Quality Assurance and Quality Control (QA/QC) in Infrastructure Training Course

Professional Development Training Course Outline

Category	Civil Engineering and Infrastructure Management	**Duration**	5 Days
Base Fee	$1,500 USD	**Delivery Mode**	Online / On-site Hybrid

Course Introduction

Ensuring the highest standards of quality assurance and quality control (QA/QC) is non-negotiable for the successful delivery and long-term performance of infrastructure projects, especially in rapidly developing regions like Nairobi, Kenya. Quality Assurance and Quality Control (QA/QC) in Infrastructure Training Course equips professionals with essential methodologies and tools to effectively implement and manage robust QA/QC processes across all phases of infrastructure development. QA/QC encompasses a comprehensive set of activities designed to guarantee that infrastructure projects, from roads and bridges to water systems and energy grids, meet specified requirements, relevant codes, standards, and stakeholder expectations.2 Quality Assurance (QA) focuses on preventing defects through systematic processes and proactive planning, while Quality Control (QC) involves identifying defects through inspection and testing during execution.3 The absence of stringent QA/QC can lead to significant structural failures, costly rework, project delays, safety hazards, reduced asset lifespan, and severe reputational damage. This course is meticulously designed to equip civil engineers, project managers, construction managers, quality managers, site engineers, inspectors, materials engineers, consultants, and government oversight officials with the expert knowledge and practical methodologies to design, implement, and manage effective QA/QC programs throughout the infrastructure project lifecycle. The program focuses on QA/QC principles, quality management systems (e.g., ISO 9001), inspection and testing methodologies, documentation and reporting, non-conformance management, and continuous improvement, blending rigorous analytical frameworks with practical, hands-on application, global case studies, and interactive QA/QC plan development exercises. Participants will gain the strategic foresight and technical expertise to confidently lead quality initiatives, fostering unparalleled project integrity, structural reliability, and long-term infrastructure value, thereby securing their position as indispensable leaders in delivering high-quality and sustainable infrastructure.

Programme Curriculum

Quality Assurance and Quality Control (QA/QC) in Infrastructure Training Course

Introduction

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This course is meticulously designed to equip **civil engineers, project managers, construction managers, quality managers, site engineers, inspectors, materials engineers, consultants, and government oversight officials** with the expert knowledge and practical methodologies to **design, implement, and manage effective QA/QC programs throughout the infrastructure project lifecycle.** The program focuses on **QA/QC principles, quality management systems (e.g., ISO 9001), inspection and testing methodologies, documentation and reporting, non-conformance management, and continuous improvement,** blending **rigorous analytical frameworks with practical, hands-on application, global case studies, and interactive QA/QC plan development exercises.** Participants will gain the strategic foresight and technical expertise to confidently lead quality initiatives, fostering unparalleled **project integrity, structural reliability, and long-term infrastructure value**, thereby securing their position as indispensable leaders in **delivering high-quality and sustainable infrastructure.**

Course Objectives

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

1. **Analyze core concepts and strategic responsibilities** of **Quality Assurance (QA) and Quality Control (QC)** in infrastructure projects.
2. **Master sophisticated techniques** for **developing and implementing comprehensive Quality Management Plans (QMPs)** for diverse infrastructure types.
3. **Develop robust methodologies** for **interpreting and applying relevant infrastructure codes, standards, and specifications.**
4. **Implement effective strategies** for **planning and executing various inspection and testing methodologies** (e.g., civil, structural, electrical, mechanical).
5. **Manage complex considerations** for **establishing and utilizing project-specific QA/QC documentation and reporting systems.**
6. **Apply robust strategies** for **identifying, documenting, and managing non-conformances** and implementing corrective/preventive actions.
7. **Understand the deep integration of QA/QC with project risk management and contractual obligations.**
8. **Leverage knowledge of global best practices and lessons learned** in infrastructure QA/QC from successful projects worldwide.

