COURSE OVERVIEW SE0034-4D
Assessment & Repair of Concrete Structure

Course Title
Assessment & Repair of Concrete Structure

Course Date/Venue
February 02-05, 2026/Ajman Meeting Room, Grand Millennium Al Wahda Hotel, Abu Dhabi, UAE

Course Reference
SE0034-4D

Course Duration/Credits
Four days/2.4 CEUs/24 PDHs

Course Description

This practical and highly-interactive course includes real-life case studies and exercises where participants will be engaged in a series of interactive small groups and class workshops.

Concrete is an inherently complex material to produce and an even more complex material to repair. With growing pressure to maintain the built environment, and not simply to demolish and rebuild, the need to repair concrete buildings and other structures is increasing and is expected to become of greater importance in the future.

This course serves as a practical guide to delegates on the processes to be followed in commissioning a concrete inspection and repair. It stresses the need to fully understand the cause, extent and location of the problem and it outlines the steps to a successful repair. It covers the assessment and repair of concrete structure; the durability and service life of reinforced concrete structure; and the structure and properties of concrete.

Further, the course will also discuss the causes of concrete and reinforced concrete damage; the additional preventive measures during the design for durability, surface applied barriers, altering the electromechanical behaviour and cathodic prevention; and the damage assessment, visual inspection, physical testing, chemical testing and electromechanical testing.

During this interactive course, participants will learn the corrosion potential, concrete resistivity and monitoring mounts; the assessment of corrosion-affected structures; the principles and standards of rehabilitation including the EN 1504 European Standard; and the principles and methods for rehabilitation of concrete damage due to reinforcement corrosion.

Course Objectives

Upon the successful completion of this course, participants will be able to:

- Assess and repair concrete structure in a professional manner
- Discuss durability and service life of reinforced concrete structure
- Identify the structure and properties of concrete as well as the causes of concrete and reinforced concrete damage
- Apply additional preventive measures during the design for durability, surface applied barriers, altering the electromechanical behaviour and cathodic prevention
- Carryout damage assessment, visual inspection, physical testing, chemical testing and electromechanical testing
- Recognize corrosion potential, concrete resistivity and monitoring mounts
- Review the assessment of corrosion-affected structures
- Discuss the principles and standards of rehabilitation including the EN 1504 European Standard
- Carryout principles and methods for rehabilitation of concrete damage due to reinforcement corrosion

Exclusive Smart Training Kit - H-STK®

*Participants of this course will receive the exclusive "Haward Smart Training Kit" (**H-STK®**). The **H-STK®** consists of a comprehensive set of technical content which includes **electronic version** of the course materials conveniently saved in a **Tablet PC**.*

Who Should Attend

This course provides a complete and up-to-date overview of assessment and repair concrete structure for senior project managers and technicians.

Course Fee

US$ 4,500 per Delegate + **VAT**. This rate includes H-STK® (Haward Smart Training Kit), buffet lunch, coffee/tea on arrival, morning & afternoon of each day.

Accommodation

Accommodation is not included in the course fees. However, any accommodation required can be arranged at the time of booking.

Course Certificate(s)

Internationally recognized certificates will be issued to all participants of the course who completed a minimum of 80% of the total tuition hours.

Certificate Accreditations

Haward's certificates are accredited by the following international accreditation organizations:

- British Accreditation Council (BAC)

  Haward Technology is accredited by the **British Accreditation Council** for **Independent Further and Higher Education** as an **International Centre**. Haward's certificates are internationally recognized and accredited by the British Accreditation Council (BAC). BAC is the British accrediting body responsible for setting standards within independent further and higher education sector in the UK and overseas. As a BAC-accredited international centre, Haward Technology meets all of the international higher education criteria and standards set by BAC.

- The International Accreditors for Continuing Education and Training (IACET - USA)

  Haward Technology is an Authorized Training Provider by the International Accreditors for Continuing Education and Training (IACET), 2201 Cooperative Way, Suite 600, Herndon, VA 20171, USA. In obtaining this authority, Haward Technology has demonstrated that it complies with the **ANSI/IACET 2018-1 Standard** which is widely recognized as the standard of good practice internationally. As a result of our Authorized Provider membership status, Haward Technology is authorized to offer IACET CEUs for its programs that qualify under the **ANSI/IACET 2018-1 Standard**.

  Haward Technology's courses meet the professional certification and continuing education requirements for participants seeking **Continuing Education Units** (CEUs) in accordance with the rules & regulations of the International Accreditors for Continuing Education & Training (IACET). IACET is an international authority that evaluates programs according to strict, research-based criteria and guidelines. The CEU is an internationally accepted uniform unit of measurement in qualified courses of continuing education.

