



Accredited Africa Training Institute for Capacity Development

Unit FO409, Hatfield Plaza · 1122 Burnett St, Hatfield 0028 · Pretoria, Gauteng · South Africa

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COURSE BROCHURE

Cable Stayed Bridge Construction Principles And Applications Training

Physical Planning and Construction / Physical Planning, Design and Management

Unit Standard 116352 · NQF Level 7 · 10 Credits · 7 Days

COURSE OVERVIEW

This course provides participants with comprehensive knowledge of cable-stayed bridge construction principles, design considerations, and practical applications. It equips learners with the skills to plan, manage, and execute cable-stayed bridge projects safely and efficiently.

Category	Physical Planning and Construction
Subfield	Physical Planning, Design and Management
Unit Standard	116352
Accreditation	SAQA Accredited · NQF Level 7 · 10 Credits
Duration	7 days
Training Method	Online, On-Campus, In-House
Certificate	Issued via AATICD LMS – verifiable online

LEARNING OUTCOMES

- Apply fundamental principles of cable-stayed bridge design and construction.
- Analyze structural behavior and load distribution in cable-stayed bridges.
- Evaluate construction methodologies and erection sequences for cable-stayed bridges.
- Implement quality control and safety measures during construction.
- Demonstrate proficiency in monitoring and maintenance of cable-stayed bridges.

WHO SHOULD ATTEND

- This course is intended for civil engineers, construction project managers, site supervisors, and technical professionals involved in the design, construction, or maintenance of cable-stayed bridges.

COURSE OUTLINE

Day 1: Introduction to Cable Stayed Bridges and Historical Context

- Overview of bridge types: beam, arch, suspension, cable stayed.
- Key components: tower, deck, cables, anchorages.
- Historical evolution: from early designs to modern marvels.
- Notable examples: Millau Viaduct, Sunshine Skyway, Nelson Mandela Bridge.
- Regulatory framework: SANS 10160, SAQA unit standard 116352.
- Basic terminology and structural behavior.

Day 2: Structural Mechanics and Load Analysis

- Load types: dead, live, wind, temperature, seismic.
- Load combinations per SANS 10160.
- Cable force calculation: equilibrium and influence lines.
- Tower behavior under asymmetric loading.
- Cable arrangement configurations and their effects.
- Introduction to structural analysis software (brief demo).

Day 3: Materials and Construction Components

- Cable materials: prestressing strands, parallel wire, locked coil.
- Corrosion protection: galvanizing, sheathing, wax, PE pipes.
- Tower materials: reinforced concrete, steel, composite.
- Deck types: steel orthotropic, concrete box girder, composite.
- Material testing: tensile, fatigue, relaxation tests.
- Local material availability and specifications.

Day 4: Construction Methods and Erection Sequences

- Construction sequences: tower erection, deck segment placement, cable installation.
- Balanced cantilever method: segmental construction.
- Incremental launching and span-by-span methods.
- Temporary supports, falsework, and guy cables.
- Cable stressing and tensioning procedures.
- Monitoring deflections and forces during construction.
- Safety protocols and quality assurance.

Day 5: Cable Installation, Tensioning, and Adjustment

- Cable handling and installation: reel, pulling, saddles.
- Stressing equipment: multi-strand jacks, monostrand jacks.
- Tensioning sequence: initial, intermediate, final.
- Force measurement: load cells, pressure gauges, frequency.
- Adjustments for geometry control and load redistribution.
- Cable replacement methods and vibration mitigation.

Day 6: Inspection, Maintenance, and Rehabilitation

- Inspection techniques: visual, NDT, cable scanning.
- Deterioration: corrosion, fatigue, vibration, anchor degradation.
- Monitoring systems: accelerometers, strain gauges, GPS.
- Maintenance: cleaning, re-tensioning, coating.

- Rehabilitation: cable replacement, strengthening, damping.
- Case studies: failures and successful retrofits.
- Regulatory requirements: SANRAL bridge inspection manual.

Day 7: Design Project, Case Studies, and Assessment

- Group project: preliminary design of a cable stayed bridge.
- Load calculation and cable sizing exercise.
- Case study: Nelson Mandela Bridge (Johannesburg).
- Case study: Msikaba Bridge (Eastern Cape).
- Presentation of design projects and peer review.
- Assessment preparation: key concepts and calculations.
- Final assessment: written test and practical exercise.

ASSESSMENT & CERTIFICATION

Delegates are assessed through exercises and a final test. A mark of **50% or above** earns an **AATICD Certificate of Completion**, issued digitally with a unique verification code. This course carries **10 NQF credits** at **NQF Level 7**.

PRICING (PER DELEGATE, EX-VAT)

Delegates	Training Method	Price per Delegate	Total
1	Online	R 32,400.00	R 32,400.00
1	In-House	R 42,200.00	R 42,200.00
1	On-Campus (Pretoria)	R 48,600.00	R 48,600.00

UPCOMING SESSIONS

Start	End	Method	Venue
07 Aug 2026	17 Aug 2026	On-Campus	Dubai, UAE
10 Aug 2026	18 Aug 2026	On-Campus	Abu Dhabi, UAE
11 Aug 2026	19 Aug 2026	On-Campus	Durban, South Africa
11 Aug 2026	19 Aug 2026	On-Campus	Mauritius
12 Aug 2026	20 Aug 2026	On-Campus	Cape Town, South Africa
13 Aug 2026	21 Aug 2026	On-Campus	Dubai, UAE
14 Aug 2026	24 Aug 2026	On-Campus	Pretoria, South Africa
17 Aug 2026	25 Aug 2026	On-Campus	Durban, South Africa

Contact us if no suitable date is listed – on-demand sessions can be arranged for groups.

HOW TO GET A QUOTE OR APPLY

1. **Get an instant quotation online:** visit www.aaticd.co.za, open the page for this course (Unit Standard 116352) and click **Get A Quote / Apply**. Select your training method and number of delegates – your quotation is generated immediately and emailed to you with the course brochure attached.
2. **Apply by email:** send the course title, your preferred training method (Online, In-House or On-Campus Pretoria), the number of delegates and your preferred dates to apply@aaticd.co.za – our team will reply with a formal quotation.
3. **Apply by phone or WhatsApp:** call **+27 12 004 8389** or WhatsApp **+27 65 077 6310** and we will prepare your quotation and reserve your seats.
4. **Confirm your booking:** accept the quotation and settle the invoice. As soon as payment is confirmed your delegates are enrolled and receive their AATICD LMS login details by email, along with joining instructions for their chosen training method.

Group discounts apply automatically – the more delegates you enrol, the lower the price per delegate. No payment is required to request a quotation.

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