistintie 3,
SF-02150 Espoo, Finland.

Keywords: Concrete Structures, Partial Prestressing, Design,
Building Construction, Research and Development, Pre-
stressed Concrete, Methods, Cracks, Standards,
Building Costs.

DESIGN OF HOLLOW CORE SLABS.

Matti Pajari.

VTT, Concrete and Silicate Laboratory, Kemistintie 3,
SF-02150 Espoo, Finland.

Keywords: Hollow Core Slabs, Design, Prestressed Concrete, Design
Criteria, Dimensioning, Reliability, Estimation,
Building Construction, Concrete Structures.

THE UTILIZATION OF THE NEW MATERIALS IN REINFORCED CONCRETE
BRIDGES.

Seppo Matala, Liisa Salparanta, Kalervo Orantie.

VTT, Concrete and Silicate Laboratory, Kemistintie 3,
SF-02150 Espoo, Finland.

Keywords: Reinforced Concrete, Concrete Construction, Materials,
Concrete Durability, Non-destructive Testing, Epoxy
Resins, Slag Concrete, Polymers, Curing, Bridges (Struc-
tures).

DEVELOPMENT OF QUALITY ASSURANCE SYSTEMS FOR BUILDING INDUSTRY.

Osmo Koskisto, Jukka Jokela, Reima Rae, Matti Alasaïmi,
Heino Ollila, Heikki Saari.

VTT, Concrete and Silicate Laboratory, Kemistintie 3,
SF-02150 Espoo, Finland.

Keywords: Quality, Components, Quality Assurance, Prefabrication,
Quality Control, Construction Industry, Building
Materials, Safety, Construction Materials, Project
Planning.

LASER APPLICATIONS IN THE CONCRETE INDUSTRY, PRE-STUDY.

Karl-Johan Serén.

VTT, Concrete and Silicate Laboratory, Kemistintie 3,
SF-02150 Espoo, Finland.

Keywords: Lasers, Applications, Concrete, Measurement Instruments,
Cutting, Construction Industry, Building Constructions,
Concrete Industry, Construction Materials.

MICROMECHANICAL APPROACH IN THE STATISTICAL MODELLING OF CONCRETE.

Raimo Lehtinen, Lasse Mörönen.

VTT, Concrete and Silicate Laboratory, Kemistintie 3,
SF-02150 Espoo, Finland.

Keywords: Concrete, Building Materials, Modelling, Building
Construction, Microstructure, Optical Measurement,
Statistical Methods, Strength.

MICROPOROSITY OF CONCRETE.

Markku Leivo.

VTT, Concrete and Silicate Laboratory, Kemistintie 3,
SF-02150 Espoo, Finland.

Keywords: Concrete, Building Construction, Microstructure,
Construction Materials, Micropore Size, Frost Resistance,
Porosity.

INTERACTION PRICIPLES IN COMPOSITE STRUCTURES

Matti Leskelä

University of Oulu, Laboratory of structural engineering,
Kasarmitie 8, SF-90100, Oulu, Finland

Keywords: Composite structures, Interaction, Stiffness,
Connection behaviour

BOND AND ANCHORAGE PROPERTIES OF DIFFERENT TYPES OF COMPOSITE
SLABS

Matti Leskelä

University of Oulu, Laboratory of structural engineering,
Kasarmitie 8, SF-90100, Oulu, Finland

Keywords: Composite slabs, Anchorage, Bond strength, Failure
types

STRESS-STRAIN CHARACTERISTICS OF CONCRETE IN DIFFERENT
ENVIRONMENTS

Matti Leskelä

University of Oulu, Laboratory of structural engineering,
Kasarmitie 8, SF-90100, Oulu, Finland

Keywords: Concrete, Stress state, Strength, Environmental loads

QUALITY CONTROL OF PRESTRESSED HOLLOW CORE SLABS BASED ON ELASTIC
PROPERTIES AND SMALL TEST SPECIMENS

Matti Leskelä

University of Oulu, Laboratory of structural engineering,
Kasarmitie 8, SF-90100, Oulu, Finland

Keywords: Hollow core slabs, Quality control, Cracking, Anchorage

APPLICABILITY OF THE SECOND ORDER THEORY IN CONCRETE COLUMNS
USING FEM

Matti Leskelä

University of Oulu, Laboratory of structural engineering,
Kasarmitie 8, SF-90100, Oulu, Finland

