



**SPECIFICATION,  
INSPECTION  
& RESTORATION  
OF CONCRETE STRUCTURES**  
PROTEA HOTEL RANCH RESORT,  
POLOKWANE

**EVERYTHING YOU  
NEED TO KNOW ABOUT  
CONCRETE STRUCTURES**

The aim of the course is to give consulting engineers and contractors the tools necessary to prolong the useful life-span of reinforced and prestressed concrete structures in the interests of avoiding costly maintenance procedures as the structure ages. Specifiers, supervisors and contractors will find it much of interest to enable them to provide their clients with superior quality structures.

Many large clients and government bodies have already adopted the new specification for concrete durability that has been developed in South Africa. The associated sampling, testing and evaluation of results has however, resulted in confusion amongst design consultants, contractors and laboratories in the acceptance or rejection of concrete based on predicted durability.

**NOV.**  
**23-24, 2020**  
**8:30AM - FINISHED**

Book and pay before  
**2 November 2020**  
and get a discount per  
delegate.

in association with:



**B A Raath and Associates**  
Consulting and Training in Concrete  
Registered CC nr. 2020/106947/23  
BBBEE Compliant (Classified as an Exempt Micro Enterprise)

accredited by:



**ECSA: 2 CPD Points**

# SPECIFICATION, INSPECTION & RESTORATION OF CONCRETE STRUCTURES TRAINING SEMINAR

## DAY ONE

08:00 ARRIVAL & REGISTRATION

08:30 MORNING SESSION

### CHAPTER 1:

- Introduction

### CHAPTER 2:

- Constituent Materials for Concrete
- Manufacture
- Hydration of Cement
- Extenders
- Classification of Cement

### CHAPTER 3: AGGREGATES FOR CONCRETE

- Purpose of Aggregates
- Properties of Fine Aggregate
- Properties of Coarse Aggregate
- Influence of Aggregate on Concrete
- Water for Concrete
- Admixtures for Concrete

13:00 LUNCH BREAK

14:00 AFTERNOON SESSION

### CHAPTER 4: THE THREE STATES OF CONCRETE

- Fresh Concrete
- Plastic State Cracking
- Effect of Temperature Concrete
- Importance of the Fresh State of Concrete

### CHAPTER 5: GREEN CONCRETE

- Introduction
- Hydration of Cement
- Operations in the Green State

16:00 END OF DAY ONE

## DAY TWO

08:00 ARRIVAL & REGISTRATION

08:30 MORNING SESSION

### SESSION 6: HARDENED CONCRETE

- Introduction
- Testing of Concrete in Compression
- Characteristic Strength
- Histograms and Normal Distribution Curves

### DAY TWO MORNING SESSION CONTINUES...

- Acceptance of Cube Results
  - Compressive Strength for Structural Design
  - When Cubes Fail the Test
  - Tensile Strength of Concrete
  - Abrasion Resistance
  - Shrinkage
  - Overloading
  - Autogenous Shrinkage
  - Prevention of Voids and Cracks
- ### SESSION 7: SITE OPERATIONS ON CONCRETE
- Transport and Placing of Concrete
  - Properties of Concrete that Change
  - Methods of Transportation
  - Methods of Placement
  - Compaction and Curing
  - Curing
  - Formwork

13:00 LUNCH BREAK

14:00 AFTERNOON SESSION

### CHAPTER 8: DETERIORATION OF HARDENED CONCRETE

- Introduction
- Mechanical Deterioration
- Cracking of Concrete
- Concrete Life-span
- Principal Modes of Attack
- Aggressive Environments
- External Damage Caused by Flowing Water
- Other Modes of Failure
- Mechanical Damage to Concrete
- Durability Testing

### CHAPTER 9: DETECTION AND REPAIR OF CONCRETE DEFECTS

- Introduction
- Failure Mechanisms
- Detection of Concrete Defects
- Repair of Concrete Defects
- Concrete Repair materials
- Preparation for Repair
- Sealing of Cracks
- Restoring Concrete Durability
- Removal and Repair of Defective Concrete
- Repair of Screeds Toppings and Plasters
- Concrete that is not Aesthetically Pleasing
- Repair of Soft Chalky Surfaces on Floors
- Creating Structural Strength and Continuity

16:00 END OF DAY TWO

Easy ways to register

# SPECIFICATION, INSPECTION & RESTORATION OF CONCRETE STRUCTURES TRAINING SEMINAR

## AIM OF THE COURSE

The aim of the course is to give consulting engineers and contractors the tools necessary to prolong the useful life-span of reinforced and prestressed concrete structures in the interests of avoiding costly maintenance procedures as the structure ages. Specifiers, supervisors and contractors will find much of interest to enable them to provide their clients with superior quality structures.