  Haward Technology Middle East will award **2.4 CEUs** (Continuing Education Units) or **24 PDHs** (Professional Development Hours) for participants who completed the total tuition hours of this program. One CEU is equivalent to ten Professional Development Hours (PDHs) or ten contact hours of the participation in and completion of Haward Technology programs. A permanent record of a participant's involvement and awarding of CEU will be maintained by Haward Technology. Haward Technology will provide a copy of the participant's CEU and PDH Transcript of Records upon request.

Course Instructor(s)

This course will be conducted by the following instructor(s). However, we have the right to change the course instructor(s) prior to the course date and inform participants accordingly:

Mr. Steve Magalios, CEng, PGDip (on-going), MSc, BSc, is a **Senior Civil Engineer** with over **30 years** of extensive **On-shore & Offshore** experience in the **Oil & Gas**, **Construction**, **Refinery** and **Petrochemical** industries. His expertise widely covers in the areas of **Concrete Structures & Building Rehabilitation**, **Reinforced Concrete Structures Protection**, **Concrete** Structure Inspection & Repair, **Concrete** Inspection & Maintenance, **Concrete Maintenance & Reliability Analysis**, Design and Behaviour of **Steel Structures**, **Advanced Steel Design & Stability** of **Structures Concrete Structural** Design, **Dynamic Analysis** of **Rotating Equipment** Foundations & **Structural Steel Piperacks**, **Concrete** Technology, **Construction** Planning, **Construction & Concrete Works** Maintenance, Advanced **Building Construction** Technology, **Geosynthetics & Ground Improvement** Methods, **Bench** Design, **Benching**, **Land Survey and ArcGIS for Earthworks & Management**, **ArcGIS** for Surveying, Computer Aided Design (**CAD**), **AutoCAD Civil 3D**, **GIS & Mapping**, **Structural Analysis & Design** (**STAAD PRO**), **Land Surveying** & Property Evaluation, **Earth Measurements**, **Earthwork** & **Structural Maintenance**, System Safety Program Plan (**SSPP**) Inspection, **Building & Road** Design Skills, **Civil Engineering Design**, **Structural Reliability** Engineering, **Road** Construction & Maintenance, **Road** Pavement Design, **Road** Maintenance, **Drainage** System Operations & Maintenance, **Blueprint** Reading & Interpretation, **Blue Print** Documentation, Mechanical **Drawings**, **P&ID**, **Flow Diagram** Symbols, **Cartographic** Representation, Soil Classification, **Cadastral Surveying** & Boundary Definition, **Project Engineering** & Design, **Construction** Management, **Project Planning** & Execution, **Site Management**, **Site Supervision**, Effective **Resource Management**, **Project Evaluation**, **FEED** Management, **EPC Projects** Design, **Project Completion & Workover**, Quality Control and Team Management. He is also well-versed in **Pipeline** Operation & Maintenance, **Pipeline** Design & Construction, **Pipeline** Engineering, Scraper Traps, Burn Pits, Risk Assessment, HSE Plan & Procedures, **Construction** Planning, Methods & Management, **Sloping**, **Embankments**, **Construction** Planning, **Construction Quality** Management, **Project Risk** Assessment, **Project Quality** Plans, **Excavation**, **Backfill & Compaction**, **Excavation & Reinstatement**, **Excavation Safety** for Construction, **Groundworks Supervision**, **Construction Quality** Remote Sensing, Construction Materials, Construction Surveying, **Detailed Engineering** Drawings, Codes & Standards Quality Plan & Procedures, Safety & Compliance Management, Permit-to-Work Issuer, ASME, API, ANSI, ASTM, BS, NACE, ARAMCO & KOC Standards, MS Office tools, **AutoCAD**, **STAAD-PRO**, GIS, ArcInfo, ArcView, Autodesk Map and various programming languages and software such as **SHOTPlus**, FORTRAN, BASIC and AUTOLISP. Currently, he is the **Chartered Professional Surveyor Engineer & Urban-Regional Planner** wherein he is deeply involved in providing exact data, measurements and determining properly boundaries. He is also responsible in preparing and maintaining sketches, maps, reports and legal description of surveys.

During his career, Mr. Magalios has gained his expertise and thorough practical experience through challenging positions such as a **Project Site Construction Manager**, **Construction Site Manager**, **Project Manager**, **Deputy PMS Manager**, **Head of the Public Project Inspection Field Team**, **Technical Consultant**, **Senior Consultant**, **Consultant/Lecturer**, **Construction Team Leader**, **Lead Pipeline Engineer**, **Project Construction Lead Supervising Engineer**, **Civil Engineer**, **Lead Site Engineer**, **Senior Site Engineer Lead Engineer**, **Senior Site Engineer**, **R.O.W. Coordinator**, **Site Representative**, **Supervision Head** and **Contractor** for international Companies such as the Penspen International Limited, Eptista Servicios de Ingeneria S.I., J/V ILF Pantec TH. Papaioannou & Co. – Emenergy Engineering, J/V Karaylannis S.A. – Intracom Constructions S.A., Ergaz Ltd., Alkyonis 7, Palaeo Faliro, Piraeus, Elpet Valkaniki S.A., Asprofos S.A., J/V Depa S.A. just to name a few.