Keywords: Concrete column, FEM, Stiffness, Deflections, Cracking

COMPARISON BETWEEN GAP-GRADED AND CONTINUOUSLY-GRADED CONCRETES

Vesa Penttala, Timo Rautanen

Helsinki University of Technology, Rakentajanaukio 4 A,
SF-02150 Espoo, Finland

Keywords: Gap-graded concrete, Mechanical properties,
Pumpability, Abrasion, Frost-resistance

MECHANICAL PROPERTIES OF HIGH STRENGTH CONCRETES

Vesa Penttala, Ari Ipatti, Veli-Antti Hakala

Helsinki University of Technology, Rakentajanaukio 4 A,
SF-02150 Espoo, Finland

Keywords: High strength concretes, Stress-strain relationship,
Bond of reinforcement, Shrinkage, Creep, Fatigue,
Abrasion

FREEZE-THAW DURABILITY AND CARBONATION OF HIGH STRENGTH CONCRETE

Pekka Vuorinen, Vesa Penttala

Helsinki University of Technology, Rakentajanaukio 4 A,
SF-02150 Espoo, Finland

Keywords: High strength concrete, Freeze-thaw durability,
Carbonation

EFFECTS OF MICROPOROSITY ON THE PROPERTIES OF CONCRETE

Vesa Penttala, Timo Rautanen, Veli-Antti Hakala

Helsinki University of Technology, Rakentajanaukio 4 A,
SF-02150 Espoo, Finland

Keywords: Concrete, High strength concrete, Microporosity,
Shrinkage, Creep, Heat treatment, Curing

PRODUCT APPLICATIONS OF HIGH STRENGTH CONCRETES-MATERIALS,
PRODUCTION METHODS, AND QUALITY CONTROL

Vesa Penttala, Pekka Vuorinen

Helsinki University of Technology, Rakentajanaukio 4 A,
SF-02150 Espoo, Finland

Keywords: High strength concrete, Materials, Production methods,
Quality control

PRODUCT APPLICATIONS OF HIGH STRENGTH CONCRETES-STRUCTURAL DESIGN

Pekka Kanerva, Jari Hänninen

Helsinki University of Technology, Rakentajanaukio 4 A,
SF-02150 Espoo, Finland

Keywords: High strength concrete, Structural design, Shear
strength

PRODUCT APPLICATIONS OF HIGH STRENGTH CONCRETES-FIRE BEHAVIOUR

Ulla-Jumppanen, Ullrich Diederichs

Technical Research Centre of Finland, Kivimiehentie 4,
SF-02150 Espoo, Finland

Keywords: High strength concrete, High temperature,
Thermomechanical properties, Fire behavior.

PHYSICAL PROPERTIES OF CEMENT PASTE AND CONCRETE CONTAINING PEAT
FUEL ASH

Ari Ipatti

Imatran Voima Oy, Concrete and Soils Laboratory,
Rajatorpantie 8, P.O. Box 112, SF-01601 Vantaa, Finland

Keywords: Ashes, Cement pastes, Concretes, Peat, Physical
properties

LONG-TERM STABILITY OF CEMENT SOLIDIFIED WASTES GENERATED AT THE
LOVIISA NUCLEAR POWER PLANT

Ari Ipatti

Imatran Voima Oy, Concrete and Soils Laboratory,
Rajatorpantie 8, P.O. Box 112, SF-01601 Vantaa, Finland

Keywords: Cement, Ion-exchange resins, Solidification

PRESTRESSED STONE AND CONCRETE BEAMS

Herman Parland

Tampere University of Technology, Division of Structural
Mechanics, P.O. Box 527, SF - 33101 Tampere, Finland.

Keywords: Concrete Beams, Granite Beams, Joint Parameters,
Prestressing.

BICRITERION APPROACH IN OPTIMIZING REINFORCED CONCRETE BEAM

Markku Heinisuo

Tampere University of Technology, Division of Structural
Mechanics, P.O. Box 527, SF - 33101 Tampere, Finland.

Keywords: Concrete Beams, Multicriterion optimization.

DESIGN OF EXTERIOR WALLS FOR DURABILITY

Matti Pentti

Tampere University of Technology, Division of Building Construction, P.O. Box 527, SF - 33101 Tampere, Finland.

Keywords: Durability, Exterior Walls, Masonry Structures, Precast Concrete Panels, Structural Design.

COMPOSITE STRUCTURES

Lauri Mehto, Jouko Pynnönen, Timo Inha

Tampere University of Technology, Division of Building Construction, P.O. Box 527, SF - 33101 Tampere, Finland.

Keywords: Beams, Composite, Columns, Connections, Design, Slabs, Tests.

FIRE DESIGN FOR CONCRETE BEAMS AND SLABS

Timo Inha

Tampere University of Technology, Division of Building Construction, P.O. Box 527, SF - 33101 Tampere, Finland.