9. **Optimize strategies for conducting internal and external quality audits** and management reviews for continuous improvement.
10. **Formulate specialized recommendations** for **selecting and managing qualified third-party inspection and testing services.**
11. **Conduct comprehensive assessments** of material quality, workmanship, and construction processes against specified standards.
12. **Navigate challenging situations** such as **poor quality materials, inadequate workmanship, and contractual disputes** related to quality.
13. **Develop a holistic, systematic, and proactive approach** to **Quality Assurance and Quality Control (QA/QC) in Infrastructure,** ensuring project integrity and long-term asset performance.

Target Audience

This course is designed for professionals interested in Quality Assurance and Quality Control (QA/QC) in Infrastructure:

1. **Civil Engineers & Construction Engineers:** Involved in design, construction, and quality oversight.[5]
2. **Project Managers & Construction Managers:** Responsible for overall project quality.[6]
3. **Quality Managers & QA/QC Engineers:** Dedicated to developing and implementing quality systems.
4. **Site Engineers & Inspectors:** Conducting on-site quality checks and supervision.
5. **Materials Engineers & Lab Technicians:** Responsible for material testing and compliance.[7]
6. **Consultants & Independent Verifiers:** Providing third-party quality assurance services.
7. **Government Oversight Officials:** From infrastructure ministries, public works, and regulatory bodies.
8. **Procurement Specialists:** Ensuring quality requirements are met in material and service procurement.

Course Duration: 5 Days

Course Modules

- **Module 1: Foundations of Quality Management in Infrastructure**
  - **Defining Quality Assurance (QA) vs. Quality Control (QC)**: Prevention vs. Detection.
  - **Importance of QA/QC in Infrastructure**: Safety, durability, cost-efficiency, reputation, public trust.[8]
  - **Principles of Quality Management**: Customer focus, leadership, engagement, process approach, improvement, evidence-based decision making.[9]
  - **Overview of Quality Management Systems (QMS)**: ISO 9001 and its relevance to infrastructure.
  - **The Cost of Poor Quality**: Rework, delays, failures, liability, loss of reputation.
- **Module 2: Developing a Quality Management Plan (QMP) for Infrastructure Projects**
  - **Purpose and Components of a QMP**: Policy, objectives, responsibilities, procedures, resources.
  - **Integrating QMP with Project Management Plan**: Alignment with scope, schedule, budget, risk.
  - **Stakeholder Expectations and Quality Requirements**: Translating client needs into measurable standards.
  - **Establishing Quality Control Points (QCPs) and Inspection & Test Plans (ITPs)**.
  - **Developing Quality Standards and Specifications**: Reference to local and international codes (e.g., KEBS, ASTM, AASHTO).
- **Module 3: Inspection and Testing Methodologies for Infrastructure**
  - **Material Testing**: Concrete (compressive strength, slump), asphalt (gradation, compaction), soil (compaction, bearing capacity), steel (tensile strength).
  - **Workmanship Inspection**: Earthworks, concrete pouring, rebar fixing, formwork, paving.

