TOPO.

City of Townsville

Erosion and Sediment Control Advanced Training

Focussed at engineers, environmental advisors, planning and compliance staff, project managers

14-15 *(Days 1 and 2)* and 28-29 *(Days 3 and 4)* February 2024

Course overview

The ESC Advanced course is delivered over 4 days (28 PDUs) and is specifically focussed at those tasked with preparing, implementing or assessing erosion and sediment control plans.

The course will provide attendees with valuable knowledge which will improve ESC decision making at all project stages (tendering to final project delivery) and assist in developing or assessing an ESC plan which is in accordance with the requirements of the IECA 2008 “Best Practice Erosion and Sediment Control” document and its revised appendices.

The course has been developed to be practical and engaging, with attendee numbers limited to provide the best learning environment.

Practical exercises will include preparing a ESC plan, sizing of sediment basins and drainage measures (spillways, chutes, diversion channels/bunds). In addition a field component will be undertaken to operate a high efficiency sediment basin and understand treatment aspects.

It is not a prerequisite for attendees to have completed the ESC Awareness course, however attendees should have an existing understanding and experience with erosion and sediment control.

IECA
International Erosion Control Association
APPROVED TRAINING

LEARNING OUTCOMES

+ Knowledge of the IECA Best Practice Erosion and Sediment Control Manual
+ Awareness of the impacts of poor onsite ESC management on the receiving environment
+ Review of relevant legislation and requirements
+ Soil types, properties and management techniques relevant to the North Queensland region
+ Awareness of what is considered best practice for managing ESC and the associated limitations
+ Appreciation of why some erosion and sediment control techniques are more effective than others
+ An understanding of construction and maintenance requirements for drainage, erosion and sediment control measures (relevant to cost control, resource planning and efficiency onsite)
+ Construction site hydrology and hydraulics
+ Design and operation of sediment basins (including Type A, B and D basin sizing)
+ Achieving successful revegetation on all sites
+ Water quality monitoring (turbidity, TSS, pH)
+ Inspection and auditing requirements per IECA, Council and TMR
+ ESC plan preparation process

Course program

DAY 1

1. INTRODUCTION AND EROSION RISK

+ Introduction to the issue of erosion and consequences of sedimentation on our environment
+ Environmental impacts and construction phase water quality performance objectives
+ Overview of relevant legislation
+ Forms of erosion and erosion drivers
+ Erosion risk assessment (RUSLE) and selection of appropriate sediment and erosion control measures

2. SOIL PROPERTIES AND MANAGEMENT

+ Key soil properties (physical and chemical)
+ Soil sampling and analysis
+ Understanding sodic & dispersive soils
+ Acidic or alkaline soils
+ Soil fertility, compaction and handling
+ Management techniques for problem soils
+ Soils as a growing media

3. SEDIMENT CONTROL

+ Role of sediment control measures and compliance requirements for capture of sediment laden runoff
+ Effectiveness and limitations of sediment controls
+ Construction and maintenance requirements for all types of sediment controls
+ Sediment basin design standards, operation, treatment and maintenance requirements
+ Emerging treatment technology including auto dosers (rainfall and flow based activated) and rapid settling coagulants & flocculants

DAY 2

4. DRAINAGE CONTROL

+ Principles of drainage design and construction standards for temporary drains and diversions
+ Use of clean and dirty water diversion drains to manage runoff and control erosion generation
+ Comparison of drain lining options and rock check dams
+ Works within a waterway and temporary crossings

5. EROSION CONTROL & REVEGETATION

+ Using erosion control techniques to manage soil stockpiles, stabilised site access, temporary work areas and to achieve final site stabilisation
+ Comparison of various erosion control products performance, suitability for nominated works and installation and maintenance requirements

6. HYDROLOGY & HYDRULICS

+ Principles of drainage design and construction standards for temporary drains and diversions
+ Calculating peak flow using rational method
+ Manning's equation and sizing of drains and chutes
+ Design sizing for sediment basins and spillways
+ Worked examples and design excercises

DAY 3

7. TYPE A, B & D SEDIMENT BASIN DESIGN

7.1. INTRODUCTION

+ 'Why' sediment basin standards have changed
+ 'What' are the current basin standards specified within various specifications and guidelines and what do they mean for your site
+ 'What' the change in standards mean (80th%ile five day event vs 80% hydrological effectiveness)
+ Overview of sediment basin options (Type A, B & D) to achieve new design standards
+ Basin selection and design triggers

7.2. BASIN DESIGN

+ Process for sizing Type A, B and D sediment basins
+ Designing basin inlet arrangements, including forebays and level spreaders
+ Designing basin outlets, including decants, risers and emergency spillways
+ Discussion of key design paramters to maximise performance and reduce potential for resuspension and short-circuting, including clear water zone and baffles
+ Comparision of sizing for Type A, B and D basins

7.3. COAGULENTS AND FLOCCULANTS

+ Coagulation and flocculation process
+ Coagulant and flocculant types and effectiveness
+ How to determine what to use (attendee excercise to perform jar tests)
+ Active and passive dosing

DAY 4

8. FIELD DEMONSTRATION

+ Site visit to Townsville City Council HES basin demonstration site
+ Witness critical construction and operation aspects for sediment basins and treatment of sediment laden water
+ Dosing systems (rainfall activated vs flow activated)
+ Adaptive management and trouble shooting
+ Retro fitting existing basins and storage structures
+ Basin decommissioning

9. PLAN PREPARATION

+ Requirements of a ESC plan and process to develop one
+ Plan preparation exercise to prepare staged plans, identify control measures, locate and size sediment and drainage control measures and identify suitable erosion control practices

Course presenter

TERRY CLARK

Terry Clark is an Environmental Engineer with over 18 years direct experience in the area of soil and water management, specifically erosion and sediment control. Terry regularly presents a range of ESC training courses and is highly respected within industry as both a technical expert but also someone who can clearly communicate and provide a practical perspective. Terry has been invited by Griffith University to sessional lecture Engineering Design and has previously presented ESC training at Sydney TAFE.

Terry is a Certified Practitioner in Erosion and Sediment Control (CPESC) and Director of the Australasian Sector of the International Erosion Control Association (IECA). He is also a Registered Professional Engineer of Queensland (RPEQ) and holds a Cert IV in Training and Assessment. Terry has broad experience within the environmental field having previously worked within both private industry and Government. He has developed an appreciation and detailed understanding of the entire development process from the initial project conception, design and construction phases and subsequent final delivery.

Course inclusions

+ Engaging and insightful course developed and presented by industry expert (see above)
+ Field trip to inspect Townsville City Council HES basin display, with hands on treatment activities
+ Attendees completing the Advanced training course can be awarded AQP under the Townsville City Council scheme
+ Supply of detailed course notes, design tools, jar testing kit and certificate of attendance
+ Full catering (morning tea, lunch, afternoon tea and refreshments)

NEXT TRAINING COURSE:

When: 14-15 *(Days 1 and 2)* and 28-29 *(Days 3 and 4)* February 2024
Timing: 8.30am – 5.00pm (approx)
Where: Riverway Stadium, Sporting Drive, Condon, QLD
Cost: $1,650 (ex gst)

Additional information:

- Catering included (please advise of any dietary requirements ASAP)
- Limited places available. Secure your spot by contacting Terry Clark on the details below.

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