Keywords: Fire Ratings, Fire Resistance, Heat Transfer, Prestressed Concrete, Reinforced Concrete, Structural Design, Thermal Properties.

BEHAVIOUR OF FLEXURAL CONCRETE STRUCTURES IN FIRE

Timo Inha

Tampere University of Technology, Division of Building Construction, P.O. Box 527, SF - 33101 Tampere, Finland.

Keywords: Computer Programs, Concrete Structures, Cracking, Fire Ratings, Heat Transfer, Structural Analysis, Thermal Properties.

ACTUAL BEHAVIOUR OF A BEAM TO COLUMN CONNECTION IN A REINFORCED CONCRETE PORTAL FRAME

Ralf Lindberg

Tampere University of Technology, Division of Building Construction, P.O. Box 527, SF - 33101 Tampere, Finland.

Keywords: Bearing Pad, Cantilever, Column, Connection, Portal Frame, Precast Concrete Element.

TIME-DEPENDENT BEHAVIOUR OF PRESTRESSED CONCRETE

Ralf Lindberg, Timo Turunen

Tampere University of Technology, Division of Building Construction, P.O. Box 527, SF - 33101 Tampere, Finland.

Keywords: Cracking, Creep, Hollow Slab, Prestressed Concrete Element, Shrinkage.

SLENDER PRESTRESSED COLUMNS

Ralf Lindberg

Tampere University of Technology, Division of Building Construction, P.O. Box 527, SF - 33101 Tampere, Finland.

Keywords: Creep, Precast Concrete Column, Prestress, Shrinkage.

EXACT FINITE ELEMENT METHOD FOR LAYERED BEAMS, APPLICATIONS: CONCRETE-STEEL COMPOSITE BEAMS, PRECAST AND CAST-IN-SITU SHEAR WALLS

Markku Heinisuo, Simo Malmi, Arto Möttönen

Tampere University of Technology, Division of Structural Mechanics, P.O. Box 527, SF - 33101 Tampere, Finland.

Keywords: Finite elements, Layered Beams, Shear Walls.

DEVELOPMENT OF POZZOLANIC CEMENT WITH MICRO SILICA AND FINELY GROUND RHYOLITE.

Haraldur Asgeirsson, Gudmundur Gudmundsson, Hakon Olafsson.

The Icelandic Building Research Institute, Keldnaholt, 112 Reykjavik, Iceland.

Keywords: Cement, Pozzalona, silicafume, concrete durability

HYDROPHOBING AGENTS FOR PROTECTION OF LOW QUALITY CONCRETE.

Hakon Olafsson, Jon H. Gestsson.

The Icelandic Building Research Institute, Keldnaholt, 112, Reykjavik, Iceland.

Keywords: Concrete, impregnation, moisture, durability, quality

THE EFFECT OF RELATIVE HUMIDITY AND TEMPERATURE ON ALKALI EXPANSION OF MORTAR BARS.

Hakon Olafsson.

The Icelandic Building Research Institute, Keldnaholt, 112, Reykjavik, Iceland.

Keywords: Concrete, damage, alkali expansion, relative humidity

EFFECT OF ALKALI AGGREGATE REACTIVITY IN CONCRETE ON RESISTENCE AGAINST FREEZING AND THAWING.

Sveinbjörn Sveinbjörnsson.

The Icelandic Building Research Institute, Keldnaholt, 112, Reykjavik, Iceland.

Keywords: Concrete, alkali reaction, frost resistance, durability

ALKALI AGGREGATE DAMAGES IN CONCRETE WITH MICRO SILICAFIELD STUDY

Sveinbjörn Sveinbjörnsson,

The Icelandic Building Research Institute, Keldnaholt, 112, Reykjavik, Iceland.

Keywords: Concrete, alkali damage, micro silica, field study

T-HEADED BARS AS SHEAR REINFORCEMENT IN HIGH-STRENGTH-CONCRETE

Tormod Dyken, Jan M. Munkeby, Bernt Jakobsen.

Norwegian Contractors, Holtet 45, 1320 Stabekk, Norway.

Keywords: Offshore-structures, shear-reinforcement, ductility,
high-strength-concrete, friction welding

FIBER REINFORCED MORTAR AND CONCRETE. MATERIAL PROPERTIES AND
STRUCTURAL APPLICATIONS.

T.A. Hammer, A. Tomaszewicz.

SINTEF div FCB, Cement and Concrete Research Institute. The
Norwegian Institute of Technology, N-7034 Trondheim, NTH, NORWAY.