Many large clients and government bodies have already adopted the new specification for concrete durability that has been developed in South Africa. The associated sampling, testing and evaluation of results has however, resulted in confusion amongst design consultants, contractors and laboratories

## DETERIORATION OF REINFORCED CONCRETE

Mechanisms that lead to the deterioration of concrete will be given as well as the methods used to avoid and repair them if necessary. Environmental factors and structural usage will be discussed in detail.

The influence of sand grading, aggregate shape and size, curing and cement type will be considered amongst many other factors to be included in the specification and selection of materials, to ensure maximum performance in marine and industrial areas

## ABOUT OUR TRAINER

### OUR TRAINER HAS YEARS OF PRACTICAL EXPERIENCE IN THE TOPICS BEING COVERED

**Bruce Raath (PrEng, CEng):** The author and presenter is the well-known international and experienced trainer and lecturer Bruce Raath, who has Membership of Institute of Concrete Technologists (London) and Assoc. Membership of the Institution of Structural Engineers (London). This combination of qualifications gives a clear insight into the relationship between the behaviour of materials, and the modification of the constituent materials to produce a high quality structure on behalf of the client.

Bruce Raath matriculated at the Durban high School and obtained a Degree in Civil Engineering from the University of Kwa-Zulu Natal in 1970. He worked for the then South African Railways for a period of 10 years doing both maintenance and construction work. After a period in consulting with Webb and Partners in Durban, he lectured at the Durban University of Technology (then M L Sultan) and was senior lecturer in structural design and theory of structures. In 1998, he was co-founder of the concrete testing and consulting firm Contest in Durban until he rejoined the C&CI as Education and Training Manager in 2006. He has since retired from the C&CI and formed his own consulting and training practice in construction



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## WHO SHOULD ATTEND?

The course will be of interest to government departments, client bodies, specifying design engineers, building inspectors, constructors and laboratory staff.

## REGISTRATION INFO / FEES

Event: Specification, Inspection & Restoration of Concrete Structures Training Seminar

Date: 23-24 November 2020

Venue: Protea Hotel Ranch Resort, Polokwane

**Price:** (excluding VAT and per delegate)

Early Bird: R7999 + vat (pay before 2 Nov 2020)

Standard: R8999 + vat

Group Discount: 4-6 10%  
7-11 13%  
12+ 20%

calculated on standard price

## AUTHORIZATION

Full Name:

Tel (Direct Line):

Signature + date:

Person responsible for payment:

Tel (Direct Line):

Email Address:

## COMPANY DETAILS

Company / Organization Name:

Physical Address:

Postal Address:

Tel (Direct Line):

Tel (S/Board):

Fax:

Email:

VAT Registration:

## OFFICE USE

## STATUS

## DELEGATE DETAILS

| Title: | Full Name: | Designation: | I.D. Number: | Cell: | Email: |
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### TERMS AND CONDITIONS

#### Payment Terms:

Payment is required within five (5) days on receipt of tax invoice

Following completion and return of the registration form, full payment is required within five (5) days from receipt of tax invoice and an invoice will be sent as receipt of payment. We reserve the right to refuse admission and withhold CPD points and certificate if payment is not received on time, a payment or an official purchase order must be received prior to the conference or training seminar.

#### Fees:

Fees are exclusive of VAT

Bulk discounts are not calculated on early bird price. Invoiced amounts need to be paid on or before the early bird date to receive the rate. If names and/or ID numbers are not confirmed before documents are sent through to the venue, you will be liable to pay the courier fee.

**Cancellation Policy:** Written cancellations made within 48 hours of the receipt of the signed registration form will receive a full refund. Cancellation received in writing 1 month prior to the start of the event will receive a 50% refund or discount on the invoiced amount. Cancellation within 1 month of the start of the event will not receive any refund and will be liable for the full invoiced amount, however a substitution of the delegate will be allowed.

**Indemnity:** Should for any reason outside the control of CPD Africa conferences or training events, the venue or speakers change, or the event is cancelled due to an act of terrorism, extreme weather conditions or industrial action, CPD Africa conferences and training shall endeavour to reschedule but the client hereby indemnifies and holds CPD Africa conferences and training harmless from and against any and all costs, damages and expenses, including attorney's fees, which are incurred by the client. The construction, validity and performance of this agreement shall be governed in all respects by the laws of South Africa and to the exclusive jurisdiction of whose courts the parties hereby agree to submit.

**No-shows:** Registrants who do not attend the event, without written notices as per the cancellation policy will be liable for 100% of the invoiced amount.

#### \*\*\*Important Notice:

This booking form constitutes as a legal binding contract.

Whilst every reasonable effort will be made to adhere to the advertised brochure(s), CPD Africa reserves the right to change venues or location.



### BANKING DETAILS:

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Branch: Woodstock  
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Branch Code: 201909  
Acc Holder: Continuous Professional Developments (Pty)Ltd

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VAT No: 4910268376