



Repair Protection & Maintenance of Concrete Structures in the Gulf

5-Day Training Program

INTRODUCTION

Over the last decade, concrete rehabilitation has become recognized to be a "stand alone" discipline requiring very specialist knowledge and expertise. This course has been developed to cover the latest advances in materials and techniques and the current state-of-the-art for the repair protection of concrete structures. The presenter's experiences as a concrete materials consultant and a "troubleshooting" investigator will be used for many of the topics that will be covered. Various concrete deterioration mechanisms will be identified, together with the way in which failure to understand them can impact on the development of a concrete restoration strategy.

WORKSHOP OBJECTIVES

- To identify the many advances in technology that have occurred over years and how they can provide considerable benefit to the concrete repair and protection industry-and ensure that we get it right the second time!
- To facilitate learning from the current state-of-the-art and the experience of others.
- To identify many types of mistakes that have often caused major disputes or conflicts and have usually resulted in costly remedial work

PROGRAM

DAY 1

INTRODUCTION TO CONCRETE REPAIR

- Why understanding the differences between cause and effect is important-case studies
- What are the problems? Failure and deterioration types and mechanisms.
- Why do concrete repairs often fail? -Materials-Methods-Design- Combination Effect

DAY 2

THE INVESTIGATION AND STRATEGY DEVELOPMENT PROCESSES



- Understanding the investigation process-non-destructive testing-troubleshooting-case studies
- Designing a concrete repair and protection strategy-key design considerations and strategy components
- Planning a concrete restoration project-specification development-bid documents and process
- Restoration strategies and their effect on electrochemical compatibility-rebar treatments-water proofers-chloride extraction-realkalization-cathodic protection-metallizing-sealers-embedded anodes-corrosion inhibitors

DAY 3

STRENGTHENING,REMOVAL,PREPARATION,BONDING & CRACK REPAIR

- Modern strengthening techniques for concrete structures-exterior post-tensioning-fabricated jackets and collars-composite wrapping-supplemental elements
- What are the best techniques for concrete removal and substrate preparation? hand and mechanically operated equipment
- Substrate Preparation and bonding agents-are they really necessary?
- Crack repair methods, materials and techniques-routing and sealing-injection-vacuum impregnation

DAY 4

JOINT REPAIR, CONCRETE REPAIR MATERIALS & APPLICATION PROCEDURES

- Joint repair techniques and materials
- Concrete repair materials-cement-based-resin based properties-benefits and disadvantages
- Trowelling, spraying and forming repairs-what have we learned? Past problems-new techniques

DAY 5

RESTORATION CASE STUDIES, CONCRETE PROTECTION, MAINTENANCE & MONITORING

- Restoration case studies-material selection- low pressure grouting-underwater repairs-slab replacement, etc
- Protecting your investment-sealers-coatings-membranes
- Preventive maintenance & monitoring programs.