Keywords: Fiber reinforced concretes, steel fibers, plastic
fibers, material properties, structural design

THE EXPLOSION RESISTANCE OF CONCRETE STRUCTURES.

T.A. Håverstad.

SINTEF div FCB, Cement and Concrete Research Institute, The Nor-
wegian Institute of Technology, N-7034 Trondheim, NTH, NORWAY.

Keywords: Concrete, explosion, dynamic response.

HIGH STRENGTH CONCRETE. PREPROJECT.

Ivar Holand.

SINTEF div. FCB, Cement and Research Institute, The Norwegian
Institute of Technology, N-7034 Trondheim, NTH, NORWAY.

Keywords: Concrete, high-strength, state-of-the-art research
plan, mechanical properties

AUTOMATIC SURVEILLANCE OF OFFSHORE STRUCTURES.

K. Høiseth, J.J. Jensen.

SINTEF div FCB, Cement and Concrete Research Institute, the Nor-
wegian Institute of Technology, N-7034, Trondheim, NTH, NORWAY

Keywords: Concrete, offshore structures, instrumentation, sur-
veillance

CONCRETE STRUCTURES EXPOSED TO HYDROCARBON FIRE.

J.J. Jensen, U. Danielsen.

SINTEF div FCB, Cement and Concrete Research Institute, The Norwegian Institute of Technology, N-7034 Trondheim, NTH, NORWAY

Keywords: Concrete, fire, offshore structures

EFFECT OF WATER PRESSURE ON STATIC AND DYNAMIC LOADED CONCRETE STRUCTURES.

J.J. Jensen, L. Bjerkeli.

SINTEF div FCB, Cement and Concrete Research Institute, the Norwegian Institute of Technology, N-7034 Trondheim, NTH, NORWAY

Keywords: Concrete, water pressure, water penetration, pore pressure, effect of loading

STRUCTURAL PROPERTIES OF HIGH-STRENGTH CONCRETE.

J.J. Jensen, A. Tomaszewicz.

SINTEF div FCB, Cement and Concrete Research Institute, The Norwegian Institute of Technology, N-7034 Trondheim, NTH, NORWAY

Keywords: High-strength concretes, reinforced concrete, structural properties, strength, failure mechanism

QUANTITATIVE ANALYSIS OF CEMENT BY X-RAY DIFFRACTION.

H. Justnes, I. Meland.

SINTEF div FCB, Cement and Concrete Research Institute, the Norwegian Institute of Technology, N-7034 Trondheim, NTH, NORWAY

Keywords: Cement, Analysis, Quantitative, X-ray, Diffraction

THE ULTIMATE STRAIN AND THE DUCTILITY OF HIGH STRENGTH CONCRETE.

Bernd Kepp, Jan M. Munkeby.

Norwegian Contractors, Holtet 45, N-1320 Stabekk, Norway.

Keywords: High-strength concrete, ductility, confinement, lightweight aggregates, stress-strain-relationship

BEHAVIOUR OF CONCRETE MADE OF BLENDED CEMENT AND SILICA FUME.

Magne Maage, Olav Gautefall, Inger Meland.

SINTEF div. FCB, Cement and Concrete Research Institute. The Norwegian Institute of Technology, N-7034 Trondheim, NTH, Norway

Keywords: Blended cement, silica fume, fresh concrete, mechanical properties, durability

LOW POROSITY CONCRETE.

Magne Maage, Inger Meland, Tor Arne Hammer.

SINTEF div FCB, Cement and Concrete Research Institute, The Norwegian Institute of Technology, N-7034 Trondheim-NTH, NORWAY

Keywords: Gypsum free cement, set retarding, cement paste, concrete, durability

BLENDED CEMENTS.

Inger Meland.

SINTEF div FCB, Cement and Concrete Research Institute, The Norwegian Institute of Technology, N-7034 Trondheim, NTH, NORWAY

Keywords: Blended Cements, Pastes, Fineness, Hydration, Carbonation

ALKALINE REACTIVITY.

Inger Meland.

SINTEF div. FCB Cement and Concrete Research Institute, The Norwegian Institute of Technology, N-7034 Trondheim, NTH, NORWAY

Keywords: Akali-Silica Reaction, Cements, Ceramic Tiles. Test methods.

IDENTIFICATION OF ADMIXTURES IN HARDENED CONCRETE.

Inger Meland.

SINTEF div FCD, Cement and Concrete Research Institute, The Norwegian Institute of Technology N-7034 Trondheim, NTH, NORWAY

Keywords: Admixtures, Hardened Concrete, Identification

CONCRETE ADMIXTURES II.