    - **Structural and Component Testing**: Non-destructive testing (NDT), load testing.
    - **Electrical and Mechanical QC**: Installation checks, functional testing of systems.[10]
    - **Environmental and Safety QA/QC**: Compliance with environmental management plans and safety protocols.[11]
- **Module 4: Quality Documentation, Reporting, and Communication**
    - **Essential QA/QC Documentation**: Checklists, inspection reports, test reports, non-conformance reports.[12]
    - **Record Keeping and Traceability**: Ensuring all quality-related activities are documented.[13]
    - **Reporting Frequency and Formats**: Daily, weekly, monthly quality reports.[14]
    - **Effective Communication of Quality Issues**: Internal teams, subcontractors, clients, regulatory bodies.
    - **Digital QA/QC Platforms**: Leveraging software for real-time data capture, reporting, and analysis.[15]
- **Module 5: Non-Conformance Management and Corrective/Preventive Actions**
    - **Identifying Non-Conformances**: Deviations from specifications, standards, or QMP.
    - **Non-Conformance Reporting (NCR) Process**: Documentation, classification, and tracking.
    - **Root Cause Analysis for Non-Conformances**: Identifying underlying issues.
    - **Corrective Actions**: Addressing the immediate problem and preventing recurrence.
    - **Preventive Actions**: Proactive measures to eliminate potential non-conformances.
- **Module 6: Quality Auditing and Continuous Improvement**
    - **Types of Quality Audits**: Internal, external, first-party, second-party, third-party.
    - **Audit Planning and Execution**: Audit checklists, interviewing techniques, evidence collection.
    - **Audit Reporting and Follow-up**: Documenting findings and tracking corrective actions.
    - **Management Review of the QMS**: Ensuring its continuing suitability and effectiveness.[16]
    - **Continuous Improvement Tools**: PDCA cycle (Plan-Do-Check-Act), Lean principles, Six Sigma concepts applied to quality.
- **Module 7: QA/QC in Procurement and Subcontractor Management**
    - **Establishing Quality Requirements in Procurement**: Material specifications, supplier qualifications.
    - **Supplier Quality Management**: Auditing suppliers, incoming material inspections.
    - **Subcontractor QA/QC Management**: Ensuring subcontractors adhere to project quality standards.[17]
    - **Contractual QA/QC Clauses**: Embedding quality responsibilities and performance metrics in contracts.[18]
    - **Dispute Resolution Related to Quality**: Managing disagreements over quality deficiencies.[19]
- **Module 8: Advanced Topics and Case Studies in Infrastructure QA/QC**
    - **QA/QC for Sustainable Infrastructure**: Integrating environmental and social quality criteria.
    - **Implementing Advanced Statistical Process Control (SPC)**: Using data to monitor and control processes.
    - **Forensic Engineering and Failure Analysis**: Learning from infrastructure failures.
    - **Case Studies of Major Infrastructure Quality Failures**: Analyzing root causes and lessons learned (e.g., bridge collapses, road deteriorations).
    - **Developing a Project-Specific QA/QC Enhancement Plan**: Participants will work on a practical exercise to design a robust QA/QC plan for a hypothetical infrastructure project (e.g., a new port facility or expressway in Kenya), addressing specific quality challenges in the local context.

Training Methodology

- **Interactive Workshops:** Facilitated discussions, group exercises, and problem-solving activities.
- **Case Studies:** Real-world examples to illustrate successful community-based surveillance practices.
- **Role-Playing and Simulations:** Practice engaging communities in surveillance activities.
- **Expert Presentations:** Insights from experienced public health professionals and community leaders.
- **Group Projects:** Collaborative development of community surveillance plans.
- **Action Planning:** Development of personalized action plans for implementing community-based surveillance.
- **Digital Tools and Resources:** Utilization of online platforms for collaboration and learning.
- **Peer-to-Peer Learning:** Sharing experiences and insights on community engagement.
- **Post-Training Support:** Access to online forums, mentorship, and continued learning resources.

Register as a group from 3 participants for a Discount

Send us an email: info@fineskilltrainingcenter.org or call +254769199797

Certification

Upon successful completion of this training, participants will be issued with a globally recognized certificate.

Tailor-Made Course

We also offer tailor-made courses based on your needs.

Key Notes

- Participants must be conversant in English.
- Upon completion of training, participants will receive an Authorized Training Certificate.
- The course duration is flexible and can be modified to fit any number of days.
- Course fee includes facilitation, training materials, 2 coffee breaks, buffet lunch, and a Certificate u

Upcoming Scheduled Sessions

Start Date	End Date	Location	Price
23 Nov 2026	27 Nov 2026	Online	$1,000
23 Nov 2026	27 Nov 2026	Physical	$1,500
23 Nov 2026	27 Nov 2026	Physical	$3,000
23 Nov 2026	27 Nov 2026	Physical	$3,000
23 Nov 2026	27 Nov 2026	Physical	$6,000
23 Nov 2026	27 Nov 2026	Physical	$4,500

Start Date	End Date	Location	Price
23 Nov 2026	27 Nov 2026	Physical	$6,000
23 Nov 2026	27 Nov 2026	Physical	$6,000

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