Mr. Magalios is a **Registered Chartered Engineer** and has a **Master's** and **Bachelor's** degree in **Surveying Engineering** from the **University of New Brunswick**, **Canada** and the **National Technical University of Athens**, **Greece**, respectively. Further, he is currently enrolled for **Post-graduate** in **Quality Assurance** from the **Hellenic Open University**, **Greece**. He has further obtained a Level 4B Certificates in Project Management from the National & Kapodistrian University of Athens, Greece and Environmental Auditing from the Environmental Auditors Registration Association (EARA). Moreover, he is a **Certified Instructor/Trainer**, a **Chartered Engineer** of Technical Chamber of Greece and has delivered numerous trainings, workshops, seminars, courses and conferences internationally.

Training Methodology

All our Courses are including **Hands-on Practical Sessions** using equipment, State-of-the-Art Simulators, Drawings, Case Studies, Videos and Exercises. The courses include the following training methodologies as a percentage of the total tuition hours:-

30% Lectures
20% Practical Workshops & Work Presentations
30% Hands-on Practical Exercises & Case Studies
20% Simulators (Hardware & Software) & Videos

In an unlikely event, the course instructor may modify the above training methodology before or during the course for technical reasons.

Course Program

The following program is planned for this course. However, the course instructor(s) may modify this program before or during the course for technical reasons with no prior notice to participants. Nevertheless, the course objectives will be always met:

Day 1: ***Monday, 02nd of February 2026***

0730 – 0800	*Registration & Coffee*
0800 – 0815	*Welcome & Introduction*
0815 – 0830	***PRE-TEST***
0830 – 0930	***Durability & Service Life of Reinforced Concrete Structure*** *Peculiarities of Middle East Environment for Concrete Structures ● Failure of Concrete Structures Due to Degradation ● Reinforcement Steel Failure ● Concrete Failure ● Environmental Attack ● Reinforced Concrete Structures ● Structural and Non-structural Damage Classification*
0930 – 0945	*Break*
0945 – 1100	***Structure & Properties of Concrete*** *Cements, Aggregates, Water, and Mixtures ● Blended Cements, Pozzolanic Materials ● Mechanical and Geometrical Requirements, Physical and Chemical Requirements ● Workability, Hardened Concrete Properties, Transport Processes in Concrete*
1100 – 1215	***Causes of Concrete & Reinforced Concrete Damage*** *Mechanical Causes ● Physical Causes ● Thermal Effect ● Structural Causes ● Settlement ● Chemical causes ● Water Attack ● Sulphate Attack*
1215 – 1230	*Break*
1230 – 1420	***Causes of Concrete & Reinforced Concrete Damage (cont'd)*** *Reinforcement Corrosion ● Corrosion Rate ● Stress Corrosion Cracking ● Hydrogen Damage ● Stray currents ● Carbonation ● Chloride Induced Corrosion ● Macrocells*
1420 - 1430	***Recap*** *Using this Course Overview, the Instructor(s) will Brief Participants about the Topics that were Discussed Today and Advise Them of the Topics to be Discussed Tomorrow*
1430	*Lunch & End of Day One*