SINTEF div FCB, Cement and Concrete Research Institute, The Norwegian Institute of Technology, N-7034 Trondheim, NTH, NORWAY

Keywords: Admixtures, Cements, Concrete, Identification, Interactions

IN-SITU QUALITY OF CONCRETE STRUCTURES.

Matz Modeer, Bernt Jakobsen, Jan Moksnes.

Norwegian Contractors, Holtet 45, N-1320 Stabekk, Norge.

Keywords: High Strength Concrete, Condeep Platforms, Slipforming/Ordinary Formwork, In-situ Quality, Core Testing

COMPUTER-AIDED CONCRETE TECHNOLOGY.

Ole Chr. Styri, Knut O. Kjellsen, Kåre Reknes and Odd E. Gjørsv.

Division of Building Materials, Norwegian Institute of Technology, N-7034 NTH Trondheim, Norway.

Keywords: Concrete construction, property development, mathematical models, microcomputers, software

PUNCHING SHEAR IN PRECAST REINFORCED CONCRETE SLABS.

A. Tomaszewicz.

SINTEF div FCB, Cement and Concrete Research Institute, The Norwegian Institute of Technology, N-7034 Trondheim, NTH, NORWAY

Keywords: Reinforced concrete, precast concrete, punching shear, failure mechanism, research

MECHANICS OF SHEAR FAILURE.

Solfrid Vada, Matz Modeer.

Universitetet i Oslo, Inst. for Matematikk, P.O. Box 1032 Blindern, N-0315 Oslo, Norge, Norwegian Contractors, Holtet 45, N-1320 Stabekk, Norge.

Keywords: Shear failure, multiple cracking, FEM analyses, fictitious crack model, reinforced concrete.

RHEOLOGY OF FRESH CONCRETE.

Olafur H. Wallevik and Odd E. Gjörv.

Division of Building Materials, The Norwegian Institute of Technology, N-7034 NTH, Trondheim, Norway.

Keywords: Fresh concrete, rheology, test methods, yield strength, viscosity

HIGH STRENGTH CONCRETE.

Min-Hong Zhang, Lasse Husebye, Heinrich Rønning and Odd E. Gjörv.
Division of Building Materials, The Norwegian Institute of Technology, N-7034, NTH Trondheim, Norway.

Keywords: Mix design, aggregates, strength properties, abrasion resistance, durability

ENERGY DISSIPATION IN STATIC AND IMPACT TESTS ON CONCRETE SLABS.

Lars Andersson.

"
Institutionen för Byggnadsstatik, Kungliga Tekniska Högskolan i Stockholm, S-10044 Stockholm, Sverige.

Keywords: Concrete slab, Energy dissipation, Shelter, Impact

ALKALI ACTIVATED SLAG CONCRETE.

Ronny Andersson, Hans-Erik Gram.

Swedish Cement and Concrete Research Institute, S-100 44 Stockholm, Sverige.

Keywords: Slag, activation, alkalies, steam curing

ROOFING SHEETS MADE OF MORTAR REINFORCED WITH NATURAL FIBRES.

Ronny Andersson, Hans-Erik Gram.

Cement och Betong Institutet, Swedish Cement and Concrete Research Institute, S-10044 Stockholm, Sverige.

Keywords: Natural fibres, natural pozzolans, roofing sheets, durability

PAVEMENTS OF ROLLER COMPACTED CONCRETE.

Ronny Andersson

Swedish Cement and Concrete Research Institute, S-10044 Stockholm, Sverige.

Keywords: Mix proportioning, pavemente, properties, roller compacted concrete test methods

THERMAL STRESSES IN MASSIVE CONCRETE DUE TO HYDRATION - ANALYSIS OF STRESS DEVELOPMENT IN SOME PRACTICAL CONSTRUCTION SITUATIONS.

Stig Bernander, Mats Emborg.

Division of Structural Engineering, Luleå University of Technology, S-95287 Luleå, Alt. Skanska AB, Box 7050, 402 31 Gothenburg, Sverige.

Keywords: Young concrete - temperature - creep - stress analyses - practical cases

CHLORIDE INITIATED REINFORCEMENT CORROSION.

Kajsa Byfors.

Swedish Cement and Concrete Research Institute, S-100 44 Stockholm, Sverige.

Keywords: Reinforcement corrosion, chloride transport, chloride binding, threshold values, service life

COMPOSITE ACTION.

Krister Cederwall, Thomas Pettersson, Elzbieta Saran, Stig Øberg..

Chalmers tekniska högskola, Betongbyggnad, S-412 96 Göteborg, Sverige.

Keywords: Composite action, Shear capacity, Influence of prestressing

INFLUENCE OF POLLUTION ON DETERIORATION OF CONCRETE.

Satish Chandra,

Division of Building Materials, Chalmers University of Technology, 412 96 Göteborg, Sverige.

Keywords: Pollution, concrete deterioration leaching, acid rain, expansive sulphates.

FATIGUE OF CONCRETE UNDER LOW TEMPERATURES.

Per Anders Daerga.

Division of Structural Engineering, Luleå University of Technology, S-951 87 Luleå, Sverige.

Keywords: Fatigue, Concrete, Fracture mechanics, Cold climate construction, Freezing and thawing

ADHESIVE ANCHORS AND HOOK ANCHORS IN CONCRETE STRUCTURES.

Lennart Elfgren, Ulf Ohlsson, Kent Gylltoft.

Division of Structural Engineering, Luleå University of Technology, S-951 87 Luleå, Sverige.

Keywords: Adhesive anchors, Hook anchor, Anchor bolts, Fracture Mechanics, Fastener

FATIGUE STRENGTH OF CABLE COUPLERS IN PRESTRESSED CONCRETE BEAMS.

Mats Emborg, Lennart Elfgren.

Division of Structural Engineering, Luleå University of Technology, S-951 87 Luleå, Sverige.

Keywords: Coupling section, Fatigue test, Cable coupler, Local bending, Fretting

TEMPERATURE STRESSES IN MASSIVE CONCRETE STRUCTURES DUE TO HYDRATION - THEORETICAL MODELS AND LABORATORY TESTS.

Mats Emborg, Stig Bernander.

Division of Structural Engineering, Luleå University of Technology, S-951 87 Luleå, Sverige.

Keywords: Hydration, Temperature stresses, Creep model, Fresh concrete, Laboratory test

STRUCTURAL CONNECTIONS BETWEEN CONCRETE COMPONENTS IN PRECAST STRUCTURES.

Bjørn Engstrøm.

Chalmers tekniska högskola, betongbyggnad, S-412 96 Göteborg, Sverige.

Keywords: Precast element, structural connections, joints structural integrity, force transfer

IMPROVEMENT OF THE DURABILITY OF NATURAL FIBRE CONCRETE FOR ROOFING SHEETS.

Hans-Erik Gram.

Swedish Cement and Concrete Research Institute, S-100 44 Stockholm, Sverige.

Keywords: Durability, natural fibres, rice husk ash, roofing sheets

DYNAMIC LOAD TESTS ON PRESTRESSED CONCRETE BRIDGES STUDIES WITH NON-DESTRUCTIVE TEST METHODS.

Kent Gylltoft.

Statens Provningsanstalt, Box 857, S-501 15 Borås, Sverige.

Keywords: Prestressed concrete bridges, dynamic loading, vibration measurements, non-destructive test method, modal analysis

TEST OF MATERIAL PROPERTIES IN MIXED MODE I AND II.

Manouchehr Hassanzadeh.

Division of Building Materials, Lund Institute of Technology, Box 118, S-221 00 Lund, Sverige.

Keywords: Fracture, tests, shear

DETERMINATION OF WATER VAPOUR PERMEABILITY IN CONCRETE, CEMENT MORTAR AND CEMENT PASTE UNDER HIGH MOISTURE CONDITIONS.

Göran Hedenblad.

Lund Institute of Technology, Division of Building Materials, Box 118, 221 00 Lund Sverige.

Keywords: Concrete, cement mortar, cement paste, water vapour, permeability

MINIMUM REINFORCEMENT FOR CRACK CONTROL.

Ake Holmberg.

Box 793 S-220 07 Lund.

Keywords: Minimum Reinforcement, Cracking in Tension

THE RELATION BETWEEN FUNCTIONALLY AND ENVIRONMENTALLY CAUSED DEGRADATION OF CONCRETE.

Hans Ingvarsson.

Royal Institute of Technology, Department of Structural Engineering, S-100 44 Stockholm, Sverige.

Keywords: Concrete, fatigue, deterioration, durability, service life

NUMERICAL MODELING OF STRESSES DUE TO VARIABLE TEMPERATURE AND MOISTURE STATES IN CONCRETE.

Jan-Erik Jonasson, Mats Emborg.

Division of Structural Engineering, Luleå University of Technology, S-951 87 Luleå, Sverige.

Keywords: Temperature, Moisture, Massive Concrete, Creep, Winter Concreting

MODELLING OF HYDRATION PROCESS AND RELATED MATERIAL BEHAVIOUR.

Jan-Erik Jonasson.