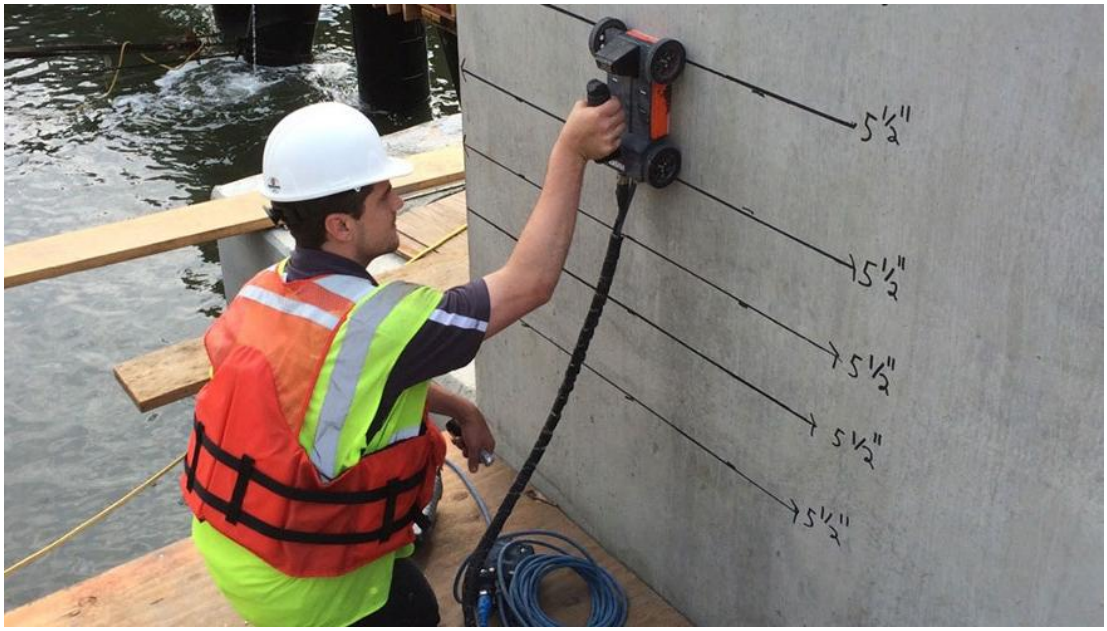
Day 2:	Tuesday, 03rd of February 2026
0730 – 0930	***Additional Preventive Measures*** *Design for Durability ● Surface Applied Barriers • Altering the Electrochemical Behaviour ● Cathodic Prevention*
0930 – 0945	*Break*
0945 – 1100	***Damage Assessment*** *Visual Inspection ● Physical Tests ● Chemical Tests • Electrochemical Tests ● Corrosion Potential ● Concrete Resistivity ● Monitoring Movements*
1100 – 1215	***Assessment of Corrosion-Affected Structures*** *Structural Typology ● Collection of Background Data ● Classification of Damage Levels ● Periodicity of the Inspections*
1215 – 1230	*Break*
1230 – 1420	***Assessment of Corrosion-Affected Structures (cont'd)*** *Diagnosis Phase ● Practical Case I ● Practical Case II ● Practical Case III ● Practical Case IV*
1420 - 1430	***Recap*** *Using this Course Overview, the Instructor(s) will Brief Participants about the Topics that were Discussed Today and Advise Them of the Topics to be Discussed Tomorrow*
1430	*Lunch & End of Day Two*

Day 3:	Wednesday, 04th of February 2026
0730 – 0930	***Principles & Standards of Rehabilitation*** *Rehabilitation Methodology ● Principles of Rehabilitation ● Standards & Guidance for Selection of Repairs ● EN 1504 European Standard*
0930 – 0945	*Break*
0945 – 1100	***EN 1504 European Standard*** *Project Phases of the Concrete Repair & Protection Process*
1100 – 1215	***Principles & Methods for Rehabilitation of Damaged Concrete*** *Surface Protection ● Cracks Repair ● Injection Materials • Special Types of Surface Protection ● Replacement of Damaged Concrete*
1215 – 1230	*Break*
1230 – 1420	***Principles & Methods for Rehabilitation of Damaged Concrete (cont'd)*** *Recasting, Sprayed Mortar, Sprayed Concrete ● Placement Methods Reinforcement of housing Structures ● Properties of Fibres ● Dry Shrinkage Process*
1420 - 1430	***Recap*** *Using this Course Overview, the Instructor(s) will Brief Participants about the Topics that were Discussed Today and Advise Them of the Topics to be Discussed Tomorrow*
1430	*Lunch & End of Day Three*

Day 4:	***Thursday, 05th of February 2026***
0730 – 0930	***Principles & Methods for Rehabilitation of Concrete Damage due to Reinforcement Corrosion*** *Re-alkalization ● Service Life & Durability*
0930 – 0945	*Break*
0945 – 1100	***Principles & Methods for Rehabilitation of Concrete Damage due to Reinforcement Corrosion (cont'd)*** *Chloride Extraction ● Corrosion Inhibitors*
1100 – 1215	***Principles & Methods for Rehabilitation of Concrete Damage due to Reinforcement Corrosion (cont'd)*** *Cathodic Protection*
1215 – 1230	*Break*
1230 – 1345	***Rehabilitation of Reinforced Concrete Structures*** *Practical Cases II, III & IV*
1345 - 1400	***Course Conclusion*** *Using this Course Overview, the Instructor(s) will Brief Participants about the Course Topics that were Covered During the Course*
1400 – 1415	***POST-TEST***
1415 – 1430	*Presentation of Course Certificates*
1430	*Lunch & End of Course*

Practical Sessions

This practical and highly-interactive course includes real-life case studies and exercises:-



Course Coordinator

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