CBI (Swedish Cement and Concrete Research Institute), S-100 44 Stockholm, Sverige.

Keywords: Hydration, Temperature, Winter Concreting, Modelling, Computer Programs

TEST METHOD FOR FLY ASH CONTENT IN HARDENED CONCRETE.

Gunnar Klingstedt, Hans-Erik Gram.

(Cement och Betong Institutet), Swedish Cement and Concrete Research Institute, S-100 44 Stockholm, Sverige.

Keywords: Fly ash, SEM-EDS-analyse, concrete, content of fly ash

DURABILITY OF CELLULOSE FIBRES IN A CEMENT MATRIX.

Anders Larsen, Hans-Erik Gram.

(Cement och Betong Institutet), Swedish Cement and Concrete Research Institute, S-100 44 Stockholm, Sverige.

Keywords: Durability, Cellulose fibres, modification of binder, accelerated ageing

VERY HIGH STRENGTH FIBRE CONCRETE.

Anders Larsen, Hans-Erik Gram.

(Cement och Betong Institutet), Swedish Cement and Concrete Research Institute, S-100 44 Stockholm, Sverige.

Keywords: Cement, fibres, admixtures, modification of binder

TEAR PROOF LONGITUDINAL JOINTS BETWEEN PRECAST CONCRETE SLABS.

Christer Ljungkrantz.

(Cement och Betong Institutet), Swedish Cement and Concrete Research Institute, S-100 44 Stockholm, Sverige.

Keywords: Precast concrete, slabs, joints, mortar, test methods

NON-DESTRUCTIVE FIELD TESTS OF STRENGTH, PERMEABILITY AND REINFORCEMENT CORROSION IN EXISTING CONCRETE STRUCTURES.

Christer Molin, Per Johan Jønns.

Statens Provningsanstalt, Box 5608, S-114 86 Stockholm, Sverige.

Keywords: Non destructive testing equipment, in situ, evaluation, strength, durability

MODELLING OF THE MATURING CONCRETE, INFLUENCE OF MOISTURE AND CASTING TEMPERATURE.

Larissa Molina.

(Cement och Betong Institutet), Swedish Cement and Concrete Research Institute, S-100 44 Stockholm, Sverige.

Keywords: Hydration, Temperature, Moisture, Three-dimensional modelling, Computer programs

PORE STRUCTURE AND PHYSICAL PROPERTIES OF TODAY'S CONCRETE.

Lars-Olof Nilsson, Juhan Aavik,

Byggnadsmaterial, Chalmers Tekniska Högskola, S-412 96 Göteborg, Sverige.

Keywords: Pore structure, sorption isotherms, moisture, drying, permeability

INCREASING THE SHEAR CAPACITY WITH STEEL FIBRE SHOTCRETE.

Jan Norberg.

Inst. f. Brobyggnad, KTH, S-100 44 Stockholm, Sverige.

Keywords: Repair, strengthening, fibre, shotcrete

MULTIPLANE MODEL - A CONSTITUTIVE MODEL FOR SEJAR IN CONCRETE.

Jan Norberg.

Inst. f. Brobyggnad, KTH, S-100 44 Stockholm, Sverige.

Keywords: Constitutive model, fracture mechanics, concrete to concrete friction

PUNCHING SHEAR STRENGTH OF COLUMN FOOTINGS.

Birgitta Nylander, Sven Kinnunen.

Institutionen för Byggnadsstatik, Kgl, Tekniska Högskolan, 100 44 Stockholm, Sverige.

Keywords: Concrete, footings, punching, anchorage

FRACTURE MECHANICS APPLIED TO NUMERICAL MODELING OF CONCRETE STRUCTURES.

Ulf Ohlsson, Per Anders Daerga, Lennart Elfgren.

Division of Structural Engineering, Luleå Univ. of Technology, S-951 87 Luleå, Sverige.

Keywords: Concrete, Fracture mechanics, numerical modeling, finite element method, time-dependence

INFLUENCE OF BOLT LENGTH IN A COMPOSITE BEAM.

Tage Petersson.

Inst. f. Brobyggnad, KTH, S-100 44 Stockholm, Sverige.

Keywords: Composite, bolt length, concrete, steel, co-operation

COMPOSITE CONCRETE SLABS UNDER DIFFERENTIAL SHRINKAGE AND ULTIMATE LOAD.

Johan Slifwertorand.

Inst. f. Byggnadsstatik, KTH, S-100 44 Stockholm, Sverige.

Keywords: Concrete bridge deck, composite slab, bond, differential shrinkage, load-bearing capacity

DIAPHRAGM ACTION IN PRECAST HOLLOW CORE FLOORS.

Steve Svensson.

Chalmers tekniska högskola, betongbyggnad, S-412 96 Göteborg, Sverige.

Keywords: Diaphragm action, precast floors, grouted joints, cracks, detailing

TEMPERATURE AND MATURITY DEVELOPMENT OF LOW HEAT ORDINARY PORTLAND CEMENT.

Bjørn Tøllsten, Jan-Erik Jonasson.

Division of Structural Engineering, Luleå University of Technology, S-951 87 Luleå, Sverige.

Keywords: Maturity development, Low heat cement, Adiabatic calorimeter, Cement hydration, Temperature development

CONSTITUTIVE MODEL FOR DESCRIPTION OF MECHANO-SORPTIVE BEHAVIOUR IN CONCRETE.

Sven Thelandersson.

Avd för Byggnadsmekanik, Lunds Tekniska Högskola, Box 118, 221 00 Lund Sverige.

Keywords: Concrete, constitutive model, sorption, shrinkage, creep

CREEP, SHRINKAGE AND CRACKING IN DRYING CONCRETE.

Sven Thelandersson, Ola Dahlblom.

Avd för Byggnadsmekanik, Lunds Tekniska Högskola, Box 118, 221 00 Lund Sverige.

Keywords: Concrete, creep, shrinkage, cracking, drying

EFFECT OF SLAB THICKNESS ON PUNCHING SHEAR STRENGTH OF CONCRETE SLABS.

Peter Tolf, Sven Kinnunen.

Institutionen för Byggnadsstatik, Kgl. Tekniska Högskolan, 100 44 Stockholm, Sverige.

Keywords: Concrete, flat plates, punching, size effect

DEVELOPMENT OF ULTRASONIC TECHNOLOGY FOR DETECTION OF DETERIORATED CONCRETE.

Ulrika Wiberg.

Royal Institute of Technology, Department of Structural Engineering, S-100 44 Stockholm.

Keywords: Non-destructive examination, Ultrasonic testing, Concrete, Ultrasonic velocity, Ultrasonic intensity

ADDRESSES:

1. Ronny Andersson/Hans-Erik Gram
Swedish Cement and Concrete Research Institute
S - 100 44 STOCKHOLM 70
SWEDEN
2. H.H. Bache
Aalborg Portland
P.O. Box 165
DK - 9100 AALBORG
DENMARK
3. Krister Cederwall/Stig Øberg
Division of Concrete Structures
Chalmers University of Technology
S - 412 96 GÖTEBORG
SWEDEN
4. S. Chatterji/P. Nepper-Christensen
Building Technology
The Technological Institute
Gregersensvej, Postboks 141
DK - 2630 TÅSTRUP
DENMARK
5. Carolyn M. Hansson/Birgit Sørensen
The Danish Corrosion Centre
DK - 2605 BRØNDBY
DENMARK
6. Åke Holmberg
P.O. Box 793
S - 220 07 LUND
SWEDEN
7. Tarja Häkkinen
Technical Research Centre of Finland
Concrete and Silicate Laboratory
Kemistintie 3
SF - 02150 ESPOO
FINLAND
8. Odd E. Gjorv/Eirik Bathen
Division of Building Materials
The Norwegian Institute of Technology
N - 7034 TRONDHEIM - NTH
NORWAY
9. Jukka Jokela
Technical Research Centre of Finland
Concrete and Silicate Laboratory
Kemistintie 3
SF - 02150 ESPOO
FINLAND

10. Klaus Juvas
Partek Corporation
Concrete Industry Division
SF - 21600 PARGAS
FINLAND
11. Ulla Kjær
Concrete and Structural Research Institute
Dr. Neergaards Vej 13
DK - 2970 HØRSBOLM
DENMARK
12. Herbert Krenchel/Anders Staf Hansen
Department of Structural Engineering, ABK,
Technical University of Denmark
Bygning 118
DK - 2800 LYNGBY
DENMARK
13. Herbert Krenchel/John A. Bickley
Department of Structural Engineering, ABK,
Technical University of Denmark
Bygning 118
DK - 2800 LYNGBY
DENMARK
14. Inger Meland
Cement and Concrete Research Institute
SINTEF div FCB
N - 7034 TRONDHEIM - NTH
15. Magne Maage/Randulf Johansen
Cement and Concrete Research Institute
SINTEF div FCB
N - 7034 TRONDHEIM - NTH
16. Pirjo Tepponen/Bo-Erik Eriksson
Lohja Corporation
Product Development
SF - 08700 VIRKKALA
FINLAND